Bangladesh Rice Research Institute

Plant Breeding Division

Summary Research Program for Aus and T. Aman 2023-24

Program Area (01): Varietal Development Program (VDP)
Sub-Program (01): Plant Breeding

Summary of RYT, ALART and PVT, Aman 2023-24

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
Regional Yield Trial (RYT)					
	Project 02: Development of Transplanted Aus (T. Aus) Rice				
1	Regional Yield Trial (RYT#1-Favorable &2-BB Resistance)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Fourteen entries for both the RYTs will be evaluated against two checks. Checks: BRRI dhan48, and BRRI dhan98	PI: MK CI: SKD, JF, KMI & Scientist of R/S	BRRI Gazipur, Cumilla, Rangpur, Rajshahi, Kushtia, Sonagazi
	Project-4: Development of Rainfed Lowland Rice, T. Aman				
2	Regional Yield Trial (RYT#1 & 2)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	A total of 11 and 07 advanced lines will be tested in RYT#1 and RYT#2 along with checks BRRI dhan71, BRRI dhan75 and BRRI dhan49, BRRI dhan87, respectively.	PI: MAK CI: RRM, TKH, and URS	Total 7-8 locations
	Project 06: Development of Salt Tolerant Rice				

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3	Regional Yield Trial (RYT#1, 2 & 3)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-farm condition	Total 78 genotypes along with 4 checks will be evaluated. Checks: BRRI dhan87, BRRI dhan73 and BR10 and BR 23	PI: MAR CI: HK, RFD, THA, & R/S	Gazipur, Satkhira and Khulna (5-6 locations)
	Project-7a: Development of Antioxidant enriched Rice, T. Aman				
4	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	Total 16 advanced lines will be tested along with checks Japanese Black Rice and Indonesian Black Rice	PI: SG CI: SM, MMY, ZAR and KMI	All BRRI R/S and Gazipur
	Project-7b: Development of Photosensitive Rice, T. Aman				
5	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	Total 4 advanced lines will be tested along with checks BRRI dhan2, BRRI dhan23	PI: SG CI: SM, MMY, ZAR and KMI	Total 6-8 locations
	Project-11: Development of Zinc Enriched Rice, T. Aman				
6	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	A total 4 entries tested in replicated trial against standard check varieties BRRI dhan49, BRRI dhan72, BRRI dhan87 and BRRIdhan93	Do & R/S	Total 7-8 locations
	Project-12: Development of Disease Resistant Rice (BB & Blast)				
7	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Six entries will be tested in the replicated yield trial (RYT#1) against susceptible and standard check varieties BRRI dhan75, BRRI dhan87 and resistant check IRBB60	PI: MK & THA CI: SKD & J F & Scientist of R/S	All BRRI R/S and Gazipur

			under BB resistant program. Seven entries will be tested in the replicated yield trial (RYT#2) against the check varieties BRRI dhan72 and BRRI dhan87 under Blast resistant program.		
	Project-14: Development of Submergence and Water Stagnation Tolerance Rice Varieties				
8	Regional Yield Trial (RYT/PVS)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-farm condition	Total 10 genotypes along with 3 checks will be evaluated Checks: BRRI dhan79, BRRI dhan52 and BINA dhan11	PI: SG CI: SM, ZAR and KMI & R/S	Gazipur, Rangpur, Kurigram, Lalmonirhat, (6 locations)
	Project-15: Development of Drought Tolerant Rice, T. Aman				
9	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	A total 07 advanced lines will be tested along with checks BRRI dhan71.	PI: MAK CI: RRM, TKH, and URS	Rajshahi R/S (Tanore, Paba, Chapainawabganj, Rangpur (Sadar, Nilphamari, Kurigram), Kushtia
	Project-17: Deployment of Super high yielding fine quality rice varieties				
7	Regional yield Trial -RYT#1(Katari type), RYT#2 (Zira type), RYT#3 (High yielding) & RYT#4 (Tall haor)	Evaluation of agronomic performance, specific and general adaptability under on station conditions	Total 14 entries will be tested in replicated trial against standard check varieties BRRI dhan18, BRRI dhan28, BRRI dhan81, Katari and Zira.	PI: ASMM, CI: NJ, AAS and & R/S	10 BRRI R/S
Advance Line Adaptive Research Trial (ALART)					
	Project-6: Development of Salt Tolerant Rice				
	Project-17: Deployment of Superior high yielding fine quality rice varieties				
1	Advanced Line Adaptive Research	On-farm evaluation of advanced breeding lines compared to standard	In ALART-1 (Zira type), 3 selected materials (BRH13-	PI: Scientist of ARD	10 locations (Locations will be selected by ARD

	Trial -ALART-1(BRRI dhan49 grain type) and ALART-2 (Swarna grain type)	checks for testing their specific and general adaptability	7-9-3-2B, BRH13-2-14-2-1B, BRH11-7-17-10B, any two lines) will be evaluated with BRRI recommended practices with check varieties BRRI dhan49 and Zira Under ALART-2, Swarna grain type two selected materials (BRH9392-6-2-1-3-4 and BR9396-6-2-2B) will be evaluated with check varieties BRRI dhan94	CI: ASMM, NJ, AWS	
	Project 18: Development of Deep-Water rice varieties				
2	Advanced Line Adaptive Research Trial (Re-ALART)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	Under ALART three selected materials (BR9892-6-2-2B, BR9376-6-2-2B and BR9392-6-2-1B) will be evaluated with check variety Dudlaki	PI: Scientist of ARD CI: ASMM, NJ, AWS	10 locations (Locations will be selected by ARD
Proposed Variety Trial (PVT)					
	Project-6: Development of Salt Tolerant Rice				
1	Proposed Variety Trial (PVT)	To evaluate advanced breeding lines compared to standard checks in on-farm and on-station conditions in different regions by the NSB team for recommendation to release a new variety.	One genotype (BR11716-4R-102) will be tested with tolerant check BRRI dhan73 and sensitive check BRRI dhan87 with similar growth duration.	SCA	Total 10 locations (Locations will be selected by SCA)

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	Project-14: Development of Submergence and Water Stagnation Tolerance Rice Varieties				
2	Proposed Variety Trial (PVT)	On-farm and on-station evaluation of advance breeding lines compared to standard checks for releasing as new variety in different regions	One genotype (BR9158-19-9-6-50-2-HR1) will be tested with check BRRI dhan52.	SCA	Total 6 locations (Location will be selected by SCA)
3	Proposed Variety Trial (PVT)	On-farm and on-station evaluation of advance breeding lines compared to standard checks for releasing as new variety in different regions	One selected material (BRH13-2-4-7-2B) will be evaluated under integrated improved management practices compared with BRRI recommended practices with check varieties BRRI dhan57 and Zira.	SCA	10 locations (Locations will be selected by SCA

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
1	**Project-1: Development of Rice Varieties for Upland (DSR Aus) Ecosystems** **Project Leader: Dr. Md. Akhlasur Rahman**					
1.1	Hybridization	To create variations for the development of new genotypes with high yield, drought tolerant, adaptable to direct seeded condition with acceptable grain quality	40 parents will be used in hybridization	PI: MAR CI: NJ	Gazipur	**12.0 GOB**
1.2	Confirmation of F_1	To confirm the crosses as true F_1s and use of the selected F_1s to produce F_2 seeds	15 crosses will be grown	do	Gazipur	
1.3	Segregating RGA (F_2-F_5)	Generation Advance	16828 progenies will be advanced	do	Gazipur	
1.4	Line Stage Testing (LST)	To select uniform genotypes in terms of plant height and days to flowering with key target traits	5204 breeding lines will be evaluated	do	Gazipur	
1.5	Observational Yield Trial (OYT)	Selection of superior lines with desired agronomic characters	Total 64 advanced lines will be tested along with checks BRRI dhan83, BRRI dhan65, BRRI dhan43	do	Gazipur	
1.6	Preliminary Yield Trial (PYT)	Initial evaluation of breeding lines for yield potential in replicated trial	Total 27 advanced lines will be tested along with checks BRRI dhan83, BRRI dhan65, BRRI dhan43	do	Gazipur,	
1.7	Advanced Yield Trial (AYT)	Evaluation of breeding lines for yield potential in replicated trial	Total 15 advanced lines will be tested along with checks BRRI	do	Gazipur, Sonagazi, Feni	

			dhan83, BRRI dhan65, BRRI dhan43			
1.8	Maintenance breeding	Maintaining seed purity and seed increase of landraces	Seeds of 100 landraces/varieties adaptable to upland/DSR and *Jhum* ecosystem will be increased	do	Gazipur	

Expected Output: High yielding rice varieties adaptable to aerobic upland conditions through DSR and dibbling method will be developed.

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Tk.)
2	**Project -2: Development of Transplanted Aus (T. Aus) Rice** **Project leader: Dr. Mahmuda Khatun**					**10.0 GOB**
2.1	Hybridization	Introgression of earliness, pre-harvest sprouting tolerance and tolerance to high temperature into high yielding varieties	Total 35 parents will be grown in three different sets at 7 days interval to synchronize flowering.	PI: MK CI: SKD, JF, KMI	Gazipur	
2.2	Growing of F_1 populations	To confirm the crosses as true hybrid	Around 15 single, 8 back crosses will be confirmed and F_2 seed will be produced	do	Gazipur	
2.3	Segregating population	Advancement of segregating generations following single seed descent-based RGA method	10 F_2, 11 F_3, 20 F_4 and 12 F_5 populations will be advanced through RGA techniques	do	Gazipur	
2.4	LST	Screening of genetically fixed breeding lines for homogeneity, plant type, grain yield potential, grain quality and other attributes	Around 6800 breeding lines from 17 crosses will be grown in LST nursery	do	Gazipur	
2.5	Observational Yield Trial (OYT)	Selection of homogeneous breeding lines with acceptable grain quality having high yield with good plant type	In total 688 test entries along with 3 checks (BRRI dhan48, BRRI dhan82 and BRRI dhan98) will be evaluated under OYT#1 followed by sparse testing model of genomic selection.	do	Gazipur, Cumilla, Rajshahi, & Rangpur	

