

ANNUAL RESEARCH REVIEW WORKSHOP 2023-2024



XIX: REGIONAL STATION, RANGPUR (18-24 January, 2025)



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1. GENERAL INFORMATION

BRRRI Regional Station, Rangpur represents eight northern districts of Rangpur Division. The elevation is 33.65 meters from sea level. The latitude is 25.4145 and Longitude is 89.161. It has included 08 Districts (Rangpur, Gaibandha, Kurigram, Lalmonirhat, Nilphamari, Dinajpur, Thakurgaon and Panchagarh), 58 Upazilas, 1 City Corporation, 21 Poursavas and 536 Union councils which is covered major 6 AEZ (1, 2, 3, 7, 25 & 27). The total geographical area of this region is 16,185 sq. kilometer which is covered 11% of total area. According to the 2011 census, the total population of Rangpur Division is 15,787,758 which are 10% of country total population. Population density is 980/km². 51.18% of total population is male and 48.82% is female. This region has a total of 27,39,076 agricultural household, where 24% landless, 35% marginal, 26% small, 12% medium and 3% are landlord farmer.

The main missions of this station are-

1. To develop cold tolerant rice variety at seedling stage for Boro season and flash flood submergence tolerant, drought tolerant, short duration and aromatic rice variety for T. Aman season
2. To develop location and AEZ need based variety and technology for yield improvement
3. To provide technical support and training to the extension organization (GO & NGO) for modern rice production practices
4. To extend rice related best technologies suitable for well being of the needy farmers

Basic Information about the region

Land Utilization:

- Net cultivable land: 12,44,761 ha (1.24 m ha)
- Total rice area : 10,31,800 ha (1.03 m ha)

Land Type:

- High land : 4,57,208 ha
- Medium high land: 6,86,099 ha*
- Medium low land : 1,06,167 ha*
- Low land : 32,610 ha*

*Flood prone area which is 64 % of total land. It varies from location to location (**Table 1**)

Table 1: Flood and drought prone areas of Rangpur-Dinajpur region

District	Net crop area	Flood prone area		Drought prone area	
	(ha)	(ha)	%	(ha)	%
Rangpur	2,00,000	40,000	20	25,000	13
Gaibandha	1,49,749	75,000	50	5,000	3
Kurigram	1,62,480	30,000	18	40,000	25
Lalmonirhat	91,771	13,581	15	8,410	9
Nilphamari	1,28,515	9,000	7	2,000	2
Dinajpur	2,58,259	39,402	15	66,025	26
Thakurgaon	1,41,559	21,025	15	37,000	26
Panchagarh	1,12,428	5,600	5	45,000	40
Region	12,44,761	2,33,608	19	2,28,435	18

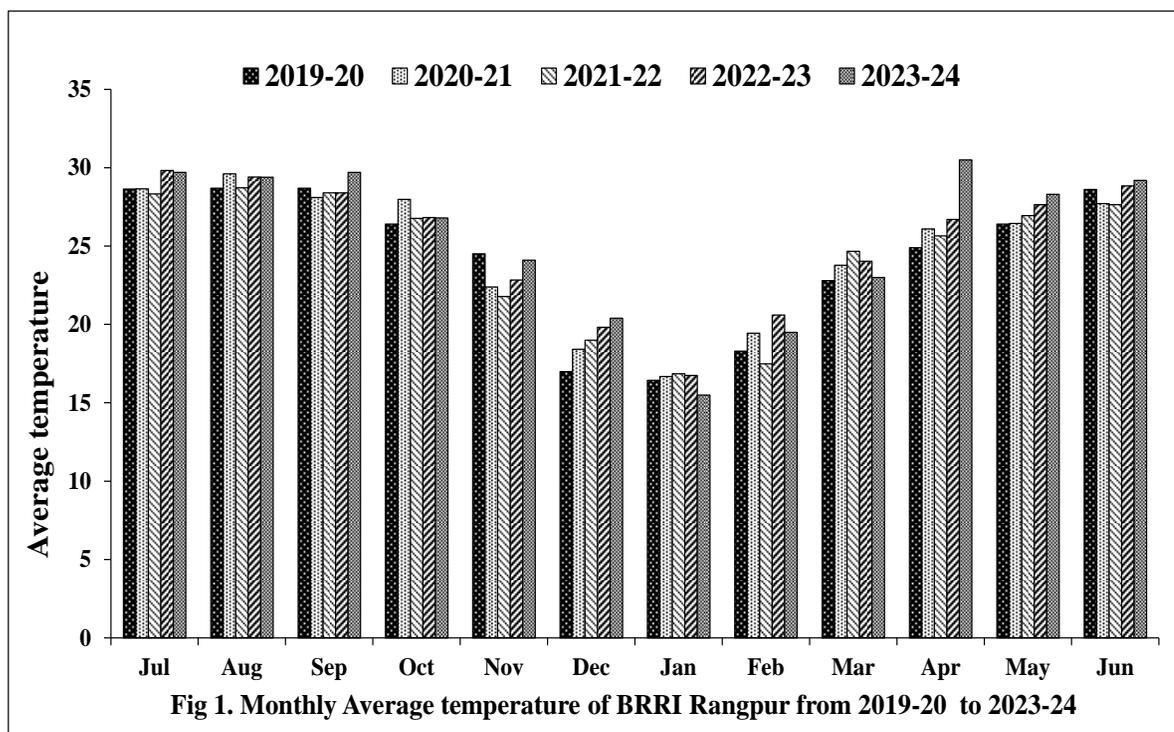
Note: Entire eight districts are under cold prone area

Table 2: Major AEZ's in Rangpur-Dinajpur Region

District	Name of AEZ
Rangpur	2-Active Tista Floodplain, 3-Tista Meander Floodplain & 27-North-Eastern Barind Tract
Gaibandha	2-Active Tista Floodplain, 3-Tista Meander Floodplain, 7-Active Brahmaputra-Jamuna Floodplain, 25- Level Barind Tract & 27-North-Eastern Barind Tract
Kurigram	2-Active Tista Floodplain, 3-Tista Meander Floodplain & 7-Active Brahmaputra-Jamuna Floodplain
Lalmonirhat	2-Active Tista Floodplain & 3-Tista Meander Floodplain
Nilphamari	2-Active Tista Floodplain & 3-Tista Meander Floodplain
Dinajpur	1-Old Himaloyan Piedmont plain, 3-Tista Meander Floodplain, 25- Level Barind Tract & 27-North-Eastern Barind Tract
Thakurgaon	1-Old Himaloyan Piedmont plain
Panchagarh	1-Old Himaloyan Piedmont plain & 3-Tista Meander Floodplain

Climate

- Rangpur and Dinajpur region is very cold prone area (prolong winter) than other part of the country. Winter starts from mid November/2024 and continued up to March/2024 (Fig. 1 & 2). In winter, temperature usually goes below the critical level (<15°C) of rice growth in 1st January/24 to 31st January/24(Fig. 2).
- Maximum rainfall occurs in July 2020 (Fig. 3).
- Vulnerability for sustainable crop production is occurring due to climate change day by day in Rangpur-Dinajpur region (Fig. 4 & 5).



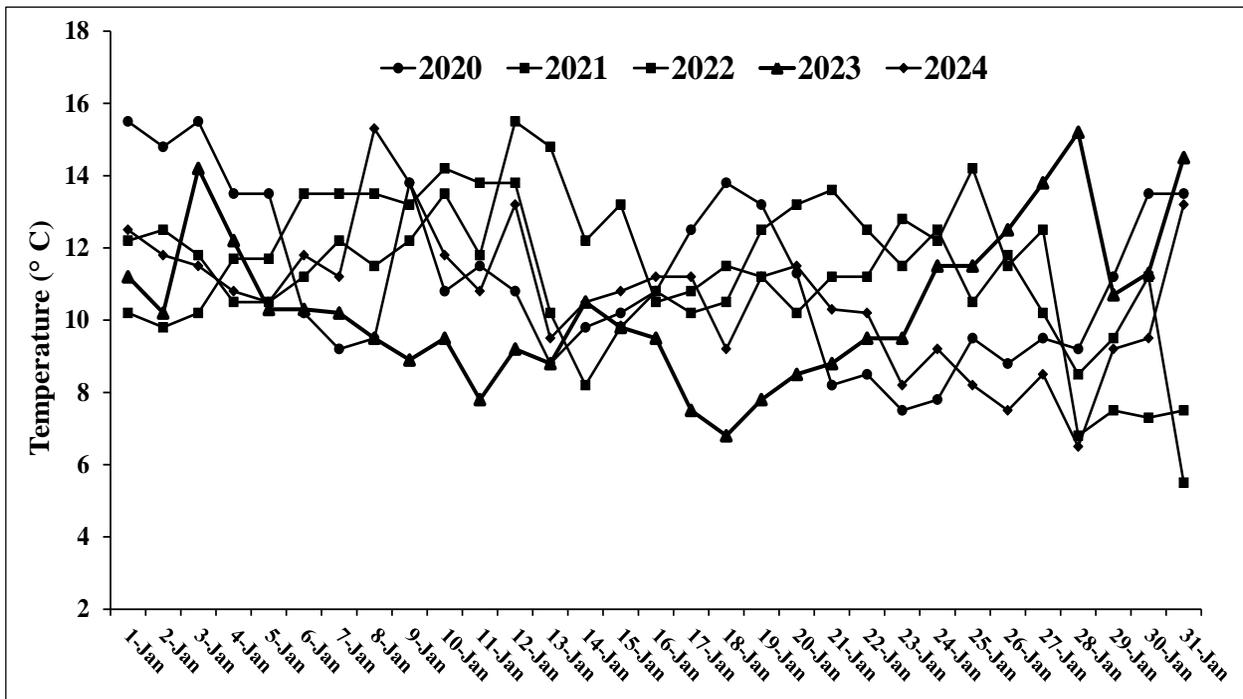


Fig.2: Minimum Temperature in the month of January at BIRRI Rangpur from 2020-2024

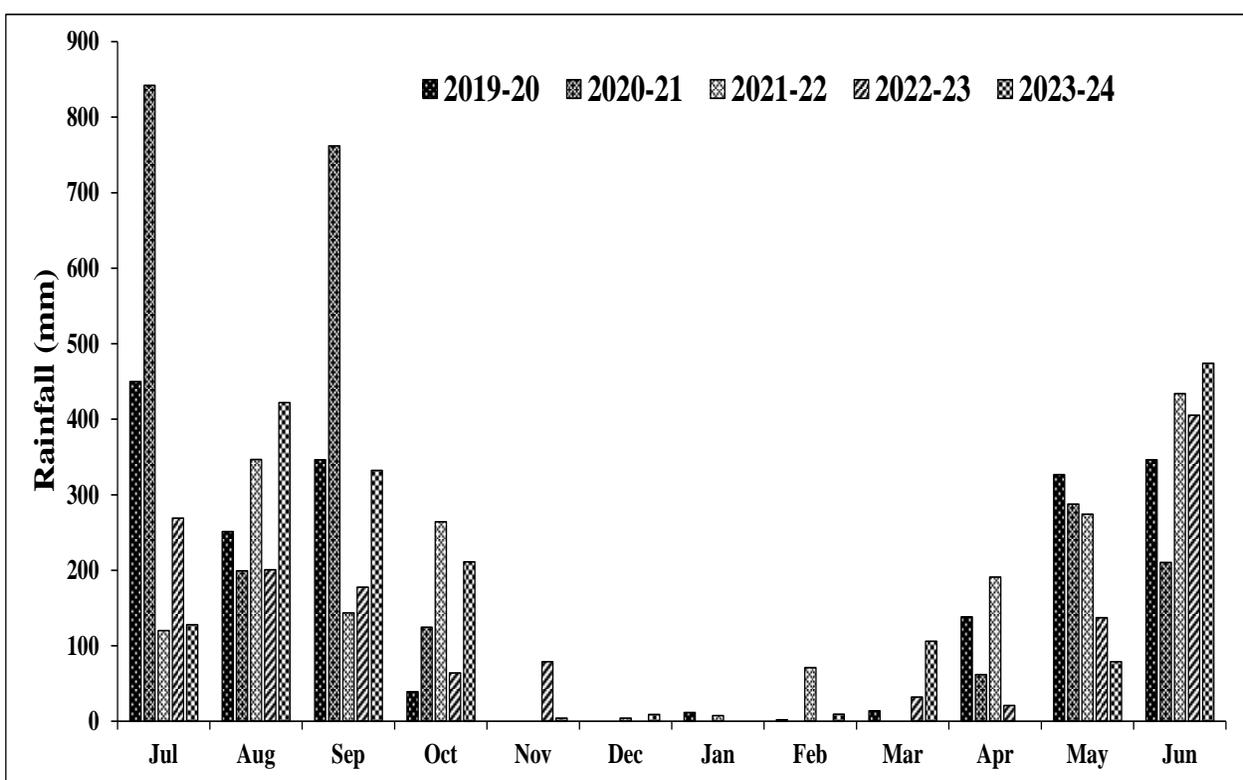


Fig.3: Monthly Total Rainfall (mm) of BIRRI Rangpur from 2019-20 to 2023-24

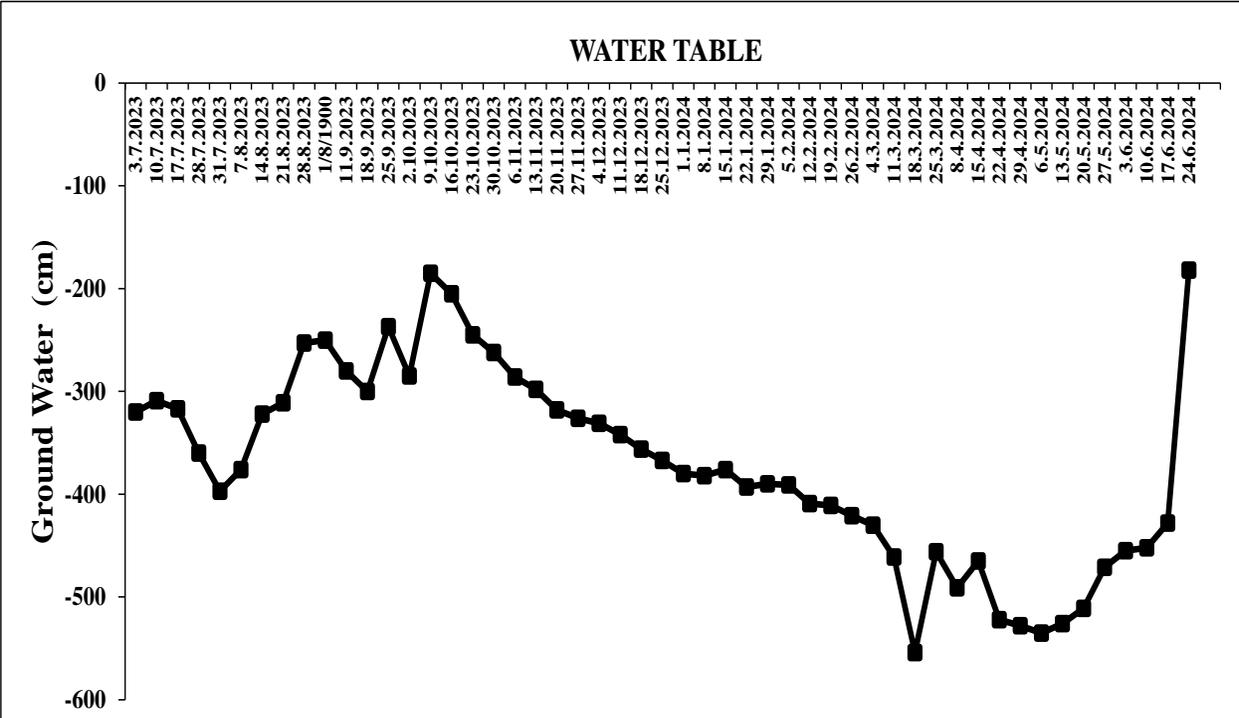


Fig.4: Ground water data of BIRRI Rangpur during July 2023 to June 2024

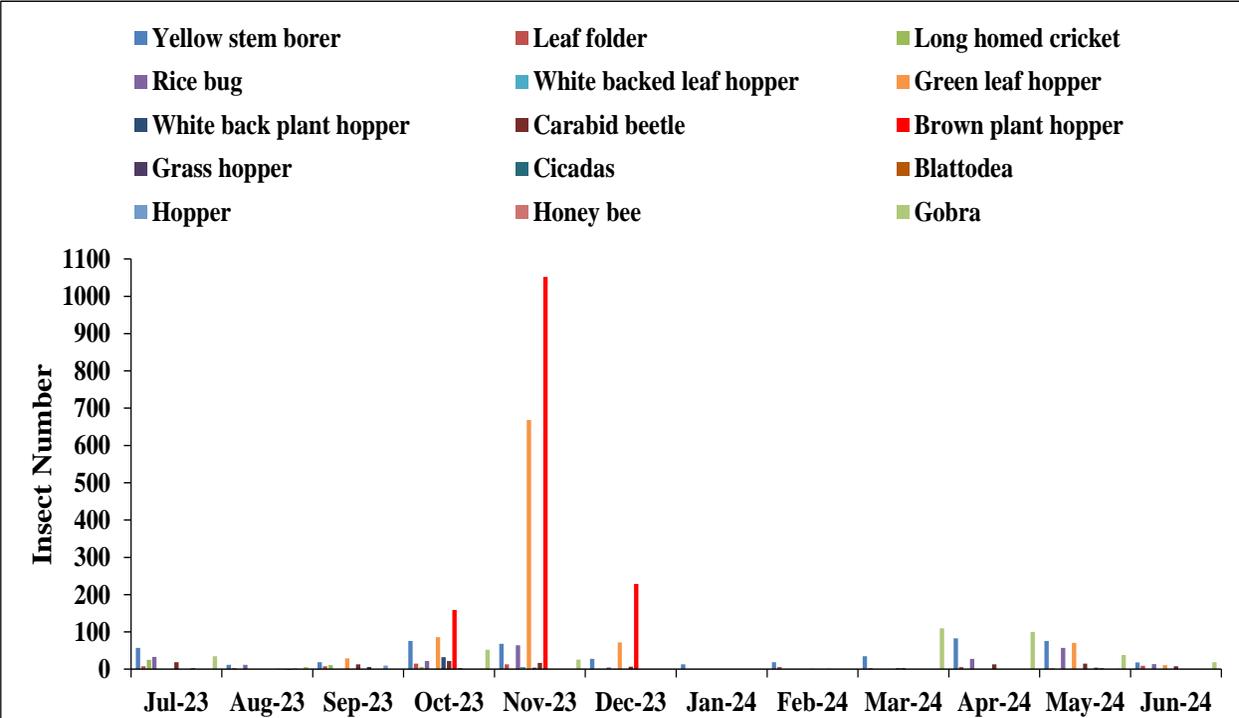


Fig.5: Monthly light trap insect data of BIRRI Rangpur from July/2023 to June/2024

2. SUMMARY

For developing region specific suitable modern rice varieties for Rangpur-Dinajpur region, 10 germplasms were collected from farmers' field for maintenance breeding, four single crosses were made and 40 individual plants were bulked from 2F₆ and 1F₇ generations during 2023-2024. In total, 200 individual plants and three fixed genotypes were selected from observational yield trial under the program of breeding for second generation rice. In OYT, BRrang35-RGA-5-5-1-1-1 produced 8.45 t/ha which was higher than BRRI dhan88 (6.60 t/ha). Under Basmati rice breeding program, 150 individual plants and three fixed genotypes were selected from OYT. BRrang55-RGA-40-1-1-1 gave highest yield (7.52 t/ha) over BRRI dhan104 (6.55 t/ha) in OYT. Under the development of hybrid rice parental lines and hybrids, in total 61 testcross F₁s were made from source nursery by testcross. A total of 45 RYT's and 16 ALART's were conducted during this reporting period.

