Research Program 2019-2020

VARIETAL DEVELOPMENT PROGRAM PROGRAM AREA

PLANT BREEDING DIVISION

Proposed Research Program 2019-20

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 as well as good eating quality.	1000
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.	1500
3	Improvement of rice for shallow flooded & Deep Water environment	Generation of genotypes in combination with moderate elongation, high yield and submergence tolerance for shallow flooded sub-ecosystem (flood water depth 0.5-1.0 m).	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
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

SN	Program Area/Project	Major Objective	Annual Budget (Thousand Tk.)
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.	2000
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 and grain quality etc.	2500
11	Development of Drought Tolerant Rice for T. Aman Season	Introgression of drought tolerance traits gene into high yielding rice genetic background.	3000
12	Development of Green Super Rice Project (GSR) for T. Aman and Boro Season	Development of varieties with less input potential and better yield performance.	3000
13	Development for Golden rice for T. Aman & Boro	Development of new genotypes with high Beta Carotene (Vitamin-A) content and acceptable grain quality.	5000
14	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.	2500
15	Development of Cold Tolerance Boro Rice	Introgression of cold tolerance gene into high yielding rice genetic background.	2500
16	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
17	Development of hill Rice	Introgression of genes responsible for waxy and sticky cooking quality into high yielding rice genetic background.	1000
18	Development of Heat Tolerant Rice	Introgression genes for high temperature tolerance into high yielding varieties for developing rice varieties with short growth	1000

SN	Program Area/Project	Major Objective	Annual Budget (Thousand Tk.)
		duration.	
19	International Network For Genetic Evaluation of Rice (INGER)	Promising genotypes selection after evaluation to be used as parent materials and to be included in yield trials.	500
Total Budget (Thousand Tk.) : 50500			

Hybrid Rice Division

Proposed Research Program 2019-2020

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, 2. Selection of heterotic rice hybrids, 3. Conversion of prospective materials into new CMS lines.	60,000.00
1.3	Backcross Nursery	Developing CMS lines from identified maintainer by back crossing.	60,000.00
1.4	CMS Maintenance and Evaluation Nursery	Maintain and evaluate of CMS lines	70,000.00
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
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	Source Nursery	Identification of prospective maintainers and restorers of diversified origin for making experimental rice hybrids.	40,000.00

SL.	Experiments	Major Objective(s)	Budget Thousand Tk.
2.4	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
2.5	Backcross Nursery	Developing BB resistant CMS lines from identified maintainer by back crossing.	2,00000.00
Project-3: Evaluation of parental materials & hybrids			
3.1	Observational Trial (OT) of experimental hybrids	Selection of promising hybrids	75,000.00
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 hybrids	To find out promising hybrids with high yield potential and higher adaptability	300,000.00
3.4	Combining ability of A, B & R lines	To select the best combiner (S) in respect of grain yield & yield components	75,000.00
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
Project-4: Seed Production of Parental lines and Hybrids			
4.1	CMS multiplication of promising A line	To produce pure and good quality seed of CMS lines for subsequent use.	150,000.00
4.2	CMS multiplication of BRRI hybrid dhan1 & BRRI hybrid dhan4	Production of pure and good quality seed of CMS lines.	2,00000.00
4.3	CMS line multiplication of BRRI hybrid dhan2	Production of sufficient quantity quality seeds of CMS lines for subsequent use	100,000.00
4.4	CMS line multiplication of BRRI hybrid dhan3	Production of sufficient quantity quality seeds of CMS lines for subsequent use	100,000.00
4.5	CMS line	Production of sufficient quantity quality seeds of CMS	100,000.00

SL.	Experiments	Major Objective(s)	Budget Thousand Tk.
	multiplication of BRRI hybrid dhan5	lines for subsequent use	
4.6	CMS line multiplication of BRRI hybrid dhan6	Production of sufficient quantity quality seeds of CMS lines for subsequent use	100,000.00
4.7	CMS line multiplication of BRRI hybrid dhan7	Production of sufficient quantity quality seeds of CMS lines for subsequent use	100,000.00
4.8	F_1 seed production of BRRI hybrid dhan2 & BRRI hybrid dhan4	Production of sufficient quantity quality hybrid seed for subsequent use	150,000.00
4.9	F_1 seed production of BRRI hybrid dhan3	Production of sufficient quantity quality hybrid seed for subsequent use	100,000.00
4.10	F_1 seed production of BRRI hybrid dhan5 & BRRI hybrid dhan7	Production of sufficient quantity quality hybrid seed for subsequent use	150,000.00
4.11	F_1 seed production of BRRI hybrid dhan6	Production of sufficient quantity quality hybrid seed of promising hybrids for subsequent use	100,000.00
4.12	F_1 seed production of promising hybrids	To produce sufficient quantity of seed for OST and OFT	250,000.00
4.13	Growth duration differentiation method (GDDM) for synchronization in flowering	To determine proper heading time of parental lines (A &R) of promising hybrids	35,000.00
4.14	Nucleus seed production of BRRI hybrid dhan1 & BRRI hybrid dhan4	To produce parental lines nucleus seeds of BHD1 & BHD4	60,000.00
4.15	Nucleus seed production of BRRI hybrid dhan2	To produce parental lines nucleus seeds of BHD2	60,000.00
4.16	Nucleus seed production of BRRI hybrid dhan3	To produce parental lines nucleus seeds of BHD3	60,000.00
4.17	Nucleus seed production of BRRI hybrid dhan5	To produce parental lines nucleus seeds of BHD5	60,000.00
4.18	Nucleus seed production of BRRI hybrid dhan6	To produce parental lines nucleus seeds of BHD6	60,000.00
4.19	Maintainer and restorer lines multiplication of promising and released hybrids	Production of sufficient quantity quality parental lines for subsequent use	75,000.00
Total (Thirty nine lakh and sixty thousand taka only)			39,60000.00

Genetic Resources and Seed Division (GRSD)

Proposed Research Program 2019-2020

SL No.	Program area/ Project	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	Collection, characterization, documentation, conservation and rejuvenation of rice germplasm to enrich the Genebank of BRRI and its sharing with rice researchers	1160.0
3.2	Seed production and variety maintenance	Maintenance of nucleus seed stock and production for supplying breeder seeds as per National demand and MOU/LOA with seed growers.	8100.0
3.3	Exploratory and genetic studies	Conduct problem related genetic studies for breeder seed and rice germplasm.	800.0
3.4	Seed technology packages	Exploratory and genetic studies of seed technology for recommending as rice seed production technology.	100.0
3.5	Out research activities	Visit to breeder and foundation seed production farms to ensure the quality of produced seed.	120.0

Biotechnology Division

Proposed Research Program 2019-20

Sl No.	Program area/ Project	Major objective	Annual budget (in Lakh Taka)
Program area: Biotechnology			
1	Development of low glycemic index (GI) rice variety through anther culture	To develop low glycemic index rice variety	2.00

Sl No.	Program area/ Project	Major objective	Annual budget (in Lakh Taka)
2	Development of salt tolerant rice variety through anther culture	To develop salt tolerant rice variety	2.00
3	Development of premium quality Kalijira type rice 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	To develop rice variety with antioxidant through anther culture	3.0
6	Development of somaclone using EMS treated rice seed	To develop modern rice varieties for Aus, Aman and Boro	3.00
7	Development of Aus rice variety through somaclonal variation	To develop high yielding Aus rice variety	1.00
8	Development of antioxidant enriched rice variety through somaclonal variation	To develop high yielding antioxidant enriched rice variety	1.00
9	Improvement of BRRI dhan47 through somaclonal variation	To develop somaclone of BRRI dhan47 with reduced shattering.	1.00
10	Progeny selection	To select the best progeny with high yield and desirable traits	1.00
11	Observational trials	To select agronomically desirable and high yield potential breeding lines	1.00
12	Primary yield trials	To evaluate initial yield potential of advanced breeding lines	0.5
13	Secondary yield trials	To evaluate further yield potential of advanced breeding lines	0.5
14	Regional yield trials	To evaluate yield potential of advanced breeding lines at the regional level	0.5
15	Proposed Variety Trials	On farm evaluation of proposed lines by the NSB team for releasing as a new rice variety	6.00
16	Development of rice variety through wide hybridization followed by embryo rescue	To develop different stress tolerant rice variety through wide hybridization	1.5

Sl No.	Program area/ Project	Major objective	Annual budget (in Lakh Taka)
17	Development of rice variety through wide hybridization followed by anther culture	To develop modern rice variety for Aus, Aman and Boro	1.5
18	Development of salt tolerant transgenic rice	To develop salt tolerant transgenic rice lines	6.00
19	Introgression of salt tolerant mangrove gene	To develop salt tolerant transgenic rice lines	2.00
20	Identification of QTLs for salinity tolerance both at seedling and reproductive stage	To identify QTLs for salt tolerance both at seedling and reproductive stage	3.00
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	Gene pyramiding for resistance to bacterial blight (BB)	To develop breeding lines possessing multiple BB resistance genes through Marker Assisted Selection	2.00
23	Validation of a simple functional marker for fragrance in non-Basmati fragrant rice varieties	To distinguish the alleles of major fragrance gene in local aromatic rice to examine the potential of this functional marker among Basmati, non-Basmati aromatic and non aromatic rice varieties	2.00
24	Gene cloning	To isolate and cloning of salt and drought tolerant gene(s) followed by construct preparation	10.00

CROP SOIL WATER MANAGEMENT PROGRAM AREA

Agronomy Division

Research Program, 2019-2020

Sl. No.	*Title*	*Objective(s)*	Annual budget Thousand Tk.

Seeds and Seedlings			
1	Effect of seedling age on tillering dynamics of BRRI released varieties and its impact on yield during T. Aman 2019 & Boro 2019-20	To investigate the effect of seedling age on tillering ability of BRRI varieties and its impact on grain yield	50,000.00
2	Effect of seed treatment with chitosan on the growth of rice seedlings in saline medium during T. Aman 2019 & Boro 2019-20	To reduce reverse the adverse effects of salinity on rice seedling growth using seed treatment with Chitosan. To evaluate biochemical indicators like proline content and MDA content	30,000.00
Planting Practices			
1	Improvement of soil health in four crops pattern through agronomic management during T. Aman	i) To validate BRRI developed 4 crops systems ii)To increase the cropping intensity and productivity, and iii) To improve the soil health	*150,000.00*
2	Effect of planting date on growth and yield of advanced lines during Aus, T. Aman & Boro	To determine suitable time of planting and selection of high yield potential genotypes	150,000.00
3	Effect of planting date on growth and yield of BRRI released varieties in Boro seasons in haor area of Habiganj during Boro, 2019-20	i) To determine the cutoff date for planting in haor area ii) To determine suitable date of planting	150,000.00
4	Comparative performance study on the number of lines in logo method and normal transplanting of rice cultivation during T.Aman, 2019 & Boro, 2019-20	To compare the yield performance of number of lines in logo method	50,000.00
Fertilizer Management			
1	Effect of nitrogen and potassium fertilizer management on growth and yield of mechanically transplanted Boro rice during Boro, 2019-20	To determine the suitable N and K fertilizer management option for mechanically transplanted rice	50,000.00
2	Effect of N management at the reproductive phase of rice during T. Aman, 2019	To verify whether top dressing of urea is useful or harmful after PI stage for inbred rice	25,000.00
Weed Management			

1	Evaluation of candidate herbicides during Aman & Boro (Routine work)	To find out the efficacy of new herbicides	50,000.00
2	Study on herbicide options for effective weed management in direct seeded Aus rice	i) To evaluate herbicide options for effective weed control in Direct seeded Aus Rice ii) To determine cost effective and sustainable weed management in direct seeded Aus rice	25,000.00
3	Allelopathic effect of rice varieties on weed management	i. Effects of rice allelopathy on shoot length, root length and dry matter accumulation of *E. crusgalli and Echinochloa colona* ii. Find out the average inhibition of barnyard grass and jangle grass growth by allelopathic effects of rice varieties iii. Compare three methods (Relay seeding method, root exudates techniques and double pot techniques) in determining the allelopathic potential of rice varieties iv. Isolation and identification of the allelo-chemicals present in the selected rice variety	50,000.00
4	Assessment of residual soil toxicity through bioassay	To assess the residual soil toxicity in herbicides applied in rice field	15,000.00
5	Collection and isolation of potential fungi for controlling *E. crusgalli* and *M. vaginalis* two major weeds of rice during Aus 2019-Boro 2020	i) To isolate fungi from infected weed samples ii) To evaluate the efficacy of fungi against the weeds iii) To identify genus and/or species of fungi	150,000.00
Yield Maximization			
1	Effect of micronutrient and organic matter for growth and yield maximization of Boro rice during Boro, 2019-20	i. To find out the role of micronutrient for enhance grain yield ii. To find out the best combination of organic and	50,000.00

		inorganic fertilizer for maximize higher yield	
2	Yield maximization of T. Aus rice through integrated crop management during T. Aus, 2019	To maximize growth and yield of T. Aus varieties	25,000.00
3	Maximizing rice yield of BRRI developed new varieties through influencing agronomic critical factors	To maximize rice yield and identify the response to the agronomic management factors	10,000.00

