



# BIRRI Genebank

A very short introduction



**Genetic Resources and Seed Division  
BANGLADESH RICE RESEARCH INSTITUTE**

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## **Plant Genetic Resources Conservation**

Plant Genetic Resources (PGR) can be preserved in 1. On site conservation as a) *in-situ* (in their original habitats) and b) *on-farm* (in traditional farming systems) and 2. Off site conservation as a) *ex-situ* (in seed storage, DNA storage etc.) and b) *in-vitro* (for vegetatively propagated crop species).

### **Seed Genebank**

Seed Genebank stores dried seeds at a very low temperature for preserving genetic diversity. It is an *ex-situ* type of conservation.

Important traits such as tolerant to biotic and abiotic stresses and good eating and cooking qualities are available in local, landrace and wild rice germplasm. Bangladesh is abundant with rice diversity since time immemorial.

At present, cultivation of traditional local rice varieties in the farmers' field is maintaining a decreasing trend. That is why, the need to preserve the seeds of those varieties in Genebank is being urgently felt.

### **BRRI Genebank**

Systematic conservation of rice germplasm was started at Bangladesh Rice Research Institute (BRRI) since the establishment of Genebank in 1974. The modern Genebank with processing facilities was established in 1985 through the assistance from Japanese International Cooperation Agency (JICA). At present, the long-term Genebank having 225 sq feet areas with 2000 cft volume (57.09 cubic meters) together with the short and medium-term storages were established in 2007 with the GOB fund. Until now, 8,578 germplasm have been registered and preserved in the Genebank. Besides, 90 wild rice samples were conserved in *ex-situ* type field conservation at Net house, GRS Division, BRRI.

## **Objectives of BIRRI Genebank**

- ◆ Collection of traditional/exotic and wild rice varieties from home and abroad.
- ◆ Rejuvenation of accessions after checking and monitoring in the short, medium and long-term storages for replacing the old stock (having less than 80% germination) by the fresh seed from the rice field.
- ◆ Registration of new collection by giving accession (acc.) number after cross checking the duplication.
- ◆ Characterization of rice germplasm through morphological and molecular characters for varietal identification and establishment of property right for safety.
- ◆ Evaluation of rice germplasm against abiotic, biotic factors/stresses and grain quality.
- ◆ Documentation of characterized rice germplasm through digital photo and computer database documentation system for different users.
- ◆ Supply/exchange of rice germplasm to different national/international researchers/organizations at home and abroad.
- ◆ Conducting relevant activities of Genebank management.

## **Output of BIRRI Genebank**

- Collected germplasm conserved safely and documented along with their characters in computer database of the Genebank.
- Conserved germplasm with valuable traits made available/exchange/shared for utilization as parent material for developing new variety/genotype at home and abroad for rice improvement.

## Storage facilities of BRRRI Genebank

### Short-term

- Type: Walking (90 m<sup>2</sup>)
- Temperature: 20 to 22°C
- Capacity: 15,000 accessions
- Seed moisture: around 10%
- Packing: Brown paper bags
- Amount: 150 g seeds per acc.
- Stored: Big glass jars containing silica gel
- Seed viability: More than 80%
- Seed longevity: 3 to 5 years.



### Medium-term

- Type: Walking and Refrigerator (11 units)
- Temperature: 0 to 5°C
- Capacity: 10,000 accessions
- Seed moisture: 8-10%
- Packing: Laminated aluminum foils
- Amount: 50 g seeds per acc.
- Stored: Air tight glass jars containing silica gel
- Tester: Dhariyal, Hashikalmi, Purbachi, Nizersail and Patnai-23
- Seed longevity: 15 to 20 years.



### Long-term

- Type: Walking (225 sqf)
- Temperature:  $-20 \pm 1^\circ\text{C}$
- Capacity: 22,000 packets
- Seed moisture: less than 8%
- Packing: Laminated aluminum foils
- Amount: 50 g seeds per acc.
- Stored: Air tight glass jars containing silica gel
- Tester: Same as medium-term
- Seed longevity: 50 to 100 years.



### Ex-situ conservation

- Type: *Ex-situ* field conservation
- Species: Wild rice
- Number of species: 11
- Number of samples: 90
- Stored: One sample per pot.



## Some activities of BRRI Genebank



Collection

Characterization

Molecular study

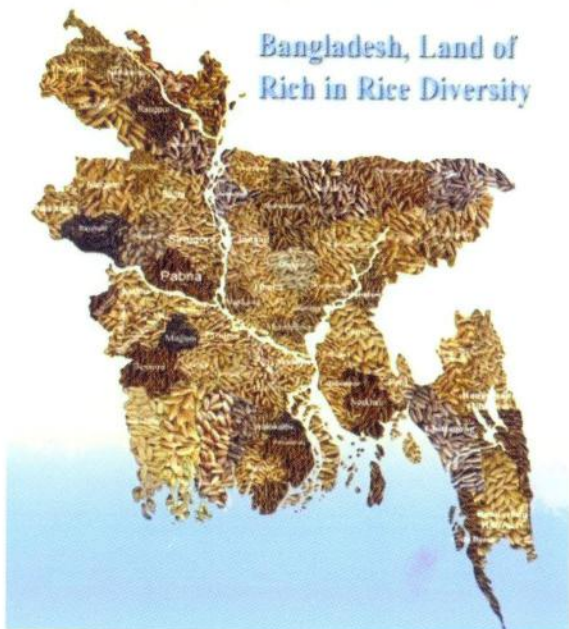
## Germplasm used in BRRI varieties (short list)

- Latisail in BR3
- Badshabhog as BR5
- Nizersail in BR22
- DA-29 in BR23
- Pajam in BR25
- Purbachi in BRRI dhan28
- Kashkani as BRRI dhan34
- Bashmati (D) in BRRI dhan37 and BRRI dhan38
- Swarnalata in BRRI dhan46
- Swarna in BRRI dhan51
- *Oryza rufipogon* in BRRI dhan55, BRRI dhan87 and BRRI dhan89
- Jirakatari in BRRI dhan62
- Amol-3 in BRRI dhan81
- Nerica-10 pure line in BRRI dhan82.

## Present status of BRRI Genebank

Variety/line	Accession (no.)
Indigenous <i>indica</i> (local)	5,373
Indigenous <i>indica</i> (pure line)	857
Local <i>indica</i> varieties and breeding lines	565
Exotic <i>indica</i> (IRRI, China, USA, Turkey etc.)	1,610
<i>Japonica</i> (Korea, Japan, Taiwan, N. China)	103
Wild rice (4 species)	46
Unknown	24
<b>Total</b>	<b>8,578</b>

## Bangladesh, Land of Rich in Rice Diversity



**For more information**

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