In planting time experiment, appreciable better yield in the Rangpur region, BRRI dhan75 should preferably be transplanted on 20th July- 20th August, BRRI dhan87 & BRRI dhan90 on 20th of August and BRRI dhan52, BRRI dhan79 and BRRI dhan93 on 20th July- 05th August. In Boro season, both short and long duration variety had higher grain yield on 25 December to 25 January planting. BRRI dhan74 giving higher yield up to 25 February have the potentiality of late Boro variety.

In long-term nutrient omission trial, it was observed that the omission of N in T. Aman and omission of N and P in Boro season from complete fertilizer significantly reduced the grain yield of rice at BRRI Rangpur farm. Among the major nutrient elements, omission of N appeared as the most yield limiting nutrient followed by P and K omission for rice in both seasons.

A total of 2086 varietal demonstrations were conducted in Rangpur-Dinajpur region during this reporting period. Fifteen field days were arranged and 30 farmers training were conducted on modern rice production technology.

A total of 10,607 kg, 10,992 kg and 9,748 kg TLS were produced in T. Aus, T. Aman and Boro season, respectively. A total of 9,250 kg Breeder seed was produced and sent to the GRS Division, BRRI Gazipur. In this reporting period, 18,826 kg TLS was distributed for dissemination and popularization of latest BRRI varieties in Rangpur-Dinajpur region.

3. VARIETAL DEVELOPMENT PROGRAM (VDP)

A. BIRRI Regional Station Rangpur

Program 1: Development of rice varieties suitable for Rangpur region

General Objectives: Development of high yielding (≥ 8.0 t/ha) rice varieties giving the thrust is to develop short duration varieties accompanied with tolerance to drought, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.

Project Leader: M Rokebul Hasan

Experiment 3.1: Germplasm Collection and maintenance breeding

MR Hasan, MRS Ripon and KM Iftekharuddaula

Specific objectives: To collect local, cultivated and exotic germplasm for the utilization of variety development

Methodology: Collection programs were performed for exploration of rice germplasm. For this purpose, GRSD and farmers were informed well ahead for collection. Some collections were also made directly from the farmer fields.

Results: A total of 10 rice germplasms were collected and maintenance during reporting period 2023-2024 (Table 3). Collected germplasms will be characterized and used for breeding purpose.

Table 3: List of rice germplasms collected and maintained from different sources during reporting period 2023-2024

SL#	Name of the germplasms	Location/Division	Characteristics
01.	Rata Boro	Plant Breeding Division, BIRRI	Premium quality
02.	Tepi Boro	Plant Breeding Division, BIRRI	Premium quality
03.	Guti Swarna	Sadar, Nilphamari	High yield potential
04.	Swarna pajam	Sadar, Nilphamari	High yield potential
05.	Masuri guti	Sadar, Nilphamari	Premium quality
06.	Jira	Sadar, Nilphamari	Premium quality
07.	Pusa Basmati1509	Sadar, Dinajpur	Premium quality
08.	Rosulbhog	Nageshwari, Kurigram	Premium quality
09.	Pusa Basmati-1 (BVE/2020)	PBD, BIRRI	Premium quality
10.	Basmati (Acc. No.4361)	GSRD, BIRRI	Premium quality

Experiment 3.2: Hybridization

MR Hasan, MRS Ripon and KM Iftekharuddaula

Specific objectives: To introgress genes from diverse genetic background for earliness, tolerant to drought, sturdy stem, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.

Materials and methods: Five parental varieties/lines (donors and recipients) were grown in the hybridization block of Rangpur Regional station at three dates with an interval of seven days to synchronize flowering for cross combinations. Single seedling of forty-five days old were

transplanted in 3.0 m x 2 rows plots with a spacing of 20 cm x 20 cm. Fertilizers were applied @ 225 kg Urea, 100 kg TSP, 120 kg MP, 75 kg Gypsum and 7.5 kg Zinc Sulphate/ha. Total amount of TSP, Gypsum, ZnSO₄ and ½ MP were applied at the time of final land preparation. Urea was applied with three equal splits at 15, 30 and 45 days after transplanting (DAT). Rest ½ MP was applied with the 2nd split of urea application. Crop management such as weeding, irrigation etc. was done in time. Pest management was done as required. Usual method of emasculation and pollination were done. At maturity, F₁ seeds were dried and stored cautiously in paper bags with proper labeling. After hybridization, parents were maintained.

Results: Four crosses were made using ten diverse parents. F₁ seeds were harvested at maturity and preserved with proper labels (Table 4).

Table 4: List of crosses made, Breeding for standard rice varieties for Rangpur region, Boro, 2023-24

SN	Cross combination	F ₁ seeds	Characteristics
1.	BRRRI dhan29/PB1509	37	Premium quality
2.	BRRRI dhan89/PB1509	42	Premium quality
3.	BRrang35-5-5-1-1-1/BP1509	45	Premium quality
4.	PB1509/BR1286-4R-312	30	Premium quality

Experiment 3.3: Pedigree nurseries

MR Hasan, MRS Ripon and KM Iftekharuddaula

Specific objective: To advance of segregation generation

Materials and methods: A total of 3 crosses comprising 2 F₆ generation and 1F₇ generations were grown. Single seedling of twenty-five days old were transplanted in 5.4 m x three rows plots with a spacing of 20 cm x 20 cm. Fertilizers were applied @ 180 kg Urea, 100 kg TSP, 120 kg MP, 75 kg Gypsum and 7.5 kg Zinc Sulphate/ha. Total amount of TSP, Gypsum, ZnSO₄ and ½ MP were applied at the time of final land preparation. Urea was applied with three equal splits at 15, 30 and 45 days after transplanting (DAT). Rest ½ MP was applied with the 2nd split of urea application. Crop management such as weeding, irrigation etc. was done in time. Pest management was done as required. Usual method of emasculation and pollination were done. At maturity, F₁ seeds were dried and stored cautiously in paper bags with proper labeling. After hybridization, parents were maintained.

Results: In total 40 progenies from F₆ (30) and F₇ (10) generations were harvested at maturity and preserved with proper labels (Table 5).

Table 5: List of selected progenies from F₆ & F₇, Breeding for standard rice varieties for Rangpur region, T. Aman, 2023

SN	BR No.	Crosses	Selected Progenies	Objectives
F ₆ Generation				
1.	BRrang35	BRRRI dhan90/BRRRI dhan70	10	Premium quality
2.	BRrang36	BRRRI dhan87/Miniket (Dinajpur)	20	Premium quality
F ₇ Generation				
1.	BRrang28	BRRRI dhan87/Shompa katari	10	Premium quality
Total			40	

Program 2: Breeding of Photoperiod-sensitive rice varieties (PSR) for Lowland and Charland ecosystem

General Objectives: To develop moderate photoperiod-sensitive climate smart rice varieties with high yield potential (≥ 8.0 t/ha) with acceptable grain quality

Project Leader: M Rokebul Hasan

Experiment 3.4: Observational Trial (OT)

MR Hasan and KM Iftekharuddaula

Specific objective: Evaluation of promising breeding lines for their homogeneity, adaptability, phenotypic acceptability and high yield potentials

Materials and methods: A total of 25 genotypes were evaluated at BRRRI RS, Rangpur. BR22 and Gainja were used as standard checks. The unit plot size was 5.4 m x 5 rows. Twenty-five-day-old seedlings were transplanted @ single seedling with the spacing of 20 cm x 20 cm. Fertilizers were applied @ 180 kg Urea, 100 kg TSP, 120 kg MP, 75 kg Gypsum and 7.5 kg Zinc Sulphate/ha. Total amount of TSP, Gypsum, ZnSO₄ and ½ MP were applied at the time of final land preparation. Urea was applied with three equal splits at 15, 30 and 45 days after transplanting (DAT). Rest ½ MP was applied with the 2nd split of urea application. Crop management such as weeding, irrigation etc. was done in time. Pest management was done as required.

Results: Two genotypes (BRrang13-1-9-8-2-1 and BRrang13-1-9-8-5-3) were selected based on the better performance with homogeneity in flowering, phenotypic acceptability, insect and disease reaction, earliness and grain yield (**Table 6**). All selected genotypes performed better over all standard checks. BRrang13-1-9-8-2-1 produced 1.5 and 3.2 t/ha yields advantage over BR22 and Gainja respectively. Moreover, twelve individual plants were selected for further evaluation.

Table 6: Agronomic parameters of the selected materials from Observational Yield Trial (OYT), Breeding of Photoperiod-sensitive rice varieties (PSR) for Lowland and Charland ecosystem, T. Aman, 2023

SL#	Designation	PHt. (cm)	Mat. (days)	Yield (t/ha)	Remarks
01.	BRrang13-1-9-8-2-1	112	143	6.7	MPPS
02.	BRrang13-1-9-8-5-3	110	146	6.5	MPPS
03.	BR22 (Ck.)	113	148	5.2	SPPS
04.	Gainja (Ck.)	102	140	3.5	SPPS

Here, MPPS: Moderately photoperiod sensitive; SPPS: Strongly photoperiod sensitive
D/S: 20 July, 2023; D/T: 15 August, 2023 & Spacing: 20 cm x 15 cm

Program 3: Breeding for Second Generation Rice (SGR)

General Objective: Development of high yielding (≥ 8.0 t/ha for T. Aman and ≥ 10.0 t/ha for Boro) rice varieties by modifying plant type giving the thrust is to develop short duration varieties accompanied with tolerance to drought/cold, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.

Project Leader: M Rokebul Hasan

Experiment 3.5: Observational Trial (OT)

MR Hasan and KM Iftekharuddaula

Specific objective: Evaluation of promising breeding lines for their homogeneity, adaptability, phenotypic acceptability and high yield potentials

Materials and methods: A total of 200 genotypes were evaluated at BRRIS, Rangpur. BRRIS dhan88 and BRRIS dhan89 were used as standard checks. The unit plot size was 5.4 m x 10 rows. Forty five day old seedlings were transplanted @ single seedling with the spacing of 20 cm x 20 cm. Fertilizers were applied @ 260 kg Urea, 100 kg TSP, 120 kg MP, 110 kg Gypsum and 11 kg Zinc Sulphate/ha. Total amount of TSP, Gypsum, ZnSO₄ and ½ MP were applied at the time of final land preparation. Urea was applied with three equal splits at 15, 30 and 45 days after transplanting (DAT). Rest ½ MP was applied with the 2nd split of urea application. Crop management such as weeding, irrigation etc. was done in time. Pest management was done as required.

Results: Three genotypes (BRrang13-RGA-5-5-1-1-1, BRrang31-2-9-7-1 and BR8415-5-4-Rang5-8-1-1) were selected based on the better performance with homogeneity in flowering, phenotypic acceptability, insect and disease reaction, earliness and grain yield (**Table 7**). All selected genotypes performed better over all standard checks. BRrang13-RGA-5-5-1-1-1 produced 1.2 t/ha yields advantage and 9 days earlier over BRRIS dhan89 (7.25 t/ha & 159 days). Moreover, 100 individual plants were selected for further evaluation.

Table 7: Agronomic parameters of the selected materials from Observational Yield Trial (OYT), Breeding for Second Generation Rice (SGR), Boro, 2023-24

SL#	Designation	PHt. (cm)	Mat. (days)	Yield (t/ha)
1.	BRrang35-RGA-5-5-1-1-1	101	150	8.45
2.	BRrang31-2-9-7-1	105	147	8.12
3.	BR8415-5-4-Rang5-8-1-1	103	150	7.84
4.	BRRIS dhan88 (Ck)	105	146	6.60
5.	BRRIS dhan89 (Ck)	98	159	7.25

D/S: 10 December, 2023; D/T: 27 January, 2024 & Spacing: 20 cm x 20 cm

Program 4: Breeding for Basmati Rice

General Objective: Development of high yielding (≥ 6.0 t/ha for T. Aman and ≥ 8.0 t/ha for Boro) rice varieties with improved modified plant type giving the thrust is to develop short duration varieties from diverse genetic background for tolerant to cold, sturdy stem, resistance to major biotic stresses (insect and diseases) and acceptable basmati quality.

Project Leader: M Rokebul Hasan

Experiment 3.6: Observational Trial (OT), T. Aman, 2023

MR Hasan and KM Iftekharuddaula

Specific objective: Evaluation of promising breeding lines for their homogeneity, adaptability, phenotypic acceptability and high yield potentials

Materials and methods: A total of 110 genotypes were evaluated at BRRRI RS, Rangpur. BRRRI dhan70 were used as standard check. The unit plot size was 5.4 m x 5 rows. twenty-five-day-old seedlings were transplanted @ single seedling with the spacing of 20 cm x 20 cm. Fertilizers were applied @ 180 kg Urea, 100 kg TSP, 120 kg MP, 110 kg Gypsum and 11 kg Zinc Sulphate/ha. Total amount of TSP, Gypsum, ZnSO₄ and ½ MP were applied at the time of final land preparation. Urea was applied with three equal splits at 15, 30 and 45 days after transplanting (DAT). Rest ½ MP was applied with the 2nd split of urea application. Crop management such as weeding, irrigation etc. was done in time. Pest management was done as required.

Results: Four genotypes were selected based on the better performance with homogeneity in flowering, phenotypic acceptability, insect and disease reaction, earliness and grain yield (**Table 8**). All selected genotypes performed better over the standard check. Four fixed genotypes were selected. BRrang55-RGA-14-2-1 produced 1.25 t/ha yields advantage and 11 days earlier over BRRRI dhan70. Moreover, 150 individual plants were selected for further evaluation.

Table 8: Agronomic parameters of the selected materials from Observational Yield Trial (OYT), Breeding for Basmati Rice, T. Aman, 2023

SL#	Designation	PHt. (cm)	Mat. (days)	Yield (t/ha)
1.	BRrang55-RGA-14-2-1	115	120	5.50
2.	BRrang55-RGA-20-2-1	110	115	5.15
3.	BRrang55-RGA-44-5-1	109	124	4.90
4.	BRrang55-RGA-44-10-2	115	125	4.80
5.	BRRRI dhan70 (Ck)	122	131	4.25

D/S: 15 July, 2023; D/T: 07August, 2023 & Spacing: 20 cm x 20 cm

Experiment 3.7: Observational Trial (OT), Boro, 2023-24

MR Hasan and KM Iftekharuddaula

Specific objective: Evaluation of promising breeding lines for their homogeneity, adaptability, phenotypic acceptability and high yield potentials

Materials and methods: A total of 150 genotypes were evaluated at BRRRI RS, Rangpur. BRRRI dhan104 were used as standard checks. The unit plot size was 5.4 m x 10 rows. Forty-five-day-old seedlings were transplanted @ single seedling with the spacing of 20 cm x 20 cm. Fertilizers were applied @ 260 kg Urea, 100 kg TSP, 120 kg MP, 110 kg Gypsum and 11 kg Zinc Sulphate/ha. Total amount of TSP, Gypsum, ZnSO₄ and ½ MP were applied at the time of final land preparation. Urea was applied with three equal splits at 15, 30 and 45 days after transplanting (DAT). Rest ½ MP was applied with the 2nd split of urea application. Crop management such as weeding, irrigation etc. was done in time. Pest management was done as required.

Results: Three genotypes were selected based on the better performance with homogeneity in flowering, phenotypic acceptability, insect and disease reaction, earliness and grain yield. All selected genotypes performed better over the standard check. Three fixed genotypes were selected (**Table 9**) and physico-chemical properties were analysed (**Table 10 & 11**). BRrang55-RGA-14-2-1 produced 0.97 t/ha yields advantage over BRRI dhan104. Moreover, 120 individual plants were selected for further evaluation.

