Research Program 2020-2021

Plant Breeding Division

Table-3
Proposed Research Program 2020-21

SN	Program Area/Project	Major Objective	Annual Budget (Thousand Tk.)
1	Development of Upland Rice (Broadcast Aus)	Development of varieties in combination of multiple traits such as quick seedling emergence and vigorous growth, short growth duration (90-95 days), tolerance to lodging, drought and pre-harvest sprouting and good eating quality.	1000
	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	700
	Development of Glutinous Rice	Development of glutinous rice varieties in combination of multiple traits such as grain amylose content <10% with high yield and drought tolerance	500
2	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.	2000
3	Improvement of rice for shallow flooded & Deep Water environment	Generation of genotypes in combination with slow elongation, high yield and submergence tolerance for shallow flooded deep water sub-ecosystem (flood water depth 0.5-1.0 m). Development of deep water rice varieties with facultative type high elongation and drought tolerance, higher grain (2.5- 3.5 t/ha) and straw (10 - 12 t/ha) yields.	1500
4	Development of Rainfed Lowland Rice (RLR) (T. Aman)	Introgression of genes from diverged genetic background for the improvement of standard T. Aman varieties.	3000
5	Development of Salt Tolerant Rice for T. Aman and Boro Season	Introgression of salinity tolerant traits/ gene (s) in high yielding varieties suitable for RLR and irrigated Boro ecosystem.	6000
6	Development of Premium Quality Rice (PQR) for T. Aman and Boro Season	Introgression of genes for small & long slender grain with aroma, photosensitivity and Anti-oxidant property into high yielding genetic background for the development of national and international grade aromatic rice.	5000
	Development of	Development of strong photo-sensitive (Nizersail type)	500

SN	Program Area/Project	Major Objective	Annual Budget (Thousand Tk.)
	photo-sensitive Rice, T. Aman	and medium photo-sensitive (Gainza type) premium quality rice for T. Aman season	
7	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, and acceptable grain quality.	5000
8	Development of Insect Resistant Rice (IRR) for T. Aman & Boro Season	Introgression of genes of BPH and gall midge into high yielding rice genetic background.	3000
9	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.	2500
10	Development of Submergence and Water Stagnation Tolerance Rice	Introgression of submergence and medium stagnant water tolerant genes into modern genetic background with high yield potential, short/long growth duration, weakly/strongly photoperiod sensitivity, grain quality etc.	2500
11	Development of Drought Tolerant Rice for T. Aman Season	Introgression of drought tolerance genes into high yielding rice genetic background.	3000
12	Development for Golden rice for T. Aman & Boro	Development of new genotypes with high Beta Carotene (Vitamin-A) content along with resistance to major insect pests and diseases, and acceptable grain quality.	5000
13	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.	3000
14	Development of Cold Tolerant Boro Rice	Introgression of cold tolerance gene into high yielding rice genetic background.	3000
15	Development of Water Saving Rice	Development of new rice genotypes based on water use efficiency with better plant type and major insect and disease resistance.	1500
16	Development of Heat Tolerant Rice	Introgression of genes for high temperature tolerance into high yielding varieties for developing rice varieties with short growth duration.	1000
17	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.	500
Total Budget (Thousand Tk.) : 50200			

Biotechnology Division
Table-3
Proposed Research Program 2020-21

Sl No.	Program area/ Project	Major objective	Annual budget (in Lakh Taka)
Program area: Biotechnology			
1	Evaluation of doubled haploids for developing low glycemic index (GI) rice	To select high yielding low glycemic index (GI) rice lines having desirable characters	0.25
2	Development and evaluation of salt tolerant rice lines through anther culture	To develop salt tolerant rice variety	2.00
3	Development and evaluation of premium quality Kalijira type rice lines through anther culture	To develop Kalijira type aromatic rice variety	2.00
4	Development of Aus rice variety through anther culture	To develop short duration high yield Aus rice variety	1.00
5	Development of antioxidant enriched black rice variety through anther culture	To develop antioxidant enriched black rice variety	1.00
6	Development of high yielding photosensitive rice variety through anther culture	To develop photosensitive rice variety	2.00
7	Field evaluation of doubled haploid high yielding rice lines	To select high yielding rice lines having desirable characters	1.50
8	Field evaluation of somaclonal variants developed from EMS treated rice seed	To select high yielding rice lines having desirable characters	0.50
9	Development of high yielding short stature aromatic Kilizira type varieties using NMU	To develop high yielding short stature aromatic Kilizira type varieties	1.00
10	Development of low sterility variants of BRH-11-9-11-4-5B rice lines using NMU	To reduced sterility of BRH-11-9-11-4-5B	1.00
11	Development of Sheath Blight resistant rice lines through mutation by NMU	To develop Sheath Blight resistant lines	1.00
12	Field evaluation of somaclonal variants for developing Aus rice variety	To develop high yielding Aus rice variety	1.00
13	Field evaluation of somaclonal variants for developing antioxidant enriched black rice lines	To develop high yielding antioxidant enriched black rice variety	1.00

Sl No.	Program area/ Project	Major objective	Annual budget (in Lakh Taka)
14	Field evaluation of somaclonal variants of BRRI dhan47	To develop somaclone of BRRI dhan47 with reduced shattering.	0.5
15	Development of rice variety through wide hybridization followed by embryo rescue	To develop different stress tolerant rice variety through wide hybridization	1.5
16	Development of salt tolerant transgenic rice using *PVA* from *Porteresia coarctata*	To develop salt tolerant transgenic rice lines	2.00
17	Development of salt tolerant transgenic rice using *GlyI* and *GlyII* .	To develop salt tolerant transgenic rice lines	2.00
18	Introgression of salt tolerant mangrove gene *AeMDHAR*	To develop salt tolerant transgenic rice lines	2.00
19	Development of high yielding aromatic rice lines through genome editing	To develop high yielding aromatic rice lines using CRISPR-Cas9 genome editing technology.	4.00
20	Development of high yielding blast resistant lines using CRISPR-Cas9 technology.	To develop high yielding blast resistant lines using CRISPR-Cas9 genome editing technology.	4.00
21	Identification of QTLs for taller seedling height	To identify QTLs for taller seedling height for developing tidal submergence tolerant rice variety	3.00
22	Field evaluation of bacterial blight (BB) resistant gene pyramided lines	To develop breeding lines possessing multiple BB resistance genes	2.00
23	Validation of a simple functional marker for fragrance in non-Basmati fragrant rice varieties	To validate functional markers of major fragrance gene *BADH2* in different back ground and to examine the potential of this functional markers for using marker assisted selection	2.00
24	Isolation and cloning of stress tolerant DREB genes	To isolate and cloning of stress tolerance gene from *O. rufipogon*	5.00
25	Variations identification in DREB genes sequences in different types of rice genotypes	To find out the variation in DREB gene sequences in different types of rice genotypes	5.00
26	Variations identification in BADH2 gene sequence in different aromatic genotypes	To find out the variation in *BADH2* gene sequences in different Bangladeshi local aromatic rice genotypes	5.00
27	Isolation and cloning of drought tolerant genes from wheat	To isolate and cloning of drought tolerance gene	3.00
28	Identification of *Setaria italica* mutants losing C4 properties.	Characterizing of *Setaria italica* mutant population for loss of C4 functions	2.00

Genetic Resources and Seed Division (GRSD)

Table 3
Proposed Research Program 2020-2021

SL No.	Program area/ Project (Duration)	Major Objective(s)	Annual Budget Thousand Tk.
Program Area 01: Varietal Development Program (VDP)			
3	**Sub-program area: Rice Germplasm and Seed**		
3.1	Rice germplasm conservation and management (since 1974)	Collection, characterization, documentation, conservation and rejuvenation of rice germplasm to enrich the Genebank of BRRI and its sharing with rice researchers	1060.0
3.2	Seed production and variety maintenance (since 1990)	Maintenance of nucleus seed stock and production for supplying breeder seeds as per National demand and MOU/LOA with seed growers.	8155.0
3.3	Exploratory and genetic studies (since 1990)	Conduct problem related genetic studies for breeder seed and rice germplasm.	555.0
3.4	Seed technology packages (since 2009)	Exploratory and genetic studies of seed technology for recommending as rice seed production technology.	130.0
3.5	Out research activities (since 2016)	Visit to breeder and foundation seed production farms to ensure the quality of produced seed.	200.0

Hybrid Rice Division

Table-3
Proposed Research Program 2020-2021

SL.	Experiments	Major Objective(s)	Budget Thousand Tk.
Project-1: Development of parental materials for high yield, high amylose content and fine grain containing hybrid rice variety			
1.1	Source Nursery	Identification of prospective maintainers and restorers from diverse genetic origin	50,000.00
1.2	Test cross Nursery	1. Confirmation of maintainers and restorers from the crossed entries,	60,000.00

SL.	Experiments	Major Objective(s)	Budget Thousand Tk.
		2. Selection of heterotic rice hybrids, 3. Conversion of prospective materials into new CMS lines.	
1.3	Backcross Nursery	Developing CMS lines from identified suspected maintainer lines by back crossing.	80,000.00
1.4	CMS Maintenance and Evaluation Nursery	Maintain and evaluate of CMS lines for genetic purity and subsequent use	100,000.00
1.5	Improvement of parental lines by (B x B) crosses.	To broaden the genetic base of maintainer lines and selection of the recombinant lines	70,000.00
1.6	Improvement of parental lines by (R x R) crosses.	To broaden the genetic base of restorer lines and selection of the recombinant lines	70,000.00
1.7	Evaluation of Fatema dhan and its generation advancement	To select fix lines from Fatema dhan	50,000.00
1.8	Evaluation of MST (Multi-Stress Tolerant) lines	To identify prospective maintainer and restorer lines having MST traits	70,000.00
Project-2: Breeding for BB resistant hybrid rice variety			
2.1	Development of disease resistant parental lines (BB)	To develop new CMS and restorer lines resistance to disease (BB) and find out heterotic rice hybrid combinations having resistance to disease (BB)	200,000.00
2.2	Screening of existing maintainers and restorers against BB resistance.	To identification of BB resistance maintainers and/or restorers from existing materials.	80,000.00
2.3	Screening of existing maintainers and restorers against Blast resistance.	To identification of blast resistance maintainers and/or restorers from existing materials.	70,000.00
2.4	Source Nursery	Identification of prospective maintainers and restorers of diversified origin for making experimental rice hybrids.	40,000.00
2.5	Test cross Nursery	1. Confirmation of maintainers and restorers from the crossed entries. 2. Selection of heterotic rice hybrids. 3. Conversion of prospective maintainers into new CMS lines	50,000.00
2.6	Backcross Nursery	Developing BB resistant CMS lines from identified maintainer by back crossing.	200,000.00
Project-3: Evaluation of parental materials & hybrids			
3.1	Observational Trial (OT) of experimental hybrids	Selection of promising hybrids	85,000.00
3.2	Preliminary Yield trials of promising hybrids	To study the wider adaptability and yield potentiality of promising hybrids	200,000.00
3.3	Multi-location trials of promising	To find out promising hybrids with high	500,000.00

SL.	Experiments	Major Objective(s)	Budget Thousand Tk.
	hybrids	yield potential and higher adaptability	
3.4	Combining ability of A, B & R lines	To select the best combiner (S) in respect of grain yield & yield components	85,000.00
3.5	National Hybrid Rice Yield Trial (NHRYT)	Evaluation of imported hybrids for subsequent selection	Funded by SCA
3.6	Quality ensure of previous season produced F_1 and CMS lines through grow out test	To determine purity of parental lines and hybrids of BRRI released hybrid rice	50,000.00
3.7	Evaluation of exotic hybrids and parental and source materials (A, B, R & F_1)	To evaluate adaptability and yield performance of exotic materials	200,000.00
3.8	Demonstration trials of BRRI released hybrids along with promising hybrids and checks	To evaluate the performances of released hybrids with promising ones	50,000.00
3.9	Identification of promising combiners developed using iso-cytoplasmic restorers (ICR)	To determine the selected ICR lines for assessing their potential in hybrid development	100,000.00
3.10	Breeding for outcrossing potentials in CMS lines	To select best CMS lines for enhancing seed production of hybrid rice	200,000.00
Project-4: Seed Production of Parental lines and Hybrids			
4.1	Seed multiplication of promising CMS lines	To produce pure and good quality seed of CMS lines for subsequent use.	200,000.00
4.2	CMS multiplication of BRRI hybrid dhan1 & BRRI hybrid dhan4	Production of pure and good quality seed of CMS lines.	200,000.00
4.3	CMS line multiplication of BRRI hybrid dhan2	Production of sufficient quantity quality seeds of CMS lines for subsequent use	150,000.00
4.4	CMS line multiplication of BRRI hybrid dhan3	Production of sufficient quantity quality seeds of CMS lines for subsequent use	300,000.00
4.5	CMS line multiplication of BRRI hybrid dhan5	Production of sufficient quantity quality seeds of CMS lines for subsequent use	300,000.00
4.6	CMS line multiplication of BRRI hybrid dhan6	Production of sufficient quantity quality seeds of CMS lines for subsequent use	300,000.00
4.7	CMS line multiplication of BRRI hybrid dhan7	Production of sufficient quantity quality seeds of CMS lines for subsequent use	150,000.00
4.8	F_1 seed production of BRRI hybrid dhan2 & BRRI hybrid dhan4	Production of sufficient quantity quality hybrid seed for subsequent use	200,000.00
4.9	F_1 seed production of BRRI hybrid dhan3	Production of sufficient quantity quality hybrid seed for subsequent use	600,000.00
4.10	F_1 seed production of BRRI hybrid dhan5 & BRRI hybrid dhan7	Production of sufficient quantity quality hybrid seed for subsequent use	850,000.00
4.11	F_1 seed production of BRRI hybrid dhan6	Production of sufficient quantity quality hybrid seed of promising hybrids for subsequent use	300,000.00
4.12	F_1 seed production of promising	To produce sufficient quantity of seed for	350,000.00

SL.	Experiments	Major Objective(s)	Budget Thousand Tk.
	hybrids	PYT and MLT	
4.13	Growth duration differentiation method (GDDM) for synchronization in flowering	To determine proper heading time of parental lines (A & R) of promising hybrids	50,000.00
4.14	Nucleus seed production of BRRI hybrid dhan1 & BRRI hybrid dhan4	To produce parental lines nucleus seed of BHD1 & BHD4	70,000.00
4.15	Nucleus seed production of BRRI hybrid dhan2	To produce parental lines nucleus seed of BHD2	70,000.00
4.16	Nucleus seed production of BRRI hybrid dhan3	To produce parental lines nucleus seed of BHD3	70,000.00
4.17	Nucleus seed production of BRRI hybrid dhan5	To produce parental lines nucleus seed of BHD5	70,000.00
4.18	Nucleus seed production of BRRI hybrid dhan6	To produce parental lines nucleus seed of BHD6	70,000.00
4.19	Nucleus seed production of BRRI hybrid dhan7	To produce parental lines nucleus seed of BHD7	70,000.00
4.20	Maintainer and restorer lines multiplication of promising and released hybrids	Production of sufficient quantity quality parental lines for subsequent use	100,000.00
Total (Seventy one lakh and thirty thousand taka only)			71,30000.00

Grain Quality and Nutrition Division

Table-3
Proposed Research Program 2020-2021

Sl.	Title Project/Experiment/Activity	Objectives (General & Specific)	Budget (Lakh Tk)
Project-1: Grain Quality Characteristics for Variety Development			
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.	2.5
1.2	Determination of physicochemical and cooking properties of transforming rice breeding lines	To find out the physicochemical and eating quality of promising lines for identifying better grain quality	0.5
1.3	Evaluation of physicochemical properties of newly released BRRI varieties	To determine physicochemical and cooking qualities of (recently released) BRRI developed rice varieties for updating the database.	1.0
1.4	R to predict proximate composition of rice varieties	1.To calibrate a near accurate prediction model for proximate composition of rice 2.To characterizing the proximate composition (moisture, carbohydrate, protein, lipids, ash and Dietary fiber) of BRRI varieties as an index of nutritional	0.5

Sl.	Title Project/Experiment/Activity	Objectives (General & Specific)	Budget (Lakh Tk)
		worth	
1.5	Determination of changes of amylose and protein content of newly BRRI released HYVs in Boro season at different storage condition.	To help awareness about nutritional quality at different storage condition of newly BRRI released HYVs.	0.5
1.6	Nutraceutical Characterization of newly released BRRI varieties (BRRI dhan90 to BRRI dhan100)	To determine nutraceutical properties including antioxidants, minerals, fatty acid and amino acid profiling's of BRRI released HYVs from BR1 to BRRI dhan95 and BRRI hybrid1 to BRRI hybrid dhan6 along with their physicochemical and cooking properties.	0.5
Project-2: Grain Quality parameters for consumer preference			
2.1	A survey of rice grain quality in Bangladesh: Consumer preference	To identify scientific reasons of preferring local varieties over HYV in terms of grain quality and nutrition.	2.0
2.2	Taste profiling of popular rice varieties in Bangladesh	1. To characterize the textural and cooking properties of a collection of rice varieties belonging to the intermediate and high AC classes; and 2. To apply modeling techniques to predict distinct cooking quality ideotypes based on visco-elastic, textural attributes and flavor.	2.5
2.3	To Screening, Selection, and Training of Sensory Panelists	1.To determine impairment of primary senses (colour, vision, ageusia and anosmia 2.To matching test for taste and odor substances 3.To ability to detect basic taste and odor acuity 4.To determine ability to characterized texture 5.To performance in comparison with other candidates 6.To increase sensory acuity of panelists and provide them with rudimentary knowledge of procedures used in sensory evaluation	1.0
2.4	Analysis of ferulic acid (FA) in Bangladeshi rice varieties in association of biochemical evaluation on burning effects of RBO in vivo rat experiment	1.To evaluate on appropriate analysis methodology and study amount of FA and their relation to nutrition properties in rice. 2.To evaluate the burning effects of RBO.	0.5
2.5	To Screening, Selection, and Training of Sensory Panelists	1.To determine impairment of primary senses (colour, vision, ageusia and anosmia)	1.0

Sl.	Title Project/Experiment/Activity	Objectives (General & Specific)	Budget (Lakh Tk)
		2.To matching test for taste and odor substances 3.To ability to detect basic taste and odor acuity 4.To determine ability to characterized texture 5.To performance in comparison with other candidates 6.To increase sensory acuity of panelists and provide them with rudimentary knowledge of procedures used in sensory evaluation	
Project-3: Nutritional Quality Assessment of Rice
3.1	Fatty acid profiles and nutritional quality of rice bran oil (RBO) in all BRRI high yielding varieties	1.To identify the varieties containing higher amount of oil content. 2.To analyze the fatty acid profile, heavy metal and nutritive value of rice bran oil.	0.5
3.2	Development and validation of an HPLC methods for detection of bioactive compounds and residues of common herbicides and pesticide in rice grain	To develop and validate HPLC methods for determination of alpha-tocopherols (Vit-E), Carotenoids (Vit-A), Phytic Acid (PA), Ferulic acid (FA), Anthocyanin (C3G), Tricyclazole, Aflatoxin (G_1, G_2, B_1, B_2), Bensulfuron-methyl and Acetochlor in rice grain samples at GQN, BRRI.	1.0
3.3	Study on antioxidative and anticancer properties of pigmented (black, red, purple) rice varieties in Bangladesh	1.Extraction and identification of anthocyanin from different Bangladeshi pigmented rice varieties. 2.Anti-carcinogenic effects by observing the anti-proliferative activity in cancer cells. 3.Anti-oxidant enzyme activity in the lysates of cultured cells by estimating activities of detoxifying enzymes. 4.Anti-diabetic effects by measuring serum glucose and insulin levels in type 2 diabetic rats. 5.Anti-inflammatory effects by estimating serum levels of IL-4, IL-6 and TGF-beta	0.5
3.4	Assessment of heavy metals (Cd, Zn, Pb, Cr, As) in soil, water, and rice grain from industrial area (Dhaka, Gazipur, Narayangonj, Mymensingh, Narshindi etc).	1. To quantify heavy metals in soil, water, and rice grain. 2. To identify area of rice field contaminated by industrial effluent water.	1.5
3.5	Proximate analysis of Swietenia Mahagoni, Neem, and Bishkatali oil	1.To extract oil and isolate Alkaloid from Mahagoni, Neem and Bishkatali as	0.5

