

### Proposed Research Program 2023-2024

Sl. No.	Program Area/ Project/ Experiment Title & Duration	Major Objective	Expected output	Annual Budget (Thousand Tk.)
	<b>Program Area: Varietal Development program (VDP)</b>			
	<b>Plant Breeding Division</b>			
1	Development of Upland Rice (Broadcast Aus)	Development of high yield new rice varieties in combination of multiple traits such as adaptable to direct seeded condition, quick seedling emergence and vigorous growth, short growth duration (90-95 days), tolerance to lodging, drought and pre-harvest sprouting and good eating quality	For B. Aus, promising lines/ varieties will be developed with short duration: 90-95 days, yield potential: 4.0-4.5 t/ha, with early vigor, adaptable to aerobic upland conditions through DSR and dibbling method	1500
2	Development of Jhum/Hill Rice	Development of high yielding rice variety with low (10-19%) to intermediate (20-25%) and high (25%) grain amylose content and drought tolerance suitable for Jhum cultivation	For Jhum rice, high yielding rice variety with low (10-19%) to high (>25%) grain amylose content and drought tolerance along with good eating quality for jhum cultivation acceptable to tribal of Chattogram hill districts will be developed.	800
3	Development of Transplanted Aus (T. Aus) Rice	Introgression of earliness, pre-harvest sprouting tolerance and tolerance to high temperature into high yielding varieties for developing rice varieties with slender grain, short growth duration and resistance to major diseases under field condition.	Promising lines/ varieties will be developed with better yield potential (5.0–5.5 t/ha) and shorter growth duration (105-110 days) in comparison to existing varieties	2000

4	Improvement of rice for shallow flooded & Deep-water environment	Development of high yielding (4.0-5.0 t/ha) rice varieties for shallow flooded area (up to 1.0 m depth), shallow deep area (30 cm water) and medium deep area (50-60 cm water) along with submergence, facultative/slow elongation and hypoxia tolerance.	High yielding (4.0-5.0 t/ha) rice varieties for shallow flooded area (up to 1.0 m depth), shallow deep area (30 cm water) and medium deep area (50-60 cm water) along with submergence, facultative elongation and hypoxia tolerance will be developed.	1700
5	Development of Rainfed Lowland Rice (RLR) (T. Aman)	Introgression of genes from diverged genetic background for the improvement of standard T. Aman varieties.	Short duration varieties (105-115 days) with 4.5-5.0 t/ha yield potential and medium duration (116-130 days) varieties with 6.0-7.0 t/ha yield potential will be developed.	5000
6	Development of Salt Tolerant Rice variety for T. Aman and Boro Season	Introgression of salinity tolerant traits/ gene (s) in high yielding varieties suitable for RLR and irrigated Boro ecosystem.	Salt tolerant varieties will be developed based on farmers, consumers, miller's preference of target region with seedling stage (EC 14 dS/m) & reproductive stage tolerance (EC 8-10 dS/m) and better yield potential (5.5-6.5 t/ha for the T. Aman and 7.5-8.0 for Boro season) in comparison to existing varieties	10000
7	Development of Premium Quality Rice (PQR) for T. Aman and Boro Season	Introgression of genes for small & long slender grain with aroma, BLB and into high yielding genetic background for the development of national and international grade aromatic rice.	National grade (Kalizira, Chinigura, Kataribhog, Banglamoti and BRRI dhan34 type) and international grade (Basmati, Jasmine,) high yielding aromatic varieties with earliness, good plant type, anti-oxidant potential will be developed.	7000
8	Development of Antioxidant enriched Rice for T. Aman and Boro season	Introgression of Anthocyanin gene into the genetic background of high yielding rice variety	High yielding Antioxidant enriched rice variety will be developed	1000

9	Development of photosensitive Rice for T. Aman season	Development of strong photo-sensitive (Nizersail type) and medium photo-sensitive (Gainza type) premium quality rice for T. Aman season	Photo-sensitive high yielding varieties will be developed	500
10	Development of favorable Boro Rice	Development of new genotypes based on the farmers and consumers preference with better plant type and major insect and disease resistance.	Rice varieties for favorable irrigated ecosystem will be developed with high yield potential (7.0-8.5 t/ha), earliness to long duration and acceptable grain quality.	5500
11	Development of Cold Tolerant Boro Rice	Introgression of cold tolerance gene into high yielding rice genetic background.	Cold tolerance rice varieties will be developed for cold affected northern, western and Haor region with high yield potential (6.5-7.5 t/ha).	9000
12	Development for Micronutrient Enriched Rice (ZER) for T. Aman & Boro	Development of new genotypes with high iron and zinc content along with resistance to major insect pests and diseases, abiotic stress tolerance and acceptable grain quality.	Rice varieties with high iron and zinc content with resistance to major insect pests and diseases, abiotic stress tolerance and acceptable grain quality will be developed.	5000
13	Development of Insect Resistant Rice (IRR) for T. Aman & Boro Season	Introgression of genes of BPH and gall midge resistance into high yielding rice genetic background.	BPH and Gall midge resistant variety will be developed with better yield potential (5.5-6.5 t/ha for T. Aman and 7.0-8.0 t/ha for irrigated Boro season).	3500
14	Development of Disease Resistant Rice (BB, Blast & RTV) for T. Aman and Boro season	Introgression of high yield, lodging tolerance and disease resistance trait for BB, Blast & RTV.	BB, Blast and RTV resistant varieties will be developed with better yield potential (5.5 – 6.0 t/ha for T. Aman season and 7.5-8.0 t/ha for Boro season).	3000
15	Development of Submergence and Water Stagnation Tolerance Rice	Development of high yielding (6.0-6.5 t/ha for non-stress) and (5.0-5.0 t/ha for stress condition) rice varieties tolerant to submergence (flash flooding) and medium	High yielding rice varieties with different growth duration and three weeks submergence, stagnant flood and anaerobic germination tolerances	3000

		stagnant water (MSW) stresses with short/long growth duration, weakly/strongly photoperiod sensitivity, acceptable grain quality etc.	with yield target 6.0-6.5 t/ha in normal condition and 5.5 t/ha in stress condition.	
16	Development of Water Saving Rice	Development of short duration water-use-efficient rice genotypes with 10% more yield than the check varieties under transplanted alternate wetting and drying (AWD) & aerobic condition.	Short duration water-use-efficient rice genotypes with 10% more yield than the standard check varieties will be developed for Boro season under transplanted alternate wetting and drying (AWD) & aerobic condition.	1500
17	Development of Drought Tolerant Rice for T. Aman Season	Introgression of drought tolerance genes into high yielding rice genetic background.	Drought Tolerant Varieties for T. Aman season will be developed with potential yield target (5.0 – 6.0 t/ha).	3000
18	Deployment and Validation of High Beta-carotene Rice and High-Iron & Zinc Rice Varieties (Healthier Rice Project), T. Aman and Boro season	Development of new genotypes with high Beta Carotene (Vitamin-A) content along with resistance to major insect pests and diseases, and acceptable grain quality.	Development of high yielding rice varieties with enhanced Provitamin A, high Iron and Zinc content in polished rice grain.	4000
19	International Network for Genetic Evaluation of Rice (INGER)	Promising genotypes will be selected after evaluation and will be used as parent materials and also will be included in yield trial.	Exchange of elite rice germplasm among the rice growing countries of the world and their evaluation, characterization and utilization under wider range of environments for ultimate use by farmers.	500
	<b>Biotechnology Division</b>			
1	Regional yield trial (RYT) for development of low glycemic index (GI) rice variety	To select high yield potential materials having low glycemic index	Agronomically desirable, early maturing, high yield potential materials will be identified.	100.0
2	Development of premium quality rice variety through anther culture	To develop high yielding premium quality rice lines	High yielding premium quality rice lines (Kalijira Type) will be	100.0

			developed.	
3	Development of high yielding photoperiod sensitive double haploid rice through anther culture	To develop high yielding photosensitive rice variety through culture	High yielding Photosensitive rice variety will be developed	50
4	Development of high yielding photoperiod sensitive double haploid rice from F <sub>2</sub> generation plants through anther culture	To develop high yielding photosensitive rice variety	High yielding Photosensitive rice variety will be developed	100.0
5	Development of Aus rice variety through anther culture	To develop short duration high yielding Aus rice variety	Short duration, high yielding Aus rice variety will be developed	100.0
6	Secondary yield trial (SYT) for development of antioxidant enriched black rice variety	To select agronomically desirable and high yield potential materials	Agronomically desirable, early maturing, high yield potential materials will be identified.	500.0
7	Preliminary yield trial (PYT) for development of antioxidant enriched black rice variety	To select agronomically desirable and high yield potential materials	Agronomically desirable, early maturing, high yield potential materials will be identified.	200.0
8	Observational trial (OT) for development of antioxidant enriched black rice variety through somaclonal variation	To select agronomically desirable and high yield potential materials	Agronomically desirable, early maturing, high yield potential materials will be identified.	150.0
9	Development of favorable high yielding rice variety	To select the best lines with high yield potential	Superior breeding lines with earliness and high yield will be selected.	50
10	Observational trial for development of antioxidant enriched black rice variety	To select agronomically desirable and high yield potential materials	High yielding black rice breeding lines will be selected.	50
11	Development of Premium Quality Rice (Kalijira type) through somaclonal variation	Progeny selection of materials developed through somaclonal variation	Superior breeding lines with aroma, short stature and high yield will be selected.	100.0
12	Development of high yielding premium quality rice variety through somaclonal variation	To create somaclonal variation and select rice lines with high yield and desirable traits	Premium quality somacloned rice lines with high yield and desirable traits will be developed.	100.0

13	Development of rice variety through wide hybridization followed by embryo rescue	To develop high yielding and short duration rice lines through wide hybridization	High yielding and short duration rice lines will be developed.	100.0
14	Development of Aus rice variety through anther culture	To develop high-yielding Aus rice	High-yielding Aus rice variety	100.0
15	Development of Photosensitive Rice Through Anther culture	To develop photosensitive rice having taller seedling capability To develop photosensitive rice having normal seedling capability	High-yielding photosensitive rice varieties having taller seedling capabilities High-yielding photosensitive rice varieties having normal seedling capabilities	100.0
16	Development of Aman Rice for the favorable ecosystem	To develop high-yielding aman rice varieties	High-yielding favorable Aman rice varieties	100.0
17	Development of Boro Rice for the favorable ecosystem though anther culture	To developing high-yielding boro rice	High-yielding short-duration boro rice variety. High-yielding medium-duration boro rice variety. High-yielding long-duration boro rice variety.	150
18	Marker assisted selection for fragrance	To develop high yielding aromatic rice	Kalijira type high yielding aromatic rice varieties will be developed	100.0
19	Marker assisted selection for submergence tolerance aromatic rice	To confirm submergence tolerance aromatic genotype in F <sub>1</sub>	Submergence tolerant Kalijira type high yielding aromatic rice varieties will be developed	100.0
20	Development of multiple disease resistant (blast and bacterial blight) rice varieties using marker assisted selection	To introgress bacterial blight (BB) and blast resistant genes in high yielding variety	BB and Blast resistant yielding rice lines will be developed	200.0
21	Genome wide association mapping for photosensitivity of rice	To identify genomic location controlling photosensitivity.	Photosensitive high yielding rice varieties will be developed	100.0
22	Marker assisted selection for BB	To develop BB resistance BRRI dhan87	BB resistance BRRI dhan87 will be	50

	resistance BRRI dhan87		developed.	
23	Development salt tolerance of transgenic rice	To develop genotypes with salt tolerance with GlyI and GlyII genes.	Transgenic salt tolerance rice will be developed	50
24	Introgression of salt tolerant mangrove gene	To develop salt tolerant transgenic rice lines with mangrove <i>AeMDHAR</i>	Transgenic salt tolerance rice will be developed.	0.5
25	Development salt tolerance of transgenic rice	To develop genotypes with salt tolerance with <i>PcPVAI</i>	Transgenic salt tolerance rice will be developed.	200.0
26	Development of high yielding aromatic rice variety through genome editing.	To develop high yielding aromatic rice lines using CRISPR-Cas9 technology	High yielding aromatic rice will be developed.	50.0
27	Isolation and cloning of drought and cold tolerant gene	To isolate and cloning of stress tolerant genes from wheat	Stress tolerance gene will be cloned and used for construct preparation followed by transformation into rice	50.0
28	Development of variants using EMS of BRH-11-9-11-4-5B having reduced sterility	To reduce sterility of BRH-11-9-11-4-5B	High yielding rice variety will be developed.	50.0
29	Development of Kilijira type rice variety through mutation by NMU	To develop high yielding short stature aromatic Kilizira type varieties	High yielding, short stature aromatic Kilizira type varieties will be developed	50.0
30	Development of high yielding sheath blight resistant rice variety	Sheath Blight resistant lines through mutation by EMS.	High yielding sheath blight resistant rice varieties will be developed	50.0
31	Development of Premium Quality Rice through Mutation by EMS (Ethyle Methane sulfonate)	To develop high yielding, short growth duration and short stature plant type aromatic rice lines	Premium Quality rice lines with high yield, short duration with aromatic rice grain will be developed.	50.0
32	Identification of major regulators for C4 rice	To develop C4 rice line	Major regulatory gene(s) for C4 photosynthetic pathway will be identified	100.0
33	Study on kernel elongation of rice	To identify rice variety with high kernel elongation	rice variety with high kernel elongation will be developed	50.0
34	Variation of <i>BADH2</i> gene sequences in aromatic rice	to investigate the nature of the fragrance gene ( <i>frg</i> ) in local aromatic cultivars	Components responsible for aroma in selected local aromatic rice will be	30.0

			identified	
	<b>Hybrid Rice Division</b>			
	<b>Project: Development of parental materials for high yield, high amylose content and fine grain containing hybrid rice variety Program Duration: 2023-2024</b>			
1.1	Source Nursery	Identification of prospective maintainers and restorers from diverse genetic origin		70,000.00
1.2	Test cross Nursery	1. Confirmation of maintainers and restorers from the crossed entries, 2. Selection of heterotic rice hybrids, 3. Conversion of prospective materials into new CMS lines.	New B & R lines identification	70,000.00
1.3	Backcross Nursery	Developing CMS lines from identified maintainer by back crossing.	New CMS line development	1,00000.00
1.4	CMS Maintenance and Evaluation Nursery	Maintain and evaluate of CMS lines	Genetic purity maintainance	1,50000.00
1.5	Development of disease resistant parental lines (Blast)	To develop new CMS lines resistance to disease (Blast) and selection of heterotic rice hybrids resistance to disease (Blast)	Blast resistant hybrid rice variety development	1,00000.00
1.6	Improvement of parental lines by (B x B) and (R x R) crosses.	To broaden the genetic base of parental lines	New recombinant B & R lines development	50,000.00
1.7	Submergence tolerant parental line development	To develop new CMS lines resistance to submergence and selection of heterotic rice hybrids resistance to submergence	Submergence tolerant hybrid rice variety development	1,50000.00
1.8	Field Rapid Generation Advance (FRGA) for B and R lines improvement.	New recombinant B & R lines will be developed	New recombinant B & R lines development	2,00000.00
	<b>Project-2: Evaluation of parental materials &amp; hybrids</b>			

	<b>Duration: 2023-2024</b>			
2.1	Observational Trial (OT) of experimental hybrids	Selection of promising hybrids	Selection of promising hybrids	1,00000.00
2.2	Preliminary Yield trials of promising hybrids	To study the wider adaptability and yield potentiality of promising hybrids	Adaptable promising hybrids selection	80,000.00
2.3	Combining ability of A, B & R lines	To select the best combiner (S) in respect of grain yield & yield components	Best combiner hybrids selection	80,000.00
2.4	National Hybrid Rice Yield Trial (NHRYT)	Evaluation of imported hybrids for subsequent selection		Funded by SCA
2.5	Quality ensure of previous season produced F <sub>1</sub> and CMS lines through grow out test	To determine purity of parental lines and hybrids of BRRRI released hybrid rice	Ensure quality of produced CMS & F <sub>1</sub> seeds	50,000.00
2.6	Demonstration trials of BRRRI released hybrids along with promising hybrids and checks	To evaluate the performances of released hybrids with promising ones	Best hybrid of promise identification	50,000.00
2.7	Multi-location Yield trials of Promising hybrids	To study the yield potentiality of promising hybrids at farmers field	Wide adaptable hybrids selection	5,00000.00
2.8	Breeding for outcrossing potentials in CMS lines	To select best CMS lines for enhancing seed production of hybrid rice	New CMS lines with high out crossed will be developed	80000.00
	<b>Project-3: Seed Production of Parental lines and Hybrids Duration: 2023-2024</b>			
3.1	Multiplication of promising CMS lines	To produce pure and good quality seed of CMS lines for subsequent use.	Seed increased for subsequent use	2,00000.00
3.2	CMS multiplication of BRRRI hybrid dhan1 & BRRRI hybrid dhan4	Production of pure and good quality seed of CMS lines.	CMS seed multiplication of BHD1 & BHD4	2,00000.00
3.3	CMS line multiplication of BRRRI hybrid dhan2	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD2	1,00000.00
3.4	CMS line multiplication of BRRRI hybrid dhan3	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD3	1,00000.00
3.5	F <sub>1</sub> seed production of BRRRI hybrid	Production of sufficient quantity quality	F <sub>1</sub> seed production of BHD3	1,00000.00

	dhan3	hybrid seed for subsequent use	available	
3.6	F <sub>1</sub> seed production of BRRRI hybrid dhan4	Production of sufficient quantity quality hybrid seed for subsequent use	F <sub>1</sub> seed production of BHD4 available	1,00000.00
3.7	F <sub>1</sub> seed production of BRRRI hybrid dhan5	Production of sufficient quantity quality hybrid seed for subsequent use	F <sub>1</sub> seed production of BHD5 available	1.00000.00
3.8	CMS line multiplication of BRRRI hybrid dhan5	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD5	1,00000.00
3.9	F <sub>1</sub> seed production of BRRRI hybrid dhan6	Production of sufficient quantity quality hybrid seed for subsequent use	F <sub>1</sub> seed production of BHD6 available	1.00000.00
3.10	CMS line multiplication of BRRRI hybrid dhan6	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD6	1,50000.00
4.11	F <sub>1</sub> seed production of promising hybrids	Production of sufficient quantity quality hybrid seed of promising hybrids for subsequent use	F <sub>1</sub> seed production of promising hybrids available	3,00000.00
4.12	CMS line multiplication of BRRRI hybrid dhan8	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD8	1,50000.00
4.12	F <sub>1</sub> seed production of BRRRI hybrid dhan7	Production of sufficient quantity quality hybrid seed for subsequent use	F <sub>1</sub> seed production of BHD7 available	1,00000.00
4.13	F <sub>1</sub> seed production of BRRRI hybrid dhan8	Production of sufficient quantity quality hybrid seed for subsequent use	F <sub>1</sub> seed production of BHD8 available	1,00000.00
4.14	Growth duration differentiation method (GDDM) for synchronization in flowering	To determine proper heading time of parental lines (A &R) of promising hybrids	Actual growth duration of A & R lines will be determined	50,000.00
4.15	Nucleus seed production of BRRRI hybrid dhan1 & BRRRI hybrid dhan4	To produce parental lines nucleus seeds of BHD1 & BHD4	Nucleus seeds of A & R lines of BHD1 & BHD4 produced	60,000.00
4.16	Nucleus seed production of BRRRI hybrid dhan2	To produce parental lines nucleus seeds of BHD2	Nucleus seeds of A & R lines of BHD2 produced	60,000.00
4.17	Nucleus seed production of BRRRI hybrid dhan3	To produce parental lines nucleus seeds of BHD3	Nucleus seeds of A & R lines of BHD3 produced	60,000.00
4.18	Nucleus seed production of BRRRI hybrid dhan5	To produce parental lines nucleus seeds of BHD5	Nucleus seeds of A & R lines of BHD5 produced	60,000.00

4.19	Nucleus seed production of BRRRI hybrid dhan6	To produce parental lines nucleus seeds of BHD6	Nucleus seeds of A & R lines of BHD6 produced	60,000.00
4.20	Nucleus seed production of BRRRI hybrid dhan8	To produce parental lines nucleus seeds of BHD8	Nucleus seeds of A & R lines of BHD8 produced	60,000.00
4.21	Maintainer and restorer lines multiplication of BRRRI released hybrids	Production of sufficient quantity quality parental lines for subsequent use	Maintainer & restorer lines of released hybrids available	50,000.00
	<b>Genetic Resources and Seed Division</b>			
<b>1</b>	<b>Project 01: Rice Germplasm Conservation and Management</b>	<b>Collection, characterization, conservation and rejuvenation of rice germplasm to enrich the Genebank of BRRRI and its sharing with rice researchers</b>	Collected germplasm will be conserved safely and documented along with their characters in Genebank and in computer database.  Conserved germplasm with valuable traits will be made available for utilization as parent material(s) for developing new variety(s) /genotype(s).	<b>149</b>
1.1	Collection of rice ( <i>Oryza sativa</i> L.) germplasm	To collect cultivated and wild rice germplasm from unexplored areas of Bangladesh and to store the collected rice germplasm for different users		
1.2	Rejuvenation and conservation of rice germplasm	To rejuvenate the Genebank accessions with fresh stock and to register the new collection by giving BRRRI Genebank accession number after cross checking the duplication		
1.3	Purification (cleaning up) of rice germplasm accession	To isolate the pure and homogeneous germplasm line(s) from each germplasm accession		

1.4	Morphological characterization and documentation of rice germplasm	<p>i. To characterize the rice germplasm as per BRRI prescribed "Germplasm Descriptors and Evaluation Form" as developed from biodiversity international and UPOV convention</p> <p>ii. To document the characterized rice germplasm through morpho-physiological data, digital photo, leaflet and to develop a computer database documentation system for different users</p>		
1.5	Molecular characterization of rice germplasm	To characterize the rice germplasm through molecular tools (DNA Fingerprinting)		
<b>2</b>	<b>Project 02: Exploratory and Genetic Studies.</b>	<b>Exploratory and genetic studies of rice germplasm.</b>	The genetic parameters/genetic studies of respective year will be helpful for varietal development and other plant breeding related issues.	<b>110</b>
2.1	Evaluation of photosensitive rice germplasm collected from Northern districts of Bangladesh	To identify rice germplasm suitable for late transplanting after flood in northern region of Bangladesh (Bogura, Kurigram, Lalmonirhat, Gaibandha, Rangpur and Jamalpur)		
2.2	Selection of superior genotypes from T. Aman/ Boro rice germplasm based on agro-morphological traits	To identify rice germplasm with higher total biomass yield and higher phenotypic acceptance		
2.3	Characterization of similar named Jhoshua, Mal Shira, Shailla and Shapahar groups of germplasm	To characterize and evaluate the similar or duplicate named groups of Jhoshua, Mal Shira, Shailla and Shapahar rice germplasm accessions through quantitative and qualitative traits for developing their core		

		collection		
2.4	Morphological and molecular characterization of 30 aromatic rice germplasm	To identify and to study the morphological and molecular characteristics of selected aromatic rice germplasm		
2.5	Characterization of Nazirsail and Rata groups of rice germplasm	To characterize and evaluate the similar named Nazirsail and Rata groups of rice germplasm accessions for developing their core collections		
2.6	Characterization of important rice genetic resources of Bangladesh and identification of candidate genes for early flowering and yield related traits	To characterize rice germplasm at morphological and molecular level, purify and develop a core set for further evaluation for early flowering and yield related traits, and to explore genome-wide association study (GWAS) based on explored traits for identifying genomic regions/QTLs/genes associated with the traits		KGF & GIFS fund
2.7	Genetic basis and identification of candidate genes for salinity tolerance and salinity recovery in 3K rice panel of Bangladeshi rice accessions	To identify genomic regions/QTLs/candidate genes for salinity tolerance and salinity recovery traits through genome-wide association study (GWAS) using the 3K panel of Bangladeshi rice germplasm phenotyped under a standardized screening protocol for salinity recovery		50
2.8	Identification and selection of Sticky rice from Jhum rice germplasm	To identify and to study the selection criteria for developing sticky rice varieties from Jhum rice germplasm		60
2.9	Trait-based selection and Performance Analysis of Exclusive Aus Germplasm from all over	i. To study the available exclusive Aus rice germplasm for trait-based selection ii. To find out the bests in trait-based		100

	Bangladesh	clusters		
2.10	Morphological characterization of Aus rice germplasm collected from greater Kushtia region of Bangladesh	<p>i. To characterize the 66 Aus rice germplasm collected from greater Kushtia region (Kushtia, Chuadanga and Meherpur) in morphological level using ‘Rice Germplasm Descriptors and Evaluation Form’ (BRRI 2018)</p> <p>ii. To observe the genetic diversity and yield performance of 66 Aus rice germplasm</p>		50
2.11	Assessment of morphological characters and physico-chemical properties of fine rice germplasm of Bangladesh	<p>i. To characterize the rice germplasm</p> <p>ii. To assess the physicochemical properties of the rice germplasm</p>		50
2.12	Morphological characterization of Red rice germplasm of Bangladesh	To characterize the Red rice germplasm		50
<b>3</b>	<b>Project 03: Seed Production and Variety Maintenance</b>	<b>Maintenance of nucleus seed stock and production for supplying breeder seeds as per national demand</b>	Varietal purity (both genetic and physical) will be maintained. Breeder seed will be supplied to GO, NGOs and private sector seed producing organizations. Limited quantity of quality seed (QS) will be supplied to other divisions/Regional stations of BRRI and farmers directly or through DAE personnel for experimental/exhibition purpose	<b>860</b>
3.1	Nucleus seed production and variety maintenance	<p>i. To maintain genetic purity and homogeneity of morphological characteristics of BRRI invented rice varieties as a source of breeder seed</p> <p>ii. To maintain the BRRI recommended</p>		100