Table 9: Agronomic parameters of the selected materials from Observational Yield Trial (OYT), Breeding for Basmati Rice, Boro, 2023-24

SL#	Designation	PHt. (cm)	Mat. (days)	Yield (t/ha)
1.	BRrang55-RGA-14-2-1	108	152	7.52
2.	BRrang55-RGA-20-2-1	95	150	6.75
3.	BRrang55-RGA-44-5-1	105	148	6.50
4.	BRRI dhan104 (Ck.)	95	154	6.55

D/S: 10 December, 2023; D/T: 25 January, 2024 & Spacing: 20 cm x 20 cm

Table 10: Physical characteristics of selected basmati genotypes from Observational Yield Trial (OYT), Breeding for Basmati Rice, Boro, 2023-24

AC#	Designation	MO (%)	Head Rice Recovery	Chaki. (%)	M GrL (mm)	MGr W (mm)	L/B ratio	Size & Shape	TWG (gm)	Aroma
18088	BRrang-RGA-14-2-1	70	43	48	7.7	1.7	4.5	ELS	21.4	+
18091	BRrang-RGA-20-2-1	70	46	40	7.4	1.7	4.4	LS	21.3	++
18100	BRrang-RGA-44-5-1	70	46	51	7.7	1.7	4.5	ELS	20.3	++
18103	BRRI dhan50 (Ck)	67	26	45	6.4	1.5	4.3	LS	17.8	+
18104	BRRI dhan70 (Ck)	69	57	33	6.6	2.0	3.4	LS	19.7	++
18106	BRRI dhan104 (Ck)	67	52	49	7.4	1.8	4.1	LS	23.8	++

Table 11: Chemical properties of selected basmati genotypes from Observational Yield Trial (OYT), Breeding for Basmati Rice, Boro, 2023-24

AC#	Designation	Alakali speadin g value	Amy (%)	Protein (%)	Cooked rice L (mm)	EL	IR	Ring formation
18088	BRrang-RGA-14-2-1	7.0	24	8.2	13.7	1.8	5.0	Slightly ring
18091	BRrang-RGA-20-2-1	6.7	23.8	8.0	12.6	1.7	4.3	Slightly ring
18100	BRrang-RGA-44-5-1	6.8	24.1	7.9	13.0	1.7	4.1	Moderately ring
18103	BRRI dhan50 (Ck)	3.1	26.8	8.1	9.0	1.4	3.7	NA
18104	BRRI dhan70 (Ck)	4.0	21.7	7.1	10.7	1.6	4.1	Slightly ring
18106	BRRI dhan104 (Ck)	7.0	27.3	8.9	11.8	1.6	3.7	Slightly ring

HYBRID RICE DEVELOPMENT

Report for T. Aman, 2023

Program 1: Development of hybrid rice parental lines and hybrids

General objective: To develop maintainer and restorer lines from diverse genetic origin

Project Leader: Anowara Akter

Principal investigator: Anowara Akter

Co-investigators: M S Hossain, MR Hasan and M J Hasan

Experiment 3.8: Constituting of Source Nursery (SN) in T. Aman, 2023

Specific Objective: To make a test crosses for identification of prospective maintainers and restorers from diverse genetic origin through testcross

Materials and Methods: A total of one hundred (100) elite breeding lines with five CMS lines were constitute in source nursery during T.Aman season, 2023. Elite breeding lines and CMS lines were grown separately at seven days' interval for proper synchronization of flowering stage to make a test cross. The seeds of selected parents were raised in well-prepared wet seed beds. Twenty five days old seedling was transplanted in the field at 2 m² plot with the spacing of 20 cm x 20 cm. Fertilizers were applied @ with 150:100:70: 60:10 kg/ha Urea, TSP, MP, gypsum and ZnSO₄ respectively. Intercultural and agronomic practices were applied when necessary. The crosses were done by hand pollination according to the combinations required. After pollination female parents were covered with glycine bags and tagged properly. Mature seeds were collected from each crossed panicles of female parent, dried and stored separately in paper bags with proper labeling.

Results: A total sixty one test crosses (F₁s) were made (**Table 12**) using five CMS lines by testcross during T.Aman, 2023.

Table 12: List of testcross F₁s during T. Aman, 2023

SL#	Combinations	Amount of seeds
01.	BRR11A / HAH210	25
02.	BRR11A / BR11607-4R-192(BB)	28
03.	BRR11A / BR11366-4R-133	32
04.	BRR11A / BR12839-4R-73	45
05.	BRR11A / BR11359-4R-236	80
06.	BRR11A / BR11359-4R-409	75
07.	BRR11A / Shova (TH)	64
08.	BRR11A / IR18C10011	65
09.	BRR11A / BRR1 dhan93	66
10.	BRR11A /BR12839-4R-21	82
11.	BRR11A /BR12839-4R-73	74
12.	BRR11A /BR10646-3-3-3-1-4	56
13.	BRR11A /BR11866-5R-136	49
14.	BRR109A /BR12839-4R-106	82
15.	BRR11A/BR12154-5R-219-PS1	79
16.	BRR11A/BR11690-5R-187	88
17.	BRR11A/IR103783-B-B-6-2	82
18.	BRR11A/IR13F652-1-PS2	55

19.	BRR111A/BR11196-5R-445	50
20.	BRR111A/IR19A8593	47
21.	BRR111A/IR18A2496	60
22.	BRR111A/IR19A1862	52
23.	BRR111A/IR16F1063-P1	25
24.	BRR111A/SVIN147_WS20-FP-15	28
25.	BRR111A/IR14T156	45
26.	BRR111A/IR18A2496	80
27.	BRR111A/ IR19A1473	75
28.	BRR111A/BR12162-5R-350-3	64
29.	BRR174A/BRR110R-MASP1	70
30.	BRR174A/BR11971-4R-212	66
31.	BRR174A/IR18C10013	80
32.	BRR174A/BRR1 dhan102	75
33.	BRR174A/BR12836-4R-63	35
34.	BRR174A/IR16F1063	64
35.	BRR174A/IR19A1862	70
36.	BRR174A/IR14T156	66
37.	BRR174A/IR20LT2362	50
38.	BRR174A/IR19A8541	45
39.	BRR174A/IR19A8592	25
40.	BRR174A/IR20LT1998	28
41.	BRR174A/IR19A8338	32
42.	BRR174A/IR16F1148	50
43.	BRR174A/BR10212-16-1-1	75
44.	BRR174A/IR19A8538	35
45.	BRR174A/IR19A8541	64
46.	BRR174A/IR15F1886	70
47.	BRR197A/MAHICCO-2	66
48.	BRR199A/H-1203	82
49.	BRR199A/Dhani Gold	74
50.	BRR199A/BR11607-4R-192(BB)	72
51.	BRR199A/BR10646-3-3-3-1-4	55
52.	BRR199A/BR11974-4R-610	67
53.	BRR199A/BR11318-5R-84	65
54.	BRR199A/BR11359-4R-299	66
55.	BRR199A/BR11978-4R-378	82
56.	BRR199A/BR11970-4R-403	74
57.	BRR199A/BR11970-4R-399	56
58.	BRR199A/BR11866-5R-136	49
59.	BRR1109A/BR11359-4R-211	45
60.	BRR1109A/IR18C10013	80
61.	BRR174A/BR12487-5R-60	75

Experiment 3.9: Test cross Nursery in T. Aman, 2023

- Objectives:** i. Confirmation of maintainers and restorers from the crossed entries.
ii. Selection of heterotic rice hybrids.
iii. Conversion of prospective maintainers into new CMS lines.

Materials and Methods: A total of one hundred and eighty three testcrosses (F_1 s) along with their parents and BRR1 hybrid dhan6, AZ7006 and Dhani gold as check variety were grown in testcross nursery during T.Aman, 2023. The seeds of selected parents were raised in well-prepared wet seed beds. Twenty five days old seedling was transplanted in the field at 2 m² plot with the spacing of 20 cm x 20 cm. Fertilizers were applied @ with 150:100:70: 60:10 kg/ha Urea, TSP, MP, gypsum and ZnSO₄ respectively. Intercultural and agronomic practices were applied when necessary.

Results: None of testcrosses (F_1 s) were found heterotic out of 139 but two testcrosses were found completely sterile (**Table 13**) and immediately backcrossed with their corresponding male parents regarded as BC₁ generation for conversion of new CMS lines.

Table 13: BC₁F₁s during T. Aman, 2023

SL#	Cross Combinations	Amount of seeds
01.	BRR199A/IR75608B-MASP3	85
02.	BRR111A/IR75608B-MASP5	55

Boro, 2023-24

Program 1: Development of hybrid rice parental lines and hybrids

General objective: To develop maintainer and restorer lines from diverse genetic origin.

Project Leader: Anowara Akter

Principal investigator: Anowara Akter

Co-investigators: M S Hossain, MR Hasan and M J Hasan

Experiment 3.10: Constituting of source nursery for make a testcross between elite breeding lines and CMS lines in Boro, 2023-24

Specific Objective: Identification of prospective maintainers and restorers from diverse genetic origin through testcross

Materials and Methods: A total of one hundred and sixty seven elite breeding lines with seven CMS lines were constitute in source nursery during Boro, 2023-24. Elite breeding lines and CMS lines were grown separately at seven days' interval for proper synchronization of flowering stage to make a test cross. The seeds of selected parents were raised in well-prepared wet seed beds. Twenty five days old seedling was transplanted in the field at 2 m² plot with the spacing of 20 cm x 20 cm. Fertilizers were applied @ with 270:130:120: 70:10 kg/ha Urea, TSP, MP, gypsum and ZnSO₄ respectively. Intercultural and agronomic practices were applied when necessary. The crosses were done by hand pollination according to the combinations required. After pollination female parents were covered with glycine bags and tagged properly. Mature seeds were collected

from each crossed panicles of female parent, dried and stored separately in paper bags with proper labeling.

Results: A total 90 testcross F₁s (**Table 14**) were made by testcross from source nursery. The testcross F₁s along with corresponding male parents and standard checks will be evaluated in testcross nursery during next T. Aman, 2024.

Table 14: List of testcross F₁s during Boro, 2023-24

SL#	Combinations	Amount of seeds
01.	BRR109A/BRR110R-MASP1-1-1	55
02.	BRR109A/BRR120R-MASP1-2-1	38
03.	BRR109A/MAHICCO-2	35
04.	BRR109A/TEJ GOLD	50
05.	BRR109A/H-1203(SYNGENTA)	48
06.	BRR109A /NARIYA-14	80
07.	BRR109A /KAJOL LATA	75
08.	BRR109A /AD181	35
09.	BRR109A /HA184	64
10.	BRR109A /HGG205	70
11.	BRR109A /HGP197	65
12.	BRR109A /BR9942-1-2-1-1-B1(BB)	66
13.	BRR109A /BR9942-1-2-1-1-B2(BB)	82
14.	BRR109A /BR9942-1-2-3-1-(BB)	74
15.	BRR109A /BR11607-4R-72(BB)	56
16.	BRR109A /BR11607-4R-192(BB)	49
17.	BRR109A /BR11607-4R-184(BB)	82
18.	BRR109A /BR11607-4R-116(BB)	79
19.	BRR109A /BR12096-4R-103-1(BB)	66
20.	BRR109A /BR12096-4R-124-1(BB)	88
21.	BRR109A /BR12096-4R-25-1(BB)	95
22.	BRR109A /IRRI154-Pi9(Blast)	82
23.	BRR109A /BR11966-4R-510	80
24.	BRR109A /BR11971-4R-182	55
25.	BRR109A /BR11971-4R-200	74
26.	BRR109A /BR11971-4R-205	50
27.	BRR109A /BR11971-4R-230	47
28.	BRR111A /BR11971-4R-234	60

SL#	Combinations	Amount of seeds
29.	BRR110A /BR11974-4R-25	52
30.	BRR111A /BR11974-4R-33	50
31.	BRR111A /BR11974-4R-45	25
32.	BRR1109A /BR11974-4R-54	28
33.	BRR1109A /BR11974-4R-186	32
34.	BRR1109A /BR11974-4R-218	50
35.	BRR1109A /BR11974-4R-179	45
36.	BRR1109A /BR11974-4R-409	80
37.	BRR1109A /BR11974-4R-478	75
38.	BRR1120A /BR11974-4R-588	35
39.	BRR1120A /BR11974-4R-610	64
40.	BRR1120A /BR11973-4R-434	70
41.	BRR1120A /BR11973-4R-450	66
42.	BRR1120A /BR11973-4R-480	80
43.	BRR1120A /BR11973-4R-488	75
44.	BRR1120A /BR11973-4R-496	35
45.	BRR1120A /BR11973-4R-498	64
46.	BRR1120A /BR11973-4R-535	70
47.	BRR199A /BR11973-4R-562	66
48.	BRR1109A /BR11973-4R-567	32
49.	BRR1109A /BR11978-4R-374	50
50.	BRR1109A /BR10646-3-3-3-1-4	45
51.	BRR1109A /BR10648-12-1-3-4-1	25
52.	BRR1109A /BR11361-4R-149	28
53.	BRR1109A /BR11366-4R-179	32
54.	BRR1109A /BR11371-4R-322	50
55.	BRR1109A /BR11371-4R-259	45
56.	BRR1109A /BR11371-4R-522	80
57.	BRR1109A/BR11660-5R-6	75
58.	BRR1120A/BR11359-4R-279	35
59.	BRR1120A/BR11366-4R-173	64
60.	BRR1120A/BR11359-4R-11	80
61.	BRR1120A/BR11361-4R-172	65
62.	BRR1120A/BR11361-4R-154	66
63.	BRR1120A/BR11363-4R-155	82

SL#	Combinations	Amount of seeds
64.	BRR109A/BR11366-4R-121	74
65.	BRR120A/BR10642-4-5-1-2-1	56
66.	BRR109A/Katari, Shibganj	49
67.	BRR110A/BR9674-1-4-1-3-P1	45
68.	BRR120A/BR96-1-4-1-3-P2	80
69.	BRR109A/BR12432-5R-4-1	75
70.	BRR110A/BR12605-4R-121-1	35
71.	BRR110A/BR11845-4R-90-1	64
72.	BRR110A/BR10966-B-3R-32	70
73.	BRR110A/BR12605-4R-371-1	65
74.	BRR199A/IRRI154	66
75.	BRR199A/IR18C1005	82
76.	BRR199A/IR18C10011	74
77.	BRR199A/IR18C10010	56
78.	BRR199A/IR18C10012	49
79.	BRR199A/IR18C10013	65
80.	BRR199A/IR18C1003	45
81.	BRR199A/IR18C1004	35
82.	BRR110A/BINA dhan25	38
83.	BRR199A/BAU3	37
84.	BRR11A/BRR1 dhan103	50
85.	BRR199A/BRR1 dhan108	75
86.	BRR110A/BRAC dhan1	80
87.	BRR199A/BRR1 dhan94	65
88.	BRR110A/BRR1 dhan95	66
89.	BRR110A/BR12839-4R-73	82
90.	BRR109A/BR12839-4R-137	74

Experiment 3.11: Test cross Nursery in Boro, 2023-24

Objectives: i. Confirmation of maintainers and restorers from the crossed entries,
ii. Selection of heterotic rice hybrids,
iii. Conversion of prospective maintainers into new CMS lines

Materials and Methods: A total of ninety test crosses (F₁s) along with their parents and four standard hybrid check variety (BRR1 hybrid dhan8, SL-8H, Herra-2 and Tej gold) were grown in testcross nursery during Boro season, 2023-24. Twenty five days old seedling was transplanted

in the field at 2 m² plot with the spacing of 20 cm x 20 cm. Fertilizers were applied @ with 270:130:120:70:10 kg/ha Urea, TSP, MP, gypsum and ZnSO₄ respectively. Intercultural and agronomic practices were applied when necessary.

Results: None of testcrosses (F₁s) were found heterotic out of ninety (90).

Experiment 3.12: Back cross nursery (BCN), Boro, 2023-24

Objective: Conversion of prospective maintainers into new CMS lines

Materials and Methods: Two BC₁ populations along with their corresponding male parents were grown in back cross nursery during Boro season, 2023-24. Twenty five days old seedling was transplanted in the field with the spacing of 20 cm x 20 cm. Fertilizers were applied @ with 270:130:120:70:10 kg/ha Urea, TSP, MP, gypsum and ZnSO₄ respectively. Intercultural and agronomic practices were applied when necessary.

Results: Two back cross generations (BC₁) were advanced (**Table 15**) to next generations (BC₂) for conversion of prospective maintainers into new CMS lines against bacterial blight.

Table 15: BC₂F₁s during Boro, 2023-24

SL#	Cross Combinations	Amount of seeds
01.	BRR199A/ IR75608B-MASP3	95
02.	BRR111A/IR75608B-MASP5	70

Program 2: Development of disease resistant (Blast) hybrid rice parental lines by molecular approach.

General Objective: Introgression of blast resistance gene, *Pi9* into bacterial blight resistant restorer and maintainer lines

Experiment 3.13: Hybridization

Objective: Introgression of blast resistance gene into bacterial blight resistant restorer and maintainer lines

Materials and Methods: Two pyramided of bacterial blight resistant restorer and maintainer lines (BRR131R-MASP4-4-1 and IR75608B-MASP2-1-1) as a recurrent parent and one donor parent, IRR1154Pi9 (**Table 16**) were used for hybridization. These parents were grown in three different sets at 7 days interval to synchronize flowering among the recipient (female) and donor (male) parents. Thirty days old seedlings were transplanted per set in the hybridization block with the spacing of 20 cm x 20cm. Fertilizer dose was applied 270:130:120:70:10 kg/ha Urea:TSP:MP:Gypsum:ZnSO₄, respectively. Intercultural and agronomic practices were applied when necessary.

Table 16: List of parents for hybridization during Boro, 2023-24

SL#	Recurrent Parents	Donor parent	Target gene
01.	BRR131R-MASP4-4-1	IRRI154Pi9	Pi9
02.	IR75608B-MASP2-1-1	IRRI154Pi9	Pi9

Results: Hybridization was done between two recipient parents BRRI31R-MASP4-4-1, IR75608B-MASP2-1-1 and one donor parent IRR154Pi9 carrying blast resistance gene *Pi9*. One hundred and thirty one F₁ seeds (naked) were found (**Table 17**) from two cross combinations. The F₁ populations will be grown in T. Aman, 2024.

Table 17: List of F₁s during Boro, 2023-24

SL#	F ₁ Populations	Target gene	Amount of seeds
01.	BRRI31R-MASP4-4-1/ IRR154Pi9	Pi9	76
02.	IR75608B-MASP2-1-1/ IRR154Pi9	Pi9	55

B. BRRI HQ Gazipur

Experiment 3.14: Regional Yield Trial (RYT), 2023-2024

MS Hossain, MR Hasan, concerned scientist of the trials and KM Iftekharuddaula

General objective: To evaluate specific and general adaptability of the advanced genotypes in on station condition

Regional Yield Trial (RYT), T. Aus, 2023

Three RYT's were conducted under T. Aus; two favourable and one Bacterial Blight Resistant against standard check varieties (**Table 18**).

