ANNUAL RESEARCH REVIEW WORKSHOP
2022-2023

BRRI REGIONAL STATION
GOPALGANJ

BANGLADESH RICE RESEARCH INSTITUTE

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SUMMARY

In the proposed variety trial (PVT), one set in T. Aman, 2022 of inbred trial was evaluated at BRRI RS Goalganj. BRRI RS Gopalganj conducted seven advanced lines adaptive research trials (ALART) in the Gopalganj and Bagerhat districts during the reporting year 2022–2023.In ALART (STR-1) T. Aman 2022, two advanced lines BR11712-4R-218 and BR11716-4R-102 produced a higher yield (4.6-4.9 t ha^{-1}) than the standard check varieties BRRI dhan73 (4.0 t ha^{-1}) and BRRI dhan87 (4.4 t ha^{-1}). In the case of ALART (DWR) Aman, three advanced lines BR10230-7-19-2B, BR9376-6-2-2B and BR9392-6-2-1B gave a greater yield (3.1-3.5 t ha^{-1}) than the standard checks Fulkori (2.7 t ha^{-1}).For ALART (SubTR-LD), Aman, one advanced line namely BR9158-19-9-6-50-2-HR1 produced higher yield (5.4 t ha^{-1}) than the standard checks BRRI dhan44 (3.7 t ha^{-1}) and BRRI dhan52 (4.6 t ha^{-1}). In ALART for (FBR-Barishal) Boro 2022-23, two advanced lines BRBa1-4-9 and BRBa 3-1-7 produced higher yield (7.89-8.06 t ha^{-1}) than the standard checks BRRI dhan58 (6.90 t ha^{-1}) and BRRI dhan89 (7.69 t ha^{-1}). One advanced line IR12A173 produced a greater yield (7.90 t ha-1) at ALART (FBR- MD) Boro than the standard checks BRRI dhan58 (7.64 t ha-1) and BRRI dhan96 (6.88 t ha-1).Again, ALART (FBR-SD), Boro, three advanced lines BR11318-5R-63, BR11337-5R-72 and SVIN109 produced higher yield (7.64-8.16 t ha^{-1}) than the standard checks BRRI dhan81 (7.05 t ha^{-1}) and BRRI dhan96 (7.15 t ha^{-1}) with similar growth duration.

Four RYTs, namely RYT (Swarna and long slender type), RYT (Short selender), RYT (Tall breeding materials) and RYT (DWR-Hbg) were conducted during T. Aman, 2022. Six RYTs such as RYT(FBR-Barishal), RYT(STR), RYT (Zira type), RYT (Tall) ,RYT (FBR-Boro) and RYT (PQR) were conducted at BRRI RS Gopalganj during Boro 2022-23.

From the Faridpur and Khulna regions, 216 Aman rice germplasm samples were grown. This rice germplasm was rejuvenated to produce more seed for evaluation and use in the future. The Rice Germplasm Descriptors and Evaluation Form, GRSD, BRRI was used in an experiment to characterize 50 T.Aman germplasm using 51 agro-morphological characteristics (20 quantitative and 31 qualitative characters).

Under the TRB-BRRI project, eleven varietal replacements through Head to Head (HTH) demonstrations were carried out throughout the reporting year, five in the Aman season of 2022 and six in the Boro season of 2022–2023 on each of one bigha (33 decimal) of land.

In addition, three block demonstrations were held: one for Aus 2022 Season (100 bigha, BRRI Hybrid dhan7) at Shoronkhola, Bagerhat and two for Boro 2022-23 (200 Bigha, BRRI Hybrid dhan5) at Kotalipara, Gopalganj and (150 Bigha, BRRI Hybrid dhan3) at Tungipara, Gopalganj. A total number of 500 (30 in Aus, 220 in T. Aman and 250 in Boro) field demonstrations (about 1 bigha each) of newly released BRRI modern rice varieties were conducted in different farmer's field in Gopalganj, Bagherhat and Narail districts. On the other hand, 07 farmers' training and 17 field days in different locations of BRRI RS Gopalganj recommended areas were organized. Also, Gopalganj attended a Krishi mela (Agricultural exhibition).

In the reporting year, 4.94 tons of breeder seeds of different BRRI varieties were produced and delivered to the GRS division, BRRI Gazipur. Additionally, 11.66 tons of TLS of BRRI rice varieties were produced by BRRI RS Gopalganj.

INTRODUCTION

Bangladesh Rice Research Institute (BRRI), Regional Station, Gopalganj was established in 2018 and situated at 22°56'48" N latitude and 89°49'24" E longitude and 4.0 m above from the sea level. In 2018, 4 hectares of land were acquired in Bhetdhar mouza of Gobra union under Sadar Upazila of Gopalganj district for BRRI regional Station, Gopalganj. The station is situated near Ghonapara on Gopalganj-Tungipara road and 7 km away from Gopalganj town. The total constructional area of this station is 3.26 acres which included a Lab cum Office building, single accommodation, covered threshing floor, implement shed, RCC road and total research area is 6.74 Acre. The whole station was surrounded by a boundary wall.

The station represents the Agro Ecological Zone-14 in Gopalganj-Khulna Beel area. The soil of this region is mainly composed of high organic matter etel-etel loam texture. The economy of the Gopalganj district is mainly based on agriculture and source of income of the people of this district comes from agriculture. The main purpose of setting up the regional station is to work on the problem of paddy cultivation and its solution including deep water paddy research in the peat-rich Gopalganj-Khulna beel agro-ecological zone. Rice-based single or two-crop cropping is the main cropping pattern in these regions.

This station also conducts research and development programs under various major research activities of BRRI such as rice variety development, seed production, crop-soil-water management, pest management, socio-economic policy and technology transfer. Demonstration trials of new varieties and crop management, field days, farmers training are given to farmers regularly to improve their livelihood in the Gopalganj-Khulna Beel area.

VARIETAL DEVELOPMENT PROGRAM

Experiment 1. Proposed Variety Trial (PVT) for Inbreed Rice, Aman, 2022

Specific Objective: On-sation evaluation of proposed lines by the NSB (National Seed Board) team for Inbrid Rice, Aman, 2022

Materials and Methods:

One set and three entries of inbrid trial (T. Aman 2022) were evaluated in comparison with the check variety under the supervision of BRRI R/S, Gopalganj. Set-1 contained I-044, I-045, and I-046. The experiment was laid out in randomized complete block design with three replications. 25 days old seedlings were transplanted at a spacing of 20×15 cm using one seedling per hill in 5 m $\times$ 4 m unit plot at BRRI Gopalganj. 247 (Urea): 100 (TSP): 120 (MP): 70 (Gypsum): 08 (ZnSO$_4$) @ kg/ha fertilizers were applied in the trial. All amounts of TSP, Gypsum, MOP and ZnSO$_4$ were applied at the time of final land preparation and Urea was applied in three equal splits at 10, 30 and 50 days after transplanting (DAT). Cowdung was applied at the beginning of the final land preparation. All crop management practices were followed as and when necessary. Data on date of seeding and transplanting, days to flowering and maturity, plant height and yield per plot of the entries were recorded. The experimental plots were evaluated by the field evaluation team of National Seed Board (NSB) at flowering and ripening stage.

Location: BRRI R/S Gopalganj

Investigator: M Z Islam

Co-Investigator: SC Das

Results:

One set of inbred trial (Aman, 2022) was evaluated under PVT at BRRI RS Gopalganj. In proposed variety trial, two advanced breeding lines I-044, I045 and (I-046) were tested. Two advanced lines produced higher yield (5.17-6.47 t ha^{-1}) than the line coded as 1-046 (2.97 t ha^{-1}) with 20-21 days longer growth durations (Table 1).

Table 1. Grain yield and ancillary characters of Proposed Variety Trial (PVT) genotypes during T. Aman 2022

SN.	Code No.	Growth duration(Days)	Yield (t ha^{-1})
1	I-044	185	6.47
2	I-045	184	5.17
3	I-046	164	2.97
	LSD$_{0.05}$	1.99	0.41

Experiment 2. ALART for Salt Tolerant Rice (STR) T. Aman 2022

Specific Objective:

1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.

2. To get feedback information about the advantages and disadvantages of the selected genotypes from farmers and Extension personnel.

3. To select suitable genotype(s) for proposed variety trial (PVT).

Materials and Methods:

Three advanced lines BR11712-4R-218, BR11716-4R-102 and BR11723-4R-172 along with BRRI dhan73 and BRRI dhan87 as checks were tested at farmer's field in two locations of Kashimpur, Sadar, Bagerhat (STR-1) and Maderdia, Sannashi bazar Rampal, Bagerhat (STR-2) during T. Aman 2022. Thirty days old seedlings of each entry was transplanted in 4m×5m plot using 2-3 seedlings at a spacing of 20cm×20cm with three replications following Randomized Complete Block (RCB)design.Urea, TSP, MP, gypsum, and ZnSO4 were used at a rate of 200:62:83:56:5 kg/ha, respectively. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 10-15 and 25-30 days after transplanting (DAT) and 5-7 days before PI stage. Crop management such as weeding irrigation etc was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), Phenotypic acceptance at vegetative and reproductive stage, 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, grain yield (9 m^2 crop will be cut from each plot), yield components (Panicles m^{-2}, Grains panicle^{-1}, 1000-grain weight, %Sterility), insect infestation, disease incidence, lodging prevalence and feedback and comments of farmers and extension personnel were collected.

Location: Kashimpur, Sadar, Bagerhat (STR-1) and Maderdia, Sannashi bazar ,Rampal, Bagerhat (STR-2)

Investigator: Afruz Zahan, SSO, ARD, BRRI, Gazipur

Co-Investigators: M Z Islam and **S** C Das

Results: Same sets of Advanced Line Adaptive Research Trial (ALART) for salt tolerant rice (STR-1 and STR-2) were conducted at farmers' fields of Kashimpur, Sadar, Bagerhat (STR-1) and Maderdia, Sannashi bazar Rampal, Bagerhat (STR-2) during T, Aman 2022. Three advanced lines BR11712-4R-218, BR11716-4R-102 and BR11723-4R-172 along with BRRI dhan73 and BRRI dhan87 as checks were tested at farmer's field in two locations (Table 2). In STR-1, both the advanced lines BR11712-4R-218 and BR11716-4R-102 produced higher yield (4.6-4.9 t ha^{-1}) than the standard check varieties BRRI dhan73 (4.0 t ha^{-1}) and BRRI dhan87 (4.4 t ha^{-1}) with 4-6 days shorter growth durations. In the case of STR-2, the trial was damaged due to heavy rainfall and standing water.