		HYVs (High Yielding Variety) and LIVs (Locally Improved Variety) for encouraging farmers to cultivate and for any other purpose		
3.2	Breeder seed production	To produce the breeder seed (BS) of BIRRI invented rice varieties as per indent of GO, NGOs and PS seed producing organizations/companies/entrepreneurs		
<b>4</b>	<b>Project 04: Seed Technology Packages.</b>	<b>Studies on seed technology for recommending as modern rice seed production technology.</b>	The quality seed production related important/current problems at farmers' field will be solved with appropriate recommendations through the developed seed technology package	<b>120</b>
4.1	Publication on seed production technology package	To make seed technology knowledge available to the growers by preparing leaflet on seed production techniques for BIRRI Rice Seed Network partners		120
<b>5</b>	<b>Activities of GRS Division</b>		All of the services from GRS Division are simplified for client's satisfaction.	<b>705</b>
5.1	Rice germplasm supply and exchange	i. To provide/supply rice germplasm accessions from BIRRI Genebank to different divisions of BIRRI for screening against biotic and abiotic stresses ii. To share germplasm to researchers from home and abroad with prescribed MTA for rice improvement		15
5.2	Sending <i>khudebarta</i> (SMS) for breeder seed distribution	To make it easy for the clients of BIRRI Breeder Seed Network to get the information of BS distribution		50
5.3	Breeder seed distribution	To supply the breeder seed of BIRRI invented rice varieties as per indent of		50

		GO, NGOs and PS seed producing organizations/companies/entrepreneurs		
5.4	Monitoring of breeder and foundation seed production farms	<p>i. To visit breeder seed plots of BRRRI regional stations at flowering and maturity stages for ensuring the quality of produced seed as BS standard</p> <p>ii. To visit foundation seed (FS) plots of seed producing agencies at flowering and maturity stages for improving the quality of produced seed as FS standard by sharing experiences.</p>		140
	<b>Grain Quality and Nutrition Division</b>			
1.	<b>Grain Quality Characteristics for Varietal Development</b>			
	1.1: Determination of physicochemical and cooking properties of advanced breeding lines	To help to develop data base on physicochemical, cooking and eating qualities of grain for newly developed breeding lines	Able to generate some breeding lines with superior grain quality.	500
	1.2: Determination of physicochemical and cooking properties of Transforming Rice Breeding (TRB) lines	To find out the physicochemical and eating quality of promising lines for identifying better grain quality	Able to generate some Transforming breeding lines with superior grain quality.	TRB project funded
	1.3: Evaluation of physicochemical properties of newly released BRRRI varieties	1.To determine the physicochemical and cooking qualities of BRRRI-developed rice varieties for updating the database.	Able to generate a database for newly released BRRRI varieties.	500
	1.4: Nutraceutical characterization of newly released BRRRI HYVs.	<p>1.Amino acid profiling of newly released BRRRI HYVs.</p> <p>2.Fatty acid profiling of newly released BRRRI HYVs.</p>	Able to generate a database for newly released BRRRI varieties.	200

		<p>3. Antioxidant profiling of newly released BRRI HYVs.</p> <p>4. Mineral profiling of newly released BRRI HYVs.</p> <p>5. Volatile aromatic compound (VOC) profiling of newly released BRRI HYVs.</p>		
2.	<b>Nutritional Quality Assessment of Rice</b>			
	2.1: Analysis of ferulic acid (FA) in RBO of Bangladeshi rice varieties in the association of biochemical evaluation on burning effects of RBO in vivo rat experiment	<p>1. To evaluate an appropriate analysis methodology and study the amount of FA and their relation to nutrition properties in rice.</p> <p>2. To evaluate the burning effects of RBO</p>	Able to make a standard methodology to analyze ferulic acid in rice and their relation to nutrition properties in rice.	500
	2.2: To Screening, Selection, and Training of Sensory Panelists	<p>1. To determine impairment of primary senses (color, vision, ageusia, and anosmia)</p> <p>2. To match test for taste and odor substances</p> <p>3. To ability to detect basic taste and odor acuity</p> <p>4. To determine the ability to characterize texture</p> <p>5. To evaluate performance in comparison with other candidates</p> <p>6. To increase the sensory acuity of panelists and provide them with a rudimentary knowledge of procedures used in sensory evaluation</p>	It will help to identify and measure the sensory attributes of interest and to relate quality indicators associated with the sensory attribute.	100
	2.3: A study on the different components of rice in relation to palatability	1. To identify the parameters of rice grain by comparing different components of rice samples responsible for palatability.	This study will help to identify which components are responsible for superior cooked rice taste in Bangladeshi people among	200

	2.4: The effect of fermentation on the nutritional and microbial changes in panta bhat	<ol style="list-style-type: none"> <li>1. To evaluate the nutritional properties of panta bhat</li> <li>2. To determine the starch digestibility and bioavailability of mineral content</li> <li>3. To evaluate the microbial properties and beneficial effect of panta bhat</li> </ol>	This study will help to comparison of nutritional properties between pantha bhat and freshly prepared cooked rice.	100
	2.5: Comparative study on rice bran oil (RBO) produced from BRRI varieties with existing RBO available in the market (Recommendation from BARC workshop-2021)	<ol style="list-style-type: none"> <li>1. To observe the chemical properties of RBO</li> <li>2. To analyze the FA profile, heavy metal and nutritional value of RBO</li> </ol>	Able to know the chemical, FA profile, Heavy metal and nutritional value of RBO.	100
	2.6: Assessment of heavy metals (Cd, Zn, Pb, Cr, As) in soil, water, and rice grain from industrial area (Dhaka, Gazipur, Narayangonj, Mymensingh, Narshindi etc.)	<ol style="list-style-type: none"> <li>1. To quantify heavy metals in soil, water, and rice grain.</li> <li>2. To identify area of rice field contaminated by industrial effluent water.</li> </ol>	The study would reveal elevated levels of heavy metals (Cd, Zn, Pb, Cr, As) in soil, water, and rice grain samples collected from industrial areas around Dhaka, Gazipur, Narayangonj, Mymensingh, Narshindi, and others indicating potential environmental contamination and food safety concerns.	100
	2.7: Standardization of in vitro Glycemic Index (GI) method to evaluate GI value of rice	<ol style="list-style-type: none"> <li>1. To standardize the in vitro GI method</li> <li>2. To assess the variability of GI value through in vitro starch digestibility of physicochemically different BRRI varieties</li> </ol>	This study will help to identify suitable method for easily evaluating the GI value of rice.	300
	2.8: Anthocyanin content, their antioxidant properties, and expression of anthocyanin biosynthetic pathway genes in pigmented Boro rice cultivars of Bangladesh	<ol style="list-style-type: none"> <li>1. To evaluate physicochemical properties and anthocyanin content in the pigmented traditional boro rice cultivars</li> <li>2. Analysis of expression of major genes (PAL, CHS, ANS) involved in anthocyanin biosynthetic pathway.</li> </ol>	Able to know the anthocyanin quantities in pigmented rice and also the expression of of major genes involved in anthocyanin biosynthesis pathway.	250

3.	<b>Commercial Rice-based Products</b>			
	3.1: Determination of physicochemical properties and nutritional quality of puffed, popped and flattened rice from BRRI varieties	1.To identify the physical quality of puffed, popped and flattened rice 2.To determine the nutritional value and heavy metals in puffed, popped and flattened rice	Able to know the physical and nutrition quality of puffed, popped and flattened rice.	750
	3.2: Survey on rice-based value-added products available in the market (Recommendation from BARC workshop-2022)	1.To find out BRRI varieties are used commercially for producing rice-based products 2.To analyze the nutritional quality of value-added rice-based products in the market	Identification and analysis of emerging trends and consumer preferences in the rice product industry, providing valuable insights for businesses and policymakers to enhance product development and market strategies.	300
	3.3: Formulation of rice-based foods supplemented with anthocyanin-enriched fermented rice bran	1.Physicochemical and biochemical characterization of pigmented anthocyanin rich rice varieties. 2.Genome sequencing and analysis of gene expression in the anthocyanin biosynthesis pathway in selected Bangladeshi rice varieties. 3. Formulation of anthocyanin-fortified rice-based bakery products with fermented rice bran	A total of 20 rice cultivars will be characterized by physicochemical, cooking, nutraceutical properties. 2. a total of five rice cultivars including three black rice, one red rice and one white rice will be selected for whole genome sequencing. 3. Formulation of anthocyanin-fortified rice-based bakery products with fermented rice bran for nutraceutical advantage.	GQN-KGF-OFANS Project Funded 2022-24 (3 years)
	3.4: Formulation of rice porridge	1.To estimate SDS, RDS, and RS 2.To estimate Na, K, Zn, Fe, and folic acid 3.Sensory evaluation	Recipe development of nutritious rice porridge	350
4.	<b>Remote Sensing in Precision</b>			

	<b>Agriculture</b>			
	4.1: Application of remote sensing in rice agriculture	1.To monitor crops at different growth stages. 2.To ensure effective crop management 3.To validate precision agriculture in rice cultivation	Able to monitor crops at different growth stage to ensure effective crop management and validate precision agriculture in rice	800
	<b>Program Area: Rice Farming Systems</b>			
	<b>Rice Farming Systems Division</b>			
1	<b>Survey</b>			
1.1	Characterization of farming system of Charlands	To characterize and generate information on the farming system and identify problem and prospects of Charlands in Noakhali, Barishal, Rangpur, Sirajganj, Faridpur and Bhola regions for exploring its opportunities of improvement	Farming system of Charlands in Noakhali, Barishal, Rangpur, Sirajganj, Faridpur and Bhola regions will be explored.	500
2	<b>Development of Cropping System and Component Technology for Favorable Ecosystem</b>			
2.1	Performance evaluation of four-cropped cropping pattern for irrigated medium high land ecosystem	i) To evaluate the agronomic and economic performance of four cropped cropping pattern ii) To assess the soil fertility and water requirement in different cropping patterns	Profitable four-cropped cropping pattern for irrigated medium high land ecosystem will be developed.	200
2.2	Performance evaluation of three-cropped cropping pattern for irrigated medium high land ecosystem	i) To evaluate the agronomic and economic performance of three cropped cropping pattern ii) To assess the soil fertility and water requirement in different cropping patterns	Profitable three-cropped cropping pattern for irrigated medium high land ecosystem will be developed.	300

2.3	Determination of optimum planting window of newly released rice varieties in Mustard-Boro-T. Aman cropping system	<ul style="list-style-type: none"> <li>i) To find out the suitable rice varieties for Mustard-Boro-T. Aman cropping pattern under different planting time</li> <li>ii) To find out the optimum sowing/planting window of mustard, Boro and T. Aman rice for Mustard-Boro-T. Aman cropping pattern</li> </ul>	Optimum planting time of newly released rice varieties in Mustard-Boro-T. Aman cropping system for obtaining maximum output will be identified.	200
2.4	Exploration of water logged wetland ecosystem through modification of land type for fish, vegetables and fruit production	<ul style="list-style-type: none"> <li>i) To bring up unproductive land to efficient production system</li> <li>ii) To find out suitable cropping cycle and economic return</li> <li>iii) To identify scope for increasing productivity by inclusion of high value fish and suitable vegetables and perennial fruit</li> </ul>	Productivity of unproductive land will be increased through by inclusion of high value fish and suitable vegetables and perennial fruit trees.	500
2.5	Land-Water interfacing with rice-fish-vegetables-fruit to intensify the system productivity	<ul style="list-style-type: none"> <li>i) To diversify and maximize production of pond-based farming system.</li> <li>ii) To improve nutritional level of consumers and increase farm income</li> </ul>	Production of pond-based farming system will be increased.	400
2.6	Transformation of waterlogged wetland into three-tier production system for integrated rice-fish, vegetables and fruit cultivation	<ul style="list-style-type: none"> <li>i) To increase productivity and production diversity through integrating rice-fish, vegetables and fruits</li> <li>ii) To meet up the nutritional requirements of the farm family and increase income</li> </ul>	Productivity of waterlogged wetland will be increased through integrating rice-fish, vegetables, and fruits.	300
2.7	Evaluation of newly released BRRI rice varieties under Boro -Fallow-T. Aman cropping pattern	i) To find out the suitable crop sequence with newly released BRRI rice varieties in Boro -Fallow-T. Aman cropping pattern	Suitable crop sequence with newly released BRRI rice varieties in Boro -Fallow-T. Aman cropping pattern will be identified.	200
2.8	Effect of fertilizer management of Boro rice in late situation under Potato -Boro -T. Aman cropping system	To compare the yield performance of Boro rice in late situation under different fertilizer management in Potato - Boro -T. Aman cropping pattern	Optimum fertilizer management for Boro rice in late situation in Potato - Boro -T. Aman cropping pattern will be found out.	250

2.9	Management of aged seedling to minimize the yield loss of T. Aman rice	To compare the yield performance of aged seedling of T. Aman rice through nitrogen fertilizer and crop management techniques	Optimum nitrogen fertilizer management for T. Aman rice will be determined.	250
2.10	Utilization of fallow land to intensify the single T. Aman area and boost up the productivity in the Sylhet region	To increase the system productivity and income of the farmers through introduction of site-specific improved cropping systems	Productivity of the single T. Aman are in the Sylhet region will be increased.	300
2.11	Development of four-cropped cropping pattern under irrigated ecosystem	To find out the most profitable and sustainable rice-based four cropped cropping pattern	Profitable and sustainable rice-based four cropped cropping pattern will be developed.	500
2.12	Long term evaluation of four cropped cropping pattern on crop productivity and soil health	i) To validate the profitable cropping pattern under farmer's field condition ii) To find out long term implications of four cropped cropping pattern	long term implications of four cropped cropping pattern under farmer's field condition will be evaluated.	300
2.13	Evaluation of crop productivity and soil health under conservation tillage system in Maize-Mungbean-T. Aman cropping pattern	To identify the extent of resource conservation and soil health by strip tillage system	Crop productivity and soil health under conservation tillage system in Maize-Mungbean-T. Aman cropping pattern will be evaluated.	200
2.14	Evaluation of zero tillage mustard-based cropping patterns in Barind Tract	To identify the profitable cropping pattern and extent of resource conservation for increasing the crop productivity	Profitable cropping pattern and extent of resource conservation for increasing the crop productivity in Barind Tract will be developed.	250
2.15	Productivity and Soil Health Evaluation of Exhaustive Cropping Patterns in Barind Region	To validate the profitable cropping patterns and to observe the soil health due to exhaustive cropping pattern	Productivity and Soil Health of exhaustive Cropping Patterns in Barind Region will be evaluated.	300
2.16	Varietal Improvement of Potato-Boro-T. Aman cropping pattern in Rajshahi region.	To find out the suitable varietal combination in Barind tract	Suitable varietal combination of Potato-Boro-T. Aman cropping pattern in Rajshahi region will be identified.	400
2.17	Evaluation of different Aman rice varieties under Wheat-Jute-T. Aman	i) To find out the suitability of newly released Aman rice varieties under	Suitable newly released Aman rice varieties under Wheat-Jute-T. Aman	500

	Aman cropping pattern in Faridpur region	Wheat-Jute-T. Aman cropping pattern ii) To increase the system productivity and farmers' income	cropping pattern in Faridpur region will be identified.	
2.18	Improvement of Boro-Fallow-Fallow cropping pattern through inclusion of B. Aman rice in Gopalganj District	To increase cropping intensity and productivity in Gopalganj District	Cropping intensity and productivity in Gopalganj District will be increased.	300
2.19	Year-round vegetables production under agro-forestry system with exotic date palm ( <i>Phoenix dactylifera</i> )	i) To utilize the fallow space under date palms ii) To ensure year-round vegetables supply to farm family ii) To increase whole farm productivity	Whole farm productivity will be improved by year-round vegetables production under agro-forestry system.	300
2.20	Interpolation of premium quality and nutrient enriched rice varieties in Existing Mustard-Boro-T. Aman cropping pattern	To increase system productivity and profitability of existing cropping system	system productivity and profitability of Mustard-Boro-T. Aman cropping pattern will be improved.	250
2.21	Evaluation of different rice-based cropping patterns under agro-forestry system with exotic date palm ( <i>Phoenix dactylifera</i> )	i) To ensure food sufficiency for farm family ii) To increase whole farm productivity	Suitable rice-based cropping patterns under agro-forestry system with exotic date palm ( <i>Phoenix dactylifera</i> ) will be developed.	300
2.22	Effect of early mustard harvesting on Boro rice transplanting time under Mustard-Boro-T. Aman Cropping System	i) To evaluate the early harvesting potentialities of HY mustard ii) To reduce the field duration of mustard iii) To ensure the close to optimum transplanting time of Boro rice iv) To increase total productivity of Mustard-Boro-T. Aman cropping pattern	Effect of early mustard harvesting under Mustard-Boro-T. Aman Cropping System will be evaluated.	500
2.23	Determination of optimum planting window of newly released T. Aman Rice varieties in Boro-Jute-T. Aman cropping pattern	To find out the effective rice varieties with appropriate planting time for increasing yield potential of T. Aman rice	Effective rice varieties with appropriate planting time for increasing yield potential of T. Aman rice in Boro-Jute-T. Aman cropping pattern will be identified.	500

2.24	Improvement of Boro-Fallow-T. Aman cropping pattern in Cumilla region	To increase cropping intensity and productivity through crop intensification in rice-based cropping system	Boro-Fallow-T. Aman cropping pattern in Cumilla region will be improved.	250
2.25	Varietal improvement of Boro-T. Aus-T. Aman cropping pattern in Cumilla region	To maximize the productivity and farm income	Productivity and farm income of Boro-T. Aus-T. Aman cropping pattern in Cumilla region will be increased.	300
<b>3.0</b>	<b>Development of Cropping System and Component Technology for Stress Prone Area</b>			
3.1	Intensification of Watermelon-Fallow-T. Aman cropping pattern by inclusion of Aus rice	i) To find out the suitable BRRI released rice varieties for Watermelon-T. Aus-T. Aman cropping pattern ii) To maximize the productivity and farm income	Suitable BRRI released rice varieties for Watermelon-T. Aus-T. Aman cropping pattern will be identified.	200
3.2	Optimizing of nitrogen management for Boro rice production in Rice-Fish non-saline gher-ecosystem	To find out the appropriate N dose for optimum Boro rice production in Rice-fish non-saline gher ecosystem	N dose for optimum Boro rice production in Rice-fish non-saline gher ecosystem will be determined.	200
3.3	Performance of saline tolerant BRRI rice varieties in the southern coastal saline gher-ecosystem	To find out the yield performance of BRRI released saline tolerant rice varieties in gher system	Performance of BRRI released saline tolerant rice varieties in gher system will be evaluated.	200
3.4	Ratooning ability of BRRI released Boro rice varieties for Barishal region in Boro-Fallow-T. Aman cropping pattern	i) To identify potential ratoon rice variety for Barishal region under tidal surge non saline ecosystem ii) To identify best fertilizer management under appropriate stem cutting for best ratoon rice crop iii) To intensify the land coverage and increase the productivity	Potential ratoon rice variety for Barishal region under tidal surge non saline ecosystem will be identified.	200
3.5	Suitable varietal combination for Fallow-T. Aus-T. Aman cropping	i) To identify potential Aus and Aman varieties at different inundation depth in	Potential Aus and Aman varieties at different inundation depth in Barishal	300

	pattern in Barishal region	Barishal region ii) To increase the rice productivity of Barishal region	region will be identified.	
3.6	Improvement of single T. Aman cropping pattern through inclusion of salt tolerant Boro rice variety in saline coastal area	i) To find out the suitable BIRRI released rice varieties for Fallow-Fallow-T. Aman cropping pattern ii) To maximize the productivity and income	Single T. Aman cropping pattern through inclusion of salt tolerant Boro rice variety in saline coastal area will be improved.	300
<b>4.0</b>	<b>Development of Cropping System Technologies for Hill Ecosystem</b>			
4.1	Exploring the hills for rice research: Feasibility study for exploring spring water for Boro cultivation	i) To explore available water resource (Chhara) in hilly areas ii) To expand Boro rice cultivation using low lift pump (LLP) for irrigation in Fallow-Fallow-T. Aman cropping pattern iii) To increase the overall rice production in hilly areas	Rice production in hilly areas will be increased.	350
4.2	Exploring the hills for rice research: Feasibility of Boro rice cultivation in fringe land at Rangamati district	To increase the Boro coverage across the fringe land by cultivation of different Boro rice varieties	Boro coverage across the fringe land by cultivation of different Boro rice varieties will be increased.	200
4.3	Improvement of Jhum production system through the introduction of modern HYV Aus varieties in hilly areas	To increase the system productivity through the introduction of modern HYV Aus varieties and to compare their performance with the local varieties in jhum culture	Jhum production system through the introduction of modern HYV Aus varieties in hilly areas will be improved.	250
4.4	Inclusion of mustard in Boro-Fallow-T. Aman cropping pattern in piedmont plain land	To increase the system productivity of Boro-Fallow-T. Aman cropping system by the inclusion of mustard.	System productivity of Boro-Fallow-T. Aman cropping system will be increased by the inclusion of mustard.	450
4.5	Intensification of Fallow-Fallow-T. Aman cropping pattern through the inclusion of modern Aus rice in piedmont plain hilly areas	To increase the system productivity of Fallow-Fallow-T. Aman cropping system by inclusion of Aus rice	System productivity of Fallow-Fallow-T. Aman cropping system will be increased by inclusion of Aus rice.	350

4.6	Fertilizer management in HYV Aus rice in Jhum cultivation system	i) To develop a suitable method of fertilizer application in HYV Aus under jhum cultivation ii) To increase fertilizer use efficiency through proper management	Suitable method of fertilizer application in HYV Aus under jhum cultivation will be identified.	250
<b>5.0</b>	<b>Validation and Delivery of Cropping System Technology</b>			
5.1	Validation and delivery of site-specific rice based improved cropping patterns in different agro ecosystem across the country	To increase the system productivity and income of the farmers through introduction of improved and intensified cropping systems	System productivity and income of the farmers will be increased through introduction of improved cropping systems.	500
5.2	Validation of pair row potato/pair row Maize-T. Aus-T. Aman cropping pattern in farmers' field	i) To validate the profitable cropping pattern under farmers field condition ii) To find out long term implications of four crop cropping pattern	Profitable Maize-T. Aus-T. Aman cropping pattern under farmers field condition will be developed.	300
5.3	Adaptability of Mustard-Boro-T. Aman cropping pattern in Rajshahi region	To disseminate and up-scaling the profitable cropping pattern and synchronize cultivation technique for increasing farm income and profitability	Profitable Mustard-Boro-T. Aman cropping pattern in Rajshahi region will be developed.	300
5.4	Varietal Improvement of Potato-Boro-T. Aman cropping pattern in Rajshahi region.	To find out the suitable varietal combination in Barind tract	Suitable varietal combination of Potato-Boro-T. Aman cropping pattern in Rajshahi region will be identified.	400
5.5	Validation and fine tuning of Lentil+Muskmelon-Jute-T. Aman cropping pattern in Faridpur region	To increase the system productivity and farmers' income	System productivity and farmers' income of Lentil+Muskmelon-Jute-T. Aman cropping pattern in Faridpur region will be increased.	400
5.6	Validation of Boro-deepwater Aman in the single Boro area of Faridpur region	To increase the system productivity and farmers' income	System productivity and farmers' income of Boro-deepwater Aman in the single Boro area of Faridpur region will be increased.	350

5.7	Improvement of existing Cropping pattern in Gopalganj District	To increase the productivity by improving the existing cropping pattern.	Productivity of existing Cropping patterns in Gopalganj District will be increased.	300
5.8	Validation of improved cropping pattern in Barishal region	To increase the system productivity in Barisal region	System productivity in Barisal region will be increased.	300
5.9	Field days and farmers' training on different farming systems activities	i) To motivate farmers for adoption of FSR technologies ii) To improve farmers' knowledge base on improved agricultural production system	farmers' knowledge base on improved agricultural production system will be improved.	1200
<b>6.0</b>	<b>Integrated Farming Systems</b>			
6.1	Development of Integrated Farming Systems for Different Farm Categories for Improving the Livelihoods of the Resource Poor Farm Household	i) To Improve the Livelihoods of the Resource Poor Farm Household	Livelihoods of the Resource Poor Farm Household will be improved.	
6.1.1	Monitoring the whole farm activities of intervened farmers	i) To determine the livelihood improvement of the farmers resulted from the intervention of farming systems technologies ii) To observe the resource flow in the selected farm family	Livelihood of the farmers resulted from the intervention of farming systems technologies will be improved.	1000
6.1.2	Integration of mustard/sunflower/pulses in the rice-based cropping system under different rice growing environments	i) To increase the system productivity by inclusion of mustard, sunflower and pulses in the existing cropping systems	System productivity by inclusion of mustard, sunflower and pulses in the existing cropping systems will be increased.	300
6.1.3	Promotion of improved cropping pattern packages	To increase the system productivity and income of the farmers through introduction of improved cropping patterns	System productivity and income of the farmers through introduction of improved cropping patterns will be increased.	300
6.1.4	Farmers' participatory evaluation of recently released BRRI varieties for	i) To find out the suitable T. Aman and Boro varieties for different rice growing	Suitable T. Aman and Boro varieties for Boro and T. Aman season of	200