RYT#1 (Favourable): Twelve genotypes along with two standard checks; BRRI dhan48 and BRRI dhan98 were evaluated in this trial. Yield range was observed from 1.39 to 5.33 t/ha and growth duration ranged from 104 to 121 days. The highest grain yield was observed in BRRI dhan98 (5.33 t/ha) with 111 days. None of the tested genotypes were found high yielder over the check varieties.

RYT#2 (Favourable): Seven genotypes along with two standard checks; BRRI dhan48 and BRRI dhan98 were evaluated. The highest grain yield was found in BR12096-4R-25-1 (4.32 t/ha) with 108 days followed by BRRI dhan98 (3.66 t/ha & 111 days).

RYT#3 (BB): Eight genotypes along with three standard checks; BRRI dhan48, BRRI dhan82 and BRRI dhan98 were evaluated. BR(path)13784-BC3-6-8-9-HR16 (5.24 t/ha) produced highest grain yield followed by BRRI dhan98 (5.13 t/ha) and BR(path)13784-BC3-61-3-8-6-HR3 (4.78 t/ha).

Regional Yield Trial (RYT), T. Aman, 2023

A total of 19 RYT's were conducted under T. Aman: two Rainfed Lowland Rice (RLR), one Zinc Enriched Rice (ZER), two Salinity Tolerant Rice (STR), three Drought Tolerant Rice (DTR), one Disease Resistant Rice (DDR-BB), one False smut Rice, one Low Amylose (LA-Biotechnology), one Long Duration, one Premium Quality Rice (Aromatic), one Premium Quality Rice (Non-aromatic), one Photosensitive, two Katari and two Zira type against standard check varieties (**Table 18**).

RYT#1 (RLR-1): Nine genotypes along with two standard checks; BRRI dhan71 and BRRI dhan75 were evaluated. BRRI dhan71 produced highest grain yield (5.20 t/ha) with 115 days

among all the tested entries. Therefore, none of the tested genotypes were found superior over the check varieties.

RYT#2 (RLR-2): Seven genotypes were evaluated against two standard checks; BRRi dhan49 and BRRi dhan87. The highest grain yield produced by BR10797-6R-24 (5.72 t/ha) with only 128 days, where as standard check BRRi dhan49 produced 4.83 t/ha with 132 days.

RYT#3 (ZER): Four genotypes along with four standard checks; BRRi dhan49, BRRi dhan72, BRRi dhan87 and BRRi dhan93 were tested. BR10854-4-1-1-2-8 produced highest yield (5.74 t/ha) with 135 days over all checks yield; BRRi dhan72 (5.32 t/ha) and BRRi dhan87 (5.37 t/ha).

RYT#4 (STR-1): Twelve genotypes were evaluated against two standard checks; BRRi dhan73 and BRRi dhan87. Yield range was observed from 3.88 to 5.55 t/ha and growth duration ranged from 117 to 133 days. BR13111-4R-63 produced highest yield (5.55 t/ha) over all tested genotypes. Standard checks BRRi dhan73 and BRRi dhan87 produced 4.86 t/ha and 4.10 t/ha, respectively.

RYT#5 (STR-2): Seventeen genotypes were evaluated against three standard checks; BRRi dhan30, BRRi dhan87 and Gainza. BR13121-4R-40 produced highest yield (4.93 t/ha) followed by BR13105-4R-37 (4.91 t/ha) among the all tested genotypes; BRRi dhan30 (4.53 t/ha) and BRRi dhan87 (4.23 t/ha).

RYT#6 (DTR-1): Seven genotypes were evaluated against BRRi dhan71. Yield range was observed 4.12 to 5.21 t/ha and growth duration ranged from 106 to 113 days. None of the tested genotypes were observed superior over the check variety.

RYT#7 (DTR-2, Nilphamari): Seven genotypes were tested against BRRi dhan71. The highest grain yield was observed in IR17L1360 (5.33 t/ha) followed by BR12023-6R-111(5.17 t/ha). The standard check variety BRRi dhan71 produced 5.02 t/ha which is statistically similar to IR17L1360. In terms of growth duration, IR17L1360 showed eight days earlier than BRRi dhan71.

RYT#8 (DTR-3, Kurigram): Seven genotypes were evaluated against standar check variety BRRi dhan71. The highest grain yield was observed in IR17L1360 (5.54 t/ha) followed by BR12023-6R-111(5.42 t/ha). The standard check variety BRRi dhan71 produced 4.79 t/ha with 114 days.

RYT#9 (LA-Bio): Three genotypes along with two standard checks; BRRi dhan71 and BRRi dhan87 were evaluated. BR(Bio)10381-AC11-7-1 produced highest yield (6.26 t/ha) with 136 days over all checks yield; BRRi dhan71 (4.86 t/ha) and BRRi dhan87 (5.79 t/ha). But BR(Bio)10381-AC11-7-1 showed 13 days longer growth duration than BRRi dhan87.

RYT#10 (DRR-BB): Six genotypes were tested along with three checks; BRRi dhan75, BRRi dhan87 and IRBB60 (Res Ck.). Yield range was observed from 2.59 to 6.04 t/ha and growth duration ranged from 105 to 134 days. BR11869-5R-47 gave highest yield (6.04 t/ha) followed by BRRi dhan87 (5.62 t/ha).

RYT#11 (False smut): Nine genotypes were tested along with two checks; BRRi dhan49 and BRRi dhan87. Yield range was observed from 3.26 to 5.16 t/ha and growth duration ranged from 109 to 131 days. BR(path)13804-BC3-4 gave highest yield 5.16 t/ha with 118 days where as BRRi dhan49 produced 5.14 t/ha with 131 days.

RYT#12 (Long duration): Four genotypes were tested along with two checks; BRRi dhan76 and BRRi dhan91. BR9892-8-2-2B was observed high yielder (3.27 t/ha) over the check varieties; BRRi dhan76 (1.60 t/ha) and BRRi dhan91 (1.32 t/ha).

RYT#13 (Premium Quality Rice-Aromatic): Five genotypes were tested along with two checks; BRRi dhan34 and BRRi dhan70. Yield range was observed from 2.52 to 4.40 t/ha and growth duration ranged from 116 to 156 days. BR12836-4R-312 was observed high yielder (4.40 t/ha) followed by BR12839-4R-51 (4.16 t/ha).

RYT#14 (Premium Quality Rice-Non Aromatic): Seven genotypes were tested along with two checks; BRRi dhan49 and BRRi dhan87. Yield range was observed from 3.32 to 5.45 t/ha and growth duration ranged from 104 to 132 days. The highest yield was observed in BRRi dhan49 (5.45 t/ha) followed by BR12839-4R-106 (5.23 t/ha). The highest false smut disease was found in BR12839-4R-137 (20%).

RYT#15 (Photosensitive): Eight genotypes were tested along with two checks; BRRi dhan49 and BRRi dhan87. Yield range was observed from 3.49 to 5.34 t/ha. The highest yield was observed in BR10212-5-5-3 (5.34 t/ha) followed by IR13F652-1-P3 (4.80 t/ha).

RYT#16 (Katari type, Mithapukur Rangpur): Three genotypes along with one check; Katari were evaluated. BRH9-3-14-2B produced highest yield (4.46t/ha) which was statistically similar to Katari but had 17 days shorter growth duration.

RYT#17 (Zira type, Mithapukur Rangpur): Five genotypes along with two checks; Zirashail and BRRi dhan62 were evaluated. Yield range was observed from 2.88 to 4.13 t/ha and growth duration ranged from 97 to 108 days. BRH11-7-17-10B gave highest yield (4.13 t/ha) with 108 days over all tested entries.

RYT#18 (Katari type, BRRi RS Rangpur): Three genotypes along with one check; Katari were evaluated. Yield range was observed from 4.20 to 4.78 t/ha and growth duration ranged from 105 to 126 days. BRH9-3-14-2B gave highest yield (4.78t/ha) with 108 days over all tested entries.

RYT#19 (Zira type, Mithapukur Rangpur): Four genotypes along with two checks; Zirashail and BRRi dhan62 were evaluated. Yield range was observed from 3.45 to 4.49 t/ha and growth duration ranged from 97 to 106 days. BRH17-23-8-2-7B gave highest yield (4.49 t/ha) followed by BRH11-7-17-10B (4.29 t/ha).

Regional Yield Trial (RYT), Boro, 2023-2024

A total of 23 RYTs were conducted during Boro season: one Favorable Boro Rice (FBR-SD), one Favorable Boro Rice (FBR-MD), one Favorable Boro Rice (FBR-SMD), one Favorable Boro Rice (FBR-ELS), one Favorable Boro Rice (FBR-Barishal), one Salinity Tolerant Rice (STR), one Salinity Tolerant Rice (ALART Cum RYT), one Fine grain, one Zinc Enriched Rice (ZER), six Premium Quality Rice (PQR), Six Disease Resistant Rice (DRR) and two Heat Tolerant Rice against standard check varieties (**Table 18**).

RYT#1 (FBR-SD): Eight genotypes along with two checks; BRRI dhan88 and BRRI dhan96 were evaluated. Yield range was observed from 6.25 to 7.27 t/ha and growth duration ranged from 150 to 168 days. BR12671-4R-95 produced the highest grain yield (7.27 t/ha) followed by BR12574-5R-52 (7.10 t/ha) and BRRI dhan96 (7.09 t/ha).

RYT#2 (FBR-MD): Nine genotypes along with three checks; BRRI dhan58, BRRI dhan89 and BRRI dhan102 were evaluated. Yield range was observed from 5.97 to 7.78 t/ha and growth duration ranged from 155 to 165 days. None of the tested entries produced higher grain over the standard check varieties.

RYT#3 (FBR-SMD): Ten genotypes along with four checks; BRRI dhan58, BRRI dhan88, BRRI dhan89 and BRRI dhan102 were evaluated. Yield range was observed from 4.98 to 6.71 t/ha and growth duration ranged from 152 to 163 days. BR13027-BC1-3R-77 (6.71 t/ha) performed better over all tested entries.

RYT#4 (FBR-ELS): Four genotypes along with two checks; BRRI dhan63 and BRRI dhan104 were evaluated. Yield range was observed from 6.59 to 7.40 t/ha and growth duration ranged from 154 to 159 days. BR7528-2R-19-16-RIL-59 (7.40 t/ha) produced highest grain yield followed by BR9945-5R-21 (7.36 t/ha).

RYT#5 (FBR-Barishal): Ten genotypes along with two checks; BRRI dhan74 and BRRI dhan102 were evaluated. Yield range was observed from 6.87 to 8.08 t/ha and growth duration ranged from 152 to 166 days. NGR749-2 produced highest grain yield (8.08 t/ha) followed by NGR745-2 (8.05 t/ha).

RYT#6 (STR): Twelve genotypes along with three checks; BRRI dhan28, BRRI dhan67 and BRRI dhan88 were evaluated. Yield range was observed from 5.45 to 7.47 t/ha and growth duration ranged from 147 to 172 days. BR13113-4R-116 produced highest grain yield (7.47 t/ha) followed by BR13111-4R-191 (7.38 t/ha).

RYT#7 (ALART Cum RYT-STR): Five genotypes along with three checks; BRRI dhan28, BRRI dhan67 and BRRI dhan88 were evaluated. Yield range was observed from 5.66 to 7.71 t/ha and growth duration ranged from 145 to 163 days. BR13111-4R-63 gave highest grain yield (7.71 t/ha) followed by BR13113-4R-63 (7.49 t/ha).

RYT#8 (Fine grain): Four genotypes along with one check; BRRI dhan28, BRRI dhan67 and BRRI dhan88 were evaluated. Yield range was observed from 6.91 to 7.96 t/ha and growth

duration ranged from 150 to 155 days. BR10247-14-18-4 produced highest grain yield (7.96 t/ha) followed by BRH9-3-12-2B (7.43 t/ha).

RYT#9 (ZER): Six genotypes were evaluated along with two checks; BRRi dhan74 and BRRi dhan89. Yield range was observed from 6.45 to 8.38 t/ha and growth duration ranged from 152 to 167 days. BR10572-2-7-1-4 gave highest grain yield (8.38 t/ha & 166 days) followed by BRRi dhan89 (7.78 t/ha & 166 days).

RYT#10 (PQR-1, BRRi RS Rangpur): Six genotypes were evaluated along with three checks; BRRi dhan81, BRRi dhan104 and BRRi dhan107. Yield range was observed from 6.28 to 7.10 t/ha and growth duration ranged from 150 to 166 days. BR11361-4R-149 produced highest yield (7.10 t/ha) followed by BR11359-4R-24 (6.92 t/ha).

RYT#11 (PQR-2, BRRi RS Rangpur): Five genotypes were evaluated along with three checks; BRRi dhan58, BRRi dhan104 and BRRi dhan107. Yield range was observed from 5.77 to 7.33 t/ha and growth duration ranged from 155 to 161 days. None of the tested genotypes performed better over the standard checks.

RYT#12 (PQR-3, BRRi RS Rangpur): Ten genotypes were evaluated along with three checks; BRRi dhan102, BRRi dhan104 and BRRi dhan107. Yield range was observed from 4.63 to 7.36 t/ha and growth duration ranged from 163 to 169 days. BR11359-4R-181 produced highest yield (7.36 t/ha) followed by BR11359-4R-289 (6.89 t/ha).

RYT#13 (PQR-1, Parbartipur-Dinajpur): Six genotypes were evaluated along with three checks; BRRi dhan81, BRRi dhan104 and BRRi dhan107. Yield range was observed from 5.80 to 7.16 t/ha and growth duration ranged from 153 to 165 days. BR11366-4R-133 produced highest yield (7.16 t/ha) followed by BR11371-4R-522 (7.11 t/ha).

RYT#14 (PQR-2, Parbartipur-Dinajpur): Five genotypes were evaluated along with three checks; BRRi dhan58, BRRi dhan104 and BRRi dhan107. Yield range was observed from 4.19 to 6.49 t/ha and growth duration ranged from 152 to 160 days. None of the tested genotypes performed better over the standard checks.

RYT#15 (PQR-3, Parbartipur-Dinajpur): Ten genotypes were evaluated along with three checks; BRRi dhan102, BRRi dhan104 and BRRi dhan107. Yield range was observed from 5.28 to 7.34 t/ha and growth duration ranged from 163 to 165 days. BR11359-4R-288 produced highest yield (7.34 t/ha) followed by BR11359-4R-181 (7.01 t/ha).

RYT#16 (DRR): Fourteen genotypes along with three standard checks; BRRi dhan88, BRRi dhan89 and BRRi dhan101 were evaluated. Yield range was observed from 5.89 to 8.43 t/ha and growth duration ranged from 147 to 164 days. BR11867-5R-331 produced highest yield (8.43 t/ha) followed by BRRi dhan89 (8.33 t/ha), BR12125-6R-79 (7.99 t/ha) and BR13793-4R-1 (7.96 t/ha).

RYT#17 (DRR, BB-BLAST): Six genotypes along with two standard checks; BRRi dhan28 and BRRi dhan88 were evaluated. Yield range was observed from 6.47 to 7.42 t/ha and growth

duration ranged from 149 to 152 days. BR(path) 13802-BC3-12-10-14 produced highest yield (7.42 t/ha) followed by BR(path) 13802-BC3-10-11-12 (7.04 t/ha) and BRRi dhan28 (7.02 t/ha).

RYT#18 (DRR, BLAST-LD): Five genotypes along with one standard checks; BRRi dhan29 were evaluated. Yield range was observed from 6.82 to 8.65 t/ha and growth duration ranged from 158 to 168 days. None of the tested genotypes performed better over the standard checks.

RYT#19 (DRR, BLAST-MD): Four genotypes along with two standard checks; BRRi dhan58 and BRRi dhan89 were evaluated. Yield range was observed from 6.26 to 8.42 t/ha and growth duration ranged from 150 to 167 days. Rod miniket-1 produced highest yield (8.42 t/ha) followed by BRRi dhan89 (8.32 t/ha) and BRRi dhan58 (7.59 t/ha).

RYT#20 (DRR, BLAST-Premium Quality): Three genotypes along with two standard checks; BRRi dhan50 and BRRi dhan63 were evaluated. Yield range was observed from 6.03 to 7.61 t/ha and growth duration ranged from 153 to 176 days. None of the tested genotypes performed better over the standard checks.

RYT#21 (DRR, BLAST): Four genotypes along with two standard checks; BRRi dhan28 and BRRi dhan88 were evaluated. Yield range was observed from 6.70 to 7.73 t/ha and growth duration ranged from 149 to 155 days. BR(path)15641-3HR-15 produced highest yield (7.73 t/ha) followed by BRRi dhan28 (7.14 t/ha) and BR(path) 15641-3HR-45 (6.92 t/ha).

RYT#22 (High temperature Tolerant Rice-1): Five genotypes along with three standard checks; BINA dhan14, BRRi dhan28 and BRRi dhan98 were evaluated. Yield range was observed from 3.60 to 5.52 t/ha and growth duration ranged from 108 to 121 days. BR12605-4R-298 produced highest yield (5.52 t/ha) followed by BR12605-4R-297 (5.29 t/ha) and BRRi dhan98 (5.27 t/ha).

RYT#23 (High temperature Tolerant Rice-2): Five genotypes and three standard checks; BINA dhan14, BRRi dhan28 and BRRi dhan98 were tested. Yield range was observed from 5.10 to 6.21 t/ha and growth duration ranged from 108 to 120 days. None of the tested genotypes performed better over the standard checks.