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Tk.)
			and 95 high temperature tolerant advanced lines will be evaluated with 3 checks (Binadhan14, BRRI dhan98 and N22) under OYT#2			
2.6	Advanced Yield Trial (AYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks under on station condition	Total of 32 high temperature tolerant advanced lines for AYT#1, 14 (high day-high night temperature tolerant lines for AYT#2, 50 for AYT#3 and 10 for AYT#4 will be evaluated along with several checks: BRRI dhan28, Binadhan14, N22 (AYT#1 & AYT#2), BRRI dhan48, BRRI dhan82, BRRI dhan98 (AYT#3), BRRI dhan27 and BRRI dhan106 (AYT#4)	do	BRRI Gazipur, Natore, Rajshahi, Rangpur Cumilla, greater Barishal and Sonagazi	
2.7	Regional Yield Trial (RYT#1 &2) for favorable condition	Evaluation of agronomic performance, specific and general adaptability under on station condition	Fourteen entries for both the RYTs will be evaluated against 3 checks. Checks: BRRI dhan48, BRRI dhan82 and BRRI dhan98	PI: MK CI: SKD, JF, KMI & Scientist of R/S	BRRI Gazipur, Cumilla, Rangpur, Rajshahi, Kushtia, Sonagazi	
2.8	Maintenance and seed increase of key parents	To maintain genetic purity of parent materials with seed production	Seeds of 176 key parents for the breeding program will be increased and their genetic purity will be maintained	do	BRRI Gazipur	

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
3	**Project -3: Development of Shallow Flooded Rice Varieties** **Project Leaders: Dr. Sharmistha Ghosal**					
3.1	Hybridization	Generation of genotypes in combination with slow elongation, high yield and submergence tolerance for shallow flooded water sub-ecosystem (flood water depth 0.5-1.0 m)	8 parents will be utilized to make 10 single crosses	PI: SG CI: ASMM, SM, ZAR, MMY and KMI	Gazipur	**7.0 GOB**
3.2	F_1 confirmation	Confirmation of crosses with introgression of genes for slow elongation, high yield and submergence tolerance for shallow flooded deep water sub-ecosystem (flood water depth 0.5-1.0 m) into improved genetic background	Twenty-three single crosses will be confirmed	do	Gazipur	
3.3	Segregating population (F2-F5)	Advancement of segregating generations following single seed descent-based RGA method	A total sixty-one crosses comprising of 12900 progenies will be grown	do	Gazipur	
3.4	Line Stage Testing	Screening of genetically homozygous lines for homogeneity, grain quality, grain yield potential	1881 breeding lines of 18 single and multiple crosses (elite x elite) will be grown	do	Gazipur	
3.5	Observational Yield Trial (OYT)	Evaluation of tall breeding lines	Total 62 genotypes will be evaluated against two check varieties under shallow flooded conditions	do and R/S	Gazipur	
3.6	Advanced Yield Trial (AYT)	Yield evaluation of advanced breeding lines in replicated trials	38 advanced breeding lines will be evaluated along with two checks varieties (BRRI dhan44,	do and R/S	Gazipur	

		for shallow flooded sub-ecosystem	BRRI dhan91) under shallow flooded conditions			
3.7	Maintenance and seed increase of land races	Maintenance of seed purity and seed increase of land races	Seeds of 20 land races adaptable under shallow flood and deep-water ecosystem will be increased	do	Gazipur	

Expected Output: Shallow flooded rice varieties will be developed with better yield target (4.5-5.0 t/ha)

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
4	**Project 04: Development of Rainfed lowland Rice Project leader: Dr. Md. Abdul Kader**					**10.0 GOB**
4.1	Hybridization	Introgression of genes from diverged genetic background into rice varieties/lines for the improvement of standard T. Aman varieties.	25 parents will be used	PI: MAK CI: RRM, TKH URS	Gazipur	
4.2	Confirmation of F_1 Quality check (QC) analysis of F1s	To confirm the crosses as true hybrid	31 F_1 s will be grown	do	Gazipur	
4.3	Maintenance of Parents	To ensure seed safety of different quality genotypes and for future use in the hybridization or in the experiment as check variety	Around 31 genotypes will be grown to maintain their genetic purity.	do		
4.4	FRGA	Generation Advance	Forty crosses comprising ~ 22,460 progenies	do	Gazipur	
4.5	Line Stage Test (LST) Trial	Identification of uniform lines based on plant height, flowering date and grain type	606 breeding lines	do	Gazipur	
4.6	Observational Yield Trial (OYT#1,2&3)	Selection of genetically fixed breeding lines with acceptable	A total of 250, 134 and 50 lines will be evaluated in OYT#1, 2	do and R/S	Gazipur, Rangpur	

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		grain quality having high yield potential with good plant type	and 3 along with BRRI dhan71, BRRI dhan75 and BRRI Dhan49, BRRI dhan87 and BRRI dhan71, BRRI dhan75, respectively.		and Cumilla	
	Trait paneling of OYT lines	Assessment of presence/ availability of favorable alleles in breeding lines/population	Total 384 Lines	do	Out Sourcing	
4.7	Advanced Yield Trial (AYT#1 &2)	Confirmatory yield evaluation of advanced lines compared to standard checks	A total of 38 and 58 genotypes will be tested in AYT#1 and 2 along with BRRI dhan71, BRRI dhan75 and BRRI Dhan49, BRRI dhan87, respectively.	do & R/S	Gazipur, Rangpur and Cumilla	
4.8	Regional Yield Trial (RYT#1&2)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-farm condition	A total of 11 and 07 advanced lines will be tested in RYT#1 and RYT#2 along with checks BRRI dhan71, BRRI dhan75 and BRRI dhan49, BRRI dhan87, respectively.	do & R/S	Total 7-8 locations	

Expected Output: Short duration varieties (105-115 days) with 4.5-5.0 t/ha yield potential and medium duration (116-130 days) varieties with 6.0-7.0 t/ha yield potential will be developed.

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
5	**Project 06: Development of Salt Tolerant Rice Project Leader: Dr. Md. Akhlasur Rahman**					**38.0 GOB, AGGRi Alliance & TRB-BRRI (BMGF)**
5.1	Hybridization	Introgression of salinity tolerant genes in elite background of advanced genotypes	45 parents will be used	PI: MAR CI:HK	Gazipur	
5.2	Confirmation of F_1 Quality check (QC)analysis of F1s	To confirm the crosses as true hybrid	44F_1s will be grown	PI: MAR CI: HK, RFD	Gazipur	
5.3	FRGA and GRGA	Generation Advance	One hundred ten Crosses comprising ~ 41192progenies	PI: HK CI: MAR	Gazipur	
5.4	Line Stage Test (LST) Trial	Identification of uniform lines based on plant type, flowering uniformity and grain type	>4500 breeding lines from 20 crosses	PI: MAR CI: HK, RFD& TA	Satkhira/ Gazipur	
5.5	Observational Yield Trial (OYT)	Selection of genetically fixed salt tolerant breeding lines with acceptable grain quality having high yield potential with good plant type	~452 Lines from LST along with 03 checks BRRI dhan73, BRRI dhan87 and BRRI dhan23 will be evaluated	PI: MAR CI: HK, RFD, THA & R/S	Gazipur, Satkhira and Khulna	
	Trait paneling of OYT lines	Assessment of presence/ availability of favorable alleles in breeding lines/population	Total 452 Lines	PI: HK CI: MAR	Out Sourcing	
	Grain quality analysis of OYT, PYT, AYT & RYT lines	To evaluate key economic traits based on consumers preference	Total 872 lines	PI: SSD CI:HK, MAR	GQN	

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5.6	Preliminary Yield Trial (PYT1 ,2 &3)	Initial yield evaluation of advanced lines compared to standard checks in replicated trial	237genotypes along with three checks BRRI dhan73, BRRI dhan30 and BR23,	PI: MAR CI: HK, RFD&TA	Gazipur, Satkhira and Khulna	
5.7	Advanced Yield Trial (AYT#1&2)	Confirmatory yield evaluation of advanced lines compared to standard checks	107 genotypes along with 2 checks BRRI dhan87, BRRI dhan73	PI: MAR CI: HK, RFD&TA	Gazipur, Satkhira and Khulna	
5.8	Regional Yield Trial (RYT#1,2,3)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-farm condition	78 genotypes along with 02 checks will be evaluated. Checks: BRRI dhan73, BRRI dhan30 and BR23,	PI: MAR CI: HK, RFD, & TA	Gazipur, Satkhira and Khulna 5-6 locations)	
5.9	Line augmentation	To develop diverse pre-breeding materials with combination of multiple alleles of desired/important traits	• Confirming a number of lines with *xa5, xa13* and *Xa21* combination • Trait paneling breeding lines with Pi9 allele	PI: MAR CI: HK, RFD,	Gazipur	
5.10	Regional Yield Trial (RYT#1, 2 & 3)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-farm condition	Total 76 genotypes along with 4 checks will be evaluated. Checks: BRRI dhan87, BRRI dhan73 and BR10 and BR 23	PI: MAR CI: HK, RFD, THA, & R/S	Gazipur, Satkhira and Khulna (5-6 locations)	
5.11	Advanced Line Adaptive Research Trial (ALART)	-To evaluate the yield potential and adaptability of the advanced lines at farmers' field	Total 2 (two) advanced breeding lines (BR10440-20-5-6B1 and BR10441-17-1-5) will be tested along with checks BRRI	PI: Scientist of ARD CI: MAR, HK, KMI	10 locations (Location will be	

		in different agro-ecological zones. -To get feedback about the advantages and disadvantages of the selected materials from farmers and Extension personnel. -To select suitable genotype(s) for proposed variety trial (PVT).	dhan87/BRRI dhan75 and BRRI dhan73		selected by ARD)	
5.12	Proposed Variety Trial (PVT)	To evaluate advanced breeding lines compared to standard checks in on-farm and on-station conditions in different regions by the NSB team for recommendation to release a new variety.	One genotype (**BR11716-4R-102**) will be tested with check BRRI dhan73 and BRRI dhan87 sensitive check with similar growth duration.	SCA	Total 10 locations (Locations will be selected by SCA)	
5.13	Maintenance breeding	Maintenance of donors/local and elite parents for future use in the hybridization or in the experiment as check variety	150 parents will be grown	PI: HK CI: MAR, RFD	Gazipur	

Expected Output: Salt tolerant variety(ies) for farmers, consumers and miller's preference will be developed with better yield potential (7.5-8.0 t/ha)

a) Salt tolerant variety(ies) with salt tolerance at seedling stage (12 dS/m) and reproductive stage tolerance (EC = 8.0-10.0 dS/m) will be developed based on different stakeholders' demand such as farmers, consumers, miller's preference of target region