Sl.	Title Project/Experiment/Activity	Objectives (General & Specific)	Budget (Lakh Tk)
	and its efficacy on insect pest of rice.	well as their efficacy on rice insect pest. 2.To determine and quantify the active ingredients in Mahagoni, Neem and Bishkatali oil.	
Project-4: Commercial Rice Based Products			
4.1	Determination of physicochemical properties and nutritional quality of puffed, popped and flattened rice from newly released BRRI varieties	1. To identify the physical quality of puffed, popped and flattened rice. 2. To determine the nutritional value of puffed, popped and flattened rice.	0.5
4.2	Survey on indigenous rice products of BRRI modern varieties.	To find out the popular BRRI varieties are used for producing puffed and flattened rice.	1.5
4.3	Value addition and standardization of nutritional level in selected food items to mitigate malnutrition	1.Survey on dietary pattern of street children in capital city, Dhaka. 2. Formulation of low cost rice based nutraceutical food items. 3.Impact evaluation studies of formulated rice based foods	1.5

Agronomy Division

Table-3

Proposed Research Programme 2020-2021

Sl.	Programme area/Project (Duration)	Major objective	Annual budget Thousand TK.
1	Alleviation of salt stress in rice by exogenous phytoprotectants: regulation of Na^+/K^+ homeostasis and oxidative metabolism (2 Years)	1. To identify the effective phytoprotectant in mitigating salt stress of rice 2. To explore the effect of exogenous phytoprotectants on plant phenotype under salt stress 3. To assess the regulatory mechanisms of phytoprotectants in alleviating salt stress	200.00
2	Effect of time of planting on growth and yield of BRRI developed advanced lines (Long-term)	1. To determine optimum planting time of BRRI developed advanced lines	300.00
3	Enhancing rice yield by optimizing planting time of newly released transplanted Aman varieties (1 year)	1. To determine the effect of variable planting time on the phenology, growth and yield of newly released transplanted Aman varieties 2. To find out optimum time of planting for newly released transplanted Aman varieties	150.00
4	Application of Nano-Zinc Oxide to Improve Salt Tolerance in Rice (2 years)	1. To develop an eco-friendly protocol to synthesis Nano-Zinc Oxide 2. To investigate the effect of Nano-Zinc Oxide on growth, yield and mineral status of rice under salinity stress	200.00
5	Improving nutrient uptake, nitrogen-use efficiency and yield of rice through application of neem coated urea (2 years)	1. To determine the nitrogen use efficiency as influenced by neem coated urea compared to prilled urea. To find out the influence of neem coated urea on the grain nutrient (NPK) uptake, growth and yield of transplanted rice.	200.00
6	Growth and yield improvement of transplanted Aman rice in Charland ecosystem through integrated nutrient management (2 years)	1. To determine an economically suitable fertilizer management option for better growth and yield of rice in Charland ecosystem	200.00
7	Mitigation of waterlogging stress in T. Aman rice through application of plant protectant coupled with balanced fertilization (2 years)	1. To determine the effect of combined application of fertilizer and plant protectants on the growth, yield and nutrient uptake of waterlogging T. Aman rice	200.00
8	Nitrogen application to maximize grain yield of	1. To find out optimum nitrogen rate for shorna type varieties	150.00

Sl.	Programme area/Project (Duration)	Major objective	Annual budget Thousand TK.
	shorna type varieties in T. Aman season (2 years)	2. To find out the influence of nitrogen application on the grain N uptake, growth and yield of shorna type varieties.	
9	Residue analysis of widely used herbicides in the irrigated rice (3 years)	1. To validate of high-performance liquid chromatographic protocol for the determination of herbicide residues 2. To determine the residue of pre and post-emergence herbicides in the irrigation water, soil, rice straw and grain	300.00
10	Herbicide Application: Shifts in soil microbial community structure (2 years)	1. To characterize the herbicide-induced responses of microorganisms in transplanted rice. 2. To evaluate the herbicide-induced tolerance of soil microbes	250.00
11	Evaluation of candidate herbicides (Long-term)	1. To determine the weed control efficacy of new herbicide	200.00
12	Yield Maximization of BRRI developed rice varieties through influencing some Agronomic Critical Factors in different seasons (2 years)	1. To study the effect of Agronomic most critical factors for yield maximization of newly BRRI developed varieties 2. To find out and recommended the most appropriate Agronomic critical factors packages for yield maximization of newly BRRI developed varieties	200.00
13	Maximizing yield and quality of some local fine aromatic cultivars through influencing some Agronomic management in Aman seasons (2 years)	1. To study the effect of some Agronomic managements for yield maximization of some local fine aromatic popular varieties 2. To find out and recommended the most appropriate Agronomic management packages for yield maximization and quality improvement of some local fine aromatic popular varieties	250.00
14	Toxic heavy metal bioaccumulation in rice cultivated in soil and water contaminated with industrial waste (2 years)	1. To quantify the physico-chemical parameters of soil and water contaminated with industrial waste 2. To determine the transfer of toxic heavy metals from contaminated soils and water into rice straw and grain	250.00

Plant Physiology Division

Table - 3
Proposed Research Program 2020-2021

Sl.	Programme area/ Project (Duration)	Major Objective	Annual Budget Thousand Tk.
1. Salinity tolerance			
Expt. 1.1	Exploring new sources of salinity tolerance from BRRI Gene Bank germplasm at seedling stage	To identify salt tolerant genotypes at seedling stage for donor parents.	300.00
Expt. 1.2	Characterization for salinity tolerance of Bengal Assam Aus Panel (BAAP) rice germplasm at seedling stage	To find out new sources of salinity tolerance from BAAP Panel germplasm at seedling stage.	300.00
Expt. 1.3	Characterization for salinity tolerance at seedling stage during T. Aman and Boro season	To identify salt tolerant advance breeding lines/genotypes at seedling stage	200.00
Expt. 1.4	Characterization of advanced breeding lines at salinity stress for whole growth period during Aman and Boro season	To know the level of salinity tolerance of different genotypes at whole life cycle.	200.00
Expt.1.5	CRISPR-Cas9 mutagenesis of the *OsRR22* gene for improving salinity tolerance of rice	To increase salinity tolerance via CRISPR-Cas9-targeted mutagenesis of the transcription factor gene *OsRR22*	1000.00
Expt. 1.6	Validation of Ashfal balam salinity tolerant QTLs for seedling and reproductive stage	To measure the effects of QTLs at seedling and reproductive stage salinity tolerance of rice.	300.00
Expt. 1.7	Characterization for salt tolerance of a backcross population of rice at seedling stage	I. To classify the population in to different classes according to the level of tolerance II. To identify marker-trait linkage of Saltol specific markers through selective genotyping	300.00
2. Submergence tolerance			
Expt. 2.1	Identification of rice germplasm for two weeks flash flood submergence tolerance	To identify tolerant germplasm for two weeks of complete submergence at vegetative stage.	300.00
Expt. 2.2	Identification of advance breeding lines for flash flood submergence tolerance	To identify tolerant genotypes for two weeks under complete submerged condition at vegetative stage.	200.00

Sl.	Programme area/ Project (Duration)	Major Objective	Annual Budget Thousand Tk.
Expt. 2.3	Screening for stagnant flooding tolerance of advance breeding lines and germplasm at whole growth period during T. Aman season	I. To identify the tolerant germplasm and advance breeding lines for water stagnation condition II. To observe the tillering ability under water stagnation conditions	200.00
Expt. 2.4	Evaluation of survivability and tolerance level of BRRI dhan78 under saline submergence condition	To identify the tolerant level and survivability of BRRI dhan78 under saline submergence condition.	300.00
Expt. 2.5	Evaluation of elongation ability of BRRI dhan91 under deep flooding condition	To observe the elongation ability of BRRI dhan91 under deep flooding condition	200.00
3. Drought tolerance			
Expt. 3.1	Confirmation of performance for ALART/ RYT /AYT materials under drought stress at reproductive stage (TRB-Project)	To evaluate of ALART/ RYT /AYT materials under control drought condition in the net house.	300.00
Expt. 3.2	Screening germplasm for drought tolerance at reproductive phase (TRB-Project)	To identify rice germplasm tolerant to drought stress at reproductive phase.	300.00
Expt. 3.3	Evaluation of previously selected germplasms under drought stress at reproductive phase in the rain-out shelter	To find out the correlation of field performance of tested genotypes with the performance under control drought condition in the rain-out shelter	300.00
Expt. 3.4	Physiological and biochemical characterization of advance breeding lines under drought stress at reproductive phase	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.	400.00
Expt. 3.5	Characterization of rice germplasms under drought stress at reproductive phase using SSR marker	To study the genetic diversity of the germplasms.	500.00
4. Heat tolerance			
Expt. 4.1	Screening of rice germplasm for high temperature tolerance	To identify new heat tolerant germplasm for donor parent.	300.00
Expt. 4.2	Generation advance and yield trial of spikelet fertility introgressed lines in the background dhan28 and	To know the yield potential of developed lines.	300.00

Sl.	Programme area/ Project (Duration)	Major Objective	Annual Budget Thousand Tk.
	BRRI dhan29		
Expt. 4.3	Screening for high temperature tolerance of spikelet fertility QTL introgression lines	To identify high temperature tolerant lines under controlled condition	300.00
5. Cold tolerance			
Expt. 5.1	Exploring new sources of cold tolerance from BRRI Gene Bank collections at seedling stage	To identify rice genotypes which can tolerate low temperature at seedling stage.	300.00
Expt. 5.2	Screening of advanced breeding lines for seedling stage cold tolerance (TRB-Project)	To identify advanced breeding lines which can tolerate low temperature at seedling stage.	300.00
Expt. 5.3	Characterization and evaluation of some selected rice genotypes for cold tolerance	To identify cold tolerant rice genotypes at natural condition.	200.00
Expt. 5.4	Effect of polythene covering on seedling growth during Boro season	To identify a suitable technique for protecting Boro rice seedling from cold injury	500.00
Expt. 5.5	Reduction of growth duration through vernalization and accumulation of degree days at seedling	To determine vernalization effect on life period of rice	200.00
6. Growth studies			
Expt. 6.1	Determination of growth stages of some rice varieties as affected by sowing time	I. To determine the duration of the different growth phases of rice varieties at various transplanting dates. II. To detect appropriate degree days to III. initiate panicle in different transplanting dates.	200.00
Expt. 6.2	Determination of growth stage and yield potential of 60 day-Aus rice varieties	To determine the duration of the different growth phases and yield potential of Indian Aus rice varieties	300.00
Expt. 6.3	Photo-sensitivity test of some advanced breeding lines	To know the photo-sensitivity of advanced breeding lines and recently released T. Aman varieties.	200.00
7. Yield potential			
Expt. 7.1	Investigation of anatomical and photosynthetic differences in rice leaves and related C4 species	I. To identify leaf anatomical differences between rice and C4 species. II. To explore differences of photosynthetic related parameters	1000.00

Sl.	Programme area/ Project (Duration)	Major Objective	Annual Budget Thousand Tk.
		between rice and C4 species.	
Expt. 7.2	Rooting dynamics of BRRI rice varieties against different nitrogen concentrations	To find out varieties having better root system under high nitrogen condition.	200.00
8. Crop weather information			
8.1	Automatic weather station data collection and maintenance	To collect, transfer and storage of automatic weather station data.	200.00
8.2	Manual weather station data collection and maintenance	To collect, transfer and storage of different weather variables	200.00
		Total budget	10300.00

Soil Science Division

Table-3
Proposed Research Program 2020-21

Project/ SL#.	Project title and Expt.	Major Objectives	Annual budget (Thousand Tk.)
I.	**Fertility Assessment of Rice Soils and Nutrient use efficiency in rice**	To assess fertility status of rice growing areas and determine optimum fertilizer requirement	
	1.1. Increase N use efficiency through nanotechnology and zeolite amendment	• To assess N use efficiency by urea-HA nanohybrid and urea plus natural zeolite over prilled urea	500
	1.2. Fertilizer management for fine aromatic rice varieties	• To find out the suitable fertilizer combination for increasing yield and quality of premium rice	200
	1.3. Nutrient management for growing four crops in a year	• To increase crop production, • To maintain soil fertility and improve nutrient use-efficiency • To determine nutrient depletion/mining	500
	1.4. Management interventions to improve NUE and reduce N losses in typical rice cropping system of Bangladesh	• To quantify the fate of N fertiliser (crop, soil and losses) and NUE under various N managements for double rice cropping • To develop locally based mitigation options that can be compared within plot-based experiments	UKRI GCRF SANH Proj.)

Project/ SL#.	Project title and Expt.	Major Objectives	Annual budget (Thousand Tk.)
	1.5. Determination of N fertilizer doses for ALART materials	• To determine optimum N doses for ALART materials	400
	1.6. Determination of N fertilizer doses for new BRRI varieties	• To determine optimum N doses newly released BRRI varieties.	400
	1.7. Effect of nitrogen and potassium rates on modern rice cultivation	• To find out the suitable combination of N and K for MV rice cultivation • To study the N and K dynamics in soil and plant	400
	1.8. Screening of N use efficient rice genotypes	• To find the N use efficient genotypes • To find the agronomic traits related to efficient N management • GWA mapping of selected NUE lines	400
	1.9. Performance of BRRI rice varieties under P deficient soil	• To find out P efficient rice varieties	UKRI GCRF SANH Proj.)
	2.0. Effect of different micronutrients on growth and yield of rice	• To study the effect of micronutrients and beneficial nutrients on growth and yield of rice • To observe the interactions among the different micronutrients and beneficial nutrients • To study the effect of micronutrients and beneficial nutrients on soil biochemical properties	200
	2.1. Nutrient management for diversified cropping in Bangladesh (NUMAN)	• Develop and test tools for sustainable nutrient management for intensively cropped areas of north-west Bangladesh, the emerging cropping systems based on CA and for coastal zone soils of southern Bangladesh	400
	2.2. Effect of long-term rice farming on the changes of soil nutrient status of BRRI Farm soil	• To determine the changes occurred in soil carbon and plant nutrient status in BRRI farm soil due to long-term rice farming • To develop a fertility map of the soils of the study area • To devise a nutrient dynamics model to estimate the nutrient status on long-term basis	ACIAR and KGF

Project/ SL#.	Project title and Expt.	Major Objectives	Annual budget (Thousand Tk.)
II.	**Identification and management of nutritional disorder**	• To determine upcoming nutritional disorders in rice under intensive rice cultivation with different fertilizer management practices	
	2.1. Long-term missing element trial at BRRI regional station	• To determine nutrient mining problem on soil fertility and its influence on rice yield • To find out nutrient management options for correcting soil problems	700
	2.2. Long-term effect of organic and inorganic nutrients on yield and yield trend of lowland rice	• To evaluate changes in soil physical, chemical and biological properties • To determine management options for solution of soil problem(s)	200
	2.3. Consequences of continuous wetland rice cropping on rice yield and soil health	• To evaluate soil fertility and rice yield changes over time • To find out mitigation options of soil health	120
	2.4. Potassium fertilizer management for rice based cropping systems in Old Himalayan Piedmont soil	• To identify the K deficiency in soil • To determine the K contribution for different crops • To increase yield and maintain soil fertility	600
	2.5. Increasing Fertilizer Use Efficiency and Resilience in Saline Soils	• To manage soil salinity using organic and inorganic sources • To develop a technology for increasing rice yield	500
	2.6. Delineating rice yield limiting soil factors for some selected paddy soils of Bangladesh	• To identify rice yield limiting factors of selected paddy soils in Habiganj, Faridpur, Rangpur and Gazipur • To find out an appropriate nutrient package for maximum rice yield.	200
	2.7. Determination of Critical Limit of Nutrients for Major Soils and Crops	• Delineation of the present status of different nutrients in calcareous, non-calcareous, piedmont and terrace soils of AEZ 18, 19 and 20. • Determination of critical limit of P, K, S, Zn and B for different soils and rice crop.	NATP

Project/ SL#.	Project title and Expt.	Major Objectives	Annual budget (Thousand Tk.)
III	**Integrated nutrient management for intensive rice cropping**	To increase rice productivity with sustainable soil health.	
	3.1. Integrated nutrient management for double and triple rice cropping for maximizing productivity	• To improve land productivity and soil health under intensive cropping system.	300
	3.2. Performance of vermicompost and poultry manure on rice yield and soil health	• To find out the effect of poultry manure and vermicompost with chemical fertilizers on yield and yield attributes of rice and its impacts on soil nutrient status and uptake of micronutrients by rice plants.	200
	3.3. Effect of Silicon on growth and yield of rice	• To know the effect of Si on growth and yield of rice under rice- rice cropping system	200
	3.4. Effect of INVINSA (PGR) on growth and yield of Boro rice	• To find out the efficacy of INVINSA on Boro rice	300
IV.	**Greenhouse gas emission study**	To study GHG emission from rice field	
	4.1 Alternate wetting and drying: a promising water saving approach to mitigate GHG emission from paddy fields	• To evaluate potential of AWD coupled deep placed UB as a tool of adaptation in changing climate over continuous flooded (CF) rice with broadcasted PU • To compare net N supplying trends of deep placed UB over broadcasted PU under CF and AWD • To validate Cool Farm Tool Beta-3 with measured GHG emission	IRRI
	4.2. Mitigating Greenhouse Gas (GHG) emissions from Rice-based Cropping Systems through Efficient Fertilizer and Water Management	• To quantify GHG emission from rice-based cropping system under different water and N management • To develop a technology for increased crop productivity with reduced negative environmental impacts	KGF

Project/ SL#.	Project title and Expt.	Major Objectives	Annual budget (Thousand Tk.)
	4.3.Effect of different organic sources for amelioration of industrial polluted area of Sreepur, Gazipur	• To characterize the bio- physio-chemical properties of heavy metal polluted industrial area of Sreepur, Gazipur. • To determine the mineralization rate of OMs in heavy metal polluted soil • To determine the effect of OM on crop yield and soil health	NATP
	4.4. Effect of biochar on rice yield and soil health on problem soils	• Optimum rate of biochar for rice cultivation in charland and saline soils • Increased rice yield, improved soil health and lower GHG emission	300
V.	**Soil Microbiology and Biofertilizer**	To improve soil health	
	5.1. Evaluation of bio-organic fertilizer for the improvement of rice yield and soil health	• To evaluate the efficacy bio-organic fertilizer for growth and yield of rice • To assess the impact of bio-organic fertilizer on soil health	500
	5.2. Microbial characterization of different AEZs soil and formulation of biofertilizer for rice cultivation in acid and saline soil	• To assess soil bio-physico-chemical properties of different AEZ's of Bangladesh and characterize potential plant growth promoting bacteria (PGPB) • To develop bio-fertilizer using potential microbes for rice cultivation in acid and saline soil	NATP
	5.3. Effect of industrial pollution on soil microbial biomass C, N and total microbial population	• To determine soil microbial biomass C, N and total microbial population • To find out relation with soil microbial properties and degree of industrial pollution	300

Irrigation and water management

Table-3

Proposed Research Programme 2020-2021

Sl.	Program area/Project (Duration)	Major Objectives	Annual budget (Thousand Tk)
	Program Area: Crop-Soil-Water Management		