Table 18: Grain yield and other characters of different entries under Regional Yield Trials (RYTs) in T. Aus, 2023, T. Aman, 2023 and Boro, 2023-2024

SL#	Designation	Mat. (days)	PHt. (cm)	Yld. (t/ha)	Remarks
T. Aus, 2023					
RYT#1 (Favourable)					
01.	BR11898-5R-241	121	102	1.39	Bird damage-30%
02.	BR12087-5R-25	105	105	4.14	
03.	BR12087-5R-31	106	100	2.50	Bird damage-15-20%
04.	BR12087-5R-132	107	105	3.78	Bird damage-10%
05.	BR12091-5R-233	107	99	4.48	
06.	BR12091-4R-09	106	107	4.66	
07.	BR12091-4R-97	106	99	3.10	Bird damage-15-20%
08.	BR12091-4R-169	105	93	2.79	Bird damage-20%
09.	BR12101-5R-76	109	94	4.08	Bird damage-10%

10.	BR12102-4R-58	107	103	4.47	
11.	BR11863-5R-82	104	95	1.89	Bird damage-20%
12.	BR11864-5R-31	107	88	3.53	Bird damage-20%
13.	BRR1 dhan48 (Ck)	106	98	3.15	Bird damage-15%
14.	BRR1 dhan98 (Ck)	111	86	5.33	
	CV	1.35	2.55	6.80	
	Lsd (0.05)	1.02	3.17	0.72	

D/S: 16 April, 2023; D/T: 15 May, 2023; Spacing: 20cm x 15cm

RYT#2 (Favourable)

01.	BR11866-5R-147	107	82	2.75	Bird damage-25%, RD-10%
02.	BR11866-5R-215	112	77	2.00	Bird damage-25%, RD-10%
03.	BR11866-5R-312	108	95	2.63	Bird damage-20%
04.	BR11867-5R-103	108	89	2.47	Bird damage-10%
05.	BR11867-5R-188	108	89	2.57	Bird damage-25%,
06.	BR11867-5R-442	108	86	1.79	Bird damage-30%, RD-10%
07.	BR12096-4R-25-1	108	96	4.32	
08.	BRR1 dhan48(Ck)	107	94	2.46	Bird damage-10%, RD-10%
09.	BRR1 dhan98(Ck)	111	88	3.66	Bird damage-10%
	CV	3.71	2.35	5.18	
	Lsd (0.05)	2.57	2.17	0.45	

D/S: 16 April, 2023; D/T: 15 May, 2023; Spacing: 20cm x 15cm

RYT#3 (BB)

01.	BR(path)13784-BC3-61-3-8-6-HR3	102	101	4.78	
02.	BR(path)13784-BC3-62-3-5-HR2	103	96	2.91	Bird damage-20%, RD-10%
03.	BR(path)13784-BC3-63-6-4-HR6	104	92	3.59	
04.	BR(path)13784-BC3-34-9-10-HR9	104	97	3.05	Bird damage-10%, RD-10%
05.	BR(path)13784-BC3-3-8-7-HR13	104	97	2.34	Bird damage-20%, RD-10%
06.	BR(path)13784-BC3-5-3-4-HR15	103	100	3.07	Bird damage-20%, RD-10%
07.	BR(path)13784-BC3-6-8-9-HR16	104	94	5.24	
08.	BRR1 dhan48(Ck)	106	98	3.82	
09.	BRR1 dhan82(Ck)	104	105	3.42	Bird damage-20%, RD-10%
10.	BRR1 dhan98 (Ck)	109	95	5.13	
	CV	1.42	1.74	5.89	
	Lsd (0.05)	1.47	2.83	0.55	

D/S: 18 April, 2023; D/T: 16 May, 2023; Spacing: 25cm x 15cm

T. Aman, 2023

RYT#1 (Rainfed Lowland Rice, RLR-1)

01.	BR12001-6R-205	109	135	4.68	BLB-40%, FS-1%, Lgd-100%
02.	BR10795-6R-133	117	153	3.80	Lgd-100%
03.	BR12005-6R-14	136	134	4.36	Lgd-100%
04.	BR10797-6R-140	107	119	3.14	Lgd-100%
05.	BR10799-6R-104	124	136	4.31	Lgd-100%
06.	BR12007-6R-61	103	144	3.19	Lgd-100%, FS-2%
07.	BR11333-6R-4	120	123	3.97	Lgd-100%, FS-1%
08.	BR11333-6R-84	115	108	4.18	Lgd-30%, FS-1%
09.	BR10799-6R-31	117	140	4.35	Lgd-100%
10.	BRR1 dhan71 (Ck)	115	124	5.20	Lgd-50%
11.	BRR1 dhan75 (Ck)	106	112	4.10	Lgd-60%
	CV	0.59	1.38	6.24	
	Lsd (0.05)	0.91	3.27	0.55	

D/S: 15 July, 2023; D/T: 06 August, 2023; Spacing: 20cm x 15cm

RYT#2 (Rainfed Lowland Rice, RLR-2)

01.	BR12011-6R-178	106	133	4.23	Lgd-90%
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02.	BR10797-6R-24	128	135	5.72	
03.	BR10799-6R-70	108	122	3.27	
04.	BR11343-6R-51	129	112	4.56	
05.	BR11227-6R-98	139	176	4.66	Lgd-100%
06.	BR10802-6R-66	132	156	4.61	Lgd-100%
07.	BR11336-6R-10	136	166	5.10	Lgd-100%
08.	BRRi dhan49 (Ck)	132	117	4.83	
09.	BRRi dhan87 (Ck)	124	136	4.28	Lgd-100%
	CV	2.97	2.38	7.27	
	Lsd (0.05)	1.21	4.84	0.49	

D/S: 02 July, 2023; D/T: 25 July, 2023; Spacing: 20cm x 15cm

RYT#3 (Zinc Enriched Rice, ZER)

01.	BR10854-4-1-1-2-8	135	130	5.74	Lgd-60%, BLB-5%
02.	BR10855-3-2-5-2-5	127	155	3.56	Lgd-100%, FS-5%
03.	BR10863-8-3-5-3-2	127	126	3.80	Lgd-100%, FS-1%
04.	BR11176-16-7-4-4-2	127	156	3.78	Lgd-50%, FS-1%
05.	BRRi dhan49 (Ck)	130	122	5.16	FS-2%
06.	BRRi dhan72 (Ck)	125	130	5.32	Lgd.-20%,
07.	BRRi dhan93 (Ck)	135	134	5.37	Lgd.-50%
	CV	1.52	3.24	7.18	
	Lsd (0.05)	1.34	7.15	0.44	

D/S: 02 July, 2023; D/T: 25 July, 2023; Spacing: 20cm x 15cm

RYT#4 (Salinity Tolerant Rice, STR-1)

01.	BR13113-4R-63	118	101	3.95	BLB-10%, ShB-10%
02.	BR13125-4R-92	118	102	3.88	BLB-10%, FS-2%, ShB-5%
03.	BR13118-4R-76	125	109	4.53	Lgd-100%, ShB-10%
04.	BR13113-4R-185	123	98	4.24	Lgd-40%, ShB-10%
05.	BR13113-4R-191	131	103	4.93	Lgd-100%, BLB-40%
06.	BR13106-4R-469	117	127	5.00	BLB-10%, FS-2%, ShB-5%
07.	BR13108-4R-232	119	122	4.35	BLB-10%, ShB-5%
08.	BR13106-4R-438	133	103	4.97	ShB-5%
09.	BR13111-4R-63	121	116	5.55	Lgd-90%
10.	BR13106-4R-185	125	102	4.52	FS-2%, ShB-5%
11.	BR13122-4R-136	119	109	4.79	BLB-10%, ShB-20%
12.	BR13113-4R-116	124	106	4.26	Lgd-90%
13.	BRRi dhan73 (Ck)	124	137	4.86	Lgd-100%
14.	BRRi dhan87 (Ck)	132	119	4.10	Lgd-100%
	CV	2.34	1.89	6.42	
	Lsd (0.05)	2.49	3.33	0.75	

D/S: 10 July, 2023; D/T: 06 August, 2023; Spacing: 20cm x 20cm

RYT#5 (Salinity Tolerant Rice, STR-2)

01.	BR13103-4R-37	145	120	4.39	Lgd- 30%, BLB-90%
02.	BR13103-4R-7	142	119	4.57	
03.	BR13115-4R-159	147	104	2.84	
04.	BR13115-4R-159	148	90	3.02	BLB-40%, ShB-20%
05.	BR13115-4R-93	143	80	2.46	
06.	BR13105-4R-37	143	106	4.91	
07.	BR13115-4R-60	146	101	3.50	ShB-20%
08.	BR13115-4R-122	147	96	3.62	
09.	BR13115-4R-8	148	101	3.84	
10.	BR13103-4R-52	148	166	3.73	Lgd- 100%
11.	BR13121-4R-40	143	109	4.93	
12.	BR13117-4R-95	149	119	4.13	
13.	BR13115-4R-63	143	99	3.71	

14.	BR13115-4R-70	149	99	3.33	
15.	BR13115-4R-117	149	98	4.48	
16.	BR13115-4R-32	123	99	3.79	
17.	BR22	157	115	3.17	
18.	BRRi dhan30 (Ck)	143	121	4.53	Lgd- 20%, BLB-40%
19.	BRRi dhan87 (Ck)	133	123	4.23	Lgd- 100%
20.	Gainja(Ck)	149	129	2.46	Lgd- 100%
	CV	3.26	3.70	8.25	
	Lsd (0.05)	2.63	1.43	0.58	

D/S: 10 July, 2023; D/T: 05 August, 2023; Spacing: 20cm x 20cm

RYT#6 (Drought Tolerant Rice, DTR-1)

01.	BR12023-6R-111	106	104	4.94	
02.	BR12021-6R-117	107	114	4.82	
03.	IR15L1720	107	118	4.72	
04.	IR127009-B-8-2-1-2	109	115	4.12	ShB-20%
05.	IR1721314	106	118	4.22	
06.	IR100097-B-B-RGA-B	109	108	4.24	
07.	IR17L1360	108	115	5.05	
08.	BRRi dhan71(Ck)	113	117	5.21	
	CV	3.73	2.17	9.06	
	Lsd (0.05)	1.47	5.12	0.49	

D/S: 15 July, 2023; D/T: 05 August, 2023; Spacing: 20cm x 15cm

RYT#7 (Drought Tolerant Rice, DTR-2, Kishoreganj-Nilphamari)

01.	BR12023-6R-111	108	107	5.17	
02.	BR12021-6R-117	108	138	4.41	
03.	IR15L1720	108	124	3.90	
04.	IR127009-B-8-2-1-2	108	121	4.74	
05.	IR1721314	107	130	4.30	
06.	IR100097-B-B-RGA-B	108	122	4.40	ShB-20%
07.	IR17L1360	107	123	5.33	
08.	BRRi dhan71(Ck)	115	127	5.02	
	CV	1.274	1.115	5.142	
	Lsd (0.05)	1.937	1.814	0.414	

D/S: 14 July, 2023; D/T: 05 August, 2023; Spacing: 20cm x 15cm

RYT#8 (Drought Tolerant Rice, DTR-3, Rajarhat-Kurigram)

01.	BR12023-6R-111	113	113	5.42	
02.	BR12021-6R-117	112	132	5.21	
03.	IR15L1720	114	116	4.87	
04.	IR127009-B-8-2-1-2	115	121	4.82	
05.	IR1721314	113	121	4.22	ShB-10%
06.	IR100097-B-B-RGA-B	114	117	5.03	
07.	IR17L1360	115	122	5.54	
08.	BRRi dhan71(Ck)	114	126	4.79	
	CV	1.284	2.85	3.704	
	Lsd (0.05)	2.072	4.083	0.381	

D/S: 14 July, 2023; D/T: 08 August, 2023; Spacing: 20cm x 15cm

RYT#09 (Low Amylose-Bio)

01.	BR(Bio)10381-AC11-7-1	136	115	6.26	
02.	BR(Bio)10381-AC11-8-1	105	94	3.30	Lgd-100%, BLB-20%
03.	BR(Bio)13031-AC1-2	105	121	3.74	Lgd-100%, BLB-10%
04.	BRRi dhan71(Ck)	112	121	4.84	
05.	BRRi dhan87 (Ck)	123	117	5.79	
	CV	1.123	2.788	4.164	
	Lsd (0.05)	0.246	3.589	0.314	

D/S: 17 July, 2023; D/T: 08 August, 2023; Spacing: 20cm x 15cm

RYT#10 (Disease Resistant Rice-DRR-BB)

01.	BR11896-4R-123	119	108	4.79	Lgd-90%
02.	BR12098-4R-117	133	164	4.28	Lgd-100%
03.	BR12098-4R-71	125	152	2.59	Lgd-100%
04.	BR12442-4R-49	117	111	5.30	
05.	BR11869-5R-47	131	148	6.04	BLB-50%
06.	BR11869-5R-72	134	137	4.56	Lgd-100%
07.	BRR1 dhan75	105	112	5.04	Lgd-100%
08.	BRR1 dhan87 (Ck)	125	139	5.62	
09.	IRBB60 (Res. Ck)	113	98	4.73	
	CV	1.187	2.848	3.731	
	Lsd (0.05)	0.541	5.512	0.504	

D/S: 03 July, 2023; D/T: 28 July, 2023; Spacing: 20cm x 15cm

RYT#11 (False Smut Resistant Rice-FSRR)

01.	BR(path)13804-BC3-4	118	118	5.16	
02.	BR(path)13804-BC3-9	112	127	3.26	Lgd-100%
03.	BR(path)13804-BC3-13	116	111	3.77	
04.	BR(path)13804-BC3-14	116	115	4.29	
05.	BR(path)13804-BC3-16	117	123	4.68	FS-2%,
06.	BR(path)13804-BC3-18	109	132	4.44	
07.	BR(path)13804-BC3-20	114	107	5.13	
08.	BR(path)13804-BC3-21	114	116	4.04	
09.	BR(path)13800-BC3-134-21-1	109	122	4.49	FS-2%
10.	BRR1 dhan49 (Ck)	131	100	5.14	FS-5%
11.	BRR1 dhan87 (Ck)	125	138	4.07	
	CV	3.774	3.431	4.62	
	Lsd (0.05)	1.283	3.41	0.721	

D/S: 03 July, 2023; D/T: 27 July, 2023; Spacing: 25cm x 15cm

RYT#12 (Long Duration-LD)

01.	BR9892-8-2-2B	148	138	3.27	Lgd-100%
02.	BR10247-14-18-7-3	147	142	2.81	Lgd-100%
03.	BR10238-5-1-9-2B	144	138	2.09	Lgd-100%
04.	BR9392-6-2-1B	153	173	1.71	Lgd-100%
05.	BRR1 dhan76 (Ck)	146	158	1.60	Lgd-100%
06.	BRR1 dhan91 (Ck)	145	170	1.32	Lgd-100%
	CV	1.121	2.471	3.108	
	Lsd (0.05)	3.184	4.381	0.265	

D/S: 15 June, 2023; D/T: 13 July, 2023; Spacing: 25cm x 15cm

RYT#13 (Premium Quality Rice, PQR-Aromatic)

01.	BR12836-4R-63	122	125	3.98	
02.	BR12836-4R-312	116	114	4.40	FS-2%
03.	BR12839-4R-124-1	117	116	3.90	FS-2%
04.	BR12839-4R-51	116	107	4.16	FS-2%
05.	BR12838-4R-89-1	117	120	3.90	
06.	BRR1 dhan34 (Ck)	156	140	2.52	Lgd-70%
07.	BRR1 dhan70 (Ck)	128	151	3.99	Lgd-70%
	CV	3.180	1.549	4.289	
	Lsd (0.05)	3.814	2.733	0.501	

D/S: 03 July, 2023; D/T: 28 July, 2023; Spacing: 20cm x 15cm

RYT#14 (Premium Quality Rice, PQR-Non Aromatic)

01.	BR12839-4R-106	132	136	5.23	
02.	BR12839-4R-34-1	124	123	3.73	FS-2%
03.	BR12839-4R-76	115	110	3.82	FS-2%

04.	BR12839-4R-137	122	122	3.85	FS-20%
05.	BR12839-4R-86-1	124	133	3.55	
06.	BR12839-4R-90-1	125	122	4.28	
07.	BR12839-4R-72	104	107	3.32	FS-2%
08.	BRR1 dhan49 (Ck)	130	117	5.45	FS-5%
09.	BRR1 dhan87 (Ck)	127	137	5.01	
	CV	8.754	2.716	5.945	
	Lsd (0.05)	2.204	4.505	0.408	

D/S: 03 July, 2023; D/T: 28 July, 2023; Spacing: 20cm x 15cm

RYT#15 (Photosensitive)

01.	BR10212-17-3-2-2	129	114	4.05	BLS-30%, FS-1%
02.	BR10212-4-3-1	126	120	4.72	BLS-40%, FS-1%
03.	BR10211-30-2-1-4	128	122	3.63	BLS-30%, FS-2%
04.	BR10212-5-5-3	127	121	5.34	BLS-60%, FS-1%
05.	IR13F652-1-P3	129	103	4.80	BLS-30%, ShB-20%
06.	IR16FF1097P-P1	134	109	3.49	BLS-40%
07.	BR11196-5R-5	135	122	3.94	BLS-70%
08.	BR10211-7-5-1	127	120	4.26	BLS-15%
09.	BR22 (Ck)	133	115	4.68	
10.	BR23 (Ck)	134	117	4.20	BLS-40%
	CV	2.123	1.409	7.691	
	Lsd (0.05)	1.442	2.452	0.450	

D/S: 30 July, 2023; D/T: 24 August, 2023; Spacing: 20cm x 15cm

RYT#16 (Katari type-Mithapukur)

01.	BRH9-3-14-2B	108	110	4.60	
02.	BRH13-9-5-2B	108	110	3.91	
03.	BRH9-3-2B	108	111	3.95	
04.	Katari (Ck)	125	123	4.25	
	CV	3.423	2.871	7.334	
	Lsd (0.05)	0.911	4.586	0.742	

D/S: 15 July, 2023; D/T: 06 August, 2023; Spacing: 25cm x 15cm

RYT#17 (Zira type-Mithapukur)

01.	BRH11-7-17-10B	108	112	4.13	
02.	BRH17-23-8-2-7B	108	111	4.09	
03.	BRH14-2-1-7B	108	111	3.76	
04.	BR9392-1-7-5B	108	114	3.74	
05.	Zirashail (Ck)	99	100	3.11	Lgd-70%
06.	BRR1 dhan62(Ck)	97	89	2.88	
	CV	3.168	1.556	4.041	
	Lsd (0.05)	0.450	2.122	0.473	