	Boro and T. Aman season	ecosystems ii) To disseminate these varieties for achieving higher production over the existing varieties	different rice growing ecosystems will be identified.	
6.1.5	Farmers' participatory quality seed production of recently released BRRI varieties for Boro and T. Aman season	i) To demonstrate the quality seed production technique of rice at farm level ii) To expedite the delivery systems of good quality seeds among the farmers'' community	Quality seed production of recently released BRRI varieties for Boro and T. Aman season at farmers level will be increased.	200
6.1.3	Promotion of improved cropping pattern packages	To increase the system productivity and income of the farmers through introduction of improved cropping patterns	System productivity and income of the farmers through introduction of improved cropping patterns will be increased.	300
6.1.4	Farmers' participatory evaluation of recently released BRRI varieties for Boro and T. Aman season	i) To find out the suitable T. Aman and Boro varieties for different rice growing ecosystems ii) To disseminate these varieties for achieving higher production over the existing varieties	Suitable T. Aman and Boro varieties for Boro and T. Aman season of different rice growing ecosystems will be identified.	200
6.1.5	Farmers' participatory quality seed production of recently released BRRI varieties for Boro and T. Aman season	i) To demonstrate the quality seed production technique of rice at farm level ii) To expedite the delivery systems of good quality seeds among the farmers'' community	Quality seed production of recently released BRRI varieties for Boro and T. Aman season at farmers level will be increased.	200
	<b>Program Area: Crop Soil Water Management</b>			
	<b>Agronomy Division</b>			
	<b>Planting Practices</b>			
1.1	Effect of time of planting of newly developed BRRI varieties in	1. To find out the suitable time of planting of different popular varieties	The optimum time of planting of newly developed BRRI varieties in	400

	different regional stations	in different R/S 2. To find out the cut of transplanting dates for different varieties 3. Yield loss assessment due to delay planting	different regional stations will be developed	
2	<b>Fertilizer Management</b>			
2.1	Yield loss assessment due to omission of N at certain growth stage of rice	To assess yield loss of rice due to improper N application	The yield loss of rice due to improper N application will be identified	200
2.2	Performance evaluation of Zeba coated urea (ZCU) on nutrient uptake, nitrogen use efficiency and grain yield of transplanted rice	To evaluation the effect of Zeba coated urea (ZCU) on nutrient uptake, nitrogen use efficiency and grain yield of transplanted rice	The effect of Zeba coated urea (ZCU) on nutrient uptake, nitrogen use efficiency and grain yield of transplanted rice will be developed	300
3	<b>Weed Management</b>			
3.1	Effect of adding urea with herbicides for controlling weeds and the growth and yield of transplanted rice	To find out the effect of urea mixing with commonly used herbicides on weed control efficiency and the growth and yield of transplanted rice	The fate of urea mixing with commonly used herbicides will be explored	200
4	<b>Yield Maximization</b>			
4.1	Effect of different yield goal levels agronomic factors-based managements on lodging behavior of BRRI developed T. Aman and Boro varieties	1. To study the effect of agronomic factors-based managements on varietal lodging behavior at different yield goal level 2. To recommend the judicial management protocol for sustainable yield of different variety	The judicial management protocol for sustainable yield of different variety will be developed	200
5	<b>Soil Health Improvement</b>			
5.1	Changes in soil microbial community and activity caused by application of Bispyribac Sodium	1. To evaluate the changes in the microbial community (genus & species level) and activity after the application of Bispyribac	The changes in the microbial community (genus & species level) and activity after the application	400

	and Bensulfuran methyl + acetaclor	Sodium and Bensulfuran methyl + acetaclor 2. To investigate the microbial population shifting during the rice growth period	herbicide will be identified	
5.2	Effect of herbicides on soil microbial community, soil fertility and enzyme activity	1. To characterize the herbicide-induced responses of microorganisms in transplanted rice 2. To examine the influence of herbicides on soil fertility and enzyme activity of soil microbes	The influence of herbicides on soil fertility and enzyme activity of soil microbes will be identified	300
6	<b>Precision Agriculture</b>			
6.1	Precision Agriculture management techniques for sustainable rice production	1. To improve rice yield and grain quality, reducing input costs and environmental impact, and increasing efficiency and sustainability of the production process. 2. The overall objective is to improve the competitiveness of rice production, while ensuring the sustainability of the agricultural ecosystem	The sustainable rice production techniques using precision agriculture will be developed.	900
	<b>Soil Science Division</b>			
1	<b>Fertility Assessment of Rice Soils and Nutrient use efficiency in rice</b>			
	1.1 Improvement of rice yield and N use efficiency through nano technology	<ul style="list-style-type: none"> <li>To assess yield and N use efficiency by urea-HA nano hybrid and natural zeolite plus prilled urea (PU) over PU</li> </ul>	Nitrogen use efficient Technology	5.0
	1.2 Screening of N use efficient rice genotypes	<ul style="list-style-type: none"> <li>To find the N use efficient genotypes</li> <li>To find the agronomic traits related to efficient N management</li> <li>GWA mapping of selected NUE lines</li> </ul>	Nitrogen efficient rice genotypes	Funded by UKRI GCRF SANH Project

1.3 Management interventions to improve NUE and reduce N losses in typical rice cropping system of Bangladesh	<ul style="list-style-type: none"> <li>• To quantify the fate of N fertilizer (crop, soil and losses) and NUE under various N managements for double rice cropping.</li> <li>• To develop locally based mitigation options that can be compared within plot-based experiments.</li> </ul>	Technology N loss mitigation and increase of NUE	Funded by UKRI GCRF SANH Project
1.4 Nitrogen response to drought tolerant ALART material in T. Aman season	<ul style="list-style-type: none"> <li>• To find out the optimum doses of N for drought tolerant ALART materials</li> </ul>	Optimum N recommendations for drought tolerant breeding lines will be developed.	2.0
1.5 Nitrogen response to submergence tolerant ALART material in T. Aman season	<ul style="list-style-type: none"> <li>• To find out the optimum doses of N for submergence tolerant ALART materials</li> </ul>	Optimum N recommendations for submergence tolerant breeding lines will be developed.	2.0
1.6. Determination of nitrogen doses for modern rice varieties	<ul style="list-style-type: none"> <li>• To identify optimum nitrogen dose for MV rice</li> </ul>	Optimum N recommendations for new rice variety will be developed.	2.0
1.7. Phosphorus response study of newly released rice varieties	<ul style="list-style-type: none"> <li>• To investigate the performance of MV rice under deficient soil P levels</li> </ul>	P efficient rice genotypes will be identified	2.0
1.8. Effect of nitrogen and potassium rates on modern rice cultivation	<ul style="list-style-type: none"> <li>• To find out the suitable combination of N and K for MV rice cultivation</li> <li>• To study the N and K dynamics in soil and plant</li> </ul>	A suitable combination of N and K for improved rice production.	4.0
1.9. Effect of Crop residues retention on soil physicochemical properties after six cycles of four crops cropping	<ul style="list-style-type: none"> <li>• To assess the changes in soil total C and N, exchangeable K, available P, S and Zn, etc. after six crop cycles.</li> <li>• To assess the changes in bulk density, percent sand, silt and clay</li> </ul>	Soil health improving technology for intensive cropping will be developed	2.0

	1.10. Effect of Phosphatic fertilizers on growth, yield and economics of wetland rice	<ul style="list-style-type: none"> <li>• To find out the right P source on growth and yield of rice</li> <li>• To observe the residual effect of P in the succeeding rice crop &amp;</li> <li>• To compare the economics of P fertilizers in rice production</li> </ul>	Right source of P fertilizer to be chosen based on recovery and use efficiency of P as well as improved rice yield.	2.0
	1.11. Effect of long-term rice farming on the changes in soil nutrient status in different The soil profile of BRRI Farm	<ul style="list-style-type: none"> <li>• To determine the changes that occurred in soil carbon and plant nutrient status of BRRI farm soil</li> <li>• To develop a soil fertility map</li> <li>• To devise a nutrient dynamics model to estimate the nutrient status on long term basis</li> </ul>	Soil fertility map and nutrient recommendations for BRRI farms under changing farm practices will be developed	2.0
2.	<b>Identification and management of the nutritional disorder</b>			
	2.1. Long-term effect of organic and inorganic nutrients on yield and yield trend of lowland rice	<ul style="list-style-type: none"> <li>• To evaluate changes in soil physical, chemical and biological properties</li> <li>• To determine management options for solution of soil problem(s)</li> </ul>	Increased yield and soil health maintenance through balanced fertilization	2.0
	2.2. Long-term missing element trial at BRRI regional station	<ul style="list-style-type: none"> <li>• To determine the nutrient mining problem on soil fertility and its influence on rice yield</li> <li>• To find out nutrient management options for correcting soil problems</li> </ul>	Nutrient supplying capacity of BRRI R/S soils will be determined.	3.0

	2.3. Effect of intensive rice cropping on rice yield under continuous wetland condition	<ul style="list-style-type: none"> <li>• To evaluate soil fertility and rice yield changes over time</li> <li>• To find out mitigation options for soil health</li> </ul>	The consequences of intensive cropping under continuous wetland conditions will be evaluated.	1.2
	2.4. Carbon and nitrogen fractions and stocks under continuous wetland conditions in intensive rice cropping	<ul style="list-style-type: none"> <li>• To study the long-term effects of different inorganic fertilizer applications on different fractions of SOC and soil N</li> <li>• To estimate the effect of long-term chemical fertilizer on changes in C &amp; N in intensive rice cropping</li> </ul>	Carbon and nitrogen stock in soil under continuous rice crop will be quantified	1.0
	2.5. Study the phosphorus fractions from Long-term phosphorus experiment	<ul style="list-style-type: none"> <li>• To find out the different P fractions in long-term P application</li> <li>• To identify the mining nutrient</li> <li>• To determine the N-P, N-K, P-K, P-Zn ratio in soil</li> <li>• To maintain soil fertility</li> </ul>	Changes of soil P over long-term P application in rice-rice cropping pattern will be identified.	1.5
	2.6. Development of nutrient management packages through Artificial Intelligence using a Drone	<ul style="list-style-type: none"> <li>• To identify the nutrient requirement through analyzing the plant image of aerial photography</li> <li>• To correlate the image results with current plant nutrient content</li> <li>• To develop a proper nutrient requirement package for rice</li> </ul>	Development of precise nutrient recommendations for rice through image analysis.	2.0

	2.7. Changes in soil fertility of long-term missing element trial	<ul style="list-style-type: none"> <li>• To maximize rice yield</li> <li>• To identify the mining nutrient</li> <li>• For maintaining soil fertility</li> </ul>	Yield-limiting fertility factors of rice crop will be identified for better soil management.	1.5
	2.8. Effect of Added Zinc on BRRRI Zinc-Enriched Rice Varieties	<ul style="list-style-type: none"> <li>• To increase rice yield</li> <li>• To increase Zn uptake by grain</li> <li>• To improve grain quality</li> </ul>	Improved yield and grain quality of Zn-enriched rice varieties.	0.5
3.	<b>Integrated nutrient management for intensive rice cropping</b>			
	3.1. Integrated nutrient management for double and triple rice cropping for maximizing productivity	<ul style="list-style-type: none"> <li>• to improve land productivity and soil health under an intensive cropping system.</li> </ul>	Rice yield improvement through nutrient management under intensive cropping.	2.0
	3.2. Soil Management to maximize the yield of newly released rice varieties	<ul style="list-style-type: none"> <li>• To maximize rice yield through organic and inorganic amendments while maintaining soil health in BRRRI farm</li> </ul>	Development of soil management practices for maximizing rice yield.	4.0
	3.3. Estimation of C and N flows in a village and developing methods to improve soil C and N within the system	<ul style="list-style-type: none"> <li>• To estimate major C and N flows in a village</li> <li>• To develop treatments to improve soil C stock and N use efficiency in the farming system</li> </ul>	Major C and N flows in a village will be quantified to improve soil C stock and NUE in the farming system.	5.0
	3.4. Good Agriculture Practices (GAP) to Increase Rice Productivity	<ul style="list-style-type: none"> <li>• To obtain quality and safe rice</li> <li>• To sustain crop yield</li> <li>• To maintain soil health &amp; minimize</li> </ul>	Development of technologies for safe rice production, maintenance of soil health and minimize environmental pollution.	5.0

		environmental pollution		
4.	<b>Soil and Environmental problem</b>			
	4.1. Effect of biochar on rice yield and soil health on problem soils	<ul style="list-style-type: none"> <li>• Optimum rate of biochar for rice cultivation in Charland soil</li> <li>• Increased rice yield and improved soil health</li> </ul>	Increasing rice yield in charland through biochar management	2.0
	4.2. Effects of fertilizer and varietal management on absorption and mitigating greenhouse gas emissions from rice cultivation in South-western coastal ecosystems	<ul style="list-style-type: none"> <li>• To quantify GHG absorption and emissions from rice fields under different fertilizer and varietal management</li> <li>• To develop technology for increased crop productivity with reduced negative environmental impacts.</li> <li>• To develop country-specific Emission Factors and national GHG inventory</li> </ul>	Technology for increased crop productivity with reduced negative environmental impacts will be developed.	GoB ADP Program
	4.3. Saline Soil Management through organic & inorganic amendment & surface drainage	<ul style="list-style-type: none"> <li>• To investigate the effectiveness of organic &amp; inorganic amendments along with shallow surface drain in mitigating soil salinity &amp; increasing rice yield</li> </ul>	Improved technology development for the management of saline soil while sustaining rice yield.	1.5
	4.4. Effect of Zeolite & Silicon application on saline soil management in Rice cultivation	<ul style="list-style-type: none"> <li>• To mitigate the effects of salinity by applying zeolite and silicon for improvement of fertilizer use efficiency in saline condition</li> </ul>	GHG emissions will be quantified from rice fields with different fertilizer management, particularly Zeolite application and their upscaling in different agroecological zones.	1.0

	4.5. Management intervention for mitigation of carbon emission and determination of <b>C absorption</b> in the rice-based cropping system	<ul style="list-style-type: none"> <li>• To assess the GHG</li> <li>• To determine Net carbon balance (Emission and absorption)</li> </ul>	Technology for increased crop productivity and mitigating C emission will be developed.	JIRCAS
5.	<b>Soil Microbiology and Biofertilizer</b>			
	5.1. Evaluation of bio-organic fertilizer for the improvement of rice yield and soil health	<ul style="list-style-type: none"> <li>• To evaluate the efficacy bio-organic fertilizer for growth and yield of rice.</li> <li>• To assess the impact of bio-organic fertilizer on soil health.</li> </ul>	The efficacy bio-organic fertilizer for growth and yield of rice will be evaluated.	5.0
	5.2. Microbial characterization of different AEZs soil	<ul style="list-style-type: none"> <li>• To characterize potential plant growth promoting bacteria (PGPB)</li> <li>• To develop bio-fertilizer using potential microbes for rice cultivation in acid and saline soil</li> </ul>	Characterization of plant growth promoting bacteria to develop bio-fertilizer.	5.0
	5.3. Bio-Coated Urea: a new approach to improve N fertilizer use efficiency (NUE) and crop yield	<ul style="list-style-type: none"> <li>• To formulate a bio-coated urea and Bio-coated TSP fertilizer</li> <li>• To determine its efficacy in soil-plant system</li> </ul>	A bio-coated urea fertilizer with higher efficiency will be formulated.	3.0
	5.4. Isolation and Screening of Methane Degrading Bacteria	<ul style="list-style-type: none"> <li>• Isolation and identification of indigenous potential methanotrophs from paddy field</li> <li>• Determination of methane oxidation capability of the isolates</li> </ul>	Potential methane degrading bacteria (methanotrophs) of rice field will be isolated to reduce global warming problem.	3.0
	5.5. Soil microbial community structure and enzyme activity under intensive continuous wet	<ul style="list-style-type: none"> <li>• To study the long-term effect of different inorganic fertilizer management on soil microbial</li> </ul>	The soil factors that influence the soil microbial community structure and enzyme activities will be quantified.	2.0

	land rice cropping system	community structure and enzyme activities.  • To determine the soil factors that influence the soil microbial community structure and enzyme activities		
	<b>Irrigation and Water Management Division</b>			
1.	<b>Improvement of Water Use Efficiency in Irrigated Agriculture</b>			
1.1	Determination of Physical and Hydraulic Properties of Different Soil Types (2015 to be conitued)	<ul style="list-style-type: none"> <li>• To determine important physical properties (bulk density, particle density, infiltration rate, hydraulic conductivity, soil-water retention, etc.) of root zone soil</li> <li>• To develop soil-water retention/characteristics curves</li> <li>• To determine parameters of soil-water retention function</li> </ul>	<ul style="list-style-type: none"> <li>• Documentation of important soil physical properties for improved water management</li> <li>• Generation of data bank for utilization in crop modeling</li> </ul>	100
1.2	Development of an Automated and IoT based procession irrigation system using multiple sensors and automatic control gates. (2024-2028)	<ul style="list-style-type: none"> <li>•To develop a sensor and IoT-based smart irrigation system for controlling water application in a plot as well as in the whole command area</li> <li>•To improve the water use efficiency and water productivity in rice cultivation <ul style="list-style-type: none"> <li>• To develop a user-friendly irrigation saving technologies for the farmers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• An automated and user-friendly water saving technology for rice</li> <li>• Increased water use efficiency and water productivity</li> </ul>	300
1.3	Study on Water-Stress Tolerance for Different Advanced Rice Genotypes of BRRI (2015 to be	<ul style="list-style-type: none"> <li>• To quantify water-stress tolerance capacity for different rice varieties</li> </ul>	<ul style="list-style-type: none"> <li>• Scaling of water-stress tolerance capacity (WSTC) of each variety</li> </ul>	100

	contined)	<ul style="list-style-type: none"> <li>To determine yield of the rice varieties under different water-stress conditions</li> </ul>	<ul style="list-style-type: none"> <li>Easy scheduling of irrigation based on WSTC</li> <li>Additional information for cultivation of a newly released variety</li> </ul>	
1.4	Performance Evaluation of the Proposed Rice genotypes Under Different Water Regimes (2019 to continued)	<ul style="list-style-type: none"> <li>To study performance of the proposed rice varieties under different water regimes</li> <li>To evaluate suitable water regimes for proposed lines/varieties of rice</li> </ul>	<ul style="list-style-type: none"> <li>Determination of water stress tolerance capacity of proposed lines/variety</li> <li>Water management package identification for specific variety</li> </ul>	200
1.5	Optimization of Water Use Efficiency Through Subirrigation in Bangladesh (2021 to 2026)	<ul style="list-style-type: none"> <li>To increase water use efficiency in crop cultivation</li> <li>To design and installation of subirrigation system</li> <li>To evaluate the performance of sub-irrigation system in transplanted rice field</li> </ul>	<ul style="list-style-type: none"> <li>Feasibility of subirrigation system in rice cultivation</li> <li>Increased water use efficiency and water productivity</li> </ul>	300
1.6	Feasibility of Mini-Sprinkler Irrigation System in Transplanted Rice in Bangladesh	<p>To increase water use efficiency in crop cultivation</p> <p>To evaluate the performance of sprinkler irrigation system in transplanted rice field</p>	Feasibility of sprinkler irrigation system in rice cultivation	300
1.7	Determining Minimum Irrigation Water Requirement of Rice at Different Regions of Bangladesh through Water Balance from On-Farm Demand and Model Simulation	<ol style="list-style-type: none"> <li>To measure minimum water requirement for rice irrigation at different regions</li> <li>To measure yield response of rice to irrigation application base on on-farm demand and simulated irrigation requirement</li> <li>To figure out variation in irrigation water requirements among different</li> </ol>	<ul style="list-style-type: none"> <li>The growth and decline of irrigation water for delayed transplanting of Boro rice</li> <li>Optimim transplanting window for maximum rainfall utilization and reduction in GW abstraction</li> </ul>	300

		treatments		
1.8	Impact of Different Perched Water Level on Yield Performance, Water Use and Grain Nutritional Quality of Rice	<ol style="list-style-type: none"> <li>To assess the water use in different growth stages in relation to various water treatments</li> <li>To assess the grain nutritional quality pattern in rice at different perched water levels</li> </ol>	Effect of different parched water level in grain quality and yield performance	200
1.9	Real-time Monitoring System for Salt Dynamics in Different Textured Soils by Using Internet-of-Things (IoT) (2023-2025)	<ul style="list-style-type: none"> <li>To develop a IoT based procedure for monitoring salt dynamics in soils, and</li> <li>To monitor salt movements during salinization and desalinization processes in 3 different textured soils under saturated/unsaturated conditions</li> </ul>	<ul style="list-style-type: none"> <li>A real time soil salinization and desalinization monitoring system will be developed based on IoT.</li> <li>These features will provide an integrated solution that can facilitate the monitoring and prevention of soil salinization in coastal regions</li> </ul>	200
1.10	Performance Evaluation of Smart Card Operated Irrigation Management of Rice Field in Muhuri Project Areas of Feni District (2023-2026)	<ul style="list-style-type: none"> <li>To optimize the use of water for irrigation applying smart card technique</li> <li>To reduce energy cost compared to farmer's traditional management practices</li> <li>To evaluate a cost-benefit analysis of the different irrigation methods</li> </ul>	To increase average water use, reduce water required /Kg of Boro rice production, increase yield avg. yield, reduce irrigation Cost, increase avg. earning /Ha. of Boro rice cultivation.	300
1.11	Assessment of Available Water Resources for Bringing Fallow Lands Under Cultivation in Sylhet and Habiganj (2023-2025)	<ul style="list-style-type: none"> <li>To quantify the fallow land amount in Sylhet and Habiganj</li> <li>To identify water sources and estimate available water resources</li> <li>To figure out a suitable way for irrigating fallow lands</li> </ul>	A working guideline for increasing irrigated cropping area in Habiganj and Sylhet region could be carried out.	100
1.12	Increasing Land Productivity in Valley Area of Hilly Region	<ul style="list-style-type: none"> <li>To conserve water from hilly stream near valley in dry season</li> </ul>	<ul style="list-style-type: none"> <li>Irrigation facility development using nearby water sources will</li> </ul>	150

	Through Integrated Minor Irrigation System (2023-2026)	<ul style="list-style-type: none"> <li>To develop appropriate water distribution and application systems for irrigating valley land</li> <li>To bring fallow lands under rice or rabi crop cultivation</li> </ul>	increase the cropping intensity and land productivity in valley areas of hilly regions.	
1.13	Sensor-Based Soil Moisture Tracking for Varying Water Level in Paddy Field (2023-2026)	<ul style="list-style-type: none"> <li>To calibrate soil moisture sensors with observed lab and field data</li> <li>To monitor and record continuous soil moisture data over the season</li> <li>To figure out soil moisture dynamics with water level depletion</li> </ul>	<ul style="list-style-type: none"> <li>Precise soil moisture relationship with shallow water table and its effect on crop yield could be identified.</li> </ul>	500
2.	<b>Utilization of Water Resources in Rainfed Environment</b>			
2.1	Agricultural drought forecasting for mitigating drought in T. Aman rice (2021-2025)	<ul style="list-style-type: none"> <li>To validate drought by using forecasted rainfall and evaporation</li> <li>To mitigate drought by applying supplemental irrigation</li> <li>To determine suitability of drought model for forecasting, and</li> <li>To determine yield performance after mitigating drought</li> </ul>	<ul style="list-style-type: none"> <li>Drought tolerance ability of BRRIdhan71 will be identified for Kushtia region.</li> <li>Effect of supplemental irrigation on yield and yield contributing parameters of BRRIdhan71 will be quantified.</li> </ul>	
2.2	Irrigation Scheduling of Rice ( <i>Oryza sativa</i> L.) Based on Weather Forecasting in Gazipur (2020-2025)	<ul style="list-style-type: none"> <li>To predict water demand through water balance simulation model for rice cultivation</li> <li>To compare performance of water balance simulation model with AWD and conventional methods</li> <li>To validate water balance simulation model with CROPWAT 8.0 model</li> <li>To recommend the better method for irrigation scheduling of rice</li> </ul>	<ul style="list-style-type: none"> <li>Irrigation water requirement determination through weather forecasting</li> <li>Better method for irrigation scheduling</li> </ul>	

<b>3.</b>	<b>Land Productivity Improvement in the Coastal Environment</b>			
3.1	Assessment of Water Resources Availability Suitable for Irrigation to Increase Crop Production in Tidal Areas of Barisal Region (2025 to be continued)	<ul style="list-style-type: none"> <li>• To monitor dynamic temporal variation of surface water salinity in the dry season at different locations of Barisal region</li> <li>• To assess constrains and prospects of tidal water utilization for irrigated crop cultivation</li> <li>• To assess availability of water and potentials for irrigated crop cultivation</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of suitable water in terms of salinity for irrigation at different distances from the coast towards the upstream</li> <li>• Guidelines for productivity improvement through assessment of available suitable water resources for irrigation</li> </ul>	100
3.2	Water Resources Assessment During Dry Season Crop Cultivation in Selected Polders of Coastal Region (2017-2026)	<ul style="list-style-type: none"> <li>• To delineate suitable water resources during dry season</li> <li>• To determine the amount of fresh water available for crop production during dry period</li> <li>• To assess cultivable area used for different cropping patterns based on water resources</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of suitable water in rivers and canals in dry season</li> <li>• Productivity improvement through assessment of available suitable water resources for irrigation</li> </ul>	100
3.3	Saline Water Irrigation Strategies for Boro Rice Cultivation in The Coastal Saline Area	<ol style="list-style-type: none"> <li>1. To find out the saline water irrigation management options for Boro rice cultivation</li> <li>2. To assesses the response of rice growth and yield to saline water irrigation</li> <li>3. To quantify the ionic stress on plant shoot and root under saline water treatments</li> </ol>	<ul style="list-style-type: none"> <li>• Saline water irrigation management options for rice production in the saline area</li> <li>• Salt-sensitvity at different growth stages of Boro rice under clay textured soil</li> </ul>	400
3.4	Impact of Saline Water Irrigation and Rice Straw and Gypsum Amendment on Soil Physicochemical Properties and	<ul style="list-style-type: none"> <li>• To evaluate the effect of rice straw and gypsum incorporation and saline water irrigation on soil physical and chemical properties</li> </ul>	<ul style="list-style-type: none"> <li>• Ameliorate of the harmful effect of salinity and improve soil properties</li> <li>• Sustainable use of saline water</li> </ul>	100

	Rice Yield in The Coastal Saline Area (2021-2025)	<ul style="list-style-type: none"> <li>To find out the effect of rice straw and gypsum amendment on rice growth and yield in the saline area</li> <li>To find out the sustainable saline water irrigation for rice cultivation in the coastal area</li> </ul>	irrigation for rice cultivation in the coastal area	
4.	<b>Sustainable Management of Water Resources</b>			
4.1	Monitoring Groundwater Level Fluctuation and Safe Utilization of Groundwater in Different Geo-Hydrological Regions (1779 to be continued)	<ul style="list-style-type: none"> <li>To determine fluctuation of groundwater level over time and its relationships with rainfall</li> <li>To determine water quality for assessing its suitability for irrigation</li> </ul>	<ul style="list-style-type: none"> <li>Known dynamic behavior of groundwater level in different regions of Bangladesh</li> <li>Awareness development for judicious use of groundwater resources</li> </ul>	100
4.2	Evaluation of Available Groundwater Resources for Sustainable Crop Production in Selected Locations of Bangladesh	<ol style="list-style-type: none"> <li>To evaluate fluctuation pattern of GWL</li> <li>To determine the GWL depletion trend</li> <li>To assess the GW recharge pattern through model study</li> <li>To recommend the safe use of GW in study locations</li> </ol>	<ul style="list-style-type: none"> <li>Withdrawal and recharge pattern of groundwater</li> <li>Safe groundwater withdrawal level</li> </ul>	200
4.3	Assessment of Surface and Groundwater Quality for Irrigation in Selected Locations of Bangladesh (2029-2025)	<ul style="list-style-type: none"> <li>To determine the surface and groundwater quality parameters</li> <li>To determine the suitability of groundwater for irrigation</li> </ul>	<ul style="list-style-type: none"> <li>Safe irrigation water sources identification</li> </ul>	150
4.4	Reuse of Domestic Household Water for Crop Production at BRRF farm, Gazipur	<ol style="list-style-type: none"> <li>To find out the quality of domestic wastewater for irrigation</li> <li>To assess the opportunities of domestic wastewater for irrigation</li> </ol>	<ul style="list-style-type: none"> <li>BRRF residential area wastewater can be reused for irrigation purpose</li> <li>Groundwater withdrawal for irrigation can be reduced</li> </ul>	300
4.5	Assessing On-farm Water-use Efficiency of BRRF Research Farm,	<ol style="list-style-type: none"> <li>To find out present irrigation management status of BRRF farm</li> </ol>	<ul style="list-style-type: none"> <li>Plan to improve water use efficiency of BRRF farm, Gazipur</li> </ul>	100

