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Sub-Project Completion Report

on

Co-ordinated Project

Transfer of Agricultural Technologies to Farmer's level for Increasing Farm Productivity

Sub-project Duration

July 2018 to June 2022

Co-ordinating Organization
Technology Transfer and Monitoring Unit
Bangladesh Agricultural Research Council

Project Implementation Unit
National Agricultural Technology Program-Phase II Project
Bangladesh Agricultural Research Council
New Airport Road,Farmgate, Dhaka-1215, Bangladesh
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Program Based Research Grant (PBRG)

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Transfer of Agricultural Technologies to Farmer's level for Increasing Farm Productivity

Implementing Organization

1. **Coordinating Component:** Bangladesh Agricultural Research Council (BARC)
2. Bangladesh Wheat and Maize Research Institute (BWMRI)
3. Bangladesh Agricultural Research Institute (BARI)
4. Adaptive Research and Extension Division (ARED), Bangladesh Institute of Nuclear Agriculture (BINA)
5. Training and Technology Transfer Division, Bangladesh Sugarcrop Research Institute (BSRI)
6. Bangladesh Livestock Research Institute (BLRI)
7. Bangladesh Fisheries Research Institute (BFRI)
8. Soil Resource Development Institute (SRDI)
9. Cotton Development Board (CDB)
10. Bangladesh Jute Research Institute (BJRI)
11. Bangladesh Rice Research Institute (BRRI)

Project Implementation Unit
National Agricultural Technology Program-Phase II Project
Bangladesh Agricultural Research Council
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Table of contents

Serial no.	Subjects	Page no.
01	Title page	i
02	Implementing organization	i
03	Acknowledgement	ii
04	Contribbutors	iii
05	Abbreviation and Acronyms	iv
06	Table of content	v
07	List of tables	vi
08	List of figures	xv
09	List of appendices	xxxii
10	Executive Summary	xxxiii
11	PBRG Sub-project Completion Report (PCR)	1
12	Sub-project Description	1
13	Background of the sub-project	6
14	Sub-project general objective	7
	Sub-project specific objectives (component wise)	7
15	Implementing location	8
16	Methodology in brief (with appropriate pictures)	9
17	Results and discussion (with appropriate pictures)	35
18	Research highlight (title, background, objectives, methodology, key findings, and key words)	213
19	Annexure-1: Field monitoring and evaluation report	318
20	Annexure-2: Questionnaire	526

List of Tables

Table no.	Title	Page no.
1	Farmers name, address and pond area of project site-1 of BFRI	19
2	Farmers name, address and pond area of project site-2 of BFRI	21
3	Farmers name, address and pond area of project site-3 of BFRI	22
4	Farmers name, address and pond area of project site-4 of BFRI	23
5	Farmers name, address and pond area of project site-5 of BFRI	25
6	Transferring Selected Technologies	35
7	Monitoring of technology transfer activities by TTMU, BARC Total 41 Monitoring tours at NARS institutes for the year 2018-22	36
8	Technology Database progress	40
9	List of farmers and yield performance of new wheat varieties in their fields, 2019-20	65
10	List of farmers and yield performance of new wheat varieties in their fields, 2020-21	66
11	Average yield (t/ha) of new varieties over three years	67
12	Division wise transterred and non-transferred technologies of BWMRI	71
13	Farmers name, address and field area of project site (Vill. Shidda and Damudda Sadar, Upazilla. Damudda, District-Shariatpur)	72
14	Farmers name, address and field area of project site (Vill. Nagerpara, Tin khamba and Goshairhat sadar, Upa. Goshairhat)	74
15	Farmers name, address and field area of project site (Vill. Lakutia Uchapole, Upazilla. Babuganj, District-Barisal)	74
16	Farmers name, address and field area of project site (Vill. Saidergaon, Union-Saidergaon, Upazilla- Muladi, District-	75

	Barisal)	
17	Farmers name, address and field area of project site (Vill. Kazichar union- Kazichar, Upazilla- Muladi, District-Barisal)	75
18	The Initial Establishment of saplings and % Success (Shidda, Damudda Upazilla)	76
19	The Initial Establishment of saplings and % Success (Nagerpara	77
20	The Initial Establishment of saplings and % Success (Lakutia Uchapole	78
21	The Initial Establishment of saplings and % Success (Saidergaon union	79
22	The Initial Establishment of saplings and % Success (Kazichar union	79
23	Division wise transferred and non-transferred technologies of BARI	85
24	Performance of T. Aman rice Binadhan-17 at Sadar, Mymensingh during 2018-19	86
25	Performance of T. Aman rice Binadhan-17 at Madhukhali Faridpur during 2018-19	87
26	Performance of Mustard (Binasharisha-9) at Sadar, Mymensingh during 2018-19	89
27	Performance of Boro rice (Binadhan-14) at Sadar, Mymensingh during 2018-19	91
28	Performance of Lentil (Binamasur-8) at Madhukhali, Faridpur during 2018-19	92
29	Performance of Aus rice (Binadhan-19) at Madhukhali, Faridpur during 2018-19	92
30	Performance of T. Aman Binadhan-7 at Sadar, Mymensingh during 2019-2020	94
31	Performance of T. Aman Binadhan-7 at Madhukhali, Faridpur during 2019-2020	94
32	Performance of T. Aman Binadhan-11 at Sadar, Mymensingh during 2019-2020	94
33	Performance of T. Aman Binadhan-11 at	95

	Madhukhali Faridpur during 2019-2020	
34	Performance of Binasarisha-9 at Sadar, Mymensingh during 2019-2020	99
35	Performance of Binamasur-8 and BARI Masur-6 at Madhukhali, Faridpur during 2019-2020	101
36	Division wise transferred and non-transferred technology, BINA (1975-2019)	109
37	Performance of BSRI akh 42 as a chewing cane with potato / onion / cabbage – mungbean sequential intercropping during 2018-2019	110
38	Economic analysis of BSRI akh 42 as a chewing cane with sequential intercropping during 2018-2019	111
39	Performance of BSRI akh 45 as a gur variety with potato / onion / cabbage - mungbean sequential intercropping during 2018-2019	112
40	Economic analysis of BSRI akh 45 as a gur variety with sequential intercropping during 2018-2019	113
41	Performance of BSRI akh 42 as a chewing cane with potato / onion / cabbage-mungbean sequential intercropping during 2019-2020	113
42	Economic analysis of BSRI akh 42 as a chewing cane with sequential intercropping during 2019-2020	114
43	Performance of BSRI akh 45 as a gur variety with potato /onion / cabbage-mungbean sequential intercropping during 2019-2020	115
44	Economic analysis of BSRI akh 45 as a gur variety with sequential intercropping during 2019-2020	116
45	Performance of BSRI akh 42 as a chewing	117

	cane with potato / onion / cabbage-mungbean sequential intercropping during 2020-2021	
46	Economic analysis of BSRI akh 42 as a chewing cane with sequential intercropping during 2020-2021	118
47	Performance of BSRI akh 45 as a gur variety with potato / onion / cabbage-mungbean sequential intercropping during 2020-2021	118
48	Economic analysis of BSRI akh 45 as a gur variety with sequential intercropping during 2020-2021	119
49	Farmers' feedback about the varieties demonstrated in BSRI project site	120
50	Knowledge sharing and motivated farmers of demonstration about BSRI variety	120
51	Highest sugarcane produced/Higher Income generated BSRI variety	121
52	Output and Outcome, BSRI	121
53	Division wise transferred and non-transferred Technology, BSRI	126
54	Before introduction of the technology the feeding cost of dairy cow (300 kg body weight) in rainy season, BLRI	128
55	Biomass yield and morphological characteristics of BLRI Napier-4 fodder	129
56	Preparation cost of 1000 kg Dole silage, BLRI	129
57	Physical characteristics of silage, BLRI	130
58	Chemical composition of silage, BLRI	130
59	Feed intake and milk yield (l/d) of cross bred dairy cows fed silage diets, BLRI	131
60	Technology used and return from different parameters of dairy cattle farming during July 2018- December 2020, BFRI	132
61	Division wise transferred and non-transferred Technology, BLRI	133
62	Farmers name, address and pond area of	134

	project site-1, BFRI	
63	Farmers name, address and pond area of project site-2, BFRI	135
64	Farmers name, address and pond area of project site-3, BFRI	136
65	Farmers name, address and pond area of project site-4,BFRI	138
66	Farmers name, address and pond area of project site-5, BFRI	139
67	Mean water quality values of the demonstration ponds	140
68	Growth and productions of fish under three ponds	141
69	Cost and return analyses of fish production in three ponds	142
70	Mean water quality values of the demonstration ponds	143
71	Growth and productions of fish under three ponds, BFRI	144
72	Cost and return analyses of fish production in three ponds, BFRI	145
73	Mean values of water quality parameters in demonstration ponds	146
74	Growth and production of fish under three ponds during the period of trial, BFRI	147
75	Cost and return analyses of fish production in one hectare area, BFRI	148
76	Mean water quality values of the demonstration ponds, BFRI	149
77	Growth, Survival and production performance of Pabda, Gulsha and Rui in three ponds, BFRI	150
78	Mean water quality values of the demonstration ponds	150
79	Growth, Survival and production performance of Shing, Rui and Catla in two ponds	151
80	Input cost and economic return in Shing with	152

	Rui and Catla in trial ponds, BFRI	
81	Division wise transferred and non-transferred technology, BFRI	154
82	Relationship of Boro and T. Aman yield with respondent farmer's education level in Tangail, SRDI	155
83	Relationship of Boro and T. Aman yield with respondent farmer's education level in Comilla	156
84	Relationship of Boro yield with respondent farmers fertilizer dose in Tangail	156
85	Relationship of T. Aman Yield with Fertilizer dose in Tangail	157
86	Relationship of Boro yield with respondent farmers fertilizer dose in Comilla	157
87	Relationship of T. Aman yield with respondent farmers fertilizer dose in Comilla	158
88	Average result of balanced fertilizer application in Boro (BRRIdhan58) adaptive trial plot over control (farmers practice) in Tangail and Comilla district	160
89	Balanced fertilizer dose and Farmers' practice in Tangail and Comilla district	160
90	Average result of balanced fertilizer application in T. Aman (BRRIdhan72) adaptive trial plot over control (farmers practice) in Tangail and Comilla district	160
91	Balanced fertilizer dose and Farmers' practice in Tangail and Comilla district	161
92	Division wise transferred and non-transferredTechnology, SRDI	167
93	Adaptive trials in the 1st year have set and data has collected and result of adaptive trials, Yield and yield contributing characters, CDB	167
94	Adaptive trials in the 1st year have set and data has collected and result of adaptive trials, Lint characters, CDB	168
95	Adaptive trials in the 2nd year have set and data has collected and result of adaptive trials,	172

	Yield and yield contributing characters, CDB	
96	Adaptive trials in the 2nd year have set and data has collected and result of adaptive trials, Lint characters, CDB	172
97	Adaptive trials in the 3rd year have set and data has collected and result of adaptive trials,Yield and yield contributing characters, CDB	173
98	Adaptive trials in the 3rd year have set and data has collected and result of adaptive trials, Lint characters, CDB	173
99	Division wise transferred and non-transferred technologies, CDB	175
100	Cost and return analysis of seed production at Manikganj in the year 2018-19, BJRI	182
101	Table 101 Cost and return analysis of seed production at Manikganj in the year 2019-20, BJRI	182
102	Cost and return analysis of seed production at Manikganj in the year 2020-21, BJRI	183
103	Cost and return analysis of seed production at Rangpur and Lalmonirhat in the year 2019-20, BJRI	183
104	Cost and return analysis of seed production at Rangpur and Lalmonirhat in the year 2020-21, BJRI	184
105	Cost and return analysis of seed production at Lalmonirhat in the year 2021-22, BJRI	184
106	Cost and return analysis of seed production at Rangpur in the year 2021-22, BJRI	185
107	Comparative statement of seed yield in two different locations in different years, BJRI	185
108	Comparative statement of cost & return for seed in two different locations in different years, BJRI	186
109	Cost and return analysis of fibre production at Faridpur in the year 2018-19, BJRI	188
110	Cost and return analysis of fibre production at Rangpur &Lalmonirhat in the year 2018-19,	188

	BJRI	
111	Cost and return analysis of fibre production at Faridpur in the year 2019-20, BJRI	189
112	Cost and return analysis of fibre production at Rangpur &Lalmonirhat in the year 2019-20, BJRI	189
113	Average results of technology trial plots over control plots (farmers practice) at Faridpur in 2018-19, BJRI	190
114	Average results of technology trial plots over control plots (farmers practice) at Rongpur and Lalmonirhat in 2018-19, BJRI	190
115	Average results of technology trial plots over control plots (farmers practice) at Faridpur in 2019-20, BJRI	190
116	Average results of technology trial plots over control plots (farmers practice) at Rongpur and Lalmonirhat in 2019-20, BJRI	191
117	Comparative statement of fibre yield in different locations in the different years, BJRI	191
118	Comparative statement of cost & return for fibre crop in two different locations in different years, BJRI	191
119	Division wise transferred and non-transferred technologies, BJRI (1910-2019), BJRI	192
120	Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of SPDP in Boro, 2019, BRRI	193
121	Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of demonstration plots in T. aman, 2019, BRRI	195
122	Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of demonstration plots in Boro 2020, BRRI	196
123	Growth duration, grain yield, total production, retained seeds, knowledge	199

	sharing and motivated farmers of demonstration plots in T. aman, 2020, BRRI	
124	Farmers' feedback about the varieties demonstrated in Boro seasons, BRRI	200
125	Farmers' feedback about the varieties demonstrated in T. aman seasons, BRRI	201
126	Division wise transferred and non-transferred technologies, BRRI	212

List of Figures

Figure no.	Description	Page no.
1	GIS map shows planned areas (dotted) for technology transfer of SRDI	08
2	Rapid Technology Transfer (RTT) model of profitable agricultural recently generated technology from NARS institutes for increasing farm productivity	10
3	Focus group discussion to identify the problems of new wheat varieties adoption arranged by BWMRI	12
4	Distribution of seed and fertilizer among farmers by BWMRI	13
5	Roguing in demo plot for maintaining seed purity by BWMRI	13
6	Base line survey at project site of BSRI	16
7	Focus group discussion at project site of BSRI	16
8	Monitoring team remembers observing the Demonstration pond of BFRI project	21
9	Demonstration pond of Shing culture by BFRI	22
10	Demonstration pond of pabda-Gulsha farming by BFRI	24
11	Demonstration pond of Shing farming by BFRI	25
12	Adaptive trial and control plot established side by side by SRDI	28
13	Baseline survey at Muktagacha, Mymensingh by BRRI	31
14	Focus group discussion at Valluka & Muktagacha of Mymensingh district arranged by BRRI	32
15	Baseline survey at Valluka, Mymensingh by BRRI	32
16	Baseline survey at Valluka & Muktagacha, Mymensingh by BRRI	33

17	Focus group discussion at Valluka & Muktagacha of Mymensingh district	34
18	Participants in the Annual Review Workshop	52
19	Participants in the Coordination meeting	56
20	Monitoring team with PI of BWMRI component in front of the demonstration Plot of BARI Gom 33 at Vushirbandar village of Chirirbandar upazila, Dinajpur	60
21	Monitoring team along with concerned PI and farmer in a newly established fruit orchard at Babugonj, Barishal under BARI component (Left). Selected farmers receiving input (fertilizer) at Babugonj, Barishal under BARI component (Right).	60
22	Monitoring team with PI and concerned farmer in front of a demonstration plot at Mymensingh under BINA component	60
23	Monitoring team visiting the demonstration plot at Sirajgonj under BSRI component	61
24	Monitoring team with PI and concerned farmer in front of a demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj under BLRI component (Left). Concerned PI demonstrated preserved silage in a Dol (Right).	61
25	Monitoring team with Co-PI, concerned farmer and TV presentator Md. Rezaul Karim in front of a demonstration pond at Nakla upazila, Sherpur under BFRI component (Left). Coordinator with Co-PI showing harvested shing fish of a demonstration pond at Nakla upazila, Sherpur under BFRI component (Right).	61
26	Field monitoring at Comilla district under SRDI component under SRDI component	62
27	Field monitoring at Bandarban district under CDB component	62
28	Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for seed	62

	production at Manikgonj under BJRI component	
29	Monitoring team with PI and concerned farmer in front of a demonstration plot at Mymensingh under BRRI component	63
30	Performance of BARI Gom 33 at farmers field, Baliadangi, Thakurgaon, 2018-19	64
31	Performance of BARI Gom 29, Atwari, Panchagarh, 2019-20	65
32	Performance of BARI Gom 32, Haripur, Thakurgaon, 2019-20	65
33	Performance of WMRI Gom 1 at Atwari, Panchagarh, 2020-21	67
34	Performance of BARI Gom 33 at Sadar, Dinajpur, 2020-21	67
35	News-01 on input distribution among the farmers was published in local newspaper	68
36	News-02 on input distribution among the farmers was published in local newspaper	69
37	Monitoring by Director (TTMU, BARC)	69
38	Demonstration plot visit by Co-PI, other scientist from BWMRI and DAE personnel	70
39	Monitoring by Director (PIU-BARC, NATP-2) and his team with PI	70
40	Division wise total Technology generated, BWMRI, WRC	71
41	Monitoring team along with concerned PI and farmer in a fruit orchard	83
42	Input (fertilizer) distribution ceremony Fig.4. Selected farmers receiving input (fertilizer) at Babugonj, Barisal	84
43	Division wise generated technologies of BARI	85
44	Field view of T. Aman Binadhan-17 at Sadar, Mymensingh	88
45	Field view of T. Aman Binadhan-17 at Madhukhali, Faridpur	89

46		
47	Field view of Binasarisha-9 at Sadar, Mymensingh	90
48	Field view of Binadhan-14 at Sadar, Mymensingh	91
49	Field view of Binadhan-19 at Madhukhali, Faridpur	93
50	Field view of T. Aman Binadhan-7 at Sadar, Mymensingh durring 2019-2020	96
51	Field view of T. Aman Binadhan-7 at Madhukhali, Faridpur durring 2019-2020	96
52	Field view of T. Aman Binadhan-11 at Sadar, Mymensingh durring 2019-2020	97
53	Field view of T. Aman Binadhan-11 at Madhukhali, Faridpur durring 2019-2020	98
54	Field view of Binasarisha-9 at Sadar, Mymensingh during 2019-2020	100
55	Field view of T. Aman Binamasur-8 at Madhukhali, Faridpur during 2019-2020	102
56	Field view of aus Binadhan-19 and Binadhan-14 at Sadar, Mymensingh during 2019-2020	103
57	57 Field view of aus Binadhan-19 and Binadhan-14 at Madhukhali, Faridpur during 2019-2020	104
58	Field monitoring of Binadhan-7 and Binadhan-11 at Sadar, Mymensingh on 17-10-2019	105
59	Field monitoring of Bindhan-10 at Sadar, Mymensingh on 15-3-2020	106
60	Field monitoring of Binsarisha-9 at Sadar, Mymensingh on 5-12-2019	107
61	Division wise grand total technology generated, BINA (1975-2019)	108
62	Year wise grand total technology generated, BINA (1975-2019)	109
63	Sugarcane seed carying and preparation of setts with chemical treatment	121
64	Land preparation and planting of setts	122

65	Different intercropping with sugarcane	122
66	Different intercropping with sugarcane	123
67	Different growth stages of sugarcane	123
68	Mature stage of chewing cane (BSRI akh 42) and gur variety (BSRI akh 45)	124
69	Harvesting of chewing cane plot and demonstrate hygenic gur preparation	124
70	Division wise generated Technology, BSRI	125
71	year wise generated Technology, BSRI (1987-2018)	126
72	Farmers fodder plots and fertilizer distribution, BLRI	129
73	Fodder cutting and Dole silage preparation, BLRI	129
74	Prepared silage, BLRI	130
75	Silage feeding, BLRI	131
76	Monitoring team remembers observing the Demonstration pond, BFRI	135
77	Demonstration pond of Shing culture, BFRI	137
78	Demonstration pond of pabda-Gulsha farming, BFRI	138
79	Demonstration pond of Shing farming, BFRI	139
80	Director TTMU observing Pabda demonstration pond, BFRI	141
81	Harvested Pabda in Demonstration pond, BFRI Harvested Pabda in Demonstration pond, BFRI	142
82	Harvesting of Pabda fish, BFRI	144
83	Harvesting of Shing from demonstration pond, BFRI	147
84	Division wise generated technology, BFRI	153
85	year wise generated technology, BFRI	153
86	Selected farmers of Tangail sadar and Bhuapur Upazila are being motivated by P.I. and Co-P.I. about the use of balanced fertilizer dose in Boro-T. Aman pattern using Soil Test Value given in Updated Upazila Nirdeshika of SRDI on 19.09.2018 in presence of SSO, SRDI and	161

	ADD, DAE, Tangail	
87	Selected Farmers and SSAOs of Tangail Sadar and Bhuapur Upazila attending Focus Group Discussion in SRDI district office, Tangail	161
88	Selected farmers and SAAOs of Sadar Dakshin and Burichong Upazila are being motivated by P.I. & Co-PI in presence of PSO, SRDI, Comilla about the use of balanced fertilizer dose in Boro- T. Aman pattern using Soil Test Status given in Updated Upazila Nirdeshika on 24.09.2018	162
89	Farmers interview during baseline survey, SRDI	162
90	Selection of farmer's field for conducting adaptive trial on use of balanced fertilizer in Boro- T. Aman pattern at Tangail Sadar (left) and Bhuapur Upazila (right) in Tangail, SRDI	162
91	Selection of farmer's field for conducting adaptive trial on use of balanced fertilizer in Boro- T. Aman pattern at Sadar Dakshin and Burichong Upazila in Comilla, SRDI	163
92	Distribution of 5kg BRRIdhan58 seed to selected farmers at Tangail Sadar (left) and Bhuapur Upazila (right) in Tangail, SRDI	163
93	Distribution of 5kg BRRIdhan58 seed to selected farmers at Sadar Dakshin (left) and Burichong Upazila (right) in Comilla, SRDI	163
94	Boro seedbed (Tangail sadar, Tangail), SRDI	163
95	Boro seedbed (Bhuapur, Tangail), SRDI	163
96	Boro seedbed (Sadar Dakshin, Comilla), SRDI	164
97	Boro seedbed (Burichong, Comilla), SRDI	164
98	Boro adaptive trial plot, Tangail, SRDI	164
99	Boro adaptive trial plot, Bhuapur, SRDI	164

100	Boro adaptive trial plot, Sadar Dakshin, Comilla, SRDI	164
101	Boro adaptive trial plot, Burichong, Comilla, SRDI	164
102	Balanced fertilizer application in Farmer'sField (Tangail sadar), SRDI	164
103	Balanced fertilizer application in Farmer's Field (Bhuapur), SRDI	164
104	Monitoring team visit, Tangail Sadar, SRDI	165
105	Monitoring team visit, Bhuapur, SRDI	165
106	Visiting Bhuapur Trial site, SRDI	165
107	Visiting Burichong Trial site, SRDI	165
108	Boro harvesting, trial plot, Tangail Sadar Boro harvesting, trial plot, Tangail Sadar, SRDI	165
109	Boro harvesting, trial plot, Bhuapur, SRDI	165
110	Boro harvesting, trial plot, Burichong, SRDI	165
111	T.Aman harvesting Tangail sadar,Tangail, SRDI	165
112	Field day at Tangail SadarTangail, SRDI	166
113	Field day at Tangail sadar, Tangail, SRDI	166
114	Field day at Sadar Dakshin,Comilla, SRDI	166
115	Field day at Sadar Dakshn, Comilla, SRDI	166
116	Monitoring team visiting Bhuapur, Tangail, SRDI	166
117	Monitoring team visiting Bhuapur, Tangail, SRDI	166
118	Monitoring team visit, Burichong, SRDI	166
119	Monitoring team visiting Sadar Dakshin, Comilla, SRDI	166
120	Year wise Technology generated, SRDI	167
121	Consulting With CCDO and Others Field Officers, CDB	168
122	Seed Sowing in the Field, CDB	168
123	Inter Culture Operation and Earthling –up, CDB	168
124	Demonstration Field, Bandarban, CDB	168
125	Weeding and Fertilizer Application, CDB	169
126	Consulting With cotton growers, CDB	169

127	Data Collection in Thakurgaon Zone, CDB	169
128	Insect Control by Hand Picking, CDB	169
129	Field Monitoring with PI, Co-PI, SSO and Farmer in Bandarban, CDB	169
130	Cotton Field at harvesting stage, CDB	170
131	Cotton harvesting by hand, CDB	170
132	Harvesting Cotton carrying by Tribal lady, CDB	170
133	Stake Holder Meeting, CDB	170
134	Group Discussion, CDB	170
135	Field Day, CDB	171
136	Field Assistant/Scientific Assistant Training at CDB Conference Room	171
137	Division wise generated technologies, CDB	174
138	Year wise generated technologies, CDB	174
139	Baseline survey, BJRI	175
140	Focus group discussion, BJRI	176
141	Adaptive trials for fiber, BJRI	179
142	Adaptive trials for seed, BJRI	181
143	Division wise generated technologies, BJRI (1970-2019)	192
144	Demonstration plots at Valluka & Muktagacha of Mymensingh district Boro 2019, BRRI	202
145	Demonstration plots at Valluka & Muktagacha of Mymensingh district and Seedbed at Sadar, Jamalpur in Boro 2019, BRRI	203
146	Demonstration plots at Valluka and Muktagacha in Boro 2019 and T. aman 2019,BRRI	205
147	Demonstration plots at Muktagacha, Mymensingh and Sadar, Jamalpur in Boro 2019 and T. aman 2019, BRRI	206
148	Crop at mature stage at Sadar, Jamalpur, BRRI	207
149	Crop cut at Valluka, Mymensingh in Boro 2019, BRRI	207
150	Crop cut at Valluka, Mymensingh and	208

	Sharishabari, Jamalpur in Boro 2019, BRRI	
151	Crop-cut of different rice varieties at Sharishabari, Jamalpur in Boro 2019, BRRI	210
152	Land preparation, Fertilizers application in the Demonstration plots at Sadar, Jamalpur in Boro 2020, BRRI	210
153	Division wise generated technologies, BRRI	211
154	Year wise generated technologies, BRRI (1970-2019)	212
155	A monitoring team of BARC, Coordinator of the Project Dr Faujia Yasmin, Direcor (TTMU) and her team was visited the field of T. aman experimental plot at Sadar, Mymensingh on 17 October 2019	267
156	A monitoring team of PIU, BARC, Dr. Md. Abdul Jalil Bhuyan and his team was visited the field of mustard experimental plot at Sadar, Mymensingh on 5 Dec 2019	268
157	A monitoring team of BARC, Coordinator of the Project Dr Faujia Yasmin, Direcor (TTMU) and her team was visited the field of boro rice (Bindhan-10) experimental plot at Sadar, Mymensingh on 15 March 2020	269
158	Field visit of Binadhan-11 at Sadar, Mymensingh during 2020-2021by an internal monitoring team of BINA	270
159	An internal monitoring team of BINA Dr M Monjurul Alam Mondol and Dr A F M Feroj Hasan (PI) was visited the experimental plot of T. aman (Binadhan-11) and Mustard (Binasarisha-9) at Sadar, Mymensingh on 18 October 2020 and 4 January 2021, respectively	270
160	Different times TTMU, BARC, NATP-II and BSRI team monitoring project site	272
161	Different time TTMU-BARC, NATP-II and BSRI DG and others team monitoring project site	273
162	Monitoring team visited at Sadar, Jamalpur	278

	in Boro 2019, BRRI	
163	Monitoring team visited at Sadar, Jamalpur in Boro 2019, BRRI	279
164	Monitoring team visited at Sadar and Sharishabari, Jamalpur in T. aman 2019, BRRI	280
165	Demonstration plot at Kaharoleupazila, Dinajpur, BWMRI	325
166	Monitoring team with PI of BWMRI component in front of the demonstration Plot of BARI Gom 33 at Vushirbandar village of Chirirbandarupazila, Dinajpur	326
167	Demonstration plot of BWMRIGom1is monitored in presence of concerned PI and farmer at Itua village of Kaharoleupazila, Dinajpur	326
168	Newly established fruit orchard at Babugonj, Barishal, BARI	331
169	Monitoring team along with concerned farmer in a fruit orchard at Babugonj, Barishal,BARI	332
170	Monitoring team in front of a fruit orchard at Muladi, Barishal,BARI	332
171	Monitoring team along with concerned farmer in a fruit orchard at muladi, Barishal,BARI	332
172	Monitoring team in front of a newly established fruit orchard at Babugonj, Barishal,BARI	337
173	Monitoring team along with concerned PI and farmer in a fruit orchard at Babugonj, Barishal,BARI	337
174	Input (fertilizer) distribution ceremony at Babugonj, Barishal,BARI	338
175	Selected farmers receiving input (fertilizer) at Babugonj, Barishal, BARI	338
176	Fruit sapling distribution ceremony at Regional Station, BARI, Rahmatpur, Barisal, BARI	342

177	Selected farmers receiving fruit saplings, BARI	343
178	Farmers from Muladi Upazila receiving fruit saplings, BARI	343
179	Fruit sapling distribution ceremony at Regional Station, BARI, Rahmatpur, Barisal, BARI	344
180	FGD session with farmers at Regional Station, BARI, Rahmatpur, Barisal, BARI	344
181	Newly established fruit orchard at Babugonj, Barishal, BARI	348
182	Monitoring team along with concerned farmer in a fruit orchard at Babugonj, Barishal, BARI	349
183	Monitoring team in front of a fruit orchard at Muladi, Barishal, BARI	349
184	Monitoring team along with concerned farmer in a fruit orchard at muladi, Barishal, BARI	350
185	Distributed 25 Fruit sapling/farmer, for 120 farmers, in 2 upazillas, 2018, BARI	351
186	A demonstration plot of BINA Sarisha-9, BINA	357
187	Monitoring team with PI and concerned farmer in front of a demonstration plot, BINA	358
188	Interviewing Demonstration farmers, BINA	358
189	Monitoring team inspecting a demonstration plot of BINA Sarisha-9 Field monitoring and evaluation report at BINA on 17 October, 2019	359
190	Monitoring team with PI and concerned farmer in front of a trial plot of BINA developed BINA Dhan-7 at Mymensingh	363
191	A trial plot of BINA Dhan-11 of T. Aman variety at Mymensingh. Field monitoring and evaluation report at BINA on 15 March, 2020	363
192	Monitoring team with PI and concerned	367

	farmer in front of a trial plot of BINA developed BINA Dhan-10 of boro variety at Mymensingh	
193	A trial plot of BINA Dhan-10 of boro variety at Mymensingh	368
194	Monitoring team with PI and concerned farmer in front of a trial plot of BINA developed BINA Sharisha-9 at Mymensingh	372
195	A trial plot of BINA Sharisha-9 at Mymensingh	372
196	A trial plot of BINA developed BINA Masur-8 at Madhukhali, Faridpur	376
197	A trial plot of BINA developed BINA Masur-8 with concerned farmer at Madhukhali, Faridpur	376
198	Concerned PI was interviewed in his office by the monitoring team, BINA	380
199	Monitoring team along with concerned farmer and PI in front of a demonstration plot at Sadar upazila, Sirajgonj, BSRI	385
200	Monitoring team along with concerned farmer in front of a demonstration plot at Raigonj upazila, Sirajgonj, SRDI	385
201	Sugarcane in mature stage for gur preparation in a demonstration plot, SRDI	386
202	Newly planted sugarcane demonstration plot. Plant is not still visible, BSRI	386
203	BARI Mung was being sown in the demonstration plot by the respective Farmer as 2nd inter crop at Sadar upazila, Sirajgonj, , BSRI	391
204	Monitoring team along with concerned farmer in front of a demonstration plot at Sadar upazila, Sirajgonj, BSRI	392
205	Monitoring team along with concerned farmer and PI in front of a demonstration plot at Raigonj upazila, Sirajgonj, BSRI	392
206	Monitoring team taking some notes from the concerned farmer in front of a	393

	demonstration plot at Raigonj upazila, Sirajgonj, BSRI	
207	Coordinator of the project along with concerned farmer in front of a demonstration plot at Sadar upazila, Sirajgonj, BSRI	393
208	Monitoring team in front of a demonstration plot, BSRI	398
209	Monitoring team along with concerned farmer and PI visiting the demonstration plot, BSRI	399
210	Monitoring team interviewing a demonstration farmer, BSRI	399
211	Monitoring team, PI and farmer in front of a demonstration plot, BSRI	400
212	A demo. Farmer harvesting inter crop (potato) from demonstration plot, BSRI	400
213	Monitoring team along with concerned PI in front of a trial plot of BSRI Akh42 at Salanga upazila, Sirajgonj	405
214	A trial plot of BSRI Akh 42 at Sadar, Sirajgonj	406
215	Coordinator of the project along with concerned PI in front of a trial Plot of BSRI Akh 42 at Salanga upazila, Sirajgonj	406
216	Monitoring team along with concerned farmer in front of a trial plot of BSRI Akh 42 at Ullapara upazila, Sirajgonj, BSRI	407
217	Coordinator of the project along with concerned PI in front of a trial Plot of BSRI Akh 45 at Sadar upazila, Sirajgonj	411
218	Monitoring team along with concerned PI in front of a trial plot of BSRI Akh45 at Sadar upazila, Sirajgonj	412
219	Monitoring team with PI and concerned farmer in front of a demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj	416
220	Preservation of silage through Dol technique, BLRI	416

221	Concerned PI demonstrated preserved silage in a Dol, BLRI	417
222	Concerned farmer demonstrated preserved silage in a Dol, BLRI	417
223	Monitoring team with PI and concerned farmer in front of a demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj	422
224	A demonstration Plot of BLRI Napier-4 at Shajadpur, Sirajgonj	423
225	Monitoring team visiting a demonstration Plot of BLRI Napier-4	423
226	A demonstration plot is seen after first cut, BLRI	424
227	Monitoring team with PI, co-PI and concerned farmer in front of a Demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj	428
228	A demonstration plot is seen after first cut, BLRI	428
229	Monitoring team with PI, co-PI and concerned farmer in front of a trial plot of BLRI Napier-4 at Shahjadpur, Sirajgonj	432
230	A trial plot of BLRI Napier-4 is seen after first cut at Shahjadpur, Sirajgonj	433
231	Discussion with concerned farmers of BLRI Napier-4 before field visit at Shahjadpur, Sirajgonj	433
232	In front of BLRI regional station, Baghabari, Shahjadpur, Sirajgonj. Field monitoring and evaluation report at BFRI on 21 April, 2019	434
233	Monitoring team with Co-PI in front of a demonstration pond at Nakla upazila, Sherpur, BFRI	438
234	Monitoring team in front of a demonstration pond of Hira Mia at Tegouri village of Nakla upazila under Sherpur district, BFRI	438
235	Monitoring team observing fish sampling of a demonstration pond at Nakla upazila under Sherpur district, BFRI	439

236	Fish harvesting of a demonstration pond of Hira Miah at Nakla upazila, Sherpur,BFRI	443
237	Monitoring team with Co-PI showing harvested shing fish of a demonstration pond at Nakla upazila, Sherpur, BFRI	443
238	Monitoring team with Co-PI and TV presentator Md. Rezaul Karim in front of a demonstration pond at Nakla upazila, Sherpur, BFRI	444
239	Concerned Co-PI was interviewed in his office by the monitoring team, BFRI	448
240	Monitoring team taking some notes interviewing the concerned Co-PI, BFRI	449
241	Monitoring team with PI of SRDI component in front of the demonstration plot at Vuapur, Tangail	455
242	Final land preparation with basal application of fertilizer (Fertilizer Recommendation Guide-2018) at Vuapur, Tangail, SRDI	455
243	Demonstration plot is ready for transplanting BRRI Dhan-58 at Vuapur, Tangail, SRDI	456
244	Seed bed of BRRI Dhan-58 for transplanting in the Demonstration plot at Vuapur, Tangail	456
245	Monitoring team noted Demonstration related information at Vuapur, Tangail, SRDI	457
246	Demonstration plot at Burichog, Comilla, SRDI	461
247	Monitoring team with Co-PI of SRDI component in front of the demonstration Plot at Sadar Daskin upazila, Comilla	462
248	Demonstration plot is monitored by coordinator at Sadar Daskin, Comilla, SRDI	462
249	Monitoring team with Co-PI of SRDI component in front of the demonstration Plot at Burichog upazila, Comilla	466
250	Demonstration plot at Burichog, Comilla, SRDI	467
251	First coordinator of the sub-project (at	472

	present EC, BARC) monitored the project activities at Bandarban district (17-19.11.2018), CDB	
252	Fig 251 Field Monitoring of a demonstration plot at Sadar, Bandorban,CDB	476
253	Monitoring team along with concerned PI in front of a trial plot of CB-14 variety at Dighinala upazila, Khagrachari, CDB	480
254	A trial plot of CB-14 variety at Mohalchari upazila, Khagrachari, CDB	480
255	Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for seed production at Manikgonj	485
256	Monitoring team in front of a demonstration plot at Manikgonj	486
257	Monitoring team recording some information about the demonstration at Manikgonj	486
258	Monitoring team with Co-PI of the BJRI component	487
259	Monitoring team visiting the trial plot of BJRI developed Rabi-1 var. for seed production at Manikgonj	491
260	Monitoring team with PI of the BJRI component observing the newly germinated Seedling of jute in a trial plot at Manikgonj	492
261	Monitoring team visiting the trial plot of BJRI developed HC-95 var. for seed production at sadar, Rangpur	496
262	Monitoring team with Co-PI and concerned farmer in front of a trial plot at Sadar, Lalmonirhat, BJRI	497
263	Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for seed production at Manikgonj	501
264	Monitoring team with PI of the BJRI component counting pod number of a plant of a demonstration plot at Manikgonj	501
265	Monitoring team with PI and Co-PI in front of a demonstration plot at Manikgonj	502

266	Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for fiber production at Faridpur	506
267	Monitoring team in front of a demonstration plot of BJRI developed Rabi-1 var. at Faridpur	506
268	A demonstration plot of BJRI developed Rabi-1 variety	507
269	A demonstration plot of BJRI developed Rabi-1 variety at Faridpur	507
270	Monitoring team taking some notes about the demonstration plot of BJRI developed Rabi-1 variety	508
271	Monitoring team interviewing demonstration plot related persons of BJRI Regional Station, Faridpur	508
272	Monitoring team in front of a demonstration plot at BJRI Regional Station, Faridpur	509
273	A front view of a demonstration plot at BJRI Regional Station, Faridpur	509
274	Monitoring team in front of a demonstration plot at Valuka, Mymensingh, BRRI	515
275	Monitoring team interviewing a demo farmer at Muktagasa, Mymensingh, BRRI	515
276	Monitoring team and PI in front of a demo plot at Muktagasa, Mymensingh, BRRI	516
277	Monitoring team in front of a demonstration plot at Sadar, Jamalpur,BRRI	520
278	A demonstration plot at Sharishabari, Jamalpur	520
279	Monitoring team interviewing a demo. farmer at Sadar, Jamalpur,BRRI	521
280	A demonstration plot at Sadar, Jamalpur, BRRI	521
281	Monitoring team in front of a demonstration plot at Valuka, Mymensingh, BRRI	525

List of Appendices

Appedix no.	Title	Page no.
01	Field monitoring and evaluation report	318
02	Questionnaire	526
03	Year wise Techndata of different NARS institutes	527

Abbreviation and Acronym

Abbreviation	Full name
ARD	Adaptive Research Division
BARI	Bangladesh Agricultural research Institute
BARC	Bangladesh Agricultural Research Council
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agriculture Research Institute
BCR	Benefit Cost Ratio
BINA	Bangladesh Institute of Nuclear Agriculture
BSRI	Bangladesh Sugarcane Research Institute
BRRI	Bangladesh Rice Research Institute
BBS	Bangladesh Bureau of Statistics
BCE	Benefit Cost Efficiency
BCR	Benefit Cost Ratio
BJRI	Bangladesh Jute Research Institute
BSRI	Bangladesh Sugarcrop Research Institute
BWMRI	Bangladesh Wheat and Maize Research Institute
CI	Co-Investigator
CDB	Cotton Development Board.
CGP	.Comparative Grant Proposal.
CRB	Benefit Cost Ratio
CRI	Crown Root Initiation
DAE	Department of Agricultural Extension
DA	Daily Allowance.
DAE	Department of Agriculture Extension.
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GO	Government Organization.
GR	Gross Return
ID	Identification.
IFAD	International Fund for Agricultural Development
JAF	Jute and Allied Fibre Crops
JFS	Jute Farming System
MOA	Ministry of Agriculture.
MOP	Muriate of Potash
MOU	Memorandum of Understanding.
NATP-II	National Agricultural Technology Program-II

NGO	Non-government Organization
OFRD	On-farm. Research Division
PBRG	Program Based Research Grant
PCR	Project Completion Report
PI	Principal Investigator
PIU	Project Implementation Unit
PSTU	Patuakhali Science and Technology Institute
PTOS	Power Tiller Operated Seeder
RARS	Regional Agricultural Research Institute
RTT	Rapid Technology Transfer
SAAO	Sub Assistant Agriculture Officer
SRDI	Soil Resources Development Institute
STP	Spaced Transplanting
TA	Travel Allowance.
TSP	Triple Super Phosphate
TTMU	Technology Transfer and Monitoring Unit
UAO	Upazila Agriculture Officer
WB	World Bank

Executive Summary

The information on agricultural technology (variety, production, management technology etc.) developed by different NARS institutions every year are still scattered and even some generated technologies are not aware at farmers' level. So, immediate transfer of technology at farmers' level directly is needed for farm productivity enhancement. Project Implementation Unit (PIU)-BARC, NATP-2 invited project proposals for Programme Based Research Grant (PBRG) and a coordinated project on **"Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** was submitted by the coordination of the Technology Transfer and Monitoring Unit (TTMU) of Bangladesh Agricultural Research Council (BARC) and a letter of agreement was signed on 11 July, 2018 with 10 NARS institutes. Technology Transfer and Monitoring Unit (TTMU) coordinated 10 NARS institutes to transfer generated economically viable 63 technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level and to assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes like BWMRI, BARI, BINA, BSRI, BLRI, BFRI, SRDI, CDB, BJRI and BRRI. Associate coordinator and the relevant scientist of PBRG ID-005 has been trasferred 63 technologies through establishing 373 trials among 331 farmers of 35 Upazillas of 17 districts by 10 implementing organizations. 04 (Four) technologies were implemented by BWMRI, 23 (twenty three) technologies by BARI, 08 (eight) technologies by BINA, 03 (three) technologies by BSRI, 02 (two) technologies by BLRI, 02 (two) technologies by BFRI, 01 (one) technology by SRDI, 04 (Four) technologies by CDB, 04 (Four) technologies by BJRI and 12 (twelve) technologies were implemented by BRRI (Annexure-1).

BWMRI selected 33 demonstrations in 26 farmer's field for technology transfer activities in Dinajpur, Thakurgao and Panchagar (who use traditional methods) under each location and total six to seven locations from Upazillas of Dinajpur (Dinajpur sadar, Kaharol, Shetabgang), Thakurgaon (Haripur, Peergang) and Panchagar (Tentulia, Atwari) districts through 1 FGD. BARI released important 23 fruit varieties distributed 6000 saplings among 120 farmers and also trained them up at Shidda village under Damudda Upazilla and Nagerpara, Idilpur and Tin Khamba village under Gosairhat Upazilla in Shariatpur district and Saidergao and Kazirchar union at Muladi Upazilla and Babuganj Upazilla under Barisal district. BINA planted rice seedlings followed by two new cropping patterns among 36 selected farmers in Sadar, Mymensingh and Madhukhali, Faridpurand arranged 2 FGD. BSRI selected four locations of Sirajgonj district (Sirajgonj Sadar, Kazipur, Raigonj and Tarash Upazilla) with 20 farmers in 20 bighas. A considerable number of farmers observed the performance of the BSRI released latest sugarcane varieties and among them 535 farmers were motivated for the next year cultivation. BFRI evolved technologies viz., Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) and Culture of Shing with Rui and Catla in ponds were demonstrated in Nokla upazilla of Sherpur district in 13 ponds of 3 farmers. BLRI transferred technology to 55 farmers of Baghabari and Shajadpur of Sirajgonj and Godagari of Rajshahi and trained 25 farmers. SRDI transferred Upazila Nirdeshika based balanced fertilizer application technique in Boro-Fallow-T. Aman cropping pattern in the field of 12 farmers at Tangail Sadar and Bhuapur Upazila of Tangail and Sadar Dakshin and Burichong Upazila of Comilla districts. CB-14 variety of CDB transferred 4 technologies among 42 farmers of Khagrachari, Bandarban and Thakurgaon districts and arranged 1 FGD. BJRI cultivated Tossa Pat-8 (Robi-1) and BJRI *Kenaf* (HC-95) among selected 16 farmers in two locations of Faridpur and Rangpur and arranged 2 FGD and conducted one training. Total grain production of Boro season BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 were 3.57 kg, 3.62 kg, 3.12 kg, 3.11 kg, 2.95 kg and 4.03 t/ha respectively from 26 farmers of Valuka, Muktagacha, Sarishabari and sadar of Mymensingh district. Besides, plastic drums were given to each

farmer who observed the performance of the six BRRI released recent rice varieties and among them 595 farmers were motivated for the next year cultivation.

According to objective 2, TTMU constructed a questionnaire to assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of 10 NARS institutes mentioned above. Implementers conducted base line survey under each location farmers and farmers' field collaboration with DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO) followed by farmer and site selection for transferring technology, farmers' orientation by FGD with new technologies of wheat, block farming of modern varieties with improve technology instead of traditional technology at farmer's field / plot following generated Rapid Technology Transfer Model of this project.

1046 technologies evolved from different organizations of NARS from 1951 to 2019 of which 96 technologies were from BWMRI &WRC, BARI, 196 from BINA, 193 from BSRI, 62 from BFRI, 10 from SRDI, 68 from CDB and 421 technologies were generated by BRRI. Seeing the profitability of the technology having BCR>1 *viz.* Binadhan-10=1.55, Binadhan -11=1.54, Binadhan-19=1.57, Binamasur-8=1.98, Binasarisha-9=1.56, gur variety akh 45=3.2, chewing variety akh 42=4.57 of BSRI, BCE=1:1.2 for feeding from BLRI, Culture of Shing with Rui and Catla in ponds of BFRI =1.29, BRRIdhan72 in adaptive trial plot receiving balanced fertilizer dose of SRDI =1.01-1.41, CDB =1.45, BJRI =1.76 (fibre) and 1.52 (seed), rice varieties of BRRI =.1.38 (T.aman) and 1.19 (Boro) that succeeded and motivated the farmers should be dessiminated.

Trial farmers achieved higher production as well as net profit adopting new technologies than previous farming practices. The trial of the sixty three technologies showed satisfactory impact upon neighboring farmers. It is outstanding that trial farmers should be pioneers and progressive ones in adopting new technologies who would continue to use and have influence on other farmers of their society. Farmers need based technologies could be placed at ATECC meeting to disseminate the technologies all over the country in different ways. Technologies and Models like RTT Model generated from PBRG, CRG, NATP-2 and NARS institutes should be continued incessantly for countrywide dissemination through ongoing project extension and revision. So, it is a burning issue to invent the ways of transferring technology economically. With this view in mind, the present research has been analyzed/practiced the Rapid Technology Transferring Model (RTT) in Bangladesh for farm productivity enhancement.

Component	Technology	BCR
BWMRI		
BARI		
BINA	Binadhan-10	1.55
	Binadhan -11	1.54
	Binadhan-19	1.57
	Binamasur-8	1.98
	Binasarisha-9	1.56
BSRI	Gur variety akh 45	3.2
	Chewing variety akh 42	4.57
BLRI	BCE	1:1.2
BFRI	Culture of Shing with Rui and Catla in ponds	1.29
SRDI	BRRIdhan72 in adaptive trial plot receiving balanced fertilizer dose	1.01-1.41
CDB	Cotton fibre and seed	1.45
BJRI	Jute Fibre	1.76
	Jute Seed	1.52
BRRI	T.aman	1.38
	Boro	1.19

PBRG Sub-Project Completion Report (PCR)

A. Sub-project Description

1. **Sub-Project Title:**Coordinated Project on the "*Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity*"
2. **Implementing organization (s):**

Bangladesh Agricultural Research Council (BARC), Coordinating Component
2.1 Bangladesh Wheat and Maize Research Institute (BWMRI)
2.2 Bangladesh Agricultural Research Institute (BARI)
2.3 Adaptive Research and Extension Division (ARED), Bangladesh Institute of Nuclear Agriculture (BINA)
2.4 Training and Technology Transfer Division, Bangladesh Sugarcrop Research Institute (BSRI)
2.5 Bangladesh Livestock Research Institute (BLRI)
2.6 Bangladesh Fisheries Research Institute (BFRI)
2.7 Soil Resource Development Institute (SRDI)
2.8 Cotton Development Board (CDB)
2.9 Bangladesh Jute Research Institute (BJRI)
2.10 Bangladesh Rice Research Institute (BRRI)

3. **Name and full address with phone, cell and e-mail of coordinator, PI and Co-PI (s):**

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Component-1: BWMRI	**Dr. Md. Abdul Hakim** Senior Scientific Officer Wheat Breeding, WRC, BARI, Dinajpur Cell no: 01711788153 Email: hakimwrc@bari.gov.bd;

c. **Co-principal investigator(s):**

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4. Sub-project budget (Tk.):

4.1 Total: 3,24,60,000.00 (in Tk. as approved)

4.1.1 Sub-project budget (Tk.):

4.1.1.1 BARC:

Total approved Budget (Tk) : 79,00,000.
Total fund released (Tk) : 39,80,703.00
Total fund spent (Tk) : 31,19,124.00
Unspent fund (Tk) : 8,61,579.0

4.1.1.2 BWMRI:

Total approved Budget (Tk) : 2,100,000/-
Total fund released (Tk) : 1347105/-
Total fund spent (Tk) : 966090/-
Unspent fund (Tk.) : 381015/-

4.1.1.3 BARI:

Total approved Budget (Tk): 25,00,000/-
Total fund released (Tk) : 20,19,360/-
Total fund spent (Tk) : 18,22,993.50
Unspent fund (Tk) : 1,96,366.50

4.1.1.4 BINA:

Total approved Budget (Tk) : 23,00,000.00
Total fund released (Tk) : 18,21,430.00
Total fund spent (Tk) : 16,76,969.00
Unspent fund (Tk) : 14,44,461.00

4.1.1.5 BSRI:

Total approved Budget (Tk) : 21,00,000
Total fund released (Tk) : 17, 51,370
Total fund spent (Tk) : 16, 22,099
Unspent fund (Tk.) : 1, 29,271

4.1.1.6 BLRI:

Total approved Budget (Tk) : 23,00,000.00
Total fund released (Tk.) : 17,30,520.00
Total Fund spent (Tk.) : 13,54,270.00
Unspent fund (Tk.) : 3,76,250.00

4.1.1.7 BFRI:

Total approved Budget (Taka) : 28,00,000
Total Fund release : Tk. 1885000
Total Fund spent :Tk. 1689362
Unspent Fund : Tk. 195638

4.1.1.8 SRDI:

Total approved Budget (BDT) : 26,10,000.00
Total Fund Released (BDT) : 16,95,260.00
Total Fund Spent (BDT) : 15,49,907.50
Unspent Fund (BDT) : 1,45,352.50

4.1.1.9 CDB:

Total approved Budget (Tk) : 2500000.00
Total fund released (Tk) : 1762530.00
Total fund spent (Tk) : 1237135.00
Unspent fund (Tk.) : 525395.00

4.1.1.10 BJRI:

Total approved Budget (Tk.) : 28,00,000.00
Total fund released (Tk) : 16,16,830.00
Total fund spent (Tk) : 9,51,486.36
Unspent fund (Tk.) : 6,65,343.64

4.1.1.11 BRRI:

Total approved Budget (Tk) :25,50,000.00
Total fund released (Tk) : 1377240.00
Total fund spent (Tk) : 1032196.00
Unspent fund (Tk) : 345044.00

4.2 **Latest Revised (if any):Not Applicable**

5. Duration of the sub-project:

5.1 **Start date (based on LoA signed):**

i. **Coordinating Component (BARC):** July 2018
ii. **Component (NARS Institute)**: July 2018

5.2 **End date:**

i. **Coordinating Component (BARC):** June 2022
ii. **Component (NARS Institute)**: December 2021

6. **Background of the sub-project:**

Bangladesh is predominately an agricultural country. Day by day population is increasing (1.48%) with land decreasing (1%). So it needs to increase production using modern practices to meet up the rising food demand for rising population. Government has given emphasis on research to increase productivity of products and by-products through generated technologies. Every year 13 NARS institutes are engaged with different researches. BRRI, BJRI, BSRI, BLRI, BFRI, FRI, BTRI, BSRTI,SRDI, BINA, BARI and CDB innovate technologies on rice, jute, sugar crops, livestock, fisheries, forest, tea, sericulture, soil, crops, cotton respectively need to transfer at farmers' hand. Already some matured technologies from different NARS institutes are transferred to DAE, DLS, DoF for dissemination in different ways (demonstration, training, workshop, publication, newspaper, fair, rally, social media. etc.) but the adoption rate is low, are still scattered around and not exactly known at farmers' level. Some of matured or promising important technologies are still not using in field which needs to transfer at farmers' level. So, immediate transfer of technology at farmers' level is needed for farm productivity enhancement. Technology Transfer and Monitoring Unit (TTMU) established at BARC in 1989 to transfer technologies. TTMU is coordinating to strengthen the research-extension linkages and working to facilitate swiftly transfer of modern technologies generated by the National Agricultural Research System (NARS) to Department of Agricultural Extension (DAE), DLS and DoF. On this background TTMU organizes Technology workshops, training programs (ToT) at Dhaka and outside of Dhaka and also meetings (NATCC, ATECC) for transferring technologies.A Meeting regarding implementation progress of RADP (2015-16) projects and revenue budget programs was held on 31 July 2016 at Ministry of Agriculture (MoA) discussed to identify problems and solve those problems of BARI and all others institutes. On 15 Feb 2017, TTMU, BARC arranged workshop regarding "***Constrains of dissemination of varieties and technologies developed by NARS institutes and ways to overcome***"**.** On this background, for rapid transfer of technology directly to farmers, PBRG Sub-Project ***on Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity*****ID-005**has doneat TTMU, BARC which LoA signed on 11 July 2018**.** Total 63 technology transferred**(**BWMRI: 4, BARI: 23, BINA: 8, BSRI: 3, BLRI: 2, BFRI: 2, SRDI: 1, CDB: 4, BJRI: 3, BRRI: 12)among 200 farmers at 35 Upazila of 17District. The proper transfer way at farmers' level has analyzed and developed Rapid Technology Transfer (RTT) Model of rapid transferring technologies for farm /agricultural productivity enhancement.TTMU, BARC assessed the status of transferred and non transfer tecnplogies for further selection of need based technologies to increase farm productivity.

7. **Sub-project general objective (s)**:

Coordinating Component: **BARC**

i. To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level

ii. To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes

8. **Sub-project specific objectives (component wise):**

Component 1: BWMRI

i) To transfer some selected BWMRI generated matured/promising technologies of wheat to farmers' level

ii) To determine the benefit cost analysis of using selected technologies at farmers' level

Component 2: Pomology, HRC, BARI

i) To transfer some selected BARI generated fruit technologies

ii) To produce and distribution of good quality propagules /saplings

iii To determine the cost benefit and problems

Component 3: BINA

i) To incorporate HYV mustard and lentil varieties between early T. aman and late boro rice cropping sequences

ii) To increase cropping intensity and crop yield through improved cropping patterns

iii) To determine the benefit cost analysis of using selected technologies at farmers' level

Component 4: BSRI

i) To transfer gur (molasses) and chewing varieties of sugarcane among the participating farmers for increasing yield through intercropping,

ii) To create awareness about sugarcane production packages and improved technologies of BSRI and

iii) To determine the benefit cost analysis by using selected technologies at farmers' field.

Component 5: BLRI

i) To transfer selected BLRI generated matured technology (silage) to farmers' level

ii) To determine the cost benefit analysis by using selected technologies at farmers'level

Component 6: BFRI

i) To transfer selected BFRI (Fisheries) generated promising technology to farmers field

ii) To determine the cost benefit and problem of using selected technologies at farmers level

Component 7: SRDI

i) To transfer SRDI's Updated Land and Soil Resources Utilization Guide based balanced fertilizer application in Boro-Fallow-T.Aman pattern to farmer's level.

ii) To determine benefit, cost and problem of using aforesaid SRDI technology at farmers level.

Component 8: CDB

i) To transfer recently generated CDB technologies to cotton farmers of some selected areas of Bangladesh

ii) To determine the benefit cost analysis of using selected technologies at farmers' level.

Component 9: BJRI

i) To introduce BJRI newly released variety at farmers' level for higher yield

ii) To produce seed of newly released jute crop at farmers' level to make self sufficient

iii) To analyze the cost and return of selected technologies at farmers' level

Component 10: BRRI

(1) To transfer recently generated **BRRI** technologies to rice farmers of some selected areas of Bangladesh in T. Aman and Boro season.

(2) To analyze the cost and return of selected technologies at farmers' level

9. Implementing location (s):

Implementing locations of sub-project activities of component organizations according to sub-project proposal (PP) were as follows:

Component organizations	Locations
BWMRI	Dinajpur sadar, Kaharol and Shetabgang, Dinajpur; Haripur and Peergang, Thakurgaon; Tentulia and Atwari, Panchagar district
BARI	Damudda Upazilla, Nagerpara, Gosairhat Upazilla, Shariatpur district; Muladi and Babuganj Upazilla, Barisal district.
BINA	Sadar, Mymensingh and Madhukhali, Faridpur district
BSRI	Sadar, Kazipur, Raigonj and Tarash Upazilla, Sirajgonj district
BFRI	Nokla upazilla of Sherpur district
BLRI	Baghabari and Shajadpur, Sirajgonj and Godagari, Rajshahi district
SRDI	Sadar and Bhuapur Upazila, Tangail; Sadar Dakshin and Burichong , Comilla district **Fig.1 GIS map shows planned areas (dotted) for technology transfer of SRDI**
CDB	Khagrachari, Bandarban and Thakurgaon district
BJRI	Faridpur and Rangpur district
BRRI	Valuka, Muktagacha, Sarishabari and sadar, Mymensingh district

9. Methodology in brief (with appropriate pictures):

10.1 Bangladesh Agricultural Research Council (BARC)

BARC as the Apex body is a coordinating component of the project. The participating institutes are BWMRI, HRC (Fruit), BARI, BINA, BSRI, BLRI, BFRI, SRDI, CDB, BJRI and BRRI. The Coordinator and other personnel of this project have overall responsibility to coordination, monitor, conduction, evaluation, compilation of all collected transferred technology related information and supervision. BARC is a coordinating body of the project that performed some activities in order to achieve project objectives.

i) BARC coordinated the activities of the participating institutes (BWMRI, HRC (Pomology), BARI, BINA, BSRI, BLRI, BFRI, SRDI, CDB, BJRI and BRRI).
ii) Developed model for profitable technology transfer
iii) TTMU, BARC assessed transferring status of technologies from the inception of each institute
iv) Conducted regular desk and field monitoring technology transfer activities from the coordination unit of TTMU, BARC.
v) Organized coordination meeting with all PIs and Co-PIs of the participating institutes.
vi) Organized annual review workshop with participation of all concerned PIs, Co-PIs, working scientists, experts, BARC personnel etc.

Scientists of different institutes having experiences on technology transfer participated as expert members in the Inception meeting, Review and other workshops and gave their valuable suggestions for successful implementation of the sub-project activities.Coordination meetings were organized by TTMU, BARC regularly with implementing organizations of the sub-project to collect latest information about the progress of the sub-project activities andMonitoring and Evaluation report, half-yearly report, co-ordinated annual report and sub-project completion report were made following formats supplied by NATP-2, PIU-BARC.accepted profitable technology placed to ATECC meeting for dessimination.

Transfer Activities of Agricultural Technology to increase farm productivity

(Developing Model, Coordination, Monitoring, Evaluation and Supervision)

Developing Model

Rapid Technology Transfer (RTT) Model for enhancing farm productivity

Technology can be transferred directly to the farmers in the field level. Technologies can be transferred to the farmers' level in shortest time/ immediate/rapid after generation of the technology. Only profitable technology selected by the trial can be transferred to the extension department (DAE, DLS, DoF) for dissemination. All technologies (crop, fish, livestock/animal, forest etc.) generated by 13 NARS institutes can be transferred through this model for enhancing farm productivity. Ten (10) NARS institutes transferred through this model for enhancing farm productivity. Modern technologies have selected instead of old/ancient technologies as per present need. Farmers' selected with the consultation of

extension departments (DAE, DLS, DoF). Farmer's training or FGD and technology transfer directly to the selected farmers by technology generator. Trial plots of selected farmers have set up in suitable areas and have monitored by TTMU, BARC. Profitability of technologies has evaluated through profitability analysis and motivated by seeing the profitability of technology neighbouring farmers and farmers of different areas of the country. TTMU, BARC have suggest/recommend technologies in the ATTEC meeting involving the concerned scientists and officers of extension departments (DAE,) for countrywide dissemination all over Bangladesh. It is possible to transfer technologies generated from PBRG, CRG, NATP-2 and other institutes directly and rapidly to the farmers at field level through Rapid Technology Transfer (RTT) Model.

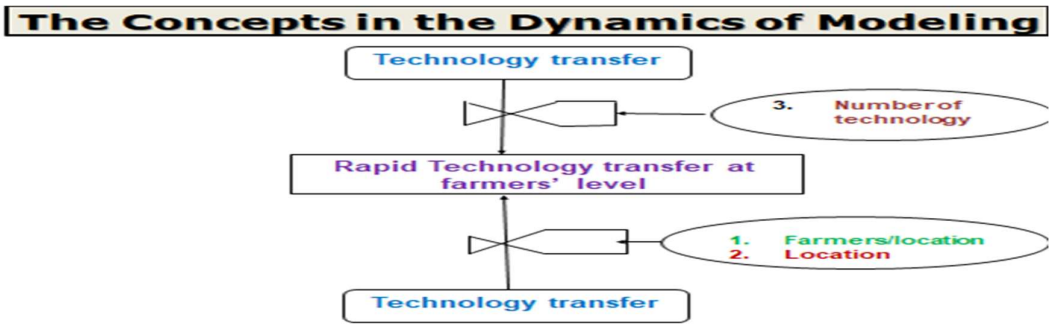


Fig. 2:Rapid Technology Transfer (RTT) Model of profitable agricultural recently generated technologyfrom NARS institutes for increasing farm-productivity

Coordination with NARS Institutes for transferring technologies

To transfer 63 technologies, 10 out of 13 NARS institutes have considered as component part of TTMU, BARC (coordinating component). TTMU, BARC coordinated directly to PIs' of BARI, BINA, BSRI, BLRI, SRDI, BRRI, BWMRI, BJRI, CDB and BFRI.

Monitoring of technology transfer activities by TTMU, BARC

Total 41 Monitoring tours at NARS institutes for the year 2018-22 has done (Annexer-1).

Evaluation

Profitability analysis for all NARS institutes has done with the assistance of PI, Co-PI and concerned economists under the supervision of the Coordinator TTMU, BARC.

Supervision

Two Agricultural technology Extension Coordination Committee (ATECC) Meeting was held on 28 Feb. 2021 and 16 Nov 2020 where placed profitable technologies for dessimination.

Data collection

Research data were collected with a structured questionnaire. Name of technology, year of technology generation, sources of fund, name of generator, suitable location as well as way of transfer were collected. Enumerators were collected data from 10 NARS institutes (BWMRI, CDB, BINA, BFRI, BRRI, BLRI, BJRI, BARI, BSRI, and SRDI) with the help of concerned PI. Data of each institute arranged ascending to year. The year wise technology data has been classified as transferred and non-transferred for divisions of Institutes, The Head of each division compiled the format with the help of PI's and all compiled information was send to TTMU, BARC through proper channel.

Other Components

10.2:Bangladesh Wheat and Maize Research Institute (BWMRI)

Several steps were taken to transfer wheat technologies along with latest wheat varieties at farmers' level successfully:

a.Baseline survey

A baseline survey was conducted according to questionnair during the implementation of this project. Location and farmers were selected based on the survey. Every year new farmers were selected with some common farmers in each.

b. Farmer and site selection for transferring technology

Five Upazilas were selected from (Dinajpur Sadar and Kaharol) and Thakurgaon (Haripur, Pirganj and Baliadangi) district in 2018-2019 cropping season. Ten farmers were selected from five Upazilas for technology transfer activities. In 2019-2020 season, seven Upazilas were selected from Dinajpur (Dinajpur Sadar, Kaharol and Setabganj), Thakurgaon (Haripur and Pirganj) and Panchagarh (Tentulia and Atwari) districts. Twelve farmers were selected from seven locations. In 2020-2021, twenty-six farmers were selected from Dinajpur (Dinajpur Sadar), Thakurgaon (Ranisankail, Haripur, Thakurgaon Sadar) and Panchagarh (Atwari and Tetulia) Districts.

c. Activity 3: Farmers' orientation by FGD with new technologies of wheat

Focus Group Discussion was arranged in order to identify the problems related to technology adoption and give an orientation on wheat production, seed processing and storage technologies.

Fig. 3:Focus group discussion to identify the problems of new wheat varieties adoption arranged by BWMRI

d. Block farming of modern varieties with improve technology instead of traditional technology at farmer's field

i. Total fifty-eight trials were conducted in forty-four farmers field in the selected locations covering a total area of 21.35 ha. All the trials were conducted at irrigated timely sown condition (15 Novemebr to 1st week of December).

ii. Wheat varieties: BARI Gom 29, BARI Gom 30, BARI Gom 32 and BARI Gom 33, WMRI Gom 1 (high yielding and short stature varieties with good level terminal heat tolerance)

iii. Unit plot size: Unit plot size varied from 1 bigha to 1 acre.

iv. Planting method: Machine planting with Power Tiller Operated Seeder (PTOS) and broadcasting.

v. Fertilizer dose and methods of application: The crop was fertilized with organic manure @ 5 ton/ha with NPKS, Zn and B @ 120, 26, 50, 20, 4.0 and 2.5 kg ha-1 respectively to ensure proper growth and development. The elements N, P, K, S, Zn and B were applied in the form of Urea, Triple Super Phosphate, Muriate of Potash, Gypsum, ZnSO4 (monohydrate) and Boric acid respectively. Two-third of urea and the entire quantity of other fertilizers were applied at final land preparation.

vi. Seed rate was 100 kg/ha during PTOS sowing and 120 kg/ha was broadcasting method.

vii. Three irrigation were applied at CRI, Booting and Grain filling stages.

viii. Weedicide (Affinity) was used at 25 to 35 days after sowing in all farmer's field.

ix. Production performance and farmers' reaction were monitored regularly by the personnel of institute and these technology transfer activities also monitor by the personnel of TTMU, BARC.

x. Crop harvest were done by presence of PI in some location and presence of representative of PI in some location.

Fig. 4:Distribution of seed and fertilizer among farmers, BWMRI

Fig. 5: Roguing in demo plot for maintaining seed purity, BWMRI

10.3 Pomology Division, Horticulture Research Centre. Bangladesh Agricultural Research Institute (HRC, BARI)

At first baseline survey, farmer and site selection for transferring technologies were done with the help of DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO).Focus group discussion was done for orientation on modern fruit production technologies forthe selected farmers. These discussions are on using of modern fruit production technologies of BARI released mature technologies. At first, in order to dissemination of BARI released latest fruit varieties the propagules were distributed

among the selected farmers (which were produced before) at 30/09/2018 in Shariatpur district. Demonstration plots were established with BARI released latest modern fruit varieties BARI Aam-3, 4, 8, 11; BARI litchu-3; BARI Kola-1, 2, 3, 4, 5; BARI Lebu-1, 2, 3; BARI Peyara -2; BARI amloki-1; ; BARI Dragon fall-1, BARI kamranga-1; BARI Narikel-1, 2; BARI Batabilebu-3; BARI Malta-1;BARI Jamrul-1 and BARI Amra-2. The demonstration was a block-farming for each location. Unit plot size of block demonstration is 0.25 acres of land for each mixed fruit garden. Establishment of mother fruit or chard data were collected from the demonstration plot using a prescribed own institutional survey format. Beyond the quantitative data, farmers' reaction/feedback was also recorded.

Field Preparation

At first fields were cultivated through power tiller, cleaned out of different weed and unwanted plants. The dried fields were left exposed to sunlight for five to seven days and then applied different organic and chemical fertilizer in different pits maintaining different distance for different trees. The pit size for large trees are (1x1x1m) and for small trees are (75x75x75cm). Common application dose of different fertilizer

Cowdung : 20k g/pit
TSP : 300-400 g/pit
MoP : 150-200 g/pit
Gypsum : 200 g/pit

After application of fertilizer, water was supplied in the pit. After 15 days saplings were distributed among the farmers for planting in Shariatpur district on 30/09/18 and Barisal district on 29/05/19.

10.4: Adaptive Research and Extension Division (ARED), Bangladesh Institute of Nuclear in Agriculture (BINA)

Activity 1: Baseline survey

Conducted base line survey before T. aman cultivation of first year on July 2018.

Activity 2: Farmer and site selection for transferring technology

Eighteen farmers (who use traditional methods) of each location was selected under Sadar, Mymensingh and Madhukhali, Faridpur in the month of July 2018. Therefore, total thirty six farmers' was selected for technology transfer and validation activities. Farmers were almost same in second year.

Activity 3: Focus group discussions and orientation with technologies

Focus group discussion including selected farmers' was organised on Novemer 2019 in both locations.

Activity 4: Transfer and validation of modern technology instead of traditional technology at farmer's field/ plot

To transfer of modern technology of BINA, location specific profitable cropping pattern activities with T. aman (var. Binadhan-7 and Binadhan-11) was carried out in 18 selected farmers plot at Sadar, Mymensingh in aman season of 2019. Then experimental plot of mustard (var. Binasarisha-9) was carried out in the same farmers plot in rabi season. In boro season, the experimental plot of boro rice (var. Binadhan-10) was carried out in the same farmers' plots. On the other

hand, experimental plot with T. aman (var. Binadhan-7 and Binadhan-11) was carried out in 18 selected farmers plot at Madhukhali, Faridpur in aman season of 2019. Then experimental plot of lentil (var. Binamasur-8) was carried out in the same farmers plot in the same farmers plot in rabi season. In aus season, the experimental plot of aus rice (var. Binadhan-19 and Binadhan-14) was carried out in the same farmers' plots.

Activity 5: Field days, mass media campaign etc

Two field days were organized within this period.

Activity 6: Data collection and EconomicAnalyses

Data regarding yield and yield attributes of Binadhan-7 and Binadhan-11, Binasarisha-9 and Binamasur-8 were collected, analysed and recorded. The experimental plots of boro and aus rice is now in field.

Activity 7: Knowledge Sharing with Personnel of Extension Service

Knowledge shared with the personnel of DAE and farmers' in the project areas at the field visit and monitoring time.

10.5:Training and Technology Transfer Division,Bangladesh Sugarcrop Research Institute (BSRI)

Activity 1: Baseline survey: A base line survey was conducted under each location.

Activity 2: Farmer and site selection for transferring technology

Farmers and farmers' field were selected collaboration with DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO). Four locations were selected i.e. Sirajgonj district (Sirajgonj Sadar, Kazipur, Raigonj and Tarash Upazilla) and five farmers were selected in each selected location. So, total no. of farmers is 20 and total demo area is about 20 bighas. BSRI supplied necessary inputs i.e., seeds, fertilizers, labors for weeding, signboards and technical supports.

Activity 3: Farmers' FGD and orientation with technologies

A focus group discussion including selected farmers' was done on using modern technologies fororientation. These discussion was on using of modern sugarcane production technologies of BSRI released mature technologies.

Activity 4: Demonstration of modern technology instead of traditional technology at farmer's field/ plot

a) High to medium high land was selected at each location. The area of the land was 0.3 ha. The STP Soil bed settlings of BSRI akh 42 and BSRI akh 45 varieties were sown in the month of October, November, December and January. Row to row spacing 100 cm and plant to plant spacing was 45 cm.

b) These modern technology was demonstrated: Production and fertilizer management: Ploughing and laddering was done. Recommended fertilizers dose for sugarcane and intercrop was applied. The recommended dose of fertilizer is Urea-270 kg/ha, TSP-220 kg/ha, MoP- 200 kg/ha, Gypsum- 165 kg/ha, Zinc sulphate- 07 kg/ha, Borax-07 kg/ha and Magnesium oxside- 33kg/ha.

c) Yield, production cost and economic returns were recorded.

d) Production performance and farmers' reaction is monitored regularly by the personnel of institute and these technologies transfer activities was monitored by the personnel of TTMU, BARC.

Fig. 6:Base line survey at project site of BSRI

Fig. 7:Focus group discussion at project site of BSRI

10.6: Training, Planning and Technology Testing Division,Bangladesh Livestock Research Institute (BLRI)

The following BLRI developed technology has transferred to increase income generation of farmers and protein based food in the country.

Name of technology: Preservation of green grasses/fodder through Dole silage technique

Silage-Silage is fermented, high-moisture stored fodder which can be fed to ruminants (cattle).

Purpose of silage- To prepare silage in the season when there is an abundance of green grass and to ensure its supply to the cattle in case of shortage of green grass.

The benefits of silage

1.Grass silage contains 85% of nutrients.
2.All parts of the grass can be stored here.
3.Fresh grass is difficult to store in the rainy season but Dole silage can be done easily.
4.Silage is a very tasty and lactic acid rich feed.
5.It is a goodsource of crude protein and vitamins.

Dole silo method

1. Dole method was very useful for small scale dairy farms.
2. In this method a farmer can made a dole silo of 50 kg to 1000 kg size depending on his need.
3. This type of dole silo could be easily moved from one place to another.

The following steps was taken to transfer technology and adapted successfully to farmers.

Activity 1. Site selection:

Two regional station of BLRI was selected for technology transfer. These are Shajadpur, Sirajgonj, and Godagari, Rajshahi.

Activity 2. Baseline survey:

Baseline survey was conducted among farmers from locations.

Activity 3.Farmers selection:

Farmers was selected under the location for Focus Group Discussion (FGD) based on availability of livestock population and their socio-economic condition.

Activity 4.Training in a form of FGD:

Selected farmers were provided training in a form of FGDon the silage technology. Farmers name and address of Shajadpur, Sirajgonj district are as follows-

Farmers name with address	Farmers name with address
1. Md Hisab Ali Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	2. Md. Asraful Islam Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
3. Md. Anwar Ali Prong Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	4. Mst. Hasna Khatun Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
5. Md. Zakir Hossain Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	6. Mst. Taslima Khatun Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
7. Md. Samat Fakir Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	8. Md. Idris Ali Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
9. Md. Anjat Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	10. Md. Sirajul Islam Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
11.Md. Asr af Ali Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	12. Md. Jainal Abedin (1) Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
13. Md. Jainal Abedin (2) Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	14. Md. Shaneen Mondol Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
15. Md. Kamal Mondol Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	16. Md. Alauddin Mondol Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
17. Md. Shameem Hossain Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	18. Md. Sayeed Prang Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
19. Md. Abu malek Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	20. Md. Dulal Prang Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
21. Md. Rubel Hossain Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	22. Md. Nazrul Islam Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
23. Md. Ruhul Islam Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	24. Md. Imrul Islam Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj
25.Md. Rafiqul(Tokon) Village: Tearbondor; P.O: Baghabarighat Upazilla: Shajadpur; District: Sirajgonj	

Activity 5. Field trial/Demonstration and refining/up-scaling:

i) Fodder cultivation:

Fodder is agricultural feedstuff composed of entire plants, including leaves and stalks used specifically to feed livestock, such as cattle, goat, sheep etc. Perennial high yielding fodders like Napier (Var. BLRI Napier 1, 4) were sown in November/2018. Thirty farmers were selected under two sites. The Napier fodders were propagated by stem cutting method. Line to line and plant to plant distance were 70 and 35 cm, respectively. During land preparation Triple Super Phosphate (TSP), Murate of Potash (MP), Urea and Cowdung were applied @ 150, 125, 220 and 5000 kg/ha, respectively. Grasses were harvested at a regular interval at 40-45 days after each cutting, whilst first cut was made 55-60 days after the establishment.

ii) Dole silage preparation

Whole day programme was imparted among the selected farmers on "Preparation of Silage as 'dole method' in the field. Dole was made by bamboo and its inside sealed with polythene. The napier grasses were harvested manually. Then the grasses were chopped to 2-2.54 inch in length. About 1 ton fodder was preserved in each dole. The silage was compact by pressure manually so that no air could enter inside the dole. Silage is preserved for 3 months. After 3 months a feeding trial was conducted on cross bred dairy cows and at the same time silage quality (colour, smell), rottenness, p^H were measured and yeast & moulds were visually observed as per methods of integrated evaluation (BAPH, 1996). Silage samples were collected for nutritional and microbial analysis.

iii) Feeding trial/demonstration on dairy cows:

Selection, grouping and housing of animals

Twenty five (25) farmers each having two cross dairy cows were used for the feeding trial. The cross dairy cows of 2^{nd} or 3^{rd} parity and after calving (2-3 months pregnancy) dividing into two groups (T_1 - dol silage, T_0 –control).

Dietary treatments

Two diets were prepared and considered as dietary treatments, T_1 - dol silage, T_0 –control. The concentrate part of the ration consisted of wheat bran, rice polish, crushed maize, khesari bran, soyabean meal, til oil cake and salt. The concentrate mixture contained 18% CP and 10.31 MJ ME/kg DM. Fresh and clean drinking water was available for all the animals. The daily required amount of feed was portioned into two for feeding to the animals in the morning at 7:00 hours and afternoon at 16:00 hours. Concentrate was supplied first followed by roughages.

Measurement of feed intake and sample collection

The silage (Napier grass) intake of each animal was determined by subtracting the amount of leftover (if any) from the amount of feed given on the previous day. Refusal was collected every morning before feed supply and weighed to determine daily feed intake. During the trial period, the animals consumed all of the concentrate. For metabolism trial output of faeces was recorded daily during the last 7 days of the feeding trial period. The quantity of feed, refusal and feces were weighed daily and representative samples were kept for analysis. Milk was collected at that time. Feces was collected at every 8:00 am and after 24 hours, weighed and sub-sample was taken every day from an animal. **Samples of f**aeces were put in plastic bags in the freezer (-20 °C).

iv) Chemical analysis of samples

All the samples of feeds and faeces were prepared and sub-samples were used for analysis. The samples were subjected to chemical analysis for the determination of dry matter (DM), organic matter (OM) and ash following the methods of AOAC (1995). All the samples were analysed in duplicate and the mean values were recorded.

v) Statistical analysis

The statistical analysis was done using 'SPSS-11.5' statistical program to compute analysis of variance (ANOVA) in completely randomized design (CRD) (Steel and Torrie, 1980). Differences among the treatment means were determined by Duncan′s Multiple Range Test (DMRT) (Duncan, 1955).

10.7: Bangladesh Fisheries Research Institute (BFRI)

The following trials were conducted at Gourdar village, Nokla upazilla, Sherpur during September 2018 to March 2019.

1. Name of the Trial:Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

The project has been implemented by Bangladesh Fisheries Research Institute (BFRI) in coordination with Technology Transfer & Monitoring Unit of Bangladesh Agricultural Research Council (BARC), Dhaka. The project activities were carried out in a participatory approach at farmer's field.

The following activities were undertaken to transfer the technology at farmer's level successfully.

Site and Farmer selection

This technology was demonstrated for the period of 6 months in three farmer's pond at Goarder, Nokla upazilla, Sherpur district during September 2018 to March 2019. Ponds were selected with the active participation of Nokla Upazilla Fishery Officer. Farmers name with address having pond area is shown in Table 1.

Table 1. Farmers name, address and pond area of project site-1 of BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Md. Hira Mia C/o: Md.Amsar Ali Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40
02.	Md. Mostafizur Rahman C/o: Md.Matiur Rahman Village: Ranigaoni; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35
03.	Ripon Hasan C/o: Md.Kader Khan Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35

Pond Preparation

Prior to stocking, ponds were dried and cleaned for weed and unwanted aquatic animals. The dried ponds were left exposed to sunlight for five days and then limed at the rate of 250 kg/ha. Five days after liming, water were supplied from shallow tube well to the ponds and filled up to the depth of 1 meter.

Fish stocking and Management

Fingerlings of Pabda, Gulsha with Rui were uniformly stocked on 12 October 2018 in three ponds at a stocking density of 1,25,000, 50,000 and 1250/ha. During stocking, the initial weight of Pabda, Gulsha and Rui are 4.23±2.68, 3.30±1.48 and 35.50±3.49g, respectively Feeding began immediately after stocking. Fish were fed regularly at a rate of 6-8% of body weight with supplementary feed (28% crude protein). Fishes under the demonstration ponds were sampled regularly at monthly intervals to determine growth rate as well as feed adjustment and to check up the health condition of fish. In all the three ponds lime and table salt (NaCl) was applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality management

Water samples were collected between 10:00 to 11:00 am at ten-day intervals of each pond surface to a depth of 20cm. A number of clean 500 ml black bottles marked with pond number used for collection of water samples. The bottles were then brought to the Water Quality and Pond Dynamics Laboratory of Freshwater Station, Bangladesh Fisheries Research Institute. Water temperature (°C) from each pond was recorded at least three spots by using a Celsius thermometer. Water transparency was determined by using a standard Seechi disc of 20 cm. diameter. Dissolved oxygen (mg/l) and pH were measured using a digital DO meter (WPA, model OX20) and a direct reading digital pH meter (HANNA, model HI 9025), respectively. Total alkalinity (mg/l) was determined titrimetrically according to the standard procedure and methods.

The following trials were conducted during July 2019 to May 2020.

02. Name of the Trial:Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

The project has been implemented by Bangladesh Fisheries Research Institute (BFRI) in coordination with Technology Transfer & Monitoring Unit of Bangladesh Agricultural Research Council (BARC), Dhaka. The project activities were carried out in a participatory approach at farmer's field. For disseminating the technology at farmer's level successfully, the following activities were undertaken accordingly.

Site and Farmer selection

This technology was demonstrated for the period of 5 months in three farmer's pond at Goarder, Nokla upazilla, Sherpur district during July to November 2019. Ponds were selected with the active participation of Nokla Upazilla Fishery Officer. Farmers name with address having pond area is shown in Table 2.

Table 2. Farmers name, address and pond area of project site-2 of BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Mossamat Nasima Khatun C/o: Hira Miah Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40
02.	Sraboni Akhter C/o: Md.Mustafizur Rahman Village: Ranigaoni; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40
03.	Sahid Ali Khan C/o: Md.Kader Khan Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35

Fig. 8 Monitoring team remembers observing the demonstration pond ofBFRI project

Pond Preparation

After selection of ponds, all the ponds were drained out. Bottom of all ponds were sun-dried up to cracking of bottom soil. Two to three PVC pipes have been set at a reasonable place in each dike of each pond so that excess rain water can pass out of the pond during monsoon. Each pond was encircled with fine mesh nylon net fastened in bamboo poles to prevent entrance of any animal inside the pond. Source of water was ensured, so that water can be supplied to the ponds during pond preparation, or whenever necessary during culture. After drying, soil of the ponds was treated with calcium oxide @ 250 kg/ha. During preparation, ponds were filled up with underground water supplied from shallow tube well. After three days, water of the ponds was fertilized with urea and TSP @ 25 and 30 kg/ha, respectively to enhance primary productivity.

Fish stocking and Management

Fingerlings of uniform size of Pabda, Gulsha with Rui were stocked on 10 July 2019 in three ponds at a stocking density of 1,75,000, 75,000 and 1250/ha. During stocking, the initial weight of Pabda, Gulsha and Rui were 3.43±0.15, 3.23±0.18 and 104±7.20g, respectively

Feeding began immediately after stocking. Fish were fed regularly at a rate of 6-8% of body weight with supplementary feed (30% crude protein). Fishes under the demonstration ponds were sampled regularly at monthly intervals to determine growth rate as well as feed adjustment and to check up the health condition of fish. Lime and table salt (NaCl) were applied at the rate of 50 and 125 kg/ha at fortnightly intervals in all the ponds.

Water quality management

Water quality parameters such as water temperature (°C), secchi disc (cm), pH, dissolved oxygen (mg/L) and total alkalinity (mg/l) were monitored at around 10.00-11.00 am at weekly interval. Water transparency was determined by using a standard Seechi disc of 20 cm. diameter. Dissolved oxygen (mg/l) and pH were measured using a digital DO meter (WPA, model OX20) and a direct reading digital pH meter (HANNA, model HI 9025), respectively. Total alkalinity (mg/l) was determined titrimetrically according to the standard procedure and methods.

03. Technology II: Demonstration of Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond

The technology entitled Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond was demonstrated in Gourdar village, Nokla upazilla, Sherpur during July to November 2019. The following protocols were followed for demonstrating the technology in two ponds.

Pond Selection

For demonstrating the technology, two ponds were selected with consultation Nokla Upazilla Fishery Officer. Farmers name with address having pond area is given below in table 3.

Table 3. Farmers name, address and pond area of project site-3 of BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Md. Rifatullah C/o: Hira Miah Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.30
02.	Sahid Ali Khan C/o: Md.Kader Khan Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35

Fig. 9 Demonstration pond of Shing culture, BFRI

Pond preparation

Prior to stock, ponds were dried and treated with bleaching powder at the rate of 12.50 kg/ha. Then ponds were filled up with water up to the depth at 1.50 meter and then lime was applied at the rate of 125 kg/ha.

Fish stocking and management

Fingerlings of Shing (*Heteropneustes fossilis*) with Rohu and Catla were stocked in ponds at a stocking density of 175000, 750 and 750/ha, respectively. Feeding began immediately after stocking. Fish were fed at a rate of 5-8% of body weight with supplementary feed (30% crude protein). The feeds were supplied twice daily morning at 5.00 am and evening 7.00 pm. Fish sampling was done at an interval of one month to adjust the feeding rate by measuring the weight of fish and to observe the health condition of fish. In all the ponds lime and table salt (NaCl) were applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality analysis

Water quality parameters such as water temperature, transparency, pH, dissolved oxygen (DO) and total alkalinity were determined at ten days interval between 01000 to 1100 hrs.

Harvesting

At the end of the culture period, all fishes were harvested by repeated netting followed by dewatering the ponds. Total bulk weight and number of fishes from each pond were recorded. Survival and gross production of fishes of each pond was estimated.

The following trials were conducted during July to December 2020

4. Name of the Trial: Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

Site and Farmer selection

During July to December 2020, the technology entitled Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) was demonstrated for the period of 6 months in three farmer's pond at Goarder, Nokla upazilla, Sherpur district. Ponds were selected with the active participation of Nokla Upazilla Fishery Officer. Farmers name with address having pond area is shown in Table 4

Table 4. Farmers name, address and pond area of project site-4 of BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Ashik Talukger Village: Satgaon; P.O: Goarder,Upazilla: Nokla; District: Sherpur	0.40
02.	Md. Fazlul Haque Village: Satgaon; P.O: Goarder,Upazilla: Nokla; District: Sherpur	0.40
03.	Md.Sahid Ali Village: Tagouri; P.O: Goarder; Upazilla: Nokla; District: Sherpur	0.35

Fig. 10:Demonstration pond of pabda-Gulsha farming, BFRI

Pond Preparation

The selected ponds were dried and cleaned for weed and unwanted aquatic animals. The dried ponds were left exposed to sunlight for five days and then limed at the rate of 250 kg/ha. Five days after liming, water were supplied from shallow tube well to the ponds and filled up to the depth of 1 meter.

Fish stocking and Management

After pond preparation, fingerlings of Pabda, Gulsha with Rui were stocked on July 2020 in three ponds at a stocking density of 225000, 100,000 and 1250/ha. During stocking, the initial weight of Pabda, Gulsha and Rui are 3.50±0.19, 3.10±0.39 and 150±8.80g, respectively. Fish are being fed regularly at a rate of 4-8% of body weight with floating supplementary feed (30% crude protein). Fishes under the demonstration ponds were being sampled regularly at fortnightly intervals to determine growth rate as well as feed adjustment and to check up the health condition of fish. In all the three ponds lime and table salt (NaCl) were being applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality management

Water quality parameters such as water temperature, pH, Dissolved Oxygen, total Ammonia are being checked between 10:00 to 11:00 am at ten-day intervals of each pond surface to a depth of 20cm.

05. Demonstration of Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond

The technology entitled Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond was demonstrated in Gourdar village, Nokla upazilla, Sherpur during July to December 2020. The following steps were under taken for demonstrating the technology in two ponds.

Pond Selection

Two ponds were selected with consultation Nokla Upazilla Fishery Officer for demonstrating the technology, Farmers name with address having pond area is given in table 5.

Table 5. Farmers name, address and pond area of project site-5 of BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Md. Mostafizur Rahman Village: Banigaon; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35
02.	Sumon Miah Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40

Fig. 11Demonstration pond of Shing farming, BFRI

Pond preparation

The ponds were dewatered, freed from aquatic vegetation and exposed to full sunlight. The standard method of pre-stocking pond preparation method was followed. Prior to stock, ponds were treated with bleaching powder at the rate of 12.50 kg/ha. Then ponds filled up with water up to the depth at 1.50 meter and lime was applied at the rate of 125 kg/ha.

Fish stocking and management

The trial ponds were stocked Shing, Rohu and Catla at a stocking density of 250000, 1000 and 1000/ha, respectively. Fingerlings were fed twice daily with floating feed containing 33% crude proteins at 8% of biomass in first month. Later 5-6-% in next two months and 4% throughout the rest of the culture period. Seepage and evaporation loss during the culture period wee compensated periodically to maintain desire water depth. A total of 50 individuals of Shing from each pond were sampled on fortnightly intervals to adjust the feeding rate by measuring the weight of fish and to observe the health condition of fish. In all the ponds lime and table salt (NaCl) were applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality analysis

Water quality parameters such as water temperature, transparency, pH, dissolved oxygen (DO) and total alkalinity were being determined at ten days interval between 1000 to 1100 hrs.

Fish Harvesting

After 06 months, the fish were harvested by repeatedly netting followed by dewatering the ponds. After harvesting, Survival and production of fish were calculated.

10.8: Soil & Land Classification Survey Section, Soil Resources Development Institute (SRDI)

The project implemented by SRDI in coordination with TTMU, BARC. The project activities will be carried out in a participatory approach i.e. in collaboration with DAE personnel at farmer's field in selected locations involving respective district offices of SRDI. The main activities of this project was the selection of farmers and plots for establishment of adaptive trial; demonstration of SRDI developed technologies i.e use of balanced fertilizer dose in Boro and T. Aman based on Updated Upazila Nirdeshika, yield data collection and economic analysis, organizing focus group discussion and field days etc., presentation at annual research workshop and distribution of printed materials.

The following steps were taken to transfer technologies at farmers' level successfully:

Activity 1: Baseline survey

Baseline survey was conducted before demonstration; all information (i.e., family size, cultivable land, homestead area, education level, land type, soil type, cropping pattern, variety, use of fertilizers and pesticides, yield of Boro and T. Aman, production cost, consumption and selling of rice produced, income source and expenditure) were collected from 24 farmers using traditional method to compare with modern technology (Annexure).

Activity 2: Farmer and site selection for transferring technology

Eight farmers (who use traditional methods) were selected in four Upazilas under Cumilla (Sadar Dakshin and Burichong) and Tangail districts (Tangail sadar and Bhuapur) for conducting adaptive trial. In each Upazila one farmer's field were selected for conducting trial on balanced fertilizer use in Boro and T. Aman according to soil test status of Updated Upazila Nirdeshika, a SRDI generated technology. Another adjacent farmer's field was selected in each Upazila as control plot. BRRIdhan58 and BRRIdhan72 were selected for Boro and T. Aman season, as test crop respectively (Annexure).

Activity 3: Focus group discussions and orientation with technologies

Focus group discussions involving selected farmers' were arranged on using balanced fertilizer dose in Boro and T. Aman according to soil test status of Updated Upazila Nirdeshika, a SRDI generated technology.

Activity 4: Field trial and transfer of SRDI developed Nirdeshika based balanced fertilizer application technology to farmer's field

- The soil analytical data given in the Nirdeshika was considered as the initial status of the experimental plots over which fertilizer recommendations were made following FRG 2018, BARC (Annexure).
- Boro rice variety **BRRIdhan 58** and Aman rice variety **BRRIdhan 72** were incorporated in the selected project areas to conduct adaptive trial for each location. The cropping pattern being Boro-Fallow-T. Aman.
- Unit plot size for the trial is 0.134 hectare (33 decimal) in farmer's field.

- Two adjacent farmer's plots of 0.134 hectare were selected for the trial. One farmer was supported with seed, fertilizer, irrigation, pest management packages and another farmer was supported with seed and other cultural packages except fertilizer and this plot was treated as control.
- BRRI recommended seed rate, seedling age, plant/line spacing, irrigation, pest management practices were followed.
- The results of the demonstration will help motivating project farmers as well as neighboring farmer community in adopting the proven technology of balanced fertilizer application based on Upazila Nirdeshika data base.

Activity 5: Field days, mass media campaign etc

Field days (4) were organized in second year on harvesting of BRRIdhan72 and in third year after harvesting of T. Aman at selected location for each technology in presence of selected farmers and extension personnel for awareness rising about the disseminated technologies.

Activity 6: Data collection and Economic Analyses

Yield data as well as cost data were collected from adaptive trail plot as well as control plot using a prescribed own institutional survey format. BCR was calculated using recorded cost and benefit data at the end of the project period. Beyond the quantitative data, farmers' reaction/feedback was also reported.