Table 2. Grain yield and ancillary characters of ALART (STR) genotypes during T. Aman 2022

SN.	Genotypes	Plant height (cm)	Growth duration(Days)	Yield (t ha^{-1})
1	BR11712-4R-218	92	121	4.6
2	BR11716-4R-102	89	121	4.9
3	BR11723-4R-172	98	121	4.4
4	BRRI dhan73 (Tol. Ck)	118	123	4.0
5	BRRI dhan87 (Sus. Ck)	121	130	4.4
	LSD$_{0.05}$	2.78	1.49	0.09

Experiment 3. ALART for deep water rice (DWR), under direct seeded condition, B. Aman 2022

Specific Objective:

1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.
2. To get feedback information about the advantages and disadvantages of the selected genotypes from farmers and Extension personnel.
3. To select suitable genotype(s) for proposed variety trial (PVT).

Materials and Methods:

Six advanced lines along with Fulkori as checks were sown at Neemtala, Haridaspur, Gopalganj sadar during B. Aman 2022. Fertilizers @ 9:5.5:5.5:4 kg Urea, TSP, MP and Gypsum /Bigha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 50 DAT. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: Neemtala, Haridaspur, Gopalganj

Investigator: Dr. Md. Humaun Kabir

Co-Investigators: M Z Islam and S C Das

Results:

Six advanced lines along with Fulkori check were grown at Neemtala, Haridaspur, Gopalganj sadar during Aman 2022. Three advanced lines BR10230-7-19-2B, BR9376-6-2-2B and BR9392-6-2-1B gave a higher yield (3.1-3.5 t ha^{-1}) than the standard checks Fulkori (2.7 t ha^{-1}) with 11-12 days longer growth durations (Table 3).

Table 3. Grain yield and ancillary characters of ALART (DWR) genotypes during B. Aman 2022

SN.	Genotypes	Plant height (cm)	Growth duration(Days)	Yield (t ha^{-1})
1	BR10230-7-19-2B	159	177	3.5
2	BR9892-6-2-2B	161	173	2.8
3	BR9376-6-2-2B	164	167	3.1
4	BR9392-6-2-1B	154	178	3.1
5	BR-KM(Mun)-PL-5-7-3-B	205	173	2.6
6	BR-DL (Hbj)-PL-12-4-7-B	191	171	2.4
7	Fulkori (Ck)	165	166	2.7
	LSD$_{0.05}$	2.50	2.14	0.37

Experiment 4. ALART: Re- ALART for submergence Tolerance Rice (SubTR-LD), T. Aman 2022

Specific Objective:

1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field as submergence tolerance T. Aman genotypes in the real submergence tolerance prone ernvironment

2. To get feedback information about the advantages and disadvantages of the selected genotypes from farmers and Extension personnel.

3. To select suitable genotype(s) for proposed variety trial (PVT).

Materials and Methods:

Two advanced lines BR9158-19-9-6-50-2-HR1, IR13F441 along with BRRI dhan44 (Sus. ck) and BRRI dhan52 (Tol. Ck) as checks were grown at South Gobra, Gopalganj sadar during T. Aman 2022. Fertilizers @ 200:62:50:56:5 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ /ha were applied. The total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5-7 days `before PI. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, flood water depth (cm) and duration, plant height, lodging tolerance and grain yield were collected.

Location: South Gobra, Sadar Gopalganj

Investigator: Md. Niaz Morshed, SO, ARD, BRRI, Gazipur

Co-Investigators: M Z Islam and S C Das

Results:

Two advanced lines BR9158-19-9-6-50-2-HR1, IR13F441 along with BRRI dhan44 (Sus. ck) and BRRI dhan52 (Tol. Ck) as checks were grown at South Gobra, Gopalganj sadar during T. Aman 2022. One advanced line namely BR9158-19-9-6-50-2-HR1 produced higher yield (5.4 t

ha^{-1}) than the standard checks BRRI dhan44 (3.7 t ha^{-1}) and BRRI dhan52 (4.6 t ha^{-1}) with similar growth durations (Table 4).

Table 4. Grain yield and ancillary characters of ALART (SubTR-LD) genotypes during T.Aman 2022

SN.	Genotypes	Plant height (cm)	Growth duration(Days)	Yield (t ha^{-1})
1	BR9158-19-9-6-50-2-HR1	141	153	5.4
2	IR13F441	119	153	4.1
3	BRRI dhan44 (Sus. Ck)	122	151	3.7
4	BRRI dhan52 (Tol. Ck)	121	150	4.6
	LSD$_{0.05}$	2.50	2.14	0.36

Experiment 5. ALART for Favorable Boro Rice (FBR-Barishal), Boro 2022-23

Specific Objective:

1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.
2. To get feedback information about the advantages and disadvantages of the selected genotypes from farmers and extension personnel.
3. To select suitable genotype(s) for proposed variety trial (PVT).

Materials and Methods:

Four genotypes along with BRRI dhan58 and BRRI dhan89 as checks were grown at Charboira, Gobra, Sadar Gopalganj during Boro 2022-23. Fourty days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 25cm×15cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 270:112:150:112:11 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ / ha were applied. The total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 50 DAT. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), Phenotypic acceptance at Vegetative and Reproductive stage, 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, Grain yield (9 m^2 crop will be cut from each plot), Yield components (Panicles m^{-2}, Grains panicle^{-1}, 1000-grain weight, %Sterility), Insect infestation, Disease incidence, Lodging prevalence and Feedback and Comments of farmers and extension personnel were collected.

Location: Charboira, Gobra, Sadar Gopalganj

Investigator: Afruz Zahan, SSO, ARD, BRRI Gazipur

Co-Investigators: M Z Islam, S C Das and MKH Tarek

Results:

Four advanced lines along with BRRI dhan58 and BRRI dhan89 as checks were tested at farmer's field in Charboira, Gobra, Sadar Gopalganj during Boro 2022-23(Table 5). Two advanced lines BRBa1-4-9 and BRBa 3-1-7 produced higher yield (7.89-8.06 t ha^{-1}) than the standard checks BRRI dhan58 (6.90 t ha^{-1}) and BRRI dhan89 (7.69 t ha^{-1}) with similar growth duration. Due to

rat damage and pest infestation (stem borer), yield of BRBa1-4-9, BRBa 3-1-7 and BRRI dhan89 was reduced.

Table 5. Grain yield and ancillary characters of ALART (FBR- Barishal) genotypes during Boro 2022-23

SN.	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	V1= BRBa1-4-9	120.33	147	7.89
2	V2= BRBa14-NGR414-1	101.33	147	6.44
3	V3= BRBa 3-1-7	95.33	145	8.06
4	V4= BRBa40-NGR1255-1	118.66	147	6.90
5	V5= BRRI dhan58 (ck)	93.66	142	6.90
6	V6= BRRI dhan89 (ck)	107.66	148	7.69
	LSD$_{0.05}$	4.21	1.31	0.43
	CV%	2.18	0.49	3.25

Experiment 6. ALART for Medium Duration Boro Rice (FBR-MD), Boro 2022-23

Specific Objective:

1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.

2. To get feedback information about the advantages and disadvantages of the selected genotypes from farmers and extension personnel.

3. To select suitable genotype(s) for proposed variety trial (PVT).

Materials and Methods:

Two genotypes along with BRRI dhan58 and BRRI dhan96 as checks were grown at Charboira, Gobra, Gopalganj sadar during Boro 2022-23. Fourty days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 20cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers were applied at a rate of 260:100:120:110:10 kg Urea, TSP, MP, Gypsum, and ZnSO4 per hectare. The total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), Phenotypic acceptance at Vegetative and Reproductive stage, 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, Grain yield (9 m^2 crop will be cut from each plot), Yield components (Panicles m^{-2}, Grains panicle^{-1}, 1000-grain weight, %Sterility), Insect infestation, Disease incidence, Lodging prevalence and Feedback and Comments of farmers and extension personnel were collected.

Location: Charboira, Gobra, Sadar Gopalganj

Investigator: Dr. Md. Rafikul Islam, PSO, ARD, BRRI Gazipur

Co-Investigators: M Z Islam, **S** C Das and MKH Tarek

Results:

Two advanced lines IR12A173 and IR17A1694 with BRRI dhan58 and BRRI dhan96 as checks were grown at Charboira, Gobra, Gopalganj sadar during Boro 2022-23.One advanced line

IR12A173 produced higher yield (7.90 t ha^{-1}) than the standard checks BRRI dhan58 (7.64 t ha^{-1}) and BRRI dhan96 (6.88 t ha^{-1}). Mean growth duration of all the advanced lines (140 days) were similar to check variety BRRI dhan58 and six days longer than the other check BRRI dhan96 (Table 6).

Table 6. Grain yield and ancillary characters of ALART (FBR, MD) genotypes during Boro 2022-23

SN	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	V1= IR12A173	106.06	140	7.90
2	V2=IR17A1694	97.56	140	6.86
3	V3= BRRI dhan58 (ck)	102.56	142	7.64
4	V4= BRRI dhan96 (ck)	94.83	134	6.88
	LSD$_{0.05}$	8.73	1.96	0.55
	CV%	4.36	0.7	3.78

Experiment 7. ALART for Short Duration Boro Rice (FBR-SD), Boro 2022-23

Specific Objective:

1. To evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in different agro-ecological zones.
2. To get feedback information about the advantages and disadvantages of the selected genotypes from farmers and extension personnel.
3. To select suitable genotype(s) for proposed variety trial (PVT).

Materials and Methods:

Two genotypes along with BRRI dhan58 and BRRI dhan96 as checks were grown at Charboira, Gobra, Gopalganj sadar during Boro 2022-23. Fourty days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 20cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers were applied at a rate of 260:100:120:110:10 kg Urea, TSP, MP, Gypsum, and ZnSO4 per hectare. The total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), Phenotypic acceptance at vegetative and reproductive stage, 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, grain yield (9 m^2 crop will be cut from each plot), yield components (Panicles m^{-2}, grains panicle^{-1}, 1000-grain weight, %sterility), Insect infestation, disease incidence, lodging prevalence and feedback and comments of farmers and extension personnel were collected.

Location: Charboira, Gobra, Sadar Gopalganj
Investigator: Dr. Md. Rafikul Islam, PSO, ARD, BRRI Gazipur
Co-Investigators: M Z Islam, **S** C Das and MKH Tarek

Results:

During the Boro 2022–2023, four advanced lines with BRRI dhan81 and BRRI dhan96 as checks were tested at a farmer's field in Charboira, Gobra, Sadar Gopalganj. Three advanced lines BR11318-5R-63, BR11337-5R-72 and SVIN109 produced higher yield (7.64-8.16 t ha^{-1}) than the standard checks BRRI dhan81 (7.05 t ha^{-1}) and BRRI dhan96 (7.15 t ha^{-1}) with similar growth duration. The average growth duration of BR11318-5R-63 was 135 days which was similar to check varieties   BRRI dhan81 and BRRI dhan96. But two advanced lines BR11337-5R-72 and SVIN109 was 5-6 days longer than the checks BRRI dhan81 and BRRI dhan96. Flowering and maturity of these advanced lines was uniform (Table 7).

