

# ANNUAL RESEARCH REVIEW WORKSHOP REPORT 2022-2023



**Bangladesh Rice Research Institute  
Regional Station, Sonagazi, Feni**

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## Scientific Manpower 2022-2023

SN	Name and Designation	Working Days	Remarks
1	Biswajit Karmakar, PhD Principal Scientific Officer & Head	365	
2	Md. Nayeem Ahmed, MS Senior Scientific Officer	365	
3	Md. Adil, PhD Senior Scientific Officer	335	
4	Md. Rashid Shahriar Ripon, MS Scientific Officer	41	Transferred to BRRI Rangpur
5	Md. Raihan Uddin, MS Scientific Officer	154	Left BRRI and Joined at DAE
6	Md. Asib Biswas, MS Scientific Officer	365	
7	Md. Ariful Islam Khalid, MS Scientific Officer	365	
8	Md. Al-Imran Hasan, MS Scientific Officer	152	Left BRRI and Joined at BADC
9	Tanzila Ferdous, MS Scientific Officer	41	Transferred to BRRI Sirajganj
10	Sania Tamanna, B. Sc. (Ag.) Scientific Officer	365	
11	Md. Zahirul Haque Farm Manager	365	
12	Md. Ariful Islam Senior Scientific Assistant	25	Transferred to BRRI Rajshahi
13	Md. Oli Ahmed Arif Scientific Assistant	310	
14	Md. Jabaydur Rahman Scientific Assistant	365	
15	Md. Rakibul Ahmed Scientific Assistant	336	Transferred to BRRI Gazipur

## SUMMARY

A total of 79 crosses were made during T. Aman and Boro at BIRRI Regional Station, Sonagazi. For pure line selection of Renguin (one of the best local Aus varieties in Hilly areas), 5 plants were selected on the basis of uniformity, good plant type and disease and insect free during T. Aus.

Regional Yield Trials (RYT) and Advanced Line Adaptive Research Trial (ALART) were conducted at experimental field of BIRRI, Sonagazi, Feni to test the yield performance and to evaluate the yield potential and adaptability of superior breeding lines, respectively. From RYT, a total of 191 breeding lines were tested during the reporting period from which 34 lines were found better than checks regarding grain yield and yield contributing characters.

### **RYT Aus 2022**

Seventeen lines along with standard checks BIRRI dhan27, BIRRI dhan48 and BIRRI dhan98 were tested under two RYTs (Favorable condition & non-saline tidal condition) during T. Aus 2022 from which three lines from RYT-Favorable condition (BR11863-5R-256, BR11607-4R-72 and 7 FBR-416, two lines from RYT- Non-saline tidal condition (BR9829-78-1-2-1 and BR11868-5R-2) were selected for advancing trial.

### **RYT Aman 2022**

Fifty-seven lines along with standard checks BIRRI dhan49, BIRRI dhan71, BIRRI dhan72, BIRRI dhan73, BIRRI dhan87, BIRRI dhan91, BIRRI dhan93, BIRRI dhan94 and IRBB60 were tested under 10 RYTs (BB, RLR, Tidal, ZER, LS, SS, STR1, STR2, STR1- Farmers' Field, STR2-Farmers' Filed) in Aman 2022 from which, two lines from RYT# BB (BR11869-5R-47, BR11874-5R-109), one line from RYT-Tidal (BR10238-5-1-9-3B), one line from RYT-ZER (BR9674-1-1-5-2-P4-HR1) were selected for advancing trial.

### **RYT Boro 2023**

One hundred eighteen lines along with standard checks BIRRI dhan28, BIRRI dhan29, BIRRI dhan50, BIRRI dhan58, BIRRI dhan63, BIRRI dhan67, BIRRI dhan74, BIRRI dhan81, BIRRI dhan84, BIRRI dhan88, BIRRI dhan89, BIRRI dhan92, BIRRI dhan96, BIRRI dhan97, Indonesian Black rice and Local checks (Jirashail, Tepi Boro and Rata Boro) were tested under 14 RYTs (BB-Blast, BB, ZER, FBR-Barishal, FBR-SD, FBR-MD, FBR-LD, FBR-ELS, FBR-Biotechnology, PQR-Basmati, STR, Zira type, Antioxidant-Black rice-SD, Antioxidant-Black rice-MD) during Boro 2022-23. Three lines from FBR-SD (BR11637-5R-140, BR11903-5R-56, BR12208-5R-402), two lines from FBR-MD (IR18A1398, IR18A1907), two lines from FBR-LD (BR11894-5R-260, BR11318-5R-84), three lines from FBR-ELS (BR9945-5R-21, IR18A2102, BR7528-2R-19-16-R1L-59), four lines from FBR-Barishal (NGR 418-1, NGR 968-1, NGR 994-1, NGR 745-2), three lines from STR (BR11712-4R-44, BR11712-4R-93, BR11712-4R-12, BR11712-4R-346), two lines from BB (BR(Path)13800-BC3-8-1, BR(Path)13800-BC3-109-10), five lines from BB-Blast [BR(Path)13800-BC3-8-5, BR(Path)13800-BC3-134-8, BR(Path)13800-BC3-8-11, BR(Path)13800-BC3-12-13, BR(Path)13800-BC3-134-25] were selected for advanced trial.

### **AGGRi network trials (ANT) for salt-stress prone environment in Aman 2023**

A total of 110 RGA derived IRRI breeding lines along with 8 global and 4 national check varieties were evaluated at coastal saline environment like Chakaria of Cox'sbazar in Aman 2022. The entries showed a wide range of variations in grain yield starting from 0.44 to 4.52 t ha<sup>-1</sup> with a mean value of 2.11 t ha<sup>-1</sup> in 1<sup>st</sup> replication and 0.70 to 4.97 t ha<sup>-1</sup> with mean value of 2.64 t ha<sup>-1</sup> in 2<sup>nd</sup> replication. The overall performance across the site of the tested lines varied from 0.48 to 4.04 t ha<sup>-1</sup> with mean value of 2.46 t ha<sup>-1</sup>. Among the tested 110 genotypes, 11 rice genotypes were selected based on yield performance (3.51 to 4.04 t ha<sup>-1</sup>) for further investigation.

### **AGGRi network trials (ANT) for salt-stress prone environment in Boro 2023**

The entries showed a wide range of variations in grain yield started from 0.56 to 4.23 t ha<sup>-1</sup> with a mean value of 1.98 t ha<sup>-1</sup> in first replication and 0.58 to 3.68 t ha<sup>-1</sup> with mean value of 2.26 t ha<sup>-1</sup> in second replication. The overall performance across the site of the tested lines varied from 0.62

to 3.40 t ha<sup>-1</sup> with mean value of 2.12 t ha<sup>-1</sup>. During the experimental period, significant salinity level observed. Mean Salinity levels were 3.0, 19.69 and 5.15 dS/m at vegetative, flowering and maturity stages, respectively. Five rice genotypes entry no. 37 (IR21LT1293), 39 (IR21LT1605), 119 (IR21LT1157), 131 (IR21LT1048), and 148 (IR21LT1679) performed better than the check varieties.

### **ALART**

Five ALART trials conducted in Aman 2022 while three ALART trials conducted in Boro 2023 at farmers' field. A total of 40 breeding lines along with check varieties were evaluated under these trials during the reporting period.

### **Reduction of insecticide use in rice production**

Bangabandhu dhan100 and BRRI dhan97 produced significantly higher yield in T2 (Prophylactic insecticide use) treatment as compared to T1 (Refrained from insecticide) treatment. BRRI dhan96 gave significantly similar yield in both treatments. Significantly higher number of white head (caused by yellow stem borer attack) and ETL percentage was found in all three varieties using T1 treatment as compared to T2 treatment. Nevertheless, BRRI dhan100 produced highest yield (6.59 tha<sup>-1</sup>) using T2 treatment as compared to all treatment-variety combinations. Besides, BRRI dhan97 showed highest number of white head (139) and ETL percentage (4.38) using T1 treatment as compared to all treatment-variety combinations. All treatment-variety combinations showed below 5% ETL.

### **Pest Survey**

Survey was carried out at farmers' fields of Feni, Noakhali, Laxmipur, Cox'sbazar, Chattogram and Khagrachari districts both in Aman 2022 and Boro 2022-23. Bacterial Leaf Blight (BLB), Bacterial Leaf Streak (BLS), Sheath rot, False smut and Sheath blight infestation were observed in different scores during Aman season. BRRI dhan49 was affected by false smut disease in different locations. BRRI dhan28, BRRI dhan29, BRRI dhan67, BRRI dhan89, BRRI 92 and BRRI dhan84 were affected moderate to highly by neck blast during Boro season.

**Light Trap:** Rice insect pests and their natural enemies were monitored throughout the reporting period by Pennsylvanian light traps from July 2022 to June 2023 at BRRI Sonagazi, Feni. Abundance of leaf roller, Stem borer, Rice bug, green leafhopper, grasshopper, Mole cricket, Field cricket, and stink bug were found in the light trap. Some beneficial insects like lady bird beetle, spider, damsel fly, carabid beetle, Staphylinid beetle were also found.

### **Time of Planting, Boro 2023**

BRRI dhan92 produced the highest grain yield (8.63 t/ha) followed by BRRI dhan89 (8.34 t/ha) in early seeding at 1<sup>st</sup> November 2022 which was transplanted at 5 December 2022. The lowest grain yield of tested varieties was found in late seeding on 20 December 2022 that transplanted on 25 January 2023.

### **Yield maximization, Aman 2022**

The highest grain yield was found in T4= STB + Cow dung (2 t/ha) for BRRI dhan87 (5.93 t/ha) which was at par with BRRI dhan94 (4.86 t/ha) and BRRI dhan95 (5.50 t/ha); but in STB, BRRI dhan95 (5.56 t/ha) which is insignificant. In consideration of variety, the treatments effect was significant for BRRI dhan87, but BRRI dhan94 and BRRI dhan95 was insignificant. The results also indicated that STB + cow dung (2 t/ha) treatment is enough for the maximum yield of tested varieties BRRI dhan87, BRRI dhan94 and BRRI dhan95.

### **Yield maximization, Boro 2023**

Results showed that highest grain yield was found in T1=STB for BRRI dhan92 (9.31 t/ha) followed by BRRI dhan89 (7.66 t/ha). BRRI dhan96 the gave the highest grain yield (7.14 t/ha) in T3 (STB + 20% more N) which was statistically significant from other treatments. The results also indicated that T1=STB dose treatment is enough for the maximum yield of tested varieties BRRI dhan89 and BRRI dhan92 but BRRI dhan96 required 20% more N than STB dose.



### **Optimizing Planting Geometry, Boro 2023**

Bangabandhu dhan100 produced the highest grain yield (7.72 t ha<sup>-1</sup>) in the closest spacing (20 cm×15 cm) which was statistically similar with the spacing 25cm×15cm (7.37 t ha<sup>-1</sup>) and the yield was decreased gradually with increased spacing. It is concluded that the closer spacing (20 cm × 15 cm) followed by (25 cm × 15 cm) would be recommended to attain higher yield of Bangabandhu dhan100.

### **Optimizing Nitrogen Rate, Boro 2023**

The treatments had significant effects on yield and yield components of Bangabandhu dhan100. Among the treatments, T6 produced the highest mean grain yield 7.47 t ha<sup>-1</sup>, which statistically significant with T5 (7.36 t ha<sup>-1</sup>), T1 (7.23 t ha<sup>-1</sup>), T4 (7.04 t ha<sup>-1</sup>), and T7 (6.92 t ha<sup>-1</sup>). The lowest mean grain yield obtained in the control treatment T7 (3.51 t ha<sup>-1</sup>) followed by T2 (-N) ((4.52 t ha<sup>-1</sup>). Yield was not increased in treatments applied additional N. Therefore, it is concluded that 100 N ha<sup>-1</sup> would be recommended for Bangabandhu dhan100 to obtain higher yield avoiding lodging.

### **Effect of nitrogen levels on protein quality of rice, Boro 2023**

Yield and yield components of BRR1 dhan92 were significantly affected by the different levels of nitrogen, except 1000-grain weight. All the parameters performed the best in the treatment T<sub>4</sub> (150 kg N ha<sup>-1</sup>). Among the treatments, the treatment T<sub>4</sub> (150 kg N ha<sup>-1</sup>) gave the highest grain yield (7.88 t ha<sup>-1</sup>) followed by T<sub>5</sub> (175 kg N ha<sup>-1</sup>) (7.53 t ha<sup>-1</sup>) and the lowest yield was found in control treatment T<sub>1</sub> (3.50 t ha<sup>-1</sup>).

### **Cost Effective Weed Management, Aman 2022**

Application of post emergence herbicide along with BRR1 Weeder produced higher grain yield than Farmers' practice. Yield of farmer's practice reduced for higher weed infestation due to late hand weeding. Application of herbicide and BRR1 Weeder at proper time to reduce the weed infestation effectively.

**MLT of promising Hybrid lines, Aman 2022:** A total of 27 hybrid lines were tested in MLT Aman 2022 and Boro 2023. BRR197A/BRR153R, BRR197A/BRR142R, BRR199A/BRR142R and BRR197A/BRR143R were selected from MLT-1 and hybrid IR78369A/BRR142R, IR58025A/BRR146R, IR102758A/BRR142R, IR58025A/BRR143R, IR105688A/BRR143R and IR78369A/BRR153R were selected from MLT-2 for advanced trials.

**MLT of promising Hybrid lines, Boro 2023:** Among fourteen hybrids, the entry BRR197A/BRR142R showed yield advantage ranging from 43-53% over all the checks. Entry BRR1125A/EL86R and BRR197A/BRR138R showed yield advantage ranging from 2-9% over SL8H (Ck-2), 6-15% over Heera-2 and 34-45 over Tej Gold. So, we selected three hybrids based on stable yield performance and advantage over checks

**Stability analysis, Aus 2022:** Among the Aus varieties, BRR1 dhan98 ranked the top producing the highest mean grain yield (6.36 t ha<sup>-1</sup>) followed by BRR1 hybrid dhan7 (5.88 t ha<sup>-1</sup>). The variety BR21, BRR1 dhan65, and BRR1 dhan27 were found low yielding varieties having grain yield 3.30, 3.36 and 3.71 t ha<sup>-1</sup>, respectively.

**Stability analysis, Aman 2022:** Among the Aman varieties, BRR1 dhan103 ranked the top attaining the higher mean grain yield (5.70 t ha<sup>-1</sup>) followed by BRR1 dhan52 (5.58 t ha<sup>-1</sup>). The variety BR5, BRR1 dhan62, and BRR1 dhan91 were found low yielding varieties having grain yield 2.50, 3.15 and 3.20 t ha<sup>-1</sup>, respectively.

**Stability analysis, Boro 2023:** Among the Boro varieties, BRR1 dhan89 gave the highest grain yield (8.56 t ha<sup>-1</sup>) followed by BRR1 dhan92 (8.48 t ha<sup>-1</sup>). The lowest grain yield obtained in BR7 (4.21 t ha<sup>-1</sup>) followed by BR17 (4.82 t ha<sup>-1</sup>) and BR8 (5.04 t ha<sup>-1</sup>).

**Head-to-Head Adaptive Trial (HHAT), Aman 2022:** Ten HHATs (Costal Ecosystem-5, Short duration-2 and Flash flood system-3) were conducted at Sonagazi, Fulgazi, Mirsarai, Chakaria, Cox'sbazar Sadar Upazila of different districts during Aman 2022 under TRB Project. Across the locations, BRRRI dhan79 gave the highest mean grain yield (5.22 t ha<sup>-1</sup>) for coastal ecosystem, BRRRI dhan75 yielded the highest (5.46 t ha<sup>-1</sup>) for short duration, and BRRRI dhan52 yielded highest in average of the locations (4.98 t ha<sup>-1</sup>) for Flash flood ecosystem.

**HHAT Boro 2023:** A total of 15 HHATs (Short duration 3, Long duration 3, Salinity 3 and Hill ecosystem 6) were conducted at Chattogram and Rangamati regions during Boro 20223 under TRB Project. Among the groups, BRRRI dhan74 yielded the highest (7.05 t ha<sup>-1</sup>) for short duration group, BRRRI dhan102 produced the highest mean grain yield (8.14 t ha<sup>-1</sup>) for long duration group, BRRRI dhan99 gave the highest grain yield (6.17 t ha<sup>-1</sup>) for salinity ecosystem and Bangabandhu dhan100 yielded the highest in average of the locations (7.11 t ha<sup>-1</sup>) for hilly ecosystem.

#### **Activities of Premium quality rice (PQR) Project:**

BRRRI and ASEDS (NGO) takes initiatives in rapid out-scaling of modern PQR varieties and its management technologies in Bogura and Sirajganj districts. Twenty-four Adaptive trials (AT), 120 Pilot production (PP) trials, 12 Field days and eight farmers trainings were executed in project areas during 2022-2023.

**AT Aman 2022:** BRRRI dhan75 produced the highest mean grain yield (5.13 t ha<sup>-1</sup>) followed by BRRRI dhan90 (4.91 t ha<sup>-1</sup>) in AT Aman 2022. The lowest grain yield (3.01 t ha<sup>-1</sup>) was obtained in Binadhan-13 followed by BRRRI dhan34 (3.43 t ha<sup>-1</sup>). Farmers' preferences of the varieties were BRRRI dhan90> BRRRI dhan75> BRRRI dhan34> BRRRI dhan80> BRRRI dhan70>Binadhan-13 in Aman 2022.

**AT Boro 2023:** Irrespective of varieties and locations, the highest mean grain yield (8.02 t ha<sup>-1</sup>) was found in BRRRI dhan102 followed by Bangabandhu dhan100 (6.91 t ha<sup>-1</sup>). The lowest grain yield (5.14 t ha<sup>-1</sup>) was obtained in Binadhan-25 followed by BRRRI dhan81 (5.32 t ha<sup>-1</sup>) and local variety Katari (5.54 t ha<sup>-1</sup>). Farmers preference was BRRRI dhan102>Katari>Binadhan-25>Bangabandhu dhan100> BRRRI dhan63>BRRRI dhan81 in Boro 2023.

**PP Aman 2022:** Total production of all the varieties was 34.55 t of which 3640 kg retained as seeds (11% of total production) by the farmers for next season cultivation. About 1793 farmers gained awareness and knowledge about the varieties and 329 farmers (18%) were motivated to cultivate the varieties.

**PP Boro 2023:** Among the varieties, BRRRI dhan102 gave the highest mean grain yield (7.87 t ha<sup>-1</sup>) followed by Bangabandhu dhan100 (7.02 t ha<sup>-1</sup>). The lowest mean grain yield (5.75 t ha<sup>-1</sup>) was found in BRRRI dhan81 followed by BRRRI dhan50 (5.83 t ha<sup>-1</sup>) and BRRRI dhan63 (6.19 t ha<sup>-1</sup>) (Table 68). Across the locations, BRRRI dhan102 produced the highest grain yield (8.46 t ha<sup>-1</sup>) at Royganj, Sirajganj followed by Bangabandhu dhan100 (7.83 t ha<sup>-1</sup>) at Sherpur, Bogura.

**Field Day under PQR Project:** Twelve field days were conducted during the reporting period in Sirajganj and Bogura districts. Around 1500 participants attended in the field days and gathered knowledge about rice technologies.

**Farmers' training under PQR Project:** A total of eight Farmers' Training on Premium Quality Rice (PQR) technologies was executed in Sirajganj and Bogura districts. About 240 farmers, extension personnel, NGO personnel and field level project employees were participated as trainee. Expert scientists from BRRRI and Extension personnel delivered speech on different topics related to PQR technologies.

**Demonstration funded by GOB in 2022-2023:** A total of 852 demonstrations were executed in 852 bigha land at farmer's field during Aus 2022, Aman 2022 and Boro 2022-23 funded by GOB.

Total grain production of the SPDP was 676.07 ton and 59.19 ton (9 %) was preserved as seed. From the SPDPs, 61255 farmers gained knowledge on rice technologies and 11568 farmers (19%) were motivated.

**Demonstration funded by Karmasuchi in 2022-2023:** A total of 120 demonstrations were executed in 120 bigha land at farmer's field during 2022-2023 financial year (Boro 2022-23) funded by BRRI Sonagazi Research and Development Karmosuchi. Total grain production of the SPDP was 163.03 ton and 9.79 ton (7%) was preserved as seed. From the SPDPs, 2530 farmers gained knowledge on rice technologies and 216 farmers (9%) were motivated.

**Demonstration funded by Hybrid project:** A total of 240 demonstrations were executed in 240 bigha land at farmer's field during 2022-2023 financial year (Boro 2022-23) funded by BRRI Hybrid project. Total grain production of the SPDP was 173.29 ton. From the SPDPs, 10902 farmers gained knowledge on rice technologies and 1712 farmers (16%) were motivated.

**Demonstration funded by TRB project:** A total of 120 demonstrations were executed in 120 bigha land at farmer's field during 2022-2023 financial year (Aman 2022 & Boro 2022-23) funded by TRB project. Total grain production of the SPDP was 103.71 ton and 8.62 ton (8%) was preserved as seed. From the SPDPs, 8544 farmers gained knowledge on rice technologies and 1365 farmers (16%) were motivated.

**Farmers Training funded by GOB:** Forty farmers trainings on rice technologies were executed and trained up 1200 farmers having 925 male and 275 female farmers.

**Farmers Training funded by Karmasuchi:** A total of 64 trainings on rice technologies were executed and trained up 1920 farmers having 1472 male and 448 female farmers.

**Field day funded by GOB:** Sixteen field days were organized in selected demonstration sites during 2022-2023. Out of 16 field days 14 were funded by GOB and 2 by Hybrid rice project. Nearly 1600 progressive farmers, local leaders, extension personnel (DAE and NGO personnel) and public representatives were participated in those occasions.

**Field day funded by Karmasuchi:** A total of 26 field days were organized in selected demonstration sites at maturity stage during 2022-2023 financial year funded by BRRI Sonagazi Research and development Karmosuchi. Almost 2600 progressive farmers, local leaders, extension personnel and public representatives were participated in the programs.

**Breeder Seed Production funded by GOB:** A total of 30.25-ton breeder seeds were produced by GoB during the reporting period (2022-23). All the Breeder seeds of different varieties were sent to Genetic Resource and Seed Division, BRRI, Gazipur.

**Breeder Seed Production funded by Karmasuchi:** A total of 35.60-ton breeder seeds were produced by BRRI Sonagazi during the reporting period (2022-23). All the Breeder seeds of different varieties were sent to Genetic Resource and Seed Division, BRRI, Gazipur.

**Quality Seed (TLS) Production funded by GOB:** A total of 26.63-ton TLS of modern rice varieties were produced by BRRI Sonagazi during the reporting (2022-23).

**Quality Seed (TLS) Production funded by Karmasuchi:** A total of 21.1 ton TLS of modern rice varieties were produced by BRRI Sonagazi during the reporting period 2022-23.



## 1. Variety Development Program Area

### 1.1 Crop season: T. Aus 2022

#### 1.1.1: Development of high yielding Aus variety for Chattogram and Hilly areas:

M Adil, S Tamanna, B Karmakar

Specific Objectives:

- To make pure and uniform the variety through pure line selection.
- To develop high yielding and short duration Aus varieties for the Chattogram and Hilly areas

**Germplasm collection for Pure line selection:** Renguin is a one of the best and popular local Aus variety in Hilly areas. Renguin was collected from Khagrachari during T. Aus 2022.

#### 1.1.2: Regional Yield Trial (RYT)

M Adil, S Tamanna, B Karmakar

**Specific objective:** To evaluate specific and general adaptability of the genotypes in on-station condition.

**Materials and method:** Two RYT's from Plant Breeding Division were evaluated at BRRI Sonagazi, Feni. Eighteen to Twenty days old seedlings were transplanted using 2-3 seedlings per hill with the spacing of 20 cm x 15 cm. The unit plot size was 5.4m x 12 rows. The experiment was laid out in RCB design with three replications. Fertilizer doses were 158 Kg: 60 Kg DAP: 90 Kg MP: 60 kg Gypsum: 7.5 Kg Zn SO<sub>4</sub>/ha. All amounts of fertilizers were applied at the time of final land preparation except urea. Urea was applied in 3 equal splits at 10 DAT, maximum tillering and before PI stage. Standard crop management practices were followed for all the genotypes.

#### 1.1.3 Regional Yield Trials (RYT), T. Aus 2022

Seventeen lines along with standard checks BRRI dhan27, BRRI dhan48 and BRRI dhan98 were tested under 2 RYT's (Favorable condition & non-saline tidal condition) in BRRI, Sonagazi, Feni to test the yield performance and to evaluate the yield potential and adaptability.

#### 1.1.4 RYT-Favorable condition, T. Aus 2022

Twelve advanced breeding lines along with two standard checks BRRI dhan48 and BRRI dhan98 were evaluated at BRRI, Sonagazi, Feni during T. Aus 2022. The advanced breeding lines BR11863-5R-256, BR11607-4R-72 and 7 FBR-416 produced higher yield than checks (Table 1). Therefore, BR11863-5R-256, BR11607-4R-72 and 7 FBR-416 were selected for further varietal development activities.

Table 1: Yield and agronomic performance of RYT-Favorable condition during T. Aus 2022 at BRRI Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	GD (day)	Plant height (cm)	PACP	Remarks
1	BR11863-5R-82	5.93	110	99	5	ShR-2
2	BR11863-5R-256	6.24	112	115	5	ShR-2, BB-2
3	BR11864-5R-31	5.77	111	100	4	ShR-2, BB-2, SB-1
4	BR11864-5R-38	5.30	111	99	5	ShR-2, SB-2
5	BR11864-5R-75	5.29	112	106	5	ShR-3, BB-2, SB-1
6	BR11869-5R-98	5.30	110	104	4	F5m-1, BB-2, SB-2
7	BR11604-4R-133	5.76	126	129	5	ShR-2, SB-2, LD-3
8	BR11607-4R-6	5.56	123	118	5	ShR-2, BB-2, SB-1
9	BR11607-4R-72	6.03	114	109	4	ShR-2, BB-2, SB-1
10	BR9651-15-2-1-3	4.61	112	97	5	ShR-4, BB-2, SB-1
11	7 FBR-400	5.61	112	107	5	ShR-2, BB-2, SB-2
12	7 FBR-416	6.53	113	104	3	ShR-2, BB-2, SB-1
13	BRRI dhan48 (Ck.)	5.67	110	106	4	ShR-2, BB-2
14	BRRI dhan98 (Ck.)	5.98	112	103	4	ShR-2, SB-1

	LSD (0.05)	0.76	2.72	8.45		
	CV (%)	8.00	1.40	4.70		
	H2b (%)	0.71	0.96	0.89		

### 1.1.5 RYT-Non-saline-tidal during T. Aus 2022

Five advanced breeding lines along with two standard checks BRR1 dhan27, BRR1 dhan48 and BRR1 dhan98 were evaluated at BRR1, Sonagazi, Feni during T. Aus 2022. The advanced breeding lines BR9829-78-1-2-1 and BR11868-5R-2 produced higher yield than checks (Table 2). Therefore, BR9829-78-1-2-1 and BR11868-5R-2 were selected for further varietal development activities.

Table 2: Yield and agronomic performance of RYT- Non-saline-tidal during T. Aus 2022 at BRR1 Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR9829-78-1-2-1	6.21	115	124	7	ShR-2, BB-1, SB-1, UE, Mix
2	BR9830-5-2-2-3	5.35	113	122	5	ShR-2, SB-1
3	BR8773-2-2-2-2	5.80	118	124	7	ShR-2, SB-2, LD-4, RD-2%
4	BR11868-5R-2	6.18	120	138	5	ShR-2, BB-2, SB-2, UE
5	BRR1 dhan27 (Ck.)	5.19	110	141	5	ShR-2, BB-2, SB-1, LD-2
6	BRR1 dhan48 (Ck.)	5.28	109	103	5	ShR-2, BB-2, SB-1
7	BRR1 dhan98 (Ck.)	4.88	112	102	5	ShR-2, SB-1, RD-15%,
	LSD (0.05)	0.75	2.67	6.02		
	CV (%)	7.50	1.30	2.80		
	H2b	0.78	0.96	0.98		

## 1.2 Crop Season: Aman 2022

### 1.2.1 Hybridization, T. Aman 2022

In this hybridization program, local popular varieties Rajashail, Kajalshail and Kalobajal were used as female and Thirty-six BRR1 varieties were used as male parents, expected to introgress genes from diverse genetic background for the improvement of local popular photosensitive variety with higher yield (7.0 t/ha), slender grain, lodging tolerance. Crossing was done among the desirable parents. Usual method of emasculation and pollination was followed for crossing.

Table 3: List of Rajashail crosses made during T. Aman 2022, BRR1 Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F1 Seeds	Date of Pollination
1	Rajashail/BR11	3	56	15-Oct-22
2	Rajashail/BR3	2	52	10-Oct-22
3	Rajashail/BRR1 dhan103	6	71	12-Oct-22
4	Rajashail/BRR1 dhan49	4	120	9 & 11-Oct-22
5	Rajashail/BRR1 dhan52	5	88	8 & 11-Oct-22
6	Rajashail/BRR1 dhan54	4	27	12-Oct-22
7	Rajashail/BRR1 dhan70	3	24	14-Oct-22
8	Rajashail/BRR1 dhan71	3	71	15-Oct-22
9	Rajashail/BRR1 dhan72	2	15	13-Oct-22
10	Rajashail/BRR1 dhan75	5	102	9 & 13-Oct-22
11	Rajashail/BRR1 dhan76	2	32	15-Oct-22
12	Rajashail/BRR1 dhan77	3	88	15-Oct-22
13	Rajashail/BRR1 dhan78	2	18	13-Oct-22
14	Rajashail/BRR1 dhan79	4	93	11 & 12-Oct-22
15	Rajashail/BRR1 dhan80	2	15	12-Oct-22
16	Rajashail/BRR1 dhan87	4	89	7 & 8-Oct-22
17	Rajashail/BRR1 dhan90	2	33	14-Oct-22
18	Rajashail/BRR1 dhan94	3	15	10-Oct-22

Table 4: List of Kajalshail crosses made during T. Aman, 2022, BRR I Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F1 Seeds	Date of Pollination
1	Kajalshail/BR10	3	108	3-Nov-22
2	Kajalshail/BR11	2	136	3-Nov-22
3	Kajalshail/BR22	2	37	2-Nov-22
4	Kajalshail/BR22	2	85	2-Nov-22
5	Kajalshail/BR22	1	35	3-Nov-22
6	Kajalshail/BR23	3	142	3-Nov-22
7	Kajalshail/BRR I dhan103	2	120	1-Nov-22
8	Kajalshail /BRR I dhan34	4	147	1-Nov-22
9	Kajalshail /BRR I dhan46	3	173	2-Nov-22
10	Kajalshail /BRR I dhan49	4	70	31-Oct-22
11	Kajalshail /BRR I dhan51	2	121	3-Nov-22
12	Kajalshail /BRR I dhan52	2	53	2-Nov-22
13	Kajalshail /BRR I dhan54	5	149	31-Oct-22
14	Kajalshail BRR I dhan87	4	103	31-Oct-22
15	Kajalshail /BRR I dhan75	4	218	1-Nov-22

Table 5: List of Kalobajal crosses made during T. Aman, 2022-23, BRR I R/S, Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F1 Seeds	Date of Pollination
1	Kalobajal /BR22	4	56	12-Nov-22
2	Kalobajal /BR23	5	70	11 & 13-Nov-22
3	Kalobajal /BRR I dhan52	1	11	12-Nov-22
4	Kalobajal /BRR I dhan87	2	34	12-Nov-22
5	Kalobajal /BRR I dhan93	1	14	12-Nov-22

Table 6: List of Ratoon crosses made during T. Aman 2022, BRR I Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F1 Seeds	Date of Pollination
1	Rajashail/BR22	8	77	08, 11, 13-Nov-22
2	Rajashail/BR23	5	55	9, 12, 13-Nov-22
3	Rajashail/BRR I dhan93	4	83	15-Nov-22

Table 7. List of BR22 &amp; BR23 crosses made during T. Aman 2022, BRR I Sonagazi

SN	Parentage	No. of F1 Seeds	No. of emasculated Panicle	Date of Pollination
1	BR22/BR23	1	17	17-Nov-22
2	BR23/BR22	2	16	17-Nov-22

**Results:** Forty-three crosses were made using 30 parents (Table 3-7).

**Investigators:** M Adil, S Tamanna, B Karmakar

### 1.2.2 Regional Yield Trial (RYT)

**Specific objective:** To evaluate specific and general adaptability of the genotypes in on-station condition.

**Materials and method:** Ten RYT's from Plant Breeding Division were evaluated at BRR I Sonagazi, Feni. Twenty-one to Twenty-five days old seedlings were transplanted using 2-3 seedlings per hill with the spacing of 20 cm x 15 cm. The unit plot size was 5.4m x 12 rows. The experiment was laid out in RCB design with three replications. Fertilizer doses were 180 Kg: 75 Kg DAP: 112 Kg MP: 75 kg Gypsum: 7.5 Kg Zn SO<sub>4</sub>/ha. All amounts of fertilizers were applied

at the time of final land preparation except urea. Urea was applied in 3 equal splits at 10 DAT, maximum tillering and before PI stage. Crop management such as weeding, disease and insect pests control were done in time.

### 1.2.3 Regional Yield Trials (RYT), T. Aman 2022

Fifty-seven lines along with standard checks BRRRI dhan49, BRRRI dhan71, BRRRI dhan72, BRRRI dhan73, BRRRI dhan87, BRRRI dhan91, BRRRI dhan93, BRRRI dhan94 and IRBB60 were tested under 10 RYT's (BB, RLR, Tidal, ZER, LS, SS, STR1, STR2, STR1- Farmers' Field, STR2-Farmers' Filed) in BRRRI, Sonagazi, Feni to test the yield performance and to evaluate the yield potential and adaptability.

**Investigators:** M Adil, S Tamanna, B Karmakar

### 1.2.4 RYT Bacterial Blight (BB) during T. Aman 2022

Four advanced breeding lines along with three standard checks BRRRI dhan87 and IRBB60 were evaluated at BRRRI, Sonagazi, Feni during Aman 2022. The advanced breeding lines BR11869-5R-47 and BR11874-5R-109 gave higher yield than checks. (Table 8). So, BR11869-5R-47 and BR11874-5R-109 selected for further varietal development activities.

Table 8: Yield and agronomic performance of RYT (BB) during T. Aman 2022 at BRRRI Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR11869-5R-47	5.92	133	124	5	BB-1, FSm-2, Sterility, LD-10
2	BR11869-5R-72	5.34	133	127	7	FSm-5, BB-2, Sterility
3	BR11874-5R-109	5.79	117	105	3	
4	BRRRI dhan49 (Ck.)	5.57	133	104	7	FSm-3, BB-2, Sterility
5	BRRRI dhan87 (Ck.)	5.45	130	130	7	BB-5, ShR-2, Sterility, LD-90%
6	IRBB60 (Res.CK)	4.52	115	91	4	
	LSD (0.05)	0.67	1.68	5.58		
	CV (%)	6.8	0.7	2.7		
	H2b	0.80	0.99	0.99		

### 1.2.5 RYT Zinc Enriched Rice (ZER) during T. Aman 2022

Four advanced breeding lines along with two standard checks BRRRI dhan72 and BRRRI dhan87 were evaluated at BRRRI, Sonagazi, Feni during Aman 2022. The advanced breeding line BR9674-1-1-5-2-P4-HR1 gave higher yield than checks (Table 9). So, BR9674-1-1-5-2-P4-HR1 was selected for further varietal development activities.

Table 9: Yield and agronomic performance of RYT(ZER) during T. Aman 2022 at BRRRI Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR10490-1-2-3-8-7	5.73	108	104	7	ShB-7, ShR-5, RD-15%
2	BR10470-1-2-3-13-5	5.87	110	113	7	BB-5, ShB-7, ShR-3
3	BR10471-1-2-3-15-1	6.17	113	112	7	ShB-7, ShR-2, UE
4	BR9674-1-1-5-2-P4-HR1	6.80	113	111	6	ShB-5
5	BRRRI dhan72 (Ck.)	6.03	118	111	5	
6	BRRRI dhan87 (Ck.)	5.63	116	112	5	
	LSD (0.05)	1.09	1.62	1.40		
	CV (%)	10.00	0.80	0.70		
	H2b	0.39	0.98	0.98		

### 1.2.6 RYT (Tidal) during T. Aman 2022

Four advanced breeding lines along with one standard check BRRRI dhan91 were evaluated at BRRRI, Sonagazi, Feni during Aman 2022. The advanced breeding line BR10238-5-1-9-3B gave higher yield than check (Table 10). So, BR10238-5-1-9-3B was selected for further varietal development activities.

Table 10: Yield and agronomic performance of RYT (tidal) during T. Aman 2022 at BRRRI Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR9892-8-2-2B	5.13	155	146	7	LD-100%
2	BR10247-14-18-7-3B	5.50	156	151	7	LD-100%
3	BR10238-5-1-9-3B	5.64	158	152	7	LD-100%
4	BR9392-12-6-2-4B	3.26	161	172	7	LD-100%
5	BRRRI dhan91 (Ck.)	3.03	157	174	7	LD-100%
	LSD (0.05)	0.87	1.35	6.00		
	CV (%)	10.20	0.50	2.00		
	H2b	0.96	0.97	0.98		

### 1.2.7 Advanced Line Adaptive Research Trial (ALART) during T. Aman 2022

Five categories of ALARTs such as, Salt Tolerant Rice (STR-Sonagazi), Salt Tolerant Rice (STR-Companiganj), Premium quality Rice (PQR), Re-ALART for submergence tolerance rice; long duration (SubTR-LD#1) and SubTR-LD#2 were conducted during T. Aman 2022-23. Recommended management practices were followed in these trials. Data were collected on yield and yield contributing characters, phenotypic acceptance at vegetative and reproductive stage, insect and disease reaction and lodging records.

