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Highlights of the Research Findings during 2005-06
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All research programs of BRRI including nine regional stations were executed under seven program areas:

1. Varietal Development
Program performing divisions are**:**
- Plant Breeding
- Genetic Resources and Seed
- Grain Quality and Nutrition
- Biotechnology
- Hybrid Rice

2. Crop Soil Water Management
Program performing divisions are:
- Soil Science
- Agronomy
- Plant Physiology Irrigation
- Irrigation and Water Management

3. Pest Management
Program performing divisions are:
- Entomology
- Entomology

4. Rice Farming Systems
Program performing divisions are**:**
- Rice Farming Systems

5. Socio-Economics and policy
Program performing divisions are**:**
- Agricultural Economics
- Agricultural Statistics
- Farm Management

6. Farm Mechanization
Program performing divisions are**:**

- Farm Machinery & Post Harvest Technology
- Workshop Machinery & Maintenance

7. Technology Transfer

Program performing divisions are**:**

- Adaptive Research
- Training

Highlights of The Research Findings

Varietal Development Program Area:

- A total of 228 advanced lines were generated from breeding population and 375 advance lines were selected from observational and yield trials.
- Three promising lines were proposed to the National Seed Board to release as varieties :
  - BR5226-6-3-2 as **BRRI dhan46** for delay planting at flood prone T. Aman areas
  - PVS-3B(IR63307-4B-4-3) as **BRRI dhan47** for saline prone boro areas
  - BR5563-3-3-4-1 as **BRRI dhan48** for T.Aus season as a substitute of BR26
  - BR6592-4-6-4 was selected as a promising line with prospect of future variety complementary to BR11 and BRRI dhan32 for T.Aman season.
- Two BRRI developed hybrid combinations, BRRI 1A/BR 168R and BRRI 1A/BR 827R produced more than 1 t/ha yield advantage over BRRI inbred varieties in T. Aman and Boro season and have been sent to National Seed Board for evaluation and recommendation.
- Seven tissue cultures derived salt tolerant (at 12ds/m) advance lines have been selected for future use and identification of BR1, BR2, BR17 and BR18 have been completed with SSR marker at molecular level.
- Some of 153 breeding lines have been identified with acceptable physicochemical properties
- 164 rice germplasm were collected during 2005-06.
- 1003 germplasm were characterized and 2150 accessions were registered.
- 63 varieties were maintained as nucleus stock and 69 tons of breeder seed of 30 varieties were produced.
- About 10 tons of breeder seed were supplied to different stakeholders

Crop-Soil-Water Management Program Area:

- BR5226-6-3-3 produced higher grain yield as direct-wet seeded rice up to 05 September transplanting and out yielded BR22 by 1.30 t/ha when 40 day old seedlings were transplanted on 25 September.

- BRRI dhan45 produced 6.64 t/ha at 100-16-43-6 kg N-P-K-S/ha along with 2 t/ha poultry litter.

- Rice straw recycling appeared to be a good supplementary source of K fertilizer in rice cultivation.

- Soil test based K fertilization produced higher grain yield of rice and wheat compared to farmers' practices and K control.
- The use of 68 kg K /ha/year in a long term missing element trail (20 yrs) was insufficient to minimize K depletion from soil.
- Polishing and cooking of rice grain substantially reduced the Arsenic concentration.
- About 6% of the additional Barind area (10630 ha) can be brought under irrigation using available ground water.

- A model has been developed using daily water balance that can be useful in the preparation of irrigation schedule for rice cultivation.
- By trapping river water (with <4.0 ds/m salinity) by sluice gate during February to March in coastal regions, mono-cropped rice land can be converted to double cropped land.
- Additional application of ca++ appears to improve the salinity tolerance in rice.

Pest Management Program Area:

- During 2005-06, crop loss due to rice hispa infestation was lower in case of BRRI dhan29 (18%) than BR3, BR11, BR22, BRRI dhan28, BRRI dhan30 and BRRI dhan40.
- 3% Neem oil in combination with a low concentration (0.1%) of emulsifier caused significant mortality to rice hispa.
- Eight Exotic and 3 local rice germplasm were found tolerant against BPH and GLH.
- 43 entries were found Resistant to Moderately Resistant against Ufra and BLB

- Three isolates of bio-control agent, BanShB738(3), BanShB581(1) and BanShBFPS6(1) were found effective to control Sheath Blight disease in rice field
- AFLP-C primer has been found promising for differentiation of strain of *Fusarium monoliformae.*

Rice Farming Systems Program Area:

- Under irrigated condition, T.Aman-Potato-Boro (Double Transplanted) cropping pattern gave 102% and 206% higher gross margin over T.Aman-Fallow-Boro pattern at Gazipur and Kapasia, respectively. It was 40% and 46% higher than T.Aman-Potato-Boro cropping pattern.

- LCC based N-management increased grain yield of T.Aman rice by 0.20 - 0.90 t/ha and saved 12 - 85 kg N/ha. It increased yield of Boro by 0.12 - 0.41 t/ha and reduced N-use by 3 - 71 kg/ha.

Socio-Economics and Policy Program Area:

- The yield gap of rice ranged 1.4-1.5 t/ha. Both crop management and socio-economic factors have been identified as major constraints to higher yield at farmers' field.
- BRRI dhan28 and BRRI dhan29 are traded in the name of Minikit, while Pajam is traded in the name of Nizersail. The traders earned TK 50-55 per 80 kg bag by changing the name of the rice varieties.
- A stability model has been developed that measures the stability of genotypes in terms of yield and its fluctuations over years and across the locations. The model uses a single index, is mathematically simple and can provide an indication of instability with the changing environment.
- Yield of rainfed Aman rice is positively related to relative water supply (RWS) capacity of soils in the month of October. A map has been created characterizing the rainfed T.Aman area based on RWS that may be used as a decision support tool for rainfed T. Aman production planning.

Farm Mechanization Program Area:

- Metal versions of foot-print levers for drum seeder have been designed and fabricated to cover the foot- print of the operators.

- The maximum head rice recovery of BRRI dhan34, BRRI dhan37, BRRI dhan38, Chinigura, Kalijira, Kataribhog and Basmoti was found to be 65.46%, 65.91%, 67.26%, 65.76%, 61.94% and 59.70%, respectively.

Technology Transfer Program Area:

- Based Advanced lines Adaptive Research Trials (ALART). BR6592-4-6-4 was identified as a potential genotype for T.Aman
- Seed Production and Demonstration Program (SPDP) was carried out for promotion of the BRRI rice varieties. About 80 tons of seeds were produced by farmers of which 25% is expected to be utilized as seeds.
- About 766 personnel mostly from DAE (88.54%) received rice production and other rice related trainings during 2005-06.