Table 7. Grain yield and ancillary characters of ALART (FBR- SD) genotypes during Boro 2022-23

SN	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	V1= BR11318-5R-63	116.60	135	8.16
2	V2= BR11337-5R-72	106.13	140	7.80
3	V3= SVIN109	109.13	141	7.64
4	V4= IR17A1723	94.36	134	6.00
5	V5= BRRI dhan81 (ck)	98.90	135	7.05
6	V6= BRRI dhan96 (ck)	95.10	134	7.15
	LSD$_{0.05}$	5.87	2.92	0.92
	CV%	3.12	1.17	6.95

RYT T. Aman 2022

Experiment 8. Regional Yield Trial (RYT), (Swarna and long slender type), T. Aman 2022

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on station condition.

Materials and Methods:

Two advanced lines along with BRRI dhan87 and BRRI dhan94 as checks were grown at BRRI R/S Gopalganj. Thirty days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 25cm×15cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 24:15:15:10:1 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ per bigha ha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI-Gazipur and 11 Regional Stations of BRRI.

Investigator: ASM Masuduzzaman

Co-Investigators: M Z Islam and S C Das

Results:

Five advanced lines along with BRRI dhan87 and BRRI dhan94 as checks were tested at BRRI RS Gopalganj during T. Aman 2022. None of the advanced lines produced higher yield (5.15-6.03 t ha^{-1}) than the standard check BRRI dhan87 (6.37 t ha^{-1}).On the other hand, one advanced line BRH9392-6-2-1-3-4 gave higher yield (6.03 t ha^{-1}) than the check BRRI dhan94 (5.37 t ha^{-1}) (Table 8).

Table 8. Grain yield and ancillary characters of RYT (Swarna and long slender type) genotypes during T. Aman 2022

SN	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BRH9392-6-2-1-3-4	158	139	6.03
2	BR9396-6-2-2B	129	145	5.15
3	BR10238-5-1-4-2	147	140	5.40
4	BR9392-10-20-1B	114	116	5.17
5	BRH11-2-4-7B	113	116	5.47
6	BRRI dhan94(ck)	125	137	5.37
7	BRRI dhan87(ck)	121	125	6.37
	LSD$_{0.05}$	5.71	1.53	0.35

Experiment 9. Regional Yield Trial (RYT), (Short Slender), T. Aman 2022

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in onstation condition.

Materials and Methods:

Three advanced lines along with BRRI dhan49 as check were tested at BRRI R/S Gopalganj. Twenty five days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 25cm×15cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 24:15:15:10:1 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ per bigha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI-Gazipur and 11 Regional Stations of BRRI.

Investigator: ASM Masuduzzaman

Co-Investigators: M Z Islam and S C Das

Results:

Three advanced lines along with BRRI dhan49 as check were tested at BRRI RS Gopalganj during T. Aman 2022. Three advance lines produced slightly higher yield (5.37-5.60 t ha^{-1}) than the standard check BRRI dhan49 (5.03 t ha^{-1}) (Table 9).

Table 9. Grain yield and ancillary characters of RYT (Short Slender) genotypes during T. Aman 2022

SN.	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BRH13-2-14-2-1B	126	120	5.60
2	BRH17-23-8-2-7B	120	117	5.43
3	BRH13-7-9-3-2B	106	103	5.37
4	BRRI dhan49 (Ck)	124	134	5.03
	LSD$_{0.05}$	7.01	2.28	0.42

Experiment 10. Regional Yield Trial (RYT), (Tall Breeding Materials), T. Aman 2022

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on station condition.

Materials and Methods:

Four advanced lines along with BRRI dhan91 as check were tested at BRRI R/S Gopalganj. Twenty five days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 25cm×15cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 24:15:15:10:1 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ per bigha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI-Gazipur and 11 Regional Stations of BRRI.

Investigator: ASM Masuduzzaman

Co-Investigators: M Z Islam and S C Das

Results

Four advanced lines along with BRRI dhan91 as checks were assessed. The average grain yield of all advanced lines (3.38-3.77 t ha^{-1}) was higher than the checks BRRI dhan91 (2.27 t ha^{-1}) with similar growth durations (Table 10).

Table 10. Grain yield and ancillary characters of RYT (tall breeding materials) genotypes during T. Aman 2022

SN	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BR9892-8-2-2B	165	151	3.63
2	BR10247-14-18-7-3	160	150	3.77
3	BR10238-5-1-9-2B	166	151	3.53
4	BR9392-12-6-2-4B	175	159	3.38
5	BRRI dhan91 (ck)	174	153	2.27
	LSD$_{0.05}$	7.98	1.14	0.24

Experiment 11. Regional Yield Trial (RYT), (DWR-Hbg), T. Aman 2022

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on station condition.

Materials and Methods:

Three advanced lines along with BRRI dhan91 and Sada Jabra as checks were tested at BRRI R/S Gopalganj. Twenty five days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 25cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 150:100:70:60:10 kg Urea, TSP, MP, Gypsum and $ZnSO_4$ per ha were applied. The Total amount of TSP, MP, Gypsum and $ZnSO_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, water depth (15 days interval), 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Goplalganj

Investigator: Dr. Md. Abu Syed

Co-Investigators: M Z Islam and S C Das

Results:

Three advanced lines along with BRRI dhan91 and Sada Jabra as checks were grown. Three advance lines gave a higher yield (2.93-3.23 t ha^{-1}) than the standard checks BRRI dhan91 (2.43 t ha^{-1}) and Sada Jabra (2.07 t ha^{-1}) with similar growth durations (Table 11).

Table 11. Grain yield and ancillary characters of RYT (DWR-Hbg) genotypes during Aman 2022

SN.	Genotypes	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BR7730-1-1-2B	233.67	168	3.17
2	BR7918-1-2-3B	189.33	167	2.93
3	BR79190101-3B	217.67	169	3.23
4	BRRI dhan91 (Std.ck)	173.00	167	2.43
5	Sada Jabra (Local ck.)	223.00	171	2.07
	LSD$_{0.05}$	6.26	0.59	0.48

Experiment 12. Observation Yield Trial (OYT), (DWR-Gpg), Aman 2022

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on station condition.

Materials and Methods:

Seven advanced lines along with BRRI dhan91 as check were tested at BRRI R/S Gopalganj. Twenty five days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 25cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 140:100:70:60:10 kg Urea, TSP, MP, Gypsum and $ZnSO_4$ per ha were applied. The total amount of TSP, MP, Gypsum and $ZnSO_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT

and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, water depth (15 days interval), 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height and grain yield were collected.

Location: BRRI RS Gopalganj

Investigator: M Z Islam

Co-Investigator: S C Das

Results:

Seven local deep water varieties along with BRRI dhan91 checks were grown. Seven local deep water varieties gave lower yield (1.80-2.28 t ha^{-1}) than the standard check BRRI dhan91 (2.35 t ha^{-1}) (Table 12). The yield of deep water rice varieties were reduced due to rat damaged.

Table 12. Grain yield and ancillary characters of RYT (DWR-Gpg) genotypes during Aman 2022

SN.	Genotypes	Plant height (cm)	Yield (t ha^{-1})
1	Shisumati	174	2.28
2	Debmani	165	2.20
3	Chamara	208	2.0
4	Laxmidigha	198	2.1
5	Patjag	163	1.8
6	Jabra	185	2.1
7	Bashiraj	179	1.9
8	BRRI dhan91 (Std.ck)	170	2.35

Experiment 13. Preliminary Yield Trial (PYT) of Jhum rice genotypes , Aus 2022

Specific Objective: To evaluate the yield performance of two Jhum rice genotypes for comparing with standard check

Materials and Methods:

Two genotypes along with BRRI dhan83 as check were grown at BRRI RS Gopalganj. Twenty five days old seedlings of each entry was transplanted in 4 m×5 m plot using 2-3 seedlings at a spacing of 20cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers were applied @ 60:20:40 kg NPK/ha in Aus, 2022. The Total amount of TSP, MP, Gypsum and $ZnSO_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI stage. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI RS Gopalganj

Investigator: M Z Islam

Co-Investigators: S C Das

Results:

Two jhum rice genotypes along with BRRI dhan83 as check were grown. Chibingshe gave gave higher yield (4.50 t ha^{-1}) than the standard check BRRI dhan83 (4.03 t ha^{-1}) with three days longer

growth durations (Table 13). On the other hand, Galong produced similar yield (4.15 t ha^{-1}) than the standard check BRRI dhan83 (4.03 t ha^{-1}).

Table 13. Grain yield and ancillary characters of PYT (Jhum-Gpg) genotypes during Aus 2022

SN.	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	Chibingshe	113.10	110	4.50
2	Galong	109.53	108	4.15
3	BRRI dhan83	108.37	107	4.03
	LSD$_{0.05}$	6.27	3.66	0.36
	CV%	2.91	1.49	3.73

Experiment 14. Regional Yield Trial (FBR-Barishal), for Boro 2022-23

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in different regional station and head quarter of BRRI.

Materials and Methods:

Nine genotypes along with BRRI dhan58 and BRRI dhan89 as checks were grown at BRRI R/S Gopalganj. Thirty five days old seedlings of each entry was transplanted in 5.4m×12 rows plot using 2-3 seedlings at a spacing of 20cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 260:100:120:110:10 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ /ha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI. Crop management such as weeding irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Gopalganj

Investigator: Md. Alamgir Hossain

Co-Investigators: S C Das and M Z Islam

Results:

Nine advanced lines along with BRRI dhan88 and BRRI dhan89 as checks were grown at BRRI RS Gopalganj during Boro 2022-23. Three advance lines gave a higher yield (8.06-8.23 t ha^{-1}) than the standard check BRRI dhan89 (7.7 t ha^{-1}) with similar growth durations. On the other hand, all the advanced lines produced higher yield (7.43-8.23 t ha^{-1}) than the standard check BRRI dhan88 (6.53 t ha^{-1}) (Table 14).

Table 14. Grain yield and ancillary characters of RYT(FBR-Barishal) genotypes during Boro 2022-23

SN.	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	NGR522-2	95.66	147	7.7
2	NGR270-3	94.86	146	7.63
3	NGR418-1	96.53	146	8.23
4	NGR416-1	95.2	147	7.46
5	NGR968-1	98.66	147	7.63
6	NGR994-1	96.33	147	7.8
7	NGR745-2	95.46	146	7.43
8	NGR590-2	98.6	148	8.06
9	NGR710-1	100.86	147	8.1
10	BRRIdhan88(ck)	95	138	6.53
11	BRRIdhan89(ck)	110	149	7.7
	LSD$_{0.05}$	1.46	2.57	0.57
	CV%	0.87	1.03	4.44

Experiment 15. Regional Yield Trial (RYT), Development of Salt Tolerance Rice (STR), Boro 2022-23

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in on station condition.