Activity 7: Knowledge Sharing with Personnel of Extension Service

The personnel of SRDI established linkage with the concern personnel of DAE at the selected location.

Activity 8: Workshop on Achievement of project, Reporting and Publication

a) The results will be presented in annual progress workshop and finally in complete implementation workshop.
b) Annual report and leaflet was prepared, published and distributed.

BCR was calculated to find out the impact of balanced fertilizer dose on farm productivity and farmers income.

Fig.12Adaptive trial and control plot established side by side, SRDI

10.9: Cotton Development Board (CDB)

Activity 1: Land and Farmer selection:

CDB is providing extension services to the cotton farmers through its 3 zonal offices. Each year one well drained high to medium high land was selected at every growing zone. The area of the land was 1 bigha (0.1378 ha).

Activity 2: Establishment of Demonstration plot:

Ploughing and laddering was done for 3 times. The seeds of CB-14 variety was sown in mid June to mid July depending on the favorable environment. Plant spacing was 90 × 25 cm.

Activity 3: Crop management:

Fertilizer application: CDB recommended fertilizers dose for CB-14 was applied at 4 splits(i.Basal dose.ii.25 DAE, iii.55. DAE iv.80 DAE) The recommended dose of fertilizer are Urea- 300 kg/ha, TSP-275 kg/ha, MOP- 350 kg/ha, Gypsum-140kg/ha, Zinc sulphate- 20 kg/ha, Borax-25 kg/ha and Magnesium sulphate- 20 kg/ha.

Weed management: The plot was kept free from weed for the first 90 days after germination.

Pest management: Integrated Pest Management tools and techniques was followed for controlling cotton sucking and chewing pest.

Removal of vegetative branch: Vegetative branch was removed from the cotton plant at the 1st square stage.

Detopping: De-topping was done before cotton plant harvesting stage.

Application of mepiquat chloride: Four sprays of Mepiquat chloride at the rate of 1.75 ml/10 liter of water was done starting from 30 days after germination at 15 days interval.

Activity 4:Data collection and analysis:

Cotton yield and yield contributing characters as well as cost benefit data was collected from the demonstration and other selected farmers plot using a prescribed survey format. Comparative cost benefit will be analyzed before and after setting field trial.

Activity 5:Training of Staff:

Stuff (Field/ research assistant) training was organized at CDB head quarter before experiment setting to facilitate dissemination/on-farm trial of the selected technologies to farmers.

Activity 6: Presentation at annual research workshop

Data recorded: Agronomic traits

i) Plant count at harvest	ii) Number of vegetative branches/plant
(iii) Node number on 1st fruiting branches/plant	(iv) Number of primary fruiting branches/plant
(v)Number of secondary fruiting branches/plant	(vi) Number of days to 1st flowering
(vii) Number of days to 1st boll split	(viii) Plant height (cm) at harvest
(ix) Number of burst boll/plant	x) Number of sunburst boll/plant
(xi) Number of bolls/plant	(xii) Single boll weight (g)
(xiii) Seed cotton yield (kg/ha)	
C. Ginning traits	i) GOT (%) (ii) Seed index (iii) Lint index (iv) Fuzz grade
D. Lint Character	(i) Fiber Length (mm) (ii) Fiber Strength (mm) (iii) Fiber Fineness (micronaire value) (iv) Fiber maturity

Recorded data would be analyzed statistically, in MSTAT/ SPSS Program) and final report was prepared and preserved for future use.

10.10: Jute Farming Systems Division, Bangladesh Jute Research Institute (BJRI)

Methodology:

BJRI developed new variety of JAF crop along with seed production technology were selected for technology transfer activities.

Seed production:

Seed production (in the late season) technology developed by BJRI (direct seeding, line sowing, etc), which has the potentiality to increase seed production in the unit area, is not yet disseminated at farmers' field. So these technologies were followed to produce more seed in the area and make them self sufficient in jute seed.

Variety demonstration:

BJRI has recently developed variety of *tossa* jute, BJRI Tossa Pat-8 (Robi-1) and BJRI *Kenaf* (HC-95) of jute and allied fibre crops, which have potentiality to increase crop yield and economic return. Recently released varieties along with other technologies like line sowing method, recommended fertilizer doses, weed management, pest and disease control have already demonstrated at farmers' field. The improved retting technique of jute will be demonstrated at farmers' level after harvesting of green jute plant. Crop yield (fibre and stick) will also be reported after completion of crop harvest. The crop will be harvested at July/August.

The following steps were taken to transfer jute and allied fibre (JAF) technologies:

Activity 1: **Baseline survey**

Base line survey was done following a structured questionnaire. Information related to jute seed and jute cultivation were collected regarding production (cost-returns) using traditional method to compare with modern technology.

Activity 2: Selection of location/site and farmer for transferring technology

Jute seed production technology transferred in the locations i.e., Manikganj and Rangpur. six farmers (covering the area of 68 decimals) from Manikganj and another six farmers from Rangpur (covering the area of 62 decimals) were selected from the two locations. Seed crop is already harvested and completed its all activities. Variety demonstration technologies were done in two locations i.e., Faridpur and Rangpur. Eight farmers were selected from each location for the technology transfer activities.

Activity 3: Farmers' orientation by FGD with new technologies of jute

Farmers' orientation regarding FGD was arranged on jute seed production technologies but FGD orientation regarding jute fibre production was not possible due to Corora Pendamic effect. We hope, FGD orientation on fibre production will be possible to arranged very soon if the situation (Corora Pendamic effect) favour us. By the FGD orientation programme farmers are introduced about BJRI technologies on jute seed and jute fibre production.

Activity 4:Demonstration and refining/up-scaling of modern technology instead of traditional technology at farmers' field/ plot

i) **Land:** Medium high to high land for jute and high land for jute seed production was selected

ii) **Variety**: BJRI Tossa Pat-8 (Robi-1) and BJRI *Kenaf* (HC-95) were selected for both jute seed and jute fibre production.

iii) **Unit plot size:** 0.04 hectare (10 dec.) of land was considered for jute seed and 0.08 hectare (20 dec.) of land was considered for jute fibre production.

iv) **Sowing/Planting method**: Line sowing method were followed for both jute seed and jute production

v) **Fertilizer doses and methods of application:** The jute crop was fertilized with organic manure @ 5ton ha^{-1} with NPKS, Zn and B @ 50, 15, 10, 16, 2 and 2 kg ha^{-1}, respectively to ensure proper growth and development for seed production. On the other hand, the jute crop was fertilized with organic manure @ 5ton ha^{-1} with NPKS and Zn @ 74, 10, 30, 15 and 2 kg ha^{-1}, respectively to ensure proper growth and development for fibre production. The elements N, P, K, S, Zn and B were applied in the form of Urea, Triple Super Phosphate, Muriate of Potash, Gypsum, ZnSO4 and Boric acid, respectively. In case of jute seed production one-third of urea and the entire quantity of other fertilizers were applied at final land preparation and next two-third of urea were applied 15 and 30 days, respectively after sowing. On the other hand, jute fibre production half of urea and the entire quantity of other fertilizers was applied at final land preparation. Rest half of urea was applied 45-50 days after sowing.

vi) **Seed rate:** BJRI Tossa Pat-8 (Robi-1) = 6-7 kg ha^{-1} and Kenaf (HC-95) = 12-13 kg ha^{-1}

vii) **Irrigation:** 2 times

viii) **Weeding:** Weeding were done manually

ix) Data is recording in all agronomic aspects

x) Jute seed crop has already been harvested and the jute fibre crop is in the field

Activity 5: Data collection and Economic Analyses:

After completion of data collection economic analysis has done

Activity 6: Knowledge sharing with extension personnel and local people were arranged.

10.11:Bangladesh Rice Research Institute (BRRI)

At first Baseline survey, Farmer and site selection for transferring technology were done with help of DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO).Focus group discussion was done for orientation on modern rice production technologies forthe selected farmers. These discussions are on using of modern rice production technologies of BRRI released mature technologies. Dissemination of BRRI released latest rice varieties were done in in 4 rice growing season i.e., Boro 2019, T. aman 2019, Boro 2020 and T. aman 2020. Demonstration plots were established with BRRI released latest modern rice varieties i.e., BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 in Boro 2019. In T. aman, 2019 demonstrations plot were set-up with BRRI released latest modern T. aman rice varieties i.e., BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87. And in Boro, 2020 demonstrations plot were set-up with BRRI released latest modern Boro rice varieties i.e., BRRI Dhan58, BRRI Dhan67, BRRI Dhan81, BRRI Dhan84, BRRI Dhan88 and BRRI Dhan89 in the same locations. In T. aman 2020 season Demonstrations plot were set-up with BRRI released latest modern T. aman rice varieties i.e., BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87. The demonstration was a block farming for each location. Unit plot size of block demonstration is 6 bighas of land having one bigha of land for each variety. Yield and yield contributing data and cost benefit data were collected from the demonstration plot using a prescribed own institutional survey format and BCR were calculated using recorded cost and benefits data. Beyond the quantitative data, farmers' reaction/feedback were also recorded.

Fig.13:Baseline survey at Muktagacha, Mymensingh, BR

Fig. 14: Focus group discussion at Valluka & Muktagacha of Mymensingh district arranged, BRRI

Fig.15:Baseline survey at Valluka, Mymensingh, BRRI

Fig.16:Baseline survey at Valluka & Muktagacha, Mymensingh, BRRI

Fig. 17: Focus group disc
.....ussion at Valluka & Muktagacha of Mymensingh district, BRRI

11.Results and discussion: (with appropriate pictures):

11.1Bangladesh Agricultural Research Council (BARC)

Bangladesh Agricultural Research Council (BARC) was the coordinating component of the sub-project "**Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity (ID-005)"**that provided technical and managerial support for proper implementation of sub-project activities of different concerned organizations and institutes.

11.1.1 Transfer Activities of Agricultural Technology to increase farm-productivity (Coordination, Monitoring, Evaluation and Supervision)

Coordination with NARS Institutes for transferring technologies

To transfer technologies, 10 out of 13 NARS institutes have considered as component part of TTMU, BARC (coordinating component). TTMU, BARC coordinated directly to PIs' of BARI, BINA, BSRI, BLRI, SRDI, BRRI, BWMRI, BJRI, CDB and BFRI in selecting technology and developing model. monitor, evalution and supervision.

Table 6:Transferring Selected Technologies

10 Institutes	Total selected Technology (63): BWMRI-04,BARI-23,BINA-8,BSRI-3,BLRI-2, BFRI-2, SRDI-1, CBD-4,BJRI-4, BRRI-12
BWMRI	BARI Gom 30, BARI Gom 32, BARI Gom 33 and WMRI Gom 1
BARI	BARI Aam-3, BARI Aam-4, BARI Aam-8 and BARI Aam-11, BARI Lebu-1 BARI Lebu-2 and BARI Lebu-3 BARI Kola-1, BARI Kola-2, BARI Kola-3, BARI Kola-4 and BARI Kola-5, BARI Malta-1, BARI Peyara-2, BARI Kamranga-1,BARI Lichu-3, BARI Jamrul-1, BARI Dragon fruit-1, BARI Amra-2, BARI Batabilebu-3, BARI Amloki-1,BARI Narikel-1 and BARI Narikel-2
BINA	Binadhan-7, Binadhan-17, Binadhan-14, Binadhan-19; Binasarisha-9, Binasarisha-14; Binamasur-7, Binamasur-8 **Improved Cropping pattern:** Mymensingh (two upazilla): Early T. aman rice (variety: Binadhan-7/ Binadhan-17), - mustard (variety: Binasarisha-4/ Binasarisha-9) - late boro rice (variety: Binadhan-14) Magura and Faridpur: Early T. aman rice (variety: Binadhan-7/ Binadhan-17) - lentil (variety: Binamasur-5/Binamasur-6/Binamasur-8/) - late boro rice (variety: Binadhan-14).
BSRI	Transfer chewing varieties of sugarcane (BSRI Akh 42) Transfer latest gur varieties of sugarcane (BSRI Akh 45) Production package of sugarcane with intercropping
BLRI	BLRI Napier 4 Preservation of green grasses/fodder through silage technique
BFRI	Culture of Pabda & Gulsha with Rui, Culture of Shing in ponds
SRDI	SRDI (Upazila Nirdeshika) based balanced fertilizer application in Boro-Fallow-T. Aman cropping pattern to farmer's level
CDB	CB-14 variety, Application of mepiquate chloride, Removal of vegetative branches and De-topping
BJRI	BJRI Tossa Pat-8 (Rabi-1), HC-95 and Production and management packag
BRRI	**Boro:** BRRI dhan58, BRRI dhan67, BRRI dhan81, BRRI dhan84, BRRI dhan88, BRRI dhan89 **Aman:** BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79 , BRRI dhan80, BRRI dhan87

Table 7: Monitoring of technology transfer activities by TTMU, BARC Total 41
Monitoring tours at NARS institutes for the year 2018-22

Institute	Year	Date	Location	Number	Total
BWMRI	a) 2018-19 b) 2019-20	a) 9-11.02.19 b) 21-23.12.19	a) Thakurgaon b) Dinajpur	a) 1 b) 1	**2**
BARI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 29.09.18, 29-31.05.19 b) 10-12.12.19 c) 20-23.12.20 d) 12-15.12.21	a) Shariatpur, Barishal b) Barishal c) Barishal d) Barishal	a) 2 b) 1 c) 1 d) 1	**5**
BINA	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 17.01.19 b) 15.03.20, 17.10.20 c) 01.03.21, 02.02.21 d) 07.12.21	a) Mymensingh b) Mymensingh, Mymensingh c) Faridpur, Mymensingh d) Mymensingh	a) 1 b) 2 c) 2 d) 1	**6**
BSRI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 13.01.19 b) 20.10.19, 05.03.20 c) 8-9.02.21 d) 08.11.21	a) Sirajgonj b) Sirajgonj, Sirajgonj c) Sirajgonj d) Sirajgonj	a) 1 b) 2 c) 1 d) 1	**5**
BLRI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 31.01.19 b) 22.10.19, 12.03.20 c) 10-11.02.21 d) 11.11.21	a) Sirajgonj b) Sirajgonj, Sirajgonj c) Sirajgonj d) Savar	a) 1 b) 2 c) 1 d) 1	**5**
BFRI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 21.04.19 b) 19.10.19 c) 03.02.21 d)	a) Sherpur b) Sherpur c) Mymensingh d)	a) 1 b) 1 c) 1 d)	**3**
SRDI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 07.01.19 b) 15.10.19, 18.03.20 c) d)	a) Tangail b) Cumilla, Cumilla c) d)	a) 1 b) 2 c) d)	**3**
CDB	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 17-19.11.18, 09-11.02.19 b) 20-22.12.19 c) d) 26-28.12.21	a) Banderban, Thakurgaon b) Banderban c) d) Khagrachari	a) 2 b) 1 c) d) 1	**4**
BJRI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 27.12.18, 29.06.19 b) 24.12.19 c) 06.10.20 d) 28.11.21-01.12.21	a) Manikgonj, Faridpur b) Manikgonj c) Manikgonj d) Rangpur	a) 2 b) 1 c) 1 d) 1	**5**
BRRI	a) 2018-19 b) 2019-20 c) 2020-21 d) 2021-22	a) 28.01.19 b) 13.10.19, 13.02.20 c) d)	a) Mymensingh b) Jamalpur, Mymensingh c) d)	a) 1 b) 2 c) d)	**3**
Total					**41**

Evaluation

Profitability analysis for all NARS institutes has been done with the assistance of PI, Co-PI and concerned economists under the supervision of the Coordinating component of TTMU, BARC.

Component	Technology	BCR
BWMRI	BARI Gom 30, BARI Gom 32, BARI Gom 33 and WMRI Gom 1(Avrage)	1.45
BINA	Binadhan-10	1.55
	Binadhan -11	1.54
	Binadhan-19	1.57
	Binamasur-8	1.98
	Binasarisha-9	1.56
BSRI	Gur variety akh 45	3.2
	Chewing variety akh 42	4.57
BLRI	BCR	1:1.2
BFRI	Culture of Shing with Rui and Catla in ponds	1.29
SRDI	BRRIdhan72 in adaptive trial plot receiving balanced fertilizer dose	1.01-1.41
CDB	Cotton fibre and seed	1.45
BJRI	Jute Fibre	1.76
	Jute Seed	1.52
BRRI	T.aman	1.38
	Boro	1.19

Supervision

BARI Gom 30, BARI Gom 32, BARI Gom 33 and WMRI Gom 1 and Bina sharisha-9 for demionstration/field day placed at Agricultural Technology Extention Coordination Committee (ATECC) meeting on 28 Feb. 2021.BRRIdhan70, BRRIdhan71, BRRIdhan75, BRRIdhan79, BRRIdhan80BRRIdhan87 for demonstration/field day placed at ATECC meeting on 16 Nov 2020.

ড. ফওজিয়া ইয়াসমিন, পরিচালক (টিটিএমইউ), বিএআরসি তাঁর বক্তব্যে NATP Phase-2 এর অর্থায়নে প্রযুক্তি হস্তান্তর ও পরিবীক্ষণ ইউনিট কর্তৃক বাস্তবায়নাধীন Transfer of Agricultural Technologies to Farmers Level for Increasing Farm Productivity, ID-005 শীর্ষক PBRG উপ-প্রকল্পের মাধ্যমে ৫৯টি লাভজনক ফসল প্রযুক্তি হস্তান্তর করা হয়েছে মর্মে সভায় অবহিত করেন। ফসল প্রযুক্তি দ্রুত সম্প্রসারণের লক্ষ্যে উক্ত প্রযুক্তি সমূহের মধ্যে রবি মৌসুমের জন্য বারি গম-৩০, বারি গম-৩২, বারি গম-৩৩, ডাব্লিউএমআরআই গম-১ ও বিনা সরিষা-৯ জাতের প্রদর্শনী স্থাপন/মাঠদিবসের সুপারিশ করেন।

জনাব আলীমূল এহছান চৌধুরী, সভাপতি, কৃষি যন্ত্রপাতি প্রস্তুতকারক সমিতি, বলেন Mechanization project এর মাধ্যমে বিদেশ থেকে যন্ত্রপাতি আমদানী করা হচ্ছে। কিন্তু স্থানীয়ভাবে উৎপাদিত কৃষি যন্ত্রপাতী কৃষক কর্তৃক সমাদৃত। এগুলো দেশের বাজারে Marketing করা হলে আমদানির বিকল্প হিসেবে স্থানীয় শিল্প গড়ে উঠবে। এই জন্য স্থানীয় কৃষি যন্ত্রপাতীর উপর গুরুত্ব দেওয়ার সুপারিশ করেন।

অতিরিক্ত পরিচালক, ডিএই ফরিদপুর, জনাব রিফাতুল হোসাইন বলেন পেঁয়াজের আবাদ ফরিদপুর অঞ্চলে বাড়ানোর চেষ্টা করা হচ্ছে। প্রায় ৭ হাজার হেক্টর জমিতে মুড়ি কাটা পেঁয়াজ উৎপাদিত হবে। গ্রীষ্মকালীন পেঁয়াজ খরিফ-২ মৌসুমে উৎপাদনের উদ্যোগ নেয়া হবে। BADC থেকে সময়মত বীজ পাওয়া যাচ্ছে না । হাইব্রিড জাতের চাষ বাড়ানোর চেষ্টা করা হচ্ছে। কৃষি যান্ত্রিকীকরনের কৌশল সম্পর্কে কৃষক প্রশিক্ষনের উপর জোর দিতে হবে।

অতিরিক্ত পরিচালক, ডিএই, সিলেট জনাব দিলীপ কুমার অধিকারী বলেন গ্রীষ্মকালীণ পেঁয়াজ মৌলভীবাজার ও হবিগঞ্জ জেলায় ভালো হয়। পাহাড়ী এলাকায় যেখানে চা হয়না সেখানে কাজুবাদাম আবাদের উদ্যেগ নেয়া হচ্ছে।

জনাব মিতুল কুমার শাহ্, AGM, Hortex Foundation, বলেন রপ্তানি উপযোগী ফলমূল ও শাকসবজি উৎপাদনে কৃষকদেরকে সহযোগিতা, প্রদর্শনী স্থাপন এবং শাকসবজি ও ফলমূল সংগ্রহোত্তর অপচয় কমানোর জন্য Mechanization এর মাধ্যমে কৃষকদেরকে সহায়তার সুপারিশ করেন।

জনাব রেজা আহমেদ খান, উপপরিচালক (গবেষণা), কৃষি বিপণন অধিদপ্তর, খামারবাড়ি ঢাকা বলেন, পেঁয়াজের বাজার নিয়ন্ত্রণের জন্য যৌক্তিক মূল্য নির্ধারণের কার্যক্রম গ্রহণসহ বিধি প্রনয়ণ করা হয়েছে। Post harvest management কার্যক্রম জোরদারকরণে কৃষি বিপণন অধিদপ্তর কার্যকরী ভূমিকা পালন করছে।

জনাব মোঃ আব্দুল মজিদ, উপপরিচালক (সম্প্রসারণ), সরেজমিন উইং ,ডিএই, খামারবাড়ি ঢাকা **২নং আলোচ্য সূচি** অনুযায়ী ২০১৯-২০২০ রাজস্ব বাজেটের আওতায় প্রদর্শনী ও ফলোআপ কার্যক্রমের অগ্রগতির উপর পাওয়ার পয়েন্ট উপস্থাপন করেন।

ক) ফসল প্রদর্শনী ঃ
রবি মৌসুম/২০১৯-২০২০ এ ১৫টি ফসল যেমনঃ বোরোধান, শীতকালীন ভুট্টা, গম, বার্লি, সরিষা, চিনাবাদাম (শীতকালীন), পেঁয়াজ, রসুন, কালোজিরা, আলু, মিষ্টিআলু, বিটি বেগুন, সূর্যমূখী, সয়াবিন ও আখের ৫৫৩৮০টি প্রদর্শনী বাস্তবায়ন করা হয়েছে। খরিফ-১/২০১৯-২০২০ এ ৬টি ফসল যেমনঃ আউশধান, পাট, গোলমরিচ, গ্রীষ্মকালীন মুগ, গ্রীষ্মকালীন তিল ও মাসকালাই এর মোট ৭০১০টি প্রদর্শনী স্থাপন করা হয়েছে। খরিফ-২/২০১৯-২০২০ মৌসুমে রোপাআমন ও তুলার মোট ১২,৮৭০টি প্রদর্শনীসহ মাঠ ফসলের সর্বমোট ৭৫,২৬০টি প্রদর্শনী বাস্তবায়ন করা হয়েছে।

খ) প্রযুক্তি প্রদর্শনীঃ সোলার লাইট ট্রাপের মোট ২,০০০টি প্রদর্শনী বাস্তবায়ন করা হয়েছে।
সর্বমোট ৭৭,২৬০টি প্রদর্শনী স্থাপন করা হয়েছে।

গ) মাঠ দিবসঃ ৭,৭২৬টি মাঠ দিবস সম্পন্ন করা হয়েছে ।

ড. ফজলুল হোসেন, পরিচালক (টিঅ্যান্ডই), বাংলাদেশ কৃষি গবেষণা কাউন্সিল, ফার্মগেট, ঢাকা বলেন PIU-BARC, NATP-2 অর্থায়নে Transfer of Agricultural Technologies to Farmers Level For Increasing Farm Productivity উপ-প্রকল্পের মাধ্যমে ময়মনসিংহে অঞ্চলে ৫ টি ধান যেমন, বি ধান ৭৫, বি ধান ৭৯, ৫ টি ধান ৭৬, ৫ টি ধান ৮৫ ও ৫ টি ধান ৮৭ প্রযুক্তিসমূহ কৃষক পর্যায়ে ট্রায়াল প্লটের মাধ্যমে হস্তান্তর করা হয়েছে। যার ফলন কম ও লাভজনক। এসব নেইবুরে ঐ ৫ জাতগুলো ময়মনসিংহ অঞ্চলের অন্যান্য অঞ্চল তথা দেশব্যাপি সম্প্রসারণের লক্ষ্যে প্রদর্শনী অথবা প্রদোদনা দ্রুত অন্তর্ভুক্ত করার সুপারিশ করেন। জনাব মোঃ আব্দুল মতিন, অতিরিক্ত পরিচালক (সোনাবাং), কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ঢাকা জানান ২০২৩ সালের আওতায় ২৫৫-২/২০২১-২২ নীতিতে উক্ত জাত সমূহের নতুন উদ্ভাবিত জাতসমূহ প্রদর্শনী বাস্তবায়নের কার্যক্রম চলছে।

ড. আব্দুল মতিন, CSO, BARI বলেন সূর্যমুখীর চাহিদা দিন দিন বৃদ্ধি পাচ্ছে এবং এর যথেষ্ট সম্ভাবনাও রয়েছে। বারি সূর্যমুখী ৩ একটি সম্ভাবনাময় জাত। তিনি সূর্যমুখীর বীজ আমদানী না করে বারি কর্তৃক উদ্ভাবিত জাত সম্প্রসারণ করার আহ্বান জানান। জনাব মোঃ মিজানুর রহমান, অতিরিক্ত পরিচালক (মনিটরিং ও মূল্যায়ন), সরেজমিন উইং, কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ঢাকা, বলেন হাইব্রিড জাতের তুলনায় বারি কর্তৃক উদ্ভাবিত জাতের ফলন তুলনামূলকভাবে কম বিধায় কৃষক পর্যায়ে জাতগুলো জনপ্রিয় হচ্ছে না। জনাব এ.এইচ.এম. মনিরুল আলম, পরিচালক, সরেজমিন উইং, কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ঢাকা, বলেন খরি ও সিএফিসি থেকে ১২ সপ্তাহ ও তারের বীজ সরবরাহ করা হয় যে সমস্ত জাতের প্রদর্শনী বাস্তবায়ন করা হয়।

জনাব মোঃ আওলিকুল আলম, অতিরিক্ত পরিচালক, কৃষি সম্প্রসারণ অধিদপ্তর, বরিশাল অঞ্চল বলেন পানি উন্নয়ন বোর্ড খাল পুনঃখনন ও স্লুইসগেট সংস্কার করে যথা সময়ে চাষাবাদের ব্যবস্থা করলে অত্র এলাকায় বোরো আবাদ বৃদ্ধির যথেষ্ট সম্ভাবনা রয়েছে। ড. মোঃ মাহবুবুর রহমান, অতিরিক্ত পরিচালক, দিনাজপুর অঞ্চল, পানি উন্নয়ন বোর্ডের প্রতিনিধিকে ATBCC সভায় অন্তর্ভুক্ত করার সুপারিশ করেন।

জনাব কামাল উদ্দিন মিয়া, উপপরিচালক, কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ময়মনসিংহ বলেন অধিক আগাছানাশক ব্যবহার করায় প্রায় ৯০০০ হেক্টর জমি অনাবাদি থাকে। তিনি উপজেলা কর্মকর্তাদের সরেজমিনে উক্ত বিল পরিদর্শন করে বিষয়টি নিয়ে সংশ্লিষ্ট কর্তৃপক্ষের সাথে যোগাযোগ স্থাপনের মাধ্যমে দীর্ঘস্থায়ী ভাবে উক্ত সমস্যা সমাধানের প্রস্তাব করেন। সভাপতি ও সদস্য সচিব মহোদয় অবশ্যই বিল পরিদর্শন করার ব্যাপারে মতামত প্রদান করেন।

জনাব এ. কে. এম. মনিরুল আলম, পরিচালক, সরেজমিন উইং, কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ঢাকা যেসব ফসলে Seed Treatment করার সুযোগ আছে সেসব ফসলের বীজ শোধন করার ব্যবস্থা গ্রহণ করার জন্য বিএডিসিকে অনুরোধ করেন। জনাব মোঃ মোজাম্মিল হক, সদস্য পরিচালক (বীজ ও উদ্যান), বাংলাদেশ কৃষি উন্নয়ন কর্পোরেশন, বলেন Seed Treatment করলে কেজি প্রতি প্রায় ১৫ টাকা দাম বৃদ্ধি পায়। এমতাবস্থায় প্রদর্শনী ও প্রণোদনা কার্যক্রমের প্রস্তাবনা তৈরির সময় প্রতি কেজি বীজের মূল্যের সঙ্গে ১৫ টাকা যোগ করে শোধনকৃত বীজের মূল্য প্রস্তাবনা আকারে মন্ত্রণালয়ে প্রেরণের সুপারিশ করেন। আলোচনা শেষে শুধুমাত্র প্রদর্শনী ও প্রণোদনার বীজ বিএডিসি কর্তৃক শোধন করে দেয়ার ব্যাপারে সর্বসম্মতিক্রমে সিদ্ধান্ত গৃহীত হয়।

জনাব বিশ্ব ভূষণ রায়, অতিরিক্ত পরিচালক, কৃষি সম্প্রসারণ অধিদপ্তর, রংপুর অঞ্চল বলেন, আউশ মৌসুমে ব্রিধান ৮৩ ও ব্রিধান ৯৮ এর ফলন ভাল হয়েছে। তিনি এবার জাতের প্রদর্শনী স্থাপনের ক্ষেত্রে উদ্ভাবিত জাত ২টি অন্তর্ভুক্তকরণ ও Cropping Pattern অনুসরণ করার সুপারিশ করেন। পরিচালক, সরেজমিন উইং, জানান নতুন প্রস্তাবসমূহে Cropping Pattern base প্রদর্শনী স্থাপন করা হচ্ছে।

জনাব মোঃ মিজানুর রহমান, অতিরিক্ত পরিচালক (মনিটরিং ও মূল্যায়ন), সরেজমিন উইং, কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ঢাকা বলেন, বিভেজহস্থাই তোষা পাট ৮ জাতের পাটের বীজ কৃষক পর্যায়ে সহজলভ্য করার জন্য মতামত ব্যক্ত করেন। তাঁর আরও বলেন বিএডিসি ও বিভেদ্যালয়ই প্রয়োজনীয় বীজ উৎপাদন করতে পারলে ভারত থেকে পাটের বীজ আমদানি নির্ভরতা হ্রাসে সহায়ক হবে। সভাপতি মহোদয় বলেন, পাট বীজ উৎপাদন বৃদ্ধির জন্য কৃষি মন্ত্রণালয়ের একটি পরিবেষ্টনা রয়েছে।

জনাব মোঃ মোজাম্মিল হক, পরিচালক সদস্য (বীজ ও উদ্যান), বিএডিসি বলেন, প্রধানমন্ত্রীর নির্দেশনা অনুসারে ৩ বছরের মধ্যে পাট বীজ উৎপাদনে স্বয়ংসম্পূর্ণতা অর্জন করতে হবে। সে লক্ষ্যে বিভেদ্যালয়ই তোষা পাট ৮, বিএডিসি পাট ১ জাতের বীজ উৎপাদন করতে বিএডিসি, বিভেদ্যালয়ই ও জিকেই একত্রে চুক্তিবদ্ধ হতে হবে। এ লক্ষ্যে বিপিসি মন্ত্রণালয়ে প্রেরণ করা হয়েছে। ৫৭ মেট্রিক টনের বর্তমানে উৎপাদিত ৩ হাজার মেট্রিক টনের ১৩ হাজার মে.টন পর্যন্ত মান ঘোষিত বীজ উৎপাদনের লক্ষ্যমাত্রা দেয়া হয়েছে।

প্রতিনিধি কটেজ ইন্ডাস্ট্রিজ বলেন, তাঁরা দেশীয় পর্যায়ে ২৭ ধরনের কৃষি যন্ত্রপাতি তৈরি করছেন। কৃষক সমাবৃত এ সমস্ত কৃষি যন্ত্রপাতিগুলো মাঠ পর্যায়ে সম্প্রসারণের ব্যাপারে সংশ্লিষ্ট সকলের সহযোগিতা কামনা করেন।

Scanned by CamScanner

Scenarios of transfer activities of generated technologies according to NARS institutes

Technological information of seven NARS (BWMRI, BINA, CDB, BSRI, BFRI, BRRI, and SRDI) institutes of Bangladesh is presented. Out the seven institutes BRRI have been developed the highest number of technology. A total 421 technology was generated during 1970 to 2019 followed by BINA 196, BSRI 193, BWMRI 96, CDB 68, BFRI 62 and SRDI 10 (Table-8).

Table-8: Technology Database progress

SL.No.	Institute	Division	Year	Total Technology
1.	BWMRI WRC, BARI	4	1968 to2019	96
2.	BARI	4	1976 to 2020	283
3.	BINA	10	1972 to 2019	196
4.	BSRI	11	1951 to 2018	193
5.	BLRI	5	1984 to 2020	89
6.	BFRI	3	1984 to 2018	62
7.	SRDI	-	1983 to 2013	10
8.	CDB	5	1993 to 2018	68
9.	BJRI	5	1990 to 2020	186
10.	BRRI	14	1970 to 2019	421

Mode of generated Technologies Transfer:

TTMU usually organizes technology workshops, training programs (ToT) at Dhaka and outside of Dhaka and also meetings (NATCC, ATECC) which are not attached directly to farmers. Irrespective of all institutes, most of the technologies have been transferred in different ways. Research organization transferred technologies through field demonstration (DEMO), field day (FD), framers training (FT), extension personnel training (ET), paper publication (PP), other viz. leaflet, media, etc. Extension organization is widely disseminated technology to the farmers.

Conduction of Workshop /Meeting/Seminar/Training:

During the project period, the project **organized 4 meetings, 3workshops** for rapid transferring of technologies as well as successful implementation of the project.

a. **Workshop:**

The Coordinating component TTMU, BARC conducted one inception, one Implementation, one completion and two Annual Progress workshops.

b. Meeting:

The Coordinating component TTMU, BARCconducted 3 coordination meetingswith all concerned extension personnel (eg. DAE, DLS, DoF etc.) for technology dissemination

c. Compilation:

The Coordinator, other personnel and consultant of TTMU, BARC compiled the Annual Progress Report, six month report and PCR

11.1.1 Organizing Inception Workshop

To initialize work programme of the implementing organizations a day-long inception workshop of the sub-project **"Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity (ID-005)"**was conducted by coordinating components on 14 October, 2018 at the conference room-1 of BARC. Total 55 particicipants from all institutes and organizations including PIs and Co-PIs, scientists, expert members and experienced

BARC personnel were attended in this workshop. The inception workshop was aimed to inform the objectives and component-wise work plan of the sub-project and receive feedback from the participants and expert members to improve the work plan and methodology on national priority-basis. The inaugural session was chaired by Dr. Fauzia Yasmin, Director, TTMU, BARC and the coordinator of this sub-project. Dr. Md. Kabir Ikramul Haque, the Formerexecutive Chairman of BARC was present as the chief guest while Dr. Mian Sayeed Hassan, Former Director, PIU, NATP-2, BARC Campus was as special guest.The invited expert members of the workshop were Dr. Abdur Razzaq, former sector coordination extension, NATP-2, PMU, BARC Campus; PIU-BARC; Dr. Kazi M. Kamaruddin, Former Program Director, Livestock and Fisheries, KGF, BARC Campus and Dr. Mian Sayeed Hassan, Former Director, PIU-BARC, NATP-2; The two resource speaker of the workshop were Dr. M.A. Quayyum, Former CSO (OFRD), BARI and Dr. Md. Abdul Jalil Bhuyan, Former Research Management Specialist, Project Implementation Unit (PIU), NATP-2, BARC Campus.

The chairperson of the inaugural session Dr. Fauzia Yasmin commented that the inception workshop createsopportunity to fine tune the planned activities and the proposed methodology by the participants and experts making scope for accelerating the project activities. He also invited opinions / valuable suggestions from the scientists and expert members for the improvement of prorgamme activities. There were two technial session presided by Dr. Abdur Razzaq, former sector coordination extension, NATP-2, PMU, BARC Campus and M. Kamaruddin, Former Program Director, Livestock and Fisheries, KGF, BARC Campus. After brainstormed discussion the following valuable opinions / recommendations were made for the improvement of the project activities:

Valuable Recommendations / Suggestions

General recommendations/suggestions

- Appropriate method and necessary measures should be taken to transfer the technologies at farmer's level.
- Appropiate variety name should be given for transferring technology.
- Technology should be disseminated in package from. All detail information should be in included with variety and management package.
- Economic analysis is needed for varietal substitution.
- FGD should be done with farmers and DAE personnel to know the existing agricultural information of the site for technological dessimination.
- To co-ordinate with OFRD, BARI and DAE, DOF and DLS personnels for disseminate the technology.
- Technologies should be selected according to address SDG as well as season & location.
- Work plan wise activities should be taken to smooth running of the project.
- New technologies should be selected as per recommendation of ATECC committee.
- Specific title should be added for all components.
- All publications should be acknowledged to PIU-BARC, NATP-2.
- Land size for demonstrations should be clearly mentioned.

- Limitations or problems for technology transfer should be highlighted. Technology gap (lack of appropriate technology), resource gap, vulnerabilities gap, price gap, market gap, quality of production gap, policy gap, etc should be analyzed. Measures should be taken for overcoming these limitations.
- Modern variety should be disseminated and varietal substitution is needed.
- Farmer's reaction/opinion should be given by component wise.
- Exchange of seed production among farmers should be added in work plan.
- Exposure visit should be added in work plan by all components.
- Socio-economic activities should be included & rick management also be considered.
- Specific objectivities should be mentioned according to project activities.
- Budget of each activity should be clearly mentioned.
- All the PI of co-ordinated project should informed the program like workshop, knowledge sharing meeting to the co-ordinating agency (TTMU, BARC), PIU-BARC and PMU well ahead of time.
- Research, Extension and farmers linkage should be strengthened.
- Mother plant should be transferred to DAE and BADC which needs to be multiplied it. It should be monitored by scientists and transferred to farmer's level.

Recommendations made for the concerned component organizations

Sl	Component	Recommendations
1	Component BARC	• Number of meeting should be increased for coordination unit.
2	Wheat Research Centre PI: Md. Mahbubor Rahman	• Variety name and management practices should be clearly mentioned in the packages. • FGD discussion should be clearly mentioned in report. • Reaction and opinion of neighbour farmers should be included. • No. and area of block demonstration to be mentioned. • Dissemination policy should be changed in approaches.
3	Component BARI PI: Dr. Syed Md. Mizanur Rahman	• Technology dissemination method should be clearly mentioned. FGD, training and other method should be included highlighted elaborately. • DAE personnels should be included in the project activity. • Name of technology as well as project location should be clearly mentioned. • Existing system of technology dissemination of that location should be mentioned. • Selection of technology should be based on location, AEZ, farmers' choice etc. Physiological studies to be discarded. • Log frame should be added in inception report. • Location could be extended in this project. • No. of technology should be reduced for proper dissemination. • Five technologies for mother orchard should be selected. • DAE and BADC should be involved in mother orchard establishment. They will multiply and supplied to planting

		materials to the farmers. • New technology for fruit bagging to be incorporated. • Project activities should be specific. • No. of farmer, no. of mother orchard and saplings should be mentioned. • Objective and output should be specified. • No. of crop could be reduced. • Post harvest management practices may be included.
4	Component BINA	• Variety or technology should be selected in package form after FGD (Highlighted the findings of FGD in inception report). • Existing cropping pattern with variety to be mentioned for Mymensingh and Faridpur. Log frame should be added in the report.
5	Component BSRI	• Crops should be considered in 3 crop based cropping pattern. • Relay crop and cropping pattern should be specified in the report. • Two types of transfer technology i.e. one is chewing type for gur production and another is intercrop vegetables/pulses/oil seed with chewing type of sugarcane.
6	Component BLRI PI: Dr. Md. Zillur rahman	• Silage preparation techniques should added in the report. • Microbial analysis should be done in lieu of chemical analysis in silage production. • Number of farmer could be reduced and selected the number as per budget • Economically viable technologies should be addressed. • Name of the location under two regional stations should be mentioned. • Pre & post intervention should be done and will be presented in PCR. • Best method for silage preparation invented by BLRI should be practiced. • Increase milk and meat production (%) should be clearly mentioned in Log-frame.
7	Component BFRI (Fish)	• Budget of polyculture should be added. • Technology should be disseminated in package form. • Comprehensive data should be incorporated to set up the experiment. • Stocking density data should be added in the report. • Farmers selection, pond selection, pond preparation, soil and water test should be done for this project. • Activities should be changed in third year.
8	Component SRDI PI: Dr. Md. Altaf Hossain	• Complete package should be taken from OFRD, BARI. • Fertilizer recommendation guide/2018 should be considered.

		• Smart technology and agricultural packages should be addressed. • Base line/FGD data should be incorporated. • Number of farmers and area of the experimental plot should be clearly mentioned. • Variety should be selected as per interview with SAAO, DAE in according to Upazilla & AEZ basis. • To consider soil health in selecting the technolgies. • Exiting farmer's practises should be surveyed and considered to transfer the technologies.
9	Component CDB PI: Dr. Mominul Islam	• Methodologies should be clearly mentioned as per title of the activities. • No. of Demo plot for CV-14 variety should be clearly mentioned. Problem also should be identified and necessary measures should be taken to transfer or sustain the technologies through FGD. • Duration project period should be corrected. • Area of block demonstration should be mentioned. • Parameters of data and time frame should be included. • Technologies should be selected after completing FGD. • Neighbouring farmers should be invited in FGD.
10	Component BRRI PI: Dr. Md. Humayun Kabir	• Location for T. Aman and Boro rice should be specific. • Aus variety may be included in this project. • Block farming term should be used instead of demonstration. • No. of variety should be reduced for proper dissemination. • Rice var. BRRI dhan47 and BRRI dhan63 should be excluded from this project. • An economist could be included in this project for analysis of baseline survey/FGD. • Bangladesh should be avoided from the objectives due to no. of location is low. • Analysis should be done for barrier of disseminating new technologies. • Profile should be added for new variety. New variety adoption rate will be higher if the difference between existing and new profile is very low. • Highlights of FGD needs to be included in inception report. More budget should be added for field day and workshop.

11.1.2: Organizing Annual Review Workshop

To initialize work programme of the implementing organizations thrice day-long Annual Review Workshop of the sub-project "Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity (ID-005)" was organized by coordinating components gradually on 02 October, 2019, 14 December, 2020 and 10 March, 2021at BARC Auditorium. All institutes and organizations including PIs and Co-PIs, scientists, expert members and experienced BARC and NARS personnel were attended in this workshop.

Progress, challenges and future plan of the sub-project activities of each component were presented by PIs of the concerned component in the technical sesssion as per format supplied by coordinating component. The chairperson,expert members, renowned scientists and other participants of the session madevaluable opinions / suggestions on each report as presented by concerned PI.After threadbare discussion the coordinated decision were made in the review workshop for making progress of the project activities and producing a remarkable sub-project completion report. After having discussin the chairperson in his concluding remarks thanked all the participants for attending the workshop.

Proceedings of annual workshops are shown below:

I. Proceedings of first Annual Review Workshop held on 02 October 2019

A day-long workshop was started on 02 October 2019 at Training Building (2nd Floor), BARC by TTMU, BARC with an inaugural session on "Transfer of Agricultural Technologies to Farmer's Level for Increasing Farm Productivity" (ID-005) chaired by Dr. Fauzia Yasmin, Director, TTMU, BARC and coordinator of this sub-project. Dr. Md. Kabir Ikramul Haque, Executive Chairman, BARC was present as the chief guest, while as special guest Dr. Mian Sayeed Hassan, Director, PIU-BARCwas present.

After the inaugural session, Technical Session-1 chaired by Dr. Md. Abdul Jalil Bhuyan, Research Management Specialist, Project Implementation Unit (PIU), NATP-2, BARC Campus, Dhaka. In Technical Session-1, PIs of five components (BRRI, BARI, BWMRI BINA, BSRI) including coordinating component (TTMU, BARC) gave their presentation. After presentation, chairperson of the Technical Session-1 opened the floor for discussion.

Technical Session-2 chaired by Dr. S. M. Ziqrul Haq Chowdhury, Member Director (Livestock), BARC, Dhaka. In Technical Session-2, PIs of five components (BJRI, CDB, SRDI, BLRI, BFRI) gave their presentation. After presentation, chairperson of the Technical Session-2 opened the floor for discussion. The following opinions/ discussions were made by the participants and experts.

Valuable Recommendations / Suggestions

Sl	Component	Recommendations
	Bangladesh Agricultural Research Council	Preparation of fact sheet of Technology and compilation.
01	Bangladesh Wheat and Maize Research Institute (BWMRI)	• Organic 10 t/ha may not feasible for wheat cultivation. • Quantify the variety of seed storage of wheat. • Farmer's previous practice, reactions and negative impact of herbicides should be clearly mentioned in report.
02	Bangladesh Agricultural Research Institute (BARI)	• Mixed/homestead fruit garden should be cited. • NSB recommended the name of fruit variety should be mentioned.

03	Bangladesh Institute of Nuclear Agriculture (BINA)	• Existing cropping pattern of each site (Faridpur & Mymensingh) should be mentioned. • If possible, trial plot size should be enlarged. • Information on pest & disease infestation should be included.
04	Bangladesh Sugarcrop Research Institute (BSRI)	• BARI released potato/onion variety as intercrop should be mentioned. • Success stories of farmer should be given before and after intervention in case of gur & chewing variety with intercrops. • If possible, trial sites might be taken (Chewing and Gur production technology) in hilly region.
05	Bangladesh Livestock Research Institute (BLRI)	• Description of silage preparation (step by step) and cultivation procedure of napier grass may be given. • If possible, trial site might be changed. • Measure the cost effectiveness of the technology (silage production tech.).
06	Bangladesh Fisheries Research Institute (BFRI)	• Trial pond should be increased. Singh fish can be included. • Previous production data is needed to compare with the transferred technology. • Farmers existing practice of poly culture of fish to be compared with previous practice and also matured technology of Pabda, Guisha & Rui.
07	Soil Resource Development Institute (SRDI)	• Compare Upazilla Nirdeshika with farmers' previous practice. • Two rice crops (Boro-Aman) pattern is not justified, at least three crops pattern may be taken, if possible. Reasons for negative BCR of Boro rice should be mentioned. Using recommended fertilizer, grain yield of Boro rice (var. BRRI dhan 58) increase only 5% than farmer practice. Mention the reasons. • Farmer dose of fertilizer (based on survey) to be given.
08	Cotton Development Board (CDB)	• Farmers previous practice is needed to compare with transferring technologies. • Pest & disease management should be mentioned. • Site characterization of three sites to be given. • Input cost of Thakurgaon is much higher (more than double) than hilly areas. Reason to be given/ justified. • Result should be discussed site wise with production technology.
09	Bangladesh Jute Research Institute (BJRI)	• Consider location specific cropping pattern for the sustainability of jute production. • Indian variety of jute seed randomly used, so emphasis should be given in seed production as well as production technology to be given in details. • Quality seed should be defined and storage process of seed should be mentioned.
10	Bangladesh Rice Research Institute (BRRI)	• The newly rice variety BRRI dhan 74, 81, 86, 84 showed some problems, so second year trial should be done carefully. • Same ecology of trial sites might be considered, if possible.

All organizations must follow:

- Technology should be given in providing format (Fact sheet) and send to co-ordinating unit of TTMU, BARC.
- Technology should transfer in package from. Detailed production technology with variety and management practice of each trial should be given in methodology chapter.
- Cropping pattern should be mentioned and replaced existing technology by selected transferred technology (if applicable).
- Farmers gathering should be done in trial plot, if possible.
- Baseline information/FGD information to be given in detail in Annexure and highlight in main report with emphasis on existing crops, cropping pattern, farmer practice etc.
- Farmer's reaction/opinion to be given of each technology.
- Success stories of farmers should be given before and after project intervention.

II. Proceedings of second Annual Review Workshop held on 14 December 2020

A day-long workshop was started on 14 December 2020 at Auditorium (2nd Floor), Main building, BARC by TTMU, BARC with an inaugural session on"Transfer of Agricultural Technologies to Farmer's Level for Increasing Farm Productivity" (ID-005) chaired by Dr. Fauzia Yasmin, Director, TTMU, BARC and coordinator of this sub-project. and coordinator of this sub-project. Dr. Shaikh Mohammad Bokhtiar, Executive Chairman, BARC was present as the chief guest, while as special guest Dr. Harun ur Rashid, Director, PIU-BARC was present. After the inaugural session, Technical Session-1 chaired by Dr. Md. Abdul Jalil Bhuyan, Research Management Specialist, Project Implementation Unit (PIU), NATP-2, BARC Campus, Dhaka. In Technical Session-1, PIs of five components (BRRI, BINA, BSRI, BWMRI, BARI) including coordinating component (TTMU, BARC) gave their presentation. After presentation, chairperson of the Technical Session-1 opened the floor for discussion. Technical Session-2 chaired by Dr. S. M. Ziqrul Haq Chowdhury, Member Director (Livestock), BARC, Dhaka. In Technical Session-2, PIs of five components (BJRI, CDB, SRDI, BLRI, BFRI) gave their presentation. After presentation, chairperson of the Technical Session-2 opened the floor for discussion. The following opinions / discussions were made by the participants and experts.

Valuable Recommendations / Suggestions

Sl	Component	Recommendations
	Bangladesh Agricultural Research Council	• Fact sheet of 63 Technologies should be compiled.
01	Bangladesh Wheat and Maize Research Institute (BWMRI)	• Location wise production varied 2-13 t/ha should be interpreted.
02	Bangladesh Agricultural Research Institute (BARI)	• Yield data of some fruits (banana, guava, Malta etc) should be presented.

03	Bangladesh Institute of Nuclear Agriculture (BINA)	• Two new technologies should be included with Rapid Technology transfer (RTT) model. • Instead of existing cropping pattern (T. Aman- Fallow-Boro), proposed/introduced cropping pattern (T. Aman-Mustard/Lentil-Late Boro/Aus) should be given/mentioned as technology. • Reason should be mentioned for same grain yield of BINA variety and hybrid variety.
04	Bangladesh Sugarcrop Research Institute (BSRI)	• Sugarcane yield shown but yield of intercrop (potato, onion) to be given.
05	Bangladesh Livestock Research Institute (BLRI)	• Silage should be checked in 3 months, 6 months, 9 months and 1 year interval. Each time different studies or testing should be carried out with nutrient analysis and microbiological analysis. • Toxic materials should be avoided in silage preparation. Use of excess molasses causes diarrhoea.
06	Bangladesh Fisheries Research Institute (BFRI)	• Fish feed ingredients and its company name should be given. • Fish disease or any other problems during culture should be given with their solutions, if any.
07	Soil Resource Development Institute (SRDI)	• Soil analysis should be checked.
08	Cotton Development Board (CDB)	• Result should be presented in package (4-technology package) form including use of cotton seed.
09	Bangladesh Jute Research Institute (BJRI)	• In cost and return table, the unit tha-1 under cost should be corrected.
10	Bangladesh Rice Research Institute (BRRI)	• BRRIdhan71 (aromatic rice) yield was 5.01 t/ha which mentioned as low. Needs to be explained.

All organizations must follow:

- If technologies transfer in package form, result should also present in package form.
- Farmer's reaction/opinion to be given for each technology.
- Success stories of farmers should be given.
- Characteristics of different varieties used should be given.
- Mention the reason of yield variation at location to location.
- Exact period with date of start and date of ending should be given for each selected crop.
- PIU-BARC should be acknowledged for all sorts of publication.
- Yield & benefit, gross return, gross margin, total cost/variable cost followed by BCR to be shown.
- Livelihood improvement of farmers should be highlighted with giving necessary information.
- All sorts of project related video clips and publication should be send to PIU-BARC through coordinator.
- Exact period with date of start and ending with characteristics should be given for each selected technology (crop).

III. Proceedings of third Annual Review Workshop held on 10 March 2021

A day-long workshop was started on 10 March 2021 at BARC Auditorium-01, by TTMU, BARC with an inaugural session on ÒMatured Technology Developed by NARS Institutes (2018-19 to 2019-20)Ó chaired by Dr. Fauzia Yasmin, Director, TTMU, BARC and coordinator of this sub-project. Total 100 particicipants from all institutes and organizations including PIs and Co-PIs, scientists, expert members and experienced BARC and NARS personnel were attended in this workshop. The chairperson gave emphasis on the title, research highlights,transfer of climate resilient, sustainable and nutrition-richfood technologies for enhancing national food security by implementing SDG supportable component-wise technologies on priority-basisand coordinator of this sub-project also told that a total of 278 technologies generated by NARS institutes have been presented in this workshop. Recommendation given by expert members nd participants are as follows:

টেকনিক্যাল সেশন-১: উক্ত সেশনে তুলা উন্নয়ন বোড (সিডিবি),বাংলাদেশ পরমাণু কৃষি গবেষণা ইনস্টিটিউট (বিনা), বাংলাদেশ ধান গবেষণা ইনস্টিটিউট (ব্রি), বাংলাদেশ গম ও ভুট্টা গবেষণা ইনস্টিটিউট (বিডব্লিউএমআরআই), বাংলাদেশ সুগারক্রপ গবেষণা ইনস্টিটিউট (বিএসআরআই),বাংলাদেশ মৎস্য গবেষণা ইনস্টিটিউট (বিএফআরআই-মৎস্য) এবং বাংলাদেশ প্রাণিসম্পদ গবেষণা ইনস্টিটিউট (বিএলআরআই) কর্তৃক উদ্ভাবিত যথাক্রমে ৬টি, ১৯টি, ৩১টি, ৬টি, ২৪টি, ৬টি ও ৬টিসহ সর্বমোট ৯৮টি প্রযুক্তি উপস্থাপিত হয়। উক্ত সেশনে উন্মুক্ত আলোচনায় অংশগ্রহণকারীরা নিম্নলিখিত বিভিন্ন সুপারিশ প্রদান করেন।

সিডিবিঃ

সিডিবি'র আলোচনায় বিশেষ করে ঈঠ-ঘ১ জাতটিকে সম্প্রসারণের লক্ষ্যে প্রদত্ত তথ্যগুলো আরও সুনির্দিষ্ট করতে হবে। আন্ত:ফসল চাষাবাদের বিস্তারিত তথ্যসহ ধান-তুলা-পেঁপে শস্যবিন্যাসে আলাদা আলাদা ফসলের তুলনা করে বিসিআর/গ্রস মার্জিন সংযোজন করতে হবে। পাহাড়ী অঞ্চলে প্রযুক্তি সম্প্রসারণের ক্ষেত্রে পানির প্রাপ্যতা এবং মাটির আর্দ্রতার অবস্থা বিবেচনা করতে হবে। এছাড়া, তুলার জাত সম্প্রসারণের ক্ষেত্রে সংশ্লিষ্ট প্রতিষ্ঠানের পদক্ষেপ গ্রহণ করতে হবে।

বিনাঃ

গামা রেডিয়েশান প্রয়োগ করে পোকাকে বন্ধা করে পোকা দমন গুদামজাত শস্যের ক্ষেত্রে সম্ভব। কৃষকের উন্মুক্ত মাঠে নয়। সুতরাং, "কিউকারবিট সবজির ফ্রুট ফ্লাই পোকা দমন" প্রযুক্তিটি উন্মুক্ত মাঠে কিভাবে সফল হবে তার সুনির্দিষ্ট দিক নির্দেশনা থাকতে হবে। পাহাড়ী অঞ্চলে চার ফসলের শস্য বিন্যাসের ক্ষেত্রে মাটির পুষ্টিগুন যাতে ক্ষতিগ্রস্ত না হয় সেটি বিবেচনায় আনা। চার ফসল ভিত্তিক শস্য বিন্যাসে দু'টি ফসলের মধ্যে ব্যবধান ৪-৯ দিন তাই কৃষকের মাঠে এ প্রযুক্তি সম্প্রসারণের যৌক্তিকতা বিবেচনা করতে হবে।

ব্রিঃ

উদ্ভাবিত জাতের বৈশিষ্ট্যের ক্ষেত্রে এবহবঃরপ ঐড়সড়ুমড়ংরঃু শতকরা কত ভাগ তা জাতের বৈশিষ্ট্যে উল্লেখ থাকতে হবে। বেসরকারী সংস্থা কর্তৃক ব্রি উদ্ভাবিত ধানের হাইব্রিড জাত সম্প্রসারণ করতে বীজ উৎপাদনে হেক্টর প্রতি এর ফলন ও অন্যান্য তথ্য সংযোজন করতে হবে। আউশ, আমন ও বোরো জাতভিত্তিক প্রযুক্তির ক্ষেত্রে উৎপাদন পদ্ধতি আলাদা না করে প্রযুক্তির সাথে সমন্বয় করে পূনরায় প্রতিবেদন প্রেরণ করতে হবে। জরপব উড়পঃড়ৎ অ্যাপসটিঘধঃরড়হধষ অ্যাপসের (ঘঅঞচ-২ কর্তৃক তৈরিকৃত) সাথে লিংককরতে পারে।

বিডব্লিউএমআরআইঃ

বেবি কর্ণ-এর ক্ষেত্রে দুধ অবস্থায় পুষ্টিগুণ বেশি থাকে তাই ঐ সময় কাটা হলে পুষ্টি উপাদান বেশি পাওয়া যাবে তা প্রযুক্তির বৈশিষ্ট্যে উল্লেখ থাকতে হবে।

বিএসআরআইঃ

যে সকল প্রযুক্তি ইতোপূর্বে প্রকাশিত হয়েছে তা বাদ দিয়ে এবং প্রযুক্তি ব্যবহারের তথ্য (ছকের ৪ নং পয়েন্ট) সংযোজনপূর্বক পূনরায় প্রযুক্তি প্রতিবেদন প্রেরণ করতে হবে। প্রযুক্তি পল্লী প্রযুক্তি নয়, বরং তথ্য হিসেবে বিবেচিত হবে। আন্তঃফসল চাষাবাদের প্রযুক্তির বিস্তারিত (ফলন, আয় ব্যয়) সকল তথ্য ছক আকারে প্রতিবেদনে উল্লেখ করতে হবে।

বিএফআরআই (মৎস্য)ঃ

গুতুম, বালাচাটা, খলিশা ইত্যাদি দেশীয় (ওহফরমবহড়ঁং) প্রজাতি মাছ রক্ষায় কৃষক বিদ্যমান চাষ পদ্ধতিতে কিভাবে চাষ করবে এবং পুষ্টিগুণসহ কেমন লাভজনক হবে তা উল্লেখ করতে হবে। এক কেজি ব্রুড মাছ থেকে কতটুকু ডিম এবং কতগুলো রেণ পোনা তৈরি হবে তা প্রযুক্তিতে উল্লেখ করতে হবে। বিলুপ্তপ্রায় মাছের ক্ষেত্রে রোগবালাই ব্যবস্থাপনাসহ সকল তথ্য প্যাকেজ আকারে একত্রে উল্লেখ থাকতে হবে। প্রযুক্তির বৈশিষ্ট্যে প্রতিটি প্রজাতির মাছের ডিম ধারণ ক্ষমতা উল্লেখ করতে হবে। মাছের বৃদ্ধির জন্য হরমোন ব্যবহার করলে তার জবংরফঁধষ বভভবপঃ আছে কিনা এবং থাকলে কতদিন পর্যন্ত থাকে উল্লেখ করতে হবে। প্রযুক্তি সম্প্রসারণের ক্ষেত্রে মৎস্য অধিদপ্তরের (উড়ঋ) সাথে লিংকেজ বাড়াতে হবে।

বিএলআরআইঃ

হৃষ্টপুষ্টকরণ প্রযুক্তি ও নিরাপদ মাংশ উৎপাদন প্রযুক্তি সকল পশু যেমন গরু, মহিষ, ছাগল ইত্যাদির ক্ষেত্রে আলাদা করে প্রয়োগ/ব্যবহৃত হতে পারে। কৃমিনাশক ঔষধ মহিষ সংগ্রহের সাথে সাথে নয়, বরং ১-২ সপ্তাহ পরে দিতে হবে । "ফডারের বায়োমেট্রিকেল রাঙ্কিং টুল" প্রযুক্তি নয়, তথ্য হিসেবে বায়োমেট্রিক ফর্মূলার পাশাপাশি চযুংরপধষষু উপস্থাপন করতে হবে। টিএমআর-এর ফর্মূলা কৃষক কিভাবে ব্যবহার করবে তা প্রযুক্তির তথ্যে স্পষ্টভাবে উল্লেখ থাকতে হবে। বিএলআরআই এর প্রযুক্তি উদ্ভাবনের ক্ষেত্রে গবেষণা মাঠের পাশাপাশি সরেজমিন ট্রায়াল বাস্তবায়নের ক্ষেত্রে উখঝ প্রতিনিধি অন্তর্ভূক্ত করার উদ্দ্যোগ গ্রহণ করতে হবে।

টেকনিক্যাল সেশন-২

টেকনিক্যাল সেশন-২ এ বাংলাদেশ কৃষি গবেষণা ইনস্টিটিউট (বারি), বাংলাদেশ পাট গবেষণা ইনস্টিটিউট (বিজেআরআই), মৃত্তিকা সম্পদ উন্নয়ন ইনস্টিটিউট (এসআরডিআই), রেশম গবেষণা ও প্রশিক্ষণ ইনস্টিটিউট (বিএসআরটিআই), বাংলাদেশ বন গবেষণা ইনস্টিটিউট (বিএফআরআই-বন) এর উদ্ভাবিত প্রযুক্তি যথাক্রমে ১৪২টি, ২০টি, ৬টি, ২টি ও ১০টিসহ সর্বমোট ১৮০টি প্রযুক্তি উপস্থাপিত হয়।

বারিঃ

প্রযুক্তি উদ্ভাবনের গাইডলাইন অনুযায়ী আন্তর্জাতিক বাজার ও বাণিজ্যিকিকরণকে গুরুত্ব দিয়ে প্রযুক্তি উদ্ভাবনের লক্ষ্যমাত্রা নির্ধারণ করতে হবে। সরেজমিন গবেষণা বিভাগকে অন্তর্ভূক্তপূর্বক উপস্থাপিত প্রযুক্তিসমূহের মধ্যে পরিচালক, গবেষণার মাধ্যমে বাছাই করে প্রমিজিং প্রযুক্তিসমূহের সংশোধিত প্রতিবেদনের কপি টিটিএমইউ, বিএআরসিতে প্রেরণ করতে হবে। বারি টমেটো-১১, বারি মাল্টা-২, বারি আম-১২, বারি ফুলকপি-৩, বারি আলু-৮২ ইত্যাদি প্রযুক্তিসমূহকে মাঠপর্যায়ে দ্রুত সম্প্রসারণের পদক্ষেপ গ্রহণ করতে হবে।

বিজেআরআইঃ

জাতপ্রযুক্তির সাথে ব্যবস্থাপনা প্রযুক্তিসহ সমন্বিত তথ্য প্রেরণ করতে হবে।

এসআরডিআইঃ

সমগ্র বাংলাদেশের মাটির স্বাস্থ্য রক্ষার প্রযুক্তি উদ্ভাবনে এসআরডিআই-কে জোর দিতে হবে। তাৎক্ষনিকভাবে মাটির/জমির অনুজীব ও পুষ্টি উপাদানের অবস্থা নির্নয়পূর্বক সার সুপারিশের জন্য ঝড়রষ করঃ উদ্ভাবন করার কার্যক্রম গ্রহণ করতে হবে। ডিবলিং, সিডলিং প্রযুক্তির ক্ষেত্রে বারির সাথে যৌথভাবে সমন্বয় করে প্রযুক্তি উদ্ভাবন করা যেতে পারে।

বিএসআরটিআইঃ উপস্থাপিত ২টি প্রযুক্তি ব্যবহার উপযোগী।

বিএফআরআই (বন):

বাঁশের তৈরি আসবাবপত্রের সাথে কাঠের তৈরি আসবাবপত্রের তুলনামূলক তথ্যসহ স্থায়িত্বকাল উল্লেখ করতে হবে। উদ্ভাবিত প্রযুক্তিসমূহ সম্প্রসারণের লক্ষ্যে উদ্দ্যোক্তাগণের সাথে সমন্বয়, প্রশিক্ষণ এবং কর্মশালার উদ্দ্যোগ গ্রহণ করতে হবে।

বিটিআরআই:

বাংলাদেশ চা গবেষণা ইনস্টিটিউট (বিটিআরআই), শ্রীমঙ্গল, মৌলভীবাজার হতে ৪টি প্রযুক্তি প্রতিবেদন করা হয়েছে। যদিও কর্মশালায় উপস্থাপন করা হয়নি।

সঞ্চালক ড. মোঃ আব্দুর রাজ্জাক, সেক্টর কোঅর্ডিনেটর (সম্প্রসারণ) পিএমইউ, এনএটিপি-২ ও প্রাক্তন নির্বাহী চেয়ারম্যান, বিএআরসি, ঢাকা ও বিষয় বিশেষজ্ঞগণ ড. মোঃ আজিজ জিলানী চৌধুরী, সদস্য পরিচালক (শস্য বিভাগ), বিএআরসি, ড. মো. মনিরুল ইসলাম, সদস্য পরিচালক, মৎস্য বিভাগ, বিএআরসি, ড. শাহ্ মো. জিকরুল হক চৌধুরী, প্রাক্তন সদস্য পরিচালক, প্রাণিসম্পদ বিভাগ, বিএআরসি, ও ড. মোঃ আব্দুল কাউয়ুম, প্রাক্তন মূখ্য বৈজ্ঞানিক কর্মকর্তা, সরেজমিন গবেষণা বিভাগ, বারিকর্মশালা বাস্তবায়নের পূর্বেই কমিটি গঠন করে বাছাইকৃত প্রযুক্তি উপস্থাপনের মতামত প্রদান করেন।

বিস্তারিত আলোচনা শেষে সর্বসম্মতিক্রমে নিম্নলিখিত সিদ্ধান্তসমূহ গৃহীত হয়:

ক্র.নং	সিদ্ধান্ত	বাস্তবায়নকারী সংস্থা
১.	প্রযুক্তির সংখ্যার উপর ভিত্তি করে কর্মশালার মেয়াদকাল একদিনের পরিবর্তে বৃদ্ধি করা যেতে পারে।	টিটিএমইউ, বিএআরসি
২.	শুধুমাত্র জুলাই ২০১৮ হতে জুন ২০২০ মেয়াদে উদ্ভাবিত প্রযুক্তিসমূহ মুদ্রণের ক্ষেত্রে বিবেচিত হবে।	সকল নার্স প্রতিষ্ঠান
৩.	প্রযুক্তি সম্বলিত বই প্রকাশ করতে বিষয় বিশেষজ্ঞ ও অন্যান্য পরামর্শকগণকে নিয়ে একটি বই মূদ্রণ কমিটি গঠন করতে হবে।	টিটিএমইউ, বিএআরসি
৪.	উদ্ভাবিত জাত, উৎপাদন পদ্ধতি, শস্য বিন্যাস, উৎপাদনশীলতা এবং লাভজনকতা সমন্বয়ে প্যাকেজ আকারে প্রযুক্তি প্রতিবেদন তৈরি করে প্রেরণ করতে হবে।	সকল নার্স প্রতিষ্ঠান
৫.	প্রতিটি প্রযুক্তি উদ্ভাবনের সময়কাল, এলাকা, সুনির্দিষ্ট তুলনামূলক বৈশিষ্ট/তথ্য উল্লেখ করতে হবে। জাতভিত্তিক প্রযুক্তির ক্ষেত্রে জাতের পুষ্টিগুণের তথ্য অন্তর্ভূক্ত করতে হবে।	সকল নার্স প্রতিষ্ঠান
৬.	সুপারিশ অনুসারে সংশোধিত প্রতিবেদন টিটিএমইউ, বিএআরসিতে প্রেরণ করতে হবে।	সকল নার্স প্রতিষ্ঠান

সর্বশেষে সভাপতি মহোদয় কর্মশালার সুপারিশ অনুযায়ী প্রযুক্তি প্রতিবেদন পূনঃসংশোধনপূর্বক অতি দ্রুততম সময়ের মধ্যে টিটিএমইউ, বিএআরসিতে প্রেরণ করতে সংশ্লিষ্ট প্রতিষ্ঠানের প্রতিনিধিগণকে অনুরোধ

জানান। আর কোন বক্তব্য না থাকায় সভাপতি মহোদয় কর্মশালা বাস্তবায়নে ২০টি প্রতিষ্ঠান থেকে আগত বিজ্ঞানী/কর্মকর্তাগণসহ সকলকে ধন্যবাদ জানিয়ে কর্মশালার সমাপ্তি ঘোষণা করেন।

Fig. 18 Participants in the Annual Review Workshop

11.1.3 Conducting coordination meeting with all components

From the commencement of sub-project activities three coordination meetings with component organizations /institutes were held on by BARC on 05 December, 2019, 19 October, 2020 and 06 May, 2021. Development, challenges, opportunities and future plan of the sub-project activities of each component were discussed thoroughly in the meeting and core decision were made for facing the constraints and accelerating the sub-project activities in respect of smooth running in proper channel. Proceedings of eah coordination meeting are shown below.

a. Proceedings of first coordination meeting that held on 05 December 2019

বাংলাদেশ কৃষি গবেষণা কাউন্সি
নতুন বিমানবন্দর সড়ক, ফার্মগেট, ঢাকা-১২১

বিষয়: প্রযুক্তি হস্তান্তর ও পরিবীক্ষণ ইউনিট কর্তৃক বাস্তবায়নাধীন "Transfer of Agri Farmers level for Increasing Farm Productivity, ID-005" শীর্ষক PI কার্যবিবরনীঃ

স্মারক নং: ১২.২০.০০০০.০০৯.১৪.০০৪.১৭/২৫৬৪; তারিখ: ২৬/১১/২০১৯ খ্রি: মোতাবে
ঘটিকায় ড. ফওজিয়া ইয়াসমিন, পরিচালক (টিটিএমইউ) ও কো-অর্ডিনেটর "Transfe
005) উপ-প্রকল্প" মহোদয়ের সভাপতিত্বে একটি সমন্বয় সভা অনুষ্ঠিত হয়। সভাপতি
সভার কাজ আরম্ভ করেন। শুরুতেই তিনি উপ-প্রকল্পের উদ্দেশ্য ও কো-অর্ডিনেশন
পরবর্তীতে সভাপতি মহোদয়ের অনুমতিক্রমে উপস্থিত পিআইগণ স্ব স্ব কম্পোনেন্টের অগ্র
সদস্যই স্বতঃস্ফূর্তভাবে আলোচনায় অংশ গ্রহণ করেন। উপস্থাপিত বিষয়সমূহ এবং প্রকল্প
বিশ্লেষণধর্মী আলোচনা অনুষ্ঠিত হয়। সভায় বিজ্ঞানীগণ এবং বিশেষজ্ঞগণ তাদের নিজ
প্রকল্পের মাঠ পর্যায়ের বাস্তব কার্যক্রম ও আর্থিক অগ্রগতি নিয়ে বিস্তারিত আলোচনা হ
নিম্নলিখিত সিদ্ধান্তসমূহ গৃহীত হয়ঃ

সিদ্ধান্ত ১ঃ প্রকল্পের মাঠ পর্যায়ে বাস্তব ও আর্থিক অগ্রগতি শত ভাগ অর্জনে প্রয়োজনীয় পদ
আর্থিক ব্যবস্থাপনা বাস্তবায়নের জন্য যথাযথ নিয়ম অনুসরণ করতে হবে।

সিদ্ধান্ত ২ঃ হস্তান্তরিত প্রযুক্তিসমূহের Fact Sheet তৈরির জন্য প্রেরণকৃত ছক মোতাবেক
প্রযুক্তি হস্তান্তরের পূর্বে Base line study এবং প্রযুক্তি হস্তান্তরের পরের সমুদয় তথ্য (Ec
লক্ষ্যে কো-অর্ডিনেটর বরাবর প্রেরণ করতে হবে।

সিদ্ধান্ত ৩ঃ প্রকল্প সংশ্লিষ্ট মাঠপর্যায়ের প্রযুক্তি হস্তান্তরের স্ব স্ব প্রতিষ্ঠান কর্তৃক মাসে কমঃপা
এবং মনিটরিং রির্পোটের ভিত্তিতে প্রয়োজনীয় ব্যবস্থা গ্রহণ করতে হবে।

সিদ্ধান্ত ৪ঃ প্রকল্প কার্যক্রম/সাফল্যগাঁথা প্রিন্ট ও ইলেকট্রনিক মিডিয়ায় প্রচারের ব্যবস্থা নিতে

সিদ্ধান্ত ৫ঃ প্রকল্প সংশ্লিষ্ট যেকোন প্রকাশনায় PIU-BARC, NATP-2 কে Acknow
অর্ডিনেশন ইউনিটের সংশ্লিষ্ট বিজ্ঞানীদের নাম অন্তর্ভূক্ত করতে হবে।

b. Proceedings of 2nd coordination meeting that held on 19 October 2020

বাংলাদেশ কৃষি গবেষণা কাউন্সি

নতুন বিমানবন্দর সড়ক, ফার্মগেট, ঢাকা-১২

বিষয়: প্রযুক্তি হস্তান্তর ও পরিবীক্ষণ ইউনিট কর্তৃক বাস্তবায়নাধীন "Transfer of Ag Farmers level for Increasing Farm Productivity, ID-005" সমন্বয় সভার কার্যবিবরনীঃ

স্মারক নং: ১২.২০.০০০০.০০৯.১৪.০০৪.১৭/৩৯/১৭৩০; তারিখ: ১১/১০/২০২০ খ্রিঃ মো ঘটিকায় ড. ফওজিয়া ইয়াসমিন, পরিচালক (টিটিএমইউ) ও কো-অর্ডিনেটর "Transfer..... উপ-প্রকল্প" মহোদয়ের সভাপতিত্বে উপ-প্রকল্পের ২য় সমন্বয় সভা অনুষ্ঠিত হয়। সভাপতি ম কাজ আরম্ভ করেন। শুরুতেই তিনি প্রকল্প প্রস্তাব (পিপি) এর সময়সীমার উপর গুরুত্ব ও Report (PCR) তৈরির প্রস্তুতি এবং বাজেট রিভিশন এর বিষয়ে বিশেষভাবে আলে স্বতঃস্ফূর্তভাবে প্রকল্পের অগ্রগতি, PCR, বাজেট রিভিশন ও উপ-প্রকল্পের মেয়াদ বৃদ্ধি ইত করেন। আলোচনান্তে, সর্বসম্মতিক্রমে নিম্নলিখিত সিদ্ধান্তসমূহ গৃহীত হয়ঃ

সিদ্ধান্ত ১ঃ প্রকল্পের প্রোপোজাল (পিপি) মোতাবেক জুন ২০২০ এর মধ্যে কম্পোনেন্টসমূ ডিসেম্বর ২০২০ এর মধ্যে Project Completion Report (PCR) তৈরির প্রস্তুতির বিষয়ে নি

সিদ্ধান্ত ২ঃ প্রকল্পের ২য় বছরের (জুলাই ২০১৯-জুন ২০২০ পর্যন্ত) অগ্রগতি সংক্রান্ত ক আয়োজনের সিদ্ধান্ত গৃহীত হয়।

সিদ্ধান্ত ৩ঃ এই উপ-প্রকল্পের প্রত্যেকটি কম্পোনেন্টের কার্যক্রম/সাফল্যগাঁথা সম্ভাব্য ক্ষেত্রে প্রি প্রচারের ব্যবস্থা গ্রহনের বিষয়ে সভায় সিদ্ধান্ত গৃহীত হয় ।

সিদ্ধান্ত ৪ঃ কোর্ডিনেশন ইউনিট হতে নির্ধারিত হস্তান্তরিত প্রযুক্তিসমূহের একটি বই প্রকাশনা প্রেরণকৃত ছক মোতাবেক লিখা (বাংলা ও ইংরেজী) দ্রুততম সময়ের মধ্যে কোর্ডিনেশন ইউনিট

সিদ্ধান্ত ৫ঃ উপ-প্রকল্পের ২য় উদ্দেশ্য অর্জনের জন্য নার্সভূক্ত প্রতিষ্ঠান সমূহের উদ্ভাবিত প্রযুক্তি তথ্য উপাত্ত ইতিমধ্যে প্রেরিত হয়েছে। কিন্তু মৌখিকভাবে একাধিকবার, পরবর্তীতে ১ম সমন্ব বিএআরসি মহোদয়ের তাগিদপত্র সত্তেও বাংলাদেশ পাট গবেষণা ইনস্টিটিউট কর্তৃক প্রযুক্তি

c. Proceedings of third coordination meeting that held on 06 May 2021

বিষয়: প্রযুক্তি হস্তান্তর ও পরিবীক্ষণ ইউনিট কর্তৃক বাস্তবায়নাধীন ÒTransfer of Agricultural Technologies to Farmers level for Increasing Farm Productivity, ID-005Ó শীর্ষক চইজএ উপ-প্রকল্পের ৩য় সমন্বয় সভার কার্যবিবরনীঃ

গত ৬ মে ২০২১ তারিখে সকাল ১১.০০ ঘটিকায় ÒTransfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity, ID-005Ó শীর্ষক চইজএ উপ-প্রকল্পের ৩য় সমন্বয় সভা ড. ফওজিয়া ইয়াসমিন, পরিচালক (টিটিএমইউ), বিএআরসি ও কোর্ডিনেটর, Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity, ID-005 উপ-প্রকল্প মহোদয়ের সভাপতিত্বে কোভিড-১৯ এর লকডাউনের কারনে তড়ড়স চষধঃভড়ৎস-এর মাধ্যমে অনুষ্ঠিত হয়। সভাপতি মহোদয় সকলকে স্বাগত জানিয়ে সভার কার্যক্রম আরম্ভ করেন। শুরুতেই তিনি উপ-প্রকল্পের উদ্দেশ্য, কো-অর্ডিনেশন ইউনিট (বিএআরসি পার্ট) এর অগ্রগতি, বাজেট এবং প্রকল্প প্রস্তাব মোতাবেক প্রকল্পের কার্যক্রম শেষে Project Completion Report (PCR) তৈরির প্রস্তুতির বিষয় তুলে ধরেন। কোভিড-১৯ এর লকডাউনের মধ্যে প্রকল্পের কার্যক্রমের অগ্রগতি, মনিটরিং ও সার্বিক বিষয়ে পর্যালোচনা করা হয়। উক্ত সভায় সকল কম্পোনেন্টের পিআই, কো-পিআই, এ্যাসোসিয়েট কোর্ডিনেটর, প্রকল্প সংশ্লিষ্ট বিজ্ঞানী ও কর্মকর্তাগণ অনলাইনে যুক্ত হন। কো-অর্ডিনেটর মহোদয় সভার এর আলোচ্যসূচি অনুযায়ি চঈজ জমা দান, বাজেট ব্যয়, গবেষণার ফলাফল ইত্যাদির অগ্রগতি উপস্থাপনের আহ্বান জানান। সকল পিআইগণ নিজ নিজ অবস্থানে থেকে উক্ত বিষয়ের অগ্রগতি উপস্থাপন করেন। পরবর্তীতে উম্মুক্ত আলোচনায় সকলে অংশগ্রহণ করেন এবং নিজ নিজ অভিমত ব্যক্ত করেন। আলোচনান্তে, সর্বসম্মতিক্রমে নিম্মোক্ত সিদ্ধান্তসমূহ গৃহীত হয়:

১। সেসব কম্পোনেন্ট অধ্যাবধি চঈজ জমা দান করেনি, তা দ্রুততম সময়ের মধ্যে কো-অর্ডিনেটর বরাবর জমা প্রদান করতে হবে।

২। বিনা, বিএসআরআই কম্পোনেন্টের কার্যক্রম এখনও মাঠ পর্যায়ে চলমান থাকায় উক্ত কম্পোনেন্টের পি-আইগণ প্রকল্পের সময় বৃদ্ধির অনুরোধ জানান। এছাড়া, ৪টি কম্পোনেন্ট (ইঔজও, ইজজও, ঈউই, ইডগজও) এর পরবর্তী আরো একটি শস্য মৌসুমে গবেষণা পরিচালনার টাকা অবশিষ্ট থাকায় প্রকল্পের সময় বৃদ্ধির অনুরোধ জানান।

৩। অবশিষ্ট অর্থ ছাড় করণের লক্ষ্যে এনএটিপি-২ হতে প্রদত্ত ছক (বাজেট সংক্রান্ত) প্রেরণ করার সিদ্ধান্ত গৃহীত হয়।

৪। প্রকল্পের কার্যক্রম বিলম্বে শুরু হওয়া, কোভিড-১৯ মহামারির কারণে যথাযথভাবে কার্যক্রম বাস্তবায়ন না হওয়ায় প্রায় সকল কম্পোনেন্টের অব্যয়িত টাকা রয়েছে। এমতাবস্থায় প্রকল্পের মেয়াদ বৃদ্ধি হলে কার্যক্রম সুষ্ঠুভাবে সুসম্পন্ন করা সম্ভব হবে মর্মে প্রকল্পের সময়সীমা বৃদ্ধির অনুরোধ জানানো হয়।

পরিশেষে সভায় আর অন্য কোন আলোচ্য বিষয় না থাকায় সভাপতি মহোদয় সংশ্লিষ্ট সকল পি-আই, কো-পিআই গণকে কৃতজ্ঞতা ও ধন্যবাদ জানিয়ে সভার সমাপ্তি ঘোষণা করেন।

Fig. 19 Participants in the Coordination meeting

IV. Proceedings of Project Completion Workshop

A day-long Project Completion Workshop was started on 23 February 2022 at Auditorium-1(2nd Floor), Main building, BARC by TTMU, BARC with an inaugural session on "Transfer of Agricultural Technologies to Farmer's Level for Increasing Farm Productivity" (ID-005) chaired by Dr. Fauzia Yasmin, Director, TTMU, BARC and coordinator of this sub-project. Dr. Md. Aziz Zilani Chowdhury, Executive Chairman (Routine Charge), BARC was present as the chief guest, while as special guest Dr. Md. Saifullah, M.D (A & F), BARC was present. After the inaugural session, Technical Session-1 chaired by Dr. Md. Aziz Zilani Chowdhury, Executive Chairman (Routine Charge), BARC. In Technical Session-1, PIs of five components (BRRI, BINA, BSRI, BWMRI, BARI) including coordinating component (TTMU, BARC) gave their presentation. After presentation, chairperson of the Technical Session-1 opened the floor for discussion. Technical Session-2 chaired by Dr. Nazmun Nahar Karim, Member Director (Livestock), BARC, Dhaka. In Technical Session-2, PIs of five components (BJRI, CDB, SRDI, BLRI, BFRI) gave their presentation. After presentation, chairperson of the Technical Session-2 opened the floor for discussion and in his concluding remarks thanked all the participants for attending the workshop. The following opinions / discussions were made by the participants and experts.

Valuable Recommendations / Suggestions

Sl	Component	Recommendations
	Bangladesh Agricultural Research Council	Impact of transferred technology to farmers' level by the NARS institutes through this project in COVID-19 pandemic situations could be analyzed by conducting further research;
01	Bangladesh Wheat and Maize Research Institute (BWMRI)	• Existing varieties (BARI Gom29) should present in the technology generated slide. • Quantify the variety wise seed storage of wheat.
02	Bangladesh Agricultural Research Institute (BARI)	• Database of farmers with mobile number should be developed for future activities. • Present status of orchards and yield data of some fruits (banana, guava, Malta etc) should be presented with management package. • Number of saplings as per variety distributed should be provided. • After distribution of fruit saplings to farmers' reaction of farmers of that location should be mentioned in PCR; • No of distributed fruit saplings to farmers' could also be incorporated in the report;
03	Bangladesh Institute of Nuclear Agriculture (BINA)	• Cost Benefit Ratio calculation should be revisited; BCR is too high, mention the reason. • The Crop yield and time for suggested cropping pattern should be mentioned in PCR;
04	Bangladesh Sugarcrop Research Institute (BSRI)	• Sugarcane yield shown but yield of intercrop (potato, onion) to be given with variety name. • Variety name of BSRI should be corrected; • Yield of intercropped crops should be mentioned in PCR
05	Bangladesh Livestock Research Institute (BLRI)	• Female farmer should be included. • BCE is new term, which should be avoided. • Individual minerals could be analyzed separately rather than total minerals; • Date should be mentioned in PCR for cultivation of Napier 4 fodder variety, cutting, processing, silage preparation etc.; • In addition to harmful bacterial count (Clostridium, Bacillus etc.), beneficial bacterial count data could be added in PCR.
06	Bangladesh Fisheries Research Institute (BFRI)	1. Farmer number should be increased. 2. BCR Could be added in PCR.
07	Soil Resource Development Institute (SRDI)	• Presentation was not done.

08	Cotton Development Board (CDB)	• Information should be provided on seed production and storage facility.
09	Bangladesh Jute Research Institute (BJRI)	• BCR vary place to place. Somewhere high and somewhere low. Mention the reason. • Table number should be reduced in presentation. • Quality seed should be defined and storage process of seed should be mentioned. • Baseline survey result, research highlights should be added in report; • Interpretation of the research data is necessary to prepare final report; • Quality seeds of jute could be based on some parameters and it maintained properly for future research.
10	Bangladesh Rice Research Institute (BRRI)	• Number of motivated farmer is too high. Explain the reason. • BCR is higher in T. Aman than Boro, why? • In PCR year wise detail research data could be incorporated and then compiled; • Unit for yield of rice should be common for all components; • Crop yield comparison between research field and farmers' field should be mentioned in PCR. If the yield gap is exist, the explanation could be incorporated.

All organizations must follow:

- Technology should be given in providing format (Fact sheet) and send to co-ordinating unit of TTMU, BARC.
- Farmers reaction/opinion to be given of each technology.
- Success stories of farmers should be given before and after project intervention.
- Cost (Tk./Bigha) is higher in traditional varieties than modern varieties, mention the reason.
- General objectives should be same for all components.
- Variety name should write correctly.
- Total cost, gross return, gross margin, BCR should be provided.
- Information on publication (leaflet, booklet) should be provided.
- Results should be elaborate with success story. Success story of farmers who received the technology could be added in report;
- Recent innovation of technology aligned with Governmental policy (Krishi Niti-2018, SDG-2030, Delta Plan-21, 8th 5 Year plan etc.) developed by NARS institutes could be disseminated to farmers in future research;
- Future plan of these research activities could be incorporated in the PCR.
- Project Completion Report (PCR) should be in detailed from and component wise individual PCR should be submitted. Project implementation date should be mentioned clearly in PCR.

- Information/Knowledge generated from this sub-project should be documented through leaflet, booklet or journal paper within the project period. Combined publication within the component for different crop should be appreciated;
- Detail management package of the technology should be added in the report;
- More emphasis would be given on technology developed by NARS institutes related to safe food, agro processing, value chain, marketing and for dissemination.
- Unit should be same (ha/bigha).

Compilation

Compiling and editing yearly reports of the sub-project

Half yearly and yearly reports submitted by component organizations were reviewed and necesary correction and improvements were made before submission. Three annual progress reports on the basis of achievement by component organizations were prepared and submitted to NATP, PIU-BARC.

Compiling, editing and printing of the Sub-project Completion Reports (PCR)

Sub-project Completion Reports submitted by component organizations were reviewed and necesary correction and modifications were made and sent back to respective institutes for revision before submission. component organizations revised and submitte their reports to the coordinator. On the basis of that PCR have been prepared and submitted to NATP, PIU-BARC.

Monitoring and evaluation of technical activities

During 2018 to 2019 a grand sum of 41 field monitoring and evaluation of techniacal activities to different component organizations have been expedited viz. monitored 2 times in BWMRI on 9-11 February and 21-23 December, 2019; 5 times at BARI on 29 September, 2018, 29-31 May and 10-12 December, 2019, 02 February, 01 March and 07 December, 2021; 6 times at BINA on 17 January, 2019, 15 March and 17 October,2020, 01 March, 02 February and 07 December, 2021; 5 times at BSRI on 13 January and 20 October, 2019, 05 March, 2020, 08-9 February and 08 November, 2021; 5 times at BLRI on 31 January and 22 October, 2019, 12 March, 2020, 10-11 February and 11 November, 2021; 3 times at BFRI on 21 April and 19 October, 2019, 03 February, 2021; 3 times at SRDI on 17 January and 15 October, 2019, 18 March, 2020; 4 times at CDB on 17-19 November, 2018, 9-11 February and 20-22 December, 2019, 26-28 December, 2021; 5 times at BJRI on 27 December, 2018, 29 June and 24 December, 2019, 06 October, 2020, 28 November and 01 December, 2021 and 3 times at BRRI on 28 January and 13 October, 2019 and 13 February, 2020.

According to field monitoring format for CRG and PBRG sub-project of NATP-2 proper utilization of methodology, appropriation of original plan, internal field monitoring, field / laboratory experimental status, technology generation, financial & procurement etc. were monitored and possible suggestions were provided to mitigate the restrictions. Some problems were conveyed to the sub-project management. Field monitoring reports were submitted to the coordinator that is shown in Annexure.

Fig. 20 Monitoring team with PI of BWMRI component in front of the demonstration Plot of BARI Gom 33 at Vushirbandar village of Chirirbandar upazila, Dinajpur

Fig. 21 Monitoring team along with concerned PI and farmer in a newly established fruit orchard at Babugonj, Barishal under BARI component (Left). Selected farmers receiving input (fertilizer) at Babugonj, Barishal under BARI component (Right).

Fig. 22 Monitoring team with PI and concerned farmer in front of a demonstration plot at Mymensingh under BINA component

Fig. 23 Monitoring team visiting the demonstration plot at Sirajgonj under BSRI component

Fig.24 Monitoring team with PI and concerned farmer in front of a demonstration plot of BLRINapier-4 at Shajadpur, Sirajgonj under BLRI component (Left). Concerned PI demonstrated preserved silage in a Dol (Right).

Fig.25 Monitoring team with Co-PI, concerned farmer and TV presentator Md. Rezaul Karim in front of a demonstration pond at Nakla upazila, Sherpur under BFRI component (Left). Coordinator with Co-PI showing harvested shing fish of a demonstration pond at Nakla upazila, Sherpur under BFRI component (Right).

Fig. 26 Field monitoring at Comilla district under SRDI componentunder SRDI component

Fig. 27 Field monitoring at Bandarban district under CDB component

Fig. 28 Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for seed production at Manikgonj under BJRI component

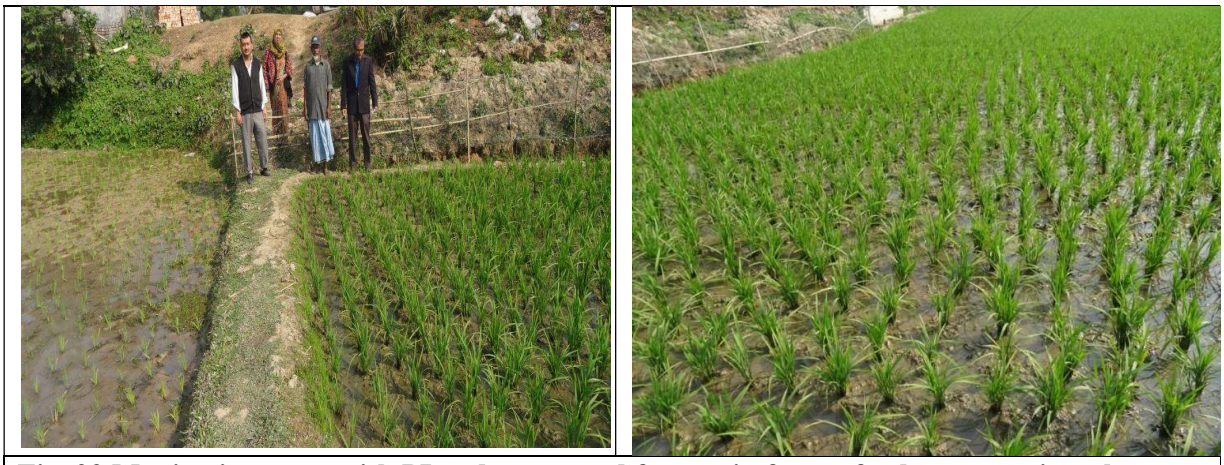


Fig. 29 Monitoring team with PI and concerned farmer in front of a demonstration plot at Mymensingh under BRRI component

Zoom platform, 06 May, 2021

Results of components

11.1 Bangladesh Wheat and Maize Research Institute (BWMRI)

Total 4 technologies selected to transfer at farmers' level through generated RTT model from this project,for dissemination.

All the trials were harvested at the end of March to 1st week of April. Year wise results were presented in tables. Only yield data were recorded from the demonstration plot. Yield data of 20 m^2 area per plot was recorded and converted into t/ha.

Table 1. List of farmers and yield performance of new wheat varieties in their fields, 2018-19

Sl no	Farmer's name	Yield (t/ha)			
		BARI Gom 29	BARI Gom 30	BARI Gom 32	BARI Gom 33
1	Md Apan, Pirganj, Thakurgaon	4.57	-	5.11	-
2	Md MunjurAlam, Haripur, Thakurgaon	5.14	4.94	5.36	-
3	Mr Sirazul Islam, Baliadangi, Thakurgaon	-	-	5.93	4.46
4	Mr Mannan, Tetulia, Panchagarh	-	-	4.94	4.49
5	Md Anarul, Kaharol, Dinajpur	-	4.90	5.33	-
6	Md. Shahin, Sadar, Dinajpur	-	-	-	4.69
Average		**4.86**	**4.92**	**5.33**	**4.55**

There were 12 demo plots in 2018-19 cropping season in six farmers' field. Four wheat varieties viz., BARI Gom 29, 30, 32 and 33 were used in those plots. Among the 12 plots, the highest grain yield was recorded in BARI Gom 32 field (5.93t/ha). The lowest yield level was 4.46 t/ha in BARI Gom 33. The average yield of BARI Gom 29, 30, 32 and 33 were 4.86, 4.92, 5.33 and 4.55 t/ha, respectively (Table 1).