Sl.	Program area/Project (Duration)	Major Objectives	Annual budget (Thousand Tk)
	Sub-Program: Water Management **Sub-Sub Program I: Improvement of Water Use Efficiency in Irrigated Agriculture**		
1	Water Requirement	• To generate water efficient technologies for rice cultivation	
1.1	Determination of physical and hydraulic properties in different soil types 2015-22	• To document the important soil physical properties in different soil profiles • To develop a soil moisture characteristics curve	100
1.2	Automated Alternate Wetting and Drying Irrigation System for Rice production 2018-21	• To automate conventional implementation of AWD technology • To make the AWD method easy and user-friendly • To save irrigation water by precise water level monitoring	200
1.3	Technique for Using Basin Water for Elevated Land Rice Cultivation in Haor Area during Dry Season 2019-22	• To develop a technique for using basin water of haor during dry season • To bring elevated land under boro cultivation • To improve land productivity	100
1.4	Problems and potentials for crop productivity improvement through water management in the Hilly areas 2015-2021	• To identify problems & potentials of water resources development for agriculture and livelihood improvement in the Hilly area • To recommend suitable water management options	100
1.5	Study on water stress tolerance capacity for different advanced rice genotype of BRRI 2015- To be continued	• To quantify water-stress tolerance capacity for different varieties • To determine yield of varieties under different water stress condition	100
1.6	Performance evaluation of the proposed rice varieties under different water regimes 2019-23	• To study performance of the proposed rice varieties under different water regimes • To evaluate suitable water regimes for proposed lines/varieties of rice	200
1.7	Improving soil-water availability for crop production in char land by amendment practices 2019-22	• To determine soil physical properties of root zone soil layers • To determine water holding capacity of root zone soil layers • To determine infiltration rate and saturated hydraulic conductivity of the soil layers before and after soil amendment • To measure soil-water retention curves of the soil layers and determine their parameters	100

Sl.	Program area/Project (Duration)	Major Objectives	Annual budget (Thousand Tk)
1.8	Determining minimum irrigation water requirement of rice at different regions of Bangladesh through water balance from on-farm demand and model simulation 2019-21	• To measure minimum water requirement for rice irrigation at different regions • To measure yield response of rice to irrigation application based on on-farm demand and simulated irrigation requirement • To recommend the suitable water requirement package	200
1.9	Optimization of water use efficiency through sub-irrigation system in fine (light) textured soils of Bangladesh 2020-25	• To design and installation of a sub-irrigation system in a particular field based on soil physical and hydraulic properties • To estimate the total annual water balance in the sub-irrigation system • To evaluate the performance of sub-irrigation system	500
Sub-Sub Program III: Land Productivity Improvement in the Coastal Environment		
2	*Water Management for rice cultivation in climate change situation*	• *To obtain optimum rice yield under changing climatic environment*	
2.1	Agricultural drought forecasting for mitigation of drought in T. Aman rice 2017- 22	• To determine drought using forecasted rainfall and evapotranspiration • To mitigate effect of drought by applying supplemental irrigation • To determine suitability of existing model for drought forecasting, and • To determine yield performance of T. Aman rice after mitigating drought	200
2.2	Irrigation scheduling of Boro rice (Oryza sativa L.) based on weather forecasting in Gazipur 2019- 22	• To predict water demand through WBSM (Towfiq, 2007) • To compare performance of WBSM with AWD and CSW methods • To validate WBSM with CROPWAT 8.0 model • To recommend the better method for irrigation scheduling of Boro rice	100
2.3	Feasibility evaluation of the use of sub-surface drainage system for rice-based cropping pattern in Bangladesh 2020-25	• To identify post-monsoon waterlogged crop field under rice-based cropping pattern • To collect detail information about land use, elevation and gradient, soil physical and hydraulic properties • To evaluate potential benefit due to	100

Sl.	Program area/Project (Duration)	Major Objectives	Annual budget (Thousand Tk)
		installation of sub-surface drainage system • To recommend suitable area for sub-surface drainage for increasing productivity	
Sub-Sub Program IV: Sustainable Management of Water Resources			
3	Land and Water Resources Use for Sustainable Crop Production	• To increase land and water productivity for improving food security and livelihoods in the coastal zones	
3.1	3.1: Assessment of suitable water resources availability for irrigation to increase crop production in tidal areas of Barisal region 2015-2020	• To monitor the dynamics of surface water salinity in the dry season at different locations of Barisal region • To assess the suitability of water for irrigated crop cultivation. • To assess the availability of water and potentials for irrigated crop cultivation • To assess the constraints and prospects of tidal water utilization for crop production.	100
3.2	Water resources assessment during dry season crop cultivation in selected polders of coastal region 2017-2020	• To delineate suitable water resources during dry season • To determine the amount of fresh water available for crop production during the period and • To assess the cultivated area by different cropping pattern based on water resources	100
3.3	Expt. 3.3: Use of less saline water resources for increasing cropping intensity in Barisal region 2017-2020	• To bring fallow land under Boro cultivation • To improve crop and land productivity in the region	200
Sub-Sub Program IV: Sustainable Management of Water Resources			
4	Surface and Ground Water Assessment	• To identify the aquifer characteristics and quality of groundwater in Bangladesh and its relationship with rainfall	
4.1	Monitoring of groundwater fluctuation and safe utilization in different geo-hydrological regions 1979-To be continued.	• To determine the fluctuation of groundwater level over time and its relationships with rainfall, and • To determine water quality for assessing suitability for irrigation.	100
4.2	Conjunctive use of wastewater and fresh water for irrigation in Boro	• To determine suitability of wastewaters for Boro rice cultivation.	100

Sl.	Program area/Project (Duration)	Major Objectives	Annual budget (Thousand Tk)
	rice cultivation 2020-22	• To analyze rice grain sample for heavy metal uptake.	
4.3	Effect on percolation losses and groundwater recharge due to weak plough-pan formed under long term conservation agriculture 2019-21	• To determine amount of irrigation water contributed through deep percolation to ground water recharge under SP and CT • To determine depth of vertical movement of irrigation water towards ground water level • To determine the depth and vicinity of the nearest aquifer	200
4.4	Assessment of groundwater level depletion dynamics in selected locations of Bangladesh 2019-21	• To evaluate fluctuation pattern of GWL • To determine the GWL depletion trend • To assess the GW recharge pattern through model study • To recommend location specific safe GW use	200
4.5	Assessment of surface and groundwater quality for irrigation in selected locations of Bangladesh 2019-22	• To determine the surface and groundwater quality parameters • To determine the suitability of groundwater for irrigation	200
4.6	Evaluation of available groundwater resources for sustainable crop production in selected locations of Bangladesh 2020-23	• To evaluate fluctuation pattern of GWL • To determine the GWL depletion trend • To assess the GW recharge pattern through model study • To recommend the safe use of GW in study locations	150
4.7	Monitoring and performance analysis of wastewater at Gazipur district 2020-22	• To monitor quality of wastewater for irrigation throughout the year. • To determine suitability of wastewater for Boro rice cultivation.	200
Sub-Sub Program V: Utilization of Renewable Energy			
5	*5. Renewable energy for irrigation*	• *To identify some renewable energy sources for irrigation*	
5.1	Development of a low-cost DC solar water pump for irrigation in Bangladesh 2019-22	• To use brushless DC motor for operating solar water pump • To find out optimum panel size • To test efficacy of the pump for surface water irrigation • To determine economic feasibility of the pump for rice cultivation	150

Sl.	Program area/Project (Duration)	Major Objectives	Annual budget (Thousand Tk)
5.2	Evaluation of smallholder surface water solar irrigation system for crop production 2017-20	• To evaluate the technical and economic performance of a small capacity solar powered low lift centrifugal and submersible pumps • To develop a portable type PV panel structure • To determine the maximum command area covered by the solar pumps for rice irrigation • To analyze the feasibility of the pumps for rice cultivation • To assess the value addition for versatile use of solar panels (Solar home system/Paddy thresher)	350
Sub-Sub Program VI: Climate Change Impact Assessment and Adaptation Techniques Development			
6	*Climate change assessment and adoption*	• *To develop suitable water management techniques and practices in rice cultivation for mitigating and adopting climate change impacts*	
6.1	Mitigation options of GHG emission under different water regimes 2020-23	• To find out the suitable water management options based on GHG emission and sustainable rice production	200
Sub-Sub Program VII: Technology Validation in the Farmers' Field			
7	*Water Management Technologies Demonstration and Dissemination at Farmers' Field*	• *To increase the irrigation efficiency and water productivity by appropriate management of water through BRRI developed water management technologies*	
7.1	Improved Water Management Technologies for increasing Agricultural Production in the Haor areas (Phase-2) 2020-23	• To demonstrate the effectiveness of some water management technologies in the haor areas • To assess the existing land uses and potential for increasing production • To assess the water resources availability and potential of irrigation expansion through improved management	500

Plant Pathology

Table-3
Proposed Research Programme 2020-2021

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
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	600
2	Monitoring of rice diseases in HIZR and healthier rice under confined condition	To determine the incidence and severity of rice diseases on the genotypes.	100
3	Estimation of production loss due to rice disease	To estimate the yield loss in selected areas	600
4	Pathotypic and genetic diversity of *Rhizoctonia solani* AG1-IA	1. To estimate the genetic diversity of *R. solani* AG1-IA using ITS region sequences 2. To examine differentiation in aggressiveness of the isolates using seedling/plant assays in the greenhouse/field 3. To determine the relationship between geographic origin and the pathogenic as well as genetic variability of *R. solani* AG1-IA populations.	500
5	Molecular characterization of bakanae causing fungi in Bangladesh	To find out the fungi associated with bakanae disease of rice in Bangladesh	500
6	Development of differential system of *Xanthomonas oryzae pv. oryzae* and study on its molecular diversity	1. To identify a standard differential set of isolates of *X. oryzae* pv. *oryzae*; 2. To know the diversity of *X. oryzae* pv. *oryzae*.	500
7	To study the microbial effect on expression of AQU, DHN and DREB genes in rice under drought stress.	1. To identify potential microbes for drought tolerance in rice. 2. To find out the efficacy of microbes as drought tolerance in rice.	50
8	Determination of toxins from infected seeds by seed borne pathogens	1. To determine the level of major toxins in contaminated seeds. 2. To identify deterioration of antioxidant properties in infected seeds.	100
9	Studies on entomopathogenic fungi (*Metarhizium anisopliae*) to control BPH	1. To identify the pathogenicity of entomopathogenic fungi against BPH. 2. To examine suitable media for mass production and find out appropriate rate of application for BPH management.	50

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
10	Development of an inoculation technique for mass screening of sheath rot disease	To find out an effective and efficient inoculation method for mass screening	50
11	Development of a new scale for scoring of sheath rot disease	To develop an easy and accurate scale for sheath rot disease scoring	50
12	Identification of the source of infection of rice false smut disease	1. To disclose whether the spores of *Ustilaginoidea virens* are in the air or not. 2. To identify whether seeds are the carrier of the pathogen or not 3. To identify whether soil is the carrier of the pathogen or not	100
13	Improvement of differential system for rice blast disease in Bangladesh using differential system and molecular marker	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	300
14	Isolation of potential fungi for controlling major weeds of rice	To identify potential fungi for controlling major weeds of rice	200
15	Production of afla toxin by storage fungi at different moisture level in storage condition	1. To determine the population of different storage fungi 2. To determine the production of afla toxin at different moisture level	50
16	Exploring new sources of resistance and pyramiding blast resistant gene in Boro rice.	1. To find out new source of major resistant gene(s) against blast disease in the native land races 2. To introgress of known resistant genes and/or gene pyramiding to develop durable blast resistant variety	1000
17	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 and sheath blight diseases of rice	100
18	Introgression of blast resistant genes into BRRI dhan47	To develop durable blast resistant variety harboring *Pi40* and *Pi9* genes	100
19	Identification of major blast resistant genes in jhum rice.	To find out blast resistant source(s) of *Pi genes*	100
20	Exploring new source of blast resistance in native rice germplasms	1. To identify new sources of resistance from upland rice germplasm. 2. To assess the diversity based on phenotypic reactions and molecular marker	50

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
21	Improvement of BRRI varieties for resistance to blast and bacterial blight diseases using marker assisted backcross breeding	To develop durable resistant cultivars through pyramiding of both BB and blast genes (broad spectrum resistance)	200
22	Identification of resistant sources and gene pyramiding of bacterial blight and blast resistance into the background of BRRI dhan29 through MAS	1. To identify bacterial blight and blast resistant sources 2. To develop high yielding bacterial blight and blast resistant pre-breeding lines	100
23	Pyramiding of major BB resistant gene(s) in susceptible rice varieties/lines.	To introgress major BB resistant gene(s) into the selected cultivar for durable resistance.	300
24	Observational trial of blast resistant advanced lines	To evaluate the blast resistance and yield	100
25	Gene detection of bacterial blight (BB) resistance in local rice cultivars using phenotypic and molecular studies	To identify BB resistant genes in native cultivars	100
26	Screening of LST against BB and blast	To identify resistant source(s) against BB and blast	950
27	Screening of rice germplasm against bakanae disease	To identify the resistant sources against bakanae disease of rice.	50
28	Screening of land races against Sheath blight disease	To identify the resistant source against sheath blight disease of rice.	100
29	Linkage and QTL mapping of tungro resistance in rice	To identify significant QTLs with linked marker for tungro resistance in rice land race Kumragoir.	700
30	Development of prebreeding materials for tungro resistance	To develop tungro resistant advance lines.	200
31	Development of blast resistant varieties using differential system and molecular markers	To develop blast resistant varieties for Bangladesh	200
32	Studies on the genetic mechanism of rice blast resistance in BRRI dhan33	1. To know the genetic mechanism of rice blast and gall midge resistance in BRRI dhan33 2. To identify marker data for developing blast and gall midge resistant varieties through MAS	200
33	Linkage and QTL mapping of blast resistance in BR16	To identify significant QTLs with linked marker for blast resistance in BR16	100
34	Disease reactions and characterization of upland rice germplasms	1. To know the different disease status of germplasm 2. To identify best genotype/s against diseases and for better yield	30

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
35	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	600
36	Detection of novel loci underlying rice blast resistance by integrating a genome-wide association study	To detect the new sources/loci/genes of blast resistance from native germplasm	200
37	Diversity of blast resistance gene(s) in rice germplasm	To find out resistance gene(s) among the germplasm through phenotypic reaction and molecular marker	800
38	Development of Rice Blast Resistance by CRISPR/Cas9-Targeted Mutagenesis of the *OsERF922*	To develop durable blast resistant variety or line against the major races by targeted mutagenesis (CRISPR/Cas9).	500
39	Development of inoculation technique for false smut disease	To develop artificial inoculation technique of rice false smut disease	30
40	Effects of rice false smut contaminated seeds on quality	To see the effects of seed contamination on the attributes of seed quality	30
41	Investigation of grain quality and nutritional status of rice infected by major diseases	To determine the grain quality in terms of seed health, nutritional value and physicochemical properties.	50
42	Yield loss due to sheath rot disease in rice	To find out the relationship between sheath rot disease severity and yield reduction in rice	30
43	Yield loss assessment of rice caused by bacterial blight and sheath blight	To estimate yield loss due to bacterial blight and sheath blight.	50
44	Development of a yield loss app	To estimate yield loss due to diseases instantly	200
45	Development of Early Warning System of rice blast disease	To build up awareness among the rice growers at least 5 days earlier of blast disease infection	500
46	Up-scaling of the management of rice seedling blight disease in farmers seed bed during boro	To test the efficacy of seedling blight disease management technology under field condition	200
47	Isolation of effective bacterial isolate for management of sheath blight disease	To isolate and identify the effective isolates against sheath blight disease	50
48	Management of sheath blight disease using Trichoderma *harzianum*	To investigate the efficacy of *Trichoderma harzianum*	100
49	Bakanae disease control with integrated approach	To find organic amendments and chemicals for controlling bakanae disease	50
50	Formulation of nano particles from plant	1. To formulate nano particles	200

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
	parts against bakanae disease	from organic sources for controlling bakanae disease. 2.To use nano particles for safe environment	
51	Identification of potential bio-control agents and formulation of biopesticides against bakanae disease of rice	1. To identify and confirm effective microbes through (*Bacillus* spp, *Pseudomonas* spp., *Trichoderma* spp.) *in vitro* and molecular approach for controlling bakanae disease 2. To find out suitable carrier materials with prolong shelf life for biopesticide formulation	1500
52	Chemical control of sheath rot and false smut disease of rice under different planting time	1. To find out effective fungicide/s against Sheath rot and fungicide. 2. To identify time most conducive time for sheath rot disease development	50
53	Development of nano particle mediated fungicide for rice blast disease management in Bangladesh	To develop nano particle mediated fungicide for neck blast disease management as curative measure.	100
54	Factors affecting recent outbreak of rice tungro disease and its management in Cumilla region	1.To identify the causes to increase the incidence of rice tungro disease 2. To manage the rice tungro disease in the field trough integrated approaches	600
55	Determination of residual effect in fungicides treated rice	To find out the pesticide residue in pesticides sprayed rice	300
56	Digitalization of Pesticide Resister	To provide the pesticide evaluation report in mobile phone.	100
57	Performance of Ankuri as a seed treating device	To examine the efficacy of Ankuri in controlling seed borne diseases using Ankuri.	100
58	Evaluation of new chemicals against blast, bacterial blight, sheath blight, false smut, Sheath rot and bakanae diseases of rice	To find out the effective chemicals suitable for Blast, ShB, False smut, bakanae and Bacterial blight diseases	200
59	Training on integrated management of blast, bacterial blight and tungro diseases in changing climate	To build up farmer's awareness on integrated rice disease management	1000

Entomology Division
Table 3
Proposed Research Program 2020-21

Sl. No.	Programme area/project (duration)	Major objective	Annual budget thousand tk.
1.	**Project: survey & monitoring of rice arthropods**	To determine the incidence and abundance patterns of insect pests and their natural enemies at brri farm and in different aez's for better management of rice pests.	
	1.1 pest monitoring in brri farm.	To study the insect pests and their natural enemy incidence at brri farm and to create a database to develop a forecasting system.	1.5
	1.2 insect pests and natural enemy in light trap.	To study the pest and their natural enemy incidence patterns in rice fields and to create a database to develop a forecasting system.	1.5
	1.3 survey and monitoring of rice arthropods and yield loss estimation.	To know the present status of insecticide application. To reduce insecticide application in rice production. To assess the yield loss due to infestation of rice insect pests.	2.0
	1.4 fall army worm (faw) monitoring in rice.	To determine the incidence pattern of faw in rice.	3.0
	1.5 impact of lighting period on the trapping of insect.	To find out effective lighting period for maximum insect trapping. To find out suitable insect catching time. To reduce the trapping of natural enemies.	1.0
2.	Project: bio-ecology of rice insect pest and natural enemy	To study the ecology and development of insect pest of rice.	
	2.1 behavioral adaptation of rice leafroller against global warming.	To identify the effects of temperature elevation on life cycle of rice leaf roller.	2.0
	2.2 species composition of rice stemborer.	To document the stem borer species in the selected region.	1.0
	2.3 behaviour and biological parameters of fall armyworm when feeding rice.	To find out the impact of non-host rice food on the demographic parameters of fall armyworm To understand the management strategy of fall army worm in rice field	2.0