Materials and Methods:

Seven advanced lines along with BRRI dhan89, BRRI dhan67 and BRRI dhan99 as checks were grown at BRRI R/S Gopalganj. Thirty five days old seedlings of each entry was transplanted in 5.4m×12 rows plot using 2-3 seedlings at a spacing of 20cm×20cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 300:100:165:112:4 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ /ha were applied. The total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI. Crop management such as weeding; irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Gopalganj

Investigator: Md. Akhlasur Rahman

Co-Investigators: S C Das, MKH Tarek and M Z Islam

Results:

Seven advanced lines along with BRRI dhan89, BRRI dhan67 and BRRI dhan99 as checks were tested. Three advanced line gave higher yield (7.18-7.33 t ha^{-1}) than three standard checks (BRRI dhan89, BRRI dhan67 and BRRI dhan99).Yield of BRRI dhan89 reduced due to poor tillering and rat damaged. On the other hand, six advanced line produced higher yield (6.66-7.33 t ha^{-1}) than two standard checks (BRRI dhan67 and BRRI dhan99) with similar growth duration of BRRI dhan99 and 8-10 days longer growth duration of BRRI dhan67) (Table 15).

Table 15. Grain yield and ancillary characters of RYT (STR) genotypes during Boro 2022-23

SN.	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BR11712-4R-44	124.53	148	7.28
2	BR11712-4R-93	114.6	144	7.18
3	BR11717-4R-12	110	144	7.33
4	BR11724-4R-6	85.36	143	6.66
5	BR11712-4R-346	95.13	146	6.98
6	BR11713-4R-70	107.06	148	6.7
7	BR11722-4R-398	82.4	149	5.73
8	BRRIdhan67(ck)	99.2	136	6.1
9	BRRIdhan89(ck)	101.46	151	6.73
10	BRRIdhan99(ck)	95.26	148	5.93
	LSD$_{0.05}$	1.93	2.34	0.55
	CV%	1.11	0.93	4.84

Experiment 16. Regional Yield Trial (Fine grain, Zira Type), Boro 2022-23

Specific Objective: To evaluate fine grain high yielding breeding lines under integrated improved management practices in different agro-climatic conditions of Bangladesh

Materials and Methods:

Five advanced lines along with two checks Zirasail and BRRI dha28 as checks were grown at BRRI R/S Gopalganj. Thirty five days old seedlings of each entry was transplanted in 5.4m×12 rows plot using 2-3 seedlings at a spacing of 4m×5m with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 40:17:20:15:1.5 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ / Bigha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 50 DAT. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Gopalganj

Investigator: ASM Masuduzzaman

Co-Investigators: S C Das, MKH Tarek and M Z Islam

Results:

Five advanced lines along with two checks Zirasail and BRRI dha28 as checks were grown. Three advanced line gave higher yield (6.65-7. 27 t ha^{-1}) than two standard checks Zirasail (6.54 t ha^{-1})and BRRI dha28(6.34 t ha^{-1}) with similar growth duration (Table 16).

Table 16. Grain yield and ancillary characters of RYT (Fine grain, Zira Type) genotypes during Boro 2022-23

SN.	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BRH13-9-5-3B	95.2	144	6.77
2	BRH12-1-7B-P1	94.46	143	6.65
3	BRH9-3-14-2B	101.13	142	6.08
4	BRH10247-4-7-4B	108.6	147	7.27
5	BRH13-7-9-3-2B	94.53	149	6.31
6	BRRIdhan28(ck)	90.8	143	6.34
7	Zirasail (ck)	96.26	142	6.54
	LSD$_{0.05}$	2.73	2.35	0.78
	CV%	1.57	0.91	6.75

Experiment 17. Regional Yield Trial (Tall) genotypes for haor- areas, Boro 2022-23

Specific Objective: To evaluate fine grain high yielding breeding lines under integrated improved management practices in different agro-climatic conditions of Bangladesh

Materials and Methods:

Six advanced lines including BR18 as checks were tested at BRRI R/S Gopalganj. Thirty five days old seedlings of each entry was transplanted in 5.4m×12 rows plot using 2-3 seedlings at a spacing of 4m×5m with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 40:17:20:15:1.5 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ / Bigha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 50 DAT. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Gopalganj
Investigator: ASM Masuduzzaman
Investigators: S C Das, MKH Tarek and M Z Islam
Results:

Six advanced lines including BR18 as checks were tested. Three advanced lines produced higher yield (6.63-7.00 t ha^{-1}) than the standard check BR18 (6.1 t ha^{-1}) with 4-5 days shorter growth durations. In addition, two advanced lines BRH18-7-14-B (6.2 t ha^{-1}) and BR9390-6-2-1B (6.3 t ha^{-1}) gave similar yield compared with check BR18 (6.1 t ha^{-1}). However, BR9392-6-2-1B produced lower yield (3.23 t ha^{-1}) due to lodging (Table 17).

Table 17. Grain yield and ancillary characters of RYT (Tall) genotypes during Boro 2022-23

SN	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	BR9396-6-2-2B	114.8	143	7.0
2	BR9392-6-2-1B	171.33	160	3.23
3	BRH18-7-14-B	116.2	142	6.2
4	BRH13-7-9-3-2B	125.06	145	6.63
5	BR9390-6-2-1B	126.4	133	6.3
6	BR9392-6-2-1-3-4	134.33	145	6.78
7	BR18(CK)	135.8	149	6.1
	LSD$_{0.05}$	4.88	3.86	0.52
	CV%	2.08	1.49	4.89

Experiment 18. Regional Yield Trial (FBR), Boro 2022-23

Specific Objective: To evaluate specific and general adaptability of the advance breeding lines as compared with standard checks in different regional station and head quarter of BRRI.

Materials and Methods:

Five advanced lines along with BRRI dhan86 and BRRI dhan96 as checks were evaluated at BRRI R/S Gopalganj. Thirty five days old seedlings of each entry was transplanted in 5.4m×12 rows plot using 2-3 seedlings at a spacing of 25cm×15cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 311:125:150:84:7.5 kg Urea, TSP, MP, Gypsum and ZnSO$_4$ /ha were applied. The Total amount of TSP, MP, Gypsum and ZnSO$_4$ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI. Crop management such as weeding irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Gopalganj

Investigator: Dr. Jannatul Ferdous

Investigators: S C Das, MKH Tarek and M Z Islam

Results:

Five advanced lines along with BRRI dhan86 and BRRI dhan96 as checks were evaluated. One advanced line BR(Bio)13028-AC24-1-2 performed better (7.23 t ha^{-1}) over the checks BRRI dhan86(6.56 t ha^{-1}) and BRRI dhan96 (6.84 t ha^{-1}) with similar growth duration (Table 18). On the other hand, three advanced line produced lower yield (6.02-6.31 t ha^{-1}) than two standard checks BRRI dhan86(6.56 t ha^{-1}) and BRRI dhan96 (6.86 t ha^{-1}). In addition, BR(Bio)13028-AC24-3-3 produced slightly higher yield (6.70 t ha^{-1}) than the standard check BRRI dhan86(6.56 t ha^{-1}).

Table 18. Grain yield and ancillary characters of RYT (FBR-Boro) genotypes during Boro 2022-23

SN	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha⁻¹)
1	BR(Bio)13028-AC24-1-2	104.33	142	7.23
2	BR(Bio)13028-AC24-2-3	103.66	143	6.02
3	BR(Bio)13028-AC24-2-4	106	141	6.28
4	BR(Bio)13028-AC24-3-3	105	142	6.70
5	BR(Bio)13028-AC11-3-1	91.33	142	6.31
6	BRRIdhan86(ck)	87	139	6.56
7	BRRIdhan96(ck)	85	141	6.84
	$LSD_{0.05}$	3.1	2.52	0.99
	CV%	1.78	1	8.55

Experiment 19. GxE interaction of Basmati rice on physico-chemical and cooking properties

Specific Objective: To evaluate fine grain high yielding breeding lines under integrated improved management practices in different agro-climatic conditions of Bangladesh

Materials and Methods:

A total of 20 premium quality rice along with checks BRRIdhan50, BRRIdhan63, BRRIdhan81, BRRIdhan104, Tepi Boro and Rata Boro were evaluated at BRRI R/S Gopalganj. Thirty five days old seedlings of each entry was transplanted in 5.4m×02 rows plot using 2-3 seedlings at a spacing of 20cm×15cm with three replications following Randomized Complete Block (RCB) design. Fertilizers @ 260:90:150:112:11 kg Urea, TSP, MP, Gypsum and ZnSO₄ per Bigha were applied. The Total amount of TSP, MP, Gypsum and ZnSO₄ was applied at the final land preparation. Urea was applied in three equal splits at 15 days after transplanting (DAT), 30 DAT and 5 days before PI. Crop management such as weeding, irrigation etc. was done in time. Disease, insect and other pests were controlled. Data on date of seeding, transplanting, 50% flowering and maturity (80%), phenotypic acceptances at vegetative and reproductive stages, plant height, lodging tolerance and grain yield were collected.

Location: BRRI R/S Gopalganj

Investigator: M A Kader

Co-Investigators: S C Das, MKH Tarek and M Z Islam

Results:

A total of 20 premium quality rice including checks BRRIdhan50, BRRIdhan63, BRRIdhan81, BRRIdhan104, Tepi Boro and Rata Boro were evaluated. Results revealed that Indian Basmati produced the highest yield (4.76 t ha⁻¹) than six standard checks. On the other hand, Basmati (1230) gave the lowest yield (2.64 t ha⁻¹) than six standard checks (Table 19).

Table 19. Grain yield and ancillary characters of RYT (PQR) genotypes during Boro 2022-23

SN	Designation	Plant height (cm)	Growth duration (Days)	Yield (t ha^{-1})
1	Basmati (1230)	128.3	148	2.64
2	Basmati(D) (3928)	104	140	2.77
3	Basmati (4488)	133.2	147	3.69
4	Basmati370 (4489)	121.5	142	3.48
5	Basmati 37(4491)	125	144	3.43
6	Basmati (N13)(4493)	123.7	154	4.10
7	Basmati370 (4494)	119.7	142	3.70
8	Basmati 107(4501)	130.3	142	3.90
9	Basmati 377(4507)	125	143	4.07
10	Basmati 406(4508)	125.5	143	3.55
11	Basmati (4754)	118	144	3.68
12	Basmati(6614)	90.3	146	3.35
13	Super Basmati	93.5	142	2.96
14	Basmati Sufaid(187)	133	144	3.79
15	Indian Basmati	103.5	147	4.76
16	Basmati TAPL-90(2571)	128.7	142	3.78
17	Basmati Naton439(4496)	133.1	142	3.58
18	Basmati Pardnr442(4497)	89.1	144	3.02
19	Basmati 433(4509)	121.5	145	3.11
20	Pusha Basmati	107.2	152	3.75
21	BRRIdhan50(ck)	76.7	148	3.82
22	BRRIdhan63(ck)	69.1	146	4.20
23	BRRIdhan81(ck)	75.1	144	4.0
24	BRRIdhan104(ck)	79.8	150	3.87
25	Tepi Boro(ck)	142.4	142	3.95
26	Rata Boro(ck)	142.7	143	3.85
	LSD$_{0.05}$	3.07	3.34	0.65
	CV%	1.31	1.12	8.74

RICE GERMPLASM COLLECTION AND CHARACTERIZATION

Experiment 20. Collection and Rejuvenation of Rice Germplasm

Specific Objective:

i.   To collect local rice germplasm from Faridpur region and to conserve the collected rice germplasm for safe keeping.

ii. To increase the seed for further use

Materials and methods:

Mission oriented collection programs were performed for exploration of rice germplasm. For this purpose, DAE personnel were informed well ahead to assist BRRI RS scientists for arrangement of logistic support in field collection. Two hundred and sixteen Aman rice germplasm were collected from Faridpur, Khulna region and other districts of Bangladesh (Table 20). Rice germplasm were rejuvenated by growing in the field to increase the seed for safe storage. The experiment was carried out in line sowing under transplanted conditions using single row of 5.4 m long per accession with a spacing of 20 × 20 cm between rows and plants, respectively.

