Research Program 2021-22

Sl #	Project title and Expt.	Objectives	Budget (Lac Tk.)
Sub-sub program I: Soil Fertility and Plant Nutrition			
I.	**Fertility Assessment of Rice Soils and Nutrient use efficiency in rice**	To assess fertility status of rice growing areas and determine optimum fertilizer requirement	-
	1.1. Increase N use efficiency through nanotechnology and zeolite amendment	• To assess N use efficiency by urea-HA nanohybrid and urea plus natural zeolite over prilled urea	5.0
	1.2. 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.	5.0
	1.3. Management interventions to improve NUE and reduce N losses in typical rice cropping system of Bangladesh	• To quantify the fate of N fertiliser (crop, soil and losses) and NUE under various N managements for double rice cropping. • To develop locally based mitigation options that can be compared within plot based experiments.	UKRI GCRF SANH Project
	1.4. Determination of N fertilizer doses for ALART (BB res.) materials	• To determine optimum N doses for ALART materials	4.0
	1.5. Determination of N fertilizer doses for new BRRI varieties	• To determine optimum N doses for newly released BRRI varieties.	4.0
	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	4.0
	1.7. Screening of N use efficient rice genotypes	• To find the N use efficient genotypes • To find the agronomic traits related to efficient N management • GWA mapping of selected NUE lines	UKRI GCRF SANH Project
	1.8. Performance of BRRI rice varieties under P deficient soil	• To find out P efficient rice varieties	2.0
	1.9. Effect of different micronutrients on growth and yield of rice	• To study the effect of micronutrients and beneficial nutrients on growth and yield of rice • To observe the interactions among the different micro nutrients and beneficial nutrients • To study the effect of micronutrients and beneficial nutrients on soil biochemical	2.0

		properties	
	1.10. Effect of long-term rice farming on the changes of soil nutrient status of BRRI Farm soil	• To determine the changes occurred in soil carbon and plant nutrient status in BRRI farm soil due to long-term rice farming • To develop a fertility map of the soils of the study area • To devise a nutrient dynamics model to estimate the nutrient status on long-term basis	2.0
	1.11. Regional Yield Maximization Trial under Recommended Management Practices	• To validate integrated improved management practices (IIMP) compared with BRRI recommendation practices • To maximize proper filling of grains in a panicle under IIMP	1.5
	1.12. Response of Rice to Potassium in Rice-based Cropping Pattern in Old Himalayan Piedmont Soil	• To maximize yield of rice-based cropping pattern • To identify nutrient mining of soil (especially K) • To maintain soil fertility	2.0
	1.13. Potassium fertilizer management for rice-based cropping patterns in Old Himalayan piedmont soil of AEZ-1	• To identify the K deficiency in soil • To determine the K contribution for different crops • To increase yield and maintain soil fertility	3.0
	1.14. Determination of Phosphorus Fractions from Long-term Phosphorus deficient Experiment	• To quantify the fractions of P in long-term P applied soils • To identify the mining nutrient • To identify the N-P and N-K ratio for optimum rice yield	2.0
	1.15. Soil profile study of the research farms of different BRRI Regional stations	• To characterize the soils of the research fields of the BRRI Regional stations; • To classify the soils according to the world soil classification system. • To identify the soil fertility capability classification.	3.0
	1.16. Determination of ideal characteristics (physical, chemical and biological) of fertile wetland rice soil in selected research field of BRRI regional stations	• To determine the physical, chemical and biological properties of ideal farm soil. • To compare the ideal farm soil with non-ideal soil.	3.0

		• To compare the performance of rice crop in ideal soil with that of non-ideal soil	
Sub-sub program II: Nutritional disorder of soil			
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 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)	2.0
	2.2. 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	3.0
	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	1.2
	2.4. 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
Sub-sub program III: Integrated nutrient management			
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.	2.0
	3.2. Increase rice yield through organic and inorganic amendment	• To study the effect of vermicompost and silicon on rice grain yield while maintaining soil health	2.0
	3.3. Soil management to maximize the yield of newly released rice varieties	• To maximize rice yield through organic and inorganic amendments while maintaining soil health in BRRI farm	4.0
	3.4. Effects of long-term rice cultivation with organic amendments on soil quality	• To observe the changes in soil quality indicators due to rice cultivation for long term rice cultivation with organic manure	2.0

		• To assess the potential of the amended soils to sustain the yield level of rice	
	3.5. Estimation of C and N flows in a village and developing methods to improve soil C and N within the system	• To estimate major C and N flows in a village • To develop treatments to improve soil C stock and N use efficiency in the farming system	Project
	3.6. Nutrient management under conservation agriculture in double rice cropping system at AEZ 26	• To identify the nutrient requirement of crop and to improve soil health under CA practice in Boro-Fallow-T. Aman cropping pattern.	3.0
Sub-sub program IV: Soil and Environmental Problems			
IV.	**Heavy metal pollution study**	To study the contamination by heavy metal in the rice fields	
	4.1. Effect of different organic sources for amelioration of industrial polluted area	• To evaluate the efficacy of bio-organic fertilizer for growth and yield of rice • To assess the impact of bio-organic fertilizer on soil health	2.0
	4.2. Increase Rice Yield through Vermicompost in Coastal Land	• To assess the impact of vermicompost on the yield of rice in coastal saline soil	3.0
	4.3. Effect of biochar on rice yield and soil health on problem soils	• Optimum rate of biochar for rice cultivation in charland soil • Increased rice yield and improved soil health	2.0
	4.4. Effects of different sources of fertilizer and variety on rice production in saline soil	• To develop suitable integrated nutrient management package utilizing local resources, which could help sustaining rice production with maintaining soil fertility.	3.0
Sub-sub program V: Soil Microbiological Studies			
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 of bio-organic fertilizer for growth and yield of rice. • To assess the impact of bio-organic fertilizer on soil health	5.0
	5.2. Microbial characterization of different AEZs soil and formulation of biofertilizer for rice cultivation in acid and saline soil	• To assess soil bio-physico-chemical properties of different AEZ's of Bangladesh and characterize potential plant growth promoting bacteria (PGPB) • To develop bio-fertilizer using potential microbes for rice	NATP

		cultivation in acid and saline soil	