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
6	**Project-7: Development of Premium Quality Rice (PQR) T. Aman** **Project leader: Dr. Sharmistha Ghosal**					
6.1	Hybridization	Introgression of genes of small grain (national & international grade) with or without aroma into high yielding rice genetic background	15 hybridization parents will be utilized to make a total of 20 single crosses and 14 backcrosses will be continued from previous year.	PI: SG CI: SM, MMY, ZAR and KMI	Gazipur	**6.0 GOB**
6.2	Confirmation of F_1	To confirm the crosses as true hybrid	23 single crosses and 14 backcrosses will be confirmed	do	Gazipur	
6.3	Pedigree nursery (advanced through FRGA)	Advancement of progenies with improved plant type, earliness, premium quality grain and high yield potential	39838 progenies of 126 crosses will be advanced through FRGA	do	Gazipur	
6.3	Line Stage Testing	Evaluation of genetically homozygous lines for homogeneity, grain quality, grain yield potential and Anthocyanin gene	2681 fixed breeding lines of 15 crosses will be grown	do	Gazipur	
5.4	Observational Yield Trial (OYT)	Selection of genetically fixed lines with fine grain properties having high yield with good plant type	Total 11 advanced lines will be tested along with checks BRRI dhan34, BRRI dhan90 Kalijira, Chinigura, Kataribhog	do	Gazipur	
6.5	Preliminary Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	Total 16 advanced lines will be tested along with checks BRRI dhan34, BRRI dhan37, BRRI dhan70, BRRI dhan80, BRRIdhan90, Kalizira, Chinigura, Kataribhog, Dinajpur Kataribhog	do	Gazipur	
6.7	Advanced Yield Trial (AYT)	Advanced yield evaluation of advanced lines compared to standard checks	Total 4 advanced lines will be tested along with checks BRRI dhan34, BRRI dhan90	do	Gazipur	

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6.9	Maintenance of parents	Maintenance of parent for future use in the hybridization or in the experiment as check variety	Total 70 advanced line and land races will be grown	do	Gazipur	
	Project-7a: Development of Antioxidant enriched Rice, T. Aman **Project leader: Dr. Sharmistha Ghosal**					
SN	**Experiments**	**Specific Objective(s)**	**Materials & Method**	**PI and CI**	**Location**	**Budget (Lakh Taka)**
7.1	Hybridization	Introgression of Anthocyanin gene into the genetic background of high yielding rice variety	19 parents along with high C3G enriched lines will be utilized to make 22 crosses	PI: SG CI: MMY, ZAR and KMI	Gazipur	**5.0 GOB**
7.2	Confirmation of F_1	To confirm the crosses as true hybrid	15 crosses will be confirmed	do	Gazipur	
7.3	Pedigree nursery (advanced through FRGA)	Advancement of progenies with improved plant type, earliness, premium quality grain, high anthocyanin content and high yield potential	29133 progenies of 41 crosses will be advanced	do	Gazipur	
7.4	Line Stage Testing	Evaluation of genetically homozygous lines for homogeneity, grain quality, grain yield potential and Anthocyanin gene	720 fixed breeding lines of 5 crosses will be grown	do	Gazipur	
7.5	Observational Yield Trial (OYT)	Selection of genetically fixed lines having high C3G content and high yield potential	Total 163 advanced lines will be tested	do		
7.6	Preliminary Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	Total 51 advanced lines will be tested	do	Gazipur	
7.7	Advanced Yield Trial (AYT)	Confirmatory yield evaluation of advanced lines compared to standard checks	Total 54 genotypes along with 2 checks will be tested	do	Gazipur,	

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7.8	Regional Yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	16 entries will be tested in replicated trial against standard check varieties	do	Gazipur	
7.9	Maintenance of parents	Maintenance of parent for future use in the hybridization or in the experiment as check variety	Total 10 C3G enriched advanced line and land races will be grown	do	Gazipur	
Project-7b: Development of photosensitive Rice, T. Aman **Project leader: Dr. Sharmistha Ghosal**						
8.1	Hybridization	Development of strong photo-sensitive (Nizersail type) and medium photo-sensitive (Gainza type) premium quality rice for T. Aman season	8 hybridization parents will be utilized to make 10 crosses	PI: SG CI: MMY, ZAR and KMI	Gazipur	**2.0 (GOB)**
8.2	Confirmation of F_1	To confirm the crosses as true hybrid	Nine single crosses will be confirmed	do	Gazipur	
8.3	Pedigree nursery (advanced through FRGA)	Advancement of progenies with improved plant type, earliness, premium quality grain, high photosensitivity and high yield potential	13326 progenies of 46 crosses will be raised	do	Gazipur	
8.4	Observational Yield Trial (OYT)	Selection of genetically fixed lines having high yield with photosensitivity	Total 20 advanced lines will be tested along with checks BR22, BR23, Gainza and Naizersail	do		
8.6	Advanced Yield trial (AYT)	Advanced yield evaluation of advanced lines compared to standard checks	Total 24 advanced lines will be tested along with checks BR22, BR23, Gainza and Naizersail	do	Gazipur	
8.7	Regional Yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Four entries will be tested in replicated trial against standard check varieties BR22 and BR23	do	Gazipur	

Expected Output: a) National grade type (Kalizira, Chinigura, Kataribhog) high yielding varieties will be developed
b) Anti-oxidant enriched high yielding varieties will be developed

c) Photo-sensitive high yielding varieties will be developed

9	**Project-9: Development of high yielding *jhum* Rice** **Project Leader: Dr. Md. Akhlasur Rahman**					
SN	**Experiments**	**Specific Objective(s)**	**Materials & Method**	**PI and CI**	**Location**	**Budget (Lakh Taka)**
9.1	Hybridization	To create variations for the development of new genotypes with drought tolerance at seedling stage with acceptable grain quality	35 hybridization parents will be used	PI: MAR CI: NJ	Gazipur	**11.0 GOB**
9.2	Confirmation of F_1	To confirm the crosses as true F_1s and use of the selected F_1s to produce F_2 seeds	24 crosses will be grown	do	Gazipur	
9.3	Segregating RGA (F_2-F_5)	Generation Advance	5296 progenies will be advanced	do	Gazipur	
9.4	Line Stage Testing (LST)	To select uniform genotypes based on plant architecture and flowering uniformity with key target traits	1080 breeding lines will be evaluated	do	Gazipur	
9.5	Preliminary Yield Trial (PYT)	Initial evaluation of breeding lines for yield potential in replicated trial	Total 23 advanced lines will be tested along with checks Gellong, BRRI dhan83	do	Gazipur	
9.6	Secondary Yield Trial (SYT)	Confirmation of yield potentiality of the advanced lines compared to standard checks	A total of seven advanced lines will be evaluated in SYT along with BRRI dhan83 as checks.	do	Gazipur	
9.7	Advanced Yield Trial (AYT)	Evaluation of breeding lines for yield potential in replicated trial	Total 14 advanced lines will be tested along with checks Gellong and BRRI dhan83	do	Gazipur, Bandarban, Khagrasori	

					and Rangamati	
9.8	Maintenance of parents	Maintenance of parent for future use in the hybridization or in the experiment as check variety	Total 15 advanced line and landraces will be grown	do	Gazipur	

Expected Output: High yielding rice varieties adaptable to hill tracts for *jhum* cultivation will be developed for *Jhum* Rice

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
10	**Project-11: Development for Zinc Enriched Rice, T. Aman** **Project leader: Dr. Md. Abdul Kader**					
10.1	Hybridization	Development of new genotypes with high zinc and iron content along with resistance to major insect pests and diseases, abiotic stress tolerance and acceptable grain quality	Totally 20 single crosses will be made.	PI: MAK CI: RRM, URS	Gazipur	**10.0 GOB**
10.2	Confirmation of F_1	To confirm the crosses as true F_1s and use of the selected F_1s to produce F_2 seeds and in different types of crosses	Twenty crosses will be confirmed and F_2 seed will be produced	do	Gazipur	
10.3	Pedigree nursery (advanced through FRGA)	Generation advancement	One hundred twenty-one crosses comprising ~ 34,995 progenies	do	Gazipur	

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
	Line Stage Test (LST) Trial	Identification of uniform lines based on plant height, flowering date and grain type	>6200 breeding lines	do	Gazipur	
10.4	Observational Yield Trial (OYT)	Selection of homogeneous breeding lines with desirable agronomic characters with lessor no unproductive tiller, intermediate plant height, short growth duration, acceptable grain quality and high yield potential	Totally 239 genotypes will be evaluated against BRRI dhan49, BRRI dhan62, BRRI dhan72, BRRI dhan75 and BRRI dhan87	do	Gazipur	
10.5	Preliminary Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	A total of 20 test entries will be evaluated against BRRI dhan49, BRRI dhan62, BRRI dhan72, BRRI dhan75 and BRRI dhan87 under Rainfed condition	do		
10.6	Secondary Yield Trial (SYT)	Confirmation of yield potentiality of the advanced lines compared to standard checks	Total 8 genotypes will be evaluated against BRRI dhan49, BRRI dhan62, BRRI dhan72, BRRI dhan75 and BRRI dhan87under Rainfed condition	do	Gazipur	
10.7	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Best entries will be selected from 4 entries tested in replicated trial against standard check varieties BRRI dhan49, BRRI dhan72, BRRI dhan87 and BRRIdhan93	Do & R/S	Total 7-8 locations	

Expected Output: High yielding Zn enriched rice varieties will be developed.

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
11	**Project 12: Development of Insect Resistant Rice (IRR)** **Project Leader: Dr. Md. Ruhul Amin Sarker**					**15.0** GOB, TRB
11.1	Hybridization	Introgression of genes of BPH and gall midge into high yielding rice genetic background	13 well characterized parents will be used for 20 crosses	PI: MRAS, CI: MAR, HK, RFD	Gazipur	
11.2	Confirmation of F_1	To confirm the crosses as true hybrid	19 crosses will be grown	do	Gazipur	
	Quality check (QC) analysis of F_1s					
11.3	Line Augmentation	Introgression of bph genes (*bph17* and *bph32*) to develop advanced breeding lines	Three BC_2F_1, one BC2F1crosses will be confirmed and 3 BC_2F_3 seed will be produced	do	Gazipur	
11.4	FRGA	Generation Advance	More than 56511 progenies from 76 crosses will be grown	do	Gazipur	
11.5	Line Stage Testing (LST)	Identification of uniform lines based on good plant type, flowering date and grain type	~ 2273 breeding line from 16 crosses will be used	do		
11.6	Observational Yield Trial (OYT)	Selection of genetically fixed breeding lines with resistant to BPH/GM, earliness having high yield with good plant type	Selected 229 lines will be evaluated with four checks (BRRI dhan33, BRRI dhan49, BRRI dhan52 and BRRI dhan87)	PI: MRAS, CI: MAR, HK, RFD, MMH MMsH, SSD and R/S	Gazipur, Rangpur, Cumilla and GQN	
	Trait paneling of OYT lines	Assessment of presence/availability of favorable alleles in breeding lines/population				
	Grain quality analysis of OYT, PYT & AYT lines	To evaluate key economic traits based on consumers preference				
11.7	Preliminary Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	Total 45 test entries will be evaluated against BRRI dhan33,	PI: MRAS,	Gazipur, Rangpur, Cumilla	

			BRRI dhan49, BRRI dhan52 and BRRI dhan87	CI: MAR, HK, RFD and R/S		
11.8	Advanced Yield Trial (AYT)	To evaluate/confirm yield performance of the advance breeding lines as compared with standard checks at multi-locations trials	Selected 34 line will be evaluated with checks: BRRI dhan33 and BRRI dhan87	PI: MRAS, CI: MAR, HK, RFD and R/S	Gazipur, Rangpur, Cumilla	
11.9	Screening breeding lines for BPH resistance	To identify new sources of BPH resistance	~ 400breeding lines (OYT, PYT and AYT) will be evaluated for BPH resistance	PI: SSH, CI: MMH, MMsH, MRAS, MAR, HK	Entomology Division, BRRI	
11.10	Maintenance and seed increase of key parents.	To maintain genetic purity of parent materials with seed production	Seeds of 65 key parents for breeding program will be increased and their genetic purity will be maintained	PI: MRAS, CI: MAR, HK, RFD	Gazipur	

Expected output: BPH and Gall midge resistant variety will be developed with better yield potential (7.0-8.0 t/ha)

Promising genotypes will be selected after evaluation and will be used as parent materials and also will be included in yield trial.