Irrigation and Water Management Division

RESEARCH PROGRAMME 2019-2020

Sl No.	**Program area/Project with duration**	**Major objectives**	Annual budget (Thousand Tk)
Sub -Sub Program I: Water Use Efficiency Improvement in Irrigated Agriculture			
01	**Water Requirement**	• **To generate water efficient technologies for rice cultivation**	
	1.1 Determination of physical and hydraulic properties in different soil types 2015-2019	i) To document the important soil physical properties (bulk density, particle density, hyd. conductivity etc) in different soil profiles ii) To develop a soil moisture characteristics curve	50
	1.2 Development of Automated Alternate Wetting and Drying Irrigation System for Rice production 2018-2020	i) To save irrigation water ii) To use water efficiently for improving water productivity iii) To introduce digital irrigation system in rice cultivation	200
	1.3 Development of a Technique for Using Basin Water for Elevated Land Rice Cultivation during Dry Season in Haor Area 2018-2020	i) To bring elevated land under boro rice ii) To improve land productivity iii) To develop a technique for using basin water during dry season in haor areas	100
	1.4 Problems and potentials for productivity improvement through water management in Hilly areas 2015-2021	i) To identify potentials of water resources development in the Hilly area ii) To recommend suitable water management options for productivity and livelihood improvement.	100

	1.5 Study on Water-Stress Tolerance for Different Advanced Rice Genotype of BRRI 2015-to be continued	i) To quantify the tolerance capacity of soil moisture deficit for different varieties that plant suffers through Towfique's drought model ii) To determine yield of varieties under different water stress condition	100
	1.6 Optimization of Irrigation Water Use for Boro Cultivation under Different Establishment Methods 2017-2020	i) To compare the irrigation requirement and productivity under different methods of Boro cultivation ii) To find out problems of Boro cultivation under non-conventional water management practices iii) To find out suitable method of Boro cultivation under water limiting conditions	200
	1.7: Performance Evaluation of the Proposed Rice Varieties Under Different Water Regimes 2019-2021	i) To study performance of the proposed rice varieties under different water regimes ii) To evaluate suitable water regimes for proposed lines/varieties	200
	1.8: Improving Soil-Water Availability for Crop Production in Char Land by Amendment Practices 2019-2022	i) To determine soil physical properties in root zone soil layers ii) To determine water holding capacity of root zone soil layers iii)To determine infiltration rate and saturated hydraulic conductivity of the soil before and after soil amendment iv)To measure soil-water retention curves of the soil layers and determine their parameters	100
	1.9: Determining Minimum Irrigation Water Requirement of Rice at Different Regions of Bangladesh through Water Balance from On-Farm Demand and Model Simulation 2019-2021	i) To measure minimum water requirement for irrigation at different regions ii) To measure yield response of rice to irrigation application base on on-farm demand and simulated irrigation requirement iii)To figure out variation in irrigation water requirements among different treatments	200
Sub- Sub Program II: Utilization of Water Resources in Rainfed Environment			
02	Water Management for rice cultivation in climate change situation	• To obtain optimum rice yield under changing climatic environment	

	2.1 Agricultural drought forecasting for mitigating drought in T. Aman rice 2017-2022	i) To determine drought using forecasted rainfall and evaporation ii) To mitigate drought by applying supplemental irrigation iii) To determine suitability of drought model for forecasting iv) To determine yield performance after mitigating drought	200
	2.2: Irrigation Scheduling of Rice (Oryza sativa L.) Based on Weather Forecasting in Gazipur 2019-2022	i. To predict water demand through water balance simulation model for rice cultivation ii. To compare performance of water balance simulation model with AWD and conventional methods iii. To validate water balance simulation model with CROPWAT 8.0 model iv. To recommend a better method for irrigation scheduling of rice	100
Sub–Sub Program III: Land Productivity Improvement in the Coastal Environment			
03	Land and Water Resources Use for Sustainable Crop Production in Coastal Zzones	• To increase land and water productivity for improving food security and livelihoods in the coastal zones	
	3.1 Assessment of water resources availability suitable for irrigation to increase crop production in tidal areas of Barisal region 2015-2020	i) To monitor the dynamics of surface water salinity in the dry season at Barisal region ii) To assess the suitability of water for irrigated crop cultivation iii) To assess the availability of water and potentials for irrigated crop cultivation	100
	3.2 Water resources assessment during dry season crop cultivation in selected polders of coastal region 2017-2020	i) To delineate suitable water resources during dry season ii) To determine the amount of fresh water available for crop production during the period, and iii) To assess the cultivated area by different cropping pattern based on water resources	100
	3.3 Use of less saline water resources for increasing cropping intensity in Barisal region 2017-2019	i) To bring fallow land under Boro cultivation ii) To improve crop and land productivity in the region	200

Sub- Sub Program IV: Sustainable Management of Water Resources			
04	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	i) To determine the fluctuation of groundwater level over time and its relationships with rainfall ii) To determine water quality for assessing suitability for irrigation.	100
	4.2 Development of suitable method for safe ground water recharge 2016-2019	i) Determination of safe method for artificial groundwater recharge, and ii) Identify qualities and microbial activities of artificial recharged water	200
	4.3: Effect on Percolation Losses and Ground Water Recharge due to Weak Plough Pan Formed Under Long Term Conservation Agriculture 2020-2021	i) To determine amount of irrigation water contributed through deep percolation to ground water recharge under SP and CT. ii) To determine depth of vertical movement of irrigation water towards ground water level. iii)To determine the depth and vicinity of the nearest aquifer.	200
	4.4: Assessment of Groundwater Level Depletion Dynamics in Selected Locations of Bangladesh 2019-2020	i) To evaluate fluctuation pattern of GWL ii) To determine the GWL depletion trend iii)To assess the GW recharge pattern through model study iv)To recommend the safe use of GW in study locations	200
	4.5: Assessment of Surface and Groundwater Quality for Irrigation in Selected Locations of Bangladesh 2019-2022	i) To determine the surface and groundwater quality parameters ii) To determine the suitability of groundwater for irrigation	150
Sub-Sub Program V: Renewable Energy			
05	**Renewable energy for irrigation**	• To identify some renewable energy sources for irrigation	

	5.1 Evaluation of smallholder surface water solar irrigation system for crop production 2017-2020	i) To assess the suitability of solar pump for surface water irrigation ii) To evaluate the technical and economic performance of solar powered centrifugal and submersible pumps for smallholder iii) To assess the suitability of trolley or portable type PV panel structure iv) To determine the maximum command area covered by the pumps, and v) To analyze the feasibility of the pumps for rice cultivation	100
	5.2: Development of a Low-Cost DC Solar Water Pump for Irrigation in Bangladesh 2019-2022	i) To use a permanent magnet brushless DC motor for operating solar water pump ii) To find out optimum panel size for good matching between pump and PV module iii)To test efficacy of the pump for surface water irrigation iv)To determine economic feasibility of the pump for rice cultivation	150
Sub- Sub Program VI: Technology Validation in the Farmers' Field			
06	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**.**	

	6.1 Cropping system intensification in the salt-affected coastal zones of Bangladesh and West Bengal, India (LWR/2014/73) 2016-2019	i) Develop a regional scale understanding of the surface water and groundwater resources, recharge/discharge mechanisms and trends in the case study polders. ii) Develop a detailed understanding of the salt and water dynamics of the polders and develop pre-monsoon and post-monsoon groundwater abstraction regimes that improve groundwater quality and availability during the dry season. iii) Develop detailed understanding of crop production responses to various improved polder water management strategies. iv) Test suitable cropping options and polder water and salt management strategies (developed in ii and iii) through field evaluation and co-learning with farmers	
	6.2. Groundwater Resources Management for Sustainable Crop Production in Northwest Hydrological Region of Bangladesh 2016-2019	i) To analyze ground water table in different districts of northwest region ii) To determine groundwater withdrawal level for retarding water table declining iii) To determine low water required cropping pattern for groundwater scarcity zone iv) Up scaling of water saving technologies for sustainable crop production v) To determine suitable method for safe groundwater recharge and quality of groundwater in selected area	
	6.3. Up-scaling and Application of Solar Photovoltaic Pump for Smallholder Irrigation and Household Appliances in the Central Coastal Region of Bangladesh	i) Selection and Up-scaling of solar pump system (centrifugal or submersible) for smallholder surface irrigation ii) Development of portable solar panel and test its efficacy for use with solar pump and household appliances for year-round uses, and iii) Field trials of portable solar pump for irrigation in rice-based cropping pattern and year-round uses of solar energy in household appliances in the central coastal region of Bangladesh	

PLANT PHYSIOLOGY DIVISION

Research program 2019-2020

Sl. No.	Program area/Project (Duration)	Major Objective(s)	Annual budget (Thousand Tk.)
Project 1: Salinity tolerance			
1.1	Exploring new sources of salinity tolerance from BRRI Gene Bank collections at seedling stage	To find out new sources of salinity tolerance from local germplasm at seedling stage.	100
1.2	Physiological characterization of tolerant germplasm for whole growth period salinity tolerance	i) To find out yield level at varying salinity level. ii) To measure the level of tolerances of tested genotypes. iii) To identify the physiological traits associated with tolerances.	100
1.3	Screening of advance breeding line for salinity tolerance at seedling stage during T. Aman and Boro season	To identify salt tolerant advance breeding lines/genotypes at seedling stage.	100
1.4	Characterization of advanced breeding lines at salinity stress for whole growth period during Aman and Boro season	To know the level of tolerance of different genotypes.	100
Project 2: Submergence tolerance			
2.1	Identification of rice germplasm for two weeks flash flood submergence tolerance	i) To identify tolerant germplasm and breeding lines under 2 weeks complete submergence. ii) To observe elongation capacity under complete submergence.	100
2.2	Identification of breeding lines for flash flood submergence tolerance	i) To identify tolerant under 16 days of complete submergence one more. ii) To observe elongation capacity under complete.	100
2.3	Characterization of rice germplasm in relation to submergence tolerance using SSR markers	i) To survey microsatellite polymorphism in relation to submergence tolerance. ii) To investigate the nature and	500

		extent of differentiation and divergence.	
2.4	Screening for stagnant flooding tolerance of advance breeding lines and germplasm at whole growth period during T. Aman season	i) To identify tolerant germplasm for water stagnation condition. ii) To observe tillering ability under water stagnation conditions.	100
Project 3: Drought tolerance			
3.1	Confirmation of performance for ALART/ RYT /AYT materials under drought stress at reproductive stage	To evaluate of ALART/ RYT /AYT materials under control drought condition in the net house.	100
3.2	Screening germplasm for drought tolerance at reproductive phase	To identify rice germplasm tolerant to drought stress at reproductive phase.	100
3.3	Evaluation of previously selected germplasm under drought stress at reproductive phase in the rain-out shelter	To find out correlation of field performance with the performance under control drought condition in the rain-out shelter.	100
3.4	Physiological and biochemical characterization of advance breeding lines under drought stress at reproductive phase	i) To assess the effect of drought stress on growth and yield of the tested genotypes ii) To identify the physiological traits associated with drought tolerance.	200
3.5	Characterization of rice germplasms under drought stress at reproductive phase using SSR marker	To study the genetic diversity of the germplasms.	500
Project 4: Heat tolerance			
4.1	Generation advance and selection of progenies of spikelet fertility introgression lines at BC2F8:9 stage of BRRI dhan28 and BRRI dhan29 background	To fix the spikelet fertility QTL and background loci to develop heat tolerant BRRI dhan28 and BRRI dhan29.	100
4.2	Generation advance and selection of progenies of spikelet fertility introgression lines at BC3F5 stage of BRRI dhan28 and BRRI dhan29 background	To fix the spikelet fertility QTL and background loci to develop heat tolerant BRRI dhan28 and BRRI dhan29.	100
4.3	Marker-assisted introgression of spikelet fertility loci (qHTSF4.1) from N22 in to two high yielding rice variety BRRI dhan48 and	To develop heat tolerant BRRI dhan48 and BRRI dhan58 by introgressing spikelet fertility loci through MABC.	100