Fig. 30: Performance of BARI Gom 33 at farmers field, Baliadangi, Thakurgaon, 2018-19

Table 9: List of farmers and yield performance of new wheat varieties in their fields, 2019-20

Sl no	Farmer's name	yield(t/ha)			
		BARI Gom 29	BARI Gom 32	BARI Gom 33	WMRI Gom 1
1	Md. Mannan, Tentulia, Panchagarh		4.45		
2	Md. Dulal, Atwari, Panchagarh			4.78	
3	Md. Salek, Atwari, Panchagarh			4.40	
4	Md. Razzak, Atwari, Panchagarh			4.74	
5	Md. Manik, Atwari, Panchagarh	4.30			
6	Md. Hashim, Haripur, Thakurgaon		4.82		
7	Md. Hashim, Haripur, Thakurgaon				4.00
8	Md. Monjurul, Vaturia, Haripur, Thakurgaon				4.42
9	Md. Ashraful Alam, Priganj, Thakurgaon			4.30	4.15
10	Manik Master, Itua, Kaharol, Dinajpur				4.35
11	Bidhn Chandra, Sadar, Dinajpur			4.40	
12	Shukamal, Bokultola, Shetabgonj, Dinajpur			4.50	
Average		**4.30**	**4.63**	**4.52**	**4.23**

In second year (2019-200), 13 demonstration was set in 12 farmer's field. Four new wheat varieties viz., BARI Gom29, 32, 33 and WMRI Gom 1 were used in those plots. Among the 12 plots, highest grain yield (4.82 t/ha) was recorded in BARI Gom 32. Lowest yield level was 4.0 t/ha in WMRI Gom 1. The average yield of BARI Gom 29, 32, 33 and WMRI Gom 1 were 4.30, 4.63, 4.52 and 4.23 t/ha, respectively (Table 2).

Fig. 31: Performance of BARI Gom 29, Atwari, Panchagarh, 2019-20

Fig. 32: Performance of BARI Gom 32, Haripur, Thakurgaon, 2019-20

Table 10: List of farmers and yield performance of new wheat varieties in their fields, 2020-21

SL no	Name of the farmer	Yield(t/ha)		
		BARI Gom 32	BARI Gom 33	WMRI Gom 1
1	Md. Abdur Rauf, Gasbari, Atwari, Panchagarh	4.5		4.5
2	Md. MatibulGasbari, Atwari, Panchagarh	4.5		
3	Md. Babul Islam Gasbari, Atwari, Panchagarh	4.5		
4	Md. Anwar Hossain Gasbari, Atwari, Panchagarh		5	4.5
5	Md. Shahidul Gasbari, Atwari, Panchagarh	3.92		
6	Bimol Chandra Roy Radhanagar, Atwari, Panchagarh		3.82	
7	Md. SaidkuI Islam Radhanagar, Atwari, Panchagarh		4.3	
8	Md. EunusaliRadhanagar, Atwari, Panchagarh		3.95	
9	Md. Enamul haqueRadhanagar, Atwari, Panchagarh		4.12	
10	Md. Mbdul Mannan Mazhipara, Tetulia, Panchagarh		4.32	4.65
11	Md. Hosaain Ali Ruhia, Thakurgaon		3.9	
12	Md. Abdul Jalil Ruhia, Thakurgaon	4.2		
13	Md. Aminul Haque Ruhia, Thakurgaon			6.0
14	Md. Tasir Uddin Torea, Panchagarh	3.3	4.2	3.9
15	MohendranathVoumik Haripur, Thakurgoan		4.3	
16	BelshuJali Haripur, Thakurgoan		4.3	
17	Rakibul Haripur, Thakurgoan		4.3	
18	Okhil Chandra voumik Haripur, Thakurgoan		4.3	
19	Md. Hashim Haripur, Thakurgoan			4.3
20	Md. Saker Ullah Nekmorod, Ranisankail, Thakurgoan		3.7	
21	Maikel Mardi Kestopur, Sadar, Thakurgaon	4.8		4.5
22	Md. SharifulBelbari, Sadar, Dinajpur	4.25		
23	Md. AfizUdding Kalikapur, Sadar Dinajpur	4.2	4.65	
24	Dulal Kalikapur, Sadar Dinajpur			4.2
25	MohosinBelbari, Sadar, Dinajpur			4.34
26	Iddris, Belbari, Sadar, Dinajpur		4.65	
Average		**4.24**	**4.25**	**4.54**

In 2020-21 cropping season, 33 demonstration was set in 26 farmer's field. Three new wheat varieties viz., BARI Gom 32, 33 and WMRI Gom 1 were used in those plots. Among the 33 plots, highest grain yield (6.0 t/ha) was recorded in WMRI Gom 1. Lowest yield level was 3.3 t/ha in BARI Gom 32. The average yield of BARI Gom 32, 33 and WMRI Gom 1 were 4.24, 4.25 and 4.54 t/ha, respectively (Table 3).

Fig. 33: Performance of WMRI Gom 1 at Atwari, Panchagarh, 2020-21

Fig. 34: Performance of BARI Gom 33 at Sadar, Dinajpur, 2020-21

Table 11: Average yield (t/ha) of new varieties over three years

Variety/Year	2018-19	2019-20	2020-21	Average yield (y/ha)
BARI Gom 29	4.86	4.30	-	4.58
BARI Gom30	4.92	-	-	4.92
BARI Gom32	5.33	4.63	4.24	4.73
BARI Gom33	4.55	4.52	4.25	4.44
WMRI Gom 1	-	4.23	4.54	4.39

The average yield ability of wheat varieties in different years in farmer's field is presented in Table 4. New wheat varieties showed good level of yield potentiality. Farmer can obtain 4 to 4.5 ton grain per hectare if they follow the modern technologies.

Technology transfer:

Last three year's result revealed that new wheat varieties have high yield potential in farmers' field. Farmers are interested to cultivate modern wheat varieties. Block demonstration created a big impact among the farmers in selected locations. Almost 100-ton quality seed of new

varieties was produced in selected farmers' field. The actual amount of seed disseminated was even more than that. In first two years seed produced in demo plots was partly stored by farmers' own use, exchanged or sold to other neighbouring farmers that might increase the seed availability in those localities.

Media coverage: Some of the project activities were published in local newspaper which was helpful to create awareness among the wheat growers.

লোকায়ন

রোববার ০৬ ডিসেম্বর ২০২০

কৃষকদের নতুন জাতের গম বীজ ও সার বিতরণ

রুহিয়া সংবাদদাতাঃ বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট দিনাজপুর কর্তৃক রুহিয়ায় কৃষকদের মাঝে নতুন জাতের গম বীজ ও সার বিতরণ করা হয়েছে। শনিবার দুপুরে উত্তরা বাজার শিল্প নগড় এলাকায় কৃষকদের মাঝে গম বীজ ও সার বিতরণ করা হয়। এ সময় উপস্থিত ছিলেন, বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট নশিপুর, দিনাজপুর এর বৈজ্ঞানিক কর্মকর্তা ড. মোঃ রেজাউল কবির, ড. মোঃ আশরাফুল আলম, রুহিয়া থানা প্রেসক্লাবের সভাপতি আমিনুল হক প্রমুখ।

বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট নশিপুর, দিনাজপুর এর বৈজ্ঞানিক কর্মকর্তা ড. মোঃ রেজাউল পৃষ্ঠা ২ কলাম ১

কৃষকের নতুন জাতের

১ম পৃষ্ঠার পর

কবির বলেন, বারি গম ৩২, ৩৩ ও ডব্লিউএমআরআই গম-১ জাতের প্রদর্শনী কৃষকদের মাঝে প্রযুক্তি হস্তান্তর প্রকল্প (এনএটিপি-২) এর অর্থায়নে দিনাজপুর, ঠাকুরগাঁও ও পঞ্চগড় জেলার মোট ৫০ জন কৃষকদের মাঝে নতুন জাতের গম বীজ ও সার বিতরণের অংশ হিসেবে রুহিয়ায় ৩ জন কৃষকদের মাঝে এ সার বীজ বিতরণ করা হয়। কৃষকগন হলেন, আব্দুল জলিল, মোঃ হুসেন ও মোঃ জীবন।

Fig. 35: News-01 on input distribution among the farmers was published in local newspaper (06 December, 2020)

রংপুরঃ রোববার, ২১ অগ্রহায়ণ ১৪২৭ : ০৬ ডিসেম্বর ২০২০

দৈনিক যুগের আলো

রুহিয়ায় কৃষকদের মাঝে গম বীজ ও সার বিতরণ

রুহিয়া (ঠাকুরগাঁও) প্রতিনিধি॥ বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট দিনাজপুর কর্তৃক রুহিয়ায় কৃষকদের মাঝে নতুন জাতের গম বীজ ও সার বিতরণ করা হয়েছে। ০৫ ডিসেম্বর (শনিবার) দুপুরে উত্তরা বাজার শিল্প নগড় এলাকায় কৃষকদের মাঝে গম বীজ ও সার বিতরণ করা হয়। এ সময় উপস্থিত ছিলেন, বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট নশিপুর, দিনাজপুর এর বৈজ্ঞানিক কর্মকর্তা ড. মোঃ রেজাউল কবির; ড. মোঃ আশরাফুল আলম, রুহিয়া, থানা প্রেসক্লাবের সভাপতি আমিনুল হক প্রমুখ।

বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট নশিপুর, দিনাজপুর এর বৈজ্ঞানিক কর্মকর্তা ড. মোঃ রেজাউল কবির বলেন, বারি গম ৩২, ৩৩ ও ডব্লিউএমআরআই গম১ জাতের প্রদর্শনী কৃষকদের মাঝে প্রযুক্তি হস্তান্তর প্রকল্প (এনএটিপি২) এর অর্থায়নে দিনাজপুর, ঠাকুরগাঁও ও পঞ্চগড় জেলার মোট ৫০ জন কৃষকদের মাঝে নতুন জাতের গম বীজ ও সার বিতরনের অংশ হিসেবে রুহিয়ায় ৩ জন কৃষকদের মাঝে এ সার বীজ বিতরন করা হয়। কৃষকগন হলেন, আব্দুল জলিল, মোঃ হুসেন ও মোঃ জীবন। প্রকল্প বাস্তবায়নে বাংলাদেশ গম ও ভুট্টা গবেষনা ইনস্টিটিউট নশিপুর, দিনাজপুর।□

Fig. 36: News-02 on input distribution among the farmers was published in local newspaper

Fig. 37: Monitoring by Director (TTMU, BARC)

Fig. 38: Demonstration plot visit by Co-PI, other scientist from BWMRI and DAE personnel

Fig. 39: Monitoring by Director (PIU-BARC, NATP-2) and his team with PI

According to objective 2,TTMU constructed a questionnaire to assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of 10 NARS institutes.

Analysis of Technology Generation (BWMRI)

Division wise

BARC (Co-ordinating component) analysed a total of 96 technologies have been developed under four divisionsfrom the inception,During (1968-2019) period, 59 technologies by Plant breeding division (PBD), 8 technologies by Agronomy division (AGD), 6 from soil science division (SSD), and 23 technologies were developed by plant pathology division (PPD). The highest number of technologies (59) was generated from Plant breeding division (PBD) and lowest number of technologies (06) was generated from soil science division (SSD).

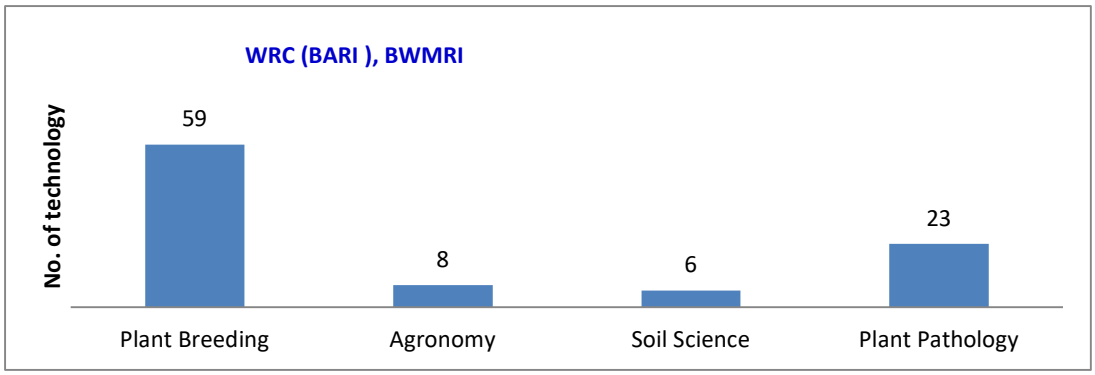


Fig.40:Division wise total Technology generated, BWMRI, WRC

Year wise

Fig. 41 showed yearwise technology generation from 1968-2019 in BWMRI & WRC, BARI.

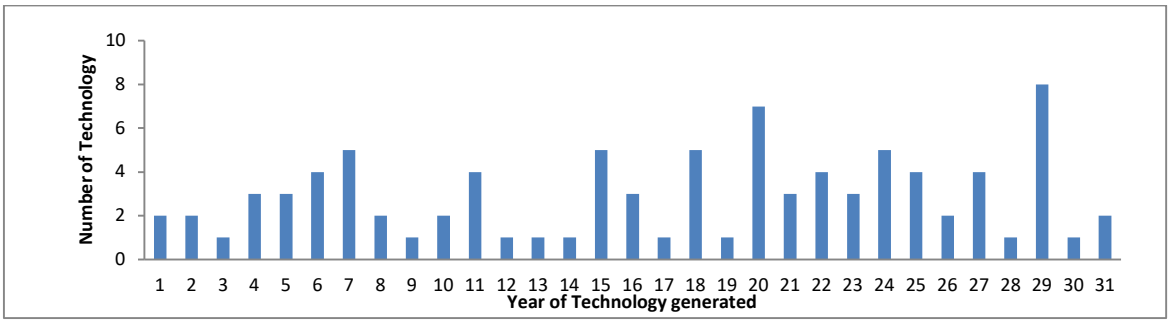


Fig.41: Year wise total Technology generated, BWMRI, WRC, BARI (1968-2019)

Transferring movement of technologies

Transfarring status/ movement

Except 5 technologies, all other technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Table 12: Division wise transterred and non-transferred technologies of BWMRI

Year	Institute	Name of Division	No of Technology	Technology Transfer TT (Nos)	Non Transfer Technology NTT (Nos)
1968-2019	BWMRI (4)	Agronomy	8	6	2
		Plant Breeding	59	56	3
		Plant Pathology	23	23	0
		Soil Science	6	6	0
Total		**04**	**96**	**91**	**05**

Among 96 technologies generated by BWMRI from 1968-2019, somore technologies can be selected transfer through RTT modelfor dissemination.

11.2 :Pomology Division, Horticulture Research Centre. Bangladesh Agricultural Research Institute (HRC, BARI)

Total 23 technologies selected to transfer at farmers' level through generated RTT model from this project for dissemination.The following trial has been conducted at Shidda village of Damudda Upazilla, in Shariatpur district and Nagerpara, Idilpur and Tinkhamba village of Gosairhat Upazilla in Shariatpur district in September 2018. The other trial has also been conducted (29/05/2019 to 31/05/2019) Kazirchar and Saider gaon union of Muladi Upazilla and Babuganj Upazilla of Barisal district in (29/05/2019 to 31/05/2019).

Name of the Trial:

Dissemination of BARI Released Fruit Varieties at Farmer's Level and demonstration of improved modern technologies of important major and minor fruit cultivation practices with mango, litchi, banana, lemon, guava, aonla, safeda, lotkon, carambola, coconut, pummelo, wax jambu and golden apple etc. The project has been implemented by Pomology Division, Horticulture Research Centre, Bangladesh agricultural Research Institute (BARI) in coordination with Technology Transfer & Monitoring Unit of Bangladesh Agricultural Research Council (BARC), Dhaka. The project activities are being carried out in a participatory approach at farmer's field. The following activities have been undertaken to transfer the technologies at farmer's level successfully.

Site and Farmer selection

This technology has been demonstrated for the period of 30 months in forty five farmer's field of Shidda at Damudda Upazilla and fifteen farmer's field of Nagerpara, Goshairhat Upazilla in Shariatpur district during July 2018 to December 2020, 30 farmers field of Babuganj Upazilla and 30 farmers field of Muladi Upazilla in Barisal district during May 2019 to December 2020. Fields have been selected with the active participation of Upazilla Agriculture Officer and Upazilla Extension Officer of four Upazillas. Farmers name with address having field area is shown in Table 13.

Table 13: Farmers name, address and field area of project site (Vill. Shidda and Damudda Sadar, Upazilla. Damudda, District-Shariatpur)

Sl. No.	Farmers name	Father's/husband's name	Address	Field area (acre)
1.	Md. Nahim Razzak (MP)	Late Abdur Razzak	Damudda Sadar,	0.50
2.	Dilruba Sharmin (UNO, campus) Damudda Upazilla	-	Upazilla Sadar, Damudda	0.27
3.	Md. Alauddin Ahmed (Chairman)	-	Shidda, 01737321177	0.56
4.	Abdul Baten (Member)	-	Shidda, 01913621747	1.00
5.	Md Mannan Bepari	-	Shidda, 01743596620	0.47
6.	Rubel Hossain	-	Damudda, 01711340892	0.32
7	Md. Lokman Hossain choukider	Hakim Ali Choukider	Damudda Sadar, 01751544439	0.30
8.	Syed Jebul Hoque	Md. Khalilur Rahman	Shidda, 01727955742	2.00
9.	Rahima Talukder	Syed Jebul Haque	Shidda, 01752262104	0.37
10.	Mushfika	Syed Jebul Haque	Shidda, 01727955742	0.30

11.	Syed Niaz Jahan	Syed Jebul Haque	Shidda, 01727955742	0.44
12.	Dr. Anwar Hossain	Late Forwardi Mir	Shidda, 01718352959	1.00
13.	Md. Ruhul Amin	Late Forwardi Mir	Shidda, 01717108875	0.35
14.	Md. Ripon Matbar, 6 no word	Md. Ali Matbar	Shidda	0.50
15.	Abdul Matin, Previous Chairman	-	Damudda, 01850712007	0.48
16.	Syed Md. Mobin	Dr. Anwar Hossain	Shidda, 01718352959	0.39
17.	Idris Halder		Shidda, 01749121815	0.40
18.	Syed Nizam Uddin	Lutfar Rahman	Shidda, 01914129465	0.38
19.	Dulal Haolader	Delwar Haolader	Shidda, Rari bari breeze	0.44
20.	Md Rustom Haolader	Karim Haolader	Shidda, Rari bari breeze, 01716835510	
21.	Nurul Islam Haolader	-	Shidda, Rari bari breeze,	
22.	Abdul Halim member	-	Shidda, Rari bari breeze,	
23.	Md. Alamgir Mazhi (Upazilla Chairman)	-	Damudda, 01715399375	1.00
24.	Aktar Khandaker	Abdus Samad Khandaker	Shidda, 01752385631	0.25
25,	Syed Siddik Alam	-Late Fazlul Hoque	Damudda, 01715620499	1.00
26.	Md. Wares Haolader	Mohor Ali Hao.	West Shidda, 01716152303	0.44
27.	Md Siraj Peda	Nazim Uddin Peda	West Shidda, 01717872035	0.35
28.	Abu bakar	Ali Akkas Chaial	North Shidda, 01717872035	0.27
29.	Aktar Khandaker	-	Shidda, 01752385631	0.40
30	Kashem Dhali	Rahman Dhali	Shidda, 01745217220	0.25
31.	Giash Uddin Fakir	Torab Ali Fakir	Shidda, 01915711512	0.38
32.	Shafikul Islam Nosu	Rustam Khandaker	Shidda, 01716799390	0.41
33.	Razu Haolader	Siddik Haolader	Shidda, 01745065139	0.26
34.	Billal Hossain	Fazlul Hoq Matbar	North Shidda, 01745340885	
35.	Md. Mokhles Matbar	-	Shidda, 01726218271	0.33
36.	Md. Mostafa member	-	Shidda, 01722014322	0.28
37.	Syed Abdul Hai	Syed Abdul Karim	Shidda, 01988879058	0.43
38.	Syed Chan Mia	Late Syed Sader Ali	Shidda, 01933154573	0.38
39.	Rustom Bepari		Shidda, 01749121815	0.44
40.	Md. Mia Chan Haolader	Ala Box Haolader	Shidda, 01705008721	0.40
41.	Abul Kalam Shamsuddin (Old Chairman)	-	Sidulkura, Shidda	0.38
42.	Md. Ujjal Sikder (UpazillaVice Chairman)	-	Damudda,	0.39
43.	Rehena Aktar (Upazilla Vice Chairman)	-	Damudda,	0.28
44.	Md. Khokon (Member, Sidul kura))	-	Sidulkura, Shidda	0.31
45.	Imam Hasan	-	Shidda, 01711305782	0.25

Table 14:Farmers name, address and field area of project site (Vill. Nagerpara, Tin khamba and Goshairhat sadar, Upa. Goshairhat)

Sl. No.	Farmer's name	Father's/husband's name	Address	Area (acre)
1.	Kazi Ridita Khanam	Syed Ruhul Amin	Tin Khamba, Damudda 017177982875	0.26
2.	Syed Md. Shifat	Syed Ruhul Amin	Tin Khamba, Damudda 017177982875	0.25
3.	Kazi Aktar Hossain	Kazi Abdur Rahman	Tin Khamba, 01722143744	0.53
4.	Md. Ayub Ali		Nagerpara, 01718457033	0.96
5.	Al Imran		Nagerpara, 01717901176	0.35
6.	Hafez Ikram Hossain		Nagerpara, 01718457033	0.26
7.	Hafez Ramzan Ali		Nagerpara, 01718457033	0.43
8.	Fatema Begum	Md. Ayub Ali	Nagerpara, 01718457033	0.34
9.	Sharmeen Aktar	Al Imran	Nagerpara, 01717901176	0.28
10.	Md. Delwar Shikari (Chairman)	Shamsuddin Ahmed	Idilpur, Goshairhat 01719875631	1.00
11.	Tazu Begum	Md. Delwar Shikari	Idilpur, Goshairhat 01834285767	0.50
12.	Md Ataur Rahman Rahman Firoz	-	Tinkhamba,Goshairhat, 01716311788	0.35
13.	Md. Lutfar Rahman		Tinkhamba,Goshairhat, 01716311788	0.56
14.	Md. Mizanur Rahman	Vice Chairman, NCC bank	Tinkhamba,Goshairhat, 01716311788	0.76
15.	Mostafa member		Tinkhamba,Goshairhat,01722014322	0.47

Table 15: Farmers name, address and field area of project site (Vill. Lakutia Uchapole, Upazilla. Babuganj, District-Barisal)

Sl. No.	Farmers name	Address	Contact Number	Field area (acre)
1.	Md. Zahidul Islam Feroz	Vill. Lakutia Upazilla-Babuganj, District-Barisal	01711230976	0.30
2.	Md. Zahirul Islam	Do	01733332015	0.37
3.	Md. Mustafizur Rahman	Do	01884499660	0.26
4.	Md. Shahidul Islam	Do	01765112689	0.50
5.	Md. Kamrul Islam	Do	01718332693	0.27
6.	Md. Pavel Hossain	Do	01717504977	0.33
7	Md. Bazlur Rahman	Do	01734877430	0.36
8.	Abdul Malek Boiati	Do	01727613533	1.00
9.	Md. Shah Alam Haolader	Do	01735736881	0.37
10.	Most. Rokeya Begum	Do	01711230976	0.35
11.	Md. Rasel Sikder	Do	01747505947	0.34
12.	Md. Dipta	Do	01726992577	0.30
13.	Md. Tarikul Islam	Do	01717504977	0.38
14.	Md. Habibur Rahman	Do	01712925792	0.40
15.	Md. Rakib Hossain	Do	01731510444	0.41
16.	Md. Johirul Islam	Do	01780253449	0.35
17.	Imam Hossain	Do	01726396042	0.42
18.	Md. Maruf Hossain	Do	01726992577	0.28
19.	Md. Arif Mahmud	Do	01725408771	0.24
20.	Md. Shafikul Islam	Do		

Table 16: Farmers name, address and field area of project site (Vill. Saidergaon, Union- Saidergaon, Upazilla- Muladi, District-Barisal)

Sl. No.	Farmers name	Address	Contact Number	Field area (acre)
1.	Kazi Zahid	Vill- Saidergaon, Union- Saidergaon, Upazilla- Muladi, District-Barisal)	01726135550	0.46
2.	Moksed Alam	Do	01732683050	0.37
3.	Rasel Khan	Do	01726396042	0.26
4.	Quddus Kazi	Do	01735736881	0.40
5.	Morshed Mir	Do	01789949622	0.45
6.	Mamun Sarder	Do	01780253449	0.42
7	Mosharraf Sarder	Do	01793514287	0.34
8.	Alauddin Bepari	Do	01735736881	1.00
9.	Amir Hossain Sikder	Do	01747505947	0.47
10.	Md. Mesbah Uddin	Do	01735065060	0.36
11.	Md. Shahjalal Akanda	Do	01717504977	0.41
12.	Md. Bulbul Sarder	Do	01734877430	0.50
13.	Md. Bapun Sarder	Do	01793514287	0.45
14.	Rahman Bepari	Do	01726992577	0.40
15.	Real Sharif	Do	01731510444	0.41
16.	Masud Akan.	Do	01716150158	0.49
17.	Nasir Khan	Do	01735065061	0.45
18.	Jasim Uddin	Do	01717504977	0.28
19.	Jahangir Alam Akanda	Do	01726992577	0.24
20.	Habul Kazi	Do	01735065060	

Table 17: Farmers name, address and field area of project site (Vill. Kazichar union- Kazichar, Upazilla- Muladi, District-Barisal)

Sl. No.	Farmers name	Address	Contact Number	Field area (acre)
1.	Alhaz Md. Montu Bishwas (Chairman, Kazichar union)	Vill.- Kazirchar, Union- Kazirchar, Upazilla- Muladi, Dist.- Barisal	01743240523	1.50
2.	Md. Shafiqul Islam	Do	01750102902	0.37
3.	Md. Jalal Sikder	Do		0.56
4.	Md. Jahangir Khokon	Do	01724005232	0.80
5.	Md Jasim Uddin	Do	01717504977	0.48
6.	Md. Mizan	Do	01734876430	0.36
7	Md. Swapan	Do	01735732882	0.33
8.	Abdul Khaleque	Do	01728332693	0.35
9.	Montu Haolader	Do	0724877430	0.38
10.	Md. Zakir Hossain	Do	01721733807	0.36
11.	Md Tutul Khan	Do	01718263393	0.34
12.	Md. Oliullah	Do	01735732882	0.45
13.	Most Reshma Parvin	Do	01732402516	0.36
14.	Md. Habibur Rahman	Do	01732736801	0.35

15.	Md. Ziaur Rahman	Do	01756102365	0.38
16.	Md. Rafiqul Islam	Do	01852434073	0.46
17.	Abul Kalam	Do	01745062331	0.42
18.	Md Badsha	Do	01742450326	0.41
19.	Md. Harunur Rashid Khan	Do	01711978282	0.46
20.	Md. Masum Khan	Do	01745113261	0.36

11.3.1 :Field Preparation

At first fields were cultivated through power tiller, cleaned out of different weed and unwanted plants. The dried fields were left exposed to sunlight for five to seven days and then applied different organic and chemical fertilizer in different pits maintaining different distance for different trees. The pit size for large trees are (1x1x1m) and for small trees are (75x75x75cm). Common application dose of different fertilizer

Cowdung : 20k g/pit
TSP : 300-400 g/pit
MoP : 150-200 g/pit
Gypsum : 200 g/pit

After application of fertilizer, water was supplied in the pit. After 15 days saplings were distributed among the farmers for planting in Shariatpur district (30/09/18) and Barisal district 29/05/19.

11.3.2 :Results so far

The data on establishment of different supplied fruit saplings, establishment of saplings and % success were recorded (Table-2).

Table 18:The Initial Establishment of saplings and % Success (Shidda, Damudda Upazilla)

SL. No	Name	Father's/husband's name	Supplied Saplings	Established saplings	% Success
1.	Md. Nahim Razzak (MP)	Late Abdur Razzak	50	45	90.00
2.	Dilruba Sharmin (UNO, Damudda Upazilla)	-	50	48	96.00
3.	Md. Alauddin Ahmed (Chairman, Shidda)	-	50	45	90.00
4.	Abdul Baten (Member)	-	50	43	86.00
5.	Md Mannan Bepari	-	50	44	88.00
6.	Rubel Hossain (A. Leage President, Damudda)	-	50	47	94.00
7.	Md. Lokman Hossain choukider	Late Hakim Ali Choukider	50	50	100.00
8.	Syed Jebul Hoque	Late Md. Khalilur Rahman	50	48	96.00
9.	Rahima Talukder	Syed Jebul Haque	50	46	92.00
10.	Mushfika	Syed Jebul Haque	50	43	86.00
11.	Syed Niaz Jahan	Syed Jebul Haque	50	47	94.00
12.	Dr. Anwar Hossain	Late Forwardi Mir	50	46	92.00
13.	Md. Ruhul Amin	Late Forwardi Mir	50	48	96.00
14.	Md. Ripon Matbar, 6 no	Md. Ali Matbar	50	50	100.00

	word				
15.	Syed Md. Sakib	Dr. Anwar Hossain	50	50	100.00
16.	Syed Md. Mobin	Dr. Anwar Hossain	50	46	92.00
17.	Idris Halder		50	42	84.00
18.	Syed Nizam Uddin	Lutfar Rahman	50	43	86.00
19.	Dulal Haolader	Delwar Haolader	50	44	88.00
20.	Md Rustom Haolader	Karim Haolader	50	43	86.00
21.	Nurul Islam Haolader	-	50	47	94.00
22.	Abdul Halim member	-	50	44	88.00
23.	Md. Alamgir Mazhi (Upazilla Chairman)	-	50	48	96.00
24.	Aktar Khandaker	Abdus Samad Khandaker	50	46	92.00
25,	Syed Siddik Alam	-Late Fazlul Hoque	50	50	100.00
26.	Md. Wares Haolader	Mohor Ali Hao.	50	47	94.00
27.	Md Siraj Peda	Nazim Uddin Peda	50	42	84.00
28.	Abu bakar	Ali Akkas Chaial	50	47	94.00
29.	Aktar Khandaker	-	50	45	90.00
30	Kashem Dhali	Rahman Dhali	50	44	88.00
31.	Giash Uddin Fakir	Torab Ali Fakir	50	46	92.00
32.	Shafikul Islam Nosu	Rustam Khandaker	50	40	80.00
33.	Razu Haolader	Siddik Haolader	50	45	90.00
34.	Billal Hossain	Fazlul Hoq Matbar	50	47	94.00
35.	Md. Mokhles Matbar	-	50	46	92.00
36.	Md. Mostafa member	-	50	42	84.00
37.	Syed Abdul Hai	Syed Abdul Karim	50	43	86.00
38.	Syed Chan Mia	Late Syed Sader Ali	50	40	80.00
39.	Rustom Bepari		50	50	100.00
40.	Md. Mia Chan Haolader	Ala Box Haolader	50	45	90.00
41.	Abul Kalam Shamsuddin (Old Chairman)	-	50	41	82.00
42	Md. Ujjal Sikder (UpazillaVice Chairman)	-	50	46	92.00
43.	Rehena Aktar (Upazilla Vice Chairman)	-	50	47	94.00
44.	Md. Khokon (Member, Sidul kura))	-	50	48	96.00
45.	Imam Hasan	-	50	40	80.00

Table 19: The Initial Establishment of saplings and % Success (Nagerpara, Goshairhat Upazilla)

SL. No	Name	Address	Supplied Saplings	Established saplings	% Success
1.	Kazi Ridita Khanam,	Tin Khamba, Damudda 017177982875	50	43	86.00
2.	Syed Md. Shifat	Tin Khamba, Damudda 017177982875	50	47	94.00
3.	Kazi Aktar Hossain	Tin Khamba, 01722143744	50	48	96.00

4.	Md. Ayub Ali	Nagerpara, 01718457033	50	40	80.00
5.	Al Imran	Nagerpara, 01717901176	50	44	88.00
6.	Hafez Ikram Hossain	Nagerpara, 01718457033	50	48	96.00
7.	Hafez Ramzan Ali	Nagerpara, 01718457033	50	49	98.00
8.	Fatema Begum	Nagerpara, 01718457033	50	40	80.00
9.	Sharmeen Aktar	Nagerpara, 01717901176	50	48	96.00
10.	Md. Delwar Shikari (Chairman)	Idilpur, Goshairhat 01719875631	50	40	80.00
11.	Tazu Begum	Idilpur, Goshairhat 01834285767	50	40	80.00
12.	Md Ataur Rahman Rahman Firoz	Tinkhamba,Goshairhat, 01716311788	50	47	94.00
13.	Md. Lutfar Rahman	Tinkhamba,Goshairhat, 01716311788	50	48	96.00
14.	Md. Mizanur Rahman Vice Chairman, NCC	Tinkhamba,Goshairhat, 01716311788	50	43	86.00
15.	Mostafa member	Tinkhamba,Goshairhat,0172 2014322	50	48	96.00

Table 20: The Initial Establishment of saplings and % Success (Lakutia Uchapole, Babuganj Upazilla)

SL. No	Name	Address	Supplied Saplings	Established saplings	% Success
1.	Md. Zahidul Islam Feroz	Vill. Lakutia Upazilla-Babuganj, District-Barisal	50	50	100.00
2.	Md. Zahirul Islam	Do	50	48	96.00
3.	Md. Mustafizur Rahman	Do	50	40	90.91
4.	Md. Shahidul Islam	Do	50	45	90.00
5.	Md. Kamrul Islam	Do	50	47	94.00
6.	Md. Pavel Hossain	Do	50	42	84.00
7.	Md. Bazlur Rahman	Do	50	43	86.00
8.	Abdul Malek Boiati	Do	50	48	96.00
9.	Md. Shah Alam Haolader	Do	50	42	84.00
10.	Most. Rokeya Begum	Do	50	47	97.00
11.	Md. Rasel Sikder	Do	50	44	88.00
12.	Md. Dipta	Do	50	46	92.00
13.	Md. Tarikul Islam	Do	50	40	80.00
14.	Md. Habibur Rahman	Do	50	43	86.00
15.	Md. Rakib Hossain	Do	50	47	94.00
16.	Md. Johirul Islam	Do	50	40	80.00
17.	Imam Hossain	Do	50	42	84.00
18.	Md. Maruf Hossain	Do	50	40	80.00
19.	Md. Arif Mahmud	Do	50	44	88.00
20.	Md. Shafikul Islam	Do	50	45	90.00

Table 21: The Initial Establishment of saplings and % Success (Saidergaon union, Muladi Upazilla)

SL. No	Name	Address	Supplied Saplings	Established saplings	% Success
1.	Kazi Zahid	Vill- Saidergaon, Union- Saidergaon, Upazilla- Muladi, District-Barisal)	50	42	84.00
2.	Moksed Alam	Do	50	48	96.00
3.	Rasel Khan	Do	50	41	82.00
4.	Quddus Kazi	Do	50	43	86.00
5.	Morshed Mir	Do	50	44	88.00
6.	Mamun Sarder	Do	50	47	94.00
7.	Mosharraf Sarder	Do	50	46	92.00
8.	Alauddin Bepari	Do	50	40	80.00
9.	Amir Hossain Sikder	Do	50	45	90.00
10.	Md. Mesbah Uddin	Do	50	45	90.00
11.	Md. Shahjalal Akanda	Do	50	44	88.00
12.	Md. Bulbul Sarder	Do	50	40	80.00
13.	Md. Bapun Sarder	Do	50	48	96.00
14.	Rahman Bepari	Do	50	47	94.00
15.	Real Sharif	Do	50	41	82.00
SL. No	**Name**	**Address**	**Supplied Saplings**	**Establishe d saplings**	**% Success**
16.	Masud Akan.	Do	50	42	82.00
17.	Nasir Khan	Do	50	44	88.00
18.	Jasim Uddin	Do	50	40	80.00
19.	Jahangir Alam Akanda	Do	50	44	88.00
20.	Habul Kazi	Do	50	43	86.00

Table 22: The Initial Establishment of saplings and % Success (Kazichar union, Muladi Upazilla)

SL. No	Name	Father's/husband's name	Supplied Saplings	Established saplings	% Success
1.	Alhaz Md. Montu Bishwas (Chairman, Kazichar union)	Vill.- Kazirchar, Union- Kazirchar, Upazilla- Muladi, Dist.- Barisal	50	50	100.00
2.	Md. Shafiqul Islam	Do	50	48	96.00
3.	Md. Jalal Sikder	Do	50	45	90.00
4.	Md. Jahangir Khokon	Do	50	45	90.00
5.	Md Jasim Uddin	Do	50	43	86.00
6.	Md. Mizan	Do	50	42	84.00
7.	Md. Swapan	Do	50	46	92.00
8.	Abdul Khaleque	Do	50	48	96.00
9.	Montu Haolader	Do	50	45	90.00
10.	Md. Zakir Hossain	Do	50	41	82.00
11.	Md Tutul Khan	Do	50	40	80.00
12.	Md. Oliullah	Do	50	40	80.00
13.	Most Reshma Parvin	Do	50	48	96.00
14.	Md. Habibur Rahman	Do	50	40	80.00
15.	Md. Ziaur Rahman	Do	50	42	84.00

16.	Md. Rafiqul Islam	Do	50	43	86.00
17.	Abul Kalam	Do	50	42	84.00
18.	Md Badsha	Do	50	45	90.00
19.	Md. Harunur Rashid Khan	Do	50	42	84.00
20.	Md. Masum Khan	Do	50	43	86.00

Distributed 25 Fruit sapling/farmer, for 120 farmers, in 2 upazillas, 2018

Sapling distribution in Barisal Region & Monitoring in the Shariatpur district

Sapling distribution & Monitoring

Fig. 41: Monitoring team in front of a newly established fruit orchard at Babugonj Barishal.

Fig. 42: Monitoring team along with concerned PI and farmer in a fruit orchard at Babugonj, Barishal.

Fig. 43: Input (fertilizer) distribution ceremony selected farmers receiving input(fertilizer) at Babugonj, Barisal.

Technology Generation

From the inception, a total of 283 technologies have been developed under four divisions. During (1976-2020) period, 109 technologies by Pomology division, 46 technologies by Farm machinery & post harvest process engineering division, 44 from Oil seed research center and 84 technologies were developed by Pulse research center.
The highest number of technologies (109) was generated from Pomology division and lowest number of technologies (44) was generated from Oil seed research center.

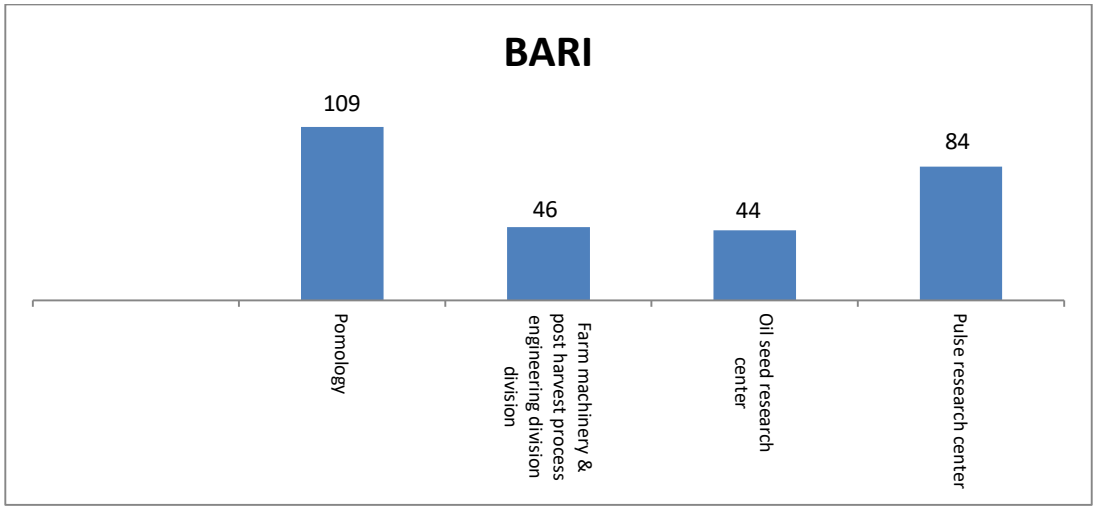


Fig. 44: Division wise generated technologies of BARI

Transferring status/movement of technologies

Except 9 technologies, all other technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Table 23: Division wise transferred and non-transferred technologies of BARI

Year	Institute	Name of Division	No of Technology	Technology Transfer TT (Nos)	Non Transfer Technology NTT (Nos)
1976-2020	BARI (4)	Pomology	109	109	0
		Farm machinery & post harvest process engineering division division	46	44	2
		Oil seed research center	44	42	2
		Pulse research center	84	79	5
Total		**04**	**283**	**274**	**09**

Among 109 technologies generated by BARI from 1976-2020, somore technologies can be selected transfer through RTT modelfor dissemination

11.3 :Adaptive Research and Extension Division (ARED), Bangladesh Institute of Nuclear in Agriculture (BINA)

Total 23 technologies selected to transfer at farmers' level through RTT model generated in this project for dissemination.

11.3.2 :Performance of T. Aman rice Binadhan-17 at Sadar, Mymensingh and Madhukhali, Faridpur during 2018-2019

The study was conducted at both the locations Sadar, Mymensingh and Madhukhali, Faridpur during 2018-19 using the variety Binadhan-17 in Aman season. There were 18 farmers at Sadar, Mymensingh and 18 farmers at Madhukhali, Faridpur. The amount of land both of Sadar, Mymensingh and Madhukhali, Faridpur was 2.43 ha following non replicated design. Seeds were sown on 7-10 July 2018 at Sadar, Mymensingh and on 17-19 July at Madhukhali, Faridpur in seed bed. Land was prepared during the third week of July 2018 through ploughing and laddering for T. aman cultivation. Fertilizers were applied at the rate 130, 100, 50, 35, 4 kg ha^{-1} as urea, TSP, MoP, gypsum and $ZnSO_4$, respectively. The whole amount of TSP, MoP, gypsum and $ZnSO_4$ were applied during the final land preparation. Urea was applied at three equal installments; the 1st installment was applied 7-10 days after transplanting, the second and 3rd doses after 22-27 days and 35-40 days of transplanting. Seedlings of 20-25 day age at both sites were transplanted on 30 July-8 August 2018 at Sadar, Mymensingh and 9-18 August 2018 at Madhukhali at 20cm × 15cm spacing. Moreover, necessary cultural and intercultural operations were followed as and when required. Data on maturity and grain yield were recorded. Maturity was assessed plot basis and grain yield was recorded from an area of 20 m^2 for each variety which was later converted to t/ha. Harvesting was done on 22 October-4 November 2018 at Sadar, Mymensingh and 2-14 November 2018 at Madhukhali, Faridpur with the duration of 112 and 110 days, respectively. Yield at Mymensingh Sadar and at Madhukhali was 3.68 t/ha and 4.51 t/ha, respectively (Table 24 and 25).

Table 24: Performance of T. Aman rice Binadhan-17 at Sadar, Mymensingh during 2018-19

Plot. No	Date of sawing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	07-07-18	30-07-18	23	25-10-18	108	3.46
2	07-07-18	31-07-18	24	22-10-18	105	4.22
3	07-07-18	06-08-18	29	30-10-18	113	3.55
4	07-07-18	04-08-18	27	29-10-18	112	3.63
5	08-07-18	01-08-18	24	23-10-18	105	4.51
6	08-07-18	04-08-18	27	04-11-18	116	3.24
7	07-07-18	02-08-18	25	31-10-18	114	3.32
8	07-07-18	07-08-18	30	29-10-18	112	3.13
9	07-07-18	07-08-18	30	30-10-18	113	3.62
10	07-07-18	06-08-18	29	31-10-18	114	3.64
11	09-07-18	07-08-18	28	30-10-18	111	4.24
12	09-07-18	08-08-18	29	31-10-18	112	4.25
13	07-07-18	04-08-18	27	31-10-18	114	4.41
14	08-07-18	01-08-18	24	29-10-18	112	3.24
15	08-07-18	04-08-18	27	30-10-18	113	3.42
16	07-07-18	07-08-18	30	31-10-18	114	3.43
17	07-07-18	07-08-18	30	04-11-18	116	3.35
18	09-07-18	08-08-18	29	31-10-18	114	3.63
		Mean	**27**		**112**	**3.68**

Table 25: Performance of T. Aman rice Binadhan-17 at Madhukhali Faridpur during 2018-19

Plot. No	Date of sawing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	17-07-18	10-08-18	23	04-11-18	108	4.81
2	17-07-18	09-08-18	24	02-11-18	106	4.29
3	17-07-18	16-08-18	29	07-11-18	111	4.15
4	17-07-18	14-08-18	27	08-11-18	112	4.63
5	18-07-18	09-08-18	22	02-11-18	105	4.56
6	18-07-18	14-08-18	27	04-11-18	107	4.25
7	17-07-18	12-08-18	25	07-11-18	111	5.12
8	17-07-18	17-08-18	30	03-11-18	107	4.13
9	17-07-18	16-08-18	29	05-11-18	107	4.63
10	17-07-18	17-08-18	30	11-11-18	114	4.65
11	19-07-18	18-08-18	29	09-11-18	111	4.74
12	19-07-18	17-08-18	28	10-11-18	112	4.25
13	17-07-18	14-08-18	27	09-11-18	112	4.63
14	19-07-18	09-08-18	22	02-11-18	105	4.52
15	18-07-18	14-08-18	27	14-11-18	116	4.23
16	17-07-18	17-08-18	30	11-11-18	114	4.65
17	19-07-18	18-08-18	29	09-11-18	111	4.74
18	19-07-18	17-08-18	28	10-11-18	112	4.25
		Mean	**27**		**110**	**4.51**

Fig. 45:Field view of T. Aman Binadhan-17 at Sadar, Mymensingh

Fig. 46: Field view of T. Aman Binadhan-17 at Madhukhali, Faridpur

Performance of Mustard (Binasharisha-9) at Sadar, Mymensingh

Table 26: Performance of Mustard (Binasharisha-9) at Sadar, Mymensingh during 2018-19

Plot. No	Date of sowing	Date of harvesting	Days to maturity	Yield (t/ha)
1	10-11-18	3-2-19	79	1.3
2	11-11-18	5-2-19	84	1.16
3	11-11-18	5-2-19	84	1.20
4	10-11-18	3-2-19	83	1.4
5	10-11-18	3-2-19	83	1.22
6	15-11-18	8-2-19	79	1.4
7	8-11-18	2-2-19	84	1.22
8	9-11-18	4-2-19	85	1.30
9	12-11-18	5-2-19	83	1.50
10	7-11-18	31-1-19	83	1.32
11	8-11-18	2-2-19	80	1.41
12	13-11-18	5-2-19	81	1.27
13	10-11-18	4-2-19	82	1.18
14	12-11-18	2-2-19	86	1.60
15	7-11-18	8-2-19	85	1.35
16	8-11-18	2-2-19	85	1.45
17	9-11-18	4-2-19	85	1.55
18	10-11-18	3-2-19	84	1.39
Mean			**83**	**1.35**

Fig. 47: Field view of Binasarisha-9 at Sadar, Mymensingh

Performance of Boro rice (Binadhan-14) at Sadar, Mymensingh

Table 27: Performance of Boro rice (Binadhan-14) at Sadar, Mymensingh during 2018-19

Plot. No	Date of sowing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	10-2-19	3-3-19	23	29-5-19	109	4.2
2	10-2-19	3-3-19	23	29-5-19	109	5.8
3	10-2-19	3-3-19	23	4-6-19	114	3.7
4	10-2-19	3-3-19	23	4-6-19	114	3.8
5	10-2-19	4-3-19	24	4-6-19	114	4.8
6	10-2-19	4-3-19	24	6-6-19	116	4.5
7	10-2-19	4-3-19	24	30-5-19	110	4.2
8	10-2-19	4-3-19	24	6-6-19	115	4.29
9	10-2-19	5-3-19	25	4-6-19	114	4.2
10	10-2-19	5-3-19	25	7-6-19	117	5.5
11	10-2-19	5-3-19	25	3-6-19	113	4.7
12	10-2-19	5-3-19	25	7-6-19	117	3.6
13	10-2-19	5-3-19	25	5-6-19	115	5.2
14	10-2-19	6-3-19	26	29-5-19	109	5.1
15	10-2-19	6-3-19	26	6-6-19	116	3.89
16	10-2-19	6-3-19	26	5-6-19	115	4.29
17	10-2-19	6-3-19	26	4-6-19	114	4.75
18	10-2-19	6-3-19	26	5-6-19	115	4.68
		Mean			**114**	**4.51**

Fig. 48: Field view of Binadhan-14 at Sadar, Mymensingh

12 Performance of Lentil (Binamasur-8) at Madhukhali, Faridpur

Table 28: Performance of Lentil (Binamasur-8) at Madhukhali, Faridpur during 2018-19

Plot. No	Date of sowing	Date of harvesting	Days to maturity	Yield (t/ha)
1	27-11-18	10-3-19	100	1.20
2	30-11-18	10-3-19	100	1.10
3	30-11-18	5-3-19	95	1.30
4	30-11-18	5-3-19	95	1.23
5	30-11-18	5-3-19	95	1.50
6	30-11-18	5-3-19	95	1.70
7	30-11-18	5-3-19	95	1.70
8	30-11-18	7-3-19	97	1.25
9	30-11-18	7-3-19	97	1.45
10	30-11-18	7-3-19	97	1.25
11	30-11-18	7-3-19	97	1.25
12	30-11-18	10-3-19	100	1.45
13	30-11-18	10-3-19	100	1.40
14	30-11-18	10-3-19	100	1.30
15	30-11-18	5-3-19	95	1.41
16	30-11-18	5-3-19	95	1.65
17	30-11-18	7-3-19	97	1.33
18	30-11-18	10-3-19	100	1.39
Mean			**97**	**1.38**

Performance of Aus rice (Binadhan-19) at Madhukhali, Faridpur

Table 29: Performance of Aus rice (Binadhan-19) at Madhukhali, Faridpur during 2018-19

Plot. No	Date of sowing	Date of harvesting	Days to maturity	Yield (t/ha)
1	27-03-19	07-07-19	100	3.5
2	02-04-19	10-07-19	98	3.6
3	28-03-19	08-07-19	100	3.5
4	27-03-19	07-07-19	100	3.5
5	28-03-19	07-07-19	99	3.4
6	27-03-19	07-07-19	100	3.4
7	02-04-19	10-07-19	98	3.3
8	27-03-19	06-07-19	99	3.4
9	27-03-19	06-07-19	99	3.6
10	02-04-19	10-07-19	98	3.5
11	27-03-19	06-07-19	100	3.5
12	27-03-19	06-07-19	100	3.4
13	02-04-19	10-07-19	98	3.5
14	27-03-19	06-07-19	100	3.6
15	27-03-19	06-07-19	100	3.3
16	28-03-19	08-07-19	99	3.5
17	29-03-19	08-07-19	99	3.4
18	02-04-19	10-07-19	98	3.5
Mean			**99**	**3.47**

Fig. 49: Field view of Binadhan-19 at Madhukhali, Faridpur

The study was conducted at both the locations Sadar, Mymensingh and Madhukhali, Faridpur during 2019 using the variety Binadhan-7 and Binadhan-11 in Aman season. There were 18 farmers at Sadar, Mymensingh and 18 farmers at Madhukhali, Faridpur (Fig 50-52). The amount of land both of locations was 2.43 ha following non replicated design. Seeds were sown on 25-31 July 2019 at Sadar, Mymensingh and on 19-20 July at Madhukhali, Faridpur in seed bed. Land was prepared during the mid of August 2019 through ploughing and laddering for T. aman cultivation. Fertilizers were applied at the rate of 130, 100, 50, 35, 4 kg ha^{-1} as urea, TSP, MoP, gypsum and $ZnSO_4$, respectively. The whole amount of TSP, MoP, gypsum and $ZnSO_4$ were applied in the time of final land preparation. Urea was applied at three equal installments; the 1st installment was applied 7-10 days after transplanting, the second and 3rd doses after 22-27 days and 35-40 days of transplanting, respectively. Seedlings of 20-31 days aged of Binadhan-7 at both locations were transplanted on 17-26 August 2019 at Sadar, Mymensingh and 16-17 August 2019 at Madhukhali, Faridpur with the spacing of 20cm × 15cm. Moreover, necessary cultural and intercultural operations were followed as and when required. Data on maturity and grain yield were recorded. Maturity was assessed plot basis and grain yield was recorded from an area of 20 m^2 for each variety which was later converted to t ha^{-1}. Seedlings of 21-28 days aged of Binadhan-11 at both locations were transplanted on 19-23 August 2019 at Sadar, Mymensingh and 16-17 August 2019 at Madhukhali, Faridpur with the spacing of 20cm × 15cm. Moreover, necessary cultural and intercultural operations were followed as and when required. Data on maturity and grain yield were recorded. Maturity was assessed plot basis and grain yield was recorded from an area of 20 m^2 for each variety which was later converted to t/ha. Harvesting was done on 7-19

November 2019 at Sadar, Mymensingh and 15-16 November 2019 at Madhukhali, Faridpur with the duration of 107-109 and 115-116 days, respectively. Binadhan-11 produced average yield of 5.88 and 5.05 t/ha at Sadar, Mymensingh and Madhukhali, Faridpur, respectively (Table 32 & 33).

Table 30: Performance of T. Aman Binadhan-7 at Sadar, Mymensingh during 2019-2020

Plot. No	Date of sawing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	31-7-19	21-8-19	20	17-11-19	106	5.72
2	29-7-19	19-8-19	20	18-11-19	109	5.54
3	25-7-19	21-8-19	26	14-11-19	109	5.83
4	25-7-19	21-8-19	26	15-11-19	110	5.06
5	25-7-19	17-8-19	22	14-11-19	109	5.82
6	25-7-19	20-8-19	22	17-11-19	112	5.33
7	25-7-19	26-8-19	31	12-11-19	107	3.12
8	25-7-19	26-8-19	31	14-11-19	109	4.93
9	25-7-19	19-8-19	24	9-11-19	105	4.64
10	25-7-19	19-8-19	24	11-11-19	107	5.17
11	25-7-19	23-8-19	28	7-11-19	103	3.38
12	25-7-19	22-8-19	27	9-11-19	105	4.27
13	25-7-19	19-8-19	24	16-11-19	111	4.66
Mean			**25**		**107**	**4.88**

Table 31: Performance of T. Aman Binadhan-7 at Madhukhali, Faridpur during 2019-2020

Plot. No	Date of sawing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	20-7-19	16-8-19	26	15-11-19	115	4.33
2	20-7-19	16-8-19	26	15-11-19	115	4.72
3	20-7-19	16-8-19	26	15-11-19	115	4.16
4	20-7-19	16-8-19	26	15-11-19	115	4.24
5	20-7-19	16-8-19	26	16-11-19	116	4.18
6	20-7-19	16-8-19	26	16-11-19	116	3.93
7	20-7-19	16-8-19	26	16-11-19	116	4.74
8	20-7-19	16-8-19	26	15-11-19	115	4.13
9	20-7-19	16-8-19	26	15-11-19	115	4.12
10	20-7-19	16-8-19	26	15-11-19	115	4.15
11	20-7-19	16-8-19	26	15-11-19	115	4.14
12	20-7-19	16-8-19	26	15-11-19	116	4.62
Mean			**26**		**115**	**4.29**

Table 32: Performance of T. Aman Binadhan-11 at Sadar, Mymensingh during 2019-2020

Plot. No	Date of sawing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	31-7-19	21-8-19	21	14-11-19	103	4.63
2	29-7-19	19-8-19	21	13-11-19	104	5.65
3	25-7-19	21-8-19	26	15-11-19	110	5.64
4	27-7-19	23-8-19	26	19-11-19	112	5.81
5	25-7-19	17-8-19	22	11-11-19	106	6.17
Mean			**23**		**107**	**5.58**

Table 33: Performance of T. Aman Binadhan-11 at Madhukhali Faridpur during 2019-2020

Plot. No	Date of sawing	Date of transplanting	Seedling age (Days)	Date of harvesting	Days to maturity	Yield (t/ha)
1	19-7-19	17-8-19	28	15-11-19	116	5.16
2	19-7-19	17-8-19	28	16-11-19	117	5.13
3	19-7-19	10-8-19	21	16-11-19	115	4.92
4	19-7-19	17-8-19	28	16-11-19	117	4.94
5	19-7-19	17-8-19	28	15-11-19	116	5.08
6	19-7-19	16-8-19	27	14-11-19	116	5.05
Mean			**27**		**116**	**5.05**

Harvesting was done on 7-19 November 2019 at Sadar, Mymensingh and 15-16 November 2019 at Madhukhali, Faridpur with the duration of 107-109 and 115-116 days, respectively. Binadhan-7 produced average yield of 4.88 and 4.29 t/ha at Sadar, Mymensingh and Madhukhali, Faridpur, respectively (Table 30 &31).

Fig. 50:Field view of T. Aman Binadhan-7 at Sadar, Mymensingh durring 2019-2020

Fig.51:Field view of T. Aman Binadhan-7 at Madhukhali, Faridpur durring 2019-2020

Fig. 52:Field view of T. Aman Binadhan-11 at Sadar, Mymensingh durring 2019-2020

Fig. 53: Field view of T. Aman Binadhan-11 at Madhukhali, Faridpur durring 2019-2020

13 Performance of mustard Binasarisha-9 and lentil-8 at Sadar, Mymensingh and Madhukhali, Faridpur during 2019-2020

The study was conducted at Sadar, Mymensingh during 2019-2020 using the variety Binasarisha-9 and BARI Sarisha-14 in Robi season (Fig. 53). There were 18 farmers having the amount of land was 1.22 ha. Seeds were sown on 23-28 November 2019 following non replicated design. Fertilizers were applied at the rate of 90, 80, 50, 60 and 3 kg ha^{-1} as urea, TSP, MoP, gypsum and boric acid, respectively. The whole amount of TSP, MoP, gypsum, boric acid and half of ureawere applied during the final land preparation. Rest half urea was applied 20-25 days after sowing at before the flowering stages. Moreover, necessary cultural and intercultural operations were followed as and when required. Data on maturity and seed yield were recorded. Maturity was assessed plot basis and seed yield was recorded from an area of 20 m^2 for each variety which was later converted to t ha^{-1}.

Table 34: Performance of Binasarisha-9 at Sadar, Mymensingh during 2019-2020

Plot. No	Date of sawing	Date of harvesting	Days to maturity	Yield (t/ha)
Binasarisha-9				
1	23-11-19	19-2-2020	88	1.68
2	23-11-19	19-2-2020	88	1.59
3	23-11-19	14-2-2020	83	1.58
4	24-11-19	17-2-2020	85	1.57
5	24-11-19	17-2-2020	85	1.64
6	25-11-19	20-2-2020	86	1.57
7	25-11-19	20-2-2020	86	1.56
8	25-11-19	21-2-2020	87	1.59
9	27-11-19	20-2-2020	85	1.63
10	27-11-19	20-2-2020	85	1.64
11	27-11-19	20-2-2020	85	1.63
12	28-11-19	20-2-2020	84	1.58
13	28-11-19	20-2-2020	84	1.62
Mean			**85**	**1.61**
BARI Sarisha-14				
14	23-11-19	16-2-2020	85	1.63
15	24-11-19	16-2-2020	84	1.58
16	25-11-19	16-2-2020	83	1.61
17	27-11-19	16-2-2020	82	1.55
18	28-11-19	16-2-2020	81	1.57
Mean			**83**	**1.59**

Harvesting was done on 14-21 February 2020 with the average maturity period of 85 and 82 days of Binasarisha-9 and BARI Sarisha-14, respectively. Binasarisha-9 and BARI Sarisha-14 produced average yield of 1.61 and 1.59 t ha^{-1}, respectively (Table 34).

Fig. 54: Field view of Binasarisha-9 at Sadar, Mymensingh during 2019-2020

The study was conducted at Madhukhali, Faridpur during 2019-2020 using the variety Binamasur-8 and BARI Masur-6 in Robi season (Fig. 54). There were 18 farmers having the amount of land was 1.22 ha. Seeds were sown on 7-17 December 2019 following non replicated design. Fertilizers were applied at the rate of 40, 100, 60, 80, 3 kg ha^{-1} as urea, TSP, MoP, gypsum and boric acid, respectively. The whole amount of all fertilizers were applied during the final land preparation. Moreover, necessary cultural and intercultural operations were followed as and when required. Data on maturity and seed yield were recorded. Maturity was assessed plot basis and grain yield was recorded from an area of 20 m^2 for each variety which was later converted to t ha^{-1}.

Table 35: Performance of Binamasur-8 and BARI Masur-6 at Madhukhali, Faridpur during 2019-2020

Plot. No	Date of sawing	Date of harvesting	Days to maturity	Yield (t/ha)
Binamasur-8				
1	7-12-19	16-3-20	99	1.98
2	7-12-19	16-3-20	99	2.02
3	7-12-19	16-3-20	99	2.03
4	7-12-19	16-3-20	99	2.11
5	7-12-19	16-3-20	99	2.04
6	7-12-19	16-3-20	99	2.02
7	10-12-19	17-3-20	97	2.01
8	10-12-19	17-3-20	97	1.85
9	10-12-19	17-3-20	97	2.20
10	11-12-19	20-3-20	99	2.10
11	11-12-19	20-3-20	99	2.02
12	11-12-19	20-3-20	99	1.99
13	11-12-19	20-3-20	99	1.90
14	11-12-19	20-3-20	99	2.11
15	17-12-19	25-3-20	98	2.20
16	17-12-19	25-3-20	98	2.05
Mean			**99**	**2.04**
BARI Masur-6				
17	11-12-19	20-3-20	99	2.01
18	17-12-19	24-3-20	97	2.03
Mean			**98**	**2.02**

Harvesting was done on 16-25 March 2020 with the average maturity period of 99 and 98 days of Binamasur-8 and BARI Masur-6, respectively. Binadmasur-8 and BARI Masur-6 produced average yield of 2.04 and 2.02 t ha^{-1}, respectively (Table 35).

Fig. 55: Field view of T. Aman Binamasur-8 at Madhukhali, Faridpur during 2019-2020

Performance of boro rice Binadhan-10 and aus rice Binadhan-19 & Binadhan-14 at Sadar, Mymensingh and Madhukhali, Faridpur during 2019-2020

In boro season season of 2019-2020, Binadhan-10 was transplanted at Sadar, Mymensingh from 18-27 February, 2020. Binadhan-10 is near ripening stages up to the reporting period (Fig. 55).

Fig. 56: Field view of aus Binadhan-19 and Binadhan-14 at Sadar, Mymensingh during 2019-2020

In aus season season of 2019-2020, Binadhan-19 and Binadhan-14 was broadcasted at Madhukhali, Faridpur from 10-15 April, 2020. Binadhan-19 and Binadhan-14 is now in vegetative stage (Fig.56).

Fig. 57: Field view of aus Binadhan-19 and Binadhan-14 at Madhukhali, Faridpur during 2019-2020

A monitoring team of BARC was visited the field of T. aman experimental plot at Sadar, Mymensingh on 17 October 2019 (Fig.57).

Fig. 58: Field monitoring of Binadhan-7 and Binadhan-11 at Sadar, Mymensingh on 17-10-2019

A monitoring team of PIU, BARC was visited the field of mustard experimental plot at Sadar, Mymensingh on 17 October 2019 (Fig.58).

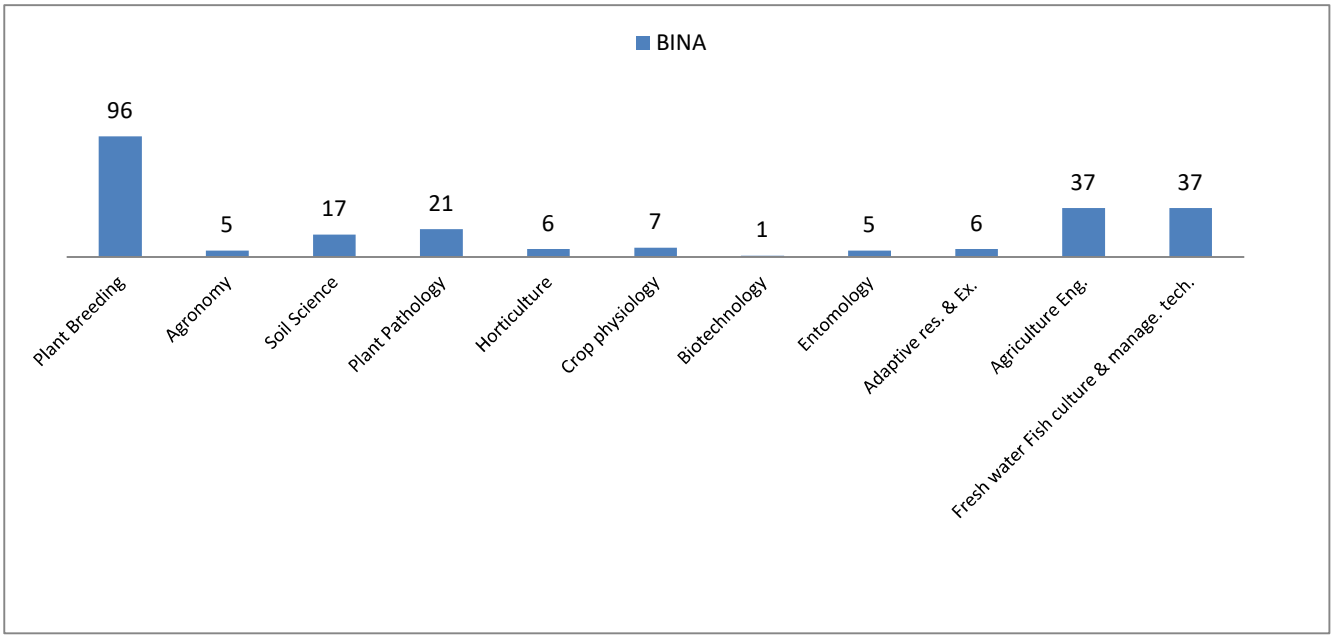
Fig. 59: Field monitoring of Binsarisha-9 at Sadar, Mymensingh on 5-12-2019

A monitoring team of coordinator team of BARC was visited the field of boro rice experimental plot at Sadar, Mymensingh on 15 March 2020 (Fig.59).

Fig. 60: Field monitoring of Bindhan-10 at Sadar, Mymensingh on 15-3-2020

Technology Generation

From the inception, ten divisions of BINA have been developed 196 technologies. During (1972-2019) period, Plant Breeding Division of BINA developed 91 technologies of different crops, Adaptive Research and Extension Division (ARED) developed 6 technologies, 37 technologiesAgronomy division developed 5 technologies, Agricultural Engineering Division developed, and Biotechnology Division developed 1 technology. Crop Physiology Division, Entomology, Horticulture and Plant Pathology Division developed 7, 5, 6, 21



technologies respectively. **Soil science** division developed 17 technologies.

The highest number of technologies (91) was generated from Plant breeding division (PBD) and lowest number of technologies (01) was generated from Biotechnology Division.

Fig. 61: Division wise grand total technology generated, BINA (1975-2019)

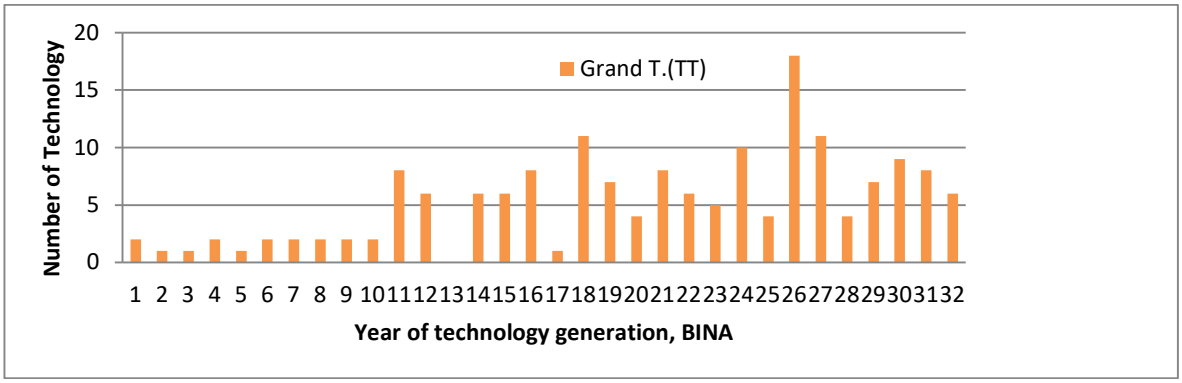


Fig. 62: Year wise grand total technology generated, BINA (1975-2019)

Transferring movement of technologies

Except 26 technologies, all other technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Table 36 Division wise transferred and non-transferred technology, BINA (1975-2019)

Year	Institute wise No of Technology	Name of Division	No of Technology	TT (Nos)	NTT (Nos)
1972-2019	BINA (10)	Adaptive Research and Extension Division	6	3	3
		Agronomy	5	4	1
		Agricultural Engineering Division	37	33	4
		Biotechnology Division	1	0	1
		Crop Physiology Division	7	7	0
		Entomology	5	5	0
		Horticulture	6	5	1
		Plant Breeding Division	91	91	0
		Plant Pathology	21	9	12
		Soil Science Division	17	13	4
Total		**10**	**196**	**170**	**26**

11.5 :Training and Technology Transfer Division,Bangladesh Sugarcrop Research Institute (BSRI)

Among 193 technologies generated by BSRI from 1951-2018 only 03 technologies were selected for transfer through this project. The average tiller population and number of chewable cane of BSRI akh 42 with potato/ onion/cabbage-mungbean sequential intercropping were 126.40 $x10^3$ ha^{-1}, 122.42 x 10^3 ha^{-1}, 122.34 $x10^3$ ha^{-1}, 94.29 $x10^3$ ha^{-1}, 90.30 $x10^3$ ha^{-1} and 89.05 $x10^3$ ha^{-1} respectively. The average cane yield and adjusted cane yield were 152.92, 148.71, 142.67, 170.64, 182.41 and 174.96 t ha^{-1} respectively. The highest number of tiller, chewable cane and cane yield were found 133.69 $x10^3$ ha^{-1}, 100.32 $x10^3$ ha^{-1} and 160.98 t ha^{-1} from potato- mungbean sequential intercropping which was followed by onion- mungbean sequential intercropping. But the highest adjusted cane yield was 192.48 t ha^{-1} found from onion- mungbean sequential intercropping which was followed by potato-mungbean sequential intercropping (179.37 t ha^{-1}). However, the tiller, chewable cane, cane yield, intercropping yield and adjusted cane yield depending on soil fertility, cropping pattern, farmers' management practices and price of intercropping (Table 37).

Table 37: Performance of BSRI akh 42 as a chewing cane with potato/onion/cabbage – mungbean sequential intercropping during 2018-2019

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 1	125.72	93.30	149.28	7.50	0.20	17.60	166.88
Farmer 2	129.41	98.10	156.15	7.85	0.21	18.43	174.58
Farmer 3	133.69	100.32	160.98	7.70	0.23	18.39	179.37
Farmer 4	116.78	85.45	145.26	7.00	0.19	16.47	161.73
Average	**126.40**	**94.29**	**152.92**	**7.51**	**0.20**	**17.72**	**170.64**

Price of Chewing cane: 5000Tk./Ton; Potato: 10 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 5	117.93	85.97	145.28	7.25	0.23	34.89	180.17
Farmer 6	116.19	83.30	142.44	7.10	0.22	34.10	176.54
Farmer 7	130.57	99.70	159.52	6.90	0.20	32.96	192.48
Farmer 8	125.00	92.25	147.60	6.85	0.21	32.87	180.47
Average	**122.42**	**90.30**	**148.71**	**7.02**	**0.21**	**33.70**	**182.41**

Price of Chewing cane: 5000Tk./Ton; Onion: 22 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 9	120.45	87.20	140.25	31.0	0.19	33.47	173.72
Farmer 10	124.23	90.90	145.10	28.5	0.20	31.10	176.20
Average	**122.34**	**89.05**	**142.67**	**29.75**	**0.195**	**32.28**	**174.96**

Price of Chewing cane: 5000Tk./Ton; Cabbage: 05 Tk./Kg; Mungbean: 65Tk./Kg

An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 4, 10,000 Tk. ha^{-1}. But after demonstration or technology transfer farmers profit was 6, 86,050 Tk. ha^{-1}. Yield increase: 56.21 t ha^{-1} (7.58 t $bigha^{-1}$). Therefore, farmers' income rises 2, 81,050 tk. ha^{-1} (37,928 tk. $bigha^{-1}$). The BCR of chewing cane BSRI akh 42 with sequential intercropping was 4.51 in the cropping season 2018 -2019 (Table 38).

Table 38: Economic analysis of BSRI akh 42 as a chewing cane with sequential intercropping during 2018-2019

Results summary for BSRI akh 42 with systematic sequential intercropping Result before and after transfer technology		
	Before	After
	Local chewing cane varieties with mixed cropping	**BSRI akh 42 with systematic sequential intercropping**
Adjusted Yield (t/ha)	120.00	176.21
Cost (Tk./ha)	Tk. 1,90,000/-	Tk. 1,95,000/-
Returns(Tk./ha)	Tk. 6,00,000/-	Tk. 8,81,050/-
Profit (Tk./ha)	Tk. 4,10,000/-	Tk. 6,86,050/-
BCR	**3.15**	**4.51**

The average tiller population and number of millable cane of BSRI akh 45 as a gur variety with potato/onion/cabbage-mungbean sequential intercropping were 154.23 $x10^3$ ha^{-1}, 155.71 x 10^3 ha^{-1}, 150.05 $x10^3$ ha^{-1}; 117.02 $x10^3$ ha^{-1}, 116.93 $x10^3$ ha^{-1} and 110.55 $x10^3$ ha^{-1} respectively. The average cane yield and adjusted cane yield were 98.46, 99.70, 94.82, 125.34, 153.04 and 145.16 t ha^{-1} respectively. The highest number of tiller, millable cane and cane yield were found 165.90 x 10^3 ha^{-1}, 128.10 x 10^3 ha^{-1} and 108.23 t ha^{-1} from onion-mungbean sequential intercropping which was followed by potato- mungbean sequential intercropping. The highest adjusted cane yield was 162.14 t ha^{-1} found from onion-mungbean sequential intercropping which was followed by cabbage- mungbean sequential intercropping (150.64 t ha^{-1}). However, the tiller, millable cane, cane yield, intercropping yield and adjusted cane yield depending on soil fertility, cropping pattern, farmers' management practices and price of intercropping (Table 39).

Table 39: Performance of BSRI akh 45 as a gur variety with potato/onion/cabbage - mungbean sequential intercropping during 2018-2019

Farmers	Tiller ($x10^3$ ha^{-1})	Millable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 1	155.74	116.75	99.23	7.90	0.29	27.95	127.18
Farmer 2	163.56	125.85	106.97	7.78	0.25	26.86	133.83
Farmer 3	150.93	114.90	95.65	7.50	0.24	25.87	121.52
Farmer 4	146.72	110.60	92.00	7.65	0.27	26.86	118.86
Average	**154.23**	**117.02**	**98.46**	**7.70**	**0.262**	**26.88**	**125.34**

Price of Sugarcane: 3500Tk./Ton; Potato: 10 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Millable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 5	156.39	115.50	101.06	7.80	0.30	54.59	155.65
Farmer 6	152.37	110.45	93.88	7.60	0.27	52.78	146.66
Farmer 7	165.90	128.10	108.23	7.75	0.28	53.91	162.14
Farmer 8	148.18	113.70	95.64	7.55	0.25	52.09	147.73
Average	**155.71**	**116.93**	**99.70**	**7.67**	**0.275**	**53.34**	**153.04**

Price of Sugarcane: 3500Tk./Ton; Onion: 22 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Millable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 9	154.85	114.00	96.90	34.5	0.24	53.74	150.64
Farmer 10	145.26	107.10	92.75	30.0	0.22	46.93	139.68
Average	**150.05**	**110.55**	**94.82**	**32.25**	**0.23**	**50.33**	**145.16**

Price of Sugarcane: 3500Tk./Ton; Cabbage: 05 Tk./Kg; Mungbean: 65Tk./Kg

An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 1, 87,750 Tk. ha^{-1}. But after demonstration or technology transfer farmers profit was 3, 36,330 Tk. ha^{-1}. Yield increase: 43.88 t ha^{-1} (5.92 t $bigha^{-1}$). Therefore, farmers' income rises 1, 53,580 Tk. ha^{-1} (20,726 Tk. $bigha^{-1}$). The BCR of chewing cane BSRI akh 45 with sequential intercropping was 3.16 in the cropping season 2018 -2019 (Table 40).

Table 40: Economic analysis of BSRI akh 45 as a gur variety with sequential intercropping during 2018-2019

Results summary for BSRI akh 45 with systematic sequential intercropping Result before and after transfer technology		
	Before	After
	Local sugarcane varieties with mixed cropping	**BSRI akh 45 with systematic sequential intercropping**
Adjusted Yield (t/ha)	96.50	140.38
Cost (Tk./ha)	Tk. 1,50,000/-	Tk. 1,55,000/-
Returns(Tk./ha)	Tk. 3,37,750/-	Tk. 4,91,330/-
Profit (Tk./ha)	Tk. 1,87,750/-	Tk. 3,36,330/-
BCR	**2.25**	**3.16**

The average tiller population and number of chewable cane of BSRI akh 42 with potato/onion/cabbage - mungbean sequential intercropping were 128.28 x10^3 ha^{-1}, 127.05 x 10^3 ha^{-1}, 124.25 x10^3 ha^{-1}, 97.67 x10^3 ha^{-1}, 96.76 x10^3 ha^{-1} and 94.97 x10^3 ha^{-1} respectively. The average cane yield and adjusted cane yield were 155.69, 153.80, 150.47, 172.63, 186.27 and 176.07 t ha^{-1} respectively. The highest number of tiller and chewable cane were found 135.24 x10^3 ha^{-1}, 104.15 x10^3 ha^{-1} from potato-mungbean sequential intercropping which was followed by onion- mungbean sequential intercropping. But the highest cane yield and adjusted cane yield were 163.92 t ha^{-1} and 196.88 t ha^{-1} found from onion-mungbean sequential intercropping which was followed by potato- mungbean sequential intercropping (163.51 t ha^{-1}) but adjusted cane yield followed by cabbage- mungbean sequential intercropping (181.84 t ha^{-1}). However, the tiller, chewable cane, cane yield, intercropping yield and adjusted cane yield depending on soil fertility, cropping pattern, farmers' management practices and price of intercropping (Table 41).

Table 41:Performance of BSRI akh 42 as a chewing cane with potato/onion/cabbage - mungbean sequential intercropping during 2019-2020

Farmers	**Tiller (x10^3 ha^{-1})**	**Chewable Cane (x10^3 ha^{-1})**	**Cane Yield (t ha^{-1})**	**Intercrop Yield (t ha^{-1})**		**Equivalent Cane Yield (t ha^{-1})**	**Adjusted Cane Yield (t ha^{-1})**
				1st	**2nd**		
Farmer 1	130.86	100.35	159.56	7.00	0.21	16.73	176.29
Farmer 2	135.24	104.15	163.51	7.20	0.19	16.87	180.38
Farmer 3	126.67	95.40	152.65	7.50	0.20	17.60	170.25
Farmer 4	120.35	90.78	147.06	7.10	0.18	16.54	163.60
Average	**128.28**	**97.67**	**155.69**	**7.2**	**0.195**	**16.93**	**172.63**

Price of Chewing cane: 5000Tk./Ton; Potato: 10 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 5	124.75	94.20	150.72	6.75	0.21	32.43	183.15
Farmer 6	134.19	103.75	163.92	6.90	0.20	32.96	196.88
Farmer 7	127.40	97.50	154.05	7.00	0.20	33.40	187.45
Farmer 8	121.88	91.59	146.54	6.50	0.19	31.07	177.61
Average	**127.05**	**96.76**	**153.80**	**6.78**	**0.20**	**32.46**	**186.27**

Price of Chewing cane: 5000Tk./Ton; Onion: 22 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 9	128.00	99.05	155.50	30.0	0.18	26.34	181.84
Farmer 10	120.50	90.90	145.44	28.0	0.19	24.87	170.31
Average	**124.25**	**94.97**	**150.47**	**29.0**	**0.185**	**25.60**	**176.07**

Price of Chewing cane: 5000Tk./Ton; Cabbage: 04 Tk./Kg; Mungbean: 65Tk./Kg

An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 4, 10,000 Tk. ha^{-1}. But after demonstration or technology transfer farmers profit was Tk. 6, 97,900 Tk. ha^{-1}. Yield increase: 58.78 t ha^{-1} (7.93 t $bigha^{-1}$). Therefore, farmers' income rises 2, 93,900 Tk. ha^{-1} (39,662 tk. $bigha^{-1}$). The BCR of chewing cane BSRI akh 42 with sequential intercropping was 4.56 in the cropping season 2019 -2020 (Table 42).

Table 42: Economic analysis of BSRI akh 42 as a chewing cane with sequential intercropping during 2019-2020

Results summary for BSRI akh 42 with systematic sequential intercropping Result before and after transfer technology		
	Before	After
	Local chewing cane varieties with mixed cropping	**BSRI akh 42 with systematic sequential intercropping**
Adjusted Yield (t/ha)	120.00	178.78
Cost (Tk./ha)	Tk. 1,90,000/-	Tk. 1,96,000/-
Returns(Tk./ha)	Tk. 6,00,000/-	Tk. 8,93,900/-
Profit (Tk./ha)	Tk. 4,10,000/-	Tk. 6,97,900/-
BCR	**3.15**	**4.56**

The average tiller population and number of millable cane of BSRI Akh 45 as a gur variety with potato/onion/cabbage - mungbean sequential intercropping were 152.92 $x10^3$ ha^{-1}, 154.68 x 10^3 ha^{-1}, 150.07 $x10^3$ ha^{-1}, 115.17 $x10^3$ ha^{-1}, 116.98 $x10^3$ ha^{-1} and 112.85 $x10^3$ ha^{-1}

respectively. The average cane yield and adjusted cane yield were 99.70, 102.02, 99.31, 126.33, 152.13 and 139.76 t ha^{-1} respectively. The highest number of tiller, millable cane and cane yield were found 164.65 x 10^3 ha^{-1}, 126.20 x 10^3 ha^{-1} and 112.31 t ha^{-1} from onion-mungbean sequential intercropping which was followed by potato- mungbean sequential intercropping. The highest adjusted cane yield was 164.46 t ha^{-1} found from onion-mungbean sequential intercropping which was followed by cabbage- mungbean sequential intercropping (143.99 t ha^{-1}). However, the tiller, millable cane, cane yield, intercropping yield and adjusted cane yield depending on soil fertility, cropping pattern, farmers' management practices and price of intercropping (Table 43).

Table 43: Performance of BSRI akh 45 as a gur variety with potato/onion/cabbage - mungbean sequential intercropping during 2019-2020

Farmers	Tiller (x10^3 ha^{-1})	Millable Cane (x10^3 ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 1	160.68	122.50	109.35	7.60	0.27	26.72	136.07
Farmer 2	150.95	112.75	95.83	7.00	0.30	25.57	121.40
Farmer 3	154.27	115.30	100.15	8.00	0.25	27.49	128.64
Farmer 4	145.80	110.15	93.50	7.45	0.24	25.73	119.23
Average	**152.92**	**115.17**	**99.70**	**7.51**	**0.265**	**26.37**	**126.33**

Price of Sugarcane: 3500Tk./Ton; Potato: 10 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller (x10^3 ha^{-1})	Millable Cane (x10^3 ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 5	164.65	126.20	112.31	7.50	0.27	52.15	164.46
Farmer 6	151.50	112.34	97.73	7.00	0.23	48.27	146.00
Farmer 7	157.18	119.79	105.41	7.25	0.29	50.95	156.36
Farmer 8	145.40	109.62	92.65	7.10	0.24	49.07	141.72
Average	**154.68**	**116.98**	**102.02**	**7.21**	**0.257**	**50.11**	**152.13**

Price of Sugarcane: 3500Tk./Ton; Onion: 22 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller (x10^3 ha^{-1})	Millable Cane (x10^3 ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 9	153.30	115.50	101.64	33.0	0.25	42.35	143.99
Farmer 10	146.85	110.21	96.98	30.0	0.23	38.55	135.53
Average	**150.07**	**112.85**	**99.31**	**31.5**	**0.24**	**40.45**	**139.76**

Price of Sugarcane: 3500Tk./Ton; Cabbage: 04 Tk./Kg; Mungbean: 65Tk./Kg

An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 1, 87,750 Tk. ha^{-1}. But after demonstration or technology transfer farmers profit was 3, 32,690 Tk. ha^{-1}. Yield increase: 42.84 t ha^{-1} (5.78 t $bigha^{-1}$). Therefore, farmers' income rises 1, 49,940 Tk. ha^{-1} (20,235 Tk. $bigha^{-1}$). The BCR of chewing cane BSRI akh 45 with sequential intercropping was 3.14 in the cropping season 2019 -2020 (Table 44).

Table 44: Economic analysis of BSRI akh 45 as a gur variety with sequential intercropping during 2019-2020

Results summary for BSRI akh 45 with systematic sequential intercropping Result before and after transfer technology		
	Before	**After**
	Local sugarcane varieties with mixed cropping	**BSRI Akh 45 with systematic sequential intercropping**
Adjusted Yield (t/ha)	96.50	139.34
Cost (Tk./ha)	Tk. 1,50,000/-	Tk. 1,55,000/-
Returns(Tk./ha)	Tk. 3,37,750/-	Tk. 4,87,690/-
Profit (Tk./ha)	Tk. 1,87,750/-	Tk. 3,32,690/-
BCR	**2.25**	**3.14**

The average tiller population and number of chewable cane of BSRI akh 42 with potato/onion/cabbage - mungbean sequential intercropping were 133.99 $x10^3$ ha^{-1}, 135.52 x 10^3 ha^{-1}, 128.60 $x10^3$ ha^{-1} and 101.07 $x10^3$ ha^{-1}, 103.55 $x10^3$ ha^{-1} & 95.35 $x10^3$ ha^{-1} respectively. The average cane yield and adjusted cane yield were 157.45, 162.20, 150.20, 174.56, 194.80 and 177.27 t ha^{-1} respectively. The highest number of tiller and chewable cane were found 140.50 $x10^3$ ha^{-1} and 107.23 $x10^3$ ha^{-1} from onion-mungbean sequential intercropping which was followed by potato- mungbean sequential intercropping. And the highest cane yield and adjusted cane yield were 167.27 t ha^{-1} and 199.83 t ha^{-1} found from onion- mungbean sequential intercropping which was followed by potato- mungbean sequential intercropping (163.29 t ha^{-1}) but adjusted cane yield followed by cabbage-mungbean sequential intercropping (180.61 t ha^{-1}). However, the tiller, chewable cane, cane yield, intercropping yield and adjusted cane yield depending on soil fertility, cropping pattern, farmers' management practices and price of intercropping (Table 45).

Table 45: Performance of BSRI akh 42 as a chewing cane with potato/onion/cabbage - mungbean sequential intercropping during 2020-2021

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 1	138.75	105.11	163.29	6.90	0.23	16.79	180.08
Farmer 2	132.34	100.65	157.01	7.45	0.20	17.50	174.51
Farmer 3	130.90	97.47	152.05	7.10	0.22	17.06	169.11
Average	**133.99**	**101.07**	**157.45**	**7.15**	**0.21**	**17.11**	**174.56**

Price of Chewing cane: 5000Tk./Ton; Potato: 10 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 4	140.50	107.23	167.27	6.75	0.22	32.56	199.83
Farmer 5	131.85	99.89	157.82	6.50	0.24	31.72	189.54
Farmer 6	134.23	103.54	161.52	7.00	0.21	33.53	195.05
Average	**135.52**	**103.55**	**162.20**	**6.75**	**0.22**	**32.60**	**194.80**

Price of Chewing cane: 5000Tk./Ton; Onion: 22 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Chewable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 7	130.42	96.92	152.01	32.5	0.20	28.60	180.61
Farmer 8	126.79	93.78	148.39	29.0	0.18	25.54	173.93
Average	**128.60**	**95.35**	**150.20**	**30.75**	**0.19**	**27.07**	**177.27**

Price of Chewing cane: 5000Tk./Ton; Cabbage: 04 Tk./Kg; Mungbean: 65Tk./Kg

An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 4, 10,000 Tk. ha^{-1}. But after demonstration or technology transfer farmers profit was Tk. 7,18,150 Tk. ha^{-1}. Yield increase: 62.83 t ha^{-1} (8.47 t $bigha^{-1}$). Therefore, farmers' income rises 3,14,150 Tk. ha^{-1} (42,395 Tk. $bigha^{-1}$). The BCR of chewing cane BSRI akh 42 with sequential intercropping was 4.66 in the cropping season 2020-2021 (Table 46).

Table 46: Economic analysis of BSRI akh 42 as a chewing cane with sequential intercropping during 2020-2021

Results summary for BSRI akh 42 with systematic sequential intercropping Result before and after transfer technology		
	Before	After
Varieties	**Local chewing cane varieties with mixed cropping**	**BSRI akh 42 with systematic sequential intercropping**
Adjusted Yield (t/ha)	120.00	182.83
Cost (Tk./ha)	Tk. 1,90,000/-	1,96,000/-
Returns(Tk./ha)	Tk. 6,00,000/-	9,14,150/-
Profit (Tk./ha)	Tk. 4,10,000/-	7,18,150/-
BCR	**3.15**	**4.66**

The average tiller population and number of millable cane of BSRI Akh 45 as a gur variety with potato/onion/cabbage - mungbean sequential intercropping were 161.37 $x10^3$ ha^{-1}, 167.69 x 10^3 ha^{-1}, 156.06 $x10^3$ ha^{-1}, 125.07 $x10^3$ ha^{-1}, 130.45 $x10^3$ ha^{-1} and 122.31 $x10^3$ ha^{-1} respectively. The average cane yield and adjusted cane yield were 106.60, 111.53, 99.68, 132.76, 162.03 and 140.70 t ha^{-1} respectively. The highest number of tiller, millable cane and cane yield were found 175.22 x 10^3 ha^{-1}, 136.10 x 10^3 ha^{-1} and 117.83 t ha^{-1} from onion-mungbean sequential intercropping which was followed by potato- mungbean sequential intercropping. The highest adjusted cane yield was 166.65 t ha^{-1} found from onion-mungbean sequential intercropping which was followed by cabbage- mungbean sequential intercropping (145.94 t ha^{-1}). However, the tiller, millable cane, cane yield, intercropping yield and adjusted cane yield depending on soil fertility, cropping pattern, farmers' management practices and price of intercropping (Table 47).

Table 47: Performance of BSRI akh 45 as a gur variety with potato/onion/cabbage - mungbean sequential intercropping during 2020-2021

Farmers	Tiller ($x10^3$ ha^{-1})	Millable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 1	161.35	124.19	106.69	7.60	0.30	27.28	133.97
Farmer 2	155.72	120.33	99.83	7.45	0.27	26.29	126.12
Farmer 3	167.04	130.71	113.28	7.10	0.25	24.92	138.20
Average	**161.37**	**125.07**	**106.60**	**7.38**	**0.27**	**26.16**	**132.76**

Price of Sugarcane: 3500Tk./Ton; Potato: 10 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Millable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 4	165.56	129.39	110.47	7.25	0.28	50.77	161.24
Farmer 5	175.22	136.10	117.83	7.00	0.26	48.82	166.65
Farmer 6	162.30	125.87	106.31	7.40	0.29	51.89	158.20
Average	**167.69**	**130.45**	**111.53**	**7.21**	**0.27**	**50.49**	**162.03**

Price of Sugarcane: 3500Tk./Ton; Onion: 22 Tk./Kg; Mungbean: 65Tk./Kg

Farmers	Tiller ($x10^3$ ha^{-1})	Millable Cane ($x10^3$ ha^{-1})	Cane Yield (t ha^{-1})	Intercrop Yield (t ha^{-1})		Equivalent Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})
				1st	2nd		
Farmer 7	161.90	125.00	103.59	33.0	0.25	42.35	145.94
Farmer 8	150.23	119.63	95.78	31.0	0.23	39.69	135.47
Average	**156.06**	**122.31**	**99.68**	**32.0**	**0.24**	**41.02**	**140.70**

Price of Sugarcane: 3500Tk./Ton; Cabbage: 05 Tk./Kg; Mungbean: 65Tk./Kg

An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 1, 87,750 Tk. ha^{-1}. But after demonstration or technology transfer farmers profit was Tk. 3, 55,020 Tk. ha^{-1}. Yield increase: 49.22 t ha^{-1} (6.64 t $bigha^{-1}$). Therefore, farmers' income rises 1, 72,270 Tk. ha^{-1} (23,248 Tk. $bigha^{-1}$). The BCR of chewing cane BSRI akh 45 with sequential intercropping was 3.29 in the cropping season 2020-2021 (Table 48).

