BANGLADESH RICE RESEARCH INSTITUTE
SUMMARY OF THE ANNUAL RESEARCH PLAN FOR THE YEAR 2025-2026

Program Area (01): Varietal Development Program (VDP)
Sub-program/VDP component (03): Rice Germplasm and Seed
Program performing unit (04): Genetic Resources and Seed Division (GRSD), BRRI

SN	Experiments /Activities	Specific Objective(s)	Year of Initiation	Materials and Method	Name of PL, PI and CI	Season	Locations	Budget (Lakh Tk.) source
				A. Rice Genebank				
1	**Project 01: Rice Germplasm Collection and Conservation**	Collection and conservation of rice germplasm to enrich the Genebank of BRRI and sharing with rice researchers			**PL: Dr. Md. Abubakar Siddique**			**5.0 GOB**
1.1	Collection of rice germplasm	To collect cultivated and wild rice germplasm from unexplored areas of Bangladesh and to store the collected rice germplasm for different users	1974	At least 200 rice germplasm will be collected from under explored area determined through grid mapping of the genebank accessions.	PI: Head CI:All GRS Scientists.	T Aman and Aus	All over the country.	5.0 and LSTD fund
Expected Output:		• Collected germplasm will be conserved safely and documented along with their characters in Genebank and in computer database. • Conserved germplasm with valuable traits will be made available for utilization as parent material(s) for developing new variety(s)/genotype(s).						
2	**Project 02: Rice Germplasm Maintenance and Management**	Rejuvenation, purification and characterization of rice germplasm for perpetuating genebank accessions and its sharing with rice researchers			**PL: Dr. M Zahidul Islam**			**7.5 GOB**
2.1	Viability testing, periodic evaluation and routine monitoring of stored Germplasm	To investigate status of germination of the Genebank accessions.	1974	Randomly chosen 300 germplasm from short-term, 300 from medium term and 300 from long term storage will be used for germination test. Viability monitoring will be performed twice a year – 1st in March and 2nd in September.	PI: Head CI: MZI (March), MH (September)	T Aman and Aus	BRRI, Gazipur	0.50
2.2	Rejuvenation and conservation of rice germplasm	To rejuvenate the Genebank accessions with fresh stock and to register the new collection by giving BRRI Genebank accession number after cross checking the duplication	1974	In T. Aman 2024: 1500 germplasm between acc. no. 5001- 7500	PI: Head CI:All GRS Scientists	T Aman and Aus	BRRI, Gazipur	1.0
2.3	Purification of germplasm in the rejuvenation nursery	To isolate pure and homogeneous germplasm line(s)	2024	In T. Aman 2024: 1500 germplasm between acc. no. 5001- 7500 1. Matching with catalogue 2. Tagging of plants 1) Green Tags – declare Pure 2) Yellow Tags – declare Pure by slight roguing	PI: Head CI:All GRS Scientists	T Aman and Aus	BRRI, Gazipur	0.50

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				3) Red Tags – peer review/catalogue call 1. Harvest plants individually from each accession and checking the panicles for genetic purity by the scientists				
2.4	Purification of germplasm through rapid generation advance	To isolate pure and homogeneous germplasm line(s)	2024	150 priority germplasm that have been used in different breeding programs to address different policies of the government will be purified through application of QC SNP markers followed by SSD based RGA technique will be used.	PI: MMH CI: MZI, PSB	T Aman and Aus	BRRI, Gazipur	5.00
2.5	Morphological characterization and documentation of rice germplasm	To characterize and document the rice germplasm as per BRRI prescribed "Germplasm Descriptors and Evaluation Form" as developed from biodiversity international and UPOV convention	1990	A total of 100 germplasm; 50 each in T. Aman, and T. Aus seasons will be morphological characterized through 53 morpho-agronomic characters by using the 'Rice Germplasm Descriptors and Evaluation Form (2018) and documented in the database	T Aus: PI: MZI; CI: MMH T. Aman: PI: TC; CI: MSA	T. Aman, and T. Aus	BRRI, Gazipur	1.0
Expected output:	• Genebank accessions will be routinely rejuvenated avoiding duplicates and documented in the restricted database. • Conserved germplasm with valuable traits will be made available for utilization as parent material(s) for the breeding programs. • .							
3	**Project 03: Exploratory and Genetic Studies.**	**Exploratory and genetic studies of rice germplasm.**			**PL: Dr. Ebna Syod Md. Harunur Rashid**			**49.5 GOB, KGF-GIFS, LSDT project**
3.1	Study agronomic performance and photo inductive cycle of the selected photoperiod sensitive rice germplasm collected from Northern districts of Bangladesh	To identify agronomically superior germplasm suitable for post flood late transplanting	2021	A total of 6-8 germplasm selected from previous years trials will be evaluated under late transplanting situation for yield and component traits. Photo-inductive cycle will be studied in collaboration with Plant Physiology Division.	PI: ESMHR CI: Head, Plant Physiology	T. Aman.	GRSD Field and Plant Physiology, Gazipur	0.50