	BRRI dhan58		
4.4	Screening rice germplasm and breeding lines for heat tolerance	To identify new heat tolerant donor and advanced breeding lines.	100
Project 5: Cold tolerance			
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.	100
5.2	Screening of advanced breeding lines for seedling stage cold tolerance	To identify advanced breeding lines which can tolerate low temperature at seedling stage.	100
5.3	Screening for reproductive stage cold tolerance of some selected rice genotypes at artificial condition	To identify rice genotypes which can tolerate low temperature at reproductive stage.	100
5.4	Characterization and evaluation of some selected rice genotypes for cold tolerance	To identify cold tolerant rice genotypes at natural condition.	100
5.5	Phenotyping of RIL population of Bhutanese rice both at seedling and reproductive stage	Phenotyping of Bhutani rice both at seedling and reproductive phase.	100
Project 6: Growth studies			
6.1	Photo-sensitivity test of some advanced breeding lines	To know the photo-sensitivity of advanced breeding lines.	100
6.2	Determination of critical photoperiod of some photosensitive rice varieties	i) To know the critical day length of some photosensitive varieties. ii) To find out the required degree-days for determination of panicle initiation.	100
Project 7: Yield potential			
7.1	Trait discovery for improving yield potential of current high-yielding ideotype	To identify morpho-physiological traits towards improvement of current high-yielding ideotype for higher yield.	100
7.2	Investigation of anatomical differences in rice leaves and related C4 species	i) To identify leaf anatomical differences between cultivated high yielding rice varieties. ii) To find out leaf anatomical differences between rice and related C4 species.	200
7.3	Seed multiplication of thermo-sensitive genic male sterile	To evaluate the pollen fertility behaviour of TGMS line.	100

	(TGMS) line for Two-line hybrid system		
7.4	Generation of male sterile rice line for two-line hybrid system by editing *TMS5* gene using CRISPR/Cas9 system	i) To generate a novel thermo-sensitive genic male sterile line by editing TMS5 gene via CRISPR/Cas9 for two-line hybrid system. ii) To evaluate the suitability of the TGMS line in two-line hybrid breeding program.	1000
7.5	Dissemination of BRRI newly developed Boro varieties in Mymensingh and Jessore regions	Dissemination of recently developed BRRI varieties (eg. BRRI dhan84, 86, 88, 89) for improving food and food and nutrition among farmers.	200
Project 8: Crop weather information			
8.1	Automatic weather station data recording, transfer, storage and maintenance	To collect and storage of automatic weather station data.	100
8.2	Manual weather station data recording, transfer, storage and maintenance	To collect and to storage of different weather station data.	100

Soil Science Division

Table 3
Proposed Research Program 2019– 2020

Sl.No.	Programme Area/Project (Duration)	Major Objective(s)	Annual Budget '000' 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	• To increase NUE by urea-HA nanohybrid over PU or polymer coated fertilizer	500
	1.2. Study on Nitrogen Mineralization rate of Guti-urea and Prilled-urea through Applicator in Boro Rice	• To compare the N-mineralization rate • To increase N use efficiency	150
	1.3. Fertilizer management for high yielding premium quality rice	• To find out the suitable fertilizer combination for increasing yield and quality of premium rice	200
	1.4. 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
	1.5. Determination of N fertilizer doses for ALART materials/new BRRI varieties	• To determine optimum N doses for ALART materials /newly released varieties.	400
	1.6. 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
	1.7. Performance of BRRI rice varieties under P deficient soil	• To find out P efficient rice varieties	200
	1.8. Effect of different micronutrients on growth and yield of rice	• Characterization of soil related to micronutrient status of single, double and triple rice cropped area.	400

Sl.No.	Programme Area/Project (Duration)	Major Objective(s)	Annual Budget '000' Tk
	1.9. 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.	ACIAR and KGF
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. 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

Sl.No.	Programme Area/Project (Duration)	Major Objective(s)	Annual Budget '000' Tk
	2.5. 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
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. Increase rice yield through the organic and inorganic amendment	• To increase rice yield in double rice cropping system • To find out appropriate dose of Silicon in rice cultivation	200
	3.4. Determination of soil phosphorus, potassium and carbon fractions after long term fertilization in wetland rice soil	• To investigate long-term fertilization effects on soil P, K and Carbon fractions	200
	3.5. Aggregate stability of paddy soil comparison on three and four crops pattern in Bangladesh	• To assess the changes of inorganic carbon and nitrogen content, physical and hydraulic properties of the soil with long-term applications of organic and inorganic under three or four cropping system	200
IV.	**Greenhouse gas emission study**	To study GHG emission from rice field	

Sl.No.	Programme Area/Project (Duration)	Major Objective(s)	Annual Budget '000' Tk
	4.1. Quantification of methane gas emission from farmers rice field under different water management practices	• To determine methane emission from farmers' rice field under AWD and CSW conditions. • To develop a technology for increased crop productivity with reduced negative environmental impacts.	**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**
	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

Sl.No.	Programme Area/Project (Duration)	Major Objective(s)	Annual Budget '000' Tk
	5.2. Soil and plant processes as influenced by temperature	• To determine the influence of temperature on nutrient mineralization from INM and chemical fertilizer amended soil • To asses changes of microbial population and beneficial microbial community under varied temperature regimes and fertilizer management practices in this soil	200
	5.3. The influence 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

PEST MANAGEMNT PROGRAM AREA

Entomology Division

Proposed Research Programme 2019-2020

Sl No.	ProgramArea / Project (Duration)	Major Objective (s)	Budget (lakh Tk.)
1	Project: Pest monitoring in BRRI farm. Duration: Long term	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
2	Project: Insect pests and natural enemy in light trap. Duration: Long term	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
3	Project: Survey of rice insect pests in selected AEZ's of Bangladesh. Duration: Long term	To find the incidence patterns of major insect pests and their natural enemies in different Agro-ecological zones (AEZs) to examine the relationship between biotic and abiotic factors on their abundance.	2.0
4	Project: Development of bioclimatic models to	To develop, validate, demonstrate and assist rice growers to adopt an integrated	2.0

Sl No.	ProgramArea / Project (Duration)	Major Objective (s)	Budget (lakh Tk.)
	forecast the dynamics of rice insect pests. Duration: Mid term	system for the management of rice insect pests.	
5	Project: Impact of lighting period on the trapping of insect. Duration: Short term	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
6	Project: Response of insect pests to elevated salinity in soil and aquatic condition. Duration: Mid term	To know the effects of salinity on insect pests incidence of rice plant.	2.0
7	Project: Behavioral adaptation of RLR against global warming. Duration: Mid term	To identify the effects of temperature elevation on life cycle of rice leaf roller.	2.0
8	Project: Species composition of stem borer in Rajshahi region Duration: Midterm	To identify the stem borer species in the selected Rajshahi region.	1.0
9	Project: Conservation of natural enemies through ecological engineering approaches. Duration: Midterm	To conserve natural enemies through ecological engineering approaches.	2.0
10	Project: Study on entomogenous fungi to control BPH. Duration: Mid term	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
11	Project: Effect of deadheart and whitehead on grain yield of BRRI rice varieties. Duration:Midterm	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
12	Project: Test of different insecticides against major insect pests. Duration: Long term	To evaluate the effectiveness of commercial formulations of different insecticides against major insect pests of rice.	3.0
13	Project: Effect of selected botanicals (neem and mahogany etc.) on major rice pests.	To identify effectiveness of eco-friendly plant materials (mahogany and neem) against major rice insect pests (SB, RLR and BPH).	1.0

Sl No.	ProgramArea / Project (Duration)	Major Objective (s)	Budget (lakh Tk.)
	Duration: Mid term		
14	Project: Fumigation action of botanical oils against rice stored grain insects. Duration: Mid term	To find out the effective plant-derived insecticidal compounds against stored grain pests.	1.5
15	Project: Test of insecticides against major stored grain pests of rice. Duration: Mid term	To evaluate the effectiveness of commercial formulations of different insecticides against major stored grain pests of rice.	2.0
16	Project: Use of nanoparticle for controlling rice insect pests Duration: Mid term	To develop nano-particle based pest management in rice To reduce chemical pesticide load in environment.	3.0
17	Project: Analysis of insecticide residues in rice. Duration:Long term	Detection of insecticide residues in rice grain, straw, bran oil, husk and soil Assess the human health and ecological risk to pesticide use in rice field.	1.0
18	Project: Effect of insecticides on natural enemies of rice insect pests Duration: Mid term	To identify relatively safer insecticides for IPM program.	1.0
19	Project: Effect of selected insecticide for stem borer management Duration: Mid term	To find out effective insecticide for stem borer management.	1.0
20	Project: Screening of rice germplasm, advance line against major insect pests. Duration:Long term	To identify resistant rice germplasm against major insect pests.	4.0
21	Project: Hybridization for the development of planthopper resistant rice variety. Duration: Long term	To develop BPH resistant advance breeding lines.	5.0
22	Project: Identification of BPH resistant sources from local germplasm. Duration:Mid term	To identify BPH resistant germplasm. To characterize BPH resistant germplasms using BPH resistant linked markers.	4.0
23	Project: Suppression of serotonin synthesis in rice using CRISPR Cas9 for	To develop insect resistant advance breeding lines. To reduce the use of insecticides.	5.0

Sl No.	ProgramArea / Project (Duration)	Major Objective (s)	Budget (lakh Tk.)
	insect control Duration:Mid term		
24	Project: Pheno-genomic studies of BPH & Gall midge resistance donor and advance breeding lines of rice Duration:Mid term	To estimate both molecular and morphological variation among the genotypes resistance to BPH & Gall midge.	3.0
25	Project: Identification of novel genetic sources of local germplasms related to WBPH resistance **Duration:** Mid term	To find resistance sources of rice germplasms under green house conditions.	1.0
26	Project: Use of solar light trap for insect pests management in crop field. Duration: Short term	To test the efficacy of BRRI solar light trap for insect pest management in rice and vegetable fields.	3.0
27	Project: Use of sex pheromone to control rice leafroller, *C. medinalis.* Duration:Short term	To test the efficacy of sex pheromone against rice leafroller in rice field To control rice leaf roller without insecticide.	1.0
28	Project: 7.3 Strengthening of environmentally sound insect pest management for enhancing rice yield Duration: Short term	To procure modern equipments for advanced research on insect pest management Reducing insecticide use in rice field To reconstruct green hose of entomology division To develop model for forecasting insect pest outbreaks in rice field To identify brown planthhoper resistance local genotypes and genes	580.25
29	Project: Ecologically based management of rats in rice field Duration: Midterm	To control rats in rice field To measure the impact of ecologically based rodent management practices on rat abundance, costs of management actions, damage to crops, and yield of crops.	2.0

Plant Pathology Division

Proposed Research Program for 2019– 20

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	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
4	Molecular characterization of bakanae causing fungi in Bangladesh	To find out the fungi associated with bakanae disease of rice in Bangladesh	500
5	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
6	Isolation and identification of rice kernel bunt pathogens and their pathogenicity test– another emerging disease of rice.	To isolate and identify of causal agent of Kernel bunt disease	30
7	Effect of drought tolerant microbes (*Pseudomonas* spp. and *Trichoderma* spp.) on drought response of rice	1. To identify potential microbes for drought tolerance in rice. 2. To find out the efficacy of microbes as drought tolerance in	50

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
		rice.	
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 isolate the entomopathogenic fungi from naturally infected insects. 2. To identify the pathogenicity of entomopathogenic fungi against BPH. 3. To examine suitable media (grains of rice, wheat and maize, different liquid and culture media) for mass production and find out appropriate rate of application for BPH management.	50
10	Development of an effective inoculation technique for Sheath rot disease screening	To find out an effective and efficient inoculation technique for ShR disease development.	50
11	Development of a new rating scale for sheath rot disease scoring	To develop a standard scoring system will be easy to score and will be widely used.	50
12	Factors affecting recent outbreak of rice tungro disease	To identify the causes of recent tungro outbreak in Bangladesh.	100
13	Identification of the source of infection of rice false smut disease	1. To disclose if the spores of *Ustilaginoidea virens* are in the air or not. 2. To identify if seeds are the carrier of the pathogen or not. 3. To identify if soil is the carrier of the pathogen or not.	100
14	Improvement of differential system for rice blast disease in Bangladesh	1. To select new differential blast isolates 2. To identify candidate resistant gene(s) or source(s) 3. To monitor regularly of the evolution of new races	300
15	Isolation of potential fungi for controlling major weeds of rice	To identify potential fungi for controlling major weeds of rice.	200

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
16	Regional Yield Trial of blast resistant materials	To develop blast resistant variety for Bangladesh.	100
17	Exploring new sources of resistance and pyramiding blast resistant gene in Boro rice.	1. To find new source of major resistant gene(s) against blast disease in the native land races. 2. To introgression of known resistant genes and/or gene pyramiding to develop durable blast resistant variety.	1000
18	Screening of advanced rice breeding lines and land races against Blast and Sheath Blight diseases	To identify the source of resistance against blast and sheath blight diseases of rice.	100
19	Introgression of Blast resistant genes into BRRI dhan47	To develop durable blast resistant variety harboring *Pi40* and *Pi9* genes	100
20	Identification of major blast resistant genes in jhum rice.	To find out blast resistant source(s) of *Pi genes*	100
21	Exploring new source of blast resistance in native rice germplasm	1. To identify new sources of resistance from upland rice germplasm. 2. To assess the diversity based on phenotypic reactions and molecular marker	50
22	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
23	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
24	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
25	BB resistance and yield performance of selected breeding lines	1. To determine the resistance against BB 2. To evaluate yield performance	100