Sl. No.	Programme area/project (duration)	Major objective	Annual budget thousand tk.
3.	Project: biological control of rice insect pests		
	3.1 leveraging diversity for ecologically based pest management.	To conserve natural enemies through ecological engineering approaches.	2.0
	3.2 study on entomogenous fungi to control bph.	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.	2.0
4.	**Project: crop loss Assessment**	To determine relationship between pest damage levels and yield losses.	
	4.1 effect of deadheart and whitehead on grain yield of brri rice varieties.	To determine the compensation abilities of different rice varieties against yellow stem borer damage. To know the relationship between ysb damage and yield loss.	1.5
5.	**Project: evaluation of chemicals and botanicals against rice insect pests**	To evaluate the effectiveness of different botanicals and determine efficacy of different insecticides against major rice insect pests.	
	5.1 test of different insecticides against major insect pests.	To evaluate the effectiveness of commercial formulations of different insecticides against major insect pests of rice.	3.0
	5.2 effect of insecticides on natural enemies of rice insect pests.	To identify relatively safer insecticides for using (if needed) in ipm program.	1.0
6.	**Project: insecticide toxicology**	To detect insecticide residue in rice.	
	6.1 residue analysis of thiamethoxam and chlorantraniliprole in rice.	To detect insecticide residues in rice hull, bran and polished rice. To establish monitoring and guidance on safe use of insecticide in rice field.	5.0
	6.2 evaluation of pesticide residue in candidate rice samples.	To detect insecticide residues (if any) in candidate rice samples.	10.0
7.	Project: host plant resistance	Identification of resistant sources against rice insect pests.	
	7.1 screening of rice germplasm, advance line against major insect pests.	To identify resistant rice germplasm against major insect pests.	4.0
	7.2 development of bph resistance rice introgression lines through marker assisted selection.	Development of elite donor for bph resistance breeding program. Development of new breeding lines for bph resistance.	4.0
	7.3 identification of bph resistant sources from rice germplasm.	To identify bph resistant germplasm. To characterize bph Resistant germplasms using bph resistant linked markers.	4.0

Sl. No.	Programme area/project (duration)	Major objective	Annual budget thousand tk.
	7.4 suppression of serotonin synthesis in rice using crispr cas9 for insect control.	To develop insect resistant rice variety To reduce insecticide dependency.	5.0
8.	**Project: insect molecular biology**	To dissect the genomic diversity of rice arthropods.	
	8.1 genome sequencing of rice hispa, *Dicladispa armigera.*	To provide a complete and Accurate genome sequence of rice hispa.	8.0
	8.2 molecular characterization of *nilaparvata lugens* in bangladesh based on coi analysis.	To assess a gene diversity of bph in Bangladesh. To know the impact of geographic location in bph genomic structure.	2.0
	8.3 gene drive to control *nilaparvata lugens.*	To assess a gene drive strategy to control the insect pest that threatens the staple food production in bangladesh.	5.0
9.	**Project: integrated pest management**	Reduction of chemical pesticide and safe food management.	
	9.1 use of sex pheromone to control rice leafroller, *C. Medinalis.*	To test the efficacy of sex pheromone against leafroller in rice field. To control rice leaf roller without insecticide.	1.0
	9.2 use of nanoparticle to control rice insect pests.	To develop nano-particle based pest management in rice To reduce chemical pesticide load in environment.	3.0
10.	**Project: vertebrate pest management**	Management of rat in the rice field.	3.0
	10.1 study on the efficiency of different traps against rice field rats.	To find out effective rat control techniques.	2.0

Rice Farming System Division
Table 3
Proposed Research Program 2020-21

Sl. No.	Program area/project (Duration)	Major Objective (s)	Annual budge Thousand Tk.
1.	Survey	To generate cropping systems database	500.00
2.	Development of Resource Conservation Technologies and Component technology for Stress prone area	To develop cropping pattern technology and component technology using reduced input and management with a target of optimum yield for abiotic stress prone area.	450.00
3.	Improvement of Jhum systems of	To develop technology for jhum	250.00

Sl. No.	Program area/project (Duration)	Major Objective (s)	Annual budge Thousand Tk.
	Cultivation in the Hilly areas	system of cultivation for increase production and diversity in ecosystem appropriate and sustainable way	
4.	Development of Cropping Systems and Component Technology for plain land in Hilly Area	To develop profitable cropping systems with high yield through appropriate input, land use and management practices for piedmont plain land in hilly areas.	250.00
5.	Development of Cropping Systems and Component Technology for Favorable Environment (Irrigated condition)	To develop agro-economically profitable cropping patterns and component technologies by optimizing resource use for Favorable Environment (irrigated condition)	1150.00
6.	Validation and Delivery of Farming Systems Technologies	To disseminate site specific and agro-economically profitable farming systems technologies in extrapolation domain	2800.00
7.	Piloting of cropping pattern technologies	To increase the farmers' production of a locality by large scale demonstration, farmers' training and field days	1500.00
8.	Development of Semi-aquatic Crop Production System	To develop a model farming system technology for semi-aquatic ecosystem.	150.00
9.	Development of homestead agro-forestry systems with exotic date palm (*Phoenix dactylifera*) in the drought-prone ecosystem	To develop agro-forestry system with exotic date palm to increase the system productivity and income of the farmers	1450.00
10.	Integrated Farming Research and Development for Livelihood Improvement in the Plain land Eco-system	To generate and disseminate climate resilient and site specific farming system technologies by optimizing land use for the Madhupur tract of Bangladesh	2900.00

Agricultural Economics Division
Table-3

Proposed Research Programme 2020– 2021

Sl. No.	Programme area/Project (Duration)	Major Objective(s)	Budget Thousand Tk.
1	Farm Level Adoption and Evaluation of Modern Rice Cultivation in Bangladesh	• To determine the region-wise adoption rate of different MVs in Aus, T. Aman and Boro seasons,	500

Sl. No.	Programme area/Project (Duration)	Major Objective(s)	Budget Thousand Tk.
	Status: Routine work	• To estimate the yield of different modern and local rice varieties in different seasons; • To determine the socio-economic and varietal constraints of MVs in different regions.	
2	Prospect and Constraints to Adoption of BRRI Released Modern Rice Varieties in Bangladesh: A Case of Rajshahi District Status: New	• 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	Determinants of Adoption Decision of Premium Quality Rice Varieties in Some Selected Areas of Bangladesh: An Econometric Approach Status: New	• To delineate adoption status and yield of premium quality rice; • To estimate profitability of premium quality and coarse grain rice; and • To identify factors influencing adoption decision of premium quality varieties.	150
4	Assessment of Popular Local Rice Varieties Cultivated in Different Seasons in Bangladesh Status: New	• To determine the adoption status of local varieties • To analyze the comparative profitability of popular local and HYV rice; and • To identify the reasons for cultivating these local cultivars.	500
5	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
6	Comparative Profitability of Rice and its Competing Enterprise in Selected Areas of Bangladesh Status: New	• To assess the profitability of rice and selected non rice enterprises • To find out the reasons for cultivating non rice enterprises • To estimate optimum allocation of resources for rice and non-rice enterprise • To explore the ways of ensuring profitability of rice production	500
7	An Economic Investigation of Rice Seed Production Status and its Adoption Behavior in a Selected Area of Bangladesh	• To examine the economics of TLS production of rice; • To analyze the factors responsible for farmer's decision to adopt commercial seed production,	100

Sl. No.	Programme area/Project (Duration)	Major Objective(s)	Budget Thousand Tk.
	Status: New	• To document the constraints of TLS production of rice.	
8	Present Scenario of Milling and Branding System of Rice and its Impact on Price in Bangladesh Status: New	• To investigate the techniques of paddy processing in different mills (automatic, semi-automatic and husking types mills) of Bangladesh; • To assess degrees of milling and recovery rate of outruns of paddy; • To evaluate degrees of milling, branding of rice and its effect on price in Bangladesh; • 4. To derive policy implication.	600
9	Market Integration and Price Transmission in Major Rice Markets of Bangladesh Status: New	• To analyze short-run and long-run spatial price relationships among major rice markets, • To examine the magnitude, speed and nature of price transmission among major rice markets in Bangladesh	100
10	Tracking Rice Varietal Authentication: A Pathway from Farm to Market Status: New	• To identify different types of rice varieties available in the market and enlist those under different clusters; • To sketch the logistic network of each cluster from origin to consumer; and • To identify the reasons of deviated names of rice varieties in the local market.	400
11	Economic Assessment and Utilization Pattern of Rice Byproducts (Broken Rice, Dead Rice, Rice Bran and Rice Husk) in Bangladesh Status: New	• To measure production and recovery rate of different rice byproducts, • To know the utilization patterns of these rice byproducts, • To identify the dominant supply chains of rice byproducts, • To evaluate the prospects and potentiality of rice byproducts in the economy of Bangladesh	1500
12	Shaping the Future Rice Value Chains and Policies in Bangladesh Status: New	• Identifying cause and effects of different rice value chain crisis at national level and revisiting recent incidences, policy measures and evidences; • Developing suitable policies and strategies for future rice value chain systems and enhance sustainable productivity and competitiveness across rice value chains in Bangladesh.	500
13	Understanding Climate Variability and Adaptation	• To assess the impact of climate variability on rice cultivation	1500

Sl. No.	Programme area/Project (Duration)	Major Objective(s)	Budget Thousand Tk.
	Strategy in the *Haor* Ecosystem Status: New	• To figure out farmers' coping and adaptation strategies to climate change • To derive policy implication.	
14	Demand of Quality Rice in Domestic and World Market Status: New	• To assess the demand of quality rice in domestic market in Bangladesh • To construct trade network of quality rice in world market following international standard • To analyze trade policy for export supply and import demand	350
15	Evolving Rice Consumption Patterns of Different Groups in Bangladesh: Evidence from Household Survey Status: New	• To understand the changes of rice consumption patterns by different groups; and, • To examine the drivers of change particularly; income, commodity prices, food habits and household demographics on rice consumption.	400

Agricultural Statistics Division
Table-3
Proposed Research Programme 2020-21

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
1.	Statistical methodology and computer programming	1. To determine the stability index of BRRI varieties. 2. To identify high yielding rice varieties having wide adaptation and/or specific adaptation to environment. 3. Location wise stability index of BRRI varieties using BRRI Stability model and other model and compare them. 4. To maintain season, year and location wise database on BRRI varieties. 5. Review the scopes and develop analytical skills on bioinformatics in rice research. 6. Analysis of RNA-Seq data and identify the significant DEGs. 7. To develop a digital salary management system for BRRI employee. 8. To update "Labour Management System (LMS)" of BRRI as user need. 9. To develop a digital "Casual Leave	29.00

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
		Application System" for Agricultural Statistics Division.	
	Activity 1.1: Stability Analysis of BRRI Varieties *(In collaboration with Plant Breeding Div., Plant Physiology Div., ARD and All Regional Stations of BRRI)* Duration: 2001-02 to continuous	1. To determine the stability index of BRRI varieties 2. To maintain season, year and location wise database on BRRI varieties	3.50
	Activity 1.2: Stability and Adaptability Analysis of BRRI Released Aus Varieties in Different Locations of Bangladesh *(In collaboration with Plant Breeding Div., Plant Physiology Div., ARD and All Regional Stations of BRRI)* Duration: 2018-19 to continuous	1. To identify high yielding Aus rice varieties having wide adaptation and/or specific adaptation to environment and 2. To assess the environment and variety interaction and varietal adaptability across different the environments 3. To determine the stability index of the variety using the BRRI developed stability model	2.50
	Activity 1.3: Improvement of BRRI Stability model to incorporate multiple factors Duration: 2020-21 - will be continued	1. To estimate location-wise stability index of BRRI varieties 2. To compare BRRI stability model with other stability models (Eberhard and Russel Model, AMMI Model etc.).	3.00
	Activity 1.4: Scopes of Bioinformatics in Rice Research *(In collaboration with Plant Breeding, Plant Pathology, Plant Physiology and Biotechnology Division)* Duration: 2020-21 - will be continued	1. Review the application of bioinformatics in rice research. 2. Develop analytical skills on the application of bioinformatics in rice research.	3.00
	Activity 1.5: Statistical Modeling and RNA-seq data Analysis *(In collaboration with Plant Breeding Div., Biotechnology Div., Plant Physiology Div. and Plant Pathology Div.)* Duration: 2020-21 - will be	1. To develop algorithms for quantification of the gene expression level. 2. To identify the differential expression genes (DEGs). 3. To identify which DEGs were significantly involved in each Gene ontology (GO).	3.00

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	continued		
	Activity 1.6: Digitalized Salary Management System for BRRI Employee *(In collaboration with Finance and Accounts Section)* Duration: 2020-21 to 2021-22	To develop a digital salary management system for BRRI employee	6.00
	Activity 1.7: Digitalized labour management system of BRRI *(In collaboration with FM Div.)* Duration: 2020-21 to 2021-22	Main Objective 1. To update "Labour Management System (LMS) " of BRRI as user need. Specific Objectives 1. Update "digitalized Attendance system of BRRI Labour" as user need. 2. Update "Digitalized and Automated Labour Wages System" as user need. 3. Update "Digital Labour Data Centre" 4. Modify the Web Application as user need.	5.00
	Activity 1.8: Digitalized casual leave application system Duration: 2020-21 to 2021-22	1. To digitalized casual leave application system of Agricultural Statistics Division	3.00
2.	Multivariate Analysis of BRRI Varieties	1. To study G×E Analysis of BRRI Varieties 2. To maintain up-to-date computerized information on rice and related crops 3. To determine year wise Growth Rate of Rice Production in Bangladesh 4. To maintain up-to-date computerized information on climatic factors 5. To produce various climatic maps.	6.00
	Activity 2.1: Genotype x Environment Interaction of BRRI varieties Duration: 2017-18 to continuous	1. To Identify BRRI released rice genotypes that have both high mean yield and stable yield performance across different environments for different ecosystem of Bangladesh.	3.00

	Activity 2.2: Maintenance of rice and rice related variable database Duration: 2007-08 to continuous	1. To maintain up-to-date computerized information on rice and related crops 2. 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. Produce various maps from these data.	3.00
3.	Agro Meteorology and Crop Modeling	1. To develop an 'integrated weather forecasting and rice advisory system (IWFRAS)' for processing, assessing and validating forecast data, advisory generation and dissemination for operational service to the stakeholders. 2. To examine the forecast-based rice crop management system through dissemination of IWFRAS activities. 3. To forecast and validate agro micro climatological factors in rice crop seasons through experimentation for sustainable rice production. 4. To provide advisory services applying the tools of ICT in Agriculture. 5. To determine the genetic coefficient of rice varieties of Aus, Aman and Boro season. 6. To simulate the impact of climate change on rice growth and yield	20.00
	Activity 3.1: Integrated Weather Forecasting and Rice Advisory System (IWFRAS) for Sustainable Productivity in Bangladesh *(In collaboration with Agronomy Div., Entomology Div., Plant Physiology Div., Soil Science, IWM Div., Plant Pathology Div., and Agril. Econ. Div.)* Duration: 2018-19 to continuous	1. To develop an 'Integrated Weather Forecasting and Rice Advisory System (IWFRAS)' for processing, assessing and validating forecast data, advisory generation and dissemination for operational service to the stakeholders. 2. To examine the forecast-based rice crop management system through dissemination of IWFRAS activities. 3. To validate forecast based rice crop management research findings through farmers' participation using IWFRAS. 4. To assess the economic benefits of forecast based rice crop management system for wide dissemination to the farmer's field.	5.00
	Activity 3.2: Minimizing Agro Micro climatological Risk Factors for Maximizing Sustainable Rice Production	1. To forecast and validation of agro micro climatological factors in rice crop seasons through experimentation for sustainable rice production. 2. To avert management risk and capacity	8.00

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	in Bangladesh *(In collaboration with Agronomy Div., Entomology Div., Plant Physiology Div., Soil Science, IWM Div., Plant Pathology Div., and Agril. Econ. Div.)* Duration: 2018-19 to continuous	development through weather forecasting information 3. To provide advisory services applying the tools of ICT in Agriculture. 4. To create database on weather forecasting and agro meteorological advisory services	
	Activity 3.3: Simulating of Climate Change Impact on Rice Growth and Yield in Bangladesh using DSSAT Model *(In collaboration with Agronomy Div., Entomology Div., Plant Physiology Div., Soil Science, IWM Div., Plant Pathology Div., and Agril. Econ. Div.)* Duration: 2017-18 to continuous	1. To determine the genetic coefficient of rice varieties of Aus, Aman and Boro season. 2. To simulate the impact of climate change on rice growth and yield 3. To forecast the yield of selected rice varieties at changing climatic conditions. 4. To select suitable rice variety(s) as adaptation options at different climatic condition for regional rice farmers.	7.00
4.	Utilization of Geographic Information System (GIS) in Rice Research	1. To construct suitability map of BRRI released rice varieties. 2. To produce various climatic maps of Bangladesh. 3. To construct a land use/land cover map. 4. To prepare a flood map	6.00
	Activity 4.1: Suitability Mapping of BRRI Varieties *(In collaboration with Plant Breeding Div., Soil Science Div. and ARD)* Duration: 2007-08 to continuous	1. To construct suitability map of BRRI rice varieties (BRRI dhan90 – BRRI dhan92)	0.50
	Activity 4.2: Climate Mapping of Temperature and Rainfall of Bangladesh Duration: 2007-08 to continuous	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 during the period. 3. To estimate the return period of extreme rainfall and high temperature.	0.50

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	Activity 4.3: Land Use and Land Cover Mapping in some selected area of Bangladesh Duration: 2019-20 to continuous	1. To identify the various objects of land use/land cover (agriculture land, fallow land, Forest, urban area, orchard, water body etc. of a specific area). 2. To calculate the area of the objects of land use land cover.	2.00
	Activity 4.4: Flood mapping using Remote Sensing Duration:2020-21 – will be continued	1. A flood map. 2. The area and extend of flood.	3.00
5.	Capacity Building Through Training	1. To train up BRRI scientists on experimental data analysis using different Statistical software. 2. To train up BRRI scientists on multivariate data analysis using different statistical software. 3. To train up BRRI scientific assistant on field experiment. 4. To train up BRRI staff on basic computer operation.	13.00
	Activity 5.1: Training Program on Experimental Data Analysis Duration: 2016-17 to continuous	1. To train up BRRI scientists on experimental data analysis using different statistical software. 2. To make BRRI scientists self-dependent on experimental data analysis. 3. To developed skills on research planning, program and report writing.	4.00
	Activity 5.2: Training program on multivariate data analysis Duration:2018-19 to continuous	1. To train up BRRI scientists on multivariate data analysis using different statistical software. 2. To give clear and straightforward guideline of how to conduct experimental design for MVA. 3. To make BRRI scientists self-dependent on multivariate data analysis. 4. To developed skills on research planning, program and report writing.	3.00
	Activity 5.3: Training program on experimental field layout, data collection and data preparation Duration:2019-20 to continuous	1. To train up BRRI scientific assistant on field experiment. 2. To self-dependent of BRRI scientific assistant on experimental data collection techniques and processing. 3. Hands on training on data preparation systems using MS-Excel.	3.00

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	Activity 5.4: Training program on basic computer operation Duration:2020-21 – will be continued	1. To train up BRRI staff on basic computer operation. 2. To self-dependent of BRRI staff on computer operation. Hands on training on basic computer and office application.	3.00
6.	Information and Communication Technology (ICT)	1. To manage and maintain ICT at Bangladesh Rice Research Institute 2. To digitize analog system of BRRI. 3. To develop software and Apps for BRRI. 4. To establish e-Governance at BRRI.	85.3
	Activity 6.1: Strengthening Cyber Security System for BRRI Duration: 2020-21 – will be continued	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.	6.00
	Activity 6.2: *"BRRI Alapon"* Telephone Directory Mobile App of BRRI Duration:2020-21 – 2021-22	1. To develop telephone directory mobile app for BRRI. 2. To communicate through mobile app via voice call, video call, email or SMS. 3. To provide location sharing through mobile app. 4. To provide all types of meeting, seminar etc. notice via SMS through mobile app.	8.00
	Activity 6.3: Vehicle Requisition Management System of BRRI Duration: 2020-21 – 2021-22	1. To develop vehicle requisition management system (VRMS) for BRRI. 2. To inform through SMS, on the basis of demand vehicle at BRRI. 3. To provide SMS for drivers for confirming their upcoming duty. 4. To host VRMS at server.	1.00
	Activity 6.4: Training on Innovation, Service Process Simplification (SPS) and e-Nothi management for enhancing capacity of BRRI employee Duration:2020-21 – will be continued	1. To provide various training on public service innovation (PSI), SPS and e-Nothi management to BRRI scientists and officers for developing capacity. 2. To bring qualitative changes in the internal research work process and service delivery in BRRI HQ and respective regional stations. 3. To compile various innovative idea through PSI and SPS training for piloting and replication activities.	12.00