### 1.2.8 Advanced Line Adaptive Research Trial (ALART)

N Ahmed, MA Biswas, M Adil, B Karmakar

Two ALARTs were conducted at experimental field of BRRRI, Sonagazi, Feni to test the yield performance and to evaluate the yield potential and adaptability of superior breeding lines, In Aman 2022 two STR trial were conducted one in Sonagazi, Feni and other in Companiganj, Noakhali. Three advance breeding lines were tested with two local check BRRRI dhan73 and BRRRI dhan87. Lines BR11712-4R-218 and BR11716-4R-102 showed better yield performance than the check varieties in Sonagazi, Feni (Table 11). In Companiganj lines BR11712-4R-218 and BR11716-4R-102 showed better yield performance than BRRRI dhan73 but statistically similar with BRRRI dhan87 (Table 12).

Table 11. Grain yield, plant height and growth duration of ALART STR Sonagazi in Aman 2022

Genotype	GD (day)	Plant height (cm)	Grain yield (t/ha)
BR11712-4R-218	121	112	6.03
BR11716-4R-102	122	114	6.52
BR11723-4R-172	123	112	5.86
BRRRI dhan73	127	128	4.82
BRRRI dhan87	129	124	5.44
CV (%)	2.78	2.14	6.37
LSD <sub>0.05</sub>	3.88	4.74	0.68

Table 12. Grain yield, plant height and growth duration of ALART STR at Companiganj, Noakhali in Aman 2022.

Genotype	Growth duration (day)	Plant height (cm)	Grain yield (t/ha)
V1=BR11712-4R-218	122	116	4.91
V2=BR11716-4R-102	123	115	5.30
V3=BR11723-4R-172	125	114	5.11

V4=BRRi dhan73	128	126	4.44
V5=BRRi dhan87	129	122	5.00
CV (%)	2.67	1.71	8.63
LSD <sub>0.05</sub>	4.21	3.83	0.8

### 1.2.9 ALART for Premium Quality Rice (PQR), T. Aman 2022

The two lines BR8493-3-5-1-P1 and BR9590-45-1-3-2-P2 were evaluated against two standard checks in ALART (PQR). Two genotypes gave lower yield (2.90 and 2.82 t ha<sup>-1</sup>) compared to two check varieties (2.69 and 3.23 t ha<sup>-1</sup>). BR8493-3-5-1-P1 genotype showed the highest yield (2.90 t ha<sup>-1</sup>) with lowest growth duration (127 days) than all other genotypes (Table 13).

Table 13. Performance of different genotypes under ALART for PQR during T. Aman2022

SN	Genotypes	Plant height (cm)	Growth duration (days)	Yield (t/ha)
1	BR8493-3-5-1-P1	126	127	2.90
2	BR9590-45-1-3-2-P2	124	141	2.82
3	BRRi dhan34 (Ck)	128	141	2.69
4	BRRi dhan70 (Ck)	122	128	3.23
	CV (%)	1.41	1.83	9.66
	LSD <sub>0.05</sub>	3.524	4.91	0.56

**NB:** Yield reduced due to the effect of the Cyclone Sitrang as the crop lodged and increased Sterility.

### 1.2.10 Re-ALART for submergence tolerance rice; long duration (SubTR-LD), Aman 2022

MA Biswas, M Adil, B Karmakar

The two lines BR9158-19-9-6-50-2-HR1 and IR13F441 were evaluated against two standard checks in ALART (SubTR-LD). The average grain yield of all advanced lines (5.58 - 5.03 t ha<sup>-1</sup>) was higher than the check variety BRRi dhan44 and BRRi dhan52 ( 5.10 t ha<sup>-1</sup>, 5.25 t ha<sup>-1</sup> respectively). BR9158-19-9-6-50-2-HR1 genotype showed the yield (2.90 t ha<sup>-1</sup>) with lowest growth duration (136 days) than all other genotypes but IR13F441 genotype showed the highest yield (5.58 t ha<sup>-1</sup>) with lowest growth duration (137 days) than two standard checks (Table 14).

Table 14. Performance of different genotypes under ALART for Sub-TR (LD) during T. Aman2022

SN	Genotype	Plant height (cm)	Growth duration (day)	Yield (t/ha)
1	BR9158-19-9-6-50-2-HR1	125	136	5.03
2	IR13F441	122	137	5.58
3	BRRi dhan44 (Ck)	131	143	5.10
4	BRRi dhan52 (Ck)	124	144	5.25
	CV (%)	1.82	0.43	9.32
	LSD <sub>0.05</sub>	4.55	1.20	0.98

### 1.2.11 Re-ALART for submergence tolerance rice; long duration (SubTR-LD), Aman 2022

MA Biswas, M Adil, B Karmakar

Among the advanced line and check varieties, the advanced line IR13F441 gave the highest yield ( 5.51 t ha<sup>-1</sup> ) followed by the 2<sup>nd</sup> highest average yield ( 5.1 t ha<sup>-1</sup>) by standard check BRRi dhan52. On an average, all the entries matured within 135-143 days. The variety BRRi dhan44 gave the highest growth duration (GD) of 143 days whereas IR13F441line gave the lowest GD or 135 days. The mean plant height of BRRi dhan44 was higher 131cm than the others. All the data represented in the below here were mean data from replicated entries (Table 15).



Table 15. Performance of different genotypes under ALART for Sub-TR (LD) in T. Aman2022

SN	Genotypes	Plant height (cm)	Growth duration (days)	Yield (t/ha)
1	BR9158-19-9-6-50-2-HR1	124	135	4.75
2	IR13F441	120	139	5.51
3	BRR1 dhan44 (Ck)	131	143	4.9
4	BRR1 dhan52 (Ck)	121	139	5.1
	CV (%)	2.08	0.21	8.74
	LSD <sub>0.05</sub>	5.15	0.58	0.89

### 1.2.12 AGGRi network trials (ANT) for salt-stress prone environment in T. Aman 2022

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**Background/ Rationale:** Yield per unit area of modern rice varieties of favorable ecosystems remain stagnant for the last two decades. The reason behind this is the use of parental lines with a narrow genetic base and/or poor breeding value. Continuous use of old varieties as parents has also leaned the genetic diversity in the elite irrigated breeding pool. To widen the genetic base of the breeding germplasm genetically diverged elite lines with high breeding value need to be used in the breeding program as parent. Under this project, a set of 110 salinity tolerant breeding lines including seven check varieties received from IRRI Philippines were evaluated at coastal saline environment.

**Abstract:** A total of 110 RGA derived IRRI breeding lines along with 8 global and 4 national check varieties were evaluated at coastal saline environment like Chakaria of Cox's bazar district under BRR1 Regional Station, Sonagazi, Feni during WS 2022 to understand salinity resistant and to select superior lines for direct use in variety release or as parents in the breeding program. The entries showed a wide range of variations in grain yield starting from 0.44 to 4.52 t ha<sup>-1</sup> with a mean value of 2.11 t ha<sup>-1</sup> in first replication and 0.70 to 4.97 t ha<sup>-1</sup> with mean value of 2.64 t ha<sup>-1</sup> in second replication. The overall performance across the site of the tested lines varied from 0.48 to 4.04 t ha<sup>-1</sup> with mean value of 2.46 t ha<sup>-1</sup>. Among the tested 110 genotypes, 11 rice genotypes were selected based on yield performance (3.51 to 4.04 t ha<sup>-1</sup>) for further investigation.

#### Materials and Methods

This trial was conducted with 110 salinity resistant derived advanced breeding lines along with 8 global and 4 national check varieties at coastal saline environment like Chakaria of Cox's bazar district under BRR1 Regional Station, Sonagazi, Feni during WS 2022. The trials were designed in Alpha lattice design with two replications. Unit plot size was 5.4 m<sup>2</sup> (27 hills × 5 rows). Two to 3 seedlings per hill were transplanted following 20 cm × 20 cm spacing in the trial. Eighteen-d-old seedlings were transplanted at Chakaria, Cox'sbazar on 09 August, 2022. BRR1 recommended fertilizers urea, TSP, MOP, Gypsum and Zinc Sulfate as the nutrient rate N, P, K, S and Zn @ 74, 15, 56, 13.6 and 1 kg ha<sup>-1</sup> were applied in the experimental field. Uniform crop management practice was followed. Pest like weeding, insect and disease were controlled in time. Water salinity was measured at 15 days interval. Observations on plant height from five random hills of each plot, 50% flowering, 80% maturity, yield, disease and insect pest infestation were recorded. Grain yield was calculated adjusting the moisture content at 14 %. Data was analyzed using the statistics 10 following a mixed linear model.

#### Results and discussion:

Grain yield of the genotypes tested under ANT salinity varied significantly within the two replications. The entries showed a wide range of variations in grain yield started from 0.44 to 4.52 t ha<sup>-1</sup> with a mean value of 2.11 t ha<sup>-1</sup> in first replication and 0.70 to 4.97 t ha<sup>-1</sup> with mean

value of 2.64 t ha<sup>-1</sup> in second replication. The overall performance across the site of the tested lines varied from 0.48 to 4.04 t ha<sup>-1</sup> with mean value of 2.46 t ha<sup>-1</sup> (Table 16). 50% Flowering and Growth duration also varied significantly within the site. The entries varied in 50% flowering from 80-100 days and growth duration from 114 to 127 days (Table 16). Wider variations in plant height were also observed within location. Plant height of the entries varied from 75 to 150 cm. During the experiment completion, no significant salinity level observed. Salinity levels were 3.0 to 4.0 and 4.35 to 4.85 dS/m in flowering and maturity stages, respectively. Most of the entries were affected by rat damage. Some of the entries were suffered from sterility due to Sitrang cyclone blowing over the experimental site and all over the coastal area of Bangladesh on 24-25 October 2022. Mixtures were also observed in most of the entries. A total of 11 (E-97, E-116, E-083, E-128, E-082, E-159, E-146, E-150, E-110, E-127, E-063,) rice genotypes were selected based on yield performance (3.51 to 4.04 t ha<sup>-1</sup>) under salinity stress for further investigation.

Table 16. Performances of rice genotypes under coastal saline environment in WS 2022 at Koralkhali, Chakaria, Cox'sbazar under BRRRI Sonagazi funded by ANT Project

Entry No.	Designation	Grain yield			Days to 50% F	GD (day)	PHT (cm)	PAcp	Remarks	
		R1	R2	Mean					R1	R2
E-054	IR20R1990	1.58	1.60	1.59	88	119	117	7	Tall, BD, RD	RD 85%
E-055	IR20R1815	2.38	2.12	2.25	92	120	90	7	Mixture,	RD 40%
E-056	IR20R1267	1.94	3.25	2.60	92	125	105	5	Sterility	Uneven
E-057	IR20R1926	2.98	3.10	3.04	100	127	109	7	FS 1, ShR 1, Mixture, Uneven	FS 2
E-058	IR20R1524	2.06	2.96	2.51	91	126	90	7	Sterility, Mixture	Mixture
E-059	IR20R1505	2.62	2.36	2.49	92	122	98	5	Sterility	Mixture
E-060	IR20R1677	1.67	3.10	2.39	87	118	94	5	RD 70%	RD 30%
E-061	IR20R1822	0.00	2.52	2.52	87	116	89	7	RD 80%, Mixture, Uneven	RD 5% Higher Sterility
E-062	IR20R1663	3.38	2.63	3.00	91	125	118	5	ShR 1	RD 5%
E-063	IR20R1699	2.67	4.35	3.51	89	121	100	7		Uneven
E-064	IR20R1834	1.80	3.44	2.62	95	126	93	7		Mixture
E-065	IR20R1402	0.00	2.31	2.31	87	118	97	7	RD-90%	
E-066	IR20R1450	2.09	3.68	2.89	96	125	94	7	Sterility	mixture
E-067	IR20R1778	2.45	3.94	3.19	90	119	103	5		Sterility
E-068	IR20R1985	1.61	1.01	1.31	87	117	97	5	RD 70%	Tall, RD 98%
E-069	IR20R1399	1.67	3.04	2.35	92	120	98	7	Sterility	
E-070	IR20R1682	2.04	2.93	2.49	97	125	101	4		
E-071	IR20R1358	1.81	4.96	3.38	91	124	102	5	FS 2, RD	
E-072	IR20R1393	4.13	2.67	3.40	90	120	94	7		RD 40%, Uneven
E-073	IR20R1421	2.80	3.14	2.97	95	125	96	5		Uneven, RD 5%, mixture
E-074	IR20R1691	3.18	3.63	3.40	96	126	101	5	Sterility	
E-075	IR20R1895	0.92	0.00	0.92	80	115	105	7	RD 80%, Mixture, Uneven, Sterility	RD 98%
E-076	IR20R1083	2.47	3.90	3.19	94	127	99	7		
E-077	IR20R1992	0.69	1.83	1.26	87	117	109	7	BD 40%, ShR 1, Tall, RD 80%	RD-40%, Mixture
E-078	IR20R1302	1.82	2.56	2.19	96	124	97	7	Sterility	
E-079	IR20R1736	2.89	3.76	3.33	94	125	99	5	Sterility	
E-080	IR20R1780	1.71	1.71	1.71	87	117	106	7	Mixture, BD-90%, RD	Uneven, RD-80%

Entry No.	Designation	Grain yield			Days to 50% F	GD (day)	PHT (cm)	PAcp	Remarks	
		R1	R2	Mean					R1	R2
E-081	IR20R1848	1.66	2.13	1.89	97	126	93	5	ShR 2, Sterility, RD	Uneven
E-082	IR20R1687	3.41	4.29	3.85	94	126	98	5		
E-083	IR20R1794	3.40	4.45	3.92	96	126	103	4	FS 1	
E-084	IR20R1543	1.60	2.77	2.18	89	119	99	7	RD 60%, Mixture, Uneven	Uneven,
E-085	IR20R1171	2.12	3.04	2.58	90	125	99	7	Huge Mixture	FSm-1, Uneven, RD
E-086	IR20R1902	1.15	0.00	1.15	82	115	150	7	BD 80%, ShR 1	RD 80%
E-087	IR20R1961	1.52	2.42	1.97	94	127	116	7	Mixture, RD	Huge mixture, Uneven, RD 10%, Awn
E-088	IR20R1472	1.33	3.00	2.17	86	117	102	7	ShR 2, RD	RD 5%
E-089	IR20R1359	2.25	3.93	3.09	96	126	105	5		
E-090	IR20R1962	1.16	2.20	1.68	88	125	128	7	BD 50%, tall, Awn, mixture, ShR-2	Tall, huge Mixture, Awn, BD 10%, RD 10%
E-091	IR20R1885	0.02	0.70	0.70	87	118	0		RD-95%	RD 90%
E-092	IR20R1048	2.76	3.66	3.21	97	125	100	4	RD-10%	Uneven, mixture
E-093	IR20R1411	2.65	3.30	2.97	90	124	101	6	RD 5%, Mix	
E-094	IR20R1351	2.43	3.16	2.80	95	127	112	7	Mixture	
E-095	IR20R1904	0.00	0.00	0.00	85	116	0		RD-98%	RD-100%
E-096	IR20R1932	2.93	3.49	3.21	88	122	85	6	RD-20%, ShR 2	RD-5%
E-097	IR20R1593	3.46	4.63	4.04	91	123	111	7	RD 5%	
E-098	IR20R1831	1.06	3.91	2.48	94	122	85	7	Mixture, short, RD	Uneven, mixture
E-099	IR20R1839	1.72	0.00	1.72	96	126	95	7	RD-30%, Mix	Uneven, mixture, FS 1
E-100	IR20R1637	3.36	0.00	3.36	93	127	105	6		
E-101	IR20R1879	2.71	2.49	2.60	88	118	105	7	Mixture, Uneven, Sterility	Uneven mixture
E-102	IR20R1155	1.17	1.48	1.32	87	117	87	7	Mixture, sterility, RD	RD-90%
E-103	IR20R1525	1.86	2.96	2.41	91	124	99	5	Mixture	Uneven, mixture
E-104	IR20R1980	1.34	1.08	1.21	90	120	118	7	Tall, Awn, tip-red, RD	Tall, uneven, RD 80%, Awn
E-105	IR20R1113	3.22	2.11	2.67	94	127	104	5	FS	Missing 1 line
E-106	IR20R1502	2.03	2.88	2.46	92	122	100	5	Mixture	Mixture
E-107	IR20R1578	3.17	3.09	3.13	91	126	114	6		
E-108	IR20R1954	0.95	3.01	3.01	92	124	91	7	Mixture, Short, RD 90%	FSm-2, Uneven, RD 15%
E-109	IR20R1817	2.63	1.45	2.04	94	123	84	6	ShR 2	RD 90%
E-110	IR20R1503	2.71	4.56	3.63	92	121	99	5		FSm-2
E-111	IR20R1685	2.40	2.48	2.44	97	127	99	7		RD-20%
E-112	IR20R1859	2.02	2.66	2.34	93	125	105	7	Mixture	Mixture, RD 5%
E-113	IR20R1785	1.98	4.13	3.06	91	126	102	5		
E-114	IR20R1931	1.38	1.17	1.27	82	116	99	7	RD	RD 90%

Entry No.	Designation	Grain yield			Days to 50% F	GD (day)	PHT (cm)	PAcp	Remarks	
		R1	R2	Mean					R1	R2
E-115	IR20R1840	1.83	3.85	2.84	92	123	94	7		
E-116	IR20R1583	2.99	4.97	3.98	93	126	103	5	Uneven, mixture, FSm-1	Uneven, Mixture
E-117	IR20R1799	2.39	3.09	2.74	88	118	93	6	RD, sterility	Uneven, mixture, RD-10%
E-118	IR20R1159	1.42	1.11	1.26	91	123	102	7	RD-80%, Mixture, Uneven	Mixture, RD 70%
E-119	IR20R1174	1.71	3.20	2.45	88	120	100	7	RD 20%, Mixture	RD 30%, Uneven
E-120	IR20R1746	2.16	3.03	2.59	93	124	95	5		RD-10%
E-121	IR20R1965	1.48	2.22	1.85	87	117	102	6	RD	Mixture, RD 5%
E-122	IR20R1791	2.75	3.62	3.19	93	123	98	6	FS 1	Uneven, sterility, mixture
E-123	IR20R1044	1.82	3.11	2.47	97	125	104	4		FSm-1
E-124	IR20R1957	2.33	2.20	2.27	88	119	98	7		RD 70%
E-125	IR20R1949	0.86	2.87	1.87	87	116	91	6	Mixture, short, RD	Uneven
E-126	IR20R1364	2.53	2.79	2.66	96	126	117	4	FSm-2	RD 20%, Uneven
E-127	IR20R1474	3.63	3.48	3.56	89	121	100	5		Mixture
E-128	IR20R1654	4.52	3.24	3.88	92	123	95	5		sterility, Mixture
E-129	IR20R1354	1.60	2.60	2.10	88	122	106	5	Sterility, BD 50%	RD 30%,
E-130	IR20R1818	1.76	3.99	2.88	92	121	95	7	FS 1, RD 50%	Uneven, mixture
E-131	IR20R1635	1.66	2.88	2.27	95	127	112	5		
E-132	IR20R1418	2.06	1.58	1.82	89	122	100	6	Mixture, Uneven	Uneven, mixture, RD 80%
E-133	IR20R1808	1.78	2.60	2.19	90	120	97	7	RD 50%	RD 20%, Uneven
E-134	IR20R1981	0.99	1.95	1.47	90	122	132	6	BD-80%, ShR-1, Tall,	Tall, RD-40%
E-135	IR20R1832	1.64	0.00	1.64	87	117	80	7	RD 40%	RD-90%
E-136	IR20R1967	1.51	2.61	2.06	98	126	95	7	RD	Uneven, sterility
E-137	IR20R1880	1.62	3.63	2.63	88	118	91	7	RD 50%	Uneven, mixture
E-138	IR20R1711	1.47	2.19	1.83	92	117	90	7	Mixture, RD	RD-10%
E-139	IR20R1210	3.31	2.75	3.03	93	125	98	5	ShR 2, RD10%	Uneven, mixture
E-140	IR20R1252	3.25	3.56	3.40	96	125	105	6	FS 2	
E-141	IR20R1813	1.35	2.17	1.76	93	120	88	7	Short, FS 1, RD	RD, Sterility
E-142	IR20R1622	3.19	2.68	2.94	91	124	98	7	Mix	RD-20%, Uneven
E-143	IR20R1907	2.14	1.62	1.88	86	116	103	5	RD 10%	RD-80%
E-144	IR20R1404	3.26	2.34	2.80	95	126	102	5	Sterility	Uneven, RD-20%
E-145	IR20R1209	2.39	3.83	3.11	97	127	106	5	RD 15%	Uneven, Mixture
E-146	IR20R1433	4.02	3.26	3.64	93	125	111	5		Mixture
E-147	IR20R1388	3.59	3.03	3.31	93	126	106	4		
E-148	IR20R1894	0.44	1.51	0.98	83	117	109	7	RD 50%, BD 40%, mixture	RD 40%, Uneven
E-149	IR20R1565	3.09	3.75	3.42	99	127	109	5		
E-150	IR20R1735	3.23	4.05	3.64	95	125	100		Mixture	Mixture
E-151	IR20R1527	2.38	2.89	2.64	93	123	92	7	RD 20%	

Entry No.	Designation	Grain yield			Days to 50% F	GD (day)	PHT (cm)	PAcp	Remarks	
		R1	R2	Mean					R1	R2
E-158	CSR 28	2.97	2.57	2.77	84	114	98	7	Sterility 5%	RD-40%, Sterility
E-159	A69-1	2.98	4.41	3.70	90	124	100	4		Uneven, mixture, Panicle recede the flag leaf
E-160	IRRI 239	2.12	1.95	2.04	90	120	91	5	RD 20%	RD-40%
E-161	SAMBHA MAHSURI	3.99	2.92	3.45	93	122	95	4	Golden color rice	golden color rice
E-162	IRRI 147	1.47	0.00	1.47	85	114	75	7	RD-80%, Mixture, Short	RD-90%
E-163	IR 54447-3B-10-2	1.41	0.02	1.41	90	121	0	7	RD 70%	RD-95%
E-164	IR 29	0.00	0.00	0.00	86	115	0		RD 80%	RD 80%
E-165	IRRI 154	2.35	2.71	2.53	90	120	103	6	RD-10%	Uneven, mixture, RD 10%
E-166	BRRIdhan73	0.00	0.95	0.48	83	114	87	7	RD-90%	RD 80%, short
E-167	BRRIdhan87	3.11	3.60	3.36	94	126	113	4	FS 2	Medium tall
E-168	Binadhan-8	2.35	1.97	2.16	90	120	75	5	Short	RD 50%
E-169	Binadhan-10	0.47	1.69	1.08	88	119	81	5	Mixture, short	RD 40%, Sterility
Range		0.44-4.52	0.70-4.97	0.48-4.04	80-99.5	115-127	75-150			
Mean		2.11	2.64	2.46	91	122	97			

NB: GD= Growth duration, PHT = Plant height, RD = Rat damage, BD = Bird damage, FS = False smut, ShR = sheath rot

### 1.3.16 Multi-location Yield Trials (MLT) Set-1, Aman 2022

MA Biswas, B Karmakar, A Ansari and MJ Hasan

**Objectives:** To assess the yield of promising rice hybrids at different locations for their adaptability

**Materials and methods:** During T. Aman 2022, eleven hybrids with three checks were used as planting materials. Twenty-one days old seedlings were transplanted with a spacing of 20 × 15 cm<sup>2</sup> using one seedling/hill. The trial was designed following RCBD with 3 replications. Fertilizers were applied @ with 150:100:70:60:10 kg/ha urea, TSP, MP, gypsum and ZnSO<sub>4</sub> respectively. Intercultural and agronomic practices were made when necessary.

**Results and discussions:** In this trial, entry AZ 7006 (Ck-2) produced highest yield (6.42 t/ha) compared to other entries (5.77-4.33 t/ha) and showed 120 cm plant height and 118 days growth duration. On the other hand, entry BRR197A/BRR153R, BRR197A/BRR142R, BRR199A/BRR142R, BRR197A/BRR143R & Dhanny Gold (Ck-3) gave satisfactory higher yield (5.77- 5.63 t/ha) than rest of the entries (5.39-4.33 t/ha) and exhibited 105-117 cm plant height and 109-120 days growth duration. So, on the basis of yield, growth duration, Plant height and other agronomic character, entry BRR197A/BRR153R, BRR197A/BRR142R, BRR199A/BRR142R and BRR197A/BRR143R and were selected for advanced trials (Table 17).

Table 17: Results of Multi-locations Yield Trials during T. Aman 2022

SN	Entry	PH (cm)	GD	PPM	GD (t/ha)	% Sterility	1000 GW (g)	Remarks
1	IR79156A/BRR146R	107	110	272	5.39	37	11.07	1. Some entries
2	BRR197A/BRR153R	105	110	265	5.77	26	23.48	

3	IR79156A/BRRI53R	109	109	266	4.55	32	25.07	submerged due to cyclone Sitrang. 2. Rat damage and BLB was seen in some entries.
4	IR105688A/BRRI53R	102	109	269	4.33	29	24.46	
5	BRRI97A/BRRI42R	118	110	284	5.76	31	23.25	
6	BRRI99A/BRRI42R	106	109	263	5.75	31	23.69	
7	BRRI99A/BRRI37R	111	110	250	4.84	24	25.37	
8	IR102758A/BRRI36R	105	109	255	5.02	32	26.16	
9	BRRI97A/BRRI43R	110	114	273	5.75	30	25.32	
10	BRRI99A/BRRI43R	111	113	268	5.31	20	23.56	
11	IR79156A/BRRI43R	117	112	264	4.81	14	24.79	
12	BRRI hybrid dhan6 (Ck-1)	118	109	254	5.28	24	23.61	
13	AZ 7006 (Ck-2)	120	118	264	6.42	27	21.50	
14	Dhanny Gold (Ck-3)	117	120	278	5.63	25	19.78	
	Mean	111	112	266	5.33	27	22.94	
	CV	3.34	1.61	9.92	11.22	4.1	2.36	
	LSD	6.24	3.015	44.31	1.0034	1.88	0.91	

DS: 19 July 2022 DT: 08 August 2022; Unit plot size: 30 m<sup>2</sup>

### 1.3.17 Multi-location Yield Trials (MLT) Set-2, Aman 2022

MA Biswas, B Karmakar, A Ansari and MJ Hasan

**Objectives:** To assess the yield of promising rice hybrids at different locations for their adaptability

**Materials and methods:** During T. Aman 2022, ten hybrids with three checks were used as planting materials. Twenty-one days old seedlings were transplanted with a spacing of 20 × 15 cm<sup>2</sup> using one seedling/hill. The trial was designed following RCBD with 3 replications. Fertilizers were applied @ with 150:100:70:60:10 kg/ha urea, TSP, MP, gypsum and ZnSO<sub>4</sub> respectively. Intercultural and agronomic practices were made when necessary.

**Results and discussion:** In this trial, entry IR78369A/BRRI42R produced highest yield (7.01 t/ha) compared to other entries (6.93-5.72 t/ha) and showed 109 cm plant height and 119 days growth duration. On the other hand, Entry IR58025A/BRRI46R, IR102758A/BRRI42R, IR58025A/BRRI43R, IR105688A/BRRI43R & IR78369A/BRRI53R gave satisfactory higher yield (6.93- 6.38 t/ha) than rest of the entries (5.72-6.29 t/ha) and exhibited 109-115 cm plant height and 108-112 days growth duration. So, on the basis of yield, growth duration, Plant height and other agronomic character, entry IR78369A/BRRI42R, IR58025A/BRRI46R, IR102758A/BRRI42R, IR58025A/BRRI43R, IR105688A/BRRI43R and IR78369A/BRRI53R were selected for advanced trials (Table 18).

Table 18: Results of Multi-locations Yield Trials during T. Aman 2022

Entry	PH (cm)	GD	PPM	Grain Yield (t/ha)	Sterility (%)	1000 GW (g)	Remarks
IR58025A/BRRI46R	109	112	368	6.93	32	23.98	1. Some entries submerged due to cyclone Sitrang. 2. Rat damage, BLB and Insect infestations were seen in some entries.
IR102758A/BRRI53R	111	109	283	5.95	21	25.95	
IR79125A/BRRI53R	113	108	343	5.86	27	25.25	
IR78369A/BRRI53R	114	113	349	6.38	13	24.36	
IR102758A/BRRI42R	116	112	277	6.86	31	25.49	
IR78369A/BRRI42R	114	109	342	7.01	24	20.25	
IR58025A	119	109	274	6.29	32	24.31	
IR105688A/BRRI43R	117	116	285	6.56	31	25.24	
IR102758A/BRRI43R	118	114	274	6.38	35	24.50	
IR58025A/BRRI43R	121	115	285	6.57	41	25.40	
BRRI hybrid dhan6 (Ck-1)	117	108	297	5.72	14	22.45	
AZ 7006 (Ck-2)	119	119	308	6.00	36	24.50	
Dhani Gold (Ck-3)	115	117	312	6.22	32	23.06	
Grand Mean	116	112	307	6.36	28	24.21	
CV	3.85	1.93	3.69	11.55	14.03	1.49	
LSD	7.50	3.65	19.12	1.24	6.72	0.61	

DS: 20 July 2022 DT: 09 August 2022; Unit plot size: 30m<sup>2</sup>



### 1.3 Crop Season: Boro 2022-2023

#### 1.3.1 Hybridization, Boro 2022-23

M Adil, S Tamanna, B Karmakar

In this hybridization program, popular varieties BRRi dhan67, BRRi dhan74, BRRi dhan97 & BRRi dhan99 were used as female and Twenty-two BRRi varieties/Breeding lines were used as male parents, expected to introgress genes from diverse genetic background for the improvement of popular variety BRRi dhan67, BRRi dhan74, BRRi dhan97 & BRRi dhan99 with higher yield (8.5 t/ha), slender grain, lodging tolerance, salt tolerant and disease resistant. Crossing was done among the desirable parents. Usual method of emasculation and pollination was followed for crossing.

**Results:** Forty-three crosses were made using parents (Table 19-22).

Table 19: List of BRRi dhan67 crosses made during T. Aman, 2022-23, BRRi Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F <sub>1</sub> Seeds
1	BRRi dhan67/BR11607-4R-72	4	26
2	BRRi dhan67/BR11712-4R-44	5	99
3	BRRi dhan67/BR11712-4R-93	1	4
4	BRRi dhan67/BR12180-5R-7	5	85
5	BRRi dhan67/BR11723-4R-12	1	18
6	BRRi dhan67/BR12177-5R-1	2	10
7	BRRi dhan67/BR11712-4R-79	3	47
8	BRRi dhan67/BR11716-4R-105	2	17
9	BRRi dhan67/BR11712-4R-1	2	15
10			

Table 20: List of BRRi dhan74 crosses made during T. Aman, 2022-23, BRRi R/S, Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F <sub>1</sub> Seeds
1	BRRi dhan74/IRRI 154 (Pi9)	3	52
2	BRRi dhan74/BR11607-4R-72	5	64
3	BRRi dhan74/BR11712-4R-44	6	84
4	BRRi dhan74/BR11712-4R-93	2	29
5	BRRi dhan74/BR12180-5R-7	2	20
6	BRRi dhan74/BR11723-4R-12	2	61
7	BRRi dhan74/BR11716-4R-105	3	43
8	BRRi dhan74/BR11712-4R-1	4	76
9	BRRi dhan74/BPH resistant line	5	88

Table 21: List of BRRi dhan97 crosses made during T. Aman, 2022-23, BRRi R/S, Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F <sub>1</sub> Seeds
1	BRRi dhan97/BR11607-4R-72	3	38
2	BRRi dhan97/BR11712-4R-44	2	14
3	BRRi dhan97/BR11723-4R-38	3	26
4	BRRi dhan97/BR11723-4R-12	5	79
5	BRRi dhan97/BR11716-4R-64	2	9
6	BRRi dhan97/BR11712-4R-79	2	18
7	BRRi dhan97/BR11716-4R-105	5	90
8	BRRi dhan97/BR11712-4R-1	3	49

Table 22: List of BRR I dhan99 crosses made during T. Aman, 2022-23, BRR I R/S, Sonagazi

SN	Parentage	No. of emasculated Panicle	No. of F <sub>1</sub> Seeds
1	BRR I dhan99/BR11712-4R-93	3	172
2	BRR I dhan99/BR12180-5R-7	2	85
3	BRR I dhan99/BR12177-5R-1	5	83
4	BRR I dhan99/BR11712-4R-227	2	14
5	BRR I dhan99/BR11715-4R-16	3	58
6	BRR I dhan99/BR11712-4R-79	4	104
7	BRR I dhan99/BR11716-4R-105	2	25
8	BRR I dhan99/BR11712-4R-1	3	84

### 1.3.2. Regional Yield Trial (RYT), Boro 2022-23

M Adil, S Tamanna, B Karmakar

**Specific objective:** To evaluate specific and general adaptability of the genotypes in on-station condition.

**Materials and method:** Fourteen RYTs were evaluated at BRR I Sonagazi, Feni during Boro 2021-2022. Thirty-five to Forty days old seedlings were transplanted using 2-3 seedlings per hill with the spacing of 20 cm x 20 cm. The unit plot size was 5.4m x 12 rows. The experiment was laid out in RCB design with three replications. Fertilizer doses were 270 Kg: 112 Kg DAP: 150 Kg MP: 112 kg Gypsum: 11 Kg Zn SO<sub>4</sub>/ha. All amounts of fertilizers were applied at the time of final land preparation except urea. Urea was applied in 3 equal splits at 15-20 DAT, maximum tillering and before PI stage. Crop management such as weeding, disease and insect pests control were done in time.

### 1.3.3 Regional Yield Trials (RYT), Boro 2022-23

One hundred eighteen lines along with standard checks BRR I dhan28, BRR I dhan29, BRR I dhan50, BRR I dhan58, BRR I dhan63, BRR I dhan67, BRR I dhan74, BRR I dhan81, BRR I dhan84, BRR I dhan88, BRR I dhan89, BRR I dhan92, BRR I dhan96, BRR I dhan97, Indonesian Black rice and Local checks (Jirashail, Tepi Boro and Rata Boro) were tested under 14 RYTs (BB-Blast, BB, ZER, FBR-Barishal, FBR-SD, FBR-MD, FBR-LD, FBR-ELS, FBR-Biotechnology, PQR-Basmati, STR, Zira type, Antioxidant-Black rice-SD, Antioxidant-Black rice-MD) in BRR I, Sonagazi, Feni to test the yield performance and to evaluate the yield potential and adaptability.

### 1.3.4 RYT Favorable Boro Rice Short Duration (FBR SD), Boro 2022- 23

Nine advanced breeding lines along with two standard checks BRR I dhan28 and BRR I dhan96 were evaluated at BRR I, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines BR11637-5R-140, BR11903-5R-56 and BR12208-5R-402 gave higher yield than checks (Table 23). So, BR11637-5R-140, BR11903-5R-56 and BR12208-5R-402 were selected for further varietal development activities.

Table 23: Yield and agronomic performance of RYT (FBR SD) during Boro 2023 at BRR I Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR11637-5R-140	6.79	140	120	5	NB-1,SB-1,BB-3
2	BR11894-5R-376	6.27	143	111	5	NB-1
3	BR11900-5R-24	6.94	144	102	5	NB<1,BB-3
4	BR11903-5R-56	7.37	140	98	5-7	NB-3,BB-5,ShR-3
5	BR12180-5R-17	6.92	150	124	5	NB-1-3,BB-5,ShR-1
6	BR12480-5R-29	6.43	149	110	5-7	NB-3
7	BR12208-5R-274	6.50	141	109	5	NB-3,ShR-3,BB-5
8	BR12208-5R-394	7.18	142	90	5-7	NB-3-5,ShR-3,BB-5
9	BR12208-5R-402	7.63	143	91	5-7	BB-3-5,NB-3

10	BRR I dhan28 Ck.)	5.14	140	106	7	NB-7, BB-3-5, ShR-3
11	BRR I dhan96 Ck.)	6.30	139	81	5	NB-1, BB-2
	LSD (0.05)	1.15	1.72	2.27		
	CV (%)	10.10	0.70	1.30		
	H2b	0.67	0.98	1.00		

Note: SB: Stem borer, NB: Neck blast, ShR: Sheath rot, BB: Bacterial blight

### 1.3.5 RYT Favorable Boro Rice Medium Duration (FBR MD), Boro 2023

Nine advanced breeding lines along with two standard checks BRR I dhan81 and BRR I dhan89 were evaluated at BRR I, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines IR18A1398 and IR18A1907 produced higher yield than checks (Table 24). So, IR18A1398 and IR18A1907 were selected for further varietal development activities.

Table 24: Yield and agronomic performance of RYT (FBR MD) during Boro 2023 at BRR I Sonagazi.

SN	Designation	GY (t ha <sup>-1</sup> )	GD (day)	PHT (cm)	PACP	Remarks
1	IR17A1275	7.38	139	91	7	NB-5, ShR-3, BB-2, SB-1
2	IR17A1694	7.97	146	93	7	NB-5, SB-2, ShR-3, ShB-3
3	IR17A1735	7.28	138	84	7	NB-5, ShR-3, ShB-2
4	IR18A1398	9.03	148	116	5	NB-2, ShR-3, ShB-3
5	IR18A1907	8.81	146	112	5	NB-2, LB-2, ShR-3, LD-25%
6	IR18A2119	7.40	144	89	7	NB-5, BB-3, SB-1
7	BR8899-14-4-1-2-2-1	7.98	144	91	7	NB-5, SB-2, ShR-5, BB-3, ShB-5, LB-2
8	BR11342-5R-23	6.95	143	117	7	NB-1-3, BB-3, LB-1, LD-100%
9	BR12177-5R-43	6.84	156	124	7	BB-5, SB-2, NB-1, ShR-3
10	BRR I dhan81 (Ck.)	5.70	142	93	7	NB-5-7, BB-5, SB-2, ShR-3, LD-25%
11	BRR I dhan89 (Ck.)	7.89	153	112	5	NB-3, BB-2-3, ShR-3-5, LD-40%
	LSD (0.05)	0.82	2.26	3.11		
	CV (%)	6.40	0.90	1.80		
	H2b	0.91	0.98	0.99		

Note: SB- Stem borer, NB-neck blast, LB- Leaf Blast, ShR-Sheath rot, BB-Bacterial blight

### 1.3.6 RYT Favorable Boro Rice Long Duration (FBR LD) Boro 2022-23

Five advanced breeding lines along with three standard checks BRR I dhan81, BRR I dhan89 and BRR I dhan92 were evaluated at BRR I, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines BR11894-5R-260 and BR11318-5R-84 produced higher yield than checks (Table 25). Therefore, BR11894-5R-260 and BR11318-5R-84 were selected for further varietal development activities.