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3.2	Development of a duplicate free core set of rice germplasm through QC genotyping and GBS profiling	• to optimize quality checking (QC) standards. • to sort and filter out duplicates of the genebanks accessions. • determination of sequence-based genetic distance and deploying trait-based SNPs.	2024	Around 300 rice germplasm (2400 plant samples) will genotyped using QC-SNP indica panel through outsourcing Extracted DNA of around 300 accessions (1200) plant samples will be used in GBS profiling.	PI: MAS CI: MZI, NM, PSB	Year round	BRRI, Gazipur	KGF, GIFS, LSTD, PARTNER fund
3.3	Whole Genome Sequencing of GBS purified germplasm	• to develop a sequence repository for downstream analysis. • to facilitate discovery of novel genes and variants associated with traits of interest.	2024	A total of 177 rice germplasm purified through GBS profiling will be used for WGS through outsourcing.	PI: MAS CI: MZI, NM, PSB	**Boro**	GRSD and outside for outsourcing	30.0
3.4	Trait discovery and validation of landrace varieties for specific adaptability (salinity, blast)	• To explore trait marker association for identifying genomic regions/QTLs/genes. • To develop functional makers and validate for specific traits required for climate resilience.	2024	The GBS purified or WGS accessions will be evaluated against salinity/drought tolerance. GWAS will be performed to identify the genomic regions/QTLs/genes based on targeted traits.	PI: MAS CI: MZI, NM, PSB, Scientists from Plant Physiology and Plant Pathology	Year round	GRSD and Plant Physiology	5.0
3.5	Deciphering the genetic potential of native rice (Oryza sativa L.) landraces for tolerance to anaerobic germination	To evaluate the rice accessions for anaerobic germination tolerance SNP markers will be used in this study to screen the genotypes for GWAS and to identify the novel QTLs/ genes for AG-related traits by exploring Bangladeshi landraces.	2024	The GBS purified acc. or Aus acc. will be evaluated for tolerance to anaerobic germination.	PI: MZI CI: MMH, MAS, PSB, Head Physiology Div.	Year round	GRSD and Plant Physiology	1.0
3.6	Development of core collection of Pajam group of rice germplasm accessions from BRRI Genebank	To develop the core collection of similar named Pajam group of rice germplasm accessions for pre-breeding materials	2025	Twenty-three (23) similar named Pajam group of rice germplasm accessions from BRRI Genebank along with BR25, BRRI dhan49 and BRRI dhan108 will be evaluated for Agro-morphological and yield contributing traits during T. Aman 2025 for developing its core collection	PI: MSA. CI: TC, NM and MZ	T Aman	GRSD	0.5
3.7	Development of a duplicate free core collection of Nazirsail group of rice germplasm	To identify a duplicate free sub-set of Nazirsail germplasm accessions for future varietal development program	2024	Thirty-three (33) similar named Nazirsail group of germplasm accessions from BRRI Genebank along with BR4, BR22, Nizersail (DA-25) and BRRI dhan49 will be characterized for yield contributing traits	PI: MSA CI: TC, NM and AB.	T. Aman	Field and Mol. Lab, GRSD, BRRI, Gazipur.	2.0