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
		of selected materials	
26	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
27	Detection of major resistant genes and pyramiding of bacterial blight resistance into parental lines of hybrid rice using MABC	1. To screen out available maintainers and restorers against differential isolates of BB. 2. To develop pyramiding of bacterial blight resistant hybrid rice parental lines carrying *Xa4*, *xa5*, *xa13* and *Xa21*.	200
28	Screening of LST against BB	To identify resistant source(s) against BB	950
29	Screening of rice germplasm against Bakanae disease	To identify the resistant sources against bakanae disease of rice.	50
30	Screening of land races against Sheath blight diseases	To identify the resistant source against sheath blight diseases of rice.	100
31	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
32	Development of prebreeding materials for tungro resistance	To develop tungro resistant advanc lines.	200
33	Development of blast resistant varieties using differential system and molecular markers	To develop blast resistant varieties for Bangladesh.	200
34	Studies on the genetic mechanism of rice blast and gall midge 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
35	Linkage and QTL mapping of blast resistance in BR16	To identify significant QTLs with linked marker for blast resistance in BR16.	100
36	Detection and confirmation of	To characterize the land races	200

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
	blast resistance genes in land races using differential system	against blast disease	
37	Development of inoculation technique for false smut disease	To develop artificial inoculation technique of rice false smut disease.	30
38	Identification of the primary source of natural infection of rice false smut disease	To understand the disease cycle of RFSm in nature.	50
39	Effects of RFSm contaminated seeds on quality	To see the effects of seed contamination on the attributes of seed quality	30
40	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
41	Developing an algorithm between the severity of sheath rot disease and yield reduction in rice	To develop an algorithm associating the levels of severity of sheath rot disease and reduction of grain yield in rice	30
42	Crop loss assessment at different stages of rice caused by bacterial blight	1. To estimate yield loss due to bacterial blight. 2. To know the stage of rice which is responsible for maximum yield loss.	50
43	Diagnoses of physical environment and pathogen biology responsible for rice blast disease outbreak in Bangladesh	To find out the reasons of recent rice blast outbreak in Bangladesh.	200
44	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 at field condition.	200
45	Evaluation of commercial biopesticides against major rice diseases	To screen the effective biopesticides for rice diseases	50
46	Isolation of effective bacterial isolate for management of sheath blight disease	To isolate and identify the effective isolates against sheath blight disease	50
47	Management of Sheath blight disease using *Trichoderma harzianum*	To investigate the efficacy of *Trichoderma harzianum*	100

Sl No.	Programme area/Project (Duration)	Major Objective(S)	Annual budget Thousand Tk.
48	Bakanae disease control with integrated approach	To find organic amendments for controlling bakanae disease.	50
49	Identification of crop damage phenomenon by red eelworm and their management	1. To identify whether red eelworm cause significant crop damage or not 2. To formulate the sound management strategy to control the organism if they are pathogenic to rice.	500
50	Identification of potential bio-control agents and formulation of biopesticides against Bakanae disease of rice	1. To identify and confirm effective microbes (*Bacillus* spp, *Pseudomonas* spp., *Trichoderma* spp.) *in vitro* and molecularly as sources of biocontrol agent/s for controlling bakanae disease. 2. To find out suitable carrier materials with prolong shelf life for biopesticide formulation.	1500
51	Chemical control of sheath rot disease of rice under different planting time	1. To find out effective fungicide/s against Sheath rot. 2. To identify time most conducive time for sheath rot disease development.	50
52	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
53	Integrated management of rice tungro disease	To manage the rice tungro disease in the field trough integrated approaches.	200
54	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
55	Integrated management of blast disease for enhancing rice production in relation to climate change	1. To minimize yield loss due to blast disease. 2. To build up farmers awareness on blast disease management.	800

FARM MACHINERY AND MECHNIZATION PROGRAM AREA

Farm Machinery and Postharvest Technology Division

Proposed Research Programme 2019-2020

Sl. No	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	**1,05,40,000.00**
1.1	Evaluating and modifying of BRRI developed machines Duration : 1998-2019	• 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 : 2013-2019	• 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 : 2015-2019	• 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 : 2015-2019	• To design a head feed combine harvester • To manufacture the designed combine harvester prototype • To carryout field performance test of the developed combine harvester prototype	15,00,000.00

Sl. No	Programme area /Project with duration	Major Objective	Annual budget Thousand Tk.
1.5	Development of manual seed sower machine for raising mat type seedling Duration : 2016-2019	• Improvement of manual seeds sower machine • Performance evaluation of seeds sower machine	1,00,000.00
1.6	Performance evaluation of power operated seed sower machine Duration : 2016-2019	• To observe the performance of the seed sower machine • To calibrate the sower machine for different rice variety • To calibrate the sower machine at different days of sprouting	1,00,000.00
1.7	Field evaluation of minimum tillage unpuddled mechanized rice transplanting Duration : 2016-2019	• To compare the agronomic performance • To identify the problem	2,00,000.00
1.8	Incorporation of prilled urea deep placement mechanism in the rice transplanter Duration: 2017-2019	• To develop a technology for dispensing seedling and prilled urea simultaneously • To incorporate the impeller type (force mode) prilled urea deep placement mechanism in the walking type rice transplanter • To test the field performance of the technology • To save the fertilizer application time and cost	3,00,000.00
1.9	Design and development of fertilizer deep placement (FDP) mechanism for existing rice transplanter Duration : 2018-2021	• 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	90,000.00

Sl. No	Programme area /Project with duration	Major Objective	Annual budget Thousand Tk.
		application	
1.10	Design and development of power tiller operated rice transplanter Duration : 2018-2021	• To design and development of mat type transplanter suitable to incorporate with 2-wheel tractor (power tiller). • To design simple linkage mechanism to incorporate the transplanter with power tiller. • To design simple and easy power transmission and hydraulic mechanism suitable to operation in wetland. • To test, evaluate and validate the technology in laboratory, research field and farmers' field.	5,00,000.00
1.11	Design and development of inclined plate hill dispensing seeder for direct seeding of rice Duration : 2018-2021	• To design and development of hill dispensing type direct seeder of rice • To design simple metering device for different graded of rice varieties • To design simple and easy power transmission mechanism for furrow making, covering, uniform and hill dispensing of seeds. • To test, evaluate and validate the technology in laboratory, research field and farmers' field	4,00,000.00
1.12	Development of a forward motion manual rice transplanter	• Design and fabrication of a manual operated forward motion rice transplanter • Performance evaluation of the developed rice transplanter	4,00,000.00
1.13	Development, validation and adoption of power weeder for wet land rice cultivation	• 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
1.14	Design and development of walking type power operated rice transplanter	• Design and development of walking type power operated rice transplanter	25,00,000.00

Sl. No	Programme area /Project with duration	Major Objective	Annual budget Thousand Tk.
1.15	Ergonomic study of BRRI developed farm machinery for mechanized rice cultivation	• To find out the operational suitability of the BRRI multi-rows power weeder • To develop a guideline for safety of operation • To compare efficiency over other weeding practices	2,00,000.00
1.16	Design and development of a reaper binder	• 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
02	Milling and Processing Technology	• To reduce loss, improve quality and addition of value to the farm products	**23,00,000.00**
2.1	Improvement of air blow type engelberg huller mill	▪ To design and development of cyclone separator for collection husk and bran ▪ To design and fabricate air blowing type rice mill for commercial use ▪ To test and evaluation modified air blowing type rice mill	2,00,000.00
2.2	Test, evaluation and modification rubber roll de-husker Duration : 2016-2019	• To modify and development of a rubber roll de-husker • To evaluate the performance of paddy de-husker	3,00,000.00
2.3	Study the milling recovery of long grain rice varieties in commercial mill Duration : 2016-2019	• To compare the milling recovery of processed rice in different rice mill • To evaluate head rice and broken rice percentage	3,00,000.00
2.4	Effect of drying and tempering on milling recovery of BRRI Variety under different moisture content Duration : 2017-2019	• To find out optimum moisture content for maximum milling yield and head rice recovery	3,00,000.00
2.5	Design and development of a small scale recirculating type dryer	• To design and fabricate of small scale recirculating type dryer • To study spatial distribution of air temperature and moisture	6,00,000.00

Sl. No	Programme area /Project with duration	Major Objective	Annual budget Thousand Tk.
		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	
2.6	Study the effect of polishing on rice grain quality	• 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
2.7	Design and development of a compact rice mill	• To design and fabricate of a compact rice mill • To evaluate the performance of fabricated rice mill	5,00,000.00
03	Development of stores and storage technology	• To increase shelf life of rice in store	2,00,000.00
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
04	Renewable Energy Technology	• Development of renewable energy extraction technologies from solar, agri-residues and waste products	27,00,000.00
4.1	Study the briquette production from rice byproduct Duration : 2016-2019	• To prepare briquettes from rice straw and husk • Characterization of different briquettes originated from agricultural residue • To measure the calorific value of the briquettes	1,00,000.00

Sl. No	Programme area /Project with duration	Major Objective	Annual budget Thousand Tk.
4.2	Study on Solar Energy Utilization for BRRI Power Chopper Operation Duration : 2017-2020	• 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	• 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	• 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	Development and performance evaluation of a hand operated compression type briquetting machine	• To develop of a manually operated briquetting machine • To evaluate the performance of developed machine	1,00,000.00
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	10,00,000.00
5.1	Industrial and farm level extension of BRRI machinery and Postharvest technology Duration : 1998-2018	• To create awareness and demonstrate the benefit of using BRRI machines among the farmers • To motivate the local entrepreneurs to manufacture BRRI developed machinery	10,00,000.00

Workshop Machinery and Maintenance Division

SUMMARY OF THE PROPOSED RESEARCH PROGRAMME 2019-20

Sl. No.	Programme area/ Project duration	Objectives	Annual budget Thousand, TK.

Sl. No.	Programme area/ Project duration	Objectives	Annual budget Thousand, TK.
1	Development of machine vision approach in determination of paddy varieties	• to identify the variety analyzing image of paddy • to develop machine vision algorithm in determination of particular paddy variety	100.00
2	Modification of manually operated transplanter	• to design the power transmission system of manually operated transplanter • to test the performance of manually operated transplanter	30.00
3	Design and development of manually/power operated mini reaper	• to develop a manuallyoperated reaper • to evaluate the performance of the manually operated reaper	200.00
4	Modification of reaper travelling wheel for wet-land condition	• to design the suitable travelling wheel for wet-land condition • to test and evaluate the newly designed wheel at wet-land as well as dry-land condition	50.00

Sl. No.	Programme area/ Project duration	Objectives	Annual budget Thousand, TK.
5	Determination of tilling efficiency of power tiller at selected areas in Bangladesh	• to determine the optimum tillage depth for maximum paddy yield • to identify the amount of fuel consumption according to depth of	50.00

Sl. No.	Programme area/ Project duration	Objectives	Annual budget Thousand, TK.
		tillage	
6	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	100.00
7	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 demands of the farmers	100.00
8	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 • to increase crop production by improving irrigation facilities where electricity is not available	200.00

RICE FARMING SYSTEMS PROGRAM AREA

Rice Farming Systems Division

Proposed Research Program 2019- 2020

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 for abiotic stress prone area.	450.00
3.	Development of Cropping Systems and Component Technology for Hilly Area	To develop profitable cropping systems through fertilizer management	250.00
4.	Development of Cropping Systems and Component Technology for Favorable Environment (Irrigated condition)	To develop agro-economically profitable cropping patterns and component technologies for Favorable Environment (irrigated condition)	1150.00
5.	Validation and Delivery of Farming Systems Technologies	To disseminate agro-economically profitable farming systems technologies	2800.00
6.	Development of Semi-aquatic Crop Production System	To develop a model farming system technology for semi-aquatic ecosystem.	150.00
7.	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
8.	Integrated Farming Research and Development for Livelihood Improvement in the Plain land Eco-system	To generate climate resilient and site specific farming system technologies by optimizing land use for the Madhupur tract of Bangladesh	2900.00