Table 48: Economic analysis of BSRI akh 45 as a gur variety with sequential intercropping during 2020-2021

Results summary for BSRI akh 45 with systematic sequential intercropping Result before and after transfer technology		
	Before	**After**
Varieties	**Local sugarcane varieties with mixed cropping**	**BSRI akh 45 with systematic sequential intercropping**
Adjusted Yield (t/ha)	96.50	145.72
Cost (Tk./ha)	Tk. 1,50,000/-	1,55,000/-
Returns(Tk./ha)	Tk. 3,37,750/-	5,10,020/-
Profit (Tk./ha)	Tk. 1,87,750/-	3,55,020/-
BCR	**2.25**	**3.29**

Farmers' feedback about BSRI varieties

Farmers expressed their opinions about the demonstrated varieties. Farmers' opinions are collected by project personnel by direct interactions with the farmers and report (data sheet)

collected from the DAE personnel. These opinions are very important for BSRI scientists to rectify the problems about the BSRI varieties by different means. The summary of farmers' reactions about some BSRI varieties is given as follows (Table 49).

Table 49:Farmers' feedback about the varieties demonstrated in BSRI project site

S N	Variety	Advantages	Disadvantages
1.	BSRI akh 42	i. Vigorous growth, higher tillering & high yielding ii. Better crop stand and no lodging iii. Non flowering iv. Early maturity v. Soft and easy chewing with better taste vi. Good recovery vii. Moderately resistant to red rot disease viii. Drought tolerant ix. Most popular than BSRI akh 41	Sometimes Susceptible to red rot disease where submerge or flood occurs
2.	BSRI akh 45	i. Higher tillering and high yielding ii. Better crop stand iii. High recovery (11.32-15.41 %) iv. Better for gur variety v. Good for ratoon vi. Drought tolerant vii. Water logging and flood tolerant viii. Resistant to red rot and smart disease	Crop may lodged at maturity stage in waterlogged/ flood condition.

Table 50: Knowledge sharing and motivated farmers of demonstration about BSRI variety

S N	Upazila	BSRI akh 42 (Knowledge sharing farmer)	BSRI akh 42 (Motivated farmer)	BSRI akh 45 (Knowledge sharing farmer)	BSRI akh 45 (Motivated farmer)
1.	Sadar	250	110	240	45
2.	Kazipur	200	75	230	60
3.	Raigonj	215	100	200	35
4.	Ullahpara	230	90	80	20
Total		**895**	**375**	**750**	**160**

Table 51:Highest sugarcane produced/Higher Income generated Variety

	Highest sugarcane produced/ Higher Income generated Variety	Cane Yield (t ha^{-1})	Adjusted Cane Yield (t ha^{-1})	Tk./ha
Higher Productivity	BSRI akh 42 with onion-mungbean sequential intercropping	167.27	199.83	-
Higher Profit	BSRI akh 42 with onion-mungbean sequential intercropping	-	-	9,99,150/-
Transfer Way	Demonstration			
Popular	Extension personnel can disseminate high and medium high land of the country wide			

Table 52:Output and Outcome, BSRI

OUTPUT	OUTCOME
Yield increase: Chewing cane: 59.27 t ha^{-1} Gur variety: 45.31 t ha^{-1}	BSRI released latest sugarcane varieties BSRI akh 42 and BSRI akh 45 were transferred to farmers in selective areas.
Income rise: Chewing cane: 2,96,350 Tk. ha^{-1} Gur Variety: 1,58,585 Tk. ha^{-1}	Popularization of profitable technology was increased.
Profitable technologies (BSRI akh 42 and BSRI akh 45 with systematic sequential intercropping) were transferred to farmer field directly.	Increased linkage of researchers with farmers, extension personnel and policy makers.
69 male and 31 female farmers were trained through FGD.	Farmers got information about the latest BSRI sugarcane varieties.

Fig. 63: Sugarcane seed carying and preparation of setts with chemical treatment

Fig. 64: Land preparation and planting of setts

Fig. 65: Different intercropping with sugarcane

Fig. 66: Different intercropping with sugarcane

Fig. 67: Different growth stages of sugarcane

Fig.68: Mature stage of chewing cane (BSRI akh 42) and gur variety (BSRI akh 45)

Fig.69: Harvesting of chewing cane plot and demonstrate hygenic gur preparation

Technology Generation

Bangladesh Sugar crop Research Institute was established in 1951 and from the inception of the institute developed 193 technologies from 11 different divisions. Agricultural Economics Division does not develop any technology directly. Therefore, there is no matured technology in Agricultural Economics Division. The highest number of technologies (50) was generated from Plant breeding division and lowest number of technologies (03) was generated from Training & Technology Transfer Division.

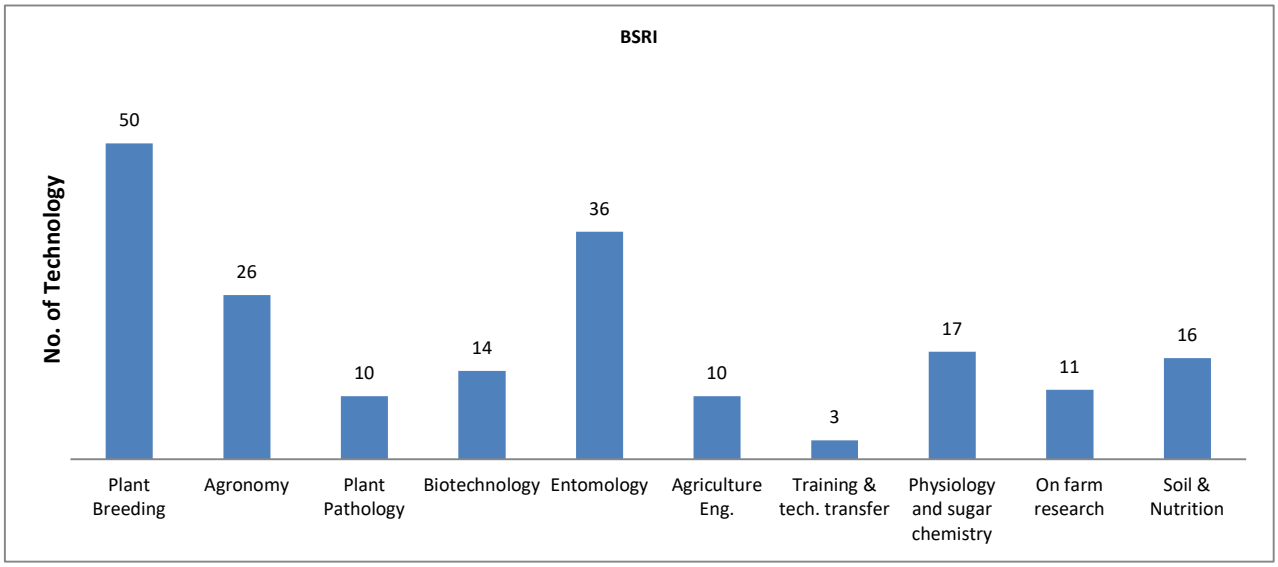


Fig. 70: Division wise generated Technology, BSRI

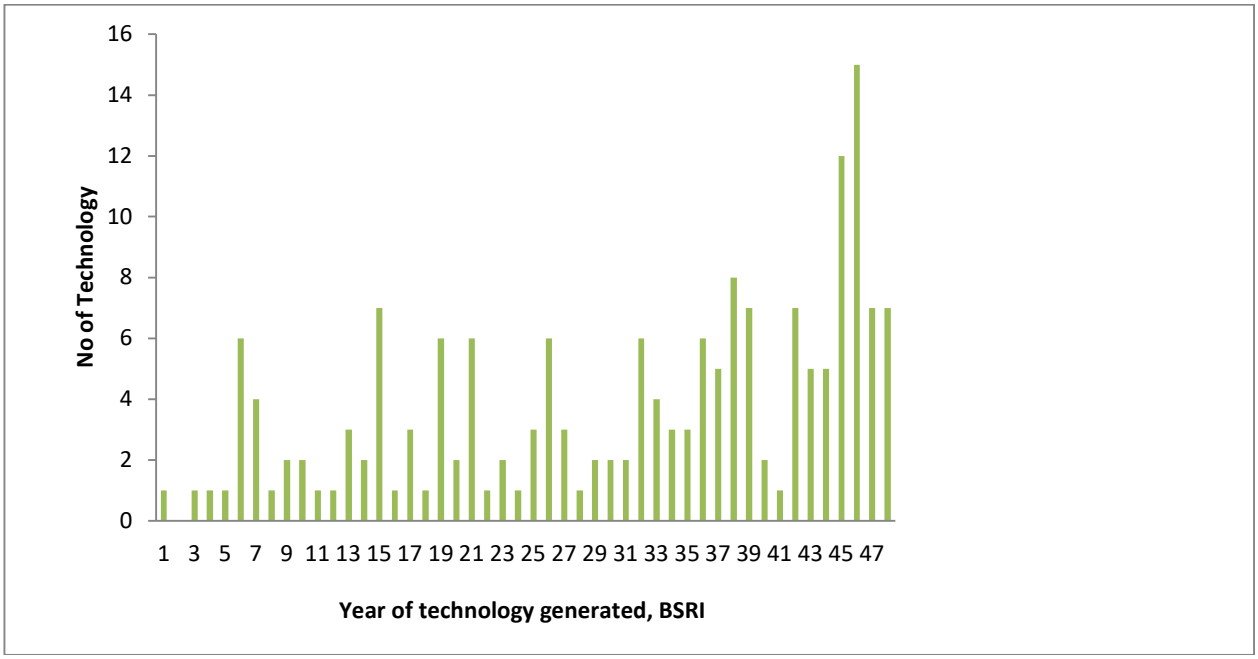


Fig. 71: year wise generated Technology, BSRI (1987-2018)

Transferring status /movement of technologies, BSRI

All other technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Table 53: Division wise transferred and non-transferred Technology, BSRI

Year	Institute wise No of Technology	Name of Division	No of Technology	TT (Nos)	NTT (Nos)
1951-2018	BSRI (11)	Physiology and Sugar Chemistry	17	15	2
		Agricultural Economics Division	-	-	-
		Agricultural Engineering Division	10	10	0
		Agronomy & Farming Systems Division	26	26	0
		Biotechnology	14	14	0
		Breeding	50	37	13
		Entomology	36	36	0
		On Farm Research	11	11	0
		Pathology	10	10	0
		Soils and Nutrition Division	16	16	0
		Training & Technology Transfer Division	3	3	0
Total		**11**	**193**	**178**	**15**

11.6:Training, Planning and Technology Testing Division,Bangladesh Livestock Research Institute

Among 89 technologies generated from 1984-2020 by BLRI only 02 technologies were preferred for transfer through this project.

Base line Survey: A baseline survey was completed. The surveyed information are shows in following.

The general information of farmers is shown in Table-1. The education level of farmers were 8% illiterate, 82% primary level and 9% secondary level. The family member of male were below 18 years 1.61 and over 18 years 2.0 number per family. The female were below 18 years 1.57 and over 18 years 1.74 number per family. The land availability such as housing area were 0.50 acre, cultivated area 0.95 acre, uncultivated area 0.08 acre and fodder land area 0.20 acre per family.

Table 1.General information of farmers

Sl. No.	Topic		% farmers
1.	Education:	Illeterate	8
		Primary level	82
		Secondary level	9
2.	Family members (number/family):	Male<18	1.61
		Female <18	1.57
		Male>18	2.0
		Female>18	1.74
3	Land availability(acre./family)	Housing area	0.50
		Cultivable land	0.95
		Uncultivable land	0.08
		Fodder land	0.20

The area basis occupations are shown in Table-2. The Agriculture was the highest (91%) occupation of char areas but business (0.5%) and services (0.5%) were the lowest occupation.

Table 2. Occupation of goat farmers

Sl. No.	Occupatiion	Percent (%)
1	Agriculture	91
2	Business	0.5
3	Services	0.5
4	Others	8

The major problems faced by farmers are shown in Table-3. The major problem faced by the farmers were lack of fodders/grasses, lack of grazing land, high price of concentrate feed, Lack of green grass preservation technology etc in rainy season.

Table 3. Problem faced by farmers

Sl.No.	Problems
1.	Lack of fodders.
2.	Lack of grazing land.
3.	High price of feed (concentrates and straw).
5.	Lack of fodder/grasses in rainy season.
6.	Over rain of rainy season.
7.	Lack of green grass preservation technology.

The served results showed that before introduction of the technology the feeding cost of dairy cows (300 kg body wt) in rainy season was Tk. 252 Tk./d/cow, where concentrate 108 Tk./d/cow and straw 144 Tk./d/cow. The served results also showed that milk production was 7.51 lit./day/cow. Before introduction of the technology the feedingcost of dairy cow (300 kg body weight) in rainy season is shown in the following table 54.

Table 54: Before introduction of the technology the feeding cost of dairy cow (300 kg body weight) in rainy season, , BLRI

Sl. No.	Items	Feed Cost (Tk./day/Dairy cow)
1.	Concentrate (normal season 1kg +extra 3 kg in rainy season)	4x27 tk= 108 tk
2.	Straw	12 kgx12 Tk.=144 Tk
3.	**Total feed cost**	**=252 Tk**

B) **Training in a form of FGD:** Thirty (30) farmers was selected under the location for Focus Group Discussion (FGD) based on availability of livestock population and their socio-economic condition. Selected farmers were provided training in a form of FGDon Napier fodder cultivation and the silage technology.

C) **Fodder cultivation and Dole silage preparation in the field condition**

The BLRI Napier 4 fodder cultivation was conducted in the farmer's plot of Baghabari, Shajadpur, Sirajgonj and Godagari, Rajshahi to determine the biomass yield, morphological characteristics and nutritive value. Thus BLRI Napier 4 fodder was popularized in the areas. These cultivated fodder was used for dole silage preparation in the field condition. Napier

fodder yield and its morphological characteristics are shown in the following table 55. There was no significant (p>0.01) differences of biomass yield (t/ha), DM % (dry matter) and morphological characteristics of BLRI Napier-4 fodder in the two areas. Fertilizer Cost for fodder cultivation was 15856.00 and 16344.00 in Shajadpur and Godagari, respectively. These cost was also non-significant between two areas. Production cost of dole silage preparation is shown in the following table 55.

Table 55: Biomass yield and morphological characteristics of BLRI Napier-4 fodder

Locations	Biomass yield (t/ha)	%DM	DM (t/ha)	No. of hill (thousand/ ha)	No. of tiller/hill	Survival percentage
Shajadpur	26.56±4.87	14.59±1.13	3.87±0.45	20.87±2.11	14.44±1.11	97.56±4.23
Godagari	25.94±5.32	14.24±2.34	3.68±0.98	18.79±3.33	13.87±2.12	95.23±5.33
Level of sig	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

NS= Not significant

Fig. 72 Farmers fodder plots and fertilizer distribution, , BLRI

Table 56: Preparation cost of 1000 kg Dole silage, , BLRI

Sl. No.	Items	Cost for 1000kg Dool silage (Tk.)
1.	Fodder production cost (0.75 tk/kg)	750.00
2.	Labor cost	450.00
3.	Material cost	1525.00
	Total cost	**2725.00**

* Silage cost per kg is Tk. 2.73

Fig. 73: Fodder cutting and Dole silage preparation, , BLRI

Physical observation of Dole silage

The Physical observation of Dole silage used in the trial is given in Table 57. The silage possess yellowish color and sweet & sour odor. The p^H of the silage was 6.6±0.211. A small layer of yeasts & moulds were observed on the surface of the silages. The external properties offarmer's dole silage remain good . Even if the preservation period is prolonged, there is not much difference in the external properties.

Table 57: Physical characteristics of silage, BLRI

External features	
Color	Yellowish
Smell	Sweet acidic
Rotten	A small amount at the top (About 1-2%)
East / Mold	A small amount on the top floor
PH	6.6 (slightly acidic)
Overall comment (acceptance)	Good

Chemical composition of fresh grass and silage

The chemical composition of fresh grass and silage is given in Table 58. It can be seen from the table that the CP contents of napier grasses and napier silages were 9.31 and 10.10%, respectively

Table 58: Chemical composition of silage, BLRI

Parameters	**Fresh grass**	**Silage**
Dry matter (%)	17.08	17.85
Organic matter (%)	90.18	88.10
Crude protein (%)	9.31	10.10
Total Minerals (%)	**9.82**	**11.08**

Fig.74: Prepared silage, BLRI

Microbes in silage

Silage microbial was tested in the laboratory. But no harmful microbes like Clostridium, Bacillus were found in it. This is because the silage was well-sealed so that no air could get inside. The grass was turned over several times before silage making so that it would not contain excess water. During silage preparation special care was taken to ensure that soil, manure or any other material did not enter the silage along with the grass. Clostridia are endospore-forming anaerobic bacteria. Some clostridia can cause serious health problems. A typical "clostridial silage" is characterized by a high butyric acid content of more than 5 g/kg DM, a high pH (over pH 5 in low DM silages), and a high ammonia and amine content (Voss, 1966; McPherson and Violante, 1966). Ensiling methods that cause a rapid and

sufficient drop in silage pH will help to prevent the development of such clostridial silage, because, as for enterobacteria, clostridia are inhibited at low pH. Furthermore, clostridia are more susceptible to a low availability of water (i.e. a low water activity (a_w)) than LAB (Kleter *et al.*, 1982, 1984; Huchet *et al.*, 1995). For this reason, decreasing the aw-value of a crop, such as by wilting to a higher DM content, can be a way of selectively inhibiting clostridia (Wieringa, 1958). Finally, clostridia will also be inhibited by nitrite and NO, or compounds that are degraded in silage to nitrite and NO (Spoelstra, 1983, 1985). To decrease bacillus growth in silage, storage temperatures should not be too high (Gibson *et al*. 1958) and air ingress should be minimized (Vreman *et al.*, in press). In addition, initial contamination of fresh plant material with soil or manure should be prevented (McDonald *et al.*, 1991; Rammer *et al*. 1994). Ensiling methods that minimize air ingress (e.g. good compaction and covering of the silo), and additives that prevent initiation of aerobic spoilage, will help to prevent or limit mould growth.

D) Feeding of silage

Effects of Dole silge on nutrient intake and milk production

The average values for nutrient intakes (DM, DCP and ME) in different treatment group are shown in Table 59. The study revealed that there was no significant difference in total DM intake between the groups. The DCP (kg/d) intake was significantly (P<0.01) difference between the treatment group. The higher DCP (kg/d) intake was observed in T_1(0.738) followed by T_0 (0.455). The ME (MJ/d) intake was also significant (P<0.05) difference between the dietary groups. ME (MJ/d) was 90.83 in T_1 afterward 80.11 in T_0. The average milk yield (l/d) was higher in T_1 (10.42) followed by T_0 (7.51). The results showed that milk yield was related to feed intake.

Table 59: Feed intake and milk yield (l/d) of cross bred dairy cows fed silage diets

Intake and production	Dietary treatments		Level of sig.
	T_0	T_1	
Rice straw DM (kg/d)	7.26	-	
Concentrate mixture DM (kg/d)	5.32	4.72	
Silage DM (kg/d)	-	7.79	
Total DM (kg/d)	12.58±0.82	12.51±0.77	NS
DMI/100kgLW	3.48±0.59	3.56±0.57	NS
DCP (kg/d)	0.455^{b}±0.41	0.738^{a} ±0.84	**
ME (MJ/d)	80.11^{b}±0.82	90.83^{a}±0.88	*
Milk yield (l/d)	7.51^{b}±0.71	10.42^{a}±0.85	**

[abc]Mean values in a row with different superscripts differ significantly; NS= Not significant, *P<0.05; **P<0.01

Fig. 75: Silage feeding, BLRI

Table 60: Technology used and return from different parameters of dairy cattle farming during July 2018- December 2020

Parameters	Before intervention	After intervention	Remarks
Feed Cost (Tk./day/Dairy cow)	252.00	163.00	Reduce feed cost 89 Tk./day/dairy cow
Milk production (L/day/cow)	7.51	10.42	Increase milk production 2.91 L/day/cow
BCE	**1:1.68**	**1:1.20**	

Technology Generation

From the inception, a total of 89 technologies have been developed under five divisions. During (1984-2020) period, 15 technologies by Poultry production research division, 36 technologies by Animal production research division, 8 technologies from Goat and sheep production research division, 23 technologies from Animal health research division and 7 technologies were developed by Biotechnology division.

The highest number of technologies (36) was generated from Animal production research division and lowest number of technologies (07) was generated from Biotechnology division.

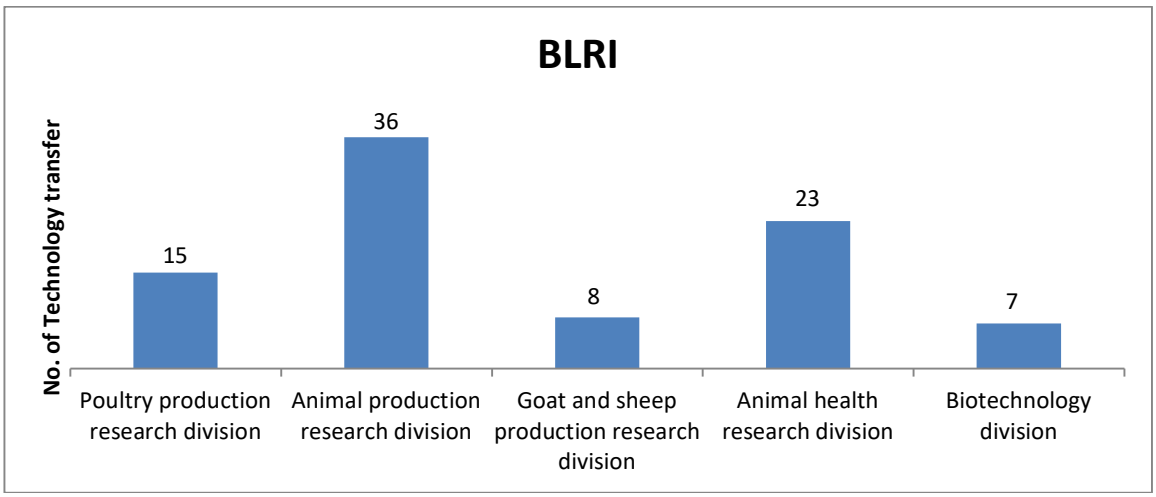


Fig. Division wise generated Technology, BLRI

Transferring status/ movement of technologies

All technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Fig. 61: Division wise transferred and non-transferred Technology, BLRI

Year	Institute	Name of Division	No of Technology	Technology Transfer TT (Nos)	Non Transfer Technology NTT (Nos)
1984 - 2020	BLRI (5)	Poultry production research division	15	15	0
		Animal production research division	36	36	0
		Goat and sheep production research division	8	8	0
		Animal health research division	23	23	0
		Biotechnology division	7	7	0
Total		**04**	**89**	**89**	**00**

11.7 :Bangladesh Fisheries Research Institute (BFRI)

Among 62 technologies generated by BFRI from 1984-2018 only 02 technologies were preferred for transfer through this project. The following trials were conducted at Gourdar village, Nokla upazilla, Sherpur during September 2018 to March 2019.

2. Name of the Trial:Validation & Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

The project has been implemented by Bangladesh Fisheries Research Institute (BFRI) in coordination with Technology Transfer & Monitoring Unit of Bangladesh Agricultural Research Council (BARC), Dhaka. The project activities were carried out in a participatory approach at farmer's field.

The following activities were undertaken to transfer the technology at farmer's level successfully.

Site and Farmer selection

This technology was demonstrated for the period of 6 months in three farmer's pond at Goarder, Nokla upazilla, Sherpur district during September 2018 to March 2019. Ponds were selected with the active participation of Nokla Upazilla Fishery Officer. Farmers name with address having pond area is shown in Table 62.

Table 62: Farmers name, address and pond area of project site-1, BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Md. Hira Mia C/o: Md.Amsar Ali Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40
02.	Md. Mostafizur Rahman C/o: Md.Matiur Rahman Village: Ranigaoni; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35
03.	Ripon Hasan C/o: Md.Kader Khan Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35

Pond Preparation

Prior to stocking, ponds were dried and cleaned for weed and unwanted aquatic animals. The dried ponds were left exposed to sunlight for five days and then limed at the rate of 250 kg/ha. Five days after liming, water were supplied from shallow tube well to the ponds and filled up to the depth of 1 meter.

Fish stocking and Management

Fingerlings of Pabda, Gulsha with Rui were uniformly stocked on 12 October 2018 in three ponds at a stocking density of 1,25,000, 50,000 and 1250/ha. During stocking, the initial weight of Pabda, Gulsha and Rui are 4.23±2.68, 3.30±1.48 and 35.50±3.49g, respectively Feeding began immediately after stocking. Fish were fed regularly at a rate of 6-8% of body weight with supplementary feed (28% crude protein). Fishes under the demonstration ponds were sampled regularly at monthly intervals to determine growth rate as well as feed adjustment and to check up the health condition of fish. In all the three ponds lime and table salt (NaCl) was applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality management

Water samples were collected between 10:00 to 11:00 am at ten-day intervals of each pond surface to a depth of 20cm. A number of clean 500 ml black bottles marked with pond number used for collection of water samples. The bottles were then brought to the Water Quality and Pond Dynamics Laboratory of Freshwater Station, Bangladesh Fisheries Research Institute. Water temperature (°C) from each pond was recorded at least three spots by using a Celsius thermometer. Water transparency was determined by using a standard Seechi disc of 20 cm. diameter. Dissolved oxygen (mg/l) and pH were measured using a digital DO meter (WPA, model OX20) and a direct reading digital pH meter (HANNA, model HI 9025), respectively. Total alkalinity (mg/l) was determined titrimetrically according to the standard procedure and methods.

The following trials were conducted during July 2019 to May 2020.

02. Name of the Trial:Validation & Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

The project has been implemented by Bangladesh Fisheries Research Institute (BFRI) in coordination with Technology Transfer & Monitoring Unit of Bangladesh Agricultural

Research Council (BARC), Dhaka. The project activities were carried out in a participatory approach at farmer's field. For disseminating the technology at farmer's level successfully, the following activities were undertaken accordingly.

Site and Farmer selection

This technology was demonstrated for the period of 5 months in three farmer's pond at Goarder, Nokla upazilla, Sherpur district during July to November 2019. Ponds were selected with the active participation of Nokla Upazilla Fishery Officer. Farmers name with address having pond area is shown in Table 63.

Table 63:Farmers name, address and pond area of project site-2, BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Mossamat Nasima Khatun C/o: Hira Miah Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40
02.	Sraboni Akhter C/o: Md.Mustafizur Rahman Village: Ranigaoni; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40
03.	Sahid Ali Khan C/o: Md.Kader Khan Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35

Fig. 76: Monitoring team remembers observing the Demonstration pond, BFRI

Pond Preparation

After selection of ponds, all the ponds were drained out. Bottom of all ponds were sun-dried up to cracking of bottom soil. Two to three PVC pipes have been set at a reasonable place in each dike of each pond so that excess rain water can pass out of the pond during monsoon. Each pond was encircled with fine mesh nylon net fastened in bamboo poles to prevent entrance of any animal inside the pond. Source of water was ensured, so that water can be supplied to the ponds during pond preparation, or whenever necessary during culture. After drying, soil of the ponds was treated with calcium oxide @ 250 kg/ha. During preparation, ponds were filled up with underground water supplied from shallow tube well. After three days, water of the ponds was fertilized with urea and TSP @ 25 and 30 kg/ha, respectively to enhance primary productivity.

Fish stocking and Management

Fingerlings of uniform size of Pabda, Gulsha with Rui were stocked on 10 July 2019 in three ponds at a stocking density of 1,75,000, 75,000 and 1250/ha. During stocking, the initial weight of Pabda, Gulsha and Rui were 3.43±0.15, 3.23±0.18 and 104±7.20g, respectively Feeding began immediately after stocking. Fish were fed regularly at a rate of 6-8% of body weight with supplementary feed (30% crude protein). Fishes under the demonstration ponds were sampled regularly at monthly intervals to determine growth rate as well as feed adjustment and to check up the health condition of fish. Lime and table salt (NaCl) were applied at the rate of 50 and 125 kg/ha at fortnightly intervals in all the ponds.

Water quality management

Water quality parameters such as water temperature (°C), secchi disc (cm), pH, dissolved oxygen (mg/L) and total alkalinity (mg/l) were monitored at around 10.00-11.00 am at weekly interval. Water transparency was determined by using a standard Seechi disc of 20 cm. diameter. Dissolved oxygen (mg/l) and pH were measured using a digital DO meter (WPA, model OX20) and a direct reading digital pH meter (HANNA, model HI 9025), respectively. Total alkalinity (mg/l) was determined titrimetrically according to the standard procedure and methods.

04. Technology II: Demonstration of Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond

The technology entitled Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond was demonstrated in Gourdar village, Nokla upazilla, Sherpur during July to November 2019. The following protocols were followed for demonstrating the technology in two ponds.

Pond Selection

For demonstrating the technology, two ponds were selected with consultation Nokla Upazilla Fishery Officer. Farmers name with address having pond area is given below in table 64.

Table 64 :Farmers name, address and pond area of project site-3, BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Md. Rifatullah C/o: Hira Miah Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.30
02.	Sahid Ali Khan C/o: Md.Kader Khan Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35

Fig. 77: Demonstration pond of Shing culture, BFRI

Pond preparation

Prior to stock, ponds were dried and treated with bleaching powder at the rate of 12.50 kg/ha. Then ponds were filled up with water up to the depth at 1.50 meter and then lime was applied at the rate of 125 kg/ha.

Fish stocking and management

Fingerlings of Shing (*Heteropneustes fossilis*) with Rohu and Catla were stocked in ponds at a stocking density of 175000, 750 and 750/ha, respectively. Feeding began immediately after stocking. Fish were fed at a rate of 5-8% of body weight with supplementary feed (30% crude protein). The feeds were supplied twice daily morning at 5.00 am and evening 7.00 pm. Fish sampling was done at an interval of one month to adjust the feeding rate by measuring the weight of fish and to observe the health condition of fish. In all the ponds lime and table salt (NaCl) were applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality analysis

Water quality parameters such as water temperature, transparency, pH, dissolved oxygen (DO) and total alkalinity were determined at ten days interval between 01000 to 1100 hrs.

Harvesting

At the end of the culture period, all fishes were harvested by repeated netting followed by dewatering the ponds. Total bulk weight and number of fishes from each pond were recorded. Survival and gross production of fishes of each pond was estimated.

The following trials were conducted during July to December 2020

4. Name of the Trial: Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

Site and Farmer selection

During July to December 2020, the technology entitled Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) was demonstrated for the period of 6 months in three farmer's pond at Goarder, Nokla upazilla, Sherpur district. Ponds were selected with the active participation of Nokla Upazilla Fishery Officer. Farmers name with address having pond area is shown in Table 65.

Table 65: Farmers name, address and pond area of project site-4, BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Ashik Talukger Village: Satgaon; P.O: Goarder,Upazilla: Nokla; District: Sherpur	0.40
02.	Md. Fazlul Haque Village: Satgaon; P.O: Goarder,Upazilla: Nokla; District: Sherpur	0.40
03.	Md.Sahid Ali Village: Tagouri; P.O: Goarder; Upazilla: Nokla; District: Sherpur	0.35

Fig. 78: Demonstration pond of pabda-Gulsha farming, BFRI

Pond Preparation

The selected ponds were dried and cleaned for weed and unwanted aquatic animals. The dried ponds were left exposed to sunlight for five days and then limed at the rate of 250 kg/ha. Five days after liming, water were supplied from shallow tube well to the ponds and filled up to the depth of 1 meter.

Fish stocking and Management

After pond preparation, fingerlings of Pabda, Gulsha with Rui were stocked on July 2020 in three ponds at a stocking density of 225000, 100,000 and 1250/ha. During stocking, the initial weight of Pabda, Gulsha and Rui are 3.50±0.19, 3.10±0.39 and 150±8.80g, respectively. Fish are being fed regularly at a rate of 4-8% of body weight with floating supplementary feed (30% crude protein). Fishes under the demonstration ponds are being sampled regularly at fortnightly intervals to determine growth rate as well as feed adjustment and to check up the health condition of fish. In all the three ponds lime and table salt (NaCl) are being applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality management

Water quality parameters such as water temperature, pH, Dissolved Oxygen, total Ammonia are being checked between 10:00 to 11:00 am at ten-day intervals of each pond surface to a depth of 20cm

06. Demonstration of Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond

The technology entitled Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond was demonstrated in Gourdar village, Nokla upazilla, Sherpur during July to December 2020. The following steps were under taken for demonstrating the technology in two ponds.

Pond Selection

Two ponds were selected with consultation Nokla Upazilla Fishery Officer for demonstrating the technology, Farmers name with address having pond area is given in table 66.

Table 66:Farmers name, address and pond area of project site-5, BFRI

Sl. No.	Farmers name with address	Pond area (acre)
01.	Md. Mostafizur Rahman Village: Banigaon; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.35
02.	Sumon Miah Village: Tagouri; P.O: Goarder Upazilla: Nokla; District: Sherpur	0.40

Fig. 79:Demonstration pond of Shing farming, BFRI

Pond preparation

The ponds were dewatered, freed from aquatic vegetation and exposed to full sunlight. The standard method of pre-stocking pond preparation method was followed. Prior to stock, ponds were treated with bleaching powder at the rate of 12.50 kg/ha. Then ponds filled up with water up to the depth at 1.50 meter and lime was applied at the rate of 125 kg/ha.

Fish stocking and management

The trial ponds were stocked Shing, Rohu and Catla at a stocking density of 250000, 1000 and 1000/ha, respectively. Fingerlings were fed twice daily with floating feed containing 33% crude proteins at 8% of biomass in first month. Later 5-6-% in next two months and 4% throughout the rest of the culture period. Seepage and evaporation loss during the culture period wee compensated periodically to maintain desire water depth. A total of 50 individuals of Shing from each pond were sampled on fortnightly intervals to adjust the feeding rate by measuring the weight of fish and to observe the health condition of fish. In all the ponds lime and table salt (NaCl) were applied at the rate of 50 and 125 kg/ha at fortnightly intervals.

Water quality analysis

Water quality parameters such as water temperature, transparency, pH, dissolved oxygen (DO) and total alkalinity are being determined at ten days interval between 1000 to 1100 hrs.

Fish Harvesting

After 06 months, the fish were harvested by repeatedly netting followed by dewatering the ponds. After harvesting, Survival and production of fish were calculated.

Results and discussion: Component wise results and discussion of each trial illustrated below-

01. Name of the Trial:Validation & Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

The overall mean values of each water quality parameter in three ponds are presented in Table 67. Water temperature did not differ among the ponds. It ranged from 21.20 – 33.7°C, 21.60 - 33.4°C and 21.20 – 33.5°C in pond-1, pond-2 and pond-3 with the mean values of 24.89±3.50, 25.21±3.61 and 26.70±3.65°C, respectively. The variation in temperature among the ponds were found similar and within the suitable range of growth of fish in tropical ponds (Roy *et al*. 2002, Begum et al. 2003 and Kohinoor et al. 2004). Water transparency values of three ponds showed variations on different sampling dates. The mean values of water transparency were 24.40±2.80, 23.66±3.55 and 27.30±3.90cm in pond 1, Pond-2 and pond-3, respectively. Boyd (1982) recommended a transparency between 15-40 cm. as appropriate for fish culture. pH varied from 8.66±1.10, 8.42±1.18 and 8.23±1.40 in pond-1, Pond-2 and pond-3, respectively. Ponds water were alkaline throughout the culture period which might be due to regular application of lime in the ponds at monthly interval. The mean values dissolved oxygen contents in pond-1, pond-2 and pond-3 were of 5.10±0.61 mg/l, 4.30±0.77 mg/l and 5.22 ±0.50 mg/l. The fluctuations in dissolved oxygen concentrations in three ponds were within the productive range throughout the culture period (Boyd 1982). The total alkalinity values of the ponds water were found to be at the productive level. The mean values of total alkalinity in pond-1, pond-2 and pond-3 were 140±8.20 mg/l, 123±9.18 and 126±8.5 mg/l, respectively. Total alkalinity values found within the suitable range in the present trial.

Table 67: Mean water quality values of the demonstration ponds

Parameter	Md. Hira Mia (P-1)	Md. Mostafizur Rahman (P-2)	Ripon Hasan (P-3)
Temperature (°C)	24.89±3.50	25.21±3.61	26.70±3.65
Transparency (cm)	24.40±2.80	23.66±3.55	27.30±3.90
pH	8.66±1.10	8.42±1.18	8.23±1.40
Dissolved oxygen (mg/L)	5.10±0.61	4.30±0.77	5.22 ±0.50
Total alkalinity (mg/L)	140±8.20	123±9.18	126±8.5

Growth and production performances

Details of stocking, growth and production performances in three ponds are presented in table 68. Pabda attained an average harvesting weight of 42±7.80g in Pond-1, 38±6.90g in Pond-2 and 36±7.30g in Pond-3. In case of Gulsha, the harvesting mean weight was lower than pabda

in the ponds. However, it was 32±5.3g, 29±5.99g and 31±4.70g in Pond-1, Pond-2 and Pond-3, respectively. At harvest, the weights of Rui were 660±92g, 709±110g and 672±126g in Pond-1 Ponf-2 and Pond-3, respectively. The survival rate of three species in three ponds was fairly high. The mean survival rate of pond-1, 2 and 3 were 78±10.81, 79±14.0 and 78±9.66, respectively. The survival rate of pabda and Gulsha were more or less same in the ponds.

Table 68: Growth and productions of fish under three ponds

Pond	Fish sp.	At stocking		Harvesting wt. (g)	Survival (%)	Species wise production (kg/pond)	Total production (kg/pond)	Total production (kg/ha)
		Initial Wt. (g)	Stocking density /ha					
Pond-1 (Hira Miah)	Pabda	3.1±0.26	1,25,000	42±7.80	75	3938	926	5788
	Gulsha	2.30±0.28	50000	32±5.30	69	1104		
	Rui	34±2.1	1250	660±92	90	743		
Pond-2 (Mustafizur)	Pabda	3.6±0.26	1,25,000	38±6.90	79	3753	774	5529
	Gulsha	2.60±0.28	50000	29±5.99	65	943		
	Rui	35±2.1	1250	709±110	94	833		
Pond-3 (Ripon Khan)	Pabda	3.8±0.26	1,25,000	36±7.30	77	3465	739	5282
	Gulsha	2.10±0.28	50000	31±4.70	74	1100		
	Rui	30±2.1	1250	672±126	92	794		

After six months rearing, the calculated production obtained were 5785, 5529 and 5280 kg/ha from Pond-1, pond-2 and Pond-3, respectively (Table 7). The higher production was obtained from Pond-1. The relative contribution of Pabda and Gulsha in total production was 87.16%, 84.93% and 78.09% from pond-1, pond-2 and pond-3, respectively. While in case of Rui, the relative contribution of pond-1, pond-2 and pond-3 were 12.84%, 15.06% and 14.95%, respectively.

Fig. 80: Director TTMU observing Pabda demonstration pond, BFRI

These production levels were comparable to those obtained in others mono and polyculture systems in South Asian Region. Kohinoor *et. al*. (1997) recorded an average production from semi intensive culture of pabda (*Ompok pabda*) with Rajpunti (*Barbodes gonionotus*) and

Common carp (*Cyprinus carpio*) over six months culture period as 2,932 kg/ha where the contribution of Pabda was only 15.27%. But, Kohinoor *et. al.* (2009) recorded a gross production of 2393 to 2986 kg/ha in six months from a composite culture of Indian major carps with Pabda and Gulsha, where the contribution of Pabda and Gulsha were 5.2 to 9.04%, respectively. A study conducted by Kohinoor *et. al*. (2011) observed the effect of different stocking densities on the production of Pabda and Gulsha in earthen ponds and got a production ranged from 7,175 to 7,687 kg/ha/6 months.

Fig. 81: Harvested Pabda in Demonstration pond, BFRI

The cost of production and return from culture of Pabda, Gulsha and Rui under three ponds are presented in Table 8. While estimating cost of production, variables costs towards lease value, labour, lime, feed and other cost were taken into consideration. Due to higher gross production, the net benefit was higher in pond-1. The net benefit of Pond-1, Pond-2 and Pond- 3 were Tk. 148516, Tk. 113743 and Tk. 111409, respectively. In case of net benefit of Pabda and Gulsha with Rohu in polyculture management, Kohinoor *et al.* (2011) found that an amount of Tk. 6,20,200/ha could be achieved by applying supplementary feed and fertilization. In the present study, the production as well as net return was very encouraging. The fish farmer would get opportunity to sell the high valued fish Pabda and Gulsha at a higher price in the market and they would also get an opportunity to consume the fish. The obtained growths of fish in three demonstration ponds are very encouraging.

Table 69: Cost and return analyses of fish production in three ponds

Inputs	**P-1 (40 decimal)**		**P-2 (35 decimal)**		**P-3 (35 decimal)**	
	Qty.	**Cost (Tk.)**	**Qty.**	**Cost (Tk.)**	**Qty.**	**Cost (Tk.)**
Pond preparation	-	4000	-	3500	-	3500
Fingerling (Nos.)	35250	36250	24675	25375	24675	25375
Feed (Kg)	1533	88914	1478	85724	1417	82186
Fertilizers (Kg) (Lime)	100	2500	88	2200	88	2200
Others cost	-	25000	-	20000		20000
Total cost		1,56,664		1,36,799		133261

Sell price of fish (Pabda:Tk.350; Gulsha: 400 and Rui: Tk.120/kg)		305180		250542		244670
Net benefit	**-**	**148516**	**-**	**113743**	**-**	**111409**
Net benefit (acre)		**371290**		**324980**		**318311**

02. Name of the Trial:Validation & Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

Results

The mean values of physico chemical parameters recorded during the trial period were presented in Table 70. The mean values of water temperature were 24.89±3.50, 25.21±4.61 and 26.70±3.65°C, respectively in ponds- 1, 2 and 3, respectively. The variation in temperature among the ponds were found similar and within the suitable range of growth of fish in tropical ponds (Begum et al. 2003 and Kohinoor et al. 2004). The water transparency values of three ponds showed variations on different sampling dates. The mean values of water transparency were 24.40±2.80, 23.66±3.55 and 26.70±3.65 cm in pond-1, Pond-2 and pond-3, respectively. Boyd (1982) recommended a transparency between 15-40 cm. as appropriate for fish culture. The mean values of pH were 8.66±1.10, 8.42±1.18 and 8.23±1.40 in pond-1, Pond-2 and pond-3, respectively. Ponds water was alkaline throughout the culture period which might be due to regular application of lime in the ponds at monthly interval. The mean values of dissolved oxygen contents in pond-1, pond-2 and pond-3 were of 5.10±0.61 mg/l, 4.30±0.77 mg/l and 5.22 ±0.50 mg/l. The fluctuations in dissolved oxygen concentrations in three ponds were within the productive range throughout the culture period (Boyd 1982). The total alkalinity values of the ponds water were found to be at the productive level. The highest mean value of total alkalinity was recorded in pond-1 (140±8.20), and the lowest was in pond-2 (123±9.18). Total alkalinity values found within the suitable range in the present trial.

Table 70: Mean water quality values of the demonstration ponds, BFRI

Parameter	**Pond-1 (Nasima Khatun)**	**Pond-2 (Sraboni Akhter)**	**Pond-3 (Sahid Ali)**
Temperature (°C)	24.89±3.50	25.21±3.61	26.70±3.65
Transparency (cm)	24.40±2.80	23.66±3.55	26.70±6.65
pH	8.66±1.10	8.42±1.18	8.23±1.40
Dissolved oxygen (mg/L)	5.10±0.61	4.30±0.77	5.22 ±0.50
Total alkalinity (mg/L)	**140±8.20**	**123±9.18**	**126±8.5**

Growth and production performances

The growth, survival rate and production performances of fish in different ponds recorded during this trial are given in table 71. Pabda attained an average harvesting weight of 42±7.80g in Pond-1, 45±6.90g in Pond-2 and 40±7.30g in Pond-3. In case of Gulsha, the harvesting mean weight was lower than pabda in the ponds. However, it was 33±5.3g,

39±5.99gand 35±4.7g in Pond-1, Pond-2 and Pond-3, respectively. At harvest, the weights of Rui were 730±88g, 709±105g and 780±109g in Pond-1 Ponf-2 and Pond-3, respectively. The survival rate of three species in three ponds was fairly high. The mean survival rate of ponds-1, 2 and 3 were 80.26±10.26, 77.66±11.23 and 81.33±10.21, respectively. The survival rates of fish in three ponds, which ranged between 72 to 93%. The survival rate of pabda and Gulsha were more or less same in the ponds.

Table 71: Growth and productions of fish under three ponds, BFRI

Pond	Fish sp.	At stocking		Harvesting wt. (g)	Survival (%)	Species wise production (kg/pond)	Total production (kg/pond)	Total production (kg/ha)
		Initial Wt. (g)	Stocking density /ha					
Pond-1 (Nasima khatun)	Pabda	3.3±0.20	1,75,000	42±7.80	78	917	1336	8350
	Gulsha	3.2±0.17	75,000	33±5.30	72	285		
	Rui	106±6.6	1250	730±88	92	134		
Pond-2 (Sraboni Akhter)	Pabda	3.6±0.18	1,75,000	45±6.90	75	945	1392	8700
	Gulsha	3.10±0.22	75,0000	39±5.99	68	319		
	Rui	96±8.5	1250	709±105	90	128		
Pond-3 (Sahid Ali)	Pabda	3.4±0.22	1,75,000	40±7.30	74	725	1139	8135
	Gulsha	3.40±0.25	75000	35±4.70	78	287		
	Rui	110±8.9	1250	780±109	93	127		

After five months rearing, the production obtained were 1336, 1392 and 1139 kg from Pond-1, pond-2 and Pond-3, respectively (Table 10). The higher production was obtained from Pond-1. The relative contribution of Pabda and Gulsha in total production was 89.97%, 90.80% and 88.84% from pond-1, pond-2 and pond-3, respectively. While in case of Rui, the relative contribution of pond-1, pond-2 and pond-3 were 10.02%, 9.19% and 11.15%, respectively.

Fig. 82: Harvesting of Pabda fish, BFRI

These production levels were comparable to those obtained in others mono and polyculture systems in South Asian Region. Kohinoor *et. al*. (1997) recorded an average production from semi intensive culture of pabda (*Ompok pabda*) with Rajpunti (*Barbodes gonionotus*) and Common carp (*Cyprinus carpio*) over six months culture period as 2,932 kg/ha where the contribution of Pabda was only 15.27%. But, Kohinoor *et. al.* (2009) recorded a gross production of 2393 to 2986 kg/ha in six months from a composite culture of Indian major carps with Pabda and Gulsha, where the contribution of Pabda and Gulsha were 5.2 to 9.04%, respectively. A study conducted by Kohinoor *et. al*. (2011) observed the effect of different stocking densities on the production of Pabda and Gulsha in earthen ponds and got a production ranged from 7,175 to 7,687 kg/ha/6 months.

The cost of production and return from culture of Pabda, Gulsha and Rui under three ponds are presented in table 72. While estimating cost of production, variables costs towards lease value, fingerling, fish feed, labour, lime and other cost were taken into consideration. Due to higher gross production, the net benefit was higher in pond-2. The net benefit of Pond-1, Pond-2 and Pond- 3 were Tk. 152475, Tk. 155275 and Tk. 134075, respectively. In case of net benefit of Pabda and Gulsha with Rohu in polyculture management, Kohinoor *et al.* (2011) found that an amount of Tk. 6,20,200/ha could be achieved by applying supplementary feed and fertilization. In the present study, the production as well as net return was very encouraging. The fish farmer would get opportunity to sell the high valued fish Pabda and Gulsha at a higher price in the market and they would also get an opportunity to consume the fish. The obtained growths of fish in three demonstration ponds are very encouraging.

Table 72:Cost and return analyses of fish production in three ponds, BFRI

Inputs	P-1 (40 decimal)		P-2 (40 decimal)		P-3 (35 decimal)	
	Qty.	Cost (Tk.)	Qty.	Cost (Tk.)	Qty.	Cost (Tk.)
Lease value		12000		12000		10500
Pond preparation	-	4000	-	4000	-	3500
Fingerling (Nos.)	40200	42000	40200	42000	35175	36750
Feed (Kg)	2270	124850	2560	140800	1960	107800
Fertilizers (Kg) (Lime)	100	2500	100	2500	88	2200
Others cost	-	50000	-	50000		35000
Total cost		235350		251300		195750
Sell price of fish (Pabda:Tk.300; Gulsha: 325 and Rui: Tk.150/kg)	1336	387825	1392	406575	1139	329825
Net benefit/pond	**-**	**152475**	**-**	**155275**	**-**	**134075**
Net benefit (ha)		**952968**		**970468**		**957678**

03. Demonstration of Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond

The overall mean values of each water quality parameters in two ponds are presented in Table 73. The variations in temperature among the ponds were found similar and were within the suitable range for growth of fish in tropical ponds. The water temperature in P-1 and P-2 ranged from: 27.50-31.8°C and 27.90 -32.5°C, respectively with the mean values 28.42±0.42 and 28.55±0.66°C.

Table 73: Mean values of water quality parameters in demonstration ponds

Water quality parameter	Md. Sohid Khan (P-1)	Md. Rifatullah (P-2)
Temperature (°C)	28.42±0.42	28.55±0.66
Transparency (cm)	24.21±1.80	28.12±1.59
pH	7.12 - 8.40	7.34 -8.34
Dissolved oxygen (mg/l)	5.69±0.28	5.10±0.62

The mean values of water transparency were 24.21±1.80 and 28.12±1.59 in P-1 and P-2, respectively. The values of transparency sometimes varied with sampling dates which could be due to differences in abundance of plankton. The value of pH fluctuated from 7.12 - 8.40 and 7.34 - 8.34 in P-1 and P-2, respectively. The pH in two ponds water was alkaline throughout the culture period which might be due to regular application of lime in all the ponds at monthly interval. The dissolved oxygen concentration in the demonstration ponds ranged from 4.20 to 7.3, and 4.24 to 6.2 in P-1 and P-2, respectively, with the mean values of 5.69±0.28 and 5.10±0.62 mg/l. Comparatively suitable level of dissolved oxygen as observed in the demonstration ponds.

Growth and production performances

Growth performances, production and survival of fish in two ponds are presented in table 13. It was observed that among the species under two ponds, the highest weight was attained by Catla. Shing reached an average harvesting weight of 48±8.92gin P-1 and 45±6.80 in P-2, respectively. While, the average weight attained by Catla was 740±29.21 in P-1, and 758±24.20g in P-2. At harvest, the weights of Rui were 652±24.99g and 670±32.50gin P-1 and P-2, respectively. The weight of Shing in P-1 showed better growth performance between the ponds. Based on the number of fish harvested at the end of the trial, survival ranged from 76-94%. Among the species, Catla showed the good survival among the species. After five months rearing, the production obtained were 7278 and 6841 kg/ha from P-1 and P-2, respectively (Table 13). In P-1, where the contribution of Shing was 91.26% while the contribution of Shing in Pond-2 was 90.08% in total production.

Fig. 83: Harvesting of Shing from demonstration pond, BFRI

Table 74: Growth and production of fish under three ponds during the period of trial, BFRI

Farmers name	Fish sp.	Initial Wt. (g)	At Harvesting Wt. (g)	Survival (%)	Species wise Production (kg/pond)	Total Production (kg/ha)
P-1 (Md. Sahid Khan)	Shing	2.5±1.41	48.0±8.92	79	930	7278
	Catla	110±4.18	740±29.21	92	48	
	Rui	105±5.53	652±24.99	90	41	
P-3 (Md. Rifatullah)	Shing	2.5±1.41	45.0±6.80	76	718	6641
	Catla	115±5.61	758±24.20	94	42	
	Rui	108±6.24	670±32.50	91	37	

The cost of different inputs and economic return from the sale of fishes in two ponds are summarized in table 75. The cost of inputs and economic return were calculated according to the local price of the inputs used and farm gate price of the fishes produced. The costs of production were Tk. 187100, and Tk. 156800in P-1 and P-2, respectively. The net profit of pond-1 and pond-2 were Tk.151250 and Tk.106350, respectively. However, Khan *et al*. (2003) observed the effect of different stocking densities on production of catfish (*H. fossilis*) in earthen ponds and got the production range 2080 to 3364 kg/ha. A study conducted by Kohinoor et al. (2012) obtained production of 7549 to 9031 kg ha^{-1} in six months from *H. fossilis* in monoculture management. While in the present experiment, higher production as well as higher net benefit was found. The reason might be due to that in the present trial, Shing *(H. fossilis*) were cultured with other species which enhanced to increase the total production as well as net benefit.

Table 75: Cost and return analyses of fish production in one hectare area, BFRI

Inputs	P-1(Md. Sahid Khan)		P-2 (Md. Rifatullah)	
	Quantity (Kg)	Cost (Tk.)	Quantity (Kg)	Cost (Tk.)
Lease money		10500		9000
Pond preparation		3500		3000
Fish fingerling		27100		22800
Feed	1500	90000	1300	78000
Harvesting cost		6000		4000
Others (labours, lime, salt etc.)		50000		40000
Total cost		187100		156800
Total income from fish				
Sell price: Shing: 350/kg Rui:150/kg Catla: 150/kg		338350		263150
Net Benefit:		**151250**		**106350**

Conclusion

It can be concluded that trial farmers achieved higher production as well as net profit adopting new technologies than previous farming practice. The trial of the technology showed satisfactory impact upon neighboring farmers. It is expected that trial farmers should be pioneers and progressive ones in adopting new technologies who would continue to use and have influence on other farmers of their society.

04. Name of the Trial: Validation & Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*)

In case of water temperature, transparency, pH, Dissolve Oxygen and total alkalinity of trial ponds was more or less similar and congenial for Fish culture in Table 14. Water temperature did not differ much among the ponds. It ranged from 25.20 - 32.3°C, 25.60 - 34.3°C and 24.60-33.8°C in pond-1, pond-2 and pond-3 with the mean values of 26.85±3.50 26.90±3.65°C and 26.34±3.38, respectively. The variation in temperature among the ponds were found similar and within the suitable range of growth of fish in tropical ponds (Begum *et al*. 2003). Water transparency values of three ponds showed variations on different sampling dates. The mean values of water transparency were 28.94±3.70, 31.30±4.90 and 29.70±3.80 cm in pond 1, pond-2 and pond-3, respectively. Boyd (1982) recommended a transparency between 15-40 cm. as appropriate for fish culture. he pH values of the pond water under the three ponds were found acceptable range for fish culture. pH varied from 8.70±2.40, 8.40±2.52 and 8.55±2.71 in pond-1, pond-2 and pond-3, respectively. The dissolved oxygen contents in pond-1, pond-2 and pond-3 ranged from 4.2 to 6.1 mg/l, 4.4 to 5.8 mg/l and 4.30 to 6.10 mg/l, respectively with the mean values of 5.20±0.39 mg/l, 5.14±0.42 mg/l and 5.62 ±0.76 mg/l, respectively. The fluctuations in dissolved oxygen concentrations in three ponds were within the productive

range throughout the culture period (Boyd 1982). Ponds water was alkaline throughout the culture period which might be due to regular application of lime in the ponds at monthly interval. The mean values of total alkalinity were recorded in 114±8.50, 119±6.85 and 136±8.20 mg/l in P-1, P-2 and P-3, respectively.

Table 76: Mean water quality values of the demonstration ponds, BFRI

Parameter	Ashik Talukger (P-1)	Md. Fazlul Haque (P-2)	Md.Sahid Ali (P-3)
Water Temperature (°C)	26.85±3.50	26.90±3.35	26.34±3.38
Transparency (cm)	28.94±3.70	31.30±4.90	29.70±3.80
pH	8.70±2.40	8.40±2.52	8.55±2.71
Dissolved oxygen (mg/L)	5.20±0.39	5.14 ±0.42	5.62 ±0.76
Total alkalinity (mg/L)	114±8.50	119±6.85	136±8.20

Growth and production performances

Growth performances, production and survival rate of fish in three ponds are presented in table 77. In the present trial the average harvesting weight of were 36±7.80gin Pond-1, 40±6.90 in pond-2 and 42±7.30gin Pond-3. In case of Gulsha, the harvesting mean weight was lower than Gulsha in the ponds. However, it was 31±5.30g 28±5.99and 34±4.70gin Pond-1, Pond-2 and Pond-3, respectively. At harvest, the weights of Rui were 650±54g, 680±105and 710±62g in Pond-1, Pond-2 and pond-3, respectively. The survival rate of three species in three ponds was fairly high. The mean survival rate of pond-1, pond-2 and pond-3 were 79±9.84, 77.33± 8.50 and 78±6.02, respectively. The survival rate of pabda and Gulsha were more or less same in the ponds. After six months rearing, the calculated production recorded were 9081, 9231 and 10630 kg/ha from Pond-1, Pond-2 and Pond-3, respectively (Table 15). The higher production was obtained from Pond-1. The relative contribution of Pabda and Gulsha in total production was 88.85% and 88.15% from pond- 1, 2 and 3, respectively. While in case of Rui, the relative contribution of pond -1 and 2, were 11.15 and 11.85%, respectively. These production levels were comparable to those obtained in others mono and polyculture systems in South Asian Region. Kohinoor *et. al*. (1997) recorded an average production from semi intensive culture of pabda (*Ompok pabda*) with rajpunti (*Barbodes gonionotus*) and common carp (*Cyprinus carpio*) over six months culture period as 2,932 kg/ha where the contribution of pabda was only 15.27%. But, Kohinoor *et. al.* (2009) recorded a gross production of 2393 to 2986 kg/ha in six months from a composite culture of Indian major carps with pabda and gulsha, where the contribution of Pabda and Gulsha were 5.2 to 9.04%, respectively. A study conducted by Kohinoor *et. al*. (2011) observed the effect of different stocking densities on the production of Pabda and Gulsha in earthen ponds and got a production ranged from 7,175 to 7,687 kg/ha/6 months.

Table 77: Growth, Survival and production performance of Pabda, Gulsha and Rui in three ponds, BFRI

Pond	Fish sp.	At stocking		Harvesting wt. (g)	Survival (%)	Species wise prod. (kg/pond)	Total prod. (kg/pond)	Total prod. (kg/ha)
		Initial Wt. (g)	Stocking density /ha					
Pond-1 (Ashikur Rahman)	Pabda	3.3±0.20	2,25,000	36±7.80	76	984	1453	9081
	Gulsha	3.2±0.17	100,000	31±5.30	71	352		
	Rui	106±6.6	1250	650±54	90	117		
Pond-2 (Fazlul Haque)	Pabda	3.6±0.18	2,25,000	40±6.90	74	1056	1477	9231
	Gulsha	3.10±0.22	100,000	28±5.99	66	296		
	Rui	96±8.5	1250	680±105	92	125		
Pond-3 (Sahid Ali)	Pabda	3.4±0.22	2,25,000	42±7.30	78	737	1063	10630
	Gulsha	3.40±0.25	100,000	34±4.70	73	248		
	Rui	110±8.9	1250	710±62	88	78		

Farmers Reaction: The present growths of fish from three demonstration ponds are very encouraging. Farmers were very happy and delighted.

Technology 5. Demonstration of Culture of Shing (*Heteropneustes fossilis*) with Rui (*Labeo rohita*) and Catla (*Catla catla*) in farmer's pond

Mean level of physicochemical parameters over the 6 month grow-out of Shing cultures are presented in table 78. The mean water temperature, transparency, pH, dissolved oxygen and total alkalinity showed more or less similar in two ponds. Water quality parameters in two ponds were within the normal range for fish culture.

Table 78: Mean water quality values of the demonstration ponds

Parameter	Mustafizur Rahman (P-1)	Md. Sumon (P-2)
Temperature (°C)	26.21±3.55	26.90±3.35
Transparency (cm)	32±4.20	34±4.88
pH	8.60±1.98	8.42±1.16
Dissolved oxygen (mg/L)	5.50±0.47	5.74 ±0.70
Total alkalinity	124±7.20	134±5.80

The gross production of fish in two ponds was calculated from the growth and survival of each fish species (Table 79). The survival rates of Shing, Rui and Catla in two ponds were fairly high. The average survival of Shing was higher in pond-2 (79%) while in pond-1, it

was 76%. The survival rate of Rui and Catla in pond-1 were 85 and 88 %, respectively, while in pond-2, 83% and 90% survival was found in Rui and Catla, respectively. The harvesting weight of Shing were 43±7.80g and 48±6.90g in pond-1 and Pond-2 respectively. It was found that harvesting weights of Shing was higher in pond-2 than that of pond-1. The gross production of Shing, Rui and Catla were 1290 kg in pond-1, while in pond-2, it was 1261 kg. The contribution of Shing in total production was 88.68% in pond-1, while in pond-2, it was 90.24%. After six months rearing, the calculated production recorded were 11793 and 10508 kg/ha from Pond-1 and Pond-2, respectively (Table 12). These production levels were comparable to those obtained in others mono and polyculture systems in South Asian Region. Farzana*et. al*. (2018) recorded Stinging Catfish (*Heteropneustes fossilis*) was cultured with Indian major in ponds over a period of 5 months as. 6533 kg/ha. But, Azhar Ali *et. al.* (2018) recorded a gross production of 6529 to 7133 kg/ha in six months from a composite culture of Indian major carps with Shing. A study conducted by Nurun Nabi*et. al*. (2020) observed the effect of different stocking densities on the production of Shing based polyculture in earthen ponds and got a production ranged from 6713 to 8791 kg/ha/6 months.

Table 79: Growth, Survival and production performance of Shing, Rui and Catla in two ponds

Pond	Fish sp.	At stocking		Harvesting wt. (g)	Survival (%)	Species wise prod. (kg/pond)	Total prod. (kg/pond)	Total prod. (kg/ha)
		Initial Wt. (g)	Stocking density /ha					
Pond-1 Mustafizur Rahman	Shing	3.3±0.20	2, 50,000	43±7.80	76	1144	1290	11793
	Rui	3.2±0.17	1000	590±5.30	85	70		
	Catla	106±6.6	1000	620±54	88	76		
Pond-2 Md. Sumon	Shing	3.6±0.18	2,50,000	48±6.90	79	1138	1261	10508
	Rui	3.10±0.22	1000	560±5.99	83	55		
	Catla	96±8.5	1000	630±105	90	68		

Production economics

A simple analysis of cost benefit was performed to explore the economic profit. The operational costs included only the cost of fingerlings, feed, fertilizer/lime and others excluding the labor cost for feeding. The cost of different inputs and economic return from the sale of fish in two ponds are presented in Table 80. The cost of inputs and economic return were calculated according to the local price of the inputs used and farm gate price of the fishes produced. Due to higher gross production, the higher net benefit was obtained in pond-1. The net benefit of Pond-1 and Pond-2 were Tk. 69945and Tk. 57610, respectively. Saokat et al. (2017) estimated the benefit cost ration and profitability of Shing culture in seasonal water bodies in greater northern region of Bangladesh and got the net benefit of

BDT 959,116.04/ha/150 days. Alam *et al.,* (2017) recorded the cost and benefit of Shing fish (*Heteropneustes fossilis*) in monoculture system and got the net benefit of BDT 712333/ha/7 months. More or less similar benefit was found by Khan *et al.,* (2003) when culture of Stinging catfish (*Heteropneustes fossilis*) at different stocking densities in earthen ponds. In the present experiment, the net benefit was more or less same in the above findings.

Table 80: Input cost and economic return in Shing with Rui and Catla in trial ponds, BFRI

Inputs	Pond-1 (Mustafizur Rahman)		Pond-2 (Md. Sumon)	
	Qty.	Cost (Tk.)	Qty.	Cost (Tk.)
Pond preparation	-	3500	-	3000
Fingerling (Nos.)	35280	45990	30240	39420
Feed (Kg)	2650	145750	2450	134750
Fertilizers/Lime (Kg)	75	1875	64	4800
Others cost	-	35000	-	30000
Total cost		232115		211970
Sell price of fish (Shing:Tk.250; Rui: 100 and Catla: Tk.110/kg)	1290	302060	1261	269580
Net benefit	**-**	**69945**	**-**	**57610**
Net benefit (ha)		**499607**	**-**	**480083**

Farmers Reaction: The present growths of fish from three demonstration ponds are very encouraging. Farmers were very happy and delighted.

Technology Generation

Bangladesh Fisheries Research Institute under the Ministry of Fisheries and Livestock is a single Fisheries Research Institute deals with open water (OW), freshwater (FW), and coastal fish culture management technology (CFCMT). From 1984-2018, BFRI developed 62 technologies. Out of them, 39, 7, and 16 technologies were developed by fresh water, open water, and coastal fish culture respectively. All the technologies have been transferred.

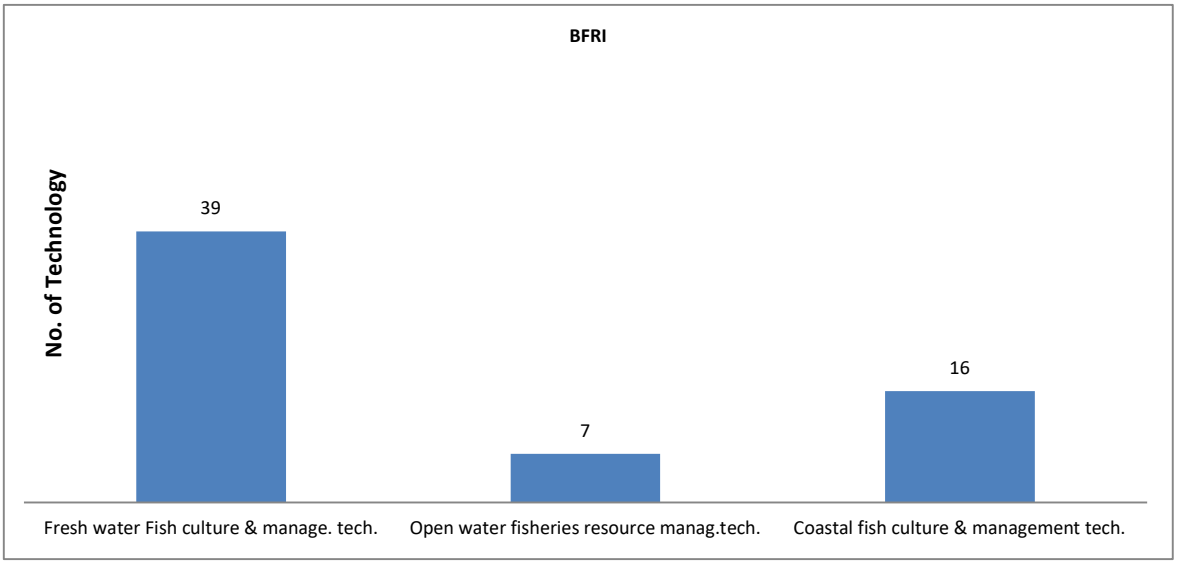


Fig. 84: Division wise generated technology, BFRI

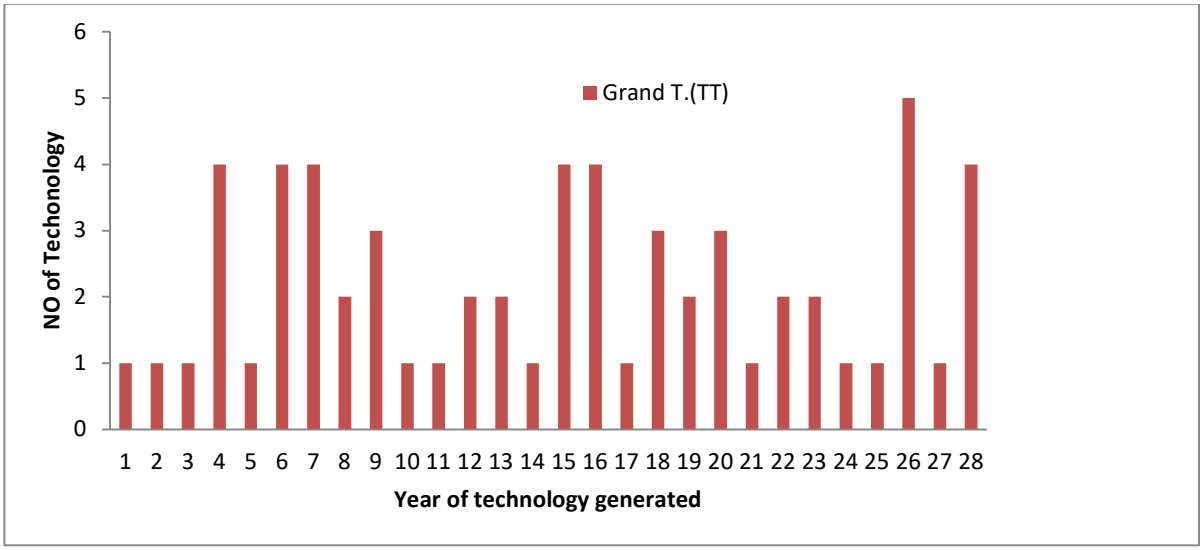


Fig. 85: year wise generated technology, BFRI

Transferring status/ movement of technologies

All other technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Table 81: Division wise transferred and non-transferred technology, BFRI

Year	Institute wise No of Technology	Name of Division	No of Technology	TT (Nos)	NTT (Nos)
1984-2018	BFRI (3)	Fresh water management technology	39	39	0
		Open water management technology	7	7	0
		Coastal fish culture& management technology	16	16	0
Total		**03**	**62**	**62**	**0**

11.8 :Soil & Land Classification Survey Section, Soil Resources Development Institute (SRDI)

Among 10 technologies generated by SRDI from 1983-2013 only 01 technology was selected for transfer through this project. Focus Group Discussions were arranged to motivate the farmers about using soil test based fertilizer dose in Boro-Fallow-T. Aman pattern. Baseline data of 24 farmers of 4 Upazilas (Tangail Sadar, Bhuapur and Sadar Dakshin, Burichong) of Tangail and Cumilla districts have been collected by interviewing farmers using a questionnaire.

Four adaptive trial sites were selected with the help of DAE personnel and SRDI scientists. BRRIdhan58 and BRRIdhan72 was the test crop. BRRI recommended cultural practices were followed except fertilizer dose. Fertilizer dose were calculated on the basis of soil test status given in respective updated Upazila Nirdeshika following FRG 2018, BARC. Detailed fertilizer recommendations are given in Annexure 3A to 3D.

Data collected by baseline survey were analyzed by using SPSS software version 16.

11.8.1: Findings of Baseline survey:

Respondent farmers' average age in Tangail was 54 years (range 48-61) and in Cumilla it was 50 years (range 33-70). It was observed that middle to old aged famers is dominating in the farming community. Medium sized family (5-7 members) dominates (67%) in Cumilla while small sized family (<5 members) dominates in Tangail. Farm size in Tangail varies from 0.13-0.53ha (average 0.29ha) and in Cumilla it varies from 0.16-1.13ha (average 0.46ha) (Annexure 1).

The selected farmers mainly follow Boro-Fallow-T. Aman cropping pattern. They mostly use modern variety seed. They are not aware of soil test based fertilizer application and generally do not use recommended fertilizer dose in T. Aman (Annexure 4A, 4B, 4C & 4D).

11.8.1.1 In Tangail, both Boro and T. Aman yield was found positively correlated with respondent farmer's education level. In Cumilla Boro yield was found positively correlated but T. Aman yield was negatively correlated with respondent farmer's education level (Table 82 & 83.

11.8.1.2 In Tangail, Boro yield was found positively correlated with application of Urea, TSP, MoP and Cowdung but negatively correlated with Gypsum and Zinc Sulfate (Table 84). On the other hand, T. Aman yield was positively correlated with Urea, TSP, MoP and Gypsum (Table 85). Most of the respondent farmers do not use Zinc Sulfate and cowdung in T. Aman.

11.8.1.3 In Comilla, Boro yield was found positively correlated with application of TSP, Zinc Sulfate and Cowdung but negatively correlated with Urea and MoP (Table 86). This may be because farmers use more Urea than actually required in Boro. On the other hand, T. Aman yield was positively correlated with Urea, TSP, MoP and negatively correlated with Gypsum (Table 87). Most of the respondent farmers do not use TSP and Gypsum in T. Aman and Zinc Sulfate in Boro and T. Aman.

Table 82:Relationship of Boro and T. Aman yield with respondent farmer's education level in Tangail, SRDI

			Education level	Boro (t/ha)	T. Aman (t/ha)
Spearman's rho	**Education level**	Correlation Coefficient	1.000	.539	.399
		Sig. (2-tailed)	.	.071	.199
		N	12	12	12
	Boro (t/ha)	Correlation Coefficient	.539	1.000	.564
		Sig. (2-tailed)	.071	.	.056
		N	12	12	12
	T. Aman (t/ha)	Correlation Coefficient	.399	.564	1.000
		Sig. (2-tailed)	.199	.056	.
		N	12	12	12

Table 83: Relationship of Boro and T. Aman yield with respondent farmer's education level in Comilla

			Education level	Boro (t/ha)	T. Aman (t/ha)
Spearman's rho	Education level	Correlation Coefficient	1.000	.537	-.025
		Sig. (2-tailed)	.	.072	.939
		N	12	12	12
	Boro (t/ha)	Correlation Coefficient	.537	1.000	.037
		Sig. (2-tailed)	.072	.	.909
		N	12	12	12
	T. Aman (t/ha)	Correlation Coefficient	-.025	.037	1.000
		Sig. (2-tailed)	.939	.909	.

Table 84: Relationship of Boro yield with respondent farmers fertilizer dose in Tangail

Boro		Urea (t/ha)	TSP (t/ha)	MoP (t/ha)	Gypsum (t/ha)	Zinc Sulfate (t/ha)	Cow dung (t/ha)	Yield (t/ha)
Urea (t/ha)	Pearson Correlation	1	-.359	.290	.068	-.003	.125	.586*
	Sig. (2-tailed)		.252	.361	.833	.992	.699	.045
	N	12	12	12	12	12	12	12
TSP (t/ha)	Pearson Correlation	-.359	1	.023	-.041	.032	-.095	.125
	Sig. (2-tailed)	.252		.944	.900	.922	.769	.698
	N	12	12	12	12	12	12	12
MoP (t/ha)	Pearson Correlation	.290	.023	1	.390	.383	.541	.486
	Sig. (2-tailed)	.361	.944		.210	.219	.069	.109
	N	12	12	12	12	12	12	12
Gypsum (t/ha)	Pearson Correlation	.068	-.041	.390	1	-.310	-.094	-.004
	Sig. (2-tailed)	.833	.900	.210		.327	.773	.989
	N	12	12	12	12	12	12	12
Zinc Sulfate (t/ha)	Pearson Correlation	-.003	.032	.383	-.310	1	.447	-.061
	Sig. (2-tailed)	.992	.922	.219	.327		.145	.850
	N	12	12	12	12	12	12	12
Cowdung (t/ha)	Pearson Correlation	.125	-.095	.541	-.094	.447	1	.530
	Sig. (2-tailed)	.699	.769	.069	.773	.145		.076
	N	12	12	12	12	12	12	12
Yield (t/ha)	Pearson Correlation	.586*	.125	.486	-.004	-.061	.530	1
	Sig. (2-tailed)	.045	.698	.109	.989	.850	.076	
	N	12	12	12	12	12	12	12

*. Correlation is significant at the 0.05 level.

Table 85: Relationship of T. Aman Yield with Fertilizer dose in Tangail

T. Aman		Urea (t/ha)	TSP (t/ha)	MoP (t/ha)	Gypsum (t/ha)	Zinc Sulfate (t/ha)	Cow-dung (t/ha)	Yield (t/ha)
Urea (t/ha)	Pearson Correlation	1	.243	.261	-.076	-.073	.[a]	.196
	Sig. (2-tailed)		.447	.413	.814	.821	.	.542
	N	12	12	12	12	12	12	12
TSP (t/ha)	Pearson Correlation	.243	1	.724**	.522	.047	.[a]	.071
	Sig. (2-tailed)	.447		.008	.082	.884	.	.826
	N	12	12	12	12	12	12	12
MoP (t/ha)	Pearson Correlation	.261	.724**	1	.717**	.289	.[a]	.302
	Sig. (2-tailed)	.413	.008		.009	.362	.	.341
	N	12	12	12	12	12	12	12
Gypsum (t/ha)	Pearson Correlation	-.076	.522	.717**	1	.337	.[a]	.047
	Sig. (2-tailed)	.814	.082	.009		.283	.	.886
	N	12	12	12	12	12	12	12
Zinc Sulfate (t/ha)	Pearson Correlation	-.073	.047	.289	.337	1	.[a]	-.023
	Sig. (2-tailed)	.821	.884	.362	.283		.	.944
	N	12	12	12	12	12	12	12
Cowdung (t/ha)	Pearson Correlation	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]
	Sig. (2-tailed)	.	.	.	.	.		.
	N	12	12	12	12	12	12	12
Yield (t/ha)	Pearson Correlation	.196	.071	.302	.047	-.023	.[a]	1
	Sig. (2-tailed)	.542	.826	.341	.886	.944	.	
	N	12	12	12	12	12	12	12

** Correlation is significant at the 0.01 level (2-tailed). Cannot be computed because at least one of the variables is constant.

Table 86: Relationship of Boro yield with respondent farmers fertilizer dose in Comilla

Boro		Urea (kg/ha)	TSP (kg/ha	MoP (kg/ha	Zinc Sulfate (kg/ha)	Cowdung (kg/ha)	Yield (t/ha)
Urea (kg/ha)	Pearson Correlation	1	-.085	.715**	-.250	-.508	-.723**
	Sig. (2-tailed)		.792	.009	.433	.092	.008
	N	12	12	12	12	12	12
TSP (kg/ha	Pearson Correlation	-.085	1	-.073	.775**	.393	.260
	Sig. (2-tailed)	.792		.821	.003	.207	.414
	N	12	12	12	12	12	12
MoP (kg/ha	Pearson Correlation	.715**	-.073	1	-.087	-.075	-.632*
	Sig. (2-tailed)	.009	.821		.789	.816	.027
	N	12	12	12	12	12	12
Zinc Sulfate (kg/ha)	Pearson Correlation	-.250	.775**	-.087	1	.407	.534
	Sig. (2-tailed)	.433	.003	.789		.189	.074
	N	12	12	12	12	12	12
Cowdung (kg/ha)	Pearson Correlation	-.508	.393	-.075	.407	1	.613*
	Sig. (2-tailed)	.092	.207	.816	.189		.034
	N	12	12	12	12	12	12
Yield (t/ha)	Pearson Correlation	-.723**	.260	-.632*	.534	.613*	1
	Sig. (2-tailed)	.008	.414	.027	.074	.034	
	N	12	12	12	12	12	12

Table 87: Relationship of T. Aman yield with respondent farmers fertilizer dose in Comilla

T. Aman		Urea (kg/ha)	TSP (kg/ha	MoP (kg/ha	Gypsum (kg/ha)	Cow-dung (kg/ha	Yield (t/ha)
Urea (kg/ha)	Pearson Correlation	1	.788**	.654*	.364	.434	.523
	Sig. (2-tailed)		.002	.021	.244	.158	.081
	N	12	12	12	12	12	12
TSP (kg/ha	Pearson Correlation	.788**	1	.622*	.337	.254	.423
	Sig. (2-tailed)	.002		.031	.284	.425	.171
	N	12	12	12	12	12	12
MoP (kg/ha	Pearson Correlation	.654*	.622*	1	.022	.784**	.273
	Sig. (2-tailed)	.021	.031		.946	.003	.391
	N	12	12	12	12	12	12
Gypsum (kg/ha)	Pearson Correlation	.364	.337	.022	1	-.165	-.147
	Sig. (2-tailed)	.244	.284	.946		.608	.648
	N	12	12	12	12	12	12
Cow dung (kg/ha)	Pearson Correlation	.434	.254	.784**	-.165	1	.484
	Sig. (2-tailed)	.158	.425	.003	.608		.111
	N	12	12	12	12	12	12
Yield (t/ha)	Pearson Correlation	.523	.423	.273	-.147	.484	1
	Sig. (2-tailed)	.081	.171	.391	.648	.111	
	N	12	12	12	12	12	12

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level.

- In Tangail, BCR of 7 Boro farmers were above 1 (range 1.04-1.22) which means they earned profit but BCR of 5 Boro farmers were less than 1 (range 0.88-0.99) which means they suffered loss (Annexure5A). High input & labour cost and lower market price of the produce was the probable reasons of loss.
- On the other hand BCR of 1 T. Aman farmer were less than 1 (range 0.88) which means he suffered loss but that of 11 farmers were above 1(range 1.02-1.41) which means they earned profit (Annexure5B). Lower input cost and relatively higher market price of the produce was the probable reasons of benefit.
- In Comilla, BCR of 7 Boro farmers were above 1 (range 1.01-1.16) which means they earned profit but BCR of 5 Boro farmers were less than 1 (range 0.84-0.98) which means they suffered loss (Annexure 5C).
- On the other hand BCR of 3 T. Aman famers were below 1 (range 0.92-0.94) which means they suffered loss and 9 farmer's BCR was above (1.01-1.40) which means the farmer earned profit (Annexure 5D).

Findings of Adaptive trial:

- Average yield of BRRIdhan58 in adaptive trial plot receiving balanced fertilizer dose was 15% and 21% higher over control in Tangail Sadar and Bhuapur Upazila respectively. On the other hand yield of BRRIdhan58 in adaptive trial plot was 10% and 12% higher over control in Sadar Dakshin and Burichong Upazila respectively (Table 7).

- Average yield of BRRIdhan72 in adaptive trial plot receiving balanced fertilizer dose was 9% and 7.9% higher over control in Tangail Sadar and Bhuapur Upazila respectively. On the other hand yield of BRRIdhan72 in adaptive trial plot was 12% and 9% higher over control in Sadar Dakshin and Burichong Upazila respectively (Table 9).

- Average yield in Boro was 6.29 t/ha (5.6-7.7) and in T. Aman it was 4.94 t/ha (4.39-5.88). Highest yield 7.7 t/ha in Boro (BRRIdhan58) was recorded in Bhuapur (Trial plot) which was 21% higher over control plot. Highest yield 5.88 t/ha in T. Aman (BRRIdhan72) was recorded in Sadar Dakshin (Comilla) which was 12% higher than control plot.

- In Tangail, average benefit cost ratio (BCR) in Boro was 1.19 (1.12-1.40) and in T. Aman it was 1.48 (1.31-1.57) (Annexure 6A, 6B). On the other hand, average BCR in Boro was 1.18 (1.09-1.35) and in T. Aman it was 1.47 (1.21-1.60) in Cumilla (Annexure 6C, 6D). Iqbal (2005) found that the BCR of Boro rice in landless, marginal, small, medium and large category of farmers were 1.87, 1.40, 1.41, 1.83 and 1.64 respectively. Islam, *et al*. (2017) found that the undiscounted BCR of rice in coastal district Satkhira was 1.38, 1.23 and 1.15 for small, medium and large farmers respectively.

- Farmers practice (fertilizer dose) was found imbalanced (Table 8,10) and that is why they got comparatively poor yield in Boro and T. Aman both in Tangail and Comilla district.

- It was observed that by using balanced dose of fertilizer based on Soil Test Status as given in Updated Upazila Nirdeshika of SRDI rice productivity at farmers' level was substantially increased and they earned profit through rice culture. Extension personnel of DAE should come forward to popularize the use of balanced dose of fertilizer based on Soil Test Status as given in Updated Upazila Nirdeshika of SRDI.

Table 88: Average result of balanced fertilizer application in Boro (BRRIdhan58) adaptive trial plot over control (farmers practice) in Tangail and Comilla district

Upazila	Soil Series and Land type	Yield (t/ha)	
		Adaptive trial	Control
Tangail district		**BRRIdhan58**	
Bhuapur	Sonatala, MHL	7.70 (21%)*	6.25
Tangail Sadar	Sonatala, MHL	6.90 (15%)	6.00
Cumilla district		BRRIdhan58	
Sadar Dakshin	Pritimpasa, MHL	6.85 (10%)	6.20
Burichong	Varella, MHL	6.65 (12%)	5.90

* yield increment over control

Table 89: Balanced fertilizer dose and Farmers' practice in Tangail and Comilla district

Upazila	Fertilizer application in BRRIdhan58									
	Adaptive Trial (kg/ha)					Control plot (kg/ha)				
Tangail district	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)
Tangail Sadar	262	62.5	191	85.5	3.33	261	134	112	90	11
Bhuapur	262	102.5	115	117.5	3.33	224	75	75	37	0
Cumilla district	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)
Sadar Dakshin	262	102.5	115	50.8	3.33	180	112	75	60	0
Burichong	262	102.5	115	117.5	3.33	224	97	97	75	0

Table 90: Average result of balanced fertilizer application in T. Aman (BRRIdhan72) adaptive trial plot over control (farmers practice) in Tangail and Comilla district

Upazila	Soil Series and Land type	Yield (t/ha)	
		Adaptive trial	Control
Tangail district		**BRRIdhan72**	
Bhuapur	Sonatala, MHL	5.16 (9.0%)	4.73
Tangail Sadar	Sonatala, MHL	5.57 (7.9%)*	5.16
Cumilla district		BRRIdhan72	
Sadar Dakshin	Pritimpasa, MHL	5.88 (12%)	5.23
Burichong	Varella, MHL	5.16 (9.0%)	4.73

* yield increment over control

Table 91:Balanced fertilizer dose and Farmers' practice in Tangail and Comilla district

Upazila	Fertilizer application in BRRIdhan72									
	Adaptive Trial (kg/ha)					Control plot (kg/ha)				
Tangail district	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)
Tangail Sadar	131	20	113	57.2	0.95	187	90	105	90	7.5
Bhuapur	131	32.5	68.4	80	0.95	224	75	75	37	0
Comilla district	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)	Urea	DAP	MoP	Gypsum	Zinc Sulfate (hepta)
Sadar Dakshin	131	32.5	68.4	35.6	0.95	90	0	75	0	0
Burichong	131	32.5	68.4	80	0.95	150	82	90	52	0

Pictorial view of the sub-project activities over the years:

Fig. 86: Selected farmers of Tangail sadar and Bhuapur Upazila are being motivated by P.I. and Co-P.I. about the use of balanced fertilizer dose in Boro-T. Aman pattern using Soil Test Value given in Updated Upazila Nirdeshika of SRDI on 19.09.2018 in presence of SSO, SRDI and ADD, DAE, Tangail

Fig. 87: Selected Farmers and SSAOs of Tangail Sadar and Bhuapur Upazila attending Focus Group Discussion in SRDI district office, Tangail

Fig. 88: Selected farmers and SAAOs of Sadar Dakshin and Burichong Upazila are being motivated by P.I. & Co-PI in presence of PSO, SRDI, Comilla about the use of balanced fertilizer dose in Boro- T. Aman pattern using Soil Test Status given in Updated Upazila Nirdeshika on 24.09.2018

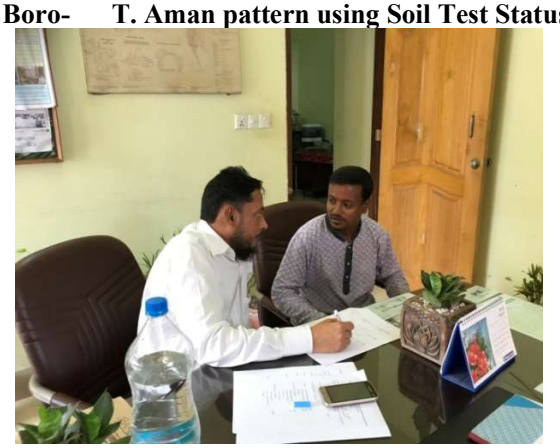


Fig. 89: Farmers interview during baseline survey, SRDI

Fig. 90: Selection of farmer's field for conducting adaptive trial on use of balanced fertilizer in Boro-T. Aman pattern at Tangail Sadar (left) and Bhuapur Upazila (right) in Tangail, SRDI

Fig. 91: Selection of farmer's field for conducting adaptive trial on use of balanced fertilizer in Boro-T. Aman pattern at Sadar Dakshin and Burichong Upazila in Comilla, SRDI

Fig. 92: Distribution of 5kg BRRIdhan58 seed to selected farmers at Tangail Sadar (left) and Bhuapur, SRDI Upazila (right) in Tangail, SRDI

Fig. 93: Distribution of 5kg BRRIdhan58 seed to selected farmers at Sadar Dakshin (left) and Burichong, SRDI Upazila (right) in Comilla, SRDI

Fig. 94:Boro seedbed (Tangail sadar, Tangail), SRDI
Fig. 95:Boro seedbed (Bhuapur, Tangail), SRDI

Fig. 96:Boro seedbed (Sadar Dakshin, Comilla), SRDI

Fig. 97:Boro seedbed (Burichong, Comilla), SRDI

Fig. 98:Boro adaptive trial plot, TangailSadar, SRDI

Fig. 99:Boro adaptive trial plot, Bhuapur, SRDI

Fig. 100:Boro adaptive trial plot, Sadar Dakshin, Comilla, SRDI

Fig. 101:Boro adaptive trial plot, Burichong, Comilla, SRDI

Fig. 102: Balanced fertilizer application in Farmer'sField (Tangail sadar), SRDI

Fig. 103:Balanced fertilizer application in Farmer's Field (Bhuapur), SRDI

Fig. 104:Monitoring team visit, Tangail Sadar, SRDI

Fig. 105:Monitoring team visit, Bhuapur, SRDI

Fig. 106:Visiting Bhuapur Trial site, SRDI

Fig. 107:Visiting Burichong Trial site, SRDI

Fig. 108: Boro harvesting, trial plot, Tangail Sadar, SRDI

Fig. 109:Boro harvesting, trial plot, Bhuapur, SRDI

Fig. 110:Boro harvesting, trial plot, Burichong, SRDI

Fig. 111:T.Aman harvesting Tangail sadar,Tangail, SRDI

Fig. 112:Field day at Tangail SadarTangail, SRDI

Fig. 113:Field day at Tangail sadar, Tangail, SRDI

Fig. 114:Field day at Sadar Dakshin,Comilla, SRDI

Fig. 115:Field day at Sadar Dakshn, Comilla, SRDI

Fig. 116:Monitoring team visiting Bhuapur, Tangail, SRDI

Fig. 117:Monitoring team visiting Bhuapur, Tangail, SRDI

Fig. 118:Monitoring team visit, Burichong, SRDI

Fig. 119:Monitoring team visiting Sadar Dakshin, Comilla, SRDI

Technology Generation

Soil Resource Development Institute (SRDI) was established in 1983. During (1983-2013) SRDI developed 10 technologies. Out of ten, two technologies are developed for the hilly area, two for the salinity area, and six for all over Bangladesh.

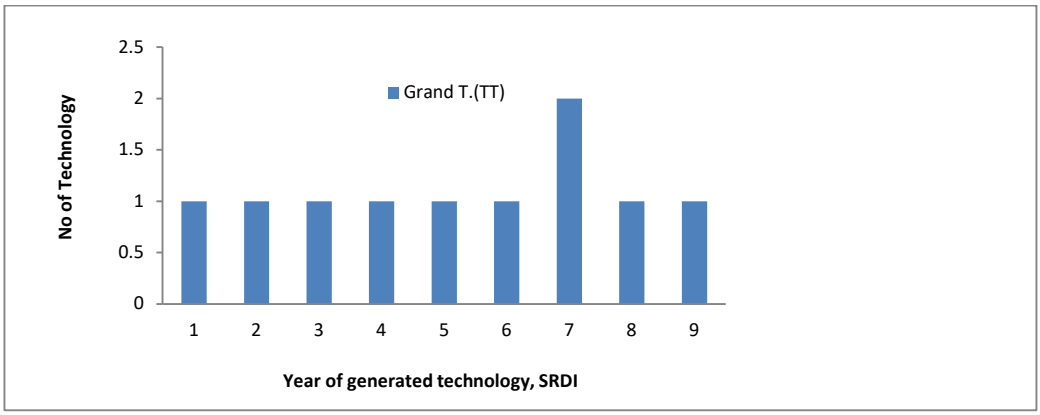


Fig. 120: Year wise Technology generated, SRDI

Transferring movement of technologies

All the technologies have been transferred through field trials, field Day, training, and demonstrations.

Table 92: Transferred and non-transferredTechnology, SRDI

Year	Institute wise No of Technology	Name of Division	No of Technology	TT (Nos)	NTT (Nos)
1983-2013	SRDI	-	10	10	0
Total		**-**	**10**	**10**	**0**

11.9 :Cotton Development Board (CDB)

Among 68 technologies generated by CDB fom 1993-2018 only 04 technologies were selected for transfer through this project.

Adaptive trials in the 1st year have set and data has collected and result of adaptive trials is shown below:

Table 93: Yield and yield contributing characters

Plot no	location	Number of fruiting branches/ plant	Number of bolls/plant	Single boll weight (g)	Yield (Kg/Bigha)	Yield (Kg/ha)
1.	Bandarban	18.2	32.2	4.8	575	4312
2	Bandarban	17.5	32.4	4.9	588	4410
3	Bandarban	18.1	32.3	4.8	586	4395
4	Bandarban	18.1	31.5	5.0	586	4395
5	Khagrachari	14.2	28.0	5.15	585	4387
6	Khagrachari	13.1	27.4	5.5	578	4335
7	Thakurgoan	14.6	27.4	5.8	685	5137
8	Thakurgoan	14.5	27.3	5.5	578	4335

Table 94: Lint characters :

Ginning out turn (%)	Staple length (mm)	Staple stranth (g/tex)	Micronaire value (µg/inch)	Uniformity Ratio (%)
39.83	28.35	28.36	5.01	81.49

Fig. 121: Consulting With CCDO and Others Field Officers, CDB

Fig. 122: Seed Sowing in the Field, CDB

Fig. 123: Inter Culture Operation and Earthling –up, CDB

Fig. 124: Demonstration Field, Bandarban, CDB

Fig. 125: Weeding and Fertilizer Application, CDB

Fig. 126: Consulting With cotton growers, CDB

Fig. 127: Data Collection in Thakurgaon Zone, CDB

Fig. 128: Insect Control by Hand Picking, CDB

Fig. 129: Field Monitoring with PI, Co-PI, SSO and FarmerinBandarban, CDB

Fig. 130: Cotton Field at harvesting stage, CDB

Fig. 131: Cotton harvesting by hand, CDB

Fig. 132: Harvesting Cotton carrying by Tribal lady, CDB

Fig. 133: Stake Holder Meeting, CDB

Fig. 134: Group Discussion, CDB

Fig. 135: Field Day, CDB

Fig. 136: Field Assistant/Scientific Assistant Training at CDB Conference Room.