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3.8	Evaluation of agronomic performance for Aus rice germplasm of BRRI Genebank for developing its core collection	To evaluate the agronomic performance of Aus germplasm of BRRI Genebank for developing its core collection	2025	A total of 52 Aus rice germplasm accessions of BRRI Genebank along with BRRI dhan42 and BRRI dhan43 will be grown during T. Aus 2026 season. Data on seedling height, culm diameter and height, effective tiller number, panicle length, date of flowering, date of maturity, filled grain number, unfilled grain number, grain length, breadth, decorticated grain length, breadth, TGW, grain yield per hill and plot will be recorded for developing its core collection.	PI: MSA. CI: NM, TC and MMH	T Aus	GRSD field	0.5
3.9	Determination of duration of flowering of all Breeder seed producing BRRI developed rice varieties	To determine the duration of flowering of all Breeder seed producing BRRI developed rice varieties for Preparing leaflet on 'Maintaining proper isolation distance in breeder seed plot'	2025	All the Breeder seed producing BRRI varieties at GRSD, BRRI of which 46 in T. Aman 2025 and 27 in Boro 2025-26 seasons will be used for data recording. Sample plants will be the 250 border line plants of each side of each plots. Data on date of flowering (date of anthesis) of both main tiller and panicle bearing tertiary tiller from each variety plot for i) First 5 plants ii) 50% plants iii) Last 5 plants will be recorded.	PI: MSA. CI: ESMHR, MAS, MZI, TC, NM, MMH and PSB.	T Aman	GRSD field	0.5
3.10	Purification and characterization of aromatic rice accessions	To develop a duplicate free aromatic rice germplasm panel	2024	All the aromatic rice accessions present (>150) in the genebank (113) will be characterized for yield and grain size and shape, aroma quality using GCMS trait SNP markers analysis.	PI: AB CI: PSB, GQN Scientist	T. Aman	BRRI, Gazipur & Outsourcing	2.0
3.11	Characterization of Biruin rice germplasm for yield and component traits, amylose and	Investigate amylose and antioxidant content in the Biruin germplasm	2023	Forty-eight Biruin accessions in T. Aman season will be used for this study.	PI: AB CI: MAR, GQN Scientist	T. Aman	GRSD Field and GQND Lab, BRRI	1.0
3.12	Assessment of agronomic performance and trait-based phenotypes of Aus Germplasm	To investigate agronomic performance and response to different biotic and abiotic stress	2023	A total of 100 non-Jhum/non-hilly Aus germplasm available in BRRI genebank will be evaluated against Blast, tungro, heat, preharvest sprouting, anaerobic germination	PI: TC/ESMHR/MZI CI:PSB, Scientists from Plant Pathology and Plant Physiology Division	Aus	BRRI, Gazipur.	1.0
3.13	Molecular characterization of Aus rice germplasm collected from greater Kushtia region of Bangladesh	To characterize the rice germplasm through molecular tools using SNP QC and trait SNP panel	2023	Sixty-six (66) rice germplasm of Aus season from greater Kushtia region (Kushtia, Chuadanga and Meherpur) will be characterized at molecular level using QC and trait SNP panel	PI: NM CI: MAS, TC, MAR	Aus	BRRI, Gazipur.	1.0

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3.14	Assessment of agronomic and physico-chemical properties of long slender rice germplasm	• To characterize the rice germplasm • To assess the physico- chemical properties including elongation ratio, amylose and aroma content of the long slender rice germplasm	2023	A total of 20 purified fine rice germplasm which was not will be evaluated for agronomic traits and grain quality	PI: MHKB CI: MSA, ESMHR, MAS, GQN Scientist	T. Aman	BRRI, Gazipur.	0.50
3.15	Assesment of physico – chemical properties of red rice germplasm of Bangladesh	To assess the phyco-chemical properties including amylose, mineral and aroma content of the red rice germplasm	2023	A total of 15 Red rice germplasm of Bangladesh will be investigated.	PI: MHKB CI: MSA ESMHR, MAS, Scientist from GQN division	Year round	BRRI Gazipur	0.50
3.15	Morphological and molecular characterization of wild rice accessions	i. To characterize the wild rice accessions. ii. To make a core collection of wild rice accessions.	2024	A total of 77 accessions of wild rice from BRRI Genebank will be characterized. The duplicates will be identified through molecular fingerprinting.	PI: MHKB CI: PSB, MAS, AB and MSA	Year round	BRRI Gazipur	1.0
3.16	Field validation of Blast resistant rice germplasm of Bangladesh.	To validate the rice germplasm for blast resistance in different areas of Bangladesh	2019	A total of 11 resistant genotypes selected from a previous study with 303 rice germplasm will be investigated. BRRI dhan74 as resistance check and BRRI dhan28 and BRRI dhan64 as susceptible check will be used.	PI: MHKB CI: MSA, ESMHR, MAS, MAIK	**Boro**	BRRI R/S Cumilla, Barishal, Rangpur and Gazipur	1.5
3.17	Selection of superior genotypes from T. Aman rice germplasm based on agro-morphological traits	To identify rice germplasm with higher total biomass yield and higher phenotypic acceptance	2024	A total of 50 germplasm will be grown in T Aman season and data will be collected according to the objective. Preliminary selected germplasm will be characterized in details and in a systematic way (with replication) for identification of the better genotypes which will ultimately be used for crossing program.	PI: ESMHR. CI: TC and NM.	T Aman		0.5
3.18	Screening of rice germplasm against pre harvest sprouting (PHS)	To identify rice germplasm resistant to pre harvest sprouting	2024	A total of 100 germplasm will be screened. Standard screening protocol will be followed for screening. Identified genotypes will ultimately be used for crossing program.	PI: ESMHR. CI: TC and NM.	T Aus	BRRI Gazipur	0.5
	Expected output: The genetic parameters/genetic studies of respective year will be helpful for varietal development and other plant breeding related issues.							