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	Activity 6.5: "Rice Doctor" Apps for BRRI Duration:18-19 – 2020-21	1. To develop rice doctor Apps for BRRI. 2. To manage and maintain rice doctor apps. 3. To host rice doctor Apps at server.	5.00
	Activity 6.6: Strengthen and dissemination of modern rice technology and its management information at the farmer door step through RKB Mobile Apps Duration: 2019-20 to continuous	1. To disseminate RKB at all regional stations. 2. To develop and modify the design of RKB. 3. To develop push notification system. 4. To manage and maintain RKB through regular updating of the information and documents.	5.00
	Activity 6.7: BRKB website management *(In collaboration with training, breeding and others research divisions* Duration:2014-15 to continuous*)*	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.	01.90
	Activity 6.8: Dynamic view connectivity system, Bangla searching system and inner banner system for BRKB Website *(In collaboration with training, breeding and others research divisions)* Duration:2018-19 to continuous	1. To construct dynamic view connectivity system. 2. To create Bangla searching system. 3. To develop inner banner system. 4. To manage and maintain BRKB Website through regular updating of the information and documents.	2.00
	Activity 6.9: BRRI Web Mail and Group Mail Duration: 2014-15 to continuous	1. To create Web mail and Group mail id with password for all scientists and officers of BRRI. 2. To manage, maintain and update regularly as routine work web mail and group mail of BRRI.	1.40
	Activity 6.10: Developing secure system for BRRI Web Mail and Group Mail Duration:2018-19 to continuous	1. To develop spamming filtering system (SFS) at BRRI web mail server. 2. To create automatic active & close system (AACS) at BRRI web mail server. 3. To develop Secure Sockets Layer (SSL).	2.60
	Activity 6.11: Online Application System of BRRI *(In collaboration with Administration of BRRI and*	1. To develop "Online application system" for BRRI. 2. To host "Online application system" at data center. 3. To manage and maintain "Online	2.00

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	Teletalk Mobile Company Ltd.) Duration: 2015-16 to continuous	application system".	
	Activity 6.12: e-File Management System of BRRI *(In collaboration with Administration of BRRI)* Duration: 2016-17 to continuous	1. To setup "e-File Management Software" for BRRI Head Quarter and all Regional station(R/S) for establishing e-Governance. 2. To setup "e-File (Nothi) Management System" for ensuring faster movement of files, hassle less and paperless office system. 3. To setup "e-File (Nothi) Management System" for increasing transparency, accountability at BRRI.	2.00
	Activity 6.13: e-Tender System of BRRI *(In collaboration with Building and Construction and procurement cell)* Duration:2015-16 to continuous	1. To develop "e-Tender system "of BRRI as per requirement of the Ministry of Agriculture (MoA). 2. To introduce the online tendering system to facilitate the procurement process of BRRI. 3. To participate in the local and international tender/procurement of BRRI. 4. To increase transparency, competition and minimize the processing time and effort.	2.00
	Activity 6.14: LAN and internet connectivity of BRRI regional station(R/S) Duration:2016-17 to continuous	1. To setup Local Area Network (LAN) for all regional station of BRRI. 2. To setup Internet connectivity for all regional station of BRRI. 3. To manage and maintain LAN & Internet connectivity of BRRI regional station.	11.10
	Activity 6.15: BRRI Web Portal Management Duration:2014-15 to continuous	1. To develop and modify the design of BRRI Web Portal. 2. To manage and maintain BRRI Web Portal through regular updating of the information and documents.	2.30
	Activity 6.16: Management of BRRI HQ Local Area Network and Internet Connectivity Duration:2007-08 to continuous	1. To increase the infrastructure of BRRI local Area Network. 2. To increase the bandwidth connectivity from 60 Mbps to 70 Mbps or more. 3. To manage and maintain ICT Network of BRRI.	4.50

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	Activity 6.17: BRRI Networks Update, Maintenance and Extension Duration:2015-16 to continuous	1. To increase and stimulate awareness to all visitors of Facebook group through 'BRRI Networks'. 2. To extend, manage, update and maintain 'BRRI Networks' regularly. 3. To promote all activities, where only official interactions, various problems and theirs solutions can be posted.	0.50
	Activity 6.18: Personal Data Sheet of BRRI. Duration: 2014-15 to continuous	1. To develop "Personal Data Sheet (PDS)" database for all scientists, officers, clerks of BRRI. 2. To develop "Personal Data Sheet (PDS)" database using user name & password. 3. To get BACKUP of "Personal Data Sheet (PDS)" database regularly.	0.50
	Activity 6.19: Video Conference System of BRRI (skype/zoom system) Duration: 2014-15 to continuous	1. To develop "Video conference system of BRRI. (skype/zoom system)" for administration, all divisional head and regional station head of BRRI. 2. To develop "Video conference system of BRRI (skype/zoom system)" for research, administration works and innovative interactions.	05.00
	Activity 6.20: New version of management Information System (MIS) of BRRI Duration: 2019-20 to continuous	1. To develop new version of management Information System (MIS) Software for BRRI. 2. To manage and maintain MIS of BRRI 3. To host MIS software at Bangladesh computer council (BCC).	4.50
	Activity 6.21: Integrating Digital Signature into e-File (Nothi) System of BRRI and its management Duration: 2019-20 to continuous	1. To integrate digital signature into e-File (Nothi) System for every user in BRRI. 2. To incorporate digital signature with e-File (Nothi) system helping by Access to Information (A2i) and Controller of Certifying Authority (CCA) jointly. 3. To provide training by Controller of Certifying Authority (CCA), Ministry of ICT (MoICT) for smooth using of digital signature in e-File (Nothi) system and other's.	2.00
	Activity 6.22: Rice Pest Corner *(In collaboration with Plant Pathology division & Entomology Division)* Duration: 2019-20 to continuous	1. To develop Rice Pest Corner for BRRI Website. 2. To develop a Web Application for Rice Pest Corner. 3. To manage and maintain Rice Pest Corner.	3.50

Sl. No.	Program area/ Project (Duration)	Major Objective	Annual Budget (lac TK.)
	Activity 6.23: Heritage of BRRI Duration: 2014-15 to continuous	1. To develop "Heritage" for all scientists, all officers, all clerks, and all workers of BRRI. 2. To develop "Heritage "for research and administration works. 3. To create and stimulate awareness amongst the present employees of BRRI about ex. Scientists and officer's great activity.	0.50

Farm Management Division

Table 3
Proposed Research Program 2020-21

Sl. No.	Program area/Project (Duration)	Major Objectives	Annual Budget (Lak. TK)
	1. Program Area: Socioeconomic and Policy		
	3.1.Project : Rice production management		
	Expt.1. Effect of transplanting date and spacing on the yield of different short duration rice varieties. (continue)	To find out the suitable transplanting date of different short duration rice variety in terms of maximum benefit.	0.50
	Expt.2. Integrated nutrient management for yield maximization of rice. (continue)	To find out the suitable management practice for yield maximization of rice and soil health	0.50
	Expt.3. Efficacy of mechanical deep placement of urea and seedling transplanting on rice yield. (new)	To evaluate the efficacy of newly developed mechanical rice transplanter cum prilled Urea applicator.	1.00
	Activity.4. Demonstration of technologies under Amar Gram, Amar Sohor. (New)	To demonstrate the performance of BRRI new released rice variety.	1.00
	Activity.5. Seed production of BRRI released different popular Rice varieties (Breeder seed and TLS seed)	To disseminate BRRI released rice varieties among the farmers and researchers.	2.00
	3.2. Project: Survey and development of data base for labor management.		
	Expt.1. Study on laborers' wage for rice cultivation throughout Bangladesh with food and without food. (continue) Locations: Different districts. Around BRRI HQ and regional stations.	To document farmers' labor management practices for rice cultivation	1.00

Sl. No.	Program area/Project (Duration)	Major Objectives	Annual Budget (Lak. TK)
	3.3. Project: Management and utilization of land, Labour and other farm resources. 1. Management of land, labor, farm implements, flower garden, irrigation and drainage etc.	Better utilization of farm land and other farm resources for smooth running of research activities of BRRI	50.00
			Total= 56.00

Farm Machinery and Postharvest Technology Division

Table - 3
Proposed Research Programme 2020-2021

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
01	*Development of Agricultural Machines*	• *Development of farm machinery adaptable to rice eco-system* • *Reduction of human drudgery*	*1,41,50,000.00*
1.1	Evaluating and modifying of BRRI developed machines Duration : 1998-2020	• To verify the quality of BRRI machines • To identify the functional problems of farm machines • To improve the performance of farm machines	50,000.00
1.2	Design and development of a head feed power thresher Duration : 2017-2020	• To design and develop a head feed thresher • To conduct test of the thresher for its performance and capacity • To compare the performance with the existing threshers	1,00,000.00
1.3	Design and development of whole feed mini combine harvester Duration : 2015-2020	• To assess combine harvester field performance, general condition, durability, repair and maintenance requirements • To check the fuel consumption and hourly production of the combine harvester under different working conditions • To obtain operator views regarding suitability of combine harvester.	15,00,000.00
1.4	Design and development of head feed mini combine harvester Duration : 2015-2020	• To design a head feed combine harvester • To manufacture the designed combine harvester prototype • To carryout field performance	15,00,000.00

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
		test of the developed combine harvester prototype	
1.5	Design and development of remote control seed sower machine for raising mat type seedling Duration : 2016-2020	• To improve the existing manual seeds sower machine using electronic device • To evaluate the performance of seeds sower machine	1,00,000.00
1.6	Development of a forward motion manual rice transplanter Duration : 2019-2021	• Design and fabrication of a manual operated forward motion rice transplanter • Performance evaluation of the developed rice transplanter	4,00,000.00
1.7	Development, validation and adoption of power weeder for wet land rice cultivation Duration : 2019-2021	▪ To develop and multiplication of the power weeder ▪ To demonstration, validation and adaptation the weeder in different location under different rice seasons • To reduce the rice production cost	20,00,000.00
1.8	Design and development of walking type power operated rice transplanter Duration : 2019-2021	• To design and develop a power operated rice transplanter • To test performance of the developed rice transplanter	25,00,000.00
1.9	Design and development of fertilizer deep placement mechanism for existing rice transplanter Duration: 2019-2021	• To design and development of power transmission mechanism from engine to the applicator for both walking and riding type rice transplanter • To design and attach adjustable type fertilizer dispensing mechanism in the rice transplanter • To design skid, furrow opener and covering mechanism for fertilizer deep placement • To test, evaluate and validate the technology in laboratory, research field and farmers' field • To save energy, cost and time of separately seedling transplanting and deep placement of fertilizer application	5,00,000.00
1.10	Ergonomic study of BRRI developed farm machinery for mechanized rice cultivation Duration : 2019-2021	• To find out the operational suitability of the BRRI multi-rows power weeder • To develop a guideline for safety	2,00,000.00

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
		of operation • To compare efficiency over other weeding practices	
1.11	Design and development of a reaper binder Duration : 2019-2021	• To design and fabricate a reaper binder with locally available materials • To evaluate the performance of the reaper binder • To identify the functional problems during the field operation	6,00,000.00
1.12	Design and development of a medium type combine harvester Duration : 2019-2021	• To design and develop a medium type combine harvester • To evaluate the field performance of the developed combine harvester	10,00,000.00
1.13	Design and development of a manual paddy seeding machine for mat type seedling raising. Duration : 2020-2022	• To design a manual operated paddy seed sower machine for mat type seedling raising • To fabricate the machine using locally available materials • To evaluate the performance of the seed sower machine	5,00,000.00
1.14	Design and development of power operated seed sower machine for raising mat type seedling Duration : 2020-2022	• Design and fabrication of a BRRI power operated seed sower machine for mat type seedling preparation	2,00,000.00
1.15	Study the effect of spacing on yield in mechanically transplanted rice Duration : 2020-2022	• To study the effect of spacing on yield and yield contributing characters • To find out the suitable options of spacing of the mechanical rice transplanter in different rice seasons.	50,000.00
1.16	Design and development of a medium type head feed type combine harvester Duration : 2020-2022	• To design and development a head feed paddy combine harvester (medium/small type) • To fabricate the machine based on the design consideration in Bangladesh condition • To evaluate the field performance in different crop season and soil condition • To build capacity of local manufacturer to fabricate the newly designed machine	25,00,000.00

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
1.17	Design and development of a power operated straw rope maker Duration : 2020-2022	• To design a straw rope making technology for different length of paddy straw • To fabricate the technology as per design • To evaluate the performance of the developed machine • To analyze the strength and properties of the straw rope • To analyze the economic performance	2,00,000.00
1.18	Determination of tilling efficiency of power tiller at selected areas in Bangladesh Duration : 2013-2020	• To determine the optimum tillage depth for maximum paddy yield • To identify the amount of fuel consumption according to depth of tillage	50,000.00
1.19	Attachment of binding facilitiy in BRRI self-proplled reaper Duration : 2020-2022	• To attach binding unit in existing BRRI self-propelled reaper	2,00,000.00
02	Milling and Processing Technology	• *To reduce loss, improve quality and addition of value to the farm products*	*48,00,000.00*
2.1	Design and development of solar dryer Duration : 2015-2020	▪ To design, fabricate and develop solar dryer ▪ To compare with traditional sun drying of paddy	1,00,000.00
2.2	Test, evaluation and modification rubber roll de-husker for commercial use Duration : 2015-2020	• To modify and development of a rubber roll de-husker • To evaluate the performance of paddy de-husker	3,00,000.00
2.3	Effect of drying and tempering on milling recovery of BRRI Variety under different moisture content Duration : 2017-2020	• To find out optimum moisture content for maximum milling yield and head rice recovery	3,00,000.00
2.4	Design and development of a small scale recirculating type dryer Duration : 2019-2020	• To design and fabricate of small scale recirculating type dryer • To study spatial distribution of air temperature and moisture content in and outside of small scale recirculating type dryer; • To investigate technical and financial performance of small scale recirculating type dryer; and • To study the effect of drying on germination rate and milling quality.	6,00,000.00

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
2.5	Study the effect of polishing on rice grain quality Duration : 2019-2020	• To find out the suitable levels of polishing on rice • To investigation the weight loss during milling • To evaluate the Zn and Fe concentration of selected rice varieties • To observe the head rice recovery of different DOM	1,00,000.00
2.6	Design and development of a compact rice mill Duration : 2019-2021	• To design and fabricate of a compact rice mill • To evaluate the performance of fabricated rice mill	5,00,000.00
2.7	Design and development of mobile single pass rice milling system for farmers and small traders in Bangladesh Duration : 2020-2022	• To design and drawing a material flow diagram for single pass rice milling system operated with electric motor or diesel engine; • To develop power transmission system and control mechanism of the system; • To fabricate a prototype of a mobile single pass rice milling system; • To evaluate the mobile single pass rice milling system for parboiled and un-parboiled paddy; and • Economic analysis of the system.	29,00,000.00
03	*Development of stores and storage technology*	• *To increase shelf life of rice in store*	*3,00,000.00*
3.1	Effect of ageing on milling performance of premium quality rice Duration : 2018-2021	• To observe the milling performance of BRRI dhan50 at different aging	2,00,000.00
3.2	Validation and adaptation of hermetic storage structure in household level of Bangladesh Duration : 2020-2022	• To compare the performance of traditional and hermetic storage technologies in rice storage	1,00,000.00
04	*Renewable Energy Technology*	• *Development of renewable energy extraction technologies from solar, agri-residues and waste products*	*28,50,000.00*
4.1	Study the briquette production from rice byproduct Duration : 2016-2020	• To prepare briquettes from rice straw and husk • Characterization of different briquettes originated from agricultural residue	1,00,000.00

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
		• To measure the calorific value of the briquettes	
4.2	Study on solar energy utilization for small agricultural machinery Duration : 2017-2021	• To design mechanism of solar energy utilization • To evaluate the performance of the developed machine	3,00,000.00
4.3	Validation and adaptive field trial of BRRI developed solar light trap Duration : 2017-2021	• Adaptive trial of BRRI solar light trap in farmer's field; • Evaluation of BRRI solar light trap on rice field, rice-fish and vegetable ecosystem; and • Awareness build-up through training and demonstration across the country.	20,00,000.00
4.4	Identification of agricultural residues for maximizing biogas production Duration : 2017-2021	• To identify the potential biogas material from agricultural residues • To find out the best mixing ratio for maximum biogas production	2,00,000.00
4.5	Design and development of low cost Bio-char production technology using different agricultural by product Duration : 2020-2022	• To develop an energy efficient bio-char production technology • To produce bio-char using different agricultural by product • To evaluate the quality of produced bio-char • To select the optimum bio-char production technology	50,000.00
4.6	Feasibility study of solar energy use in agricultural machinery Duration : 2013-2020	• To study the suitability of solar energy use in agricultural machinery • To evaluate the aptness of solar energy use in agricultural machinery	2,00,000.00
05	*Popularization of BRRI developed farm machinery and Postharvest technology*	• *Awareness build up about the benefit of using BRRI machines among the farmers* • *Motivation of the local manufacturer to manufacture the BRRI agricultural machinery*	*12,00,000.00*
5.1	Industrial and farm level extension of BRRI machinery and Postharvest technology Duration : 1998-2020	• To create awareness and demonstrate the benefit of using BRRI machines among the farmers • To motivate the local entrepreneurs to manufacture	10,00,000.00

Sl	Programme area /project with duration	Major Objective	Annual budget Thousand Tk.
		BRRI developed machinery	
5.2	Survey the status and constraint of farm machinery used in farmer's field at selected areas Duration : 2015-2020	• To investigate the capacity of engineering workshop in agricultural machinery manufacturing; • To study the production and existing use level of agricultural machinery at different farm operations • To identify the limitations and prospects of engineering workshop at farm level.	2,00,000.00
06	Application of ICT in Agriculture	To apply ICT in Agriculture	*1,00,000.00*
6.1	Development of machine vision approach in determination of paddy varieties Duration : 2020-2022	• To develop machine vision algorithm in determination of particular paddy variety • To identify the variety analyzing image of paddy	1,00,000.00

Workshop Machinery and Maintenance
Table-3
Proposed Research Programme 2020-21

Sl. No.	Prorgramme area: Farm Mechanization and Post-harvest Technology	Major Objectives	Annual budget Thousand Tk.
1	Design and development of power operated small-size reaper	• to develop a power operated small-size reaper • to evaluate the performance of power operated reaper	200.00 GOB
2	Field evaluation of BRRI reaper for harvesting rice in dry land condition	• to desseminate BRRI reaper for harvesting rice in dry land	200.00 GOB
3	Potentiality of engineering workshop for enhancing farm mechanization in selected areas of Bangladesh	• to investigate the capacity of engineering workshop in agricultural machinery manufacturing • to study the production and existing use level of agricultural machinery at different farm operations • to identify the limitations and prospects of engineering workshop at farm level	150.00
4	Survey on status and constraint of farm machinery used in farmer's field at selected areas	• to investigate the machinery used by the farmers • to identify the problems of theses machinery to use it • to find out the machinery demand of the farmers.	150.00
5	Determination of tilling efficiency of power tiller at selected areas of Bangladesh	• to determine the optimum tillage depth for maximum paddy yield • to identify the amount of fuel consumption according to tillage depth	100.00
6	Feasibility study of solar energy use in agricultural machinery	• to study the suitability of solar energy use in agricultural machinery • to evaluate the aptness of solar energy use in agricultural machinery	200.00
7	Development of machine vision approach in determination of paddy varieties	• to develop machine vision algorithm in determination of particular paddy variety • to identify the variety analyzing image of paddy	50.00