D/S: 15 July, 2023; D/T: 06 August, 2023; Spacing: 25cm x 15cm

RYT#18 (Katari type- BRR1 Rangpur)

01.	BRH9-3-14-2B	110	109	4.78	
02.	BRH13-9-5-2B	109	113	4.35	
03.	BRH9-3-2B	105	110	4.20	
04.	Katari (Ck)	126	124	4.59	
	CV	2.874	2.571	6.783	
	Lsd (0.05)	2.265	3.469	0.440	

D/S: 15 July, 2023; D/T: 05 August, 2023; Spacing: 25cm x 15cm

RYT#19 (Zira type-BRR1 Rangpur)

01.	BRH11-7-17-10B	105	106	4.29	
02.	BRH17-23-8-2-7B	106	107	4.49	
03.	BRH14-2-1-7B	104	106	4.25	
04.	BR9392-1-7-5B	105	101	4.14	
05.	Zirashail (Ck)	99	111	3.45	Lgd-70%

06.	BRRI dhan62 (Ck)	97	101	3.60	
	CV	0.324	1.107	4.494	
	Lsd (0.05)	0.673	2.323	0.365	

D/S: 15 July, 2023; D/T: 06 August, 2023; Spacing: 25cm x 15cm

Boro, 2023-24

RYT#01(Favourable Boro Rice; FBR-SD)

01.	BR12574--5R-168	150	127	6.59	PTD-100%, ShB-5%
02.	BR12574-5R-52	152	105	7.10	
03.	BR12520-5R-67	159	98	6.68	PTD-100%
04.	BR12667-4R-86	159	105	6.25	PTD-80%, ShB-15%, Lgd-100%
05.	BR12671-4R-95	168	126	7.27	PTD-40%, Lgd-40%
06.	BR12676-4R-392	151	95	6.54	
07.	BR12682-4R-50	163	127	6.97	PTD-100%, Lgd-100%
08.	BR12208-4R-278	159	97	6.45	ShB-15%
09.	BRRI dhan88 (Ck)	152	98	6.61	
10.	BRRI dhan96 (Ck)	150	96	7.09	PTD-100%, ShB-15%
	CV	5.82	3.47	7.49	
	Lsd (0.05)	1.69	2.57	0.42	

D/S: 05 December, 2023; D/T: 16 January, 2024; Spacing: 20cm x 20cm

RYT#02 (Favourable Boro Rice; FBR-MD)

01.	BR12508-5R-5	158	103	6.61	
02.	BR12517-5R-57	157	107	7.46	PTD-100%
03.	BR12514-5R-97	154	93	7.24	
04.	BR12520-5R-11	154	108	7.03	PTD-100%
05.	BR12423-6R-38	156	109	6.65	PTD-100%, ShB-5%
06.	BR125214-5R-27	155	111	6.56	PTD-70%
07.	IR18A13-98	165	112	7.65	
08.	BR11318-5R-148	163	112	7.45	PTD-100%
09.	BR11894-5R-260	155	110	7.08	
10.	BRRI dhan58 (Ck)	159	104	5.97	PTD-100%
11.	BRRI dhan89 (Ck)	165	111	7.78	
12.	BRRI dhan102 (Ck)	164	111	7.11	
	CV	6.874	2.042	3.569	
	Lsd (0.05)	2.451	4.347	0.778	

D/S: 05 December, 2023; D/T: 19 January, 2024; Spacing: 20cm x 20cm

RYT#03 (Favourable Boro Rice; FBR-SMD)

01.	BR13027-BC1-3R-77	158	111	6.71	
02.	IR17A2875	154	106	5.38	
03.	BR11894-R-R-R-158	154	108	6.03	
04.	BR11894-R-R-R-148	159	105	4.98	PTD-60%, ShB-5%
05.	BR11894-R-R-R-115	154	106	5.32	PTD-100%, ShB-10%
06.	IR18A24-27	152	92	4.64	
07.	IR17A2922	159	108	5.28	
08.	IR19A7068	152	95	5.17	
09.	BR11894-R-R-R-105	160	113	6.34	BLS-10%
10.	BR11894-R-R-R-329	154	107	6.10	PTD-100%
11.	BRRI dhan58 (Ck)	160	98	6.50	PTD-100%
12.	BRRI dhan88 (Ck)	152	93	5.68	
13.	BRRI dhan89 (Ck)	163	109	6.23	
14.	BRRI dhan102 (Ck)	160	110	5.97	
	CV	7.258	1.779	6.203	
	Lsd (0.05)	6.411	4.037	0.695	

D/S: 07 December, 2023; D/T: 20 January, 2024; Spacing: 20cm x 20cm

RYT#04 (Favourable Boro Rice; FBR-ELS)

01.	BR7528-2R-19-16-RIL-52	158	103	6.80	PTD-100%
02.	BR7528-2R-19-16-RIL-55	157	106	7.16	
03.	BR7528-2R-19-16-RIL-59	157	103	7.40	
04.	BR9945-5R-21	155	108	7.36	ShB-5%
05.	BRRi dhan63 (Ck)	154	89	7.22	
06.	BRRi dhan104 (Ck)	159	98	6.59	
	CV	6.177	1.615	6.846	
	Lsd (0.05)	0.308	2.031	0.511	

D/S: 07 December, 2023; D/T: 18 January, 2024; Spacing: 20cm x 20cm

RYT#05 (Favourable Boro Rice; FBR-Barishal)

01.	NGR350-2	154	100	7.98	BLS-5%
02.	NGR472-2	161	101	7.79	
03.	NGR736-1	165	99	7.33	
04.	NGR745-3	165	98	6.87	
05.	NGR994-1	164	97	8.04	
06.	NGR745-2	165	94	7.04	
07.	NGR749-2	164	110	8.05	BLB-10%, ShB-10%
08.	NGR750-1	163	99	7.46	BLB-20%, ShB-10%
09.	NGR796-2	163	104	7.09	BLB-20%, ShB-10%
10.	NGR1161-3	161	100	7.72	BLB-20%, ShB-10%
11.	BRRi dhan74 (Ck)	152	95	7.17	
12.	BRRi dhan102 (Ck)	166	101	7.70	
	CV	4.175	1.619	2.096	
	Lsd (0.05)	0.418	2.791	0.452	

D/S: 09 December, 2023; D/T: 22 January, 2024; Spacing: 20cm x 20cm

RYT#06 (Salinity Tolerant Rice, STR)

01.	BR13113-4R-63	162	101	6.90	
02.	BR13125-4R-92	159	104	6.96	
03.	BR131138-4R-76	162	104	6.89	
04.	BR13113-4R-185	161	94	7.11	
05.	BR13111-4R-191	172	107	7.38	
06.	BR13106-4R-469	161	98	5.45	
07.	BR13108-4R-232	155	112	6.80	
08.	BR13106-4R-438	162	98	6.08	
09.	BR13111-4R-63	155	112	6.27	Lgd-100%, BLB-95%
10.	BR13106-4R-184	165	114	6.76	
11.	BR13122-4R-136	165	107	5.91	Lgd-50%
12.	BR13113-4R-116	151	113	7.47	Lgd-40%, BLB70%
13.	BRRi dhan28 (Ck)	147	108	6.48	Lgd-40%
14.	BRRi dhan67 (Ck)	154	114	6.95	Lgd-100%
15.	BRRi dhan88 (Ck)	149	97	5.77	
	CV	2.038	2.175	2.142	
	Lsd (0.05)	5.775	4.932	0.542	

D/S: 09 December, 2023; D/T: 23 January, 2024; Spacing: 20cm x 20cm

RYT#07 (ALART Cum RYT-STR)

01.	BR13113-4R-63	152	98	7.49	NB-10%, ShB-5%
02.	BR13106-4R-184	161	92	6.57	
03.	BR13113-4R-116	156	107	5.66	
04.	BR13122-4R-136	163	109	7.01	BLB10%
05.	BR13111-4R-63	157	109	7.71	FS-1%, ShB-5%
06.	BRRi dhan28 (Ck)	145	107	7.12	PTD-60%, ShB-25%

07.	BRRi dhan67 (Ck)	151	108	6.93	
08.	BRRi dhan88 (Ck)	146	93	7.36	ShB-5%
	CV	1.214	2.047	5.424	
	Lsd (0.05)	0.447	3.259	0.464	

D/S: 10 December, 2023; D/T: 25 January, 2024; Spacing: 20cm x 20cm

RYT#08 (Fine grain)

01.	BRH9-3-12-2B	154	99	7.43	BLS-70%, ShB-5%
02.	BR10247-14-18-4	155	105	7.96	BLS-70%, ShB-5%
03.	BR10247-4-7-4B	155	104	6.92	BLS-70%
04.	IR12A-177	151	101	6.91	BLS-40%, ShB-5%
05.	BRRi dhan100 (Ck)	150	112	7.03	
	CV	1.382	3.194	5.671	
	Lsd (0.05)	0.976	3.549	0.507	

D/S: 11 December, 2023; D/T: 24 January, 2024; Spacing: 25cm x 15cm

RYT#09 (ZER)

01.	BR10552-1-1-3-4	162	126	7.76	
02.	BR10552-1-1-4-6	161	108	6.94	ShB-5%
03.	BR10570-29-7-3-2	162	97	7.44	
04.	BR105-71-15-6-8-5	164	91	6.45	PTD-100%,BLS-20%, ShB-15%
05.	BR10572-2-7-1-4	167	126	8.38	PTD-100%,BLS-20%
06.	BR9674-1-4-1-3-P1	168	110	7.25	PTD-100%
07.	BRRi dhan74 (Ck)	152	99	7.68	
08.	BRRi dhan89 (Ck)	167	110	7.78	
	CV	1.212	2.094	5.471	
	Lsd (0.05)	0.867	3.049	0.484	

D/S: 07 December, 2023; D/T: 18 January, 2024; Spacing: 20cm x 15cm

RYT#10 (PQR-1 BRRi RS Rangpur)

01.	BR11359-4R-24	150	116	6.92	BLS-5%
02.	BR11359-4R-341	150	106	6.78	PTD-100%,BLS-15%
03.	BR11361-4R-149	153	104	7.10	PTD-100%,ShB-20%
04.	BR11366-4R-133	153	120	6.28	PTD-100%
05.	BR11366-4R-179	153	124	6.76	PTD-100%
06.	BR11371-4R-522	153	111	6.44	PTD-100%,BLS-5%
07.	BRRi dhan81 (Ck)	150	100	6.60	PTD-70%,ShB-10%
08.	BRRi dhan104 (Ck)	163	101	6.73	PTD-100%
09.	BRRi dhan107 (Ck)	166	103	6.32	PTD-100%
	CV	1.512	2.394	5.577	
	Lsd (0.05)	0.578	3.375	0.482	

D/S: 07 December, 2023; D/T: 20 January, 2024; Spacing: 20cm x 15cm

RYT#11 (PQR-2 BRRi RS Rangpur)

01.	BR11359-4R-11	155	106	6.40	PTD-100%,BLS-5%
02.	BR11359-4R-169	156	111	6.78	PTD-100%,ShB-15%
03.	BR11359-4R-250	156	111	5.77	PTD-90%, ShB -5%
04.	BR11361-4R-154	156	102	6.51	ShB -25%
05.	BR11363-4R-20	156	113	6.21	PTD-100%
06.	BRRi dhan58 (Ck)	161	99	7.33	PTD-100%
07.	BRRi dhan104 (Ck)	159	99	6.97	
08.	BRRi dhan107 (Ck)	161	102	5.89	
	CV	1.272	2.794	5.971	
	Lsd (0.05)	0.876	3.949	0.487	

D/S: 07 December, 2023; D/T: 20 January, 2024; Spacing: 20cm x 15cm

RYT#12 (PQR-3 BRRi RS Rangpur)

01.	BR11359-4R-181	167	119	7.36	Lgd-100%, PTD-90%,BLB-20%
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02.	BR11359-4R-211	167	123	6.23	Lgd-100%, PTD-90%
03.	BR11359-4R-260	169	109	5.70	Lgd-100%, BLB-30%
04.	BR11359-4R-263	167	133	4.63	Lgd-100%,PTD-100%,ShB-20%
05.	BR11359-4R-275	167	122	6.62	Lgd-40%, PTD-100%,BLB-25%
06.	BR11359-4R-289	166	123	6.89	Lgd-70%, PTD-100%
07.	BR11359-4R-288	168	110	6.54	Lgd-100%
08.	BR11359-4R-304	168	118	5.95	Lgd-100%, PTD-90%,ShB-20%
09.	BR11359-4R-351	168	119	5.98	Lgd-100%, PTD-90%,BLB-40%
10.	BR11359-4R-373	167	119	6.00	Lgd-100%, PTD-90%,BLB-30%
11.	BRR1 dhan102 (Ck)	166	109	6.65	Lgd-40%
12.	BRR1 dhan104 (Ck)	163	101	6.82	
13.	BRR1 dhan107 (Ck)	164	107	5.99	
	CV	1.812	2.044	6.271	
	Lsd (0.05)	1.976	3.049	0.487	

D/S: 07 December, 2023; D/T: 18 January, 2024; Spacing: 20cm x 15cm

RYT#13 (PQR-1 Parbartipur-Dinajpur)

01.	BR11359-4R-24	165	114	5.62	
02.	BR11359-4R-341	164	104	6.70	
03.	BR11361-4R-149	164	108	6.71	
04.	BR11366-4R-133	164	121	7.16	
05.	BR11366-4R-179	165	123	5.80	
06.	BR11371-4R-522	164	112	7.11	
07.	BRR1 dhan81 (Ck)	153	102	6.30	
08.	BRR1 dhan104 (Ck)	164	102	6.75	
09.	BRR1 dhan107 (Ck)	164	103	6.82	
	CV	1.217	3.044	6.421	
	Lsd (0.05)	1.476	4.349	0.607	

D/S: 07 December, 2023; D/T: 21 January, 2024; Spacing: 20cm x 15cm

RYT#14 (PQR-2 Parbartipur-Dinajpur)

01.	BR11359-4R-11	152	108	5.89	NB-50%
02.	BR11359-4R-169	152	113	4.19	NB-40%
03.	BR11359-4R-250	152	112	5.87	NB-10%
04.	BR11361-4R-154	152	106	5.99	
05.	BR11363-4R-20	152	114	5.80	
06.	BRR1 dhan58 (Ck)	152	98	6.28	
07.	BRR1 dhan104 (Ck)	159	100	6.49	
08.	BRR1 dhan107 (Ck)	160	104	6.47	
	CV	1.017	3.244	6.121	
	Lsd (0.05)	2.476	3.344	0.501	

D/S: 07 December, 2023; D/T: 21 January, 2024; Spacing: 20cm x 15cm

RYT#15 (PQR-3 Parbartipur-Dinajpur)

01.	BR11359-4R-181	165	120	7.01	
02.	BR11359-4R-211	165	124	6.95	
03.	BR11359-4R-260	163	110	6.88	
04.	BR11359-4R-263	164	134	5.97	
05.	BR11359-4R-275	165	123	6.79	
06.	BR11359-4R-289	163	124	6.87	
07.	BR11359-4R-288	165	112	7.34	
08.	BR11359-4R-304	165	119	5.28	
09.	BR11359-4R-351	165	120	6.64	
10.	BR11359-4R-373	165	122	6.84	
11.	BRR1 dhan102 (Ck)	165	112	6.82	
12.	BRR1 dhan104 (Ck)	165	99	6.86	
13.	BRR1 dhan107 (Ck)	165	108	6.98	

CV	2.210	3.240	6.021
Lsd (0.05)	1.076	3.241	0.425

D/S: 07 December, 2023; D/T: 21 January, 2024; Spacing: 20cm x 15cm

RYT#16 (Disease Resistant Rice DRR)

01.	BR11866-5R-277	164	99	7.91	NB-10%, ShB-5%
02.	BR867-5R-118	154	102	7.64	
03.	BR11867-5R-119	160	92	7.14	
04.	BR11867-5R-331	164	119	8.43	
05.	BR11869-5R-148	151	110	7.21	PTD-100%, ShB-5%
06.	BR12437-4R-164	157	100	7.14	PTD-100%
07.	BR12437-4R-109	162	103	6.96	
08.	BR12125-6R-6	154	98	6.44	PTD-100%, ShB-10%, Irregular flowering
09.	BR12125-6R-79	153	96	7.99	ShB-10%, Irregular flowering
10.	BR12125-6R-149	153	118	7.70	Irregular flowering
11.	BR12450-4R-24	158	114	6.09	Lgd-90%, PTD-100%
12.	BR12450-4R-108	160	109	7.22	Lgd-100%, PTD-70%
13.	BR13793-4R-1	164	101	7.96	
14.	BR13796-5R-102	152	117	5.89	
15.	BRRi dhan88 (Ck)	147	96	7.19	
16.	BRRi dhan89 (Ck)	161	116	8.33	
17.	BRRi dhan101 (Ck)	158	122	7.65	PTD-80%
	CV	2.010	3.044	6.421	
	Lsd (0.05)	1.776	3.040	0.401	

D/S: 11 December, 2023; D/T: 25 January, 2024; Spacing: 25cm x 15cm

RYT#17 (Disease Resistant Rice DRR, BB-BLAST)

01.	BR(path) 13802-BC3-10-11-12	152	101	7.04	BLS-10%
02.	BR(path) 13802--BC3-11-10-13	149	112	6.99	BLS-10%
03.	BR(path) 13802-BC3-12-10-14	150	99	7.42	BLS-10%
04.	BR(path) 13784-BC3-17-10-6-HR18	152	113	7.00	Lgd-30%, BLS-10%
05.	BR(path) 13784-BC3-18-11-7-HR19	152	114	6.56	Lgd-100%,BLS-10%
06.	BR(path) 13784-BC3-19-12-8-HR20	152	114	6.47	Lgd-100%, BLS-10%
07.	BRRi dhan28 (Ck)	149	115	7.02	Lgd-100%
08.	BRRi dhan88 (Ck)	150	99	6.91	
	CV	2.417	4.944	5.220	
	Lsd (0.05)	1.274	4.024	0.425	

D/S: 09 December, 2023; D/T: 22 January, 2024; Spacing: 25cm x 15cm

RYT#18 (Disease Resistant Rice DRR, BLAST-LD)