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
12	**Project-13: Development of Disease Resistant Rice (BB, Blast & RTV) Program leader- Dr. Mahmuda Khatun**					**10.0 GOB, TRB-BRRI**
12.1	Hybridization	Introgression of high yield, lodging tolerance and disease resistance trait for BB, Blast & RTV	Crosses will be done using 35 parents for BB, Blast & RTV	PI: MK CI: SKD & J F	Gazipur	
12.2	F_1 confirmation	To confirm the crosses as true hybrid	10 crosses for BB, 15 crosses for Blast and 5 crosses for Blast with RTV will be confirmed	do	Gazipur	

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12.3	Segregating population	Advancement of segregating generations following single seed descent-based RGA method	~32700 progenies from 68 crosses for BB and Blast will be advanced through RGA techniques	do	Gazipur	
12.4	Line Stage Testing (LST)	Identification of uniform lines based on good plant type, flowering date and grain type	~ 4800 breeding line from 16 crosses will be used	do	Gazipur	
12.5	Observational Yield Trial (OYT)	Selection of genetically fixed breeding lines with strong plant type, uniformity in heading, good PACP in the field condition and tolerance to disease (BB & Blast) in artificial inoculation condition	~250 fixed lines for BB & Blast will be evaluated against susceptible & resistant checks BRRI dhan75 (Sus & Std Ck) BRRI dhan87 (Sus & Std Ck) IRBB60 (Res Ck)	do	Gazipur, Cumilla, Rangpur & Rajshahi	
12.6	Advanced Yield Trial (AYT)	To evaluate/confirm the yield performance of the advanced breeding lines as compared with standard checks at multi-location trials	A total of six entries for BB will be evaluated against susceptible & resistant checks: BRRI dhan49 (Sus & Std Ck) BRRI dhan87 (Sus & Std Ck) IRBB60 (Res Ck)	do	Gazipur, Cumilla, Rajshahi & Rangpur	
12.7	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on-station conditions	Six entries will be tested in the replicated yield trial against susceptible and standard check varieties BRRI dhan75, BRRI dhan87, and resistant check IRBB60. Seven entries will be tested in the replicated yield trial (RYT#2) against the check varieties BRRI dhan72 and BRRI dhan87 under Blast resistant program.	PI: MK & THA CI: SKD & J F & R/S	All BRRI R/S and Gaz	

12.8	Maintenance and seed increase of key parents.	To maintain the genetic purity of parent materials with seed production	The seeds of 98 key parents for the breeding program will be increased and their genetic purity will be maintained	do	Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
13	**Project-14: Development of Submergence and Water Stagnation Tolerance Rice Varieties** **Program leader: Dr. K M Iftekharuddaula**					**10.0 GOB, TRB-BRRI**
13.1	Hybridization	Introgression of submergence and medium stagnant water tolerant genes into modern genetic background with high yield potential, short/long growth duration, weakly/strongly photoperiod sensitivity, grain quality etc.	26 parents will be utilized to make 30 single crosses	PI: SG CI: SM, ZAR and KMI	Gazipur	
13.2	F_1 confirmation	Confirmation of crosses with introgression of genes for submergence tolerance (particularly *SUB1*) and water stagnation tolerance into improved genetic background	A total of 43 crosses will be confirmed	do	Gazipur	
13.3	Segregating population advanced through FRGA	Advancement of segregating generations following single seed descent-based rapid generation advanced techniques	A total eighty crosses comprising of 25,395 population will be grown	do	Gazipur	
13.4	Line Stage Testing	Screening of genetically homozygous lines for homogeneity, grain quality, grain	3565 breeding lines of 119 crosses (elite x elite) will be grown	do	Gazipur	

		yield potential and *SUB1*-specific SNP markers				
13.5	Observational Yield Trial (OYT))	Initial evaluation of the genotypes with tolerance against controlled submergence, rainfed and flood prone farmers field conditions	A total 200 breeding lines will be evaluated under rainfed and controlled conditions using 4 checks (BRRI dhan52, BRRI dhan79, Binadhan-11)	do	Gazipur and Rangpur	
13.6	Preliminary Yield Trial (PYT)	Preliminary evaluation of yield and survivability of promising breeding lines in replicated trial under controlled submergence and flash flood prone farmers' field.	A total of 40 breeding lines will be evaluated under rainfed and submergence prone farmers field using three checks (BRRI dhan52, BRRI dhan79, and BINA dhan11)	do	Gazipur and Rangpur	
13.7	Advanced Yield Trial (AYT)	Advanced evaluation of yield and survivability of promising breeding lines in replicated trial under controlled submergence and flash flood prone farmers' field.	A total of 33 breeding lines will be evaluated under flood prone areas of farmer's field and rainfed & controlled on-station conditions against two standard checks (Binadhan-11 and BRRI dhan79)	do	Gazipur and Rangpur	
13.8	PVS Trial/ Regional Yield Trial (RYT)	Evaluation of genotypes in the real submergence and/or medium stagnation prone environments of the farmers' field with the participation of farmers under the management practices of researchers	A total of 10 advanced breeding lines with checks varieties BRRI dhan52, BRRI dhan79, BINA dhan11 will be evaluated under flood prone areas of farmer's field and on-station rainfed and controlled conditions	do	Gazipur and Rangpur	
13.9	Proposed Variety Trial (PVT)	On-farm evaluation of proposed genotype by the NSB team for recommendation to release as a new variety.	One entry (**BR9158-19-9-6-50-2-HR1**) will be evaluated against 1 check Checks: BRRI dhan52	do	Sites will be selected by SCA	

13.10	Maintenance of submergence and Stagnant flood tolerant genotypes	To ensure seed safety of submergence tolerant genotypes	Around 150 genotypes for submergence and stagnant flood breeding program will be grown to maintain their genetic purity.	do		
13.11	Screening and evaluation of Core parental material for submergence tolerance	Screening of Core parentalmaterial for submergencetolerance	Around 310 test parental material along with 10 checks will be screened	do	Gazipur	

Expected Output: Submergence and Water Stagnation Tolerant varieties will be developed with yield target 6.0 to 6.5 t/ha

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
14	**Project 16: International Network for Genetic Evaluation of Rice (INGER)** **National coordinator: K M Iftekharuddaula, Key cooperator: Sharmistha Ghosal**					
14.1	International Rainfed Lowland Rice Observational Nursery Module 1 (IRLON)-3 sets	Sharing germplasm and breeding lines through international platform for the acceleration of rice improvement	Materials will be provided by IRRI	CI: MAH	Gazipur	3.0 (GOB)
14.2	International Rice Soil Stress Tolerance Nursery (IRSSTN) - Module 1 (Coastal salinity, wet season)-1set	do	do	CI: MAK, MRH, AS	Gazipur, Rangpur, Barishal	
14.3	International Rice Brown Plant Hopper	do	do	CI: MAR	Satkhira	

	Nursery (IRBPN)- 2 sets					
14.4	International Rice Tungro Nursery (IRTN) -2 sets	do	do	CI: SSH, MRAS	Gazipur	
14.5	International Rice Blast Nursery (IRBN)- 2 sets	do	do	CI: MAL, MK	Gazipur	
14.6	International Rice Bacterial Blight Nursery (IRBBN)-2 sets	do	do			
14.7	International Rice Submergence Tolerance Nursery for Flood prone environment (IRSTN-FP)-1 set	do	do	CI: MAL, MK	Gazipur	

Expected Output: Promising genotypes will be selected after evaluation and will be used as parent materials and also will be included in yield trial.

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15	**Project 04: Development of Drought Tolerant Rice** **Project leader: Dr. Md. Abdul Kader**					
15.1	Hybridization	Introgression of drought tolerance gene into high yielding rice genetic background	27 parents will be used	PI: MAK CI: RRM, TKH URS	Gazipur	**10.0 GOB**
15.2	Confirmation of F_1	To confirm the crosses as true hybrid	25 F_1 s will be grown	do	Gazipur	
	Quality check (QC)analysis of F1s					
15.3	Maintenance of Parents	To ensure seed safety of different quality genotypes and for future use in the hybridization or in the experiment as check variety	Around 35 genotypes will be grown to maintain their genetic purity.	do		
	FRGA	Generation Advance	Thirty-three crosses comprising ~ 10,123 progenies	do	Gazipur	
15.4	Observational Yield Trial (OYT#1&2)	Selection of homogeneous breeding lines with drought tolerant quality having high yield with good plant type	A total of 136 and 160 lines will be evaluated in OYT#1 and 2 along with BRRI dhan71, BRRI dhan87 and BRRI dhan71, BRRI dhan93, respectively.	do and R/S	Gazipur, Rangpur and Rajshahi	
15.5	Trait paneling of OYT lines	Assessment of presence/ availability of favorable alleles in breeding lines/population	Total 296 Lines	do	Out Sourcing	

	Advanced Yield Trial (AYT#1 &2)	Confirmatory yield evaluation of advanced lines compared to standard checks	A total of 46 and 21 genotypes will be tested in AYT#1 and 2 along with BRRI dhan71, BRRI dhan75 and BRRI dhan49, BRRI dhan71, BRRI dhan87, respectively.	Do & R/S	Gazipur, Rangpur and Rajshahi	
15.6	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-farm condition	A total of 7 advanced lines will be tested along with checks BRRI dhan71	PI: MAK CI: RRM, TKH, and URS	Rajshahi R/S (Tanore, Paba, Chapainawabganj), Rangpur (Sadar, Nilphamari, Kurigram), Kushtia	

Expected Output: Drought Tolerant Varieties will be developed with potential yield target (5.0 – 6.0 t/ha)