Sl. No.	Prorgramme area: Farm Mechanization and Post-harvest Technology	Major Objectives	Annual budget Thousand Tk.
8	Validation of hermetic storage technology on rice seed quality for small farmers	• to compare the performance of hermetic storage technology in rice storage • to determine the physical and nutrition changes of stored rice • to find out appropriate rice seed storage technology	200.00

Adaptive Research Division
Table 03
Proposed Research Program 2020-2021

Sl. No	Program area/Project	Major Objectives	Annual Budget (Thausand Tk.)
	Program Area: Technology Transfer		
01	Adaptive Research		
	Validation of Technologies	Validate the matured technologies at farm level	Project Total
	1. Varietal development		13000-15000
	Advanced Lines Adaptive Research Trial (ALART) during T. Aus 2020, T. Aman 2020 and Boro, 2021	To evaluate the yield potential and adaptability of advanced breeding lines at farmers' field in different agro-ecological zones of Bangladesh. To get feedback information about the advantages and disadvantages of the advanced lines from farmers and DAE personnel.	
	1.1 ALART : Favorable Environment (FE) in T. Aus 2019 Locations: Barishal, Cumilla, Habiganj, Chattogram, Kushtia, Rajshahi, Rangpur, Faridpur, Mymensingh, Gazipur	Do	1000.00
	1.2 ALART: Non-Saline tidal environment (NSTE) in T. Aus 2020 Locations: Barishal, Jhalokathi, Patuakhali, Bhola, Noakhali, Chattogram, Gazipur	Do	1000.00
	1.3 ALART: Stagnant Water Rice (SWR) Shallow flooded (50 to 100 cm), Early T. Aman 2020 Locations: Faridpur, Gopalganj, Cumilla, Jashore, Satkhira, Habiganj, Munsiganj, Sirajganj, Tangail, BRRI Gazipur	Do	1000.00

Sl. No	Program area/Project	Major Objectives	Annual Budget (Thausand Tk.)
	1.4 ALART: Rainfed Lowland Rice (RLR) in T. Aman 2020 Locations: Barishal, Faridpur, Satkhira,Kushtia, Rajshahi, Rangpur, Habiganj, Cumilla, Feni, Gazipur	Do	1000.00
	1.5 ALART: Zinc Enriched Rice (ZER) in T. Aman Locations: Barishal, Faridpur, Satkhira, Kushtia, Rajshahi, Rangpur, Habiganj, Cumilla, Feni, Gazipur	Do	1000.00
	1.6 ALART: Insect Resistant Rice-Brown Plant Hopper (IRR-BPH) in T. Aman 2020 Locations: Dinajpur, Sirajganj, Naogaon, Rajshahi, Kushtia, Satkhira, Habiganj, Cumilla' Chattogram, Gazipur	Do	1000.00
	1.7 ALART Premium Quality Rice (PQR) in T. Aman 2020 Locations : 10 upazilas of 6 districts (Thakurgaon, Rangpur, Bogura, Naogaon, Gazipu)	Do	1000.00
	1.8 ALART: Favorable Boro rice (FBR) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	1000.00
	1.9 ALART: Favorable Boro rice (FBR) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur		1000.00
	1.10 ALART: Zinc Enriched Rice (ZER) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	1000.00
	1.11 ALART: Insect Resistant Rice (IRR) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	1000.00
	1.12 ALART: Favorable Boro Rice-Biotechnology (FBR-BIO) genotypes in	Do	1000.00

Sl. No	Program area/Project	Major Objectives	Annual Budget (Thausand Tk.)
	Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur		
	1.13 ALART: Bacterial Blight Resistant-Biotechnology (BBR-Bio) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	1000.00
02	Dissemination of Technologies	Conducting on-farm trials for dissemination of BRRI technologies	Project Total
	2. Seed Production and Dissemination Program (SPDP)	To encourage the farmers for production, processing and storing of quality seed at on-farm level. To increase adoption of BRRI varieties. To get feedback information from the farmers and DAE personnel about BRRI varieties.	8000-8500.00
	2.1 SPDP B. Aus 2020 under GOB	To disseminate BRRI dhan43, BRRI dhan65 and 83 drum-seeder technologies	200.0
	2.2 SPDP T. Aus 2020 under GOB	B To disseminate BRRI dhan48, 82 & BRRI hybrid dhan 7	600.0
	2.3 SPDP in *Jhum* of Hilly areas in Aus 2020	To disseminate BRRI technologies in the hilly region of Bangladesh.	200.0
	2.4 SPDP in Valley of Hilly areas in T. Aus 2020	To disseminate BRRI dhan55, BRRI dhan82 and 85 I the valley of hills	400.0
	2.5 SPDP T. Aman 2020 under GoB	To disseminate BRRI varieties in different region of Bangladesh.	1350.0
	2.6 Dissemination of BRRI dhan78 in the southern tidal areas during T. Aman 2020	To disseminate BRRI technologies in the hilly region of Bangladesh.	100.0
	2.7 SPDP in Valley of Hilly areas in T. Aman 2020	To disseminate BRRI technologies in the hilly region of Bangladesh.	500.00
	2.8 Dissemination of BRRI dhan71 & 75 in the northern districts in T. Aman-	To disseminate BRRI technologies in the hilly region	450.00

Sl. No	Program area/Project	Major Objectives	Annual Budget (Thausand Tk.)
	Potato-Boro cropping pattern During Aman 2020	of Bangladesh.	
	2.9 A new model of SPDP in T. Aman 2020	To disseminate BRRI varieties and technologies in different region of Bangladesh.	300.00
	2.10 SPDP Aman 2020 under TRB	To disseminate BRRI varieties and technologies in different region of Bangladesh.	400.00
	2.11 Selected Varieties and Environment, HHAT Aman 2020	To disseminate BRRI varieties through block demonstration in different region of Bangladesh.	800.00
	2.12 SPDP of promising rice varieties in T. Aman 2020 under SPIRA Project.	To disseminate BRRI varieties through block demonstration in different region of Bangladesh.	500.0
	2.13 Coordinated Project on The Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity, in T. Aman, 2020	To disseminate BRRI varieties and technologies in Mymensingh areas of Bangladesh	400.00
	2.14 SPDP in Boro 2020-21 under GoB	To disseminate BRRI varieties and technologies in hilly areas of Bangladesh.	1400.00
	2.15 SPDP in Valley of Hilly areas in Boro 2020-21	To disseminate suitable BRRI varieties and technologies in potato growing areas of Bangladesh.	500.00
	2.16 A new model of SPDP in Boro 2020-21	To disseminate suitable BRRI varieties and technologies in different region of Bangladesh.	300.00
	2.17 SPDP Boro 2020-21 under TRB	To disseminate BRRI varieties and technologies in different region of Bangladesh.	350.00
	2.18 Head to Head Adaptive Trial distribution among the collaborators, Boro 2020-21	To disseminate BRRI varieties and technologies at farmers' level.	800.00
	2.19 Coordinated Project on The Transfer of Agricultural Technologies to Farmers' level for Increasing Farm Productivity, in Boro, 2020-21	To disseminate BRRI varieties and technologies in hilly areas of Bangladesh	400.00
03	Promotional activities	To update knowledge and skill of farmers and stalk holders on modern rice cultivation technology.	Project Total (Thausand tk.)
	3. Training		5500.00-6000.00

Sl. No	Program area/Project	Major Objectives	Annual Budget (Thausand Tk.)
	3.1 Farmers' training in Aus 2020, T. Aman 2020& Boro2021 under GoB, HNRD and TRB Total no: 100	To train the farmers on modern rice production technologies. To improve the farmers' knowledge and skill on rice production technologies. To create farmers' awareness about recent technologies.	3200.00
	3.2 Field day in Aus 2020, T. Aman 2020 & Boro2021 under GoB, SPIRA Total No. 60	To get feedback information directly from the farmers. For rapid dissemination of rice technologies among the farmers.	2100.00
04	Enrichment of own seed stock		
	4.1 Production of quality seeds of BRRI released recent varieties.	To produce quality seeds of BRRI varieties for adaptive research trials during Aman and Boro season.	300.00

Training Division

Table-3

Proposed Research Programme 2020-21

Sl.No.	Programme area/project Duration	Major Objective	Annual budget Thousand Tk.
1.	Rice production and communication training course for BRRI scientists. Duration: 2 months	To acquire and enrich knowledge on: ▪ Modern rice production technologies ▪ Identification of field problems of rice cultivation and its solutions ▪ Research planning and execution. ▪ Data collection, analysis and interpretation ▪ Report/scientific article writing and presentation ▪ Service rule and job description and ▪ Help extension personnel for quick dissemination of rice production technologies	15 lac
2.	Training on modern rice production technologies for DAE officers Duration: 2 months	To acquire and enrich knowledge on: ▪ Modern rice production technologies ▪ Identification of field problems of rice cultivation and its solutions and ▪ Quick dissemination of rice production technologies in the field	46 Lac

Sl.No.	Programme area/project Duration	Major Objective	Annual budget Thousand Tk.
3.	Hands on Training on Modern Rice Production Technologies (Yield Maximization). Duration: One week	To train the extension agents so that they can: ▪ Able to use and disseminate modern rice production technologies and ▪ Identify and solve the field problems of rice cultivation and help the farmers to increase productivity.	25 Lac
4.	Training on Agricultural Research Methodology Duration: 5 days	At the end of the course the scientists will be able to- • Use proper methodology of planning, execution, data collection and analysis of research activities • Present and interpreted data efficiently	9 Lac
5.	Training on Scientific Article Writing Duration: 5 days	To increase the skill of scientists for writing scientific article	9 Lac
6.	Farmers Training onModern Rice Production Technologies Duration: One day	To trained the farmers so that they can • Apply the modern techniques of rice production • Identification of field problems of rice cultivation and its solutions	4 Lac

Regional Station, Sagardi, Barishal

Table – 3
Proposed Research Program 2020-21

Sl No	Programme area/Project with duration	Major Objective	Budget Thousand Tk
Programme area/Project with duration: Regional Station, 2019-20			
1	Collection and Characterization of local Aus germplasm	- To collect local aus rice germplasm from Barishal region and characterize for varietal development	200
2	Characterization and conservation of T. Aman local rice varieties cultivated in tidal areas of Barishal region	-To characterize T. Aman Local Rice varieties for varietal development	100
3	Screening of rice varieties of T. Aman local rice varieties cultivated in tidal areas of Barishal region	- To identify the rice varieties having waxy leaf properties and identified rice varieties use in future breeding program	100

Sl No	Programme area/Project with duration	Major Objective	Budget Thousand Tk
4	Development of varieties for tidal submergence of T. Aman	To transfer submergence tolerance and taller seeding height controlling genes into varieties having intermediate plant height	300
5	Introgression of dense-erect panicle gene in Indica rice (*Oryza Sativa* L.) to improve plant architecture	-To transfer dense and erect panicle gene in Indica genotype to improve plant architecture for higher yield	200
6	Observation Yield Trial (OYT) for high yielding rice	-To select fixed lines with intermediate plant height, medium growth duration and better field resistance to insect pests and diseases	100
7	Advanced Yield Trial (AYT) for high yielding rice	- To evaluate the adaptability and yield potential of advanced lines	100
8	Regional Yield Trial (RYT) for high yielding rice	-To test the yield potential and adaptability of advanced lines of rice	100
9	Research program under TRB	-Objectives of TRB	1000
10	Proposed variety evaluation trial of hybrid rice	-To evaluate the best performing hybrid rice provided by different companies	150
11	Multi location trial (MLT) of hybrid rice	-To develop hybrid rice	25
12	Pest monitoring at BRRI Barishal Farms	To study the pest and their natural enemy incidence patterns	50
13	Insect pests and natural enemies in light trap	To study the pest and their natural enemy incidence peak time in rice	50
14	Survey of rice insect pests in Barishal region	To find out the incidence patterns of the major rice insect pests and their natural enemies	50
15	Conservation of natural enemies through ecological engineering approaches	To conserve natural enemies through ecological engineering approaches	100
16	Identification the species in dead heart and white head infected field	To identify the stem borer species composition	50
17	Insect Population in light in differential caught	To identify effective and cheaper Light trap	100
18	Survey and monitoring of rice disease in BRRI Barishal Station	To investigate the status of different rice diseases in southern region of Bangladesh.	25
19	Screening of available pesticides recommended for blast disease control of rice	To find out effective pesticide(s) to manage blast disease of rice.	25
20	Demonstration trial under SPIRA	-To demonstrate the yield performance and suitability of modern rice varieties in Barishal region	175
21	Demonstration, seed production and scaling up of MV rice in Barishal region	To disseminate modern rice varieties in Barishal region	300
22	Breeder seed production	-To produce breeder seed for disseminating BRRI released HYV of	1000

Sl No	Programme area/Project with duration	Major Objective	Budget Thousand Tk
		rice s	
23	TLS production	-To produce TLS seed for disseminating BRRI released HYV of rice	500
24	Farmers' training	To train farmers about BRRI developed technologies	240
25	Farmers' field day	To make the farmers familiar with HYV of rice	200

BRRI Regional Station, Bhanga, Faridpur
Table-03
Proposed Research Programme 2020-2021

Sl. No.	Programme area/Project (Duration)	Major objective	Annual budget Thousand TK.
	Varietal development		500.0
1	Hybridization(Continued)	To transfer useful gene/traits into modern genetic background	50.0
2	Field Rapid generation advance (FRGA) (Continued)	To shorten the breeding cycle through rapid advancement of segregating population	50.0
3	Regional Yield Trial (Continued)	To evaluate selected local deep water rice varieties in representative deep water areas under R/S Bhanga.	300.0
4	Proposed Variety Trial (PVT) of T. Aman, 2020	On-farm evaluation of proposed line by the NSB (National Seed Board) team for releasing as new variety	100.0
6	ALART	To evaluate yield, specific and general adaptability of the advanced breeding lines as compared with standard checks under on farm condition in different agro-ecological zone.	200.0
7	Multi-location Yield Trial in B. Aman, (Continued)	To evaluate promising breeding lines for their phenotypic acceptability, adaptation under natural shallow flooded conditions	200.0
8	Morphological Characterization of Pigmented Boro Rice Germplasm (Continued)	To characterize germplasm to identify useful variation in pigmented Boro rice germplasm using the Rice Germplasm Descriptors and Evaluation Form, GRSD	100.00
	CROP-SOIL WATER MANAGEMENT		200.0
9	Nitrogen and K management of newly released short duration modern T. Aman rice	To find out optimum level of N and K of newly released short duration rice varieties.	200.0

64

Sl. No.	Programme area/Project (Duration)	Major objective	Annual budget Thousand TK.
	varieties (Two years)		
	FARMING SYSTEMS RESEARCH PROGRAM		150.0
10	Validation of Mustard/Mungbean-Onion-T.Aus-T.Aman suitable four-crop cropping pattern in Faridpur region (One year)	Suitability and sustainability assessment of the Mustard/Mungbean-Onion-T.Aus-T.Aman in Faridpur region	100.0
11	Validation of improved fertilizer management option in *Aman* rice relayed with jute at farmers field in shallow flooded area. (One year)	To validate and fine tune of improved fertilizer management option at farmers field	50.0
	SOCIO ECONOMICS PROGRAM		
9	Stability of yield of BRRI released Aman and Boro varieties (Continued)	Stability analysis of BRRI released modern rice varieties in Aman and Boro Season at BRRI R/S Bhanga, Faridpur.	20.0

Regional Station, Cumilla

Table-03
Proposed Research Programme 2020-2021

Sl. No.	Programme area/Project (Duration)	Major Objectives	Annual budget Thousand Tk.
Program Area (01): Varietal Development Program (VDP)			
Program for Aus and T. Aman season 2020-21			
1.1	Project 01: Development of Transplanted Aus Rice (BRRI R/S, Cumilla own program)		
1.1.1	Advanced Yield Trial (AYT) (continue)	To evaluate agronomic performance, specific and general adaptability under on station condition	30 GOB
1.2	Project-2: Development of Transplanted Aman Rice with high yield, short duration, water stagnation, premium quality, & multi stress tolerant (BRRI R/S, Cumilla own program)		
1.2.1	Hybridization (continue)	Introgression of genes from diverged genetic background into rice varieties/lines for the improvement of standard T. Aman varieties	1000 GOB
1.2.2	Confirmation of F_1 (2019-continue)	To confirm the crosses as true hybrid	

Sl. No.	Programme area/Project (Duration)	Major Objectives	Annual budget Thousand Tk.
1.2.3	Growing of F_2 population (2018-continue)	Selection of progenies with emphasis on earliness, plant type, grain type and high yield potential compared to standard varieties	
1.2.4	Pedigree nursery (2017-continue)	Selection of progenies with improved plant type, earliness, acceptable grain quality and high yield potential compared to standard varieties	
1.2.5	Observational Trial (OT) (2013-continue)	Initial yield evaluation of advanced lines compared to standard cks	
1.2.6	Preliminary Yield Trial (PYT) Com (2012-continue)	Initial yield evaluation of advanced lines compared to standard checks	
1.2.7	Secondary Yield Trial-1 (SYT-1) (Favorable) (2011-continue)	Confirmation of potential of advanced lines compared to standard cks	
1.2.8	Secondary Yield Trial-2 (SYT-2) (INGER) (2011-continue)	Confirmation of potential of advanced lines compared to standard cks	
1.2.9	Secondary Yield Trial-3 (SYT-3) (INGER) (2011-continue)	Confirmation of potential of advanced lines compared to standard cks	
1.2.10	Secondary Yield Trial-4 (SYT-4) (GSR) (2011-continue)	Confirmation of potential of advanced lines compared to standard cks	
1.2.11	Advanced Yield Trial-1 (AYT-1) (2009- continue)	Confirmation of potential of advanced lines compared to standard cks	
1.2.12	Advanced Yield Trial-2 (AYT-2) (2009- continue)	Evaluation of advanced breeding lines for development of variety suitable for Cumilla region	
1.2.13	Advanced Yield Trial-3 (AYT-3) (Water Stagnation) (2009- continue)	Evaluation of advanced breeding lines for development of variety suitable for Cumilla region	
1.2.14	Advanced Yield Trial-4 (AYT-4) (Water Stagnation) (2009- continue)	Evaluation of advanced breeding lines for development of variety suitable for Cumilla region	
1.3	Project-3: Development of Boro Rice with high yield, short duration, water stagnation, premium quality, & multi stress tolerant (BRRI R/S, Cumilla own program)		
1.3.1	Hybridization (continue)	To develop breeding population with high yield potential along with earliness and acceptable grain quality	1000 GOB
1.3.2	F_1 Confirmation (2019- continue)	To confirm F_1 s as true crosses	
1.3.3	Growing of F_2 population (2018- continue)	Selection of progenies with emphasis on earliness, strong culm, high yield potential and disease and insect	