	Gazipur	<ol style="list-style-type: none"> <li>2. To measure seasonal water requirement and water withdrawal for rice cultivation</li> <li>3. To suggest plan for efficient irrigation management plan for BRRI farm.</li> </ol>		
4.6	Present Status and Potentiality for Increasing Rice Cultivation in Surface Water Irrigation Projects of Bangladesh (2021-2025)	<ul style="list-style-type: none"> <li>• To determine the present status of major irrigation projects</li> <li>• To identify the problems of command area increasing</li> <li>• To figure out the improvement options for surface water utilization</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement options of surface water irrigation project</li> </ul>	100
4.7	Groundwater Use Potential for Supplemental Irrigation for Boro Rice Production in the Haor Areas (2022-2025)	<ul style="list-style-type: none"> <li>• To assess the groundwater availability for Boro rice cultivation</li> <li>• To install tubewell for irrigation development</li> <li>• To reduce yield loss due to water stress at the later stage of Boro rice</li> <li>• To assess potential command area for the installed STW</li> </ul>	<ul style="list-style-type: none"> <li>• To increase productivity by mitigating water stress at the reproductive phase of rice</li> </ul>	500
4.8	Effectiveness of Surface Laid PVC Pipe Irrigation for Boro Rice Cultivation in The Haor Areas (2022-2025)	<ul style="list-style-type: none"> <li>• To develop a portable water conveyance system under undulating condition of haor areas</li> <li>• To minimize irrigation water loss in distribution systems of the LLP schemes</li> <li>• To increase irrigation coverage per unit time</li> </ul>	<ul style="list-style-type: none"> <li>• To increase crop coverage by improving irrigation facilities for Boro production</li> </ul>	200
4.9	Conjunctive Use of Wastewater and Fresh Water for Irrigation in Boro Rice Cultivation	<ol style="list-style-type: none"> <li>1. To determine suitability of different types of wastewater for Boro rice cultivation.</li> <li>2. To analyze rice grain sample for heavy metal uptake.</li> </ol>	<ul style="list-style-type: none"> <li>• Suitability of wastewater as a source of irrigation</li> </ul>	100

5.	<b>Utilization of Renewable energy</b>			
5.1	Development of A Low-Cost DC Solar Water Pump for Irrigation in Bangladesh (2019-2025)	<ul style="list-style-type: none"> <li>• To use a permanent magnet brushless DC motor for operating solar water pump</li> <li>• To find out optimum panel size for good matching between pump and PV module</li> <li>• To test efficacy of the pump for surface water irrigation</li> <li>• To determine economic feasibility of the pump for rice cultivation</li> </ul>	<ul style="list-style-type: none"> <li>• Optimum panel and pump size</li> <li>• Suitability for rice irrigation</li> <li>• Environment friendly technology</li> </ul>	150
5.2	Feasibility Assessment of Solar Pump Utilization for Irrigation Purpose in Chattogram Region (2021-2025)	<ul style="list-style-type: none"> <li>• To evaluate the present status of solar pumps at field conditions in Chattogram region</li> <li>• To find out the suitable source of water for solar pumping system</li> <li>• To assess the suitability of solar pump system at Chattogram region</li> </ul>	<ul style="list-style-type: none"> <li>• Present irrigation scenario, sources of irrigation water and energy for irrigation pumps</li> <li>• Suitability to use of solar energy in irrigation</li> </ul>	100
6.	<b>Climate Change Impact Assessment and Adaptation Techniques Development</b>			
6.1	Effect of Irrigation Suspension on Mitigating Greenhouse Gas Emission in Irrigated Rice Cultivation	<ol style="list-style-type: none"> <li>1. To determine irrigation requirement and yield of Boro rice under varying practices</li> <li>2. To assess irrigation suspension practices on reducing global warming potential</li> </ol>	<ul style="list-style-type: none"> <li>• Suitable water management option in Boro rice cultivation for reducing GHG emission</li> </ul>	50
7.	<b>Technology Validation in the Farmers' Field</b>			
7.1	Modeling Climate Change Impact on Agriculture and Developing Mitigation and Adaptation Strategies for Sustaining	1. Assessment and characterization of climatic variability, vulnerability, and extreme events for agri-production under climate change		

	Agricultural Production in Bangladesh			
7.2	Intervention in Surface Water Utilization Through Integrated Minor Irrigation Schemes for Escalating Water and Land Productivity in Coastal Region (ISIMISC)	<ol style="list-style-type: none"> <li>1. Expansion of Boro rice cultivation in selected area utilizing less saline surface water.</li> <li>2. Assessment of suitable water resources for crop planning in selected polders.</li> <li>3. Increasing water use efficiency by adopting on-farm water saving technologies.</li> </ol>		
7.3	Upscaling of Improved Water Management Practices for Sustainable Productivity in the Haor areas (2022-2025)	<ul style="list-style-type: none"> <li>• To document the existing agricultural water management practices for identifying problems and potential to attain higher productivity in the haor areas.</li> <li>• To assess the effect of water stress on the yield of Boro rice and find suitable measures to overcome the problem.</li> <li>• To demonstrate performance of suitable water management technologies for the improvement of irrigation efficiency and optimum crop yield; and</li> <li>• To explore the possibility of increasing crop production by further irrigation expansion.</li> </ul>	<ul style="list-style-type: none"> <li>• Crop and land productivity will be improved</li> </ul>	5825
7.4	Mitigating Risk and Scaling-Out Profitable Cropping System Intensification Practices in the Salt-Affected Coastal Zones of the Ganges Delta (2021-2025)	<ul style="list-style-type: none"> <li>• Scaling out profitable cropping system intensification practices</li> <li>• Mitigating risk of changed practices and changing climate</li> </ul>	<ul style="list-style-type: none"> <li>• Crop and land productivity improvement in the coastal area</li> </ul>	2628
	<b>Plant Physiology Division</b>			

<b>Project 1: Salinity tolerance</b>				
1	Exploring new sources and advance breeding lines for salinity tolerance from at seedling stage Status: Ongoing (materials new) Starting date: September, 2023 Ending date: August, 2023	To identify salt-tolerant advance breeding lines/germplasm at the seedling stage.	New sources of Salinity tolerant donor and tolerant advance breeding lines	100000.00
2	Re-evaluation of previously screened saline-tolerant germplasm for salinity tolerance at the seedling stage. Status: New Starting date: July, 2023 Ending date: August, 2023	To identify salt-tolerant advance breeding lines/germplasm at the seedling stage.	New sources of Salinity tolerant donor.	100000.00
3	Characterization of BRRRI saline tolerant varieties for whole growth period at different salinity level Status: New Starting date: July, 2023 Ending date: June, 2023	To identify salt-tolerant level.	New sources of Salinity tolerant donor.	150000.00
<b>Project 2: Submergence tolerance</b>				
4	Identification of rice germplasm/advanced breeding lines for two weeks flash flood submergence tolerance Status: Ongoing (materials new) Starting date: April 2023 Ending date: July 2023	To identify tolerant germplasm/advanced breeding line for two weeks of complete submergence at vegetative stage.	Submergence tolerant germplasm will be detected.	100000.00
5	Screening of local germplasms for Anaerobic tillering ability under water stagnant condition	i. To identify tolerant germplasm for water stagnation condition. ii. To observe tillering ability under water	Water stagnant tolerant genotypes with high tillering ability.	150000.00

		stagnation conditions.		
	<b>Project 3: Drought Tolerance</b>			
6	Confirmation of performance for ALART/ RYT /AYT materials under drought stress at reproductive stage Status: New Starting date: July, 2023 Expected ending date: Feb, 2024	To evaluate of ALART/ RYT /AYT materials under control drought condition in the net house.	Drought tolerant genotypes were identified	150000.00
7	Physiological and biochemical characterization of advanced breeding lines under drought stress at reproductive phase Status: New i. Date of initiation: July 2023 ii. Date of completion: March 2024	1. To assess the effect of drought stress on growth and yield of the tested genotypes 2. To identify the physiological traits associated with drought tolerance.	Mechanism of tolerance of tested genotypes were determined	150000.00
8	Screening germplasm for drought tolerance at reproductive phase (TRB-Project) Status: New Starting date: July' 2023 Expected ending date: April' 2024	To identify rice germplasm tolerant to drought stress at reproductive phase.	The best tolerant germplasm to be further used as donor parent for developing future drought-tolerant varieties.	150000.00
9	Evaluation of previously selected germplasm under drought stress reproductive phase in the rain-out shelter Status: New i. Starting date: July 2023 ii. Expected ending date: December 2023	To find out the correlation of field performance of tested genotypes with the performance under control drought condition in the rain-out shelter.	Drought tolerant genotypes were confirmed under control condition.	100000.00

10	Characterization of rice germplasms under drought stress at reproductive phase using SSR marker i. Date of initiation: July 2022 ii. Date of completion: December, 2023	To study the genetic diversity of the germplasms.	Genetic similarity and cluster analysis together with drought tolerance ability of the germplasms were identified.	150000.00
	<b>Project 4: Heat Tolerance</b>			
11	Screening for high temperature induced spikelet fertility QTL introgression lines and germplasm under controlled conditions Starting date: February 2015 Expected date: September 2023	To identify new sources of heat tolerance from Bangladeshi rice germplasm.	New sources of heat tolerance from Bangladeshi rice germplasm	150000.00
12	Screening for high temperature tolerance of spikelet fertility QTL introgression lines Starting date: February 2023 Expected date: September 2023	To identify high temperature tolerant lines under controlled condition	High temperature tolerant introgression lines	150000.00
13	Observational yield trial of high temperature induced spikelet fertility introgression lines in the BRRI dhan28 and BRRI dhan29 backgrounds. Starting date: November 2023 Expected date: May 2024	To identify high yielding and homogenous lines having phenotypic similarity with respective recipient parents.	Heat tolerant version of BRRI dhan28 and BRRI dhan29	150000.00
14	Marker assisted introgression of high temperature induced spikelet fertility QTL ( <i>qHTSF4.1</i> ) in the background of BRRI dhan48, BRRI dhan62 and BRRI dhan71	To develop heat tolerant Aus and T. Aman (short duration) lines	Heat tolerant version of BRRI dhan48 (Aus) and BRRI dhan62 (Short duration T. Aman) variety	200000.00

	Starting date: November 2023 Expected date: May 2024			
15	Pyramiding of heat tolerance <i>qHTSF4.1</i> and <i>EMF3</i> in the background of BRRI dhan28 Status: New Starting date: November 2023 Expected date: May 2026	To develop high temperature tolerant ( <i>qHTSF4.1</i> + <i>EMF3</i> ) pyramided lines	Greater heat tolerance for BRRI dhan28 and BRRI dhan58 by pyramiding two QTLs into single background.	200000.00
	<b>Project 5: Cold tolerance</b>			
16	Exploring new sources of cold tolerance from BRRI Gene Bank collections at seedling stage Status: On-going (materials new)	To identify rice genotypes which can tolerate low temperature at seedling stage.	Identification of new sources of cold tolerant germplasm	100000.00
17	Screening of advanced breeding lines for seedling stage cold tolerance (SDCTR Project) Status: On-going (materials new)	To identify advanced breeding lines which can tolerate low temperature at seedling stage.	Identification of cold tolerant advanced breeding lines	100000.00
18	Characterization and evaluation of some selected rice genotypes for cold tolerance Status: New i. Date of initiation: October 2023 ii. Date of completion: May 2024	To characterize rice genotypes at natural cold condition.	Determination of tolerance level of tested varieties.	150000.00
19	Characterization of advanced breeding lines for cold tolerance (SDCTR-Project) Status: New Date of initiation: October 2023 Date of completion: May 2024	To identify cold tolerant advanced breeding lines for whole growth period.	Identification of cold tolerant advanced lines.	150000.00
	<b>Project 6: Growth and yield</b>			

20	Study the Influence of Photo-thermal Quotient on the Growth and Yield of Rice under Varying Dates of Transplanting at different locations of Bangladesh. Status: New Starting date: July, 2023 Ending date: May, 2024	To justify the seeding or planting date in relation to agro-climatic indices.	Justify the suitable planting time with weather variables.	100000.00
21	Reduction of pre-harvest sprouting of rice through chemical spraying. Status: New Starting date: April, 2023 Ending date: September, 2023	To reduce the pre-harvest sprouting spikelet in rice panicle	PHS preventing technology.	100000.00
22	Study of the grain filling characteristics of rice under different environmental conditions	To study the temperature effect on the grain-filling rate and duration.	Grain filling rate.	100000.00
23	Introgression of strong culm genes for improvement of lodging tolerance of BRRI dhan87. Status: New Starting date: November 2023 Expected date: December 2026	To improve lodging resistance of BRRI dhan87 through introgressing <i>SCM1</i> and <i>SCM2</i>	Lodging resistant version of BRRI dhan87	100000.00
24	Evaluation for lodging tolerance of some genotypes in T. Aman season. Status: Old (new materials) Starting date: June 2023 Ending date: January 2024.	To determine lodging characters of T. Aman varieties and advanced breeding lines.	Lodging tolerance of the tested varieties will be known.	100000.00
25	Photoperiod sensitivity test of different types of rice genotypes	To know the photosensitive response of tested genotypes	Photo-sensitivity of the tested genotypes will be known.	150000.00
	<b>Project 7: Genome editing</b>			

25	CRISPR-Cas9 mutagenesis of the <i>OsRR22</i> gene for improving salinity tolerance of rice Status: Old (new materials) Starting date: April 2023 Ending date: June 2024	To increase salinity tolerance via CRISPR-Cas9-targeted mutagenesis of the transcription factor gene <i>OsRR22</i> .	Development of salt tolerant rice line.	150000.00
26	Study of the relationship between SNORKEL ( <i>Sk1</i> and <i>Sk2</i> ) genes and <i>Sub1</i> gene through mutagenesis of <i>Sub1</i> gene in rice Status: Ongoing (materials new) Starting date: July 2023 Ending date: June 2027	To know the relationship between <i>Sub1</i> and <i>SNORKEL</i> gene after the loss of function of <i>Sub1</i> gene ii. To observe the elongation ability of the mutants under submerged condition after the loss of function of <i>Sub1</i> gene.	The relationship between SNORKEL ( <i>Sk1</i> and <i>Sk2</i> ) genes and <i>Sub1</i> gene will be discovered.	150000.00
27	Generation of male sterile rice line for two-line hybrid system by editing <i>TMS5</i> gene using CRISPR/Cas9 system Starting date: July 2020 Ending date: June 2026	i. To generate a novel thermo-sensitive genic male sterile line by editing <i>TMS5</i> gene via CRISPR/Cas9 for two-line hybrid system. ii. To evaluate the suitability of the TGMS line in two-line hybrid breeding	Development of male sterile rice line for two-line hybrid system.	150000.00
<b>Project 8: C4 rice research and development</b>				
28	Investigation of anatomical and photosynthetic differences in the C3-rice leaves and C4 species Starting date: July 2021 Expected date: June 2025	i. To identify leaf anatomical differences between C3-rice and C4 species. ii. To explore differences of photosynthetic related parameters between rice and C4 species	Anatomical and photosynthesis differences of C3 and C4 species	200000.00
29	Optimizing chlorophyll fluorescence imaging system for photosynthetic efficiencies of C3 and C4 species in different stress condition i. Starting date: July 2021	i. To identify photosynthetic efficiencies of C3 and C4 species under low CO <sub>2</sub> stress. ii. To explore photosynthetic differences of rice under salinity, submergence and drought stress.	Optimized chlorophyll fluorescence imaging protocol for stress detection of C3 and C4 species	200000.00

	ii. Expected date: June 2025			
30	<b>Project 9: Crop Weather Information</b> Manual weather station data collection and maintenance	To collect, transfer and storage of different weather variables	Archiving of manual weather data from BRRRI headquarter and different regional stations.	50000.00
	<b>Program Area: Pest Management</b>			
	<b>Entomology Division</b>			
1	Pest monitoring in BRRRI farm.  Duration: Long term, continued since 1972.	To study the insect pests and their natural enemy incidence at BRRRI farm and to create a database to develop a forecasting system.	Insect pests and their natural enemy incidence will be identified and a database for insect forecasting will be developed.	150000/-
2	Insect pests and natural enemy in light trap.  Duration: Long term, continued since 1972.	To study the pest and their natural enemy incidence patterns in rice fields and to create a database to develop a forecasting system.	Insect pests and their natural enemy incidence will be identified and a database for insect forecasting will be developed.	150000/-
3	Survey and monitoring of rice arthropods in different crop zone.  Duration: Long term, continued since 2020.	To know the present status of insecticide application. To identify the peak abundance of insect pests in region.	The highest levels of insect pest abundance in various crop zones of Bangladesh will be determined.	200000/-
4	Behavioral adaptation of RLR in different weather condition.  Duration: Mid term, continued since 2019.	To identify the effects of temperature on life cycle of rice leaf roller.	The impact of temperature due to climate change on the life cycle of the rice leafroller will identify.	200000/-
5	Conservation of natural enemies through eco-engineering.	To conserve natural enemies through ecological engineering approaches. To reduce insecticide application in rice	Ecological engineering methods for preserving natural enemies will minimize insecticide usage in rice	200000/-

	Duration: Mid term, continued since 2019.	production. To save environment from insecticidal pollution.	field.	
6	Study on entomogenous fungi to control BPH.  Duration: Mid term, continued since 2019.	To isolate the fungi from naturally infected insects. To explore suitable media for mass production of the entomogenous fungi and its use in BPH management.	Naturally occurring entomopathogenic fungi isolates that have infected brown planthoppers will discover.	200000/-
7	Study on the biology of green mirid bug an egg predator of BPH.  Duration: Mid term, continued since 2022.	To know the biology and life cycle of green mirid bug.	An efficient natural predator will be utilized for managing Brown Planthopper (BPH).	100000/-
8	Species composition of stem borer in rice.  Duration: Mid term, continued since 2022.	To study the relative abundance of different species of rice stem borers and to determine the yield loss due to their damage.	Will assess the relative prevalence of various species of rice stem borers and quantify the resulting yield loss from their damage.	150000/-
9	Test of different insecticides against major insect pests.  Duration: Long term, continued since 1972.	To evaluate the effectiveness of commercial formulations of different insecticides against major insect pests of rice.	Effective insecticide formulation and dose against specific insect will evaluate.	300000/-
10	Use of nanoparticle to control rice insect pests.  Duration: Mid term, continued since 2019.	To develop nano-particle based pest management in rice To reduce chemical pesticide load in environment.	Nano particle based pest management will reduce the use of chemical insecticides.	300000/-
11	Pesticidal Effect of different botanicals and chemical against Rice weevil ( <i>Sitophilus oryzae</i> L.).	To assess the effectiveness of botanicals and chemical management practices for Rice weevil.	The pesticidal efficacy of various botanical and chemical compounds against the Rice weevil will be investigated.	100000/-

	Duration: Short term, continued since 2023.			
12	Reduction of insecticide use in rice production to ensure safe food production.  Duration: Mid term, continued since 2023.	To manage insect pests with less or no use of insecticide. To compare insect pests and natural enemy status in insecticide free and insecticide spray field. To know the compensation abilities of different rice varieties due to insect damage.	Minimizing the utilization of insecticides in rice cultivation to guarantee the safety of food production.	150000/=
13	Effect of different insecticides on susceptible GLH population.  Duration: Mid term, continued since 2023.	To find out the susceptibility baseline of different group insecticides on GLH.	Insect resistant rice germplasm will be identified.	200000/-
14	Effect of different formulation of insecticide on resurgence development.  Duration: Short term, continued since 2023.	To know the effect of insecticide formulation on development of resurgence in GLH.	The impact of insecticides on the resurgence of GLH populations will be identified.	100000/-
15	Residue analysis of different insecticide in rice by using LCMS.  Duration: Long term, continued since 2020.	To detect insecticide residues in rice hull, bran and polished rice. To establish monitoring and guidance on safe use of insecticide in rice field.	The presence of insecticide residues in rice hulls, bran, and polished rice, will assess and will develop monitoring protocols and guidelines for the safe application of insecticides in rice fields.	500000/-
16	Development and validation of analytical methods for multiple pesticide residue determination in rice grain using Liquid Chromatography with Tandem	To develop and validate a multi-residue analytical method for the analysis of different pesticide in rice grain using QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) extraction	A validated analytical method for multiple pesticide residue determination in rice grain using LCMS will develop.	500000/-

	Mass Spectrometry (LCMS/MS).  Duration: Long term, continued since 2023.	coupled to LC-MS/MS.		
17	Screening of rice germplasm, advance line against BPH, WBPH, GLH.  Duration: Long term, continued since 1972.	To identify resistant rice germplasm against major insect pests.	Insect resistant rice germplasm will be identified.	400000/-
18	Suppression of serotonin synthesis in rice using CRISPR Cas9 for insect control.  Duration: Mid term, continued since 2019.	To develop insect resistant rice variety To reduce insecticide dependency.	Insect resistant rice line will be developed.	500000/-
19	Use of sex pheromone in corporation with other IPM tools to control leafroller and stem borer.  Duration: Mid term, continued since 2018.	To test the efficacy of sex pheromone against leafroller & stem borer in rice field. To control rice leafroller & stem borer without insecticide.	Environment friendly IPM based technology will be developed to reduce insecticide application.	100000/-
20	Effect of zinc on insect and disease incidence in modern rice varieties.  Duration: Mid term, continued since 2023.	To observe the resistant ability of zinc enrich rice variety against major diseases, insect and NEs.	Efficacy of Zinc on disease, insects and NE's will be determined.	100000/-
21	Use of Watching Tower to manage rice rats.  Duration: Long term, continued since 2018.	Sustainable management of rat facilitating owl watch tower for predation.	Prospect will develop by creating owl watch towers to facilitate predation is an approach towards sustainable rat management.	100000/-

22	Reduction of rat breeding capacity using botanicals as feeding materials.  Duration: Long term, continued since 2023.	To explore the dose and efficacy of selected Phyto-estrogenic botanicals (PEB) for the management of rice rats.	Decreasing the reproductive potential of rats by utilizing botanicals as food sources.	100000/-
	<b>Plant Pathology Division</b>			
	<b>Project 1: Survey and monitoring of rice diseases</b>			
1	Survey and monitoring of rice diseases in selected areas	1. To investigate the present status of different rice diseases in different climatic environments 2. To update disease crop calendar	Web-based rice disease information platform will be developed	700
2	Digitization of disease surveillance system and visualization at BRRRI website	To develop a web-based rice disease information platform in Bangladesh	Web-based rice disease information platform will be developed	100
	<b>Project 2: Population structure and biology of major pathogens</b>			
3	Identification of new virus disease and its causal organisms in Bangladesh	To identify the new viruses by based on phenotypic symptoms and molecular markers.	New virus disease/s will be identified.	200
4	Etiology, Epidemiology and Management of BPB: An emerging and climate sensitive rice disease in Bangladesh.	To conduct a details studies on bacterial panicle blight disease.	Detail information on bacterial panicle blight disease will be known.	50
5	Seed health status of rice in Bangladesh	1.To know the health conditions of rice seeds available from public and private sectors, and farmers' seed as well; 2.To develop rice seed health standard in Bangladesh	Seed health standard in Bangladesh will be established.	50

6	Improvement of differential system for rice blast disease in Bangladesh	1. To select new differential blast isolates 2. To identify candidate resistant gene(s) or source(s) 3. To monitor regularly of the evolution of new races.	Differential system for rice blast disease in Bangladesh will be established	300
7	Biology of Rice Kernel Smut Disease ( <i>Tilletia Barclayana</i> ) and Its Molecular Identification	1. Isolation, clarify the growth nature of this fungus, life cycle and host pathogen interaction relationship 2. Molecular identification with ITS region and compared sequence analysis of some Rangpur isolates with worldwide through NCBI website	Biology of Rice Kernel Smut Disease will be known	200
8	Identification of critical climate status for rice blast and ShB disease outbreak	To identify the real time for disease development and overcome the risk	Critical climate status for rice blast and ShB disease outbreak will be identified	200
9	Investigation of disease and insect resistance performance in Zn content rice	To observe the resistant ability of Zn-enrich rice against major pests	Resistant ability of Zn-enrich rice against major pests will be known	200
10	Optimization and validation of aflatoxin detection method by chromatography	1.To optimize the method to detect toxin in rice using LCMS-MS 2. To validate the method following same procedure	Aflatoxin detection method will be optimization and validated	200
	<b>Project 3: Disease resistance and molecular studies</b>			
11	Development of BB resistant pre-breeding materials for T. Aus	To develop medium duration BB resistance advanced lines for T. Aus	BB resistant pre-breeding materials will be developed for T. Aus	100
12	Development of pre-breeding materials of BB and False smut resistance in the background of BRRI dhan49	To develop resistance rice lines of bacterial blight and false smut disease.	To develop resistant lines of bacterial blight and false smut disease	100
13	MLT of BB and Blast resistant	To develop pyramid line of blast and BB	Pyramid line of blast and BB	100

	lines in the Genetic Background of BRRRI dhan63	resistance of BRRRI dhan63	resistance of BRRRI dhan63 will be developed	
14	MLT of BB and Blast resistant lines in the Genetic Background of BRRRI dhan81	To develop pyramid line of blast and BB resistance of BRRRI dhan81.	Pyramid line of blast and BB resistance of BRRRI dhan81 will be developed	100
15	MLT of tungro resistance advanced lines in Gazipur and Cumilla	To evaluate tungro resistance advanced lines in Gazipur and Cumilla	Tungro resistant advanced lines will be identified	50
16	Advanced Yield Trial of blast resistant lines, T. Aman	To evaluate blast resistance advanced lines	Blast resistant advanced lines will be identified	100
17	Introgression of blast resistance gene(s) into BRRRI dhan58 using marker assisted backcross breeding.	To introgress blast resistance <i>Pi9</i> and <i>Pbi</i> genes in BRRRI dhan58.	Blast resistant BRRRI dhan58 will be developed.	50
18	Development of new markers for the detection of Rice Tungro Bacilliform Virus (RTBV)	To develop novel primer to detect RTBV strain of Bangladesh.	Novel primer to detect RTBV strain of Bangladesh will be developed.	200
19	Phenotypic and genetic characterization of local aromatic germplasms.	To characterize resistance pattern for developing blast resistant aromatic pre breeding materials.	Characterization of local aromatic germplasms against blast will be identified.	50
20	Evaluation for Blast resistant advanced lines during Boro 2022-23	To evaluate specific and general adaptability of blast advance breeding lines along with disease parameters as compared with standard checks.	Blast resistant advanced lines will be evaluated	50
21	MLT for both BB and Blast resistance during Boro 2022-23 (Short duration)	To evaluate specific and general adaptability of blast and Bacterial blight resistant advance breeding lines along with disease parameters.	Adaptability of blast and Bacterial blight resistant advance breeding lines will be identified.	100
22	Multilocation trial for Blast resistant advanced lines (Short duration)	To evaluate specific and general adaptability of blast resistant advance lines along with disease parameters.	Adaptability of blast resistant advance breeding lines (short) will be identified	100
23	RYT of bacterial blight (BB) resistant materials	To develop bacterial blight resistant advanced lines.	Bacterial blight resistant variety will be developed.	50