SOCIO-ECONOMICS AND POLICY PROGRAM AREA

Agricultural Economics Division

Proposed Research Programme 2019 – 2020

Sl. No.	Programme area/Project (Duration)	Major Objective(s)	Annual Budget Thousand Tk.
1	**Farm Level Adoption and Evaluation of Modern Rice Cultivation in Bangladesh** **Status: Routine work**	✓ Determine the region-wise adoption rate of different MVs in Aus, T. Aman and Boro seasons; ✓ Estimate the yield of different modern and local rice varieties in different seasons; ✓ Delineate the socio-economic and varietal constraints to the adoption of MVs in different regions.	**500**
2	**Estimation of Costs and Return of MV Rice Cultivation at the Farm Level** **Status: Routine work**	✓ Delineate input use pattern in modern Aus, T. Aman and Boro rice cultivation; ✓ Estimate the profitability and risk of modern Aus, T. Aman and Boro rice cultivation at farm level; and, ✓ Estimate the factor and income share of MV rice cultivation in different seasons.	**500**
3	**Value Chain Analysis of Aromatic Rice in Bangladesh** **Status: Continued**	✓ Map the value chain networks of *Tulshimala* and *Kalijira* aromatic rice and the process of value addition along the chain; ✓ Determine costs, margins and price spread of value chain; and, ✓ Identify constraints and opportunities of value chain of aromatic rice and recommend policy measures. ✓	**300**
4	**Sustainable Food and Nutritional Security of Smallholder Farmers' in Rural Bangladesh through BRRI Technologies** **Status: New**	✓ To evaluate the present food/rice security situation in Rural Bangladesh; ✓ To address the possible ways for increasing rice productivity for achieving food and nutritional security in Bangladesh towards 2030.	**1000**
5	**Farmers' perceptions of and adaptation strategies to climate and environmental changes in drought prone north-west**	✓ Delineate farmers' perception of and responses to climate and environmental changes in relation to rice production; ✓ Identify the factors affecting the	**200**

Sl. No.	Programme area/Project (Duration)	Major Objective(s)	Annual Budget Thousand Tk.
	Bangladesh **Status: Continued**	adaptation strategies; ✓ Estimate economic viability of the dominant cropping pattern; and ✓ Understand farmers' observation along with their suggestions of the impact of climate change on farming;	
6	**Climate Change Adaptation of Rural Households in *Charland* of Bangladesh** **Status: New**	✓ Examine *charland* farm households' biophysical and socioeconomic characteristics; ✓ Study *charland* farm households' perceptions to climatic and environmental changes; ✓ Delineate factors that facilitate or constraint adaptation strategies to climate change; ✓ Assess economic viability of existing cropping systems and potential climate-smart cropping systems.	**500**
7	**Possible Adaptation Options and Sustainable Rice Cultivation in *Haor* Areas: Responsiveness to Casual Flash Flood** **Status: New**	✓ Document the extent of magnitude of crop damage due to casual flash flood in the study areas; ✓ Search farmer's adaptation options toward rice cultivation and sustain the rice farming in the study areas; ✓ Identify factors facilitates adoption status of rice farmers.	**500**
8	**Returns to Investment on Rice varietal Research in Bangladesh** **Status: Continued**	✓ Estimate the rate of return of post 1990s BRRI released varieties replacing pre1990s rice varieties (modern and local)	**500**

Agricultural Statistics Division

Proposed Research Programme_2019-20

Sl. No.	Program area/ Project	Major Objective	Annual Budget (Lac. Tk)
	Program area: Socio-economic and Policy		
1.	**Statistical methodology and computer programming**	1. To determine the stability index of BRRI varieties 2. To study G×E analysis of BRRI varieties 3. To project national rice production of Bangladesh 4. To maintain season, year and location wise database on BRRI varieties	8.00
	1.1 Experiment/Study: Stability Analysis of BRRI Varieties *(In collaboration with Plant Breeding Div., Plant Phy. Div., ARD and All Regional Stations of BRRI)*	1. To determine the stability index of BRRI varieties 2. To maintain season, year and location wise database on BRRI varieties	3.50
	1.2 Experiment/Study: Genotype x Environment interaction of BRRI varieties *(In collaboration with Plant Breeding Div., Plant Physiology Div., ARD and All Regional Stations of BRRI)*	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
	1.3 Experiment/Study: Region specific BRRI variety adoption: A simple way of increasing national production	1. To project national rice production of Bangladesh 2. To find out region specific highest yielded BRRI varieties	1.50
2.	**Multivariate Analysis of BRRI Varieties**	1. To maintain up-to-date computerized information on rice and related crops 2. To determine year wise GR of rice production in Bangladesh 3. To maintain up-to-date computerized information on climatic factors 4. To produce various climatic maps.	4.00

Sl. No.	Program area/ Project	Major Objective	Annual Budget (Lac. Tk)
		5. To determine regional growth rate and trend of area, production and yield of rice in Bangladesh and measure regional disparities and its mapping of rice production.	
	2.1 Activity: Maintenance of rice and rice related variable database	1. To maintain up-to-date computerized information on rice and related crops 2. To determine year wise GR of rice production in Bangladesh 3. To maintain up-to-date computerized information on climatic factors both BRRI regional stations and BMD stations data. 4. Make comparison between BRRI stations and BMD stations data. 5. Produce various maps from these data	3.00
	2.2 Study: Regional growth and trend analysis of rice area, production and yield in Bangladesh	1. To determine regional growth rate and trend of area, production and yield of rice in Bangladesh. 2. To measure regional disparities and its mapping of rice production. 3. To estimate the situation of rice regarding its area, production and yield in Bangladesh.	1.00

3.	**Agro Meteorology and Crop Modeling**	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 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. 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 7. To forecast the yield of selected rice varieties at changing climatic conditions. 8. To select suitable rice variety(s) as adaptation options at different climatic condition for regional rice farmers	15.00
	3.1 Experiment/Study: Minimizing agro micro climatological risk factors for maximizing sustainable rice production in Bangladesh *(In collaboration with Agronomy Div., Entomology Div., Plant Physiology Div., Soil Science, IWM Div., Plant Pathology Div., and Agril. Econ. Div.)*	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 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	8.00

	3.2 Experiment/Study: 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.)*	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 Geographical 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 rice area map. 4. To construct a land use and land cover map	5.00
	4.1 Experiment/Study: Suitability mapping of BRRI released varieties *(In collaboration with Plant Breeding Div., Soil Science Div. and ARD)*	To construct suitability map of BRRI released rice varieties.	0.50
	4.2 Experiment/Study: Climate mapping of temperature and rainfall of Bangladesh	To determine areas of critical maximum, minimum temperature and rainfall map of Bangladesh for rice during all seasons and the whole period.	0.50
	4.3 Experiment/Study Online Rice crop mapping using satellite remote sensing technology in some selected area of Bangladesh	1. Extracting the temporal signature of rice types. 2. Classification of various rice type (early, late and very late transplanting) based on unique temporal signature and rice area mapping.	2.00
	4.4 Experiment/Study: Land use and land cover mapping in some selected area of Bangladesh	1. To identify the various objects of land use/land cover (agriculture land, fallow land, Forest, urban area, orchard, Submergence area, water body etc. of a specific area). 2. To calculate the area of the objects of land use land cover.	2.00

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.	10.00
	5.1Activity: Training program on experimental data analysis	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
6.	**Information & 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.	
	6.1 Activity: "Rice Doctor" Apps for BRRI.	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
	6.2 Activity: Strengthen & dissemination of modern rice technology and its management information at the farmer door step through RKB Mobile Apps	1. To disseminate RKB at all regional station. 2. To develop and modify the design of RKB. 3. To manage and maintain RKB through regular updating of the information and documents. 4. To develop push notification system	8.80
	6.3 Activity: BRKB website management *(In collaboration with training, breeding and others research divisions)*	1. To develop and modify the design of BRKB Website. 2. To manage and maintain BRKB Website through regular updating of the information and documents.	1.90

	6.4 Activity: Dynamic view connectivity system, Bangla searching system and inner banner system for BRKB Website. *(In collaboration with training, breeding and others research divisions)*	1. To construct dynamic view connectivity system. 2. To create Bangla searching system. 3. To develop inner banner system.	2.00
	6.5 Activity: BRRI Web Mail and Group Mail.	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
	6.6 Activity: Developing secure system for BRRI Web Mail and Group Mail.	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
	6.7 Activity: Online Application System of BRRI *(In collaboration with Administration of BRRI and Teletalk Mobile Company Ltd.)*	1. To develop "Online application system" for BRRI. 2. To host "Online application system" at data center. 3. To manage and maintain "Online application system" through regular updating of the information and documents.	2.00
	6.8 Activity: e-File Management System of BRRI. *(In collaboration with Administration of BRRI)*	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

	6.9 Activity: e-Tender System of BRRI *(In collaboration with Building and Construction and procurement cell)*	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
	6.10 Activity: Digitalized Labour Salary Management System of BRRI (In collaboration with FM Div.)	1. To digitalized "Labour Salary Management System" (LSMS) of BRRI. 2. To manage and maintain LSMS through regular updating with labor management related various information.	1.00
	6.11 Activity: Online Labour wages Management System of BRRI *(In collaboration with FM Div.)*	1. To online "Labour wages Management System" (LWMS) of BRRI. 2. To manage and maintain LWMS through regular updating.	5.00
	6.12 Activity: Digitalized Labor Management System of BRRI *(In collaboration with FM Div.)*	1. Digitalized "attendance system of BRRI Labor". 2. Digitalized and automated "Labor Salary System". 3. Develop a labor data center. 4. Update and modify the web application as user need.	3.00
	6.13 Activity: Digitalized Casual Leave Application System	1. To digitalized Casual Leave Application System of Agricultural Statistics division.	3.00
	6.14 Activity: LAN and internet connectivity of BRRI regional station(R/S).	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

	6.15 Activity: BRRI Web Portal Management.	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
	6.16 Activity: Management of BRRI HQ Local Area Network and Internet Connectivity.	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
	6.17 Activity: BRRI Networks Update, Maintenance and Extension.	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
	6.18 Activity: Video Conference System of BRRI (skype system)	1. To develop "Video conference system of BRRI. (skype system)" for administration, all divisional head and regional station head of BRRI. 2. To develop "Video conference system of BRRI (skype system)" for research, administration works and innovative interactions.	5.00
	6.19 Activity: New version of Management Information System (MIS) of BRRI.	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
	6.20 Activity: Integrating Digital Signature into e-File (Nothi) System of BRRI and its management.	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) forsmooth usingof digital signature in e-File (Nothi) system and other's.	0.50

	6.21 Activity: Rice Pest Corner *(In collaboration with Plant Pathology & Entomology Division)*	1. To develop Rice Pest Corner for BRRI. 2. To develop a Web application for rice Pest corner. 3. To manage and maintain Rice Pest Corner	4.50
	6.22 Activity: Personal Data Sheet (PDS) of BRRI.	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
	6.23 Activity: Heritage of BRRI.	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

Proposed Research Program 2019-20

Sl. No.	Program area/Project (Duration)	Major Objective(s)	Annual Budget (Thousand TK.)
	Program Area: Socio-economic and Policy		
03	**Farm Management Division**		
	3.1. Project : Rice production management		
	Expt. 1. **Effect of transplanting date and spacing on the yield and yield components of different short duration rice varieties in T.Aman and Boro seasons**	To find out the suitable transplanting date of different short duration rice variety for maximizing rice yield.	50
	Expt. 2. **Yield maximization of rice through integrated nutrient management in T.Aman and Boro seasons**	To find out the suitable nutrient management practice for maximizing rice yield	50
	Expt. 3. **Efficacy of mechanical deep placement of urea and seedling transplanting on rice yield in Boro season.**	To evaluate the efficacy of newly developed mechanical rice transplanter cum prilled Urea applicator.	50
	3.2. Project: Survey and development of Data base for labor management.		
	Expt. 1. **Monitoring the laborers' wage rate for rice cultivation in different locations of Bangladesh.** Locations: **Different districts. Around BRRI HQ and regional stations**	To document farmers' labor management practices for rice cultivation	100
	3.3. Project: Management and utilization of land and other resources. **These include:** • Seed production, management of land, labor, farm implements, flower garden, irrigation and drainage etc	Better utilization of farm land and other resources for smooth running of research activities of BRRI	5000
			Total= 5250

Technology Transfer Program Area

Adaptive Research Division

Proposed Research Program: 2019-2020

Sl. No	Proposed Research Program	Major Objectives	Annual Budget (lac Tk.)
Program Area: Technology Transfer			
01	**Adaptive Research**		
	Validation of Technologies	**Validate the matured technologies at farm level**	**Project Total**
	1. Varietal development		**15-20**
	Advanced Lines Adaptive Research Trial (ALART) during T. Aus 2019, T. Aman 2019 and Boro, 2020	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 of promising rice genotypes in T. Aus 2019 Locations: Kushtia (Mirpur), Rajshahi (Tanore), Rangpur (Pirganj), Bhola (Sadar), Feni (Sonagazi), Cumilla (Chandina), Habiganj (Sadar), Faridpur (Sadar), Mymensingh (Trishal) and BRRI Gazipur.	Do	3.0
	1.2 ALART: Rainfed Lowland Rice (RLR) genotypes in T. Aman 2019 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	3.0
	1.3 ALART: Rainfed Lowland Rice (RLR Bio) genotypes of Biotechnology in T. Aman 2019 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur,	Do	3.0