Adaptive trials in the 2nd year have set and data has collected and result of adaptive trials is shown below:

Table 95: Yield and yield contributing characters, CDB

Plot no	location	No.of fruiting branches/plant	Number of bolls/plant	Single boll weight (g)	Yield (Kg/Bigha)	Yield (Kg/ha)
1	Khagrachari	14.8	27.4	5.0	572	4290
2	Khagrachari	15.0	27.5	5.10	563	4222
3	Khagrachari	14.7	28.7	5.15	607	4552
4	Khagrachari	14.7	27.0	5.15	570	4275
5	Bandarban	16	40	5.4	521	3907
6	Bandarban	15	27	5.3	525	3937
7	Bandarban	14	28	5.2	528	3960
8	Bandarban	18	30	5.1	508	3810
9	Bandarban	15	27	5.22	528	3960
10	Bandarban	17	29	5.3	550	4125
11	Thakurgoan	14.4	27	5.7	670	5025
12	Thakurgoan	14	27.3	5.8	675	5062
13	Thakurgoan	15.5	27.6	5.8	655	4912
14	Thakurgoan	14.9	29.2	5.8	685	5137
	Average	**15.21**	**28.76**	**5.36**	**582**	**4369**

Table 96: Lint characters, CDB

Ginning out turn (%)	Staple length (mm)	Staple stranth (g/tex)	Micronaire value (µg/inch)	Uniformity Ratio (%)
39.83	28.35	28.36	5.01	81.49

Adaptive trials in the 3nd year have set and data has collected and result of adaptive trials is shown below:

Table 97: Yield and yield contributing characters, CDB

Plot no	location	No.of fruiting branches/plant	Number of bolls/plant	Single boll weight (g)	Yield (Kg/Bigha)	Yield (Kg/ha)
1	Khagrachari	16.4	33.5	5.0	543	4045.35
2	Khagrachari	16.2	33.3	5.1	540	4023
3	Khagrachari	23.5	30	5.0	540	4023
4	Khagrachari	16.4	33.9		540	4023
5	Bandarban	13.7	26.6	4.8	527	3926.15
6	Bandarban	12	21.9	4.8	473	3523.85
7	Bandarban	12.5	21.1	4.7	483	3598.35
8	Bandarban	13.3	22.1	4.8	538	4008.1
9	Bandarban	13.3	29.2	4.8	545	4060.25
10	Bandarban	13.8	25.0	4.9	487	3628.15
11	Thakurgoan	14.6	17.9	7.0	648	4827.6
12	Thakurgoan	13.6	27.4	6.5	610	4544.5
13	Thakurgoan	14.6	27.4	7.0	625	4656.25
14	Thakurgoan	15.6	27.4	6.0	565	4209.25
	Average	**14.96**	**26.91**	**5.03**	**547.43**	**4078.343**

Table 98: Lint characters, CDB

Ginning out turn (%)	Staple length (mm)	Staple stranth (g/tex)	Micronaire value (µg/inch)	Uniformity Ratio (%)
39.83	28.35	28.36	5.01	81.49

Technology Generation

A total of 68 technologies have been developed from the inception of CDB. During 1993-2018 period, 21 technologies from plant breeding division, 22 technologies from the Agronomy division, 13 from Soil science division, 02 from plant pathology division and

10 from entomology division were developed. All technologies were transferred through on-firm trial, demonstration, field day, training (Extension personal/NGO/Framer) and leaflet distribution. Agronomy Division of CDB developed a highest number of technology (22 nos) followed by plant Breeding division (21 nos). The lowest number of technology (02) was developed from plant pathology division.

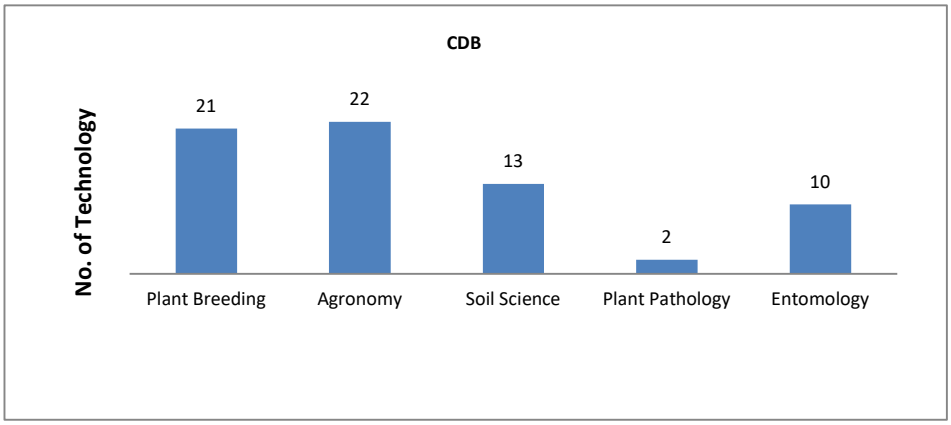


Fig. 137: Division wise generated technologies, CDB

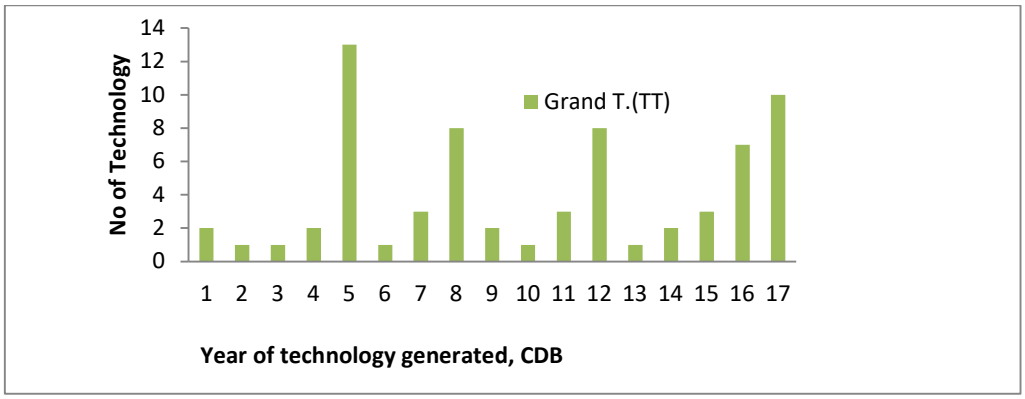


Fig. 138 Year wise generated technologies, CDB

Transferring movement of technologies, CDB

All the technologies have been transferred through field trials, field Day, training, and demonstrations .

Table 99: Division wise transferred and non-transferred technologies, CDB

Year	Institute wise No of Technology	Name of Division	No of Technology	TT (Nos)	NTT (Nos)
1993-2018	CDB (5)	Agronomy	22	22	0
		Breeding	21	21	0
		Entomology	10	10	0
		Pathology	2	2	0
		Soil Science	13	13	0
Total		**05**	**68**	**68**	**0**

11.10 Jute Farming Systems Division, Bangladesh Jute Research Institute (BJRI)

Findings of Baseline Survey: The age range of the respondent farmers' in Manikganj was 40-80, in Faridpur was 30-63, in Rangpur and Lalmonirhat it was 22-61 years. It was observed that middle to old aged farmers were dominating in the farming community. Family size ranged from 03-08 in Manikganj (average 6 members). The average family size in Faridpur was 02-06 (average 5 members) and 03-09 in Rangpur and Lalmonirhat districts (average 5 members). Medium sized family (4-6 members) dominates in all areas of the locations. Farm size varies from 33-255 decimal (average 121decl.) in Manikganj, from 86-2030 decimals in Faridpur (average 444 decl.), from 30-484 decimals (average 189 decl.) in Rangpur and Lalmonirhat. Education level of the farmers in different locations varies from class five to degree. Only four farmers were illiterate in different locations but they can sign only. Some pictures are given bellow:

Fig. 139: Baseline survey, BJRI

Focus group discussion: Focus Group Discussions were arranged to motivate the farmers on using the new variety BJRI Tossa Pat-8 and kenaf variety HC-95. At the same time cultivation procedure, agronomic management, intercultural operations, pest and disease control, fertilizer management, plant population management, etc. were discussed in detail with the farmers' to obtain maximum yield from the new crop variety. The farmers' of the selective area were actively participated and took part spontaneously on the whole day discussion. Basic information of the farmers' was mentioned in the baseline survey chapter. It was known from the FGD that farmers' cultivate jute and kenaf collecting seed from the local market or from the seed shop.

Fig. 140: Focus group discussion, BJRI

Adaptive trials for seed: The farmers in the selected areas cultivate jute and allied fibre crops but they do not produce jute seed. The farmers just collect seeds from the local market or from other places and sow it in their field. They never thought about the seed quality and its proper time of sowing. Many of the time, the farmers' failed to collect good quality seed. That is why, they were not getting desired yield as the farmers are not getting desired plant population and plant height at the time of harvest. Not only that, there were few farmers those were taking care of their jute crops properly. Due to lack of quality seed, proper agronomic management, fertilizer management, intercultural operations, pest and disease control, etc. the jute growers were not getting desired yield. So, the jute growers were not getting desired

financial benefits and losing interest on jute cultivation. If the farmers can get good quality jute seeds of high yielding variety, they can obtain desired yield and economic return. While we were working in the area, we discussed with the farmers' about the quality seed, new high yielding variety (Robi-1& HC-95), time of sowing, it's agronomic management, desired plant population, pest and disease control, etc. We tried to convince the farmers to produce jute seed in a small portion of their land or in a small portion of their vegetable garden to get quality seed by their own. It is true that jute seed crop is not remunerative compared to other high value vegetables as it is grown in the robi season. That is why, the farmers do not want to show interest to grow jute seed sacrificing other vegetable crops grown in the same time. On the other hand, the price of jute seed is very low compared to other seed crops. So it will be tuff to convince the farmers to produce jute seed, unless and until the price of jute seed will be remunerative or profitable to them. As the farmers do not produce jute seed by themselves (no control plots), so we could not show any comparative statement of development for the intervention of the seed production technology.We selected 8-10 farmers from each location for seed production covering at least 10 decimal land.

According to the sub-project proposal, there were two locations for the seed production, one is at Manikganj and another is atRongpurregion. Officially, the project activity was started from the month of July/2018 but practically it was started some months later due to some management issue. So, we could not manage the project activity in both the locations in the proper time. We could started seed production at Manikganjfrom the project starting time (July/2018) but we could not manage it at Rangpur region. Six farmers were selected for jute seed production at Manikganj covering 10 decimals of land (Table-100). From the table it is showed that the highest seed yield (35 kg $plot^{-1}$) was obtained from the plot of Mr. Bachu Mia. The average seed yield, cost, gross return (GR) and BCR was found $plot^{-1}$ was 30kg, Tk.5563, Tk. 6600 and 1.19 respectively. If we convert this data to ha^{-1}then the average seed yield, cost, gross return (GR) and BCR stands for 743kg, Tk. 137684, Tk. 163350 and 1.19 respectively. Table-2 showed that in the year 2019-20, the average seed yield, cost, GR and BCR $ha^{-1}$was found 836kg, TK. 168750, Tk. 267520 and 1.46 respectivelyat Manikganj. At Manikganj, in the year 2020-21, Table-3 showed that the average seed yield, cost, GR and BCR ha^{-1} was found 765kg, TK. 168750, Tk. 215100 and 1.27 respectively. In the year 2020-21 at Manikganj, seed yield was disturbed by the long duration and repeated flood. So seed yield, GR and BCR was found comparatively lower than the previous year.

Table-4 showed that in the year 2019-20, the average plot size was 10 decimal at Rangpur region (Rangpur and Lalmonirhat) though the plot size was varied from farmer to farmer (8-13 decimals).The average seed yield, cost, GR and BCR $plot^{-1}$ was found 32kg, Tk. 7667, Tk. 10133 and 1.32 respectively. When the data is converted to ha^{-1}then the average seed yield, cost, GR and BCR stands for 792kg, Tk. 189758, Tk. 250792 and 1.32 respectively (Table-4). In the year 2020-21, table-5 showed that the average plot size was 11decimal at Rangpur and Lalmonirhat though the plot size was varied from farmer to farmer (10-13 decimals).The average seed yield, cost, GR and BCR $plot^{-1}$ was found 42kg, Tk. 8000, Tk. 13394 and 1.67 respectively. When the data is converted to ha^{-1}then the average seed yield, cost, GR and BCR stands for 945kg, Tk. 180000, Tk. 301364 and 1.67 respectively (Table-5). Five farmers covering 10 - 33 decimal of land were brought under seed production programme in the year

2021-22 at Lalmonirhat Sadar. Seed yield was varied from farmers to farmer as the plot size was varied (average 16 decimal).The average seed yield was found 855 kgha^{-1}. The average seed production cost, GR and BCR was recorded Tk. 152831, Tk. 256571 ha^{-1} and 1.68 respectively (Table 6). In the year 2021-22, Table-7 showed that the average plot size was 11 decimal at Rangpur though the plot size was varied from farmer to farmer (10-14 decimals).The average seed yield, cost , GR and BCR plot^{-1} was found 40kg, Tk. 7057, Tk. 13394 and 1.67 respectively. When the data is converted to hectare; the average seed yield, cost, GR and BCR stands for 945kg, Tk. 180000, Tk. 301364 and 1.67 respectively (Table-5). It should be mentioned here that jute seed price was also varied from year to year. Variation of seed price during the year was considered in the calculation of GR which is reflected in the BCR.

Adaptive trials for fibre: The selected farmers in the selected areas cultivate jute (Robi-1) and allied fibre crops (HC-95) during the kharif-1 season. They collect seeds from the local market and just sow in their field. Many of the time, the farmers' failed to collect good quality seed. That is why, they were not getting desired yield as the farmers are not getting desired plant population and plant height at the time of harvest. There were few farmers those were taking care of their jute crops properly as they were not getting equitable price of jute. Due to lack of good quality seed, proper agronomic management, fertilizer management, intercultural operations, pest and disease control, etc. the jute growers were not getting desired yield. So, the jute growers were not getting desired financial benefits and losing interest on jute cultivation. If the farmers can get good quality jute seeds of high yielding variety, they can obtain desired yield and economic return. We discussed with the farmers' in detail about the quality seed and its effect on yield, new high yielding variety (Robi-1& HC-95), time of sowing, it's agronomic management, pest and disease control, etc. in the contribution on yield. The farmers were convinced and agreed to follow the advice on jute cultivation. We selected 8-10 farmers from each location for fibre production covering at least 20 decimal land. We provided technology with full package to them. The farmers were doing all the activities by their hands and with the help of some labours. The farmer's expressed their happiness when they got good result from the technology. Four adaptive trial sites (two for fibre and two for seed) were selected with the help of DAE personnel and BJRI scientists. BJRI Tossa Pat-8 and HC-95 was the crop variety for adaptive trials. BJRI recommended cultural practices like- agronomic management; fertilizer management, pest and disease control management, etc. were followed.

Fig. 141: Adaptive trials for fiber, BJRI

Findings of adaptive trials for seed: According to the sub-project proposal, there were two locations for the seed production, one is at Manikganj and another is at Rongpur region. Officially, the project activity was started from the month of July/2018 but practically it was started some months later due to some management issues. So, we could not manage the project activity in time. We could started seed production at Manikganj from the project starting time (July/2018) but we could not manage seed production at Rangpur region. Six farmers were selected for jute seed production at Manikganj covering 10 decimals of land (Table-100). Table-100 also showed that the highest seed yield (35 kg plot^{-1}) was obtained from the plot of Mr. Bachu Mia. The average seed yield, cost, gross return (GR) and BCR

was found plot^{-1} was 30kg, Tk.5563, Tk. 6600 and 1.19 respectively. If the data is converted to hectare, the average seed yield, cost, gross return (GR) and BCR stands for 743kg, Tk. 137684, Tk. 163350 and 1.19 respectively. Table-101 showed that in the year 2019-20, the average seed yield, cost, GR and BCR ha^{-1} was found 836kg, TK. 168750, Tk. 267520 and 1.46 respectively at Manikganj. Table-102 showed that in the year 2020-21, the average seed yield, cost, GR and BCR ha^{-1} was found 765kg, TK. 168750, Tk. 215100 and 1.27 respectively at Manikganj. Seed yield was disturbed at Manikganj in the year 2020-21 for the reason of the long duration and repeated flood. So seed yield, GR and BCR was found comparatively lower than the previous year.

Table 103 showed that in the year 2019-20, the average plot size was 10 decimal at Rangpur region (Rangpur and Lalmonirhat) though the plot size was varied from farmer to farmer (8-13 decimals).The average seed yield, cost, GR and BCR plot^{-1} was found 32kg, Tk. 7667, Tk. 10133 and 1.32 respectively. When the data is converted to ha^{-1}then the average seed yield, cost, GR and BCR was found 792kg, Tk. 189758, Tk. 250792 and 1.32 respectively. On the other hand, Table 104 showed that the average plot size was 12 decimal at Rangpur and Lalmonirhat though the plot size was varied from farmer to farmer (10-13 decimals).The average seed yield, cost, GR and BCR per 10 decimal plot^{-1} was found 35kg, Tk. 6667, Tk. 11161 and 1.67 respectively. When the data is converted from 10 decimal to ha^{-1}then the average seed yield, cost, GR and BCR was found 867kg, Tk. 165008, Tk. 276235 and 1.67 respectively. It should be mentioned here that jute seed price was also varied from year to year and it was considered on the calculation of GR and BCR. Seed yield was found 908 kgha^{-1} at Lalmonirhat in the year 2021-2022 (Table 105). Cost of seed production and gross return (GR) were recorded Tk. 172900 and Tk. 272318 ha^{-1} at Lalmonirhat in the same year. Table 6 also showed that seed yield was found higher in the 3rd year than in 1st& 2nd year. The average seed yield was found 939 kgha^{-1} at Rongpur in the year 2021-22 (Table103). The cost of seed production and GR were found Tk. 183625 and Tk. 281775 ha^{-1} respectively at Rongpur in the same year. It was also observed that seed yield was found higher in the 3rd year between the locations compared to previous years. An increasing trend of seed yield was observed in different years (from 2018-2022) in Rongpur and Lalmonirhat. The highest GR (Tk. 2,67,520) and BCR (1.46) was found in the year 2019-20 at Manikganj compared to the base year. But at Rongpur & Lalmonirhat the highest GR (Tk. 2,76,235) and BCR (1.67) was found in the year 2020-21 (Table105). Compare to the base year (2019-20) 9.47% and 16.67% higher seed yield was recorded in the 3rd (2020-21) and 4th (2021-22) year at Rongpur and Lalmonirhat. The lowest seed yield (792 kgha^{-1}) was recorded in the 1st year (2019-20) and the highest seed yield (924 kgha^{-1}) was recorded in the 4th year (2021-22). It might be due to increase technical knowhow of the farmers for taking care and the cultural management of the seed crop by the farmers. But the seed production scenario is observed a bit deviated from year to year at Manikganj. Compare to base year (2018-19) 12.52% higher seed yield was recorded in the 2nd year at Manikganj locations. In the 3rd year (2020-21) seed yield was lower due to heavy rainfall. The crop land was inundated by rain water. So the seed crop could not establish in time due to water lodge situation. Crop growth was not ensured up to the level and that is why jute seed was lower in the season.

Fig. 142: Adaptive trials for seed, BJRI

Table 100: Cost and return analysis of seed production at Manikganj in the year 2018-19, BJRI

SL. No.	Name of farmers	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Md. Saiful Islam	10	29	5563	6380	1.15
2.	Md. Bachu Mia	10	35	5563	7700	1.39
3.	Md.Aminul Islam	10	32	5563	7040	1.27
4.	Md. Sukur Ali	10	28	5563	6160	1.11
5.	Abdur Razzak	10	26	5563	5720	1.03
6.	Md. AduMollah	10	30	5563	6600	1.17
	Sub-Total average	10	30	5563	6600	1.19
	Converted average 10 $^{-1}$ decimal		**30**	**5563**	**6600**	**1.19**
	Converted average hectare $^{-1}$		**743**	**1,37,684**	**1,63,350**	**1.19**

Price of jute seed =Tk 220 kg^{-1}

Table 101: Cost and return analysis of seed production at Manikganj in the year 2019-20, BJRI

SL. No.	Farmer's name	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Md. Alauddin	10	33	7500	10560	1.40
2.	Nur Muhammad	12	38	8500	12160	1.43
3.	Md. Aminul	12	41	8500	13120	1.54
4.	Md. Thandu Mia	10	34	7500	10880	1.45
5.	Md. Anwar Siddique	11	36	7500	11520	1.53
6.	Md. Adam Molla	10	34	7500	10880	1.45
	Sub-Total average	10.66	36	7500	10933	1.46
	Converted average 10 $^{-1}$ decimal		**34**	**7036**	**10256**	**1.46**
	Converted average hectare $^{-1}$		**836**	**1,68,750**	**2,67,520**	**1.46**

Price of jute seed = Tk 320 kg^{-1}

Table 102: Cost and return analysis of seed production at Manikganj in the year 2020-21, BJRI

SL. No.	Name of farmers	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Md. Saiful Islam	12	39	7500	10920	1.46
2.	Md. Ismail Hosen	12	35	7500	9800	1.31
3.	Md. Aminul Islam	12	41	7500	11480	1.53
4.	Abdul Kuddus	10	29	7500	8120	1.08
5.	Md. Imdadul Haque	11	32	7500	8960	1.19
6.	Abdus Satter	9	28	7500	7840	1.05
7.	Md. Saifur Rahman	11	35	7500	9800	1.31
	Sub-Total average	11	34	7500	9560	1.27
	Converted average 10 $^{-1}$ decimal		**31**	**6818**	**8691**	**1.27**
	Converted average hectare $^{-1}$		**767**	**168746**	**215102**	**1.27**

Price of jute seed = Tk 280 kg^{-1}

Table 103: Cost and return analysis of seed production at Rangpur and Lalmonirhat in the year 2019-20, BJRI

SL. No.	Farmer's name	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Abdul Matin	13	42	8500	13440	1.58
2.	Md. Serajul Islam	8	27	7500	8640	1.15
3.	Md. Bakul Mia	10	33	7500	10560	1.41
4.	Md. Aminul Haque	10	32	7500	10240	1.36
5.	Md. Oahiduzzaman	10	29	7500	9280	1.24
6.	Md. Ershadul Haque	8	27	7500	8640	1.15
	Sub-Total average	10	32	7667	10133	1.32
	Converted average 10 $^{-1}$ decimal		**32**	**7667**	**10133**	**1.32**
	Converted average hectare $^{-1}$		**792**	**189758**	**250792**	**1.32**

Price of jute seed= Tk 320 kg^{-1}

Table 104: Cost and return analysis of seed production at Rangpur and Lalmonirhat in the year 2020-21, BJRI

	Farmer's name	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Md. Afser Ali	13	50	8000	16000	2.00
2.	Md. Limon Mia	12	47	8000	15040	1.88
3.	Abdul Matin	10	36	8000	11520	1.44
4.	Md. Akbor Ali	12	43	8000	13760	1.72
5.	Md. Oahiduzzaman	11	38	8000	12160	1.52
6.	Abdul Kuddus	10	35	8000	11200	1.40
7.	Md. Jamal Uddin	12	44	8000	14080	1.76
	Sub-Total average	12	42	8000	13,394	1.67
	Converted average 10 $^{-1}$ decimal		**35**	**6667**	**11,161**	**1.67**
	Converted average hectare $^{-1}$		**867**	**165008**	**276235**	**1.67**

Price of jute seed = Tk 320 kg^{-1}

Table 105: Cost and return analysis of seed production at Lalmonirhat in the year 2021-22, BJRI

SL. No.	Farmer's name	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Md. Afser Ali	13	46	9100	13800	1.52
2.	Abdul Matin	10	38	7000	11400	1.63
3.	Md. Limon Mia	12	45	8400	13500	1.61
4.	Md. Akbor Ali	12	44	8400	13200	1.57
5.	Md. Rafiqual Islam	33	121	23100	36300	1.57
	Sub-Total average	16	59	11200	17640	1.58
	Converted average 10 $^{-1}$ decimal		37	7000	11025	1.58
	Converted average hectare $^{-1}$		908	172900	272318	1.58

Price of jute seed = Tk 300 kg^{-1}

Table 106 :Cost and return analysis of seed production at Rangpur in the year 2021-22, BJRI

SL. No.	Farmer's name	Land area (dec.)	Seed yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Abdul Kuddus	10	36	7000	10800	1.54
2.	Md. Jamal Uddin	12	47	9000	14100	1.57
3.	Md. Nur Jamal	14	52	10500	15600	1.49
4.	Md. Hazrat Ali	10	41	7500	12300	1.64
5.	Md. Rassel Mia	10	35	7500	10500	1.40
6.	Md. Faruk Hossen	10	39	7500	11700	1.56
7.	Md. Ruhul Amin	10	39	7500	11700	1.56
	Sub-Total average	11	41	8071	12386	1.53
	Converted average 10 $^{-1}$ decimal		38	7434	11408	1.53
	Converted average hectare^{-1}		939	183625	281775	1.53

Price of jute seed = Tk 300 kg^{-1}

Table 107 :Comparative statement of seed yield in two different locations in different years, BJRI

SL. No.	**Year**	**Seed yield (kg ha^{-1})**			
		Manikganj	**Yield increased compared to base year**	**Rongpur & Lalmonirhat**	**Yield increased compared to base year**
1	2018-19	743	-	-	-
2	2019-20	836	12.52 %	792	-
3	2020-21	767	Due to heavy rainfall, crop land was inundated. So the crop establishment delayed and yield was not up to the level.	867	9.47 %
4	2021-22	-	-	924	16.67 %

Table 108: Comparative statement of cost & return for seed in two different locations in different years , BJRI

Year	Cost & Return for seed crop (Tkha^{-1})					
	Manikganj			Rongpur & Lalmonirhat		
	Cost	Return	BCR	Cost	Return	BCR
2018-19	1,37,684	1,63,350	1.19	-	-	-
2019-20	1,68,750	2,67,520	1.46	1,89,758	2,50,792	1.32
2020-21	1,68,746	2,15,102	1.27	1,65,008	2,76,235	1.67
2021-22	-	-	-	1,72,900	2,72,318	1.58

Findings of adaptive trials for fibre: In the year 2018-19, the average fibre and stick yield was found 233 and 527kg plot^{-1} in Faridpur location respectively (plot size 20 decimal). But when the average fibre and stick yield was converted to hectare it was found 2.883 and 6.522 ton ha^{-1}. On the other hand, the average fibre and stick yield was found 242 and 541 kg plot^{-1} in Rangpur & Lalmonirhat locations respectively. Similarly, when the average fibre and stick yield was converted to hectare it was found 2.995 and 6.695ton ha^{-1} in Rangpur & Lalmonirhat. The average Gross Return (GR) plot^{-1}was calculated Tk. 11803 in Faridpur and Tk. 12219 in Rangpur & Lalmonirhat respectively. But when it was calculated hectare^{-1} it was Tk. 146062 and 151210 in Rangpur & Lalmonirhat respectively. The cost of crop cultivation (Tk. 8200 plot^{-1} and Tk. 101475 ha^{-1}) was remaining same in both the location as the plot size was same (20 decimal). The BCR was found 1.44 in Faridpur and 1.49 in Rangpur & Lalmonirhat respectively. The price of fibre (Tk.45) and stick (Tk 2.50) kg^{-1} was considered on calculating GR and BCR in both the location (Table 109 & 110).

Table 113 &114 showed that when the yield data was converted from kg plot^{-1} to ton ha^{-1}, the average fibre and stick yield was found 2.879 and 6.506 ton ha^{-1} in the BJRI trial plots at Faridpur location in the year 2018-19. On the other hand, the average fibre and stick yield was found 2.989 and 6.691 ton ha^{-1} in the BJRI trial plots at Rangpur & Lalmonirhat location in the same year. On an average, fibre yield increased 15% in Faridpur and 18% in Rangpur & Lalmonirhat over control plot in the same year. Only good quality seed, the HYV variety (Robi-1 & HC-95) and improve management provided increased yield to the farmers.

Similarly, in the year 2019-20, the average fibre and stick yield was found 260 and 574 kg per 20 decimal plots in Faridpur location respectively. But when the average fibre and stick yield was converted to hectare it was found 3.218 and 7.11 ton ha^{-1} in the same location. On the other hand, the average fibre and stick yield was found 267 and 588 kg per 20 decimal plots in Rangpur & Lalmonirhat locations respectively. Similarly, when the average fibre and stick yield was converted to hectare it was found 3.309 and 7.28 ton ha^{-1} in Rangpur & Lalmonirhat. The average GR plot^{-1} and hectare $^{-1}$ was calculated Tk. 16169 and Tk. 200091 in Faridpur respectively. In Rangpur & Lalmonirhat it was Tk. 15508 plot $^{-1}$ and Tk. 191911 ha^{-1} respectively. The cost of crop cultivation was more or less similar in both the locations.

The cost of crop cultivation was Tk. 7723 in Faridpur and Tk. 7656 in Rangpur & Lalmonirhat respectively. The BCR was found 2.09 in Faridpur and 2.03 in Rangpur & Lalmonirhat. The price of fibre (Tk. 56) and stick (Tk 2.80) kg^{-1} was considered on calculating GR and BCR in Faridpur location. On the other hand, the price of fibre (Tk. 52.5) and stick (Tk 2.80) kg^{-1}) was considered on calculating GR and BCR in Rangpur & Lalmonirhat location (Table 115 & 116).

In the year 2019-20, the average fibre and stick yield was recorded 3.218 and 7.11 ton ha^{-1} from the trial plots in Faridpur location. But in the farmers plot, the fibre and stick yield was recorded 2.689 and 5.812 ton ha^{-1} respectively in the same location. Depending on the farmer's attitude and taking care of the crop, fibre yield increased 9-27% in the location. On an average 20% increased fibre yield was found in the trial plots over control in Faridpur. On the other hand, the average fibre and stick yield was found 3.309 and 7.28 ton ha^{-1} in the BJRI trial plots in Rangpur & Lalmonirhat location. Fibre and stick yield was found 2.704 and 6.103 ton ha^{-1} respectively from the farmers plot in the same year and same location. Due to use quality seed, HYV variety, proper management, farmers attitude and taking care of the crop fibre yield increased 12-30% in the same location. It is also observed that on an average 22% increased fibre yield was found in the trial plots over control (Table 117 & 118). Farmers' attitude to the crop, quality seed and the HYV variety (BJRI Tossa Pat-8 & HC-95) provided increased yield to the farmers. Sometimes weather condition (excessive rain, rainless condition, flood, hail storm, repeated flood, etc.), climate and natural hazards (Ampan, Covid-19, etc.) creates problem to achieve or to establish better yield of the crop. Table 117 showed that fibre yield increased 15- 20% in Faridpur and 18-22% in Rangpur & Lalmonirhat. It can also be expressed that yield increased in the 2^{nd} year compared to the 1^{st} year. Farmers' knowledge, attitude to the crop, increased knowledge on the crop management, use of good quality seed of the better variety, etc. might be the causes of increased production. The highest gross return (GR) (Tk.2,00,091&1,91,911) and BCR (2.09 & 2.03) was received in the year 2019-20 from Faridpur and Rangpur & Lalmonirhat location respectively compared to the base year (Table 118).

Table 109: Cost and return analysis of fibre production at Faridpur in the year 2018-19, BJRI

SL. No.	Name of farmers	Land area (dec.)	Fibre yield (Kgplot^{-1})	Stick yield (Kgplot^{-1})	Cost (Tkplot^{-1})	GR (Tkplot^{-1})	BCR
1.	Md. Mizan Sarder	20	236	523	8200	11928	1.45
2.	Md. Lal Mia	20	221	501	8200	11198	1.36
3.	Md. Faruke Matubber	20	232	529	8200	11763	1.43
4.	Md. Anwar Molla	20	238	547	8200	12078	1.47
5.	Akmol Pramanik	20	240	548	8200	12170	1.48
6.	Md. Ali Sheikh	20	229	513	8200	11588	1.41
	Average	20	233	527	8200	11803	1.44
	Converted average ha^{-1}		2883	6522	101475	146062	1.44

Fibre price = Tk 45 kg^{-1}; Stick price = Tk 2.50 kg^{-1}

Table 110: Cost and return analysis of fibre production at Rangpur &Lalmonirhat in the year 2018-19, BJRI

SL. No.	Name of farmers	Land area (dec.)	Fibre yield (kg plot^{-1})	Stick yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Md. Mizanur Raham	20	244	549	8200	12352	1.50
2.	Md. Abdur Rashid	20	230	529	8200	11672	1.42
3.	Md. Hassan Mia	20	240	534	8200	12135	1.48
4.	Md. Siraj Ali	20	248	547	8200	12528	1.53
5.	Md. Saheb Ali	20	237	532	8200	11995	1.46
6.	Md. Bipul Mia	20	250	553	8200	12632	1.54
	Average	20	242	541	8200	12219	1.49
	Converted average ha^{-1}		**2995**	**6695**	**101475**	**151210**	**1.49**

Fibre price = Tk 45 kg^{-1}; Stick price = Tk 2.50 kg^{-1}

Table 111: Cost and return analysis of fibre production at Faridpur in the year 2019-20, BJRI

SL. No.	Name of farmers	Land area (dec.)	Fibre yield (kg plot^{-1})	Stick yield (kg plot^{-1})	Cost (Tk plot^{-1})	GR (Tk plot^{-1})	BCR
1.	Abdur Razzak	20	267	526	8200	16425	2.00
2.	Md. Kalam Kha	30	348	829	9500	21809	2.30
3.	Md. Jahangir Kha	20	259	549	8200	16041	1.96
4.	Md. Siddique	20	268	565	8200	16590	2.02
5.	Md. Alam kha	25	332	742	9500	20670	2.18
6.	Md. EmanSakh	25	337	839	9500	21221	2.23
7.	Abdur Razzak	20	264	564	8200	16363	2.00
8.	Md. Momin Sakh	20	265	556	8200	16397	2.00
	Sub- total average	22.50	293	646	8688	18190	2.09
	Converted average 20^{-1} decimal		260	574	7723	16169	2.09
	Converted average ha $^{-1}$		**3218**	**7110**	**95572**	**200091**	**2.09**

Fibre price =Tk 56 kg^{-1}; Stick price = Tk 2.80 kg^{-1}

Table 112: Cost and return analysis of fibre production at Rangpur &Lalmonirhat in the year 2019-20, BJRI

SL. No.	Name of farmers	Plot size (dec.)	Fibre yield (kg)	Stick yield (kg)	Cost (Tk)	GR (Tk)	BCR
1.	Md. Afsar Ali	27	358	788	10,000	20764	2.08
2.	Md. Limon	21	297	653	8200	17226	2.10
3.	Md. Monsur Ali	25	319	702	9500	18502	1.95
4.	Abdul Motin	28	343	755	10,000	19894	1.99
5.	Md. Eusuf Ali	20	291	640	8200	16878	2.06
6.	SakhSahidul	25	322	708	9500	18676	1.97
7.	Aminul Islam	24	334	735	9500	19372	2.04
8.	Abdul Kader	21	289	636	8200	16762	2.04
	Sub- total average	23.87	319	702	9138	18509	2.03
	Converted average 20^{-1} decimal		267	588	7656	15508	2.03
	Converted average ha $^{-1}$		**3309**	**7280**	**94743**	**191911**	**2.03**

Fibre price =Tk 52.50 kg^{-1} ; Stick price = Tk 2.50 kg^{-1}

Table 113: Average results of technology trial plots over control plots (farmers practice) at Faridpur in 2018-19, BJRI

SL. No.	Farmers name	Yield (ton ha^{-1}) at Faridpur				Fibre yield increased (%)
		Adaptive trial		Control		
		Fibre	Stick	Fibre	Stick	Fibre
1	Md. Mizan Sarder	2.920	6.472	2.512	5.791	16
2	Md. Lal Mia	2.734	6.12	2.487	5.433	10
3	Md. Faruke Matubber	2.871	6.546	2.475	5.353	16
4	Md. Anwar Molla	2.945	6.768	2.438	5.186	21
5	Akmol Pramanik	2.970	6.781	2.561	5.529	16
6	Md. Ali Sheikh	2.834	6.348	2.487	5.433	14
	Average	**2.879**	**6.506**	**2.493**	**5.454**	**15**

Table 114: Average results of technology trial plots over control plots (farmers practice) at Rongpur and Lalmonirhat in 2018-19, BJRI

SL. No.	Farmers name	Yield (ton ha^{-1}) at Rongpur & Lalmonirhat				Fibre yield increased (%)
		Adaptive trial		Control		
		Fibre	Stick	Fibre	Stick	Fibre
1	Md. Mizanur Raham	3.020	6.794	2.673	6.200	13
2	Md. Abdur Rashid	2.846	6.546	2.599	5.952	10
3	Md. Hassan Mia	2.970	6.608	2.401	5.816	24
4	Md. Siraj Ali	3.069	6.769	2.599	5.668	18
5	Md. Saheb Ali	2.933	6.584	2.475	5.804	19
6	Md. Bipul Mia	3.094	6.843	2.525	5.631	23
	Average	**2.989**	**6.691**	**2.545**	**5.845**	**18**

Table 115: Average results of technology trial plots over control plots (farmers practice) at Faridpurin 2019-20, BJRI

SL. No.	Farmers name	Yield (ton ha^{-1}) at Faridpur				Fibre yield increased (%)
		Adaptive trial		Control		
		Fibre	Stick	Fibre	Stick	Fibre
1	Abdur Razzak	2.937	5.786	2.396	5.019	23
2	Md. Kalam Kha	3.828	9.119	3.403	7.452	12
3	Md. Jahangir Kha	2.849	6.039	2.361	4.965	21
4	Md. Siddique	2.948	6.215	2.339	5.132	26
5	Md. Alam kha	3.652	8.162	2.882	6.351	27
6	Md. Eman Sakh	3.707	9.229	3.414	7.319	9
7	Abdur Razzak	2.904	6.204	2.342	5.228	24
8	Md. Momin Sakh	2.915	6.116	2.373	5.032	23
	Average	**3.218**	**7.11**	**2.689**	**5.812**	**20**

Table 116: Average results of technology trial plots over control plots (farmers practice) at Rongpurand Lalmonirhat in 2019-20, BJRI

SL. No.	Farmers name	Yield (ton ha^{-1}) at Rongpur & Lalmonirhat				Fibre yield increased (%)
		Adaptive trial		Control		
		Fibre	Stick	Fibre	Stick	Fibre
1.	Md. Afsar Ali	3.712	8.166	2.854	6.441	30
2.	Md. Limon	3.079	6.775	2.761	6.232	12
3.	Md. Monsur Ali	3.308	7.277	2.573	5.807	29
4.	Abdul Motin	3.556	7.824	2.854	6.441	25
5.	Md. Eusuf Ali	3.017	6.638	2.559	5.776	18
6.	SakhSahidul	3.339	7.345	2.688	6.067	24
7.	Aminul Islam	3.463	7.619	2.781	6.277	25
8.	Abdul Kader	2.997	6.592	2.561	5.780	17
	Average	**3.309**	**7.280**	**2.704**	**6.103**	**22**

Table 117: Comparative statement of fibre yield in different locations in the different years, BJRI

SL. No.	Year	Fibre yield for adaptive trials (ton ha^{-1})		Fibre yield for control (ton ha^{-1})		Yield increased (%)	
		Faridpur	Rongpur & Lalmonirhat	Faridpur	Rongpur & Lalmonirhat	Faridpur	Rongpur & Lalmonirhat
1	2018-19	2.883	2.995	2.493	2.545	15	18
2	2019-20	3.218	3.309	2.689	2.704	20	22

Table 118: Comparative statement of cost & return for fibre crop in two different locations in different years, BJRI

Year	Cost & Return for fibre crop (Tkha^{-1})					
	Faridpur			Rongpur & Lalmonirhat		
	Cost	Return	BCR	Cost	Return	BCR
2018-19	1,01,475	1,46,062	1.44	1,01,475	1,51,210	1.49
2019-20	95,572	2,00,091	2.09	94,743	1,91,911	2.03
2020-21	-	-	-	-	-	-

Technology Generation

From the inception, a total of 186 technologies have been developed under five divisions. During (1910-2020) period, 52 technologies by Breeding division, 17 technologies by Fiber quality improvement division, 28 from Jute farming system division, 48 from Pest management division and 41 technologies were developed by Agronomy division.

The highest number of technologies (52) was generated from Breeding division and lowest number of technologies (17) was generated from Fiber quality improvement division.

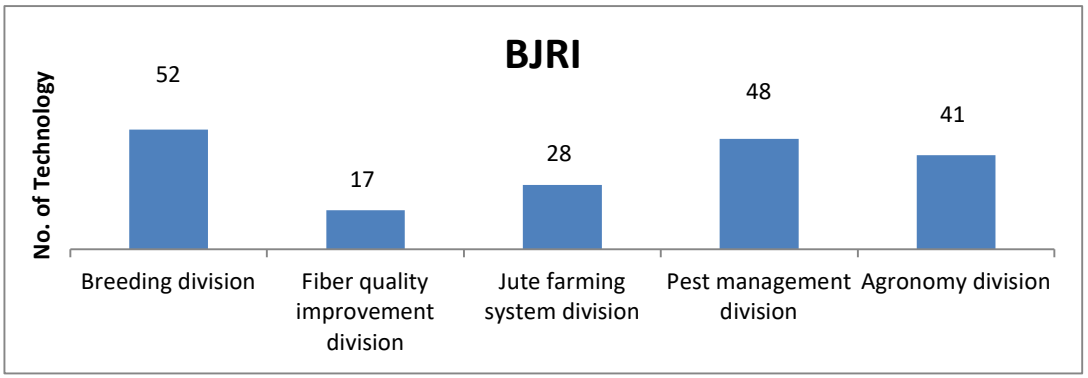


Fig. 143: Division wise generated technologies, BJRI (1970-2019)

Transferring movement of technologies

Except 1 technology, all other technologies were transferred through on-farm trial, Field Demonstration, Field day, training (Extension personal/NGO/Farmer), leaflet distribution etc.

Table 119: Division wise transferred and non-transferred technologies, BJRI (1910-2019)

Year	Institute	Name of Division	No of Technology	Technology Transfer TT (Nos)	Non Transfer Technology NTT (Nos)
1910-2020	BJRI (5)	Breeding division	52	52	0
		Fiber quality improvement division	17	17	0
		Jute farming system division	28	27	1
		Pest management division	48	48	0
		Agronomy division	41	41	0
Total		**05**	**186**	**186**	1

11.11 :Bangladesh Rice Research Institute (BRRI)

Among 421 technologies generated by BRRI fom 1970-2019 only 12 technologies were selected for transfer through this project.

Boro 2019 results: The average yield of BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 were 6.67, 6.51, 5.83, 5.81, 5.51 and 7.44 t/ha respectively (Table 120). Among the varieties, BRRI dhan89 produced the highest grain yield 7.44 t/ha followed by BRRI dhan58 (6.67 t/ha) and BRRI dhan74 (6.51 t/ha). However, the lowest grain yield (5.51 t/ha) was found in BRRI dhan86 and the 2nd lowest grain yield (5.81 t/ha) was found in BRRI dhan84. However, the yield of BRRI dhan89 varied from 7.05 to 7.63 t/ha in different locations depending on soil fertility, cropping pattern and management practices (Table 1). The average growth duration of BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 were 154, 147, 145, 143, 142, & 157 days respectively. The highest grain yielder BRRI dhan89 have the longest duration (157 days) followed by BRRI dhan58 (154 days) and BRRI dhan74 (147 days). Duration of highest grain yielder BRRI dhan89 varied from 156 to 158 days. And duration of lowest grain yielder BRRI dhan86 varied from 141 to 143 days.

Total grain production of BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 were 3570 kg, 3618 kg, 3122 kg, 3110 kg, 2950 kg and 4028 kg respectively. The highest total paddy production (4028 kg) came from BRRI dhan89 and the lowest total paddy production (2950 kg) came from BRRI dhan86. The retained seeds by the participant farmers of BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 were 495 kg, 420 kg, 405 kg, 370 kg, 330 kg and 545 kg respectively. The highest amount of seed retained by the farmers was 545 kg of BRRI dhan89 followed by 495 kg of BRRI dhan58. Grand total of six rice varieties regarding to grain production was 20,398 kg from which farmers retained 2565 kg as seed for the next year cultivation. A considerable number of farmers observed the performance of the six BRRI released recent rice varieties and among them 562 farmers were motivated for the next year cultivation (Table120).

Table 120: Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of SPDP in Boro, 2019, BRRI

District	Upazila	Grain yield (t/ha)	Growth Duration (day)	Total production (kg)	Seeds retained (kg)	Knowledge sharing farmers (no.)	Motivated farmers (no.)
BRRI dhan58							
Mymensingh	Valuka	6.51	155	871	110	145	22
	Muktagacha	6.57	154	880	140	220	27
Jamalpur	Sadar	6.62	152	886	125	180	23
	Sharishabari	6.97	153	933	120	150	20
Mean/Total		**6.67**	**154**	**3570**	**495**	**695**	**92**
BRRI dhan74							
Mymensingh	Valuka	6.53	146	1008	110	175	21
	Muktagacha	6.80	147	910	100	110	23
Jamalpur	Sadar	6.00	146	803	120	205	30
	Sharishabari	6.70	148	897	90	150	20

Mean/Total		**6.51**	**147**	**3618**	**420**	**640**	**94**
BRRI dhan81							
Mymensingh	Valuka	5.52	144	739	110	125	28
	Muktagacha	5.26	145	704	60	80	20
Jamalpur	Sadar	5.95	144	797	120	130	23
	Sharishabari	6.59	145	882	115	150	18
Mean/Total		**5.83**	**145**	**3122**	**405**	**485**	**89**
BRRI dhan84							
Mymensingh	Valuka	6.20	143	830	90	115	23
	Muktagacha	5.62	142	752	105	90	28
Jamalpur	Sadar	5.60	143	750	80	130	27
	Sharishabari	5.81	144	778	95	150	28
Mean/Total		**5.81**	**143**	**3110**	**370**	**485**	**106**
BRRI dhan86							
Mymensingh	Valuka	6.00	141	803	85	85	18
	Muktagacha	5.44	143	728	90	75	15
Jamalpur	Sadar	6.20	142	830	105	105	14
	Sharishabari	4.40	143	589	50	150	5
Mean/Total		**5.51**	**142**	**2950**	**330**	**415**	**52**
BRRI dhan89							
Mymensingh	Valuka	7.58	156	1015	150	190	35
	Muktagacha	7.05	157	937	135	150	31
Jamalpur	Sadar	7.63	157	1071	120	170	38
	Sharishabari	7.51	158	1005	140	150	25
Mean/Total		**7.44**	**157**	**4028**	**545**	**660**	**129**
Grand total				**20398**	**2565**	**3380**	**562**

Results of T. aman, 2019: The average yield of the latest BRRI released T. aman rice varieties e.g. BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 was 4.54, 5.07, 5.01, 5.02, 4.56 and 6.02 t/ha respectively (Table 121). Among the rice varieties, BRRI dhan87 produced the highest grain yield 6.02 t/ha followed by BRRI dhan71 (5.07 t/ha), BRRI dhan79 (5.02 t/ha) and BRRI dhan75 (5.01 t/ha). However, the yield of BRRI dhan87 varied from 5.89 to 6.13 t/ha in different locations depending on soil fertility, cropping pattern and management practices (Table 2). Although, similar grain yield was found among the three rice varieties e.g. BRRI dhan71, BRRI dhan75 and BRRI dhan79. However, the lowest grain yield (4.54 t/ha) was found in BRRI dhan70 and the 2nd lowest grain yield (4.56 t/ha) was found in BRRI dhan80. The average growth duration of BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 was 132, 116, 116, 143, 134, & 129 days respectively. The highest grain yielder BRRI dhan87 have the intermediate duration (129 days). Duration of highest grain yielder BRRI dhan87 varied from 128 to 130 days. The highest growth duration was observed in BRRI dhan79 (143 days) followed by BRRI dhan80 (134 days) and BRRI dhan70 (132 days). Lowest growth duration was observed in BRRI dhan71 and BRRI dhan75 (116 days).

Total grain production of BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 were 2432 kg, 2718 kg, 2683 kg, 2686 kg, 2441 kg and 3221 kg

respectively. The highest total paddy production (3221 kg) came from BRRI dhan87 and the lowest total paddy production (2432 kg) came from BRRI dhan70. The retained seeds by the participant farmers of BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 were 410 kg, 520 kg, 445 kg, 430 kg, 470 kg and 602 kg respectively. The highest amount of seed retained by the farmers was 602 kg of BRRI dhan87 followed by 520 kg of BRRI dhan71. Grand total of six rice varieties regarding to grain production was 16,181 kg from which farmers retained 2877 kg as seed for the next year cultivation. A considerable number of farmers observed the performance of the six BRRI released recent rice varieties and among them 642 farmers were motivated for the next year cultivation (Table 121).

Table 121: Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of demonstration plots in T. aman, 2019, BRRI

District	Upazila	Grain yield (t/ha)	Growth Duration (day)	Total production (kg)	Seeds retained (kg)	Knowledge sharing farmers (no.)	Motivated farmers (no.)
BRRI dhan70							
Mymensingh	Valuka	4.55	132	609	90	40	26
	Muktagacha	4.39	130	588	110	45	21
Jamalpur	Sadar	4.45	133	596	90	50	26
	Sharishabari	4.77	133	639	120	50	20
Mean/Total		**4.54**	**132**	**2432**	**410**	**185**	**93**
BRRI dhan71							
Mymensingh	Valuka	5.21	117	697	110	60	35
	Muktagacha	5.08	116	680	200	55	25
Jamalpur	Sadar	4.77	117	629	90	50	30
	Sharishabari	5.32	115	712	120	65	25
Mean/Total		**5.07**	**116**	**2718**	**520**	**230**	**115**
BRRI dhan75							
Mymensingh	Valuka	5.26	116	704	120	65	38
	Muktagacha	4.87	115	652	130	70	32
Jamalpur	Sadar	4.43	116	593	105	60	27
	Sharishabari	5.48	116	734	90	50	20
Mean/Total		**5.01**	**116**	**2683**	**445**	**245**	**117**
BRRI dhan79							
Mymensingh	Valuka	5.18	142	693	95	45	21
	Muktagacha	4.95	145	663	140	50	25
Jamalpur	Sadar	4.73	143	633	95	45	20
	Sharishabari	5.21	142	697	100	42	18
Mean/Total		**5.02**	**143**	**2686**	**430**	**182**	**84**
BRRI dhan80							
Mymensingh	Valuka	4.41	133	590	100	38	26
	Muktagacha	4.75	135	636	130	45	22
Jamalpur	Sadar	4.52	132	605	115	38	29
	Sharishabari	4.56	134	610	125	50	30
Mean/Total		**4.56**	**134**	**2441**	**470**	**171**	**107**

BRRI dhan87							
Mymensingh	Valuka	6.12	129	819	140	65	36
	Muktagacha	5.89	128	788	160	55	32
Jamalpur	Sadar	5.92	130	793	132	59	28
	Sharishabari	6.13	128	821	170	62	30
Mean/Total		6.02	129	3221	602	241	126
Grand total				**16181**	**2877**	**1254**	**642**

Results of Boro, 2020: The mean rice grain yield of 4 project locations of BRRI dhan58, BRRI dhan67, BRRI dhan81, BRRI dhan84, BRRI dhan88 and BRRI dhan89 were 6.79, 5.66, 5.45, 5.53, 6.13 and 7.49 t/ha respectively (Table 122). Among the varieties, BRRI dhan89 produced the highest grain yield 7.49 t/ha followed by BRRI dhan58 (6.79 t/ha) and BRRI dhan88 (6.13 t/ha). However, the lowest rice grain yield (5.45 t/ha) was found in BRRI dhan81 and the 2nd lowest grain yield (5.53 t/ha) was found in BRRI dhan84. However, the highest grain yielder BRRI dhan89 yield varied from 7.12 to 7.86 t/ha in different locations depending on soil fertility, cropping pattern and management practices (Table 122). The average growth duration of BRRI dhan58, BRRI dhan67, BRRI dhan81, BRRI dhan84, BRRI dhan88 and BRRI dhan89 were 151, 145, 141, 141, 143, & 158 days respectively. The highest rice grain yielder BRRI dhan89 had the longest growth duration (158 days) followed by BRRI dhan58 (151 days) and BRRI dhan67 (145 days). And among the varieties the lowest growth duration was 141 days both for BRRI dhan81 & BRRI dhan87 followed by 143 days in BRRI dhan88 and 145 days in BRRI dhan67. Duration of highest rice grain yielder BRRI dhan89 was varied from 157 to 159 days.

Total grain production of BRRI dhan58, BRRI dhan67, BRRI dhan81, BRRI dhan84, BRRI dhan88 and BRRI dhan89 were 3636 kg, 3032 kg, 2918 kg, 2962 kg, 3281 kg and 4010 kg respectively. The highest total paddy production (4010 kg) came from BRRI dhan89 and the lowest total paddy production (2918 kg) came from BRRI dhan81. The retained seeds by the participant farmers of BRRI dhan58, BRRI dhan67, BRRI dhan81, BRRI dhan84, BRRI dhan88 and BRRI dhan89 were 545 kg, 365 kg, 520 kg, 586 kg, 625 kg and 845 kg respectively. The highest amount of seed retained by the farmers was 845 kg of BRRI dhan89 followed by 625 kg of BRRI dhan88. Grand total of six rice varieties regarding to grain production was 19,839 kg from which farmers retained 3,486 kg as seed for the next year cultivation. A considerable number of farmers observed the performance of the six BRRI released recent rice varieties and among them 619 farmers were motivated for the cultivation of these varieties in the next year (Table 122).

Table 122: Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of demonstration plots in Boro 2020, BRRI

District	Upazila	Grain yield (t/ha)	Growth Duration (day)	Total production (kg)	Seeds retained (kg)	Knowledge sharing far. (no.)	Motivated farmers (no.)
BRRI dhan58							
Mymensingh	Valuka	7.15	151	957	130	60	30
	Muktagacha	6.37	149	853	145	42	28
Jamalpur	Sadar	6.71	152	898	150	50	20
	Sharishabari	6.93	150	928	120	56	25

Mean/Total		**6.79**	**151**	**3636**	**545**	**208**	**103**
BRRI dhan67							
Mymensingh	Valuka	5.84	146	782	90	45	20
	Muktagacha	5.48	144	734	80	50	18
Jamalpur	Sadar	5.57	146	746	100	42	15
	Sharishabari	5.75	145	770	95	38	10
Mean/Total		**5.66**	**145**	**3032**	**365**	**175**	**63**
BRRI dhan81							
Mymensingh	Valuka	5.78	140	773	152	48	28
	Muktagacha	5.44	141	728	125	34	15
Jamalpur	Sadar	5.18	142	693	105	40	22
	Sharishabari	5.41	141	724	138	44	24
Mean/Total		**5.45**	**141**	**2918**	**520**	**166**	**89**
BRRI dhan84							
Mymensingh	Valuka	5.91	140	791	142	58	31
	Muktagacha	5.41	141	724	154	43	22
Jamalpur	Sadar	5.15	142	689	125	39	18
	Sharishabari	5.66	141	758	165	47	26
Mean/Total		**5.53**	**141**	**2962**	**586**	**187**	**97**
BRRI dhan88							
Mymensingh	Valuka	6.33	143	847	165	65	38
	Muktagacha	6.07	142	812	155	70	32
Jamalpur	Sadar	5.94	144	795	135	60	27
	Sharishabari	6.18	143	827	170	50	20
Mean/Total		**6.13**	**143**	**3281**	**625**	**245**	**117**
BRRI dhan89							
Mymensingh	Valuka	7.86	157	1052	220	60	40
	Muktagacha	7.41	158	992	195	75	35
Jamalpur	Sadar	7.12	159	953	200	50	30
	Sharishabari	7.57	157	1013	230	55	45
Mean/Total		**7.49**	**158**	**4010**	**845**	**240**	**150**
Grand Total				**19,839**	**3,486**	**1,221**	**619**

T. aman 2020 result: The average yield of the latest BRRI released T. aman rice varieties e.g. BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 was 4.84, 4.50, 4.62, 4.94, 4.49 and 5.77 t/ha respectively (Table 123). Among the

rice varieties, BRRI dhan87 produced the highest grain yield 5.77 t/ha followed by BRRI dhan79 (4.94 t/ha), BRRI dhan75 (4.62 t/ha) and BRRI dhan71 (4.50 t/ha). However, the highest yielder BRRI dhan87 varied from 5.32 to 6.13 t/ha in different locations depending on soil fertility, cropping pattern and management practices (Table 123). Although, similar grain yield were found in the three rice varieties e.g. BRRI dhan70, BRRI dhan71 and BRRI dhan80. However, the lowest grain yield (4.48 t/ha) was found in BRRI dhan70 and the 2nd lowest grain yield (4.49 t/ha) was found in BRRI dhan80. The average growth duration of BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 was 132, 117, 117, 145, 133, & 129 days respectively. The highest grain yielder BRRI dhan87 have the intermediate duration (129 days). Duration of highest grain yielder BRRI dhan87 varied from 128 to 130 days. On average the highest growth duration was observed in BRRI dhan79 (145 days) followed by BRRI dhan80 (133 days) and BRRI dhan70 (132 days). The lowest growth duration was observed both in BRRI dhan71 and BRRI dhan75 (117 days).

Total grain production of BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 were 2421 kg, 2409 kg, 2473 kg, 2646 kg, 2402 kg and 3089 kg respectively. The highest total paddy production (3089 kg) came from BRRI dhan87 and the lowest total paddy production (2402 kg) came from BRRI dhan80. The retained seeds by the participant farmers of BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87 were 360 kg, 363 kg, 444 kg, 441 kg, 275 kg and 509 kg respectively. The highest amount of seed retained by the farmers was 509 kg of BRRI dhan87 followed by 444 kg of BRRI dhan75. Grand total of six rice varieties regarding to grain production was 15,440 kg from which farmers retained 2392 kg as seed for the next year cultivation. A considerable number of farmers observed the performance of the six BRRI released recent rice varieties and among them 595 farmers were motivated for the next year cultivation (Table 123).
An estimation on economic analysis revealed that before the demonstration or technology transfer framers profit was 3585 tk./bigha in T. aman 2020. But after demonstration or technology transfer farmers profit was Tk. 5047 tk./bigha. Yield increase: 0.613 T/ha (613 Kg/ha). Therefore, farmers income rise 10,921 Tk. /ha (1462 Tk. /Bigha) (Table 4). Good quality seeds are the prime factor for higher yield. Therefore, preservation of rice seeds in a proper way farmers need plastic drums. Plastic drums having capacity of 75-80 kg were supplied to each farmer of the project plots to preserve paddy for the next year cultivation.

Table 123: Growth duration, grain yield, total production, retained seeds, knowledge sharing and motivated farmers of demonstration plots in T. aman, 2020, BRRI

District	Upazila	Grain yield (t/ha)	Growth Duration (day)	Total production (kg)	Seeds retained (kg)	Knowledge sharing farmers (no.)	Motivated farmers (no.)
BRRI dhan70							
Mymensingh	Valuka	4.82	131	645	82	74	28
	Muktagacha	4.34	132	581	95	61	22
Jamalpur	Sadar	4.15	133	556	73	60	18
	Sharishabari	4.77	130	639	110	72	30
Mean/Total		4.48	132	2421	360	267	98
BRRI dhan71							
Mymensingh	Valuka	4.48	116	600	115	66	30
	Muktagacha	4.65	117	623	84	54	24
Jamalpur	Sadar	4.02	118	538	68	40	17
	Sharishabari	4.84	115	648	96	62	26
Mean/Total		4.50	117	2409	363	222	97
BRRI dhan75							
Mymensingh	Valuka	4.83	116	647	134	78	32
	Muktagacha	4.67	117	625	103	70	26
Jamalpur	Sadar	4.13	118	553	86	53	20
	Sharishabari	4.84	116	648	121	82	27
Mean/Total		4.62	117	2473	444	283	105
BRRI dhan79							
Mymensingh	Valuka	5.08	142	680	130	67	24
	Muktagacha	4.95	145	663	71	50	18
Jamalpur	Sadar	4.53	148	606	94	46	20
	Sharishabari	5.21	143	697	146	42	22
Mean/Total		4.94	145	2646	441	205	84
BRRI dhan80							
Mymensingh	Valuka	4.78	132	640	87	78	26
	Muktagacha	4.35	133	582	66	49	22
Jamalpur	Sadar	3.92	135	525	50	38	14
	Sharishabari	4.89	131	655	72	72	21
Mean/Total		4.49	133	2402	275	237	83
BRRI dhan87							
Mymensingh	Valuka	5.93	128	794	160	85	35
	Muktagacha	5.69	129	762	128	62	32
Jamalpur	Sadar	5.32	130	712	71	59	24
	Sharishabari	6.13	128	821	150	93	37
Mean/Total		5.77	129	3089	509	299	128
Grand total				**15440**	**2392**	**1513**	**595**

Farmers' feedback about BRRI varieties

Farmers expressed their opinions about the demonstrated varieties. Farmers' opinions are collected by project personnel by direct interactions with the farmers and report (data sheet)

collected from the DAE personnel. These opinions are very important for BRRI scientists to rectify the problems of the BRRI varieties by different means. The summary of farmers' reactions about some BRRI varieties is given as follows (Table 124& 125).

Table 124: Farmers' feedback about the varieties demonstrated in Boro seasons, BRRI

SN		Season: Boro	
	Variety	**Advantages**	**Disadvantages**
1.	BRRI dhan58	Comparatively higher yield, more grains in panicle, better crop stand, no lodging, higher tillering, good taste, milling recovery high, good slender grain. Early than most popular BRRI dhan29.	There is some sterile grain at the top of panicle. Susceptible to neck blast disease in some places.
2.	BRRI dhan67	Salinity tolerant, less pest incidence, Seedling stage cold tolerance, higher yield.	Crop may lodged at maturity in waterlogged condition.
3.	BRRI dhan74	Zn enriched rice. Comparatively higher yield, better crop stand, no lodging and higher tillering. Early than BRRI dhan58.	Farmers dislike its bold grain.
4.	BRRI dhan81	Long slender grain, Good taste of cooked rice, Higher market price, Seedling stage cold tolerance. Milling recovery high. Early with good yield.	Susceptible to blast disease.
5.	BRRI dhan84	Color of rice is reddish, good in taste. Zn enriched rice. Early with good yield**.**	A bit higher sterility.
6.	BRRI dhan86	Slender grain. Better crop stand, no lodging. Short duration.	Lower tillering. Lowest yield.
7.	BRRI dhan88	Lodging tolerance, 3-4 days shorter than BRRI dhan28 but higher yield than BRRI dhan28.	--
8.	BRRI dhan89	Medium fine rice. Culm is strong and straight, lodging tolerant. Elongation ratio is 1:4. Highest grain yield among the demonstrated varieties.	Sheath blight infection is higher. Longest growth duration among the demonstration varieties.

Table 125: Farmers' feedback about the varieties demonstrated in T. aman seasons, BRRI

SN	Variety	Advantages	Disadvantages
Season: T. Aman			
1.	BRRI dhan70	Long fine grain with having aroma.	Having sterility and lower yield.
2.	BRRI dhan71	Drought tolerant, higher yield with shorter growth duration, Rabi crop can be easily grown after harvesting.	---
3.	BRRI dhan75	Higher yield with shorter growth duration, Long slender grain having a bit aroma, Rabi crop can easily be grown after harvesting.	Sometimes sterility become high, flowering occurs very early (30 DAT of transplanted plots with seedling age 20-25 days).
4.	BRRI dhan79	Submergence tolerance. Good yield, grain medium slender .	Susceptible to False Smut disease.
5.	BRRI dhan80	Higher grain yield, aromatic rice, looking promising. Lodging tolerant	-----
6.	BRRI dhan87	Higher grain yield, long slender grain, higher straw yield.	Having lodging tendency.

Higher BCR was found in T. aman season than Boro season. Among the 4 locations higher BCR was found in Valluka upzilla of Mymensingh district followed by sharishabari upzilla of Jamalpur district, whereas the lowest BCR was found in Sadar upzilla of Jamalpur district. Higher productivity and higher profit came from BRRI dhan87 (in T. aman season) and BRRI dhan89 (In Boro season). On an average of 2 seasons and 4 locations, yield increase 0.672 T/ha (672 Kg/ha) and income rise 5789 Tk. /ha (775 Tk. /Bigha) after the project activities. Besides, plastic drums were given to each farmer of the demonstration plots to preserve paddy for the next year cultivation.

Fig.144: Demonstration plots at Valluka & Muktagacha of Mymensingh district Boro2019, BRRI

Fig.145: Demonstration plots at Valluka & Muktagacha of Mymensingh district and Seedbed at Sadar, Jamalpur in Boro 2019, BRRI.

বাংলাদেশ ধান গবেষণা ইনস্টিটিউট (ব্রি), গাজীপুর
ফলিত গবেষণা বিভাগ
Transfer of Agricultural technologies to farmers' level for increasing farm productivity (IDS65)
BRRIdhan84

Fig.146: Demonstration plots at Valluka and Muktagacha in Boro 2019 and T. aman 2019,BRRI

Fig.147: Demonstration plots at Muktagacha, Mymensingh and Sadar, Jamalpur in Boro 2019 and T. aman 2019, BRRI

Fig. 148: Crop at mature stage at Sadar, Jamalpur, BRRI

Fig. 149: Crop cut at Valluka, Mymensingh in Boro 2019, BRRI

Fig. 150: Crop cut at Valluka, Mymensingh and Sharishabari, Jamalpur in Boro 2019, BRRI

Fig. 151: Crop-cut of different rice varieties at Sharishabari, Jamalpur in Boro 2019, BRRI

Fig.152: Land preparation, Fertilizers application in the Demonstration plots at Sadar, Jamalpur in Boro 2020, BRRI

Technology Generation

From the initiation of BRRI, a total of 421 technologies have been developed from 14 divisions. Out of them 3 from Biotechnology (BTD), 11 from WMM, 31 from Entomology Division (ED), 39 from FMPHT (Farm Machineries and Post-Harvest Management), 85 from Plant Breeding Division (PBD), 25 from Grain Quality and Nutrition Division (GQND), 18 from Irrigation and Water Management Division (IWMD), 13 from Plant Pathology division (Pathology Division), 38 from Soil Science Division (SSD), 67 from Agri. Statistic division(AgSD), 51 from Rice Framing System (RFS), 6 from Hybrid Rice Division (HD) and 34 from Agronomy division (AGD).

The highest number of technologies (85 nos.) was developed by plant breeding division and the lowest number of technologies (03 nos.) was developed by biotechnology division.

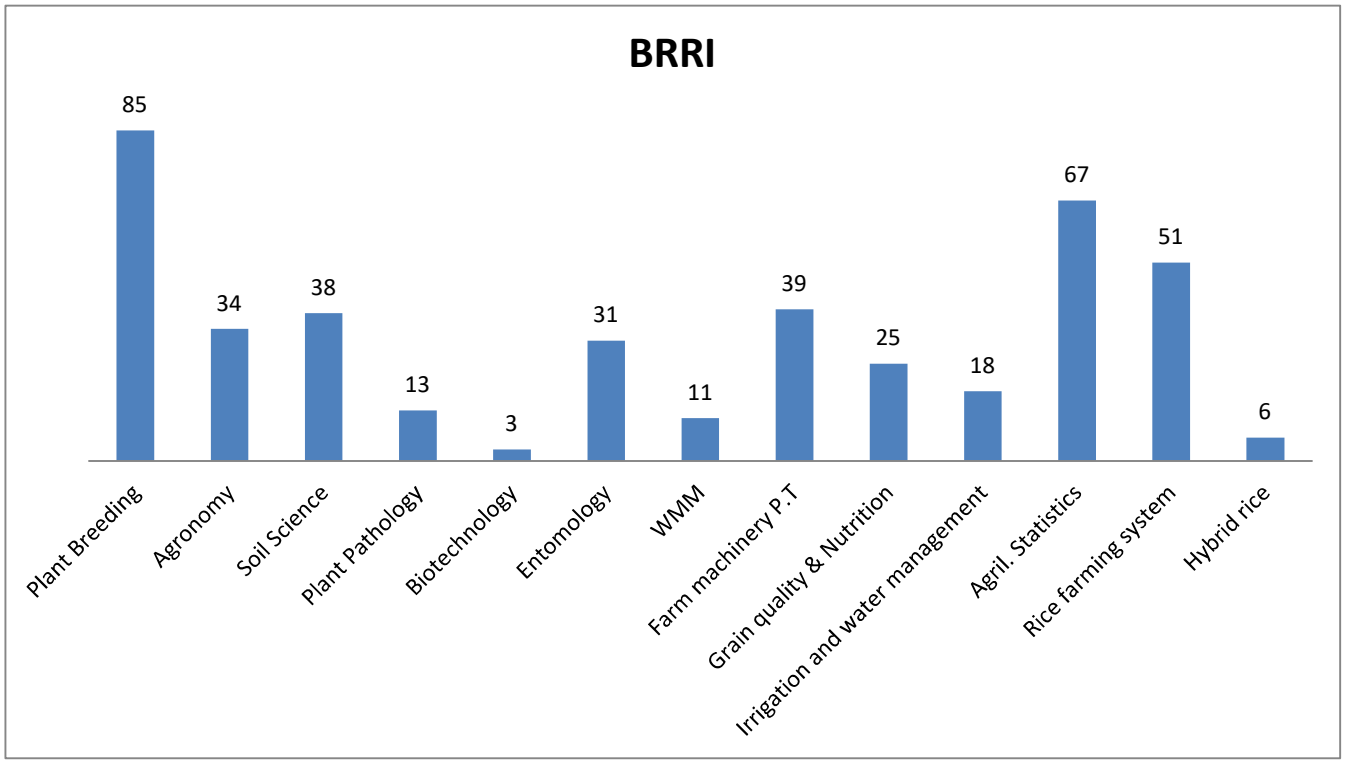


Fig. 153: Division wise generated technologies, BRRI

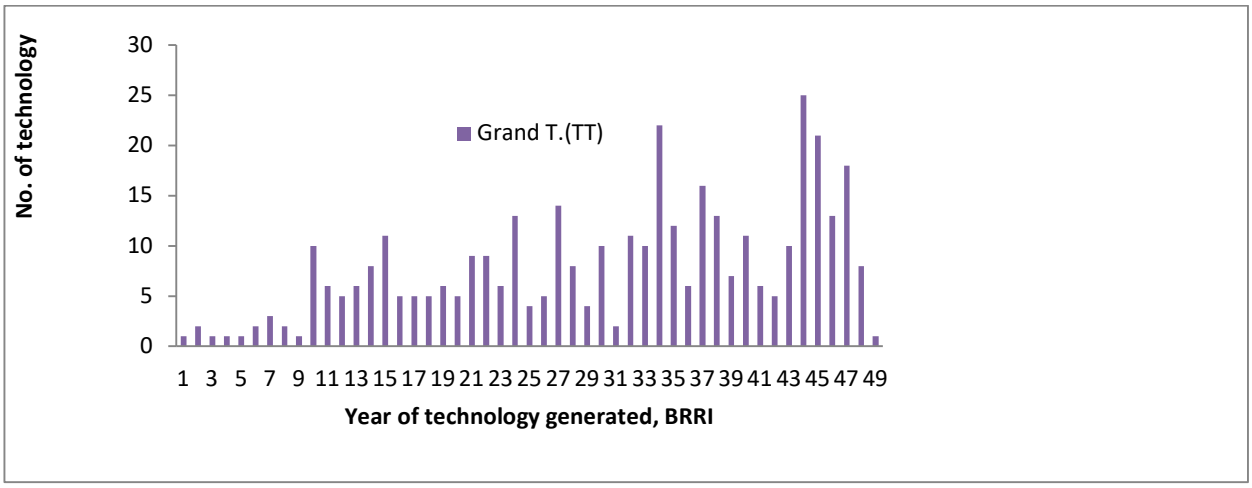


Fig. 154: Year wise generated technologies, BRRI (1970-2019)

Transferring status/ movement of technologies, BRRI

All the technologies were transferred except 36 technologies. Field Demonstration, Field day, Farmer's day, Rally, Agricultural fair with DAE, journal publication, leaflet are used for transferring the technologies.

Table 126 Division wise transferred and non-transferred technologies, BRRI

ear	Institute wise No of Technology	Name of Division	No of Technology	TT (Nos)	NTT (Nos)
1970-2019	BRRI (14)	Biotechnology	3	3	0
		WMM	11	1	10
		Entomology	31	31	0
		Plant Breeding	85	85	0
		FMPHT	39	23	16
		Grain Quality and Nutrition	25	25	0
		Plant Pathology	13	13	0
		Irrigation and Water Management	18	14	4
		Soil Science	38	37	1
		Agricultural Statistics (2)	67	67	0
		Rice Farming Systems	51	51	0
		Hybrid Rice	6	6	0
		Agronomy	34	29	5
Total		**14**	**421**	**385**	**36**

12 Research Highlights:

12.1: Bangladesh Agricultural Research Council (BARC)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background of the sub-project:

Bangladesh is predominantly an agricultural country. Day by day population is increasing (1.48%) with land decreasing (1%). So it needs to increase production using modern practices to meet up the rising food demand for rising population. Government has given emphasis on research to increase productivity of products and by-products through generated technologies. Every year 13 NARS institutes are engaged with different researches. BRRI, BJRI, BSRI, BLRI, BFRI, FRI, BTRI, BSRTI,SRDI, BINA, BARI and CDB innovate technologies on rice, jute, sugar crops, livestock, fisheries, forest, tea, sericulture, soil, crops, cotton respectively need to transfer at farmers' hand. Already some matured technologies from different NARS institutes are transferred to DAE, DLS, DoF for dissemination in different ways (demonstration, training, workshop, publication, newspaper, fair, rally, social media. etc.) but the adoption rate is low, are still scattered around and not exactly known at farmers' level. Some of matured or promising important technologies are still not using in field which needs to transfer at farmers' level. So, immediate transfer of technology at farmers' level is needed for farm productivity enhancement. Technology Transfer and Monitoring Unit (TTMU) established at BARC in 1989 to transfer technologies. TTMU is coordinating to strengthen the research-extension linkages and working to facilitate swiftly transfer of modern technologies generated by the National Agricultural Research System (NARS) to Department of Agricultural Extension (DAE), DLS and DoF. On this background TTMU organizes Technology workshops, training programs (ToT) at Dhaka and outside of Dhaka and also meetings (NATCC, ATECC) for transferring technologies.A Meeting regarding implementation progress of RADP (2015-16) projects and revenue budget programs was held on 31 July 2016 at Ministry of Agriculture (MoA) discussed to identify problems and solve those problems of BARI and all others institutes. On 15 Feb 2017, TTMU, BARC arranged workshop regarding "**Constrains of dissemination of varieties and technologies developed by NARS institutes and ways to overcome".** On this background, for rapid transfer of technology directly to farmers, PBRG Sub-Project **on Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm ProductivityID-005** has launchedat TTMU, BARC which LoA signed on 11 July 2018**.** Total 63 technologies**(**BWMRI: 4, BARI: 23, BINA: 8, BSRI: 3, BLRI: 2, BFRI: 2, SRDI: 1, CDB: 4, BJRI: 3, BRRI: 12)transferred among 200 farmers at 35 Upazilas of 17Districts. The proper transfer way at farmers' level had analyzed and developed Rapid Technology Transfer (RTT) Model of rapid transferring technologies for increasing farm /agricultural productivity.TTMU, BARC assessed the status of transferred and non-transferred technologies for further selection of need based technologies to enhance farm productivity.

Objectives:

i. To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level
ii. To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes

Methodology:

BARC as the Apex body is a coordinating component of the project. The participating institutes are BWMRI, HRC (Fruit), BARI, BINA, BSRI, BLRI, BFRI, SRDI, CDB, BJRI and BRRI. The Coordinator and other personnel of this project have overall responsibility for coordination, monitor, conduction, evaluation, compilation of all collected transferred technologies related information and supervision. BARC is a coordinating body of the project that performed some activities in order to achieve project objectives.

vii) BARC coordinated the activities of the participating institutes (BWMRI, HRC (Fruit), BARI, BINA, BSRI, BLRI, BFRI, SRDI, CDB, BJRI and BRRI).
viii) Developed model for profitable technology transfer
ix) TTMU, BARC assessed transferring status of technologies from the inception of each institute
x) Conducted regular desk and field monitoringof technology transfer activities from the coordination unit of TTMU, BARC.
xi) Organized coordination meeting with all PIs and Co-PIs of the participating institutes.
xii) Organized annual review workshop with participation of all concerned PIs, Co-PIs, working scientists, experts, BARC personnel etc.

Scientists of different institutes having experiences on technology transfer participated as expert members in the Inception meeting, Review and other workshops and gave their valuable suggestions for successful implementation of the sub-project activities.Coordination meetings were organized by TTMU, BARC regularly with implementing organizations of the sub-project to collect latest information about the progress of the sub-project activities andMonitoring and Evaluation report, half-yearly report, co-ordinated annual report and sub-project completion report those were made following formats supplied by NATP-2, PIU-BARC. Accepted profitable technology transferred through RTT model wereplaced to ATECC meeting for dessimination.

Key findings:

To transfer technologies, 10 out of 13 NARS institutes have considered as component part of TTMU, BARC (coordinating component). TTMU, BARC coordinated directly to PIs' of BWMRI,BARI, BINA, BSRI, BLRI, BFRI,SRDI, CDB,BJRIand BRRI in selecting technology and developing model, monitoring, evaluation and supervision.Total selected 63technologiesfrom the aforesaid 10 Institutes.Total 41 Monitoring tours of technology transfer activities by TTMU, BARC at 10 NARS institutes for the year 2018-22(BWMRI-2, BARI-5 BINA-6, BSRI-5, BLRI-5, BFRI-3, SRDI-3, CDB-4, BJRI-5 and BRRI-3**)** were done**.**Profitability analysis(BCR>1)for all NARS institutes has been done with the assistance of PI, Co-PI and concerned economists under the supervision of the Coordinating component of

TTMU, BARC. BARI Gom 30, BARI Gom 32, BARI Gom 33 and WMRI Gom 1 and Bina sharisha-9 for demionstration/field day placed at Agricultural Technology Extention Coordination Committee (ATECC) meeting on 28 Feb. 2021. BRRIdhan70, BRRIdhan71, BRRIdhan75, BRRIdhan79, BRRIdhan80 BRRIdhan87 for demonstration/field day placed at ATECC meeting on 16 Nov 2020.

TTMU constructed a questionnaire to assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of 10 NARS institutes.Technology Database progressof10 NARS (BWMRI, BARI, BINA, BSRI, BLRI, BFRI, SRDI, CDB-4, BJRI and BRRI) institutes of Bangladesh has been analyzedby BARC. A total technologyies were generated during 1951 to 2020 followed by BWMRI-96, BINA-196, BSRI- 193, BLRI-89, BFRI-62, SRDI-10,CDB-68, BJRI-186 and BRRI-421. BARC (Co-ordinating component) analysed a total of 96 technologies During (1968-2019) period, from the inception,the highest number of technologies (59) was generated from Plant Breeding division of BWMRI; 109 from Pomology division, BARI; 96 from Plant Breeding, BINA;50 from Plant Breeding, BSRI; 36 from Animal Production Research division,BLRI; 39 from fresh water fish culture & management technologdivision, BFRI;22 from Agronomy, CDB;6 from SRDI;52 from Plant Breeding division, BJRIand 85 from Plant Breedingdivision of BRRI.

During the project period, the project organized 3 meetings, 4workshops for rapid transferring of technologies as well as successful implementation of the project.The Coordinator, other personnel and consultant of TTMU, BARC compiled the Annual Progress Reports and PCR.

Key words: Technology Transfer, Modern variety, Rapid Technology Transfer (RTT) Model, Farmers, Farm productivity.

12.2: **Bangladesh Wheat and Maize Research Institute**

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background: Bangladesh Wheat and Maize Research Institute (BWMRI) has developed 36 wheat varieties. Wheat varieties released after 2010 has high yield potential with some other additional traits. Recent wheat varieties are heat tolerant, resistant to different foliar disease like leaf bight, leaf rust and stem rust. BWMRI has also developed wheat varieties resistant to wheat blast which is a new threat to wheat production in south and south western districts. BWMRI is engaged in developing technology packages to sustain wheat production at farmers level. But those varieties and other technologies are not being adopted by the farmers in a satisfactory rate due to their inadequate knowledge about the varieties and technologies and insufficient extension efforts.Some of matured or promising important technologies are still not using in field need to transfer at farmers' level. So, immediate technology transfer at farmers' level is needed for wheat productivity enhancement. However, the wide scale transfer of these wheat production technologies requires demonstration in farmer's field and training. This research is therefore planned to transfer modern technologies at farmer's level rapidly using different methods/ways.

Objectives:

i) To transfer some selected BWMRI generated matured/promising technologies to farmers' level
ii) Dissemination of new wheat varieties to the farmers

Methodology:

The project was implemented in selected locations of Dinajpur, Thakurgoan and Panchagarh districts. Farmers were selected based on the baseline survey information from another previous project of BWMRI in those locations. Focus Group Discussion was arranged in order to identify the problems related to technology adoption and give an orientation on wheat production, its management, seed processing and storage technologies. Total fifty-eight demonstration trials were conducted in forty-four farmers field in the selected locations. All the trials were conducted at irrigated timely sown condition (15 Novemebr to 1st week of December). BARI Gom 29, BARI Gom 30, BARI Gom 32 and BARI Gom 33, WMRI Gom 1 were used as modern wheat varieties. BWMRI recommended production technologies were used for wheat production. Wheat fields were monitored time to time by BWMRI/ NATP team.

Key findings:

Three years demonstration result shows that the new wheat varieties have good level of yield potentiality. Across three years yield ranged from 3.3 to 6.0 t / ha. Farmer can obtain 4 to 4.5 t grain per hectare if they follow the modern technologies. Block demonstration created a big impact among the farmers in selected locations. Almost 100-ton quality seed of new varieties was produced in selected farmers' field. The actual amount of seed disseminated was even more than that. In first two years seed produced in demo plots was partly stored by farmers' own use, exchanged or sold to other neighbouring farmers that might increase the seed availability in those localities.

Key word: Technology Transfer, Modern variety, Farmers' field, Farm productivity, BCR. Baseline survey, Focus group discussion.

12.3:Bangladesh Agricultural Research Institute (BARI)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

Bangladesh has a diversity of 70 different native fruit species. Bangladesh Agricultural Research Institute has developed 77 improved varieties of 32 different fruit crops. It is imperative to reach these varieties to the fruit growers/farmers immediately. Most of the fruits are seasonal. Though Bangladesh has reached near to self-sufficiency in food grain production but still are far behind in mitigating the nutritional requirement whereas malnutrition is a serious problem in Bangladesh. High population growth and inadequate care of fruits trees are enhancing the fruit deficiency problem day by day. Fruits are the most nutritious and delicious among all the foods available in nature. Though multi-various fruits are grown in Bangladesh, per capita availability is only 76g as against the minimum dietary requirement of 200g per head per day. The south region of Bangladesh always deprived from

any improved fruit varieties. There are about 19 million homesteads in the country, where fruit trees are grown without any care. Farmers are still using the old and traditional fruit varieties, most of these are seedlings plants, local cultivar and low yielding. Besides these, inadequate production and distribution of quality planting materials, non-adoption of modern production practices are the major constraints. There is a vast scope to increase the yield and quality of fruits through technological intervention and ensuring the availability of quality planting materials of improved BARI released fruit varieties to the growers. In order to bring the quantitative and qualitative improvement in fruit production, there should not be any compromise on quality aspects of planting materials. Hence, the main hurdle, less availability of quality propagules/seedlings of BARI released improved fruit varieties should be adequately addressed and a huge number of quality propagules/seedlings should be produced and distributed to the fruit growers. It is expected that through this project BARI released improved fruit varieties of mango, litchi, banana, lemon, guava, amloki, malta, kamranga, narikel, batabilebu, jamrul, amra, peyeara, sofeda, dragon fall etc. would be disseminated in Shariatpur and Barisal. Extending fruit cultivation through quality sapling production and distribution will certainly mitigate the nutritional demand and reduce the poverty through additional income. Moreover, through plantation of fruit crops a healthy and friendlier environment will be created.

Objectives:

i) To transfer the propagules/saplings of BARI developed fruit varieties to the fruit growers/farmers

ii) To produce good quality propagules/saplings

iii) To determine the benefit, cost and problems of using fruit varieties technologies at farmers' level.

Methodology:

At first baseline survey, farmer and site selection for transferring technologies were done with the help of DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO).Focus group discussion was done for orientation on modern fruit production technologies forthe selected farmers. These discussions are on using of modern fruit production technologies of BARI released mature technologies. At first, in order to dissemination of BARI released latest fruit varieties the propagules were distributed among the selected farmers (which were produced before) at 30/09/2018 in Shariatpur district. Demonstration plots were established with BARI released latest modern fruit varieties BARI Aam-3, 4, 8, 11; BARI litchu-3; BARI Kola-1, 2, 3, 4, 5; BARI Lebu-1, 2, 3; BARI Peyara -2; BARI amloki-1; ; BARI Dragon fall-1, BARI kamranga-1; BARI Narikel-1, 2; BARI Batabilebu-3; BARI Malta-1;BARI Jamrul-1 and BARI Amra-2. The demonstration was a block farming for each location. Unit plot size of block demonstration is 0.25 acres of land for each mixed fruit garden. Establishment of mother fruit or chard data were collected from the demonstration plot using a prescribed own institutional survey format. Beyond the quantitative data, farmers' reaction/feedback were also recorded.

Field Preparation

At first fields were cultivated through power tiller, cleaned out of different weed and unwanted plants. The dried fields were left exposed to sunlight for five to seven days and

then applied different organic and chemical fertilizer in different pits maintaining different distance for different trees. The pit size for large trees are (1x1x1m) and for small trees are (75x75x75cm). Common application dose of different fertilizer

Cowdung : 20k g/pit
TSP : 300-400 g/pit
MoP : 150-200 g/pit
Gypsum : 200 g/pit

After application of fertilizer, water was supplied in the pit. After 15 days saplings were distributed among the farmers for planting in Shariatpur district on 30/09/18 and Barisal district on 29/05/19.

Key Findings: The latest fruit varieties were demonstrated I 26.66 acres of land among 60 farmers in Shariatpur district and 25.40 acres of land among 60 farmers in Barisal district. The total established sample 2717 and 2635 from the supplied both the location 3000 sample each in Shariatpur and Barisal district. Percent success were higher in Shariatpur district (90.29%) than Barisal district (87.83%). Besides farmers were motivated about grafting technology after establishment of the fruit orchard to disseminate the other farmers.

Key words: Focus group discussion, Baseline survey, technology transfer.

11.4 Adaptive Research and Extension Division (ARED), Bangladesh Institute of Nuclear Agriculture (BINA)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

The Project entitled "Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-BINA component" has been implementing by Adaptive Research and Extension Division (ARED) of Bangladesh Institute of Nuclear Agriculture (BINA). Initialy, the project duration was 2.5 years started from July 2018 and ended on December 2020. BINA released promising technologies were introduced followed by two new cropping patterns as in Sadar, Mymensingh one cropping pattern like early T. aman → Mustard → late Boro against the existing T. aman→ fallow→ Boro cropping pattern; and in Madhukhali, Faridpur early T. aman → Lentil → Aus against T. aman → fallow/onion → Jute/Sesame cropping pattern. Last two years activities were completed according to work plan and report was submitted in time. ARED conducted experimental plots with T. aman rice (var. Binadhan-11) at two locations as per the work plan and activity schedule. Binadhan-11 was transplanted at Sadar, Mymensingh from 15-29 July, 2020 and at Madhukhali, Faridpur from 09-12 August, 2020. In Sadar, Mymensingh T. aman was harvested on 19-22 October 2020, yield of Binadhan-11 was 4.98 t ha^{-1} with the average maturity period of 117 days. In Madhukhali, Faridpur T. aman with same variety were harvested on 15-16 November 2019, yield of Binadhan-11 was 4.81 t ha^{-1} with the average maturity period of 116 days. In rabi season, Binasharisa-9 was sowed at Sadar, Mymensingh from 09-17 November, 2020 and Binamasur-8 was sowed at Madhukhali, Faridpur from 4-10 December, 2020.

Objectives:

i) To incorporate HYV mustard and lentil varieties between early T. aman and late boro rice cropping sequences
ii) To increase cropping intensity and crop yield through improved cropping patterns and
iii) To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production

Methodology:

Activity 1: Baseline survey

Conducted base line survey before T. aman and Boro cultivation.

Activity 2: Farmer and site selection for transferring technology

Eighteen farmers (who use traditional methods) of each location was selected under Sadar, Mymensingh and Madhukhali, Faridpur. Therefore, total thirty six farmers' was selected for technology transfer and validation activities. Farmers were almost same as last two years.

Activity 3: Focus group discussions and orientation with technologies

Focus group discussion including selected farmers' was organised in both locations.

Activity 4:Transfer and validation of modern technology instead of traditional technology at farmer's field/plot

To transfer and validation of modern technology of BINA, location specific profitable cropping pattern activities with T. aman (var. Binadhan-11) was carried out in 18 selected farmers plot at Sadar, Mymensingh in aman season of 2020. Then mustard (var. Binasarisha-9) and boro (var. Binadhan-10) were carried out in the same farmers plot in rabi and boro season of 2020-2021. On the other hand, experimental plot for cropping pattern activities with T. aman (var. Binadhan-11) was carried out in 18 selected farmers plot at Madhukhali, Faridpur in aman season of 2020. Then lentil (var. Binamasur-8) and aus (var. Binadhan-19) were carried out in the same farmers plot in rabi and aus season of 2020-2021.

Activity 5: Field days, mass media campaign etc

No field day was organized within the reporting period.

Activity 6: Data collection and EconomicAnalyses

Data regarding yield and yield attributes of Binadhan-11, Binadhan-10, Binasarisha-9 and Binamasur-8 were collected, analysed and recorded.

Activity 7: Knowledge Sharing with Personnel of Extension Service

Knowledge shared with the personnel of DAE and farmers' in the project areas at the field visit and monitoring time.

Key findings:

Binasharisa-9 produced average yield of 1.56 t ha^{-1} with the average maturity period of 84 days. On the other hand, Binamasur-8 produced average yield of 2.15 t ha^{-1} with the average maturity period of 105 days. In boro season season, Binadhan-10 was transplanted at Sadar, Mymensingh from 1-10 February, 2021. Binadhan-10 produced average grain yield of 6.12 t ha^{-1} with the average maturity period of 136 days. In aus season season, Binadhan-19 was broadcasted at Madhukhali, Faridpur from 25 April to 5 May, 2021. Binadhan-19 is now in vegetative stages. The cumulative expenditure of the project was Tk. 2163258 against the total released fund of Tk. 2164143 during the total project period.

Key words: Focus group discussion, Baseline survey, T. aman and late boro rice, technology transfer.

11.5 Training and Technology Transfer Division, Bangladesh Sugarcrop Research Institute (BSRI)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

Bangladesh Sugarcrop Research Institute (BSRI) has developed technologies (varietal, production, management etc.) is still not disseminate due to lack of proper extension work. Some of matured or promising important technologies are still not using in field which are need to transfer at farmers' level. So, immediate technology transfer at farmers' level is needed for sugar/*gur*/juice productivity enhancement. In Bangladesh, sugarcane is not only used for sugar and gur production but also used for chewing purposes. Currently, on average sugarcane is grown in 0.16 million hectares of land out of which half of area is located in the sugar mills zone and the rest in the non-mills zone where gur and juice is produced. The future prospect for chewing and *gur* varieties cultivation in Sadar, Kazipur, Raigonj, Tarash, Ullahpara under Sirajgonj district appears bright as its suitable climate and soil condition. In case of sugarcane, the national average yield is 47 t ha^{-1}. The changing climate is challenging even that low yield every now and then. But the average potentiality of sugarcane varieties is not less than 81 t ha^{-1} under favorable conditions. Thus, there persists a genuine yield gap of 34 t ha^{-1}. However, the wide scale transfer of these technologies requires demonstration in farmer's field, training, field day etc. This research is therefore planned to transfer modern technologies at farmer's level rapidly using different methods/ways.

Objectives:

i. To transfer chewing cane and gur (molasses) varieties of sugarcane among the participating farmers for increasing yield through intercropping;
ii. To create awareness about sugarcane production packages and improved technologies of BSRI; iii. To determine the benefit cost analysis by using selected technologies at farmers' field and finally to attain sustainable sugarcane production and lifted livelihood of farmers through dissemination of BSRI released latest sugarcane varieties.

Methodology:

At first Baseline survey, farmer and site selection for transferring technology were done with help of DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO). Focus group discussion was done for orientation on modern sugarcane production technologies for the selected farmers. Dissemination of BSRI released latest sugarcane varieties (chewing and gur) were done in three cropping season. Demonstration plots were established with BSRI released latest modern sugarcane varieties i.e., BSRI akh 42 as a chewing and BSRI akh 45 as a gur varieties with potato, onion, cabbage - mungbean sequential intercroppin consecutively three cropping season. The demonstration was block farming for each location. Unit plot size of block demonstration is four bighas of land having two bighas of land for each variety on each location. Yield and yield contributing data and cost benefit data were collected from the demonstration plot using

a prescribed own institutional survey format and BCR were calculated using recorded cost and benefits data. Beyond the quantitative data, farmers' reaction/feedback was also recorded.