24	RYT of multiple disease resistant (BB and Blast) pre-breeding materials (LD)	To develop bacteria blight and blast resistance long duration varieties.	BB and Blast resistant pre-breeding materials (LD) will be developed.	50
25	Evaluation of advanced lines for BB resistance in the background of CN6.	To develop BB resistance lines in the background of CN6.	BB resistant lines in the background of CN6 will be developed.	100
26	Response of Upland Aus Rice Germplasm to Blast Disease and Its Physio-Chemicals & Nutraceutical properties analysis.	1. To find out blast resistance Aus germplasm 2. To evaluate the physio-chemicals & nutraceutical properties.	Blast resistant Aus germplasm will be evaluated along with physio-chemicals & nutraceutical properties.	100
27	Screening of advanced breeding lines and land races against Blast, Bacterial blight and Sheath Blight diseases	To identify the source of resistance against blast, bacterial blight, Bakanae and sheath blight diseases of rice.	Source of resistance against blast, bacterial blight, Bakanae and sheath blight diseases of rice will be identified.	100
28	Development of blast resistant varieties using differential system and molecular markers	To develop blast resistant varieties for Bangladesh	Blast resistant varieties for Bangladesh will be developed.	200
29	Studies on host range of the rice blast pathogen	To determine the pathogenicity of all the isolates to rice and the pathogenicity of rice isolates to foxtail millet and barely.	Host range of the rice blast pathogen will be identified	600
30	Characterization of blast pathogen isolates collected from different hosts	To investigate the various fungal morphological characteristics.	Blast pathogen isolates collected from different hosts will be characterized.	50
31	Detection of novel QTLs for blast and BB resistance revealed by genome-wide association studies in 112 rice landraces from Bangladesh.	To detect novel loci underlying rice blast and BB resistance in local germplasm of Bangladesh.	Novel QTLs for blast and BB resistance in 112 rice landraces from Bangladesh will be identified.	200
32	Isolation, Purification and	To isolate, purify and preserve the	<i>Xanthomonas oryzae</i> pv. <i>oryzae</i>	50

	Preservation of <i>Xanthomonas oryzae</i> pv. <i>oryzae</i>	<i>Xanthomonas oryzae</i> pv. <i>oryzae</i> obtained from infected rice leaves	obtained from infected rice leaves will be preserved for further work.	
33	Development of durable broad-spectrum BB and Blast resistant variety through mutagenesis by CRISPR/Cas9 system	To develop broad spectrum resistant rice variety against Bacterial Blight and Blast disease using CRISPR/Cas9 system	Durable BB and Blast resistant variety will be developed	500
34	Detection of avirulence gene(s) existing in different eco-system	To improve the existing differential system for rice blast resistance	Existing differential system for rice blast resistance will be improved.	200
35	Genomic analysis of both <i>X. oryzae</i> pv. <i>oryzae</i> and <i>Pyricularia oryzae</i>	To identify possible SNP among the sequenced isolates as well as to formulate race specific primers.	Possible SNP among the sequenced isolates as well as to formulate race specific primers will be identified.	200
36	Investigation of the expression level of targeted gene (Pi9, Pb1, Xa13 and Xa21) in the introgressed advanced lines.	Validation of reference genes to observe the functional status of advanced lines	Reference genes to observe the functional status of advanced lines will be validated.	200
37	Genome-wide association mapping of resistance against rice blast, bacterial blight, sheath blight and tungro diseases in Bangladesh (Project)	To detect novel resistant loci underlying for rice blast, BB, ShB and tungro diseases in Bangladesh	Novel resistant loci underlying for rice blast, BB, ShB and tungro diseases in Bangladesh will be detected.	200
38	Characterization of a new resistance segregant of IRBL-9W	To find out homozygous blast resistant line	Homozygous blast resistant line will be found out.	200
39	Genetic basis of blast resistance in native aromatic and Zoom rice germplasm	To identify resistance source of blast disease containing aroma.	Resistant source of blast disease containing aroma will be identified.	50
40	MLT of durable blast resistance advanced lines	To develop durable blast resistant line	Durable blast resistant line will be developed.	200
	<b>Project 4: Epidemiology, yield loss and grain quality studies</b>			
41	Genotype and environmental interaction on neck blast incidence	To understand the pattern of neck blast incidence in relation to variety and	The pattern of neck blast incidence in relation to variety and environment	30

	in blast prone area.	environment	will be understood.	
42	Crop Loss Assessment of rice due to major diseases in Bangladesh	To calculate the actual crop loss due to major diseases	Actual crop loss due to major diseases will be known.	500
43	Enabling Farmers in Combating Pest and Diseases in Rice Crops: Artificial Inelegancy for Food Safety	To apply Artificial Inelegancy in rice pests diagnoses and management. And to determine photosynthetic efficiency after pathogen infection in rice leaves using RGB value (New).	Rice pests diagnoses and management will be done Artificial Inelegancy.	100
44	Development of Early Warning System of rice blast disease	1.To aware the rice growers at least 14 days earlier of blast disease infection. 2.To generate data on the thermal and humidity effect on rice disease development.	Blast disease management purpose.	300
45	Development of a yield loss app	Instant estimation of yield loss due to diseases	Yield loss will be estimated.	200
46	Climate change effect on rice disease development	To generate data on the climate change effect on rice disease development (Climate change project, IWMD).	Rice disease management.	100
47	Yield loss estimation of tungro devastation	To determine the yield loss due to tungro in natural condition.	Yield loss due to tungro in natural condition will be determined.	50
48	Identification of the source of infection of rice false smut disease	To find out the source of infection of major rice diseases and To find out the predisposing factors of major rice diseases	Source of infection and predisposing factors of major rice diseases will be found out.	100
49	Grain quality study of major rice disease infected seed	Quality evaluation of rice grain as affected by blast, sheath blight, sheath rot and false smut disease.	Grain quality of major rice disease infected seed will be studied.	100
	<b>Project 5: Management of rice diseases</b>			
50	Biosynthesis of nano-particles using plant extract	To biosynthesize NPs for the management of major diseases of rice.	Nano-particles using plant extract will be bio-synthesized.	300

51	Characterization of different nano-particles	To confirm the appropriate size (1-100nm) of nanoparticles	Different nano-particles will be characterized	300
52	<i>In-vitro</i> test of nano mediated fungicides against <i>R. solani</i>	To evaluate the antifungal effects of mediated fungicides	Nano mediated fungicides against <i>R. solani</i> will be evaluated.	300
53	<i>In vivo</i> study of green synthesized silver nano-particles against rice sheath blight disease	To evaluate the antifungal effects of biosynthesized silver nanoparticles	Antifungal effects of biosynthesized silver nanoparticles will be evaluated.	300
54	Efficacy of green synthesized AgNPs against rice sheath blight in pot and field conditions	To know the efficacy of green synthesized AgNPs against rice sheath blight in pot and field conditions	Efficacy of green synthesized AgNPs against rice sheath blight will be evaluated	300
55	Synthesis of AgNPs and ZnONPs using bacterial isolates for controlling ShB and blast	To investigate the potency of biosynthesized NPs against blast & sheath blight	The effectiveness of biosynthesized NPs against blast & sheath blight will be evaluated.	100
56	Residual Effect of Fungicide on Microbial Community in Rice Rhizosphere	To investigate microbial communities following use of fungicides and to detect and determine the residue of fungicides in soil and plant.	Residual Effect of Fungicide on Microbial Community in Rice Rhizosphere will be investigated.	100
57	Evaluation of biocontrol agents against sheath blight	To find out the effective biocontrol agents for sheath blight.	Effective biocontrol agents for sheath blight will be find out.	50
58	Determination of residual effect of fungicides in rice grain	To find out the pesticide residue in pesticides sprayed rice.	Pesticide residue in pesticides sprayed rice grain will be find out.	300
59	Synthesis of nano-particles from different sources	1. To find out the effective silica (SiO <sub>2</sub> ) and silicon (Si) NPs from Na <sub>2</sub> O <sub>3</sub> Si.9H <sub>2</sub> O and TEOS 2.To develop silica nano-particles from rice husk ash.	Nano-particles from different sources will be Synthesized.	200
60	Suppression of fungal and bacterial development by hydrogen peroxide	To observe the effect of H <sub>2</sub> O <sub>2</sub> on fungal and bacterial development at different concentrations.	The effect of H <sub>2</sub> O <sub>2</sub> on fungal and bacterial development will be observed.	100
61	Effect of neem leaf mediated nano	To manage bakanae, blast and brown spot	Effect of neem leaf mediated nano	100

	particles on seed borne disease management	disease.	particles on seed borne disease management will be studied.	
62	Efficacy of <i>Bacillus cereus</i> as bacterial biopesticide to manage sheath blight disease	To manage sheath blight disease and yield increase of rice.	Efficacy of <i>Bacillus cereus</i> to manage sheath blight disease will be studied.	100
63	Estimation of yield loss due to bakanae and blast disease at field level	To estimate yield loss due to rice blast and bakanae disease at field level.	Yield loss due to rice blast and bakanae disease at field level will be estimated.	100
	<b>Project 6: Pesticide evaluation (Routinr Works)</b>			
64	Evaluation of new chemical against Blast, and sheath blight diseases of rice	To find out the effective chemicals suitable for Blast and ShB disease management.	Effective chemicals suitable for Blast and ShB disease management will be find out.	100
	<b>Project 7: Technology Transfer</b>			
65	Training on integrated management of blast, bacterial blight and tungro disease in changing climate	To build up farmer's awareness on integrated rice disease management	Farmer's awareness on integrated rice disease management will be build up.	100
	<b>Programme Area: Farm Mechanization and Postharvest Technology</b>			
	<b>Farm Machinery and Postharvest Technology Division &amp; Workshop Machinery and Maintenance Division</b>			
1.	<b>Development of Agricultural Machines</b>			
	1.1: Evaluating and modifying of BRRI developed machines	<ul style="list-style-type: none"> <li>• To verify the quality of BRRI machines</li> <li>• To identify the functional problems of farm machines</li> </ul>	Ensure to develop an Ideal prototype of modern farm machinery	50.00

		<ul style="list-style-type: none"> <li>• To improve the performance of farm machines</li> </ul>		
	1.2: Design and development of walking type power operated rice transplanter	<ul style="list-style-type: none"> <li>• To design and develop a power-operated rice transplanter</li> <li>• To test the performance of the developed rice transplanter</li> </ul>	Prototype of a power operated walking type rice transplanter will be available for Bangladesh conditions.	2500.00
	1.3: Design and development of a 4-row walking-type semi-automatic rice transplanter	<ul style="list-style-type: none"> <li>• Design of power transmission system of rice transplanter</li> <li>• To fabricate power operated rice transplanter according to the design</li> <li>• To investigate the performance of the developed rice transplanter</li> </ul>	Improved version of BRRI manual rice transplanter will be available and reduce human drudgery.	2500.00
	1.4: Design and development of power-operated seed sower machine for raising mat-type seedling	<ul style="list-style-type: none"> <li>• Design and fabrication of a BRRI power-operated seed sower machine for mat-type seedling preparation</li> </ul>	Prototype of a power-operated automatic Seed sower machine for raising mat-type seedlings will be available for Bangladesh condition.	200.00
	1.5: Design and development of a diesel engine-operated high-speed hydro-tiller for marshy land	<ul style="list-style-type: none"> <li>• To design a variable power transmission mechanism of the diesel engine-operated hydro-tiller</li> <li>• To design a rotary casing of a hydro tiller suitable for marshy land</li> <li>• To develop a prototype based on engineering design</li> <li>• To evaluate the prototype in different soil conditions</li> </ul>	Diesel engine-operated high-speed hydro-tiller for marshy land will be available.	300.00
	1.6: Postharvest loss assessment of whole and head feed combine harvester under different soil condition	<ul style="list-style-type: none"> <li>• To assess the loss of grain.</li> <li>• To identify a suitable operating system to minimize the loss.</li> </ul>	Technical faults of whole and head feed combine harvester will be identified.	50.00
	1.7: Development of mat-type	<ul style="list-style-type: none"> <li>• To develop a mat-type seedling using a</li> </ul>	Feasibility of seedling raising for	300.00

	seedling using a hydroponic technique	hydroponic technique <ul style="list-style-type: none"> <li>• Performance test of developed seedling for rice transplanter</li> </ul>	mechanical rice transplanter using hydroponic technique will be known.	
	1.8: Performance evaluation of laser land leveler with the conventional method	<ul style="list-style-type: none"> <li>• To evaluate the performance of laser land leveler and conventional systems</li> <li>• To find the feasibility of the laser land leveler in Bangladesh</li> </ul>	Technical know-how of laser land leveler will be known.	1000.00
	1.9: Identification and fabrication of fast-moving spare parts of combine harvester and rice transplanter enhancing sustainable mechanization in Bangladesh	<ul style="list-style-type: none"> <li>• To list down the fast-moving spare parts of the different make and model</li> <li>• To identify the strength and quality of the major parts</li> <li>• To take initiative for the fabrication of the parts</li> </ul>	Fast-moving spare parts of combine harvester and rice transplanter will be identified.	1000.00
	1.10: Ground pressure and bearing capacity of combine harvester in different soil conditions	<ul style="list-style-type: none"> <li>• To estimate ground pressure and bearing capacity of combine harvester in different soil conditions</li> <li>• To estimate the required force in cutting, threshing, cleaning, and bagging rice through combine harvester</li> </ul>	The different soil parameter ie. ground pressure, Cone penetration resistance, Bulk density of soil etc. may help to design and fabricate ideal prototype of combine harvester in Bangladesh condition.	200.00
	1.11: Modification of power transmission system of BRRRI hydro-tiller	<ul style="list-style-type: none"> <li>• To detect the causes of frequent tearing of hydro tiller chain</li> <li>• To modify the power transmission system for increasing the longevity of hydro tiller</li> </ul>	Longevity of hydro tiller will be increased.	50.00
	1.12: Design and development of single-row wetland power weeder	<ul style="list-style-type: none"> <li>• To design, fabricate and develop a power-operated single-row weeder suitable for weeding both in a row-to-row and line-to-line of the lowland and upland fields (line and without line sowing).</li> <li>• To evaluate its performance in the</li> </ul>	Power-operated single row paddy weeder, as well as a multi-crop weeder, will be developed	100.00

		<p>different multi-crop fields.</p> <ul style="list-style-type: none"> <li>• To compare with other dry and wetland paddy weeders</li> </ul>		
	1.13: Design and development of a self-propelled multi-rows power weeder for both wet and dry land condition	<ul style="list-style-type: none"> <li>• To design and fabricate the self-propelled weeder</li> <li>• To evaluate the weeding performance in different locations</li> <li>• To improve the developed weeder based on evaluation</li> <li>• To reduce the weeding cost in rice production</li> </ul>	Self-propelled multi-rows power weeder for both wet and dry land condition will be developed	500.00
	1.14: Performance evaluation of BRRI whole feed combine harvester (model no- BRRI WCH 2021) under different soil conditions, crop conditions, and seasons	<ul style="list-style-type: none"> <li>• To evaluate the performance of BRRI combine harvester in respect of soil condition, crop condition, and seasons</li> <li>• To establish a relationship between the machine performance and plough pan depth of the field</li> <li>• To compare the performance of BRRI combine harvester with the traditional harvesting systems.</li> </ul>	BRRI developed whole feed combine harvester would be able to meet the domestic demand and reduce import dependence.	250.00
2	<b>Milling and Processing Technology</b>			
	2.1: Test, evaluation, and modification of rubber roll de-husker for commercial use	<ul style="list-style-type: none"> <li>• To modify and development of a rubber roll de-husker</li> <li>• To evaluate the performance of paddy de-husker</li> </ul>	The combination of de-husker and polisher will be an alternate milling system of auto rice milling.	300.00
	2.2: Design and development of solar seed dryer	<ul style="list-style-type: none"> <li>• To design, fabricate, and develop a solar dryer</li> <li>• To compare with traditional sun drying of paddy</li> </ul>	A suitable solar seed dryer will be developed.	100.00
	2.3: Design and development of a	<ul style="list-style-type: none"> <li>• To design and fabricate a compact rice</li> </ul>	A mobile compact rice mill for	1000.00

	compact rice mill	mill <ul style="list-style-type: none"> <li>To evaluate the performance of fabricated rice mill</li> </ul>	consumer level will be developed.	
	2.4: Drying and tempering effect on Kernel Strength and milling recovery of the parboiled and un-parboiled Paddy	<ul style="list-style-type: none"> <li>To determine the kernel strength of paddy in terms of drying and tempering effect.</li> <li>To make a relation between kernel strength and milling recovery.</li> </ul>		BRRI, Gazipur
	2.5: Design and development of a mini rice mill for homestead level using	<ul style="list-style-type: none"> <li>To design and develop a mini rice mill suitable for individual household</li> <li>To evaluate the milling performance using different rice varieties under different conditions</li> <li>To analyze the cost of milling and the pay-back period.</li> </ul>	A mini rice mill for homestead level using will be available.	500.00
3.	<b>Development of stores and storage technology</b>			
	3.1: Effect of ageing on milling performance of premium quality rice	<ul style="list-style-type: none"> <li>To observe the milling performance of BRRI dhan50 at different aging</li> </ul>	Data will be generated on head rice recovery and cooking parameters.	200.00
	3.2: Effect of the different storage structures of milled rice in long-term storage	<ul style="list-style-type: none"> <li>To find out the suitable storage structure</li> <li>To investigate the influence of moisture content on storage time</li> <li>To observe the prevalence of insect/diseases infestation of storage time</li> <li>To determine the effect of length of storage time on the quality of milled rice</li> </ul>	Suitable storage structure for milled rice will be identified.	500.00
4.	<b>Renewable Energy Technology</b>			
	4.1: Study the briquette production from rice by product	<ul style="list-style-type: none"> <li>To prepare briquettes from rice straw and husk</li> </ul>	Alternate source of rice husk to produce briquette will be identified	BRRI, Gazipur

		<ul style="list-style-type: none"> <li>• Characterization of different briquettes originated from agricultural residue</li> <li>• To measure the calorific value of the briquettes</li> </ul>		
	4.2: Study on solar energy utilization for small agricultural machinery	<ul style="list-style-type: none"> <li>• To design a mechanism for solar energy utilization</li> <li>• To evaluate the performance of the developed machine</li> </ul>	Small farm machinery (Paddle thresher, open drum thresher, winnower etc.) could be operate.	300.00
	4.3: Design, development, and performance evaluation of briquetting machine using rice husk with a different ration of maize steam	<ul style="list-style-type: none"> <li>• To design and develop a briquetting machine using rice husk with different ratios of maize steam.</li> <li>• To determine the physical and combustion properties of the final product.</li> <li>• To evaluate the performance of the briquette machine.</li> </ul>	Alternate source of rice husk to produce briquette will be identified	200.00
	4.4: Performance evaluation of a rice husk-straw pellet machine	<ul style="list-style-type: none"> <li>• To evaluate the performance of a pellet machine</li> </ul>	Knowledge, experience and data will be generated about husk-straw pellet machine.	1000.00
	4.5: Improvement and validation of solar energy utilization system for small types of different agricultural machinery	<ul style="list-style-type: none"> <li>• To improve solar energy utilization system</li> <li>• To improve solar panel carrier</li> <li>• To evaluate the performance of the developed machine using solar energy</li> </ul>	Small farm machinery (Paddle thresher, open drum thresher, winnower etc.) could be operate in the field	700.00
	4.6: Design and develop a solar-powered smart bird repellent	<ul style="list-style-type: none"> <li>• To design an audio player using Arduino software</li> <li>• To identify the scary melodies for granivorous birds</li> <li>• To test the performance</li> </ul>	User-friendly, smart bird repellent will be available that will enhance food security.	250.00
	4.7: Design and development of solar power-operated sprayer	<ul style="list-style-type: none"> <li>• To design and fabricate a solar-power-operated sprayer</li> </ul>	Drudgery less smart sprayer will be developed	300.00

		<ul style="list-style-type: none"> <li>• To evaluate the performance of the sprayer</li> </ul>		
5.	<b>Popularization of BRRRI developed farm machinery and Postharvest technology</b>			
	5.1: Industrial and farm-level extension of BRRRI machinery and Postharvest technology	<ul style="list-style-type: none"> <li>• To create awareness and demonstrate the benefit of using BRRRI machines among farmers</li> <li>• To motivate the local entrepreneurs to manufacture BRRRI-developed machinery</li> </ul>	Awareness will be developed to use modern farm machinery	1000.00
	5.2: Training on operation, repair, and maintenance of farm machinery	<ul style="list-style-type: none"> <li>• To impart knowledge to the farmers/operators/mechanics/extension workers/entrepreneurs about the effective use of farm machinery</li> <li>• To develop skilled operators and mechanics</li> </ul>	Skilled machine operator and mechanic for agricultural machinery operation and maintenance will be developed	3000.00
6.	<b>Precision Agriculture</b>			
	6.1: Detection of rice leaf diseases and early diagnosis using faster regional convolutional neural networks (R-CNN)	<ul style="list-style-type: none"> <li>• To develop and enhance an image processing system and deep learning techniques to advance the agricultural sector.</li> </ul>	The rice pests affected damaged areas will be detected before creating a hazardous situation in rice farming.	250.00
	6.2: Application of machine learning techniques in predicting agricultural drought: A regional examination of Bangladesh	<ul style="list-style-type: none"> <li>• Development of machine learning techniques in predicting standardized precipitation evapotranspiration index (SPEI)</li> </ul>	The future rainfall and temperature extremes can be predicted which may help to avoid potential risk for rice cultivation in Bangladesh	350.00
	6.3: Detection of Pests Affected Areas in Rice Farming Using Remote Sensing and Machine Learning Techniques	<ul style="list-style-type: none"> <li>• To enhance natural pest control measures for precision rice farming</li> <li>• To limit the environmental hazards</li> <li>• To validate the results with ground truth data</li> </ul>	The rice pests affected damaged areas will be detected before creating a hazardous situation in rice farming.	500.00

	6.4: Assessing the future rainfall and temperature extremes from CMIP6 GCMs and their potential risk to rice cultivation in Bangladesh	<ul style="list-style-type: none"> <li>• Assessing future changes in rainfall and temperature extremes based on data from the CMIP6 global climate models (GCMs).</li> <li>• Evaluating the potential risks associated with these changes to rice cultivation in Bangladesh.</li> </ul>	Assessment of spatiotemporal changes in rice phenology and identification of hot spots in Bangladesh to heat stress will be known.	500.00
	6.5: Future Changes in thermal bioclimatic indicators over the coastal region using bias-corrected CMIP6 models	<ul style="list-style-type: none"> <li>• To assess the current state of thermal bioclimatic indicators in coastal regions, based on historical data and observations.</li> <li>• To evaluate the performance of the CMIP6 models in simulating thermal bioclimatic indicators in coastal regions, and to identify any biases that may exist.</li> <li>• To apply bias correction techniques to the CMIP6 models to improve their accuracy in simulating thermal bioclimatic indicators in coastal regions.</li> <li>• To use the bias-corrected CMIP6 models to project future changes in thermal bioclimatic indicators over coastal regions under different emission scenarios.</li> <li>• To assess the potential impacts of these changes in thermal bioclimatic indicators on ecosystems and human communities in coastal regions.</li> </ul>	Able to provide useful information to policymakers and other stakeholders on the potential impacts of climate change on coastal regions and the need for adaptation measures to address these impacts.	500.00
	<b>Program Area: Socio Economics &amp; Policy</b>			
	<b>Agricultural Economics Division</b>			