				B. Breeder Seed Unit (BSU)				
4	**Project 04: Seed Production and Variety Maintenance**	**Maintenance of nucleus seed stock and production for supplying breeder seeds as per national demand**			**PL= Dr. Mir Sharf Uddin Ahmed.**			**86.0 GOB**

SN	Experiments /Activities	Specific Objective(s)	Year of Initiation	Materials and Method	Name of PL, PI and CI	Season	Locations	Budget (Lakh Tk.) source
4.1	Maintenance of BRRI released and recommended varieties	To maintain genetic purity and homogeneity in morphological characteristics	1990	A total of 107 BRRI developed rice varieties including 56 of T. Aman (up to BRRI dhan111) and 51 of Boro (up to BRRI dhan117) seasons. Also, a total 22 BRRI recommended rice varieties inclusing 10 of both T. Aman and Boro and 12 of T. Aus seasons will be maintained thorough head to row method and roguing.	PI: ESMHR CI: PSB	T. Aman and T. Aus.	BRRI, Gazipur.	1.00
4.2	Nucleus seed production	To produce source seeds for breeder seed production of different BRRI varieties	1990	500-50,000 panicles of each of 67 varieties (42 T.Aman & Aus varieties and 25 Boro varieties) will be produced through head to row method and thorough roguing	Coordinator: MAS PI: All scientists of GRSD	T.Aman	BRRI, Gazipur and all BRRI R/S	20.0
4.3	Breeder seed production	To produce the breeder seed (BS) of BRRI invented rice varieties as per indent of GO, NGOs and PS seed producing organizations/companies/entrepreneurs	1990	• Tentatively a total of 200 tons of breeder seed from 63 varieties (50 tons from 42 T. Aman & Aus varieties and 150 tons from 29 Boro varieties) will be produced. • Each variety will be sown from stored nucleus seed as 'intact panicles' using 'Head/panicle to row' method. • Time isolation distance (21 days gap) will be properly maintained between two adjacent different rice varieties. • Thorough roguing will be done at every crop stage. • Seeds from individual variety will be separately harvested, processed, dried and stored (20˚C with 50% RH).	Coordinator: ESMHR PI (HQ): All scientists of GRSD PI (R/S): Head, R/S.	T. Aman	BRRI, Gazipur and all BRRI R/S.	65.0
	Expected output:	• Varietal purity (both genetic and physical) will be maintained. • Breeder seed will be supplied to GO, NGOs and private sector seed producing organizations. • Limited quantity of quality seed (QS) will be supplied to other divisions/Regional stations of BRRI and farmers directly or through DAE personnel for experimental/exhibition purpose.						