Fertilizers were applied @ 60:20:40 kg NPK/ha in T. Aman season, 2022. Proper control measures were taken for insect pests, diseases and weeds when necessary.

Location: BRRI Gopalganj

Investigator: M Z Islam

Co-Investigator: S C Das

Table 20. List of rice germplasm rejuvenated during T.Aman 2022

SL. No.	Genotypes	Upazilla	District	Season
1	Shisumaoti	Kasiani	Gopalganj	B. Aman
2	Devmoni	Kasiani	Gopalganj	B. Aman
3	Modusail	Kasiani	Gopalganj	T. Aman
4	Laljira	Tungipara	Gopalganj	T. Aman
5	Jabra	Tungipara	Gopalganj	T. Aman
6	Ranga digha/ Lal Digha	Kasiani	Gopalganj	B. Aman
7	Najirsail	Kasiani	Gopalganj	T. Aman
8	Laksmidigha	Kasiani	Gopalganj	B. Aman
9	Nonakochi	Sarankhola	Bagrthat	T. Aman
10	Balam	Sarankhola	Bagrthat	T. Aman
11	Sadamota	Sarankhola	Bagrthat	T. Aman
12	Lalmota	Sarankhola	Bagrthat	T. Aman
13	Chinikanai	Sarankhola	Bagrthat	T. Aman
14	Joyna	Mollahat	Bagrthat	T. Aman
15	Najirsail	Mollahat	Bagrthat	T. Aman
16	Bashiraj	Mollahat	Bagrthat	B. Aman
17	Jabra	Mollahat	Bagrthat	T. Aman
18	Sada jabra	Sadar, Gopalganj	Gopalganj	T. Aman
19	Jabra	Sadar, Gopalganj	Gopalganj	T. Aman
20	Lal digha	Sadar, Gopalganj	Gopalganj	T. Aman
21	Lal balam	Tungipara	Gopalganj	T. Aman
22	Nazirsail	Tungipara	Gopalganj	T. Aman
23	Bashiraj	Tungipara	Gopalganj	B. Aman
24	Unknown	Tungipara	Gopalganj	T. Aman
25	Motashoil	Tungipara	Gopalganj	T. Aman
26	Jabra	Tungipara	Gopalganj	T. Aman
27	Lal Jabra	Tungipara	Gopalganj	T. Aman
28	Malbhog/ Kumragoir	Tungipara	Gopalganj	T. Aman
29	Jira dhan	Tungipara	Gopalganj	T. Aman
30	Kallbhira	Tungipara	Gopalganj	T. Aman
31	Shailkhali	Madhukhali	Faridpur	T. Aman
32	Dhiga bhoro	Madhukhali	Faridpur	B. Aman
33	Jabra shoto	Madhukhali	Faridpur	T. Aman
34	Ranjit shorna	Badalgachhi	Naogaon	T. Aman
35	Nazirsail-1 (Local)	Sadar, Gopalganj	Gopalganj	T. Aman
36	Nazirsail-2 (Local)	Sadar, Gopalganj	Gopalganj	T. Aman
37	Badshabhog	Sadar, Gopalganj	Gopalganj	T. Aman
38	Lal Balam	Pirojpur Sadar	Pirojpur	T. Aman
39	Shorn Dhan5	Badalgachhi	Naogaon	T. Aman
40	Depa dhan	Tungipara	Gopalganj	T. Aman
41	Moyna moti	Tungipara	Gopalganj	T. Aman
42	Bashiraj	Tungipara	Gopalganj	B. Aman
43	20 nombar Dhan	Tungipara	Gopalganj	T. Aman

SL. No.	Genotypes	Upazilla	District	Season
44	Tepa Dhan	Mollahat	Bagrthat	T. Aman
45	Shisumaoti	Mollahat	Bagrthat	B. Aman
46	Najirsail	Mollahat	Bagrthat	T. Aman
47	Najirsail	Mollahat	Bagrthat	T. Aman
48	Jira Dhan	Mollahat	Bagrthat	T. Aman
49	Joyna	Mollahat	Bagrthat	T. Aman
50	Jabra	Mollahat	Bagrthat	T. Aman
51	Bashiraj	Mollahat	Bagrthat	T. Aman
52	Sada Mota	Sadar Bagrthat	Bagrthat	T. Aman
53	Lal Mota	Sadar Bagrthat	Bagrthat	T. Aman
54	Badshabhog	Sadar Bagrthat	Bagrthat	T. Aman
55	Bati Balam	Sarankhola	Bagrthat	T. Aman
56	Kaliijira	Sarankhola	Bagrthat	T. Aman
57	Dudkalam	Sarankhola	Bagrthat	T. Aman
58	Chinigura	Sarankhola	Bagrthat	T. Aman
59	Bashiraj	Sadar Gopalganj	Gopalganj	B. Aman
60	Binnapuli Atob	Badalgachhi	Naogaon	T. Aman
61	Jabra	Mollahat	Bagrthat	T. Aman
62	Ratul	Mollahat	Bagrthat	Aus
63	Depa	Mollahat	Bagrthat	T. Aman
64	Kajoilata	Mollahat	Bagrthat	T. Aman
65	Joyna	Mollahat	Bagrthat	T. Aman
66	Bashiraj	Mollahat	Bagrthat	B. Aman
67	Patjag	Kalihat	Tangail	B. Aman
68	Chamara	Kalihat	Tangail	B. Aman
69	Laksmidigha	Sadar, Gopalganj	Gopalganj	B. Aman
70	Ranga Digha	Sadar, Gopalganj	Gopalganj	B. Aman
71	Nazirsail	Sadar, Gopalganj	Gopalganj	T. Aman
72	Kalo Saita	Sadar, Gopalganj	Gopalganj	T. Aman
73	Sada Jabra	Sadar, Gopalganj	Gopalganj	T. Aman
74	Fullkori	Sadar,Habiganj	Habiganj	B. Aman
75	Kajollata	Wazirpur	Pirojpur	T. Aman
76	Damini	Wazirpur	Pirojpur	T. Aman
77	Habu Balam	Wazirpur	Pirojpur	T. Aman
78	Shorna Dhan	Wazirpur	Pirojpur	T. Aman
79	Subarnalata	Wazirpur	Pirojpur	T. Aman
80	Unknown	Tungipara	Gopalganj	T. Aman
81	SadaJira	Sadar, Gopalganj	Gopalganj	T. Aman
82	Nazirsail	Sadar, Gopalganj	Gopalganj	T. Aman
83	Nazirsail Local	Sadar, Gopalganj	Gopalganj	T. Aman
84	SadaJira	Sadar, Gopalganj	Gopalganj	T. Aman
85	Sada Jabra	Sadar, Gopalganj	Gopalganj	T. Aman
86	Lal Jira	Sadar, Gopalganj	Gopalganj	T. Aman
87	kalijira	Sadar, Pirojpur	Pirojpur	T. Aman
88	Monteshor	Sadar, Pirojpur	Pirojpur	T. Aman
89	Kiron Dhan	Sadar, Pirojpur	Pirojpur	T. Aman
90	Hugli Dhan	Sadar, Pirojpur	Pirojpur	T. Aman
91	Kalijira	Sadar, Gopalganj	Gopalganj	T. Aman
92	Bish No.	Sadar, Gopalganj	Gopalganj	T. Aman
93	Bandarjhota	Rajoir	Madaripur	T. Aman
94	Shorna dhan-1	Sadar	Faridpur	T. Aman

SL. No.	Genotypes	Upazilla	District	Season
95	Ranga digha	Kashiani	Faridpur	T. Aman
96	Kala digha-1	Alfadanga	Faridpur	T. Aman
97	Kalojira-1	Alfadanga	Faridpur	T. Aman
98	Shisumati-1	Kashiani	Gopalganj	T. Aman
99	Khoia motar	Naria	Shariatpur	B.Aman
100	Sada Boro	Alfadanga	Faridpur	T. Aman
101	Modhusail	Alfadanga	Faridpur	T. Aman
102	Jabra	Alfadanga	Faridpur	T. Aman
103	Unknown	Alfadanga	Faridpur	T. Aman
104	Shorna dhan-2	Alfadanga	Faridpur	T. Aman
105	Depa dhan	Alfadanga	Faridpur	T. Aman
106	Shisumoti-2	Alfadanga	Faridpur	T. Aman
107	Boro digha-1	Alfadanga	Faridpur	T. Aman
108	Boga digha	Alfadanga	Faridpur	T. Aman
109	Shisumoti-3	Alfadanga	Faridpur	T. Aman
110	Kach kolom	Alfadanga	Faridpur	T. Aman
111	Boro dhiga-2	Alfadanga	Faridpur	T. Aman
112	Shorna dhan-3	Alfadanga	Faridpur	T. Aman
113	Lal dhan	Alfadanga	Faridpur	T. Aman
114	Boro digha-3	Nagarkanda	Faridpur	T. Aman
115	Malabhog-1	Alfadanga	Faridpur	T. Aman
116	Laxmi digha-1	Alfadanga	Faridpur	B.Aman
117	Kala digha-2	Alfadanga	Faridpur	B.Aman
118	Badai	Shibchar	Faridpur	T. Aman
119	Laxmi digha-2	Shibchar	Faridpur	B.Aman
120	Lal digha-1	Bhanga	Faridpur	B. Aman
121	Patharia dhan	Bhanga	Faridpur	T. Aman
122	Malabhog-2	Bhanga	Faridpur	T. Aman
123	Laxmi digha-3	Bhanga	Faridpur	B.Aman
124	Shorna dhan-4	Bhanga	Faridpur	T. Aman
125	Hijol digha-1	Bhanga	Faridpur	B.Aman
126	Begunbichi	Bhanga	Faridpur	T. Aman
127	Hijol digha-2	Naria	Shariatpur	B.Aman
128	Laxmi digha-4	Naria	Shariatpur	B.Aman
129	Sona digha	Naria	Shariatpur	B.Aman
130	Manik digha	Naria	Shariatpur	B.Aman
131	Shisumoti-4	Madhukhali	Faridpur	B.Aman
132	Paijam-1	Madhukhali	Faridpur	T. Aman
133	Boro digha-4	Madhukhali	Faridpur	B.Aman
134	Dudkalam	Madhukhali	Faridpur	B.Aman
135	Hijol digha-3	Madhukhali	Faridpur	B.Aman
136	Arparina-1	Boalmari	Faridpur	T. Aman
137	Lal paijam-1	Boalmari	Faridpur	T. Aman
138	Debmoni-1	Boalmari	Faridpur	T. Aman
139	Debmoni-2	Boalmari	Faridpur	T. Aman
140	Boro digha-4	Boalmari	Faridpur	B. Aman
141	Shorna mota	Boalmari	Faridpur	T. Aman
142	Latisail	Madhukhali	Faridpur	T. Aman
143	Shisumoti-5	Madhukhali	Faridpur	B.Aman
144	Ranga dhiga	Alfadanga	Faridpur	B.Aman
145	Shisumoti-5	Alfadanga	Faridpur	B. Aman