Table 25: Yield and agronomic performance of RYT (FBR LD) during Boro 2023 at BRR I Sonagazi.

SN	Designation	GY (t ha <sup>-1</sup> )	GD (day)	PHT (cm)	PACP	Remarks
1	BR11894-5R-260	8.58	150	98	5	ShR-1, Cold Injury 30-40%
2	BR11660-5R-6	5.24	144	92	7	ShR-1
3	BR11318-5R-148	7.97	153	96	3-5	Panicle under leaf
4	BR11318-5R-84	9.30	157	102	3-5	ShR-1, Panicle upper the leaf
5	BR10301-5R-89	7.65	154	101	3-5	Cold injury 30%, Shattering problem
6	BRR I dhan81 (Ck.)	5.97	141	77	7	Leaves are not fully erect
7	BRR I dhan89 (Ck.)	7.65	154	95	3-5	Leaf erect, Panicle under leaf
8	BRR I dhan92 (Ck.)	8.62	156	104	3-5	
	LSD (0.05)	0.65	1.38	2.19		
	CV (%)	4.90	0.50	1.30		
	H2b	0.98	0.99	0.99		

Note: SB- Stem borer, NB-neck blast, ShR-Sheath rot, BB-Bacterial blight

### 1.3.7 RYT Favorable Boro Rice Extra-Long-slender (FBR ELS) Boro 2022-23

Six advanced breeding lines along with three standard checks BRRI dhan50, BRRI dhan63 and BRRI dhan86 were evaluated at BRRI, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines BR9945-5R-21, IR18A2102 and BR7528-2R-19-16-R1L-59 gave higher yield than checks (Table 26). Therefore, BR9945-5R-21, IR18A2102 and BR7528-2R-19-16-R1L-59 were selected for further varietal development activities.

Table 26: Yield and agronomic performance of RYT (FBR ELS) during Boro 2022-23 at BRRI Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR9945-5R-21	8.61	146	115	5	LB-2,NB-3,ShR-1,SB-1, LD-50%
2	BR10604-5R-58	7.20	146	98	5	LB-2,NB-2,ShR-3,SB-1
3	IR18A2102	7.28	142	91	7	NB-3-5,ShR-2
4	BR7528-2R-19-16-R1L-52	7.62	154	104	7	LB-3,NB-3,ShR-5,ShB-5,SB-1,BB-3
5	BR7528-2R-19-16-R1L-55	7.40	153	97	5	LB-3,NB-1,ShR-3,ShB-2,SB-1
6	BR7528-2R-19-16-R1L-59	7.84	153	99	5	NB-3,ShR-3,ShB-3,SB-1
7	BRR dhan50 (Ck.)	6.30	149	82	5	LB-3,NB-1-2,ShR-2,SB-1-2
8	BRR dhan63 (Ck.)	5.73	146	87	7	LB-5,NB-5-7,ShR-2
9	BRRI dhan86 (Ck.)	6.35	140	90	5	LB-2,NB-2,ShR-2,SB-1
	LSD (0.05)	0.75	1.60	6.83		
	CV (%)	6.00	0.60	4.10		
	H2b	0.92	0.99	0.95		

Note: SB- Stem borer, NB-neck blast, LB- Leaf Blast, ShR-Sheath rot, BB-Bacterial blight

### 1.3.8 RYT Favorable Boro Rice Barishal (FBR Barishal) Boro 2022-23

Nine advanced breeding lines along with two standard checks BRRI dhan88 and BRRI dhan89 were evaluated at BRRI, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines NGR 418-1, NGR 968-1, NGR 994-1 and NGR 745-2 gave higher yield than checks (Table 27). So, NGR 418-1, NGR 968-1, NGR 994-1 and NGR 745-2 were selected for further varietal development activities.

Table 27: Yield and agronomic performance of RYT (FBR Barishal) during Boro 2022-23 at BRRI Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	NGR 522-2	7.48	145	97	5	NB-1,BPH-3
2	NGR 270-3	6.91	145	98	5	NB-1,ShR-3
3	NGR 418-1	7.53	144	96	5	NB-1
4	NGR 416-1	7.37	145	97	5	NB-1,ShR-1,BPH-2
5	NGR 968-1	7.62	146	100	5	NB-1,SB-1,BPH-2
6	NGR 994-1	8.82	147	101	5	NB-1,SB-1
7	NGR 745-2	7.94	146	96	5	NB-1.,BB-5,SB-1
8	NGR 590-2	6.91	146	100	7	NB-1-3,BPH-3
9	NGR 710-1	6.63	147	95	7	NB-1,BPH-1
10	BRRI dhan88 (Ck.)	6.11	143	92	7	NB-3, BB-3, ShR-3, ShB-1-3, SB-1, LD-50%
11	BRRI dhan89 (Ck.)	7.70	152	104	5	NB-1,BB-3,SB-1
	LSD (0.05)	0.59	1.49	2.05		
	CV (%)	4.70	0.60	1.20		
	H2b	0.92	0.95	0.96		

Note: SB- Stem borer, NB-neck blast, LB- Leaf Blast, ShR-Sheath rot, ShB- Sheath blight, BB-Bacterial blight

### 1.3.9 RYT Salt Tolerant Rice (STR) Boro 2022-23

Seven advanced breeding lines along with three standard checks BRRI dhan97, BRRI dhan89 and BRRI dhan99 were evaluated at BRRI, Sonagazi, Feni during Boro 2022-23. The advanced

breeding lines BR11712-4R-44 and BR11712-4R-93 produced higher yield than all checks. But BR11712-4R-12 and BR11712-4R-346 gave higher yield than BRR1 dhan97 (Table 28). So, BR11712-4R-44, BR11712-4R-93, BR11712-4R-12 and BR11712-4R-346 were selected for further varietal development activities.

Table 28: Yield and agronomic performance of RYT (FBR STR) during Boro 2022-23 at BRR1 Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR11712-4R-44	8.17	150	121	5	LB-3, NB-1-2, ShR-3, LD-30%
2	BR11712-4R-93	8.29	150	121	5	LB-2, NB-<1, ShR-2, LD-50%
3	BR11712-4R-12	7.19	149	107	3-5	NB-<1, ShR-<1
4	BR11712-4R-6	6.64	148	93	7	LB-3, NB-3-5, ShR-3
5	BR11712-4R-346	7.00	149	90	5	LB-3, NB-1-3, ShR-2, BB-2, SB-1
6	BR11712-4R-70	5.91	150	114	5	LB-3,NB-3-5,SB-1,ShR-1,RD-20, LD-20%
7	BR11722-4R-398	6.11	148	85	7	LB-5,NB-5-7,ShR-5,
8	BRR Dhan67 (Ck.)	6.59	146	110	7	LB-3,NB-5-7,ShR-3,
9	BRR1 Dhan89 (Ck.)	7.41	153	106	5-7	LB-3,NB-3,ShR-3
10	BRR1 Dhan99 (Ck.)	7.33	152	101	5	LB-3,NB<1,ShR-1,
	LSD (0.05)	0.89	1.59	5.48		
	CV (%)	7.60	0.60	3.00		
	H2b	0.86	0.93	0.98		

Note: SB- Stem borer, NB-neck blast, LB- Leaf Blast, ShR-Sheath rot, BB-Bacterial blight, RD-Rate Damage

### 1.3.10 RYT Bacterial Blight (BB) Boro 2022-23

Eighteen advanced breeding lines along with three standard checks BRR1 dhan58, BRR1 dhan89 and BRR1 dhan92 and one resistant check BRR1 dhan101 were evaluated at BRR1, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines (BR(Path)13800-BC3-8-1 and BR(Path)13800-BC3-109-10 gave higher yield than checks and showed better performance against BB and Blast (Table 29). Therefore, (BR(Path)13800-BC3-8-1 and BR(Path)13800-BC3-109-10 were selected for further varietal development activities.

Table 29: Yield and agronomic performance of RYT (FBR BB) during Boro 2022-23 at BRR1 Sonagazi.

SN	Designation	Grain yield (t ha <sup>-1</sup> )	Growth duration (day)	Plant height (cm)	PACP	Remarks
1	BR11604-4R-24	7.06	149	112	5	NB-45% (3-5), BB-10% (1-3)
2	BR11607-4R-2	6.36	156	94	5	NB-1-10% (3), ShR-5% (1)
3	BR11607-4R-258	4.77	149	93	7	NB-60-80% (3-5), SB-1,
4	BR11866-5R-73	7.53	156	88	5	NB-1-12% (1-3), BB-1-5% (1)
5	BR11866-5R-136	6.29	154	98	7	NB-40-50% (5), BB-1-20% (1-3), SB-1
6	BR11866-5R-223	7.74	159	96	5	NB-1-3% (1-3), SB-1
7	BR11866-5R-277	7.45	156	95	5	NB-3-5% (1-3), BB-1-10% (1-3)
8	BR11867-5R-117	5.20	149	99	7	NB-70-80% (5), BB-5% (1)
9	BR11867-5R-140	6.82	154	90	5	NB-1-40% (1-3), BB-1% (1)
10	BR11867-5R-154	6.87	154	87	7	NB-1-50% (1-5), BB-1% (1), ShR-1% (1), SB-1
11	BR11867-5R-347	4.77	144	94	7	NB-60-80% (5), BB-5% (1)
12	BR11868-5R-9	6.68	144	99	7	NB-10% (3)
13	BR(Path)13800-BC3-8-1	8.21	149	103	3-5	NB-1-5% (1-3), BB-5% (1)
14	BR(Path)13800-BC3-8-6	7.70	154	102		NB-2-5% (3), BB-910% (1-3), Sb-1,
15	BR(Path)13800-BC3-109-10	8.16	153	99	4	NB-3-5% (1-3), ShR-5% (1)
16	BR(Path)13800-BC3-8-7	7.28	154	103	5	NB-5-15% (1-3), BB-5% (1-3), ShR-10% (1)
17	BR(Path)13800-BC3-8-9	7.85	154	106	5	NB-1-5% (1-3), BB-5-10% (1-3), ShR-15 (1), Ldg-15%

18	BR(Path)13800-BC3-224-28	7.59	151	108	5	NB-3-10% (1-3), BB-5% (1), SB-1
19	BRRRI dhan58 (Std. Ck.)	6.61	148	102	7	NB-8-40% (3), BB-10% (3), ShR-5% (1)
20	BRRRI dhan89 (Std. Ck.)	8.14	153	107	3-5	NB-2-5% (3), BB-10-60% (3-7), ShR-5% (1)
21	BRRRI dhan92 (Std. Ck.)	8.17	155	116	3-5	NB-1% (1), BB-20-40% (3), SB-1
22	BRRRI dhan101 (Res. Ck.)	6.58	147	109	7	NB-20-60% (3-5), BB-5-10% (1-3), Ldg-20%
	LSD (0.05)	1.03	1.48	4.89		
	CV (%)	16.20	2.70	7.90		
	H2b	0.91	0.98	0.95		

### 1.3.11 RYT Blast-Bacterial Blight (Blast-BB) Boro 2022-23

Ten advanced breeding lines along with three standard checks BRRRI dhan89 and BRRRI dhan92 were evaluated at BRRRI, Sonagazi, Feni during Boro 2022-23. The advanced breeding lines BR(Path)13800-BC3-8-5, BR(Path)13800-BC3-134-8, BR(Path)13800-BC3-8-11, BR(Path)13800-BC3-12-13 and BR(Path)13800-BC3-134-25 produced higher yield than checks and showed better performance against Blast and BB (Table 30). Therefore, (BR(Path)13800-BC3-8-5, BR(Path)13800-BC3-134-8, BR(Path)13800-BC3-8-11, BR(Path)13800-BC3-12-13 and BR(Path)13800-BC3-134-25 were selected for further varietal development activities.

Table 30: Yield and agronomic performance of RYT (Blast-BB) during Boro 2022-23 at BRRRI Sonagazi.

SN	Designation	GY (t ha <sup>-1</sup> )	GD (day)	PH (cm)	PACP	Remarks
1	BR(Path)13800-BC3-8-5	8.51	151	105	3	NB-1% (1), BB-5-10% (1)
2	BR(Path)13800-BC3-134-8	7.94	149	103	5	NB-1% (1), BB-1-10% (1)
3	BR(Path)13800-BC3-8-11	8.41	152	104	3-5	NB-1% (1), BB-1-20% (1)
4	BR(Path)13800-BC3-110-19	7.40	153	105	4	NB-1% (1), BB-1% (1)
5	BR(Path)13800-BC3-12-13	7.66	149	108	5	NB-5% (1-3), BB-1-5% (1)
6	BR(Path)13800-BC3-224-17	7.27	151	108	5	NB-1-2% (1), BB-5-10% (1-3)
7	BR(Path)13800-BC3-134-25	8.39	151	101	3-5	NB-1% (1), BB-1-10% (1)
8	BR(Path)13800-BC3-8-37	7.06	151	105	5	NB-1-2% (1), BB-1-10% (1-3)
9	BR(Path)13800-BC3-110-4	7.46	154	106	3-5	NB-1-2% (1), BB-2% (1)
10	BR(Path)13800-BC3-224-44	7.53	153	105	5	NB-1% (1), BB-1-5% (1)
11	BRRRI dhan89 (Ck.)	7.56	152	110	3-5	NB-1-5% (1-3), BB-1-10% (1)
12	BRRRI dhan92 (Ck.)	8.00	155	110	3-5	NB-1% (1), BB-1-20% (1-3)
	LSD (0.05)	0.62	1.86	3.74		
	CV (%)	4.70	0.70	2.10		
	H2b	0.81	0.90	0.77		

### 1.3.12 Multi-location trials of promising hybrids

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**Objectives:** To find out suitable promising hybrids for Boro season

**Materials and methods:** Fourteen hybrids with three checks, e.g.; 1-18. The plot size was 5 × 6 m<sup>2</sup>= 30m<sup>2</sup> and total transplanted area was about 1600 m<sup>2</sup>. 35 days old seedlings were planted with a spacing of 20 × 15 cm and 1 seedlings/hill. The trial was designed following RCB design with 3 replications. The full dose was used during final land preparation.

The fertilizer management was used as follows:

Fertilizer	Amount (kg/1600 m <sup>2</sup> )	Time of application
Urea	45	¼ was used at final land preparation, 1/4 <sup>th</sup> at 12-15 DAT, 1/4 <sup>th</sup> at 30-35 DAT and 1/4 <sup>th</sup> at booting stage.
TSP	24	The full dose was used during final land preparation.



MP	24	2/3 at final land preparation and 1/3 with 2 <sup>nd</sup> top dressing of Urea
Gypsum	12	The full dose was used during final land preparation.
Zinc Sulphate	2	The full dose was used during final land preparation.

### Results and discussions:

Among 14 hybrids, entry BRR197A/BRR142R showed yield advantage ranging from .43-53% over all the checks. Entry BRR1125A/EL86R and BRR197A/BRR138R showed yield advantage ranging from 2-9% over SL8H (Ck-2), 6-15% over Heera-2 and 34-45 over Tej Gold. So, we selected three hybrids based on stable yield performance and advantage over checks (Table 31).

Table 31: Results of Multi-location yield trials during Boro2022-23

Entry	PH (cm)	GD (day)	Panicle/ m <sup>2</sup>	Grain Yield (t/ha)	Sterility %	1000-GW (g)
BRR1125A/EL86R	110	139	268	8.75	41	29.42
IR105687A/EL86R	107	137	337	7.04	49	28.91
BRR197A/BRR138R	104	140	269	8.14	42	32.44
BRR1109A/BRR138R	112	139	303	7.46	43	25.92
BRR197A/BRR142R	109	130	370	9.27	42	31.57
BRR199A/BRR142R	105	139	275	7.29	46	30.45
BRR111A/BRR132R	104	140	220	6.96	31	29.57
BRR1125A/BRR132R	108	141	280	7.57	46	29.83
IR105687A/BRR132R	99	138	263	7.80	30	27.71
BRR1109A/IR85551-9-1-1-1-2-1-1-1R	99	136	367	7.72	38	24.37
BRR1110A/IR85551-9-1-1-1-2-1-1-1R	99	139	344	7.35	44	26.36
BRR1125A/IR85551-9-1-1-1-2-1-1-1R	96	137	321	6.20	43	27.05
IR105687A/IR85551-9-1-1-1-2-1-1-1R	90	135	314	6.30	44	26.13
IR102758A/IR85551-9-1-1-1-2-1-1-1R	96	136	389	6.84	44	28.71
BRR1 hybrid dhan5 (Ck-1)	107	142	230	9.23	36	34.26
SL8H (Ck-2)	96	137	246	7.98	35	27.60
Heera-2 (Ck-3)	103	139	264	7.62	34	33.64
Tej Gold (Ck-4)	98	137	255	6.03	34	26.34
Grand Average	102	138	295	7.53	40	28.91
CV	2.79	0.46	12.7	10.87	22.74	9.32
LSD	4.74	1.057	62.25	1.358	15.154	4.469

### ALART Boro 2022-23

#### Objectives:

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).

#### 1.3.13 ALART Short Duration (SD) Boro 2023

#### Materials and Methods:

This experiment was conducted in char Shahpur, Sonagazi, Feni during Boro 2022-23 season. Four lines BR11318-5R-63, BR11337-5R-72, SVIN109 and IR17A1723 were tested against two checks BRR1 dhan81 and BRR1 dhan96 to evaluate their yield potential and adaptability. The experimental design was RCB with three replications with unit plot size 4m x 5m = 20m<sup>2</sup> and

20cm x 20cm spacing. The seedling age was 28 days and 2-3 seedlings per hill was used. The fertilizer dose was urea, DAP, MOP, gypsum and zinc sulfate 270-112-150-112-11 kg/ha. All amounts of DAP, MoP, Gypsum and Zinc sulfate were applied at the time of final land preparation. Urea was applied in 3 equal splits at 15 days after transplanting (DAT), 30 DAT, and 5 days before PI stage. In this experiment BRRI recommended practice was followed. For irrigation AWD practice was done. The plot was kept weed free up to panicle initiation (PI) stage. Proper insect management practice was done. Disease was not controlled to identify susceptibility and tolerance level of the tested genotypes. The following data were collected date of seeding, transplanting, flowering (50%) and maturity (80%), Phenotypic acceptance at Vegetative and Reproductive stage, Plant height: 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, Grain yield (9 m<sup>2</sup> crop will be cut from each plot), Yield components (Panicles m<sup>-2</sup>, Grains panicle<sup>-1</sup>, 1000-grain weight, %Sterility), Insect infestation, Disease incidence, Lodging prevalence, Feedback and Comments of farmers and extension personnel. Sampling was done when 80% of grains are ripened. An area measuring 3m x 3m = 9 m<sup>2</sup> was marked excluding border lines. Properly counted the no. of missing hills within the sample area (if any) and added the same number of hills from other areas excluding border lines of the plot with the harvested sample hills to get accurate yield estimation for 9 m<sup>2</sup> area. Threshing was done by pedal thresher and clean the leaves, straws and other stubble materials from the grains and taken weight properly and simultaneously recorded the moisture% of the grains at the time of weighing.

## Results and discussion

This experiment was conducted to evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in Sonagazi, Feni of Bangladesh. Four rice genotypes were evaluated with two check varieties. All the rice genotypes showed statistically similar grain yield with checks. In case of plant height all the tested lines showed statistically higher than the checks. (Table 32).

Table 32. Grain yield and yield contributing characters of ALART Short Duration (SD) Boro 2023 at Sonagazi, Feni

Genotype	Grain yield (t/ha)	Growth duration (day)	Plant height (cm)
V1=BR11318-5R-63	6.09	140	116
V2=BR11337-5R-72	6.42	141	115
V3=SVIN109	6.54	143	114
V4=IR17A1723	6.62	142	126
V5=BRRI dhan81 (Ck.)	6.43	144	102
V6=BRRI dhan96 (Ck.)	6.48	142	89
CV (%)	5.58	2.47	2.10
LSD <sub>0.05</sub>	0.65	3.54	4.22

### 1.3.14 ALART Medium Duration (MD) Boro 2023

#### Materials and methods

This experiment was conducted in char Shahpur, Sonagazi, Feni during Boro 2022-23 season. Two lines IR12A173 and IR17A1694 were tested against two checks BRRI dhan58 and BRRI dhan96 to evaluate their yield potential and adaptability. The experimental designed was RCB with three replications with unit plot size 4m x 5m= 20m<sup>2</sup> and 20cm x 20cm spacing. The seedling age was 28 days and 2-3 seedlings per hill was used. The fertilizer dose was urea, DAP, MOP, gypsum and zinc sulfate 270-112-150-112-11 kg/ha. All amounts of DAP, MoP, Gypsum and Zinc sulfate were applied at the time of final land preparation. Urea was applied in 3 equal splits at 15 days after transplanting (DAT), 30 DAT, and 5 days before PI stage. In this experiment BRRI recommended practice was followed. For irrigation AWD practice was done. The plot was kept weed free up to panicle initiation (PI) stage. Proper insect management practice was done. Disease was not controlled to identify susceptibility and tolerance level of the tested genotypes. The following data were collected date of seeding, transplanting, flowering (50%) and maturity (80%), Phenotypic acceptance at Vegetative and Reproductive stage, Plant height: 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, Grain yield (9 m<sup>2</sup> crop will be cut

from each plot), Yield components (Panicles m<sup>-2</sup>, Grains panicle<sup>-1</sup>, 1000-grain weight, %Sterility), Insect infestation, Disease incidence, Lodging prevalence, Feedback and Comments of farmers and extension personnel. Sampling was done when 80% of grains are ripened. An area measuring 3m x 3m = 9 m<sup>2</sup> was marked excluding border lines. Properly counted the no. of missing hills within the sample area (if any) and added the same number of hills from other areas excluding border lines of the plot with the harvested sample hills to get accurate yield estimation for 9 m<sup>2</sup> area. Threshing was done by pedal thresher and clean the leaves, straws and other stubble materials from the grains and taken weight properly and simultaneously recorded the moisture% of the grains at the time of weighing.

### Results and Discussion

This experiment was conducted to evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in Sonagazi, Feni of Bangladesh. Two rice genotypes were evaluated with two check varieties. All the rice genotypes showed statistically similar grain yield with checks. In case of plant height all the tested lines showed statistically higher than the check variety BRRI dhan96. (Table 33).

Table 33. Grain yield and yield contributing characters of ALART Medium Duration (MD) Boro 2023 at Sonagazi, Feni

Genotype	Grain yield (t/ha)	Growth duration (day)	Plant height (cm)
V1=IR12A173	6.20	148	101
V2=IR17A1694	6.43	144	96
V3=BRRI dhan58 (Ck.)	6.51	151	99
V4=BRRI dhan96 (Ck.)	6.14	142	86
CV (%)	5.94	2.65	2.06
LSD <sub>0.05</sub>	0.70	3.87	4.34

### 1.3.15 ALART Favorable Boro Rice (FBR)-Barishal Boro 2023

#### Materials and Methods

This experiment was conducted in char Shahpur, Sonagazi, Feni during Boro 2022-23 season. Four lines BRBa 1-4-9, BRBa14-NGR414-1, BRBa 3-1-7 and BRBa40-NGR1255-1 were tested against two checks BRRI dhan58 and BRRI dhan89 to evaluate their yield potential and adaptability. The experimental designed was RCB with three replications with unit plot size 4m x 5m= 20m<sup>2</sup> and 20cm x 20cm spacing. The seedling age was 28 days and 2-3 seedlings per hill was used. The fertilizer dose was urea, DAP, MOP, gypsum and zinc sulfate 270-112-150-112-11 kg/ha. All amounts of DAP, MoP, Gypsum and Zinc sulfate were applied at the time of final land preparation. Urea was applied in 3 equal splits at 15 days after transplanting (DAT), 30 DAT, and 5 days before PI stage. In this experiment BRRI recommended practice was followed. For irrigation AWD practice was done. The plot was kept weed free up to panicle initiation (PI) stage. Proper insect management practice was done. Disease was not controlled to identify susceptibility and tolerance level of the tested genotypes. The following data were collected date of seeding, transplanting, flowering (50%) and maturity (80%), Phenotypic acceptance at Vegetative and Reproductive stage, Plant height: 12 plant height of each plot is to be measured from bottom (soil level) to panicle tip, Grain yield (9 m<sup>2</sup> crop will be cut from each plot), Yield components (Panicles m<sup>-2</sup>, Grains panicle<sup>-1</sup>, 1000-grain weight, %Sterility), Insect infestation, Disease incidence, Lodging prevalence, Feedback and Comments of farmers and extension personnel. Sampling was done when 80% of grains are ripened. An area measuring 3m x 3m = 9 m<sup>2</sup> was marked excluding border lines. Properly counted the no. of missing hills within the sample area (if any) and added the same number of hills from other areas excluding border lines of the plot with the harvested sample hills to get accurate yield estimation for 9 m<sup>2</sup> area. Threshing was done by pedal thresher and clean the leaves, straws and other stubble materials from the grains and taken weight properly and simultaneously recorded the moisture% of the grains at the time of weighing.

#### Results and Discussion

This experiment was conducted to evaluate the yield potential and adaptability of the advanced rice genotypes at farmers' field in Sonagazi, Feni of Bangladesh. Four rice genotypes were

evaluated with two check varieties. The highest grain yield was found in check variety BRRI dhan89 which is significantly different from all tested lines and check variety BRRI dhan58. All the rice genotypes showed statistically similar grain yield with checks. In case of plant height highest was found in line BRBa1-4-9 and lowest in lines BRBa3-1-7. (Table 34).

Table 34. Grain yield and yield contributing characters of ALART Favorable Boro Rice (FBR)-Barishal, Boro 2022-23 at Sonagazi, Feni

Genotype	Grain yield (t/ha)	Growth duration (day)	Plant height (cm)
V1=BRBa1-4-9	6.90	156	112
V2=BRBa14-NGR414-1	6.72	154	101
V3=BRBa3-1-7	6.58	152	86
V4=BRBa40-NGR1255-1	6.47	155	107
V5=BRRI dhan58 (Ck.)	6.61	152	99
V6=BRRI dhan89 (Ck.)	7.52	155	104
CV (%)	4.15	2.13	1.04
LSD <sub>0.05</sub>	0.51	2.92	3.39

### 1.3.16 AGGRi network trials (ANT) for salt-stress prone environment in Boro 2023.

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#### Background/Rationale

Yield per unit area of modern rice varieties of favorable ecosystems remain stagnant for the last two decades. The reason behind this is the use of parental lines with a narrow genetic base and/or poor breeding value. Continuous use of old varieties as parents has also leaned the genetic diversity in the elite irrigated breeding pool. To widen the genetic base of the breeding germplasm genetically diverged elite lines with high breeding value need to be used in the breeding program as parent. Under this project, a set of 190 salinity tolerant breeding lines including six global and four local check varieties received from IRRI Philippines from were evaluated at coastal saline environment.

#### Abstract

A total of 190 RGA (rapid generation advance) derived IRRI breeding lines along with 6 global and 4 national check varieties were evaluated at coastal saline environment like Companiganj of Noakhali district under BRRI Regional Station, Sonagazi, Feni during dry season (DS) Boro 2023 to understand salinity resistant and to select superior lines for direct use in variety release or as parents in the breeding program. The entries showed a wide range of variations in grain yield starting from 0.56 to 4.23 t ha<sup>-1</sup> with a mean value of 1.98 t ha<sup>-1</sup> in first replication and 0.58 to 3.68 t ha<sup>-1</sup> with mean value of 2.26 t ha<sup>-1</sup> in second replication. The overall performance across the site of the tested lines varied from 0.62 to 3.40 t ha<sup>-1</sup> with mean value of 2.12 t ha<sup>-1</sup>. Among the tested 190 genotypes, 5 rice genotypes IR21LT1293, IR21LT1605, IR21LT1157, IR21LT1048 and IR21LT1679 were selected based on yield performance (3.12 to 3.40 t ha<sup>-1</sup>), growth duration (131 to 142 days), Plant height (82 to 91 cm) & salinity score (3 to 5) under salinity stress for further investigation.

#### Materials and Methods

This trial was conducted with 190 salinity resistant derived advanced breeding lines along with 6 global and 4 national check varieties at coastal saline environment like Companiganj of Noakhali district under BRRI Regional Station, Sonagazi, Feni during DS 2023. The trials were designed in Alpha lattice design with two replications. Unit plot size was 3.12 m<sup>2</sup> (27 hills × 5 rows). Two to 3 seedlings per hill were transplanted following 20 cm × 20 cm spacing in the trial. Forty-seven-d-old seedlings were transplanted on 03-04 February 2023 at Companiganj, Noakhali. Applied fertilizers N, P, K, S and Zn @ 120, 22, 75, 20 and 2.7 kg ha<sup>-1</sup> as urea, TSP, MOP, Gypsum and Zinc Sulfate in the experimental field. All amount of P, K, S and Zn was applied at the time of final land preparation and nitrogen (urea) were applied in three equal

splits at 10, 25 and 45 days after transplanting (DAT). Uniform crop management practice was followed. Pest like weeding, insect and disease were controlled in time. Water salinity was measured at 3 days interval. Inclusion of salt water from river was started on 13 March 2023. Saline water was imposed in experimental field to increasing salinity stress for the crop. Observation on plant height from three random hills of each plot, 50% flowering, 80% maturity, yield, disease and insect pest infestation were recorded. Grain yield was calculated adjusting the moisture content at 14%. Data was analyzed using the statistics 10 following a mixed linear model.

### Results and discussion:

Grain yield of the genotypes tested under AGGRi Network Trial (ANT) under salinity stress varied significantly within the two replications. The entries showed a wide range of variations in grain yield started from 0.56 to 4.23 t ha<sup>-1</sup> with a mean value of 1.98 t ha<sup>-1</sup> in first replication and 0.58 to 3.68 t ha<sup>-1</sup> with mean value of 2.26 t ha<sup>-1</sup> in second replication. The overall performance across the site of the tested lines varied from 0.62 to 3.40 t ha<sup>-1</sup> with mean value of 2.12 t ha<sup>-1</sup> (Table 35). Flowering (50%) and Growth duration also varied significantly within the sites. The entries varied in flowering from 103-126 days and growth duration from 129 to 152 days (Table 35). Wider variations in plant height were also observed within location. Plant height of the entries varied from 63 to 118 cm. During the experimental period, significant salinity level observed. Mean Salinity levels were 3.0, 19.69 and 5.15 dS/m at vegetative, flowering and maturity stages, respectively. A total of 5 rice genotypes entry no. 37 (IR21LT1293), 39 (IR21LT1605), 119 (IR21LT1157), 131 (IR21LT1048), and 148 (IR21LT1679) performed better than the check varieties. Those 5 genotypes were selected based on yield performance (3.13 to 3.40 t ha<sup>-1</sup>), growth duration (131-142 days), Plant height (82-91 cm) & salinity score (3-5) under salinity stress for further investigation.

Table 35. Performances of rice genotypes under coastal saline environment in dry season 2023 at Char Kachapia, Companiganj of Noakhali under BRRi Sonagazi funded by ANT Project

Entry No.	Designation	Grain yield (t/ha)			DTF (day)	DTM (day)	PHT (cm)	PAcp	SAL_ MAT_1_9		Remark
		R1	R2	Mean					R1	R2	
1	IR21LT1379	1.99	2.43	2.21	106	132	80	7	7	7	SB-1
2	IR21LT1026	1.70	1.39	1.54	107	134	92	7	7	7	SB-1
3	IR21LT1422	0.99	2.28	1.63	116	140	118	9	9	7	ShR-1
4	IR21LT1056	2.76	3.08	2.92	108	134	87	5	5	5	
5	IR21LT1046	2.72	2.80	2.76	108	134	84	7	7	5	
6	IR21LT1118	2.84	2.57	2.70	107	134	87	7	7	7	SB-1
7	IR21LT1616	1.12	2.68	1.90	107	133	91	7	7	5	SB-1
8	IR21LT1065	1.95	3.66	2.81	107	134	93	7	7	3	
9	IR21LT1205	2.37	2.42	2.39	103	130	91	7	7	7	
10	IR21LT1114	0.74	1.02	0.88	120	147	63	9	9	9	
11	IR21LT1419	1.93	2.28	2.11	116	142	90	7	7	7	SB-1
12	IR 137775-B-B RGA-B RGA- 99 RGA	2.71	2.74	2.73	116	142	84	7	7	5	SB-1
13	IR21LT1331	1.09	1.09	1.09	122	148	88	9	9	9	
14	IR21LT1355	0.74	3.24	1.99	107	134	79	7	7	5	
15	IR21LT1344	1.66	2.89	2.28	110	135	84	7	7	5	
16	IR21LT1473	2.66	2.23	2.44	111	137	91	7	9	9	SB-1
17	IR21LT1621	2.00	2.61	2.31	109	135	95	7	7	5	SB-1
18	IR21LT1528	1.32	1.07	1.19	118	143	74	9	7	7	SB-1
19	IR21LT1293	2.26	2.17	2.21	107	133	104	7	7	7	SB-1
20	IR21LT1144	1.62	2.83	2.22	109	135	98	7	7	7	ShR-3, NB-1
21	IR21LT1029	2.12	2.72	2.42	105	132	86	7	7	5	
22	IR21LT1655	1.72	2.49	2.11	107	134	106	9	9	7	ShR-1

Entry No.	Designation	Grain yield (t/ha)			DTF (day)	DTM (day)	PHT (cm)	PAcp	SAL_ MAT_1_9		Remark
		R1	R2	Mean					R1	R2	
23	IR21LT1735	2.31	2.92	2.61	106	133	85	7	7	5	
24	IR21LT1710	1.43	2.22	1.82	119	145	105	9	7	7	
25	IR21LT1723	1.19	2.09	1.64	111	136	79	9	7	7	SB-1, LB-1
26	IR21LT1693	2.34	2.03	2.19	114	139	81	7	7	7	
27	IR21LT1507	2.20	3.42	2.81	115	141	83	5	7	5	
28	IR21LT1694	2.58	2.40	2.49	114	139	83	7	7	7	NB-1, SB-1
29	IR21LT1479	2.65	2.25	2.45	109	135	88	7	9	7	SB-1
30	IR21LT1453	1.51	2.01	1.76	112	138	91	9	9	7	SB-1, ShR-1
31	IR 134632-B-B RGA-B RGA-40 RGA	2.58	1.80	2.19	104	131	85	9	7	9	
32	IR21LT1233	2.52	3.57	3.05	104	131	85	5	5	5	
33	IR21LT1141	1.22	2.00	1.61	115	141	99	9	9	7	ShR-3, NB-1
34	IR21LT1147	2.58	2.16	2.37	107	133	92	7	5	7	SB-1
35	IR21LT1387	1.40	1.77	1.58	106	133	77	9	7	7	NB-1
36	IR21LT1680	2.51	1.69	2.10	113	139	85	7	5	7	NB-1
37	IR21LT1605	3.36	3.43	3.40	106	132	91	5	5	5	
38	IR21LT1254	0.56	1.89	1.22	119	145	104	9	9	9	
39	IR21LT1226	3.08	3.18	3.13	105	131	84	5	5	5	
40	IR21LT1050	1.55	1.99	1.77	110	137	92	9	7	7	
41	IR21LT1356	2.28	2.61	2.44	112	138	93	7	7	5	
42	IR21LT1332	1.87	2.09	1.98	105	131	77	7	7	7	SB-1
43	IR21LT1220	1.49	2.46	1.98	109	134	86	9	9	7	
44	IR21LT1403	2.39	2.34	2.37	120	145	91	7	9	7	
45	IR21LT1186	2.17	2.40	2.29	111	137	93	7	5	7	NB-1
46	IR21LT1553	2.44	2.41	2.43	125	150	99	7	9	7	
47	IR 137778-B-B RGA-B RGA-72 RGA	1.74	2.82	2.28	115	141	85	7	7	5	SB-1
48	IR21LT1450	2.07	1.91	1.99	106	132	73	7	7	7	SB-1
49	IR21LT1416	0.89	0.60	0.74	124	151	93	9	9	9	
50	IR21LT1580	0.87	1.52	1.20	113	139	89	9	9	9	
51	IR21LT1122	1.82	2.13	1.97	117	143	73	9	9	7	
52	IR21LT1306	3.02	2.49	2.76	105	132	82	7	5	7	NB-1
53	IR21LT1442	1.78	2.03	1.91	115	141	94	9	9	7	SB-1
54	IR21LT1107	2.86	2.20	2.53	113	138	109	7	7	7	SB-1
55	IR21LT1599	2.25	1.69	1.97	110	139	81	9	7	7	SB-1
56	IR21LT1436	2.36	2.20	2.28	113	138	102	7	7	7	SB-1
57	IR21LT1652	1.06	1.27	1.16	122	149	89	9	9	9	SB-1
58	IR21LT1449	0.65	0.58	0.62	126	151	81	9	9	7	
59	IR21LT1682	2.16	1.67	1.92	115	141	76	9	7	7	
60	IR21LT1161	2.63	2.42	2.52	111	139	89	7	5	7	SB-1
61	IR21LT1252	1.88	1.89	1.88	119	145	101	9	7	9	
62	IR21LT1149	1.47	2.33	1.90	112	138	91	9	7	7	SB-1
63	IR21LT1261	2.11	1.65	1.88	119	145	107	9	7	7	
64	IR21LT1372	2.41	2.32	2.37	107	133	83	7	9	7	
65	IR21LT1670	0.86	1.27	1.07	119	145	92	9	5	5	SB-1
66	IR 137762-B-B RGA-B RGA-21 RGA	2.33	2.21	2.27	109	135	101	7	5	7	
67	IR21LT1228	1.27	2.68	1.98	109	135	89	7	7	5	
68	IR21LT1013	2.10	2.63	2.36	109	136	84	7	7	5	SB-1