1	Farm Level Adoption and Evaluation of Modern Rice Cultivation in Bangladesh  Status: Routine work	To determine the region-wise adoption rate of different MVs in Aus, T. Aman and Boro seasons,  To estimate the yield of different modern and local rice varieties in different seasons		500
2	Prospect and Constraints to Adoption of BRRI Released Modern Rice Varieties in Bangladesh: A Case of Rajshahi District  Status: Continued	To identify the drivers and constraints of adoption of BRRI released varieties;  To delineate the prospect of BRRI varieties for large scale dissemination at the farm level.		200
3	Estimation of Costs and Return of MV Rice Cultivation at the Farm Level  Status: Routine work	To determine the costs and returns of MV Aus, T. Aman and Boro rice cultivation in Bangladesh,  To estimate the factor and income share of MV rice cultivation in different seasons; and  To evaluate the changes in costs and returns and inputs utilization pattern over the years.		500
4	Effect of subsidy on mechanization in rice cultivation: An evidence from combine harvester in non-haor areas  Status: New	To evaluate the profitability of MV Boro rice cultivation using combine harvester and human labour at the farm level.  To assess financial viability of combine harvester from owners' perspective.  identify problems encountered in farm mechanization in rice cultivation.		300
5	Producers' welfare loss in Bangladesh: An assessment of rice	To estimate the rice supply function in Bangladesh.		50

	market distortion Status: New	To assess the impact of changes in paddy market price on the welfare of rice producers.		
6	Impact of rice production on poverty reduction in rural Bangladesh: A panel data analysis Status: Continued	To evaluate whether rice production can decrease the poverty level in rural farm families in Bangladesh		50
7	Comparative Study on Hybrid and Inbreed Rice Cultivation in Bangladesh Status: New	Assessing inputs use pattern and profitability of hybrid and inbreed rice cultivation in Bangladesh. Estimating the costs and land requirements of hybrid seed production. Identifying the strengths and weaknesses of hybrids and inbreeds at the farm level.		200
8	Adoption of salinity tolerant rice in southern part of Bangladesh: An Econometric Approach Status: Continued	To delineate the adoption status, yield, and estimate profitability of salt-tolerant rice varieties; To identify factors influencing the adoption decision of salt-tolerant rice varieties; and, To measure the impact of salt-tolerant rice varieties on farmers' livelihoods.		200
9	Adoption status of BRRI developed different technologies (other than rice variety) in Bangladesh. Status: new	To know adoption status of BRRI developed different technologies in selected areas to identify the reasons of adoption and non-adoption of those technologies		200
10	Effect of demonstration in the adoption of newly released BRRI rice varieties and its impact on rice production	To assess the magnitude of farmers awareness and interest about the new rice varieties; To analyze profitability of BRRI released		200

	Status: New	varieties over popular existing varieties; Factor affecting adoption of BRRRI released new rice cultivars; and, To identify the problems towards the adoption of BRRRI released new varieties		
11	Role of women in smallholder rice farms in Bangladesh  Status: New	To determine the level of inequality of women in access to productive and economic resources  To determine the extent of women participation in rice farming activities		100
	<b>Agricultural Statistics Division</b>			
	Stability analysis of BRRRI Varieties  Duration: 1 year	<ul style="list-style-type: none"> <li>• To determine the stability index of BRRRI varieties</li> <li>• To estimate location-wise stability index of BRRRI varieties</li> <li>• To determine the stability index of BRRRI varieties according to the growth duration</li> <li>• To find out the location-wise yield performance of BRRRI varieties at different years</li> <li>• To find out the overall yield performance of BRRRI varieties at different locations and year.</li> <li>• Season, year and location wise database on BRRRI varieties</li> </ul>	Stability index of BRRRI varieties according to seasons	550
	Improvement of BRRRI Stability model by incorporate multiple factors  Duration: 1 year	<ol style="list-style-type: none"> <li>1. To improve BRRRI stability model</li> <li>2. To incorporate multiple factors into stability model</li> <li>3. To estimate location-wise stability index of BRRRI varieties</li> </ol>	Improvement of Stability model by incorporate multiple factors	300

		<ol style="list-style-type: none"> <li>4. To assess the trend of stability index for BRRI varieties.</li> <li>5. To estimate the effect of weather parameter on stability index of BRRI varieties</li> <li>6. To compare BRRI stability model with other stability models (Eberhart and Russel model, AMMI model and Fuzzy log model etc.).</li> </ol>		
	<p>Development of machine learning model for predicting rice yield loss concerning meteorological features in Bangladesh</p> <p>Duration: 1 year</p>	<ol style="list-style-type: none"> <li>1. To assess and categorize rice yield loss in different seasons in Bangladesh.</li> <li>2. To develop a machine learning model for predicting and classifying yield loss.</li> <li>3. To construct a decision tree based on several meteorological parameters for determining yield loss.</li> </ol>		300
	<p>Genotype x Environment interaction of BRRI varieties</p> <p>Duration: 1 year</p>	To Identify BRRI released rice genotypes that have both high mean yield and stable yield performance across different environments for different ecosystem of Bangladesh	Genotype x Environment Interaction effect of BRRI varieties	300
	<p>CV for estimating yield and yield contributing characters of BRRI varieties</p> <p>Duration: 1 year</p>	<ol style="list-style-type: none"> <li>1. To determine the acceptable limit of CV for biometric characters of rice varieties</li> <li>2. To determine the relative contribution of phenotypic characters/yield contributing characters to rice yield</li> <li>3. To review the existing experimental data</li> </ol>		300
	Rice database and analysis system (RDAS)	1. To develop a web based integrated framework on 'Rice Database and	Automated informative and user-friendly rice database and analysis	300

	Duration: 1 year	Analysis System (RDAS). 2. To create map and graph based on rice data	system (RDAS)	
Maintenance of Rice and related Database  Duration: 1 year	1. To maintain up-to-date computerized information on rice and related crops 2. To determine year wise GR of Rice Production in Bangladesh 3. To maintain up-to-date computerized information on climatic factors both BRRI regional stations and BMD stations data. 4. To make comparison between BRRI stations and BMD stations data. To produce various maps from these data	1. Database on rice and related crops. 2. Year wise GR of Rice Production in Bangladesh 3. Database on climatic factors 4. Various climatic maps. 5. Growth rate and trend scenario of area, production and yield of rice in Bangladesh.		300
New edition of Simple Lessons from Biometry  Duration: 1 year	1. To update and publish a new edition of 'Simple Lesion from Biometry' 2. To incorporate novel experimental designs 3. To incorporate novel analytical techniques for various types of data 4. To incorporate the other topics related to biometry			300
Suitability Mapping of BRRI Varieties  Duration: 1 year	To construct suitability map of BRRI rice varieties (BRRI dhan98 – BRRI dhan101)	1. Suitable and not suitable areas for particular rice varieties.		50
Climate Mapping of Temperature and Rainfall  Duration: 1 year	1. To determine expected maximum and minimum temperature and rainfall in different region for rice in Bangladesh. 2. To determine areas of critical maximum and minimum temperature and rainfall map of Bangladesh for rice	1. Different climatic factors map of Bangladesh  2. Changing Pattern of climatic factors.		50

		during the period. 3. To estimate the return period of extreme rainfall and high temperature		
Season wise rice area mapping of Bangladesh  Duration: 1 year	1. To construct season wise rice area map of Bangladesh. 2. To estimate season wise rice area of Bangladesh 3. To validate and compare the rice database from various sources 4. To find out the best source of rice area data.	1. Season wise rice cultivated area.	200	
Projected Climatic Factors (2050) Maps of Bangladesh  Duration: 1 year	1. To construct projected climatic factors maps of Bangladesh for 2050 2. To determined projected climatic factors value district/division wise of Bangladesh for 2050. 3. To deliver an idea about future climate to researchers and planners	1. Projected climatic factors maps of Bangladesh.	300	
Suitability Mapping of Various Cropping Pattern  Duration: 1 year	To construct suitability map of various cropping pattern	Suitable and not suitable areas for particular cropping pattern.	500	
Rice Yield Estimating Using Unmanned Aerial Vehicles (UAVs) Data  Duration: 1 year	1. To develop a mathematical model between rice yield and UAV images. 2. To develop a rice yield estimation model that takes less time, labour, and cost.	1. Possible to predict yield before harvesting. 2. Save time, money and labor.	300	
Develop a dynamic web application for visualizing and analyzing the rice disease surveillance data  Duration: 1 year	To Develop a dynamic web application for visualizing and analyzing the rice disease surveillance data	A dynamicweb application for visualizing and analyzing the rice disease surveillance data	500	
Digitalized Tour Distance Calculation System from BRRH HQ	To develop a digital tour distance calculation system for BRRH HQ	A digital tour distance calculation system for BRRH HQ	100	

	Duration: 1 year			
	Update the web application to calculate the Stability Index for BRR I Stability Model Duration: 2023 (Contd.)	To update the web application to calculate the stability index for BRR I stability model.	Updated web application to calculate the stability index for BRR I stability model.	300
	Update the Platform for BRR I Developed Management Information System (MIS) Duration: 2023 (Contd.)	To update the unique platform for BRR I developed MIS	Updated unique platform for BRR I developed MIS	100
	Digitalized quota management system of BRR I Duration: 2022 (Contd.)	To update the digital quota management system for BRR I	Updated digital quota management system for BRR I	3.00
	Digitalized salary management system of BRR I Duration: 2020 (Contd.)	To update the digital salary management system of BRR I as user need.	Updated the digital salary management system of BRR I	500
	Digitalized labour management system of BRR I Duration: 2019 (Contd.)	To update Labour Management System (LMSV1) of BRR I	Updated Labour Management System (LMSV1) of BRR I	500
	Develop real time AI-based monitoring system for location-specific insect and disease Duration: 2023 (Contd.)	<ul style="list-style-type: none"> <li>• To develop real time AI-based monitoring system for location-specific insect and disease;</li> <li>• To determine disease and insect identifying locations through collecting necessary reports;</li> <li>• To manage, maintain and host web-based application at cloud server.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a dashboard management system as an automated decision support tool which will be useful to all stakeholder i.e. policy maker, researcher, extension personnel and farmer.</li> <li>• Provide diversified information through this dashboard with identifying affected insect and disease including real time location specific detail map.</li> <li>• Develop Data driven decision (3D) model.</li> </ul>	555

			<ul style="list-style-type: none"> <li>• Adopt precision agriculture and automations solutions for choosing the right varieties.</li> <li>• Manage and maintain smart web-based application.</li> </ul>	
Smart profiling of rice varieties for disaster-prone zones of Bangladesh  Duration: 2023 (Contd.)	<ul style="list-style-type: none"> <li>• To explore mechanism for profiling rice varieties with respect to environmental suitability, physical and physiological characteristics, yield potential and tolerance to abiotic and biotic stresses;</li> <li>• To electronically present and disseminate the newly developed smart profiled varieties information through a dynamic web application and mobile app to stakeholders;</li> <li>• To manage, maintain and host mobile and web app at server.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide varietal information through this profiler which will be useful to all stakeholder i.e. farmer, researcher and extension official.</li> <li>• An easy comparison of the varieties will develop for a specific environment and quickly picking up the preferred one(s);</li> <li>• New ideas will be created in research management. As well as new technologies will be developed.</li> <li>• Adopt precision agriculture &amp; automations solutions for choosing right varieties.</li> </ul>		
Sensor-based rice pest management through Artificial Intelligence (AI) technology of BRRI.  Duration: 2022 (Contd.)	<ul style="list-style-type: none"> <li>• To develop AI based mobile and web App for BRRI.</li> <li>• To identify AI scopes in rice research engaging scientists, extension worker and farmers.</li> <li>• To manage, maintain and host AI based mobile and web app at server.</li> </ul>	<p>Time, Cost and Visit (TCV) will be less and quality (Q) will be increased.</p> <p>Adopt precision agriculture and automations solutions to close rice yield gaps.</p> <p>New ideas will be created in research management. As well as new technologies will be developed.</p>		

			Manage and maintain Ai based mobile and web app.	
	New version of rice knowledge bank (RKB) mobile Apps	<ol style="list-style-type: none"> <li>1. To develop the new version of RKB mobile apps.</li> <li>2. To develop a push notification system.</li> <li>3. To manage and maintain RKB Mobile apps.</li> </ol>	<p>Disseminate RKB at all regional stations of BRRI as well as in almost all corners of Bangladesh.</p> <p>Extend and update regularly as routine work.</p>	1100.20
	<p>“BRRI Alapon” Telephone Directory Mobile App of BRRI.</p> <p>Duration: 2018 (Contd.)</p>	<ul style="list-style-type: none"> <li>• To develop telephone directory mobile app for BRRI.</li> <li>• To communicate through mobile app via voice call, video call, email or SMS.</li> <li>• To provide location sharing through mobile app.</li> </ul> <p>To provide all types of meeting, seminar etc. notice via SMS through mobile app.</p>	<p>Digitalize internal communication system to each other of BRRI.</p> <p>Minimize time, cost and visit (TCV) for sharing instant information using the app.</p>	800
	<p>Vehicle Requisition Management System of BRRI.</p> <p>Duration: 2018 (Contd.)</p>	<ul style="list-style-type: none"> <li>• To develop vehicle requisition management system (VRMS) for BRRI.</li> <li>• To inform through SMS, on the basis of demand vehicle at BRRI.</li> <li>• To provide SMS for drivers for confirming their upcoming duty.</li> <li>• To host VRMS at server.</li> </ul>	<p>Digitalize Transport division using SMS based VRMS service.</p> <p>Manage and maintain the VRMS system.</p>	100
	<p>Innovation, Service Process Simplification (SPS) and e-Nothi system for enhancing capacity of BRRI employee.</p> <p>Duration: 2017 (Contd.)</p>	<ul style="list-style-type: none"> <li>•To provide various training on public service innovation (PSI), SPS and e-Nothi management to BRRI scientists and officers for developing capacity.</li> <li>•To bring qualitative changes in the internal research work process and service delivery in BRRI HQ and respective</li> </ul>	<p>Enrich capacity of BRRI scientists and officers through various PSI and SPS training.</p> <p>Skills of implementation process will be developed through innovative approach.</p>	120

		regional stations. •To compile various innovative idea through PSI and SPS training for piloting and replication activities.		
	“BRRI Rice Doctor” Apps for BRRI. Duration: 2017 (Contd.)	•To diagnosis insect and pest through rice doctor Apps for BRRI. •To manage and maintain rice doctor apps. •To host rice doctor Apps at server.	Manage and maintain rice doctor.	500
	Develop a new website for BRRI.	1. To develop a new website for national and international seminars and symposiums. 2. To manage domain or sub-domain for the new website. 3. To host the new website at server. 4. To manage and maintain the new website.	1. A new website for national and international seminars and symposiums. 2. Domain or sub-domain for the new website.	600.00
	BRRI facebook group (Networks) and facebook page management and information dissemination  Duration: 2018 (Contd.)	• To increase and stimulate awareness to all visitors of facebook group through ‘BRRI Networks’ and BRRI facebook page. •To extend, boosting, manage, update and maintain ‘BRRI Networks’ facebook group and facebook page regularly. •To promote all activities, where only official interactions, various problems and their solutions can be posted.	• Store more research related activities post and necessary documents. • Boost and extend the group with adding more members and introducing more new features for noble purpose.	50
	Strengthening Cyber Security System for BRRI	1. To develop Virtual Private Network (VPN) for BRRI. 2. To develop VPN tunnel for BRRI. 3. To develop secure remote connectivity for BRRI. 4. To manage and maintain cyber security system.	1. Server will be safe and secured. 2. Data communication will be safe and secured. 3. Virtual Private Network (VPN) connection and tunnel will be developed. 4. Secure remote connection will be	350.00

			developed.	
	BRKB Website Management <i>(In collaboration with training, breeding and others research divisions)</i>	1. To develop and modify the design of BRKB Website. 2. To manage and maintain BRKB Website through regular updating of the information and documents.	1. Provide more benefit to all users specially farmers, extension workers, researchers etc. 2. Include more information as well as national issues associated with rice production and training.	300.00
	BIRRI Web Portal Management.	1. To develop and modify the design of BIRRI Web Portal. 2. To manage and maintain BIRRI Web Portal through regular updating of the information and documents.	1. New features for BIRRI web portal. 2. To increase hosting spaces gradually.	400.00
	Personal Data Sheet of BIRRI.	1.To develop “Personal Data Sheet (PDS)” database for all scientists, officers, clerks of BIRRI. 2.To develop “Personal Data Sheet (PDS)” database using user name & password. 3.To get BACKUP of “Personal Data Sheet (PDS)” database regularly.	Creating Personal Data Sheet (PDS) database including various information fields for all scientists, officers, stuffs as per requirement of the Ministry of Agriculture (MoA).	350.00
	<b>Farm Management Division</b>			
	<b>Project: Rice production management</b>			
1.	Expt. 1. Artificial Plough Pan Development for Facilitating Modern Farm Machineries (Continued) Date of initiation: T. Aman 2022-23 Duration: 5 years	i)To increase soil resistance capacity ii)To develop artificial plough pan in BIRRI farm	A method would be developed for artificial plough pan in soil of BIRRI. So that farm machineries can operate in the farm.	100

2.	Expt. 2. Determination of Fertilizer Management to Control Algae Infestation in Rice Field (Continued) Date of initiation: T. Aman 2022-23 Duration: 3 years	i) To determine fertilizers' effect on algal growth in rice field ii) To identify fertilizer management to control algae in rice field	Amount and an appropriate fertilizer management method could be suggested to control algae infestation rice field.	50
3.	Expt.3. Suitable Chemical Control of Algae in Rice Field (Continued) Date of initiation: T. Aman 2022-23 Duration: 3 years	To identify suitable algae control chemical for rice field.	Suitable chemical and applying method will be identified for controlling algae.	50
4.	Expt. 4. Influence of different dates of transplanting on growth, yield performance and quality of fine rice varieties (Continued) Date of initiation: T. Aman 2022-23 Duration: 3 years	To confirm the best planting time of fine rice varieties for higher yield and quality.	Appropriate transplanting date and variety might be identified for growth, yield performance and quality	100
5.	Expt. 5. Effect of storage time in different storage technologies on quality of rice. Date of initiation: T. Aman 2022-23 Duration: 2 years	i) To observe the grain quality of fine rice variety at different storage time and storage technologies. ii) To identify the suitable storage technologies for preservation of rice seed.	Appropriate storage time and storage technologies might be identified for rice variety.	100
6.	Expt. 6. Effect of Nitrogen Levels on Protein Quality of Rice at Different Regions (Continued) Date of initiation: T. Aman 2022-23 Duration: 3 years	To find out the best nitrogen level for protein quality of rice at different regions.	Appropriate nitrogen dose might be identified for growth, yield performance and protein quality of rice at different regions.	450

	<b>Project: Labor Management System</b>			
7.	Expt.2.1 Monitoring labor wage rate at different locations of Bangladesh (Continued) Date of initiation: April 2003 Duration: Continued	To find out the laborers' wage for rice cultivation throughout Bangladesh with food and without food.	The average wage rate throughout the year may be higher than previous years.	100
8.	Expt.2.2. Labour efficiency and work quality at different time frame for rice production. Date of initiation: T. Aamn 2024 Duration: 2 years	i) To see the labour efficiency of different labourers. ii) To find out quality of work of different labourers. iii) To find out suitable time frame of a day for quality and efficient work.	Labour efficiency and work quality of different labourers.	100
	<b>Project: Rice Seed Production</b>			
9.	Expt. 3.1. Performance of BRRV Varieties in Seed Production Plots at BRRV Farm. Duration: Continuous	To observe potential yield of BRRV varieties.	Actual yield of a variety will be obtained in farm.	250
	<b>Project: Management and utilization of resources</b>			
10.	Expt.4.1 Management and utilization of land, agricultural implements and labor resources. Duration: Continuous	To efficient utilization of farm land and labor resources for smoothly running of research activities and seed production at BRRV farm.	Better outcome from farm land and labor and smooth operations of farm implements.	1300
11.	Expt. 4.2 Management and Support Services of BRRV. Duration: Continuous	Efficient utilization of resources for smoothly running of research activities and other activities of BRRV.	Smooth management and attractive office premises.	1850
	<b>Program Area: Technology Transfer</b>			
	<b>Adaptive Research Division</b>			

1	<b>Technology validation</b>			
1.1	1. Title of the experiment: Advanced Line Adaptive Research Trial (ALART): Program will be taken as per materials supplied by Plant Breeding and Biotechnology Divisions during Aus 2024, Aman 2024 and Boro 2024-25.	<input type="checkbox"/> To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones. <input type="checkbox"/> To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel. <input type="checkbox"/> To select suitable material(s) for proposed variety trial (PVT).	Some advanced lines will be selected for PVT	450
1.2	Head to Head Adaptive Trial (HHAT), during T. Aman 2023 under TRB.	<ul style="list-style-type: none"> <li>•Validate the adaptability of modern rice varieties at farmers' field</li> <li>•Investigate the performance of promising varieties compared to popular mega variety</li> </ul>	Location specific suitable variety(s) will be selected for rapid and mass scale dissemination.	40
2	<b>DISSEMINATION OF TECHNOLOGIES</b> <b>2.1 Seed Production and Dissemination Program (SPDP)</b>			
	<b>Title - SPDP in B. Aus in <i>Jhum</i> system in 2023 under GOB.</b>		<b>Grain production</b>	
2.1	Variety: BRRI dhan65/83 No. of SPDP: 56 Area/ SPDP: 1 bigha, Total area: 56 bighas Locations: 6 Upzillas of 3 districts (Khagrachari, Bandarban and Rangamati).	<ul style="list-style-type: none"> <li>➤ Rapid dissemination of newly released Aus rice varieties to the farmers</li> <li>➤ Motivate farmers to produce and preserve quality seeds of modern rice varieties</li> <li>➤ Increase availability of quality seed at farm level</li> <li>➤ Exchange seeds from farmers to farmers</li> </ul>	9,000 kg	120

		<ul style="list-style-type: none"> <li>➤ Collect feedback information from farmers and DAE personnel about BRRI varieties.</li> </ul>		
	<b>SPDP in Valley (T. Aus) in 2023 under GOB</b>			
2.2	<p>Varieties: BRRI dhan83, 85 and 98.  No. of SPDP: 18  Area/ SPDP: 1 bigha, Total area: 18 bighas  Locations: 6 Upzillas of 3 districts (Khagrachari, Bandarban and Rangamati).</p>	<ul style="list-style-type: none"> <li>➤ Rapid dissemination of newly released Aus rice varieties to the farmers</li> <li>➤ Motivate farmers to produce and preserve quality seeds of modern rice varieties</li> <li>➤ Increase availability of quality seed at farm level</li> <li>➤ Exchange seeds from farmers to farmers</li> <li>➤ Collect feedback information from farmers and DAE personnel about BRRI varieties.</li> </ul>	10,000 kg	20
	<b>SPDP in T. Aus 2023</b>			
2.3	<p>Variety: BRRI dhan98  No. of SPDP: 58  Area/ SPDP: 1 bigha, Total area: 58 bighas  Locations: 29 Upzillas of 11 districts (Narsingdi, Netrakona, Mymensingh, Sherpur, Gazipur, Manikganj, Bhola, Cumilla, B. Baria, Gaibandha, Patuakhali).</p>	<ul style="list-style-type: none"> <li>➤ Rapid dissemination of newly released Aus rice varieties to the farmers</li> <li>➤ Motivate farmers to produce and preserve quality seeds of modern rice varieties</li> <li>➤ Increase availability of quality seed at farm level</li> <li>➤ Exchange seeds from farmers to farmers</li> <li>➤ Collect feedback information from</li> </ul>	30,000	40

		farmers and DAE personnel about BRRi varieties.		
	<b>Demonstration of BRRi Hybrid dhan7 in T. Aus 2023</b>			
2.4	Variety: BRRi Hybrid dhan7 No. of SPDP: 56 Area/ SPDP: 1 bigha, Total area: 56 bighas Locations: 28 upzillas of 12 districts (Chattogram, Khagrachari, Bandarban, Rangamati, Borguna, Manikganj, Gazipur, Pirozpur, Jhalokathi, Patuakhali, Bhola and Gaibandha).	Rapid dissemination of BRRi Hybrid dhan7 to the farmers	40000	40
	<b>SPDP in T. Aman 2023</b>			
2.5	Variety: BRRi dhan70, 71, 73, 75, 76, 78, 79, 80, 87, 90, 93, 94, 95, 103 No. of SPDP: 735 Area/ SPDP: 1 bigha, Total area: 735 bighas Locations: 25 Upzillas of 12 districts (Tangail, Gazipur, Narshingdhi, Manikganj, Kishoreganj, Netrokona, Mymensingh, Sherpur, Gaibandha, Bagerhat, Cox's Bazar, Satkhira).	<ul style="list-style-type: none"> <li>➤ Rapid dissemination of newly released Aman rice varieties to the farmers</li> <li>➤ Motivate farmers to produce and preserve quality seeds of modern rice varieties</li> <li>➤ Increase availability of quality seed at farm level</li> <li>➤ Exchange seeds from farmers to farmers</li> </ul>	4,40,000	240
	<b>BRRi Hybrid Variety Demonstration Program</b>			
2.6	Variety: BRRi Hybrid dhan4 and 6 No. of SPDP: 56	Rapid dissemination of BRRi Hybrid dhan4 and 6 to the farmersthroughout the	55,000	40

	Area/ SPDP: 1 bigha, Total area: 56 bighas Locations: 28 Upzillas of 14 districts (Tangail, Gazipur, Narshingdhi, Kishoreganj, Netrokona, Mymensingh, Sherpur, Gaibandha, Bagerhat, Cox's Bazar, Satkhira, Khagrachori, Rangamati, Bandarban).	country.		
	<b>SPDP in Valley of Hill tract region in T. Aman 2023</b>			
2.7	Variety: BRRI dhan87 and 103 No. of SPDP: 56 Area/ SPDP: 1 bigha, Total area: 56 bighas Locations: 6 Upzillas of 3 districts (Khagrachari, Rangamati and Bandarban).	Rapid dissemination of newly released Aman rice varieties to the farmers of hilly areas.  Motivate farmers to produce and preserve quality seeds of modern rice varieties	50,000	20
	<b>Introducing BRRI dhan75 and BRRI dhan103 in T. Aman-Potato-Boro Cropping Pattern.</b>			
2.8	Variety: BRRI dhan75 & 103 No. of SPDP: 16 Area/ SPDP: 1 bigha, Total area: 16 bighas Locations: 8 Upzillas of 4 districts (Nilphamari, Thakurgaon, Joypurhat and Bagura).	To fit short duration Aman rice variety in the potato growing areas	20,000	30
	<b>SPDP in Boro 2023-24 under GoB.</b>			
2.9	Variety: BRRI dhan67, 74, 84, 86, 88, 89, 92, 96, 97, 99, 100, 101,	➤ Rapid dissemination of newly released Boro rice varieties to the	45,00,000	240