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh
16	**Project-17: Deployment of Superior high yielding fine quality rice varieties Project Leader: Dr. A. S. M. Masudduzzaman**					
16.1	Regional yield Trial -RYT#1(Katari type), RYT#2 (Zira type), RYT#3 (Tall haor)	Evaluation of agronomic performance, specific and general adaptability under on station conditions	Total 6 entries will be tested in replicated trial against standard check varieties BRRI dhan57, BRRI dhan94, and Jirashail.	PI: ASMM, CI: NJ, AWS and R/S	10 BRRI R/S	**5.0 GOB**
16.2	Advanced Line Adaptive Research	On-farm evaluation of advanced breeding lines compared to	Under ALART-1 (Zira type) 2 selected materials (BRH13-7-	PI: Scientist of ARD	10 locations (Locations	

	Trial -ALART-1(BRRI dhan49 grain type) and ALART-2 (Swarna grain type)	standard checks for testing their specific and general adaptability	9-3-2B, RH13-2-14-2-1B, BRH11-7-17-10B, any two) will be evaluated with BRRI recommended practices with check varieties BRRI dhan49 and Zira Under ALART-2 Swarna grain type two selected materials (BRH9392-6-2-1-3-4 and BR9396-6-2-2B) will be evaluated with check varieties BRRI dhan94	CI: ASMM, NJ, AWS	will be selected by ARD	
16.3	Proposed Variety Trial (PVT)	On-farm and on-station evaluation of advance breeding lines compared to standard checks for releasing as new variety in different regions	One selected material (BRH13-2-4-7-2B) will be evaluated under integrated improved management practices compared with BRRI recommended practices with check varieties BRRI dhan57 and Zira.	SCA	10 locations (Locations will be selected by SCA	

17	**Project 18: Development of Deep-Water rice varieties** **Project Leader: Dr. A. S. M. Masuduzzaman**					
17.1	Advance Line Adaptive Research Trial	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	Under ALART three selected materials (BR9892-6-2-2B, BR9376-6-2-2B and BR9392-6-2-1B) will be evaluated with check variety Dudlaki	PI: Scientist of ARD CI: ASMM, NJ, AWS	10 locations (Locations will be selected by ARD)	

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
18	**Development of Healthier Rice Project Leader: Dr. M. A. Kader**					
18.1	Backcross	Introgression of high iron and zinc gene into high yielding rice genetic backgrounds of BR11723-4R-27, BRRI dhan81 and BRRI dhan97	Total 3 crosses will be made with 6 parents	PI: MAK CI: RRM, TKH and URS	Gazipur	**5.00 GOB**
18.2	Pedigree Nursery	Generation Advancement	GR2E trait containing progenies will be grown	Do	Gazipur	

PI= Principal Investigator, CI= Co-investigator, ASMM=ASM Masuduzzaman, KMI=Khandakar Md. Iftekharuddaula, PSB=Partha Sarathi Biawas, MAR=Mohammad Akhlasur Rahman, MK=Mahmuda Khatun, MAK=Mohammad Abdul Kader, MRAS=Md. Ruhul Amin Sarker, SG=Sharmistha Ghosal, RRM=Ratna Rani Majumder, MAZ= Md. Anisuzzaman HK=Hasina Khatun, TKH = Tapas Kumer Hore, SP=Salma Pervin (Pl. Physio), MSR=M. Sazzadur Rahman (Pl. Physiology), SSH=Sheikh Samiul Haque (Entomology), AR=Anisar Rahman, SKD= Sanjoy Kumer Debsharma, NJ=Nusrat Jahan, AB=Avijit Biswas (Pl. Physiology), RFD= Ribed Farzana Disha, MAL= Md. Abdul Latif (P. Pathology), MMH= Md. Mofazzel Hossain (Entomology), MMsH=Md. Mosadek Hossain (Entomology), SA=Sadia Afrin (Entomology), MAR=Md. Asif Rahman, SSD=Sharifa Sultana Dipiti (GQN), ZAR= Zabid Al Riyadh, RJP=Rowmika Jahan Promee, URS= Urmi Rani Shaha, AWS: Afroza Awal Shoily, T H A= Tahmid Hossain Ansari, Scientists of Adaptive Research Div., Regional Station, HRP= Healthier Rice Project

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Program Area (1): Varietal Development Program (VDP)
Sub-Program (01): Plant Breeding

Summary of RYT, ALART and PVT, Boro 2023-24

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
Regional Yield Trial (RYT)					
	Project 6: Development of Salt Tolerant Rice (STR)				
1-2	Regional Yield Trial (RYT#1 & 2)	To evaluate specific and general adaptability of the early maturity/shorter duration (GD: ~140 days or less) advanced breeding lines as compared with standard checks in on-station and/ on-farm (salinity) conditions	Total 20 genotypes along with 2 checks will be evaluated Checks: BRRI dhan89, and BRRI dhan67	PI: MAR CI: HK, RFD, SP, & R/S	Gazipur, Satkhira and Khulna (6-7 locations)
3	RYT cum ALART	To evaluate specific and general adaptability of the early maturity/shorter duration (GD: ~140 days or less) advanced breeding lines as compared with standard checks in on-station and/ on-farm (salinity) conditions	Five promising shorter duration (SD-STR) lines (BR13113-4R-63, BR13113-4R-116, BR13106-4R-184 and BR13122-4R-136 and BR13111-4R-63 having yield potential of 8.5 to 9.67 tha^{-1} with 135 to ≤ 140 days' growth duration should be evaluated in RYT cum ALART (coordinated by Plant Breeding Division, BRRI HQ) and BRRI dhan28, BRRI dhan88 or BRRI dhan67 will be used as check varieties. The trial will be	PI: Scientist of ARD CI: MAR, HK, NJ, RFD & R/S	Gazipur, Bhanga, Rajshahi, Cumilla, Feni, Noakhali, Gopal ganj, Bagerhat, Satkhira and Khulna (10 locations)

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
			carried out in cooperation with different regional stations and assessed by ALART Monitoring Team along with relevant scientists.		
	Project 7b: Development of Premium Quality Rice (PQR) Boro				
4-6	Regional Yield Trial (RYT# 1, 2 & 3)	To evaluate specific and general adaptability of the advanced breeding lines as compared with standard checks in on-station condition	Total 21 long grain type advanced lines will be tested along with checks BRRI dhan58, BRRI dhan102, BRRI dhan104 and BRRI dhan107	PI: RRM CI: MAK, TKH, URS, KF, & R/S	Gazipur H/Q, BRRI R/S Rangpur, Dinajpur, BRRI R/S Rajshahi, Naogaon, BRRI R/S Satkhira, BRRI R/S Kushtia, BRRI R/S Cumilla
	Project 8: Development of Rice Varieties for Favorable Boro Environment				
7-9	Regional Yield Trial (RYT#1, 2 & 3)	To evaluate specific and general adaptability of the advanced breeding lines as compared with standard checks in on-station condition	Total 24 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan50, BRRI dhan63, BRRI dhan81, BRRI dhan89 and BRRI dhan96	PI: PSB CI: MAZ & R/S	Total 9 locations
	Project 8: Development of Cold Tolerant Rice				
10	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advanced breeding lines as compared with standard checks in on-station condition	Total 9 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan67 and BRRI dhan89	PI: PSB CI: MAZ & R/S	10 locations Nikli (3 locs), Taherpur (3 locs), Habiganj (4 locs)
	Project 10: Development for Zinc Enriched Rice				
11	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Six entries will be tested in replicatedtrial against standard check varieties BRRI dhan28, BRRI dhan29, BRRI dhan74 and BRRI dhna84	PI: MAK CI: RRM, TKH, URS & R/S	Gazipur, Barishal, Cumilla, Satkhira, Rangpur, Rajshahi, Sonagazi, Kushtia, Bhanga and Sirajganj

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
	Project 12: Development of Disease Resistant Rice (BB, Blast & BB-Blast)				
12-15	Regional yield Trial (RYT#1 for BB) RYT#2 for BB-Blast RYT#3 for Blast (SD) RYT#4 for Blast (MD) RYT#5 for Blast (LD)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Thirty-two entries will be tested in the replicated yield trial (RYT#1 for BB, RYT#2 for BB-Blast, RYT#3 for Blast (SD), RYT#4 for Blast (MD) and RYT#5 for Blast (LD) against susceptible and standard check varieties BRRI dhan88, BRRI dhan89, BRRI dhan92 and resistant check for BB BRRI dhan101	PI: MK, MAL,THA CI: SKD, JF, Plant Pathology Scientists & R/S	All BRRI R/S and Gazipur
	Project 17: Deployment of Superior quality high yielding rice varieties				
16-17	Regional Yield Trial -RYT# (Fine grain), RYT# (Tall)	Evaluation of agronomic performance, specific and general adaptability under on station conditions	Total nine entries will be tested in replicated trial against standard check varieties Bangabandhu dhan100 BRRI dhan102.	PI: ASMM, CI: NJ, AAS and & R/S	10 BRRI R/S
	Project 15: Development of Water Saving Rice				
18	Regional yield Trial (RYT_AWD)	Evaluation of agronomic performance, specific and general adaptability under 5-day AWD condition in regional stations	Two entries will be tested in replicated trial against standard check varietiesBRRI dhan58 and BRRI dhan102	PI: SG CI: ZAR, SM, and KMI & R/S	8 BRRI R/S
Advanced Line Adaptive Research Trial (ALART)					
	Project 6: Development of Salt Tolerant Rice (STR)				
1	Advanced Line Adaptive Research Trial (ALART)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability in different agro-ecological zones (AEZs) to nominate for	Four genotypes along with 2 checks will be evaluated Checks: BRRI dhan67 and BRRI dhan89	PI: Scientist of ARD CI: MAR, HK, NJ, RFD & R/S	Gazipur, Feni, Noakhali, Gopal ganj, Bagerhat, Satkhira and Khulna (10 locations)

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
		proposed variety trial (PVT).			
2	RYT cum ALART	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability in different agro-ecological zones (AEZs) to nominate for proposed variety trial (PVT).	Five promising shorter duration (SD-STR) lines (BR13113-4R-63, BR13113-4R-116, BR13106-4R-184 and BR13122-4R-136 and BR13111-4R-63 having yield potential of 8.5 to 9.67 tha^{-1} with 135 to ≤ 140 days' growth duration should be evaluated in RYT cum ALART (coordinated by Plant Breeding Division, BRRI HQ) and BRRI dhan28, BRRI dhan88 or BRRI dhan67 will be used as check varieties. The trial will be carried out in cooperation with different regional stations and assessed by ALART Monitoring Team along with relevant scientists.	PI: Scientist of ARD CI: MAR, HK, NJ, RFD & R/S	Gazipur, Bhanga, Rajshahi, Cumilla, Feni, Noakhali, Gopal ganj, Bagerhat, Satkhira and Khulna (10 locations)
	Project 7b: Development of Premium Quality Rice (PQR) Boro				
3	Advanced Line Adaptive Research Trial (ALART)	Evaluation of specific and general adaptability under on-farm condition	BR10645-6-4-8-1-2, BR10646-3-2-2-4-3, BR10648-12-1-3-4-1, Zira, Nachol and Katari, Shibganj will be evaluated in ALART along with checks BRRI dhan104, BRRI dhan107 and BINA dhan25	PI: Scientist of ARD CI: MAK, RRM, TKH, URS & R/S	10 locations (Location will be selected by ARD)
	Project 8: Development of Rice Varieties for Favorable Boro Environment				
4-5	Advance Line Adaptive Research Trial (ALART 1&2)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	Under favorable Boro program, BR11318-5R-63, BR11318-5R-72, SVIN109, IR12A173, IR17A1694 with medium growth duration (ALART-1) and IR17A1723 with short duration will be evaluated in ALART along with checks BRRI dhan58, BRRI dhan81, BRRI dhan88, and BRRI dhan96 (ALART-2)	PI: Scientist of ARD CI: PSB CI: MAZ	10 locations (Location will be selected by ARD)