Sl. No	Proposed Research Program	Major Objectives	Annual Budget (lac Tk.)
	Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur		
	1.4 ALART: Zinc enriched Rice (ZER) genotypes in T. Aman 2019. Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	3.0
	1.5 ALART: Rainfed Lowland Rice (RLR Rang) genotypes of BRRI Rangpur in T. Aman 2019. Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	3.0
	1.6 ALART: Premium Quality Rice (PQR) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi), Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur	Do	3.0
	1.7 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	3.0
	1.8 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	3.0
	1.9 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	3.0
	1.10 ALART: Favorable Boro Rice-Biotechnology (FBR-BIO) genotypes in Boro, 2020 Locations: Satkhira , Feni (Sonagazi),	Do	3.0

Sl. No	Proposed Research Program	Major Objectives	Annual Budget (lac Tk.)
	Cumilla, Rajshahi, Kushtia, Rangpur, Barishal (Sadar), Habiganj), Rajshahi and BRRI Gazipur		
	1.11 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	3.0
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.	
	2.1 SPDP of BRRI dhan27, 48, 82 and 85 in Aus 2019 under GoB.	To disseminate BRRI dhan48 and BRRI dhan82 and drum-seeder technologies	3.0
	2.2 SPDP of promising rice varieties in Aus 2019 under TRB project.	To disseminate BRRI varieties in different region of Bangladesh.	0.40
	2.3 SPDP in Jhum system of the slope of hill in Aus 2019 under Hill Project.	To disseminate BRRI technologies in the hilly region of Bangladesh.	4.00
	2.4 Adaptive trial in Valley of hill (AT) areas in Aus 2019 under Hill Project.	To disseminate BRRI technologies in the hilly region of Bangladesh.	2.00
	2.5 SPDP in Valley of hill areas in Aus 2019 under Hill Project.	To disseminate BRRI technologies in the hilly region of Bangladesh.	3.00
	2.6 SPDP of promising rice varieties in T. Aman 2019 under GOB.	To disseminate BRRI varieties and technologies in different region of Bangladesh.	8.00
	2.7 SPDP of promising rice varieties in T. Aman 2019 under TRB Project.	To disseminate BRRI varieties and technologies in different region of Bangladesh.	44.00
	2.8 Head to Head Adaptive trial	To disseminate BRRI varieties through block demonstration in different region of Bangladesh.	8.00

Sl. No	Proposed Research Program	Major Objectives	Annual Budget (lac Tk.)
	2.9 SPDP of promising rice varieties in T. Aman 2019 under SPIRA Project.	To disseminate BRRI varieties through block demonstration in different region of Bangladesh.	4.50
	2.10 Adaptive trial in Valley of hill (AT) areas in Aman 2019 under Hill Project	To disseminate BRRI varieties and technologies in hilly areas of Bangladesh	3.00
	2.11 SPDP in Valley of hilly areas in T. Aman 2019 under Hill Project.	To disseminate BRRI varieties and technologies in hilly areas of Bangladesh.	8.00
	2.12 Dissemination of BRRI dean 71 and 75 in northern districts in T-Aman-Potato-Boro cropping pattern	To disseminate suitable BRRI varieties and technologies in potato growing areas of Bangladesh.	3.00
	2.13 SPDP of promising rice varieties in Aman, 2019 under NATP.	To disseminate BRRI varieties and technologies in different region of Bangladesh.	4.00
	2.14 SPDP of promising rice varieties in Boro 2020 under GOB.	To disseminate BRRI varieties and technologies in different region of Bangladesh.	6.00
	2.15 SPDP of promising rice varieties in Boro 2020 under NATP.	To disseminate BRRI varieties and technologies at farmers' level.	4.00
	2.16 SPDP in Valley of hilly areas in Boro 20 under Hill Project.	To disseminate BRRI varieties and technologies in hilly areas of Bangladesh	3.00
	2.18 SPDP of promising rice varieties in Boro 2020 under TRB Project (No. of trial 20).	To disseminate BRRI varieties and replacement old varieties with new varieties in different region of Bangladesh.	5.00

03	**Promotional activities**	To update knowledge and skill of farmers and stalk holders on modern rice cultivation technology.	**Project Total (lac. to)**
	3. Training		
	3.1 Farmers' training in Aus 2019, T. Aman 2019 & Boro2020 under GoB, HNRD and TRB	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.	12.00

	3.2 Field day in Aus 2019, T. Aman 2019 & Boro2020 under GoB, SPIRA and TRB ASRS	To get feedback information directly from the farmers. For rapid dissemination of rice technologies among the farmers.	6.00
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.	2.00

Training Division

Proposed Research Program 2019-2020

Sl,No.	Program area/Project (Duration)	Major Objective(s)	Annual budget Thousand Tk.
	Program Area: Technology Transfer Program Performing Unit: Training Division		
1	Training Need Assessment PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	To assess the need and expectations of the participants from the training.	
2	Capacity Building and Technology Transfer Through Training PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain Dr. Shahnaz Parveen	• To enrich the knowledge of the participants on rice production technologies. • To disseminate BRRI developed technologies through extension personnel	
	2.1 Rice production and communication training course for BRRI scientists**.** (2-months) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	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	15 Lac

		▪ Help extension personnel for quick dissemination of rice production technologies	
	2.2 Training on modern rice production technologies for DAE officers. (2-months) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	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	30 Lac
	2.3 Training on Modern Rice Production Technologies (Yield Maximization).(One week) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	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.	24 Lac
	2.4 Special Training on Modern Rice Production Technologies for SAAO of *Haor* Areas. (One week) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	To train the SAAO of *haor* areas 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 of haor areas to increase rice productivity.	12 Lac

	2.5 Special training on modern rice production technologies for SAAO's of Khanshama Upazila of Dinajpur and Pirganj Upazila of Rangpur Districts.(One week) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	To train the extension agents so that they can: ▪ Contribute to increase the adaption of BRRI varieties in that areas. ▪ Capable 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.	2.5 Lac
	2.6 Training on Rice Production and Data Collection. (One week) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	This course will enable participants to: • Learn and recognize the basic concepts, principles and techniques of modern rice production • Identify and solve field problems of rice cultivation and • Collect data properly from the experimental plot.	3 Lac
	2.7.Training on Rice Pest Management (One week) PL: Dr. Md. Islam Uddin Mollah PI: Dr. Md. Shahadat Hossain CI: Dr. Shahnaz Parveen	• To increase knowledge of pest (insects, diseases and weed) management in rice ecosystem. • To identify the pest in the field and • To increase ability to solve pest problems in rice field.	4 Lac
	2.8 Special Training on specific issues related to rice production	• Objectives depend on the respective training courses.	
3	Evaluation of imparted training program	• Evaluate the overall training program • Assess the trainees performances • Assess the resource speaker performances	

REGIONA STATION PROGRAM AREA

Regional Station, Bhanga, Faridpur.

Proposed Research Program 2019- 2020

Sl, No.	Program area/Project (Duration)	Major Objective(s)	Annual budget Thousand Tk.
	Program Area: Varietal development , Farming Systems Research, Crop-soil-water management, Socio economics, Technology transfer **Program Performing Unit:** BRRI Regional Station, Bhanga, Faridpur		
1	Expt 1. Breeding for developing high yielding Transplanting Aman rice varieties (Hybridization) PI: Mohammad Akhlasur Rahman CI:Tusher Chakrobarty	• To develop breeding population with desirable characters with emphasis on water stagnation tolerance, anerobic tillering, earliness and good grain quality.	2 Lac (GoB)
2	Expt. 2. **:** Breeding for developing high yielding shallow flooded Deep water rice varieties (Hybridization) PI: Mohammad Akhlasur Rahman CI:Tusher Chakrobarty	• To develop breeding population with desirable characters of deep water Aman rice.	2 Lac (GoB)
3	Expt. 3. **:** Breeding for developing high yielding Aus rice varieties (Hybridization) PI: Mohammad Akhlasur Rahman CI:Tusher Chakrobarty	• To develop breeding population with introgression of heat tolerance, short duration and good grain properties.	2 Lac (GoB)
4	Expt. 4. **:** Collection and **c**onservation of local Aus germplasm PI: Mohammad Akhlasur Rahman CI:Tusher Chakrobarty	• To collect local Aus germplasm	1 Lac (GoB)
5	Expt. 5. **:** Breeding for developing high yielding rice varieties for single Boro cropping pattern (Hybridization) PI: Mohammad Akhlasur Rahman CI:Tusher Chakrobarty	• To develop breeding population with higher yield potential, tall plant along with earliness and acceptable grain quality for single Boro cropping pattern	2 Lac (GoB)

Sl, No.	Program area/Project (Duration)	Major Objective(s)	Annual budget Thousand Tk.
		of Faridpur region	
6	Expt. 6. **:** Advancement of generation through F RGA	• Advancement of generation for getting improved genotypes	1 Lac (GoB)
7	Expt. 7. **:** Validation of improved fertilizer management option in *Aman* rice relayed with jute at farmers field in shallow flooded area (On-going) PI: Tusher Chakrobarty CI: Mohammad Akhlasur Rahman	• To validate and fine tune of improved fertilizer management option at farmers field. • To determinate the improved fertilizer management option	1.5 Lac (GoB)
8	Expt. 8. **:** Identification of potential rice variety in Wheat/Onion-Jute-Relay Aman cropping pattern under shallow deep water rice ecosystem (**On-going**) PI: Tusher Chakrobarty CI: Mohammad Akhlasur Rahman	• To identify the potential rice variety in Wheat-Jute-Relay Aman cropping pattern. • To increase the total productivity of the Wheat-Jute-Relay Aman cropping pattern	1 Lac (GoB)
9	Expt. 9. **:** Multilocation testing of Boro-DWR cropping pattern in flood prone areas PI: Tusher Chakrobarty CI: Mohammad Akhlasur Rahman	• To increase the productivity by introducing a new crop in this area	0.50 Lac (GoB)
10	Expt. 10. **:** Jute-based crop cropping pattern for increasing cropping intensity and productivity in Faridpur region PI: Tusher Chakrobarty CI: Mohammad Akhlasur Rahman	• To increase cropping intensity and productivity in Faridpur region	1 Lac (GoB)
11	Expt. 11. : Nitrogen management of newly released short duration modern T. Aman rice varieties (**On-going**) PI: Md. Iftekhar Mahmud Akand CI: Tusher Chakrobarty, Mohammad Akhlasur Rahman	• To find out optimum level of nitrogen of newly released short duration rice varieties.	0.5 Lac (GoB)
12	Expt. 12. : Effect of nitrogen management on growth and yield of BRRI Hybrid dhan5 in Boro	• To find out the suitable rate of nitrogen fertilizer for efficient management and	1 Lac (GoB)

Sl, No.	Program area/Project (Duration)	Major Objective(s)	Annual budget Thousand Tk.
	season PI: Md. Iftekhar Mahmud Akand CI: Tusher Chakrobarty, Mohammad Akhlasur Rahman	better yield of newly released hybrid rice variety.	
13	Expt. 13. Dissemination of newly released BRRI varieties in Aus, T Aman and Boro seasons in greater Faridpur region PI: Mohammad Akhlasur Rahman CI:Tusher Chakrobarty	• To demonstrate the performance of newly released BRRI varieties in the farmers' fields.	5.5 Lac (SPIRA, TRB & GoB)
14	Expt 14. **:** On-farm performance evaluation Dry Direct Seeded Rice (DSR) as compared with transplanted rice (TPR) in Aus PI: Tusher Chakrobarty CI:Abhijit Saha, Mohammad Akhlasur Rahman	• Determine comparative advantage and disadvantages of DSR with respect to TPR • Identify suitable land types for DSR	4 Lac (CSISA-III)

Regional Station, Rangpur

Table –3
Proposed Research Program 2019- 2020

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 t/ha for T. Aman and ≥10 t/ha for Boro) rice varieties with improved modified plant type giving the thrust is to develop short duration varieties accompanied with tolerance to drought/cold, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.	
1.1	Germplasm collection and Hybridization	To introgress genes from diverse genetic background	30
1.2	Observational yield Trial (OYT)	Selection of homogeneous breeding lines	50

1.3	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 (>=06 t/ha for T. Aman and (>=08 for Boro season) rice varieties giving the thrust is to develop short duration varieties accompanied with tolerance to drought/cold, resistance to major biotic stresses (insect and diseases) and acceptable grain quality.**	
2.1	Field RGA	To advance segregating generation	30
2.2	Secondary Yield Trial (SYT) of BRRI dhan49 NILs	Evaluation of initial yield potential in replicated plots. Reaction to blast diseases	70
3.0	**Development of Medium stagnation and submergence Tolerant Rice (MSSTR)**	**To develop multiple stress tolerant rice varieties like stagnant flood and flash flood submergence with high yield potential (≥8 t/ha) under stress condition.**	
3.1	Germplasm collection and Hybridization	Germplasm collection and Hybridization	15
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	15
CROP-SOIL-WATER MANAGEMENT			
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	**False smut disease management of BRRI dhan49 through adjustment of N and K ratio at variable time of planting**	To adjust N and K ratio to minimize false smut disease of BRRI dhan49.	50
1.3	**Comparative study of**	To develop sustainable protection	50

	seedling protecting techniques in cold spell situation and it's carryover effect on field duration and yield	technology from cold injury at seedling stage.	
1.4	**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
1.5	**Effect of Zinc management on uptake pattern of BRRI dhan84**	To determine the uptake pattern of zinc with different zinc management in BRRI dhan84	20
		Total =	**455**