Sl. No.	Programme area/Project (Duration)	Major Objectives	Annual budget Thousand Tk.
		resistance at field condition	
1.3.4	Pedigree Nursery (F_3, F_4,F_5, F_6 and F_7)(2017- continue)	Selection of desirable segregates with emphasis on earliness, strong culm, high yield potential and disease and insect resistance at field condition	
1.3.5	Observational Trial (OT) (2013- continue)	To select genetically fixed lines/ homogenous lines with uniform plant height, heading, plant type and acceptable grain quality along with high yield potential	
1.3.6	Preliminary Yield Trial (PYT) (2012- continue)	Initial yield evaluation and selection of desirable lines compared to standard checks	
1.3.7	Secondary Yield Trial (SYT) (2011- continue)	Confirmation of yield evaluation in a replicated trial and selection of desirable lines compared with standard checks	
1.3.8	Advanced Yield Trial (2010- continue)	To evaluate the advanced breeding lines for development of variety suitable in Cumilla region	
Program Area (02): Crop-Soil-Water Management			
2.1	Soil Science		
2.1.1	Long-term missing element trials for diagnosing the limiting nutrient in soil in BRRI R/S Cumilla (2014-continue)	1. To determine nutrient deficiency problems in soil through missing elements techniques. 2. To observe long-term yield trend of rice under different nutrients managements 3. To evaluate the changes in soil physical, chemical and biological properties under long-term fertilization	100 GOB
2.1.2	Effect of N rates on the yield of BRRI dhan87 & BRRI dhan89 (2017-20)	To determine the N response behavior of BRRI dhan87 & BRRI dhan89	100 GOB
2.1.3	Evaluation of bio-organic fertilizer in the soil plant soil system (BRRI dhan87 & BRRI dhan58) (2017-continue)	1.To evaluate efficiency of biofertilizer to promote rice plant growth and yield 2.To improve soil biology	100 GOB
2.1.4	Efficiency of DAP fertilizer for the supplementation of nitrogen (2020-22)	To evaluate the efficacy of DAP fertilizer on reducing N fertilizer application	100 GOB
2.2	Agronomy		
2.2.1	Planting time effect on growth and yield of BRRI developed newly T. Aman varieties BRRI dhan93, BRRI dhan94	To find out the appropriate time of planting for yield optimization	50 GOB

Sl. No.	Programme area/Project (Duration)	Major Objectives	Annual budget Thousand Tk.
	and BRRI dhan95 (2020-21)		
2.2.2	Effect of time of planting on growth and yield of newly BRRI released Boro variety BRRI dhan96 (2020-21)	To find out the appropriate time of planting for yield optimization	50 GOB
2.2.3	Performance of BRRI dhan76 and BRRI dhan77 rice varieties under stagnant condition (2020-21)	To test the suitability of lowland rice varieties under stagnant water condition	50 GOB
2.2.4	Effect of polythene cover in seed bed during Boro season (2020-21)	To find out effective time of covering rice seedbed using polythene	50 GOB
Program Area(03): Pest Management			
3.1	Survey and yield loss assessment of rice blast disease in Cumilla district (continue)	1. To know the prevalence of Major rice disease blast 2. To assume the rice yield losses due to rice diseases	100 GOB
3.2	Validation of rice neck blast disease management technology under farmer's field condition (2018-continue)	1. To minimize yield loss due to blast disease 2. To build up farmers awareness on blast disease management	100 GOB/Project
3.3	Varietal reaction and recovering ability of BRRI released rice varieties (2019-continue)	To know the varietal reaction against tungro disease of rice	100 GOB/Project
3.4	Factors affecting rice tungro disease and its management in Cumilla region (2019-continue)	To find out the factors and a sustainable management practice of rice tungro disease from Cumilla region	665 GOB
3.5	Tracking the infection source(s) of rice false smut disease (2019-continue)	To identify whether the seed/soil and/ or the air is/are the carrier of the pathogen or not	200 GOB
3.6	Screening of Blast, BB and Tungro resistant monogenic lines in disease hot spot of Bangladesh (2018-continue)	To identify candidate gene(s) for durable disease resistant variety development	60 BMZ
3.7	Evaluation of new chemicals against Blast, Sheath blight diseases of rice (2020-continue)	To find out the effective chemicals suitable for Blast, ShB diseases of rice	60 GOB
3.8	Advisory services to the farmers (continue)	1. To assist farmers for rice production; 2. To disseminate the direct services to the farmers problems for rice production	100 GOB
Program Area(04): Economic and Policy			

4.1	Stability analysis of BRRI released rice varieties (continue)	To demonstrate the suitability of BRRI varieties in greater Cumilla region	150 GOB
Program Area (05): Technology Transfer			
5.1	Multi-location trial of new BRRI varieties in major cropping patterns (continue)	To demonstrate and disseminate BRRI varieties in greater Cumilla region	800 GOB/ SPIRA/TRB
5.2	Farmer's training on modern rice cultivation (continue)	To increase farmers knowledge	100 GOB/ SPIRA
5.3	Field day on modern rice cultivation (continue)	To increase farmers knowledge	100 GOB/SPIRA
5.4	Validation of yield performance of BRRI varieties compared to Binadhan-16, Binadhan-17, Binadhan-19 (2020-22)	To validate yield performance of BRRI varieties compared to Binadhan-16, Binadhan-17, Binadhan-19	100 GOB/SPIRA

BRRI Regional Station, Habiganj
Table -3
Proposed Research Programme 2020-2021

Sl. No.	Programme area/ project with duration	Major objectives	Annual budget (Thousand Tk)
1. Varietal Development			
Deepwater rice Project: Improvement of Deepwater Aman, 2020			
1	Regional Yield Trial	Intermediate tall deepwater rice genotypes suitable for shallow flooded deepwater areas will be selected.	100.00
2	Advanced Yield Trial	On-farm verification of yield and other agronomic characters of advanced lines	100.00
3	Advanced Yield Trial	On-farm verification of yield and other agronomic characters of advanced lines	100.00
Improvement of aerobic rice			
1	Growing F_3 Population	F_4 population will be selected for developing high yield potential T. Aus lines	100.00
2	Hybridization	Development of high yielding anti-oxidant enriched rice with aroma.	100.00
2. Crop-Soil-Water Management Program			
1	Determination of optimum N and K fertilizer dose for newly released rice varieties in Haor area	To determine the optimum N & K doses for newly released rice varieties in Haor area To increase rice yield	100.00
2	Determination of Optimum Time of Direct Seeding and Thinning for Achieving Higher Yield from Thinner	To determine optimum time of seeding and thinning for escaping flash flood and achieving higher yield from thinned	50.00

Sl. No.	Programme area/ project with duration	Major objectives	Annual budget (Thousand Tk)
	seedling in Haor areas	seedling in haor areas	
3	Long-term missing element trial for diagnosing the limiting nutrient in soil.	To identify the yield limiting nutrient if any in the soils of BRRI Habiganj farm.	70.00
4	Carbon footprint and net carbon balance with organic and inorganic amended rice soil	To assess the carbon footprint and net carbon balance during T. Aman-Fallow-Boro cropping pattern.	100.00
3. Pest Management			
1	Survey and monitoring of rice diseases and insects in BRRI Farm Habiganj	To investigate the present status of different rice diseases and insects in BRRI Farm Habiganj	50.00
2	Formulation of nano particles from plant parts against Bakanae disease	To formulate nano particles from organic sources for controlling bakanae disease. To use nano particles from organic sources for safe environment.	100.00
3	Pesticidal effect of different botanicals and chemical against rice weevil (*Sitophilus Oryzae* l.) and anguimous moth *(Sitotroga sp.)*	To assess the effectiveness of some botanicals and chemical for the management of Rice Weevil and Anguimous moth	60.00
4. Technology Transfer			
1	Demonstration of newly released Aus, T. Aman and Boro varieties	To demonstrate the performance of newly BRRI released Aus, T. Aman and Boro rice varieties to the farmers field	200.00
2	Farmers' training and Field days for Aus, T. Aman and Boro	To deliver the knowledge about the modern rice cultivation techniques to the farmers	300.00
3	Breeder seed production	To produce quality Breeder seeds at BRRI farm Habiganj	1000.00
4	Truthfully labeled seed production (TLS)	To produce locally popular TLS and ensure quality seeds supply to the local farmers	600.00

Regional Station, Kushtia
Table-03
Proposed Research Programme 2020-21

Sl. No.	Programme area/Project (Duration)	Major Objectives(s)	Annual budget (Tk.)
VARIETAL DEVELOPMENT PROGRAMME AREA			

Sl. No.	Programme area/Project (Duration)	Major Objectives(s)	Annual budget (Tk.)
Aus, 2020			
1	Regional Yield Trial (RYT) -Including 3 entries against two standard checks	To evaluate performance of some T. Aus advance lines for yield potentiality and adaptability in Kushtia region.	20,000/-
2	Effect of irrigation management on growth and yield of Aus rice cultivation -Including 3 varieties against 3 irrigation level	Find out high yielding suitable lines for greater Kushtia	20,000/-
3	ALART Favorable Environment -Including 2 entries against two standard checks	To evaluate the yield potential and adaptability of advanced lines at farmers field	30,000/-
Aman, 2020			
4	Special Yield Trial -Including 8 entries in two places	To evaluate specific and general adaptability of released varieties in Kushtia region.	40,000/-
5	Regional Yield Trial (RYT-1) for Zinc enriched rice (ZER) -Including 2 entries against 3 standard checks	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
6	Regional Yield Trial (RYT-2) for Zinc enriched rice (ZER) -Including 5 entries against 3 standard checks	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
7	Regional Yield Trial (RYT-3) for Rainfed lowland rice (RLR#1) -Including 7 entries against two standard checks	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
8	Regional Yield Trial (RYT-4) for Rainfed lowland rice (RLR#2) -Including 7 entries against two standard checks	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
9	Regional Yield Trial (RYT-5) for Premium quality rice (PQR#1) -Including 3 entries against one local and one standard check	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
10	Regional Yield Trial (RYT-6) for Premium quality rice (PQR#2) -Including 3 entries against one local and one standard check	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
11	Regional Yield Trial (RYT-7) for Development of disease resistant rice (DRR- BB, RTV & Blast) -Including 13 entries against 3 standard and one resistant check.	To evaluate the performance of some advanced breeding lines for specific and general adaptability in Kushtia region.	20,000/-
12	Regional Yield Trial (RYT-8) for Insect resistant rice (IRR-1)	Find out high yielding suitable lines for greater Kushtia	20,000/

Sl. No.	Programme area/Project (Duration)	Major Objectives(s)	Annual budget (Tk.)
	-Including 12 entries against 3 standard checks		
13	Regional Yield Trial (RYT) for Insect resistant rice (IRR-2) -Including 4 entries against two standard checks	Find out high yielding suitable lines for greater Kushtia	20,000/
14	Advanced Line Adaptive Trial (ALART)- Rainfed lowland rice (RLR) - Including 2 genotypes against two standard checks	To evaluate the yield potentiality and adaptability of the advanced rice genotypes at farmer's field	30,000/-
15	Advanced Line Adaptive Trial (ALART)- Zinc enriched rice (ZER) - Including 1 genotypes against two standard checks	To evaluate the yield potentiality and adaptability of the advanced rice genotypes at farmer's field	30,000/-
16	Advanced Line Adaptive Trial (ALART)- Insect resistant rice (IRR) - Including 4 genotypes against two standard checks	To evaluate the yield potentiality and adaptability of the advanced rice genotypes at farmer's field	30,000/-
17	Determining Minimum Irrigation Water Requirement of Rice in Different Regions through Water Balance from On-farm Demand and Model Simulation both Aus and Aman season -Including 3 treatments with 4 replications	Find out the rice irrigation water requirement for different regions on rice yield response.	50,000/-
18	Evaluation of drought tolerance ability of BRRI dhan71 in moderately drought prone Kushtia region - Including 4 treatments with 1 control plot (Rainfed)	Drought tolerance ability and effect of supplemental irrigation on yield and yield contributing parameters.	20,000/-
SOCIO ECONOMICS AND POLICY PROGRAMME AREA			
19	Stability analysis of BRRI varieties both T. Aman and Boro season -Including T. Aman and Boro were 42 and 43 respectively	Find out the seasonal stable varieties	20,000/-
20	Effect of time of planting on growth and yield of popular transplanted Aus varieties - Including 3 varieties with 2 factors	To know the effect of time of planting on growth and yield of popular Aus varieties	20,000/-
RICE FARMING SYSTEM PROGRAMME AREA			
21	Improvement of Mustard- T. Aus- T. Aman cropping pattern with variety replacement for sustainable productivity in Kushtia region	To identify the best variety and maintain a sustainable productivity	50,000/-
22	Yield response of rice to different rates of Urea and MoP fertilizer in Boro-Fallow-T. Aman cropping pattern in	To find out the best dose combination of Urea and MoP	50,000/-

Sl. No.	Programme area/Project (Duration)	Major Objectives(s)	Annual budget (Tk.)
	Kushtia		
23	Insect Population dynamics in Boro-Fallow-T. Aman cropping pattern in AEZ 11	To ensure the abundance of rice insects, their peak period and appropriate time of control	50,000/-

Regional Station, Rajshahi

Table-03
Proposed Research Programme 2020-2021

Sl. No.	Program area/Project (Duration)	Major Objective(s)	Budget (000 Tk.)
	VIII. Regional Station (Rajshahi)		
1.	Crop-Soil-Water management		
	1.1 Nutrient management under conservation agriculture in double rice cropping system	To identify nutrient requirement under conservation agriculture	50
	1.2 Long-term missing element trial at BRRI regional station, Rajshahi	To determine nutrient mining problem on soil fertility and its influence on rice	100
	1.3 Determination of N fertilizer doses through response curve for newly released BRRI rice varieties	To determine optimum N doses for newly released varieties.	50
	1.4 Determination of P fertilizer doses through response curve for newly released BRRI rice varieties	To determine optimum P doses for newly released varieties.	50
	1.5 Determination of K fertilizer doses through response curve for newly released BRRI rice varieties	To determine optimum K doses for newly released varieties.	50
	1.6 Determination of zinc doses through response curve for newly released rice varieties	To determine optimum Zn doses for newly released varieties.	40
	1.7 Determination of boron doses through response curve for newly released rice varieties	To determine optimum B doses for newly released varieties.	40
	1.8 Effect of nitrogen and potassium rates on modern rice cultivation	To find out the suitable combination of N and K for MV rice cultivation	100
	1.9 Effect of DAP and urea rates on growth and yield rice	To find out a suitable combination of DAP and urea for rice cultivation	100
3.	Variety Development		
	2.1 Hybridization Program, T. Aman 2020-21	To develop high yielding genotypes with drought tolerance at reproductive stage	50

Sl. No.	Program area/Project (Duration)	Major Objective(s)	Budget (000 Tk.)
		and slender grain	
	2.1 Hybridization Program, Boro 2020-21	To develop high yielding genotypes with photosensitive characteristics and slender grain	50
	2.3 F1 Confirmation, T. Aman 2020-21	To confirm the crosses of previous year	50
	2.4 Growing of F2 populations, T. Aman 2020-21, BRRI Rajshahi	To get F3 seeds of previous crosses	50
	2.5 Advanced yield trial (AYT), T. Aman 2020-21	To identify suitable high yielding genotypes	50
	2.6 Collection and maintenance of local landraces, T. Aman 2020-21	To find out suitable genotypes for Rajshahi region to meet the local demand and used for crossing to achieve particular characteristics	100
3.0	Rice Farming Systems		
	3.1 Development of four crops cropping patterns using short duration crop varieties in medium highland in BRRI Rajshahi	To increase the productivity and profitability of the farmers	50
	3.2 Development of four crops cropping patterns using short duration crop varieties in farmers field	To increase the productivity and profitability of the farmers	200
	3.3 Evaluation of crop productivity and soil health under conservation tillage in maize-mungbean-rice cropping pattern	To increase the productivity and soil health	50
	3.4 Development of a technology village and interventions of farming systems/adaptive trials in different categories of farmer's field	To increase the productivity and profitability of the farmers	200
	3.5 Effect of time of planting on growth and yield of newly released BRRI varieties in Rajshahi region	To identify suitable planting time and suitable variety for Boro season	50
	3.6 Effect of seedling establishment techniques on seedling growth and yield of Boro rice	To identify suitable crop establishment techniques for Boro season	50
	3.7 Effect different varieties on yield in Aus season in Barind region	To identify suitable planting time and suitable variety for Boro season	100
	3.8 Effect of different varieties on yield in Aman season in Rajshahi	To identify suitable planting time and suitable variety for Boro season	100

Sl. No.	Program area/Project (Duration)	Major Objective(s)	Budget (000 Tk.)
	region		
4		Pest Management	
	4.1 Effect of selected insecticide for stem borer management	To find out the more effective insecticide for stem borer management	50
	4.2 Species identification of stem borer in Rajshahi region	To document the stem borer species in the Rajshahi region	100
	4.3 Effect of different trap design for the management rat	To find out the effective trap design for rat control	100
	4.4 Effect of trap placement locations on rat catch	To find out the appropriate trap placement location for entrapping rat effectively	50
5		Socioeconomics and Policy	
	5.1 Stability analysis of BRRI released Aus varieties	To identify suitable and stable varieties in Rajshahi region	50
	5.2 Stability analysis of BRRI released Aus varieties	To identify suitable and stable varieties in Rajshahi region	50
	5.3 Stability analysis of BRRI released Aus varieties	To identify suitable and stable varieties in Rajshahi region	50
6		Technology Transfer	
	6.1 Seed production and distribution program	To distribute newly released BRRI varieties at farmer's level	100
	6.2 Demonstration of newly released BRRI varieties at farmers field	For popularization and rapid adoption of newly released varieties	350
	6.3 Training and Field Days	To train up farmers of Rajshahi Region	260

Regional Station, Satkhira
Table-3
Proposed Research Program 2020-2021

Sl. No.	Program area/Project with duration	Major Objective	Season	Annual Budget (Thousand Tk.)
Varietal Development				
01	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of advance breeding lines in on-station.	Aman, Boro	400
02	Advanced Line Adaptive Research Trial (ALART)	To evaluate the performance of advanced line	Aman, Boro	200
Crop-Soil-Water Management				
03	Long term missing nutrient trial	To find out long-term missing nutrient effect on rice yield	Aman, Boro	60

Sl. No.	Program area/Project with duration	Major Objective	Season	Annual Budget (Thousand Tk.)
04	Determination of economic fertilizer rate for popular transplanted Aus varieties	To find out optimum fertilizer rate and data generation for running DSSAT model	Aus	Project
05	Effect of irrigation management on growth and yield of T. Aus rice cultivation during 2019	To determine the best irrigation practice for T. Aus season, 2019 and data generation for running DSSAT model	Aus	Project
06	Effect of time of planting on growth and yield of popular transplanted Aus varieties	To find out optimum time of planting for maximum growth and yield of Aus varieties and data generation for running DSSAT model	Aus	Project
07	Increasing fertilizer use efficiency and resilience in problem soils (saline)	To manage saline soil, and improvement of rice yield by application of micronutrients, customized compound fertilizers, organic amendments.	Boro	IFDC
08	Evaluation of increased nitrogen rates for Boro rice cultivation in saline areas	To find out optimum nitrogen dose for Boro rice production in saline affected area	Boro	30
09	Evaluation of increased potassium rates for Boro rice cultivation in saline area	To find out optimum potassium dose for Boro rice production in saline affected area	Boro	30
Socio-Economic policy				
10	Validation of T. Aman rice varieties for stagnant water ecosystem	To identify suitable T. Aman rice varieties for stagnant water ecosystem.	Aman	30
11	Validation of T. Aman rice varieties for integrated rice-fish system	To identify suitable T. Aman rice varieties and intensify the total production	Aman	30
12	Stability analysis of BRRI rice varieties	To make adoption and expansion of BRRI rice varieties to the farmers' field	Aus, Aman, Boro	120
13	Selection of suitable hybrid rice genotypes under saline prone areas	To find out suitable hybrid rice in south western coastal region	Boro	50
14	Head to Head Trail	To evaluate the suitability of BRRI released rice varieties in different regions.	Aman, Boro	TRB
15	Seed production and dissemination program (SPDP)	To disseminate BRRI varieties among the farmers of this region.	Aus, Aman, Boro	100

Sl. No.	Program area/Project with duration	Major Objective	Season	Annual Budget (Thousand Tk.)
16	Breeder Seed Production	To produce Breeder seeds of BRRI released promising varieties and supply to GRS Division, BRRI Gazipur	Aus, Aman, Boro	100
17	Truthfully Labeled Seed (TLS) Production	To produce TLS as per regional and national demand	Aus, Aman, Boro	120
18	Evaluation of local land race	Collection of local rice germplasm and evaluation of yield potentiality of local genotypes	Boro	40
Technology Transfer				
19	Development and evaluation of four-crop cropping pattern and sustainability	i)To increase total productivity of unit area per year by increasing cropping intensity ii) To compare the sustainability of four-crop cropping pattern with that of three-crop cropping pattern in terms of soil health and profit	Round the year	70
20	Improvement the productivity of gher system	To increase total productivity and farm income	Round the year	100
21	Field days and farmers' training	To disseminate and popularize BRRI varieties and rice production technologies	Round the year	500