Entry No.	Designation	Grain yield (t/ha)			DTF (day)	DTM (day)	PHT (cm)	PAcp	SAL_ MAT_1_9		Remark
		R1	R2	Mean					R1	R2	
69	IR21LT1150	2.80	3.31	3.05	112	139	89	5	7	5	NB-1
70	IR21LT1583	2.25	1.58	1.91	119	145	83	8	7	9	SB-1
71	IR21LT1552	1.37	1.77	1.57	116	142	85	9	7	7	
72	IR21LT1438	1.41	1.65	1.53	114	140	98	9	9	7	NB-1
73	IR21LT1303	2.49	1.85	2.17	105	132	73	8	7	9	
74	IR21LT1692	2.07	1.99	2.03	112	138	87	7	7	7	NB-1
75	IR21LT1575	1.58	1.86	1.72	121	148	97	9	9	9	
76	IR21LT1431	2.18	2.67	2.43	125	152	94	7	9	5	ShR-3
77	IR21LT1312	1.96	2.74	2.35	107	134	97	7	7	5	SB-1
78	IR21LT1358	2.75	2.83	2.79	112	138	90	7	7	7	SB-1
79	IR21LT1548	2.31	2.67	2.49	107	132	105	7	7	7	NB-1
80	IR21LT1174	2.67	2.74	2.71	115	141	95	7	7	7	NB-1
81	IR21LT1060	1.97	2.08	2.03	106	132	85	7	7	7	SB-1
82	IR21LT1706	1.50	2.30	1.90	104	136	84	9	7	7	NB-1
83	IR21LT1109	1.70	1.56	1.63	108	134	95	9	7	7	NB-1, SB-1
84	IR21LT1103	2.00	1.64	1.82	113	139	96	9	9	7	SB-1
85	IR21LT1197	1.42	2.47	1.94	125	151	80	9	7	7	SB-1
86	IR21LT1315	2.00	2.83	2.41	107	133	90	7	7	5	NB-1
87	IR21LT1568	1.46	2.56	2.01	112	140	93	9	7	7	
88	IR21LT1071	2.61	2.26	2.44	112	138	95	7	7	7	NB-1
89	IR21LT1286	3.60	2.39	3.00	107	133	84	5	3	7	SB-1
90	IR21LT1240	2.80	2.18	2.49	121	147	100	7	9	7	
91	IR21LT1289	2.09	2.32	2.21	112	139	93	7	7	7	
92	IR21LT1474	0.73	0.93	0.83	124	150	79	9	9	9	
93	IR21LT1413	4.23	1.09	2.66	120	146	85	7	9	9	SB-1
94	IR21LT1259	0.60	0.97	0.79	122	148	103	9	9	9	
95	IR21LT1262	1.18	2.14	1.66	116	142	113	9	9	7	ShR-1
96	IR21LT1388	2.18	2.06	2.12	113	139	80	7	7	7	
97	IR21LT1325	2.73	2.99	2.86	109	135	89	7	5	5	SB-1
98	IR21LT1443	2.08	1.51	1.80	114	139	84	9	7	9	SB-1
99	IR21LT1017	1.22	2.95	2.08	108	133	86	9	5	5	ShR-1, SB-1
100	IR21LT1180	0.77	3.26	2.02	112	138	83	7	9	5	
101	IR21LT1632	1.62	1.09	1.36	114	140	87	9	7	7	
102	IR21LT1712	1.63	2.23	1.93	114	139	90	9	9	7	SB-1
103	IR21LT1035	2.24	2.08	2.16	108	135	93	7	7	7	
104	IR21LT1402	1.54	1.98	1.76	110	136	94	9	9	9	SB-1
105	IR21LT1704	2.94	2.97	2.96	106	132	76	7	5	5	SB-1
106	IR21LT1642	1.47	2.08	1.77	124	149	84	9	9	7	
107	IR21LT1448	1.12	1.74	1.43	119	144	92	9	9	7	
108	IR21LT1375	2.23	2.83	2.53	107	133	76	7	5	5	
109	IR21LT1546	1.26	2.19	1.73	119	145	81	9	9	7	
110	IR21LT1049	2.69	1.41	2.05	109	136	76	7	7	5	
111	IR21LT1206	2.11	2.51	2.31	112	138	94	7	7	7	
112	IR21LT1457	2.50	3.18	2.84	109	135	76	5	5	5	
113	IR21LT1041	1.58	2.76	2.17	105	133	96	7	7	5	SB-1
114	IR21LT1364	1.96	1.79	1.87	105	132	74	7	7	9	
115	IR21LT1623	0.98	2.41	1.69	114	140	86	9	9	7	
116	IR21LT1285	2.13	1.89	2.01	111	138	105	7	7	9	SB-1
117	IR21LT1111	2.33	3.04	2.68	112	138	100	5	5	5	NB-1, SB-1
118	IR21LT1691	2.02	1.37	1.70	118	144	80	7	5	7	NB-1
119	IR21LT1157	3.39	3.42	3.40	105	131	89	5	5	5	SB-1

Entry No.	Designation	Grain yield (t/ha)			DTF (day)	DTM (day)	PHT (cm)	PAcp	SAL_MAT_1_9		Remark
		R1	R2	Mean					R1	R2	
120	IR21LT1094	1.50	2.73	2.11	105	131	86	7	5	5	SB-1, NB-1
121	IR21LT1486	1.35	1.89	1.62	118	144	97	9	7	9	NB-1
122	IR21LT1313	2.29	2.87	2.58	103	129	75	7	5	5	SB-1
123	IR21LT1657	2.34	2.01	2.17	117	143	101	7	7	7	
124	IR21LT1725	1.97	2.20	2.08	111	138	86	7	9	7	
125	IR21LT1104	1.79	2.42	2.10	112	139	101	7	7	7	SB-1
126	IR21LT1645	2.62	2.42	2.52	114	139	93	7	5	7	
127	IR21LT1269	1.07	1.60	1.33	118	144	96	9	7	7	
128	IR21LT1531	1.76	1.94	1.85	115	141	91	7	9	7	SB-1
129	IR21LT1728	1.13	1.97	1.55	109	133	95	9	7	7	SB-1, ShR-1
130	IR 138022-B-B RGA-B RGA-95 RGA	2.56	2.12	2.34	108	135	77	7	5	5	
131	IR21LT1048	3.64	3.06	3.35	105	131	82	5	3	5	
132	IR21LT1418	0.75	1.00	0.87	122	147	91	9	9	9	
133	IR21LT1530	1.46	1.78	1.62	112	138	89	9	7	7	SB-1
134	IR21LT1609	1.83	2.94	2.38	104	130	88	7	5	5	SB-1
135	IR21LT1629	2.41	2.26	2.33	110	150	89	7	7	7	
136	IR21LT1251	0.84	1.33	1.08	124	151	82	9	9	7	SB-1
137	IR21LT1698	2.52	2.74	2.63	122	147	78	7	5	5	
138	IR21LT1194	2.63	1.94	2.28	105	131	83	7	7	9	SB-1
139	IR21LT1532	1.12	2.19	1.65	125	151	83	9	9	7	SB-1
140	IR21LT1260	3.00	1.68	2.34	110	136	90	7	5	7	SB-1
141	IR21LT1377	1.52	2.17	1.85	119	145	86	9	9	7	SB-1
142	IR21LT1700	1.70	2.21	1.96	104	132	88	7	7	7	SB-1
143	IR21LT1369	1.94	2.43	2.19	107	134	80	7	7	7	
144	IR21LT1146	2.37	2.44	2.40	108	134	85	7	5	7	NB-1
145	IR21LT1697	1.50	3.12	2.31	118	143	80	7	7	3	SB-1
146	IR21LT1732	2.70	2.64	2.67	106	132	82	7	7	5	
147	IR21LT1472	1.21	1.53	1.37	120	145	76	9	9	9	SB-1
148	IR21LT1679	3.56	2.91	3.24	116	142	78	5	3	5	SB-1
149	IR21LT1637	1.44	1.55	1.50	116	142	93	9	7	7	SB-1
150	IR21LT1187	0.98	1.89	1.43	118	143	84	9	9	7	SB-1
151	IR21LT1490	2.41	2.87	2.64	113	138	93	7	7	5	ShR-1, NB-1
152	IR21LT1298	0.89	2.98	1.94	108	134	103	9	9	5	
153	IR21LT1477	1.02	2.36	1.69	114	140	88	9	9	7	SB-1
154	IR21LT1127	2.42	1.19	1.80	120	145	89	7	7	7	SB-1
155	IR21LT1319	0.90	1.16	1.03	125	151	85	9	9	9	SB-1
156	IR21LT1008	2.92	2.52	2.72	106	132	93	7	5	5	SB-1, LB-1
157	IR21LT1547	1.52	1.83	1.67	113	138	90	9	7	9	NB-1
158	IR21LT1365	1.89	1.88	1.89	113	140	85	9	7	9	SB-1
159	IR21LT1002	2.33	2.75	2.54	111	137	87	7	5	5	ShR-1
160	IR21LT1721	2.71	2.90	2.80	109	135	85	7	7	5	SB-1
161	IR21LT1514	1.69	2.76	2.23	105	132	98	7	7	5	SB-1
162	IR21LT1686	1.95	1.96	1.95	113	139	82	7	7	7	
163	IR21LT1663	1.50	2.11	1.81	115	141	99	9	9	7	SB-1
164	IR21LT1359	1.65	1.85	1.75	111	137	94	9	7	9	
165	IR21LT1595	1.78	3.50	2.64	114	140	81	7	7	3	SB-1
166	IR21LT1406	1.26	1.78	1.52	118	145	99	9	9	7	
167	IR21LT1468	2.10	2.04	2.07	115	141	88	7	7	7	SB-1
168	IR21LT1378	2.08	1.90	1.99	118	143	88	7	5	7	SB-1

Entry No.	Designation	Grain yield (t/ha)			DTF (day)	DTM (day)	PHT (cm)	PAcp	SAL_ MAT_1_9		Remark
		R1	R2	Mean					R1	R2	
169	IR21LT1470	2.14	2.65	2.40	108	133	84	7	7	5	SB-1
170	IR21LT1256	1.65	2.58	2.11	107	133	93	8	9	7	
171	IR21LT1554	2.59	2.47	2.53	117	142	85	7	5	7	
172	IR 137770-B-B RGA-B RGA-73 RGA	1.19	2.74	1.96	113	138	93	7	7	5	SB-1
173	IR21LT1478	1.85	2.13	1.99	116	142	89	7	7	7	NB-1
174	IR21LT1263	2.93	2.40	2.66	109	135	98	7	5	7	
175	IR21LT1250	1.49	1.98	1.74	116	142	102	7	9	7	SB-1
176	IR21LT1188	1.46	2.76	2.11	105	131	69	7	7	5	
177	IR21LT1620	2.42	2.13	2.27	105	131	78	7	5	7	
178	IR21LT1738	2.97	1.75	2.36	114	140	82	7	5	9	
179	IR21LT1677	2.22	2.59	2.41	113	141	89	7	7	7	SB-1
180	IR21LT1734	2.58	3.39	2.98	110	135	83	5	5	5	SB-1
181	IR21LT1506	0.85	1.58	1.21	122	148	85	9	9	9	
182	IR21LT1739	3.78	2.12	2.95	105	131	83	5	5	7	
183	IR21LT1209	2.17	3.68	2.92	109	136	82	5	5	3	SB-1
184	IR21LT1361	1.90	1.82	1.86	108	133	100	9	7	7	
185	IR21LT1085	2.55	2.65	2.60	109	135	84	7	5	5	SB-1
186	IR21LT1088	2.90	2.17	2.53	105	131	88	7	7	7	NB-1
187	IR21LT1295	2.18	2.11	2.14	106	132	97	7	7	7	SB-1
188	IR21LT1574	1.81	1.93	1.87	110	136	90	7	9	7	
189	IR21LT1267	1.67	3.36	2.51	112	138	91	7	7	3	
190	IR21LT1626	1.21	2.02	1.62	115	141	84	9	9	7	SB-1
191	IRRI 147	2.88	3.13	3.00	112	138	100	5	5	3	
192	IRRI 240	2.96	1.65	2.30	115	141	97	7	5	7	SB-1, NB-1
193	IRRI 241	1.65	2.03	1.84	114	140	93	7	9	7	SB-1
194	IRRI 242	2.05	1.95	2.00	116	142	95	7	7	7	
195	IRRI 154	1.90	2.71	2.30	112	137	95	7	7	5	SB-1
196	A69-1	2.54	2.91	2.72	115	141	100	7	7	5	NB-1
197	BRRRI dhan28	1.89	2.92	2.41	109	135	87	7	7	5	
198	BRRRI dhan67	3.47	2.70	3.08	112	138	104	5	5	5	SB-1
199	BRRRI dhan99	2.06	2.63	2.35	112	139	89	7	7	5	SB-1
200	Binadhan-10	1.66	1.97	1.82	109	136	99	9	7	9	SB-1, ShR-1
Range		0.56-4.23	0.58-3.68	0.62-3.40	103-126	129-152	63-118				
Mean		1.98	2.26	2.12	112.09	138.24	88.98				

NB: DTF = Days to 50% flowering, DTM = Days to maturity, PHT = Plant height, NB = Neck blast, LB = Leaf blast, SB = Stem borer, ShR = Sheath rot.

## 2. Pest Management Program Area

### 2.1. Survey and monitoring of rice diseases

Survey was carried out at farmers' fields of Feni, Noakhali, Laxmipur, Cox'sbazar, Chattogram and Khagrachari districts both in T. Aman 2022 and Boro 2022-23. Sites were selected with the suggestion and collaboration of Upazila Agricultural Officer (UAO) of Department of Agricultural Extension (DAE). Sub Assistance Agricultural Officer (SAAO) of concern block helped in site selection who were the front-line workers and very much familiar to the farmers as well as their fields.

Bacterial Leaf Blight (BLB), Bacterial Leaf Streak (BLS), Sheath rot, False smut and Sheath blight infestation were observed in different scores during T. Aman season. BRRRI dhan49 in different locations and other breeding materials of BRRRI Sonagazi research field were affected by false smut disease in different locations due to fluctuation of environmental conditions during Aman season.

BRRi dhan28, BRRi dhan29, BRRi dhan97, BRRi dhan89, BRRi 92 and BRRi dhan84 were affected moderately to high by neck blast during Boro season. The farmers were suggested for preventive measures using fungicide.

## **2.2. Monitoring of insect pests and natural enemies by using light trap**

Rice insect pests and their natural enemies were monitored throughout the reporting period by Pennsylvanian light traps from July 2022 to June 2023 at the experimental field of BRRi regional station, Sonagazi, Feni. The abundance of leaf roller, Stem borer, Rice bug, green leafhopper, grasshopper, Mole cricket, Field cricket, and stink bug were found in the light trap during the reporting period. Some beneficial insects like Lady bird beetle, Spider, Damsel fly, Carabid beetle, Staphylinid beetle were also found.

## **2.3. Reduction of insecticide use in rice production to ensure safe food production**

S Tamanna, M Adil, N Bari, B Karmakar

**Justification:** Rice is a staple food and pesticides have become a dominant input for production of rice in Bangladesh (Smrity, 2020). Pesticides, the known toxic impacts to human health and environment, are widely used in the rapid growing agricultural sectors of developing countries (Shammi, 2017). The use of pesticide has been increased 400% per acre and its cost increased 600% during the last couple of decades in Bangladesh (Nakagoshi, 2001). The use of some pesticides causes long-term severe negative effects on human health and the environment in Bangladesh (Parveen, 2001). Some of the older, less costly pesticides can remain for years in soil and water (WHO, 2022). During the past decades, Peoples' Republic of Bangladesh has experienced 26.46% decrease in total pesticide consumption ((Shammi, 2017). At present, international accords and declarations make governments responsible for ensuring access to safe food, meaning food that is safe at each stage from its initial production to its final consumption (European Union, 2021).

### **Specific Objectives:**

- To manage insect pests with less or without use of insecticide.
- To compare insect pests and natural enemy status in insecticide free and insecticide spray field.
- To investigate the compensation abilities of different rice varieties due to insect damage.

**Materials and methods:** The experiment was conducted at the experimental field of Bangladesh Rice Research Institute, Regional station, Sonagazi during Boro 2022-23 designed to manage insect pests with less or no use of insecticide and to compare insect pests and natural enemy status in insecticide free and insecticide spray field. Three BRRi varieties i.e., V1=BRRi dhan96, V2=BRRi dhan97 and V3=Bangabandhu dhan100 were transplanted separately in a one bighas of field. Each field was divided in to two for two treatments i.e., T<sub>1</sub> =Refrained from insecticide use up to 40 days (to increase natural enemies) and T<sub>2</sub>= Prophylactic insecticide use@15 days interval (3 times). This experiment was laid out in a CRD with three replications. Forty days old seedlings of each variety were transplanted in one bighas of land using 2-3 seedlings with a spacing of 20 cm x 20 cm. BRRi recommended fertilizer doses was used in all the plots. All the intercultural operations were done when required except insecticide. Insect pests and natural enemies in the rice field was monitored fortnightly by sweeping and visual counting of randomly selected 20 hills. Perching @ 100/ha were also used in T<sub>1</sub> and insecticide used ETL based or not. In T<sub>2</sub>, granular insecticide was used during 1<sup>st</sup> top dressing of urea as a farmers practice without considering insect infestation. Another two times insecticide were also used at 15 days interval in T<sub>2</sub>. Insect pest and natural enemy status were counted and recorded fortnightly from both the treatments by 20 complete sweeps. Insect infestation data was collected from randomly selected 20 hills from each treatment. Data on tiller /hill, panicle/hill, panicle/m<sup>2</sup> and grain yield/20m<sup>2</sup> were taken.

**Results and Discussion:** Bangabandhu dhan100 and BRRi dhan97 produced significantly higher yield in T<sub>2</sub> (Prophylactic insecticide use) treatment as compared to T<sub>1</sub> (Refrained from insecticide) treatment. BRRi dhan96 gave significantly similar yield in both treatments. Higher number of

white head (caused by yellow stem borer attack) and ETL percentage was found in all three varieties using T1 treatment as compared to T2 treatment. Nevertheless, BRRI dhan100 produced highest yield (6.59 tha<sup>-1</sup>) using T2 treatment as compared to all treatment-variety combinations. Besides, BRRI dhan97 showed highest number of white head (139) and ETL percentage (4.38) using T1 treatment as compared to all treatment-variety combinations. All treatment-variety combinations showed below 5% ETL (Table 36).

Table 36: Evaluation of Treatments for ETL, White head, yield and other agronomic characters of BRRI varieties during Boro 2022-23 at BRRI RS Sonagazi.

Treatment	Varieties	TN/ 10 m <sup>2</sup>	PN/ 10 m <sup>2</sup>	PH (cm)	GD (day)	Yield (tha <sup>-1</sup> )	WH/10 m <sup>2</sup>	ETL (%)	Remarks
T <sub>1</sub> = Refrained from insecticide	V1=BRRI dhan96	3254	2717	78	138	6.09	47	1.44	NB-3
	V2=BRRI dhan97	3192	2846	109	145	4.75	139	4.38	NB-5
	V3= Bangabandhu dhan100	3037	2738	107	141	6.21	64	2.14	NB-1
T <sub>2</sub> = Prophylactic insecticide use	V1=BRRI dhan96	3329	2925	78	139	6.31	41	1.22	NB-2
	V2=BRRI dhan97	3596	3117	112	145	5.22	110	3.04	NB-3
	V3= Bangabandhu dhan100	3421	3063	105	142	6.59	40	1.15	NB-<1
	SE	112.56	93.60	0.97	0.39	0.11	9.65	0.32	
	SD	194.96	162.13	1.68	0.67	0.20	16.72	0.56	
	LSD (0.05)	354.68	294.95	3.06	1.22	0.36	30.42	1.01	
	CV (%)	5.9	5.6	1.7	0.5	3.4	22.8	25.0	
	H <sup>2</sup> b (%)	0.71	0.69	1.00	0.98	0.98	0.95	0.94	

### 3. Crop Soil and Water Management

#### 3.1: Effect of planting date on the performance of modern rice varieties at southeast of Bangladesh, Boro 2022-23

MAI Khalid, B Karmakar, M Adil and MS Islam

**Introduction and Justification:** Rice is the staple food in Bangladesh, and its cultivation plays a pivotal role in the country's agriculture and economy. In the diverse ecosystems of Bangladesh, the time of planting rice during the Boro season is a critical factor, that significantly influences crop yield and overall food security. This season present varying environmental conditions, necessitating careful consideration when determining the appropriate time for planting in different ecosystems. Rice production has been given the highest priority in the world in meeting the demands of its ever-increasing population (Bhuiyan et al., 2004). Majority people of the world choose rice as their main food to meet up their daily diet (BRRI, 2001). However, the potential varieties can give satisfactory yield only when planted in appropriate time. Date of transplanting has a great influence on the growth, yield and yield contributing characteristics of rice even in grain quality. Even slight changes in transplanting time substantially changes grain yields, growth duration and grain quality due to changes of air temperature and solar radiation (BRRI, 2003).

#### Specific Objectives:

1. To find out the suitable planting date of modern rice varieties for Chattogram region
2. To find out the cut of date for different varieties
3. Yield loss assessment due to delay planting.

#### Materials and Methods:

The experiment was conducted at BRRI Regional Station, Sonagazi, Feni during Boro 2022-2023. It was two factors experiment where six transplanting dates and four varieties BRRI dhan89, BRRI dhan92, BRRI dhan97 and BRRI dhan99 included in the experiment. The seeding started on 1 November 2022 and continued up to 20<sup>th</sup> December 2022 at 10 days interval and transplanting started on 05 December 2022 and completed on 25 January 2023 at 10 days interval. Thirty-five days old seedlings were transplanted for all the plantings. The spacing was 20 cm x 20 cm. Unit

plot size was 3 m x 4 m. This experiment was laid out in Randomized Complete Block Design with three replications. Fertilizer doses N, P, K, S and Zn @ 138, 22.4, 75, 20.4 and 4.0 kg ha<sup>-1</sup> (Urea, TSP, MOP, Gypsum & Zinc Sulfate (Monohydrate) @ 300, 112, 150, 112 & 11 kg ha<sup>-1</sup>) were applied equally for all the sets. Urea top dressing was done at 20, 35 and 50 days after transplanting (DAT). Unified management practices were followed for all the plantings. Yield and yield components data were collected following standard method. The data were analyzed following the software STAR.

### Results and Discussion:

Yield and yield components were significantly affected by both the planting dates and varieties. Across the planting dates, BRRRI dhan92 produced the highest grain yield (8.63 t/ha) transplanted at 5<sup>th</sup> December 2022 followed by BRRRI dhan89 (8.34 t/ha). Yield decreased gradually with in the deployed plantings. The lowest grain yield of tested varieties was found on BRRRI dhan99 (4.75 t/ha) in the last set transplanted on 25 January 2023 (Table 37).

Table 37. Effect of Seeding date on the yield performance of modern rice varieties during Boro 2023 at BRRRI Sonagazi, Feni

Transplanting date	Grain yield (t/ha)			
	BRRRI dhan89	BRRRI dhan92	BRRRI dhan97	BRRRI dhan99
5-Dec-22	8.34	8.63	5.41	4.82
15-Dec-22	7.61	8.56	5.84	5.12
25-Dec-22	6.99	7.18	5.96	6.36
5-Jan-23	7.05	7.45	6.83	6.87
15-Jan-23	6.50	6.96	6.79	6.57
25-Jan-23	6.07	6.23	4.83	4.75
CV (%)	3.33			
LSD (0.05)	0.429			

### 3.2 Optimizing Planting Geometry of Bangabandhu dhan100, Boro 2023

B Karmakar, MA Biswas and MAI Hasan

#### Specific objectives

1. To investigate the responses of Bangabandhu dhan100 to varying plant spacings
2. To determine the optimum spacing for better performance of Bangabandhu dhan100

**Materials and Methods:** The experiment was executed by the fund of BRRRI Sonagazi Development Program. Bangabandhu dhan100 was used as planting material. Forty two days old seedlings were transplanted in 3m x 4m (12 m<sup>2</sup>) unit plot by using 2-3 seedlings/hill with six different spacing. The experiment was laid out following randomized complete block design (RCBD) with 3 replications. BRRRI Recommended dose: N, P, K, S and Zn @ 124, 22, 75, 20 and 4 kg ha<sup>-1</sup> (270, 112, 150, 112 and 11 kg ha<sup>-1</sup>) were applied in the experiment. Data were collected on plant height (cm) at maturity, days to flowering and maturity, number of tillers and panicles ha<sup>-1</sup>, Number of grains panicle<sup>-1</sup>, Number of sterile spikelets panicle<sup>-1</sup>, sterility (%), 1000-grain weight, Grain and Straw yield (t ha<sup>-1</sup>), Harvest Index. Data were analyzed following the statistical software Statistix-10. The experiment was executed by the fund of BRRRI Sonagazi Development Program.

#### Result and Discussion:

The closest spacing (20 cm × 15 cm) produced the highest grain yield (7.49 t/ha), which was gradually decreased with increasing spacing. In case of spacing (30 cm × 30 cm) the yield was reduced due to lodging loss whether it provided the lowest yield was 6.04 t/ha (Table 1). T6 (30 cm × 30 cm) provided the highest number (216) of tiller, highest number of panicle (206) per 12 hills respectively. There was significant difference seen in plant height between the spacing (30 cm × 30 cm) and (20 cm × 15 cm). Among the spacing (20cm×15cm) produced the highest grain yield (7.49 t/ha) which was statistically similar with the spacing 25cm×15cm (7.37 t ha<sup>-1</sup>) (Table 24). This table shows information about the biological yield and harvest index is significantly

similar between T1=20 cm × 15cm and T3=25 cm × 15 cm treatments. Therefore, to get highest grain yield from Bangabandhu dhan100, it is recommended to use closer spacing in Chattogram region (Fig. 1).

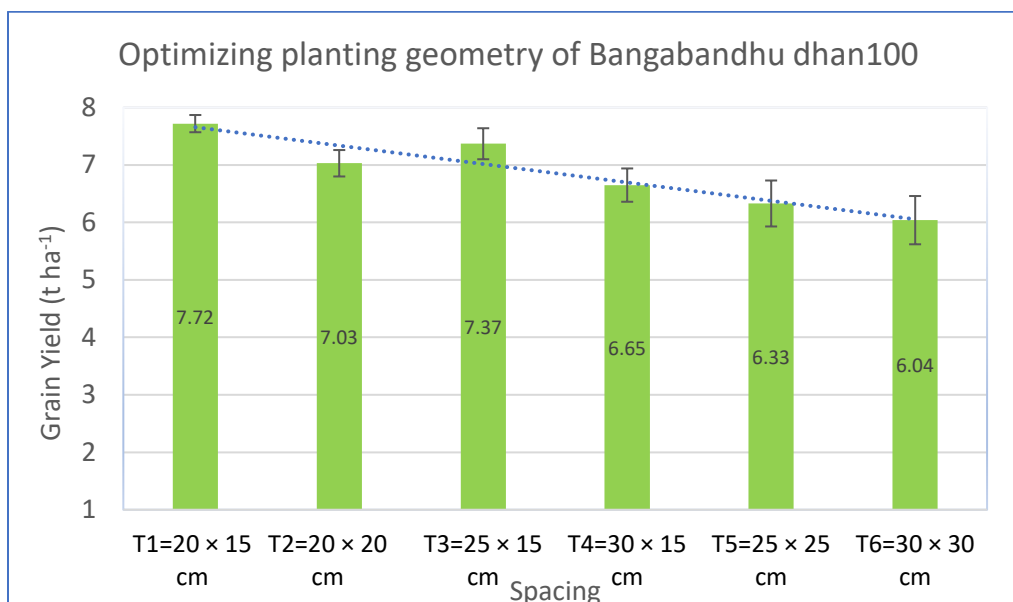


Fig. 1. Effect of plant spacing on grain yield of Bangabandhu dhan100 in Boro 2023 at BRRI Sonagazi

### 3.3 Effect of Rates on Modern Rice Varieties (Bangabandhu dhan100), Boro 2023

MA Biswas, B Karmakar, MN Ahmed and M Adil

#### Specific Objectives:

- i) To evaluate the responses of Bangabandhu dhan100 under a range of nitrogen supplies
- ii) To investigate the nitrogen use efficiency and
- iii) To find out optimum nitrogen requirement for maximum yield of Bangabandhu dhan100.

**Materials and methods:** Eight treatments on nitrogen (N) levels were applied in the experiment as follows: T1= Researcher's Practice (RP): N, P, K, S and Zn @ 124, 22, 75, 20 and 4 kg ha<sup>-1</sup> (Urea, TSP, MOP, Gypsum and Zinc Sulfate @ 270, 112, 150, 112 and 11 kg ha<sup>-1</sup>), T2 = T1 – N, T3 = T1 but 50 kg N ha<sup>-1</sup>, T4 = T1 but 100 kg N ha<sup>-1</sup>, T5 = T1 but 150 kg N ha<sup>-1</sup>, T6 = T1 but 200 kg N ha<sup>-1</sup>, T7 = Soil test based (STB) nutrient rates (N, P, K, S and Zn @ 88, 15, 54, 6 and 1 kg ha<sup>-1</sup>); STB dose was estimated in 2021, Soil Science Lab, BRRI, Gazipur through analysis of soil sample. T8 = Control (No fertilizers applied). Bangabandhu dhan100 was used in the experiment. Forty-day-old seedlings were transplanted on 15 January 2023 using 2-3 seedlings per hill. The spacing was 20 cm × 20 cm and unit plot size was 3 m × 4 m (12 m<sup>2</sup>). The experiment was laid out following randomized complete block design (RCBD) with 3 replications. Data collected on Initial and post-harvest soil status, Plant height at maturity, Yield and Yield components data were collected at maturity following standard methods. Data were analyzed following the statistical software Statistix-10. The experiment was executed by the fund of BRRI Sonagazi Development Program.

#### Result and Discussions

The treatments had significant effects on grain yield of Bangabandhu dhan100 (Fig. 2). Among the treatments, T6 produced the highest mean grain yield 7.47 t ha<sup>-1</sup>, which was statistically similar with T5 (7.36 t ha<sup>-1</sup>), T1 (7.23 t ha<sup>-1</sup>), T4 (7.04 t ha<sup>-1</sup>, and T7 (6.92 t ha<sup>-1</sup>). The lowest mean grain yield obtained in the control treatment T7 (3.51 t ha<sup>-1</sup>) followed by T2 (-N) ((4.52 t ha<sup>-1</sup>). Yield was not increased significantly in treatments applied additional N. Therefore, it is concluded that 100 N ha<sup>-1</sup> would be recommended for Bangabandhu dhan100 to obtain higher yield avoiding lodging.

There was a significant effect of N doses on phenology and yield components of Bangabandhu dhan100 (Table 38). The maximum plant height was recorded 115 cm under the treatment T<sub>6</sub> (T<sub>1</sub> but 200 kg N ha<sup>-1</sup>) and the lowest plant height was 90 cm under the treatment T<sub>2</sub> (T<sub>1</sub> – N) followed by T<sub>2</sub> (94 cm). Growth duration increased with increasing N rates and it the highest in T<sub>6</sub> (200 kg N ha<sup>-1</sup>) while the lowest was in T<sub>8</sub> (control). Maximum number of panicles per square meter (275)

produced T6 followed by T5 (271) and T1 (263) and the lowest (218) was in control (T8). Grains per panicles, Thousand grain weight, 1000-grain weight, Spikelet sterility, Straw yield and Biomass followed the similar trend of panicles per unit area while, it was reverse for harvest index (Table 38).

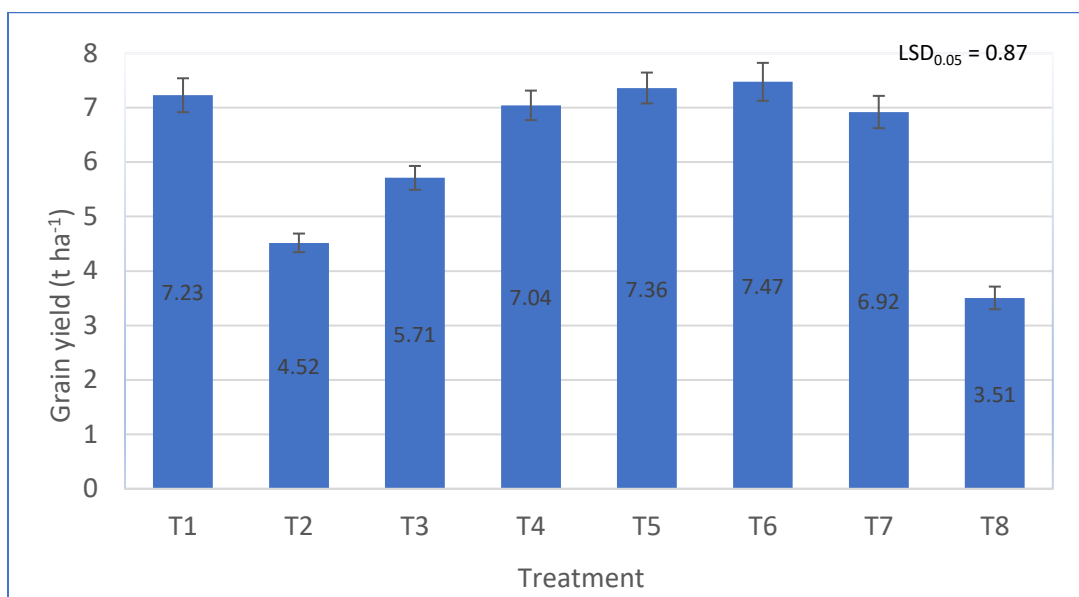


Fig. 2: Effect of nitrogen on grain yield of Bangabandhu dhan100, Boro 2023 at BRRRI Sonagazi.

**Treatments:** T1= Researcher's Practice (RP): N, P, K, S and Zn @ 124, 22, 75, 20 and 4 kg ha<sup>-1</sup>, T2 = T1 – N, T3 = T1 but 50 kg N ha<sup>-1</sup>, T4 = T1 but 100 kg N ha<sup>-1</sup>, T5 = T1 but 150 kg N ha<sup>-1</sup>, T6 = T1 but 200 kg N ha<sup>-1</sup>, T7 = STB rates (N, P, K, S and Zn @ 88, 15, 54, 6 and 1 kg ha<sup>-1</sup>); T8 = Control (No fertilizers applied).

Table 38: Effect of nitrogen on yield components, Phenology and Harvest Index of Bangabandhu dhan100 in Boro 2023 at BRRRI Sonagazi.

Treat	Plant height (cm)	Growth duration (day)	Tillers /m <sup>2</sup> (no.)	Panicles /m <sup>2</sup> (no.)	Grains /Panicle	1000-grain wt. (g)	Sterility (%)	Panicle length (cm)	Straw yield (t ha <sup>-1</sup> )	Biomass (t ha <sup>-1</sup> )	Harvest Index
T1	104	146	284	265	154	19.7	14	22.8	7.60	14.83	0.49
T2	92	142	246	233	121	19.0	16	20.6	4.21	8.73	0.52
T3	97	144	263	246	133	19.3	15	21.8	5.53	11.24	0.51
T4	103	145	271	256	151	19.4	14	22.4	6.94	13.98	0.50
T5	108	147	292	271	156	19.8	17	23.3	7.86	15.22	0.48
T6	111	148	300	275	157	19.6	19	23.4	8.41	15.89	0.47
T7	102	144	272	253	150	19.1	13	22.4	6.51	13.43	0.51
T8	90	142	238	218	91	18.8	17	19.8	3.25	6.76	0.52
CV	2.47	0.41	3.15	3.35	2.18	2.34	8.72	3.08	10.4	9.1	1.87
LSD	4.4	1	15	14	5.3	0.8	2.4	1.51	1.15	2	0.016

**Treatments:** T1= Researcher's Practice (RP): N, P, K, S and Zn @ 124, 22, 75, 20 and 4 kg ha<sup>-1</sup>, T2 = T1 – N, T3 = T1 but 50 kg N ha<sup>-1</sup>, T4 = T1 but 100 kg N ha<sup>-1</sup>, T5 = T1 but 150 kg N ha<sup>-1</sup>, T6 = T1 but 200 kg N ha<sup>-1</sup>, T7 = STB rates (N, P, K, S and Zn @ 88, 15, 54, 6 and 1 kg ha<sup>-1</sup>); T8 = Control (No fertilizers applied).

### 3.4 Soil management to maximize the yield of modern rice varieties in Aman 2022 and Boro 2023

MN Ahmed, M Iqbal, B Karmakar and A Islam

#### Materials and Methods

This experiment was conducted in BRRRI Sonagazi during Aman2022 and Boro2022-23, designed to know the fertilizers combination for maximum rice yield and to know the effect of more nitrogen and potassium on rice yield to the farmers of char land. This experiment was done in split plot design with three replications and three rice variety in each season. In Aman (BRRRI dhan87, BRRRI dhan95 and BRRRI dhan94) and in Boro (BRRRI dhan89, BRRRI dhan92 and BRRRI dhan96) were used. From this experiment rice grain yield, tiller/m<sup>2</sup>, panicle/m<sup>2</sup>, grain/panicle, 1000 grain weight, plant height and unfilled grain percent data was collected. Soil test based nutrient recommendation in Sonagazi was 88:15:54:6 kg/ha for T. Aman season and 178:24:82:10:1.7 kg/ha for Boro season.



Different levels of fertilizer dose were used as treatments T1= soil test based fertilizer application, T2= soil test based fertilizer plus 20% more nitrogen, T3= soil test based fertilizer plus 20% more potassium and T4= soil test based fertilizer with available organic matter (2 t/ha).

