










**Research Achievement 2009-2010  
(Technology Development)**

Sl. No.	Technology Developed	How Country/Farmer/Use r will be benefited
1	<p><b>BRRi dhan51</b> The NSB approved Swarna-Sub1 (IR81213-246-237) as BRRi dhan51 for flash flood prone areas in T. Aman. This submergence tolerant rice variety can produce 4.0 t/ha grain yield despite a 10-16 days of flash flooding.</p>  <p align="center"><b>BRRi dhan51</b></p>	Increased rice production in flash flood prone areas
2	<p><b>BRRi dhan52</b> The NSB approved BR11-Sub1-R1 (IR85260-66-654-Gaz 2) as BRRi dhan52 for flash flood prone areas in T. Aman season. This submergence tolerant rice variety can produce 4.5-5.0 t/ha grain yield despite a 10-14 days of flash flooding.</p>  <p align="center"><b>BRRi dhan52</b></p>	Increased rice production in flash flood prone areas
3	<p><b>BRRi dhan53</b> The NSB approved BR5778-156-1-3-HR14 as BRRi dhan53 for salinity prone area (8-10 dS/m) in T. Aman. It is 20-25 days earlier and 15 cm shorter than BRRi dhan41 with similar yield, which is suitable for cultivation in brackish shrimp field culture.</p>  <p align="center"><b>BRRi dhan53</b></p>	Improved rice production in the saline prone coastal areas.
4	<p><b>BRRi dhan54</b> The NSB approved BR5999-82-3-2-HR1 as BRRi dhan54 for salinity prone area (8-10 dS/m) in T. Aman. This variety is 10-15 days earlier and can produce 0.5-1.0 t/ha higher yield than BRRi dhan41. This variety is suitable for cultivation in brackish shrimp field.</p>  <p align="center"><b>BRRi dhan54</b></p>	Improvement of rice production in the saline prone coastal areas
5	<p><b>BRRi dhan55 (Proposed)</b> National Technical committee (NTC) of Bangladesh recommended AS996</p>	Improvement of rice

	<p>(IR73678-6-9-B) as BRRRI dhan55 for Aus and Boro season. This genotype can tolerate moderate salinity (8-10 dS/m), cold and drought and can produce 7.0 t/ha grain yield in Boro season. In T. Aus season, it can produce 5.0 t/ha grain yield and 15-20 days earlier than BRRRI dhan27.</p> 	productivity in Boro and Aus seasons throughout the country
6	<p><b>BRRRI dhan56 (Proposed)</b> Proposal has been submitted to National Seed Board (NSB) of Bangladesh for releasing IR74371-70-1-1 as BRRRI dhan56 for T. Aman season. The proposed variety is the first rainfed lowland rice HYV having drought tolerance at reproductive phase. The variety can produce 3.5-4.5 t/ha grain yield with 115 days growth duration.</p> 	Increased rice production in drought prone areas of the country
7	<p><b>BRRRI dhan57 (Proposed)</b> Proposal has been submitted to NSB for releasing BR7873-5*(NIL)-51-HR6 as BRRRI dhan57 for T. Aman. This proposed variety is drought tolerant and drought escaping, photoperiod insensitive, short duration variety having grain yield 3.0-4.5 t/ha and 10 days earlier than BINA dhan7 and 14 days earlier than BRRRI dhan33.</p> 	Increased rice production in the drought prone areas
8	<p><b>BRRRI Hybrid dhan4</b> National Seed Board (NSB) of Bangladesh approved to release BRRRI Hybrid dhan4 for T. Aman season. Its grain type is long slender and growth duration is 110-115 days, shorter than BRRRI dhan33.</p>	Escaping terminal drought in the drought prone northern region of the country
9	<p><b>Identification of Useful QTLs to increase yield</b> To increase yield, 942 BC<sub>1</sub>F<sub>1</sub> seed were obtained and 35 polymorphic SSR primers were identified. To improve salt tolerance, 2108 F<sub>2</sub> seeds were harvested and 11 polymorphic SSR primers were identified.</p>	Variety development with high yield potential
10	<p><b>Germplasm Collection</b> A total of 810 rice germplasm of Boro, Aus and T. Aman were collected.</p>	Use in breeding program
11	<p><b>Germplasm Characterization</b> 357 germplasm were characterized with 45 morpho-agronomic characters, 2420 accessions were rejuvenated and 24 germplasm were characterized at molecular level.</p>	Use in specific breeding program
12	<p><b>Hybrid combination</b> BRRRI10A/BRRRI15R combination for Boro season has been evaluated by NSB team. Grain yield is 9.5-10.00 t/ha having medium bold grain and similar growth duration of BRRRI dhan28.</p>	Higher yield