01.	BR(path) 15855-BC3-2HR-5	165	105	7.89	Lgd-30%,BLB-50%
02.	BR(path) 15855-BC3-2HR-11	168	115	7.27	Lgd-100%,PTD-60%,BLB-30%
03.	BR(path) 15855-BC2-3HR-8	158	112	6.82	Lgd-100%,PTD-100%,BLB-50%
04.	BR(path) 15855-BC2-3HR-33	168	116	7.89	PTD-100%, BLB-40%
05.	BR(path) 15855-BC2-3HR-47	166	104	7.07	
06.	BRRi dhan29 (Ck)	167	101	8.65	
	CV	1.288	2.894	5.470	
	Lsd (0.05)	0.876	3.389	0.580	

D/S: 04 December, 2023; D/T: 15 January, 2024; Spacing: 25cm x 15cm

RYT#19 (Disease Resistant Rice DRR, BLAST-MD)

01.	BR(path) 15854-BC1-3HR-21	154	103	6.75	
02.	BR(path) 15641-4HR-31	150	109	6.26	

03.	BR(path) 15853-BC1-3HR-3	161	107	7.51	BLB-20%
04.	Rod miniket-1	160	102	8.42	BLB-20%, ShB-5%
05.	BRR1 dhan58 (Ck)	163	103	7.59	
06.	BRR1 dhan89 (Ck)	167	103	8.32	
	CV	1.617	2.894	5.776	
	Lsd (0.05)	0.586	3.049	0.487	

D/S: 05 December, 2023; D/T: 16 January, 2024; Spacing: 25cm x 15cm

RYT#20 (Disease Resistant Rice DRR, BLAST-Premium Quality)

01.	BR(path) 15857-BC3-4HR-2	166	113	7.08	Lgd-100%,PTD-95%
02.	BR(path) 15857-BC3-4HR-19	176	102	6.55	
03.	BR(path) 15857-BC3-4HR-33	154	92	6.03	Irregular flowering
04.	BRR1 dhan50 (Ck)	157	91	7.61	
05.	BRR1 dhan63 (Ck)	153	88	6.87	
	CV	1.282	2.894	5.871	
	Lsd (0.05)	0.976	3.849	0.687	

D/S: 05 December, 2023; D/T: 16 January, 2024; Spacing: 25cm x 15cm

RYT#21 (Disease Resistant Rice DRR, BLAST)

01.	BR(path) 15641-3HR-15	153	118	7.73	PTD-90%
02.	BR(path) 15641-3HR-45	150	108	6.92	PTD-100%
03.	BR(path) 15857-BC3-4HR-6	149	111	6.87	PTD-100%
04.	BR(path) 15641-3HR-12	155	127	6.75	PTD-100%
05.	BRR1 dhan28 (Ck)	151	113	7.14	PTD-100%
06.	BRR1 dhan88 (Ck)	151	99	6.70	PTD-100%
	CV	1.412	2.494	5.701	
	Lsd (0.05)	0.776	3.849	0.487	

D/S: 05 December, 2023; D/T: 16 January, 2024; Spacing: 25cm x 15cm

RYT#22 (High Temperature Tolerant Rice-1)

01.	BR11845-4R-50	121	119	3.85	FS-40%
02.	BR11991-6R-58	119	119	3.60	FS-70%
03.	BR12605-4R-275	119	113	4.09	FS-15%
04.	BR12605-4R-297	110	100	5.29	FS-10%
05.	BR12605-4R-298	108	105	5.52	
06.	BINA dhan14 (Ck)	108	92	4.50	
07.	BRR1 dhan28 (Ck)	108	105	5.18	
08.	BRR1 dhan98 (Ck)	109	92	5.27	
	CV	1.012	2.694	5.785	
	Lsd (0.05)	0.977	3.844	0.507	

D/S: 22 February, 2024; D/T: 24 March, 2024; Spacing: 20cm x 15cm

RYT#23 (High Temperature Tolerant Rice-2)

01.	BR11845-4R-50	120	120	5.75	
02.	BR11991-6R-58	117	118	5.54	
03.	BR12605-4R-275	117	112	5.46	
04.	BR12605-4R-297	112	100	5.10	
05.	BR12605-4R-298	109	104	5.62	
06.	BINA dhan14 (Ck)	108	95	6.10	
07.	BRR1 dhan28 (Ck)	109	103	6.21	
08.	BRR1 dhan98 (Ck)	110	94	6.03	
	CV	2.712	2.094	5.471	
	Lsd (0.05)	1.976	4.349	0.807	

D/S: 22 February, 2024; D/T: 18 March, 2024; Spacing: 20cm x 15cm

Where as, Lgd.: Lodging; PTD: Panicle tip degeration; BLB: Bacterial leaf blight;BLS: Bacterial Leaf Streak; NB: Neck Blast; ShB: Sheath Blight; FS: False smut and RD: Rat Damage

Experiment 3.15: Advanced Line Adaptive Research Trial (ALART)

MS Hossain, MK Hasan, MR Hasan and MH Kabir

Rationale: Location specific high yielding variety development is the need of present time. Specifically the Rangpur region is different in weather condition and cropping pattern compared to the other parts of Bangladesh. Therefore, special research program was undertaken to conduct an ALART based on the suitability of some genotypes for Rangpur region.

A total of sixteen ALART's were conducted under T. Aman/2023 and Boro/2023-24 seasons. In T. Aman, three ALART's and thirteen ALART's in Boro season were performed to develop rice varieties.

In T. Aman/2023, BR9396-6-2-2B was performed better over standard check (BRRI dhan49) under SHR-1 program. In SHR-2, BRH13-2-14-1B (5.29 t/ha) performed better over standard check BRRI dhan94 (5.01 t/ha). BRH11-7-17-10B (8.71 t/ha) from SHR-2 performed better over standard check BRRI dhan81 (7.81 t/ha) and BR(Path)13800-BC3-224-44 (8.28 t/ha) from Blast-BB performed better over standard check BRRI dhan89 (7.80 t/ha) during Boro/2023-2024 (Table 19).

Table 19: Grain yield and other parameter of different entries under Advanced Line Adaptive Research Trials (ALARTs) in T. Aman, 2023 and Boro, 2023-24

SL#	Designation	Mat. (days)	PHt. (cm)	Yld. (t/ha)	Remarks
T. Aman, 2023					
ALART#1 (SHR-1, Mithapukur-Rangpur)					
01.	BRH9392-6-2-1-3-4	132	115	3.33	ShB-10%
02.	BR9396-6-2-2B	132	114	4.39	ShB -5%
03.	BRRI dhan49 (Ck)	139	112	4.09	FS-5%
D/S: 21 June, 2023; D/T:15 July, 2023; Spacing: 25cm x 15cm					
ALART#2 (SHR-2, Mithapukur-Rangpur)					
01.	BRH13-2-14-1B	138	131	5.29	ShB -5%
02.	BRH13-7-3-2B	144	125	5.22	ShB -5%
03.	BRRI dhan94 (Ck)	138	126	5.01	ShB -10%
D/S: 21 June, 2023; D/T:15 July, 2023; Spacing: 25cm x 15cm					
ALART#3 (Antioxidant, Mithapukur-Rangpur)					
01.	BR12836-4R-63	134	130	2.98	ShB -10%
02.	BR12836-4R-312	127	123	2.30	ShB -15%
03.	BRRI dhan34 (Ck)	148	131	2.17	NB-5%
04.	BRRI dhan70 (Ck)	129	161	2.66	
D/S: 21 June, 2023; D/T:15 July, 2023; Spacing: 25cm x 15cm					
Boro, 2023-2024					
ALART#1 (SHR-1, Mithapukur-Rangpur)					
01.	BRH15-24-7B	159	97	7.13	ShB -10%
02.	BR9392-1-7-5B	158	94	7.83	
03.	BR17-23-8-2-7B	159	101	7.98	
04.	BRRI dhan88 (Ck)	147	102	8.28	
D/S: 07 December, 2023; D/T:21 January, 2024; Spacing: 25cm x 15cm					
ALART#2 (SHR-2, Mithapukur-Rangpur)					
01.	BRH11-7-17-10B	157	105	8.71	
02.	BRH9-3-2B	159	104	8.29	ShB -10%

03.	BRH13-9-5-2B	159	105	8.54	
04.	BRR1 dhan81 (Ck)	147	103	7.85	
D/S: 07 December, 2023; D/T:21 January, 2024; Spacing: 25cm x 15cm					
ALART#3 (PQR, Mithapukur-Rangpur)					
01.	BR10645-6-4-8-1-2	161	105	7.58	
02.	BR10646-3-2-2-4-3	160	109	7.47	ShB -10%
03.	BR10648-1-2-1-3-4	150	106	6.36	
04.	Zira, Nachol	150	104	6.58	
05.	Katari (Ck)	162	105	5.44	
06.	BRR1 dhan104(Ck)	160	99	6.67	
07.	BRR1 dhan107(Ck)	162	104	7.33	
08.	BINA dhan25(Ck)	155	129	7.76	
D/S: 07 December, 2023; D/T:21 January, 2024; Spacing: 25cm x 15cm					
ALART#4 (Long Duration, FBR Mithapukur-Rangpur)					
01.	BR11318-5R-84	165	108	9.40	
02.	BRR1 dhan92 (Ck.)	163	114	9.51	
D/S: 04 December, 2023; D/T:20 January, 2024; Spacing: 20cm x 20cm					
ALART#5 (Short Duration, FBR, Mithapukur-Rangpur)					
01.	BR11903-5R-56	149	102	6.75	
02.	IR18A2119	145	102	6.88	ShB -10%
03.	BRR1 dhan88(Ck)	145	98	6.50	
04.	BRR1 dhan96(Ck)	146	103	6.60	
D/S: 11 December, 2023; D/T:28 January, 2024; Spacing: 20cm x 20cm					
ALART#6 (FBR-Biotechnology, Mithapukur-Rangpur)					
01.	BR(Bio)13028-AC24-1-2	149	127	6.35	Mixture-15-20%
02.	BR(Bio)13028-AC24-1-3	148	110	5.85	Mixture-10-15%
03.	BR(Bio)13028-AC24-1-4	144	111	6.11	Mixture-15-20%
04.	BRR1 dhan86 (Ck)	145	103	5.99	
05.	BRR1 dhan96 (Ck)	148	104	6.34	
D/S: 11 December, 2023; D/T:28 January, 2024; Spacing: 25cm x 15cm					
ALART#7 (Blast-BB, Mithapukur-Rangpur)					
01.	BR(Path)13800-BC3-134-8	161	105	7.21	ShB -10%
02.	BR(Path)13800-BC3-134-25	160	106	8.41	
03.	BR(Path)13800-BC3-224-44	163	107	8.55	
04.	BRR1 dhan89(Ck)	160	106	7.64	NB-10%
05.	BRR1 dhan92(Ck)	162	107	8.16	
D/S: 04 December, 2023; D/T:20 January, 2024; Spacing: 25cm x 15cm					
ALART#8 (BRR-Blast, Mithapukur-Rangpur)					
01.	BR(Path)13800-BC3-8-1	162	105	6.93	ShB -10%
02.	BR(Path)13800-BC3-8-9	163	106	6.95	
03.	BR(Path)13800-BC3-224-28	164	107	8.28	
04.	BRR1 dhan89 (Ck)	162	113	6.77	NB-10%
05.	BRR1 dhan92 (Ck)	165	112	7.80	
D/S: 04 December, 2023; D/T:20 January, 2024; Spacing: 25cm x 15cm					
ALART#9 (Late Boro, Sadar, Lalmonirhat)					
01.	BR11845-4R-62	118	112	7.52	
02.	BINA dhan14 (Ck)	112	107	7.10	
03.	BRR1 dhan28 (Ck)	114	122	7.19	
04.	BRR1 dhan98 (Ck)	120	114	7.17	
D/S: 03 February, 2024; D/T:27 February, 2024; Spacing: 20cm x 20cm					

ALART#10 (Late Boro, Kishoreganj, Nilphamari)				
01.	BR11845-4R-62	118	95	6.55
02.	BINA dhan14 (Ck)	112	100	6.87
03.	BRRRI dhan28 (Ck)	114	108	7.21
04.	BRRRI dhan98 (Ck)	118	102	7.17
D/S: 03 February, 2024; D/T:29 February, 2024; Spacing: 20cm x 20cm				
ALART#11 (Late Boro, Sadullapur, Gaibandha)				
01.	BR11845-4R-62	112	102	7.27
02.	BINA dhan14 (Ck)	105	101	6.59
03.	BRRRI dhan28 (Ck)	108	112	6.67
04.	BRRRI dhan98 (Ck)	111	103	6.76
D/S: 05 February, 2024; D/T:02 March, 2024; Spacing: 20cm x 20cm				
ALART#12 (Late Boro, Parbartipur, Dinajpur)				
01.	BR11845-4R-62	114	105	7.10
02.	BINA dhan14 (Ck)	109	102	5.96
03.	BRRRI dhan28 (Ck)	115	111	6.78
04.	BRRRI dhan98 (Ck)	115	106	6.40
D/S: 05 February, 2024; D/T:04 March, 2024; Spacing: 20cm x 20cm				
ALART#13 (Late Boro, Sadar, Rangpur)				
01.	BR11845-4R-62	121	96	7.10
02.	BINA dhan14 (Ck)	114	99	6.46
03.	BRRRI dhan28 (Ck)	116	118	6.61
04.	BRRRI dhan98 (Ck)	122	106	7.30
D/S: 03 February, 2024; D/T:29 February, 2024; Spacing: 20cm x 20cm				

Where as, NB: Neck Blast; ShB: Sheath Blight and FS: False smut

4. CROP-SOIL-WATER MANAGEMENT

Experiment 4.1: Effect of time of planting of newly developed BRRRI varieties in different regional stations

MS Zahan, MR Hasan & MS Islam

Transplanting rice in the optimum time is one of the prerequisites to achieve high grain yield. However, optimum rice planting dates varies with location and genotypes. When seedlings are transplanted at the right time, tillering and growth proceed normally. Thus, to improve rice yield, experiments were conducted at the BRRRI Farm, Rangpur both in T. Aman and Boro, 2023-2024 for BRRRI released varieties to find out the suitable transplanting time under specific agroclimatic conditions.

T. Aman, 2023

The experiment was conducted at BRRRI regional station farm, Rangpur aimed to identify a suitable planting window of short duration (BRRRI dhan75, BRRRI dhan87, BRRRI dhan90) and long duration (BRRRI dhan52, BRRRI dhan79 and BRRRI dhan93) varieties. The selected varieties were planted at five different dates at 15 days interval from July 05th to September 05th. Twenty-five days-old seedlings were transplanted following split-plot design, placing planting date in the main plots and varieties in the sub-plots with three replications. All agronomic practices were performed uniformly for all the treatments according to the growth duration. Results showed that there was a significant effect of date of transplanting on the yield potential of the tested varieties in T. aman season (**Table 20 & 21**). Early transplanting of BRRRI dhan75 (05th July to 20th of

August) gave higher grain yield than the delayed transplanting, but planted on July 05 had lodging at maturity. BRRi dhan87 and BRRi dhan90 transplanted on 20th of August produced higher grain yield (**Table 20**). All the long duration varieties gave higher yield on 20th July to 05 August (**Table 21**). Early planting had lower yield due to lodging and rainfall at flowering. In conclusion, to achieve appreciable better yield in the Rangpur region, BRRi dhan75 should preferably be transplanted on 20th July- 20th August, BRRi dhan87 & BRRi dhan90 on 20th of August and BRRi dhan52, BRRi dhan79 and BRRi dhan93 on 20th July – 05th August.

Boro, 2023-24

In Boro season, short duration varieties BRRi dhan74, BRRi dhan88, BRRi dhan96, BRRi dhan101, BRRi dhan104 and BRRi dhan105 and long duration varieties BRRi dhan89, BRRi dhan92 and BRRi dhan102 were tested to find out the optimum planting date. Forty days old seedling was transplanted during 10 December to 25 February at 15-days interval. Single seedlings were transplanted at 20- x 20-cm spacing. The treatments were distributed in a split-plot design, placing planting date in the main plots and varieties in the sub-plots with three replications. Results indicated that both short and long duration variety had higher grain yield on 25 December to 25 January planting (**Table 22 & 23**). BRRi dhan74 giving higher yield up to 25 February have the potentiality of late Boro variety.