## Results and discussion:

### Yield Maximization, Aman 2022

The results showed that highest grain yield was found in T4= STB + Cow dung (2 t/ha) for BRRRI dhan87 (5.93 t/ha), BRRRI dhan94 (4.86 t/ha) and BRRRI dhan95 (5.50 t/ha) but in STB BRRRI dhan95 (5.56 t/ha) which is insignificant. In consideration of variety, the treatments effect was significant for BRRRI dhan87, but BRRRI dhan94 and BRRRI dhan95 is insignificant. For BRRRI dhan87 and BRRRI dhan94 the treatment STB + Cow dung (2 t/ha) gave highest grain yield which was statistically significant from other treatments. The results also indicated that STB + cow dung (2 t/ha) treatment is enough for the maximum yield of tested varieties BRRRI dhan87, BRRRI dhan94 and BRRRI dhan95 (Table 39).

Table 39. Effect of different fertilizer treatment on the grain yield of newly released rice Varieties in Boro 2022-23

	BRRRI dhan87	BRRRI dhan94	BRRRI dhan95	Mean
STB	5.21	4.52	5.56	5.09
STB+20%N	4.67	4.41	5.51	4.86
STB+20% K	5.05	4.15	5.53	4.91
STB+CD	5.93	4.86	5.43	5.41
Mean	5.21	4.49	5.50	
CV (%)	Rep*treat=	Rep*treat*variety=		
LSD 0.05	Treatment :	Variety:	Interaction:	

### Yield Maximization, Boro 2022-23

The results showed that highest grain yield was found in STB for BRRRI dhan92 (9.31 t/ha), BRRRI dhan89 (7.66 t/ha) and BRRRI dhan96 (7.14 t/ha) for STB + 20% more N. In consideration of variety the treatments effect was significant for BRRRI dhan89, BRRRI dhan92 and BRRRI dhan96. For BRRRI dhan96 the treatment STB + 20% more N gave highest grain yield which was statistically significant from other treatments. The results also indicated that STB dose treatment is enough for the maximum yield of tested varieties BRRRI dhan89 and BRRRI dhan92 but BRRRI dhan96 required 20% more N than STB dose (Table 40).

Table 40. Effect of different fertilizer treatment on the grain yield of newly released rice Varieties in Boro 2023

	BRRRI dhan89	BRRRI dhan92	BRRRI dhan96	Mean
STB	7.53	9.31	7.01	7.95
STB+20%N	7.66	8.26	7.14	7.68
STB+20% K	7.31	7.71	6.60	7.21
STB+CD	7.63	7.26	6.91	7.27
Mean	7.53	8.13	6.91	
CV (%)	Rep*treat= 9.70	Rep*treat*variety= 4.90		
LSD 0.05	Treatment :0.84	Variety: 0.32	Interaction: 0.98	

## 3.5 Effect of nitrogen levels on protein quality of rice at different regions

MR Manir, B Karmakar and MA Biswas

### Objectives:

1. To determine suitable Nitrogen fertilizer (Urea) rate for salinity affected Charland
2. To identify Nitrogen fertilizer requirement in different salinity levels

### Materials and Methods

This experiment was conducted at BRRRI Sonagazi farm during Boro 2023 seasons to find out the best nitrogen level for protein quality of rice at different regions. Five treatments in Randomized Complete Block (RCB) Design with three replications were imposed and each treatment was assigned in 5 m × 4 m sized plot. The treatments were T<sub>1</sub> = No N, T<sub>2</sub> = 100 kg N ha<sup>-1</sup>, T<sub>3</sub> = 125 kg N ha<sup>-1</sup>, T<sub>4</sub> = 150 kg N ha<sup>-1</sup> and T<sub>5</sub> = 175 kg N ha<sup>-1</sup> in Boro and spacing 20 cm × 20 cm. Forty-day-old seedlings of BRRRI dhan92 were

transplanted on selected dates. All other intercultural operations were done as and when necessary. Yield and yield components data were taken at maturity stage. Collected data were statistically analyzed using a standard statistical procedure (Crop stat 7.2).

## Results and Discussion

Yield and yield components significantly affected by the different levels of N fertilizer treatments except 1000-grain weight (Table 41). All the parameters performed the best in the treatment T<sub>4</sub> (150 kg N ha<sup>-1</sup>). Among the treatments, the treatment T<sub>4</sub> (150 kg N ha<sup>-1</sup>) gave the highest grain yield (7.88 t ha<sup>-1</sup>) followed by T<sub>5</sub> (175 kg N ha<sup>-1</sup>) (7.53 t ha<sup>-1</sup>) and the lowest yield was found in control treatment T<sub>1</sub> (3.50 t ha<sup>-1</sup>). The highest filled (108.71) and unfilled (41.38) grain panicles<sup>-1</sup> were observed in 150 kg N ha<sup>-1</sup> (T<sub>4</sub>) treatment followed by 175 kg N ha<sup>-1</sup> (T<sub>5</sub>) treatment. The lowest filled (87.94) and unfilled (29.21) grain panicles<sup>-1</sup> were obtained in no N fertilizer (Control treatment). The highest 1000-grain weight (24.72 g) was found in 150 kg N ha<sup>-1</sup> (T<sub>4</sub>) treatment followed by 125 kg N ha<sup>-1</sup> (T<sub>3</sub>) (24.08 g) and 175 kg N ha<sup>-1</sup> (T<sub>5</sub>) (24.02 g) treatments and lowest 1000-grain weight (23.69 g) was observed in no N fertilizer (Control treatment). Excessive N fertilizer used pot gave the highest growth durations than less or no N fertilizer used plot. Growth durations was significantly affected by the all N fertilizer treatments. The highest growth duration (162.3 day) was observed in 175 kg N ha<sup>-1</sup> (T<sub>5</sub>) treatment followed by 150 kg N ha<sup>-1</sup> (T<sub>4</sub>) (161.3 day) and the lowest (151 day) in no N fertilizer (Control treatment) (Table 1). The highest plant height was observed in T<sub>5</sub> (120.45 cm) treatment which statistically similar to T<sub>4</sub> (119.41 cm), T<sub>3</sub> (118.13 cm) and T<sub>2</sub> (118.04 cm) treatments and the lowest in control treatment (T<sub>1</sub> = 85.98 cm). Tiller number hill<sup>-1</sup> varies significantly affected by all the different levels of N fertilizer management during Boro season. (Table 41).

Table 41. Yield and yield components of rice under different N management in Boro 2023.

Treatment	Grain yield (t ha <sup>-1</sup> )	Plant height (cm)	Tiller no hill <sup>-1</sup>	Panicles no hill <sup>-1</sup>	Filled grain panicle <sup>-1</sup>	Unfilled grain panicle <sup>-1</sup>	1000 grain wt. (g)	Growth durations (day)
T <sub>1</sub>	3.50	85.98	9.66	9	87.94	29.21	23.69	151
T <sub>2</sub>	6.74	118.04	12.33	10.66	105.26	32.19	23.95	158
T <sub>3</sub>	7.38	118.13	13.33	11.67	106.91	30.41	24.08	160
T <sub>4</sub>	7.88	119.41	16.3	13.83	108.71	41.38	24.72	161.3
T <sub>5</sub>	7.53	120.45	15.67	13	107.16	33.58	24.02	162.3
LSD (0.05)								
CV (%)								

T<sub>1</sub> = No N, T<sub>2</sub> = 100 kg N ha<sup>-1</sup>, T<sub>3</sub> = 125 kg N ha<sup>-1</sup>, T<sub>4</sub> = 150 kg N ha<sup>-1</sup> and T<sub>5</sub> = 175 kg N ha<sup>-1</sup>

### 3.6 Cost effective weed management in transplanted rice

MAI Khalid, MM Mahbub, MSh Islam

Weeds are recognized as major biological constraints that hinder the attainment of optimal rice productivity in Bangladesh. In Bangladesh, the traditional methods of weed control by smallholders include hand weeding by hoe and hand pulling. Usually, two or three hand weeding is done for growing a rice crop. However, especially at the time of peak period of labor demand, weeding often is done late, which causes drastic yield loss in rice. Farm families typically are unable to do all their own weeding and need to hire labor. Farmers indicate that finding available labor on time and financing labor is a problem. On an average, in Bangladesh about 40-50% yield was reduced in farmers' field due to poor weed management. Rice production became expensive due to high labor cost. Research in Bangladesh demonstrated that herbicide applications would produce similar rice yields to three carefully timed hand weeding with a significant reduction in labor requirements and total costs. Pre-emergence herbicides are 38-46% cheaper than one hand weeding. Economic analysis of rice production in Bangladesh revealed that the weed management cost by hand weeding is 5 times higher than herbicide application and 3 times higher than weeder application. Large scale adaptive trail in the farmers' field could be a potential option to popularize mechanical and chemical weed control technology among the farmers' of Bangladesh and to reduce the rice production cost.

## Materials and Methods

The trial was conducted at the Sonagazi upazila, Feni during Aman, season to evaluate the method of weed suppression and to find out an appropriate way to reduce weed infestation in farmers field. The trial was carried out with three treatments viz. i) T<sub>1</sub>= Weed management by pre/post emergence herbicide + 1 HW (if needed), ii) T<sub>2</sub>= Weed management by BRR I Weeder just after 1<sup>st</sup> & 2<sup>nd</sup> top dress of urea and iii) T<sub>3</sub>= Weed management by farmers' practice. Twenty five days old seedlings of BRR I dhan52 were transplanted at 20 x 20 cm spacing with 2 seedlings hill<sup>-1</sup> at Aman season. Fertilizer was applied by following BRR I recommended dose Aman: N:P:K:S = 77:12:52:12 kg/ha. Post-emergence (Penoxulam) herbicide was sprayed at 8 days after transplanting at Sonagazi with the help of a knapsack sprayer. Weeding was done by BRR I weeder during 1<sup>st</sup> and 2<sup>nd</sup> top dress of urea.

## Results and Discussion

Application of post emergence herbicide and BRR I Weeder both produced the higher grain yield than Farmers' practice at Sonagazi, Feni. Because both treatments were applied at suitable time in all locations. Due to late hand weeding, weed infestation was higher in farmer's plots and yield was also reduced than BRR I treatments (Table 42). The highest weed biomass was found for Shama, Halde mutha and Helencha in Farmers practice treatment at Sonagazi, Feni. So, weed infestation was highest in these plots. Application of herbicide and BRR I Weeder at proper time reduce the weed infestation effectively (Table 43).

Table 42: Performance of BRR I dhan52 at farmer's field in different weed control methods at Sonagazi, Feni in Aman 2022

Treatments	Grain yield (t/ha)
Weed management by pre/post emergence herbicide	4.87
Weed management by BRR I Weeder just after 1 <sup>st</sup> and 2 <sup>nd</sup> top dress of urea	4.67
Weed management by farmers' practice	4.01

Table 43: Weed Biomass (dry weight (g)/ m<sup>2</sup>) of different weed control methods at Sonagazi, Feni

Treatments	Shama	Halde mutha	Helencha
Weed management by pre/post emergence herbicide	2.31 g	0.93g	0.45g
Weed management by BRR I Weeder just after 1 <sup>st</sup> & 2 <sup>nd</sup> top dress of urea	1.46g	1.07g	0.94g
Weed management by farmers' practice	5.83g	1.56g	2.41g

### Farmer's reactions:

Farmers of Feni were very much happy to observe the performance of herbicide because they never used herbicide before. So, he had to use hand weeding several times in his field. All farmers said that herbicide application was more convenient than hand weeding because they found some problems (high labor price) and difficulties during application of BRR I weeder. They are interested to apply herbicide to manage weed in next rice crop.

## 4. Socio-Economic and Policy

### 4.1 Stability and Adaptability Analysis of BRR I Released Aus Rice Varieties

MAI Khalid, B Karmakar, M Adil, S Tamanna and MI Hossain

This experiment was designed to know the performance of BRR I released rice varieties in different region of Bangladesh. The climatic condition of our country is changing gradually and different rice varieties show different yield performance in various region of the country.

### Objectives

1. To investigate the relative performance of BRR I released rice varieties
2. To evaluate the responses of the modern rice varieties at Chattogram region
3. To select suitable and stable rice varieties.

## Materials and Methods

Thirteen BRRIs released rice varieties were evaluated at BRRIs R/S Sonagazi, Feni during Aus 2021. The trial was done RCB design with three replications. The unit plot size for each entry was 20 m<sup>2</sup> (5m x 4m). About 15-20 days old seedlings were transplanted at 20 cm x 20 cm spacing with 2-3 seedlings hill<sup>-1</sup>. Fertilizers Urea, TSP, MOP, Gypsum and Zinc Sulfate were applied as N, P, K, S, and Zn @ 72.4, 12, 45, 8.2, and 2.7 kg ha<sup>-1</sup>. All fertilizers except urea were applied as basal and urea was applied in 3 equal splits at 8 DAT, maximum tillering and before PI stage. Standard and uniform management practices were followed as and when necessary for all the locations. Appropriate measures were taken to control insect pests but diseases were not controlled to identify susceptibility and tolerance level of lines. Date of seeding, transplanting, flowering and maturity, plant height, lodging tolerance, pest and disease incidence, phenotypic acceptance at vegetative and ripening stage, yield and yield components were recorded. Feedback from farmers and DAE personnel were also recorded. For yield estimation, 10 m<sup>2</sup> sample area from each plot was harvested at maturity and grain yields were adjusted to 14% moisture content. Statistical analysis was done by using statistix 10 software.

**Results and Discussion:** Among the varieties, BRRIs dhan98 gave the highest mean grain yield (6.36 t ha<sup>-1</sup>) followed by BRRIs hybrid dhan7 (5.88 t ha<sup>-1</sup>). BR21, BRRIs dhan65, and BRRIs dhan27 produced lower grain yield 3.30, 3.36 and 3.71 t ha<sup>-1</sup>, respectively (Fig. 3).

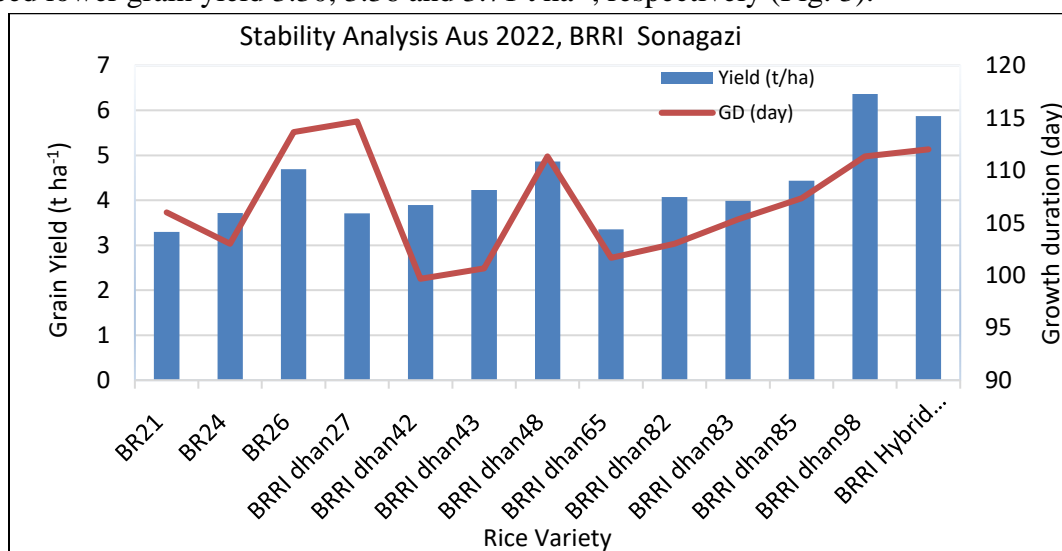


Fig. 3: Stability analysis of BRRIs developed rice varieties in Aus 2022 at BRRIs Sonagazi

## 4.2 Stability and Adaptability Analysis of BRRIs Released T. Aman Varieties

MAI Khalid, B Karmakar, M Adil, S Tamanna and MI Hossain

### Materials and Methods

Forty eight BRRIs released rice varieties were evaluated at BRRIs RS Sonagazi, Feni during Aman 2021. The trial was done RCB design with three replications. The unit plot size for each entry was 20 m<sup>2</sup> (5m x 4m). About 25-30 days old seedlings were transplanted at 20 cm x 15 cm spacing with 2-3 seedlings hill<sup>-1</sup>. Fertilizers Urea, TSP, MOP, Gypsum and Zinc Sulfate were applied as N, P, K, S, and Zn @ 90, 15, 50, 12, and 3.6 kg ha<sup>-1</sup>. All fertilizers except urea were applied as basal and urea was applied in 3 equal splits at 8 DAT, maximum tillering and before PI stage. Standard and uniform management practices were followed as and when necessary for all the locations. Appropriate measures were taken to control insect pests but diseases were not controlled to identify susceptibility and tolerance level of lines. Date of seeding, transplanting, flowering and maturity, plant height, lodging tolerance, pest and disease incidence, phenotypic acceptance at vegetative and ripening stage, yield and yield components were recorded. Feedback from farmers and DAE personnel were also recorded. For yield estimation, 10 m<sup>2</sup> sample area from each plot was harvested at maturity and grain yields were adjusted to 14% moisture content. Statistical analysis was done by using statistix 10 software.

**Results and Discussions:** Among the varieties, BRRi dhan103 ranked the top in terms of yield ( $5.70 \text{ t ha}^{-1}$ ) followed by BRRi dhan52 ( $5.58 \text{ t/ha}$ ). BR5, BRRi dhan62 and BRRi dhan91 were found low yielding varieties having grain yield  $2.52$ ,  $3.15$  and  $3.20 \text{ t ha}^{-1}$  respectively (Fig. 4).

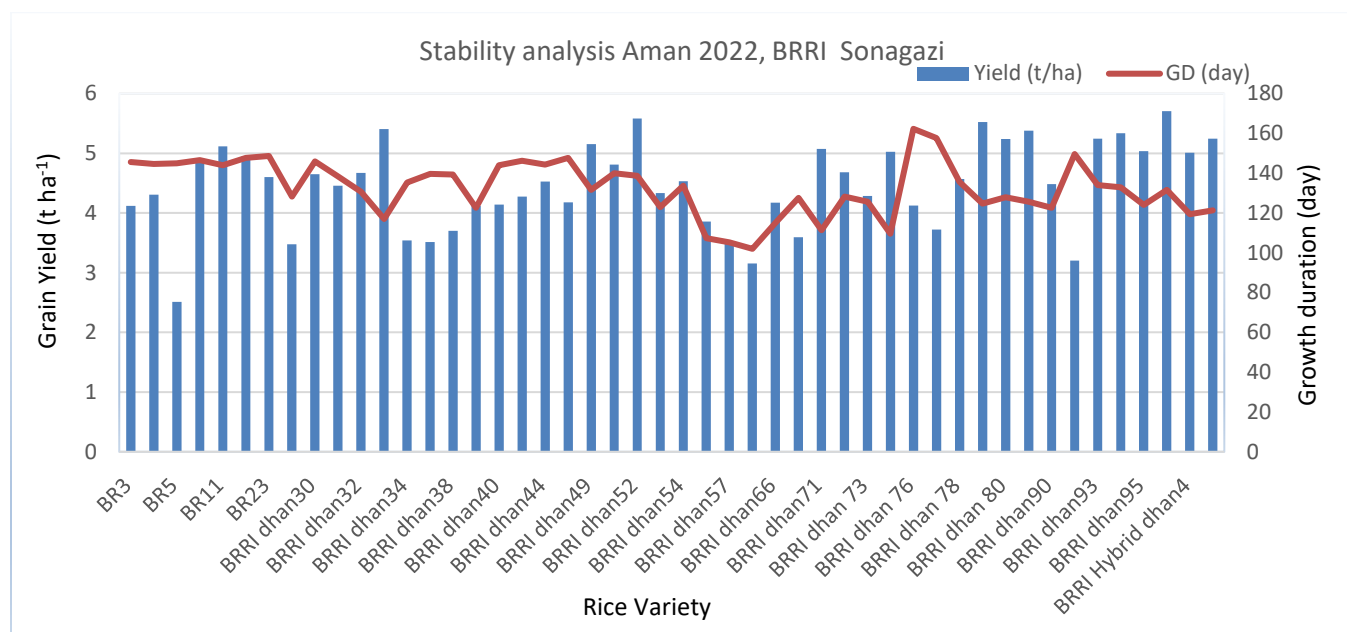


Fig. 4. Stability analysis of BRRi developed rice varieties in Aman 2022 at BRRi Sonagazi

### 4.3 Stability and Adaptability Analysis of BRRi Released Boro Varieties

MAI Khalid, B Karmakar, M Adil, S Tamanna and MI Hossain

#### Materials and Methods

Forty-eight BRRi released rice varieties were evaluated at BRRi RS Sonagazi, Feni during Boro 2020. The trial was done RCB design with three replications. The unit plot size for each entry was  $20 \text{ m}^2$  ( $5\text{m} \times 4\text{m}$ ) Forty to 35-40 days old seedlings were transplanted at  $20 \text{ cm} \times 20 \text{ cm}$  spacing with 2-3 seedlings hill<sup>-1</sup>. Fertilizers Urea, TSP, MOP, Gypsum and Zinc Sulfate were applied as N, P, K, S, and Zn @  $124$ ,  $22$ ,  $75$ ,  $20$ , and  $4 \text{ kg ha}^{-1}$ . All fertilizers except urea were applied as basal and urea was applied in 3 equal splits at 15, 30 and 45 DAT. Standard and uniform management practices were followed as and when necessary for all the locations. Appropriate measures were taken to control insect pests but diseases were not controlled to identify susceptibility and tolerance level of lines. Date of seeding, transplanting, flowering and maturity, plant height, lodging tolerance, pest and disease incidence, phenotypic acceptance at vegetative and ripening stage, yield and yield components were recorded. Feedback from farmers and DAE personnel were also recorded. For yield estimation,  $10 \text{ m}^2$  sample area from each plot was harvested at maturity and grain yields were adjusted to 14% moisture content. Statistical analysis was done by using statistix 10 software.

#### Results and Discussion

Among the varieties, BRRi dhan89 ranked the top in terms of yield ( $8.557 \text{ t ha}^{-1}$ ) followed by BRRi dhan92 ( $8.481 \text{ t/ha}$ ). The variety BR7, BR17 and BR8 were found low yielding varieties having grain yield  $4.213$ ,  $4.817$  and  $5.039 \text{ t ha}^{-1}$  respectively (Fig. 5).

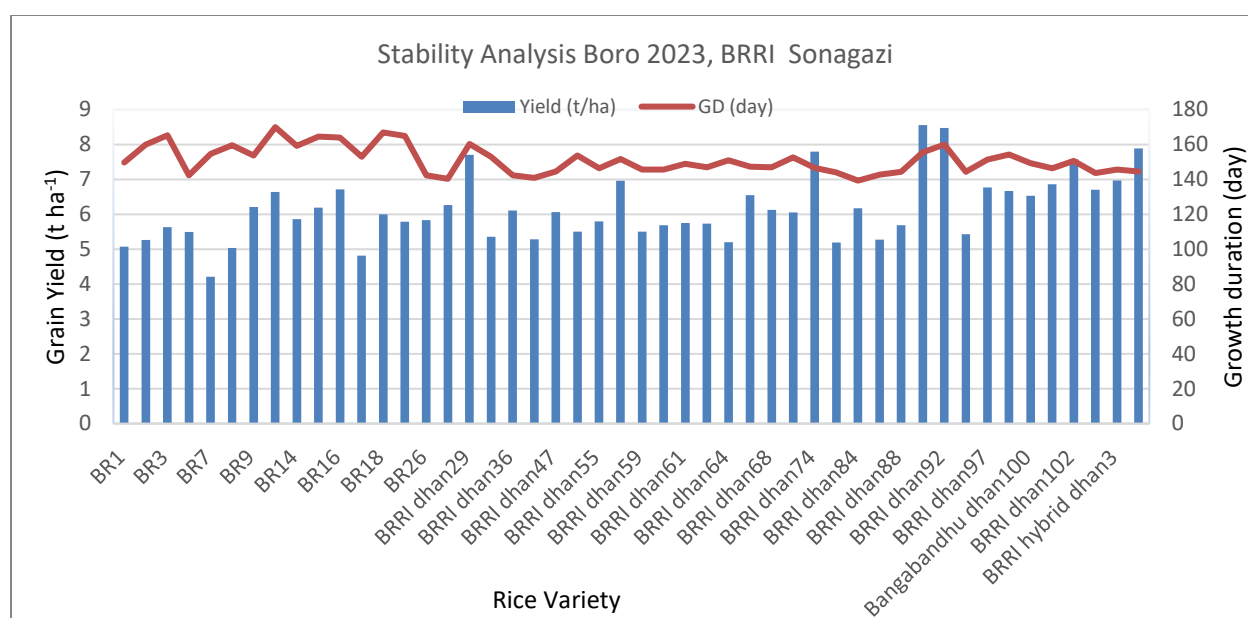


Fig. 5: Stability analysis of BRRi developed rice varieties in Boro 2023

## 5. Technology Transfer

### 5.1 Report of the Project: “Scaling-up Premium Quality Rice in Northern Region of Bangladesh”

B Karmakar, SMMS Tonmoy and MS Hossain

The project activities carried out in a participatory approach in the farmer’s field at 4 Upazila of two districts *i.e.*, Royganj and Tarash of Sirajganj; and Sherpur and Dhunat of Bogura district. BRRi act as the lead organization whereas one NGO ASEDS is the component organization for the technical, financial, and smooth running of the project activities. Moreover, the activities executed in collaboration with DAE and farmers as public private partnership (PPP). Major activities like 24 Adaptive Trial (AT) of PQR varieties, 120 Pilot Production (PP) program, 8 (eight) farmers training and 12 field days were conducted at project sites during the reporting period July 2022 to June 2023.

#### Objectives of the Project:

- 1) Select suitable premium quality rice (PQR) variety for specific location.
- 2) Rapid dissemination of PQR varieties in northern region.
- 3) Strengthen quality seed production, storage and availability at farmer's level.
- 4) Train farmers and extension personnel for updating their knowledge and skill on PQR technologies.

#### Activity 5.1.1 Adaptive trial (AT) of PQR varieties under PQR project

A total of 24 Adaptive Trials (AT) were conducted in four upazila of two districts during Aman 2022 and Boro 2023 under PQR project funded by KGF. Seven PQR varieties like BRRi dhan34, 70, 75, 80, 90, 103 and Binadhan-13 included in Aman 2022 while five rice varieties BRRi dhan63, BRRi dhan81, Bangabandhu dhan100, BRRi dhan102 and Binadhan-25 were compared used in the ATs. Unified and standard management practices were followed for all the trials.

#### Objectives of AT

1. Validate the adaptability of modern rice varieties in northern region of Bangladesh
2. Investigate the performance of promising varieties compared to popular mega variety
3. Select suitable variety(s) for target environments
4. Collect feedback about the varieties from farmers and Extension personnel.

### 5.1.1.1 AT Aman 2022 under PQR project

#### Materials and Methods

A total of 12 Adaptive Trials (AT) were conducted in four upazila of two districts in Aman 2022 under PQR project funded by KGF. Four upazilas are Royganj and Tarash of Sirajganj while Sherpur and Dhunat of Bogura district. Seven PQR varieties like BRRi dhan34, 70, 75, 80, 90, 103 and Binadhan-13 included in Aman 2022. The program was executed through public and private partnership (PPP). Area of each AT was 1 bigha (0.13 ha) and total area of AT was 12 bigha (1.56 ha). PQR project provided inputs like quality seeds, fertilizer, signboard and pesticide. Standard management practices were followed in the trials. Data collected on Farmers name, address and mobile no.; Date of seeding, transplanting, flowering and maturity; lodging tolerance, yield, disease and insect incidence, feedback of the farmers and collaborators.

#### Results and Discussion:

Irrespective of varieties and locations, the highest mean grain yield (5.13 t ha<sup>-1</sup>) was found in BRRi dhan75 followed by BRRi dhan90 (4.91 t ha<sup>-1</sup>). The lowest grain yield (3.01 t ha<sup>-1</sup>) was obtained in Binadhan-13 followed by BRRi dhan34 (3.43 t ha<sup>-1</sup>) (Table 44-45 and Fig. 6-8). Across the locations, BRRi dhan75 produced the highest grain yield (6.32 t ha<sup>-1</sup>) that was at par with BRRi dhan90 (6.02 t ha<sup>-1</sup>), while Binadhan-13 gave lowest yield 3.60 t ha<sup>-1</sup> followed by BRRi dhan34 (4.02 t ha<sup>-1</sup>). The maximum and minimum yield range and yield range gap between the highest and lowest were varied remarkably among the varieties due to environmental effect and biotic factors like disease and insect infestation.

Table 44. Summary Statistics of grain yield of Adaptive trials (AT) of PQR in Aman 2022 at Sirajganj and Bogura.

Variety	No. of Obs.(n)	Grain yield (t ha <sup>-1</sup> )				Standard Deviation (SD)	Standard Error (SE)
		Mean	Maximum	Minimum	Range		
BRRi dhan34	12	3.43	4.02	2.78	1.24	0.370	0.107
BRRi dhan70	12	4.24	4.98	3.01	1.97	0.592	0.171
BRRi dhan75	12	5.13	6.32	4.34	1.98	0.599	0.173
BRRi dhan80	12	4.82	5.64	4.16	1.49	0.447	0.129
BRRi dhan90	12	4.91	6.02	4.17	1.86	0.507	0.146
Binadhan-13	12	3.01	3.60	2.50	1.10	0.330	0.095

Table 45. Summary Statistics of Growth duration of Adaptive trials of PQR in Boro 2022 at Sirajganj and Bogura.

Variety	No. of Obs.(n)	Growth duration (day)				Standard Deviation (SD)	Standard Error (SE)
		Mean	Maximum	Minimum	Range		
BRRi dhan34	12	136	142	134	8	2.712	0.752
BRRi dhan70	12	132	135	129	6	1.730	0.480
BRRi dhan75	12	110	115	108	7	2.109	0.585
BRRi dhan80	12	133	136	130	6	1.834	0.509
BRRi dhan90	12	124	127	122	5	1.557	0.432
Binadhan-13	12	142	145	140	5	1.815	0.503

Growth duration varied remarkably due to genotype by environment interactions (Table 3 & 4). Irrespective of varieties and locations, the highest mean growth duration (142 days) obtained in Binadhan-13 followed by BRRi dhan34 (136 day) and the lowest (110 days) was found in BRRi dhan75. Across the locations, the longest growth duration (145 day) was found in Binadhan-13 that followed by BRRi dhan34 (142 day). The shortest duration (108 day) was observed in BRRi dhan75 which significantly lower than the others varieties. Among the tested varieties, BRRi dhan75 gave the highest yield with shortest duration (110 day), while BRRi dhan90 gave the second highest yield having medium duration (124 day). BRRi dhan34 also gave competitive yield with strong aroma,

however, it was infected by neck blast disease in some locations. BRRi dhan80 produced good yield. Farmers were disappointed regarding the performances of Binadhan-13 as it produced lower grain yield with longer duration. Finally, the farmers preferences of the varieties were BRRi dhan90> BRRi dhan75> BRRi dhan34> BRRi dhan80> BRRi dhan70> Binadhan-13. Moreover, the farmer's preference varied from environment to environment.

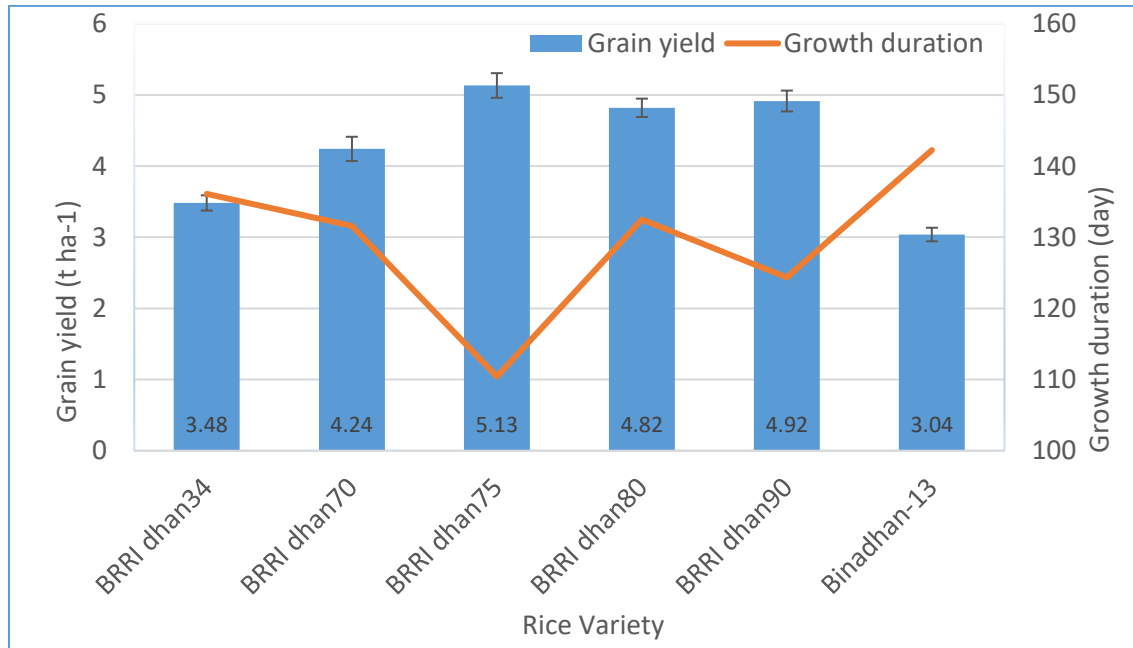


Fig. 6. Mean grain yield and growth duration of PQR varieties in adaptive trials during Aman 2022 across 12 locations of Sirajganj and Bogura.

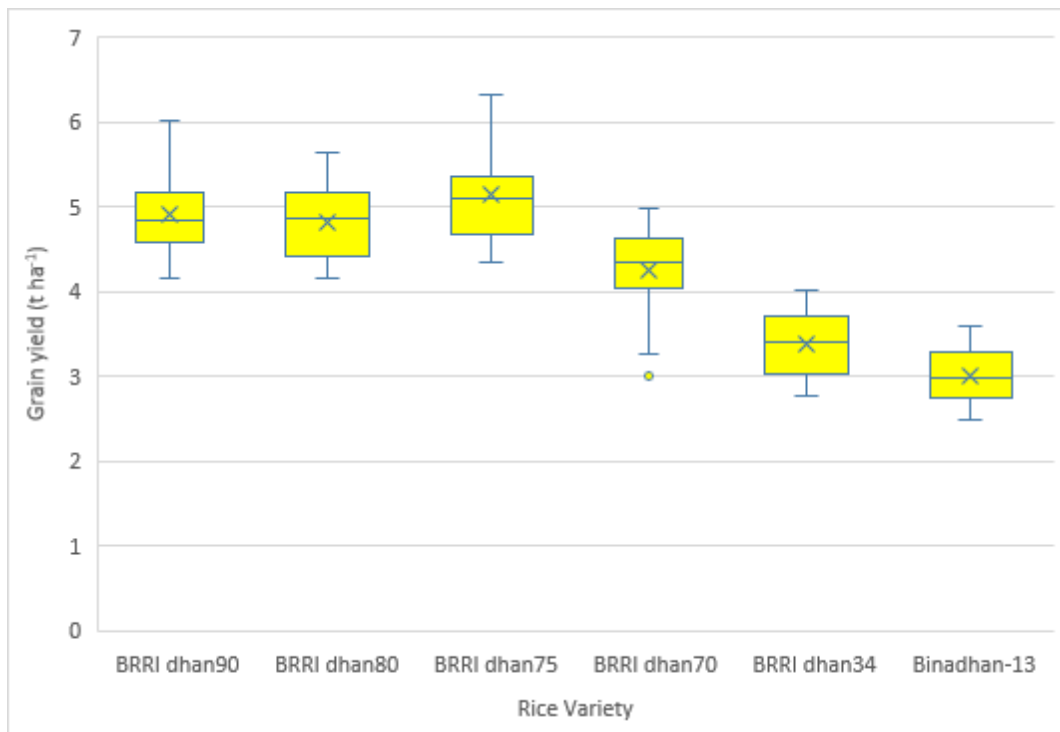


Fig. 7. Box plot of mean grain yield of the PQR varieties tested in adaptive trials during Aman 2022 across 12 locations of Sirajganj and Bogura districts.



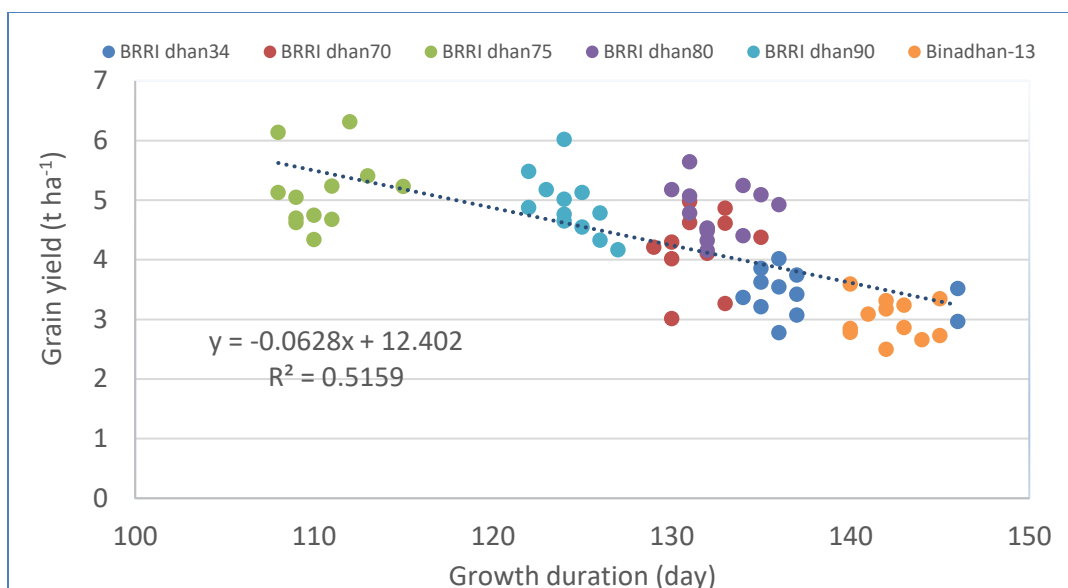


Fig. 8. Relationship of grain yield and growth duration of the PQR varieties in adaptive trials during Aman 2022 across 12 locations of Sirajganj and Bogura districts.