Transforming Rice Breeding (TRB) Program

Sl. No.	Program area/Project with duration	Major Objective	Season	Annual Budget (Thousand Tk.)
	Line Stage Testing (LST)	Selection of uniformity of each line along with high heritable and key agronomic traits such as maturity, plant height etc.	Aman, Boro	Project
	Observational Yield Trial (OT)	Identification of genetically fixed lines from non-replicated trial suitable for saline areas	Aman, Boro	Project
	Preliminary Yield Trial (PYT)	Initial evaluation of yield, salt tolerance and other agronomic characteristics of selected materials in replicated trial.	Aman, Boro	Project
	Secondary Yield Trial (SYT)	Initial evaluation of yield, salt tolerance and other agronomic characteristics of selected materials in replicated trial.	Aman, Boro	Project

	Advanced Yield Trial (AYT)	Confirmatory yield evaluation of selected materials for salt tolerance and other agronomic traits replicated trial	Aman, Boro	Project
	Regional yield trial (RYT)/Participatory Varietal Selection (PVS)	Assessment of specific and general adaptability and selection of suitable and selection of suitable genotypes by participating farmers suitable for coastal saline environments.	Aman, Boro	Project

Climate Resilient Farming Systems Research and Development for the Coastal Ecosystem (Project ID:098)

Sl. No.	Program area/Project with duration	Major Objective	Annual Budget (Thousand Tk.)
01	Year-round vegetables production in homestead area at CRFSR&D site, Kaliganj, Satkhira	i) To increase the vegetables production in the coastal region and ii) to maximize production of vegetables and farm income.	Project
02	Growing of *Chui* Jhal spices with perennial trees or wall	i) To utilize the available unused shady places and ii) to establish a new regime for cultivable species in homestead area	Project
03	Improvement of existing Boro-Fallow-T. Aman cropping pattern at FSRD site, Kaliganj, Satkhira	i)To increase the total production as well as more economic return and ii) to diversify crop production and disseminate the improved cropping pattern	Project
04	Improvement of existing Vegetables-Rice cropping pattern at FSRD site, Kaliganj, Satkhira	i)To increase the total production as well as farm income ii) To diversify crop production and disseminate the improved cropping pattern.	Project
05	Development of alternate cropping pattern at FSRD site, Kaliganj, Satkhira	i)To identify and disseminate the more productive alternate cropping pattern and ii) To increase the total farm productivity and income.	Project
06	Cropping pattern in saline affected area at FSRD site, Kaliganj, Satkhira	i)To identify the suitable cropping pattern in salinity affected area ii) To diversify crop production and disseminate the improved cropping	Project

Sl. No.	Program area/Project with duration	Major Objective	Annual Budget (Thousand Tk.)
		pattern	
07	Increasing yield through intercropping systems in Sugarcane at CRFSR&D site, Kaliganj, Satkhira	i) To make sugarcane popular by practicing intercropping ii) To increase the production of companion crops.	Project
08	Production program of BRRI released T. Aman rice varieties in different ecosystem	To disseminate newly released BRRI varieties.	Project
09	Increased productivity of gher boundary introducing of modern technology	i)To maximize the productivity of gher system and ii) To diversify the production system and to increase the farm income.	Project
10	Production performance of Sonali Chicken (Layer) at FSRD site, Kaliganj, Satkhira	i)To ensure fulfillment of nutritional requirements of farm families and ii) To make the female participants to engage in income generation.	Project
11	Production performance of Khaki Campbell duck rearing at FSRD site, Kaliganj, Satkhira	i) To increase the egg production and income of the farm families, and ii) To ensure and increase the family nutrient consumption.	Project
12	Turkey rearing in household condition by cooperative farmers at FSRD site, Kaliganj, Satkhira	i)To check the feasibility of Turkey rearing under coastal environment ii)To increase household income and improve the livelihood	Project
13	Vaccination program on poultry production	To increase productivity and to make poultry disease free.	Project
14	Goat rearing in homestead area	i)To increase income of the farm families ii)To make awareness in goat rearing for income generation.	Project
15	Fish poly-culture in saline gher system at FSRD site, Kaliganj, Satkhira	i)To increase farmers' fish production ii)To reduce dependence on shrimp farming.	Project
16	Fish poly-culture in mini pond system at FSRD site, Kaligajnj, Satkhira	To increase farmers' fish production and their income generation.	Project
17	Establishment of homestead mini orchard of Mango and Litchi along with crop production	i)To utilize homestead farm resources to grow fruit and Vegetables production ii)To increase income of the farm family by producing improved varieties of mango and litchi	Project
18	Fruit tree plantation in homestead area	i)To provide proper nutrition to the family members, and ii)To ensure the maximum utilization of the homestead area	Project

Sl. No.	Program area/Project with duration	Major Objective	Annual Budget (Thousand Tk.)
19	Roadside drumstick plantation	i)To generate income and to increase family nutrition level, and ii)To ensure the proper utilization of the drought and saline affected coastal area	Project

Regional Station, Sonagazi, Feni
Table 03
Proposed Research Programme 2020-2021

Sl. No	Programme area/Project with duration	Major Objective	Annual Budget (Thousand Tk.)
1	Regional Yield Trial (RYT) during Aus 2020, T. Aman 2020 & Boro, 2020-21	To evaluate the regional adaptability of selected genotypes under on-station condition.	500
2	Advanced Lines Adaptive Research Trial (ALART) Aus 2020, T. Aman 2020 & Boro, 2020-21	To evaluate the yield potential and adaptability of advanced breeding lines at farmer's field in different agro-ecological zones of the country.	300
3	Stability analysis of BRRI varieties during Aus 2020, T. Aman 2020 & Boro, 2020-21	To test the stability of BRRI released varieties under different agro ecological conditions prevailing at different regions of the country.	400
4	Germplasm collection and Characterization during Aus, Aman and Boro seasons	Enrichment of gene bank	300
5	Selection of profitable crop cultivation followed by T. Aman at Laxmipur, Noakhali and Feni districts.	i. To select the most profitable crop after T. Aman harvest at Laxmipur, Noakhali and Feni districts ii.To suggest the farmers a best crop combination considering the existing practice	50
6	Yield maximization of locally cultivated Aman rice variety through fertilizer management	i) To suggest an optimum chemical fertilization for local aman variety. ii) To collect the farmers feedback on fertilizer management.	100
7	Yield maximization in Badhe system using appropriate varieties practicing at Feni districts.	i) To identify the suitable rice variety for unfavorable land type during T. Aman season. ii) To collect the farmers feedback about MV rice for double	50

Sl. No	Programme area/Project with duration	Major Objective	Annual Budget (Thousand Tk.)
		transplanting Badhi system.	
8	Determination of suitable time of transplanting of BRRI developed modern rice varieties	To identify suitable time of transplanting	250
9	Integrated nutrient management package for char land rice cultivation	To find out appropriate nutrient package for char land rice cultivation	100
10	Surveillance and monitoring of insect pests and their natural enemies using fluorescent and solar light trap	To observe the availability of insect pests and their natural enemies in rice field using fluorescent as well as solar light trap to create a data base.	50
12	Monitoring of rice insect pests and their natural enemies in south east coastal region	To study the availability of rice insect pests and their natural enemies in saline and non-saline rice eco-system.	100
13	Study on seasonal variation of major rice insect pests incidence and their natural enemies influenced by abiotic factors at Chattagram region.	To study the seasonal incidence pattern of rice insect pests and natural enemies at Chattagram region.	50
14	Field survey and clinical suggestions to the farmers at different growing stages of rice.	To identify the rice field problem and instant suggestion to the target farmers regarding insects and disease.	100
15	Production of Breeder Seed.	To produce Breeder seeds with a target amount as per national demand.	800
16	Truthfully labeled seed production	To increase the rice seed availability for the farmers.	1200
17	Seed production and Dissemination Program(GoB and SPIRA)	i.To motivate farmers for producing quality rice seeds and exchange among them for rapid dissemination of BRR varieties. ii.To collect feedback information about BRRI varieties from the farmers and DAE personnel	800
18	Farmers' Training	i. To update knowledge and skills of farmers on modern rice production technologies. ii.To enhance dissemination of new technologies among the farmers	250
19	Field Days	i.To create awareness and interest among farmers, local leaders, elite persons, NGO workers and DAE personnel about BRRI varieties and technologies.	250

Sl. No	Programme area/Project with duration	Major Objective	Annual Budget (Thousand Tk.)
		ii.To promote dissemination and get feedback about BRRI technologies from the participants.	
20	Agricultural Fair	To display the BRRI released modern technologies among all categories of people.	100

Regional Station, Rangpur
Table 03
Proposed Research programme, 2020-2021

Sl. No.	Programme area/project (Duration)	Major Objective(s)	Amount budget (Thousand Tk.)
	Varietal Development Program Area		
01.	Development of Second Generation Rice (SGR)	Development of high yielding (≥8.0 t/ha for T. Aman and ≥10.0 t/ha for Boro) rice varieties with improved modified plant type To develop short duration varieties accompanied with tolerance to drought/cold, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.	
1.1	Germplasm collection and Hybridization	To introgress genes from diverse genetic background	20
1.2	F1 Confirmation	To confirm as true F1s'	10
1.3	Observational Yield Trial (OYT)	Selection of homogeneous breeding lines	30
1.4	Maintenance and seed increase of parents/lines/land races	Maintain different germplasm for breeding purpose	20
2.0	Breeding for standard rice varieties for Rangpur region	Development of high yielding (>=6.0 t/ha for T. Aman and (>=8.0 for Boro season) rice varieties To develop short duration varieties accompanied with tolerance to drought/cold, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.	
2.1	Germplasm collection and Hybridization	To introgress genes from diverse genetic background	20
2.2	F1 Confirmation	To confirm as true F1s'	10
2.3	Field RGA	To advance segregating generation	30
2.4	Observational Yield Trial (OYT) of BRRI dhan49 NILs	Evaluation of initial yield potential in replicated plots. Reaction to blast diseases	30
2.5	Maintenance and seed increase of parents/lines/land races	Maintain different germplasm for breeding purpose	20
3.0	Development of Medium stagnation	To develop multiple stress tolerant rice	

Sl. No.	Programme area/project (Duration)	Major Objective(s)	Amount budget (Thousand Tk.)
	and submergence Tolerant Rice (MSSTR)	varieties like stagnant flood and flash flood submergence with high yield potential(≥8.0 t/ha) under stress condition.	
3.1	Germplasm collection and Hybridization	Germplasm collection and Hybridization	20
3.2	F1 Confirmation	To confirm as true F1s'	10
3.3	Maintenance and seed increase of parents/lines/land races	Maintain different germplasm for breeding purpose	20
4.0	Breeding for Photoperiod-sensitive rice varieties (PSR) for lowland and Charland ecosystem	Development of Photoperiod-sensitive high yielding climate smart rice varieties with yield potential (≥8 t/ha)	
4.1	Germplasm collection and Hybridization	To introgress photoperiod-sensitive responsible genes from diverse genetic background	20
4.2	F1 Confirmation	To confirm as true F1s'	10
4.3	Maintenance and seed increase of parents/lines/land races	Maintain different germplasm for breeding purpose	20
CROP-SOIL-WATER MANAGEMENT			290
1.1	Yield maximization of BRRI dhan71 through adjustment of plant population and seedling age at variable time of planting	To adjust plant spacing and optimum age of seedling for achieving higher yield of BRRI dhan71.	50
1.2	Time of planting of latest T. Aman varieties under different N and K ratio	To determine optimum planting time in response to different N and K ratio	50
1.3	Screening of varieties for early T. Aman-early potato-optimum potato-Braus cropping pattern and increase productivity with using different crops	To determine phenotypic variation among rice genotypes and to evaluate selected rice genotypes for the adaption in early T. Aman season	50
1.4	Evaluation of BRRI dhan34, BRRI dhan87, BRRI dhan93 and BRRI dhan95 under double transplanting in rainfed lowland ecosystem	To assess the performance of selected rice varieties under double-transplanting method in rainfed lowland rice ecosystem	30
1.5	Comparative study of seedling protecting techniques in cold spell situation and it's carryover effect on field duration and yield	To develop sustainable seedling protection technology from cold injury at seedbed.	50
1.6	Yield Maximization of Boro Rice under different management options at variable time of planting	Yield improvement with ICM compared with individual crop production factor	50
1.7	Effect of Zinc management on uptake pattern of BRRI dhan84	To determine the uptake pattern of zinc with different zinc management options	20
1.8	Effect of N and K fertilizer management on growth and yield of mechanically transplanted Boro rice in light textured soil of Rangpur		
		Total =	590

Regional Station, Gopalganj

Table 03
Proposed Research Programmed 2020-2021

SL. NO	Programmed Are/ Project (Duration)	Major Objective	Annual Budget Thousand TK
1.	Nitrogen management for BRRI hybrid dhan7(Crop soil water management)	• To find out the amount of N needed for maximum grain yield and to determine economic fertilizer rate of BRRI hybrid dhan7 and • To find out the best N scheduling for BRRI hybrid dhan7	100000.00
2.	Determination of optimum seedling age for maximize grain yield of BRRI hybrid dhan7(Crop soil water management)	To find out optimum seedling age of BRRI hybrid dhan7	50000.00
3.	Suitability and validation of BRRI release modern variety in Boro -Fallow-T. Aman cropping pattern in shallow deep area in Gopalgonj, Bagerhat and Norail district	• To find out suitable variety with higher yield for proposed area • To disseminate suitable HYVs of BRRI in the area	150000.00

Regional Station, Sirajganj

Table 03
Proposed Research Programme 2020-2021

Thousands Tk.

Si. No.	Programme area/ project	Major objective	Annual budget
1.	Survey & monitoring of rice arthropods in bogura region	To determine the incidence and abundance patterns of insect pests and their natural enemies for better management.	
1.1	Insect pests and natural enemies in light trap.	To study the pest and their natural enemy incidence patterns in rice fields	50
1.2	Survey of rice insect pests in selected aez's of bogura region.	To find the incidence patterns of major insect pests and their natural enemies in relation to biotic and abiotic factors on their abundance.	80
1.3	Survey of gallmidge incidence in selected areas.	To know the incidence pattern of gallmidge in endemic areas	100 KGF
2.	Bio-ecology of rice insect pest and natural enemy	To study the biology and ecology of rice insect pest and their natural enemmies.	
2.1	Identification of gallmidge	To identify available gallmidge biotype(s)	200

Si. No.	Programme area/ project	Major objective	Annual budget
	biotype(s) in bangladesh.	through phenotypic and genotypic approach	KGF
2.2	Validation of gallmidge resistant sources (germplasm /landraces) in endemic areas	To evaluate / validate the gallmidge resistant donors in field condition at endemic areas	150 KGF
3.	Biological control of rice insect pests		
3.1	Study on entomogenous fungi to control bph.	To explore suitable media for mass production of the entomogenous fungi and its use in bph management.	50
3.2	Study on bph nils	T select bph resistant lines at field condition	10 Barde
4.	Crop loss assessment	To determine relationship between pest damage levels and yield losses.	
4.1	Relationship between gall midge damage and yield loss.	To determine the yield loss potential of rice varieties against gall midge damage.	50
5.	Evaluation of botanicals against rice insect pests	To evaluate the effectiveness of different botanicals against major rice insect pests.	
5.1	Effect of selected botanicals (mahogany and neem) on major rice pests.	To identify effectiveness of eco-friendly plant materials (mahogany and neem) against major rice insect pests (rlr and bph).	50
5.2	Pest monitoring & pesticide evaluation against rph & faw under "establishment of prevention network for migratory pests in asia region (level 4)"	To explore and share the real-time occurrence information to amivs for optimum timing to control of rph (bph, wbph and sbph) and migratory fall army worm in asian region	600 AFACI
6.	Host plant resistance	Identification of resistant sources against rice insect pests.	
6.1	Screening of rice germplasm, advance line and f_2 materials against rice gallmidge	To identify gallmidge resistant germplasm	300 KGF
6.2	Studies on the genetic mechanism of rice blast and gallmidge resistance in brri dhan33	To know the genetic mechanism of rice blast and gall midge resistance in brri dhan33. To identify marker for developing blast and gall midge resistant varieties through mas.	300 KGF
7.	Integrated management of regional problems	Reduction of regional problems for the better management of rice crop.	
7.1	Integrated nutrient management for growth and yield improvement of rice in charland ecosystem.	To increase organic matter and water holding capacity in charland soil. To determine an economically suitable fertilizer management options for better growth and yield of rice in charland ecosystem.	100
7.2	Collection and characterization of bph populations from endemic areas.	To differentiate the bph populations into different biotypes based on their reaction to differential materials.	100

Si. No.	Programme area/ project	Major objective	Annual budget
7.3	Improving soil water availability for crop production in char land by amendment	To improve the physical properties (texture) of char land soil	200
7.4	Effect of biochar on rice yield and soil health on problem soils	To study the effect of biochar on rice yield and nutrient use efficiency, soil health and ghg emission in problem soils	150
7.5	Response of latest brri varieties in char land areas of sirajganj	To examine the rice cultivation and soil nutrient status in char land areas, and To determine the adaptation of newly released brri varieties.	80
7.6	Effect of transplanting date and spacing on the yield of short duration rice varieties.	To find out the suitable transplanting date of different short duration rice variety in terms of maximum benefit.	80
8.	Vertebrate pest management	Management of rat in rice field.	
8.1	Survey, collection, identification and documentation of owl species in different areas of bangladesh	To develop a documentary of available owl species in bangladesh. To know farmers myth, knowledge and attitude about barn owl.	100 NATP
8.2	Study on barn owl biology and their mass rearing both in nature and in confine situation.	To study the bio-ecology of available owl species and their mass rearing techniques.	100 NAT
8.3	Placement and observation of owl watching tower and nest boxes in rice field	To develop and validate the effective rat management technique(s) using owl in rice ecosystem.	200 NAT
8.4	Assessment of rat damage in treated and untreated areas	To determine the per cent rat damage in treated (wt & nb) and untreated areas.	50 NAT
8.5	Test of efficacy and modification of different rat management options.	To develop effective and eco-friendly rice rat management techniques.	80 NAT
9.	Agrometeorology and crop modeling	To develop agro meteorological advisory services for rice crops of selected areas of bangladesh.	
9.1	Time of planting experiment for dssat	To develop t. Aus model for dssat using brri released aus varieties (brri 26, brri dhan48 & brri dhan82).	60
9.2	Fertilizer experiment for dssat	To develop t. Aus model for dssat using brri released aus varieties	35
9.3	Irrigation experiment for dssat	To develop t. Aus model for dssat using brri released aus varieties	35
9.4	Integrated weather forecasting and rice advisory system (iwfras) for sustainable productivity in bangladesh	To provide advisory services applying the tools of ict in agriculture. To create database on weather forecasting and agro meteorological advisory services.	-
10.	Technology transfer		
10.1	Head to head adaptive trial of modern rice varieties	1. Validate the adaptability of modern rice varieties at farmers' field 2. Investigate the performance of promising	90

Si. No.	Programme area/ project	Major objective	Annual budget
		varieties compared to popular mega variety 3. Collect feedback about the varieties from farmers and extension personnel	
10.2	Advance line adaptive research trial (alart)	To find out resistant source(s) against bb, irr, bb	90
10.3	Demonstration of latest brri varieties in farmer's field	Rapid dissemination of promising rice varieties.	300
10.4	Farmer's training	To train on modern rice production technologies	250