SL. No.	Genotypes	Upazilla	District	Season
146	Boga digha	Alfadanga	Faridpur	B. Aman
147	Lal digha-2	Alfadanga	Faridpur	B. Aman
148	Boro digha	Alfadanga	Faridpur	B. Aman
149	Nayanmoni	Saltha	Faridpur	T. Aman
150	Arparina	Saltha	Faridpur	T. Aman
151	Hijol digha-4	Saltha	Faridpur	B. Aman
152	Lal shorna	Saltha	Faridpur	T. Aman
153	Sada paijam-1	Bhanga	Faridpur	T. Aman
154	Lal paijam-2	Bhanga	Faridpur	T. Aman
155	Nadisail	Sadar	Faridpur	T. Aman
156	Chini atop	Sadar	Faridpur	T. Aman
157	Kalijira-2	Sadar	Faridpur	T. Aman
158	Sada paijam-2	Sadar	Faridpur	T. Aman
159	Boro digha-5	Sadarpur	Faridpur	B. Aman
160	Bashiraj-1	Sadarpur	Faridpur	B. Aman
161	Jhul dhan-1	Sadarpur	Faridpur	T. Aman
162	Hijol digha-5	Sadarpur	Faridpur	B. Aman
163	Hijol digha-6	Sadarpur	Faridpur	B. Aman
164	Shisumoti-6	Sadarpur	Faridpur	B. Aman
165	Nayanmoni	Sadarpur	Faridpur	T. Aman
166	Bashiraj-2	Sadarpur	Faridpur	B. Aman
167	Gambi dhan	Jajira	Shariatpur	T. Aman
168	Mala aman	Bhanga	Faridpur	T. Aman
169	Pari dhan	Bhanga	Faridpur	T. Aman
170	Chinigura	Bhanga	Faridpur	T. Aman
171	Lal Paijam-3	Bhanga	Faridpur	T. Aman
172	Paijam-2	Sadarpur	Faridpur	T. Aman
173	Sada paijam-3	Bhanga	Faridpur	T. Aman
174	Chini atop	Bhanga	Faridpur	T. Aman
175	Shorna dhan-5	Bhanga	Faridpur	T. Aman
176	Guti shorna	Bhanga	Faridpur	T. Aman
177	Jogdal	Manda	Naogaon	T. Aman
178	Maitagorol	Manda	Naogaon	T. Aman
179	Shialjota	Sadarpur	Faridpur	T. Aman
180	Sissumoti-7	Sadarpur	Faridpur	B. Aman
181	Bashiraj-3	Sadarpur	Faridpur	B. Aman
182	Hijol digha-7	Sadarpur	Faridpur	B. Aman
183	Dudkalom-1	Boalmari	Faridpur	T. Aman
184	Devmoni-1	Boalmari	Faridpur	T. Aman
185	Dudkalom-2	Muksudpur	Faridpur	T. Aman
186	Laksmi digha-4	Muksudpur	Faridpur	T. Aman
187	Kartiksail	Muksudpur	Faridpur	T. Aman
188	Laksmi digha-5	Muksudpur	Faridpur	T. Aman
189	Dudkalom	Muksudpur	Faridpur	T. Aman
190	Beto dhan-2	Manda	Naogaon	T. Aman
191	Kajol shorna	Manda	Naogaon	T. Aman
192	Basai shorna	Manda	Naogaon	T. Aman
193	Binnaphul	Niamatpur	Naogaon	T. Aman
194	Devmoni-2	Boalmari	Faridpur	T. Aman
195	Agarbati	Boalmari	Faridpur	T. Aman
196	Latisail	Boalmari	Faridpur	T. Aman

SL. No.	Genotypes	Upazilla	District	Season
197	Kalijira-3	Boalmari	Faridpur	T. Aman
198	Masranga	Charbadrasan	Faridpur	T. Aman
199	Hijol digha-8	Charbadrasan	Faridpur	T. Aman
200	Balam sonno	Tungipara	Gopalganj	T. Aman
201	Beerpala	Sadar	Gopalganj	T. Aman
202	Monynamoti	Tungipara	Gopalganj	T. Aman
203	Sissumoti-8	Madhukhali	Faridpur	T. Aman
204	Betenga	Madhukhali	Faridpur	T. Aman
205	Baila digha	Madhukhali	Faridpur	T. Aman
206	Dud lucky	Madhukhali	Faridpur	T. Aman
207	Balam dhan	Muksudpur	Faridpur	T. Aman
208	Dolkachu	Muksudpur	Faridpur	T. Aman
209	Aijan	Muksudpur	Faridpur	T. Aman
210	Ranga jabra	Muksudpur	Faridpur	T. Aman
211	Jol kowcha	Muksudpur	Faridpur	T. Aman
212	Kuriaguni	Muksudpur	Faridpur	T. Aman
213	Kartiksail	Kashiani	Faridpur	T. Aman
214	Debmoni-3	Kashiani	Faridpur	T. Aman
215	Sissumoti-9	Kashiani	Faridpur	T. Aman
216	Jhul dhan-2	Sadarpur	Faridpur	T. Aman

Results

Two hundred sixteen Aman rice germplasm were grown to produce more seed for further evaluation and utilization at BRRI RS Gopalganj.

Experiment 21. Morphological Characterization of Aman Rice Germplasm

Specific Objective: To characterize and evaluate rice germplasm as per BRRI prescribed rice descriptor for safeguarding from biopiracy.

Materials and methods:

One experiment was conducted to characterize 50 T.Aman rice germplasm(Table 21) through 51 agro-morphological traits (20 quantitative and 31 qualitative characters) using the Rice Germplasm Descriptors and Evaluation Form, GRSD, BRRI. The experiments were conducted in BRRI R/S Gopalganj. The experiment was conducted using a single row of 5.4 m long for each entry/accession with a spacing of 20×20 cm between rows and plants, respectively during Aman 2022 season. Fertilizers were applied @ 60:20:40 kg NPK/ha in Aman season. Appropriate control measures were taken for insect pests, diseases and weeds when necessary.

Table 21. Some important features of characterized germplasm during T.Aman 2022

SL. No.	Genotypes	PH(cm)	DF	DM	PL(cm)	FG/P	GL	GB	1000 gwt(g)	Y/H(g)
1	Shisumaoti	147.4	93	122	24.6	119	8.89	3.06	26.85	18.8
2	Devmoni	140	93	121	23.2	120	8.7	2.84	27.75	17.51
3	Modusail	145	81	110	18.8	127	8.92	3.07	26.35	15.05
4	Laljira	137.6	101	128	27	110	5.89	1.88	14.05	14.2
5	Jabra	160.2	104	131	22.4	114	7.63	2.98	24.35	7.83
6	Ranga digha/ Lal Digha	164.6	88	117	22.8	101	7.83	2.99	16.04	6.8
7	Najirsail	150.2	93	122	24.2	92	8.87	2.43	28.5	17.46

SL. No.	Genotypes	PH(cm)	DF	DM	PL(cm)	FG/P	GL	GB	1000 gwt(g)	Y/H(g)
8	Laksmidigha	123.2	82	111	23.6	111	6.07	2.42	23.85	6.25
9	Nonakochi	134	115	142	24.8	87	8.67	3.14	28.15	15.11
10	Balam	153.2	104	132	26.2	135	8.87	3.23	27.08	17.74
11	Sadamota	136.2	118	141	24.6	108	8.3	3.24	27.35	16.8
12	Lalmota	131.4	118	145	17.8	90	8.96	3.59	25.55	13.48
13	Chinikanai	158	105	133	26	103	6.6	3.1	17.55	9.74
14	Joyna	146.8	106	134	23.6	133	8.57	3.17	25.2	15.12
15	Najirsail	129.4	83	112	25	111	9.15	2.39	24.25	7.26
16	Bashiraj	133	98	127	23.2	86	9.26	2.55	25.25	8.38
17	Jabra	150	104	131	22.2	129	7.9	3.2	26.03	12.24
18	Sada jabra	167	101	128	18	127	7.9	3.25	24.04	15.05
19	Jabra	156	106	133	20.6	108	7.41	3.24	25.05	16.49
20	Lal digha	128	89	118	19.2	104	7.61	3.27	21.01	9.43
21	Lal balam	145	102	129	25	230	8.03	2.47	25.7	17.29
22	Nazirsail	132	94	123	19.4	66	9.63	3.18	26.15	15.12
23	Bashiraj	143	85	114	21.8	70	8.6	2.99	26.31	13.14
24	Unknown	172.2	90	149	24	64	9.12	2.2	21.08	14.97
25	Motashoil	156	86	115	21.6	109	9.25	2.84	27	9.74
26	Jabra	142	101	128	23	93	7.64	3.1	27.95	13.19
27	Lal Jabra	117	99	128	21.6	85	7.44	2.41	24.8	15.98
28	Malbhog/ Kumragoir	129	101	129	24.6	58	8.38	2.94	29.05	8.73
29	Jira dhan	140	101	130	28.4	156	5.48	1.93	14.55	17.14
30	Kallbhira	124	102	129	21	120	8.26	2.84	23.1	16.87
31	Shailkhali	112	100	129	19.8	65	7.47	2.41	23.8	11.6
32	Dhiga bhoro	112	90	119	19.6	111	7.45	3.06	28.08	11.17
33	Jabra shoto	147	90	119	22	122	7.76	3.13	26.15	17.2
34	Ranjit shorna	119	115	142	22.4	135	7.72	2.46	21.6	16.8
35	Nazirsail-1	140.8	93	122	26.2	109	9.44	2.44	24.9	13.37
36	Nazirsail-2	138	99	128	25.4	101	9.29	2.19	25	12.43
37	Badshabhog	122	98	127	27.4	216	6.3	2.12	15	12.56
38	Lal Balam	142	105	132	25.8	141	9.27	2.63	26.02	17.08
39	Shorn Dhan5	102	110	137	22	120	7.95	2.25	18.1	13.01
40	Depa dhan	140	101	129	26.8	137	8.04	3.08	20.6	14.82
41	Moyna moti	121	94	122	23.8	62	6.89	3.35	21.95	18.17
42	Bashiraj	114	85	114	21.6	77	8.59	2.99	27.95	11.51
43	20 nombar Dhan	146	101	129	21.4	127	8.1	3.25	24.4	14.98
44	Tepa dhan	101	99	128	21.8	87	8.2	3.42	24	12.79
45	Shisumaoti	114	94	122	24.8	109	8.59	3.03	20.02	15.35
46	Najirsail-1	120	97	126	20.6	61	8.71	2.84	27.43	15.89
47	Najirsail-2	118	96	124	24	88	9.71	2.58	26.95	17.63
48	Jira dhan	139	101	128	24.4	158	7.1	2.27	14.09	13.84
49	Joyna	151.6	105	133	23.4	103	8.03	2.89	24.06	14.25
50	Jabra	141	106	134	21.4	123	7.87	3.35	27.85	18.75
	Min	101.00	81.00	110.00	17.80	58.00	5.48	1.88	14.05	6.25
	Max	172.20	118.00	149.00	28.40	230.00	9.71	3.59	29.05	18.80
	mean	136.64	98.44	127.12	23.06	110.36	8.13	2.83	23.96	13.92
	CV	12.10	9.00	6.77	10.78	30.55	11.98	14.91	16.88	23.99
	LSD	4.58	2.46	2.39	0.69	9.35	0.27	0.12	1.12	0.93