### 5.1.1.2 AT Boro 2023 under PQR project

#### Materials and Method

A total of 12 Adaptive Trials (AT) were conducted in four upazila of two districts in Boro 2023 under PQR project funded by KGF. Four upazila are Royganj and Tarash of Sirajganj while Sherpur and Dhunat of Bogura district. Five rice varieties BRRRI dhan63, BRRRI dhan81, Bangabandhu dhan100, BRRRI dhan102 and Binadhan-25 were compared used in the ATs. The program was executed through public and private partnership (PPP). Area of each AT was 1 bigha (0.13 ha) and total area of AT was 12 bigha (1.56 ha). PQR project provided inputs like quality seeds, fertilizer, signboard and pesticide. Standard management practices were followed in the trials. Data collected on Farmers name, address and mobile no.; Date of seeding, transplanting, flowering and maturity; lodging tolerance, yield, disease and insect incidence, feedback of the farmers and collaborators. Data were analyzed using excel.

#### Results and Discussion

Grain yield and growth of the varieties significantly affected by genotypes and environments and their interaction (G x E) (Table 43 to 44 and Fig. 9). Irrespective of varieties and locations, the highest mean grain yield ( $8.02 \text{ t ha}^{-1}$ ) was found in BRRRI dhan102 followed by Bangabandhu dhan100 ( $6.91 \text{ t ha}^{-1}$ ). The lowest grain yield ( $5.14 \text{ t ha}^{-1}$ ) was obtained in Binadhan-25 followed by BRRRI dhan81 ( $5.32 \text{ t ha}^{-1}$ ) and local variety Katari ( $5.54 \text{ t ha}^{-1}$ ). Across the locations, BRRRI dhan102 produced the highest grain yield ( $8.77 \text{ t ha}^{-1}$ ) at Sherpur, Bogura and the yield ( $4.26 \text{ t ha}^{-1}$ ) was found in Binadhan-25 at Tarash Sirajganj that was at par with BRRRI dhan81 ( $4.55 \text{ t ha}^{-1}$ ) at Dhunat, Bogura. The maximum and minimum yield, and yield gap between the highest and lowest were varied remarkably among the varieties due environmental effect and also biotic factors like disease infection especially neck blast disease.

Genotypes, environments and their interaction had significant effect on growth duration of the long duration rice varieties (Table 46-47 and Fig. 9). Growth duration range was the highest (7 days) in Katari and it was 5 days in followed by BRRRI dhan81, BRRRI dhan102 and Binadhan-25. Irrespective of varieties and locations, the highest mean growth duration (152 days) was counted in BRRRI dhan102 and Katari followed by Bangabandhu dhan100 (151 day) and the lowest duration (142 days) was found in BRRRI dhan81 and Binadhan-25. In adaptive trials, the new variety BRRRI dhan102 performed the best and yield significantly higher than all other varieties. Therefore, based on the results of AT, it could be popularized in the northern region of Bangladesh. Farmers preferences of the tested varieties varied significantly based on overall performances of the varieties (Table 48 and Fig. 9). However, product profile such as grain yield, grain quality, taste, market price and environments played key role for the preference of the variety. Finally, the preferences of the varieties were BRRRI dhan102>Katari>Binadhan-25>Bangabandhu dhan100>BRRRI dhan63>BRRRI dhan81.

Table 46. Summary Statistics of grain yield of the PQR varieties tested in Adaptive trials during Boro 2023 under PQR project funded by KGF.

Variety	No. of Obs. (n)	Grain yield (t ha <sup>-1</sup> )				Standard Deviation (SD)	Standard Error (SE)
		Mean	Maximum	Minimum	Range		
BRRRI dhan63	12	5.70	6.58	4.56	2.02	0.73	0.21
BRRRI dhan81	12	5.32	6.51	4.55	1.96	0.67	0.19
Bangabandhu dhan100	12	6.91	7.80	5.31	2.49	0.66	0.19
BRRRI dhan102	12	8.02	8.77	7.06	1.71	0.47	0.14
Binadhan-25	12	5.14	6.04	4.26	1.78	0.52	0.15
Katari (L. Ck)	12	5.54	6.53	4.56	1.97	0.73	0.21

Table 47. Summary Statistics of Growth duration of the PQR varieties tested in Adaptive trials during Boro 2023 under PQR project funded by KGF.

Variety	No. of Obs.(n)	Growth duration (day)				Standard Deviation (SD)	Standard Error (SE)
		Mean	Maximum	Minimum	Range		
BRRRI dhan63	12	146	150	144	6	1.85	0.53
BRRRI dhan81	12	144	147	141	6	1.70	0.49
Bangabandhu dhan100	12	148	151	145	6	1.56	0.45
BRRRI dhan102	12	150	153	147	6	1.78	0.51
Binadhan-25	12	145	147	142	5	1.44	0.42
Katari (L. Ck)		149	152	145	7	2.30	0.66

Table 48. Summary Statistics of preferences of the PQR varieties tested in Adaptive trials during Boro 2023 under PQR project funded by KGF.

Variety	No. of Obs.(n)	Farmer's Preference				Standard Deviation (SD)	Standard Error (SE)
		Mean	Maximum	Minimum	Range		
BRRRI dhan63	12	3.9	6	1	5	1.62	0.47
BRRRI dhan81	12	4.3	6	2	4	1.56	0.45
Bangabandhu dhan100	12	2.8	5	2	3	0.94	0.27
BRRRI dhan102	12	1.4	3	1	2	0.67	0.19
Binadhan-25	12	2.5	5	1	4	1.38	0.40
Katari (L. Ck)		1.8	4	1	3	1.11	0.32

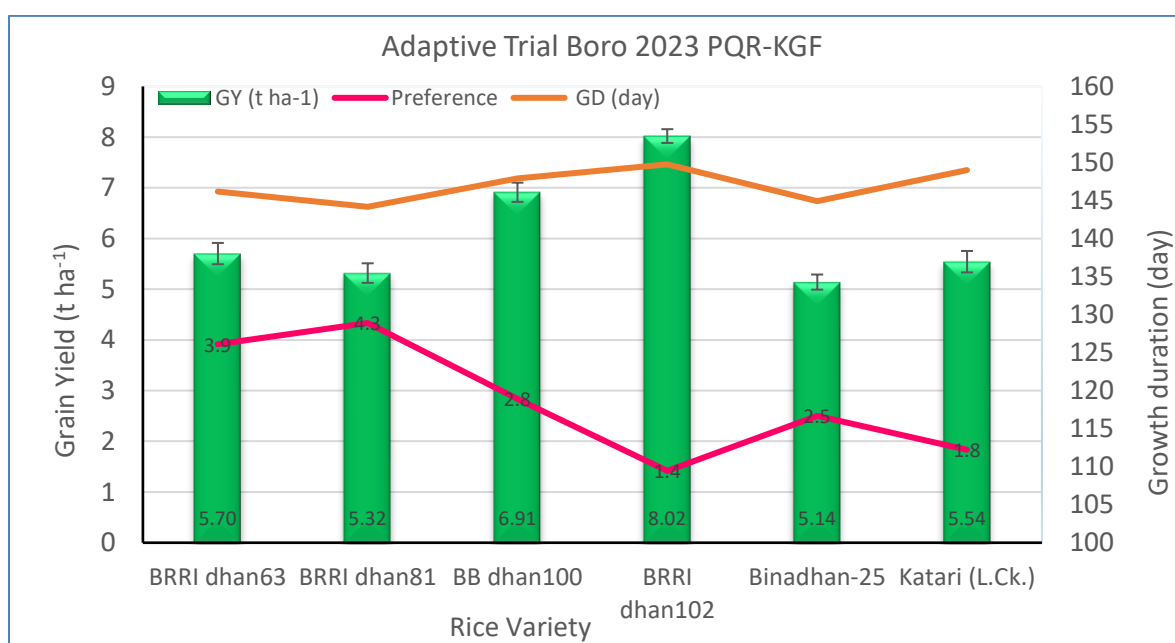


Figure 9. Mean Grain yield, Growth duration and Farmers' preferences of premium quality rice varieties used in adaptive trials in Boro 2023 across the 12 locations of Sirajganj and Bogura districts.

## Activity 5.1.2 Pilot production (PP) of PQR Varieties under PQR project

Objectives:

- 1) Rapid dissemination of newly released PQR rice varieties to the farmers
- 2) Motivate farmers to produce and preserve good quality seeds
- 3) Increase availability of quality seed of modern PQR varieties at farm level
- 4) Exchange seeds from farmers to farmers
- 5) Collect feedback about the varieties from farmers and Extension personnel.

### 5.1.2.1 Pilot Production (PP) Aman 2022 under PQR project

#### Materials and Method:

Sixty Pilot Production (PP) of PQR varieties were conducted in 4 Upazila of 2 districts (Sirajganj and Bogura) under PQR project during Aman 2022. BRRRI dhan34, 75, 80, and 90 were used in the pilot production program. The program was executed through public and private partnership (PPP). Area of each PP was 1 bigha (0.13 ha) and total area of AT was 60 bigha (7.80 ha). PQR project provided inputs like quality seeds, fertilizer, signboard and pesticide. Standard management practices were followed in the trials. Data collected on Farmers name, address and mobile no.; Date of seeding, transplanting and maturity; yield, disease and insect incidence, feedback of the farmers and collaborators.

#### Results and Discussion

Among the varieties, BRRRI dhan75 gave the highest mean grain yield (5.21 t ha<sup>-1</sup>) followed by BRRRI dhan80 (4.91 t ha<sup>-1</sup>) and the lowest grain yield was found in BRRRI dhan34 (3.36 t ha<sup>-1</sup>) (Table 49). Across the locations, BRRRI dhan75 produced the highest grain yield (6.03 t ha<sup>-1</sup>) at Royganj, Sirajganj followed by BRRRI dhan90 (5.71 t ha<sup>-1</sup>) at Royganj, Sirajganj; while the lowest yield (2.81 t ha<sup>-1</sup>) obtained in BRRRI dhan34 at Royganj, Sirajganj. Total production of all the varieties was 34.55 t of which 3640 kg retained as seeds (11% of total production) by the farmers for next season cultivation. About 1793 farmers gained awareness and knowledge about the varieties and 329 farmers (18%) were motivated to cultivate the varieties. Mean growth duration BRRRI dhan34, BRRRI dhan75, BRRRI dhan80 and BRRRI dhan90 was 136, 110, 134 and 124 days, respectively. BRRRI dhan90 gave good yield at Royganj and Tarash. BRRRI dhan34 is slightly affected by neck blast disease at Dhunat. BRRRI dhan90 gave satisfactory grain yield throughout the regions.

Table 49. Results of Pilot Production of PQR varieties in Aman 2022 at Sirajganj and Bogura districts under PQR project funded by KGF.

Location		GD (day)	GY (tha <sup>-1</sup> )	Area (bigha)	Total Prod. (ton)	Seed retained		KAF (no.)	Motivated Farmer	
District	Upazila					(kg)	%		(no.)	(no.)
<b>BRRRI dhan34</b>										
Sirajganj	Royganj	135	2.81	15	5.64	100	2	102	10	10
	Tarash	136	3.67	3	1.47	200	14	118	20	17
Bogura	Sherpur	137	3.83	3	1.54	280	18	120	22	18
	Dhunat	134	3.30	3	1.33	110	8	110	16	15
Mean		136	3.60	-	-	-	10	-		15
Total		-	-	24	9.98	690	-	450	68	-
<b>BRRRI dhan75</b>										
Sirajganj	Royganj	108	6.03	3	2.42	400	17	114	23	20
	Tarash	112	5.67	3	2.28	350	15	105	30	29
Bogura	Sherpur	111	5.10	3	2.05	260	13	120	21	18
	Dhunat	110	4.86	3	1.95	130	7	104	16	15
Mean		110	5.21				13			20
Total		-	-	12	8.70	1140		443	90	
<b>BRRRI dhan80</b>										
Sirajganj	Royganj	132	4.60	3	1.85	100	5	106	12	11
	Tarash	133	4.85	3	1.95	120	6	94	9	10
Bogura	Sherpur	134	4.52	3	1.82	50	3	90	8	9
	Dhunat	135	5.36	3	2.15	150	7	120	12	10

Mean	134	4.91	-	-	-	5	-	-	10	
Total	-	-	12	7.77	420	-	410	41	-	
<b>BRRi dhan90</b>										
Sirajganj	Royganj	125	5.71	3	2.29	500	22	150	60	40
	Tarash	122	5.12	3	2.06	360	18	112	33	29
Bogura	Sherpur	124	4.80	3	1.93	280	15	108	15	14
	Dhunat	123	4.54	3	1.82	250	14	120	22	18
Mean		124	4.82	-	-	-	17	-	-	25
Total		-	-	12	8.10	1390	-	490	130	-
Grand Mean		124	4.64	-	-	-	11	-	-	18
Grand Total		-	-	60	34.55	3640	-	1793	329	-

NB: KAF = Knowledge Acquired Farmer

### 5.1.2.2 Pilot Production Boro 2023 under PQR project

#### Materials and Method:

Sixty Pilot Production (PP) of PQR varieties were conducted in 4 Upazila of 2 districts (Sirajganj and Bogura) under PQR project during Boro 2023. BRRi dhan50, BRRi dhan63, BRRi dhan81, Bangabandhu dhan100 and BRRi dhan102 were used in the pilot production program (PP). The program was executed through public and private partnership (PPP). Area of each PP was 1 bigha (0.13 ha) and total area of PP was 60 bigha (7.80 ha). PQR project provided inputs like quality seeds, fertilizer, signboard and pesticide. Standard management practices were followed in the trials. Data collected on Farmers name, address and mobile no.; Date of seeding, transplanting and maturity; yield, disease and insect incidence, feedback of the farmers and collaborators.

#### Results and Discussion

Among the varieties, BRRi dhan102 gave the highest mean grain yield (7.87 t ha<sup>-1</sup>) followed by Bangabandhu dhan100 (7.02 t ha<sup>-1</sup>). The lowest mean grain yield (5.75 t ha<sup>-1</sup>) was found in BRRi dhan81 followed by BRRi dhan50 (5.83 t ha<sup>-1</sup>) and BRRi dhan63 (6.19 t ha<sup>-1</sup>) (Table 50). Across the locations, BRRi dhan102 produced the highest grain yield (8.46 t ha<sup>-1</sup>) at Royganj, Sirajganj followed by Bangabandhu dhan100 (7.83 t ha<sup>-1</sup>) at Sherpur, Bogura; while the lowest grain yield (4.73 t ha<sup>-1</sup>) obtained in BRRi dhan81 at Sherpur, Bogura followed by BRRi dhan50 (5.43 t ha<sup>-1</sup>) at Tarash, Sirajganj. Total area and total production of all the varieties were 60 bigha and 52.74 t from which 2750 kg was retained as seeds (7% of total production) by the farmers for next season cultivation. Average seed retention of the varieties was low, because it was very low in some varieties like BRRi dhan50, 63 and 81 as the yield of those varieties were comparatively lower than BRRi dhan102. Moreover, the varieties were some-extent infected by neck blast disease. About 2500 farmers gained awareness and knowledge about the varieties and 348 farmers (16% of total farmers) were motivated to cultivate the varieties. However, farmers motivation was the highest (31%) in BRRi dhan102. Mean growth duration BRRi dhan50, BRRi dhan63, BRRi dhan81, Bangabandhu dhan100 and BRRi dhan102 were 151, 149, 144, 148 and 149 days, respectively. We also collected average rice price of the tested varieties from the project areas. Average market price of BRRi dhan50, BRRi dhan63, BRRi dhan81, Bangabandhu dhan100, BRRi dhan102 and Katari were 35, 32, 30, 29, 30 and 40 taka per kg rice, respectively. Moreover, another PQR variety Binadhan-25 is not yet available in market so that we could not data of the variety. Finally, the preferences of the varieties were BRRi dhan102>Bangabandhu dhan100>BRRi dhan63>BRRi dhan50>BRRi dhan81.

Among the varieties, BRRi dhan102 gave the highest mean grain yield (7.87 t ha<sup>-1</sup>) followed by Bangabandhu dhan100 (7.02 t ha<sup>-1</sup>). The lowest mean grain yield (5.75 t ha<sup>-1</sup>) was found in BRRi dhan81 followed by BRRi dhan50 (5.83 t ha<sup>-1</sup>) and BRRi dhan63 (6.19 t ha<sup>-1</sup>) (Table 45). Across the locations, BRRi dhan102 produced the highest grain yield (8.46 t ha<sup>-1</sup>) at Royganj, Sirajganj followed by Bangabandhu dhan100 (7.83 t ha<sup>-1</sup>) at Sherpur, Bogura; while the lowest grain yield (4.73 t ha<sup>-1</sup>) obtained in BRRi dhan81 at Sherpur, Bogura followed by BRRi dhan50 (5.43 t ha<sup>-1</sup>) at Tarash, Sirajganj. Total area and total production of all the varieties were 60 bigha and 52.74 t from which 2750 kg was retained as seeds (7% of total production) by the farmers for next season cultivation.

Average seed retention of the varieties was low, because it was very low in some varieties like BRR1 dhan50, 63 and 81 as the yield of those varieties were comparatively lower than BRR1 dhan102. Moreover, the varieties were some-extent infected by neck blast disease. About 2474 farmers gained awareness and knowledge about the varieties and 348 farmers (16% of total farmers) were motivated to cultivate the varieties. However, farmers motivation was the highest (34%) in BRR1 dhan102. Mean growth duration BRR1 dhan50, BRR1 dhan63, BRR1 dhan81, Bangabandhu dhan100 and BRR1 dhan102 were 151, 149, 144, 148 and 149 days, respectively. We also collected average rice price of the tested varieties from the project areas. Average market price of BRR1 dhan50, BRR1 dhan63, BRR1 dhan81, Bangabandhu dhan100, BRR1 dhan102 and Katari were 35, 32, 30, 29, 30 and 40 taka per kg rice, respectively. Moreover, another PQR variety Binadhan-25 is not yet available in market so that we could not data of the variety. Finally, the preferences of the varieties were BRR1 dhan102> Bangabandhu dhan100> BRR1 dhan63>BRR1 dhan50>BRR1 dhan81.

Table 50. Results of Pilot Production of PQR Boro 2023 under PQR-KGF project

Location		Area (bigha)	GD (day)	GY (t ha <sup>-1</sup> )	Total Prod. (t)	Seed retained		KAF (no.)	Motivated Farmer		Paddy Price (Tk/40 Kg)
District	Upazila					(kg)	%		(no.)	(no.)	
BRR1 dhan50											
Sirajganj	Royganj	3	151	5.785	2.323	60	3	123	12	10	1360
	Tarash	3	152	6.264	2.516	120	5	125	17	14	1400
Bogura	Sherpur	3	150	5.428	2.180	20	1	120	8	7	1380
	Mean		151	5.825			3			10	1380
	Total	9			7.018	200		368	42		
BRR1 dhan63											
Sirajganj	Royganj	3	148	6.890	2.767	110	4	111	22	20	1250
	Tarash	3	149	6.165	2.476	50	2	102	14	14	1280
Bogura	Sherpur	3	150	5.501	2.209	60	3	105	9	9	1300
	Dhumat		149	6.19			3			14	1277
	Mean	9			7.45	220		378	26		
	Total										
BRR1 dhan81											
Sirajganj	Royganj	3	143	5.442	2.185	20	1	125	7	6	1200
	Tarash	3	145	6.536	2.625	50	2	133	12	9	1150
Bogura	Sherpur	3	145	4.732	1.901	0	0	130	0	0	1200
	Dhumat	3	143	6.197	2.489	50	2	120	10	8	1220
	Dhumat	3	144	5.833	2.343	40	2	123	8	7	1160
	Mean		144	5.75			1			6	1186
	Total	15			11.54	160		631	37		
Bangabandhu dhan100											
Sirajganj	Royganj	3	147	7.522	3.021	200	7	120	22	18	1150
	Royganj	3	149	6.177	2.481	80	3	118	11	9	1170
Bogura	Tarash	3	148	7.029	2.823	120	4	131	12	9	1120
	Sherpur	3	150	7.831	3.145	150	5	125	24	19	1180
	Dhumat	3	146	6.518	2.618	120	5	116	15	13	1130
	Mean		148	7.02			5			14	1150
	Total	15			14.09	670		610	84		
BRR1 dhan102											
Sirajganj	Royganj	3	153	8.457	3.396	2000	59	120	50	42	1250
	Tarash	3	151	7.553	3.033	350	12	131	40	31	1180
Bogura	Sherpur	3	152	7.251	2.912	250	9	124	33	27	1220
	Dhumat	3	150	8.208	3.297	400	12	112	42	38	1150
	Mean		152	7.87			23			34	1200
	Total	12			12.64	1500		487	165		
Grand	Mean		149	6.53			7			16	
	Total	60			52.74	2750		2474	354		
Katari (Local Check)											
	Mean		151	5.55	-	-	-	-	-	40	1600

NB: KAF= Knowledge Aquired Farmer

### Activity 5.1.3 Field Day under PQR Project

Field day is the mass gathering of farmers, extension personnel, scientists, local leaders, public representatives, elite person, and media person. Twelve field days were conducted during the reporting period in Sirajganj and Bogura districts. Around 1500 participants attended in the field days and gathered knowledge about rice technologies.

### Activity 5.1.4 Farmers' training on rice technologies under PQR Project

A total of eight Farmers' Training on Premium Quality Rice (PQR) technologies was executed in Sirajganj and Bogura districts. About 240 farmers, extension personnel, NGO personnel and field level project employees were participated as trainee. Expert scientists from BIRRI and Extension personnel delivered speech on different topics related to PQR technologies.

## 5.2 Head to Head Adaptive trial (HHAT) under TRB Project

### Objectives of HHAT

1. Validate the adaptability of modern rice varieties
2. Investigate the performance of promising varieties compared to popular mega variety
3. Select suitable variety(s) for target environments
4. Collect feedback about the varieties from farmers and Extension personnel.

### 5.2.1 HHAT Aman 2022 under TRB Project

Ten HHAT (Costal Ecosystem-5, Short duration-2 and Flash flood system-3) were conducted at Sonagazi Fulgazi, Mirsarai, Chakaria, Cox'sbazar Sadar Upazila of different districts during Aman 2022. For Costal ecosystem five varieties viz BINA dhan10, BINA dhan23, BIRRI dhan73, BIRRI dhan78 and BIRRI dhan79 were used, for short duration six varieties viz BIRRI dhan71, BIRRI dhan75, BINA dhan7, BINA dhan16, BINA dhan17 and BINA dhan22 were used, for Flash flood system viz BINA dhan11, BR11, BIRRI dhan51, BIRRI dhan52, BIRRI dhan79 and Lal Guti Swarna were used in those adaptive trial. In case of costal ecosystem BIRRI dhan79 yielded highest in average of the locations ( 5.22 t ha<sup>-1</sup>), In case of Short duration BIRRI dhan75 yielded highest in average of the locations ( 5.46 t ha<sup>-1</sup>), In case of Flash flood system BIRRI dhan52 yielded highest in average of the locations ( 4.98 t ha<sup>-1</sup>) (Fig. 10 to 12).

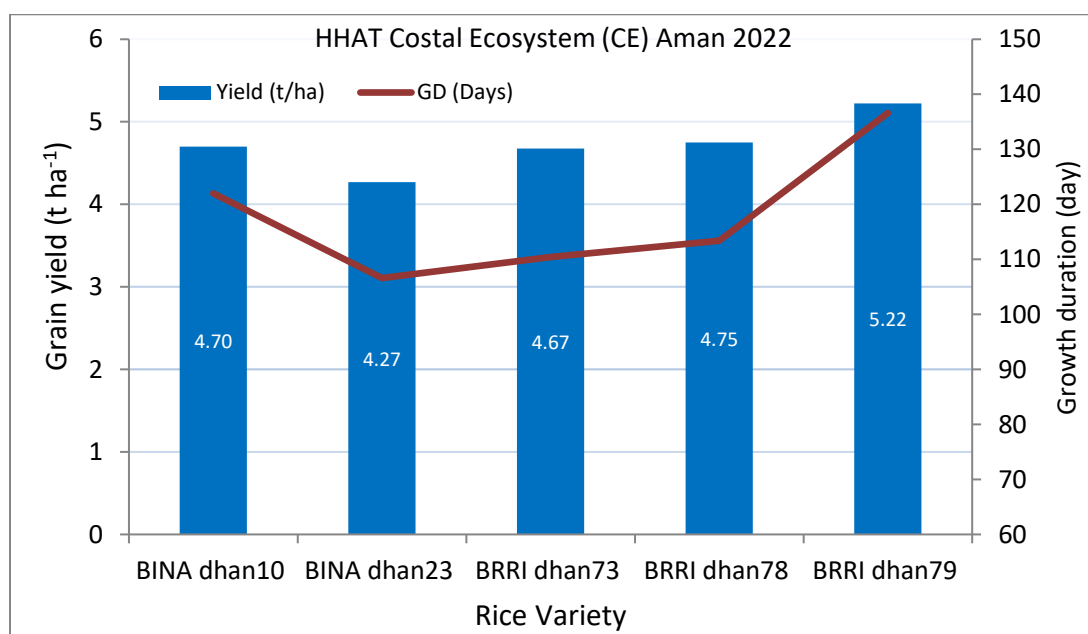


Fig.10. Grain yield and growth duration of modern rice varieties under HHAT Costal Ecosystem (CE) in Aman 2022 at Chattogram region.

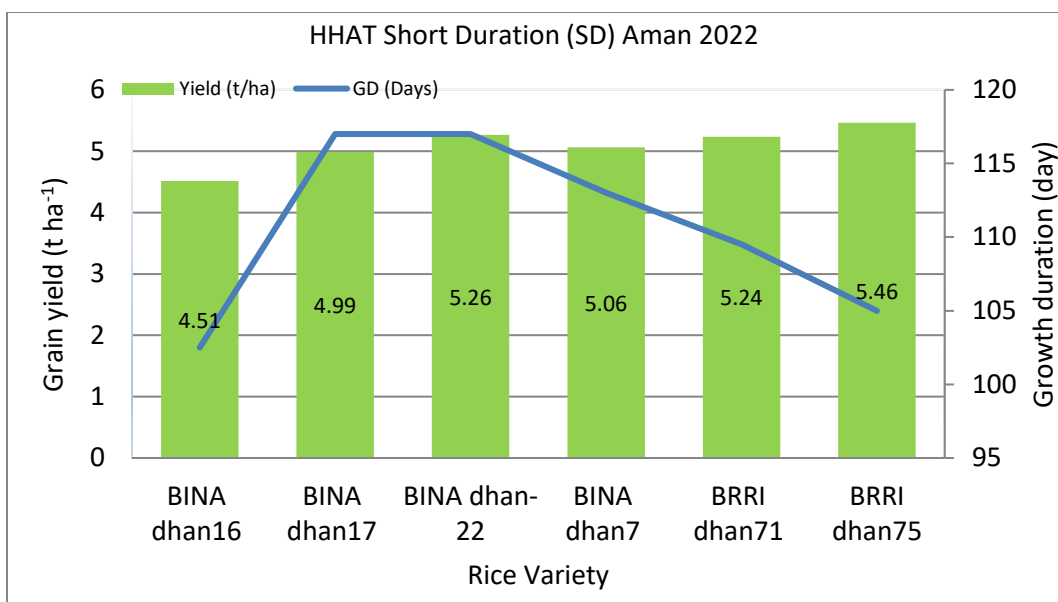


Fig.11. Grain yield and growth duration of modern rice varieties under HHAT Short Duration (SD) in Aman 2022 at Chattogram and Rangamati regions.

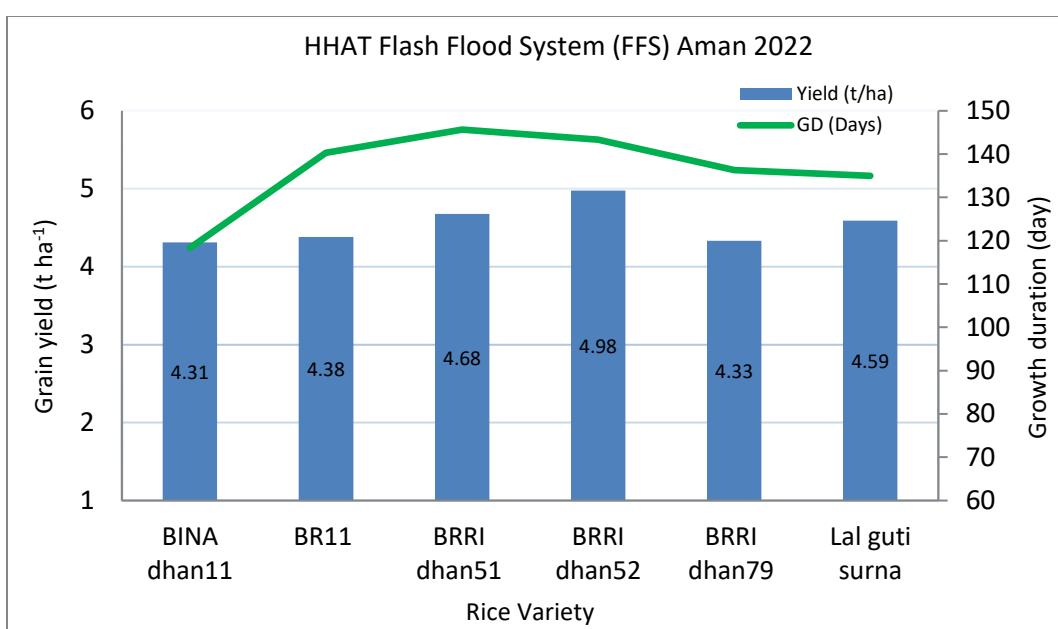


Fig.12. Grain yield and growth duration of modern rice varieties under HHAT Flash Flood System (FFS) ecosystem in Aman 2022 at Chattogram region.

### 5.2.2 HHAT Boro 2023 under TRB Project

Fifteen HHAT (Short duration-3, long duration-3, Salinity-3 and hill-6) were conducted at Sonagazi, Feni Sadar, Chagalnaya, Mirsarai, Companiganj, Cox'sbazar Sadar, Khagrachari Sadar, Mahalchari, Manikchari, Guimara, Ramgarh Upazila of different districts during Boro 2022-23. For short duration six varieties viz BIRRI dhan28, BIRRI dhan97, BIRRI dhan88, Bangabandhu dhan100, BAU dhan3 and Binadhan-25 were used, for long duration five varieties viz BIRRI dhan29, BIRRI dhan89, BIRRI dhan92, BIRRI dhan102 and Binadhan-24 were used, for Salinity four rice varieties viz BIRRI dhan28, BIRRI dhan67, BIRRI dhan97 and BIRRI dhan99 were used, for hill five varieties viz BIRRI dhan28, BIRRI dhan97, BIRRI dhan84, BIRRI dhan88 and Bangabandhu dhan100 were used in those adaptive trial. In case of short duration BIRRI dhan97 yielded highest in average of the locations ( $7.05 \text{ t ha}^{-1}$ ), In case of long duration BIRRI dhan102 yielded highest in average of the locations ( $8.14 \text{ t ha}^{-1}$ ), In case of salinity BIRRI dhan99 yielded highest in average of the locations ( $6.17 \text{ t ha}^{-1}$ ), In case of hill Bangabandhu dhan100 yielded highest in average of the locations ( $7.11 \text{ t ha}^{-1}$ ) (Fig 13 to 16) .

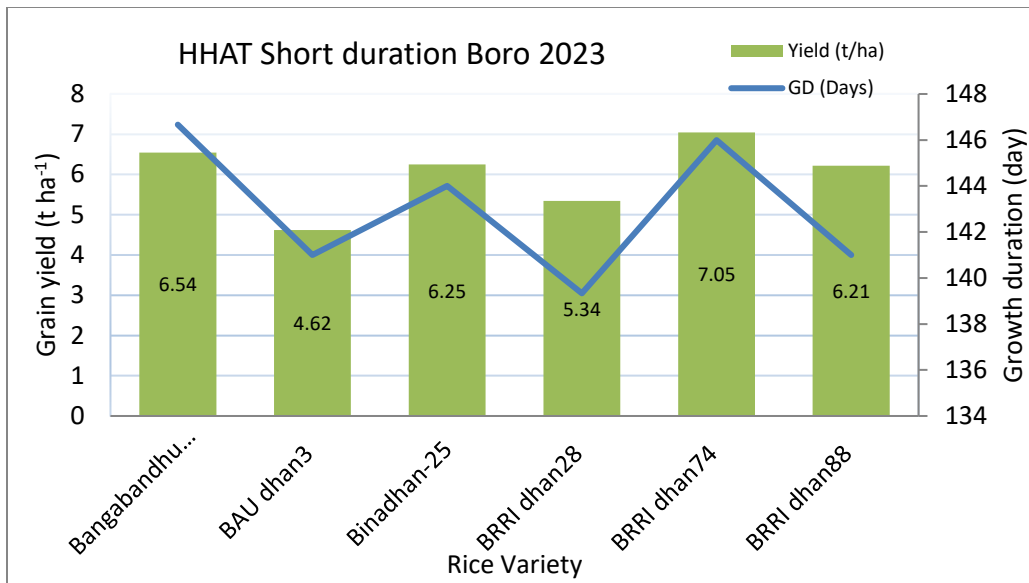


Fig. 13. Grain yield and growth duration of modern rice varieties under HHAT Short Duration (SD) in Boro 2023 at Chattogram and Rangamati regions.

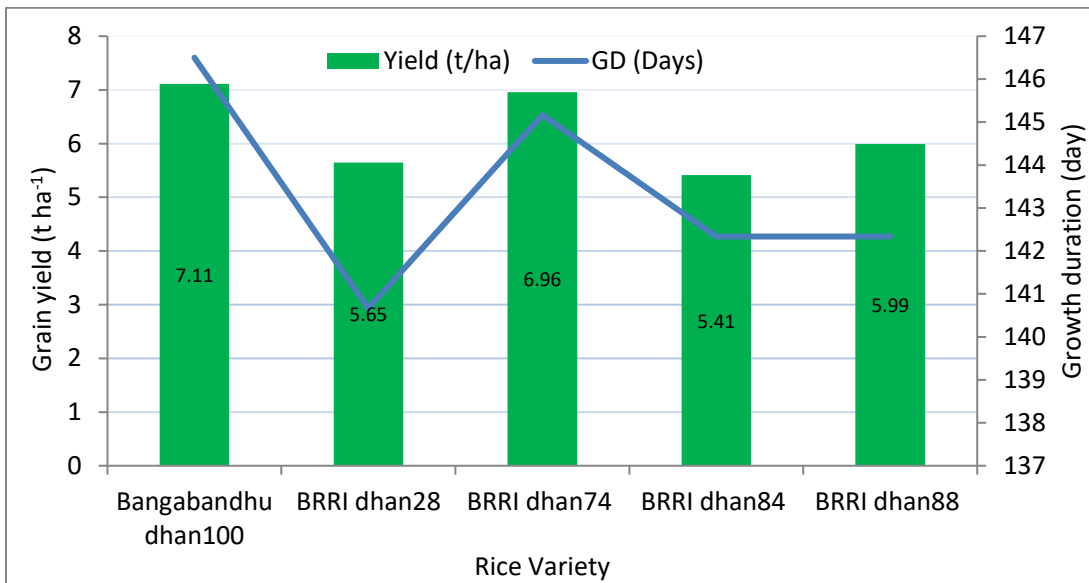


Fig.14. Grain yield and growth duration of modern rice varieties under HHAT Hill Ecosystem in Boro 2023 at Rangamati region.

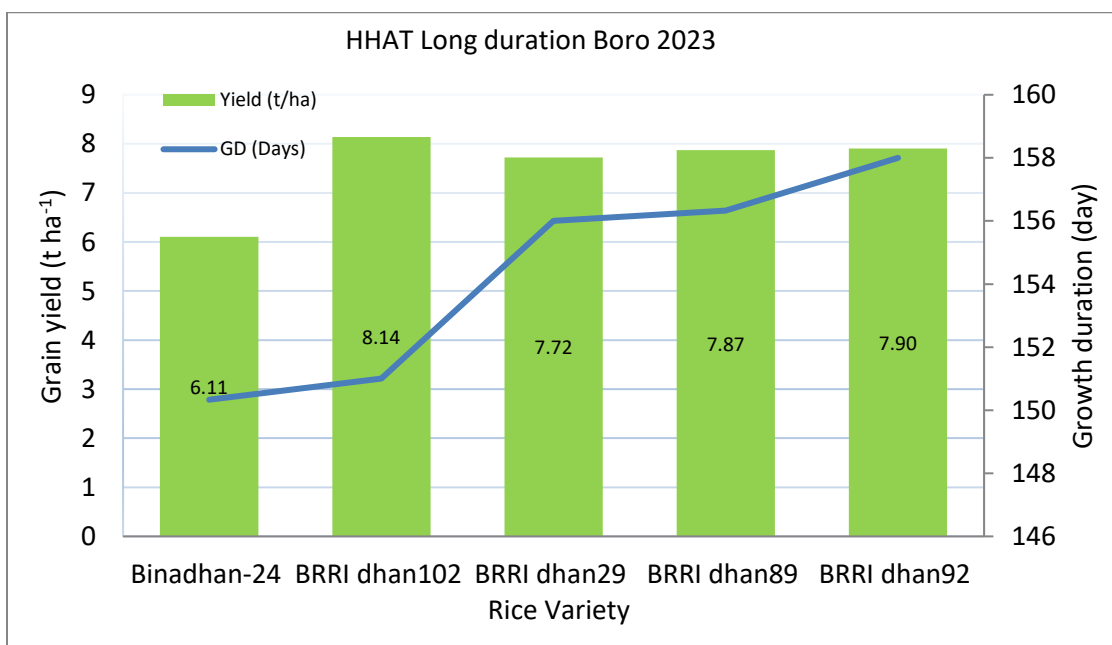


Fig.15. Grain yield and growth duration of modern rice varieties under HHAT Long Duration (LD) in Boro 2023 at Chattogram region.