	102,104, 105 No. of SPDP: 821 Area/ SPDP: 1 bigha, Total area: 821 bighas. Location: Tangail, Gazipur, Narsingdi, Kishoreganj, Netrakona, Manikganj, Mymensingh, Jamalpur, Munsiganj, Cox's Bazar, Chattogram, Bagerhat, Gaibandha.	farmers ➤ Motivate farmers to produce and preserve quality seeds of modern rice varieties ➤ Increase availability of quality seed at farm level ➤ Exchange seeds from farmers to farmers		
	<b>SPDP in Valley of Hilly areas in Boro 2023-24 under GOB</b>			
2.10	Variety: BRRI dhan67, 74, 84,88, 89, 96, 100, 102, 105 No. of SPDP: 56 Area/ SPDP: 1 bigha, Total area: bighas. Location: Khagrachari, Bandarban and Rangamati.	Rapid dissemination of newly released Boro rice varieties to the farmers of hill tracts.	50,000	30
	<b>Introducing BRRI dhan96, 104, 105 in T Aman-Potato-Boro Cropping Pattern, 2023-2024.</b>			
2.11	Variety: BRRI dhan96, 104, 105 No. of SPDP: 51 Area/ SPDP: 1 bigha, Total area: 51 bighas. Location: 17 upzillas of 8 districts (Nilphamari, Thakurgaon, Joypurhat, Bogura, Panchagar, Dinajpur, Kurigram and Lalmonirhat)	To fit short duration boro rice variety in the potato growing areas of Bangladesh	40,000	30
	<b>A new model of SPDP in Boro 2023-24</b>			

2.12	Variety: BRRRI dhan67, 84, 88, 89,92, 100, 101, 102, 104 No. SPDP: 30 Area/ SPDP: 1 bigha, Total area: 30 bighas. Location: Nilphamari, Gaibandha and Sherpur.	Including seed dealer in the SPDP will help rapid dissemination of newly released BRRRI varieties	20,000	60
	<b>Introducing polythene covered dry seedbed method in the Haors of Sylhet region in Boro 2022-23.</b>			
2.13	Variety: BRRRI dhan67, 88, 89, 92 No. of SPDP: 20 Area/ SPDP: 1 bigha, Total area: 20 bighas. Location: Kishoreganj, Gazipur, Habiganj, Netrakona.	To reduce seedling mortality due to low temperature	15,000	40
3	<b>Promotional Activities</b>			
	<b>Farmers' Training on Rice production technology</b>			
3.1	ARD conduct 100 farmer's training under GoB and TRB project at different locations of the country.	To trained up and updated the knowledge and skill of farmers on modern rice technologic	A total of 3000 trainees were participated Farmers' training during the reporting period of 2023-24. s.	40
	<b>Field day</b>			
3.2	ARD conduct 100 field days under GoB and TRB project at different locations of the country		A total of 10000 farmers and extension people participate	40
	<b>Quality seed production of newly released rice varieties</b>			
7.3	Quality seeds of promising rice varieties will be multiplied in T. Aman 2023 and Boro 2023-24 at	Quality seed will be used to conduct research activities and dissemination program of ARD.	A total of 7.5 tons quality seeds of BRRRI varieties will be produced	40

	farm of Adaptive Research Division, BIRRI, Gazipur.			
	<b>Seed support to farmers and stakeholders</b>			
7.4	After utilization of the seeds in the set program, the rest of the truthfully labeled seeds (TLS) of modern rice varieties was distributed to the farmers and stakeholders with free of cost under TRB project.	To Disseminat BIRRI varieties	Around 10.00 tons seeds will be distributed to the farmers and stakeholders with free of cost under TRB project ARD.	20
	<b>Establishment of Farmers seed center under TRB</b>			
7.5	Two seed centers will be established in farmers' level at Palashbari and Gobindaganj upazila of Gaibandha Six plastic drums (having capacity of 80 kg) were provided in each seed center.	To motivate farmers to store their ownseeds for next year cultivation	About one 480 kg seeds of modern rice varieties will be preserved in the seed centers that could be used for next season.	30
	<b>Training Division</b>			
	<b>Project 1. Capacity building and technology transfer through training</b>	To disseminate BIRRI developed technologies		
	<b>1.1. Modern rice production technologies training course for BIRRI scientists</b> Participants: BIRRI Scientist Duration: 2 month Batch : 02	To train Extension personnel/ BIRRI Scientists so that they can- <ul style="list-style-type: none"> <li>● Recognize and apply the important concept, principles advanced techniques of modern rice production.</li> <li>● Able to identify and solve field problems</li> </ul>		25.00

	No. of Participants: 60	of rice cultivation. <ul style="list-style-type: none"> <li>• Capable to do research planning, program development and report writing on research activities.</li> </ul>		
	<b>1.2. Hands on training on modern rice production technologies (Yield maximization)</b>  Participants: SAAO of DAE Duration: 1 week Batch : 16 Participants: 480	To train the extension agents so that they can- <ul style="list-style-type: none"> <li>• Recognize and apply the important concepts, principles and techniques of modern rice production.</li> <li>• Identify and solve field problems of rice cultivation and help the farmers to increase productivity.</li> </ul>		32.00
	<b>1.3. Training on research data management using spread sheet</b> Participants: BRRRI Scientists Duration: 1 week Batch : 2 Participants: 60	At the end of the course the participants will have developed their skills in; Proper data collection methods and Organize and analyzed data properly using spread sheet		6.00
	<b>1.4. Training on advance research data management using R studio</b> Participants: BRRRI Scientists Duration: 1 week Batch : 2 Participants: 60	At the end of the course the participants will have developed their skills in; Organizing scientific paper Preparing each part of the paper to communicate scientific information effectively		3.00

	<p><b>1.5. Training on management technologies of rice and data collection procedure</b>  Participants: SA of BRRI  Duration: 1 week  Batch : 2  Participants: 60</p>	<p>This course will enable participants to:</p> <ul style="list-style-type: none"> <li>• Learn and recognize the principles and techniques of modern rice production</li> <li>• Identify and solve field problems of rice cultivation and</li> <li>• Collect data properly from the experimental plot.</li> </ul>		3.00
	<p><b>1.6. Training on bioinformatics</b>  Participants: BRRI Scientists  Duration: 1 week  Batch : 1  Participants: 30</p>	<p>To trained the scientists so that they can</p> <ul style="list-style-type: none"> <li>• To get introduced to the basic concepts of bioinformatics and its significance in biological data analysis.</li> <li>• Explain about the methods to characterize and manage the different types of biological data.</li> <li>• Classify different types of biological databases.</li> </ul>		2.0
<b>II</b>	<b>Project 2. Evaluation of imparted training program.</b>	To determine the effectiveness of training program.		
	<p><b>2.1. Performance of long and short term training programs.</b>  Duration: Throughout the year</p>	<p>The purpose of this study is to</p> <ul style="list-style-type: none"> <li>• Evaluate the overall training program.</li> <li>• Assess the trainee's performance.</li> <li>• Assess the resource speaker performance.</li> </ul>		-

		<ul style="list-style-type: none"> <li>Identify the training needs, improve future training programs</li> </ul>		
	<b>Regional Station, Sonagazi</b>			
	<b>Season: Aus 2023-2024</b>			
1	<b>Program Area: Varietal Development</b>			
1.1	Pure line selection	To purify the variety	Development of high yielding (6 to 7 t/ha) Aus variety with good grain quality for Chattogram and Rangamati regions	15
2	<b>Program Area: Pest Management</b>			
2.1	Reduction of insecticide use in rice production for safe food production	<ol style="list-style-type: none"> <li>To manage insect pests with less or no use of insecticide.</li> <li>To compare insect pests and natural enemy status in insecticide free and insecticide spray field.</li> <li>To investigate the compensation abilities of different rice varieties due to insect damage.</li> </ol>	Minimum use of insecticide to safeguard for food production.	10
3	<b>Program Area: Crop-Soil-Water management</b>			
3.1	Optimizing seedling age of dibbled field for transplanting at saline Charland	<ol style="list-style-type: none"> <li>To investigate the performance of splitting tillers in dibbled plot</li> <li>To determine suitable seedling age for splitting tillers of dibbled field.</li> </ol>	Appropriate fertilizer rate and time of planting on new rice varieties will be determined; Suitability of rice in saline condition will be developed, Potassium and nitrogen rate will be identified in southern region.	20
3.2	Nitrogen management in transplanting Aus rice using splitted tillers from dibbled field	To determine suitable nitrogen rate for salinity affected Charland		20

4	<b>Program Area: Socio Economic and Policy</b>			
4.1	Stability analysis of BRRI released rice varieties	1.To investigate the stability of BRRI varieties for specific season. 2.To find out location specific suitable variety(s).	Stability and suitability of BRRI released rice varieties will be determined in the southern region.	50
5	<b>Program Area: Technology Transfer</b>			
5.1	Adaptive Trials of PQR varieties (PQR-KGF project)	1. Validate the adaptability of modern rice varieties at different rice environments 2. Investigate the performance of newly released varieties compared to popular old mega variety 3. Select suitable variety(s) for target environments	Suitable variety(s) for target environments	100
5.2	Demonstration of Modern Rice Varieties: Total 990 in 990 bigha) Aus: 210 bigha (Karmasuchi)	To demonstrate and disseminate BRRI varieties in greater Chattogram and Rangamati regions.	Rapid dissemination of newly released rice varieties to the farmers	2550
5.3	Farmer's and SAAOs training on modern rice cultivation and disease management technology Total: 20 (GoB & Partner)	To increase farmers/SAAOs/Officers knowledge		400
5.4	Field day on modern rice cultivation (GoB &Karmasuchi) Total: 10	To increase farmers knowledge		
5.5	Breeder seed production	Produce breeder seeds for further seed multiplication. Enrich seed stock of modern rice varieties.		
5.6	TLS/Quality seed production	Utilize quality seed for conducting		140

	1 ha	Research and Demonstration Provide seeds to different stakeholders to enhance dissemination of modern rice varieties.		
	<b>Season: Aman 2023-2024</b>			
1	<b>Program Area: Varietal Development</b>			
1.1	Hybridization	Introgression of genes from diverged genetic background into rice varieties/lines for the improvement of standard T. Aman varieties	Development of photosensitive variety with higher yield (7.0 t/ha), slender grain, lodging tolerance for Chattogram and Rangamati regions	50
1.2	Confirmation of F <sub>1</sub>	To confirm the crosses as true hybrid	do	30
1.3	Backcross breeding	To introgress the desirable traits into recurrent parents	do	30
2	<b>Program Area: Pest Management</b>			
2.1	Survey and monitoring of major rice insects in Sonagazi district	1. To know the prevalence of Major rice insects 2. To assume the rice yield losses due to rice insects	Find out the prevalence of Major rice insects	10
2.2	Reduction of insecticide use in rice production for safe food production	1. To manage insect pests with less or no use of insecticide. 2. To compare insect pests and natural enemy status in insecticide free and insecticide spray field. 3. To investigate the compensation abilities of different rice varieties due to insect damage.	Minimum use of insecticide to safeguard for food production	50
3	<b>Program Area: Crop-Soil-Water management</b>			
3.1	Effect of planting date on the performance of modern rice	1. To find out the optimum planting date of the rice varieties for better performance	Appropriate time of planting on new rice varieties will be determined;	50

	varieties at southeast Bangladesh	2. To investigate the climatic effect on crop establishment, growth and yield		
4	<b>Program Area: Socio Economic and Policy</b>			
4.1	Stability analysis of BRRRI released rice varieties	1.To investigate the stability of BRRRI varieties for specific season. 2.To find out location specific suitable variety(s).	Stability and suitability of BRRRI released rice varieties will be determined in the southern region.	50
5	<b>Program Area: Technology Transfer</b>			
5.1	Adaptive Trials of PQR varieties (PQR-KGF project) Demo=60	1. Validate the adaptability of modern rice varieties at different rice environments 2. Investigate the performance of newly released varieties compared to popular old mega variety 3. Select suitable variety(s) for target environments		100
5.2	Demonstration of Modern Rice Varieties: Total 990 in 990 bigha) Aman: 60 bigha, Aman: 60 bigha (TRB Project), Aman: 60 bigha (PQR Project) Aman:240 bigha, (GOB / Karmasuchi).	To demonstrate and disseminate BRRRI varieties in greater Chattogram and Rangamati regions.	Rapid dissemination of newly released rice varieties to the farmers	
5.3	Farmer's and SAAOs training on modern rice cultivation and disease management technology (GoB & Partner) Total: 40	To increase farmers/SAAOs/Officers knowledge		

5.4	Field day on modern rice cultivation (GoB & Partner) Total:20	To increase farmers knowledge		
5.5	Breeder seed production 5 hacter	Produce breeder seeds for further seed multiplication. Enrich seed stock of modern rice varieties.		700
5.6	TLS/Quality seed production 3 hacter	Utilize quality seed for conducting Research and Demonstration Provide seeds to different stakeholders to enhance dissemination of modern rice varieties.		420
	<b>Season: Boro 2023-2024</b>			
1	<b>Program Area: Pest Management</b>			
1.1	Survey and monitoring of major rice insects in Sonagazi district	1. To know the prevalence of Major rice insects 2. To assume the rice yield losses due to rice insects	Find out the prevalence of Major rice insects	10
1.2	Reduction of insecticide use in rice production for safe food production	1.To manage insect pests with less or no use of insecticide. 2. To compare insect pests and natural enemy status in insecticide free and insecticide spray field. 3. To investigate the compensation abilities of different rice varieties due to insect damage.	Minimum use of insecticide to safeguard for food production	50
2	<b>Program Area: Crop-Soil-Water management</b>			
2.1	Effect of planting date on the performance of modern rice varieties at southeast Bangladesh	1. To find out the optimum planting date of the rice varieties for better performance 2. To investigate the climatic effect on crop establishment, growth and yield	Appropriate time of planting on new rice varieties will be determined	50

2.2	Determination of potassium rate for saline affected Charland	1. To investigate the performance of modern rice variety under in dibbling planting 2. To determine suitable nitrogen rate for better performance of dibbled rice.	Appropriate potassium rate will be identified in southern region	20
2.3	Optimizing Nitrogen rate for Bangabandhu dhan100	1. To evaluate the responses of Bangabandhu dhan100 under a range of nitrogen supplies 2. To investigate the nitrogen use efficiency 3. To find out optimum nitrogen requirement for maximum yield of Bangabandhu dhan100	Appropriate nitrogen rate will be identified	20
3	<b>Program Area: Socio Economic and Policy</b>			
3.1	Stability analysis of BRRI released rice varieties	1.To investigate the stability of BRRI varieties for specific season. 2.To find out location specific suitable variety(s).	Stability and suitability of BRRI released rice varieties will be determined in the southern region.	50
4	<b>Program Area: Technology Transfer</b>			
4.1	Adaptive Trials of PQR varieties (PQR-KGF project) Demo=60	1. Validate the adaptability of modern rice varieties at different rice environments 2. Investigate the performance of newly released varieties compared to popular old mega variety 3. Select suitable variety(s) for target environments		100
4.2	Demonstration of Modern Rice Varieties: Total 990 in 990 bigha) Boro: 60 bigha (Hybrid Rice Project), 60 bigha (PQR Project),	To demonstrate and disseminate BRRI varieties in greater Chattogram and Rangamati regions.		

	240 bigha (GOB/Karmasuchi).			
4.3	Farmer's and SAAOs training on modern rice cultivation and disease management technology (GoB & Partner) Total: 40	To increase farmers/SAAOs/Officers knowledge		
4.4	Field day on modern rice cultivation (GoB & Partner) Total: 20	To increase farmers knowledge		
4.5	Breeder seed production	Produce breeder seeds for further seed multiplication. Enrich seed stock of modern rice varieties.		980
4.6	TLS/Quality seed production 5 hacter	Utilize quality seed for conducting Research and Demonstration Provide seeds to different stakeholders to enhance dissemination of modern rice varieties.		700
	<b>BRRI Regional Station, Sirajganj</b>			
1.	Long-term Missing Element Trial at BRRI R/S Sirajganj	1.To evaluate changes in soil physico-chemical & biological properties 2.To study the effect of long-term nutrient omission on rice yield	Yield limiting factors for rice in BRRI Sirajganj farm will be identified	
2.	Suitability of latest BRRI varieties in T. Aman-Mustard-Boro cropping pattern	To find out suitable T. Aman and Boro rice variety for higher productivity of T. Aman-Mustard-Boro cropping pattern	Find out suitable boro rice variety for T. Aman-Mustard-Boro cropping pattern	
3.	Scheduling of Phosphetic fertilizer on the growth of Algae and yield of rice	To monitor the effect of TSP and DAP fertilizer on algal growth and yield of rice	Effect of algal growth influenced by TSP or DAP will be indentified.	
	<b>Regional Station, Bhanga</b>			
	<b>Program Area:</b> Varietal			

	development, Farming Systems Research, Crop-soil-water management, Socio economics and Technology transfer			
1.	Breeding for developing high yielding Transplanting Aman rice varieties (Hybridization)	To develop breeding population with desirable characters with emphasis on water stagnation tolerance, anaerobic tillering, earliness and good grain quality.	Breeding population with desirable characters e.g water stagnation tolerance, anaerobic tillering, earliness and good grain quality will be developed	100
2.	Breeding for developing high yielding shallow flooded Deep water rice varieties (Hybridization)	To develop breeding population with desirable characters of deep water Aman rice	Breeding population with desirable characters of deep water Aman rice will be developed	150
3.	Breeding for developing Anoxia tolerant rice varieties	To develop high yielding anoxia and water stagnation tolerant rice genotypes for direct seeding condition to fit Onion/wheat- Jute-Relay T. Aman pattern	High yielding anoxia and water stagnation tolerant rice genotypes will be developed	100
4.	Breeding of high yielding rice varieties for high input responsive in single boro favorable ecosystem	To develop rice varieties for high input responsive in single Boro favorable ecosystem	Breeding population with desirable characters of high input responsive in single boro favorable ecosystem variety will be developed	100
5.	Confirmation of F <sub>1</sub> s	To confirm the crosses as true hybrid	The crosses as true hybrid will be confirmed	50
6.	FRGA	Generation Advance	Generation will be advanced	50
7.	Collection and Characterization of local rice landraces	To collect and characterize local rice landraces for breeding purpose and conserve in the Genebank of BRRI	Seed and characterize rice landraces will be maintained	50
8.	Screening and identification of anaerobic germination (AG) tolerance rice germplasm of Bangladesh.	To identify donor for anaerobic germination tolerance	Novel QTLs associated with anaerobic germination (AG) tolerance will be identified.	100

9.	Head to Head Trial: VRS (Variety Replacement Strategy)	<ol style="list-style-type: none"> <li>1. To evaluate the adaptation of BRRi released Rice varieties in different region of the country.</li> <li>2. To compare the modern rice variety with local variety.</li> <li>3. To select appropriate variety for specific region.</li> <li>4. To disseminate the modern varieties throughout the country.</li> </ol>	Performance of Modern HYVs varieties in Faridpur region will be evaluated	TRB
10.	Demonstration trial of BRRi developed HYVs and Hybrids varieties	To disseminate the modern HYVs and Hybrids varieties in Faridpur region	Modern HYVs and Hybrids varieties in Faridpur region will be disseminated	145
11.	Farmer's Training and Field Day	To increase farmers knowledge	Farmers will know modern rice cultivation techniques	115
12.	Stability analysis of BRRi released rice varieties	To demonstrate the suitability of BRRi varieties in Faridpur region	Performance of BRRi varieties at Faridpur station will be identified	150
13.	Effects of planting time on yield of rice in char land area of Faridpur region	<ol style="list-style-type: none"> <li>1. To achieve sustainable rice production at char land environment.</li> <li>2. To adjust planting time for saving/protect <i>Aus</i> crop from early flood.</li> </ol>	Planting time for saving/protect <i>Aus</i> crop from early flood will be adjusted.	100
14.	Effects of planting time on the performance of Modern BRRi varieties in Faridpur region	<ol style="list-style-type: none"> <li>1. To find out the suitable planting time of modern rice varieties</li> <li>2. To find out the cut of dates for of modern rice varieties</li> <li>3. Yield loss assessment due to delay planting.</li> </ol>	Planting time for saving/protect Boro crop from early flood will be adjusted.	100
15.	Development of weed control techniques in Boro-Fallow-Fallow cropping pattern	To develop cost effective and eco-friendly weed control practices for sustainable weed management in Boro-Fallow-Fallow cropping systems.	Cost effective and eco-friendly weed control practices in Boro-Fallow-Fallow cropping systems will be developed	100

16.	Effect of herbicide on Azolla infestation in Faridpur region	To reduce the abundance of Azolla at BRRI R/S Bhanga	Suitable herbicide for controlling Azolla will be identified.	150
17.	Effect of Trichocompost on nutrient and disease management in rice	1. To find out the efficacy of Trichocompost for nutrient management in rice 2. To find out the effectiveness of Trichocompost for disease management	Disease management and yield increase of rice by using Trichocompost.	150
18.	Evaluation of different Aman rice varieties under Wheat-Jute-T. Aman cropping pattern in Faridpur region	1. To find out the suitability of newly released Aman rice varieties under Wheat-Jute-T. Aman cropping pattern 2. To increase the system productivity and farmers' income	Suitable rice varieties will be found to fit under Wheat-Jute-T. Aman cropping pattern	200
19.	Validation of improved cropping pattern technology Boro-Transplanted deepwater Aman in the single Boro area of Faridpur region	To increase the system productivity and farmers' income	Single Boro area will be intensified with higher farmers' income	100
20.	Fine tuning of the improved cropping pattern technology Lentil + Muskmelon-Jute-T. Aman in Faridpur region	To increase the system productivity and farmers' income	System productivity and farmer's income will be increased.	150
	<b>Regional Station, Barishal</b>			
01	Hybridization (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
02	F1 confirmation (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
03	Generation Advancement, F2 (RGA)(Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
04	Generation Advancement, F3 (Hybrid) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
05	Generation Advancement, F5	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100

	(RGA) (Boro)	ecosystem	development	
06	Generation Advancement, F7 (Hybrid) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
07	Observational Yield Trial (OYT#1) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
08	Observational Yield Trial (OYT#2) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
09	Preliminary Yield Trial (PYT# 01) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
10	Advanced Yield Trial AYT-1 FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
11	Advanced Yield Trial (AYT-2) FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
12	Advanced Yield Trial (AYT-3) FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
13	Advanced Yield Trial (AYT-4) FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
14	Advanced Yield Trial (AYT-5) FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
15	Advanced Yield Trial (AYT-6) FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
16	Advanced Yield Trial (AYT-7) FBR (Sagordi) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
17	Advanced Yield Trial (AYT- 8) (NGR) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	150
18	Advanced Yield Trial (AYT- 9) (Boro)	To develop rice varieties for favorable ecosystem	High yielding favorable rice variety development	100
19	Hybrid Seed Production (Boro)	To produce quality hybrid seed	Getting quality hybrid seed	200
20	Hybridization (T. Aman)	To develop tidal submergence tolerant rice variety	Non saline tidal submergence rice variety development	100

21	F1 confirmation (T. Aman)	To develop tidal submergence tolerant rice variety	Non saline tidal submergence rice variety development	100
22	Preliminary yield trial (PYT) (T. Aman)	To develop tidal submergence tolerant rice variety	Non saline tidal submergence rice variety development	100
23	Advanced Yield Trial (AYT-1) (T. Aman)	To develop tidal submergence tolerant rice variety	Non saline tidal submergence rice variety development	100
24	Advanced Yield Trial (AYT-2) (T. Aman)	To develop tidal submergence tolerant rice variety	Non saline tidal submergence rice variety development	100
25	Advanced Yield Trial (AYT-3) (T. Aman)	To develop tidal submergence tolerant rice variety	Non saline tidal submergence rice variety development	100
26	Exploring sediment deposition from tidal water in Barishal regional station	To know the deposition of sediment and nutrition status of it.	Measurement of Silt deposition rate and silt properties through tidal water flow in rice field.	100
27	Effect of time of planting of newly developed BRRI varieties in Barishal region at T. Aman 2023	To know the yield performance based on time planting of BRRI varieties.	Fixation of the optimum planting time of newly developed BRRI varieties for getting higher yield.	100
28	Suitable varietal combination for Fallow-Aus-T. Aman cropping pattern in Barishal region (Aus)	To increase rice production area by adopting suitable cropping pattern	Land coverage of rice cultivation will be increased using identified suitable cropping pattern in Aus season	100
29	Ratooning ability of BRRI released Boro rice varieties at Barishal region in Boro-Fallow-T. Aman cropping pattern (Boro)	To increase rice production by adopting ratoon techniques using Boro rice varieties.	Identifying potential BRRI released ratoon varieties in Boro season at Barishal region under tidal surge non saline ecosystem along with fertilizer management to increase the productivity at Barishal region.	100
30	Diversification of a dominant single cropped area (Fallow-Fallow-T. Aman) in Barishal region, Bangladesh. (Aus, Boro)	To increase cropping intensity by adopting suitable cropping pattern	Cropping intensity will be increased.	150
31	Survey and Monitoring of Rice disease status at Barishal region	To know the rice disease status at Barishal region	Disease intensity and pattern will be found out.	150

	(Boro)			
32	Digitization of Charbadna and Sagordi farm of BRRI R/S, Barishal for converting to SMART farming (Boro)	To digitalize Charbadna and Sagordi farm for easy operating of farm activities	Charbadna and Sagordi farm will be digitalized for easy operating of farm activities.	100
33	Experiment on Stability Analysis of BRRI released modern rice varieties will be conducted in collaboration and cooperation with ASD	To find out stable one (s) of the BRRI released modern rice varieties in location specific as well as across the country	Able to find out stable performance of the BRRI released modern rice varieties in location specific as well as across the country.	150
34	Demonstration of Modern Rice Varieties (Aus, T. Aman, Boro)	To quick expansion of Modern Rice Varieties.	Drawing farmer's attention on promising rice varieties for rapid dissemination.	4000
35	Field day (Aus, T. Aman, Boro)	To inspire farmers for adopting BRRI modern rice varieties	Farmers will be inspired and motivated for cultivating HYV rice varieties.	500
36	Farmers Training on Rice Technology (Aus, T. Aman, Boro)	To increase Farmers' knowledge and skills on rice production packages	Farmers' knowledge and skills will be increased on rice cultivation, quality seed production and storing technologies.	500
37	Breeder Seed (BS) Production (Aus, T. Aman, Boro)	To produce quality Breeder seed	Quality foundation seed will be produced by using Breeder seeds.	5000
38	Truthfully labelled Seed (TLS) Production (Aus, T. Aman, Boro)	To produce quality TLS seed	Quality TLS seed will be produced in order to supply farmers.	3000
	<b>Regional Station, Rajshahi</b>			
1.0	<b>Program Area: Varietal Development Program</b>			
1.1	Hybridization	High yield & acceptable grain type with aroma	5 crosses were made with	100