Location: BRRI Gopalganj

Investigator: M Z Islam

Co-Investigator: S C Das

Results: The majority of the observed attributes of the Aman rice germplasm in the present study show notable diversity. A UPGMA dendrogram was generated using 50 T.Aman rice germplasm, and the Euclidean distance was estimated using quantitative data. Using the Euclidean distance of 0.18 as the cutoff, cluster analysis indicated that the 50 T.Aman rice germplasm was divided into three categories **(Fig. 1)**. Cluster III consisted of a maximum of 32 germplasm samples, while Cluster II comprised 16 samples. The cluster I had the fewest (2) germplasm.
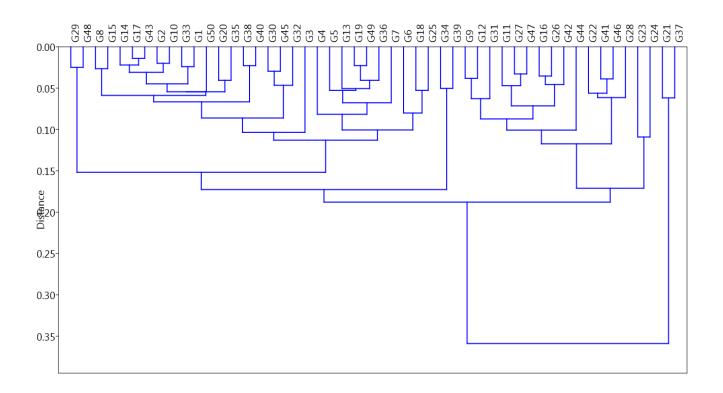

Fig. 1. UPGMA dendrogram of 50 Aman rice germplasm based on their morphological and yield component traits.

Experiment 22. Collection and chemical analysis of organic soil in Gopalganj

Specific Objective: To characterize organic soil nutrients

Justification: Soils can be divided into two groups: **organic soils** are those that are formed from sedimentation, gradual accumulation and decay of plant and animal material over time and are primarily composed of organic matter, while those that are formed from the weathering of rocks over time by various physical, chemical, and biological processes due to climate, drainage, leaching, erosion, vegetation, living organisms and human activity and are primarily composed of inorganic material are called mineral soils. Mineral soils form most of the world's cultivated land and may contain from a trace to 20 percent organic matter (OM). Organic soils (> 20% OM) are naturally rich in organic matter principally for climatic reasons and are not vital cropping soils. The organic soil is mainly found in the marshland.

In Bangladesh, the marshlands are found in Gopalgonj, Khulna, Narail, Netrokona and Sunamgonj areas (Inamul, 2008). It is a general rule that soil is called organic soil if: either more than half of the upper 80 cm of soil is organic; or organic material of any thickness rests directly

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on parent rock. Organic soil covers very few areas of Bangladesh and is considered a problem soil. However, to increase crop production the suitability of this soil needs to be studied. Soil properties are good indicators to judge for crop cultivation. For this purpose, we collected organic soil from Gopalganj district and characterized it for investigation.

Materials and Methods

Soil sample was collected from Tungipara, Gopalganj. The samples were air dried, ground and passed through a 2 mm sieve and bottled for chemical analysis. Soil pH was determined with pH meter using a glass electrode at a water suspension ratio 1: 2.5 (Jackson,1973). Organic carbon in soils was determined by wet oxidation method (Walkley and Black, 1965).Total nitrogen was estimated by Kjeldahl digestion method (Bremner,1965). Potassium was determined with neutral 1N NH_4OAC extraction method of Jackson (1973) using flame photometer.

Location: BRRI HQ, Gazipur and BRRI R/S Gopalganj

Investigators: M. N. Islam, A. Jahan, T. Islam, S. M. M. Islam, A. Islam, S. C. Das and M. Z. Islam

Results

Soil Properties

Some properties of collected soil are shown in Table 22. The soil reaction was found moderately acidic (pH 5.65). Organic carbon content is very high (14.76%). Total Nitrogen and available K contents were 0.9% and 0.24 cmol/kg, respectively.

Table 22. Properties of collected soil from Tungipara, Gopalganj, 2022-23

Parameters	Tungipara, Gopalganj
pH (1:2.5)	5.65
Organic C (%)	14.76
Total N (%)	0.9
Available K (cmol/kg)	0.24

TECHNOLOGY TRANSFER

Activity 1. Variety replacement through Head to Head Adaptive Trial during T. Aman 2022 and Boro 2022-23 under TRB-BRRI project

Objectives

- To evaluate the adaptability of modern rice varieties at farmers field
- To investigate the performance of the newly released rice varieties compared with the popular mega variety
- Rapid dissemination of newly released rice varieties at farmers' level

Methodology:

Eleven Head to Head Adaptive Trails (HHAT) were conducted in seven upazilas under three districts viz. Gopalganj, Bagerhat and Narail districts during the reporting period. In Aman 2022, eight (08) released rice varieties were used and about 20-25 days old seedlings were transplanted in 1 bigha of land maintaining 20cm × 20 cm spacing. The fertilizers and management were applied by BRRI recommended practices. During Boro 2022-23, two groups (Long duration and

short duration) of modern rice varieties were tested at 6 locations of Gopalganj, Narail and Bagherhat districts having 1 bigha of land each. About 35-40 days old seedlings were transplanted maintaining 25cm × 15cm spacing. The fertilizers were applied by BRRI recommended practices.

Location: Gopalganj

Investigators : S C Das, M K Tarek and M Z Islam

Results:

T. Aman 2022 season

In the T. Aman 2022 season, eight (8) different rice varieties—BRRI dhan33, BRRI dhan39, BRRI dhan71, BRRI dhan75, BINA dhan7, BINA dhan16, BINA dhan17 and BINA dhan22 were used. All of those varieties were short-duration varieties. In Gopalganj and Bagerhat districts, BINA dhan17 outperformed all other short-duration varieties in terms of yield (6.43 t/ha) and yield (6.53 t/ha), respectively (Table 23, Table 24 and Table 25)**.**

Boro 2022-23 season

In Boro 2022-23 season, two groups (Long duration and short duration) of BRRI modern rice varieties were tested at 6 locations of Gopalganj, Narail and Bagherhat districts viz BRRI dhan29, BRRI dhan89, BRRI dhan92, BRRI dhan102 and BINA dhan24 were used as long duration (LD) varieties and BRRI dhan28, BRRI dhan74, BRRI dhan88, Bangabandhu dhan100, BINA dhan25 and BAU dhan-3 were used as short duration varieties. Among those long duration varieties, BRRI dhan92 produced the highest yield in both locations 8.28 t/ha (Sadar upazila, Gopalganj) and 8.38 t/ha (Kalia upazila, Narail) in Gopalganj and Narail districts, respectively than the other varieties. In case of short duration, Bangabandhu dhan100 produced the highest yield in both locations that is 7.43 t/ha (Kalia upazila, Narail) and 7.53 t/ha (Mollahat upazila, Bagerhat) in Narail and Bagerhat districts respectively than the other varieties (Table 26 and Table 27)**.** Additionally, during the Boro 2022–23 season, the salinity ecosystem (short duration group) of the BRRI modern rice varieties such as BRRI dhan28, BRRI dhan67, BRRI dhan97, and BRRI dhan99 were assessed at two locations in Mongla, Bagerhat. But those trials were damaged due to high salinity (12-17 ds/m) (Table 28).

Table 23.Performance of promising new rice varieties through HHAT trial during T. Aman 2022 season (Short Duration)

Location	BRRI dhan39	BRRI dhan71	BRRI dhan75	BINA dhan16	BINA dhan17	BINA dhan22

	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha
Charboira, Sadar Gopalganj	118	4.38	114	4.94	113	4.86	105	5.62	115	6.35	113	5.78
Nilpha,Tungipara, Gopalganj	119	4.45	117	5.10	114	5.07	104	5.48	118	6.43	114	5.76
Farmer Preference (1-6)	6		4		5		3		1		2	

Farmer Preference (1-6): 1-6 means from high to low

Table 24. Performance of promising new rice varieties through HHAT trial during T. Aman 2022 season (Short Duration)

Location	BRRI dhan71		BRRI dhan75		BINA dhan7		BINA dhan16		BINA dhan17		BINA dhan22	
	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha
Sonakur Gobra Sadar Gopalganj	116	4.98	113	4.96	113	4.62	105	5.71	112	6.41	114	5.71
Kadomtola, Mollahat, Bagerhat	117	4.96	115	5.01	118	4.55	104	5.41	116	6.53	115	5.80
Farmer Preference (1-6)	5		4		6		3		1		2	

Farmer Preference (1-6): 1-6 means from high to low

Table 25. Performance of promising new rice varieties through HHAT trial during T. Aman 2022 season (Short Duration)

Location	BRRI dhan33		BRRI dhan71		BRRI dhan75		BINA dhan16		BINAdhan17		BINA dhan22	
	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha
Chadpur, Kalia, Narail	117	4.08	116	4.97	115	4.98	103	5.58	117	6.50	115	5.73
Farmer Preference (1-6)	6		5		4		3		1		2	