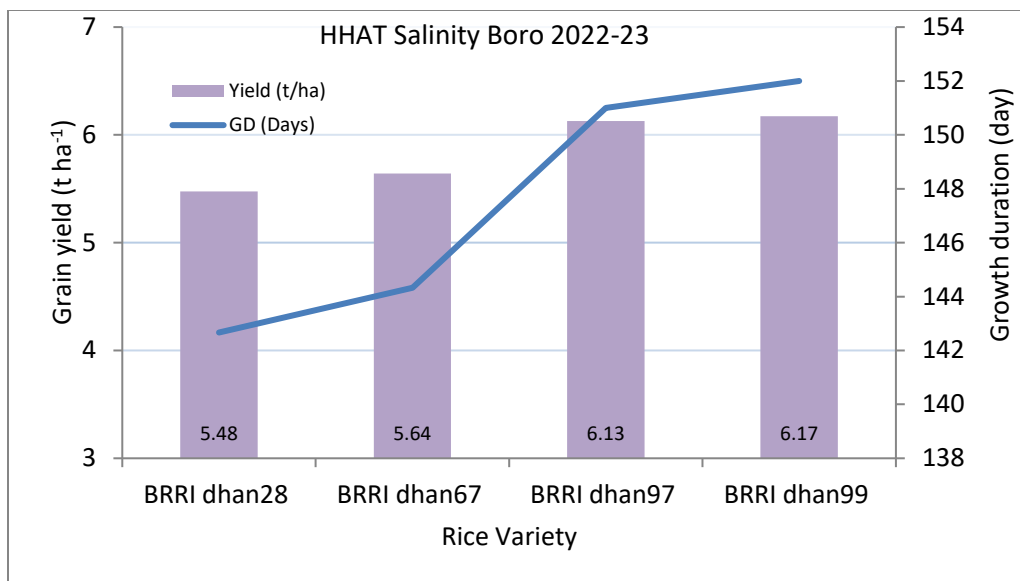


Fig.16. Grain yield and growth duration of modern rice varieties under HHAT Salinity in Boro 2023 at Chattogram region.

### 5.3 Demonstration/Seed Production and Dissemination Program (SPDP)

B Karmakar, MN Ahmed, M Adil, MA Biswas, MAI Khalid and S Tamanna

Objectives: The objectives are to

- 1) Rapid dissemination of newly released rice varieties to the farmers
- 2) Motivate farmers to produce and preserve quality seeds of modern rice varieties
- 3) Increase availability of quality seed at farm level
- 4) Exchange seeds from farmers to farmers
- 5) Collect feedback information from farmers and DAE personnel about BRRi varieties.

#### 5.3.1 Demonstration/SPDP Aus 2022 under Karmasuchi

##### Summary

A total of 162 SPDPs were executed in 162 bigha land under eighteen upazila of eight districts Feni, Noakhali, Laxmipur Chattogram, Cox'sbazar, Bandarban, Rangamati and Khagrachari during Aus 2022 under Sonagazi Karmasuchi in collaboration of Department of Agricultural Extension (DAE). BRRi dhan48, BRRi dhan82, BRRi dhan83, BRRi dhan85 and BRRi dhan98 were used in the SPDPs. Area of each SPDP was 1 bigha. BRRi provided input support like quality seeds, fertilizer and signboard while crop managements were done by the farmers under the supervision of DAE and BRRi. BRRi dhan98 gave the highest mean grain yield ( $6.21\text{ t ha}^{-1}$ ) followed by BRRi dhan48 ( $5.60\text{ t ha}^{-1}$ ) and the lowest grain yield was found in BRRi dhan82 ( $4.21\text{ t ha}^{-1}$ ). Mean growth duration of BRRi dhan48, BRRi dhan82, BRRi dhan83, BRRi dhan85 and BRRi dhan98 was 111, 105, 112, 110 and 113 days, respectively. Total production of all the varieties was 129439 kg from which 13324 kg was retained as seeds (6% of total production) by the farmers for next season cultivation. The retained seeds were used by the demo farmers. Some portion of seed also sold and /or exchanged to neighboring farmers. Thus the promising rice varieties disseminated rapidly to the farmers. About 14159 farmers gained awareness and knowledge about the varieties and 2586 farmers (9% of total farmers) were motivated to cultivate the varieties.

##### Materials and Methods

A total of 162 SPDPs were conducted in 18 upazila of 8 districts (Feni, Noakhali, Laxmipur Chattogram, Cox'sbazar, Bandarban, Rangamati, Khagrachari) under GOB fund in Aus 2022. Area of each SPDP was 1 bigha. BRRi dhan48, BRRi dhan82, BRRi dhan83, BRRi dhan85 and BRRi dhan98 were used in the SPDPs. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRRi provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

## Results and Discussion

Irrespective of varieties and locations, BRRi dhan98 gave the highest mean grain yield (6.21<sup>-1</sup>) followed by BRRi dhan48 (5.60 tha<sup>-1</sup>) and BRRi dhan83 (5.13 tha<sup>-1</sup>). The lowest grain yield was found in BRRi dhan82 (4.21 tha<sup>-1</sup>). Across the locations, BRRi dhan98 (7.22 tha<sup>-1</sup>) in Sonagazi of Feni, BRRi dhan48 (6.09 tha<sup>-1</sup>) in Sonagazi of Feni, BRRi dhan82 (4.30 tha<sup>-1</sup>) in Naikhangchari of Bandarban, BRRi dhan83 (5.84 tha<sup>-1</sup>) in Sonagazi of Feni, BRRi dhan85 (4.52 tha<sup>-1</sup>) at Sonagazi of Feni were produced highest grain yield. The lowest grain yield of BRRi dhan98 (5.53 tha<sup>-1</sup>) at Sadar in Noakhali, BRRi dhan48 (5.13 tha<sup>-1</sup>) at Fulgazi in Feni, BRRi dhan82 (4.12 tha<sup>-1</sup>) at Sonagazi in Feni, BRRi dhan83 (4.53 tha<sup>-1</sup>) at Sandwip in Chattogram and BRRi dhan85 (4.81 tha<sup>-1</sup>) at Sonagazi in Feni were found (Table 51).

Table 51. Results of demonstrations Aus 2022 under Karmasuchi

District	Upazila	GD (day)	GY (t/ha)	Area (bigha)	Total production (kg)	Seed retained (kg)	Seed retained (%)	KAF (no.)	MF (no.)	MF (%)
<b>BRRi dhan48</b>										
Feni	Sonagazi	111	6.09	8	6524	685	10	925	85	9
Noakhali	Subarnachar	110	5.58	3	2344	110	5	366	22	6
Feni	Fulgazi	112	5.13	3	2101	150	7	347	25	7
Mean/ Total		111	5.60	14	10969	945	7	1638	132	7
<b>BRRi dhan82</b>										
Feni	Sonagazi	106	4.12	9	5676	0	0	994	19	2
Bandarban	Naikhangchari	104	4.30	3	1878	10	1	344	3	1
Mean/ Total		105	4.21	12	7554	10	0	1338	22	1
<b>BRRi dhan83</b>										
Feni	Sonagazi	112	5.84	3	2344	250	11	301	32	11
Rangamati	Naniarchar	111	5.06	3	2030	92	5	366	24	7
Chattogram	Sandwip	114	4.53	3	2025	90	4	321	26	8
Cox's Bazar	Chakaria	111	5.18	3	2080	180	9	339	24	7
Khagrachari	Manikchari	112	5.12	3	2054	142	7	391	38	10
Khagrachari	Ramgarh	110	5.03	3	2021	135	7	340	58	17
Mean/ Total		112	5.13	18	12554	889	7	2058	202	10
<b>BRRi dhan85</b>										
Feni	Sonagazi	110	4.52	3	1932	60	3	321	15	5
Mean/ Total		110	4.52	3	1932	60	3	321	15	5
<b>BRRi dhan98</b>										
Feni	Sonagazi	114	7.22	61	51357	6455	13	4016	1248	31
Noakhali	Subarnachar	113	6.50	6	5540	690	12	641	130	20
	Hatia	111	6.26	15	12571	1460	12	1142	261	23
Chattogram	Sitakunda	112	6.29	3	2771	280	10	288	51	18
Laxmipur	Laxmipur Sadar	115	6.51	3	2614	200	8	233	68	29
Laxmipur	Kamalnagar	114	5.91	3	2373	205	9	290	29	10
Bandarban	Bandarban Sadar	112	6.01	3	2412	300	12	247	79	32
Feni	Feni Sadar	111	6.79	3	2728	350	13	276	48	17
Cox's Bazar	Pekuya	113	5.92	3	2379	255	11	244	51	21
Noakhali	Noakhali Sadar	115	5.53	3	2221	285	13	322	45	14
Noakhali	Companiganj	111	5.83	6	4680	560	12	515	94	18
Bandarban	Rowangchari	112	5.92	3	2376	150	6	326	45	14
Khagrachari	Matiranga	114	6.00	3	2408	230	10	264	66	25
Mean/Total		113	6.21	115	96430	11420	11	8804	2215	21
	Grand Mean	110	5.13				6			9
	Grand Total			162	129439	13324		14159	2586	

### 5.3.2 Demonstration in Aus 2022 under Hybrid project

#### Materials and Methods

A total of 114 demonstrations were conducted in 11 Upazila of 7 districts (Feni, Noakhali, Bandarban, Chattogram, Cox'sbazar, Khagrachari and Rangamati) under Hybrid project during Aus 2022. BRRi Hybrid dhan7 were used in the demonstrations. Area of each demonstration was 3 bigha and total area of demonstrations was 114 bigha. The seed production activities executed by the collaborating farmers which closely monitored and supervised by BRRi scientists and DAE personnel. BRRi provided inputs like quality seeds, fertilizer and signboard. Data on date of seeding, transplanting and maturity; lodging tolerance, yield, pest incidence, and feedback of the farmers were collected. BRRi provided quality seeds, fertilizer and signboard while rests of the managements were done by the farmers under the supervision of SAAO.

#### Results and discussion

Irrespective of locations, BRRi Hybrid dhan7 gave the highest grain yield (6.88  $\text{tha}^{-1}$ ) in Khagrachari district followed 2<sup>nd</sup> highest yield (6.78  $\text{tha}^{-1}$ ) in Feni but we found lowest yield in Rangamati (6.01  $\text{tha}^{-1}$ ). In according to Upazila Matiranga, Fulgazi, Sonagazi and Bandarban Sadar gives highest yield like 7.23  $\text{tha}^{-1}$ , 7.05  $\text{tha}^{-1}$ , 6.73  $\text{tha}^{-1}$  and 6.56  $\text{tha}^{-1}$  respectively. Total production of BRRi Hybrid dhan7 was 97,530 kg. About 4041 farmers gained awareness and knowledge about the varieties and 598 farmers (15% of total farmers) were motivated to cultivate the varieties. Mean growth duration BRRi dhan7 was 111 days. BRRi dhan7 gave good yield at Khagrachari and Feni region while it was slightly affected by water scarcity, sheath blight and bacterial blight disease at Cox's Bazar, Chattogram and Feni. BRRi Hybrid dhan7 produced lower yield in Rangamati. BRRi Hybrid dhan7 will be suitable in high and medium high land where water will not be logged. It is required further investigation by testing at more locations. Performance of BRRi dhan7 was not at par level as it was highly infected by disease (sheath blight, bacterial blight) and insect (stem borer, leaf folder). Germination failure was seen in some areas of this variety. Flowering and maturity of BRRi dhan7 were uneven in some locations that indicated that heterogeneity is still existed. Consequently, most of the farmers were disappointed due to germination failure, disease problem but in some of the area farmers were happy with this variety due to higher yield (Table 52).

Table 52: Results of demonstrations (BRRi Hybrid dhan7) in Aus 2022 under Hybrid rice project

Location		Area (bigha)	GD (day)	GY (t/ha)	Total Prod. (ton)	KAF (no.)	Motivated farmer		
District	Upazila						no.	%	
Khagrachari	Ramgarh	3	108	6.53	2.62	110	15	14	
	Matiranga	3	111	7.23	2.9	126	12	10	
Grand mean		3	110	6.88	2.72	118	13.5	12	
Cox's bazar	Chakaria	1	113	6.73	0.9	100	16	16	
		1	110	6.97	0.93	90	10	11	
		1	114	5.39	0.72	115	12	10	
Grand mean		1	112	6.37	0.85	102	13	13	
Chattogram	Sandwip	3	109	6.3	2.53	110	9	8	
Grand mean		3	109	6.3	2.53	110	9	8	
Noakhali	Companiganj	3	110	6.36	2.55	122	21	17	
		Subarnachar	6	112	5.78	4.71	120	22	18
			3	110	6.2	2.49	115	25	22
			6	110	6.55	5.26	110	20	18
			6	112	6.28	5.04	115	18	16
			3	112	6.17	2.48	120	19	16
			3	110	7.15	2.87	95	15	16
	Hatiya	3	114	6.56	2.63	120	18	15	
		3	115	6.53	2.62	123	23	21	
		3	108	7.63	3.07	120	24	20	
		3	106	6.16	2.47	115	22	19	
		3	116	5.58	2.24	123	23	19	
		3	114	6.21	2.49	100	15	15	

		3	110	6.00	2.41	115	16	14
		6	112	6.10	4.9	110	21	19
		3	114	5.76	2.31	120	22	18
		3	118	6.59	2.65	110	11	10
		6	106	5.98	4.8	98	12	12
		3	114	5.74	2.3	115	16	14
		3	106	6.35	2.55	110	18	16
Mean		4	111	6.29	3.14	113	19	17
Feni	Fulgazi	3	109	7.05	2.83	115	9	8
	Sonagazi	3	107	7.39	2.97	115	15	13
		3	113	7.22	2.9	117	18	15
		3	110	6.80	2.73	110	12	11
		3	113	6.13	2.45	90	11	12
		3	112	6.38	2.56	95	13	14
		3	114	6.49	2.61	100	12	12
Mean		3	111	6.78	2.72	106	13	12
Bandarban	Sadar	1	112	6.27	0.84	95	15	16
		1	114	6.58	0.88	90	12	13
		1	110	6.82	0.91	80	10	13
Grand mean		1	112	6.56	0.88	88	12	14
Rangamati		3	107	6.01	2.41	120	16	13
Mean		3	107	6.01	2.41	120	16	13
Grand total		114	111	6.43	9.76	4041	598	15

### 5.3.2 SPDP Aman 2022 under GOB

#### Summary

A total of 360 SPDPs were executed in 360 bigha land under twenty Upazila of eight districts Feni, Noakhali, Laxmipur Chattogram, Cox'sbazar, Bandarban, Rangamati and Khagrachari during Aman 2022 in collaboration of Department of Agricultural Extension (DAE). BRRi dhan34, BRRi dhan49, BRRi dhan52, BRRi dhan70, BRRi dhan71, BRRi dhan75, BRRi dhan78 BRRi dhan79, BRRi dhan80, BRRi dhan87, BRRi dhan90, BRRi dhan91, BRRi dhan93, BRRi dhan94 and BRRi dhan95 were used in the SPDPs. Area of each SPDP was 1 bigha. BRRi provided input support like quality seeds, fertilizer and signboard while crop managements were done by the farmers under the supervision of DAE. BRRi. BRRi dhan94 gave the highest mean grain yield ( $5.37^{-1}$ ) followed by BRRi dhan87 ( $5.28 \text{ tha}^{-1}$ ) and the lowest grain yield was found in BRRi dhan34 ( $3.38 \text{ tha}^{-1}$ ). Mean growth duration of BRRi dhan34, BRRi dhan49, BRRi dhan52, BRRi dhan70, BRRi dhan71, BRRi dhan75, BRRi dhan78, BRRi dhan79, BRRi dhan80, BRRi dhan87, BRRi dhan90, BRRi dhan91, BRRi dhan93, BRRi dhan94 and BRRi dhan95 was 134, 134, 142, 130, 117, 114, 135, 139, 131, 128, 124, 153, 135, 134 and 129 days, respectively. Total production of all the varieties was **241526** kg from which 15110 kg was retained as seeds (6% of total production) by the farmers for next season cultivation. The retained seeds were used by the demo farmers. Some portion of seed also sold and /or exchanged to neighboring farmers. Thus, the promising rice varieties disseminated rapidly to the farmers. About 21526 farmers gained awareness and knowledge about the varieties and **3004** farmers (17% of total farmers) were motivated to cultivate the varieties.

#### Materials and Methods

A total of 360 SPDPs were conducted in 20 upazila of 8 districts (Feni, Noakhali, Laxmipur Chattogram, Cox'sbazar, Bandarban, Rangamati, Khagrachari) under GOB fund in Aman 2022. Area of each SPDP was 1 bigha. BRRi dhan34, BRRi dhan49, BRRi dhan52, BRRi dhan70, BRRi dhan71, BRRi dhan75, BRRi dhan78 BRRi dhan79, BRRi dhan80, BRRi dhan87, BRRi dhan90, BRRi dhan91, BRRi dhan93, BRRi dhan94 and BRRi dhan95 were used in the SPDPs. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRRi provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

## Results and Discussions

Across the locations, BRRi dhan87 (6.26 t ha<sup>-1</sup>) at Ramgarh, Khagrachari produced highest grain yield followed by BRRi dhan94 (5.81 t ha<sup>-1</sup>) at Fatikchhari, Chattogram and BRRi dhan87 (5.75 t ha<sup>-1</sup>) at Manikchhari, Khagrachari while the lowest grain yield obtained in BRRi dhan34 (3.28 t ha<sup>-1</sup>) at Parshuram, Feni followed by BRRi dhan91 (3.43 t ha<sup>-1</sup>) and BRRi dhan34 (3.47 t ha<sup>-1</sup>) at Fulgazi of Feni. Irrespective of locations and varieties, BRRi dhan94 produced the highest mean grain yield (5.37<sup>-1</sup>) followed by BRRi dhan87 (5.28 tha<sup>-1</sup>) and BRRi dhan94 (5.26 tha<sup>-1</sup>) ((Table 53). The lowest mean grain yield was found in BRRi dhan34 (3.38 tha<sup>-1</sup>) followed by BRRi dhan91 (3.43 t ha<sup>-1</sup>). Mean growth duration of BRRi dhan34, BRRi dhan49, BRRi dhan52, BRRi dhan70, BRRi dhan71, BRRi dhan75, BRRi dhan78, BRRi dhan79, BRRi dhan80, BRRi dhan87, BRRi dhan90, BRRi dhan91, BRRi dhan93, BRRi dhan94 and BRRi dhan95 was 134, 134, 142, 130, 117, 114, 135, 139, 131, 128, 124, 153, 135, 134 and 129 days, respectively (Table 53). Farmers preferences based on overall performances and product profile of the tested varieties were BRRi dhan94> BRRi dhan87> BRRi dhan95> BRRi dhan75>BRRi dhan49> BRRi dhan80> BRRi dhan90>BRRi dhan34>BRRi dhan93> BRRi dhan71> BRRi dhan79> > BRRi dhan90> BRRi dhan70> BRRi dhan78> BRRi dhan91.

Table 53. Results of demonstrations Aman 2022 under GOB

District	Upazila	GD (day)	GY (t/ha)	Area (bigha)	Total production (kg)	Seed retained (kg)	Seed retained (%)	KAF (no.)	MF (no.)	MF (%)
BRRi dhan34										
Feni	Fulgazi	136	3.28	3	2189	145	7	320	39	13
Feni	Parshuram	133	3.47	5	1392	105	8	185	19	10
Mean/ Total		134	3.37	8	3580	250	7	505	58	11
BRRi dhan49										
Feni	Sonagazi	135	5.27	28	19719	1045	5	1740	470	28
Feni	Parshuram	134	4.92	15	9864	405	4	975	264	28
Chattogram	Rangunia	133	5.32	9	6412	490	8	475	68	15
Mean/ Total		134	5.172	52	35995	1940	6	3190	802	24
BRRi dhan52										
Feni	Sonagazi	141	5.02	23	15419	705	5	1470	152	10
Noakhali	Subarnachar	141	5.22	6	4183	160	4	335	47	14
Laxmipur	Ramganj	145	5.40	3	723	120	6	45	30	67
Mean/ Total		142	5.21	32	20325	985	5	1850	229	30
BRRi dhan70										
Khagrachari	Manikchhari	129	4.38	3	1758	325	2	133	25	19
Bandarban	Lama	130	4.61	3	1852	230	12	115	22	19
Mean/ Total		130	4.49	6	3610	555	7	248	47	19
BRRi dhan71										
Feni	Sonagazi	115	4.77	3	1911	100	5	185	18	10
Khagrachari	Ramgarh	119	5.49	3	2204	300	2	140	28	20
Mean/ Total		117	5.13	6	4115	400	4	325	46	15
BRRi dhan75										
Feni	Chhagalnaiya	113	4.78	3	1915	75	4	200	16	8
Khagrachari	Ramgarh	114	5.51	3	2214	245	1	122	26	22
Mean/ Total		114	5.15	6	4129	320	3	322	42	15
BRRi dhan78										
Feni	Sonagazi	135	5.75	9	6916	305	4	570	47	8
Noakhali	Subarnachar	135	5.18	13	9004	405	5	785	73	9
Noakhali	Hatia	133	4.53	3	1817	135	7	225	16	7
Noakhali	Companiganj	136	6.15	6	4926	135	3	345	30	9
Chattogram	Sandwip	134	4.26	3	1709	150	9	175	23	13
Mean/ Total		135	5.17	34	24372	1130	6	2100	189	9
BRRi dhan79										
Feni	Sonagazi	141	4.99	24	15998	810	5	1370	136	10
Feni	Parshuram	140	4.75	7	4438	230	5	370	41	11

Noakhali	Subarnachar	142	4.81	17	10932	505	5	1025	97	10
Noakhali	Hatia	143	4.52	3	1811	120	7	240	16	7
Noakhali	Companiganj	142	4.78	9	5748	285	5	555	51	10
Chattogram	Satkania	135	5.43	6	4362	340	8	285	42	15
Chattogram	Rangunia	133	5.45	12	8754	800	9	610	95	16
Laxmipur	Ramgati	134	3.53	3	1420	0	0	30	7	23
Mean/ Total		139	4.78	81	53462	3090	5	4485	485	13
BRR I dhan80										
Feni	Sonagazi	134	5.55	3	2224	130	6	200	15	8
Khagrachari	Manikchari	130	4.22	3	1694	280	2	135	29	22
Cox's Bazar	Chakaria	129	4.78	3	1919	180	10	390	82	21
Mean/ Total		131	4.85	9	5837	590	6	725	126	17
BRR I dhan87										
Feni	Parshuram	125	4.68	2	1249	60	5	135	9	7
Noakhali	Senbug	126	4.57	3	1833	105	6	180	14	8
Khagrachari	Manikchari	127	5.75	6	4617	695	2	275	58	21
Khagrachari	Ramgarh	130	5.94	3	2384	400	2	145	30	21
Rangamati	Naniarchar	130	4.91	3	1972	210	7	42	17	42
Bandarban	Lama	128	5.90	3	2369	280	12	125	21	17
Mean/ Total		128	5.29	20	14424	1750	6	902	149	19
BRR I dhan90										
Feni	Sonagazi	125	4.22	3	1692	85	5	205	15	8
Feni	Chhagalnaiya	127	4.55	3	1822	105	6	195	19	10
Cox's Bazar	Chakaria	120	4.91	3	1975	195	10	410	67	16
Mean/ Total		124	4.56	9	5489	385	7	810	101	11
BRR I dhan91										
Chattogram	Sandwip	153	3.43	3	1379	110	8	160	24	15
Mean/ Total		153	3.43	3	1379	110	8	160	24	15
BRR I dhan93										
Noakhali	Subarnachar	135	5.21	28	19473	895	5	1810	177	10
Cox's Bazar	Chakaria	134	5.47	3	2196	175	8	430	71	17
Mean/ Total		135	5.34	31	21669	1070	6	2240	248	13
BRR I dhan94										
Feni	Sonagazi	134	5.22	12	8364	545	7	680	71	11
Feni	Chhagalnaiya	136	5.27	6	4228	175	4	335	35	11
Feni	Parshuram	136	5.43	4	2900	130	5	205	27	14
Noakhali	Subarnachar	135	4.89	29	18955	820	4	1780	189	11
Chattogram	Mirsarai	134	5.58	3	2240	190	8	175	26	15
Chattogram	Fatikchari	133	5.81	3	2332	235	10	154	26	17
Mean/ Total		134	5.37	57	39020	2095	6	3329	374	13
BRR I dhan95										
Feni	Sonagazi	135	4.92	3	1970	110	6	195	61	31
Chattogram	Satkania	122	5.35	3	2149	330	15	140	23	16
Mean/ Total		128.5	5.14	6	4119	440	10	335	84	24
Grand Mean		132	4.83				6			17
Grand Total				360	241526	15110		21526	3004	

### 5.3.3 SPDP in Aman 2022 under Karmasuchi

#### Materials and Methods

A total of 90 SPDPs were conducted in 13 upazila of 8 districts (Feni, Noakhali, Laxmipur, Chattogram, Cox'sbazar, Khagrachari, Rangamati and Bandarban) under Sonagazi development Karmasuchi during Aman 2022. Eight modern rice varieties BRR I dhan71, BRR I dhan75, BRR I dhan78, BRR I dhan79, BRR I dhan80, and BRR I dhan87, BRR I dhan93 and BRR I dhan94 were demonstrated in the SPDPs. Area of each SPDP was 1 bigha and total area of SPDP was 90 bigha. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRR I provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

## Results and Discussion

Irrespective of varieties and locations, BRRi dhan94 gave the highest mean grain yield (6.11 t ha<sup>-1</sup>) followed by BRRi dhan87 (6.05 t ha<sup>-1</sup>) and the lowest grain yield was found in BRRi dhan78 (4.37 t ha<sup>-1</sup>) (Table 54). Across the locations, BRRi dhan94 produced the highest grain yield (6.84 t ha<sup>-1</sup>) at Fatikchari, Chattogram followed by BRRi dhan87 (6.62 t ha<sup>-1</sup>) at Rangamati Sadar, Rangamati. The lowest yield (4.23 t ha<sup>-1</sup>) obtained in BRRi dhan78 at Kamalnagar, Laxmipur. Total production of all the varieties was 73185 kg from which 6657 kg was retained as seeds (10% of total production) by the farmers for next season cultivation. About, 4475 farmers gained awareness and knowledge about the varieties and 780 farmers (17% of total farmers) were motivated to cultivate the varieties. Mean growth duration of BRRi dhan71, BRRi dhan75, BRRi dhan78, BRRi dhan79, BRRi dhan80, and BRRi dhan87, BRRi dhan93 and BRRi dhan94 were 114, 111, 136, 135, 134, 127, 135, and 135 days, respectively (Table 54). Farmers preferences based on overall performances and product profile of the tested varieties were BRRi dhan94> BRRi dhan87> BRRi dhan93> BRRi dhan79> BRRi dhan71> BRRi dhan75> BRRi dhan80> BRRi dhan78.

Table 54. Results of Demonstration of modern rice varieties in Aman 2022 funded by Sonagazi development Karmasuchi.

District	Upazila	GD (day)	GY (t/ha)	Area (bigha)	Total production (kg)	Seed retained (kg)	Seed retained (%)	KAF (no.)	MF (no.)	MF (%)
<b>BRRi dhan71</b>										
Khagrachari	Guimara	113	5.47	3	2197	220	10	120	25	21
Rangamati	Sadar	114	5.84	3	2345	300	13	150	33	22
Mean/Total		114	5.66	6	4542	520	11	270	58	21
<b>BRRi dhan75</b>										
Feni	Sonagazi	111	5.80	6	4659	285	6	365	99	27
Chattogram	Mirsarai	112	5.60	3	2249	196	9	170	23	14
Khagrachari	Matiranga	110	5.14	3	2064	300	15	110	22	20
Mean/Total		111	5.51	12	8972	781	12	645	144	17
<b>BRRi dhan78</b>										
Laxmipur	Kamalagar	137	4.23	3	1699	240	14	82	17	21
Cox'sbazar	Kutubdia	135	4.50	3	1807	105	6	410	9	2
Mean/Total		136	4.37	6	3506	345	10	492	26	11
<b>BRRi dhan79</b>										
Laxmipur	Kamalagar	134	4.90	6	3936	390	10	81	21	26
Bandarban	Sadar	135	5.35	3	2149	156	7	108	19	18
Mean/Total		135	5.13	9	6084	546	9	189	40	22
<b>BRRi dhan80</b>										
Khagrachari	Guimara	133	4.72	3	1896	300	16	110	10	9
Bandarban	Alikadam	134	4.90	3	1968	160	8	115	16	14
Mean/Total		134	4.81	6	3863	460	12	225	26	12
<b>BRRi dhan87</b>										
Feni	Sonagazi	128	5.77	6	4635	180	4	350	53	15
Chattogram	Mirsarai	126	6.24	9	7518	705	9	466	73	16
Khagrachari	Matiranga	127	5.49	6	4410	660	15	299	57	19
Rangamati	Rangamati Sadar	129	6.62	3	2659	270	10	125	29	23
Bandarban	Sadar	125	6.15	3	2470	230	9	115	20	17
Mean/Total		127	6.05	27	21691	2045	10	1355	232	18
<b>BRRi dhan93</b>										
Chattogram	Mirsarai	136	6.26	6	5028	345	7	309	47	15
Laxmipur	Sadar	134	5.90	3	2369	300	13	83	11	13
Bandarban	Alikadam	135	5.51	3	2213	180	8	108	20	19
Mean/Total		135	5.89	12	9610	825	9	500	78	16
<b>BRRi dhan94</b>										
Feni	Sonagazi	134	5.45	3	2189	200	9	120	14	12
Noakhali	Sadar	136	6.28	3	2522	290	11	195	37	19
Chattogram	Fatikchari	133	6.84	3	2747	360	13	154	54	35
Cox'sbazar	Pekuya	136	5.87	3	7458	335	4	330	71	22

Mean/Total		135	6.11	12	14916	1185	10	799	176	22
Grand Mean		128	5.44				10			17
Grand Total				90	73185	6657		4475	780	

### 5.3.4 SPDP Aman 2022 under TRB

#### Materials and Methods

A total of 60 SPDPs were conducted in 10 upazila of 8 districts (Feni, Noakhali, Laxmipur, Chattogram, Cox'sbazar, Khagrachari, Rangamati and Bandarban) under TRB during Aman 2022. Five modern rice varieties BRRi dhan78, BRRi dhan79, BRRi dhan87, BRRi dhan93 and BRRi dhan94 were demonstrated in the SPDPs. Area of each SPDP was 1 bigha and total area of SPDP was 60 bigha. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRRi provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

#### Results and Discussion

Irrespective of varieties and locations, BRRi dhan87 gave the highest mean grain yield (6.29 t ha<sup>-1</sup>) followed by BRRi dhan94 (5.57 t ha<sup>-1</sup>) and the lowest grain yield was found in BRRi dhan78 (4.94 t ha<sup>-1</sup>) (Table 55). Across the locations, BRRi dhan87 produced the highest grain yield (6.39 t ha<sup>-1</sup>) at Bandarban Sadar, Bandarban followed by BRRi dhan78 (6.21 t ha<sup>-1</sup>) at Kabirhat, Noakhali. The lowest yield (4.18 t ha<sup>-1</sup>) obtained in BRRi dhan78 at Raipur, Laxmipur. Total production of all the varieties was 43178 kg from which 2875 kg was retained as seeds (6% of total production) by the farmers for next season cultivation. About, 3325 farmers gained awareness and knowledge about the varieties and 423 farmers (12% of total farmers) were motivated to cultivate the varieties. Mean growth duration of BRRi dhan78, BRRi dhan79, BRRi dhan87, BRRi dhan93 and BRRi dhan94 were 138, 136, 125, 134 and 135 days, respectively (Table 55). Farmers preferences based on overall performances and product profile of the tested varieties were BRRi dhan94> BRRi dhan87> BRRi dhan93> BRRi dhan79> BRRi dhan78.

Table 55: Results of Demonstration of modern rice varieties in Aman 2022 funded by TRB.

District	Upazila	GD (day)	GY (t/ha)	Area (bigha)	Total prod. (kg)	Seed retained (kg)	Seed retained (%)	KAF (no.)	MF (no.)	MF (%)
<b>BRRi dhan78</b>										
Noakhali	Kabirhat	136	6.21	3	2489	90	4	180	36	20
Laxmipur	Raipur	138	4.18	3	1676	60	4	180	11	6
Chattogram	Chandanaish	140	4.44	3	1783	135	8	145	26	18
Mean/ Total		138	4.94	9	5948	285	5	505	73	15
<b>BRRi dhan79</b>										
Feni	Dagonbhuiyan	141	4.46	9	5539	295	5	530	60	11
Noakhali	Kabirhat	139	6.09	3	2444	75	3	150	15	10
Cox'sbazar	Maheshkhali	133	5.24	3	2102	205	10	180	19	11
Chattogram	Patiya	134	5.16	3	2072	175	8	140	25	18
Chattogram	Chandanaish	134	5.39	6	4329	350	8	325	54	17
Mean/ Total		136	5.27	24	16486	1100	6	1325	173	11
<b>BRRi dhan87</b>										
Khagrachari	Laxmichari	126	6.03	3	2417	90	4	150	13	9
Chattogram	Lohagara	125	6.35	3	2549	210	8	160	27	17
Chattogram	Chandanaish	125	6.38	3	2562	220	9	175	25	14
Bandarban	Bandarban Sadar	125	6.39	3	2566	240	9	165	24	15
Mean/ Total		125	6.29	12	10094	760	7	650	89	13
<b>BRRi dhan93</b>										
Feni	Dagonbhuiyan	133	4.91	3	1969	75	4	190	18	9
Laxmipur	Raipur	132	4.64	3	1859	90	5	150	21	14
Rangamati	Kaukhali	136	5.72	3	2297	330	14	180	6	3
Chattogram	Patiya	136	5.57	3	2239	160	7	150	25	17
Mean/ Total		134	5.21	12	8364	655	8	670	70	9
<b>BRRi dhan94</b>										



Feni	Dagonbhuiyan	135	5.70	3	2286	75	3	175	18	10
Mean/ Total		135	5.70	3	2286	75	3	175	18	10
Grand Mean		134	5.48				6			12
Grand Total				60	43178	2875		3325	423	

### 5.3.5 Demonstration Aman 2022 under Hybrid rice project

#### Summary

A total of 60 demonstrations of modern rice varieties were conducted during June to December 2022 under hybrid rice project (Table 1). BRRI Hybrid dhan6 rice variety demonstrated at farmers' field in the demonstrations. Area of each Demonstration was 1 to 3 bigha and total area of demonstrations was 8.03 ha. Total production was 37.99 ton. A total of 3306 farmers acquired knowledge about the varieties from which farmers are motivated to cultivate the modern varieties.

#### Materials and Methods

A total of 60 demonstrations were conducted in 14 Upazila of 8 districts (Feni, Noakhali, Laxmipur, Chattogram, Cox'sbazar, Khagrachari, Bandarban and Rangamati) under Hybrid project during Aman 2022. BRRI Hybrid dhan6 were used in the demonstrations. Area of each demonstration was 3 bigha and total area of demonstrations was 60 bigha. The seed production activities executed by the collaborating farmers which closely monitored and supervised by BRRI scientists and DAE personnel. BRRI provided inputs like quality seeds, fertilizer and signboard. Data on date of seeding, transplanting and maturity; lodging tolerance, yield, pest incidence, and feedback of the farmers were collected. BRRI provided quality seeds, fertilizer and signboard while rests of the managements were done by the farmers under the supervision of SAAO.

#### Results and discussion

Irrespective of locations, BRRI Hybrid dhan6 gave the highest grain yield ( $6.95 \text{ t ha}^{-1}$ ) in Noakhali, second and third highest were in Chattogram ( $6.34 \text{ t ha}^{-1}$ ) and Feni ( $6.24 \text{ t ha}^{-1}$ ) district but we found lowest yield in Laxmipur district ( $3.85 \text{ t ha}^{-1}$ ). Total production of BRRI Hybrid dhan6 was 37,992kg. About 3306 farmers gained awareness and knowledge about the varieties and 522 farmers (17% of total farmers) were motivated to cultivate the varieties. Mean growth duration BRRI dhan6 was 116 days. BRRI dhan6 gave good yield at Noakhali, Chattogram and Feni region while it was slightly affected by salinity, sheath blight and bacterial blight disease at Cox's Bazar, Laxmipur and Feni. BRRI Hybrid dhan6 produced lower yield in Laxmipur. BRRI Hybrid dhan6 will be suitable in high and medium high land where water will not be logged. It is required further investigation by testing at more locations. Performance of BRRI dhan6 was not at par level as it was highly infested by disease (sheath blight, bacterial blight) and insect (stem borer, leaf folder). Germination failure was one of the major problems in this variety and we found germination problem in Patiya, Mirsarai Upazila under Chattogram district and also in Kamalnagar, Laxmipur. Flowering and maturity of BRRI dhan6 were uneven in some locations that indicated that heterogeneity is still existed. Consequently, most of the farmers were disappointed with this variety (Table 56).