Regional Station, Satkhira-9400

Proposed Research Program 2019-2020

Sl. No.	Program area/ Project	Major Objective	Annual Budget Thousand Tk.
Revenue Program, Aus 2020			
1.	Seed production and dissemination program (SPDP)	To disseminate BRRI varieties rapidly among the farmers of this region	60.0
	Stability Analysis of BRRI Varieties in Aus season	To explore the suitability of rice varieties in Aman season	50.0
Revenue Program, Aman 2020			
2.	Proposed Variety Trial (PVT) Number of trial: 5	On-farm evaluation of proposed line by the NSB team for the recommendation to release a new variety	162.5
3.	Regional Yield Trial (RYT) Number of trial: 13	To evaluate specific and general adaptability of the advance breeding lines in on-station condition	325.0
4.	Effect of missing nutrient in T. Aman rice production	To find out yield limiting nutrient in T.Aman rice production	30.0
5.	Demonstration and dissemination of Aman rice varieties	To demonstrate and disseminate of Aman rice varieties to the farmers'	60.0

6.	Improvement the productivity of gher system	To increase total productivity and farm income	60.0
7.	Seed production and dissemination program (SPDP)	To disseminate BRRI varieties rapidly among the farmers of this region	40.0
8.	Stability Analysis of BRRI Varieties in T. Aman season	To explore the suitability of rice varieties in T. Aman season	60.0
9.	Field days and farmers' training	To disseminate and popularize BRRI varieties and rice production technologies to the farmers'	200.0
10.	Validation of T. Aman rice varieties for stagnant water	To identify suitable T. Aman rice varieties for stagnant water ecosystem.	30.0
11.	Demonstration of integrated rice-fish system	To identify suitable T. Aman rice varieties and intensify the total production	40.0
12.	Breeder seed production	To produce breeder seeds of BRRI released promising varieties and supply to GRS Division, BRRI Gazipur	150.0

Sl. No.	**Program area/ Project**	**Major Objective**	**Annual Budget Thousand Tk.**
Revenue Program, Boro 2019-20			
13.	Proposed Variety Trial (PVT) for Salt Tolerant Rice (STR) Number of trial: 9	On-farm evaluation of proposed line by the NSB team for the recommendation to release a new variety	292.5
14.	Proposed Variety Trial (PVT) for Short duration Rice (SDR)	On-farm evaluation of proposed line by the NSB team for the recommendation of release as a new variety	32.5
15.	Regional Yield Trial (RYT) Number of trial: 9	To evaluate specific and general adaptability of the advance breeding lines in on-station condition	180.0
16.	Evaluation of local landraces	Collection of local rice germplasm and evaluation of yield potentiality of local genotypes	20.0
17.	Effect of missing nutrient in Boro rice production	To find out yield limiting nutrient in Boro rice production	30.0

18.	Demonstration of Boro rice varieties for non saline gher	To identify suitable HYV Boro varieties for non saline gher	20.0
19.	Demonstration and dissemination of BRRI dhan67 for saline prone areas	To disseminate saline tolerant rice to the farmers' of saline affected areas in south-western coastal region	30.0
20.	Improvement the productivity of gher system	To increase total productivity and farm income	60.0
21.	Seed production and dissemination program (SPDP)	To disseminate BRRI varieties rapidly among the farmers of this region.	40.0
22.	Stability Analysis of BRRI Varieties in Aus, Aman and Boro season	To explore the suitability of rice varieties in respective season	60.0
23.	Field days and farmers' training	To disseminate and popularize BRRI varieties and rice production technologies	300.0
24.	Yield maximization of Boro rice in saline coastal area through nutrient management	To find out suitable potassium and nitrogen dose for saline affected area	60.0
25.	Breeder seed production	To produce breeder seeds of BRRI released promising varieties and supply to GRS Division, BRRI Gazipur	700.0
26.	Truthfully labeled seed production	To produce truthfully labeled seed as per regional and national demand	720.0

Transforming Rice Breeding (TRB) Program, Aman-2020
Total Budget (Thousand Tk.): 950.0 (Approx.)

Sl. No.	Program area/ Project	Major Objective	Annual Budget Thousand Tk.
27.	Participatory Varietal Selection (PVS) Number of trial: 8	Assessment of genotypes for specific and general adaptability by farmers participation	150.0
28.	Secondary Yield Trial (SYT) Number of trial: 5	Initial evaluation of yield, salt tolerance and other agronomic characteristics of selected materials in replicated trial.	100.0
29.	Preliminary Yield Trial (PYT) Number of trial: 17	Initial evaluation of yield, salt tolerance and other agronomic characteristics of selected materials in replicated trial	250.0
30.	Observational Yield Trial (OT) Number of trial: 2	Identification of genetically fixed lines from non-replicated trial suitable for saline areas	100.0

31.	Pedigree Nursery F_3, F_4, F_5 Number of trial: 6	Selection of desirable progenies from segregating population for salinity tolerance	120.0
32.	Rapid Generation Advance (RGA) F_2, F_4, F_5	Segregating populations are grown at very close spacing, high temperature and short days to shorten growth duration, thus making possible several generations per year	80.0
33.	Antenna Panel Trial Number of trial: 39	Establish a global rice array to generate genomics and phenomics data	150.0
Breeding Zone Trial (BZT) Program, Aman 2020			
34.	Breeding Zone Trial (BZT)	1. To understand and select the best performing breeding lines with highest genetic merits across the multiple environments of Bangladesh, 2. Development of regional basis database for future breeding program.	400.0

Transforming Rice Breeding (TRB) Program, Boro 2019-20

Total Budget (Thousand Tk.): 560.0 (Approx.)

Sl. No.	Program area/ Project	Major Objective	Annual Budget Thousand Tk.
35.	Participatory Varietal Selection (PVS) Number of trial: 5	Selection of genotypes by active farmers' participation suitable for saline prone areas	125.0
36.	Advanced Yield Trial (AYT) Number of trial: 5	Confirmatory yield evaluation of selected materials for salt tolerance and other agronomic traits in replicated trial	80.0
37.	Preliminary Yield Trial (PYT) Number of trial: 19	Initial evaluation of yield, salt tolerance and other agronomic characteristics of selected materials in replicated trial	150.0
38.	Observational Yield Trial (OT) Number of trial: 11	Identification of genetically fixed lines from non-replicated trial suitable for saline areas comparing to yield potential under field condition	60.0
39.	Pedigree Nursery F_5	Selection of desirable progenies from segregating population for salinity tolerance	50.0
40.	Rapid Generation Advance (RGA) F_2, F_5	Segregating populations are grown at very close spacing, high temperature and short days to shorten growth duration to grow several generations per year	70.0

41.	Least Stage Trial (LST)	More than 95000 lines were evaluated for further advancement	150.0
Breeding Zone Trial (BZT) Program, Boro 2019-20			
42.	Breeding Zone Trial (BZT)	1. To understand and select the best performing breeding lines with highest genetic merits across the multiple environments of Bangladesh, 2. Development of regional basis database for future breeding program.	250.0

Climate resilient farming systems research and development for the coastal ecosystem (Project ID: 098), Boro 2019-20
Total Budget (Thousand Tk.): 930.0 (approx.)

Sl. No.	Program area/ Project	Major Objective	Annual Budget Thousand Tk.
43.	Validation of T. Aman rice varieties for coastal ecosystem	To identify suitable T. Aman rice varieties in the saline coastal ecosystem	50.0
44.	Validation of T. Aman rice varieties for stagnant water	To identify suitable T. Aman rice varieties for stagnant water ecosystem	50.0
45.	Seed production and dissemination program (SPDP)	To disseminate BRRI varieties rapidly among the farmers of this region	60.0
46.	Determination of nitrogen rate in saline coastal area during Boro season	To find out suitable nitrogen dose for Boro rice in saline affected coastal area	40.0
47.	Determination of Potassium rate in saline coastal area during Boro season	To find out suitable potassium dose for Boro rice in saline affected coastal area	40.0
48.	Determination of seedling age of BRRI dhan67 in saline coastal area	To find out suitable seedling age of BRRI dhan67 in saline coastal area	40.0
49.	Yield and salinity of BRRI dhan67 field as affected by AWD in saline coastal area	To find out suitability of AWD method in Boro rice in saline coastal area	50.0
50.	Improvement of cropping patterns in saline coastal ecosystem	To find out profitable cropping pattern in the coastal saline area	50.0
51.	Rice production technology in saline gher	To grow rice in saline affected coastal gher areas	40.0
52.	Introduction of turkey rearing in homestead area	To increase household income by producing highly profitable turkey	40.0

		production with the participation of rural women farmers	
53.	Goat raring in homestead area	To increase household income by raring Black Bengal goat with the participation of rural women farmers	40.0
54.	Duck raring in mini-pond and homestead area	To increase household income by raring Ducks with the participation of rural women farmers	40.0
55.	Chicken raring in homestead area	To increase household income by raring hen with the participation of rural women farmers	40.0
56.	Homestead vegetable gardening	To increase household nutrition and income	30.0
57.	Establishment of mini orchard	To increase household nutrition and income	30.0
58.	Growing spices under perennial trees	To increase household nutrition and income	30.0
59.	Mixed fish production in mini-pond	To increase household income by mixed fish cultivation in mini-pond	50.0
60.	High price fish production in gher	To increase household income by high value fish cultivation in gher	30.0
61.	Mixed fish production in mini-pond	To increase household income by mixed fish cultivation in mini-pond	40.0
62.	Mixed rice-fish-vegetable production in gher land	To increase household income by rice-fish-vegetable cultivation in gher	40.0
63.	Demonstration of BRRI dhan67 for saline affected areas	To disseminate saline tolerant rice to the farmers of saline affected areas in south-western coastal region	30.0
64.	Demonstration of BRRI released new/latest varieties in saline coastal areas	To disseminate suitable new rice varieties in south-western coastal region	30.0

BRRI Regional Station, Sonagazi, Feni

Proposed Research Program 2019-20

Sl. No	Project	Major Objective	Annual Budget (Thousand Tk.)
Project 01. Evaluation and collection of Breeding Materials			

1.1	Regional Yield Trial (RYT) during Aus 2019, T. Aman 2019 & Boro, 2019-20	To evaluate the regional adaptability of selected genotypes under on-station condition.	1500
1.2	Advanced Lines Adaptive Research Trial (ALART) during Aus 2019, T. Aman 2019 & Boro, 2019-20	To evaluate the yield potential and adaptability of advanced breeding lines at farmer's field in different agro-ecological zones of the country.	300
1.3	Stability analysis of BRRI varieties during Aus 2019, T. Aman 2019 & Boro, 2019-20	To test the stability of BRRI released varieties under different agro ecological conditions prevailing at different regions of the country.	1200
1.4	Germplasm collection during Aus, Aman and Boro seasons.	Enrichment of gene bank.	150
Sub total			**3150**

Sl. No	**Project**	**Major Objective**	**Annual Budget (Thousand Tk.)**
Project 02: Crop Management			
2.1	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 study the benefit cost ratio of different non rice crop which can easily cultivated T. Aman. iii.To suggest the farmers a best crop combination considering the existing practice**.**	50
2.2	Yield maximization in Badhe system using appropriate varieties practicing at Noakhali and Feni districts.	i.To identify the suitable rice variety for unfavorable land type at Laxmipur and Noakhali districts. ii.To maximize yield using MV rice in existing farmers practice Badhi system. iii.To collect the farmers feedback about MV rice for double transplanting Badhi system.	10

2.3	Determination of suitable time of transplanting by uprooting seedlings from dibbled field	To identify suitable age of dibbled plants for uprooting and transplanting	10
Project 03: Insect and Disease Management			
3.1	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
3.2	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
3.3	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.	50
Sub total			**270**

Sl. No	**Project**	**Major Objective**	**Annual Budget (Thousand Tk.)**
Project 04: Seed Stock Enrichment			
4.1	Production of Breeder Seed.	To produce Breeder seeds with a target amount as per national demand.	2000
4.2	Truthfully labeled seed production	To increase the rice seed availability for the farmers.	5000
Project 05: Technology Dissemination			
5.1	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
5.2	Farmers' Training	i. To update knowledge and skills of farmers on modern rice production technologies. ii.To enhance dissemination of new	240

		technologies among the farmers	
5.3	Field Days	i.To create awareness and interest among farmers, local leaders, elite persons, NGO workers and DAE personnel about BRRI varieties and technologies. ii.To promote dissemination and get feedback about BRRI technologies from the participants.	250
5.4	Agricultural Fair	To display the BRRI released modern technologies among all categories of people.	100
Sub total			**8390**
Grand Total			**11810**