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
	Project 12: Development of Disease Resistant Rice (BB & BB-Blast)				
6-7	Advance Line Adaptive Research Trial (ALART 1 & 2)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	Under ALART-1 (BB resistance) three selected genotypes; BR(Path)13800-BC3-8-1, BR(Path)13800-BC3-8-9 and BR(Path)13800-BC3-224-28) will be evaluated with the check varieties BRRI dhan29 and BRRI dhan89. Under ALART-2 (BB-Blast resistance) three selected genotypes (BR(Path)13800-BC3-134-8, BR(Path)13800-BC3-134-25 and BR(Path) 13800-BC3-224-44) will be evaluated with the check varieties BRRI dhan29 and BRRI dhan89	PI: Scientist of ARD CI: MK, MAL	10 locations (Locations will be selected by ARD
	Project 17: Deployment of Superior high yielding fine quality rice varieties				
8-9	Advance Line Adaptive Research Trial -ALART-1 (Zira type) and ALART-2 (Katari)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	Under ALART-1 (Zira type) three selected materials (BRH9392-1-7-5B, BRH17-23-8-2-7B and BRH15-24-7B) will be evaluated with BRRI recommended practices withcheck varieties BRRI dhan88. Under ALART-2 (Katari) three selected materials (BRH11-7-17-10B, BRH9-3-2B and BRH13-9-5-2B) will be evaluated with check varieties BRRI dhan81	PI: Scientist of ARD CI: ASMM, NJ, AAS	10 locations (Locations will be selected by ARD
	Project 12: Development of Disease Resistant Rice (Blast)				
Proposed Variety Trial (PVT)					
	Project 17: Development of Superior high yielding fine quality rice varieties				
1	Proposed Variety Trial (PVT) (Favorable Boro)	On-farm evaluation of advance breeding lines compared to standard checks for release as variety	BR 11318-5R-63 and BR 11337-5R-72 will be evaluated under integrated improved management practices compared with BRRI recommended practices with check varieties BRRI dhan88	SCA	10 locations (Locations will be selected by SCA
2	Proposed Variety Trial	On-farm evaluation of	One selected material (BRH-10-14-2-6B)	SCA	10 locations

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location
	(PVT) (Fine quality)	advance breeding lines compared to standard checks for release as variety	will be evaluated under integrated improved management practices compared with BRRI recommended practices with check varieties Banabandhu dhan100		(Locations will be selected by SCA
3-4	Proposed Variety Trial (PVT) (PVT 1: Short duration & PVT 2: Long duration)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	Under PVT-1 (Blast Resistance-Short duration) BR (Path)12452-BC3-42-22-11-4 and BR(Path)12452-BC6-53-21-11 will be evaluated with the check varieties BRRI dhan28 and BRRI dhan88. Under PVT-2 (Blast resistance-Long duration) two selected genotypes (BR12454-BC2-69-97-39-5-44 and BR12454-BC2-75-32-31-39-7) will be evaluated with check varieties BRRI dhan29 and BRRI dhan89	SCA	10 locations (Locations will be selected by SCA
5	Proposed Variety Trial (PVT) (BB and Blast-Short duration)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability	BB and Blast resistance (Short duration) genotypes (BR(Path)13784-BC3-63-6-4-HR6) will be evaluated with check varieties BRRI dhan28 and BRRI dhan88.	SCA	10 locations (Locations will be selected by SCA

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SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
6	**Project 6: Development of Salt Tolerant Rice** **Project Leader: Md. Akhlasur Rahman**					**30.0 GOB, AGGRi Alliance & TRB-BRRI (BMGF)**
6.1	Hybridization	Introgression of salinity tolerant genes in genetically advanced genotypes	60 parents will be used	PI: MAR CI:HK, NJ	Gazipur	
6.2	Confirmation of F_1 Quality check (QC) analysis of F1s	To confirm the crosses as true hybrid	32 F_1 s will be grown	PI: MAR CI: HK, NJ RFD	Gazipur	
6.3	FRGA	Generation Advance	One hundred sixteen Crosses comprising ~ 67001 progenies	PI: NJ CI: HK, MAR	Gazipur	
6.4	Line Stage Test (LST) Trial	Identification of uniform lines based on plant height, flowering date and grain type	>5952 breeding lines	PI: MAR CI: HK, NJ, RFD, NT, SP	Satkhira/ Gazipur	
6.5	Observational Yield Trial (OYT)	Selection of genetically fixed salt tolerant breeding lines with acceptable grain quality having high yield potential with good plant type	~650 Lines from LST along with 03 checks BRRI dhan67 dhan89, BRRI dhan97 will be evaluated	PI: MAR CI: HK, RFD, TA & R/S	Gazipur, Satkhira and Khulna	
	Trait paneling of OYT lines	Assessment of presence/ availability of favorable alleles in breeding lines/population	Total 650 lines	PI: HK CI: MAR, NJ	Out Sourcing	
	Grain quality analysis of OYT, PYT, AYT & RYT lines	To evaluate key economic traits based on consumers preference	Total 720 lines	PI: SSD CI:HK, NJ, MAR	GQN	
6.6	Preliminary Yield Trial (PYT1 &2)	Initial yield evaluation of advanced lines compared to standard checks in replicated trial	147 genotypes along with 3 checks BRRI dhan67, BRRI dhan89, BRRI dhan97 will be evaluated in PYT trial	PI: MAR CI: HK, RFD, SP, NT & R/S	Gazipur, Satkhira and Khulna	
6.7	Advanced Yield Trial (AYT#1,2,3)	Confirmatory yield evaluation of advanced lines compared to standard	46 genotypes along with 3 checks BRRI dhan89,	PI: MAR CI: HK, RFD,	Gazipur, Satkhira and	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		checks	BRRI dhan67, dhan97 will be set three in AYT trial	SP, NT & R/S	Khulna	
6.8	Regional Yield Trial (RYT#1,2)	To evaluate specific and general adaptability of the early maturity/shorter duration (GD: ~140 days or less) advanced breeding lines as compared with standard checks in on-station and/ on-farm (salinity) condition	20 genotypes along with 2 checks will be evaluated Checks: BRRI dhan67, BRRI dhan89, and BRRI dhan97	PI: MAR CI: HK, RFD, SP, NT & R/S	Gazipur, Satkhira, Gopalganj, Bagerhat and Khulna 6-7 locations)	
6.9	Advanced Line Adaptive Research Trial (ALART)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and general adaptability in different agro-ecological zones (AEZs) to nominate for proposed variety trial (PVT).	Four genotypes along with 2 checks will be evaluated Checks: BRRI dhan67 and BRRI dhan89	PI: Scientist of ARD CI: MAR, HK, NJ, RFD & R/S	Gazipur, Feni, Noakhali, Gopal ganj, Bagerhat, Satkhira and Khulna (10 locations)	
6.10	Maintenance of parent	Maintenance of parent for future use in the hybridization or in the experiment as check variety	120 parents will be grown	PI: HK CI: MAR, RFD	Gazipur	

Expected Output: Salt tolerant variety(ies) for farmers, consumers and miller's preference will be developed with better yield potential (7.5-8.0 t/ha)

a) Salt tolerant variety(ies) with salt tolerance at seedling stage (12 dS/m) and reproductive stage tolerance (EC = 8-10 dS/m) will be developed based on different stakeholders' demands such as farmers, consumers, miller's preference of target region

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
7b	**Project 7: Development of Premium Quality Rice (PQR) Boro Project leader: Md. Abdul Kader**					
7b.1	Hybridization	Introgression of extra-long grain with or without aroma into high yielding rice genetic background	23 hybridization parents will be used including Indian Basmati, BRRI	PI: RRM CI: MAK, TKH, URS,	Gazipur	**18.0**

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
			dhan107, BINA dhan25 and advanced elite breeding lines	and IHJ		**GOB**
7b.2	Confirmation of F_1	To confirm the crosses as true hybrid	44 crosses will be grown	do	Gazipur	
7b.3	FRGA nursery	Generation Advance	Sixty-three crosses comprising 25,705 progenies	do	Gazipur	
7b.4	Line Stage Testing (LST)	Identification of uniform lines based on plant height, flowering date and grain type	1860 breeding lines will be evaluated	do	Gazipur	
7b.5	Observational Yield Trial (OYT#1, 2, 3 & 4)	Selection of homogeneous breeding lines with fine grain properties having high yield with good plant type	Total 374 advanced lines will be tested along with checks BRRI dhan63, BRRI dhan81, BRRI dhan102, BRRI dhan104 & BRRI dhan107	do	Gazipur, Rangpur, Rajshahi	
7b.6	Advanced Yield Trial (AYT#1, 2 & 3)	Confirmatory yield evaluation of advanced lines compared to standard checks	Total 153 genotypes along with BRRI dhan81, BRRI dhan102, BRRI dhan104 & BRRI dhan107	Do	Gazipur, Rangpur, Rajshahi	
7b.8	Regional Yield Trial (RYT# 1, 2 & 3)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	Six, five and ten long grain type advanced lines, respectively will be tested along with checks BRRI dhan58, BRRI dhan81, BRRI dhan102, BRRI dhan104 and BRRI dhan107	PI: RRM CI: MAK, TKH, URS, , IHJ & R/S	Gazipur, Rangpur, Dinajpur, Rajshahi, Naogaon, Satkhira, Kushtia, Cumilla.	
7b.9	Advanced Line Adaptive Research Trial	Evaluation of specific and general adaptability under on farm	Five genotypes will be evaluated in ten location	ARD	Total 10 locations	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
	(ALART)	condition.	of Bangladesh with check variety BRRI dhan104, BRRI dhan107 and BINA dhan25		(Location will be selected by ARD)	
7b.10	G by E interaction of Basmati type rice on phsico-chemical properties	Evaluation of Basmati type cultivar on different environment for adaptability and changes on physico-chemical properties.	A total of 20 Cultivars will be evaluated along with BRRI dhan63, BRRI dhan81, BRRI dhan104, BRRI dhan107, Tepi Boro and Rata Boro	PI: RRM CI: MAK, TKH, URS, IHJ and R/S	Gazipur, Rangpur (Rangpur, Dinajpur, Panchagarh), Rajshahi (Rajshahi, Naogaon), Kushtia (Kushtia, Chuadanga), Barishal, Satkhira, Gopalganj, Sonagazi, Cumilla & Habiganj	
7b.11	Maintenance of parents	Maintenance of parent for future use in the hybridization or in the experiment as check variety	Total 60 parents will be grown	PI: RRM CI: MAK, TKH, URS, and IHJ	Gazipur	