Table 56. Results of demonstrations (BRRI Hybrid dhan6) Aman 2022 under Hybrid rice project

Location		Area Bigha	GD	GY (t/ha)	Total Prod. (Kg)	KAF (no.)	Motivated farmer	
District	Upazila						no.	%
Khagrachari	Ramgarh	3	119	5.50	2210	130	24	19
	Matiranga	3	117	5.81	2335	144	24	17
Rangamati	Naniarchar	3	115	5.31	2133	105	21	20
Chattogram	Patiya	3	Germination failed					
	Mirsarai	3	Germination failed					
	Sandwip	3	122	6.34	2545	160	26	16
Cox's Bazar	Chakaria	6	117	5.53	4441	264	46	18
Bandarban	Sadar	3	117	5.22	2098	122	24	20
Laxmipur	Kamalnagar	6	Germination failed					
	Sadar	6	115	3.85	3096	135	33	25
Noakhali	Subarnachar	3	109	6.53	2623	330	45	14

	Kabirhat	6	112	7.10	5706	585	75	13
	Companiganj	6	114	7.22	5796	702	108	15
Feni	Sonagazi	6	113	6.24	5009	629	96	15
Grand Total		60	115	5.88	37992	3306	522	17

### 5.3.6 SPDP Boro 2023 under GOB

#### Summary

A total of 330 SPDPs were executed in 330 bigha land under sixteen Upazila of eight districts Feni, Noakhali, Laxmipur Chattogram, Cox'sbazar, Bandarban, Rangamati and Khagrachari during Boro 2022-23 in collaboration of Department of Agricultural Extension (DAE). Eleven new Boro varieties like BRRi dhan67, BRRi dhan74, BRRi dhan84, BRRi dhan88, BRRi dhan89, BRRi dhan92, BRRi dhan97, BRRi dhan99, Bangabandhu dhan100 (BRRi dhan100), BRRi dhan101 and BRRi dhan102 were used in the SPDPs. Area of each SPDP was 1 bigha. BRRi provided input support like quality seeds, fertilizer and signboard while crop managements were done by the farmers under the supervision of DAE. BRRi dhan92 gave the highest mean grain yield (7.75  $\text{tha}^{-1}$ ) followed by BRRi dhan102 (7.65  $\text{tha}^{-1}$ ) and the lowest mean grain yield was found in BRRi dhan67 (5.87  $\text{tha}^{-1}$ ). BRRi dhan67 and BRRi dhan97 showed moderately to highly susceptible to neck blast disease. Mean growth duration of BRRi dhan67, BRRi dhan74, BRRi dhan84, BRRi dhan88, BRRi dhan89, BRRi dhan92, BRRi dhan97, BRRi dhan99, Bangabandhu dhan100 (BRRi dhan100), BRRi dhan101 and BRRi dhan102 was 143,145,137,141,155,159,150,154,146,143 and 148 days, respectively. Total production of all the varieties was 310268 kg from which 21961 kg was retained as seeds (6% of total production) by the farmers for next season cultivation. The retained seeds were used by the demo farmers. Some portion of seed also sold and /or exchanged to neighboring farmers. Thus, the promising rice varieties disseminated rapidly to the farmers. About 26564 farmers gained awareness and knowledge about the varieties and 3652 farmers (14% of total farmers) were motivated to cultivate the varieties.

#### Materials and Methods

A total of 330 SPDPs were conducted in 20 upazila of 8 districts (Feni, Noakhali, Laxmipur Chattogram, Cox'sbazar, Bandarban, Rangamati, Khagrachari) under GOB fund in Boro 2022-23. Area of each SPDP was 1 bigha. Eleven new Boro varieties like BRRi dhan97, BRRi dhan97, BRRi dhan84, BRRi dhan88, BRRi dhan89, BRRi dhan92, BRRi dhan97, BRRi dhan99, Bangabandhu dhan100 (BRRi dhan100), BRRi dhan101 and BRRi dhan102 were used in the SPDPs. were used in the SPDPs. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRRi provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

#### Results and Discussion

Across the locations, BRRi dhan102 (8.11  $\text{t ha}^{-1}$ ) at Bandarban, Sadar produced highest grain yield followed by BRRi dhan92 (8.05  $\text{t ha}^{-1}$ ) at Chattogram, Mirsarai and BRRi dhan102 (8.01  $\text{t ha}^{-1}$ ) at Fatikchhari, Chattogram, while the lowest grain yield obtained in BRRi dhan97 (5.32  $\text{t ha}^{-1}$ ) at Swandip, Chattogram followed by (5.42  $\text{t ha}^{-1}$ ) at Maheskhal, Cox's Bazar and BRRi dhan99 (5.46  $\text{t ha}^{-1}$ ) at Mirsarai of Chattogram. Irrespective of locations and varieties, BRRi dhan92 gave the highest mean grain yield (7.75  $\text{tha}^{-1}$ ) followed by BRRi dhan102 (7.65  $\text{tha}^{-1}$ ) and the lowest mean grain yield was found in BRRi dhan67 (5.87  $\text{tha}^{-1}$ ). BRRi dhan67 and BRRi dhan97 showed moderately to highly susceptible to neck blast disease. Mean growth duration of BRRi dhan67, BRRi dhan74, BRRi dhan84, BRRi dhan88, BRRi dhan89, BRRi dhan92, BRRi dhan97, BRRi dhan99, Bangabandhu dhan100 (BRRi dhan100), BRRi dhan101 and BRRi dhan102 was 143,145,137,141,155,159,150,154,146,143 and 148 days, respectively (Table 57). Farmers preferences based on overall performances and product profile of the tested varieties were BRRi dhan92>BRRi dhan102> BRRi dhan87>BRRi dhan100>BRRi dhan101>BRRi dhan99>BRRi dhan88>BRRi dhan84>BRRi dhan97>BRRi dhan74> BRRi dhan67.

Table 57. Results of demonstrations Boro 2022-23 under GOB

District	Upazila	GD (day)	GY (t/ha)	Area (bigha)	Total prod. (kg)	Seed retained		KAF (no.)	Motivated Farmer	
						(kg)	(%)		(no.)	(%)
<b>BRRRI dhan67</b>										
Feni	Sonagazi	144	5.7	6	4724	216	4	285	29	11
Noakhali	Subarnachar	145	6.02	3	2356	50	2	128	12	9
Chattogram	Mirsarai	143	5.89	3	2357	145	4	149	19	13
Mean/ Total		143	5.87	12	9437	411	3	562	60	11
<b>BRRRI dhan74</b>										
Feni	Sonagazi	146	6.84	28	25525	2050	8	2459	358	15
Chattogram	Mirsarai	145	7.23	3	2891	325	11	225	32	14
Khagrachari	Ramgarh	139	6.24	6	2496	140	6	135	15	11
Mean/ Total		145	6.77	37	30912	2515	8	2819	405	13
<b>BRRRI dhan84</b>										
Khagrachari	Ramgarh	137	5.94	3	2375	150	6	150	31	21
Mean/ Total		137	5.94	3	2375	150	6	150	31	21
<b>BRRRI dhan88</b>										
Feni	Sonagazi	141	6.76	3	2703	145	5	183	17	9
Rangamati	Sadar	140	6.97	3	2790	75	3	148	13	9
Mean/ Total		141	6.87	6	5493	220	4	331	30	9
<b>BRRRI dhan89</b>										
Feni	Sonagazi	153	7.59	18	18208	1760	9	1443	192	13
	Dagonbhuiyan	154	7.9	6	6323	510	8	492	41	9
Noakhali	Subarnachar	155	7.84	6	6272	614	10	450	47	11
	Begumganj	156	7.63	10	10167	1030	10	850	68	9
Chattogram	Mirsarai	154	8.06	12	12890	1455	11	1133	173	15
Khagrachari	Ramgarh	155	6.76	6	5409	140	2	495	44	9
Mean/ Total		155	7.63	58	59269	5509	8	4863	565	11
<b>BRRRI dhan92</b>										
Feni	Sonagazi	157	7.85	21	21993	1640	7	1630	261	15
Noakhali	Subarnachar	159	7.59	9	9140	610	6	677	105	13
	Begumganj	158	7.98	6	6387	630	10	601	66	12
Khagrachari	Ramgarh	160	7.28	6	5828	310	5	473	29	6
Rangamati	Sadar	159	7.66	6	6130	620	9	506	33	6
Chattogram	Mirsarai	160	8.05	9	9666	685	11	737	195	23
	Patiya	158	7.93	3	3174	98	3	263	41	17
	Satkania	160	7.69	3	3078	260	8	261	49	19
Mean/ Total		159	7.75	63	65396	4853	7	5148	779	14
<b>BRRRI dhan97</b>										
Feni	Dagonbhuiyan	150	6.51	3	2603	90	4	309	10	3
	Sonagazi	151	6.68	18	16037	865	5	1489	99	7
Noakhali	Subarnachar	152	6.24	6	4995	118	2	464	24	5
	Hatia	150	6.64	3	2657	105	4	230	18	9
Cox's Bazar	Maheshkhali	151	5.42	3	2168	70	3	256	14	5
Chattogram	Mirsarai	149	6.34	3	2536	205	8	116	72	20
	Sawndip	150	5.32	6	4256	150	3	622	39	6
Laxmipur	Kamalnagar	149	6.18	3	2474	85	3	296	22	8
Mean/ Total		150	6.17	45	37726	1688	4	3782	298	8
<b>BRRRI dhan99</b>										
Feni	Sonagazi	154	6.63	18	15912	1063	7	1477	146	10
Noakhali	Subarnachar	153	6.84	6	5474	410	8	496	52	11
	Hatia	156	6.34	1	845	0	0	65	7	11
Chattogram	Mirsarai	151	5.46	3	2185	20	1	200	24	12
Mean/ Total		154	6.32	28	24416	1493	4	2238	229	11
<b>Bangabandhu dhan100</b>										
Feni	Fulgazi	147	6.78	3	2710	70	3	260	15	6
	Chhagalnaiya	146	6.84	3	2735	40	1	248	17	7
Chattogram	Mirsarai	145	6.5	6	5197	129	3	501	45	9
Khagrachari	Ramgarh	147	6.55	9	7865	230	3	786	56	7
Mean/ Total		146	6.67	21	18507	469	3	1795	133	7
<b>BRRRI dhan101</b>										
Feni	Chhagalnaiya	145	7.13	6	5700	330	5	415	78	19
	Fulgazi	142	7.13	3	2853	150	5	272	46	16

Chattogram	Mirsarai	143	7.18	3	2870	205	7	209	52	25
	Patiya	141	7.04	3	2817	125	4	255	31	12
Bandarban	Sadar	142	7.43	3	2974	140	5	245	70	29
Mean/ Total		143	7.18	18	17214	950	5	1396	277	20
BRR1 dhan102										
Feni	Chhagalnaiya	151	7.86	9	9427	855	9	833	179	22
	Fulgazi	148	7.46	3	2984	500	16	257	72	28
Chattogram	Mirsarai	146	7.75	3	3098	720	23	250	64	26
	Patiya	149	7.59	3	3035	235	8	280	55	20
	Satkania	146	7.04	6	5629	305	5	588	163	28
	Fatikchhari	147	8.01	6	6012	365	6	479	113	25
Khagrachari	Ramgarh	149	7.09	3	2836	43	5	240	22	9
Rangamati	Sadar	150	7.98	3	3194	235	7	256	66	25
Bandarban	Sadar	149	8.11	3	3308	445	10	297	111	32
Mean/ Total		148	7.65	39	39523	3703	10	3480	845	24
Grand Mean		147	6.80				6			14
Grand total				330	310268	21961		26564	3652	

### 5.3.7 SPDP in Boro 2023 under Karmasuchi

#### Materials and Methods

A total of 120 SPDPs were conducted in 15 upazila of 8 districts (Feni, Noakhali, Laxmipur, Chattogram, Cox'sbazar, Khagrachari, Rangamati and Bandarban) under Sonagazi development Karmasuchi during Boro 2023. Nine modern rice varieties BRR1 dhan97, BRR1 dhan84, BRR1 dhan89, BRR1 dhan92, BRR1 dhan97, BRR1 dhan99, Bangabandhu dhan100, BRR1 dhan101 and BRR1 dhan102 were demonstrated in the SPDPs. Area of each SPDP was 1 bigha and total area of SPDP was 120 bigha. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRR1 provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

#### Results and Discussion

Irrespective of varieties and locations, BRR1 dhan102 gave the highest mean grain yield (7.83tha<sup>-1</sup>) followed by BRR1 dhan101 (7.70 t ha<sup>-1</sup>) and the lowest grain yield was found in BRR1 dhan99 (5.74 t ha<sup>-1</sup>) (Table 58). Across the locations, BRR1 dhan102 produced the highest grain yield (8.92 t ha<sup>-1</sup>) at Sonagazi, Feni followed by BRR1 dhan101 (8.13 t ha<sup>-1</sup>) at Sadar, Feni. The lowest yield (5.05 t ha<sup>-1</sup>) obtained in BRR1 dhan97 at Banskhali, Chattogram. Total production of all the varieties was 163027 kg from which 9790 kg was retained as seeds (7% of total production) by the farmers for next season cultivation. About 2530 farmers gained awareness and knowledge about the varieties and 216 farmers (9% of total farmers) were motivated to cultivate the varieties. Mean growth duration of BRR1 dhan97, BRR1 dhan84, BRR1 dhan89, BRR1 dhan92, BRR1 dhan97, BRR1 dhan99, Bangabandhu dhan100, BRR1 dhan101 and BRR1 dhan102 were 145, 140, 153, 158, 148, 149, 143, 150 and 149 days respectively (Table 58). Farmers preferences based on overall performances and product profile of the tested varieties were BRR1 dhan102> BRR1 dhan101> BRR1 dhan92>BRR1 dhan89>Bangabandhu dhan100>BRR1 dhan97>BRR1 dhan84>BRR1 dhan97> BRR1 dhan99.

Table 58. Results of Demonstration of modern rice varieties in Boro 2023 funded by Sonagazi development Karmasuchi.

District	Upazila	Area (bigha)	GD (day)	GY (t/ha)	Total production (kg)	Seed retained (kg)	Seed retained (%)	KAF (no.)	MF (no.)	MF (%)
BRR1 dhan97										
Feni	Chhagalnaiya	3	146	7.08	2833	220	8	80	7	9
Laxmipur	Sadar	6	144	6.85	5500	450	8	125	10	8
Rangamati	Naniarchar	6	146	6.83	5486	390	7	130	9	7
Mean/Total		15	145	6.89	13818	1060	8	335	26	8
BRR1 dhan84										
Khagrachari	Matiranga	3	140	5.49	16466	260	2	70	5	7
Bandarban	Ruma	3	140	6.37	2559	110	4	90	6	7

Mean/Total		6	140	5.93	19025	370	3	160	11	7
	BRRi dhan89									
Feni	Sadar	3	156	7.31	2924	250	9	80	5	6
	Chhagalnaiya	3	155	7.42	2968	280	9	85	6	7
Noakhali	Subarnachar	3	154	7.96	3185	250	8	90	7	8
Laxmipur	Sadar	6	149	7.25	5826	500	9	100	6	6
Cox'sbazar	Chakaria	3	148	6.79	2727	200	7	50	5	10
Rangamati	Naniarchar	6	156	7.80	6266	390	6	85	6	7
Mean/Total		24	153	7.45	23896	1870	8	490	35	7
BRRi dhan92										
Feni	Sadar	3	157	7.77	3107	270	9	60	9	15
	Chhagalnaiya	8	159	7.60	8105	670	8	70	5	7
Cox'sbazar	Pekuya	3	154	7.66	3076	260	8	50	6	12
Mean/Total		14	158	7.65	14289	1200	8	180	20	11
BRRi dhan97										
Noakhali	Companiganj	6	150	6.55	5238	420	8	80	9	11
Chattogram	Anwara	3	147	5.21	2094	90	4	60	4	7
	Banshkhali	3	147	5.05	2029	160	8	50	6	12
Mean/Total		12	148	5.84	9361	670	7	190	19	10
BRRi dhan99										
Noakhali	Companiganj	3	149	6.54	2615	220	8	70	9	13
Chattogram	Banshkhali	3	149	5.22	2098	180	9	80	6	8
Cox'sbazar	Pekuya	3	150	5.47	2196	160	7	90	7	8
Mean/Total		9	149	5.74	6909	560	8	240	22	9
Bangabandhu dhan100										
Feni	Sonagazi	3	149	7.17	2869	160	6	95	9	9
Laxmipur	Sadar	9	142	7.18	8648	630	7	60	5	8
Cox'sbazar	Sadar	3	140	6.77	2718	220	8	50	8	16
Khagrachari	Manikchari	3	146	6.78	20335	800	4	80	7	9
Mean/Total		18	143	7.04	34570	1810	6	285	29	11
BRRi dhan101										
Feni	Sadar	3	149	8.13	3254	250	8	70	5	7
	Sonagazi	6	149	7.90	6323	530	8	110	9	8
Noakhali	Companiganj	3	151	6.85	2740	180	7	90	7	8
Mean/Total		12	150	7.70	12317	960	8	270	21	8
BRRi dhan102										
Feni	Sonagazi	3	150	8.84	3537	210	6	90	8	9
	Feni Sadar	1	151	8.92	1190	80	7	75	6	8
Laxmipur	Sadar	3	149	7.20	2891	160	6	80	9	11
Khagrachari	Manikchari	2	148	7.03	14068	520	4	85	4	5
	Banshkhali	1	148	7.16	7156	320	4	50	6	12
Mean/Total		10	149	7.83	28841	1290	5	380	33	9
Grand Mean			148	6.90			7			9
Grand total		120			163027	9790		2530	216	

### 5.3.8 Demonstration/SPDP Boro 2023 under TRB project

#### Materials and Methods

A total of 60 SPDPs were conducted in 20 upazila of 8 districts (Feni, Laxmipur, Noakhali, Chattogram, Khagrachari, Rangamati, Bandarban and Cox'sbazar) under Karmasuchi during Boro 2023. Five modern rice varieties BRRi dhan84, BRRi dhan92, and BRRi dhan97, BRRi dhan99 and Bangabandhu dhan100 were demonstrated in the SPDPs. Area of each SPDP was 1 bigha and total area of SPDP was 60 bigha. The program was executed in collaboration with farmers, Department of Agricultural Extension (DAE) and non-government organizations. BRRi provided quality seeds, fertilizers and signboards to the farmers through extension agencies. Crop management practices were done by the farmers under supervision of DAE personnel.

#### Results and Discussion

Irrespective of varieties and locations, BRRi dhan92 gave the highest mean grain yield (7.98 t ha<sup>-1</sup>) followed by BRRi dhan102 (7.96 t ha<sup>-1</sup>) and the lowest grain yield was found in BRRi dhan99 (6.58 t ha<sup>-1</sup>) (Table 59). Across the locations, BRRi dhan92 produced the highest grain yield (8.37 t ha<sup>-1</sup>) at Raipur, Laxmipur followed by BRRi dhan102 (8.65 t ha<sup>-1</sup>) at Feni Sadar, while the lowest yield

(5.87 t ha<sup>-1</sup>) obtained in BRRi dhan99 at Raipur Laxmipur. Total production of all the varieties was 60536 kg from which 5740 kg was retained as seeds (9.48% of total production) by the farmers for next season cultivation. About 5219 farmers gained awareness and knowledge about the varieties and 942 farmers (18% of total farmers) were motivated to cultivate the varieties. Mean growth duration BRRi dhan89, BRRi dhan92, and BRRi dhan99, Bangabandhu dhan100, BRRi dhan101 and BRRi dhan102 was 155, 159, 148, 148, 149 and 149 days, respectively (Table 59).

Table 59: Results of SPDP Boro 2022 under TRB Project

District	Upazila	GD (Day)	GY (t/ha)	Area (bigha)	Total prod. (kg)	Seed retained(kg)	KAF* (no.)	Motivated farmer (no.)
BRRi dhan89								
Chattogram	Chandanaish	156	7.59	3	3036	220	286	50
Noakhali	Subarnachar	155	7.95	3	3181	350	272	43
Laxmipur	Ramganj	155	8.08	3	3231	390	245	55
Mean/Total		155	7.87	9	9448	960	803	148
BRRi dhan92								
Feni	Fulgazi	158	7.59	3	3037	280	311	44
Laxmipur	Raipur	160	8.37	3	3347	230	280	53
Mean/Total		159	7.98	6	6384	510	591	97
BRRi dhan99								
Laxmipur	Raipur	148	6.58	3	2632	220	280	63
Mean/Total		148	6.58	3	2632	220	280	63
Bangabandhu dhan100								
Cox'sbazar	Ramu	148	7.04	3	2828	300	195	15
Cox'sbazar	Ukhiya	147	7.01	3	2805	320	271	61
Chattogram	Chandanaish	148	7.04	3	2828	300	195	15
Noakhali	Subarnachar	148	6.94	3	2778	390	275	47
Bandarban	Naikhangchar i	147	6.65	3	2658	400	277	55
Mean/Total		148	6.94	15	13897	1710	1213	193
BRRi dhan101								
Khagrachari	Guimara	150	7.76	3	3104	240	228	42
Chattogram	Chandanaish	149	7.23	3	2893	280	311	59
Noakhali	Sadar	147	7.58	3	3031	210	260	54
Laxmipur	Raipur	150	7.33	3	2930	220	258	51
Mean/Total		149	7.47	12	11958	950	1057	206
BRRi dhan102								
Cox'sbazar	Ramu	149	8.02	3	3221	390	190	30
Chattogram	Chandanaish	148	8.11	3	3245	240	302	68
Noakhali	Sadar	148	7.04	3	2828	300	195	15
Feni	Sadar	150	8.65	6	6923	460	588	122
Mean/Total		149	7.96	15	16216	1390	1275	235
Grand total		151	7.47	60	60536	5740	5219	942

\* KAF = Knowledge Acquired farmer

### 5.3.9 Demonstration in Boro 2023 under Hybrid rice project

#### Summary

A total of 66 demonstrations of modern hybrid rice varieties were conducted in Boro 2023 at Chattogram and Rangamati regions funded by hybrid rice project. BRRi Hybrid dhan3 and BRRi Hybrid dhan5 rice variety demonstrated at farmers' field in the demonstrations. Area of each demonstration was 1 to 3 bigha. Total production of BRRi hybrid dhan3 was 31.04 ton and BRRi hybrid dhan5 was 37.76 ton. A total of 3555 farmers acquired knowledge about the varieties from which farmers are motivated to cultivate the modern varieties.

#### Materials and Methods

A total of 66 demonstrations were conducted in 12 Upazila of 8 districts (Feni, Noakhali, Laxmipur, Chattogram, Cox'sbazar, Khagrachari, Bandarban and Rangamati) under Hybrid rice project in Boro 2023. BRRi Hybrid dhan3 and BRRi Hybrid dhan5 were used in the demonstrations. Area of each demonstration was 3 bigha and total area of demonstrations was 66 bigha. The production activities executed by the collaborating farmers which closely monitored and supervised by BRRi

scientists and DAE personnel. BRRi provided inputs like quality seeds, fertilizer and signboard. Data on date of seeding, transplanting and maturity; lodging tolerance, yield, pest incidence, and feedback of the farmers were collected. BRRi provided quality seeds, fertilizer and signboard while rests of the managements were done by the farmers under the supervision of SAAO.

### Results and Discussion

Irrespective of locations, BRRi Hybrid dhan3 gave the highest grain yield (8.36  $\text{tha}^{-1}$ ) in Sadar, Laxmipur second and third highest were in Banshkhali, Chattogram (8.26  $\text{tha}^{-1}$ ) and Sonagazi, Feni (7.59  $\text{tha}^{-1}$ ) but we found lowest yield in Laxmichari Upazila under Khagrachari district (6.53  $\text{tha}^{-1}$ ) (Table 60). In BRRi Hybrid dhan5, we saw the highest grain yield (8.83  $\text{tha}^{-1}$ ) in Naniarchar, Rangamati where second and third highest yield were in Sadar, Bandarban (8.66  $\text{tha}^{-1}$ ) and Mirsarai, Chattogram (8.13  $\text{tha}^{-1}$ ) but we found lowest yield in Manikchari Upazila under Khagrachari district (6.48  $\text{tha}^{-1}$ ). During Boro 2023, BRRi hybrid dhan3 and BRRi hybrid dhan5 gave the average grain yield 7.58  $\text{tha}^{-1}$  and 7.76  $\text{tha}^{-1}$  in southern coastal and hilly region, respectively. Total production of BRRi Hybrid dhan3 was 31,044 kg and BRRi Hybrid dhan5 was 37,765 kg. About 3555 farmers gained awareness and knowledge about the varieties and 592 farmers (17 % of total farmers) were motivated to cultivate these varieties. Mean growth duration of BRRi dhan3 and BRRi Hybrid dhan5 were 141 and 144 days respectively. BRRi Hybrid dhan3 and BRRi hybrid dhan5 gave good yield at Laxmipur, Chattogram, Feni, Rangamati and Bandarban region while both the variety was slightly affected by sheath blight, bacterial blight disease at Cox's Bazar, Khagrachari and Feni. BRRi Hybrid dhan3 and BRRi Hybrid dhan5 both produced lower yield in Khagrachari. It is required further investigation by testing at more locations. Performance of BRRi dhan3 and BRRi Hybrid dhan5 were satisfactory in most of the areas but yield become lower in Khagrachari district due to water scarcity and some demos were infested by disease (sheath blight, bacterial blight) and insect (stem borer, leaf folder). Flowering and maturity of BRRi dhan3 and BRRi Hybrid dhan5 were uneven in some locations that indicated that heterogeneity is still existed. Consequently, some of the farmers were disappointed with these variety.

Table 60: Results of demonstrations (BRRi Hybrid dhan3 and BRRi Hybrid dhan5) during Boro 2023 under Hybrid Rice project

Location		Area Bigha	GD	GY (t/ha)	Total Production (Kg)	KAF (no.)	Motivated farmer	
<b>BRRi Hybrid dhan3</b>								
District	Upazila						no.	%
Khagrachari	Laxmichari	3	140	6.53	2623	102	21	21
Chattogram	Banshkhali	4	142	8.26	4422	200	43	22
Laxmipur	Sadar	8	141	8.36	8958	505	107	21
Cox's Bazar	Chakaria	3	139	7.14	2867	90	20	22
Noakhali	Subarnachar	4	142	7.58	4052	225	23	10
Feni	Sonagazi	8	144	7.59	8122	526	64	12
Grand mean/ Total		30	141	7.58	31044	1648	278	17
<b>BRRi Hybrid dhan5</b>								
Khagrachari	Manikchari	4	141	6.48	3471	173	35	20
	Ramgarh	4	143	6.61	3541	196	35	18
Chattogram	Mirsarai	6	143	8.13	6529	255	51	21
Rangamati	Naniarchar	6	144	8.83	7090	345	50	15
Bandarban	Sadar	4	147	8.66	4638	199	33	17
Feni	Sonagazi	8	145	7.75	8286	554	79	15
Noakhali	Subarnachar	4	147	7.87	4210	185	31	17
Grand mean/ Total		36	144	7.76	37765	1907	314	16

### Feedback about the rice varieties demonstrated in 2022-2023

Feedback about the varieties demonstrated during 2022-2023 collected from farmers and extension personnel was presented in Table 61.

Table 61. Feedback of Farmers and Extension personnel about the rice varieties

SN	Variety	Advantages	Disadvantages
		Season: Aus 2022	
1	BRRRI dhan48	Higher yield, More grains in panicle, Better crop stand.	Infected by Sheath blight disease
2	BRRRI dhan83	Higher yield, Better crop stand.	Infected by Sheath blight disease in some sites
3	BRRRI dhan85	Medium yield even in water lodged condition, slender grain	Infected by Sheath blight disease in some sites
4	BRRRI dhan98	Higher grain yield, Medium slender grain	-
5	BRRRI Hybrid dhan7	Higher yield with shorter growth duration, Slender grain	Slender grain, but cooked rice are long bold
		Season: Aman 2022	
7	BRRRI dhan34	Good taste of cooked rice with aroma	Lower yield
8	BRRRI dhan49	Higher yield, better crop stands and Naijarshail type grain. Good taste, Higher market price. Lodging tolerant.	Susceptibility to False Smut disease.
9	BRRRI dhan52	Comparatively shorter growth duration, Suitable for coastal region	Susceptibility to bacterial blight disease.
10	BRRRI dhan70	Some elite farmers like for its long slender grain, good taste of cooked rice with aroma	Higher sterility and lower yield.
11	BRRRI dhan71	Drought tolerant, higher yield, Rabi crop easily can be grown after harvesting.	-
12	BRRRI dhan75	”	Infected by False Smut disease in some locations
13	BRRRI dhan78	Flood and salinity tolerant	Lower grain yield
14	BRRRI dhan79	Good yield, medium bold	Susceptible to False Smut disease
15	BRRRI dhan80	Higher yield, looking promising	Lower grain yield
16	BRRRI dhan87	Higher yield, long slender grain, higher straw yield	-
17	BRRRI dhan90	Good taste of cooked rice with aroma	Lower grain yield
18	BRRRI dhan93	Higher yield	Crop lodged in some locations due to cyclone Midhili
19	BRRRI dhan94	Higher yield	”
20	BRRRI dhan95	Good yield with medium duration	”
21	BRRRI dhan103	Higher grain and straw yield, Slender grain	-
22	BRRRI Hybrid dhan6	Short duration, higher yield	Germination failure in some locations.
		Season: Boro 2023	
23	BRRRI dhan67	Salinity tolerant, Less pest incidence Higher yield, Seedling stage cold tolerance.	Crop lodged at maturity in some places due to waterlogged condition
24	BRRRI dhan74	Zinc enriched, Higher yield Less pest incidence, No lodging	Bold grain, Lower market price
25	BRRRI dhan84	Shorter growth duration Zn enriched, Red pericarp	Crop was lodged in some sites at maturity. Severely infested by Neck blast disease in some places
26	BRRRI dhan88	Good yield, Slender grain	blast disease occurred in some sites
27	BRRRI dhan89	Higher grain yield, Medium bold grain	Infected by Neck Blast in some locations
28	BRRRI dhan92	Higher yield, drought tolerant	Long growth duration



		Slender grain	
29	BRRRI dhan96	Stem strong	Lower grain and straw yield
30	BRRRI dhan97	Higher yield, Salinity tolerant	Bold grain, Longer growth duration
31	BRRRI dhan99	Salinity tolerant, Medium slender grain	Longer growth duration
32	Bangabandhu dhan100	Zinc enriched rice, Short slender grain	Crop was lodged in some locations
33	BRRRI dhan101	Higher grain yield	Disease (BB) tolerant
34	BRRRI dhan102	Higher grain yield, Zinc enriched rice Slender grain	-
35	BRRRI Hybrid dhan3	Early variety, medium yield	Lower germination, susceptible to bacterial blight, sheath blight disease
36	BRRRI Hybrid dhan5	Higher yield with shorter duration Medium slender grain	”

### Farmers Training under GOB and Karmasuchi

Farmers' trainings were arranged in Noakhali, Feni, Chattogram, Laxmipur, Bandarban, Cox's Bazar, Rangamati and Khagrachari districts with the collaboration of DAE as an important tool to train up farmers on updated modern rice technologies and to encourage them to adopt modern rice varieties with associated technologies. A total number of 104 farmers trainings on “Modern Rice production technology” were conducted in eight districts during the reporting period. Out of 104 farmers trainings, 40 funded by GoB and 64 funded by BRRRI Sonagazi development Karmasuchi. In farmers training 2397 male and 723 female farmers participated in the program and trained up on rice technologies which has significant impact to increase food security of Bangladesh.

**Field Day:** Field days were arranged for awareness building and create interest among the farmers and concerned extension agents about the modern rice production technologies. These aided in wide publicity and familiarity of the institute, rice technologies and BRRRI's contribution towards national economy. About 100-150 persons (farmers, researchers, extension personnel, local leaders, public representatives and administrative people etc.) were invited in a field day. A total of 42 field days were arranged during 2022-2023. Out of 42 field days, 14 were funded by GOB, 26 by Karmasuchi and 2 by Hybrid rice project. Nearly 5000 progressive farmers, local leaders, DAE field staff, public representatives & NGO workers participated in those occasions.

## 6. ENRICHMENT OF SEED STOCK

### 6.1 Breeder seed Production funded by GOB and Karmasuchi

Nucleus seeds were supplied from Genetic Resources and Seed (GRS) Division for breeder seed production during Aus, Aman and Boro seasons. In Aus BRRRI dhan48, BRRRI dhan98, in Aman BRRRI dhan34, BRRRI dhan48, BRRRI dhan49, BRRRI dhan51, BRRRI dhan82, BRRRI dhan98, BRRRI dhan102 and in Boro BRRRI dhan28, BRRRI dhan29, BRRRI dhan92, BRRRI dhan97 and Bangabandhu dhan100 were cultivated during reporting period. A total of Breeder seed during Aus, Aman and Boro were 9.0 tons, 19.15 tons and 31 tons, respectively. All produced seeds were sent to GRS division of BRRRI, Gazipur (Table 62 to 64).

Table 62. Breeder seed production in Aus 2022 at BRRRI Sonagazi

SN	Boro 2022		
	Variety	Fund source	
		GOB Amount (ton)	Karmasuchi Amount (ton)
1	BRRRI dhan48	-	4.5
2	BRRRI dhan98	4.5	-
Total		4.5	4.5
Grand total 9.00 ton			

Table 63. Breeder seed production in Aman 2022 at BRRRI Sonagazi

SN	Aman 2022	
	Variety	Amount (ton)
1	BRRRI dhan34	2
2	BRRRI dhan48	3
3	BRRRI dhan49	5
4	BRRRI dhan51	2
5	BRRRI dhan82	1.65
6	BRRRI dhan98	4
7	BRRRI dhan102	1.5
Total		19.15

Table 64. Breeder seed production in Boro 2023 at BRRRI Sonagazi

SN	Variety	Seed Amount (ton), Boro 2023	
		GOB	Karmasuchi
1	BRRRI dhan28	4.5	-
2	BRRRI dhan29	5.5	-
3	BRRRI dhan92	5.00	6.00
4	BRRRI dhan97	-	5.00
5	Bangabandhu dhan100	-	5.00
Total		15.00	16.00
Grand total: 31.00 ton			

## 6.2 Quality Seed (TLS) Production by GOB and Karmasuchi

Truthfully labeled Seed (TLS) production activities were undertaken at BRRRI research field during Aus2022, Aman 2022 and Boro 2022-23. This seed production category was an easy way without any supervision of SCA but quality was maintained providing our own facilities and declared truthfully. Seeds were produced as per physical and technical capacity, opportunity and local need of BRRRI, Sonagazi. As a result, farmers purchased the seeds of BRRRI released varieties. Seeds were also purchased by different organizations. Total production of TLS during Aus, Aman and Boro were 4.50-ton, 14.125 ton (GOB: 7.125 ton, Karmasuchi: 7.00 ton) and 29.1 ton (GOB-15 ton, Karmasuchi-14.1 ton), respectively (Table 65 to 67).

Table 65. Quality seed (TLS) production (ton) in Aus2022

SN	Aus 2022	
	Variety	Amount (ton)
1	BRRRI dhan48	0.3
2	BRRRI dhan83	0.7
3	BRRRI dhan85	0.9
4	BRRRI dhan98	2.6
Total		4.5

Table 66. Quality seed (TLS) production in Aman 2022

SN	Seed Amount (ton) Aman 2022		
	Variety	GOB	Karmasuchi
1	BR22	-	1.15
2	BRRRI dhan34	0.6	-
3	BRRRI dhan49	-	0.55
4	BRRRI dhan51	-	0.8
5	BRRRI dhan52	-	0.6
6	BRRRI dhan70	-	0.3
7	BRRRI dhan75	-	0.95
8	BRRRI dhan78	-	0.8
9	BRRRI dhan79	-	0.43

10	BRRi dhan80	-	0.32
11	BRRi dhan87	1.25	-
12	BRRi dhan90	0.5	-
13	BRRi dhan91	-	0.32
14	BRRi dhan93	0.45	-
15	BRRi dhan94	1.6	-
16	BRRi dhan95	1.15	-
17	BRRi dhan102	0.775	0.78
18	BRRi dhan103	0.8	-
Total		7.125	7
Grand total: 14.125 ton			

Table 67. Quality seed (TLS) production (ton) in Boro 2022-23

SN	Boro 2022-2023		
	Variety	Fund source	
		GOB Amount (ton)	Karmosuchi Amount (ton)
1	BRRi dhan28	2.85	-
2	BRRi dhan29	3.45	-
3	BRRi dhan58	1	-
4	BRRi dhan63	1.8	-
5	BRRi dhan67	3.1	-
6	BRRi dhan74	1.1	-
7	BRRi dhan81	-	1.06
8	BRRi dhan84	-	1.8
9	BRRi dhan88	-	1.02
10	BRRi dhan89	-	1.4
11	BRRi dhan92	1.7	1
12	BRRi dhan96	-	1.02
13	BRRi dhan97	-	1.15
14	BRRi dhan99	-	1.58
15	BRRi dhan100	-	0.66
16	BRRi dhan101	-	2.16
17	BRRi dhan102	-	1.02
18	BRRi dhan104	-	0.23
Total		15	14.1
Grand total: 29.10 ton			

### 6.3 F1 seed production of BRRi hybrid dhan5 under Hybrid project

Four hundred kg F1 seed of BRRi hybrid dhan5 was produced at BRRi Sonagazi farm in Boro2022-23 season (Table 68).

Table 68. F1 seed production of BRRi hybrid dhan5 during Boro 2022-23

Combination	Plant height (cm)		50% flowering date		PER (%)	OCR (%)	Yield	
	A line	R line	A line	R line			kg/7.5 bigha	t/ha
BRRi7A/BRRi31R	93	102	125	140	80	32	400	0.34

DS: R1= 10 Dec 2022, R2 = 17 Dec 2022; A= 04 Jan 2023; DT: R = 20 Jan 2023; A = 1 Feb 2023

PER (%) = Panicle exertion rate; OCR (%) = Out crossing rate.

## **7. Advisory and Clinical service**

Scientists were invited by department of Agricultural Extension (DAE), NGOs, farmers etc. to pay visit in farmer's fields where rice field being suffered from various nutritional and pest problem. We also provided advisory and clinical services to farmers, DAE and NGO personnel who came with rice disease and insect problems. We also advised the farmers in selecting appropriate variety for their field to fit in the existing cropping practices.

## **8. Routine works**

Despite of research activities, some routine works like weather data recording, ground water level monitoring, year round light trap operation etc. were done regularly. We attended visitors from home and abroad. We participated as resource speaker to different Institutes to deliver lectures on rice and rice based technologies. We also participated in Bangladesh Betar and Television programs for discussion on rice and rice technologies. We also functioned and monitored different development works of BRRI Sonagazi so that it flourished day by day as it was at under developed situation.