Table 20: Effect of planting time on the growth duration and yield of short duration BRRi varieties in T. Aman, 2023

Variety	Date of transplanting									
	GD (days)					GY (t/ha)				
	05 th July	20 th July	05 th Aug	20 th Aug	05 th Sep	05 th July	20 th July	05 th Aug	20 th Aug	05 th Sep
BRRi dhan75	113	108	106	106	124	4.11*	4.88	4.90	4.68	1.98
BRRi dhan87	124	119	121	131	125	3.22**	3.86***	5.13	5.37	2.75
BRRi dhan90	119	116	113	109	126	2.99*	3.34***	3.81	3.83	1.61
CV (%)			0.2					10.3		
CV (%)			0.2					7.9		
LSD			0.44					0.51		

*Lodging at maturity; **lodging at flowering; ***Rainfall at flowering

Table 21: Effect of planting time on the growth duration and yield of long duration BRRi varieties in T. Aman, 2023

Variety	Date of transplanting									
	GD (days)					GY (t/ha)				
	05 th July	20 th July	05 th Aug	20 th Aug	05 th Sep	05 th July	20 th July	05 th Aug	20 th Aug	05 th Sep
BRRi dhan52	141	137	135	129	124	4.49**	5.67*	6.11	4.64	3.94
BRRi dhan79	138	132	131	126	125	4.17**	5.44	5.67	5.04	3.76
BRRi dhan93	147	141	138	133	126	2.55**	4.08*	5.42*	5.31	3.39
CV (%)			0.2					8.0		

CV (%)	0.3	7.4
LSD	0.567	0.583

*90-100% lodging; **Lodging and rainfall at flowering

Table 22: Effect of planting time on the growth duration and grain yield of short duration rice in Boro, 2023-24

Variety	Date of transplanting											
	GD (days)						GY (t/ha)					
	10 th Dec	25 th Dec	10 th Jan	25 th Jan	10 th Feb	25 th Feb	10 th Dec	25 th Dec	10 th Jan	25 th Jan	10 th Feb	25 th Feb
BRR1 dhan74	176	170	162	150	145	135	5.10	7.05	7.00	6.97	6.27	6.60
BRR1 dhan88	174	169	160	142	136	129	5.80	6.57	7.89	7.22	5.46	5.87
BRR1 dhan96	170	168	157	141	133	128	5.35	7.33	7.29	6.91	5.96	5.56
BRR1 dhan101	184	177	165	155	146	142	6.43	7.50	7.27	7.38	6.13	6.81
BRR1 dhan104	180	175	165	154	153	142	7.23	6.94	6.93	7.02	5.57	4.65
BRR1 dhan105	181	175	164	154	149	138	7.24	7.69	7.29	7.27	6.26	6.33
CV (%)	0.6						5.1					
CV (%)	0.4						8.0					
LSD	0.96						0.87					

Table 23: Effect of planting time on the growth duration and grain yield of long duration rice in Boro, 2023-24

Variety	Date of transplanting											
	GD (days)						GY (t/ha)					
	10 th Dec	25 th Dec	10 th Jan	25 th Jan	10 th Feb	25 th Feb	10 th Dec	25 th Dec	10 th Jan	25 th Jan	10 th Feb	25 th Feb
BRR1 dhan89	185	179	169	160	156	147	7.17	7.46	8.02	8.28	6.26	6.04
BRR1 dhan92	187	181	171	162	159	149	7.10	6.70	7.63	7.52	5.98	4.97
BRR1 dhan102	187	180	171	161	156	147	7.65	6.80	7.76	8.36	7.34	4.72
CV (%)	0.5						9.5					
CV (%)	0.8						8.3					
LSD	2.13						0.58					

Experiment 4.2: Effect of planting time on false smut disease incidence of rice

MS Zahan, MR Hasan, MS Islam & MA Latif

The experiment was conducted at BRRRI regional station farm, Rangpur aimed to identify a suitable planting time to avoid the incidence of rice false smut (RFSm) disease and to find out the better genotypes against false smut. 9 (nine) selected genotypes and 2 (two) checks were planted at three different dates at 15 days interval from August 05 to September 05. Twenty-five days-old seedlings were transplanted following split-plot design, placing planting date in the main plots and genotypes in the sub-plots with three replications. Single seedling was transplanted with row spacing 20 cm and plant to plant spacing 20 cm and the plot size was 1.0 m². All agronomic practices were performed uniformly for all the treatments except fungicide application.

The infection of RFSm in the experimental field ranged from 0.0 to 56.7% of the hills for different genotypes at different planting time (**Table 24**). All the genotypes had lower incidence of RFSm than the susceptible check except BR(path)13800-BC3-134-21-1. Only the BR(path)13800-BC3-134-21-1 had higher incidence even at early planting (05 August) due to low relative humidity and higher sunshine hour at flowering. All the genotypes and checks had RFSm incidence at late planting (05 Sep) and the incidence was very low except the check BRRRI dhan49 and the genotype BR(path)13800-BC3-134-21-1 because the flowering period ranges from November 01 to November 20 and had the favorable environment for disease incidence.

Table 24: Effect of planting time on grain yield and false smut incidence of rice in T. Aman, 2023

Variety	Date of transplanting					
	GY (t/ha)			Incidence (%)		
	05 th Aug	20 th Aug	05 th Sep	05 th Aug	20 th Aug	05 th Sep
BR(path)13804-BC3-4	5.00	6.59	4.79	1.3	0.0	2.0
BR(path)13804-BC3-9	4.49	5.97	4.37	0.0	0.0	3.0
BR(path)13804-BC3-13	4.81	5.47	3.34	0.0	0.7	4.0
BR(path)13804-BC3-14	5.33	5.57	5.07	0.3	0.3	4.0
BR(path)13804-BC3-16	5.48	6.22	3.45	1.3	0.7	6.7
BR(path)13804-BC3-18	5.03	5.54	4.23	6.7	1.0	7.3
BR(path)13804-BC3-20	5.97	6.31	4.91	1.0	0.0	6.0
BR(path)13804-BC3-21	4.86	5.34	4.56	1.7	0.3	4.0
BR(path)13800-BC3-134-21-1	5.37	5.47	3.95	53.3	5.0	56.7
BRRRI dhan49 (Ck.)	5.19	5.20	3.22	2.0	0.0	33.7
BRRRI dhan87 (Ck.)	6.35	6.19	4.49	0.0	0.0	11.7
CV (%)		15.1			-	
CV (%)		7.9			-	
LSD		0.654			-	

Experiment 4.3: Long-term Missing Element Trial

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Nitrogen, P, K, S and Zn are five essential plant nutrients of which the first three are the most important in terms of their deficiencies in soils and potential to increase or decrease crop yield (Shah et al., 2008). Nitrogen is the most yield limiting nutrient elements in the many paddy soils (Savant and Datta, 1982) including Bangladesh. Many rice soils of Bangladesh are also becoming deficient in P, K, S and Zn (BARC, 2018). To study the effect of long-term nutrient omission on rice yield, a long-term missing element trial has been conducted at BRRI regional station farm, Rangpur.

Materials and Methods: The experiment was initiated in a permanent layout at BRRI farm Rangpur during Boro, 2014-15 combining 7 treatments (**Table 25**) in RCB design with 3 replicates. Fertilizer nutrients i.e., N-P-K-S-Zn rate was 100-8-50-12-1 kg ha⁻¹ and 150-10-70-15-2 kg ha⁻¹ in T. Aman and Boro seasons, respectively. Urea-N was applied into three equal splits at final land preparation, active tillering and 5-7 days before panicle initiation (PI) stage. Rests of the fertilizers were applied at final land preparation. BRRI dhan87 in T. Aman and BRRI dhan89 in Boro seasons were cultivated as test rice varieties. The tiller and panicle number per meter square and grain and straw yield data were obtained. Grain yield was recorded from 5 m² areas at the center of each plot and 16 hills were collected for straw yield. The grain yield was recorded at 14% moisture content and straw yield as oven dry basis. Data were analyzed statistically by the software STAR.

Table 25: Treatment's combination in the long-term missing element trial

T ₁	Control (No fertilizer)	T ₅	NPSZn (-K)
T ₂	NPKSZn	T ₆	NPKZn (-S)
T ₃	PKSZn (-N)	T ₇	NPKS (-Zn)
T ₄	NKSZn (-P)		

Results and Discussion:

T. Aman 2023 (Tiller, Panicle, Grain and Straw yield)

In T. Aman 2023, the omission of nutrients significantly reduced the yield and yield contributing parameters of rice (**Table 26**). The highest tiller (267) and panicle (254) production per meter square were observed in complete fertilized plot followed by Zn and S omitted plot. The fertilizer control (176 & 166) and N control (203 & 195) treatments produced significantly lowest tiller and panicle number, respectively, than other treatments. The N and P omission from complete fertilizer significantly reduced the grain yield of BRRI dhan87 by 32% and 4%, respectively. The highest grain yield reduction was found in T₃, which was N omission plot from complete fertilizer. The omission of P, K, S and Zn gave statistically similar grain yield like complete fertilizer treatment in T. Aman. Similar trend was found in straw yield.

Table 26: Effect of long-term missing element on the tiller, panicle, grain and straw yield of BRRI dhan87 in T. Aman, 2023

Treatments	Tiller per m ²	Panicle per m ²	Grain yield (t ha ⁻¹)	Straw yield (t ha ⁻¹)	(%) Grain yield decreased due to nutrient omission
T ₁	176 b	166 b	3.37 c	3.10 c	-
T ₂	267 a	254 a	5.82 a	6.05 a	-
T ₃	203 b	195 b	3.95 b	4.36 b	32
T ₄	257 a	240 a	5.59 a	5.94 a	4
T ₅	261 a	245 a	5.70 a	5.99 a	2
T ₆	262 a	249 a	5.65 a	6.04 a	3
T ₇	265 a	252 a	5.74 a	6.10 a	1.5
CV (%)	6.7	6.71	2.72	3.45	

N.B. T₁= Control, T₂= NPKSZn, T₃= PKSZn (-N), T₄= NKSZn (-P), T₅= NPSZn (-K), T₆= NPKZn (-S), T₇=NPKS (-Zn)

Boro, 2023-24 (Tiller, Panicle, Grain and Straw yield)

In Boro 2023-24, omissions of different nutrient from complete fertilizer have significant influence on tiller-panicle production and grain-straw yield of BRRI dhan89 (**Table 27**). Except the fertilizer control plot and N control plot, the tiller and panicle number per meter square increased significantly in all treatments. The highest tiller (224) and panicle (214) production were found in complete fertilizer treatment and the lowest tiller (126) and panicle (120) production were recorded in fertilizer control treatment. Omission of P, K, S and Zn produced statistically similar tiller and panicle per meter square. The omission of N and P from complete fertilizer significantly reduced the grain yield of BRRI dhan89 by 47%, 24% in Boro season. Although omission of K, S and Zn reduced grain yield about 6%, 3% and 2.5% from complete fertilizer but the reduction was not statistically significant. Boro season, actually, the omission of K, S and Zn have very less yield reduction compared to N and P omission, although slightly yield penalty observed in K (6.32 tha⁻¹) and S (6.51 tha⁻¹) omission plots than complete treatment (6.71 tha⁻¹). Like K and S, the Zn omissions have no significant effect on yield reduction in BRRI Rangpur farm yet. Similar result was found in case of straw yield.

Table 27: Effect of long-term missing element on the tiller, panicle, grain and straw yield of BRRI dhan89 in Boro, 2023-24

Treatments	Tiller/m ²	Panicle/m ²	Grain yield (t ha ⁻¹)	Straw yield (t ha ⁻¹)	(%) Grain yield decreased due to nutrient omission
T ₁	126 b	120 b	3.04 c	2.75 c	-
T ₂	224 a	214 a	6.71 a	6.18 a	-
T ₃	141 b	135 b	3.54 c	3.22 c	47
T ₄	199 a	189 a	5.10 b	4.65 b	24
T ₅	206 a	191 a	6.32 a	5.88 a	6
T ₆	208 a	198 a	6.51 a	6.06 a	3
T ₇	209 a	199 a	6.53 a	6.10 a	2.5
CV (%)	5.77	5.91	5.3	3.39	

N.B. T₁= Control, T₂= NPKSZn, T₃= PKSZn (-N), T₄= NKSZn (-P), T₅= NPSZn (-K), T₆= NPKZn (-S), T₇=NPKS (-Zn)

Conclusion: The omission of N in T. Aman and omission of N and P in Boro season from complete fertilizer significantly reduced the grain yield of rice at BRRI Rangpur farm. Among

the major nutrient elements, omission of N appeared as the most yield limiting nutrient followed by P and K omission for rice in both seasons. Yet the S and Zn omission have less effect on yield reduction at BIRRI regional station farm Rangpur in both T. Aman and Boro season.

5. SOCIO-ECONOMIC

5.1: Stability analysis of BIRRI varieties at BIRRI Rangpur in T. Aus, T. Aman and Boro season during 2023-2024

One hundred nine of BIRRI developed varieties were evaluated during T. Aus (13), T. Aman (48) and Boro (48) season at BIRRI RS following RCBD with three replications. BIRRI dhan83 gave highest yield (5.44 t/ha) followed by BIRRI dhan98 (5.02 t/ha) and BIRRI hybrid dhan107 (4.60 t/ha) during T. Aus season. In T. Aman, BIRRI dhan33 (5.73 t/ha) produced highest yield followed by BIRRI dhan66 (5.72 t/ha) and BIRRI dhan95 (5.53 t/ha) in short duration; BR11 (7.24 t/ha) produced highest yield followed by BIRRI dhan94 (6.52 t/ha) and BIRRI dhan31 (6.49 t/ha) in medium duration. In long duration, BR10 (4.31 t/ha) gave highest yield followed by BIRRI dhan41 (3.72 t/ha). During Boro season, BIRRI hybrid dhan3 showed highest yield (7.98 t/ha) followed by BIRRI dhan74 (7.81 t/ha) in short duration group. In long duration group, BIRRI dhan29 produced highest yield (8.15 t/ha) followed by BIRRI dhan102 (8.13 t/ha) and BIRRI dhan89 (8.10 t/ha).

TECHNOLOGY TRANSFER

DEMONSTRATION

6.1: Demonstration: A total of 2086 (2086 bighas) varietal demonstrations were conducted at different locations of Rangpur-Dinajpur region. In T. Aus season (73 Bighas), BIRRI dhan98 and BIRRI hybrid dhan7 were used and maximum yield was observed 5.40 t/ha in BIRRI dhan98 at Sadar Dinajpur. In T. Aman session (1145 bighas), BIRRI dhan71, BIRRI dhan75, BIRRI dhan87, BIRRI dhan90, BIRRI dhan93, BIRRI dhan95, BIRRI dhan103, BIRRI hybrid dhan4 and BIRRI hybrid dhan6 were used. Maximum yield was observed 6.8 t/ha in BIRRI dhan93 at Ranisankail, Thakurgoan and Sadar, Panchagarh. In Boro season (2800 bighas), BIRRI dhan74, BIRRI dhan89, BIRRI dhan92, BIRRI dhan100, BIRRI dhan101, BIRRI dhan102, BIRRI dhan104, BIRRI dhan105 BIRRI hybrid dhan3, 5 and 8 were used. Yield range was 5.8 to 9.58 t/ha. Maximum yield was observed 9.58t/ha in BIRRI dhan92 at Boda, Panchagarh and minimum was 5.8 in BIRRI dhan100 in Rajarhat, Kurigram.

Training and Field Day: Twenty farmers training on modern rice production technology was conducted at different upazilas of Rangpur-Dinajpur region in collaboration with DAE. A total of 810 farmers and 90 SAAOs were trained through 30 training program. A total of 100 womens were present in farmers training program. It was very much helpful to minimize knowledge gap on modern Rice production technologies. Twelve in-house training were arranged at the programs BIRRI regional station to improve the capability in office management of the office staff. Fifteen field days were arranged at different demonstration sites in collaboration with DAE during 2023-2024. A total of 1500 farmers, local leaders and DAE personnel attended those field day programs.

Seeds and Seedling distribution among the flood affected farmers: BRRRI RS, Rangpur arranged special programs for the flood affected farmers. Different photosensitive varieties viz. BR22, Nizarsail and Gainja were distributed among the flood affected farmers in Sadar-Gaibandha, Sadar-Kurigram, Gangachora-Rangpur, Sadar-Lalmonirhat and Dharmadas- Metro-Rangpur.

Promotional activities for the formers enclave's farmer: BRRRI RS Rangpur conducted 40 demonstration programs for the dissemination of BRRRI developed latest varieties in Dashiarchora, Fulbari, Kurigram (Former enclave).

Seed production and dissemination in July 2023-June 2024: A total of 10,607 kg, 10,992 kg and 9,748 kg TLS were produced in T. Aus, T. Aman and Boro season respectively. A total of 4,000 kg Breeder seed (BRRRI dhan90 and BRRRI dhan93) was produced in T. Aman season and 5,250 kg Breeder seed (BRRRI dhan89 and BRRRI dhan104) was also produced in Boro season. A total of 9,250 kg Breeder seed was sent to the GRS Division, BRRRI Gazipur. In three seasons, 18,826 kg TLS was distributed among the farmers for dissemination in Rangpur-Dinajpur region.

Table 28: Variety-wise seed production and distribution during T. Aus, 2023, T. Aman, 2023 and Boro, 2023-24

Variety	Amount (kg)		Sent to GRS (kg)	Sold TLS (kg)	Distribution of TLS (kg)
	TLS	Breeder seed			
<u>T. Aus, 2023</u>					
BRRRI dhan48	78	-	-	71	07
BRRRI dhan82	38	-	-	31	07
BRRRI dhan98	10491	-	-	5530	4961
BRRRI hybrid dhan7	-	-	-	-	200
Total	10607			5630	5175
<u>T. Aman, 2023</u>					
BR 22	470	-	-	229	241
BRRRI dhan34	621	-	-	577	44
BRRRI dhan49	100	-	-	94	06
BRRRI dhan51	60	-	-	60	-
BRRRI dhan52	284	-	-	263	21
BRRRI dhan70	226	-	-	101	125
BRRRI dhan71	368	-	-	-	368
BRRRI dhan75	2076	-	-	409	1667
BRRRI dhan79	405	-	-	280	125
BRRRI dhan80	203	-	-	108	95
BRRRI dhan87	1141	-	-	275	866
BRRRI dhan93	2967	2000	2000	593	2374
BRRRI dhan95	1357	2000	2000	943	614
BRRRI dhan103	489	-	-	189	300
Naizarsail	73	-	-	-	73
Gainja	152	-	-	-	152
BRRRI hybrid dhan4	-	-	-	-	500
BRRRI hybrid dhan6	-	-	-	-	500
Total	10992	4000	4000	4121	8071
<u>Boro, 2023-24</u>					
BR 16	68	-	-	68	-

BRRi dhan28	100	-	-	100	-
BRRi dhan29	90	-	-	90	-
BRRi dhan50	107	-	-	107	-
BRRi dhan58	212	-	-	122	90
BRRi dhan63	190	-	-	90	100
BRRi dhan74	1300	-	-	650	650
BRRi dhan81	275	-	-	275	-
BRRi dhan84	104	-	-	104	-
BRRi dhan86	134	-	-	134	-
BRRi dhan88	178	-	-	113	65
BRRi dhan89	1792	2750	2750	445	1347
BRRi dhan92	1237	-	-	248	989
BRRi dhan96	84	-	-	64	20
BRRi dhan100	186	-	-	02	184
BRRi dhan101	124	-	-	124	-
BRRi dhan102	3177	-	-	123	3054
BRRi dhan104	270	2500	2500	15	255
BRRi dhan105	120	-	-	94	26
BRRi hybrid dhan3	-	-	-	-	500
BRRi hybrid dhan5	-	-	-	-	500
Total	9748	5250	5250	2968	7780
Grand Total	31347	9250	9250	12719	21026