Expected Output: Aromatic and non-aromatic fine quality rice with international (Basmati/Banglamati/Soru Balam type) standards in Boro season will be developed for domestic use and export

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
7a	**Project 7a: Development of Premium Quality Rice (Black Rice)** **Project leader: Sharmistha Ghosal**					
7a.1	Hybridization	Introgression of antioxidant properties with or without aroma into high yielding rice genetic background	12 parents will be used to make 15 crosses	PI: SG CI: SM, MMY, ZAR and KMI	Gazipur	**10.0 GOB**
7a.2	Confirmation of F_1	To confirm the crosses as true hybrid	34 crosses will be grown to be identified as true crosses	do	Gazipur	
7a.3	FRGA	Generation Advance	Around 27,000 progenies from 55 crosses will be advanced through	do	Gazipur	
7a.4	Line Stage Testing (LST)	To select uniform genotypes in terms of plant height and days to flowering with key target traits	around 350 fixed breeding lines will be evaluated	do	Gazipur	
7a.5	Observational Yield Trial (OYT#1, 2, 3 & 4)	Selection of superior lines with desired agronomic characters	Total 245 advanced lines will be tested	do	Gazipur	
7a.6	Preliminary Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	Total 176 advanced lines will be tested	do	Gazipur	
7a.7	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	Total 4-5 advanced lines will be tested along with check BRRI dhan84	PI: RRM CI: TKH, URS, KF and MAK & R/S	Total 10 locations	

Expected Output: Antioxidant rich with or without aroma high yielding rice varieties will be developed for domestic use and export

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
8	**Project 8: Development of Rice Varieties for Favorable Boro Environment** **Project leader: Partha S. Biswas**					
8.1	Hybridization	To create variations for the development of new genotypes with high yield and acceptable grain	38 hybridization parents will be used	PI: PSB CI: MAZ	Gazipur	**35.0 GOB,**

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		quality				TRB, AGGRi Alliance
8.2	Confirmation of F_1	To confirm the crosses as true F_1s and use of the selected F_1s to produce F_2 seeds and use in making different types of crosses	66 crosses will be grown	do	Gazipur	
8.3	Segregating RGA (F_2-F_6)	Generation Advance	26828 progenies will be advanced	do	Gazipur	
8.4	Line Stage Testing (LST)	To select uniform genotypes in terms of plant height and days to flowering with key target traits	5204 breeding lines will be evaluated	do	Gazipur	
8.5	Observational Yield Trial (OYT)	Selection of superior lines with desired agronomic characters	Total 695 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan81, BRRI dhan89, BRRI dhan92 and BRRI dhan96	do	Gazipur, Cumilla, Rajsahi Rangpur	
8.6	Advanced Yield Trial (AYT)	Evaluation of breeding lines for yield potential in multi-locations in replicated trial	Total 85 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan81, BRRI dhan89, BRRI dhan92 and BRRI dhan96	do	Gazipur, Cumilla, Rajsahi	
8.7	Regional Yield Trial (RYT#1, 2 & 3)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	Total 24 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan50, BRRI dhan63, BRRI dhan81, BRRI dhan89 and BRRI dhan96	PI: PSB CI: MAZ & R/S	Total 9 locations	
8.8	Advance Line Adaptive Research Trial (ALART)	On-farm evaluation of advanced breeding lines compared to standard checks for testing their specific and	BR11318-5R-63, BR11318-5R-72, SVIN109, IR12A173,	PI: Scientist of ARD CI: PSB,	Total 10 locations (Location	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		general adaptability	IR17A1694 with medium growth duration and IR17A1723 with short duration will be evaluated in ALART along with checks BRRI dhan58, BRRI dhan81, BRRI dhan88, and BRRI dhan96	MAZ	will be selected by ARD)	

Expected Output: Improved genotypes with high yield potential (≥8.0 t/ha), acceptable growth duration and better grain quality for irrigated ecosystem will be developed

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
9	**Project 9: Development of Cold Tolerant Rice** **Project leader: Partha S. Biswas**					
9.1	Hybridization	To create variations for the development of new genotypes with cold tolerance at reproductive and seedling stage with acceptable grain quality	39 hybridization parents will be used	PI: PSB CI: MAZ	Gazipur	**40.0 GOB, TRB, KGF**
9.2	Confirmation of F_1	To confirm the crosses as true F_1s and use of the selected F_1s to produce F_2 seeds and use in making different types of crosses	24 crosses will be grown	do	Gazipur	
9.3	Segregating RGA (F_2-F_6)	Generation Advance	18296 progenies will be advanced	do	Gazipur	
9.4	Line Stage Testing (LST)	To select uniform genotypes in terms of plant height and days to flowering with key target traits	1080 breeding lines will be evaluated	do	Gazipur	
9.5	Observational Yield Trial (OYT#1,2, QTL & Haor) [Cold stress (22	Selection of superior and cold tolerant lines under natural cold condition	Total 1701 advanced lines will be tested along with checks BRRI dhan28,	do	Gazipur, Habiganj Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
	Oct seeding-CS1 & 1 Nov-CS2) & non-stress (15 Nov seeding)]		BRRI dhan67, BRRI dhan89, Bhutan and Hbj.B.VI			
9.6	Advanced Yield Trial (AYT)	Evaluation of breeding lines for yield potential in multi-locations in replicated trial	Total 148 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan81, BRRI dhan67, BRRI dhan81and BRRI dhan89	do	Gazipur, And 6 Haor sites of Nikli and Taherpur	
9.7	Regional Yield Trial (RYT)	To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on-station condition	Total 9 advanced lines will be tested along with checks BRRI dhan28, BRRI dhan67 and BRRI dhan89	PI: PSB CI: MAZ & R/S	Nikli (3 loc) Taherpue (3 loc) and Habiganj (4 loc)	

Expected Output: High yielding rice varieties tolerant to cold stress at seedling and reproductive stages will be developed

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
10	**Project 10: Development for Zinc Enriched Rice, Boro** **Project leader: Md. Abdul Kader**					
10.1	Hybridization	Development of new genotypes with high zinc and iron content along with resistance to major insect pests and diseases, abiotic stress tolerance and acceptable grain quality	Total 25 single crosses will be made using 11 recipients and 15 donor parents having high yield and high zinc content under abiotic stress condition	PI: MAK CI: RRM, TKH and URS	Gazipur	**50.0 GoB**
10.2	Confirmation of F_1	To confirm the crosses as true F_1s and use of the selected F_1s to produce F_2 seeds and in different types of crosses	Fifteen single crosses will be confirmed and F_2 seed will be produced	Do	Gazipur	
10.3	Field RGA	Rapid advancement of F2 – F5	Totally 53,950 progenies of 156	Do	Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		generations through following single seed descent-based RGA method.	crosses will be advanced through Field RGA			
10.4	Line Stage Testing (LST)	Selection of uniform genotypes in terms of plant height and days to flowering with key target traits.	Totally 6,530 progenies of 24 crosses will be evaluated through Line Stage Testing (LST)	Do	Gazipur	
10.5	Observational Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	Total 484 test entries will be evaluated against BRRI dhan29, BRRI dhan74 and BRRI dhan102	Do	Gazipur	
10.6	Secondary Yield Trial (SYT)	Confirmation of yield potentiality of the advanced lines compared to standard checks	Total 12 genotypes will be evaluated against standard check varieties BRRI dhan29, BRRI dhan74 and BRRI dhna84	Do	Gazipur	
10.7	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Six entries will be tested in replicated trial against standard check varieties BRRI dhan29, BRRI dhan74 and BRRI dhna84	PI: MAK CI: RRM, TKH and URS & R/S	Gazipur, Barishal, Cumilla, Satkhira, Rangpur, Rajshahi, Sonagazi, Kushtia, Bhanga and Habiganj BRRI R/S	

Expected output: High iron and zinc content along with resistance to major insect pests and diseases and acceptable grain quality rice variety will be developed

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
11	**Project 11: Development of Insect Resistant Rice (IRR)** **Project Leader: Md. Ruhul Amin Sarker**					**15.0** GOB, TRB
11.1	Hybridization	Introgression of genes of BPH and gall midge into high yielding rice	14 well characterized parents will be used	PI: MRAS, CI: MAR, HK,	Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		genetic background		RFD		
11.2	Confirmation of F_1	To confirm the crosses as true hybrid	23 crosses will be grown	PI: MRAS, CI: MAR, HK, RFD	Gazipur	
	Quality check (QC) analysis of F_1s					
11.3	Line Augmentation	Introgression of bph genes (*bph17* and *bph32*) to develop advanced breeding lines	Three F_1, 3 BC_1F_1 crosses will be confirmed and BC_1F_1 & BC_2F_1 seeds will be produced	PI: MRAS, CI: MAR, HK, RFD	Gazipur	
11.4	FRGA	Generation Advance	More than 69873 progenies from 82 crosses will be grown	PI: HK CI: MRAS, MAR, RFD	Gazipur	
11.5	Line Stage Testing (LST)	Identification of uniform lines based on good plant type, flowering date and grain type	~ 4500 breeding line from 23 crosses will be used	PI: MRAS, CI: MAR, HK, RFD		
11.6	Observational Yield Trial (OYT)	Selection of genetically fixed breeding lines with resistant to BPH/GM, earliness having high yield with good plant type	Selected 257 lines will be evaluated with four checks (BRRI dhan88, BRRI dhan89, BR3 and T27A)	PI: MRAS, CI: MAR, HK, RFD, MMH MMsH, SSD and R/S	Gazipur, Rangpur, Cumilla and GQN	
	Trait paneling of OYT lines	Assessment of presence/availability of favorable alleles in breeding lines/population				
	Grain quality analysis of OYT, PYT & AYT lines	To evaluate key economic traits based on consumers preference				
11.7	Preliminary Yield Trial (PYT)	Initial yield evaluation of advanced lines compared to standard checks	Total 53 test entries will be evaluated against BRRI dhan88, BRRI dhan89 and BR3	PI: MRAS, CI: MAR, HK, RFD and R/S	Gazipur, Rangpur, Cumilla	
11.8	Advanced Yield Trial (AYT)	To evaluate/confirm yield performance of the advance breeding lines as compared with standard	Selected 25 line will be used with checks: BRRI dhan88, BRRI dhan89 and	PI: MRAS, CI: MAR, HK, RFD and R/S	Gazipur, Rangpur, Cumilla	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
		checks at multi-locations trials	BR3			
11.9	Screening breeding lines for BPH and GM resistance	To identify new sources of BPH and GM resistance	~ 650 breeding lines (OYT, PYT, AYT and RYT) will be evaluated for BPH and GM resistance	PI: SSH, CI: MMH, MMsH, SA, MRAS, MAR, HK	Entomology Division, BRRI	
11.10	Maintenance and seed increase of key parents.	To maintain genetic purity of parent materials with seed production	Seeds of 65 key parents for breeding program will be increased and their genetic purity will be maintained	PI: MRAS, CI: MAR, HK, RFD	Gazipur	