Farmer Preference (1-6): 1-6 means from high to low

Table 26. Performance of promising new rice varieties through HHAT trial during Boro 2022-23 season (Long Duration)

Location	BRRIdhan29	BRRIdhan89	BRRIdhan92	BRRIdhan102	BINAdhan24

	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha
Sadar, Gopalganj	158	7.61	155	8.22	158	8.28	148	8.03	147	7.72
Kalia, Narail	159	7.62	156	8.25	158	8.38	150	8.00	147	6.97
Farmer Preference (1-6)	4		2		1		3		5	

Farmer Preference (1-6): 1-6 means from high to low

Table 27. Performance of promising new rice varieties through HHAT trial during Boro 2022-23 season (Short Duration)

Location	BRRI dhan28		BRRI dhan74		BRRI dhan88		Bangabandhu dhan100		BINA dhan25		BAU dhan3	
	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha
Kalia,Narail	140	6.02	145	7.05	140	6.44	147	7.43	147	6.40	139	5.24
Mollahat, Bagerhat	140	6.31	144	6.97	141	6.12	145	7.53	145	6.94	140	4.16
Farmer Preference (1-6)	4		2		5		1		3		6	

Farmer Preference (1-6): 1-6 means from high to low

Table 28. Performance of promising new rice varieties through HHAT trial during Boro 2022-23 season (Short Duration)

Location	BRRI dhan28		BRRI dhan67		BRRI dhan97		BRRI dhan99	
	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha	GD days	Yd t/ha
L1:Holdebunia, Mongla, Bagerhat	Damaged due to salinity (12-17 ds/m)							
L2:Holdebunia, Mongla, Bagerhat	Damaged due to salinity (12-17 ds/m)							

Activity 2. Block Demonstration

High yielding hybrid rice variety development through modernization of research project and GoB funded three block demonstrations were conducted in three locations during T. Aus 2022 and Boro 2022-23 season. Two varieties viz. BRRI Hybrid dhan7 was conducted at Madhohkhuntakata, Shoronkhula, Bagerhat district around hundred bighas (100) areas and BRRI Hybrid dhan5 was conducted at Atasibari, Narikelbari union, Kotalipara, Gopalganj district around two hundred (200) bighas. Again, another block demonstration using BRRI Hybrid Dhan3 was held on 50 acres of land in Kushli, Tungipara, Gopalganj.

The average grain yield of BRRI Hybrid dhan7 was 6.35 t/ha with a growth duration of 115 days recorded at Shoronkhula, Bagerhat district. On the other hand, the average grain yield of BRRI Hybrid dhan3 was 9.12 t/ha with growth duration of 144 days recorded at Kushli, Tungipara, Gopalganj district. With the help of DAE personnel, two field days were organized at the rice crops' maturity in both locations. During the field day, the trial farmers shared their experiences with neighboring farmers, which made them interested in these varieties to cultivate those in their own land and thereby a demand for quality seeds was generated.

Activity 3. Field Demonstration

A total number of 500 (30 in Aus, 220 in T. Aman and 250 in Boro) field demonstrations (about 1 bigha each) of newly released BRRI modern rice varieties were conducted in different farmer's field in Gopalganj, Bagherhat and Narail districts. Among of them, 270 trials in the Gopalganj district, 154 trials in the Bagherhat district and 76 trials in the Narail district were conducted during Aus 2022, T. Aman 2022 and Boro 2022-23 season. Farmer's acceptance of BRRI Hybrid dhan7 in T. Aus season; BRRI dhan75, BRRI dhan87, BRRI Hybrid dhan6 in T. Aman Season and BRRI dhan67, BRRI dhan74, BRRI dhan92, Bangabandhu dhan100 , BRRI Hybrid dhan3 and BRRI Hybrid dhan5 in Boro season were found very high in those respective areas for its grain size, panicle length and high yield. Besides, a total number of 60 (20 in Aus, 20 in T. Aman and 20 in Boro) field demonstrations (about 1 bigha each) of newly released BRRI hybrid rice varieties such as BRRI Hybrid dhan7, BRRI Hybrid dhan4, BRRI Hybrid dhan6, BRRI Hybrid dhan3 and BRRI Hybrid dhan5 were conducted in different farmer's field in Gopalganj, Bagherhat and Narail districts.

Activity 4. Farmers Training

In the reporting year, seven (07) farmer's training was organized in different locations in Gopalganj and Bagerhat districts showed in Table 29. Among them, 210 farmers were participated and trained up their knowledge about modern rice production technologies and maintenance with the help of DAE and the financial assistance of GoB fund of BRRI.

Table 29. Farmers Training on modern rice cultivation and blast disease management in different regions during 2022-23

SL No.	Upazila	No. of Trainees				Total Trainees
		SAAOs		Farmer		
		M	F	M	F	
GoB fund, BRRI RS Gopalganj						
1	Gopalganj	-	-	91	29	120
2	Bagerhat	-	-	67	23	90
3	Narail	-	-	0	0	0
	Total			**158**	**52**	**210**

Activity 5. Breeder and TLS Seed Production

Production of Breeder seeds of different rice varieties of BRRI is an important and routine activity for BRRI RS Gopalganj. These regional station also produced to disseminate BRRI released varieties quickly to the farmars of Goplaganj region.

Objectives:

- To maintain the varietal purity
- To produce Breeder seed and TLS as required quantity

Materials and Methods:

Breeder seed was grown using nucleus seeds. Each variety was transplanted as per BRRI recommended cultural practices using single seedling per hill in every season. Fertilizers were applied as per recommendation of respective variety. Roguing was done at different stages with proper record keeping. When the plots were mass harvested as 'Breeder Seed' after getting 'field certificate' from Seed Certification Agency (SCA). After mass harvest, the seed of each variety was threshed, dried, cleaned separately and stored as 'breeder seed after processing' in gunny bag in the seed store. The produced breeder seeds were sent to GRS Division, BRRI, Gazipur.

Loacation: BRRI, RS, Gopalganj.

Investigators : M Z Islam and S C Das

In the reporting year, a total of 810 kg, 3920 kg and 6935 kg Truthfully Labelled Seed (TLS) were produced in T. Aus, T. Aman and Boro season, respectively. In total of 2050 kg breeder seed was produced in T. Aman season and 2892 kg breeder seed of different BRRI varieties was produced in Boro season. In total, 4942 kg of breeder seed was sent to the GRS Division, BRRI Gazipur. On the other hand, 460 kg of F_1 seed (BRRI Hybrid dhan5) was produced in Boro season (Table 30 and 31). In three season, 4730 kg Truthfully Labelled Seed (TLS) were distributed among the farmers for dissemination in Gopalganj, Bagerhat and Narail districts.

Table 30. Breeder seed and TLS seed production in T. Aus 2022 and T. Aman 2022 season at BRRI, RS, Gopalganj

Variety	Breeder Seed (kg)	TLS (kg)	Variety	Breeder Seed (kg)	TLS (kg)
	T. Aus, 2022			**T. Aman, 2022**	
BRRI dhan48	-	-	BR23	-	200
BRRI dhan82	-	260	BRRI dhan34	-	70
BRRI dhan85	-	250	BRRI dhan52	-	160
BRRI dhan98	-	300	BRRI dhan75	-	420
			BRRI dhan76	-	770
			BRRI dhan87	2050	1300
			BRRI dhan90	-	80
			BRRI dhan91	-	230
			BRRI dhan93	-	190
			BRRI dhan94	-	180
			BRRI dhan95	-	320
Total		**810**	**Total**	**2050**	**3920**

Table 31: Breeder seed and TLS seed production in Boro 2022-2023 season at BRRI, RS, Gopalganj.

Variety	Breeder Seed (kg)	TLS (kg)
	Boro 2022-23	
BRRI Hybrid dhan5	-	-

BRRI dhan67	1370	815
BRRI dhan74	1370	570
BRRI dhan89	-	820
BRRI dhan92	-	740
BRRI dhan96	-	260
BRRI dhan97	-	475
BRRI dhan99	-	645
Bangabandu dhan100	-	1215
BRRI dhan101	-	685
BRRI dhan102	-	710
Total	**2892**	**6935**

Activity 6. F_1 Seed production of BRRI Hybrid dhan5 during Boro 2022-23

Objective:

- To produce sufficient quantity of F_1 hybrid seed for subsequent use.

Materials and Methods:

CMS line (BRRI 17A) with its restorer (BRRI31R) line was grown as parental lines. BRRI hybrid dhan5 restorer was sown in two different dates at seven days interval and CMS line was sown 24 days after first set of its restorer. Thirty five days old seedlings were transplanted at a spacing of 15 cm × 15 cm having ratio 2: 10 of R and A line. Fertilizers @ 290:130:120:70:10 kg/ha of Urea-TSP-MP-gypsum and zinc sulphate were used of which ¼ urea, full dose of TSP, Gypsum, Zn SO_4, $^2/_3$MP were applied as basal. Remaining urea with equal splits was applied at 15-20 DAT, 35-40 DAT and booting stage, respectively. Rest of 1/3 MP was applied with 2nd top dress of urea. Intercultural operations, roughing, GA_3 application and supplementary pollination were performed.

Loacation: BRRI, RS, Gopalganj.

Investigators: Md. Jamil Hasan, M Z Islam and S C Das

Results:

A total of 460 kg (1.15 t ha^{-1}) of F_1 seeds were produced from BRRI Hybrid dhan5 (BRRI 17A/BRRI31R) at BRRI RS Gopalganj during Boro season (Table 32).

Table 32. F_1 Seed production of BRRI Hybrid dhan5

Hybrid	Plant height (cm)		50% flowering		Plot area (Acre)	Seed yield (kg)	Seed yield (t ha^{-1})
	A Line	R Line	A Line	R Line			
BRRI 17A/BRRI31R	87	98	121	142	1.0	460	1.15

D/S: R1= 20.11.2022   R2= 27.11.2022   A= 15.12.2022

D/T: R= 25.12.2022   A= 18.01.2023

Activity 7. Farmers Field Day and Krishi Mela

Seventeen field days were organized in the block demonstration in the Gopalganj, Bagerhat and Narail districts during T. Aus 2022; T. Aman 2022 and Boro 2022-23 seasons funded by GoB, high yielding hybrid rice variety development through modernization of research project and

increasing cropping intensity in the coastal barishal and khulna region through water resources and soil salinity management project. About 1500 farmers as well as extension personnel's, administrative people, public leaders were attended in the field days. Most of the farmers interested to cultivate new rice varieties in their areas specially BRRI dhan67, BRRI dhan87, BRRI dhan88, BRRI dhan89, BRRI dhan92,Bangabandhu dhan100 and BRRI Hybrid dhan3, BRRI Hybrid dhan4, BRRI Hybrid dhan5, BRRI Hybrid dhan6 and BRRI Hybrid dhan7. BRRI, RS, Gopalganj also participated in one Krishi Projukti mela (agriculture fair) and development fair at Rumpal upazila, Bagerhat district.