5	**Activities of GRS Division**				**PL: Dr. Partha Sarathi Biswas**			**9.5 GOB**

SN	Experiments /Activities	Specific Objective(s)	Year of Initiation	Materials and Method	Name of PL, PI and CI	Season	Locations	Budget (Lakh Tk.) source
5.1	Rice germplasm supply and exchange	i. To provide/supply rice germplasm accessions from BRRI Genebank to different divisions of BRRI for screening against biotic and abiotic stresses ii. To share germplasm to researchers from home and abroad under certain MTA.	1974	i. Germplasm request from different divisions of BRRI will be supplied. ii. Germplasm request from others in 'BRRI germplasm requested Form' through BRRI authority and necessary MTA will be considered. iii. Maximum 5 g germplasm seed for each entry will be supplied from BRRI Genebank. iv. Database will be maintained.	PI: Head CI: AB	Year round.	GRSD, BRRI, Gazipur.	0.50
5.2	Sending *khudebarta* (SMS) for breeder seed distribution	To make it easy for the clients of BRRI Breeder Seed Network to get the information of BS distribution	2019	All the foundation seed producing seed dealers of BRRI 'Rice Seed Network' will be requested to submit their application. After authorization of the allotment by BRRI authority and uploading in BRRI website, the text messages (SMS) will be sent through mobile apps to each client of SeedNet before each season for distributing breeder seed. This message includes the name of the variety(ies), allotted quantity(ies) and delivery date etc information.	PI: ESMHR CI: MMH, TC, PSB	Aus, T. Aman	GRSD, BRRI, Gazipur.	0.50
5.3	Breeder seed distribution	To supply the breeder seed of BRRI invented rice varieties as per indent of GO, NGOs and PS seed producing organizations/companies/entrepreneurs	1990	After getting breeder seed tag from SCA for tentatively 140 tons produced breeder seed from 67 varieties; in which 40 tons from 42 varieties in T. Aman and 100 tons from 25 varieties in Boro seasons, will be distributed to all applicants of 'BRRI Rice Seed Network' partners.	PI: Head, GRSD CI: ESMHR	Aus, T. Aman	BRRI, Gazipur.	5.0
5.4	Monitoring of breeder and foundation seed production farms	i. To visit breeder seed plots of BRRI regional stations at flowering and maturity stages for ensuring the quality of produced seed as BS standard ii. To visit foundation seed (FS) plots of seed producing agencies at flowering and maturity stages for improving the quality of produced seed as FS standard by sharing experiences	1990	i. Eleven BRRI regional stations will be visited and will be monitored as per the BS field standard of NSB. ii. In total 10-15 FS producing farms will be visited upon request.	For breeder seed plots: PI: Head, CI: MSA (Cum,). ESMHR(Ran,Sat), MAS (Bar, Bhanga), AB (Sonag), MZI (Habi, Raj), MHKB (Gopal), TC (Siraj) and NM (Kus, So), For foundation seed plots: PI: Head CI: ESMHR, MAS	T. Aman	Breeder seed producing plots at eleven BRRI R/S along with GO NGOs and Private Seed Producing Farms.	1.50

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5.5	Publication on seed production technology package	To make seed technology knowledge available to the growers by preparing leaflet on seed production techniques for BRRI Rice Seed Network partners	2024	One Thousand (1000) leaflets will be prepared on 1) Cultivation technology of BRRI released varieties, and 2) Maintenance of isolation distance in breeder /foundation seed production	PI: MSA CI: MAS, ESMHR, AB, MHKB, TC, NM, MAR and PSB.	Year round	BRRI Gazipur	2.0
	Publication (leaflet) on BRRI Genebank	To develop leaflet on BRRI Genebank with latest information and pictures for coming visitor(s) of BRRI Genebank	2025	Two thousands (2000) leaflets will be prepared on Breeder seed production/ BRRI Genebank with latest information for coming visitor(s) of BRRI Genebank	PI: MSA. CI: ESMHR, MAS, MZI, TC, NM, MMH and PSB.	Year round	BRRI Gazipur	0.5

PL=Project Leader, **PI=**Principal Investigator, **CI=**Co Investigator; **TA=**T. Aman, **B=**Boro and **TAS=**T. Aus; **PSB**=Dr. Partha Sarathi Biswas, **MSA**=Dr. Mir Sharf Uddin Ahmed, **ESMHR**=Dr. Ebna Syod Md. Harunur Rashid, **MAS**=Dr. Md. Abubakar Siddique, **AB**=Dr. Armin Bhuiya, **MHKB**=Dr. Md. Humayun Kabir Baktiar, **TC**=Tonmoy Chakrabarty, **NM**= Nashirum Monir, **MAR**=Md. Ashiqur Rahman and **MAIK=** Dr. Mohammad Ashik Iqbal Khan (Plant Pathology Div., Head, BRRI Barishal), **MSR**= Dr. Md. Sazzadur Rahman (Plant Physiology Div).