Expected output: BPH and Gall midge resistant variety will be developed with better yield potential (7.0-8.0 t/ha)

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
12	**Project 12: Development of Disease Resistant Rice (BB & Blast) Program leader- Mahmuda Khatun**					**10.0 GOB, TRB-BRRI**
12.1	Hybridization	Introgression of high yield, lodging tolerance and disease resistance trait for BB & Blast	Crosses will be done using 40 parents for BB, Blast & bakanae	PI: MK CI: SKD & JF	Gazipur	
12.2	F_1 confirmation	To confirm the crosses as true hybrid	15 crosses for BB and 15 crosses for Blast will be confirmed	do	Gazipur	
12.3	Segregating population	Advancement of segregating generations following single seed descent-based RGA method	~40500 progenies from 90 crosses for BB and Blast will be advanced through RGA techniques	do	Gazipur	
12.4	Line Stage Testing (LST)	Identification of uniform lines based on good plant type, flowering date and grain type	~ 6600 breeding line from 22 crosses will be used	do	Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
12.5	Observational Yield Trial (OYT)	Selection of genetically fixed breeding lines with strong plant type, uniformity in heading, good PACP in the field condition and tolerance to disease (BB & Blast) in artificial inoculation condition	~320 fixed lines for BB & Blast will be evaluated against susceptible & resistant checks BRRI dhan88 (Sus & Std Ck) BRRI dhan89 (Sus & Std Ck) BRRI dhan101 (Res Ck.)	do	Gazipur, Cumilla, Rangpur & Rajshahi	
12.6	Advanced Yield Trial (AYT)	To evaluate/confirm the yield performance of the advanced breeding lines as compared with standard checks at multi-locations trials	A total of 40 entries for BB & Blast will be evaluated against susceptible & resistant checks: BRRI dhan88 (Sus & Std Ck) BRRI dhan89 (Sus & Std Ck) BRRI dhan101 (Res Ck.)	do	Gazipur, Cumilla, & Rangpur	
12.7	Regional yield Trial (RYT)	Evaluation of agronomic performance, specific and general adaptability under on-station condition	Thirty-two entries will be tested in the replicated yield trial (RYT#1 for BB, RYT#2 for BB-Blast, RYT#3 for Blast (SD), RYT#4 for Blast (MD) and RYT#5 for Blast (LD) against susceptible and standard check varieties BRRI dhan88, BRRI dhan89, BRRI dhan92 and resistant check for BB BRRI dhan101	PI: MK, MAL,THA CI: SKD, JF, Plant Pathology Scientists & R/S	All BRRI R/S and Gaz	
12.8	Maintenance and seed increase of key parents.	To maintain the genetic purity of parent materials with seed production	The seeds of 150 key parents for the breeding program will be increased	PI: MK CI: SKD & JF	Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
			and their genetic purity will be maintained			

Expected output: BB and Blast resistant variety will be developed with better yield potential.

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
15	**Project 15: Development of Water Saving Rice Program leader- Sharmistha Ghosal**					**10.0 GOB**
15.1	Hybridization	Introgression of high yielding, water saving and lodging tolerance genes	Around 18 crosses will be made using 15 parents	PI: SG CI: ZAR, SM and KMI	Gazipur	
15.2	F_1 confirmation	To confirm the crosses as true hybrid	18 crosses will be confirmed	do	Gazipur	
15.3	Segregating population	Advancement of segregating generations following single seed descent-based RGA method	A total of 10,212 progenies from 30 crosses will be advanced through RGA techniques	do	Gazipur	
15.4	Observational Yield Trial (OYT)	Selection of genetically fixed breeding lines with strong plant type, uniformity in heading, good PAcp in the field condition	A total of 70 fixed lines will be evaluated against checks	do	Gazipur	
15.5	Preliminary Yield Trial (PYT#1) (GD <150 days)	Initial yield evaluation of advanced breeding lines in replicated trials for water saving with short duration	Total 41 advanced lines will be tested along with checks BRRI dhan58, BRRI dhan88, BRRI dhan89 and BRRI dhan102	PI: SG CI: SP, ZAR, SM and KMI	Gazipur	
15.6	Preliminary Yield Trial (PYT#2) (GD <150 days)	Initial yield evaluation of advanced breeding lines in replicated trials for water saving with short duration	Total 17 advanced lines will be tested along with checks BRRI dhan58, BRRI dhan92, BRRI dhan89 and BRRI	PI: SG CI: SP, ZAR, SM and KMI	Gazipur	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
			dhan102			
15.7	Regional yield Trial (RYT_AWD)	Evaluation of agronomic performance, specific and general adaptability under on station condition	Two entries will be tested in replicated trial against standard check variety BRRI dhan58	PI: SG CI: SP, ZAR, SM, KMI &R/S	10 BRRI R/S	

Expected output: High yielding, water saving and lodging tolerant variety will be developed with better yield potential.

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
16	**Project 16: Deployment and Validation of High Beta-carotene Rice and High-Iron & Zinc Rice Varieties (Healthier Rice Project)** **Project Leader: MA Kader**					
16.1	Hybridization	Introgression of high iron and zinc gene into high yielding rice genetic backgrounds of BRRI dha71, BRRI dhan79 and BRRI dhan81, BRRI dhan87, and BRRI dhan92 and BRRI dhan99	Six backcrosses (BC_3F_1 and BC_3F_3) will be made with 7 parents	PI: MAK CI: RRM, TKH, URS	Gazipur	**10.5** **HRP**

Expected output: High iron and zinc enriched rice genotypes/varieties will be developed with better yield potential.

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
17	**Project-17: Development of Superior high yielding fine quality rice varieties** **Project Leader: ASM Masudduzzaman**					
17.1	Regional Yield Trial -RYT# (Fine grain), RYT# (Tall)	Evaluation of agronomic performance, specific and general adaptability under on station conditions	Total nine entries will be tested in replicated trial against standard check varieties Bangabandhu dhan100 BRRI dhan102.	PI: ASMM, CI: NJ, AAS and R/S	10 BRRI R/S	**5.0** **GOB**
17.2	Advance Line Adaptive Research	On-farm evaluation of advanced breeding lines compared to	Under ALART-1 (Zira type) three selected materials will be evaluated	PI: Scientist of ARD	10 locations	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
	Trial -ALART-1 (Zira type) and ALART-2 (Katari)	standard checks for testing their specific and general adaptability	with BRRI recommended practices with check varieties BRRI dhan81, BRRI dhan88 and BRRI dhan100 Under ALART-2 Katari three selected materials will be evaluated with check varieties BRRI dhan100	CI: ASMM, NJ, AAS	(Locations will be selected by ARD	
17.2	Proposed Variety Trial (PVT)	On-farm evaluation of advance breeding lines compared tostandard checks for release asvariety	One selected material (BRH-10-14-2-6B) will be evaluated under integrated improved management practices compared with BRRI recommended practices with check varieties Bangabandhu dhan100	SCA	10 locations (Locations will be selected by SCA	

SN	Experiments	Specific Objective(s)	Materials & Method	PI and CI	Location	Budget (Lakh Taka)
18	**Project 18: International Network for Genetic Evaluation of Rice (INGER) National coordinator: KM Iftekharuddaula, Key cooperator: Sharmistha Ghosal**					
18.1	International Irrigated Rice Observational Nursery (IIRON-3 Set)	Sharing germplasm and breeding lines through international platform for the acceleration of rice improvement	Materials will be provided by IRRI	CI: PSB, MRAS, MAH, MRI	Gazipur, Barishal, Habiganj	**3.0 (GOB)**
18.2	International Rice Soil Stress Tolerance Nursery (IRSSTN) – 1 sets)	do	do	CI: MAR	Satkhira	

Expected Output: Promising genotypes will be selected after evaluation and will be used as parent materials and also will be included in yield trial

Acknowledgements with Abbreviation (Not according to seniority):

ASMM=ASM Masuduzzaman, KMI=Khandakar Md. Iftekharuddaula, PSB=Partha Sarathi Biswas, MAR=Mohammad Akhlasur Rahman, MK=Mahmuda Khatun, MAK=Mohammad Abdul Kader, MRAS=Md. Ruhul Amin Sarker, SG=Sharmistha Ghosal, RRM=Ratna Rani Majumder, MAZ= MD. Anisuzzaman HK=Hasina Khatun, TKH = Tapas Kumer Hore, MMEA=MM Emam Ahmed, SM=Sheikh Maniruzzaman, SP=Salma

Pervin (Pl. Physiology), MSR=M. Sazzadur Rahman (Pl. Physiology), SSH=Sheikh Shamiul Haque (Entomology), SKD= Sanjoy Kumer Debsharma, NJ=Nusrat Jahan, MMR= Md. Mamunur Rashid (Pl. Physiology), TH=Tuhin Halder (Pl. Physiology), RFD= Ribed Farzana Disha, MAL= Md. Abdul Latif (P. Pathology), MMH= Md. Mofazzel Hossain (Entomology), MMsH=Md. Mosaddek Hossain (Entomology), SA=Sadia Afrin (Entomology), TAH=Tahmid Hossain Ansari, MAS = Muhammad Ali Siddiquee (GQN), SSD=Sharifa Sultana Dipiti (GQN), KF=Kaniz Fatema ZAR= Zabid Al Riyadh, URS= Urmi Rani Shaha, AAS: Afroza Awal Shoily, SMTI=SM Tariqul Islam, MHK= Md. Humayun Kabir (ARD), MSA= Mir Sharfuddin Ahmed (GRS), SP= Shahana Pervin (IWM), MSI=Md. Shahidul Islam (Agronomy), AI= Aminul Islam (Soil Science), MSI= Md. Saiful Islam (Agril. Economics), MSI= Md. Shafiqul Islam, MSI= Md. Sirajul Islam (FMD), MDH= Md. Durul Huda (FMPHT), MGKB= Md. Golam Kibria Bhuiyan (WMM), MAH= Md. Alamgir Hossain, MRI= Md. Rafiqul Islam, concerned scientists of Adaptive Research Division, Regional Stations, others and BRRI authorities