Key findings:

BSRI released latest sugarcane varieties with intercropping were demonstrated in 56 bighas of land with 32 farmers in three sugarcane growing season. The highest cane yield and adjusted cane yield were 167.27 t ha^{-1} and 199.83 t ha^{-1} found from BSRI akh 42 with onion-mungbean sequential intercropping and in gur variety BSRI akh 45 the highest cane yield and adjusted cane yield were 117.83 t ha^{-1} and 166.65 t ha^{-1} found from onion- mungbean sequential intercropping both in the cropping season 2020-2021. In three seasons, the average cane yield and adjusted cane yield were 152.68 t ha^{-1}, 101.31 t ha^{-1}, 179.27 t ha^{-1} and 141.82 t ha^{-1} from BSRI akh 42 and BSRI akh 45 respectively.

The average BCR of BSRI akh 42 and BSRI akh 45 with sequential intercropping was 4.57 and 3.20 respectively. The higher BCR (4.66) was found in BSRI akh 42 as a chewing cane with sequential intercropping in the cropping season 2020-2021, as a result, higher productivity and higher profit came from BSRI akh 42 with onion – mungbean sequential intercropping. On an average of three seasons, in chewing cane BSRI akh 42 yield increase 59.27 t ha^{-1}(7.99 t $bigha^{-1}$) and income rise 2, 96,350 Tk. ha^{-1} (39,993 Tk. $bigha^{-1}$) and in gur variety BSRI akh 45 yield increase 45.31 t ha^{-1}(6.11 t $bigha^{-1}$) and income rise 1, 58,585 Tk. ha^{-1} (21,401 Tk. $bigha^{-1}$) while run the project activities. As a result, a considerable number of farmers observed the performance of the BSRI released latest sugarcane varieties and among them 535 farmers were motivated for the next year cultivation.

Keywords: Baseline survey, Demonstration, Block farming, FGD, BCR, Yield, Focus group discussion, technology transfer, Intercropping

11.6 Bangladesh Livestock Research Institute (BLRI)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

The livestock farmers in Sirajganj district are mostly susceptible to natural calamity and vulnerable condition, marginalized communities are constrained by not having cropping space in terms of access to land. Maximum lands are submerged under flood water for 5 to 6 months and the scarcity of animal feed and fodder become extreme. During this period animal depends only straw and concentrate and feed cost is comparatively higher than other season of the year. So dole silage is another solution for animal feed. Silage production reduces feed cost and improve animal health during lean period. Through this project we selected thirty farmers under Shajadpur upazilla in Shirajganj district.

Objectives:

- To transfer selected BLRI generated matured technology (silage) to farmers' level

- To determine the cost benefit analysis by using selected technologies at farmers' level

Methodology:

The BLRI Napier-4 fodder cultivation was conducted in the farmer's plot (30) of Baghabari, Shajadpur, Sirajgonj and Godagari, Rajshahi to determine the biomass yield, morphological characteristics and nutritive value. Thus BLRI Napier 4 fodder was popularized in the areas. These fodder was used for dole silage preparation in the field condition. Preparation cost of 1000 kg Dole silage was Tk.2725 (2.73 Tk/kg). Twenty (25) farmers each having two cross dairy cows were used for the feeding trial. The cross dairy cows of 2nd or 3rd parity and after calving (2-3 months pregnancy) dividing into two groups (T_1 - dol silage, T_0 –control). Two diets were prepared and considered as dietary treatments, T_1 - dole silage, T_0 –control. The concentrate part of the ration consisted of wheat bran, rice polish, crushed maize, khesari bran, soyabean meal, til oil cake and salt. The concentrate mixture contained 18% CP and 10.31 MJ ME/kg DM. Fresh and clean drinking water was available for all the animals. The daily required amount of feed was portioned into two for feeding to the animals in the morning at 7:00 hours and afternoon at 16:00 hours. Concentrate was supplied first followed by roughages.

Key findings:

- Introduction of BLRI Napier 4 high yielding fodder in the milk pocket areas of Shajadpur, Sirajgonj.
- Incorporation Dole silage technology in the existing dairy feeding system in milk shed areas.
- Dole silage technology reducing feed cost 89.00 Tk./day/dairy cow in rainy season and as well as increasing milk production 2.91 L/day/cow

The benefit cost efficiency of non-silage and silage group were 1:1.68 and 1:1.20, respectively.

Key words:

BLRI Napier-4 fodder, Dole silage, Focus group discussion, technology transfer.

11.7 :Bangladesh Fisheries Research Institute (BFRI)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

There are about 143 species of small fish in the freshwater of Bangladesh. Among the indigenous small fishes, Pabda is a very tasty and demandable fish. However, due to over exploitation and effects of climatic change on breeding and nursery grounds Pabda fish were about to disappear. Their availability has recently been increased due to development of induced breeding technologies of Pabda by the Bangladesh Fisheries Research Institute (BFRI).

Objectives:

- To validate & transfer selected BFRI (Fisheries) generated promising technology to farmers field
- To determine the cost benefit and problem of using selected technologies at farmers level

Methodology:

In case of pond culture, 1.0 lacs Pabda (5-7cm sized) along with 1.0 thousand Rui (10-12cm), 30 thousand Gulsha (5-6cm) per acre were stocked. After stocking, supplementary feed (30% crude protein) were supplied to the fishes at the rate of 3-8% of body weight. At fortnightly interval fish sampling was done by measuring the weight of fish and to observe the health condition of fish. Lime and table salt (NaCl) were applied at the rate of 20 and 50 kg/acre at fortnightly intervals to the ponds. Marketable sized fishes were harvested after 6-7 months of rearing.

Key findings:

- At harvest, the weights of pabda and Gulsha were 38 to 42g.
- The survival rate of Pabda and Gulsha in ponds was fairly high. Based on the number of fish harvested, survival ranged from 72-92%.
- After six months rearing, the productions obtained were 5529 to 5785 kg.

The relative contribution of Pabda and Gulsha in total production was 78.09 to 87.16%, %.

Key words: Technology transfer, Pabda and Gulsha, total production, Focus group discussion.

11.8 :Soil Resource Development Institute

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

The Soil Resource Development Institute (SRDI), an attached Department of the Ministry of Agriculture was established in 1983 by reorganizing the then Department of Soil Survey. The vision of SRDI is to ensure judicious and profitable use of scarce land and soil resources of the country and to protect soil health. SRDI has been playing a pivotal role in providing soil related data and information to different NARS institutes. It is also carrying out researches to generate appropriate soil and land management technology to increase cropping intensity in saline coastal areas and protecting sloping lands of Chittagong Hill Tracts. Upazila Land and Soil Resources Utilization Guide, commonly known as Upazila Nirdeshika developed by SRDI, is a unique tool for local level land use planning, location and crop specific fertilizer recommendation and post disaster agricultural rehabilitation program (Huq and Shoaib, 2013). But this promising tool is not yet used in field by extension personnel and famers in large extent. It is reported that farmers in most cases use imbalanced dose of fertilizers. Crop production with indiscriminate use of chemical fertilizer is affecting soil health. It is evidenced that by using balanced fertilizer on the basis of Upazila Nirdeshika crop yield increased by 15-25% or even more (Annual Report, SRDI, 2017). A pathway for rapid

transfer of the technology at farmers' level is needed for farm productivity enhancement as well as to ensure soil health.From previous semi-detailed survey data it was observed that Boro-Fallow-T. Aman pattern is one of the major cropping patterns in Tangail Sadar, Bhuapur, Sadar Dakshin and Burichong Upazila.Therefore, SRDI has come up with the project proposal to enhance the transfer of aforesaid proven technology in 4 Upazilas of Tangail and Comilla districts at farmers' level in Boro-Fallow-T. Aman pattern to increase crop productivity and farmers' income. The project was envisaged for three years rolling plan to familiarize the technology as well as finding out the loopholes for sluggish nature of technology transfer so that it can be overcome in project areas at grass root level.

Objectives:

i) To popularize SRDI's Updated Upazila Nirdeshika based balanced fertilizer application in Boro-Fallow-T. Aman pattern at farmers' level.
ii) To determine benefit and problem of using aforesaid SRDI technology at farmers' level.

Methodology

The project activities was carried out in a participatory approach i.e. in collaboration with DAE personnel in farmers' field in 4 Upazila under two districts involving SRDI district offices.

Baseline survey was conducted involving 24 farmers taking 6 from each Upazila. Data collected by baseline survey were analyzed by using SPSS software version 16.

Balanced fertilizer dose were calculated for Boro (BRRIdhan58) and T. Aman (BRRIdhan72) based on Soil Test Status of respective Updated Upazila Nirdeshika following FRG 2018, BARC. Farmers and extension personnel were briefed about SRDI technology i.e. application of balanced fertilizer dose in Boro-Fallow-T. Aman cropping pattern by arranging FGD (focus group discussion). Effect of balanced fertilizer dose on yield of Boro (BRRIdhan58) and T. Aman (BRRIdhan72) were demonstrated by establishing adaptive trial plots in 4 farmers' field which was compared with yield of control plot (adjacent to trial plot) receiving farmers dose. Same fertilizer dose was applied in 16 farmers' field taking 4 farmers from each Upazila and were also evaluated. Field days were arranged to show the impact of balanced fertilizer application on rice production to farmers and extension personnel.

BCR was calculated to find out the impact of balanced fertilizer dose on farm productivity and farmers income.

Key findings

Average yield of BRRIdhan58 in adaptive trial plot receiving balanced fertilizer dose was 15% and 21% higher over control in Tangail Sadar and Bhuapur Upazila respectively. On the other hand yield of BRRIdhan58 in adaptive trial plot was 10% and 12% higher over control in Sadar Dakshin and Burichong Upazila respectively.

Average yield of T. Aman (BRRIdhan72) in adaptive trial plot receiving balanced fertilizer dose was 9% and 7.9% higher over control in Tangail Sadar and Bhuapur Upazila

respectively. On the other hand, yield of BRRIdhan72 in adaptive trial plot was 12% and 9% higher over control in Sadar Dakshin and Burichong Upazila respectively.

Average yield in Boro (BRRIdhan58) was 6.29 t/ha (5.6-7.7) and in T. Aman it was 4.94 t/ha (4.39-5.88). Highest yield 7.7 t/ha in Boro (BRRIdhan58) was recorded in Bhuapur (Tangail) trial plot. Highest yield 5.88 t/ha in T. Aman (BRRIdhan72) was recorded in Sadar Dakshin (Comilla) trial plot.

In Tangail, average benefit cost ratio (BCR) in Boro was 1.19 (1.12-1.40) and in T. Aman it was 1.48 (1.31-1.57). On the other hand, average BCR in Boro was 1.18 (1.09-1.35) and in T. Aman it was 1.47 (1.21-1.60) in Comilla.

It was observed that by using balanced dose of fertilizer based on Soil Test Status as given in Updated Upazila Nirdeshika of SRDI rice productivity at farmers' level was substantially increased and they earned profit through rice culture.

Keywords: Technology transfer, balanced fertilizer dose, farm productivity, technology transfer.

11.9 :Cotton Development Board

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

Cotton production in Bangladesh should increase by combination of increasing per hectare yield and expanding the cotton growing areas .Recently, CDB has generated 4 technologies those are 1. CB-14 variety, 2.application of mepiquat chloride 3 removal of vegetative branches and 4. De-topping at 90 DAS (Day after sowing). These four technologies have the potentiality to increase per hectare yield. . CB-14 is a disease resistant full-season variety with high yield potential (4-5 ton per hectare) better than existing varieties and with high fiber quality. Four sprays of Mepiquat chloride, at the rate of 1.75 ml/10 liter of water starting from 30 days after germination at 15 days interval, suppress excessive plant growth and increase cotton yield (25%) over control.In order to increase per hectare yield, it is utmost necessary to transfer those technologies to cotton farmers. CDB is seeking NATP fund for the transfer of those matured technologies to the cotton. The ongoing project was taken for the long term sustainability of cotton production development of additional land use system integrating with cotton during 2018 to 2021. The project activities were undertaken in 3 Zonal offices of CDB. These Zonal office are located at i) Thakurgoan ii)khagrachari, and iii) Bandarban. These experiment
were conduct of these three zones. Total 42 Experiment were conducted for the 4 years.Results showed of this study, CDB developed package technology (1. CB-14 variety, 2. Application of mepiquat chloride 3. Removal of vegetative branches. and 4. De-topping at 90 DAS (Day after sowing) was found more profitable than existing cotton production technology. CDB developed package technology offers opportunity to generate more income to the cotton producer.

Objectives

i) To transfer recently generated three technologies to cotton farmers' in Bangladesh

ii) To determine the benefit cost analysis of using selected technologies at farmers' level

Methodology

The experiment were conducted on farmers field under 3 Zonal offices of CDB. This experiment were conduct of these three zones. Total 42 Experiment were conduct.

The main activities of this project were selection of land, selection of farmers, establishment of demonstration plot, crop management, data collection and analysis, and organization of field day, and presentation at annual research workshop.

Activity 1: Land and Farmer selection:

CDB is providing extension services to the cotton farmers through its 3 zonal offices. Each year one well drained high to medium high land was selected at every growing zone. The area of the land was 1 bigha (0.1378 ha).

Activity 2: Establishment of Demonstration plot:

Ploughing and laddering was done for 3 times. The seeds of CB-14 variety was sown in mid June to mid July depending on the favorable environment. Plant spacing was 90 × 25 cm.

Activity 3: Crop management:

Fertilizer application: CDB recommended fertilizers dose for CB-14 was applied at 4 splits(i.Basal dose.ii.25 DAE, iii.55. DAE iv.80 DAE) The recommended dose of fertilizer are Urea- 300 kg/ha, TSP-275 kg/ha, MOP- 350 kg/ha, Gypsum-140kg/ha, Zinc sulphate- 20 kg/ha, Borax-25 kg/ha and Magnesium sulphate- 20 kg/ha.

Weed management: The plot was kept free from weed for the first 90 days after germination.

Pest management: Integrated Pest Management tools and techniques was followed for controlling cotton sucking and chewing pest.

Removal of vegetative branch: Vegetative branch was removed from the cotton plant at the 1st square stage.

De-topping: De-topping was done before cotton plant harvesting stage.

Application of mepiquat chloride: Four sprays of Mepiquat chloride at the rate of 1.75 ml/10 liter of water was done starting from 30 days after germination at 15 days interval.

Activity 4:Data collection and analysis:

Cotton yield and yield contributing characters as well as cost benefit data was collected from the demonstration and other selected farmers plot using a prescribed survey format. Comparative cost benefit will be analyzed before and after setting
field trial.

Activity 5:Training of Staff:

Stuff (Field/ research assistant) training was organized at CDB head quarter before experiment setting to facilitate dissemination/on-farm trial of the selected technologies to farmers.

Activity 6: Presentation at annual research workshop

Data recorded: Agronomic traits

i) Plant count at harvest	ii) Number of vegetative branches/plant
(iii) Node number on 1st fruiting branches/plant	(iv) Number of primary fruiting branches/plant
(v) Number of secondary fruiting branches/plant	(vi) Number of days to 1st flowering
(vii) Number of days to 1st boll split	(viii) Plant height (cm) at harvest
(ix) Number of burst boll/plant	x) Number of sunburst boll/plant
(xi) Number of bolls/plant	(xii) Single boll weight (g)
(xiii) Seed cotton yield (kg/ha)	
	i) GOT (%)
C. Ginning traits	(ii) Seed index
	(iii) Lint index
	(iv) Fuzz grade
D. Lint Character	(i) Fiber Length (mm)
	(ii) Fiber Strength (mm)
	(iii) Fiber Fineness (micronaire value)
	(iv) Fiber maturity

Recorded data would be analyzed statistically, in MSTAT/ SPSS Program) and final report would be prepared and preserved for future use.

Key findings

CB-14 variety, 2. application of mepiquat chloride 3. removal of vegetative branches. and 4. De-topping at 90 DAS(Day after sowing).These four technologies have the potentiality to increase per hectare yield. . CB-14 is a disease resistant full-season variety with high yield potential (4-5 ton per hectare) better than existing varieties and with high fiber quality. Four sprays of Mepiquat chloride, at the rate of 1.75 ml/10 liter of water starting from 30 days after germination at 15 days interval, suppress excessive plant growth and increase cotton yield (25%) over control. Cotton plant usually has two types of branches those are vegetative branch and fruiting branch. The growth of vegetative branch reduces the number of fruiting branch and decreases cotton yield. Removal of vegetative branch at vegetative growth stage found to increase the number of fruiting branches and seed cotton yield (21%) over control.

Key words: CB-14, mepiquat chloride, vegetative branches, De-topping, Focus group discussion, technology transfer.

11.10 :Bangladesh Jute Research Institute (BJRI)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background:

Jute is the industrial field crop in Bangladesh. On an average it contributes about 4.68% country's total export (World vision Journal, 2014). In last year (2015-16), 0.725 million hectares of land cultivated under jute and allied fibre and produces 7.5-8.0 million (75-80 lakh) bales of raw jute (AIS, 2016). In 2010, Government of Bangladesh enacted a law of mandatory packaging act to package the six goods namely rice, wheat, paddy, maize, sugar

and fertilizer and in 2013, Government of Bangladesh again enacted a law of mandatory packaging act to package another eleven goods namely chilli, turmeric, onion, ginger, pulses, coriander, potato, flour, paddy husk etc. in jute sack. Apart from this viscose, charcoal, jute leaf tea, jute poly bag and diversified products of jute have opened a new era of jute cultivation. As a result, during the last five years area and production of jute had been increased. The information on jute research technology (variety, production, management, retting etc.) evolved by Bangladesh Jute Research Institute (BJRI) is still not disseminated at farmers' field level. So, technology transfer at farmers' level is needed for jute productivity enhancement. BJRI has recently released four varieties of jute and allied fibre crops, which have potentiality to increase crop yield and economic return. Recently released varieties along with other technologies like: line sowing, recommended fertilizer doses, weed management, pest and disease control, improved retting technique etc. will be demonstrated at farmers' field level. Recently BJRI developed jute and allied fibre crop variety, which are given high yield (BJRI, 2017). A single variety of tossa jute is mostly cultivated (80% of world jute area) over the jute growing areas of India and Bangladesh which is not desirable. Though productivity of jute has been increased to some extent but lot more need to be addressed to minimize cost of production with quality fiber and to withstand the competition thrown by cheaper synthetic fibers. As an eco-friendly crop the demand of jute is increasing day by day. To meet up this demand variety development program should be strengthened to evolve HYV, having drought/flood/salinity tolerance and early maturity. Bangladesh produces world's best quality jute. The agriculture climate of Bangladesh is very much suitable for quality fibre production. As a result supply of quality jute seed will ensure the fibre quality as well as quantity to a great extent. The government of Bangladesh has given more thrust to promote the jute seed industry by strengthening public sectors dealing with jute seed and also by sensitizing private sectors to reduce the dependence on imported jute seed. In BJRI, jute and allied fibre seed research activities is the main responsibility of breeder seed department of Genetic Resources and Seed Division. Besides breeder seed department other divisions like agronomy, pest management and jute faming systems division done some research work on jute and allied fibre seeds. At present, BADC is the only public sector of the country produce and distributes Jute and Allied Fibers (JAF) seeds to the growers. Generally BADC produces 700- 800 tons of seed both of deshi (*C.capsularis* L.) and tossa (*C. olitorius* L.) meeting only 8-10% of the total jute and allied fibers (JAF) seed requirements.

Objectives:

i. To introduce BJRI newly released variety (Robi-1) at farmers' level for higher fibre yield
ii. To produce seed of newly released jute and allied fibre crop at farmers' level
iii. To analyze the cost and return of selected technologies at farmers' level

Methodology:

The project was implemented by BJRI in coordination with TTMU, BARC.
BJRI developed new variety were selected for both fibre and seed production in technology transfer activities.

Adaptive trials or variety demonstration: BJRI developed variety BJRI TossaPat-8 and HC-95 those have the potentiality to increase crop yield and economic return. Recently released varieties along with other technologies like line sowing method, recommended fertilizer doses, weed management, pest and disease control, etc. were demonstrated at farmers' level.

Seed production: BJRI developed seed production technologies which were not yet disseminated at farmers' level were demonstrated. Farmer's learned how to apply the seed production technology in the field. They also knew the proper time of seed crop cultivation, agronomic management, fertilizer management, pest and disease control, etc.

The following steps were followed to transfer the jute and allied fibre (JAF) technologies:

Activity 1: **Baseline survey**
A base line survey, under each location at selected farmer's was done. Baseline information helped us to know the farmer's demand regarding fibre production. We also informed from the baseline survey that they never thought about seed and its quality. Farmer's never thought before that they can produce quality jute seed by themselves which can increase their fibre production.

Activity 2: Selection of location/site and farmer for transferring technology
The variety demonstration for fibre production technologies in two locations i.e., Faridpur and Rangpur and the seed production technologies in two locations i.e., Manikganj, and Rangpur was conducted for demonstration. Six farmers were selected from each location. So, total twenty four farmers were selected for variety demonstration and seed production technology transfer activities. Actually, we covered 32 farmers to address the adverse situations in the field.

Activity 3: Focus Group Discussion (FGD) with new technologies of jute
Before initiation of action of the technologies in the farmers' field, FGD's were arranged to get ready our farmers to do work on new technologies what we were going to disseminate among them. Motivations were also given to the farmers' on the benefits of adopting new technologies through good examples and calculations compared to the existing practices. These FGD's were done only on using of new verities and modern production technologies of BJRI.

Activity 4: Demonstration and refining/up-scaling of modern technologies at farmers' field.

i) Medium high to high land for jute fibre and high land for jute seed production were selected.

ii) **Varieties**:BJRITossa Pat-8 (Robi-1) and Kenaf (HC-95) (high yielding varieties) for fibreand seed production

iii) **Unit plot size**: 0.08 hectare (20 dec.) for fibre and 0.04 hectare (10 dec.) for seed production were selected in the farmers' field

iii) **Planting method**: Line sowing for variety demonstration and direct seedingfor seed production

iv) **Fertilizer doses and methods of application:** The jute crop were fertilized with organic manure @ 5ton ha^{-1} with NPKS and Zn @ 74, 10, 30, 15 and 2 kg ha^{-1}, respectively to ensure proper growth and development for fibre production. On the other hand, the jute seed crop were fertilized with organic manure @ 5ton ha^{-1} with NPKS, Zn and B @ 50, 15, 10, 16, 2 and 2 kg ha^{-1}, respectively to ensure proper growth and development for seed

production. The elements N, P, K, S, Zn and Bwere applied in the form of Urea, Triple Super Phosphate, Muriate of Potash, Gypsum, ZnSO4 and Boric acid, respectively. In case of jute fibre production half of urea and the entire quantity of other fertilizers were applied at final land preparation. Rest half of urea were applied 45-50 days after sowing. On the other hand, for jute seed production one- third of urea and the entire quantity of other fertilizers were applied at final land preparation and next two-third of urea were applied 20 and 40 days, respectively after sowing.

v) **Seed rate:**BJRITossa Pat-8= 5-6 kg $ha^{-1}$for fibre; 4 kg ha^{-1} for seed and Kenaf (HC-95) = 15-20 kg $ha^{-1}$for fibre; 12-13 kg ha^{-1} for seed.

vi) **Irrigation:** 2/3 (Depending on the rainfall and land condition)

vii) **Weeding:**Herbicide were used at 25 days after sowing

viii) Data were recorded on yield and yield attributes

x) Yield (fibre/seed) will be measured on the basis of whole plot harvest

Production performance and farmers' reaction were monitored regularly by the personnel of institute and these technology transfer activities were monitor by the personnel of TTMU, BARC.

BCR was calculated to find out the impact of new technology on farm productivity and farmers income.

Key findings:

For seed production: In the year 2018-19, six farmers were selected for seed production at Manikganj covering 10 decimal of land. The average seed yield was found 743 $kgha^{-1}$. The average cost of production and gross return ha^{-1} was Tk. 137684 and Tk. 163350 respectively. The BCR was found 1.19.

In the year 2019-20, similar number of farmers was selected for seed production in the same location covering 10-12 decimal land (average 10.66 decimal). The average seed yield was obtained 836 $kgha^{-1}$. The average cost of production and gross return ha^{-1} was recorded Tk. 168750 and Tk. 267520 respectively. The BCR was found 1.46.

Seven farmers were selected in the year 2020-21for seed production at Manikganj covering 9-12 decimal land (average 11 decimal). The average seed yield was found 767 $kgha^{-1}$. The average cost of production and gross return ha^{-1} was Tk. 168746 and Tk. 215102 respectively. The BCR was found 1.27. Seed yield was comparatively lower than the 2^{nd} year due to prolonged and repeated flood.

On the other hand, in the year 2019-20, six farmers were selected for seed production at Rangpur and Lalmonirhat location covering 8-13 decimal land (average 10 decimal). The average seed yield was recorded 792 $kgha^{-1}$. The average cost of production and gross return ha^{-1} was calculated Tk. 189758 and Tk. 250792 respectively. The BCR was found 1.32.

In the year 2020-21, seven farmers were selected for seed production at Rangpur and Lalmonirhat covering 10-13 decimal land (average 12 decimal). The average seed yield was found 867 $kgha^{-1}$ and the cost was calculated Tk. 165008. The average gross return ha^{-1} and BCR was calculated Tk. 276235 and 1.67 respectively. Seed yield was found higher in the 2^{nd} year compared to 1^{st}year. It might be due to farmer's attention to the crop and increased knowledge of seed crop management.

Five farmers were selected for seed production at Lalmonirhat in the year 2021-22, covering 10-33 decimal land (average 16 decimal). The average seed yield was found 908

kgha^{-1} and the cost was calculated Tk. 172900. The average gross return ha^{-1} and BCR was calculated Tk. 272318 and 1.58 respectively. Seed yield was found higher in the 4th year compared to previous years. It might be due to farmer's attention, increased knowledge and management issue of the seed crop.

Seven farmer's were selected for seed production at Rongpur in the year 2021-22, covering 10-14 decimal land (average 11 decimal). The average seed yield was found 939 kgha^{-1} and the cost was calculated Tk. 183625. The average gross return ha^{-1} and BCR was calculated Tk. 281775 and 1.53 respectively. Seed yield was found higher in the 4th year compared to previous years. It might be due to farmer's attention to the crop and increased knowhow of seed crop management.

On an average 12.52% seed yield was increased at Manikganj and 9.47-16.67% seed yield was increased at Rangpur & Lalmonirhat location through intervention of the technology.

For fiber production: In the year 2018-19, six farmers were selected for fibre production at Faridpur covering 20 decimal lands. The average fibre and stick yield was recorded 2883 and 6522 kgha^{-1} respectively. The average cost of production and gross return ha^{-1} was calculated Tk. 101475 and Tk. 146062 respectively. The BCR was found 1.44. Fibre yield was partially hampered by the effect of Ampam. On the other hand, similar number of farmers' were selected for fibre production at Rangpur and Lalmonirhat covering the same area of land in the same year. The average fibre and stick yield was recorded 2995 and 6695kgha^{-1} respectively. The average cost of production and gross return ha^{-1} was calculated Tk. 101475 and Tk. 151210 respectively. The BCR was found 1.49. Yield increased 10-21% in Faridpur (average 15%) and 10-24% in Rangpur & Lalmonirhat (average 18%) in the adaptive trials of BJRI over control.

Eight farmers were selected for fibre production at Faridpur covering 20-30 decimal land (average 22.50 decimal) in the year 2019-20. The average fibre and stick yield was recorded 3218 and 7110 kgha^{-1} respectively. The average cost of production and gross return ha^{-1} was amounted Tk. 95572 and Tk. 200091 respectively. The BCR was found 2.09. On the other hand, in the same year and same number of farmers' were selected for fibre production at Rangpur and Lalmonirhat covering 20-28 decimal of land (average 23.87 decimal).The average fibre and stick yield was recorded 3309 and 7280 kgha^{-1} respectively. The average cost of production and gross return ha^{-1} was calculated Tk. 94743 and Tk. 191911 respectively. The BCR was found 2.03 Yield increased 9-27% in Faridpur (average 20%) and 12-30% in Rangpur & Lalmonirhat (average 22%) in the adaptive trials of BJRI over control. An increasing trend of fibre yield (15-20% and 18-22%) was observed during the years in both the locations.

Key words: Demostration, Focus group discussion, BCR, Baseline survey, Variety, technology transfer.

12.10: Bangladesh Rice Research Institute (BRRI)

Title: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm productivity

Background

Bangladesh is now self-sufficient in producing of rice. However, it is very much vulnerable due to several causes like increased population, shrinking cultivable land, climate change etc. The demand of rice is increasing with the increasing population in Bangladesh. Therefore, it is a great challenge to feed the increasing population of Bangladesh. Hence, it is deem necessary to explore unfavorable areas like salinity, drought, submergence and cold prone environment. Varieties are using by the farmers are some extent vulnerable and susceptible to pest incidence and also long duration. Bangladesh Rice Research Institute (BRRI) already developed some modern rice varieties for both the favorable and unfavorable environments also having stress tolerant capacity. However, these varieties are not yet disseminate to the farmers' field as par level. The improved Aman and Boro varieties should be disseminated rapidly among the farmers specially BRRI released new rice varieties such as BRRI dhan 52, 70, 71, 72, 73, 75, 79 and 87 for T. aman season and BRRI dhan50, 58, 67, 74, 81, 84, 86, 88 and 89 for Boro season. Although Department of Agricultural Extension (DAE) is doing the dissemination activities as per their own strategies, however, BRRI can take more initiative in dissemination activities.

Objectives

(1) To increase the production of rice-based cropping system through dissemination of modern rice varieties (HYV) in T. Aman and Boro season.
(2) To strengthen quality seed production, storage and distribution at the farmer's level through dissemination of improved management package and training. And finally to attain sustainable food security through dissemination of latest BRRI rice varieties.

Methodology

At first Baseline survey, Farmer and site selection for transferring technology were done with help of DAE personnel especially Upazila Agriculture Officer (UAO) and Sub Assistant Agriculture Officer (SAAO).Focus group discussion was done for orientation on modern rice production technologies forthe selected farmers. Dissemination of BRRI released latest rice varieties were done in in 4 rice growing season i.e., Boro 2019, T. aman 2019, Boro 2020 and T. aman 2020. Demonstration plots were established with BRRI released latest modern rice varieties i.e., BRRI dhan58, BRRI dhan74, BRRI dhan81, BRRI dhan84, BRRI dhan86 and BRRI dhan89 in Boro 2019. In T. aman, 2019 demonstrations plot were set-up with BRRI released latest modern T. aman rice varieties i.e., BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87. And in Boro, 2020 demonstrations plot were set-up with BRRI released latest modern Boro rice varieties i.e., BRRI Dhan58, BRRI Dhan67, BRRI Dhan81, BRRI Dhan84, BRRI Dhan88 and BRRI Dhan89 in the same locations. In T. aman 2020 season Demonstrations plot were set-up with BRRI released latest modern T. aman rice varieties i.e., BRRI dhan70, BRRI dhan71, BRRI dhan75, BRRI dhan79, BRRI dhan80 and BRRI dhan87. The demonstration was a block farming for each

location. Unit plot size of block demonstration is 6 bighas of land having one bigha of land for each variety. Yield and yield contributing data and cost benefit data were collected from the demonstration plot using a prescribed own institutional survey format and BCR were calculated using recorded cost and benefits data. Beyond the quantitative data, farmers' reaction/feedback were also recorded.

Key findings

In four rice growing seasons (Both T. aman and Boro) different BRRI released latest rice varieties were demonstrated in 24 bighas of land with 24 farmers. In the four rice growing seasons total paddy production was 71.86 ton from which farmers retained 11.32 ton paddy seeds for the next year cultivation. A considerable number of farmers observed the performance of the BRRI released recent rice varieties and among them 2418 farmers were motivated for the next year cultivation. Higher BCR was found in T. aman season than Boro season. Among the 4 locations higher BCR was found in Valluka upzilla of Mymensingh district followed by sharishabari upzilla of Jamalpur district, whereas the lowest BCR was found in Sadar upzilla of Jamalpur district. Higher productivity and higher profit came from BRRI dhan87 (in T. aman season) and BRRI dhan89 (In Boro season). On an average of 2 seasons and 4 locations, yield increase 0.672 T/ha (672 Kg/ha) and income rise 5789 Tk. /ha (775 Tk. /Bigha) after the project activities. Besides, plastic drums were given to each farmer of the demonstration plots to preserve paddy for the next year cultivation

Key words: Block farming, Focus group discussion, technology transfer, BCR, Baseline survey.

13. Implementation Status

Procurement:

Bangladesh Agricultural Research Council

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment	**Furniture** Executive table (2) Executive chair (2) File cabinet (2) Steel Almirah (1) Front chair (10) Computer table (2) Computer chair (2) **Computer & Accessories & other** Desktop Computer (2) Laser Jet Printer (2) UPS (off line) (2) Laptop (1) Scanner (1) Digital Camera (1) Photocopier(1)	 40,000.00 20,000.00 40,000.00 24,000.00 40,000.00 10,000.00 7,000.00 1,20,000.00 40,000.00 20,000.00 60,000.00 10,000.00 25,000.00 1,30,000.00	**Furniture** Executive table (2) Executive chair (2) File cabinet (2) Steel Almirah (1) Front chair (10) Computer table (2) Computer chair (2) **Computer & Accessories & other** Desktop Computer (2) Laser Jet Printer (2) UPS (off line) (2) Laptop (1) Scanner (1) Digital Camera (1) Photocopier(1)	 47,996.00 19,800.00 29,976.00 22,188.00 40,000.00 9,900.00 10,960.00 1,19,600.00 39,600.00 15,800.00 60,500.00 9,500.00 26,000.001,31,500.00	
(b) Lab &field equipment	-	-	-	-	
(c) Other capital items	-	-	-	-	

Bangladesh Wheat and Maize Research Institute:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment					
Desktop computer	01	60,000	01	60,000	100%
Laptop	01	60,000	01	60,000	100%
UPS	01	10,000	01	10,000	100%
Laser printer	01	20,000	01	20,000	100%
Digital Camera	01	25,000	01	25,000	100%
Scanner	01	10,000	01	10,000	100%
Computer table	01	5,000	01	5,000	100%
Computer Chair	01	3,500	01	3,500	100%

Bangladesh Agricultural Research Institute:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (no)	Financial (Tk)	Physical (no)	Financial (Tk)	
a.Office Equipment (Furniture)	**Total** Computer Table-1	**5000/-** 5000/-	**Total** Computer Table-1	**5000/-** 5000/-	
b) Lab & field eqipment	**Total** Desktop Computer-01 Laptop-01 Laser printer-01 Digital Camera-01 Scanner-01	**175000/-** 60000/- 60000/- 20000/- 25000/- 10000/-	**Total** Desktop Computer-01 Laptop-01 Laser printer-01 Digital Camera-01 Scanner-01	**175000/-** 60000/- 60000/- 20000/- 25000/- 10000/-	
c) Other capital items	-	-	-	-	
	Total (a+b+c)	**180000/-**	**Total (a+b+c)**	**180000/-**	

Bangladesh Institute of Nuclear Agriculture:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment 1. Desktop computer 2. Laser Printer 3. Scanner 4. UPS 5. Digital Camera 6. File cabinet 7. Computer Table 8. Computer Chair	 1 1 1 1 1 1 1 1	 60000.00 20000.00 10000.00 10000.00 25000.00 20000.00 5000.00 3500.00	 1 1 1 1 1 1 1 1	 98750.00 24900.00 20000.00 5000.00 3500.00	All procurement was completed in first year (2018-2019)
(b) Lab &field equipment	0	0	0	0	
(c) Other capital items	0	0	0	0	

Bangladesh Sugarcrop Research Institute:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment	05	75,000/-	05	75,000/-	Timely procure all equipments
(b) Lab & field equipment	06	1,21,500/-	06	1,21,500/-	
(c) Other capital items	-	-	-	-	

Bangladesh Livestock Research Institute:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment					Completed accordingly
Laptop	1	75000.00	1	73290.00	
Printer	1		1		
Digital camera	1	25000.00	1	24610.00	
Executive table	1	20000.00	1	19795.00	
(b) Lab &field equipment	-	-	-		
(c) Other capital items	-	-	-		

Bangladesh Fisheries Research Institute:

Description of equipment & capital items	PP target		Achievements		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	Completed accordingly
(a) Office equipment	-	-	-	-	
Digital camera	01	25000	01	25000	

Soil Resource Development Institute:

Description of equipment and capital items	Target		Achievement		Remarks
	Physical (No.)	Financial (BDT)	Physical (No.)	Financial (BDT)	
a. Office equipment					Procurement was done by RFQ following Public Procurement Rules (PPR) in 2018-19.
Desktop computer	01	60,000	01	60,000	
Laser Printer	01	20,000	01	20,000	
UPS (offline)	01	10,000	01	10,000	
Scanner	01	10,000	01	10,000	
Digital camera	01	25,000	01	25,000	
b. Lab & Field equipment					
c. Other capital items					
File cabinet	01	20,000	01	20,000	
Computer table	01	5,000	01	5,000	
Computer chair	01	3,500	01	3,500	

Cotton Development Board:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment	Desktop Computer-01 Laptop Computer-01 Digital Camera -01		Desktop Computer-01 Laptop Computer-01 Digital Camera -01	50,000 50,000/ 24000/	

Bangladesh Jute Research Institute:

Description of equipment and capital items	Target		Achievement		Remarks
	Physical (No.)	Financial (BDT)	Physical (No.)	Financial (BDT)	
a.Furniture					Procurement was done by RFQ following Public Procurement Rules (PPR) in 2018-19.
Executive table	01	20,000.00	01	19850.00	
Executive chair	01	10,000.00	01	10,000.00	
Visitor chair	05	4,000.00	05	4,000.00	
Sub-Total		**50,000.00**		**49,850.00**	
b.Equipments, Tools, etc.					
Desktop computer	01	50,000.00	01	50,000.00	
Laptop	01	50,000.00	01	49,950.00	
Laser Printer	01	15000.00	01	14,700.00	
Digital camera	01	25,000	01	25,000.00	
Scanner	01	6,000	01	6,000	
Sub-Total		**1,46,000.00**		**1,45,650.00**	
Total		**1,96,000.00**		**1,95,500.00**	

Bangladesh Rice Research Institute:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Physical (No.)	Financial (Tk.)	Physical (No.)	Financial (Tk.)	
(a) Office equipment (Furniture)	Executive Table - 01 Executive Chair - 01 Steel Almira – 01	**54000.00** 20000.00 10000.00 24000.00	Executive Table - 01 Executive Chair - 01 Steel Almira – 01	**54000.00** 20000.00 10000.00 24000.00	
(b) Lab &field equipment	Laptop - 01 UPS (offline) - 01 Laser Printer - 01 Digital Camera - 01 Scanner – 01	**119000.00** 60000.00 7000.00 20000.00 25000.00 7000.00	Laptop - 01 UPS (offline) - 01 Laser Printer - 01 Digital Camera - 01 Scanner – 01	**119000.00** 60000.00 7000.00 20000.00 25000.00 7000.00	

13.Establishment/renovation facilities: Not Applicable

Description of facilities	Newly established		Upgraded/refurbished		Remarks
	PP Target	Achievement	PP Target	Achievement	

14.Training/study tour/ seminar/workshop/conference organized:
Bangladesh Agricultural Research Council

Description	Number of participant			Duration (Days/weeks/ months)	Remarks
	Male	Female	Total		
(a) Training	06	04	10	02 days	BFRI
(b) Workshop	182	17	199	01 day & 04 nos.	BARC
(c) Coordination meeting	77	7	84	01 day & 03 nos.	BARC

Bangladesh Agricultural Research Institute:

Description	Number of participant			Duration (Days/weeks/ months)	Remarks
	Male	Female	Total		
(a) Training	-	-	-	-	-
(b) Workshop	-	-	-	-	-
(c) Others (if any) FGD	90	30	120	three quarter of a day	-

Bangladesh Sugarcrop Research Institute:

Description	Number of participant			Duration (Days/weeks/ months)	Remarks
	Male	Female	Total		
(a) Training	-	-	-	-	Collect information & knowledge sharing
(b) Workshop	-	-	-	-	
(c) Others (if any)/FGD	129	51	180	2-3 hours program	

Bangladesh Fisheries Research Institute:

Description	No. of Participants			Duration (days)	Remarks
	Male	Female	Total		
Training	06	04	10	02	
Workshop	-	-	-	-	

15. Financial and physical progress (Combined & Component wise)

Financial and physical progress (All Combined) at a glance

Fig in Tk

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	9652952	8013289	7864934	230013	98.15	
b. Field research/lab expenses and supplies	12070682	11182809	10977915	128998	98.17	
c. Operating expenses	3819295	3450571	3433464	40229.50	99.50	
d. Vehicle hire and fuel, oil & maintenance	2247784	2098928	2013268	70265	95.92	
e. Training/workshop/seminar etc.	706000	671000	623120	47880	92.86	
f. Publications and printing	691637	219310	125560	93750	57.25	
g. Miscellaneous	824900	721432	685797	22645	95.06	
h. Capital expenses	2091494	2093789	2090994	2295	99.87	
Total	**32104744**	**28451128**	**27815052**	**636075.5**	**97.76**	

Bangladesh Agricultural Research Council

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	4913291.00	3698529.00	3565692.00	132837.00	96.41	
b. Field research/lab expenses and supplies	453000.00	308000.00	298000.00	10000.00	96.75	
c. Operating expenses	420937.00	356889.00	346876.00	10013.00	97.19	
d. Vehicle hire and fuel, oil & maintenance	416715.00	416715.00	409647.00	7068.00	98.30	
e. Training/workshop/seminar etc.	485000.00	485000.00	472120.00	12880.00	97.34	
f. Publications and printing	448637.00	50000.00	0.00	50000.00	00	
g. Miscellaneous	179100.00	154100.00	141600.00	12500.00	91.99	
h. Capital expenses	583320.00	583320.00	583320.00	0.00	100	
Total	**7900000.00**	**6052553.00**	**5817255.00**	**235298.00**	**96.11**	

Bangladesh Wheat and Maize Research Institute:

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	525530	529460	529460		100	
b. Field research/lab expenses and supplies	840000	816061	816061		100	
c. Operating expenses	295000	214214	214214		100	
d. Vehicle hire and fuel, oil & maintenance	160000	95224	49648	45576	52	
e. Training/workshop/seminar etc.	0				0	
f. Publications and printing	25000	25000		25000	0	
g. Miscellaneous	60970	47206	42206	5000	89	
h. Capital expenses	193500	193500	193500		100	
Total	**2100000**	**1920665**	**1845089**	**75576**		

Bangladesh Agricultural Research Institute:

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure (Upto April 2021	Balance/ Unspent	Physical progress %	Reasons for deviation
a. Contractual staff salary	519480	399320/-	387870/-	11450/-	97.13	The amount which was not received wii be used for salary and honourariu m
b. Field Research/Lab expenses and supplies	1180000	1180000/-	1180000/-	0/-	100	
c. Operating expenses	330000	330000/-	319427.50/-	10572.50	96.78	
d. Vehicle hire and fuel, oil & maintenance	190000	190000/-	190000/-	0		In adverse situation vehicle was more used
e. Training/workshop/ seminar etc.	0		0/-	0/-		
f. Publications & printing	25000	25000/-	25000/-	0/-		
g. Miscellaneous	75520	75520/-	75520/-	0/-	100	
h. Capital expenses	180000	180000/-	180000/-	0	100	
Total	**2500000**	**23,79,840/-**	**2357817.50**	**22022.50**	**99.07**	

Bangladesh Institute of Nuclear Agriculture:

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	425880	309100	309100	0		
b. Field research/lab expenses and supplies	1109896	1109896	1109896	0	100	
c. Operating expenses	362124	357422	357422	0		
d. Vehicle hire and fuel, oil & maintenance	182650	175750	175750	0		
e. Training/workshop/seminar etc.	0	0	0	0	0	
f. Publications and printing	25000	25000	25000	0	100	
g. Miscellaneous	42300	34825	33940	885		
h. Capital expenses	152150	152150	152150	0	100	
Total	**2300000**	2164143	**2163258**	885		

Bangladesh Sugarcrop Research Institute:

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	354590	298070	298070	0		
b. Field research/lab expenses and supplies	1162000	1175143	1175143	0		
c. Operating expenses	220000	201784	201755	29		
d. Vehicle hire and fuel, oil & maintenance	92000	80000	80000	0		
e. Training/workshop/seminar etc.	0	0	0	0		
f. Publications and printing	15000	24900	24900	0		
g. Miscellaneous	59910	32401	32401	0		
h. Capital expenses	196500	196500	196500	0		
Total	**2100000**	**2008798**	**2008769**	**29**		

Bangladesh Livestock Research Institute:

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance / unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	406230.00	366569.00	280910.00	85659.00	69.15	
b. Field research/lab expenses and supplies	1132222.00	1060761.00	1022700.00	38061.00	90.33	
c. Operating expenses	362387.00	347500.00	337106.00	10394.00	93.02	
d. Vehicle hire and fuel, oil & maintenance	188996.00	177500.00	188721.00	-11221.00	99.85	
e. Training/workshop/seminar etc.	0.00	0.00	0.00	0.00	00	
f. Publications and printing	25000.00	18750.00	0.00	18750.00	00	
g. Miscellaneous	67460.00	63095.00	58000.00	5095.00	85.98	
h. Capital expenses	117705.00	120000.00	117705.00	2295.00	100	
Total	**2300000.00**	**2154175.00**	**2005142.00**	**149033.00**	**87.18**	

Bangladesh Fisheries Research Institute:

Items of expenditure/activities	Total approved budget (Tk.)	Fund received (Tk.)	Actual Expenditure (Tk.)	Balance/ unspent (Tk.)	Physical progress (%)
Contractual Staff Salary	371000	315100	315033	67	43.84
Field Research	1895000	1810000	1809890	110	100
Operating Expenses	225000	201700	201619	81	90.00
Vehicle Hire and Fuel, Oil	155000	129000	128739	261	60.00
Training/Workshop etc.	40000	40000	40000	0	100
Publications and printing	25000	0	0	0	0
Miscellaneous	64000	50450	50400	50	80.00
Capital Expenses	25000	25000	25000	0	100
	2800000	2571250	2570681	569	

Soil Resource Development Institute:

Items of expenditure	Total approved budget	Fund received	Actual expenditure	Balance/ Unspent	Physical progress (%)	Reasons for deviation
	BDT					
a. Contractual staff salary	5,68,140.00	4,70,950.00	4,70,950.00	0.00	100	
b. Field research	9,08,000.00	7,48,000.00	6,68,000.00	80,000.00	89.3	
c. Operating expenses	5,40,000.00	4,50,000.00	4,48,495.00	1,505.00	99.7	
d. Vehicle hire and fuel, oil & maintenance	2,20,000.00	1,90,000.00	1,90,000.00	0.00	100	
Training/ Workshop/ Seminar	70,000.00	35,000.00	0.00	35,000.00	00	
f. Publication & Printing	65,000.00	32,500.00	32,500.00	0.00	100	
g. Miscella-neous	85,360.00	72,680.00	72,680.00	0.00	100	
h. Capital expenses	1,53, 500.00	1,53,500.00	1,53,500.00	0.00	100	
Total	**26,10,000.00**	**21,52,630.00**	**20,36,125.00**	**1,16,505.00**	**94.6**	

Cotton Development Board:

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
a. Contractual staff salary	428410	450740	450668	00	100%	
b. Field research/lab expenses and supplies	1173000	1000042	999945	827	100%	
c. Operating expenses	450000	414400	422607.5	00	100%	
d. Vehicle hire and fuel, oil & maintenance	137000	135776	147000	00	100%	
e. Training/workshop/seminar etc.	111000	111000	111000	00	100%	
f. Publications and printing	13000	00	00	00	100%	
g. Miscellaneous	62590	62590	43000	00	100%	
h. Capital expenses	125000	125000	124500	00	100%	
Total	2500000	2299548	2298720.5	827	100%	

Bangladesh Jute Research Institute:

Items of expenditure	Total approved budget	Total fund received	Actual expenditure	Balance/ Unspent	Physical progress (%)	Reasons for deviation
	BDT					
a. Contractual staff salary	467805	467805	467805	0	100%	Rest of the money were refunded
b. Field research	1511062	1191778	1191778	0	80%	
c. Operating expenses	376210	349238	349238	0	93%	
d. Vehicle hire and fuel, oil & maintenance	183423	133863	133863	0	73%	
e. Training/ Workshop/ Seminar	0	0	0	0	0%	
f. Publication & Printing	25,000	18160	18160	0	73%	
g. Miscella-neous	41,000	41,000	41,000	0	100%	
h. Capital expenses	195500	195500	195500	0	100%	
Grand Total	**2,800,000**	**23,97,344**	**23,97,344**	0.00	87%	

Bangladesh Rice Research Institute:

Items of expenditure/activities	**Total approved budget**	**Fund received**	**Actual expenditure (Up to June 2021)**	**Balance/ unspent**	**Physical progress (%)**	**Reasons for deviation**
a. Contractual staff salary	672596	590866	672596	0		
b. Field research/lab expenses and supplies	706502	783128	706502	0		
c. Operating expenses	237637	222722	230002	7635		
d. Vehicle hire and fuel, oil & maintenance	322000	368200	313000	28581		
e. Training/workshop/seminar etc.	0	0	0	0		
f. Publications and printing	0	0	0	0		
g. Miscellaneous	86690	80090	86690	0		
h. Capital expenses	169319	169319	169319	0		
Total	2194744	2214325	2178109	36216		

16. **Achievement of Sub-project by objectives (Tangible form): Technology generated/developed**

Bangladesh Agricultural Research Council

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
i. To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level.	1. Coordination and Transferring Technology 2.Questionnaire developed for baseline study and technology data collection by PI's enumarators Conducted workshop, meeting, monitoring and evaluation for rapid and directly transferred economically viable technologies of crops, livestock and fisheries to farmers' level. Collected data of all technologies from all NARS institutes 3..Monitoring and evaluation 4. Preparation for publication 5.Documents submission	Coordinated with 10 components :WRC & HRC-BARI, BINA, BSRI, BLRI & BFRI Organised meetings with 10 PI'S and 10 PI'S of 10 components Recruited 1 SSO, 1 Accountant and 1Expert Conducted 1 inception workshop Completed procurement according to guidelines Monitored and supervised selected locations for 10 components Conducted 3 workshops of Progress review for 10 components One Evaluated report One compiled PCR with the assistance of an Expert 3 Minutes of knowledge sharing meeting, data base survey report • Conducted 3 workshops • Productivity / production increased by transferring 63 technology regarding crop, fish. Feed, livestock etc. • Farmers Income increased with coordination of 10 Institutes (BWMRI, BARI, BINA, BSRI, BLRI BFRI, SRDI, CBD, BJRI, BRRI) through generated Rapid Technology Transfer (RTT) model 41 Field monitoring and	Generated 63 economicaly viable technology transter rapidly 2.Knowledge gain, 3. Farmers Motivation 3.Replace modern varity with traditional varity 4. strengthened research and extension linkage

		evaluated profitability analysis(BCR>1) of 10 Institutes (BWMRI, BARI, BINA, BSRI, BLRI BFRI, SRDI, CBD, BJRI, BRRI) and reports Under process Book-1, Journal-2, Booklet-1, leaflet -1 Half yearly report-3 Annual progress report-3, Monitoring report SoE-36,Draft PCR-1	
ii. To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes.	1. Questionnair developed for technology data collection by enumarators 2. Technology Data entry and analysis 3. Preparing report/article on Collecting technology	Technology analysis of 10 Institutes BWMRI, BARI, BSRI, BRRI, BLRI, BFRI, CDB, BINA, BJRI, SRDI from their inception 10 Institutes BWMRI, BARI, BSRI, BRRI, BLRI, BFRI, CDB, BINA, BJRI, SRDI (*PCR*)	Knowledge gain Replace modern varity with traditional variety

Bangladesh Wheat and Maize Research Institute:

General/specific objectives of the sub-project	**Major technical activities performed in respect of the set objectives**	**Output (i.e. product obtained, visible, measurable)**	**Outcome (short term effect of the research)**
To transfer some selected BWMRI generated matured/promising technologies to farmers' level	Block demonstration at farmers' field	44 farmers learned about improved wheat production technologies. New wheat varieties (BARI Gom 29, BARI Gom 30, BARI Gom 32, BARI Gom 33 and WMRI Gom 1) have been disseminated among the project farmers and beyond.	Farmers observed the economic benefit of modern wheat varieties and other technologies. Availability of quality wheat seed is increased.

Bangladesh Agricultural Research Institute:

General /specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output (i.e) product obtained, visible, measurable)	Outcome (short term effect of the research)
Propagules/Saplings production for distribution in the farmers' field.	About 25 released fruit varieties of BARI have targeted to produce.	Maximum no. of propagules/saplings (app. 6000) have produced in fruit research field, HRC, BARI, Gazipur, for distribution in the farmers' field.	The saplings/ propagules which have targeted are BARI Aam-3, 4, 8, 11, BARI litchu-3, BARI Kola-1, 2, 3, 4, 5, BARI Lebu-1, 2, 3, 5 BARI Kagzi lebu-1, BARI Peyeara -2, BARI amloki-1, BARI Safeda 2, BARI dragon fall-1, BARI kamranga-1, BARI Narikel-1, 2, BARI Batabilebu-3, BARI Malta-1, BARI Jamrul-1 and BARI Amra-2 have also produced.
To transfer some matured/promising technologies	25 matured technologies have targeted to transfer in the farmers' field.	App 6000 propagules have also produced to fulfill the objectives.	The targeted matured technologies (25 fruit varieties) have also transferred in the farmers' field.
To extend the fruit varieties round the year and increasing fruit production to mitigate the nutritional deficiency of the people of Bangladesh	The 9 fruit varieties which capable of round the year production have targeted to produce.	Extra 2000 propagules/saplings have produced in fruit research field, HRC, BARI, Gazipur, for distribution in the farmers' field.	BARI Aam-11, BARI kola-1, 2, 3, 4, 5, BARI Peyeara -2, BARI Narikel-1, 2,

Bangladesh Institute of Nuclear Agriculture:

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level	BINA released promising technologies were introduced followed by two new cropping patterns technology has been selected and implemented	Yield and profit increased	BINA released promising technologies were introduced followed by two new cropping patterns as in Sadar, Mymensingh one cropping pattern like early T. aman → Mustard → Boro against the existing T. aman→ fallow→ Boro cropping pattern; and in Madhukhali, Faridpur early T. aman → Lentil → Aus against T. aman → fallow/onion → Jute/Sesame cropping pattern technology has adopted by the selected farmers
To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes	i)Base line survey has been done of 2 research areas ii)Cost benefit analysis has been calculated and compare with previous Base line survey	More profit earn by adopting the technologies.	Farmers profit more than they earn before.
To transfer recently generated BINA technologies to farmers of some selected areas of Bangladesh	36 adaptive trials conducted at 2 research sites	i) Farmers gained good knowledge in production by using these technologies. ii) Linkage among researchers, farmers, extension personnel and others have been improved. iii)farmers' preferred transferred modern economic related technologies for improving their livelihood	iii) Technology have been transferred ii)Technology have been transferred to total in 36 farmers' field ii)25% Production will Increase, increase farmers income.
To determine the benefit cost analysis of using selected technologies at farmers' level.	Benefit cost analysis has been calculated of 36 trials	Recommended technology packages - Increase production up to (25) %	Benefit cost leads from 1.47 to 1.57

Bangladesh Sugarcrop Research Institute:

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output (i.e. product obtained, visible, measurable)	Outcome (short term effect of the research)
To transfer chewing cane & gur (molasses) varieties among the participating sugarcane farmers for increasing yield through intercropping and analysis of BCR	In three cropping seasons BSRI released latest chewing cane BSRI akh 42 and gur cane BSRI akh 45 varieties were demonstrated in 56 bighas of land with 32 farmers'. A total of 02 sugarcane varieties with different intercropping were demonstrated.	**Yield increase:** Chewing cane: 59.27 t ha^{-1} Gur variety: 45.31 t ha^{-1}	BSRI released latest sugarcane varieties BSRI akh 42 and BSRI akh 45 were transferred to farmers in the different upzila of Sirajgonj district.
	Do	**Income rise:** Chewing cane: 2, 96,350 Tk. ha^{-1} Gur Variety: 1, 58,585 Tk. ha^{-1}	Popularization of profitable technology was increased.
	Do	Profitable technologies (BSRI akh 42 and BSRI akh 45 with systematic sequential intercropping) were directly transferred to the farmer field.	Increased linkage of researchers with farmers, extension personnel and policy makers.

Bangladesh Livestock Research Institute:

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output (i.e. product obtained, visible, measurable)	Outcome (short term effect of the research)
▪ To validate and transfer selected BLRI generated matured technology (dole silage) to farmer's level. ▪ To determine the cost benefit analysis by using selected technologies at farmers' level	-High yielding BLRI napier-4 fodder cultivation - Dole silage preparation - Feeding trial/demonstration on dairy cows:	Farmers are able to practice the technology in the field condition. Reduce feed cost 89.00 Tk./day/dairy cow in rainy season and as well as increase milk production 2.91 L/day/cow.	Feed cost will be reduced through using the technology as well as increased milk production.

Bangladesh Fisheries Research Institute:

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output (i.e. product obtained, visible, measurable)	Outcome (short term effect of the research)
▪ To validate & transfer of selected BFRI (Fisheries) generated promising technology to farmers field ▪ To determine the cost benefit and problem of using selected technologies at farmers level	-Culture of pabda & Gulsha with Rui - Culture of Shing in pond	Farmers are able to practice the improved technologies of fish culture in their pond	Fish production will be increased through using these technologies

Soil Resource Development Institute

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level	A package of production technology has been selected and implemented	Yield and profit increased	Updated Upazila Nirdeshika based balanced fertilizer dose in Boro (BRRIdhan58)-Fallow-T. Aman (BRRIdhan72) cropping pattern technology has adopted by the selected farmers
To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes	i)Base line survey has been done of 4 research areas ii)Cost benefit analysis has been calculated and compare with previous Base line survey	More profit earn by adopting the technologies.	Farmers profit more than they earn before.
To transfer recently generated one package of SRDI technologies to the farmers of some selected areas of Bangladesh	24 adaptive trials conducted at 4 research sites	i) Farmers gained good knowledge in production by using these technologies.	iii)One package of technology have been transferred ii)Technology have

		ii)Linkage among researchers, farmers, extension personnel and others have been improved. iii)farmers' have been preferred transferred modern economic related technologies for improving their livelihood	been transferred to total in 24 farmers' field ii) 9-18% Production will Increase, increase farmers income.
To determine the benefit cost analysis of using selected technologies at farmers' level.	Benefit cost analysis has been calculated of 24 trials	Recommended technology packages - Increase production up to (9-18) %	Benefit cost leads from 1.12 to 1.57

Cotton Development Board:

General/specific objectives of the sub-project	**Major technical activities performed in respect of the set objectives**	**Output(i.e. product obtained, visible, measurable)**	**Outcome(short term effect of the research)**
To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level	A package of production technology has been selected and implemented	Yield and profit increased.	A profitable package cotton production technology has adopted by the selected farmers
To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes	i)Base line survey has been done of 3 research areas ii)Cost benefit analysis has been calculated and compare with previous Base line survey	More profit earn by adopting the technologies.	Farmers profit more than they earn before.
To transfer recently generated one package of CDB technologies to cotton farmers of some selected areas of Bangladesh	42 adaptive trials conducted at 3 research sites	i)Farmers gained good knowledge in Cotton production by using these technologies. ii)Linkage among researchers, farmers, extension personnel and others have been improved. iii)farmers' have been prefer transferred modern economic related technologies for improving their	iii)One package of technology have been transferred ii)Technology have been transferred to total 42 farmers ii)1 ton/ha seed cotton production will increase Increase Production increase farmers income.

		livelihood	
To determine the benefit cost analysis of using selected technologies at farmers' level.	Benefit cost analysis has been calculated of 42 trials	Recommended technology packages - Increase cotton production/ha up to (40-50) %	Benefit cost leads from 1.27 to 1.63

Bangladesh Jute Research Institute

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level	Seed production technology of Tossa Pat-8 (Robi-1) and BJRI *Kenaf* (HC-95) has been selected and implemented	Yield and profit increased.	A profitable package of production technology has adopted by the selected farmers
To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes	i)Base line survey has been done of 2 research areas ii)Cost benefit analysis has been calculated and compare with previous Base line survey	More profit earn by adopting the technologies.	Farmers profit more than they earn before.
To transfer recently generated Seed production technology of Tossa Pat-8 (Robi-1) and BJRI *Kenaf* (HC-95) to the farmers of some selected areas in Bangladesh	42 adaptive trials conducted at 2 research sites	i)Farmers gained good knowledge in seed production by using these technologies. ii)Linkage among researchers, farmers, extension personnel and others have been improved. iii)farmers' have been preferred transferred modern economic related technologies for improving their livelihood	iii) Seed production technology of Tossa Pat-8 (Robi-1) and BJRI *Kenaf* (HC-95) have been transferred ii)Technology have been transferred to total 16 farmers ii) seed production will increase, increase farmers income.
To determine the benefit cost analysis of using selected technologies at farmers' level.	Benefit cost analysis has been calculated of 16 trials	Recommended technology packages - Increase jute production up to (15-22) %	Benefit cost leads from 1.72 to 2.09

Bangladesh Rice Research Institute

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
(1) To increase the production of rice-based cropping system through dissemination of modern rice varieties (HYV) in T. Aman and Boro season.	In four rice growing seasons BRRI released latest T. aman and Boro rice varieties were demonstrated in 24 bighas of land with 24 farmers'. A total of 14 rice varieties were demonstrated	Yield increase: 0.672 T/ha (672 Kg/ha).	BRRI released latest rice varieties BRRI dhan70, 71, 75, 79, 80 and 87 (T. aman) and BRRI dhan58, 67, 81, 84, 88, and 89 (Boro) were transferred to farmers in selective areas.
		Income rise 5789 Tk. /ha (775 Tk. /Bigha).	Popularization of profitable technology was increased.
		Profitable technologies (BRRI released latest rice varieties both T. aman & Boro) were transferred to farmer directly.	Increased linkage of Researchers with farmers, Extension personnel and Policy makers.

14 :Information/knowledge generated/policy generated:

Bangladesh Agricultural Research Council

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
i. To transfer NARS institutes generated economically viable technologies rapidly for higher agricultural productivity and profitability with solving problems at farmers' level.	1. Coordination and Transferring Technology 2.Questionnair developed for baseline study and technology data collection by PI's enumerators Conducted workshop, meeting, monitoring and evaluation for rapid and directly transferred economically viable technologies of crops, livestock and fisheries to farmers' level. Collected data of all technologies from all NARS institutes 3..Monitoring and evaluation 4. Preparation for publication 5.Documents submission	Coordinated with 10 components :WRC & HRC- BARI, BINA, BSRI, BLRI & BFRI Organised meetings with 10 PI'S and 10 PI'S of 10 components Recruited 1 SSO, 1 Accountant and 1Expert Conducted 1 inception workshop Completed procurement according to guidelines Monitored and supervised selected locations for 10 components Conducted 3 workshops of Progress review for 10 components One Evaluated report One compiled PCR with the assistance of an Expert 3 Minutes of knowledge sharing meeting, data base survey report Conducted 3 workshops Productivity / production increased by transferring 63 technology regarding crop, fish. Feed, livestock etc. Farmers Income increased with coordination of 10 Institutes (BWMRI, BARI, BINA, BSRI, BLRI BFRI, SRDI, CBD, BJRI, BRRI) through generated Rapid Technology Transfer (RTT) model 41 Field monitoring and evaluated profitability analysis(BCR>1) of 10 Institutes (BWMRI, BARI, BINA, BSRI, BLRI BFRI, SRDI, CBD, BJRI, BRRI) and reports Under process Book-1, Journal-2, Booklet-1, leaflet -1 Half yearly report-3 Annual progress report-3, Monitoring report SoE-36,Draft PCR-1	1.Matured 63 economicaly viable technology transter rapidly through RTT Model 2.Knowledge gain, 3. Farmers Motivation 4.Replace modern varity with traditional varity 5. strengthened research and extension linkage
ii. To assess the data base scenarios of transferred and non-transferred technologies generated by the researchers from the inception of NARS institutes.	1. Questionnair developed for technology data collection by enumarators 2. Technology Data entry and analysis 3. Preparing report/article on Collecting technology	Technology analysis of 10 Institutes BWMRI, BARI, BSRI, BRRI, BLRI, BFRI, CDB, BINA, BJRI, SRDI from their inception 10 Institutes BWMRI, BARI, BSRI, BRRI, BLRI, BFRI, CDB, BINA, BJRI, SRDI (*PCR*)	Knowledge gained Replace modern varity with traditional variety

Bangladesh Sugarcrop Research Institute:

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output	Outcome (short term effect of the research)
To transfer chewing cane & gur (molasses) varieties among the participating sugarcane farmers for increasing yield through intercropping and analysis of BCR	Replacement of existing chewing cane and gur varieties by newly developed BSRI varieties in project area	Newly released sugarcane variety BSRI akh 42 and BSRI akh 45 gives higher yield (about 27 %) as well as higher benefits from sugarcane cultivation.	Sugarcane production and farmers' income increased.
	Replacement of existing mixed cropping practices by systematic sequential intercropping	BSRI akh 42 and BSRI akh 45 with onion/potato/cabbage-mungbean sequential intercropping gives higher yield (about 45 %) as well as higher benefits from sugarcane farming	cane yield & adjusted cane yield increased as well as farmers income raised

Cotton Development Board

General/specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output	Outcome(short term effect of the research)
To transfer recently generated one package of CDB technologies to cotton farmers of some selected areas of Bangladesh ii) To determine the benefit cost analysis of using selected technologies at farmers' level.	Base line survey and Recruitment of contractual stuff Site selection, Farmers selection, Land preparation, lay-out and Experiment set- up, Ii) Data collection, analysis Preparation of reports (quarterly, half yearly and annual	One package of technology will be transferred Technology will be transferred to total 24 farmers 1 ton/ha seed cotton production will increase Increase Production increase farmers income.	Farmers will gain good knowledge in Cotton production by using these technologies. -Linkage among researchers, farmers, extension personnel and others will be improved. -farmers' will prefer transferred modern economic related technologies for improving their livelihood

17.**Materials Development/Publication made under the Sub-project:**

Bangladesh Agricultural Research Council

Publication	Number of publication		Remarks (e.g. paper title, name of journal, conference name, etc.)
	Under preparation	Completed and published	
Technology bulletin/ booklet/leaflet/flyer etc.	2		Booklet: *Transfer and monitoring of some selected economically profitable technology at farmers level* Leaflet:*Rapid Technology Transfer (RTT) Model*
Journal publication	2		1. *Transferring NARS generated selected Technology Rapidly and economically at farmers level in Bangladesh* 2. A*ssessment of transferred and non transferred technologies generated by the researchers from the inception of NARS Institutes*
Book	1		*Transfer of some selected economically profitable technology at farmers level* (In Bangla)

Bangladesh Agricultural Research Institute

Publication	Number of publication		Remarks (e.g. paper title, name of journal, conference name. etc.)
	Under preparation	Completed and published	
Technology bulletin/booklet/leaflet/flyer etc.		01	
Journal publication			
Video clip/TV program	7 Video clip	Completed	
News Paper/ Popular Article			
Other publications, if any			

Bangladesh Livestock Research Institute

Publication	Number of publication		Remarks (e.g. paper title, name of journal, conference name, etc.)
	Under preparation	Completed and published	
Technology bulletin/ booklet/leaflet/flyer etc.		Leaflet published	
Journal publication			
TV program/Video clip		Dole silage preparation	
News Paper/Popular Article			
Other publications, if any			

Bangladesh Fisheries Research Institute

Publication	Number of publication		Remarks (e.g. paper title, name of journal, conference name, etc.)
	Under preparation	Completed and published	
Technology bulletin/ booklet/leaflet/flyer etc.		Leaflet published	
Journal publication			
TV program		**Mati-O-manush**	
News Paper/Popular Article			
Other publications, if any			

18. Description of generated Technology/knowledge/policy:

i. Technology Fact Sheet (title, introduction, description, suitable location/ecosystem, benefits, name and contact address of author)

Bangladesh Agricultural Research Council

Technology Factsheet

Title of the Technology: ***Rapid Technology Transfer (RTT) Model***

Characteristics of technology:

- Technology can be transferred **directly** to the **farmers at** the field level for dissemination.
- **Immediate** after generation of the technology can be transferred to the farmers' level in shortest time/ **rapidly**.
- Only **profitable t**echnology selected by the trial can be transferred to the extension department (DAE, DLS, DoF) for dissemination.
- **All technologies** (crop, fish, livestock/animal, forest etc.) generated by 13 NARS institutes can be transferred.

Description of the Technology:

- TTMU, BARC will **coordinate** technology transfer activity along with 13 NARS institutes.
- **Modern technologies** have to be selected instead of old/ancient technologies as per present need.
- **Farmers'** have to be selected with the consultation of extension departments (DAE, DLS, DoF) to transfer technology directly to the farmers.
- Trial plot of **selected farmers** have to be selected in **suitable areas** through technology generator.
- **Farmer's training** or FGD have to be conducted through technology generator for rapid transfer.
- **Trial plots** of selected farmers in suitable areas can be monitored by TTMU, BARC at any time.
- Profitability of technology has to be determined through **economic analysis**.
- Seeing the **profitability of technology**, neighboring farmers and farmers of different areas of the country may be motivated.
- Arranging meetings (crops, livestock, and fisheries) with the concerned scientists and officers of extension departments (DAE, DLS, DoF), TTMU, BARC have to recommend/ suggest technologies to set up **demonstration** for **countrywide dissemination**.

Suitable Area/Location: All over Bangladesh.

Benefit of the Technology:

- After generation of technologies from 13 NARS institutes can be transferred to the farmers' level **directly and rapidly** for **increasing farm productivity**.
- Seeing the **profitability** of the modern technology than traditional technology, the neighboring farmers and farmers of different areas of the country will be motivated and thus it is possible to **disseminate** technologies countrywide.
- It is possible to transfer technologies generated from **PBRG, CRG, NATP-2** and other institutes through this Rapid Technology Transfer (RTT) Model directly and rapidly to the farmers at field level for countrywide dissemination.

Influence of technology (human health, soil and environment): None

Name and Address of the Researcher:

Dr. Fauzia Yasmin, Director (TTMU) and Coordinator (PBRG ID-005), BARC, Farmgate, Dhaka -1215. Phone: 02222242632 (off), Mob: 01711017571, e-mail: f.yasmin@barc.gov.bd

ii. Effectiveness in Policy Support (if applicable): Not Applicable

19. Technology/Knowledge generation/Policy Support (as applied):

i. Immediate impact on generated technology (commodity & non-commodity)

Bangladesh Agricultural Research Council

Through RTT model immediate generated technology can transfer at farmers' level directly.

Bangladesh Wheat and Maize Research Institute

Through RTT model immediate generated technology can transfer at farmers' level directly.

Bangladesh Agricultural Research Institute

Through RTT model immediate generated technology can transfer at farmers' level directly.

Bangladesh Institute of Nuclear Agriculture

Through RTT model immediate generated technology can transfer at farmers' level directly.

Bangladesh Sugarcrop Research Institute

Sugarcane is a cash crop and sugarcane farming with systematic sequential intercropping will accelerate agricultural growth and income and there by advantage for transforming a prosperous rural farming. It will improve livelihood through income enhancement, labor utilization, employment generation, family nutrition and improvement of soil health and resource pattern.

Bangladesh Livestock Research Institute

- Dole silage technology reducing feed cost 89.00 Tk./day/dairy cow in rainy season and as well as increasing milk production 2.91 lt./day/cow
- The benefit cost efficiency of non-silage and silage group were 1:1.68 and 1:1.20, respectively.
- Increases production and farmers' income.
- Creates employment opportunities for day labor

Bangladesh Fisheries Research Institute

- The average fish production of Pabda & Gulsha culture ponds in the project site was 5000 kg/ha before the research intervention. After intervention, production increased on average to 8395 kg among trial farmers in 5-8 months rearing, showing an increase in production of 67.90%. Of the fish production, 4% was consumed by the household and 96% was sold for cash.
- Before research intervention, contribution of fish culture to farm and house income was negligible being only 15-18%. After research intervention, the contribution of fish culture to farm and house hold income on average increase to 45%, indicating a three times increase as a result of incorporation of aquaculture into the farming system
- Increases production and farmers' income.
- Creates employment opportunities for day labours
- Through RTT model immediate generated technology can transfer at farmers' level directly.

Soil Resource Development Institute

Through RTT model immediate generated technology can transfer at farmers' level directly.

Cotton Development Board

Through RTT model immediate generated technology can transfer at farmers' level directly.

Bangladesh Jute Research Institute

Through RTT model immediate generated technology can transfer at farmers' level directly.

Bangladesh Rice Research Institute

Through RTT model immediate generated technology can transfer at farmers' level directly.

ii. Generation of new knowledge that help in developing more technology in future

Bangladesh Agricultural Research Council

In this project only 63 technologies transferred at farmers' level but there are many need based technology available to transfer in future.

Bangladesh Wheat and Maize Research Institute

There are many need based technology available to transfer in future.

Bangladesh Agricultural Research Institute

There are many need based technology available to transfer in future.

Bangladesh Institute of Nuclear Agriculture

There are many need based technology available to transfer in future.

Bangladesh Sugarcrop Research Institute

Two to three crops easily growing with sugarcane by utilizing same units of land to increase farm income and family consumption as well as fulfill family nutrition. There are many need based technology available to transfer in future.

Bangladesh Livestock Research Institute

- Cultivation of newly BLRI released fodder variety can popularize in the farmers field.
- Cultivation BLRI released fodder varieties can increase dairy productivity.
- There are many need based technology available to transfer in future.

Bangladesh Fisheries Research Institute

High valued fish like as Pabda, Gulsha and Shing rearing under semi-intensive culture system. There are many need based technology available to transfer in future.

Soil Resource Development Institute

There are many need based technology available to transfer in future.

Cotton Development Board

There are many need based technology available to transfer in future.

Bangladesh Jute Research Institute

There are many need based technology available to transfer in future.

Bangladesh Rice Research Institute
There are many need based technology available to transfer in futur

iii. Technology transferred that help increased agricultural productivity and farmers' income

Bangladesh Agricultural Research Council
All type of crops, livestock, fisheries etc.(commodity & non-commodity) technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Wheat and Maize Research Institute
All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Agricultural Research Institute
All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Institute of Nuclear Agriculture
All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Sugarcrop Research Institute
BSRI released modern sugarcane varieties such as BSRI akh 42 as chewing cane and BSRI akh 45 as gur variety with systematic sequential intercropping increased agricultural productivity as well as raised farmers' income.All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Livestock Research Institute
High yielding fodder cultivation and dole silage preparation in farm condition. All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Fisheries Research Institute
All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Soil Resource Development Institute
All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Cotton Development Board
A CDB has generated 4 technologies those are 1. CB-14 variety, 2.application of mepiquat chloride 3 removal of vegetative branches and 4. De-topping at 90 DAS (Day after sowing). These four technologies have the potentiality to increase per hectare
yield.)

Bangladesh Jute Research Institute

All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

Bangladesh Rice Research Institute

BRRI released new rice varieties such as BRRI dhan 52, 70, 71, 72, 73, 75, 79 and 87 for T.aman season and BRRI dhan50, 58, 67, 74, 81, 84, 86, 88 and 89 for Boro season. All type of commodity & non-commodity related technology transferred can help increased agricultural productivity and farmers' income

iv. Policy Support

Bangladesh Agricultural Research Council

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Wheat and Maize Research Institute

The project may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Agricultural Research Institute

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Institute of Nuclear Agriculture

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Sugarcrop Research Institute

The traditional sugarcane farming systems have been replaced by the establishment of modern sugarcane varieties with commercial cash crop intercropping systems that have been promoted by governments and as integrated farming are economically and environmentally sound. The project may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable

farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Livestock Research Institute

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Fisheries Research Institute

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Soil Resource Development Institute

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Cotton Development Board

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Jute Research Institute

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

Bangladesh Rice Research Institute

The project " **Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** may be extended by the government through proper revision for continuity of the upcoming matured economically and environmentally sound profitable farmers' need based technologies to transfer at the field level quickly through Rapid Technology Transfer (RTT) model.

20. Information regarding Desk and Field Monitoring:

Bangladesh Agricultural Research Council

i. **Desk Monitoring [description & output of consultation meeting, monitoring workshops/seminars etc.):** Year round

ii. Field Monitoring (date& no. of visit, name and addresses of team visit and output):

SL.No	Date of visit	No. of visit	Name of team visit	Address of team visit	output
1. BWMRI	a) 9-11.02.19 b) 21-23.12.19	**2**	1. Dr. Fauzia Yasmin, Director (TTMU) 2. Dr. Zakiah Rahman Moni, SSO (TTMU) 3. Dr. Rathi Mahamud Morshed, SSO, Project ID-005, NATP-2	a) Thakurgaon b) Dinajpur	Satisfactory
2. BARI	a) 29.09.18, 29-31.05.19 b) 10-12.12.19 c) 20-23.12.20 d) 12-15.12.21	**5**	**Do**	a) Shariatpur, Barishal b) Barishal c) Barishal d) Barishal	**Do**
3. BINA	a) 17.01.19 b) 15.03.20, 17.10.19 c) 01.03.21, 02.02.21 d) 07.12.21	**6**	**Do**	a) Mymensingh b) Mymensingh, Mymensingh c) Faridpur, Mymensingh d) Mymensingh	**Do**
4. BSRI	a) 13.01.19 b) 20.10.19, 05.03.20 c) 8-9.02.21 d) 08.11.21	**5**	**Do**	a) Sirajgonj b) Sirajgonj, Sirajgonj c) Sirajgonj d) Sirajgonj	**Do**
5. BLRI	a) 31.01.19 b) 22.10.19, 12.03.20 c) 10-11.02.21 d) 11.11.21	**5**	**Do**	a) Sirajgonj b) Sirajgonj, Sirajgonj c) Sirajgonj d) Savar	**Do**
6. BFRI	a) 21.04.19	**3**	**Do**	a) Sherpur	**Do**

	b) 19.10.19 c) 03.02.21			b) Sherpur c) Mymensingh	
7. SRDI	a) 07.01.19 b) 15.10.19, 18.03.20	**3**	**Do**	a) Tangail b) Cumilla, Cumilla	**Do**
8. CDB	a) 17-19.11.18, 09-11.02.19 b) 20-22.12.19 c) 26-28.12.21	**4**	**Do**	a) Banderban, Thakurgaon b) Banderban c) Khagrachari	**Do**
9. BJRI	a) 27.12.18, 29.06.19 b) 24.12.19 c) 06.10.20 d) 28.11.21-01.12.21	**5**	**Do**	a) Manikgonj, Faridpur b) Manikgonj c) Manikgonj d) Rangpur, Lalmonirhat	**Do**
10. BRRI	a) 28.01.19 b) 13.10.19, 13.02.20	**3**	**Do**	a) Mymensingh b) Jamalpur, Mymensingh	**Do**

Bangladesh Wheat and Maize Research Institute:

Sl No	DATE	No of visit	TEAM	LOCATION	Output
1	09.02.2019	1	Director (TTMU, BARC) and PI	Dorbarpur, Dinajpur	Timely weeding and irrigation
2	09.03.2019	1	PI	Baliadangi, Thakurgaon	Rouging for varietal purity
3	06.01.2020	1	PI, CoPI and other scientist from BWMRI	Thakithuki, Haripur, Thakurgaon Dalua and Radhnagar, Atwari, Panchagarh	First irrigation and weeding is ensured
4	13.02.2020	1	PI, CoPI and other scientist from BWMRI	Thakithuki, Haripur, Thakurgaon Dalua and Radhnagar, Atwari, Panchagarh	First irrigation and weeding is ensured
5	16.02.2020	1	DG and CSO, BWMRI	Thakithuki, Haripur, Thakurgaon	First irrigation and weeding is ensured
6	06.01.2021	1	Co-Pi, Scientist from BWMRI and SAAO	Ranishonkoil, Haripur, Ruhia, Thakurgaon	First irrigation and weeding is ensured
7	06.02.2021	1	Co-Pi and Scientist from BWMRI	Torea, Radhanagar, GasbariAtwari, Panchagarh	First irrigation and weeding is ensured
8	20.03.2021	1	Director (PIU-BARC, NATP-2) and his team, PI and CoPI	Kalikapur, Dinajpur	Part of monitoring by NATP team

Bangladesh Agricultural Research Institute:

Location	Date	Team	PI & Co-PI
Damudda Upazilla of Shariatpur district	19/09/2018	-	Dr. Syed Md. Mizanur Rahman, PSO & PI
Damudda Upazilla of Shariatpur district	29/09/2018	Coordinator of this project (Dr. Fouzia Yasmin, Direcr TTMU)	Dr. Syed Md. Mizanur Rahman, PSO & PI
Babuganj and Muladi Upazilla in Barisal district	02/11/2018 09/12/2018	-	Dr. Syed Md. Mizanur Rahman, PSO & PI
Damudda Upazilla of Shariatpur district	**01/08/2019** **12/09/2019** **7/11/2019** **23/01/2020** **01/08/2020** **26/03/2021** **08/04/2021**	BARC Representative (Rathi Morshed, SSO)	Dr. Syed Md. Mizanur Rahman, PSO & PI
Babuganj and Muladi Upazilla in Barisal district	**27/06/2019,** **03/10/2019** **11/07/2019** **25/07/2019** **21/07/2019** **12/12/2019** **27/05/2020** **11/06/2020** **19/11/2020**	BARC Representative (Rathi Morshed, SSO)	Dr. Syed Md. Mizanur Rahman, PSO & PI

Bangladesh Institute of Nuclear Agriculture:

Location	Date	Team	PI & Co-PI
Damudda Upazilla of Shariatpur district	19/09/2018	-	Dr. Syed Md. Mizanur Rahman, PSO & PI
Damudda Upazilla of Shariatpur district	29/09/2018	Coordinator of this project (Dr. Fouzia Yasmin, Direcr TTMU)	Dr. Syed Md. Mizanur Rahman, PSO & PI
Babuganj and Muladi Upazilla in Barisal district	02/11/2018 09/12/2018	-	Dr. Syed Md. Mizanur Rahman, PSO & PI
Damudda Upazilla of Shariatpur district	**01/08/2019** **12/09/2019** **7/11/2019** **23/01/2020** **01/08/2020** **26/03/2021** **08/04/2021**	BARC Representative (Rathi Morshed, SSO)	Dr. Syed Md. Mizanur Rahman, PSO & PI
Babuganj and Muladi Upazilla in Barisal district	**27/06/2019,** **03/10/2019** **11/07/2019** **25/07/2019** **21/07/2019** **12/12/2019** **27/05/2020** **11/06/2020** **19/11/2020**	BARC Representative (Rathi Morshed, SSO)	Dr. Syed Md. Mizanur Rahman, PSO & PI

Fig. 155: A monitoring team of BARC, Coordinator of the Project Dr Faujia Yasmin, Direcor (TTMU) and her team was visited the field of T. aman experimental plot at Sadar, Mymensingh on 17 October 2019.

Fig. 156: A monitoring team of PIU, BARC, Dr. Md. Abdul Jalil Bhuyan and his team was visited the field of mustard experimental plot at Sadar, Mymensingh on 5 Dec 2019.

Fig. 157: A monitoring team of BARC, Coordinator of the Project Dr Faujia Yasmin, Direcor (TTMU) and her team was visited the field of boro rice (Bindhan-10) experimental plot at Sadar, Mymensingh on 15 March 2020.

Fig. 158: Field visit of Binadhan-11 at Sadar, Mymensingh during 2020-2021by an internal monitoring team of BINA

Fig. 159: An internal monitoring team of BINA Dr M Monjurul Alam Mondol and Dr A F M Feroj Hasan (PI) was visited the experimental plot of T. aman (Binadhan-11) and Mustard (Binasarisha-9) at Sadar, Mymensingh on 18 October 2020 and 4 January 2021, respectively.

Bangladesh Sugarcrop Research Institute:

TEAM	PI & C0-PI	DATE	No. of visit
Technical Division/Unit, BARC 1. Dr. FauziaYasmin, Director, TTMU, BARC, Farmgate, Dhaka 2. Dr. Rathi Mahamud Morshed, SSO, PBRG Project, TTMU, BARC, Farmgate, Dhaka.	Dr. Md. Nurul Kashem, PSO & S M Rezaul Karim, SSO, BSRI	12.01.2019 20.10.2019 05.03.2020	03
NATP-II, PIU, BARC 1. Dr. Md. Nowser Ali Sardar, Monitoring & Evaluation Specialist, PIU, BARC 2. Dr. Md. Sherajul Islam, Environmental & Social Safeguard Specialist, PIU, BARC 3. Mr. Dipok kumar, Monitoring Associate, PIU, BARC	Dr. Md. Nurul Kashem, PSO & S M Rezaul Karim, SSO, BSRI	02.12.2019	01
Technical Division/Unit, BARC 1. Dr. FauziaYasmin, Director, TTMU, BARC, Farmgate, Dhaka 2. Dr. Zakia Rahman Moni, SSO, TTMU, BARC, Farmgate, Dhaka 3. Dr. Rathi Mahamud Morshed, SSO, PBRG Project, TTMU, BARC, Farmgate, Dhaka	S M Rezaul Karim, SSO & Dr. Md. Nurul Kashem, PSO, BSRI	09.02.2021 - 10.02.2021 08.11.2021	02
Internal Monitoring, BSRI 1. Dr. Md. Amzad Hossain, Director General, BSRI, Ishurdi	Dr. Md. Nurul Kashem, PSO & S M Rezaul Karim, SSO, BSRI	30.01.2019 18.02.2021	06
2. Dr. A S M Amanullah, Director (ToT), BSRI, Ishurdi	Do	05.02.2018	
3. Dr. Aminul Islam, PSO, BSRI	Do	05.03.2020	
4. Mst. Faria Hossain Santa, SO & In-charge, BSRI, Sirajganj	Do	06.05.2019 02.12.2020	

Fig. 160: Different times TTMU, BARC, NATP-II and BSRI team monitoring project site

Fig. 161: Different time TTMU-BARC, NATP-II and BSRI DG and others team monitoring project site

Bangladesh Livestock Research Institute:

Monitoring team	Date(s) of visit	Total visit till date (No.)	Remarks
Technical Division/ Unit, BARC	-	-	-
PIU-BARC, NATP-2	-	-	-
Internal Monitoring	The PI and Co-PI, field assistant regularly visit the site.	36	-
Others Visitors (if any)	31/01/2019 22.10.2019 12.3.2020 10.2.2021	4	Director, TTMU, BARC, Farmgate, Dhaka

Bangladesh Fisheries Research Institute:

Monitoring team	Date(s) of visit	Total visit till date (No.)	Remarks
Technical Division/ Unit, BARC	-	-	-
PIU-BARC, NATP-2	13.02.2019 16.09.2020	02	-
Internal Monitoring	-	-	-
Others Visitors (if any)	25.07.2020 2710.2020	01 01	DG, BFRI

Soil Resource Development Institute:

i) Desk monitoring (description & output of consultation meeting, monitoring workshops/seminars, etc.):

Description	Date	Outcome
Annual Review Workshop 2019	2.10.2019	First year progress was evaluated
1st Coordination Meeting	5.12.2019	Discussion on project implementation, data analysis and reporting
2nd Coordination Meeting	19.10.2020	Discussion on problem of project implementation, data analysis and reporting
Annual Review Workshop 2020	14.12.2020	Second year progress was evaluated

ii) Field Monitoring (date & no. of visit, name & address of the team visit and output)

Date of Monitoring	No. of visit	Visit Team Members	Output
7.01.2019	01	1. Dr. Fauzia Yasmin Director, TTMU, BARC 2. Rathi Mahamud Morshed SSO	Visited Trial plots (BRRIdhan58) in Bhuapur Upazila
29.03.2019	01	1. Dr. Mian Syed Hasan Director, PIU-BARC 2. Dr. Nausher Ali Sardar Consultant PIU-BARC, NATP-2	Visited Trial plots (BRRIdhan58) in Sadar Dakshin and Burichong Upazila
16.04.2019	01	1. Dr. Md. Sirajul Islam Environmental and Social Safeguard Specialist, PIU-BARC, NATP-2 2. Dr. Rafiqul Islam PSO, Livestock Division BARC 3. Munshi Mamunur Rahman Documentation Associate PIU-BARC, NATP-2	Visited Trial plots (BRRIdhan58) in Tangail sadar and Bhuapur Upazila
15.10.2019	01	1. Dr. Fauzia Yasmin Director, TTMU, BARC 2. Rathi Mahamud Morshed SSO	Visited Trial plots (BRRIdhan72) in Sadar Dakshin and Burichong Upazila
18.3.2020	01	1. Dr. Fauzia Yasmin Director, TTMU, BARC 2. Rathi Mahamud Morshed SSO	Visited Trial plots (BRRIdhan58) in Sadar Dakshin and Burichong Upazila

Cotton Development Board:

Monitoring team	Date(s) of visits	Total visit till to date	Remarks
Technical Division/ Unit, BARC	17.11.2018, 10.12.2118 12.9.2018 21-12-2019 24-12.2021	5	
PIU-BARC, NATP-2	i) 08-02.2019 To10.02.2019 ii) 17.02 2019 - 18.02.2019 iii) 29-30 Otc 2019	3	
Internal Monitoring	ED, AD, DD, Prof.DR.Abdul Hamid and others CDB officers visited several times	several times times during growing season	

Bangladesh Jute Research Institute:

i) Desk monitoring (description & output of consultation meeting, monitoring workshops/seminars, etc.):

Description	Date	Outcome
Annual Review Workshop 2019	2.10.2019	First year progress was evaluated
1st Coordination Meeting	5.12.2019	Discussion on project implementation, data analysis and reporting
2nd Coordination Meeting	19.10.2020	Discussion on problem of project implementation, data analysis and reporting
Annual Review Workshop 2020	14.12.2020	Second year progress was evaluated

ii) Field Monitoring (date & no. of visit, name & address of the team visit and output):

Date of Monitoring	No. of visit	Visit Team Members	Outcome/Locations
27.12.2018	01	Dr. Fauzia Yasmin, Coordinator Dr. Rathi Mahamud Morshed,SSO	Visited Seed plots in Manikganj
29.06.2019	01	Dr. Rathi Mahamud Morshed, SSO	Visited Fibre plots in Faridpur
24.12.2019	01	Dr. Fauzia Yasmin, Coordinator Dr. Rathi Mahamud Morshed,SSO	Visited Seed plots in Manikganj
06.10.2020	01	Dr. Zakiah Rahman Moni,SSO, & Associate coordinator Dr. Rathi Mahamud Morshed,SSO	Visited Seed plots and Flood situation in Manikganj
31.10.2021	01	Dr. Harunur Rashid, Director, NATP-2, PIU-BARC and his team	Visited Seed plots in Rongpur & Lalmonirhat.
29-30.11.21	01	Dr. Fauzia Yasmin, Coordinator Dr. Rathi Mahamud Morshed,SSO	Visited seed crop field in Rongpur & Lalmonirhat.

Bangladesh Rice Research Institute:

Location	DATE	TEAM	PI & C0-PI
Valuka & Muktaghacha Upazilas of Mymensingh District	28-01-2019	1. Dr. Fauzia Yasmin, Director, TTMU, BARC, Farmgate, Dhaka 2.Dr. Rathi Mahamud Morshed, SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka.	Dr. Md. Humayun Kabir, SSO, ARD, BRRI
Sadar upzilla of Jamalpur district.	18-04-2019	3. Dr. Md. Sherajul Islam, Environmental & Social safeguard specialist, PIU, BARC 4. Dr. Rafiqul Islam, PSO, Livestock Division, BARC. 5.Mounshi Mamunur Rahman, Documentation Associates, PIU, BARC	Dr. Md. Humayun Kabir, SSO, ARD, BRRI
Sadar & Sharishabari upzillas of Jamalpur	13-10-2019	4. Dr. Fauzia Yasmin, Director, TTMU, BARC, Farmgate, Dhaka 5.Dr. Rathi Mahamud Morshed, SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka.	Dr. Md. Humayun Kabir, SSO, ARD, BRRI
Bhaluka upzilla of Mymensingh	13-02-2020	5. Dr. Fauzia Yasmin, Director, TTMU, BARC, Farmgate, Dhaka 6. Dr. Rathi Mahamud Morshed, SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka.	Dr. Md. Humayun Kabir, SSO, ARD, BRRI

Fig.162: Monitoring team visited at Sadar, Jamalpur in Boro 2019, BRRI

Fig. 163: Monitoring team visited at Sadar, Jamalpur in Boro 2019, BRRI

Fig. 164: Monitoring team visited at Sadar and Sharishabari, Jamalpur in T. aman 2019, BRRI

21.Weather data, flood/salinity/drought level (if applicable) and natural calamities:

Coordinating Component-BARC Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.

- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE
  - Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
  - Chemical Fertilizer: Single, imbalanced, use of contaminated one.
  - Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
  - Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
  - Pollution: Quality aspects as influenced by the project activities.
  - Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self screening check list on Environmental safeguard under PBRG, BARC

SL #	Screening items	Yes	No	Remarks
1	Will the research be lab based? if answer is no, then go to question # 6			
2	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4	Does the applicant have received formal training on lab safety issues?			
5	Does the applicant have previous work experience at lab on similar work?			
6	Will the research work require field interventions at field level?	√		
7	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√	
8	Will biophysical, agro-chemical, bio tech research perform?		√	
9	Will the project have any indirect impact on environment/ ecosystem?		√	
10	Will the research work involve permission/ clearance of any government department/ agency?		√	
11	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Social Safeguard:

Self screening check list on social safeguard under PBRG, BARC

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?		√	
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-1: WRC, BARI Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.

- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

- Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
- Chemical Fertilizer: Single, imbalanced, use of contaminated one.
- Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
- Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
- Pollution: Quality aspects as influenced by the project activities.
- Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self-screening check list on Environmental safeguard under PBRG
Component-1: WRC

SL. No	Screening items	Yes	No	Remarks
1	Will the research be lab based? if answer is no, then go to question # 6		√	
2	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?	 √ √ √ √ √ √ √ √ √ √		
3	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?		 √ √ √ √ √ √	
4	Does the applicant have received formal training on lab safety issues?		√	
5	Does the applicant have previous work experience at lab on similar work?		√	
6	Will the research work require field interventions at field level?	√		
7	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		 √ √ √ √ √ √ √ √ √	
8	Will biophysical, agro-chemical, bio tech research perform?		√	
9	Will the project have any indirect impact on environment/ ecosystem?		√	
10	Will the research work involve permission/ clearance of any government department/ agency?		√	
11	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG

Component-1 WRC

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive	√		
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-2: BARI, HRC Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	

		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.
- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE
- Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
- Chemical Fertilizer: Single, imbalanced, use of contaminated one.
- Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
- Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
- Pollution: Quality aspects as influenced by the project activities.
- Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self-screening check list on Environmental safeguard under PBRG, HRC

SL. No	Screening items	Yes	No	Remarks
1	Will the research be lab based? if answer is no, then go to question # 6		√	
2	When it is lab based then do the lab has			
	• Environmental, health and safety protocol?	√		
	• Adequate fire safety provision?	√		
	• Safety provision of gas cylinder handling?	√		
	• Proper waste disposal facilities?	√		
	• Adequate liquid waste management?	√		
	• Proper storage for hazardous chemicals?	√		
	• Adequate ventilation system?	√		
	• First-aid facilities?	√		
	• Emergency exit facilities?	√		
	• Trained personnel to guide researchers?	√		
3	Will the lab based research activities			
	• Require procuring hazardous products (WHO class I&II)?		√	
	• Produce hazardous waste materials?		√	
	• Generate infectious waste?		√	
	• Cause harmful gas emission for health?		√	
	• Generate liquid waste?		√	
	• Cause major noise?		√	
4	Does the applicant have received formal training on lab safety issues?		√	
5	Does the applicant have previous work experience at lab on similar work?		√	
6	Will the research work require field interventions at field level?	√		
7	Will the field based research work			
	• Located at or near a sensitive area?		√	
	• Require procuring hazardous products (WHO class I&II)?		√	
	• Discharge any liquid waste in the environment?		√	
	• Discharge any liquid waste/ used water?		√	
	• Generate hazardous waste?		√	
	• Impair downstream water quality?			

	• Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√ √ √ √	
8	Will biophysical, agro-chemical, bio tech research perform?		√	
9	Will the project have any indirect impact on environment/ ecosystem?		√	
10	Will the research work involve permission/ clearance of any government department/ agency?		√	
11	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG, HRC

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive	√		
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-3: BINA Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.
- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

A. Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
B. Chemical Fertilizer: Single, imbalanced, use of contaminated one.
C. Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
D. Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
E. Pollution: Quality aspects as influenced by the project activities.
F. Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self screening check list on Environmental safeguard under PBRG, BINA

SL #	Screening items	Yes	No	Remarks
1.	Will the research be lab based? if answer is no, then go to question # 6		√	
2.	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3.	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4.	Does the applicant have received formal training on lab safety issues?			
5.	Does the applicant have previous work experience at lab on similar work?			
6.	Will the research work require field interventions at field level?	√		
7.	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√	
8.	Will biophysical, agro-chemical, bio tech research perform?		√	
9.	Will the project have any indirect impact on environment/ ecosystem?		√	
10.	Will the research work involve permission/ clearance of any government department/ agency?		√	
11.	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG , BINA

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

21. Environmental matrix, self scoring environmental and social safeguard check list

Component-4: BSRI Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-***	Pesticide use				√	
		POPs				√	
		IPM				√	

	Chemicals	Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4		Soil				√	
		Water				√	
	Pollution	Air				√	

Note: - Assessment is for the proposed project only and its cycle.
- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

G. Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
H. Chemical Fertilizer: Single, imbalanced, use of contaminated one.
I. Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
J. Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
K. Pollution: Quality aspects as influenced by the project activities.
L. Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.
-

Self screening check list on Environmental safeguard under PBRG, BSRI

SL #	Screening items	Yes	No	Remarks
1.	Will the research be lab based? if answer is no, then go to question # 6		√	
2.	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3.	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4.	Does the applicant have received formal training on lab safety issues?			
5.	Does the applicant have previous work experience at lab on similar work?			
6.	Will the research work require field interventions at field level?	√		
7.	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem?		√	

	• Cause local air pollution? • Generate excessive noise/ dust?			
8.	Will biophysical, agro-chemical, bio tech research perform?		√	
9.	Will the project have any indirect impact on environment/ ecosystem?		√	
10.	Will the research work involve permission/ clearance of any government department/ agency?		√	
11.	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG, BSRI

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-5: BLRI: Environmental Screening matrix: Research under PBRG

SL.. No	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1\	Biodiversity	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/cultivars				√	
		Hybrids				√	
2.	Soil quality	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3.	Agro-chemicals	Pesticides Use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4.	Pollution	Soil				√	
		Water				√	
		Air				√	

Note: Assessment is for the proposed project only and its cycle.

-Only the major environmental issues are considered. Depending on the and nature of the proposal, assessment would include only those specific issues which are relevant.

- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE.

- Genetic Diversity: To cover crop/Livestock/Fisheries/Forestry as applicable.
- Chemical Fertilizer: Single, imbalanced, use of contaminated one.
- Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
- Health Hazards: To be considered in respect residual effect of f pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
- Pollution: Quality aspects as influenced by the project activities.
- Small (less than 20%), Moderate (Between 20-50%) and Large (over 50%).
- If improvement put + sign, and if 'deterioration' put –sign in front of the box chosen.

Self-screening check list on Environmental safeguard under PBRG, BLRI

SL #	Screening items	Yes	No	Remarks
1	Will the research be lab based? if answer is no, then go to question # 6	√		
2	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?	 √ √ √ √ √ √ √ √ √ √		
3	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?		 √ √ √ √ √ √	
4	Does the applicant have received formal training on lab safety issues?	√		
5	Does the applicant have previous work experience at lab on similar work?	√		
6	Will the research work require field interventions at field level?	√		
7	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		 √ √ √ √ √ √ √ √ √	
8	Will biophysical, agro-chemical, bio tech research perform?		√	
9	Will the project have any indirect impact on environment/ ecosystem?		√	
10	Will the research work involve permission/ clearance of any government department/ agency?		√	
11	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG, BLRI

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion	√		

	right to the ethnic community?			
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive	√		
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-6:BFRI: Environmental Matrix, self scoring environmental and social safeguard check list

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	**Biodiversity**	Flora			+		
		Fauna		+			
		Genetic diversity	+				
		Exotic varieties				none	
		Local varieties/ cultivars				none	
		Hybrids				none	
2	**Soil quality**	Organic matter	+				
		Chemical fertilizer use		+			
		Soil salinity				no	
		Fertility status	+				
		Microbial activity	+				
		Heavy metal contamination				no	
		Water quality				no	
3	**Agro-Chemicals**	Pesticide use				no	
		POPs				no	
		IPM				no	
		Pest infestation				no	
		Bio-pesticides				no	
		Health hazard				no	
4	**Pollution**	Soil				no	
		Water				no	
		Air				no	

Self screening check list on Environmental safeguard under PBRG, BFRI

SL #	Screening items	Yes	No	Remarks
1	Will the research be lab based? if answer is no, then go to question # 6		√	
2	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?		√ √ √ √ √ √	
4	Does the applicant have received formal training on lab safety issues?			N/A
5	Does the applicant have previous work experience at lab on similar work?			N/A
6	Will the research work require field interventions at field level?	√		
7	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√ √ √ √ √ √ √ √ √	
8	Will biophysical, agro-chemical, bio tech research perform?		√	
9	Will the project have any indirect impact on environment/ ecosystem?		√	
10	Will the research work involve permission/ clearance of any government department/ agency?		√	
11	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG, BFRI

Sl No.	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-7: SRDI Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

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- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

M. Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
N. Chemical Fertilizer: Single, imbalanced, use of contaminated one.
O. Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
P. Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
Q. Pollution: Quality aspects as influenced by the project activities.
R. Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self screening check list on Environmental safeguard under PBRG, SRDI

SL #	Screening items	Yes	No	Remarks
1.	Will the research be lab based? if answer is no, then go to question # 6		√	
2.	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3.	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4.	Does the applicant have received formal training on lab safety issues?			
5.	Does the applicant have previous work experience at lab on similar work?			
6.	Will the research work require field interventions at field level?	√		
7.	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√	
8.	Will biophysical, agro-chemical, bio tech research perform?		√	
9.	Will the project have any indirect impact on environment/ ecosystem?		√	
10.	Will the research work involve permission/ clearance of any government department/ agency?		√	
11.	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG , SRDI

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-8: CDB Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
		Pesticide use				√	
		POPs				√	

3	***Agro-Chemicals***	IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.
- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

S. Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
T. Chemical Fertilizer: Single, imbalanced, use of contaminated one.
U. Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
V. Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
W. Pollution: Quality aspects as influenced by the project activities.
X. Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

If screening check list on Environmental safeguard under PBRG, CDB

SL #	Screening items	Yes	No	Remarks
1.	Will the research be lab based? if answer is no, then go to question # 6		√	
2.	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3.	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4.	Does the applicant have received formal training on lab safety issues?			
5.	Does the applicant have previous work experience at lab on similar work?			
6.	Will the research work require field interventions at field level?	√		
7.	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality?		√	

	• Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?			
8.	Will biophysical, agro-chemical, bio tech research perform?		√	
9.	Will the project have any indirect impact on environment/ ecosystem?		√	
10.	Will the research work involve permission/ clearance of any government department/ agency?		√	
11.	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG , CDB

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-9: BJRI Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.
- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

Y. Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
Z. Chemical Fertilizer: Single, imbalanced, use of contaminated one.
AA. Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
BB. Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
CC. Pollution: Quality aspects as influenced by the project activities.
DD. Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self screening check list on Environmental safeguard under PBRG, BJRI

SL #	Screening items	Yes	No	Remarks
1.	Will the research be lab based? if answer is no, then go to question # 6		√	
2.	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling?			

	• Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3.	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4.	Does the applicant have received formal training on lab safety issues?			
5.	Does the applicant have previous work experience at lab on similar work?			
6.	Will the research work require field interventions at field level?	√		
7.	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√	
8.	Will biophysical, agro-chemical, bio tech research perform?		√	
9.	Will the project have any indirect impact on environment/ ecosystem?		√	
10.	Will the research work involve permission/ clearance of any government department/ agency?		√	
11.	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG , BJRI

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships,		√	

	ancestral burial grounds, etc.?			
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

Environmental matrix, self scoring environmental and social safeguard check list

Component-10 BRRI : Environmental Screening Matrix: Research under PBRG

Sl. No.	Environmental issue	Component	Improvement/Deterioration*				Remarks
			Small	Moderate	Large	None	
1	***Biodiversity***	Flora				√	
		Fauna				√	
		Genetic diversity				√	
		Exotic varieties				√	
		Local varieties/ cultivars				√	
		Hybrids				√	
2	***Soil quality***	Organic matter				√	
		Chemical fertilizer use				√	
		Soil salinity				√	
		Fertility status				√	
		Microbial activity				√	
		Heavy metal contamination				√	
		Water quality				√	
3	***Agro-Chemicals***	Pesticide use				√	
		POPs				√	
		IPM				√	
		Pest infestation				√	
		Bio-pesticides				√	
		Health hazard				√	
4	***Pollution***	Soil				√	
		Water				√	
		Air				√	

Note: - Assessment is for the proposed project only and its cycle.
- Only the major environmental issues are considered. Depending on the objective and nature of the proposal, assessment would include only those specific issues which are relevant.
- Health, Safety and Environment (HSE) are the primary concerns and thus all to be centered around HSE

EE. Genetic Diversity: To cover Crop/Livestock/Fisheries/Forestry as applicable.
FF. Chemical Fertilizer: Single, imbalanced, use of contaminated one.
GG. Heavy Metal Contamination: From project activities by Arsenic, Lead, Cadmium or any other.
HH. Health Hazards: To be considered in respect of residual effect of pesticide, use of chemicals in preservation, processing and artificial ripening besides non-compliance to safety measures like, use of masks, gloves etc.
II. Pollution: Quality aspects as influenced by the project activities.
JJ. Small(less than 20%), Moderate (Between 20-50%) and Large (Over 50%)

- If 'improvement put +sign, and if 'deterioration' put -sign in front of the box chosen.

Self screening check list on Environmental safeguard under PBRG, BRRI

SL #	Screening items	Yes	No	Remarks
1.	Will the research be lab based? if answer is no, then go to question # 6		√	
2.	When it is lab based then do the lab has • Environmental, health and safety protocol? • Adequate fire safety provision? • Safety provision of gas cylinder handling? • Proper waste disposal facilities? • Adequate liquid waste management? • Proper storage for hazardous chemicals? • Adequate ventilation system? • First-aid facilities? • Emergency exit facilities? • Trained personnel to guide researchers?			
3.	Will the lab based research activities • Require procuring hazardous products (WHO class I&II)? • Produce hazardous waste materials? • Generate infectious waste? • Cause harmful gas emission for health? • Generate liquid waste? • Cause major noise?			
4.	Does the applicant have received formal training on lab safety issues?			
5.	Does the applicant have previous work experience at lab on similar work?			
6.	Will the research work require field interventions at field level?	√		
7.	Will the field based research work • Located at or near a sensitive area? • Require procuring hazardous products (WHO class I&II)? • Discharge any liquid waste in the environment? • Discharge any liquid waste/ used water? • Generate hazardous waste? • Impair downstream water quality? • Have any degradation of land and ecosystem? • Cause local air pollution? • Generate excessive noise/ dust?		√	
8.	Will biophysical, agro-chemical, bio tech research perform?		√	
9.	Will the project have any indirect impact on environment/ ecosystem?		√	
10.	Will the research work involve permission/ clearance of any government department/ agency?		√	
11.	Will future expansion/ implementation of research findings cause any major environmental problem?		√	

Self screening check list on social safeguard under PBRG , BRRI

SL #	Screening items	Yes	No	Remarks
1	Will there be need of additional land for physical work under the research activities requirements?		√	
2	Does the research activity affect any community group's access to any resources that they use for livelihood?		√	
3	Does an activities catchments area have significant number of ethnic community?		√	
4	Does the proposed activity ensure equal inclusion right to the ethnic community?	√		
5	Does the proposed activity pose any threat to cultural tradition and way of life?		√	
6	Does the proposed activity severely restrict access to common property resources and livelihood activities?		√	
7	Does the proposed activity affect places/ objects of cultural and religious significance (Places of worships, ancestral burial grounds, etc.?		√	
8	Names (if any) of ethnic community members/ organizations which participated social screening?		√	
9	Do any social concern expressed by the tribal community (ethnic community)/?		√	
10	Does the ethnic community /organization perceive the social outcome as positive/ as negative/ as neither positive nor negative		√	
11	Is there a need to undertake an additional assessment study regarding social impacts and concern?		√	

22. Sub-project auditing (covers all types of audit performed)

Bangladesh Agricultural Research Council

Types of audit	Major observation/ issues/ objections raised; if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks

Hire farm (Mi Chowdhury& Co) FAPAD	No objection raised found all relevant documents update as per guideline. No objection raised found all relevant documents update as per guideline.	7,46,104 7,46,104	Financial management of the component found running smoothly till the end of the sub-project. No query or objection raised at any stage of operation by the audit teams.	Financial management found satisfactory
Internal (PIU-BARC) FAPAD Hire farm (Mi Chowdhury& Co)	No objection raised found all relevant documents update as per guideline No objection raised found all relevant documents update as per guideline. No objection raised found all relevant documents update as per guideline	15,30,091 15,30,091 15,30,091	Financial management of the component found running smoothly till the end of the sub-project. No query or objection raised at any stage of operation by the audit teams.	Financial management found satisfactory
FAPAD	No objection raised found all relevant documents update as per guideline	15,24,670	Financial management of the component found running smoothly till the end of the sub-project. No query or objection raised at any stage of operation by the audit teams.	Financial management found satisfactory

Bangladesh Wheat and Maize Research Institute:

Types of audit	Major observation/ issues/objections raised: if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks
FAPAD	None	-	July/2018 to June/2019	
FAPAD	None	-	July/2019 to June/2020	

FAPAD	None	-	July/2019 to June/2020	

Bangladesh Agricultural Research Institute:

Types of audit	Major observation/ issues/objections raised: if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks
FAPAD	None	-	July/2018 to June/2019	
FAPAD	None	-	July/2019 to June/2020	
FAPAD	None	-	July/2019 to June/2020	

Bangladesh Institute of Nuclear Agriculture:

Types of audit	Major observation/ issues/objections raised: if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks
FAPAD	None	-	July/2018 to June/2019	
FAPAD	None	-	July/2019 to June/2020	
FAPAD	None	-	July/2019 to June/2020	

Bangladesh Sugarcrop Research Institute:

Types of audit	Major observation/ issues/ objections raised; if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks
FAPAD	None	9,85,597/-	July/2018 to June/2019	1st year audit occurs 30.06.2019
FAPAD	None	7,41,366/-	July/2019 to June/2020	2nd year audit occurs 30.06.2020
FAPAD	None	2,81,806/-	July/2020 to June/2021	3rd year audit occurs 11.10.2021

Bangladesh Livestock Research Institute:

Types of audit	Major observation/ issues/ objections raised; if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks
FAPAD (GoB)	No objection raised in first and second financial year. Third financial year audit yet to done.	Tk. 1730520.00 (Till June 2020)	Satisfactory	

Bangladesh Fisheries Research Institute:

Types of audit	Major observation/ issues/ objections raised; if any	Amount of Audit (Tk.)	Status at the sub-project end	Remarks
FAPAD (GoB)	No objection raised in first and second financial year. Third financial year audit yet to done.	Tk. 18.00 lac (Till June 2020)	Satisfactory	

Soil Resource Development Institute:

Types of audit	Major observation/ issues/ objections raised (if any)	Amount of Audit (BDT)	Status at the sub-project end	Remarks
Govt. Audit	None	7,67,950.00	-	14.11.2019; BARC
Govt. Audit	None	9,27,310.00	-	09.12.2020; BARC

Cotton Development Board:

Types of audit	**Major observation/ issues/ objections raised; if any**	**Amount of Audit (Tk.)**	**Status at the sub-project end**	**Remarks**
FAPAD	**-**	**-**	**No Objection**	**SuccesfullyComplited**
FAPAD	**-**	**-**	**No Objection**	
FAPAD	**-**	**-**	**No Objection**	

Bangladesh Jute Research Institute:

Types of audit	Major observation/issues/ objections raised	Amount of Audit (BDT)	Status at the sub-project end	Remarks
Govt. Audit	None	7,66,472	July/2018 to June/2019	14.11.2019; BARC
Govt. Audit	None	7,27,525	July/2019 to June/2020	09.12.2020; BARC
3rd Party audit	Some advice were given	6,92,997	December/2020	24/12/2020; BARC

Bangladesh Rice Research Institute:

Types of audit	**Major observation/ issues/ objections raised; if any**	**Amount of Audit (Tk.)**	**Status at the sub-project end**	**Remarks**
FAPAD	**None**	**549448**	**January/2019 to June/2019**	
FAPAD	**None**	**952587**	**July/2019 to June/2020**	

23. Lessons Learned:

Bangladesh Agricultural Research Council:BARC

The matured technologies generated by NATP year after year through NARS institutes could be transferred to the farmers level through RTT model for increasing farm productivity. It's a continuous process. So, the project "**The Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity"** should be revised for strengthening aforesaid activities.

Bangladesh Wheat and Maize Research Institute:

i. Farmers are not interested to apply herbicide due to its high price and its some negative effect.
ii. Normally farmers do not rough to maintain varietal purity.
iii. Farmers want to cultivate newly released variety but they do not want to preserve sufficient seed of new cultivar as because of they don't have storage facility. Storing wheat seed need special care.

Bangladesh Agricultural Research Institute:

i) More demonstration are needed for rapid dissemination of BARI released fruit varieties
ii) Farmers' training needed to inform about fruit production technologies
iii) Need to increase number of demonstrations.

Bangladesh Institute of Nuclear Agriculture:

i) Farmers' training needed to inform about rice production techniques to incorporate with hybrid mustard and lentil varieties to improve knowledge and skills of farmers.
ii) More demonstrations are needed for rapid tranmission of BINA released rice varieties.
iv) Collaboration of Extension personnel of DAE needed

Bangladesh Sugarcrop Research Institute:

i. More demonstrations are needed for rapid dissemination of BSRI released chewing cane and gur varieties.
ii. Farmers' training needed to inform about modern sugarcane cultivation with intercropping and hygienic gur production techniques
iii. Generated information need to be further validated for refinement.

Bangladesh Livestock Research Institute:

i) Farmers were impressed of newly introduced high yielding fodder varieties and dole silage technique.
ii) If female farmers involved, profit margin was significantly increased.
iii) Field demonstration activities have positive impact on technology dissemination.

Bangladesh Fisheries Research Institute:

i) There is wide scope to utilize the homestead pond using high valued fish culture technology to increase family income as well as meet-up family nutrition

ii) If female farmers involved in the farming activities, profit margin was significantly higher

iii) Good quality fry has positive impact on fish production

iv) Farmers training as well as result demonstration activities have positive impact on technology dissemination

Soil Resource Development Institute:

1. It was observed that by using balanced dose of fertilizer based on Soil Test Status as given in Updated Upazila Nirdeshika of SRDI rice productivity at farmers' level was increased and they earned profit through rice culture.

2.Collaboration of Extension personnel of DAE with SRDI to popularize the use of balanced dose of fertilizer based on Soil Test Status as given in Updated Upazila Nirdeshika yielded good result.

Cotton Development Board:

i) CB-14 variety, 2.application of mepiquat chloride 3 removal of vegetative branches and 4. De-topping at 90 DAS (Day after sowing). These four technologies have the potentiality to increase per hectare yield.)

ii) Cotton cultivation is better for social and environmental perspectives

iii) Farmers' training needed to inform about cotton production techniques

iv) Need to increase number of demonstrations.

Bangladesh Jute Research Institute:

i. If it is possible to provide quality seed of the variety (BJRI Tossa Pat-8 & HC-95) to the farmers' in time at least 15-22% higher fibre yield would be possible. Farmers' harvested profit from the new jute variety.

ii. Collaborative works like BARC, BADC, DAE with related organization and proper agronomic management can contribute better results to achieve the higher yield.

Bangladesh Rice Research Institute:

i) More demonstrations are needed for rapid dissemination of BRRI released rice varieties.

ii) Farmers' training needed to inform about rice production techniques

iii) Need to increase number of demonstrations.

24. Challenges (if any):

i. Major challenge of expansion is the unstable price at harvest. Varieties and their yield ability have been proven on-farm and on-station.
ii. Farmers always want new variety seed supplied from appropriate source for varietal purity.
iii. Monitoring, regular field visit and evaluation has been hampered owing to Covid-19 pandemic
iv. Sugarcane seeds/setts carrying in char land to setup demonstrations is a challenge.
v. Natural calamities like flood sometimes damage the crops.
vi. Lack of agricultural knowledge about new variety and technology.
vii. Production of high valued fish farming in the ponds amid COVID-19.
viii. Timely supply of agricultural inputs and location specific fertilizer recommendation to farmers is a challenge.

ix. Farmers' field should be visited frequently and provided necessary advice by local extension personnel of DAE.
x. Most hilly farmers operate under subsistence condition, market has not been developed; non-farm activities are rarely visible
xi. Poor communication
xii. Farming practices are largely primitive
xiii. Poverty is widespread
xiv. Unable to understand language specially in hilly areas
xv. If it is possible to provide quality seed of the variety to the farmers' in time at least 15-22% higher yield would be possible.
xvi. Collaborative works like BARC, BADC, DAE with related organizations and proper agronomic management can contribute better results to achieve the higher yield.

25. Suggestions for future planning (if any):

- Newly evolved technologies may be transferred for rapid dissemination in future following RTT model.
- In future, more projects like this should be launched
- BARI released fruit varieties can be transferred to farmers like this project
- Need to increase number of demonstrations.
- Long term planning needs for transferring technologiesto the field level as per RTT model.
- Mature Technology Transfer activities may be strengthened throughout the country.
- Success stories may be disseminated through mass media, seminars, trainings etc.
- Intensive farming technologies can be taken to the farmers for increasing production.
- Extension personnel of DAE should serve the farmers with fertilizer recommendation made on the basis of location specific soil test status as given in the Updated Upazila Nirdeshika of SRDI for increasing crop productivity and farmers' income. This will also help in improving soil health.
- Remunerative market price ensurity is also a great challenge for sustainable fibre production.
- In time quality jute seed supply to the farmers is a big challenge for sustainable production. Large scale seed production of jute (Robi-1) and kenaf (HC-95) variety and to ensure its supply to farmers' level is a great challenge.

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Signature of the Coordinator
Date …….

Seal

Counter signature of the Head of the organization/authorized representative
Date ……..
Seal

Annexure-1
Field monitoring and evaluation report

Field monitoring and evaluation report at BWMRI on 9 to 11February, 2019

Monitoring Period: From February 9 to 11, 2019

Date of Field Visit: 09 February 2019

1. Sub-Project Title with ID: A coordinated sub-project on Transfer of Agricultural Technologies to Farmers' level for increasing farm productivity (ID-005).

2. Name of Implementing (Component) Institute: Bangladesh Wheat and Maize Research Institute, Dinajpur

3. **Coordinator/Principal Investigator/Co-Principal Investigator** (as applicable):
Name: **Dr. Md. Abdul Hakim**.

4. Sub-Project Duration (as per approval/LoA/revision): Start: May2018…Completion December 2020

5. Location (s) of the Sub-Project: Dinajpur, Thakurgona and Panchagar districts

6. Name of project Personnel (s) interviewed/ met/ discussedwith address:

a. Dr. Md. Abdul Hakim, SSO, PI, WMRI
b. Dr. Md Zaherul Islam, SSO, WMRI
c. Md. Saidur Rahman, Milan, FA
d. Farmers:
-Md. Shahin (Site: Dinajpur Sadar)
-Md. Anawarul Islam (Site: Darberpur, Dinajpur Sadar)
-Md. Apan (Site: Zaberhat, Pirganj, Thakurgaon)
-Md. Manju (Site: Bhaturia, Horipur, Thakurgaon)
-Md. Abdul Mannan (Site: Majhipara, Tetulia, Panchagar)

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	Baseline survey	Completed	100%

	Farmer and site selection for transferring technology	Six locations and one farmer from each location were selected.	100%
	Block farming	-Block farming with 4 newly resealed varieties (BARI Gom 29, 30, 32, 33) in selected farmer's field were established. -The team visited 5 sites with BARI Gom 32, 33 plots located at Dinajpur Sadar, Pirganj & Horipur of Thakurgaon and Tetulia of Panchagar. Sowing dates were 02-12-2018 to 12-12-2018. Shis came out and good growth was seen. However, less growth was found in Pirganj site.	100%
	Analysis of the information/data (supported by tables, result & discussions, research achievements, highlights and photos)	Data collections were on going	50%

8. Technology intended to be Generated/updated/validated:

Sl.No.	Description of the Technology	Number	Achievements/Status	Remarks
	BARI Gom 32			
	BARI Gom 33			

9. Training: Not applicable

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.)

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
	Demonstration and dissemination	6	6	100%

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	940590.00	
b. Funds Received till to date:	475998.00	
c. Expenditure till to date:		
i) Incurred	143911.00	
ii) Committed	277000.00	
iii) Actual Balance	3411087.00	

12. Procurement: Under processing

Item *	Type (Goods/ works/service)	Activity status(No./ date)	
		Planned	**Actual**
1. Desktop Computer			
2. UPS (offline)			
3. Laser Printer			
4. Laptop			
5. Scanner			
6. Digital Camera			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Sometimes Weed problem at Tetulia site	Weedicide (Affinity) was used half of the advised dose	Appropriate dose of the weedicide should be used.

14. Overall Observation/comments & suggestions by the Monitoring team:

a. All field trials were done within time.

b. Performance of the varieties under field (Booting stage) were excellent, except at Pirganj site of Thakurgaon where slightly less performance was found might be due to soil and/ managemental problem.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Shah Md. Ziqrul Haq Chowdhury, MD (Livestock)	BARC	
2. Dr. Fauzia Yasmin, Director (TTMU)	BARC	
3. Mr. Hasan Md. Hamidur Rahman, Directir (Comp.)	BARC	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard:

i) Soil protection: Minimum tillage system was used during land preparation that conserved soil moisture
ii) Air protection: No insecticide was used
iii) Water protection: Only two irrigation were given
iv) Indigenous people: No indigenous people is hampered, instead they are benefitted.
v) Women empowerment: Women labour were used during intercultural operation

Field monitoring and evaluation report at BWMRI on 21-23 December, 2019

Date of Field Visit: 21-23 December, 2019; Monitoring Period: From July 2018 toDecember 2020

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Wheat and Maize Research Institute (BWMRI), Dinajpur

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. ZakiahRahmanMoni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492

E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Md. Abdul Hakim
Senior Scientific Officer
Wheat Breeding,Bangladesh Wheat and Maize Research Institute (BWMRI),
Dinajpur
Email: hakimwrc@bari.gov.bd; Mobile: 01711788153

CO-Investigator:
Md. Mahbubur Rahman
Senior Scientific Officer (Wheat Breeding)
Regional Centre, BWMRI, Gazipur-1701
Email: mahbubwrc@yahoo.com ; Mobile: 01716522276

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion:December 2020**.**

Location (s) of the Sub-Project: Dinajpur, Thakurgona and Panchagardristricts

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.**Dr. Md. Abdul Hakim,**Senior Scientific Officer,Wheat Breeding, Bangladesh Wheat and Maize Research Institute (BWMRI),Dinajpur

b. MdLatifur Rahman, S.A., Wheat Breeding, Bangladesh Wheat and Maize Research Institute (BWMRI), Dinajpur

c._____

d._____

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1: To transfer some selected BARI generated matured/promising technologies to farmers' level	1. Farmer selection 2. FGD 3.To establish 45 demonstration plot	1. 45 farmer were selected 2. FGD was done 3. 45 demonstration were established with necessary input support. Wheat crop in field at tillering to booting stage.	
Objective 2: To determine the benefit cost analysis of using selected technologies at	Benefit cost analysis to be done after crop harvest.		

farmers' level			

8. Technology intended to be Generated/updated/validated:N/A

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	2,100,000.00	
b. Funds Received till to date:	1347105.00	
c. Expenditure till to date:	474410.50	
i) Incurred		
ii) Committed		
iii) Actual Balance	872694.50	

12. Procurement: Procurement process is on-going to procure the following items

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Desk top computer			
Laser Printer			
Laptop			

Digital Camera			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
No manpower(field stuff) allotted to execute the project	At least 1/2 field stuff should be allotted for the smooth execution of the project	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited projectsite of BWMRI component at VushirBandor village of Chirirbandorupazila under Dinajpur district. Monitored BARI Gom33 variety demonstration plot of Bidhan Chandra, Brojendra and DevDulal.Sowing date was 03/12/2019. BARI Gom 33 is now at booting stage. Crop condition is good. Although, a little bit weed infestation was found in the demonstration plot. At noon visited WMRIGom1 variety demonstration plot of Md. Manik at Itua village of Kaharoleupazila under Dinajpur district. Sowing date was 14/12/2019. WMRI Gom 1 is now at tillering stage. Crop condition is good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
2.		
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i)Soil protection:

ii)Air protection: Balanced fertilizer has reduced excess CO2 emission from rice field

iii)Water protection:

iv)Indigenous people:

v) Women empowerment:

Fig 165: Demonstration plot at Kaharoleupazila, Dinajpur, BWMRI

Fig. 166: Monitoring team with PI of BWMRI component in front of the demonstration Plotof BARI Gom 33 at Vushirbandar village of Chirirbandarupazila, Dinajpur

Fig 167: Demonstration plot of BWMRIGom1is monitored in presence of concerned PI and farmer at Itua village of Kaharoleupazila, Dinajpur

Field monitoring and evaluation report at BARI on 20-23 December, 2020

Date of Field Visit: 20 -23 December, 2020; Monitoring Period: From July 2018 to November 2020

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BARI component (Project ID: 005).

2. Name of Implementing (Component) Institute: Bangladesh Agricultural Research Institute, (BARI), Gazipur-1701.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Syed Md. Mizanur Rahman
Senior Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701.
Cell Phone: 01819-448805, E-mail: smmrahman1969@gmail.com

Co-Investigator:
Md. Torikul Islam
Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701
Cell Phone: 01917421220, E-mail: torikulbari1984@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Damudda Upazila of Shariatpur and Muladi & Babugonj upazila of Barishal

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

1. Md. Zahidul Islam Firoz, Babuganj, Barishal,
2. Md. Zahirul Islam, Babuganj, Barishal,
3. Md. Ibrahim Khan, Muladi, Barishal,
4. Md. Yousuf Khan, Muladi, Barishal,
5. Md. Solaiman Khan, Muladi, Barishal,
6. Md. Tutul Khan, Muladi, Barishal

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To transfer the propagules/saplings of BARI developed fruit varieties to the fruit growers/farmers;	Distributed propagules/saplings of BARI developed fruit varieties to the 60 fruit growers/farmers at Shariatpur and Barishal each. Newly fruit orchard already established with the supplied saplings of BARI developed fruit varieties. On the other hand, input (fertilizer) was distributed at Damudda, Shariatpur and Babugonj, Barishal.	Ongoing

Objective 2	To produce good quality propagules/saplings as well as income	Yet not started	
Objective 3	To determine the benefit, cost and problems of using fruit varieties/ technologiesat farmers' level	➢ After harvesting of fruits, cost benefit analysis will be done ➢ For effective dissemination of this technology, high sapling cost as well as un/non availability of quality saplings are the major problems so far.	-

8. Technology intended to be Generated/updated/validated:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Important BARI Developed new varieties	13	Already distributed	
2.	Bunch cover of banana by using blue polythene	Two farmers	Already established	

9. Training:

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
1. FGD	1	120 farmers	60 farmers	55	5	50% achievements

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Yet not done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
1				

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	25,00000/-	
b. Funds Received till to date:	22,59,680/-	99.91% achievement
c. Expenditure till to date:	22,57,858.50	

i) Incurred		
ii) Committed		
iii)Actual Unspent Balance	1821.50/-	0.9% Unspent Balance

12. Procurement: Already procured

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i)	Laptop		60,000/-
ii)	Desktop computer		60,000/-
iii)	Laser Printer		20,000/-
iv)	Camera		25000/-
v)	Scanner		10,000/-
vi)	Computer Table		5000/-
Total			1,80,000/-

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund of field research was not sufficient	✓ In future, sufficient fund for field research should be allotted	
Fund release was not in time	✓ Fund should be released in time.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BARI component at Babugonj, Barisal and monitored newly established fruit orchard of Md. Jahidul Islam Feroz and Md. Jahirul Islam. These orchards were established with the fruit saplings distributed under this project. The condition of the orchard is good. Md. Jahidul Islam Feroz informed me that the size of malta grown in his orchard was good and he earned a lot. Although nutritional deficiency was observed in 2 to 3 plants. At Muladi, Barishal, monitored mixed fruit orchard of Md. Ibrahim Khan, Md. Yousuf Khan, Md. Solaiman Khan and Md. Tutul Khan. The condition of these orchards are good. Md. Tutul Khan informed me that he sold guava, banana, malta from his orchard and he earned a lot. It may be mentioned here that 60 farmers of Babugonj and Muladi upazila of Barishal district received the fruit saplings from NATP-2.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
2.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Medium High land and high land selected for fruit orchard
ii) Air protection:It will be safe when fruit orchard will be established

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Women also will be engaged for fruit cultivation, fruit harvesting and post harvesting processing

Fig.168:Newly established fruit orchard at Babugonj, Barishal, BARI

Fig.169: Monitoring team along with concerned farmer in a fruit orchard at Babugonj, Barishal, BARI

Fig.170:Monitoring team in front of a fruit orchard at Muladi, Barishal, BARI

Fig.171:Monitoring team along with concerned farmer in a fruit orchard at muladi, Barishal, BARI

Field monitoring and evaluation report at BARI on 10-12 December, 2019

Date of Field Visit: 10 -12 December, 2019; Monitoring Period: From July 2018 to November 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BARI component (Project ID: 005).

2. Name of Implementing (Component) Institute: Bangladesh Agricultural Research Institute, (BARI), Gazipur-1701.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
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Principal Investigator:
Dr. Syed Md. Mizanur Rahman
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Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701.
Cell Phone: 01819-448805, E-mail: smmrahman1969@gmail.com

Co-Investigator:
Md. Torikul Islam
Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701
Cell Phone: 01917421220, E-mail: torikulbari1984@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Damudda Upazila of Shariatpur and Muladi & Babugonj upazila of Barishal

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

Dr. Syed Md. Mizanur Rahman**,** Senior Scientific Officer, Pomology Division, Horticulture, Research Centre, BARI, Gazipur-1701.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To transfer the propagules/saplings of BARI developed fruit varieties to the fruit growers/farmers;	Distributed propagules/saplings of BARI developed fruit varieties to the 60 fruit growers/farmers at Shariatpur and Barishal each. Newly fruit orchard already established with the supplied saplings of BARI developed fruit varieties. On the other hand, input (fertilizer) was distributed at Damudda, Shariatpur (last year) and Babugonj, Barishal (current year).	Ongoing
Objective 2	To produce good quality propagules/saplings as well as income	Yet not started	
Objective 3	To determine the benefit, cost and problems of using fruit varieties/ technologiesat farmers' level	➢ After harvesting of fruits, cost benefit analysis will be done ➢ For effective dissemination of this technology, high sapling cost as well as un/non availability of quality saplings are the major problems so far.	-

8. Technology intended to be Generated/updated/validated:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Important BARI Developed new varieties	13	Already distributed	
2.	Bunch cover of banana by using blue polythene	Two farmers	Already established	

9. Training:

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
2. FGD	1	120 farmers	60 farmers	55	5	50% achievements

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Yet not done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
1				

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	25,00000/-	
b. Funds Received till to date:	16,45,000/-(Approximately)	96% achievement
c. Expenditure till to date:	15,85,000/-(Approximately)	
i) Incurred		
ii) Committed		
iii)Actual Unspent Balance	60,000	4% Unspent Balance

12. Procurement: Already procured

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i)	Laptop		60,000/-
ii)	Desktop computer		60,000/-
iii)	Laser Printer		20,000/-
iv)	Camera		25000/-
v)	Scanner		10,000/-
vi)	Computer Table		5000/-
Total			1,80,000/-

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund of field research was not sufficient	✓ In future, sufficient fund for field research should be allotted	
Fund release was not in time	✓ Fund should be released in time.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BARI component at Babugonj, Barisal and monitored newly established fruit orchard of Md. Jahidul Islam Feroz, Md. Jahirul Islam, Md. Mostafizur Rahman and MdShahidul Islam. These orchards were established with the fruit saplings distributed under the project. The condition of the orchard is good. Although nutritional

deficiency was observed in 2 to 3 plant. It may be mentioned here that 60 farmers of Babugonj and Muladi upazila of Barisal district received the fruit saplings from NATP-2. Also attended input (fertilizer) distribution ceremony arranged for the farmers who received fruit saplings earlier.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
2.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

iii) Soil protection: Medium High land and high land selected for fruit orchard
iv) Air protection:It will be safe when fruit orchard will be established

iii) Water protection:

iv)Indigenous people:

v) Women empowerment: Women also will be engaged for fruit cultivation, fruit harvesting and post harvesting processing

Fig.172:Monitoring team in front of a newly established fruit orchard at Babugonj, Barishal, BARI

Fig. 173: Monitoring team along with concerned PI and farmer in a fruit orchard at Babugonj, Barishal, BARI

Fig. 174: Input (fertilizer) distribution ceremony at Babugonj, Barishal, BARI

Fig. 175: Selected farmers receiving input (fertilizer) at Babugonj, Barishal, BARI

Date of Field Visit: 29 -31 May, 2019; Monitoring Period: From July 2018 to April 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BARI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Agricultural Research Institute, (BARI), Gazipur-1701.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:
Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:
Dr. Syed Md. Mizanur Rahman
Senior Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701.
Cell Phone: 01819-448805, E-mail: smmrahman1969@gmail.com

Co-Investigator:
Md. Torikul Islam
Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701
Cell Phone: 01917421220, E-mail: torikulbari1984@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: DamuddaUpazila of Shariatpur and Muladi&Babugonj upazila of Barisal

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Syed Md. Mizanur Rahman**,**Senior Scientific Officer, Pomology Division, Horticulture, Research Centre, BARI, Gazipur-1701.
b. Md. Torikul Islam, Scientific Officer, Pomology Division, Horticulture Research Centre BARI, Gazipur-1701

c.Md_NazmulHoque, Scientific assistant, Pomology Division, Horticulture Research Centre BARI, Gazipur-1701
d._____

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To transfer the propagules/saplings of BARI developed fruit varieties to the fruit growers/farmers;	Distribution of propagules/saplings of BARI developed fruit varieties to the 60 fruit growers/farmers at Shariatpur is completed. On the other hand, saplings of BARI developed fruit varieties were distributed among 60 fruit growers/farmers at Barisal.	Ongoing
Objective 2	To produce good quality propagules/saplings as well as income	Yet not started	
Objective 3	To determine the benefit, cost and problems of using fruit varieties technologiesat farmers' level	➢ After harvesting of fruits, cost benefit analysis will be done ➢ For effective dissemination of this technology, high sapling cost as well as un/non availability of quality sapling are the major problems so far.	-

8. Technology intended to be Generated/updated/validated:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Important BARI Developed varieties distributed among the farmers	13	Malta and some mango trees having fruits in some farmers field	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage,

dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	25,00,000	
b. Funds Received till to date:	12,28,302/-	
c. Expenditure till to date:	12,20,923.50	
i) Incurred		
ii) Committed		
iii)Actual Unspent Balance	7,378.50	

12. Procurement: Under process

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i)	Laptop		60,000/-
ii)	Desktop computer		60,000/-
iii)	Laser Printer		20,000/-
iv)	Camera		25000/-
v)	Scanner		10,000/-
vi)	Computer Table		5000/-
Total			1,80,000/-

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund of field research was not sufficient	✓ In future, sufficient fund for field research should be allotted	
Fund release was not in time	✓ Fund should be released in time.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BARI component at Rahmatpur, Barisal and monitored fruit sapling distribution among 60 farmers. Farmers from Babugonj and Muladiupazila of Barisal district received the fruit saplings. Also attended a FGD session arranged for the participating farmers. Visited newly established fruit orchards at Damuddaupazila of Shariatpur district. These orchards were established with the fruit saplings distributed under the project. The condition of the orchard is good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. RathiMahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
2.		
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

v) Soil protection: Medium High land and high land selected for fruit orchard
vi) Air protection:It will be safe when fruit orchard will be established

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Women also will be engaged for fruit cultivation, fruit harvesting and post harvesting processing

Fig.176:Fruit sapling distribution ceremony at Regional Station, BARI, Rahmatpur, Barisal, BARI

Fig. 177:Selected farmers receiving fruit saplings, BARI

Fig.178: Farmers from Muladi Upazila receiving fruit saplings, BARI

Fig.179: Fruit sapling distribution ceremony at Regional Station, BARI, Rahmatpur, Barisal, BARI

Fig.180:FGD session with farmers at Regional Station, BARI, Rahmatpur, Barisal, BARI

Field monitoring and evaluation report at BWMRI on 12-15 December, 2021

Date of Field Visit: 12 -15 December, 2021; Monitoring Period: From July 2018 to November 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BARI component (Project ID: 005).

2. Name of Implementing (Component) Institute: Bangladesh Agricultural Research Institute, (BARI), Gazipur-1701.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. ZakiahRahmanMoni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:

Dr. Syed Md. MizanurRahman
Senior Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701.
Cell Phone: 01819-448805, E-mail: smmrahman1969@gmail.com

Co-Investigator:

Md. Torikul Islam
Scientific Officer
Pomology Division, Horticulture Research Centre
BARI, Gazipur-1701
Cell Phone: 01917421220, E-mail: torikulbari1984@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: DamuddaUpazila of Shariatpur and Muladi & Babugonjupazila of Barishal

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

1. Md. Zahidul Islam Firoz, Babuganj, Barishal,
2. Md. Zahirul Islam, Babuganj, Barishal,
3. Md. Ibrahim Khan, Muladi, Barishal,
4. Md. Yousuf Khan, Muladi, Barishal,
5. Md. Solaiman Khan, Muladi, Barishal,
6. Md. Tutul Khan, Muladi, Barishal

7.Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To transfer the propagules/saplings of BARI developed fruit varieties to the fruit growers/farmers;	Distributed propagules/saplings of BARI developed fruit varieties to the 60 fruit growers/farmers at Shariatpur and Barishal each. Newly fruit orchard already established with the supplied saplings of BARI developed fruit varieties. On the other hand, input (fertilizer) was distributed at Damudda, Shariatpurand Babugonj, Barishal.	Ongoing
Objective 2	To produce good quality propagules/saplings	Yet not started	
Objective 3	To determine the benefit, cost and problems of using fruit varieties/ technologiesat farmers' level	➢ After harvesting of fruits, cost benefit analysis will be done ➢ For effective dissemination of this technology, high sapling cost as well as un/non availability of quality saplings are the major problems so far.	-

8. Technology intended to be Generated/updated/validated:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Important BARI Developed new varieties	13	Already distributed	
2.	Bunch cover of banana by using blue polythene	Two farmers	Already established	

9. Training:

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
1. FGD	1	120 farmers	60 farmers	55	5	50% achievements

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Yet not done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
1				

11.Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	25,00000/-	
b. Funds Received till to date:	23,79840	99.07% achievement
c. Expenditure till to date:	23,57,817.50	
i) Incurred		
ii) Committed		
iii)Actual Unspent Balance	22,022.50	0.93% Unspent Balance

12. Procurement: Already procured

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i)	Laptop		60,000/-
ii)	Desktop computer		60,000/-
iii)	Laser Printer		20,000/-
iv)	Camera		25000/-
v)	Scanner		10,000/-
vi)	Computer Table		5000/-
Total			1,80,000/-

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund of field research was not sufficient	✓ In future, sufficient fund for field research should be allotted	
Fund release was not in time	✓ Fund should be released in time.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BARI component at Babugonj, Barisal and monitored newly established fruit orchard of Md. Jahidul Islam Feroz and Md. Jahirul Islam. These orchards were established with the fruit saplings distributed under this project. The condition of the orchard is good. Md. Jahidul Islam Feroz informed me that the size of malta grown in his orchard was good and he earned a lot. At Muladi, Barishal, monitored mixed fruit orchard of Md. Ibrahim Khan, Md. Yousuf Khan, Md. Solaiman Khan and Md. Tutul Khan. The condition of these orchards is good. Md. Tutul Khan informed me that he sold guava,

banana, malta, dragon fruit, lemon, papaya from his orchard and he earned a lot. It may be mentioned here that 60 farmers of Babugonj and Muladiupazila of Barishal district received the fruit saplings from NATP-2.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr.RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
2.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Medium High land and high land selected for fruit orchard
ii) Air protection: It will be safe when fruit orchard will be established

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Women also will be engaged for fruit cultivation, fruit harvesting and post harvesting processing

Fig.181:Newly established fruit orchard at Babugonj, Barishal, BARI

Fig.182: Monitoring team along with concerned farmer in a fruit orchard at Babugonj, Barishal, BARI

Fig.183: Monitoring team in front of a fruit orchard at Muladi, Barishal, BARI

Fig.184 :Monitoring team along with concerned farmer in a fruit orchard at muladi, Barishal, BARI

Monitoring, 29 September 2018

Research Project activities under NATP-2 Programme Based Research Grant funding for the financial year 2018

On 29 September 2018, Dr. Fauzia Yasmin, PSO (TTMU), Associate coordinator visited the activities progress of one sub project out of 10 projects under the PBRG coordinated project by TTMU, BARC **to Farmers' level** was implemented by BARI at morning Damuda upazilla and after lunch Goshairhat upazillaof Sariatpur district. Dr. Fauzia Yasmin, was contacted through personal contact with concerned officer PI, Dr. Sayeed Md. Mizanur Rahman, SSO, Fruit division, HRC, BARI, Gazipur, over telephone. After discussion with concerned officers (PIs' and Co-PIs'), fixed the date of visit. PI interviewed the selected farmers before distribution sapling of fruits for trial in fields.

on "**Transfer of Agricultural Technologies for Increasing Farm Productivity**" which

Upazilla:Damuda, ShariatpurDistrict:

In Inaugural programme, Chief guest was Dr. Fauzia Yasmin, PSO(TTMU), BARC, Special guest was Dr. Sayeed Md. Mizanur Rahman, SSO, Fruit division, HRC,

BARI, Gazipur, Chairperson was Mr. Alamgir Mazi, Upazil Chairman and Honourable Guest were Mr. Zabu Hauque, Ex Chairman, Sidda Union, Dr. Mr. Ratan Kumar Ghos, Agricultural Extension Officer, DAE,Anwar Hossain, *Retd*. Doctor, Damuda Hospital and Mr, Ujjal Sikder, Upazilla Vice Chairman. After delivered speech, participated in distributing total 1500 fruit saplings among the selected 60 farmers' of Damuda. Each farmer got 25 fruit sapling and after that PI discussed about production method of Fruit cultivation.

Upazilla: Goshaier hat, Shariatpur District:

Chief Guest was Dr. Fauzia Yasmin, PSO(TTMU), BARC, Special Guest was Dr. Sayeed Md. Mizanur Rahman, SSO, Fruit division, HRC, BARI, Gazipur, Chairperson was Kallan Kukar Sarker, DAE and Honourable Guest were Mr. Anurathdha Das, AEO and Mr. Md Dellaware Hossain, Chairman, Idipur Union. After delivered speech, participated in distributing total 1500 fruit saplings among the selected 60 farmers' of Goshairhat.

Fig. 185: Distributed 25 Fruit sapling/farmer, for 120 farmers, in 2 upazillas, 2018, BARI

Fruit saplings are distributed as follows:

Sl. no	Fruits(8)	Variety of Fruit sapling(17)	Number (variety wise)	Total (fruit wise)
1.	MANGO (variety-3)	BARI Mango-3	1	3
		BARI Mango-4	1	
		BARI Mango-8	1	
2.	LEBU (variety-6)	BARI Batabi Lebu-4	1	9
		BARI Malta-1	4	
		BARI Lebu-1	1	
		BARI Lebu-2	1	
		BARI Lebu-3	1	
		Kagji Lebu-1	1	
3.	LITCHI	BARI Litchi-3	1	1

4.	**GUAVA**	**BARI Guava-2**	**4**	**4**
5.	**DRAGON FRUIT**	**BARI Dragon fruit-1**	**2**	**2**
6.	**KAMRANGA**	**BARI Kamranga-1**	**1**	**1**
7.	**SAFEDA**	**BARI Safeda-3**	**1**	**1**
8	**BANANA(variety-3)**	**BARI Banana-1**	**2**	**4**
		BARI Banana-3	**1**	
		BARI Banana-4	**1**	
Total	**8**	**17**	**25**	**25**

Field monitoring and evaluation report at BINA on 17 January, 2019

Duration of Field Visit: From 17/01/2019 to 17/01/2019
Coverage of Monitoring Report: From July 2018 to December 2018

1. Sub-Project Title: Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-BINA component
2. Institute Name: Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202.
3. Coordinator/Principal Investigator/Co-Principal Investigator(as applicable):

Project Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:

Dr. A F M Feroj Hasan
Senior Scientific Officer and Head
Adaptive Research and Extension Division (ARED), BINA, BAU Campus, Mymensingh-2202
Mobile: 01712-861271
E-mail: feroj@yahoo.com; feroj1965@gmail.com

CO-Investigator:

Dr. Shamima Begum
Senior Scientific Officer
Adaptive Research and Extension Division (ARED)
Bangladesh Institute of Nuclear Agriculture (BINA)
BAU Campus, Mymensingh-2202
Mobile: 01711-947179
Email: shamimabina@yahoo.com

4. Duration: Start July 2018 Completion December 2020
5. Location(s) of the Program: Mymensingh and Faridpur District
6. Name of Person(s) with address interviewed/ met/ discussed:
    a. Dr. A F M Feroj Hasan**,** Senior Scientific Officer,BINA,Mymensingh-2202.
    b. Dr. Shamima Begum**,** Senior Scientific Officer, BINA, Mymensingh-2202.
    c. Md. Borhan Uddin, Scientific Assistant, BINA, Mymensingh-2202.

7. **Technical Information:**

- Methodology and its Appropriateness: As per project proposal
- Adherence to Original Plan:
- Reason for Deviation (if any):

8. **Field Experimentation:**

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Deviation (if any)	Performance (Good/average/ below/average/ poor
		Planned	Actual		
i) To incorporate HYV mustard and lentil varieties between early T. aman and late boro rice cropping sequences ii) To increase cropping intensity and crop yield through improved cropping patterns and iii) To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production	1. In Aman season early T. aman Binadhan-17 was cultivated in project area 2. In Robi season mustard varieties Binasharisha-9, BARIsharisha-14 and Tori-7 was cultivated 3. In Kharif-1 season Binadhan-14 will be cultivated	T. aman→ Mustard→ Late Boro	T. aman→ Mustard→ Late Boro	No	

9. **Technology Generation: N/A**

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

10. **Technology Adoption: N/A**

No. of farmers involved	No. of farmers Motivated	No. of farmers adopting/ willing to adopt technology	Local level suitability of the technology	Total area covered	Project support/ services provided for adoption	Scope/ possibility of market linkage	Remarks

11. **Internal Monitoring by the Research/Academic Institution:**

Name of visitor(s)	Designation	Date(s) of visit	Total visit till date (No.)	Remarks (Activities performed/ modification suggested)
Dr A F M Feroj Hasan	Head, ARED, BINA	27-9-18, 9-1-19, 17-1-19	3	Supervise the performance of T. aman and mustard plot, suggest the farmers
Dr Shamima Begum	SSO, ARED, BINA	17-1-19	1	Supervise the performance of mustard plot, suggest the farmers
Md Abdur Rouf	SSO, ARED, BINA	17-1-19	1	Supervise the performance of mustard plot, suggest the farmers
Md Borhan Uddin	Scientific Assistant	**July `18** (29-7-18) **August` 18** (9, 10, 11, 12, 14, 19, 25), **Sept `18** (12, 16, 30) **Oct` 18** (11, 16, 22) **Nov `18** (8, 9, 19, 29) **Jan `19** (15, 17)	20	Land preparation, Fertilizer Distribution, Transplanting, Intercultural Operation, Pesticide Application, T. aman Data Collection & Harvesting, Mustard Seed & Fertilizer distribution, Sowing, Intercultural Operation and Field visit with monitoring team.

12. **Training:**

Training Title	Training duration (From – to –)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Selection of farmer and farmers plot in selected area and to know their existing cropping pattern	14 July, 2018	18	12	11	01	

13. **Knowledge management (e.g Journal article, Manual, Booklet, Media coverage, dissemination activity etc.):** Not yet done

Sl. No	Type of Documentation/ Publicity	Number	Achievements/Status	Remarks

14. **Financial**

	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000.00	
b. Funds Received till to date: (July-December)	3,44,306.00	
c. Delay (if any) in receipt of funds: (1st Quarter and 2nd Quarter)		
d. Expenditure till to date:	1,24,131.00	Some expenditure made, but not placed within this period
i) Incurred		
ii) Committed		
iii) Anticipated/Actual Balance/Deficit		

15. **Procurement:** Procurement plan submitted

Major Activity *	Activity status (No./ date)		% of completion in the current year	Cumulative % of completion from start
	Planned	Actual		
a. Goods	1st 2-1-19 and revised 29-03-19	Within August 2018		
(i) File cabinet - 1				
(ii) Computer table - 1				
(iii) Computer chair - 1				
(iv) Desktop computer - 1				

(v) Laser Printer - 1				
(vi) Scanner - 1				
(vii) UPS - 1				
(viii) Digital camera - 1				
b. Works				
(i)				
(ii)				
c. Services				
(i)				
(ii)				

16. **Reporting**

Report type	Planned/ schedule	Actual submission date	Remarks
a. Inception report	October/2018	October/2018	
b. Six monthly report (last 01 year)			
c Annual report			
d. Internal Monitoring Report(s) (Last 01 year)			
f. Project Completion Report			

17. **Problems/Constraints/Limitation:**

Description	Implementers opinion	Suggested solution by the Monitoring Team
1) Some farmers are confused to adopt new technology	Motivate to adopt new technology and gradually motivating	

18. **Any other comments & suggestions by the visiting team:**

Visited project site of BINA component at Mirkandapara village of Parangonj union of Mymensingh district. Monitored BINA developed BINA Sharisha-9 variety demonstration plot of seven farmers namely Md. Hamidul, Habibur Rahman, Anowarul Islam, A. Rashid, Md. Ibrahim, Lyily Begum and Shamsul Hoque in the morning. Sowing date was 11/11/2018. Crop condition was good. Plenty of flowers and pods were found in each plant. All of seven farmers cultivated BINA developed T. Aman variety of BINA Dhan-17 in the previous season. All of them following the croppoing pattern – early T. Aman (BINA Dhan-17) - HYV Mustard (BINA Sharisha-9)- Late Boro (BINA Dhan-14).

19. **Overall Assessment**
    a. Continue the sub-Project as Planned
    b. Modify (specify areas of modification) the sub-Project
    c. Terminate the Project

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

Fig 186:A demonstration plot of BINA Sarisha-9, BINA

Fig 187: Monitoring team with PI and concerned farmer in front of a demonstration plot, BINA

Fig 188: Interviewing Demonstration farmers, BINA

Fig. 189: Monitoring team inspecting a demonstration plot of BINA Sarisha-9
Field monitoring and evaluation report at BINA on 17 October, 2019

Date of Field Visit: 17 October, 2019; Monitoring Period: From July 2018 to September 2019

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BINA component(Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
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Principal Investigator:
Dr. A F M FerojHasan
Senior Scientific Officer and Head
Adaptive Research and Extension Division (ARED), BINA, BAU Campus, Mymensingh-2202
Mobile: 01712-861271
E-mail: feroj@yahoo.com; feroj1965@gmail.com

CO-Investigator:
Dr. Shamima Begum
Senior Scientific Officer
Adaptive Research and Extension Division (ARED)
Bangladesh Institute of Nuclear Agriculture (BINA)
BAU Campus, Mymensingh-2202
Mobile: 01711-947179
Email: shamimabina@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020**.**

Location (s) of the Sub-Project: Mymensingh and Faridpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. A F M Feroj Hasan**,** Senior Scientific Officer, BINA, Mymensingh-2202.
b. Dr. Shamima Begum**,** Senior Scientific Officer, BINA, Mymensingh-2202..
c. Dr. Monjurul Alam Mondal, CSO and Research Coordinator, BINA, Mymensingh-2202..

d. Md. Borhan Uddin, Scientific Assistant, BINA, Mymensingh-2202.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To incorporate HYV mustard and lentil varieties between early T. aman and late boro rice cropping sequences	T. aman experiment of 2nd year is now in field	
Objective 2	To increase cropping intensity and crop yield through improved cropping patterns	T. aman-Mustard-Late boro cropping pattern followed	
Objective 3	To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production	Time to time field visit, talk with farmers' regarding improved production practices of the technologies	

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, Dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000	
b. Funds Received till to date:	4,89,660/-	received 2nd year
c. Expenditure till to date:		
i) Incurred	2,41,190/-	
ii) Committed	-	
iii) Actual Balance	2,48,470/-	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
All Procurement completed 1st year		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
T. Aman rice transplantation delayed due to late rainfall	T. Aman rice transplanted with irrigation	
Sowing of mustard delayed due to rainfall at near ripening stage of T. Aman rice	Mustard sowed just after T. Aman rice harvest and optimum field condition	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BINA component at Mirkandapara village of Parangonj union of Sadar Upazila of Mymensingh district. Monitored BINA developed BINA Dhan-7 and BINA Dhan-11 of T. Aman variety demonstration plot of seven farmers namely Md. Hamidul, Habibur Rahman, Anowarul Islam, A. Rashid, Md. Ibrahim, Lyily Begum and Shamsul Hoque. Crop condition was good. Plenty of flowers were found in each plant.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

……

ii) Air protection:

……

iii) Water protection:

iv) Indigenous people:

.....

v) Women empowerment:

Fig 190: Monitoring team with PI and concerned farmer in front of a trial plot of BINA developed BINA Dhan-7 at Mymensingh.

Fig 191: A trial plot of BINA Dhan-11 of T. Aman variety at Mymensingh.

Field monitoring and evaluation report at BINA on 15 March, 2020

Date of Field Visit: 15 March, 2020; Monitoring Period: From July 2018 toFebruary 2020

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies
to Farmers' level for Increasing Farm Productivity -BINA
component(Project ID: 005)
2. Name of Implementing (Component) Institute:Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202.
3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. ZakiahRahmanMoni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
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Principal Investigator:
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CO-Investigator:
Dr.Shamima Begum
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Adaptive Research and Extension Division (ARED)
Bangladesh Institute of Nuclear Agriculture (BINA)
BAU Campus, Mymensingh-2202
Mobile: 01711-947179
Email: shamimabina@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion:December 2020**.**
Location (s) of the Sub-Project: Mymensinghand FaridpurDistrict

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. A F M FerojHasan**,**Senior Scientific Officer,BINA,Mymensingh-2202.
b. Dr. Shamima Begum**,** Senior Scientific Officer, BINA, Mymensingh-2202..
c.Md. BorhanUddin, Scientific Assistant, BINA, Mymensingh-2202.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To incorporate HYV mustard and lentil varieties between early T. aman and late boro rice cropping sequences	Boroexperiment of 2nd year is now in field	
Objective 2	To increase cropping intensity and crop yield through improved cropping patterns	T. aman-Mustard-Late boro cropping pattern was followed	
Objective 3	To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production	Time to time field visit, provide instructions to farmers' regarding improved production practices of the technologies	

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, Dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000	
b. Funds Received till to date:	979319/-	received 2nd year
c. Expenditure till to date:		

i) Incurred	724539/-	
ii) Committed	-	
iii) Actual Balance	254780/-	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
All Procurementcompleted 1st year		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
T. Aman rice transplantation delayed due to late rainfall	T. Aman rice transplanted with irrigation	
Sowing of mustard delayed due to rainfall at near ripening stage of T. Aman rice	Mustard sowed just after T. Aman rice harvest and optimum field condition	
Boro transplanting also delayed due to delayed transplanting/sowing of previous two crops	Boro transplanting completed from 3rd week to last week of February 2020	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BINA component at Mirkandapara village of Parangonj union of Sadar Upazila of Mymensingh district. Monitored BINA developed BINAdhan-10 of Boro variety demonstration plot of twelve farmers namely Abdur Rashid, ShamsulHoque, Ruhul Amin, Nazrul Islam, Hazrat Ali, Md. Ibrahim, Md. Ashraf Ali,Shafiqul Islam, Abdul Jalil, Abdul Kuddus, Lyily Begum andHafsaKhatun. Transplanting date varied from 20 to 28 February, 2020. Crop condition was good. Although a little bit insect infestation was found. Appropriate control measure was taken to control of insect.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:
ii) Air protection:
iii) Water protection:
iv) Indigenous people:
v) Women empowerment:

Fig 192: Monitoring team with PI and concerned farmer in front of a trial plot of BINA developed BINA Dhan-10 of boro variety at Mymensingh.

Fig 193 :A trial plot of BINA Dhan-10 of boro variety at Mymensingh.

Field monitoring and evaluation report at BINA on 02 February, 2021

Date of Field Visit: 02 February, 2021; Monitoring Period: From July 2018 to January 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BINA component (Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. ZakiahRahmanMoni
Senior Scientific Officer
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Bangladesh Agricultural Research Council (BARC)
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Principal Investigator:
Dr. A F M Feroj Hasan
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Adaptive Research and Extension Division (ARED), BINA, BAU Campus, Mymensingh-2202
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E-mail: feroj65@yahoo.com; feroj1965@gmail.com

CO-Investigator:
Dr. Shamima Begum
Senior Scientific Officer
Adaptive Research and Extension Division (ARED)
Bangladesh Institute of Nuclear Agriculture (BINA)
BAU Campus, Mymensingh-2202
Mobile: 01711-947179
Email: shamimabina@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020**.**
Location (s) of the Sub-Project: Mymensingh and Faridpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Dr. A F M Feroj Hasan**,** Senior Scientific Officer,BINA,Mymensingh-2202.
b. Dr. Shamima Begum**,** Senior Scientific Officer, BINA, Mymensingh-2202..
c. Md. Borhan Uddin, Scientific Assistant, BINA, Mymensingh-2202.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To incorporate HYV mustard and lentil varieties between early T. aman and late boro rice cropping sequences	HYV mustard is now in field	
Objective 2	To increase cropping intensity and crop yield through improved cropping patterns	T. aman-Mustard-Late boro cropping pattern was followed	
Objective 3	To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production	Time to time field visit, provide instructions to farmers' regarding improved production practices of the technologies	

8. Technology intended to be Generated/updated/validated: Two technologies generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, Dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000/-	
b. Funds Received till to date:	2060715/-	
c. Expenditure till to date:	2056840/-	
i) Incurred		
ii) Committed	-	
iii) Actual Balance	3875/-	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
All Procurementcompleted 1st year		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Sowing of mustard delayed	Sowing of mustard delayed due to Covid 19	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BINA component at Mirkandapara village of Parangonj union of Mymensingh district. Monitored BINA developed BINA Sharisha-9 variety trial plots of six farmers namely Ruhul Amin, Abdul Kuddus, Rafiz, A. Rashid, Shamsul Hoque and Kawsar. Sowing date was 10 November, 2020. It is a short duration variety; life cycle is only 80 to 85 days. Crop condition was good. Plenty of flowers and pods were found in each plant. Harvesting will be start very soon. All of six farmers cultivated BINA developed T. Aman variety of BINA Dhan-11 in the previous season. All of them following the croppoing pattern – early T. Aman (BINA Dhan-11) - HYV Mustard (BINA Sharisha-9)- Late Boro (BINA Dhan-10). However, concerned farmers are suggested to exchange their last year success to their neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Zakiah Rahman Moni, SSO	TTMU, BARC, Farmgate, Dhaka	
3. Dr. Rathi Mahamud Morshed, SSO, PBRG sub-project	TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment:

Fig 194: Monitoring team with PI and concerned farmer in front of a trial plot of BINA developed BINA Sharisha-9 at Mymensingh.

Fig 195: A trial plot of BINA Sharisha-9 at Mymensingh.

Field monitoring and evaluation report at BINA on 01 March, 2021

Date of Field Visit: 01 March, 2021; Monitoring Period: From July 2018 to February 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BINA component (Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
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Associate Coordinator:

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Principal Investigator:

Dr. A F M Feroj Hasan
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CO-Investigator:

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Senior Scientific Officer
Adaptive Research and Extension Division (ARED)
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Mobile: 01711-947179
Email: shamimabina@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018; Completion: December 2020**.**

Location (s) of the Sub-Project: Mymensingh and Faridpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Md. Borhan Uddin, Scientific Assistant, BINA, Mymensingh-2202.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To incorporate HYV mustard and lentil varieties between early T. aman and late boro/Aus rice cropping sequences	HYV lentil is now in field	
Objective 2	To increase cropping intensity and crop yield through improved cropping patterns	T. aman-lentil-Aus cropping pattern was followed	
Objective 3	To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production	Time to time field visit, provide instructions to farmers' regarding improved production practices of the technologies	

8. Technology intended to be Generated/updated/validated: Two technologies generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, Dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000/-	
b. Funds Received till to date:	21,64,143/-	
c. Expenditure till to date:	21,50,383/-	
i) Incurred		
ii) Committed	-	
iii) Actual Balance	13,760/-	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
All Procurementcompleted 1st year		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Sowing of lentil delayed	Sowing of lentil delayed due to Covid 19	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BINA component at Mathurapur village of Gazna union of Modhukhali upazila under Faridpur district. Monitored BINA developed Binamasur-8 variety trial plots of six farmers namely Sarwar Molla, Shahid Sikder, Mazed Molla, Ahmed Sheikh, Mohiuddin Molla and Kartik Chandra Biswas. Sowing date was varied from 4/12/2020 to 10/12/2020. Crop condition was good. Plenty of pods were found in each plant. All of six farmers cultivated BINA developed T. Aman variety of BINA Dhan-11 in the previous season. All of them following the cropping pattern – T. Aman (BINA Dhan-11) - HYV Lentil (BINA Masur-8)- Aus (BINA Dhan-14, BINA Dhan-19). However, concerned farmers are suggested to harvest their crop after 7 to 10 days later. They are also suggested to exchange their last year success to their neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO, PBRG sub-project	TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment:

Fig 196: A trial plot of BINA developed BINA Masur-8 at Madhukhali, Faridpur.

Fig 197: A trial plot of BINA developed BINA Masur-8 with concerned farmer at Madhukhali, Faridpur.

Field monitoring and evaluation report at BINAon 07 December, 2021

Date of Field Visit: 07 December, 2021; Monitoring Period: From July 2018 to November 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologie to Farmers' level for Increasing Farm Productivity -BINA component (Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Institute of Nuclear Agriculture (BINA), BAU Campus, Mymensingh-2202.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
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Associate Coordinator:

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CO-Investigator:

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Email: shamimabina@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020**.**

Location (s) of the Sub-Project: Mymensingh and Faridpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Md. Borhan Uddin, Scientific Assistant, BINA, Mymensingh-2202.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To incorporate HYV mustard and lentil varieties between early T. aman and late boro/Aus rice cropping sequences	All cropping pattern experiments were carried out succesfully within the time limit	
Objective 2	To increase cropping intensity and crop yield through improved cropping patterns	T. aman-mustard-boro and T. aman-lentil-Aus cropping pattern was followed	
Objective 3	To improve knowledge and skills of farmers about improved production technologies of rice, mustard and lentil for increased higher production	Time to time field visit, provide instructions to farmers' regarding improved production practices of the technologies	

8. Technology intended to be Generated/updated/validated: Two technologies generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, Dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000/-	
b. Funds Received till to date:	21,64,143/-	
c. Expenditure till to date:	21,63,258/-	
i) Incurred		
ii) Committed	-	
iii) Actual Balance	885/-	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
All Procurementcompleted 1st year		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund release of last installment is necessary	Urgent need of Fund	

14. Overall Observation/comments & suggestions by the Monitoring team:

BINA developed Binadhan-10 (boro var.) were harvested on May, 2021. Interviewing concerned PI in his office the following information was captured. The trial was demonstrated in 18 farmers field having the average land size of 1 bigha in Mirkandapara village of Parangonj union under Sadar upazila of Mymensingh district. Satisfactory yield (6 ton/ha) was obtained from the trial plots. All the 18 farmers followed the same cropping pattern: T. Aman (Binadhan-11)- HYV Mustard (Binasarisha-9)- Boro dhan (Binadhan-10). The trial of the technology showed satisfactory impact upon neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO, PBRG sub-project	TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment:

Fig.198: Concerned PI was interviewed in his office by the monitoring team, BINA

Field monitoring and evaluation report at BSRI on 20 October, 2019

Date of Field Visit: 20 October, 2019; Monitoring Period: From July 2018 to September 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity - BSRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Sugarcrop Research Institute (BSRI), Ishurdi-6620, Pabna.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
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Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
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Principal Investigator:

Dr. Md. Nurul Kashem
Principal Scientific Officer & Head
Training and Technology Transfer Division
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Ishurdi- 6620, Pabna;
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CO-Investigator:

S. M. Rezaul Karim
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Email: skarim2333@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Sadar, Tarash, Raigonj of Sirajganj District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Nurul Kashem, Principal Scientific Officer, BSRI, Ishurdi- 6620, Pabna.
b. Md. Abdul Zabbar, Scientific Assistant, BSRI Sub-Station, Sirajgonj.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	Farmer and site selection for transferring technology	20 farmers selected under Sirajganj district	100% completed
	Chewing sugarcane variety	10 bighas demonstration of	100%

	Demonstration setup with intercrop	chewing variety was established with intercrop potato & onion.	completed
	Gur variety of sugarcane Demonstration setup with intercrop	10 bighas demonstration of *gur* variety was established with intercrop potato & cabbage.	100% completed
	Cultural practices	Weeding, earthling-up and other cultural practices were done	100% completed
	Fertilizers application	The recommended dose of fertilizer are Urea-270 kg/ha, TSP-220 kg/ha, MoP- 200 kg/ha, Gypsum- 165 kg/ha, Zinc sulphate- 07 kg/ha and Magnesium oxside- 33kg/ha were applied	100% completed
	Pest management	Regent 3GR, Foradan 5 G & mechanical control of insect pest in the demo plots	100% completed
Objective 2	Baseline survey	Baseline information was collected from 20 farmers	100% completed
	Focus group discussions and orientation with technologies	04 FGD were conducted and total 80 farmers were present in FGD programme	100% completed
Objective 3	BCR analysis	BCR analysis will conduct after harvest 1st year demo plots	Not yet done

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training:

Training Title/FGD Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	15	05	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	15	05	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	14	06	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	12	08	100% completed

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	21,00,000	
b. Funds Received till to date:	13,66,055	
c. Expenditure till to date:	9,80,242	
i) Incurred	-	
ii) Committed	-	
iii) Actual Balance	3,85,813	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Executive table	Goods	1	100% procurement completed.
Executive chair	Goods	1	100% procurement completed.
Front chair	Goods	4	100% procurement completed.
Computer table	Goods	1	100% procurement completed.
Steel Almira	Goods	1	100% procurement completed.
Laptop	Goods	1	100% procurement completed.
Laser printer	Goods	1	100% procurement completed.
Scanner	Goods	1	100% procurement completed.
Digital camera	Goods	1	100% procurement completed.
Top loading balance	Goods	1	100% procurement completed.
Measuring Tap	Goods	1	100% procurement completed.

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Transportation problem of carrying seed in char land	Sugarcane seed are not available in char area	
Delay of fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BSRI component at Vatpiar village of Sadar upazila under Sirajgonj district. Monitored BSRI Akh 45 variety (gur) demonstration plot of Shahidul Islam. Date of planting was 17/12/2018 and potato (Ist) and BARI Mug (2^{nd}) were as inter crop. Sugarcane is in mature stage for gur preparation. Later on monitored BSRI Akh 45 variety (gur) demonstration plot of Md. Abdul Mazid at Kaliabil village of Raigonj upazila. Date of planting was 11/12/2018 and potato (Ist) and BARI Mug (2^{nd}) were as inter crop. Sugarcane is in mature stage for gur preparation. At the noon visited BSRI Akh 45 variety (gur) demonstration plot of Md. Mazem Ali. Date of planting was 15/10/2019. Plant is not still visible. BSRI Akh 42 variety (chewing) was already harvested 2-3 months ago.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: We used mugbean as 2^{nd} intercropping for improve the soil health.

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Partially women empowerment was done.

Fig. 199: Monitoring team along with concerned farmer and PI in front of a demonstration plot at Sadar upazila, Sirajgonj, BSRI

Fig. 200 :Monitoring team along with concerned farmer in front of a demonstration plot at Raigonj upazila, Sirajgonj, BSRI

Fig.201: Sugarcane in mature stage for gur preparation in a demonstration plot, BSRI

Fig.202: Newly planted sugarcane demonstration plot. Plant is not still visible, BSRI

Field monitoring and evaluation report at BSRI on 05 March, 2020

Date of Field Visit: 05 March, 2020; Monitoring Period: From July 2018 to February 2020

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity - BSRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Sugarcrop Research Institute (BSRI), Ishurdi-6620, Pabna

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

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Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
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Principal Investigator:

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Principal Scientific Officer & Head
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Training and Technology Transfer Division
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Mobile: 01719017156,
Email: skarim2333@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020 **5.**

Location (s) of the Sub-Project: Sadar, Tarash, Raigonj of Sirajganj District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Nurul Kashem, Principal Scientific Officer, BSRI, Ishurdi- 6620, Pabna
b. Dr. Md. Aminul Haque, Principal Scientific Officer, BSRI& Station In-charge Sirajganj
c. S. M. Rezaul Karim, Senior Scientific Officer, BSRI, Ishurdi- 6620, Pabna
d. Md. Abdul Zabbar, Scientific Assistant, BSRI Sub-Station Sirajgonj

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	Farmer and site selection for transferring technology	20 farmers selected under Sirajganj district	100% completed
	Chewing sugarcane variety Demonstration setup with intercrop	10 bighas demonstration of chewing variety was established with 1st intercrop potato & 2nd intercrop BINA Mug -08	100% completed
	Gur variety of sugarcane Demonstration setup with intercrop	10 bighas demonstration of *gur* variety was established with 1stintercrop potato & 2nd intercrop BINA Mug-08	100% completed
	Cultural practices	Weeding, earthling-up and other cultural practices were done	100% completed
	Fertilizers application	The recommended dose of fertilizer are Urea-270 kg/ha, TSP-220 kg/ha, MoP- 200 kg/ha, Gypsum- 165 kg/ha, Zinc sulphate- 07 kg/ha and Magnesium oxside- 33kg/ha were applied	100% completed
	Pest management	Regent 3GR, Foradan 5 G & mechanical control of insect pest in the demo plots	100% completed
Objective 2	Baseline survey	Baseline information was collected from 20 farmers	100% completed
	Focus group discussions and orientation with technologies	03 FGD were conducted and total 60 farmers were present in FGD program	60% completed
Objective 3	BCR analysis	BCR analysis will conduct after harvest demo plots	Not yet done

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training:

Training Title/FGD Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	13	07	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	13	07	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	16	04	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)						Not yet done
Focus Group Discussion (Modern Sugarcane production technology with intercropping)						Not yet done

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	21,00,000	
b. Funds Received till to date:	17,51,370	
c. Expenditure till to date:	13,66,055	
i) Incurred	-	
ii) Committed	-	
iii) Actual Balance	3,85,315	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Executive table	Goods	1	100% procurement completed.
Executive chair	Goods	1	100% procurement completed.
Front chair	Goods	4	100% procurement completed.
Computer table	Goods	1	100% procurement completed.
Steel Almira	Goods	1	100% procurement completed.
Laptop	Goods	1	100% procurement completed.
Laser printer	Goods	1	100% procurement completed.
Scanner	Goods	1	100% procurement completed.
Digital camera	Goods	1	100% procurement completed.
Top loading balance	Goods	1	100% procurement completed.
Measuring Tap	Goods	1	100% procurement completed.

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Transportation problem of carrying seed in char land	Sugarcane seed are not available in char area	
Delay of fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BSRI component at Garudaho village of Sadar upazila under Sirajgonj district. Monitored BSRI Akh 42 variety (chewing) demonstration plot of Md. Mostafiz (Modhu Sheikh). Date of transplanting was 15/10/2019 and potato was as inter crop (1st). Later on monitored BSRI Akh 45 variety (gur) demonstration plot of Md. Shariful. Date of transplanting was 22/10/2019 and potato was as inter crop (1st). BARI Mung was being sown by the respective farmers of the two demonstration plot as 2nd inter crop while monitoring. Crop condition was very good. At the noon visited BSRI Akh 45 variety (gur) demonstration plot of Md. Abu Taher Sheikh of Boroibagh village of Raigonj upazila under Sirajgonj district. Date of transplanting was 20/10/2019 and potato was as inter crop (1st). Later on monitored BSRI Akh 45 variety (gur) demonstration plot of Md. Mazem Ali and Md. Abdul Momin of Kaliabil village of Raigonj upazila under Sirajgonj district. Date of transplanting was 25/10/2019 and potato was as inter crop (1st). Crop condition was good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: We used BINA mugbean-08 as 2nd intercropping for improve the soil health.

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Partially women empowerment was done.

Fig. 203: BARI Mung was being sown in the demonstration plot by the respective Farmer as 2nd inter crop at Sadar upazila, Sirajgonj, , BSRI

Fig. 204:Monitoring team along with concerned farmer in front of a demonstration plot at Sadar upazila, Sirajgonj, BSRI

Fig.205: Monitoring team along with concerned farmer and PI in front of a demonstration plot at Raigonj upazila, Sirajgonj, BSRI

Fig. 206: Monitoring team taking some notes from the concerned farmer in front of a demonstration plot at Raigonj upazila, Sirajgonj, BSRI

Fig.207: Coordinator of the project along with concerned farmer in front of a demonstration plot at Sadar upazila, Sirajgonj, BSRI

Field monitoring and evaluation report at BSRI on 13 January, 2019

Duration of Field Visit: From 13/01/2019 to 13/01/2019
Coverage of Monitoring Report: From July 2018 to December 2018

20. Sub-Project Title: Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-BSRI component
21. Institute Name: Bangladesh Sugarcrop Research Institute (BSRI), Ishurdi-6620, Pabna
22. Coordinator/Principal Investigator/Co-Principal Investigator(as applicable):

Project Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:

Dr. Md. Nurul Kashem
Principal Scientific Officer & Head
Training and Technology Transfer Division
Bangladesh Sugarcrop Research Institute (BSRI),
Ishurdi- 6620, Pabna;
Mob: 01716-472367,
E-mail: dmnkashem@gmail.com

CO-Investigator:

S. M. Rezaul Karim
Scientific Officer
Training and Technology Transfer Division
Bangladesh Sugarcrop Research Institute (BSRI)
Ishurdi- 6620, Pabna
Mobile: 01719017156,
Email: skarim2333@gmail.com

23. Duration: Start July 2018 Completion December 2020
24. Location(s) of the Program: Sadar, Tarash, Kazipur of Sirajganj District
25. Name of Person(s) with address interviewed/ met/ discussed:
    a.**Dr. Md. Nurul Kashem**,Principal Scientific Officer, BSRI, Ishurdi- 6620, Pabna.
    b. Md. Abdul Zabbar, Scientific Assistant, BSRI Sub-Station, Sirajgonj.

26. **Technical Information:**

- Methodology and its Appropriateness: As per project proposal
- Adherence to Original Plan:
- Reason for Deviation (if any):

27. **Field Experimentation:**

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Deviation (if any)	Performance (Good/average/ below/average/poor
		Planned	Actual		
To transfer gur (molasses) and chewing varieties of sugarcane among the participating farmers for increasing yield through intercropping.	Selection of farmer to cultivate BSRI Akh 42 (chewing) and BSRI Akh 45 (gur) through intercropping with potato and onion for demonstration.	20	18	02	Good

28. **Technology Generation: N/A**

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

29. **Technology Adoption: N/A**

No. of farmers involved	No. of farmers Motivated	No. of farmers adopting/ willing to adopt technology	Local level suitability of the technology	Total area covered	Project support/ services provided for adoption	Scope/ possibility of market linkage	Remarks

30. **Internal Monitoring by the Research/Academic Institution:**

Name of visitor(s)	Designation	Date(s) of visit	Total visit till date (No.)	Remarks (Activities performed/ modification suggested)
Dr. A S M Amanullah	Director (TOT)	22.09.18 01.01.19	02	
Sanjit Mondal	Scientific Officer & Farm In-charge	22.09.18 01.01.19	02	
Dr. Nurul Kashem	PSO & PI	22.09.18 16.10.18 20.10.18	10	

		06.11.18 22.11.18 06.12.18 11.12.18 27.12.18 02.01.19 13.01.19		
Dr. Md. Amzad Hossain	DG	27.12.18	01	
Abdul Zabbar	Scientific Assistant		05	

31. **Training:**

Training Title	Training duration (From – to –)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Farmer Group Discussion (Sugarcane production technology)	25.07.2018 02.08.2018 03.09.2018 22.09.2018	60	60	40	20	

32. **Knowledge management (e.g Journal article, Manual, Booklet, Media coverage, dissemination activity etc.):** Not yet done

Sl. No	Type of Documentation/ Publicity	Number	Achievements/Status	Remarks

33. **Financial**

	Amount (Tk.)	Remarks
a. Total Budget :	21,00,000	
b. Funds Received till to date: (July-December)	3,92,120	
c. Delay (if any) in receipt of funds: (1st Quarter and 2nd Quarter)		
d. Expenditure till to date:	3,92,120	
i) Incurred	3,92,120	
ii) Committed	-	
iii) Anticipated/Actual Balance/Deficit	-	

34. **Procurement: Procurement plan submitted and approved**

Major Activity *	Activity status (No./ date)		% of completion in the current year	Cumulative % of completion from start
	Planned	Actual		
a. Goods				
(i) Executive table	01	01	-	-
(ii) Executive chair	01	01	-	-
(iii) Front chair	04	04	-	-
(iv) Computer table	01	01	-	-
(v) Steel almira	01	01	-	-
(vi) Laptop	01	01	-	-
(vii) Laser printer	01	01	-	-
(viii) Scanner	01	01	-	-
(ix) Digital camera	01	01	-	-
(x) Top loading balance	01	01	-	-
(xi) Measuring Tap	01	01	-	-
b. Works				
(i)				
(ii)				
c. Services				
(i)				
(ii)				

35. **Reporting**

Report type	Planned/ schedule	Actual submission date	Remarks
a. Inception report	October/2018	October/2018	
b. Six monthly report (last 01 year)			
c Annual report			
d. Internal Monitoring Report(s) (Last 01 year)			
f. Project Completion Report			

36. **Problems/Constraints/Limitation:**

Description	Implementers opinion	Suggested solution by the Monitoring Team
Transportation problem of seed carrying in char land	Sugarcane seed are not available in char area	
Conducting of FDG	Lack of fund	
Delay of fund release	Required fund release as soon as possible	

37. **Any other comments & suggestions by the visiting team:**

Visited project site of BSRI component at Raghurgati and Chadpal village of Sadar upazila under Sirajgonj district. Monitored BSRI Akh 45 variety (gur) demonstration plot of Hafizur Rahman. Date of planting was 23/10/2018 and onion was as inter crop. Later on monitored BSRI Akh 42 variety (chewing) demonstration plot of Ismail Hossain. Date of planting was 20/10/2018 and potato was as inter crop. Crop condition was very good. At the noon visited BSRI Akh 45 variety (gur) demonstration plot of Shahjahan Ali of Chadpal village. Date of planting was 23/10/2018 and potato was as inter crop. Later on monitored BSRI Akh 45 variety (gur) demonstration plot of Abdul Malek. Date of planting was 24/10/2018 and potato was as inter crop. Crop condition was good.

38. **Overall Assessment**
    a. Continue the sub-Project as Planned
    b. Modify (specify areas of modification) the sub-Project
    c. Terminate the Project

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

Fig 208: Monitoring team in front of a demonstration plot, BSRI

Fig 209:Monitoring team along with concerned farmer and PI visiting the demonstration plot, BSRI

Fig 210: Monitoring team interviewing a demonstration farmer, BSRI

Fig 211: Monitoring team, PI and farmer in front of a demonstration plot, BSRI

Fig 212: A demo. Farmer harvesting inter crop (potato) from demonstration plot, BSRI

Field monitoring and evaluation report at BSRI on 08-09 February, 2021

Date of Field Visit: 08-09 February, 2021; Monitoring Period: From July 2018 to January 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity - BSRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Sugarcrop Research Institute (BSRI), Ishurdi-6620, Pabna

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
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Principal Investigator:
S. M. Rezaul Karim
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Ishurdi- 6620, Pabna
Mobile: 01719017156,
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CO-Investigator:
Dr. Md. Nurul Kashem
Principal Scientific Officer & Head
Training and Technology Transfer Division
Bangladesh Sugarcrop Research Institute (BSRI),
Ishurdi- 6620, Pabna;
Mob: 01716-472367,
E-mail: dmnkashem@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018; Completion: December 2020

5. Location (s) of the Sub-Project: Sadar, Salonga, Ullapara of Sirajganj District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Nurul Kashem, Principal Scientific Officer, BSRI, Ishurdi- 6620, Pabna
b. S. M. Rezaul Karim, Senior Scientific Officer, BSRI, Ishurdi- 6620, Pabna
c. Md. Abdul Zabbar, Scientific Assistant, BSRI Sub-Station Sirajgonj

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	Farmer and site selection for transferring technology	20 farmers selected under Sirajganj district	100% completed
	Chewing sugarcane variety Demonstration setup with intercrop	10 bighas demonstration of chewing variety was established with 1st intercrop potato & 2nd intercrop BINA Mug -08	100% completed
	Gur variety of sugarcane Demonstration setup with intercrop	10 bighas demonstration of *gur* variety was established with 1st intercrop potato & 2nd intercrop BINA Mug-08	100% completed
	Cultural practices	Weeding, earthling-up and other cultural practices were done	100% completed
	Fertilizers application	The recommended dose of fertilizer are Urea-270 kg/ha, TSP-220 kg/ha, MoP- 200 kg/ha, Gypsum- 165 kg/ha, Zinc sulphate- 07 kg/ha and Magnesium oxside- 33kg/ha were applied	100% completed
	Pest management	Regent 3GR, Foradan 5 G & mechanical control of insect pest in the demo plots	100% completed
Objective 2	Baseline survey	Baseline information was collected from 20 farmers	100% completed
	Focus group discussions and orientation with technologies	03 FGD were conducted and total 60 farmers were present in FGD program	60% completed
Objective 3	BCR analysis	BCR analysis will conduct after harvest demo plots	Not yet done

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training:

Training Title/FGD Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	13	07	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	13	07	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	20	20	16	04	100% completed
Focus Group Discussion (Modern Sugarcane production technology with intercropping)						Not yet done
Focus Group Discussion (Modern Sugarcane production technology with intercropping)						Not yet done

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	21,00,000	
b. Funds Received till to date:	19,25,685	
c. Expenditure till to date:	19,15,948	
i) Incurred	-	
ii) Committed	-	
iii) Actual Balance	9,737	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Executive table	Goods	1	100% procurement completed.
Executive chair	Goods	1	100% procurement completed.
Front chair	Goods	4	100% procurement completed.
Computer table	Goods	1	100% procurement completed.
Steel Almira	Goods	1	100% procurement completed.
Laptop	Goods	1	100% procurement completed.
Laser printer	Goods	1	100% procurement completed.
Scanner	Goods	1	100% procurement completed.
Digital camera	Goods	1	100% procurement completed.
Top loading balance	Goods	1	100% procurement completed.
Measuring Tap	Goods	1	100% procurement completed.

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Transportation problem of carrying seed in char land	Sugarcane seed are not available in char area	
Delay of fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BSRI component at Dabirgonj and Protap villages of Ullapara upazila under Sirajgonj district. Monitored BSRI Akh 42 variety (chewing) trial plots of Md. Ziaur, Md. Abdul Latif, Md. Zahidul Islam and Md. Nezab Ali where date of transplanting was 21/11/20, 12/11/20, 30/11/20, and 25/11/20 respectively. Potato, cauliflower, cabbage, chili, onion, garlic were as inter crop (1st). Later on monitored BSRI Akh 42 variety (chewing) trial plot of Md. Sattar Sarker at Kalipur village of Salanga upazila under Sirajgonj district. Date of transplanting was 28/11/20 and potato was as inter crop (1st). Crop condition was very good. At the noon visited BSRI Akh 42 variety (chewing) trial plot of Md. Abdul Hamid of Ghorachora village of Sadar upazila under Sirajgonj district. Date of transplanting was 10/11/2020 and onion, chili was as inter crop. Later on monitored BSRI Akh 45 variety (gur) trial plot of Md. Saiful Islam of Brahmoboyra village of Sadar upazila under Sirajgonj district.

Date of transplanting was 08/12/2020 and coriander was as inter crop. Crop condition was good. However, concerned farmers are suggested for thinning and gap filling in their trial plots, if applicable. They are also suggested to exchange their last year success to their neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Zakiah Rahman Moni, SSO	TTMU, BARC, Farmgate, Dhaka	
3. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: We used BINA mugbean-08 as 2nd intercropping for improve the soil health.

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Partially women empowerment was done.