1.2	F1 confirmation	High yield & acceptable grain type (Jira type)	6 crosses were confirmed	100
1.3	Growing RGA Population	Development of high yield and acceptable grain quality rice	39520 RGA genotype were harvested from 42 crosses	200
1.4	Regional Yield Trial	Evaluation of genotypes for specific and general adaptability	Around 16 RYT will be conducted to test the local adaptability	500
1.5	Collection and maintenance of local landraces	To characterize the local genotypes for Rajshahi region and to maintain the local germplasm for using in crossing program	Enriching local germplasm for further research advancement	100
2.0	<b>Program Area: Crop-soil-water managemet</b>			
2.1	Validation of agricultural drought forecasting for mitigating drought in T. Aman rice at Rajshahi region	<ul style="list-style-type: none"> <li>✓ To validate drought by using forecasted rainfall and evaporation</li> <li>✓ To mitigate drought by applying supplemental irrigation</li> <li>✓ To determine suitability of drought model for forecasting, and</li> <li>✓ To determine yield performance after mitigating drought</li> </ul>	<ul style="list-style-type: none"> <li>✓ Drought forecasting</li> <li>✓ Drought quantification in terms of amount and days and also severity</li> <li>✓ Amount and number of supplemental irrigations for mitigating drought</li> <li>✓ Impact of drought on yield</li> <li>✓ Site specific validation</li> </ul>	100
2.2	Irrigation Scheduling of Rice ( <i>Oryza sativa</i> L.) based on Weather Forecasting in Rajshahi	<ul style="list-style-type: none"> <li>✓ To predict water demand through water balance simulation model for rice cultivation</li> <li>✓ To compare performance of water balance simulation model with AWD and</li> <li>✓ conventional methods</li> <li>✓ To validate water balance simulation model with CROPWAT 8.0 model, and</li> <li>✓ 4. To recommend the better</li> </ul>	<ul style="list-style-type: none"> <li>✓ Irrigation water requirement determination through weather forecasting</li> <li>✓ Better method for irrigation scheduling</li> </ul>	100

		method for irrigation scheduling of rice		
	<b>Regional Station, Habiganj</b>			
1	Advanced Yield Trial (AYT) of Deep-water Rice, B. Aman 2023-24	Evaluation of the promising deep-water rice genotypes for yield potential and adaptability test under deep water ecosystem.		
2	Regional yield trial (RYT) of shallow deep-water rice (RYT#DWR), B. Aman 2023	Evaluation of the breeding lines for specific and general adaptability test under deep water ecosystems.		
3	Hybridization, T. Aman 2023-24	Development of photosensitive varieties suitable for low lying areas in haor ecosystem		
4	Evaluation of long duration RYT tall materials under early transplanting conditions, T. Aman 2023-24	To evaluate tall breeding materials as a source of more straw		
5	Regional Yield Trial (RYT) for False smut resistant advanced lines, T. Aman 2023-24	To evaluate specific and general adaptability of False smut resistant advance breeding lines along with disease parameters as compared with standard checks in on-station condition.		
6	Improvement of local popular cultivars, Boro 2023-24	To develop high yielding varieties with cold tolerance, acceptable grain & nutritional quality.		
7	Observational Yield Trial (OYT#1_BPH), Boro 2023-24	To identify the BPH resistance line with higher grain yield, acceptable grain & nutritional quality.		
8	Advanced Yield Trial (AYT#Hbj), Boro 2023-24	To select the best performing advanced breeding lines with higher grain yield, acceptable grain & nutritional quality,		

		resistance to insect pests and diseases in field conditions.		
9	Regional yield trial (RYT) for favorable boro rice (FBR-Medium duration), Boro 2023-24	To understand general and regional adaptability and select the best performing breeding lines with highest genetic merits.		
10	Regional yield trial (RYT) for favorable boro rice (FBR-Short duration), Boro 2023-24	To understand general and regional adaptability and select the best performing breeding lines with highest genetic merits.		
11	Regional yield trial (RYT) for favorable boro rice (FBR-Extra-long slender), Boro 2023-24	To understand general and regional adaptability and select the best performing breeding lines with highest genetic merits.		
12	Regional yield trial (RYT) for favorable boro rice (FBR-Barishal), Boro 2023-24	On-station evaluations of the advanced breeding lines for adaptability along with the check varieties in different regional stations and headquarter of BRRI.		
13	Regional yield trial (RYT) for favorable boro rice (FBR-Bio), Boro 2023-24	On-station evaluations of the advanced breeding lines for adaptability along with the check varieties in different regional stations and headquarter of BRRI.		
14	Regional yield trial (RYT-tall) for haor areas, Boro 2023-24	Evaluation of high yielding, tall and lodging tolerant breeding lines in representative areas.		
15	Regional yield trial (RYT) for disease resistant rice (Blast-LD), Boro 2023-24	To evaluate specific and general adaptability of blast resistance advance breeding lines as compared with standard checks in on-station condition.		
16	Regional yield trial (RYT) for disease resistant rice (Blast-MD), Boro 2023-24	To evaluate specific and general adaptability of blast resistance advance breeding lines as compared with standard checks in on-station condition.		

17	Regional yield trial (RYT) for disease resistant rice (Blast-SD), Boro 2023-24	To evaluate specific and general adaptability of blast resistance advance breeding lines as compared with standard checks in on-station condition.		
18	Regional yield trial (RYT) for disease resistant rice (Blast-PQR-SD), Boro 2023-24	To evaluate specific and general adaptability of blast resistance advance breeding lines as compared with standard checks in on-station condition.		
19	Regional yield trial (RYT) for disease resistant rice (BB and Blast), Boro 2023-24	To evaluate specific and general adaptability of bacterial blight and blast resistance advance breeding lines along with disease parameters as compared with standard checks in on-station condition.		
20	G x E interaction of Basmati rice on physio-chemical and cooking properties, Boro 2023-24	To find out the general and specific adaptability of Basmati rice in Bangladesh in relation to physio-chemical and cooking properties		
21	ALART- Deep Water Rice (DWR) B. Aman 2023-24	To evaluation of high yielding deep water lines (100-150 cm water depth) under direct seeded conditions.		
22	ALART_ BB & Blast, Boro 2023-24	To evaluate specific and general adaptability of the blast resistance advanced breeding line as compared with standard checks in on farm condition.		
23	ALART_ BB, Boro 2023-24	To evaluate specific and general adaptability of the bacterial blight resistance advanced breeding line as compared with standard checks in on farm condition.		
24	ALART_FBR-LD, Boro 2023-24	To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field as submergence tolerance		

		T. Aman genotype in the real submergence prone environment.		
25	ALART_FBR-SD, Boro 2023-24	To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field as submergence tolerance T. Aman genotype in the real submergence prone environment.		
26	ALART_PQR, Boro 2023-24	To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.		
27	ALART_CTR, Boro 2023-24 (5 Locations)	To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.		
28	Integrated Management of Bakanae Disease of Rice, Boro 2023-24	To develop a biocontrol approach to control bakanae disease of rice.		
29	Observation of Efficacy of Trichocompost to Control Bakanae Disease, Boro 2023-24	To observe the efficacy of trichocompost to compensate yield reduction due to bakanae disease of rice		
	<b>Regional Station Rangpur</b>			
1	Development of rice varieties suitable in Rangpur region	Development of high yielding ( $\geq 8.0$ 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.	Region specific high yield potential variety will be developed.	200

2	Breeding of Photoperiod-sensitive rice varieties (PSR) for Lowland and Charland ecosystem	To develop moderate photoperiod-sensitive climate smart rice varieties with high yield potential ( $\geq 8.0$ t/ha) with acceptable grain quality.	Moderate photoperiod-sensitive rice varieties with high yield potential ( $\geq 8.0$ t/ha) with acceptable grain quality will be developed for lowland and charland ecosystem	200
3	Breeding for Second Generation Rice (SGR)	Development of high yielding ( $\geq 8.0$ t/ha for T. Aman and $\geq 10.0$ 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.	High yield potential variety will be developed through ideotype breeding.	200
4	Breeding for Basmati Rice	Development of high yielding ( $\geq 6.0$ t/ha for T. Aman and $\geq 8.0$ 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.	High yield potential photo-insensitive basmati type variety will be developed	200
5	Development of hybrid rice parental lines and hybrids	To develop maintainer and restorer lines from diverse genetic origin	BLB and blast resistant hybrid variety will be developed.	500
6	Effect of Time of Planting of Newly Developed BRRRI Varieties in Different Regional Stations	Establishment of crop at the right time plays vital role in the performance of rice. Specific agro-climatic conditions of different regions influence the planting time of a variety.	Optimize best planting time for specific agro-climatic conditions	500

	<b>Regional Station, Satkhira</b>			
1	Performance of different entries under RYT (BB) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	BB resistant geanotype can be identify.	
2	Performance of different entries under RYT (False smut) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	False smut resistant geanotype can be identify.	
3	Performance of different entries under RYT (Katari) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
4	Performance of different entries under RYT (Tall material) at BRRI, Satkhira during T. Aman 52023	To identify best genotype.	best genotype can be identifyfy	
5	erformance of different entries under RYT (Low Amylose) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
6	Performance of different entries under RYT (Low Amylose) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
7	Performance of different entries under RYT (RLR-1) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
8	Performance of different entries under RYT (ZER) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
9	Performance of different entries under RYT (BRR) at BRRI, Satkhira during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
10	Performance of different genotypes	To identify best genotype.	best genotype can be identifyfy	

	under ALART-Anti oxydent enrich rice, during T. Aman 2023			
11	Performance of different genotypes under ALART-SHR1 (short slender) during T. Aman 2023	To identify best genotype.	best genotype can be identifyfy	
12	Advanced Line Adaptive Research Trial (ALART)-BB	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel</li> <li>3. To select suitable material(s) for Proposed Variety Trial (PVT)</li> </ol>	best genotype can be identifyfy	
13	Advanced Line Adaptive Research Trial (ALART)-BB BLAST	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel</li> <li>3. To select suitable material(s) for Proposed Variety Trial (PVT)</li> </ol>	best genotype can be identifyfy	
14	Advanced Line Adaptive Research Trial (ALART)-STR Satkhira	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel</li> <li>3. To select suitable material(s) for Proposed Variety Trial (PVT)</li> </ol>	best genotype can be identifyfy	

15	Advanced Line Adaptive Research Trial (ALART)-STR kaliganj	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel</li> <li>3. To select suitable material(s) for Proposed Variety Trial (PVT)</li> </ol>	best genotype can be identify	
16	Advanced Line Adaptive Research Trial (ALART) STR- Shamnagar	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel</li> <li>3. To select suitable material(s) for Proposed Variety Trial (PVT)</li> </ol>	best genotype can be identify	
17	Advanced Line Adaptive Research Trial (ALART)-FBR Bio	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel</li> <li>3. To select suitable material(s) for Proposed Variety Trial (PVT)</li> </ol>	best genotype can be identify	
18	Advanced Line Adaptive Research Trial (ALART) SHR1	<ol style="list-style-type: none"> <li>1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field</li> <li>2. To get feedback information about the advantages and disadvantages of the</li> </ol>	best genotype can be identify	

		selected materials from farmers and Extension personnel 3. To select suitable material(s) for Proposed Variety Trial (PVT)		
	Advanced Line Adaptive Research Trial (ALART) SHR 2	1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field 2. To get feedback information about the advantages and disadvantages of the selected materials from farmers and Extension personnel 3. To select suitable material(s) for Proposed Variety Trial (PVT)	best genotype can be identify	
18	Line Stage Trial (LST)	To assess FRGA/RGA derived advanced breeding lines for uniformity at heading and desirable agronomic and grain type traits	best genotype can be identify	
19	Observational Yield Trial (OYT)	Identification of genetically fixed advanced lines suitable for saline areas	best genotype can be identify	
20	Preliminary Yield Trial (PYT)	Initial evaluation of breeding lines for yield and other agronomic characteristics in replicated trial	best genotype can be identify	
21	Asian Food and Agriculture Cooperation Initiative (AFACI) program	Initial evaluation of yield, salt tolerance and other agronomic characteristics of selected materials in replicated trial.	best genotype can be identify	
22	AGGRi Network trial	To select the superior breeding lines in salinity stress environment of Bangladesh	best genotype can be identify	
23	Effects of long-term missing nutrients on rice yield	To identify yield limiting nutrients of rice	Yield limiting nutrient and its effects on plant can be determined	
24	Nitrogen rates and varietal effects on rice yield and greenhouse gas	To assess the effects of rice cultivars and nitrogen doses on rice yield and	Effects of variety and nitrogen dose in GHG emission can be acceses	

	emissions in coastal ecosystems of Bangladesh	greenhouse gas (GHG) emissions in the coastal environment To find out suitable rice cultivars for lowering GHG emissions with reduced negative environmental impacts.		
25	Effects of Bio-coated urea on rice yield in Boro season in the south-western coastal ecosystem.	1. To evaluate the impact of bio-coated fertilizer on rice yield. 2. To determine the effect of bio-coated fertilizer on saline soil properties	impact of bio-coated fertilizer on rice yield can be identify	
26	Effect of liquid nano urea on Rice Cultivation	To evaluate the impact of nano urea fertilizer on rice yield	impact of nano urea fertilizer on rice yield can be identify	
27	Effect of liquid nano zinc on Rice Cultivation	To evaluate the impact of nano zinc fertilizer on rice yield	impact of nano zinc fertilizer on rice yield can be identify	
28	Stability Analysis of BRRV Varieties at Satkhira	To find out the suitability and adaptability of the particular variety	suitability and adaptability of the particular variety can be determined	
29	Rice Area Production Mapping (RAPM)	Mapping of rice cultivation area according to season		
30	Estimation of rice yield in different seasons of Bangladesh: Crop cuts method	1. To find out the on-farm yield of BRRV released rice varieties in Satkhira and Jashore regions 2. To analyze the performance of BRRV released rice varieties with other varieties	analyze the performance of BRRV released rice varieties with other varieties	
31	Monitoring Soil-Water Salinity of BRRV Farm, Satkhira	To know the salinity status of BRRV-RS, Satkhira	salinity status of BRRV-RS, Satkhira can be determine	
32	Monitoring Weather Status of BRRV Farm, Satkhira	To know the weather status of BRRV-RS, Satkhira	Weather data can be use on experiment	
33	Seed production and dissemination program (SPDP)	To disseminate BRRV varieties rapidly among the farmers of Khulna and Satkhira region	disseminate BRRV varieties rapidly	

	<b>Regional Station, Kushtia</b>			
<b>1</b>	<b>Program Area: Varietal Development</b>			
<b>1.1</b>	Regional Yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	One or more advanced breeding lines will be found higher yielder than checks.	100
<b>1.2</b>	Advanced Yield Trial (AYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition		100
<b>1.3</b>	Advanced Line Adaptive Research Trial (ALART)	To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones		270
<b>2</b>	<b>Program Area: Socioeconomic and Policy</b>			
<b>2.1</b>	Stability Analysis of BRRI varieties	To maintain season, year and location-wise database on the yield performance of BRRI varieties.	One or more Varieties will be found stable in local conditions.	30 thousand
<b>3</b>	<b>Program Area: Crop-Soil-Water Management</b>			
<b>3.1</b>	Determination of the optimum time of planting of BRRI dhan87 for yield maximization at the Kushtia region	To find out the optimum time of planting and seedling age for BRRI dhan87	The identification of the timing that maximizes yield.	30 thousand
<b>3.2</b>	Effect of Missing Nutrient Elements on Growth and Grain Yield of Rice in BRRI Farm, Kushtia	i)To examine the effects of missing nutrient elements on the growth and grain yield of rice. ii)To determine the residual soil fertility.	The impact of missing nutrient elements on the growth and grain yield of rice cultivated at BRRI Farm in Kushtia will be demonstrated.	30 thousand
	<b>Program Area: Rice Farming Systems</b>			
<b>4.1</b>	Interpolation of Premium Quality	i) To increase system productivity	Productivity will be enhanced along	30 thousand

	and Nutrition-Enriched Rice Varieties in Existing Mustard – Boro – T. Aman Cropping System	and profitability of the existing cropping system ii) To maximize the land use efficiency and production efficiency of the existing pattern	with acquiring better nutrition.	
4.2	Increasing the system productivity of Boro – Fallow - T. Aman cropping pattern through the inclusion of Mustard in the High Ganges River Floodplain	i)To increase total productivity ii)To increase oil production	The overall system productivity will be increased	150 thousand
4.3	Determination of Optimum Planting Window of Newly Released T. Aman Rice Varieties in Three Cropped Cropping Pattern	To find out the effective rice varieties with appropriate planting time for increasing the yield potential of T. Aman rice.	The ideal planting window for newly released T. Aman rice varieties across three different cropping patterns will be advised.	50 thousand
4.4	Evaluation of different rice-based cropping patterns under agro-forestry systems with exotic date palm ( <i>Phoenix dactylifera</i> ).	i) To ensure food sufficiency for farm family ii) To increase whole farm productivity	The suitability and productivity of various rice-based cropping patterns within agro-forestry systems will be addressed.	50 thousand
4.5	Survey of rice-based cropping patterns and its improvement in Kushtia districts (New)	i) To create a database of the existing cropping pattern scenario in the Kushtia district ii) To explore the scope of existing cropping pattern	A database detailing the current cropping patterns prevalent in the Kushtia district will be generated.	100 thousand
5	<b>Program Area: Technology Transfer</b>			
5.1	Demonstrations of newly released BRRI varieties	To disseminate and popularize the varieties among the farmers in Kushtia	The awareness of adopting new rice varieties among farmers in the Kushtia region.	200 thousand

	<b>BRRI Regional Station, Cumilla</b>			
	<b>Program Area: Varietal Development</b>			
	<b>Project name:</b> Development of Transplanted Aman Rice with high yield along with desirable growth duration, acceptable grain quality and resistance to diseases and insect pests and water stagnation tolerant rice			
1	Hybridization	Introgression of genes from diverged genetic background into rice varieties/lines for the improvement of standard T. Aman varieties	Desirable growth duration compared to standard check varieties along with >6.0 t/ha yield potential and water stagnant tolerant lines will be developed	100 GOB
2	Confirmation of F <sub>1</sub>	To confirm the crosses as true hybrid		
3	Growing of F <sub>2</sub> population	Selection of progenies with emphasis on earliness, plant type, grain type and high yield potential compared to standard check varieties		
4	Field RGA	Advancement of progenies to develop improved plant type, earliness, acceptable grain quality and high yield potential		
5	Observational Yield Trial (OYT)	Initial yield evaluation of advanced lines compared to standard checks		
6	Preliminary Yield Trial (PYT)	Preliminary yield evaluation of advanced lines compared to standard checks		
7	Secondary Yield Trial (SYT)	Secondary yield evaluation of advanced lines compared to standard checks		
8	Maintenance breeding	Conservation of advanced lines and pre-breeding materials		

	<b>Program Area: Pest Management</b>			
1	Survey and monitoring of major rice diseases in Cumilla district	1. To know the prevalence of Major rice disease 2. To assume the rice yield losses due to rice diseases	Management of major rice disease will be developed for increasing rice production and ensure food security	50 GOB
2	Demonstration of rice neck blast disease management technology under farmer's field condition	1. To minimize yield loss due to blast disease 2. To build up farmers awareness on blast disease management		50 GOB
3	Varietal reaction and recovering ability of BRRI released rice varieties	To know the varietal reaction against tungro disease of rice		50 GOB
4	Validation of Rice Tungro disease management technology from seedbed in Cumilla region	To validate the management technology of rice tungro disease in Cumilla region		50 GOB
5	Tracking the infection source(s) of rice false smut disease	To identify whether the seed/soil and/ or the air is/are the carrier of the pathogen or not		50 GOB
6	Evaluation of new chemicals against Blast disease of rice	To find out the effective chemicals suitable for Blast disease of rice.		50 GOB
7	Evaluation of new chemicals against Sheath blight disease of rice	To find out the effective chemicals suitable for ShB disease of rice.		50 GOB
8	Multi-Location Trial (MLT) of blast resistant advanced lines	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks		50 GOB
9	Evaluation of tungro resistant advanced lines in hot spot areas in Cumilla region	To evaluate the tungro resistant advanced lines in natural farmers field condition.		50 GOB
10	Evaluation of direct seeded rice for	To evaluate less infection of tungro disease		50

	less infection of tungro disease in hot spot area in Cumilla	in direct seeded rice		GOB
11	Advisory services to the farmers	To assist farmers for rice production;		50 GOB
	<b>Program Area: Crop-Soil-Water management</b>			
1	Effect of nursery management on the performance of rice variety grown under water stagnant condition.	To find out optimum seed density To find out optimum age of rice seedling in waterlogged condition To identify proper seeding rate in water stagnant condition	Healthy seedling raising techniques will be identified under stagnant conditions; The Response of BRRI dhan98 at various seedling age and fertilizer management could be explored; Appropriate fertilizer rate and time of planting on new rice varieties will be determined; Suitability of Low land rice in stagnant condition will be developed.	60 GOB
2	Effect of seedling age and fertilizer management on growth and yield of rice variety.	To find out optimum age of rice seedling to maximize yield. To optimize urea split application with varying seedling age		60 GOB
3	Effect of time of planting on growth and yield of BRRI developed new T. Aman and Boro varieties.	To find out the appropriate time of planting for yield optimization		60 GOB
4	Effects of Potassium fertilization at different growth stages on growth and yield of rice.	To find out the effect of potassium fertilization at different growth stages of Rice		60 GOB
5	Long-term missing element trials for diagnosing the limiting nutrient in soil in BRRI R/S Cumilla	To determine nutrient deficiency problems in soil. To observe long-term yield trend of rice. To evaluate the changes in soil properties		60 GOB

		under long-term rice culture		
6	Effects of N rates on the yield of BRRRI released news varieties in BRRRI Cumilla	To update the N rates of BRRRI released new varieties		60 GOB
7	Effects of P rates on the yield of BRRRI released new varieties in BRRRI Farm Cumilla	To update the P rates of BRRRI released new varieties		60 GOB
8	Effects of K rates on the yield of BRRRI released new varieties/ advanced lines in BRRRI Farm Cumilla	To update the N rates of BRRRI released new varieties/ advanced lines in BRRRI Farm Cumilla		60 GOB
9	Determination of appropriate time of DAP application to control Algal growth	To find out the appropriate time of DAP application To control the algal growth in the rice field.		60 GOB
10	Effect of DAP and urea rates on growth and yield of rice	To find out a suitable combination of DAP and Urea for desired rice yield		60 GOB
	<b>Program Area: Socio Economic and Policy</b>			
1	Stability analysis of BRRRI released rice varieties	To demonstrate the suitability of BRRRI varieties in Cumilla Region	Stability and suitability of BRRRI released rice varieties will be determined in greater Cumilla region	60 GOB
	<b>Program Area: Technology Transfer</b>			
1	Field demonstration of different BRRRI released new rice varieties in Cumilla region (GoB, PPNB, TRB)	To demonstrate and disseminate BRRRI varieties in greater Cumilla region	Variety/ technology dissemination and awareness build up for increasing rice yield as well as food security	2000 GOB/ Karmasuchi
2	Farmer's and SAAOs training on modern rice cultivation and disease management technology	To increase farmers/SAAOs/Officers knowledge		500 GOB

	(PPNB/GoB)			
3	Field day on modern rice cultivation (GoB & PPNB)	To increase farmers knowledge		100 GOB
	<b>Regional Station, Gopalganj</b>			
1.	Collection of local rice landraces	To collect local rice landraces for breeding purposes and conserve in the Genebank of BRRI	Collected germplasm will safely be conserved and documented along with their characters	80000.00
2.	Phenotypic characterization of newly collected local rice germplasm from Faridpur and Khulna region	To increase seed and characterize rice landraces as per 'germplasm descriptors and evaluation form' of GRSD, BRRI.	Characterized rice landraces will be maintained, documented, and used for breeding purpose	100000.00
3.	Phenotypic and genotypic characterization of pigmented rice germplasm	i. To characterize rice landraces as per 'germplasm descriptors and evaluation form' of GRSD, BRRI. ii. To characterize pigmented rice germplasm using molecular markers.	Characterized rice landraces will be maintained, documented, and used for breeding purpose	50000.00
4.	Preliminary yield trial of deepwater rice germplasm	To evaluate the yield performance of seven deepwater rice germplasm for comparison with standard check	The specific and general adaptability of the deep-water rice germplasm as compared with standard checks will be evaluated in on-station conditions at Gopalganj Farm	35000.00
5.	Preliminary yield trial of Jhum rice genotypes	To evaluate the yield performance of two Jhum rice genotypes for comparison with standard check	The specific and general adaptability of the jhum rice germplasm as compared with standard checks will be evaluated in on-station conditions at Gopalganj Farm	35000.00
6.	Breeding for developing high-yielding Transplanting Aman rice	To develop a breeding population with desirable characteristics with emphasis on	The new variety will be developed	100000.00

	varieties (Hybridization)	water stagnation tolerance, anaerobic tillering, and good grain quality.		
7.	Breeding for developing high-yielding shallow flooded Deepwater rice varieties (Hybridization)	To develop a breeding population with desirable characteristics of deepwater Aman rice	The new variety will be developed	100000.00
8.	Effect of transplanting date on growth and yield of latest BRRI varieties in Gopalganj	To find out the suitable transplanting date of different BRRI-developed rice varieties in terms of maximum benefit.	Data will be generated.	50000.00
9.	Collection and chemical analysis of peat soil	i. To the analysis of the soil nutrients ii. To evaluate rapid peat sampling methods	peat soil data will be generated.	100000.00
10.	Improvement of Boro-Fallow-Fallow Cropping pattern in Gopalganj District	To increase productivity by improving the existing cropping pattern	Productivity and reduce the cost of production of rice in the Faridpur region (Gopalganj) will be increased	150000.00
11.	Demonstration trial of BRRI-developed HYVs and Hybrid varieties	To disseminate the modern HYVs and Hybrids varieties in Faridpur and Khulna region	Modern HYVs and Hybrids varieties in Faridpur and Khulna region will be disseminated	1200000.00