13	<p><b>Promising hybrids</b> Two promising hybrid combinations II32A/BRRI 20R and 262A/ BRRI17R were developed. Suitable for Boro season, which need further evaluation.</p>	Higher grain yield
14	<p><b>Economic threshold level of mixed weed population for direct seeded rice</b> In direct seeded rice, 5 to 7 weeds m<sup>-2</sup> can be allowed without significant yield reduction.</p>	Weed control cost can be minimized without sacrificing rice yield.
15	<p><b>Update Fertilizer Recommendation for Potato-Maize-T. Aman cropping pattern</b></p> <ul style="list-style-type: none"> <li>• Poultry manure @ 3 t/ha + IPNS based chemical fertilizer produced rice equivalent yield of 18.4 t/ha/yr in Gazipur and 22.4 t/ha/yr in Rangpur.</li> <li>• 36% N, 100% P and S and 70% K can be saved from the recommended dose of fertilizers</li> </ul>	Improvement of crop yield and saving of chemical fertilizers. Soil health improvement
16	<p><b>Maximize Rice Yield through INM</b></p> <ul style="list-style-type: none"> <li>• Yield increased 10-15% in triple rice over double rice cropping system</li> <li>• Saved 30-50% inorganic fertilizers</li> </ul>	Increasing rice production and saving fertilizer
17	<p><b>Fresh groundwater and pond water utilization for HYV Boro rice cultivation in Sathkhira coastal saline area</b> Fresh groundwater from 170-245ft and pond water can be utilized for Boro rice cultivation in coastal areas of Munshigonj, Satkhira.</p>  <p>Installation well in deeper zone and field demonstration of HYV Boro cultivation</p>	Boro rice cultivation in coastal areas.
18	<p><b>Double transplanting of Rice</b> Seedling height can be increased with double transplanting, which might be a good option for transplanting under shallow flooded situation. This practice improve 20-30% yield compared to over-aged seedlings.</p>	Higher yield from delayed T. Aman crop or from delayed Boro establishment
19	<p><b>Design and development of a manually operated fertilizer (USG/UMG) applicator</b> BRRI USG applicator was modified considering 18 x 20 cm, 20 x 20 cm and 22 x 20 cm spacing for double rows operation in rice field. Modified applicator was evaluated in laboratory and field condition and compared with fixed type applicator. Dispensing efficiency was found 99% in laboratory condition.</p>  <p><small>Fig. Modified USG Applicator (Adjustable type) Fig. BRRI USG Applicator (Fixed type)</small></p>	Farmer can save around 30% urea fertilizer as well as time using this technology
20	<p><b>Farm Level Evaluation of Modern Rice Cultivation in Bangladesh</b></p> <p>The MVs covered about 96% of the total Boro area in 2009-10. BRRI varieties covered 69% area. BRRI dhan28 and BRRI dhan29 were the dominant varieties covering 32% and 28% area, respectively.</p> <p>In Aus season, MVs covered about 65% while the coverage of BRRI</p>	Adoption rate of MVs rice and its productivity at the farm level.

	<p>varieties was 41%. BRRI dhan28, BR1 and BR2 being the dominant varieties covering respectively, 18, 5 &amp; 5.42 percent area.</p> <p>In T. Aman season, the coverage of MVs was 61% of which BRRI varieties covered 43%. BR11 was the prominent varieties covering 22% area. Average yield of MV Boro, T.Aman and Aus were 5.12, 3.47 and 3.50 t/ha respectively.</p>	
21	<p><b>Impact of Fertilizer and Irrigation Subsidy on Boro Rice Production In Some Selected Areas of Bangladesh</b></p> <p>Subsidized diesel operated rice farm obtained higher yield mainly because of timely adequate amount of irrigation water application in the crop field. About 33% farmers reported that subsidy should be given at the beginning of the season and 100 percent farmers opined that they were benefited for getting diesel subsidy.</p>	Increased rice production and benefit of farmers
22	<p><b>Yield loss caused by Rice hispa</b></p> <p>BR15 (12.62%), BRRI dhan38 (9.35%) and BR12 (31.97%) showed comparatively low yield losses despite similar hispa infestation level.</p>	Higher rice yield in hispa endemic areas
23	<p><b>Varietal resistance</b></p> <p>IR77298-5-6, IR78091-6-2-3-1-1, IR78126-1-2-1, IR78126-59-1-5-1-2, IR78545-49-2-2-2, IR78629-57-3-3-2 and IR78806-B-B-19-3-1-AJY1 were resistant against BPH.</p>	Development of BPH resistant varieties.
24	<p><b>Performance of BB resistant pyramid lines in different AEZs of Bangladesh</b></p> <p>Gene combination of <i>Xa4</i>, <i>Xa7</i>, <i>xa13</i> and <i>Xa21</i> is the best for gene pyramiding to develop durable BB resistant rice variety.</p>	Development of durable BB resistant rice variety.
25	<p><b>Recovering ability of BRRI Aus and Aman varieties from tungro disease</b></p> <p>In Aus season, BRRI dhan42 showed the highest recovering ability followed by BRRI dhan27. In Aman season, BRRI dhan37 and BRRI dhan39 recovered better against tungro virus.</p>	Farmers can cultivate these varieties to escape tungro disease.
26	<p><b>Chemical control of sheath blight disease</b></p> <p>Out of 20 fungicides, 17 reduced disease severity by &gt;80%.</p>	Selection of effective chemicals against ShB disease
27	<p><b>Evaluation of fungicides against leaf scald disease</b></p> <p>Nafsal fungicide was good for controlling leaf scald disease in BR22.</p>	Controlling of rice scald disease would give higher grain yield.
28	<p><b>Evaluation of fungicides against false smut disease</b></p> <p>Potent (Propiconazole) fungicide reduced 85% false smut disease incidence over control in T. Aman season.</p>	Selecting effective chemicals against false smut disease.
29	<p><b>Evaluation of fungicides against seed-borne pathogens</b></p> <p>Provax fungicide reduced seed infection of <i>Bipolaris oryzae</i> by 90.6% over control. But the chemical was ineffective against <i>Fusarium moniliforme</i>.</p>	Selecting effective chemicals against seed-borne disease