Fig 213: Monitoring team along with concerned PI in front of a trial plot of BSRI Akh42 at Salanga upazila, Sirajgonj

Fig 214:A trial plot of BSRI Akh 42 at Sadar, Sirajgonj

Fig 215: Coordinator of the project along with concerned PI in front of a trial Plot of BSRI Akh 42 at Salanga upazila, Sirajgonj

Fig 216: Monitoring team along with concerned farmer in front of a trial plot of BSRI Akh 42 at Ullapara upazila, Sirajgonj, BSRI

Field monitoring and evaluation report at BSRI on 08 November, 2021
Date of Field Visit: 08 November, 2021; Monitoring Period: From July 2018 to October 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity - BSRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Sugarcrop Research Institute (BSRI), Ishurdi-6620, Pabna

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
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Principal Investigator:
S. M. Rezaul Karim
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Training and Technology Transfer Division
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Mobile: 01719017156,
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CO-Investigator:
Dr. Md. Nurul Kashem
Principal Scientific Officer & Head
Training and Technology Transfer Division
Bangladesh Sugarcrop Research Institute (BSRI),
Ishurdi- 6620, Pabna;
Mob: 01716-472367,
E-mail: dmnkashem@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020

5. Location (s) of the Sub-Project: Sadar, Raiganj, Kazipur, Ullapara of Sirajganj District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Nurul Kashem, Principal Scientific Officer, BSRI, Ishurdi- 6620, Pabna
b. S. M. Rezaul Karim, Senior Scientific Officer, BSRI, Ishurdi- 6620, Pabna
c. Md. Abdul Zabbar, Scientific Assistant, BSRI Sub-Station Sirajgonj

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	Farmer and site selection for transferring technology	16 farmers selected under Sirajganj district	100% completed
	Chewing sugarcane variety Demonstration setup with intercrop	08 bighas demonstration of chewing variety was established with 1st intercrop potato, onion & 2nd intercrop BINA Mug -08	100% completed
	Gur variety of sugarcane Demonstration setup with intercrop	08 bighas demonstration of *gur* variety was established with 1st intercrop potato, onion & 2nd intercrop BINA Mug-08	100% completed
	Cultural practices	Weeding, earthling-up and other cultural practices were done	100% completed
	Fertilizers application	The recommended dose of fertilizer are Urea-270 kg/ha, TSP-220 kg/ha, MoP- 200 kg/ha, Gypsum- 165 kg/ha, Zinc sulphate- 07 kg/ha and Magnesium oxside- 33kg/ha were applied	100% completed

	Pest management	Regent 3GR, Foradan 5 G & mechanical control of insect pest in the demo plots	100% completed
Objective 2	Baseline survey	Baseline information was collected from 20 farmers	100% completed
	Focus group discussions and orientation with technologies	09 FGD were conducted and total 180 farmers were present in FGD program	100% completed
Objective 3	BCR analysis	BCR analysis will conduct after harvest demo plots	Not yet done

8. Technology intended to be Generated/updated/validated: Not Applicable

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training:

Training Title/FGD Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Focus Group Discussion (Modern Sugarcane production technology with intercropping)	01 day	180	180	129	51	100% completed

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	21,00,000	
b. Funds Received till to date:	2008721	
c. Expenditure till to date:	2008232	
i) Incurred	-	
ii) Committed	-	
iii) Actual Balance	489	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Executive table	Goods	1	100% procurement completed.
Executive chair	Goods	1	100% procurement completed.
Front chair	Goods	4	100% procurement completed.
Computer table	Goods	1	100% procurement completed.
Steel Almira	Goods	1	100% procurement completed.
Laptop	Goods	1	100% procurement completed.
Laser printer	Goods	1	100% procurement completed.
Scanner	Goods	1	100% procurement completed.
Digital camera	Goods	1	100% procurement completed.
Top loading balance	Goods	1	100% procurement completed.
Measuring Tap	Goods	1	100% procurement completed.

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Transportation problem of carrying seed in char land	Sugarcane seed are not available in char area	
Flood occurs in char area	Natural calamities like flood sometime damage the crops	
Delay of fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BSRI component at Vatpiar and Brahmoboyra villages Sadar upazila under Sirajgonj district. Monitored BSRI Akh 45 variety (gur) trial plot of Md.Shahidul Islam where date of transplanting was 28/11/20. Later on monitored BSRI Akh 45 variety (gur) trial plot of Md. Saiful Islam at Brahmoboyra village of Sadar upazila under Sirajgonj district. Date of transplanting was 08/11/2020. Crop condition of two trial plots was good. Crops of the two trial plots will be harvested within 15 days to 30 days. However, concerned farmers are suggested for line and deep sowing of sugarcane to erect mature sugarcane plant, if applicable. They are also suggested to exchange their last year success to their neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: We used BINA mugbean-08 as 2nd intercropping for improve the soil health.

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment: Partially women empowerment was done.

Fig 217 :Coordinator of the project along with concerned PI in front of a trial Plot of BSRI Akh 45 at Sadar upazila, Sirajgonj

Fig. 218: Monitoring team along with concerned PI in front of a trial plot of BSRI Akh45 at Sadar upazila, Sirajgonj

Field monitoring and evaluation report at BLRI on 22 October, 2019
Date of Field Visit: 22October, 2019; Monitoring Period: From July 2018 to September 2019

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technolog to Farmers' level for Increasing Farm Productivity –BLR component (Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka- 1341.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
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Mobile: 01717354092
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4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Rajshahi and Sirajgong District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Zillur Rahman**,** Senior Scientific Officer, BLRI, Savar, Dhaka-1341.
b. Md.Yousuf Ali,Scientific Officer, BLRI Regional Station, Baghabari,Shahjadpur, Sirajgonj-6770.
c.UmmeShihaAlam, Scientific Officer, Regional Station, Bhaghabari, Sirajgonj.
d. Md. Amir Hossain, Field Assistant, Regional Station, Bhaghabari, Sirajgonj..

7. Key Monitoring Indicator:

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Remarks
		Planned	Actual	
Objective 1: To transfer selected BLRI generated matured technology (silage) to farmers' Level	Napier Fodder cultivation	21 farmers plot	21 farmers plot	Napier Fodder cultivation-ongoing
	Silage preparation	25	8	Silage preparation-ongoing
Objective 2: To determine the cost benefit analysis of using selected technologies at farmers' level	Animal Feeding trial	25	8	Animal Feeding trial-ongoing
	Chemical analysis	-	-	Chemical analysis of silage-ongoing

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	2300000.00	
b. Funds Received till to date:	399060.00	
c. Expenditure till to date:	97750.00	
i) Incurred		
ii) Committed		
iii) Actual Balance		

12. Procurement: Completed

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Slow fund release	Release of fund should be in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BLRI component at Tiarbond village of Potajia union of Shahjadpur upazila under Sirajgonj district. Monitored BLRI developed BLRI Napier-4 variety demonstration plot of Md. Joynal Abedin. As per fertilizer recommendation urea, TSP, MoP and cowdung were applied at the time of land preparation. First cut of grasses were completed after 55–60 days after transplanting. Grasses will be harvested at a regular interval of 40-45 days. Preservation of green grasses/fodder through silage technique (Dol technique) was started from 3^{rd}/ 4^{th} cut of grasses. Selected farmers have already been given training in this regard. Monitored silage preservation technique of Md. Zakir Hossain, Md. Dulal Miah, Md. Idris Ali through Dol. At noon visited laboratory of BLRI regional station, where chemical analysis of silage samples have been performed for the determination of the dry matter (DM), organic matter (OM), crude protein (CP) and P^H .

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment:

Fig 219: Monitoring team with PI and concerned farmer in front of a demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj

Fig 220: Preservation of silage through Dol technique, BLRI

Fig. 221: Concerned PI demonstrated preserved silage in a Dol, BLRI

Fig. 222: Concerned farmer demonstrated preserved silage in a Dol, BLRI

Field monitoring and evaluation report at BLRI on 31 January, 2019

Duration of Field Visit: From 31/01/2019 to 31/01/2019
Coverage of Monitoring Report: From July 2018 to January 2019

39. Sub-Project Title: Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-BLRI component
40. Institute Name: Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka- 1341

41. Coordinator/Principal Investigator/Co-Principal Investigator(as applicable):

Project Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:

Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:

Dr. Md. Zillur Rahman
Senior Scientific Officer
Training, Planning and Technology Testing Division
BLRI,Savar, Dhaka-1341
Cell phone: +8801677155641
Email: mzillur2002@Yahoo.com

CO-Investigator:

Md.Yousuf Ali,
Scientific Officer
BLRI, Regional Station,
Baghabari,Shahjadpur, Sirajgonj-6770
Mobile: 01717354092
Email: myousuf@blri.gov.bd

42. Duration: Start July 2018 Completion December 2020
43. Location(s) of the Program: Rajshahiand Sirajgong District
44. Name of Person(s) with address interviewed/ met/ discussed:
    a. Dr. Md. ZillurRahman**,** Senior Scientific Officer,BLRI, Savar, Dhaka-1341.
    b. Umme Shiha Alam, Scientific Officer, Regional Station, Bhaghabari, Sirajgonj.
    c. Md. Amir Hossain, Field Assistant, Regional Station, Bhaghabari, Sirajgonj

45. **Technical Information:**

- Methodology and its Appropriateness: As per project proposal
- Adherence to Original Plan:
- Reason for Deviation (if any):

46. **Field Experimentation:**

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Deviation (if any)	Performance (Good/average / below/average /poor
		Planned	Actual		
To transfer selected BLRI generated matured technology (silage) to farmers' Level	Site selection and farmer selection	2	2	-	
	Base Line Survey	150 Questionnaire	150 Questionnaire	-	
	Distribution of inputs(Fodder seed, fertilizer etc)	21 farmers	21 farmers	-	
	Block farming of Fodder a) Napier Fodder Cultivation	21 farmers	21 farmers	-	

47. **Technology Generation: N/A**

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

48. **Technology Adoption: N/A**

No. of farmers involved	No. of farmers Motivated	No. of farmers adopting/ willing to adopt technology	Local level suitability of the technology	Total area covered	Project support/ services provided for adoption	Scope/ possibility of market linkage	Remarks

49. **Internal Monitoring by the Research/Academic Institution:**

Name of visitor(s)	Designation	Date(s) of visit	Total visit till date (No.)	Remarks (Activities performed/ modification suggested)
Dr. Md. Zillur Rahman	Senior Scientific Officer	18/10/2018, 14/12/2018	2	Site selection and farmer selection; Base Line Survey; Napier Fodder Cultivation
Md.Yousuf Ali	Scientific Officer& Station Inc-harge, BLRI Regional Station, Baghabari, shajadpur, Siragonj	8.10.2018 14.10.2018 28.10.2018 4.11.2018 12.11.2018 26.11.2018 3.12.2018 8.12.2018 26.12.2018 31.12.2018	10	Site selection and farmer selection; Base Line Survey;Distribution of inputs(Fodder seed, fertilizer etc); Napier Fodder Cultivation; Data collection

50. **Training:**

Training Title	Training duration (From – to –)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

51. **Knowledge management (e.g Journal article, Manual, Booklet, Media coverage, dissemination activity etc.):** Not yet done

Sl. No	Type of Documentation/ Publicity	Number	Achievements/Status	Remarks

52. **Financial**

	Amount (Tk.)	Remarks
a. Total Budget :	23,00,000	
b. Funds Received till to date: (July-December)	406200.00	
c. Delay (if any) in receipt of funds: (1st Quarter and 2nd Quarter)		
d. Expenditure till to date:	200000.00	
i) Incurred		
ii) Committed		
iii) Anticipated/Actual Balance/Deficit		

53. **Procurement:** Procurement plan submitted

Major Activity *	Activity status (No./ date)		% of completion in the current year	Cumulative % of completion from start
	Planned	Actual		
a. Goods				
(i)				
(ii)				
(iii)				
b. Works				
(i)				
(ii)				
c. Services				
(i)				
(ii)				

54. **Reporting**

Report type	Planned/ schedule	Actual submission date	Remarks
a. Inception report	October/2018	October/2018	
b. Six monthly report (last 01 year)			
c Annual report			
d. Internal Monitoring Report(s) (Last 01 year)			
f. Project Completion Report			

55. **Problems/Constraints/Limitation:**

Description	Implementers opinion	Suggested solution by the Monitoring Team
Slow fund release	Release of fund should be in time	

56. **Any other comments & suggestions by the visiting team:**

Visited project site of BLRI component at Tiarbond village of Potajia union of Shahjadpur upazila under Sirajgonj district. Monitored BLRI developed BLRI Napier-4 variety demonstration plot of eight farmers namely Md. Sirajul Islam, Md. Joynal Abedin, Md. Zakir Hossain, Md Alauddin Mondol, Md. Kalam Mondol, Md. Idris Ali, Md. Azmot Ali and Md. Zohrul Islam. Transplanting date of stem cutting was 15/11/2018. As per fertilizer recommendation urea, TSP, MoP and cowdung were applied at the time of land preparation. First cut of grasses were completed after 55–60 days after transplanting. Grasses will be harvested at a regular interval of 40-45 days after each cutting. Preservation of green grasses/fodder through silage technique (Dol technique) will be applied/used from 3rd/ 4th cut

of grasses. Selected farmers have already been given training in this regard. Growth of grasses was good at the time of monitoring. At noon visited laboratory of BLRI regional station, where chemical analysis of silage samples have been performed for the determination of the dry matter (DM), organic matter (OM), crude protein (CP) and P^H .

57. **Overall Assessment**
    a. Continue the sub-Project as Planned
    b. Modify (specify areas of modification) the sub-Project
    c. Terminate the Project

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

Fig 223:Monitoring team with PI and concerned farmer in front of a demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj

Fig 224:A demonstration Plot of BLRI Napier-4 at Shajadpur, Sirajgonj

Fig 225: Monitoring team visiting a demonstration Plot of BLRI Napier-4

Fig 226:A demonstration plot is seen after first cut, BLRI

Field monitoring and evaluation report at BLRI on 12 March, 2020

Date of Field Visit: 12 March, 2020; Monitoring Period: From July 2018 toFebruary 2020

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies
to Farmers' level for Increasing Farm Productivity -BLRI
component(Project ID: 005)
2. Name of Implementing (Component) Institute:Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka- 1341.
3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. ZakiahRahmanMoni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492

E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Md. ZillurRahman
Senior Scientific Officer
Training, Planning and Technology Testing Division
BLRI,Savar, Dhaka-1341
Cell phone: +8801677155641
Email: mzillur2002@Yahoo.com

CO-Investigator:
UmmeyaShihaAlam
Scientific Officer
BLRI, Regional Station,
Baghabari,Shahjadpur, Sirajgonj-6770
Mobile: 01772231314
Email:shihaalam23@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion:December 2020

5. Location (s) of the Sub-Project: Rajshahiand Sirajgong District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. ZillurRahman**,** Senior Scientific Officer,BLRI, Savar, Dhaka-1341.
b. UmmeyaShihaAlam,Scientific Officer, BLRI Regional Station, Baghabari,Shahjadpur, Sirajgonj-6770.
c. Md. Amir Hossain, Field Assistant, Regional Station, Bhaghabari, Sirajgonj.

7. Key Monitoring Indicator:

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Remarks
		Planned	Actual	
Objective 1: To transfer selected BLRI generated matured technology (silage) to farmers' Level	Napier Fodder cultivation	21 farmers plot	21 farmers plot	Napier Fodder cultivation-ongoing
	Silage preparation	25	18	Silage preparation-ongoing
Objective 2: To determine the cost benefit analysis of using selected technologies at farmers' level	Animal Feeding trial	25	18	Animal Feeding trial-ongoing
	Chemical analysis	-	-	Chemical analysis of silage-ongoing

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	2300000.00	
b. Funds Received till to date:	1730520.00	
c. Expenditure till to date (upto February 2020):	1303390.00	
i) Incurred	1303390.00	
ii) Committed	1730520.00	
iii) Actual Balance	427130.00	

12. Procurement: Completed

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BLRI component at Tiarbond village of Potajia union of Shahjadpurupazila under Sirajgonj district. Monitored BLRI developed BLRI Napier-4 variety demonstration plot of Md. Idris Ali, Md. Hisab Ali, Md Anwar Ali Pramanik and Md. Syed Pramanik. Already 1st& 2nd cut of grasses completed. At present growth of grass is good. 3rd cut of grass will be started from 2nd week of April. Preservation of green grasses through silage technique (Dol technique) was started from 1st/2nd/3rd cut of grasses. Selected farmers have already been given training in this regard. Grasses can be preserved 3-6 months through Dol technique. Preserved grasses will be used as fodder in the rainy season, while crisis of fodder occur.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:
ii) Air protection:
iii) Water protection:
iv) Indigenous people:
v) Women empowerment:

Fig 227 :Monitoring team with PI, co-PI and concerned farmer in front of a Demonstration plot of BLRI Napier-4 at Shajadpur, Sirajgonj

Fig 228: A demonstration plot is seen after first cut, BLRI

Field monitoring and evaluation report at BLRI on 10-11 February, 2021

Date of Field Visit: 10-11 February, 2021; Monitoring Period: From July 2018 to January 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity –BLRI component (Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka- 1341.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:

Dr. Md. Zillur Rahman
Senior Scientific Officer
Training, Planning and Technology Testing Division
BLRI,Savar, Dhaka-1341
Cell phone: +8801677155641
Email: mzillur2002@Yahoo.com

CO-Investigator:

Ummeya Shiha Alam
Scientific Officer
BLRI, Regional Station,
Baghabari,Shahjadpur, Sirajgonj-6770
Mobile: 01772231314
Email:shihaalam23@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018; Completion: December 2020

5. Location (s) of the Sub-Project: Rajshahi and Sirajgong District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Dr. Md. Zillur Rahman**,** Senior Scientific Officer, BLRI, Savar, Dhaka-1341.
b. Ummeya Shiha Alam, Scientific Officer, BLRI Regional Station, Baghabari,Shahjadpur, Sirajgonj-6770.
c. Md. Amir Hossain, Field Assistant, Regional Station, Bhaghabari, Sirajgonj.
d. Md. Mamun, Field Assistant, Regional Station, Bhaghabari, Sirajgonj.

7. Key Monitoring Indicator:

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Remarks
		Planned	Actual	
Objective 1: To transfer selected BLRI generated matured technology (silage) to farmers' Level	Napier Fodder cultivation	25 farmers plot	25 farmers plot	Napier Fodder cultivation-ongoing
	Silage preparation	25	18	Silage preparation-ongoing
Objective 2: To determine the cost benefit analysis of using selected technologies at farmers' level	Animal Feeding trial	25	18	Animal Feeding trial-ongoing
	Chemical analysis	-	-	Chemical analysis of silage-ongoing

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	2300000.00	
b. Funds Received till to date:	2015260.00	
c. Expenditure till to date (upto February 2020):	1873467.00	
i) Incurred		
ii) Committed		
iii) Actual Balance	141793.00	

12. Procurement: Completed

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
N/A		

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BLRI component at Tiarbond village of Potajia union of Shahjadpur upazila under Sirajgonj district. Monitored BLRI developed BLRI Napier-4 variety trial plots of Md. Idris Ali, Md. Joynal Abedin, Md. Sirajul Islam, Ashraf Ali, Ashraful Islam, Md. Hisab Ali, Md. Azmot Ali and Md Anwar Ali. Already 1st cut of grasses completed. At present growth of grass is good. 2nd cut of grass will be started from 1st week of March. Preservation of green grasses through silage technique (Dol technique) was started from 1st cut of grasses. Selected farmers have already been given training in this regard. Grasses can be preserved 3-6 months through Dol technique. Preserved grasses will be used as fodder to overcome fodder crisis in the rainy season. Concerned farmers are suggested to gap filling in the trial plot, where applicable. Variety name of grass should be mentioned in the signboard of trial plots.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Zakiah Rahman Moni, SSO	TTMU, BARC, Farmgate, Dhaka	
3. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:
ii) Air protection:
iii) Water protection:
iv) Indigenous people:
v) Women empowerment:

Fig 229: Monitoring team with PI, co-PI and concerned farmer in front of a trial plot of BLRI Napier-4 at Shahjadpur, Sirajgonj.

Fig 230 A trial plot of BLRI Napier-4 is seen after first cut at Shahjadpur, Sirajgonj.

Fig 231: Discussion with concerned farmers of BLRI Napier-4 before field visit at Shahjadpur, Sirajgonj.

Fig 232: In front of BLRI regional station, Baghabari, Shahjadpur, Sirajgonj.

Field monitoring and evaluation report at BFRI on 21 April, 2019

Date of Field Visit: 21 April, 2019; Monitoring Period: From July 2018 to March 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BFRI component(Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Fisheries Research Institute (BFRI), Mymensingh-2201.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:
Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:
Dr. Yahia Mahmud
Director General
Bangladesh Fisheries Research Institute, Mymensingh-2201,
Tel:091-65874, Mobile: 01712566134,
E-mail: yahiamahmud@yahoo.com

CO-Investigator:
Dr. A. H. M. Kohinoor
Principal Scientific Officer
Freshwater Station, BFRI, Mymensingh
Cell: 01711385005;
E-mail: kohinoor41@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Tegouri & Ranigaon village of Gouradar union under Nakla

upazila of Sherpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. A. H. M. Kohinoor**,**Principal Scientific Officer, BFRI, Mymensingh and Co-PI of the project.

b. _____

c._____

d._____

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To validate & transfer selected BFRI (Fisheries) generated promising technology to farmers field;	The technology entitled Pabda (*O. Pabda*) & Gulsha (*M. cavasius*) with Rui (*L. rohita*) in pond is being demonstrated in 03 farmers pond	Ongoing
Objective 2	To determine the cost benefit and problem of using selected technologies at farmers level	➢ After harvesting of fish, cost benefit analysis will be done ➢ For effective dissemination of this technology, high feed cost as well as un/non availability of quality seed are the major problems so far	-

Objective 3			

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training:

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Training on Environment friendly Advanced Fish Culture & Management	01	10	10	07	03	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	28,00,000	
b. Funds Received till to date:	4,70,000	
c. Expenditure till to date:		
i) Incurred	4,65,645	
ii) Committed	3,50,000	
iii) Actual Balance	4,355	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i) Fish fry	Goods	01.08.18	04.11.18
ii) Fish feed	Goods	01.08.18	04.11.18
iii) Camera	Goods	-	-
iv)			
v)			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund of field research was not sufficient	✓ In future, sufficient fund for field research should be allotted ✓ For conducting field research activities, fund should be released in time.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BFRI component at Tegouri village of Gouradar union of Nakla upazila under Sherpur district. Monitored the technology entitled Pabda (*O. Pabda*) & Gulsha (*M. cavasius*) with Rui (*L. rohita*) in 03 demonstration pond. Monitored a 60 decimal pond of a fish farmer named Hira Mia. Fish seed was released on 15/10/2018. Fish growth is good. Also monitored a 35 decimal pond of a fish farmer named Ripon Mondal in the same village. Fish seed was released on 25/10/2018. Fish growth is good. At noon, monitored a 35 decimal pond of a fish farmer named Md. Mostafizur Rahman of Ranigaon village. Fish seed was released on 25/10/2018. Fish growth is good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection: Lime is being applied to the ponds accordingly for prevent
iv) water pollution and maintaining suitable water quality for aquaculture.

iv) Indigenous people:

v) Women empowerment: Training have been offered for women empowerment

Fig 233: Monitoring team with Co-PI in front of a demonstration pond at Nakla upazila, Sherpur, BFRI

Fig 234 :Monitoring team in front of a demonstration pond of Hira Mia at Tegouri village of Nakla upazila under Sherpur district, BFRI

Fig 235: Monitoring team observing fish sampling of a demonstration pond at Nakla upazila under Sherpur district, BFRI

Field monitoring and evaluation report at BFRI on 19 October, 2019

Date of Field Visit: 19 October, 2019; Monitoring Period: From July 2018 to September 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BFRI component(Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Fisheries Research Institute (BFRI), Mymensingh-2201.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
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Associate Coordinator:

Dr. Zakiah Rahman Moni
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Principal Investigator:
Dr. Yahia Mahmud
Director General
Bangladesh Fisheries Research Institute, Mymensingh-2201,
Tel:091-65874, Mobile: 01712566134,
E-mail: yahiamahmud@yahoo.com

CO-Investigator:
Dr. A. H. M. Kohinoor
Principal Scientific Officer
Freshwater Station, BFRI, Mymensingh
Cell: 01711385005;
E-mail: kohinoor41@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Tegouri & Ranigaon village of Gouradar union under Nakla Nakla upazila of Sherpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Dr. A. H. M. Kohinoor**,**Principal Scientific Officer, BFRI, Mymensingh and Co-PI of the project.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To validate & transfer selected BFRI (Fisheries) generated promising technology to farmers field	Demonstration Trial on Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) have been conducted in three farmers pond during July to December 2019. The ponds were stocked with Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) at the rate of 175000, 100000 and 1250/ha, respectively. Fish are being fed with floating supplementary feed regularly. Fish will be harvested in December 2019.	
Objective 2	To determine the cost benefit and problem of using selected technologies at farmers level	After harvesting, cost & benefit analysis will be done.	

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
	Media coverage (Mati-O-Manush, BTV)	01	Pabda & Gulsha farming technology have been broadcasted	

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	28,00,000	
b. Funds Received till to date:	14,25,000	
c. Expenditure till to date:		
i) Incurred	11,68,607	
ii) Committed	3,00,000	
iii) Actual Balance	2,56,393	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Fish fry	Goods	July	July
Fish feed	Goods	August	September

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund Release	Delayed fund release which hampered for smooth implementation of project activities	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BFRI component at Tegouri village of Gouradar union of Nakla upazila under Sherpur district. Monitored the technology entitled Pabda (*O. Pabda*) & Gulsha (*M. cavasius*) with Rui (*L. rohita*) in a 60 decimal pond of a fish farmer named Hira Mia. Fish seed was released on May, 2019. Fish growth is good. Also monitored a 35 decimal pond of shing fish of a fish farmer named Md. Shahid Khan in the same village. Fish seed was released on June, 2019. Fish growth is good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment:

Fig 236: Fish harvesting of a demonstration pond of Hira Miah at Nakla upazila, Sherpur,BFRI

Fig 237: Monitoring team with Co-PI showing harvested shing fish of a demonstration pond at Nakla upazila, Sherpur, BFRI

Fig 238: Monitoring team with Co-PI and TV presentator Md. Rezaul Karim in front of a demonstration pond at Nakla upazila, Sherpur, BFRI

Field monitoring and evaluation report at BFRI on 03 February, 2021

Date of Field Visit: 03 February, 2021; Monitoring Period: From July 2018 to January 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BFRI component(Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Fisheries Research Institute (BFRI), Mymensingh-2201.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka

Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Yahia Mahmud
Director General
Bangladesh Fisheries Research Institute, Mymensingh-2201,
Tel:091-65874, Mobile: 01712566134,
E-mail: yahiamahmud@yahoo.com

CO-Investigator:
Dr. A. H. M. Kohinoor
Principal Scientific Officer
Freshwater Station, BFRI, Mymensingh
Cell: 01711385005;
E-mail: kohinoor41@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020

5. Location (s) of the Sub-Project: Tegouri & Ranigaon village of Gouradar union under Nakla upazila of Sherpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. A. H. M. Kohinoor**,**Principal Scientific Officer, BFRI, Mymensingh and Co-PI of the project.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To validate & transfer selected BFRI (Fisheries) generated promising technology to farmers field	Demonstration Trial on Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) have been conducted in three farmers pond during July to December 2020. The ponds were stocked with Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) at the rate of 175000, 100000 and 1250/ha, respectively. Fish are being fed with floating supplementary feed regularly. Fish was harvested in December 2020.	
Objective 2	To determine the cost benefit and problem of using selected technologies at farmers level	After harvesting, cost & benefit analysis is continuing.	

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
	Media coverage (Mati-O-Manush, BTV)	01	Pabda & Gulsha farming technology have been broadcasted	

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	28,00,000	
b. Funds Received till to date:	25,71,250	
c. Expenditure till to date:	25,40,881	
i) Incurred		
ii) Committed		
iii) Actual Balance	30,369	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Fish fry	Goods	July	July
Fish feed	Goods	August	September

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund Release	Delayed fund release which hampered for smooth implementation of project activities	

14. Overall Observation/comments & suggestions by the Monitoring team:

Fishes of 5 ponds were harvested on December, 2020. Interviewing concerned Co-PI in his office the following information was captured. The trial entitled Validation & Demonstration of Culture of Pabda (*Ompok pabda*), Gulsha (*Mystus cavasius*) with Rui (*Labeo rohita*) was demonstrated in 03 farmers pond having the average pond size of 0.36 acre in Nokla upazilla of Sherpur district. The selected ponds were prepared with lime and fertilizers. After preparation, ponds were stocked with Pabda, Gulsha and Rui at the stocking density of 225000, 100000 and 1250/ha. Fishes were fed with supplementary feed at the rate of 4-6% of estimated body weight. After six months rearing, the production obtained were 8043, 7862 and 7707 kg/ha from Pond-1, pond-2 and Pond-3, respectively. The net benefit of Pond-1, Pond-2 and Pond- 3 were Tk. 115400, Tk. 139350 and Tk. 63740, respectively. While two ponds were selected for demonstrating the technology entitled Shing culture in pond during July to December 2020. After ponds preparation, Shing, Rui and Catla were stocked 250000, 1000 and 1000/ha, respectively. After five months rearing, the production obtained were 1651 and 1261 kg in P-1 and P-2, respectively, where the contribution of Shing was 69.29 to 90.24% in total production. The net profit of pond-1 and pond-2 were Tk.69945 and Tk. 65860, respectively. The trial of the technology showed satisfactory impact upon neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Zakiah Rahman Moni, SSO	TTMU, BARC, Farmgate, Dhaka	
3. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection:

ii) Air protection:

iii) Water protection:

iv) Indigenous people:

v) Women empowerment:

Fig 239: Concerned Co-PI was interviewed in his office by the monitoring team, BFRI

Fig 240: Monitoring team taking some notes interviewing the concerned Co-PI, BFRI

Field monitoring and evaluation report at SRDI on 07 January, 2019
Duration of Field Visit: From 07/01/2019 to 07/01/2019

Coverage of Monitoring Report: From July 2018 to December 2018
Sub-Project Title: Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-SRDI component
Institute Name: Soil Resource Development Institution (SRDI), Dhaka

Coordinator/Principal Investigator/Co-Principal Investigator(as applicable):

Project Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
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Principal Investigator:

Dr. Md. Altaf Hossain
Principal Scientific Officer
Soil & Land Classification Survey Section, SRDI, Dhaka
Mobile: 01871039481
Email:altajolly63@yahoo.com

CO-Investigator:

Md. Babul Hossain
Senior Scientific Officer
Soil Survey Interpretation Section, SRDI, Dhaka
Email:babulhossain2481@yahoo.com
Mobile: 01716730903

Duration: Start July 2018 Completion December 2020
Location(s) of the Program: Tangail, Comilla
Name of Person(s) with address interviewed/ met/ discussed:

a.**Dr. Md. Altaf Hossain**, Principal Scientific Officer, SRDI, Dhaka.
b. Md. Abdul Mannan, SAAO, Upazila Krishi Office, Bhuapur, Tangail
c. Hazrat Ali, Fieldman cum Scientific Assistant, SRDI, Tangail

.

Technical Information:

- Methodology and its Appropriateness: As per project proposal
- Adherence to Original Plan:
- Reason for Deviation (if any):

58. **Field Experimentation:**

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Deviation (if any)	Performance (Good/average/ below/average/poor
		Planned	Actual		
To popularize SRDI's Updated Land and Soil Resources Utilization Guide based balanced fertilizer application in Boro-Fallow-T. Aman pattern to farmer's level.	1. Selection of farmer and famers plot for adaptive trial and control	8	8		Good
	2. Distribution of 5kg Boro seed (BRRI dhan58).	8	8		Good
	3. Establishment of seedbed	4	4		Good
	4. Establishment of Adaptive Trial: Final Land preparation and basal application of non-urea fertilizer	1	1		Good
	5. Transplanting of seedlings	8	-		
	6. Intercultural operations and top dressing of Urea	8	-		
	7. Harvesting	4	-		
	8. Field days				
	9. Data collection, analysis and reporting				

Technology Generation: N/A

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

Technology Adoption: N/A

No. of farmers involved	No. of farmers Motivated	No. of farmers adopting/ willing to adopt technology	Local level suitability of the technology	Total area covered	Project support/ services provided for adoption	Scope/ possibility of market linkage	Remarks

59. **Internal Monitoring by the Research/Academic Institution:**

Name of visitor(s)	Designation	Date(s) of visit	Total visit till date (No.)	Remarks (Activities performed/ modification suggested)
Dr. Md. Altaf Hossain	PSO, SRDI & PI	14, 19 Sept 15, 19 Nov, 7 Jan '19	5	Farmer, Farmer's plot selection, seed distribution, visit seedbed and transplanting
Md. Babul Hossain	SSO, SRDI & Co-PI	14, 19 Sept 15, 19 Nov	4	Farmer and Farmers plot selection, seed distribution
Md. Jalal Uddin	PSO, SRDI, Cumilla	19 Nov	1	Farmer, Farmer's plot selection, seed distribution
Utpol Kumar	SSO, SRDI, Tangail	14, Sept, 15 Nov	2	Farmer, Farmer's plot selection, seed distribution
Md. Hazrat Ali	Fieldman cum Scientific Assistant	24 Dec'18 6 Jan '19	2	visit seedbed, basal application of fertilizer
Millat Hossain	Fieldman cum Scientific Assistant	22 Sept 30 Dec	2	distribution of seed, visit seedbed

Training:

Training Title	Training duration (From – to –)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Importance of soil health and balanced use of fertilizer	11/09/2018 – 11/09/18	12	12	11	1	

Knowledge management (e.g Journal article, Manual, Booklet, Media coverage, dissemination activity etc.): Not yet done

Sl. No	Type of Documentation/ Publicity	Number	Achievements/Status	Remarks

Financial

	Amount (Tk.)	Remarks
a. Total Budget :	26,10,000.00	
b. Funds Received till to date: (July-December)	**3,07,226.00**	
c. Delay (if any) in receipt of funds: (1st Quarter and 2nd Quarter)		Delayed fund release
d. Expenditure till to date:		
i) Incurred	**3,07,226.00**	
ii) Committed	0.00	
iii) Anticipated/Actual Balance/Deficit	0.00	

Procurement: Procurement plan submitted

Major Activity *	Activity status (No./ date)		% of completion in the current year	Cumulative % of completion from start
	Planned	Actual		
a. Goods				
(i)				
(ii)				
(iii)				
b. Works				
(i)				
(ii)				
c. Services				
(i)				
(ii)				

Reporting

Report type	Planned/ schedule	Actual submission date	Remarks
a. Inception report	October/2018	October/2018	
b. Six monthly report (last 01 year)	January/2019	January/2019	
c Annual report			
d. Internal Monitoring Report(s) (Last 01			

year)			
f. Project Completion Report			

Problems/Constraints/Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Difficulty in farmer's practice data collection as they usually do not maintain any written record.	Need good rapport skill and cooperation of DAE personnels to collect farmer's practice data.	
Delayed fund release	Delayed fund release hampers timely implementation of the planned activities.	

Any other comments & suggestions by the visiting team:

Visited project site of SRDI component at Biramdi village of Birhata union of Vuapur upazila under Tangail district. Monitored BRRI Dhan 58 variety demonstration plot of Aminul Islam and Md. Ali. Aminul Islam was preparing his one bigha land while inspection. He applied fertilizer as SRDI developed Upazila Nirdeshika guide as basal dose. He would transplant 42 days old seedling tomorrow. On the other hand, Md. Ali was preparing his one bigha land. He applied fertilizer as traditional practice as basal dose. He would transplant 42 days old seedling tomorrow. Paddy variety and other cultural operation were same for two demonstration plot except amount fertilizer application.

Overall Assessment

a. Continue the sub-Project as Planned
b. Modify (specify areas of modification) the sub-Project
c. Terminate the Project

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

Fig 241: Monitoring team with PI of SRDI component in front of the demonstration plotat Vuapur, Tangail

Fig 242: Final land preparation with basal application of fertilizer (Fertilizer Recommendation Guide-2018) at Vuapur, Tangail, SRDI

Fig 243: Demonstration plot is ready for transplanting BRRI Dhan-58 at Vuapur, Tangail, SRDI

Fig 244 :Seed bed of BRRI Dhan-58 for transplanting in the Demonstration plot at Vuapur, Tangail

Fig 245: Monitoring team noted Demonstration related information at Vuapur, Tangail, SRDI

Field monitoring and evaluation report at SRDI on 15 October, 2019

Date of Field Visit: 15 October, 2019; Monitoring Period: From July 2018 to September 2019

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -SRDI component(Project ID: 005)

2. Name of Implementing (Component) Institute: Soil Resource Development Institution (SRDI), Dhaka

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer

Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Md. Altaf Hossain
Principal Scientific Officer
Soil & Land Classification Survey Section, SRDI, Dhaka
Mobile: 01871039481
Email:altajolly63@yahoo.com

CO-Investigator:
Md. Babul Hossain
Senior Scientific Officer
Soil Survey Interpretation Section, SRDI, Dhaka
Email:babulhossain2481@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion:December 2020**5.**

Location (s) of the Sub-Project: SadarDakshinand BurichongUpazila of CumillaDistrict

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Md. Babul Hossain**,** Senior Scientific Officer,SRDI, Dhakaand Co-PI of the project.
b. Md. MillatHossain, Field man, SRDI, Cumilla.
c._____
d._____

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	i) Trial Establishment in farmer's field ii) Intercultural operations	i) BRRIdhan72 is in booting stage. ii) Balanced fertilizer was applied according to soil test status following FRG 2018, BARC iii) Urea topdressing; weeding has been done in time. iv) Irrigation applied as required.	
Objective 2			
Objective 3			

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
	Upazila Soil and Land Resource Utilization Guide Soil test status based balanced fertilizer application in Boro-T.Aman cropping pattern	01	Trial stage	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	26,10,000.00	
b. Funds Received till to date:	7,70,881.00	
c. Expenditure till to date:	5,39,053.00	
i) Incurred		
ii) Committed		
iii) Actual Balance	2,31,828.00	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Procurement of computer and accessories(Desktop computer,printer,scanner,ups ,camera)	Goods		Procurement completed
Procurement of file cabinet	Goods		Procurement completed
Procurement of furniture (computer table, computer chair)	Goods		Procurement completed
	Goods		Procurement completed

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
1. Delayed fund release	i) Very tough to maintain scheduled Project activities.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of SRDI component at Kingbamisha village of Chouara union of Sadar Daksin upazila under Cumilla district. Monitored BRRI Dhan 72 (T. Aman Variety) variety demonstration plot of Md. Ilias and Md. Moslem Uddin. Md. Ilias applied fertilizer as SRDI developed Upazila Nirdeshika guide. On the other hand, Md. Moslem Uddin applied fertilizer as traditional practice. Paddy variety and other cultural operation were same for two demonstration plot except amount fertilizer application. BRRIdhan72 is now in booting stage. Demo plot of Md. Ilias seem to much better than Md. Moslem uddin. At noon visited BRRI Dhan 72 (T. Aman Variety) variety demonstration plot of Md. Rahmat Ali and Md. Mofiz at Isapura village of Sholonol union of Burichong upazila under Cumilla district. Md. Rahmat Ali applied fertilizer as SRDI developed Upazila Nirdeshika guide. On the other hand, Md. Mofiz applied fertilizer as traditional practice. Paddy variety and other cultural operation were same for two demonstration plot except amount fertilizer application. BRRIdhan72 is in booting stage. Demo plot of Md. Rahmat Ali seem to much better than Md. Mofiz.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Balanced fertilizer has been applied to reduce NO2 and CO2 emission

ii) Air protection: Balanced fertilizer has reduced excess CO2 emission from rice field

iii) Water protection: Ails/embankment have been made around the rice field to protect fertilizer

washing out to nearby water bodies.

iv) Indigenous people: N/A

v) Women empowerment: Crop production will increase through application of balanced fertilizer which will enhance financial solvency as well as living standard among the women of farmers community.

Fig 246: Demonstration plot at Burichog, Comilla, SRDI

Fig. 247: Monitoring team with Co-PI of SRDI component in front of the demonstration Plot at Sadar Daskin upazila, Comilla

Fig 248: Demonstration plot is monitored by coordinator at Sadar Daskin, Comilla, SRDI

Field monitoring and evaluation report at SRDI on 18 March, 2020

Date of Field Visit: 18 March, 2020; Monitoring Period: From July 2018 to February 2020

1. Sub-Project Title with ID: Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity –SRDI component(Project ID: 005).
2. Name of Implementing (Component) Institute: Soil Resource Development Institution (SRDI), Dhaka

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. ZakiahRahmanMoni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
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Principal Investigator:
Dr. Md. AltafHossain
Principal Scientific Officer
Soil & Land Classification Survey Section, SRDI, Dhaka
Mobile: 01871039481
Email:altajolly63@yahoo.com

CO-Investigator:
Md. Babul Hossain
Senior Scientific Officer
Soil Survey Interpretation Section, SRDI, Dhaka
Email:babulhossain2481@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion:December 2020**.**

Location (s) of the Sub-Project: 1) Sadar Dakshin and Burichong Upazila of Cumilla District

2) Tangail Sadar and Bhuapur upazila of Tangail district.

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Md. Babul Hossain**,** Senior Scientific Officer,SRDI, Dhakaand Co-PI of the project.

b.
c._____
d._____

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	i)Trial Establishment in farmer's field ii)Intercultural operations	i) BRRIdhan 58 is in booting stage. ii)Balanced fertilizer has been applied according to soil test status following FRG 2018, BARC iii)Urea topdressing; weeding has been done in time. iv) Irrigation applied as required.	
Objective 2			
Objective 3			

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
	SRDI developed "Upazila Soil and Land Resource Utilization Guide" Based Balanced Fertilizer Application in Boro-T. Aman cropping pattern	01	Trial stage	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	26,10,000.00	

b. Funds Received till to date:	16,95,260.00	
c. Expenditure till to date:	15,49,907.50	
i) Incurred		
ii) Committed		
iii) Actual Balance	1,45,352.50	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
Procurement of computer and accessories(Desktop computer,printer,scanner,ups ,camera)	Goods		Procurement completed
Procurement of file cabinet	Goods		Procurement completed
Procurement of furniture (computer table, computer chair)	Goods		Procurement completed
	Goods		Procurement completed

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
N/A		

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited projectsite of SRDI component at Isapura village of Sholonol union at Burichong upazila under Cumilla district. Monitored Upazila Nirdeshika based fertilizer application trial plot planted with BRRI Dhan 58 (Boro Variety).Main Trial plot is in Rahmat Ali's field.Additionally 4farmers (Md. Mamun, Md. Iqbal, Md. Saddam and Md. Faqrul) were supported with seed and soil test status based fertilizer same as Rahmat Ali's plot.On the other hand, Md. Mofizul Islamapplied fertilizer according to traditional practice. Date of seedling transplantation was same in all 6(six) trial plots, which was 01/01/2020. Paddy variety and other cultural operations were same for all six trial plots except rate of fertilizer application. Trial plot of Md. Rahmat Ali and four other farmers seemed to much better than Md. Mofizul Islam.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i)Soil protection: Balanced fertilizer has been applied to reduce NO_2 and CO_2 emission

ii)Air protection: Balanced fertilizer has reduced excess CO_2 emission from rice field

iii)Water protection: Ails/embankment has been made around the rice field to protect fertilizer

washing out to nearby water bodies.

iv)Indigenous people: N/A

v) Women empowerment: Crop production will increase through application of balanced fertilizer which will enhance financial solvency as well as living standard of the women under farmer's community in the project area.

Fig. 249: Monitoring team with Co-PI of SRDI component in front of the demonstration Plot at Burichog upazila, Comilla

Fig. 250: Demonstration plot at Burichog, Comilla, SRDI

Field monitoring and evaluation report at CDB on 09-11 February, 2019
Monitoring Period: From February 9 to 11, 2019

Date of Field Visit: 10.02.2019

1. Sub-Project Title with ID:A coordinated sub-project on Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity (ID-005).

2. Name of Implementing (Component) Institute: Cotton Development Board, Khamarbari, Farmgate Dhaka

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):
i) Coordinator: Dr. S.M. Bokhtiar, MD (P&E),BARC, Farmgate, Dhaka.
ii) Associate Coordinator: Dr. Fauzia Yasmin, Director (TTMU), cc, BARC, Farmgate, Dhaka.
iii) Principal Investigator : Md. Mominul Islam, SSO, Cotton Development Board, Khamarbari, Farmgate, Dhaka
iv) Co-Principal Investigator(s)- Mohammad Mofazzal Hossain, Cotton Development Officer, Cotton Development Board, Khamarbari, Farmgate ,Dhaka.

4. Sub-Project Duration (as per approval/LoA/revision): Start: July, 2018 End : December, 2020

5. Location (s) of the Sub-Project: The field trial (Demonstration) have been conducted on 8 farmers field/year under 3 Zonal offices of CDB. These Zonal office are located at i) Thakurgoan ii) khagrachari, and iii) Bandarban.

Two field trial have been conducted at Thakurgoan and khagrachari zone and 4 field trial have been conduced at Bandarban Zone . Total 8 trials will be conducted per year

6. Name of project Personnel (s) interviewed/met/discussed with address:

a. Md. Mominul Islam SSO, Cotton Development Board
b. Mr. Sadesh Chandra Roy, FCFM, Thakurgoan Zone, Cotton Development Board

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1: To transfer recently generated 3 technologies to cotton farmers	Site selection	Three sites selected out of Three	100%
	Farmers selection	Eight farmers selected out of eight	100%
	Base line survey	Base line survey completed.	100%
	Demonstration	Two plots with CB-14 variety visited: Plot-1 with tillage and Plot-2 without tillage. Both cases, 33 Dec. land; Sowing date- 31-7-2018. Plot-1: Line to line= 30 inch Plant to Plant= 14 inch Ball/plant= 40-50	Excellent

		Total plant= 3300 Plot-2: Line to line= 40 inch Plant to Plant= 22 inch 12 inch Ball/plant= Average 150 Total plant= 1600 Harvesting was going on, started 6 months after sowing, needed 1-1½ months. Sowing to harvesting needed 7-7½ months. Performance is good in both plots, more better in plot-2 to plot-1.	
Objective 2: To determine the Benefit-Cost analysis of using selected technologies at farmers level.		Will be calculated after harvesting of CB-14 variety.	

8. Technology intended to be Generated/updated/validated:

Sl.No.	Description of the Technology	Number	Achievements/Status	Remarks
	CB-14 Cotton Variety .	2 Farmers	Demonstration plots were showing good/better performance. Yield would be calculated after harvesting with benefit-cost analysis	Farmers would be benefitted with increase of income

9. Training:

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Stuff (Field/ research assistant) training will be organized at CDB head quarter	3 days	16 Stuff (Field/ research assistant)	Will be started			

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.)

Sl.No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks
	Trainning Manual	1	Preparing	

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	2500000.00	
b. Funds Received till to date:	436896.00	
c. Expenditure till to date:	279256.00	
i) Incurred		
ii) Committed		
iii) Actual Balance	157640.00	

12. Procurement: In-process

Item *	Type (Goods/ works/service)	Activity status(No./ date)	
		Planned	Actual
i) 1 dextop Computer			
ii) 1 Lap top			
iii) 1 Digilal Camera			

*as per approved procurement plan

13. Reporting

Report type	**Date of submission as per Plan/ schedule**	**Actual date of submission**	**Remarks**
a. Inception report	18.10.2018	18.10.2018	
b. Statement of expenditure.(SoE)*		05.11.2018 5.11.2018 2.12.2018 9.01.2019 06.02.2019	
c. Quarterly report(s)*	-	3.12.2018	
d. Six monthly report	1.1.2019	9.01.2019	
e. Procurement plan	-	02.12.2018	
f. Field Monitoring Report(s)**			

14. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
1. Pacha Disease	Spray of Autostin & Noin powder	Spray Solution should be prepared appropriately with proper application.
2. Ball worm (Before & after appearance of Ball)	-Pheromone trap -Virtako spray at 15 days interval after the worm appeared.	-Pheromone trap is better - Spray Solution should be prepared appropriately with proper application.
3. Jashid/Apid worm (Below leave, before appearance of Ball)	Pagasus spray	Spray Solution should be prepared appropriately with proper application.

15. Overall Observation/comments & suggestions by the Monitoring team:

a. The team found best growth and performance in plot-2 compared to plot-2.

b. Low plant intensity gives high performance.

c. Farmers were happy cultivating cotton with CB-14 variety.

Field Monitoring Members:

Name with position	**Organization**	**Signature with date**
1. Dr. Shah Md. Ziqrul Haq Chowdhury, MD (Livestock)	BARC	
2. Dr. Fauzia Yasmin, Director (TTMU)	BARC	
3. Mr. Hasan Md. Hamidur Rahman, Directir (Comp.)	BARC	

16. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard:

i) Soil protection:
ii) Air protection:
iii) Water protection:
iv) Indigenous people:
v) Women empowerment:

Fig. 251: First coordinator of the sub-project (at present EC, BARC) monitored the project activities at Bandarban district (17-19.11.2018), CDB

Field monitoring and evaluation report at CDB on 20-22 December, 2019
Date of Field Visit: 20-22 December, 2019

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies
to Farmers' level for Increasing Farm Productivity –CDB component(Project ID: 005)

2. Name of Implementing (Component) Institute: Cotton Development Board (CDB).

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Md. Mominul Islam
Senior Scientific Officer
Cotton Development Board
Khamarbari, Farmgate ,Dhaka-1215
Mobile: 01815885672, 01716330802
E-mail: mominhujur@yahoo.com;mominulcdb@gmail.com

CO-Investigator:
Mohammad Mofazzal Hossain
Cotton Development Officer, Cotton Development Board
Phone: 9103638, Mobile: 01711-314348
Fax: 58152758, E-mail: mdmofazzal1977@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020

5. Location (s) of the Sub-Project: SadarUpazila of Bandorban District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

Md. Mominul Islam

Senior Scientific Officer
Cotton Development Board
Khamarbari, FarmgateDhaka-1215

Mohammad Mofazzal Hossain
Cotton Development Officer, Cotton Development Board
Khamarbari, FarmgateDhaka-1215

Md. Salim Miah, Field Assistant, Cotton Development Board, Bandorban**& Md. Abdur Rashid**, Field Assistant, Cotton Development Board, Bandorban

Farmers: Khamu Marma, Mramui Chig, Soyapru Marma, Monpru Marma, Ugasha Marma, Lauchig Marma

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Activities 1	Dissemination of latest CB-14 release Cotton varieties	1st Harvesting period & Flowering Stage	
Activities 2	No. of farmers	6	
Activities 3	No. of locations	6	
Activities4	land area	6x1= 6bighas	
Activities5	Application of fertilizers, transplanting, weeding and pest control etc.	Performed in all the 4 locations	

8. Technology intended to be Generated/updated/validated/Dissemination:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Dissemination of latest CB-14 release Cotton varieties	6	Demonstration of all the 6 varieties was established in the 4 locations.	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.):N/A

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	7,63,740	
b. Funds Received till to date:	3,81,870	
c. Expenditure till to date:	2,37,792	
i) Incurred		
ii) Committed		
iii) Actual Balance	1,44,078	

12. Procurement: Already completed in the 1st year

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/ Limitation: N/A

Description	Implementers opinion	Suggested solution by the Monitoring Team

14. Overall Observation/comments & suggestions by the Monitoring team:

Monitored CDB developed CB-14 demonstration plots of six farmers named Khamu Marma, Mramui Chig, Soyapru Marma, Monpru Marma, Ugasha Marma, Lauchig Marma respectively at Majar Para,Mongpru Chara village of Sadar upazilla under Bandorban district on 21-12-19. Sowing date of seed was 3 August & 20 August 2019 and Ist harvest was done on 19-12-19 at Majar Para. Other plot was at flowering stage. Crop condition was good.

Field Monitoring Members:

Name with position	Organization	Signature with date
Dr. Zakiah Rahman Moni	Technology Transfer and	

Senior Scientific Officer	Monitoring Unit (TTMU), Bangladesh Agricultural Research Council (BARC) Farmget, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: N/A
ii) Air protection: N/A
iii) Water protection: N/A
iv) Indigenous people: Yes.
v) Women empowerment: Yes

Fig. 252: Field Monitoring of a demonstration plot at Sadar, Bandorban,CDB

Field monitoring and evaluation report at CDB on 26-28 December, 2019

Date of Field Visit:26-28 December, 2021

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies
to Farmers' level for Increasing Farm Productivity–CDB component(Project ID: 005)

2. Name of Implementing (Component) Institute:Cotton Development Board(CDB).

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Md. Mominul Islam
Principal Scientific Officer
Cotton Development Board
Khamarbari, Farmgate ,Dhaka-1215
Mobile: 01815885672, 01716330802
E-mail: mominhujur@yahoo.com;mominulcdb@gmail.com

CO-Investigator:
Mohammad Mofazzal Hossain
Cotton Development Officer, Cotton Development Board
Phone: 9103638, Mobile: 01711-314348
Fax: 58152758, E-mail: mdmofazzal1977@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion:December 2021

5. Location (s) of the Sub-Project: Dighinala and Mohalchari Upazila of Khagrachari District.

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a) Dr. Md. Mominul Islam, Principal Scientific Officer, Cotton Development Board,

Khamarbari, Farmgate, Dhaka-1215.

b) Mohammad Mofazzal Hossain, Cotton Development Officer, Cotton Development Board Khamarbari, Farmgate, Dhaka-1215.

c)

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Activities 1	Dissemination of latest CB-14 release Cotton varietiesand 3 technologies	Boll splitting stage or pre harvesting stage	
Activities 2	No. of farmers	6	
Activities 3	No. of locations	5 Upazilla of khagrachari hilldistict in this year.	
Activities4	land area	6×1= 6 bighas	
Activities5	Application of fertilizers, transplanting, weeding and pest control etccollectining of data.	Performed in all the (5 Upazilla) of khagrachari hilldistrictin this year.	

8. Technology intended to be Generated/updated/validated/Dissemination:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Dissemination of released latest CB-14 Cotton variety and 3 technologies.	6	Demonstration of all the CB-14 variety and 3 technologies was established (5 Upazilla) at Khagrachari hill district in this year.	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.):N/A

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	4,00,905	
b. Funds Received till to date:	2,00,453	
c. Expenditure till to date:	2,00,452	
i) Incurred		
ii) Committed		
iii) Actual Balance	2,00,452	

12.Procurement: Already completed in the 1st year

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual

*as per approved procurement plan

13. Problems/Constraints/ Limitation:N/A

Description	Implementers opinion	Suggested solution by the Monitoring Team

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of CDB component at Suparibagan village of Dighinala upazila under Khagrachari district. Monitored CB-14 variety trial plot of Mahil Hossain, where date of sowing was 24/07/21. Later on monitored CB-14 variety trial plot of Ruif Marma at Nunchari village of Mohalchari upazila under Khagrachari district. Date of sowing was 31/08/2021. Crop condition of two trial plots was good. Boll splitting stage or pre harvesting stage is running now. Crops of the two trial plots will be harvested within February/2022. However, concerned farmers are suggested to exchange their last year success to their neighboring farmers.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Zakiah Rahman Moni	SSO, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

iii) Soil protection: N/A
iv) Air protection: N/A
iii) Water protection: N/A
iv) Indigenous people: Yes.
v) Women empowerment: Yes

Fig. 253: Monitoring team along with concerned PI in front of a trial plot of CB-14 variety at Dighinala upazila, Khagrachari, CDB

Fig. 254: A trial plot of CB-14 variety at Mohalchari upazila, Khagrachari, CDB

Field monitoring and evaluation report at BJRI on 27 December, 2018

Duration of Field Visit: From 27/12/2018 to 27/12/2018
Coverage of Monitoring Report: From July 2018 to November 2018

60. Sub-Project Title: Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-BJRI component

61. Institute Name: Bangladesh Jute Research Institute (BJRI), Manik Mia Avenue, Dhaka-1207

62. Coordinator/Principal Investigator/Co-Principal Investigator(as applicable):

Project Coordinator:

Dr. S.M. Bokhtiar
CSO, Soil, Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:

Dr. Md. Ayub Khan
CSO & Head, Jute Farming Systems
Division (JFSD), 8120742 (Off.),
Tnt: 48111343 01552414003 (Cell),
E-mail: drmakhan3263@yahoo.com

CO-Investigator:

Dr. Md. Yearuddin Sarker
Designation: Principal Scientific Officer
Address: BJRI, Dhaka.
Tel: 58156491(off); Mobile: 01552379753;
E-mail: sarkerbjri96@gmail.com

Duration: Start July 2018 Completion December 2020
Location(s) of the Program: Rangpur, Faridpur and Manikganj
Name of Person(s) with address interviewed/ met/ discussed:

a.Dr. Md. Yearuddin Sarker, Principal Scientific Officer, BJRI, Dhaka.
b. Dr. Lutfor Rahman, Principal Scientific Officer, BJRI, Zagir, Manikgonj
c. Bishwajit Kundu, Scientific Officer, BJRI, Dhaka.

Technical Information:

- Methodology and its Appropriateness: As per project proposal
- Adherence to Original Plan:
- Reason for Deviation (if any): N/A

Lab/Field Experimentation:

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Deviation (if any)	Performance (Good/average/ below/average/poor
		Planned	Actual		
To produce seed of newly released jute crop at farmers' level to make self sufficient	Farmer selection to produce seed	06 Nos.	06 Nos.	-	Good

Technology Generation: N/A

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

Technology Adoption: N/A

No. of farmers involved	No. of farmers Motivated	No. of farmers adopting/ willing to adopt technology	Local level suitability of the technology	Total area covered	Project support/ services provided for adoption	Scope/ possibility of market linkage	Remarks

Internal Monitoring by the Research / Academic Institution:

Name of visitor(s)	Designation	Date(s) of visit	Total visit till date (No.)	Remarks (Activities performed/ modification suggested)
Dr. Md. Ayub Khan	CSO & Head, Jute Farming Systems Division (JFSD), BJRI, Dhaka	5/11/18, 12/12/18	02	
Dr. Md. Yearuddin Sarker	Principal Scientific Officer, BJRI, Dhaka	10/10/18, 22/10/18, 31/10/18	03	
Dr. Lutfor Rahman	Principal Scientific Officer, BJRI, Zagir, Manikgonj	5/11/18	01	
Bishwajit Kundu	Scientific Officer, BJRI, Dhaka	10/10/18, 31/10/18, 5/11/18, 19/11/18, 12/12/18	05	

Training:

Training Title	Training duration (From – to –)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	
Farmers Training for jute seed production	5/9/18 to 5/9/18	16	16	12	04	

Knowledge management (e.g Journal article, Manual, Booklet, Media coverage, dissemination activity etc.): Not yet done

Sl. No	Type of Documentation/ Publicity	Number	Achievements/Status	Remarks

Financial

	Amount (Tk.)	Remarks
a. Total Budget :	28,00,000	
b. Funds Received till to date:	2,37,215	
c. Delay (if any) in receipt of funds:		
d. Expenditure till to date:	71,363	
i) Incurred	71,363	
ii) Committed		
iii) Anticipated/Actual Balance/Deficit	1,65,852	

63. **Procurement:** Procurement plan submitted

Major Activity *	Activity status (No./ date)		% of completion in the current year	Cumulative % of completion from start
	Planned	Actual		
a. Goods				
(i)				
(ii)				
(iii)				
b. Works				
(i)				
(ii)				
c. Services				
(i)				
(ii)				

Reporting

Report type	Planned/ schedule	Actual submission date	Remarks
a. Inception report	October/2018	October/2018	
b. Six monthly report (last 01 year)			
c Annual report			
d. Internal Monitoring Report(s) (Last 01 year)			
f. Project Completion Report			

Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Delay fund release	Fund should be released timely	Continue the project through internal arrangement
Problem for farmer selection	Motivating process should be strengthen	Strengthen motivating process

Any other comments & suggestions by the visiting team:

Visited project site of BJRI component for seed production of jute at Diaragolrachandi village of Zagir union of Manikgonj district. Monitored BJRI developed Rabi-1 variety demonstration plot of three farmers namely Bachhu Miah, Aminul Islam and Saiful Islam in the morning. Sowing date was 17/09/2018. On an average 30 -50 pods were found in each plant. Crop condition was very good. At noon visited demonstration plot of two farmers namely Shukur Ali and Abdur Razzaq at Meghshimul village of Zagir union. Sowing date was 11/09/2018. Thirty to forty pods were found in each plant on an average. Crop condition was good.

Overall Assessment

a. Continue the sub-Project as Planned
b. Modify (specify areas of modification) the sub-Project
c. Terminate the Project

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

Fig. 255: Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for seedproduction at Manikgonj

Fig. 256: Monitoring team in front of a demonstration plot at Manikgonj

Fig. 257: Monitoring team recording some information about the demonstration at Manikgonj

Fig. 258: Monitoring team with Co-PI of the BJRI component

Field monitoring and evaluation report at BJRI on 06 October, 2020

Date of Field Visit: 06 October, 2020; Monitoring Period: From November 2019 to September, 2020

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BJRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Jute Research Institute (BJRI), Manik Mia Avenue, Dhaka-1207

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
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Principal Investigator:
Dr. Md. Yearuddin Sarker
Designation: Principal Scientific Officer
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Tel: 58156491(off); Mobile: 01552379753;
E-mail: sarkerbjri96@gmail.com

CO-Investigator:
Dr. Md. Babul Hossain
Designation: Senior Scientific Officer
Address: JFSD, BJRI, Dhaka.
Tel: (off); Mobile: 01719362161
E-mail: babulbjri@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018; Completion: December 2020

5. Location (s) of the Sub-Project: Rangpur, Faridpur and Manikganj

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Yearuddin Sarker, Principal Scientific Officer, BJRI, Dhaka
b. Md. Minhaz Ali Khan, Research Assistant, BJRI, Zagir, Manikgonj

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To introduce BJRI newly released variety at farmers' level for higher yield	Demonstration of newly released variety at farmers' level is ongoing for the dissemination and to achieve higher yield.	Ongoing
Objective 2	To produce seed of newly released jute crop at farmers' level to make self sufficient	Selected 11 farmers at Manikgonj are producing seed. The seed crop is in the field and will be harvested at 2nd week of January.	Ongoing
Objective 3	To analyze the cost and return of selected technologies at farmers' level	Not yet started	-

8. Technology intended to be Generated/updated/validated: Not applicable

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: Not applicable

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget (2019-20):	9,43,940.00	
b. Funds Received till to date from the beginning:	20,88,800.00	
c. Expenditure till to date cumulative:	15,69007.48	
i) Incurred		
ii) Committed	56,000	
iii) Actual Balance	5,19,792.52	

12. Procurement: Completed

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i) Executive table	Goods	12/02/19	15/04/19
ii) Executive chair			
iii) Visitor chair			
iv) Laptop			
v) Desktop computer			
vi) Scanner			
vii) Laser jet printer			
viii) Digital camera			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Delay fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BJRI component for seed production of jute at Sadar upazila of Manikgonj district. Monitored BJRI developed BJRI Tossa Pat-8 (Rabi-1) variety trial plots of farmers namely Osman Gani, Md. Latif Mian, Md. Saifur Rahman, Md. Bachu Mia, Fazlul Haque Raja, Md. Satter Dewan, Abdul Quddos and Md. Thandu Mian of Diaragolra, & Golracharkhanda villages of Jagir union under Manikgonj Sadar in the morning. Sowing date was varied from 22/09/2020 to 03/10/2020. Long lasting flood and continuing heavy rainfall seriously hampered the crop. Five to ten days old seedlings were found in the trial plots during monitoring. Although, crop field was inundated and damaged several times due to flood. Condition of germinated seedling was good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Zakiah Rahman Moni	SSO, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Minimum tillage system was used during land preparation
ii) Air protection:
iii) Water protection:
iv) Indigenous people: No indigenous people is hampered,
v) Women empowerment: Active participation of women in production, distribution, sale and decision making system

Fig. 259: Monitoring team visiting the trial plot of BJRI developed Rabi-1 var. for seed production at Manikgonj

Fig. 260: Monitoring team with PI of the BJRI component observing the newly germinated Seedling of jute in a trial plot at Manikgonj.

Field monitoring and evaluation report at BJRI on 28 November, 2021

Date of Field Visit: 28 November - 01 December, 2021; Monitoring Period: From July 2018 to November, 2021

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BJRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Jute Research Institute (BJRI), Manik Mia Avenue, Dhaka-1207

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmget, Dhaka
Cell no: +8801712634352
Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Md. Yearuddin Sarker
Designation: Principal Scientific Officer
Address: JFSD, BJRI, Dhaka.
Tel: 58156491(off); Mobile: 01552379753;
E-mail: sarkerbjri96@gmail.com

CO-Investigator:
Dr. Md. Abul Fazal Molla
Designation: Principal Scientific Officer
Address: Officer in charge, JRRS, Rongpur.
Tel: (off); Mobile: 01718616035
E-mail: mollahabulfazal@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Rangpur, Lalmonirhat, Faridpur and Manikganj

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Abul Fazal Mollah, Principal Scientific Officer, BJRI, Rangpur.
b. Md. Nuralam Siddik, Junior Field Assistant, BJRI, Rangpur.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To introduce BJRI newly released variety at farmers' level for higher yield	Demonstration of newly released variety at farmers' level is ongoing for the dissemination and to achieve higher yield.	Ongoing
Objective 2	To produce seed of newly released jute crop at farmers' level to make self sufficient	Selected 13 farmers at Rangpur and Lalmonirhat are producing seed. The seed crop is in the field and will be harvested at 4th week of December to 1st week of January.	Ongoing
Objective 3	To analyze the cost and return of selected technologies at farmers' level	Not yet started	-

8. Technology intended to be Generated/updated/validated: Not applicable

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: Not applicable

Training Title	No. of participants and batch		No. trained		Remarks
	Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget (Extension Period: July/2021 to January2022)	613006.00	3rd year completed Expenditure was: 6,92997.00
b. Funds Received till to date from the beginning:	24,44400.00	
c. Expenditure till to date cumulative:	21,86994.00	
i) Incurred		
ii) Committed		
iii) Actual Balance		

12. Procurement: Completed

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i) Executive table	Goods	12/02/19	15/04/19
ii) Executive chair			
iii) Visitor chair			
iv) Laptop			
v) Desktop computer			
vi) Scanner			
vii) Laser jet printer			
viii) Digital camera			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Delay fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BJRI component for seed production of jute at Sadar upazila of Rangpur district. Monitored BJRI developed HC-95 variety trial plots of farmers namely Hazrat Ali, Nur Jamal and Abdul Kuddus of Purba Shalbon village of Sadar upazila under Rangpur district. Land size varied from 10 to 15 decimal, while sowing date was varied from 10/08/2021 to 16/08/2021. During monitoring, jute crop found at flowering stage and crop will be harvested by 1st week of January, 2022. Crop condition was good, although, signboard of two trial plot was stolen. At Lalmonirhat, monitored BJRI developed HC-95 variety trial plots of Abdul Matin Mondal, Akbor Ali, Afsar Ali and Rafiqul Islam of Guriadoho village under Sadar upazila. Land size varied from 11 to 38 decimal, while sowing date was varied from 07/08/2021 to 20/08/2021. During monitoring, jute crop found at flowering stage and crop will be harvested by 1st week of January, 2022. Crop condition was also good. Unfortunately, signboard of one trial plot was stolen. Concerned farmers are suggested to exchange their last year success regarding seed production of jute with their neighboring farmers. They also suggested to timely harvest of crop for seed production and giving signboard in the trial plot again.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Minimum tillage system was used during land preparation
ii) Air protection:
iii) Water protection:
iv) Indigenous people: No indigenous people is hampered,
v) Women empowerment: Active participation of women in production, distribution, sale and decision making system

Fig. 261: Monitoring team visiting the trial plot of BJRI developed HC-95 var. for seed production at Sadar, Rangpur.

Fig. 262: Monitoring team with Co-PI and concerned farmer in front of a trial plot at Sadar,Lalmonirhat, BJRI

Field monitoring and evaluation report at BJRI on 24 December, 2019

Date of Field Visit: 24 December, 2019; Monitoring Period: From July 2018 to November 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BJRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Jute Research Institute (BJRI), Manik Mia Avenue, Dhaka-1207

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
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Phone(Office):+880258157492
E-mail: zrmoni@yahoo.com

Principal Investigator:
Dr. Md. Yearuddin Sarker
Designation: Principal Scientific Officer
Address: JFSD, BJRI, Dhaka.
Tel: 58156491(off); Mobile: 01552379753;
E-mail: sarkerbjri96@gmail.com

CO-Investigator:
Dr. Md. Babul Hossain
Designation: Senior Scientific Officer
Address: JFSD, BJRI, Dhaka.
Tel: (off); Mobile: 01719362161
E-mail: babulbjri@yahoo.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018; Completion: December 2020

5. Location (s) of the Sub-Project: Rangpur, Faridpur and Manikganj

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Yearuddin Sarker, Principal Scientific Officer, BJRI, Dhaka
b. Dr. Lutfor Rahman, Principal Scientific Officer, BJRI, Zagir, Manikgonj
c. Dr. Md. Babul Hossain, Senior Scientific Officer, JFSD, BJRI, Dhaka

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To introduce BJRI newly released variety at farmers' level for higher yield	Demonstration of newly released variety at farmers' level is ongoing for the dissemination and to achieve higher yield.	Ongoing
Objective 2	To produce seed of newly released jute crop at farmers' level to make self sufficient	Selected 06 farmers at Manikgonj and 06 farmers at Rangpur are producing seed. The seed crop is in the field and will be harvested at first week of January.	Ongoing and will be harvested soon.
Objective 3	To analyze the cost and return of selected technologies at farmers' level	Not yet started	-

8. Technology intended to be Generated/updated/validated: Not applicable

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: Not applicable

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget (2019-20):	9,43,940.00	
b. Funds Received till to date:	4,71,970.00	
c. Expenditure till to date:	107680.00	
i) Incurred		
ii) Committed	100,500.00	
iii) Actual Balance	2,63,790.00	

12. Procurement: Completed

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i) Executive table	Goods	12/02/19	15/04/19
ii) Executive chair			
iii) Visitor chair			
iv) Laptop			
v) Desktop computer			
vi) Scanner			
vii) Laser jet printer			
viii) Digital camera			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Delay fund release	Fund should be released in time	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BJRI component for seed production of jute at Sadar and Saturia upazila of Manikgonj district. Monitored BJRI developed BJRI Tossa Pat-8 (Rabi-1) variety demonstration plot of five farmers namely Aminul Islam, Nur Mohammad, Md. Aman, Alauddin and Md. Adu Mollah of Diaragolra, Chandirchar & Kamardia

villages of Jagir union under Manikgonj Sadar in the morning. Sowing date was 31/08/2019. Crop condition was good. On an average 30 -60 pods were found in each plant. Each pod contains 135 -150 seeds on an average. Crops will be harvested after 10-15 days and then seeds will be collected. At noon visited demonstration plot of Abu Bakar Siddiq at Fukurhati village of Saturia upazila under Manikgonj district. Sowing date was 03/09/2019. Crop condition was good. On an average 30-40 pods were found in each plant. Each pod contains 120 -140 seeds on an average. Crops will be harvested after 10-15 days and then seeds will be collected.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Fauzia Yasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Minimum tillage system was used during land preparation
ii) Air protection:
iii) Water protection:
iv) Indigenous people: No indigenous people is hampered,
v) Women empowerment: Active participation of women in production, distribution, sale and decision making system

Fig. 263: Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for seed production at Manikgonj

Fig. 264: Monitoring team with PI of the BJRI component counting pod number of a plant of a demonstration plot at Manikgonj

Fig. 265: Monitoring team with PI and Co-PI in front of a demonstration plot at Manikgonj

Field monitoring and evaluation report at BJRI on 29 June, 2019

Date of Field Visit: 29 June, 2019; Monitoring Period: From July 2018 to May 2019

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BJRI component(Project ID: 005)

2. Name of Implementing (Component) Institute:Bangladesh Jute Research Institute (BJRI), Manik Mia Avenue, Dhaka-1207

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
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e-mail: f.yasmin@barc.gov.bd

Principal Investigator:
Dr. Md. Ayub Khan
CSO & Head, Jute Farming Systems
Division (JFSD), 8120742 (Off.),
Tnt: 48111343 01552414003 (Cell),
E-mail: drmakhan3263@yahoo.com

CO-Investigator:
Dr. Md. Yearuddin Sarker
Designation: Principal Scientific Officer
Address: BJRI, Dhaka.
Tel: 58156491(off); Mobile: 01552379753;
E-mail: sarkerbjri96@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Rangpur, Faridpur and Manikganj

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. Babul Hossain, Senior Scientific Officer, JFSD, BJRI, Dhaka
b. Bishwajit Kundu, Scientific Officer, JFSD, BJRI, Dhaka
c. Dr. Md. Majibar Rahman, Senior Scientific Officer, BJRI Regional Station, Faridpur
d. Md. Sheikh Forid, Scientific Officer, BJRI Regional Station, Faridpur

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Objective 1	To introduce BJRI newly released variety at farmers' level for higher yield	Selected 05 Farmer to produce seed in Manikgonj.	Harvested
Objective 2	To produce seed of newly released jute crop at farmers' level to make self sufficient	Selected 12 Farmer to produce fibre in Faridpur and Rangpur.	Ongoing and will be harvested soon.
Objective 3	To analyze the cost and return of selected technologies at farmers' level	Yet not started	-

8. Technology intended to be Generated/updated/validated: No technology yet generated

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

9. Training: Not applicable

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): Not yet done

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	28,00,000	
b. Funds Received till to date:	11,44,860	
c. Expenditure till to date:		
i) Incurred	7,33,025.50	
ii) Committed	-	
iii) Actual Balance	4,11,834+Bank charge	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
i) Executive table	Goods	12/02/19	15/04/19
ii) Executive chair			
iii) Visitor chair			
iv) Laptop			
v) Desktop computer			
vi) Scanner			
vii) Laser jet printer			
viii) Digital camera			

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Fund release was not in time	✓ 1st installment fund release was delayed	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BJRI component for fibre production of jute at east Gangabordi village of Faridpur district. Monitored BJRI developed Rabi-1 variety demonstration plot of Akmol Pramanik in the morning. Sowing date was 03/04/2019. Crop condition was good. At noon visited demonstration plot of Hatgobindapur and Aruadanga village of Kanaipur union under Faridpur Sadar. Five farmers namely Md. Shekhor Ali Sheikh , Md. Mizan Sarder, Md. Anwar molla, Lal Miah, Md. Faruqe Matubbar. Sowing date was 03/04/2019. Crop condition was good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
2.		
3.		
4.		
5.		

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i) Soil protection: Minimum tillage system was used during land preparation
ii) Air protection:
iii) Water protection:
iv) Indigenous people: No indigenous people is hampered,
v) Women empowerment: Active participation of women in production, distribution, sale and decision making system

Fig. 266: Monitoring team visiting the demonstration plot of BJRI developed Rabi-1 var. for fiber production at Faridpur

Fig.267: Monitoring team in front of a demonstration plot of BJRI developed Rabi-1 var. at Faridpur

Fig. 268: A demonstration plot of BJRI developed Rabi-1 variety.

Fig. 269: A demonstration plot of BJRI developed Rabi-1 variety at Faridpur

Fig. 270: Monitoring team taking some notes about the demonstration plot of BJRI developed Rabi-1 variety

Fig. 271: Monitoring team interviewing demonstration plot related persons of BJRI Regional Station, Faridpur

Fig. 272: Monitoring team in front of a demonstration plot at BJRI Regional Station, Faridpur

Fig. 273: A front view of a demonstration plot at BJRI Regional Station, Faridpur

Field monitoring and evaluation report at BRRI on 28 January, 2019
Duration of Field Visit: From 28/01/2019 to 28/01/2019
Coverage of Monitoring Report: From July 2018 to January 2019
Sub-Project Title: Transfer of Agricultural Technologies to Farmers' Level for Increasing Farm Productivity-BRRI component
Institute Name: Bangladesh Rice Research Institute (BRRI), Gazipur-1701, Bangladesh

Coordinator/Principal Investigator/Co-Principal Investigator(as applicable):

Project Coordinator:

Dr. S.M. Bokhtiar
Member Director (Planning & Evaluation),
Bangladesh Agricultural Research Council,
Farmgate, Dhaka -1215, Phone: 029126664;
e-mail: bokhtiarsm@yahoo.com

Associate Coordinator:
Dr. FauziaYasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Principal Investigator:
Dr. Md. Humayun Kabir
Senior Scientific Officer,
Adaptive Research Division,
Bangladesh Rice Research Institute, Gazipur-1701.
Mobile: 01924458605,
E-mail: mhkabir_r@yahoo.com

CO-Investigator:
Mir Mehedi Hasan
Scientific Officer
Adaptive Research Division,
Bangladesh Rice Research Institute, Gazipur-1701.
Mobile: 01704211480,
E-mail: mmhsuny@gmail.com

Duration: Start July 2018 Completion December 2020
Location(s) of the Program: Mymensingh and Jamalpur District
Name of Person(s) with address interviewed/ met/ discussed:
a. Dr. Md. Humayun Kabir**,** Senior Scientific Officer, BRRI,Gazipur-1701.
b.Mir Mehedi Hasan**,** Scientific Officer, BRRI, Gazipur-1701.
c. Sohel Mohammed, Scientific assistant, BRRI,Gazipur-1701.

Technical Information:

- Methodology and its Appropriateness: As per project proposal
- Adherence to Original Plan:
- Reason for Deviation (if any):

8. Field Experimentation:

Objectives	Activities in relation to objectives	Status (Use appropriate unit)		Deviation (if any)	Performance (Good/average/ below/average/ poor
		Planned	Actual		
To attain sustainable food security through dissemination of latest BRRI rice varieties	1. Dissemination of latest BRRI released rice varieties	6	6	No deviation	Good
	2. No. of farmers	6x4=24	6x4=24	do	Good
	3. No. of locations	4	4	do	Good
	4. land area	6x4= 24 bighas	6x4= 24 bighas	do	Good
	5. Transplanting	4 locations	4 locations	do	Good

9. Technology Generation: N/A

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks

10. Technology Adoption: N/A

No. of farmers involved	No. of farmers Motivated	No. of farmers adopting/ willing to adopt technology	Local level suitability of the technology	Total area covered	Project support/ services provided for adoption	Scope/ possibility of market linkage	Remarks

11. Internal Monitoring by the Research/Academic Institution:

Name of visitor(s)	Designation	Date(s) of visit	Total visit till date (No.)	Remarks (Activities performed/ modification suggested)
Dr. Md. Humayun Kabir	Senior Scientific Officer	15/1/19 to 16/1/19	3 times (7 days)	1. Application of fertilizers in the field.
		25/1/19 to 26/1/19		5. Installation of signboard in the field.
		28/1/19		6. To help Project coordinator for visiting the Bhaluka and Muktagacha site (Mymensingh)

12. Training: N/A

Training Title	Training duration (From – to –)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

13. Knowledge management (e.g Journal article, Manual, Booklet, Media coverage, dissemination activity etc.): Not done yet

Sl. No	Type of Documentation/ Publicity	Number	Achievements/Status	Remarks

14. Financial

	Amount (Tk.)	Remarks
a. Total Budget :	25,50,000/-	
b. Funds Received till to date: (July-December)	3,51,416/-	
c. Delay (if any) in receipt of funds: (1st Quarter and 2nd Quarter)		
d. Expenditure till to date:	81,738/-	
i) Incurred		
ii) Committed		
iii) Anticipated/Actual Balance/Deficit		

15. Procurement: Not yet submitted

Major Activity *	Activity status (No./ date)		% of completion in the current year	Cumulative % of completion from start
	Planned	Actual		
a. Goods				
(i)				
(ii)				
(iii)				
b. Works				
(i)				
(ii)				
c. Services				
(i)				
(ii)				

16. Reporting

Report type	Planned/ schedule	Actual submission date	Remarks
a. Inception report	October, 2018	October, 2018	
b. Six monthly report (last 01 year)	January, 2019	January, 2019	
c Annual report			
d. Internal Monitoring Report(s) (Last 01 year)			
f. Project Completion Report			

17. Problems/Constraints/Limitation: N/A

Description	Implementers opinion	Suggested solution by the Monitoring Team

18. Any other comments & suggestions by the visiting team:

Visited project site of BRRI component at Valuka and Muktagasa upazila of Mymensingh district. Monitored BRRI developed BRRI Dhan-81, 89, 58, 86, 74 and 84 variety demonstration plots of six farmers namely Md. Aftab Uddin, Md. Enamul Hoque, Md. A. Rashid, Md. Amir, Md. Mozammel and Md. Abbas respectively at Habirbari village of Valuka upazilla under Mymensingh district in the morning. Sowing date of seed in the seed bed was 12/12/2018 and transplanting date of seedling

was 15/01/19. As per fertilizer recommendation TSP, MoP, Zypsum and Zinc fertilizers were applied as basal dose and urea fertilizer will be applied as top dress (three times). Crop condition was good. At noon monitored BRRI developed BRRI Dhan-58, 74, 81, 89, 86 and 84 variety demonstration plot of six farmers namely Kazi Md. Mohsin Miah, Md. Azharul Islam, Md. Mostafizur Rahman, Md. Rafiqul Islam, Laki Akter and Md. Habibur Rahman respectively at Kumargasa village of Muktagasa upazilla under Mymensingh district. Sowing date of seed in the seed bed was 04/12/2018 and transplanting date of seedling was 11/01/19. As per fertilizer recommendation TSP, MoP, Zypsum and Zinc fertilizers were applied as basal dose and urea fertilizer will be applied as top dress (three times). Crop condition was good.

19. Overall Assessment

a. Continue the sub-Project as Planned
b. Modify (specify areas of modification) the sub-Project
c. Terminate the Project

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin	Director, TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed	SSO, PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

Fig. 274: Monitoring team in front of a demonstration plot at Valuka, Mymensingh, BRRI

Fig. 275: Monitoring team interviewing a demo farmer at Muktagasa, Mymensingh, BRRI

Fig. 276: Monitoring team and PI in front of a demo plot at Muktagasa, Mymensingh, BRRI

Field monitoring and evaluation report at BRRI on 13 October, 2019
Date of Field Visit: 13 October, 2019; Monitoring Period: From July 2018 to September 2019

1. Sub-Project Title with ID: Coordinated Project on theTransfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity -BRRI component(Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Rice Research Institute (BRRI), Gazipur-1701.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:
Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)

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Phone(Office):+880258157492
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Principal Investigator:
Dr. Md. HumayunKabir
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E-mail: mhkabir_r@yahoo.com

CO-Investigator:
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Bangladesh Rice Research Institute, Gazipur-1701.
Mobile: 01704211480,
E-mail:mmhsuny@gmail.com

4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;

Completion: December 2020

5. Location (s) of the Sub-Project: Sadar and Sharishabari Upazila of Jamalpur District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a.Dr. Md. HumayunKabir**,** Senior Scientific Officer,BRRI,Gazipur-170 and PI of the project.
b. Sohaill Mohammed, Scientific assistant, BRRI,Gazipur-1701.
c._____

d._____

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Activities 1	Dissemination of latest BRRI release rice varieties	6 BRRI released latest rice varieties	
Activities 2	No. of farmers	6x4=24	
Activities 3	No. of locations	4	
Activities4	land area	6x4= 24 bighas	
Activities5	Application of fertilizers, transplanting, weeding and pest control etc.	Performed in all the 4 locations	

8. Technology intended to be Generated/updated/validated/Dissemination:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Newly BRRI released T. Aman rice varieties i.e., BRRI dhan70, 71, 75, 79, 80 & 87	6	Demonstration of all the 6 varieties was established in the 4 locations.	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.):N/A

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	2550000/-	
b. Funds Received till to date:	702830/-	
c. Expenditure till to date:		
i) Incurred	689502/-	
ii) Committed		
iii) Actual Balance	13328/-	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
		Planned	Actual
	On going		

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Price of paddy	Selling price of paddy is lower than the expectation of the farmers.	
Expenses of Project	Payment of different expenses of the Project through cheque is very very difficult, especially small amount of money.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Visited project site of BRRI component at Sadar and Sharishabari upazila of Jamalpur district. Monitored BRRI developed BRRI Dhan- 79, 80 87, 71, 75 and 70 variety (T. Aman varieties) demonstration plots of six farmers namely Md. Hazrat Ali, Md. Delowar, Md. Suruz Ali, Md. Sohel Rana, Md. Babu and Mizanur Rahman respectively at Dikpair village of Sadar upazilla under Jamalpur district in the morning. Sowing date of seed in the seed bed was 27/07/2019 and transplanting date of seedling was 28/08/19. Fertilizer was applied as per BRRI recommendation. Crop condition was good. At noon monitored BRRI developed BRRI Dhan-70, 71, 75, 80, 87 and 79 variety demonstration plot of six farmers namely Md. Atiqur Rahman, Md. Mokhlesur Rahman, Md. Abu bakar Siddique, Md. Forhad Hossain, Md. Zakaria, and Md. Farid Uddin respectively at Shanakair village of Sharishabari upazilla under Jamalpur district. Sowing date of seed in the seed bed was 28/06/2019 and transplanting date of seedling was 28/07/19. Fertilizer was applied as per BRRI recommendation. Crop condition was good.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. RathiMahamudMorshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	
3. Md. Nazmul Huda, Accountant	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

i)Soil protection: N/A
ii)Air protection: N/A
iii)Water protection: N/A
iv)Indigenous people: N/A
v) Women empowerment: Yes

Fig. 277: Monitoring team in front of a demonstration plot at Sadar, Jamalpur,BRRI

Fig. 278: A demonstration plot at Sharishabari, Jamalpur

Fig. 279: Monitoring team interviewing a demo. farmer at Sadar, Jamalpur,BRRI

. **Fig.280: A demonstration plot at Sadar, Jamalpur, BRRI**

Field monitoring and evaluation report at BRRI on 13 February, 2020

Date of Field Visit: 13 February, 2020; Monitoring Period: From July 2018 to January 2020

1. Sub-Project Title with ID: Coordinated Project on the Transfer of Agricultural Technologies
to Farmers' level for Increasing Farm Productivity –BRRI Component-10 (Project ID: 005)

2. Name of Implementing (Component) Institute: Bangladesh Rice Research Institute (BRRI), Gazipur-1701.

3. **Coordinator/Principal Investigator/ Co-Principal Investigator** (as applicable):

Coordinator:

Dr. Fauzia Yasmin
Director, Technology Transfer and Monitoring Unit,
Bangladesh Agricultural Research Council
Farmgate, Dhaka -1215, Phone: 029141297
e-mail: f.yasmin@barc.gov.bd

Associate Coordinator:

Dr. Zakiah Rahman Moni
Senior Scientific Officer
Technology Transfer and Monitoring Unit (TTMU)
Bangladesh Agricultural Research Council (BARC)
Farmgate, Dhaka
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E-mail: zrmoni@yahoo.com

Principal Investigator:

Dr. Md. Humayun Kabir
Senior Scientific Officer,
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CO-Investigator:

Mir Mehedi Hasan
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Bangladesh Rice Research Institute, Gazipur-1701.
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4. Sub-Project Duration (as per approval/LoA/revision): Start: July 2018;
Completion: December 2020

5. Location (s) of the Sub-Project: Valuka Upazila of Mymensingh District

6. Name of project Personnel (s) interviewed/ met/ discussed with address:

a. Dr. Md. Humayun Kabir**,** Senior Scientific Officer, BRRI, Gazipur-170 and PI of the project.
b. Sohail Mohammed, Scientific assistant, BRRI,Gazipur-1701.
c. Farmers of the project site of Valuka Upazila of Mymensingh District.

7. Key Monitoring Indicator:

Objective wise major Activities/milestones accomplished		Status	Remarks
Activities 1	Dissemination of BRRI released latest rice varieties	6 BRRI released latest rice varieties	
Activities 2	No. of farmers	6 x 4 = 24	
Activities 3	No. of locations	4	
Activities4	land area	6 x 4= 24 bighas	
Activities5	Application of fertilizers, transplanting, weeding and pest control etc.	Performed in all the 4 locations	

8. Technology intended to be Generated/updated/validated/Dissemination:

Sl. No.	Description of the Technology	Number	Achievements/Status	Remarks
1.	Newly BRRI released Boro rice varieties i.e., BRRI dhan 58, 67, 81, 84, 88 & 89	6	Demonstration of all the 6 varieties was established in the 4 locations.	

9. Training: N/A

Training Title	Training duration (days)	No. of participants and batch		No. trained		Remarks
		Target	Achievement	Male	Female	

10. Knowledge management (Journal, article, Manual, Booklet, Media coverage, dissemination etc.): N/A

Sl. No	Type of Documentation/Publicity	Number	Achievements/Status	Remarks

11. Financial

Item	Amount (Tk.)	Remarks
a. Total Budget :	25,50,000	
b. Funds Received till to date:	13,77,240	
c. Expenditure till to date:		
i) Incurred	9,66,586	
ii) Committed		
iii) Actual Balance	4,10,654	

12. Procurement

Item *	Type (Goods/ works/service)	Activity status (No./ date)	
Lab Equipments (Goods)	Laptop	01 Completed procurement	
	Camera	01 Completed procurement	
	Scanner	01 Completed procurement	
	UPS	01 Completed procurement	
	Printer	01 Completed procurement	

*as per approved procurement plan

13. Problems/Constraints/ Limitation:

Description	Implementers opinion	Suggested solution by the Monitoring Team
Price of paddy	Selling price of paddy is lower than the expectation of the farmers.	
Expenses of Project	Payment of different expenses of the Project through cheque is very very difficult, especially small amount of money.	

14. Overall Observation/comments & suggestions by the Monitoring team:

Project site of BRRI component at Valuka upazila of Mymensingh district was visited on 13 February 2020. Demonstration plots were set-up with BRRI developed 06 latest rice varieties i.e., BRRI dhan58, 67, 81, 84, 88 & 89. Farmers of demonstration plots are Md. Aftab Uddin, Md. Amir, Md. Hafiz, Md. Rafiq, Md. Mohiuddin and Md. Abbas of Labankutha village of Habirbari union of Valuka upazilla under Mymensingh district. Sowing date of seeds in the seed-bed was 23/11/2019 and transplanting date of seedling was 28/12/2019. As per fertilizer recommendation TSP, MoP, Zypsum and Zinc fertilizers were applied as basal dose and urea fertilizer application will be done in three equal spilt. Leaf blast disease was found during field visit time. *Troopera* fungicide was spraying to control leaf blast at the time of monitoring. Crop condition was good. At noon started for BINA and reached at 4:00

pm. Discussed with concerned PI of BINA part and he informed that BINA Sharisha-9 variety demonstration plots of seven farmers were established at the Mirkandapara village of Parangonj union of Sadar upazila under Mymensingh district, which will be harvested within seven days. Field monitoring was not done at BINA part due to time constraint/limitation. Only desk monitoring was done in BINA part.

Field Monitoring Members:

Name with position	Organization	Signature with date
1. Dr. FauziaYasmin, Director	TTMU, BARC, Farmgate, Dhaka	
2. Dr. Rathi Mahamud Morshed, SSO	PBRG sub-project, TTMU, BARC, Farmgate, Dhaka	

15. Environmental and Social Safeguard

Do you have taken any measures against environmental/social safeguard?

vi) Soil protection: N/A
vii) Air protection: N/A
iii) Water protection: N/A
iv) Indigenous people: N/A
v) Women empowerment: Yes

Fig. 281: Monitoring team in front of a demonstration plot at Valuka, Mymensingh, BRRI

Annexure-II
Questionnaire

১। খামারীর সাধারণ তথ্যাবলীঃ

ইাম	পিতার নাম	গ্রাম	উপজেলা	জেলা

২। খামারীর শিক্ষাগত যোগ্যতাঃ

নিরক্ষর	অক্ষরজ্ঞান সম্পন্ন	৫ম শ্রেনী	৮ম শ্রেনী	এসএসি	এইচএসসি	ডিগ্রী

৩। পেশাঃ

দৈনিক হাজিরা ভিত্তিক শ্রমিক	কৃষি	চাকুরীজীবী	ব্যবসা	অন্যান্য

৪। পরিবারের সদস্য সংখ্যাঃ

<১৮ বৎসর		>১৮ বৎসর		মো
পুরুষ	স্ত্রী	পুরুষ	স্ত্রী	

৫। পরিবারের আসবাবপত্রের তথ্যঃ

বিষয়বস্তু	বর্তমান ২০১৮	ভবিষ্যৎ ২০২০
মোট আসবাবপত্র		

৬।জমির পরিমান (শতক)ঃ

বিষয়বস্তু	বর্তমান ২০১৮	ভবিষ্যৎ ২০২০
বসতবাড়ী		
আবাদী		
অনাবাদী		
ঘাসের জমি		
অন্যান্য		
মোট জমি		

৭।গবাদীপ্রানি সংক্রান্ত তথ্যঃ

গবাদিপ্রাণী	বর্তমান	২বছরপর
গরু		

মহিষ		
ভেড়া		
ছাগল		
হাঁস		
মুরগী		

অর্থনৈতিক দিকসমূহ (টাকা/বৎসর)

৮। গৃহস্থালীয় ব্যয় (টাকা/বৎসর)

বিষয়বস্তু	বর্তমান	--২বছরপর
পরিবারের সকল খরচসমূহ		
শস্য উৎপাদনে খরচসমূহ		
গবাদিপ্রাণি উৎপাদনে খরচসমূহ		
মৎস্য উৎপাদনে খরচসমূহ		
অন্যান্য		
প্রকল্পের ট্রায়ালের খরচসমূহ (বিস্তারিত)		
মোট		

৯। গৃহস্থালীয় আয় (টাকা/বৎসর)

বিষয়বস্তু	বর্তমান	--২বছরপর
শস্য ও শস্যজাতীয় আয়		
মৎস্য থেকে আয়		
প্রানী ও প্রানিজাতিয় থেকে আয়		
ফডার বিক্রয়		
ব্যবসা		
চাকুরী		
অন্যান্য-		
প্রকল্পের ট্রায়ালের আয়সমূহ (বিস্তারিত)		
মোট		

১০। মহিলা ও শিশুদের ভূমিকার ধরণ:

১১। ব্যবহৃত প্রযুক্তি সম্পর্কে আপনার অভিমত। (ভাল দিক/খারাপ দিক/সংশোধিত দিক)

১২।প্রযুক্তিব্যবহারে কি কি সমস্যার সম্মখীন হয়েছেন?

সাক্ষাৎকার গ্রহণকারীর স্বাক্ষর