Regional Station, Sagardi, Barishal

Proposed Research Program 2019-20

Sl no	**Programme area/Project with duration**	**Major Objective**	**Budget Thousand Tk**
Programme area/Project with duration: Regional Station, 2019-20			
1	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
2	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
3	Introgression of dense-erect panicle and blast resistant gene in indica rice (*Oryza Sativa* L.) to improve plant architecture and blast resistance	-To improve resistance in rice plant against blast disease	100
4	Collection, 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
5	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

Sl no	Programme area/Project with duration	Major Objective	Budget Thousand Tk
6	Advanced Yield Trial (AYT) for high yielding rice	- To evaluate the adaptability and yield potential of advanced lines	100
7	Regional Yield Trial (RYT) for high yielding rice	-To test the yield potential and adaptability of advanced lines of rice	100
8	Research program under TRB	-Objectives of TRB	1000
	Research program under Golden Rice Project	-Objectives of Golden rice project	500
9	Proposed variety evaluation trial of hybrid rice	-To evaluate the best performing hybrid rice provided by different companies	150
10	Multi location trial (MLT) of hybrid rice	-To develop hybrid rice	25
11	Collection and characterization of causal organism (*Magnaportheoryzae)* of Rice Leaf blast and neck blast disease in Barishal region.	-To collect the pathogen samples of blast diseased plant from the farmers' fields of Barishal region. -To isolate, grow and characterize the organism separately from collected LB and NB samples -To study the morphological diversity of *M. oryzae*isolates.	150
12	Survey and monitoring of rice diseases in selected areas	-To investigate the status of different rice diseases in southern region of Bangladesh	100
13	Screening of new chemicals against blast disease of rice	-To find out effective chemical against blast disease of rice	100
14	Demonstration of blast and BB disease management practices of rice at farmers' field	-Enhancement of rice yield through blast and BB disease management practices	100
15	Insect pest and natural enemy incidence in light trap at BRRI Barishal	to know the seasonal occurrence, distribution and severity of major insect pests and their natural enemies at BRRI Farm, Barishal.	50
16	Perception of pesticide uses among Barishal region farmers	To asses level of knowledge and awareness of farmers pesticide use in crop field. To asses pesticide use scenario of rice field.	50
17	Survey of rice insect pests in Barishal region	To find the incidence patterns of the major rice insect pests and their natural enemies in barishal region and to examine relationship between abiotic factors on their abundance.	50

Sl no	Programme area/Project with duration	Major Objective	Budget Thousand Tk
18	Assessment of suitable water resources availability for irrigation to increase crop production in tidal areas of Barishal region.	To measure the dynamics of surface water salinity.	100
19	Assessment of potential rice (Aus, Aman, and Boro) cultivation area in Barishal Region.	-To identify the major constraints of rice cultivation -To explore available surface water sources and quantify potential area coverage by this available water	100
20	Use of Less Saline Water Resources for increasing Cropping intensity in Barishal Region	-To bring fallow land under Boro cultivation and to improve water and land productivity in the region by technology intervention such as low lift pump, plastic pipe distribution system and AWD technology.	50
21	Long-term missing element trial to diagnose limiting nutrient in soil.	-To find out yield limiting nutrient in soil.	100
22	Stability analysis of BRRI released rice varieties	-To observed the yield performance of BRRI released rice varieties	100
23	Demonstration trial under SPIRA	-To demonstrate the yield performance and suitability of modern rice varieties in Barishal region	175
24	Demonstration trial under TRB	To disseminate latest HYV of rice varieties in Barishal region	100
25	Demonstration, seed production and scaling up of MV rice in Barishal region	To disseminate modern rice varieties in Barishal region	300
26	Demonstration trial under GSR	To disseminate BRRI dhan69 in Barishal region	500
27	Breeder seed production	-To produce breeder seed for disseminating BRRI released HYV of rice s	1000
28	TLS production	-To produce TLS seed for disseminating BRRI released HYV of rice	500
29	Hybrid seed production	-To disseminate BRRI released Hybrid varieties to farmers of Barishal region	150
30	Farmers' training	To train farmers about BRRI developed technologies	240
31	Farmers' field day	To make the farmers familiar with HYV of rice	200

Sl no	Programme area/Project with duration	Major Objective	Budget Thousand Tk
32	Other extension and dissemination activities	To make the farmers familiar with HYV of rice and other technology	50
33	Uses of farm machineries to enhance the productivity at BRRI Barishal	- to enhance rice productivity at BRRI Barishal	300

BRRI Regional Station, Cumilla

Proposed Research programme, 2019-2020

Sl. No.	Programme area/project (Duration)	Major Objective(s)	Amount budget (Thousand Tk.)
	Varietal Development Program Area		
01.	**Development of Transplanted Aus Rice (Head Quarter Program)**		
1.1	Advanced Yield Trial (AYT)-BRRI Cumilla program	Evaluation of advanced breeding lines for development of variety suitable for Cumilla region.	150
1.2	Preliminary Yield Trial (PYT)	Evaluation of initial yield potential in replicated plots.	150
1.3	Regional Yield Trial (RYT-1)	Evaluation of agronomic performance, specific and general adaptability under on station condition	50
1.4	Regional Yield Trial (RYT-2)	Evaluation of agronomic performance, specific and general adaptability under on station condition	100
1.5	Regional Yield Trial (RYT-DW1)	Evaluation of agronomic performance, specific and general adaptability under deep water condition in farmers field	150
1.6	Regional Yield Trial (RYT-DW2)	Evaluation of agronomic performance, specific and general adaptability under deep water condition in farmers field	150
1.7	Advanced Line Adaptive Trial (ALART)	To evaluate the yield potential and adaptability as well as zinc enrichment at farmers field	150
2.0	Development of Transplanted Aman Rice with high yield,		

	short duration, water stagnation, premium quality, disease resistant (tungro) & multi stress tolerant (BRRI R/S, Cumilla own program);		
2.1	Hybridization	Introgression of genes from diverged genetic background into rice varieties/lines for the improvement of standard T. Aman varieties	50
2.2	Confirmation of F_1	To confirm the crosses as true hybrid	50
2.3	Growing of F_2 population	Selection of progenies with emphasis on earliness, plant type, grain type and high yield potential compared to standard varieties	100
2.4	Pedigree nursery	Selection of progenies with improved plant type, earliness, acceptable grain quality and high yield potential compared to standard varieties	100
2.5	Observational Trial (OT)	Selection of homogeneous breeding lines with acceptable grain quality having high yield with good plant type	150
2.6	Preliminary Yield Trial (PYT) Com	Initial yield evaluation of advanced lines compared to standard checks	100
2.7	Preliminary Yield Trial (PYT-1) (ING-1)	Initial yield evaluation of water stagnation advanced lines compared to standard checks	100
2.8	Preliminary Yield Trial (PYT-2) (ING-2)	Initial yield evaluation of water stagnation advanced lines compared to standard checks	100
2.9	Preliminary Yield Trial (PYT-GSR)	Initial yield evaluation of water stagnation advanced lines compared to standard checks	75
2.10	Secondary Yield Trial (SYT) COM	Confirmation of potential of advanced lines compared to standard checks	80
2.11	Advanced Yield Trial (AYT-1) COM	Evaluation of advanced breeding lines for development of variety suitable for Cumilla region	100
2.12	Advanced Yield Trial (AYT-2) WS	Evaluation of advanced breeding lines for development of water stagnant variety suitable for Cumilla region	100

3.0	Development of Boro Rice with high yield, short duration, water stagnation, premium quality, disease		
3.1	Hybridization	To develop breeding population with high yield potential along with earliness and acceptable grain quality	50
3.2	F_1 Confirmation	To confirm F_1 s as true crosses	75
3.3	Growing of F_2 population	Selection of progenies with emphasis on earliness, strong culm, high yield potential and disease and insect resistance at field condition	100
3.4	Pedigree Nursery (F_3, F_4, F_5 F_6 and F_7)	Selection of desirable segregates with emphasis on earliness, strong culm, high yield potential and disease and insect resistance at field condition	100
3.5	Observational Trial (OT)	To select genetically fixed lines/ homogenous lines with uniform plant height, heading, plant type and acceptable grain quality along with high yield potential	100
3.6	Preliminary Yield Trial (PYT)	Initial yield evaluation and selection of desirable lines compared to standard checks	125
3.7	Secondary Yield Trial (SYT)	Confirmation of yield evaluation in a replicated trial and selection of desirable lines compared with standard checks	125
3.8	Advanced Yield Trial	To evaluate the advanced breeding lines for development of variety suitable in Cumilla region	100
3.9	RYT (COM)	To evaluate the advanced breeding lines for development of variety suitable in different regions of Cumilla.	35
4.0	Crop-soil-water management (Soil)		
4.1	Long-term effects of some macro and micronutrients on growth and yield	1. Determine nutrient deficiency problems in soil through missing elements techniques.	300
4.2	Effect of N rates on the yield of BRRI dhan87	To determine the N response behavior of BRRI dhan87	100
4.3	Evaluation of bio-	1.To evaluate efficiency of	80

	organic fertilizer in the soil plant soil system	biofertilizer to promote rice plant growth and yield	
	Boro 2017-18		
4.4	Long-term effects of some macro and micronutrients on yield and nutrition of upland rice	1. Determine nutrient deficiency problems in soil through missing elements techniques.	300
4.5	Effect of N rates on the yield of BRRI dhan89	To determine the N response behavior of BRRI dhan87	100
4.6	Evaluation of bio-organic fertilizer in the soil plant system	1.To evaluate efficiency of biofertilizer to promote rice plant growth and yield	80
	Crop soil water management (Agronomy)		
4.7	Effect of time of planting on growth and yield of newly BRRI developed Aman varieties	To find out the appropriate time of planting for yield optimization	100
4.8	Effect of time of planting on growth and yield of newly BRRI developed Boro varieties	To find out the appropriate time of planting for yield optimization	80
4.9	Yield maximization of Aman rice through nutrient management	To maximize growth and yield of Aman rice	100
4.10	Yield maximization of Boro rice through nutrient management	To maximize growth and yield of Boro rice	100
5.0	Pest Management		
5.1.	Survey and yield loss assessment of rice blast disease in Cumilla, Chadpur and B Baria district	1. To know the prevalence of Major rice disease blast 2. To assume the rice yield losses due to blast	100
5.2.	Validation of rice blast disease management using BRRI recommended practices	1. To minimize yield loss due to blast disease 2. To build up farmers awareness on blast disease management	200
5.3	Integrated management	To eliminate rice tungro disease	600

	of rice tungro disease in Cumilla region	from Cumilla region	
5.4	Tracking the infection source of rice false smut disease	To identify whether the seed/soil and/ or the air is/are the carrier of the pathogen or not	100
5.5.	Advisory services to the farmers	1. To help the farmers for rice production 2. Disseminate the direct services to the farmers problems for rice production by visiting the farmers field	200
6.0	Rice Farming Systems		
6.1	Multilocation trial of different BRRI varieties in major cropping patterns	To introduce BRRI dhan85 in Aus season, BRRI dhan75 and BRRI dhan87 in T. Aman season, BRRI dhan84, & BRRI dhan89 in Boro season under 3 rice cropping pattern to increase total system production	200
7.0	Technology transfer		
7.1	Demonstration of different BRRI varieties in Cumilla region	1. To demonstrate and disseminate BRRI varieties in greater Cumilla region 2. To increase seed availability of BRRI varieties at farmers' level.	600
7.2	Farmers training and Field days	To demonstrate performance of technologies for rapid dissemination.	500
7.3	Breeder and TLS seed production.	To increase of breeder seeds and TLS seed for Boro and Aman season	2000

BRRI Regional Station, Gopalganj

Proposed Research programme, 2019-2020

Sl. No.	Programme area/project (Duration)	Major Objective(s)	Amount budget (Thousand Tk.)
01.	**Program Area: Technology Transfer**		

1.1	Demonstrations of newly released BRRI varieties	To disseminate and popularize the varieties among the farmers in Gopalganj	20
1.2	Multiplication of seeds of popular and newly released BRRI varieties	To preserve and maintain good seeds of BRRI HYVs for dissemination among the farmers.	50
2	**Program Area: Crop-Soil-Water Management**		
2.1	Response of MV rice to added Nitrogen in Boro-Fallow-T.Aman cropping pattern in AEZ 14	To determine the optimum nitrogen doses for newly released Boro and T. Aman modern varieties.	50
		Total =	**120**