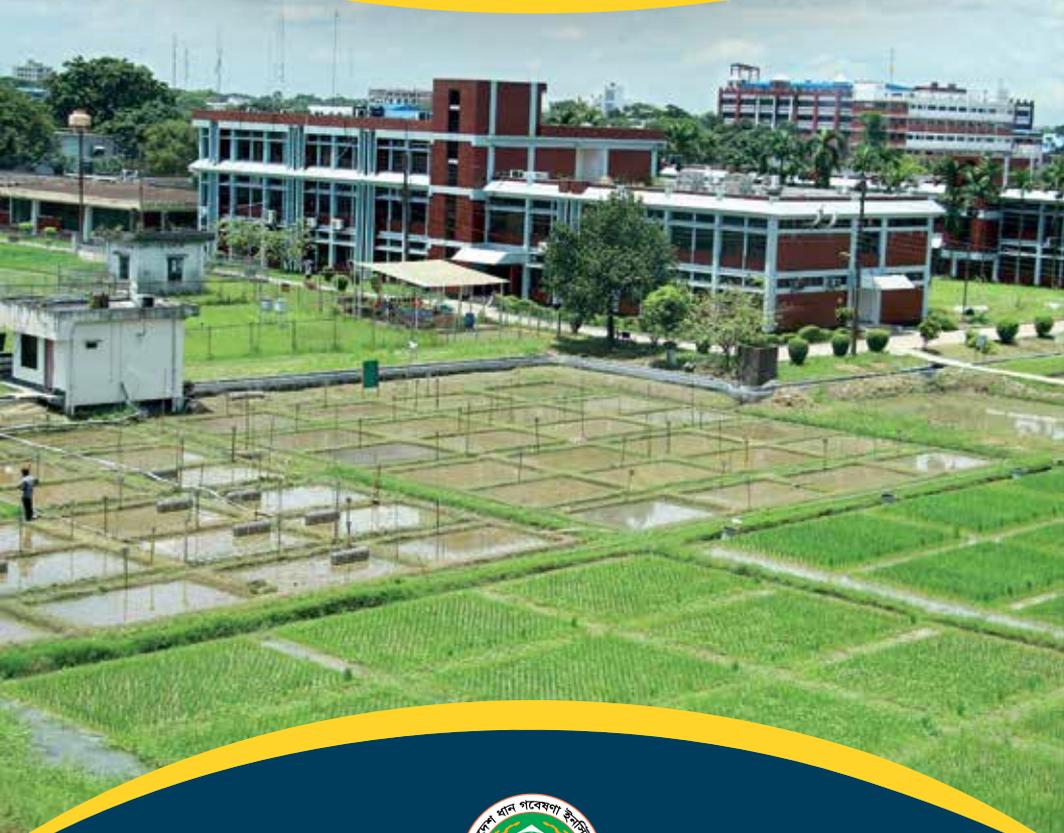


# BRRI AT A GLANCE 2023



**Bangladesh Rice Research Institute**

Gazipur 1701, Bangladesh

## Background

Rice, as a staple food, accounts for about 92% of the total food grains produced in the country. It is the main source of energy for our people. Seventy-five percent of necessary calories and 55% of protein are met from rice in the average daily diet. It shares 76% to the total crop value and rice is the source of cash income for many farmers. Moreover, rice production employs 44% of our total labour forces. It also ensures political stability for the country and provides a sense of food security to the people.

Rice research started in this part of the sub-continent in 1910. However, the modern era of rice research and development started in the mid sixties of the last century.

The demand for rice will be increasing in future with increasing population size. Realizing the importance of rice in the socio-economy and politics, an autonomous organization in the name of East Pakistan Rice research Institute (EPRRI) was established on 1 October 1970 with an 76.82 hectare of land at Joydebpur, Gazipur; 36 km away to the north of the capital city Dhaka. After liberation in 1971, it was renamed as the Bangladesh Rice Research Institute (BRRI) through the Parliamentary Act, 1973 (Act X of 1973). In order to bring dynamism in the management system, an amendment was made by a parliamentary act, 1996 (Act V of 1996).

BRRI operates with 19 research divisions, seventeen regional stations, six satellite stations for research, three support service divisions and five sections. Total manpower of the Institute is 786, of which 308 are scientists. Most of them are highly trained professionals with MS and PhD degrees.

## Mandate

- Conduct research on all aspects of rice improvement and production technologies
- Establish research centers and substations in different regions of Bangladesh for conducting research on different problems of rice
- Establish project areas for demonstration of new varieties of rice developed by the institute and organize training of framers for the cultivation of these rice varieties
- Train agricultural extension personnel and progressive farmers on modern techniques of rice production
- Publish annual reports, monographs, bulletins, booklet, leaflet, folder, journal and such other documents relating to research activities of the institute
- Advise the government on rice related policy issues.

## Governance

BRRI is an autonomous public organization under the Ministry of Agriculture. A 13-member Board of Management (BOM) headed by the Director General determines and executes the polices and undertakings of the institute.

## Research programme and management

Nineteen research divisions at BRRI HQ and seventeen regional stations across the country execute the research and technology development programme of BRRI. Multi-disciplinary, problem orientated annual research programmes are developed and executed by involving all level of scientists. Research at BRRI is organized in eight programme areas. Each programme area is composed of one or more research divisions called the programme performing units (PPU). The programme areas, component research divisions and regional stations are:

Programme Area	Component Divisions/PPU
Varietal Development	Plant Breeding, Biotechnology, Genetic Resources and Seed, Grain Quality and Nutrition
Crop-Soil-Water Management	Agronomy, Soil Science, Irrigation and Water Management, Plant Physiology
Pest Management	Entomology and Plant Pathology
Rice Farming Systems	Rice Farming Systems
Farm Mechanization	Farm Machinery and Post Harvest Technology, Workshop Machinery and Maintenance
Socioeconomic and Policy	Agricultural Economics, Agricultural Statistics, Farm Management
Technology Transfer	Adaptive Research, Training
Regional Stations	Eleven Regional Stations in different parts of the country

## BRRI regional stations in details

Name	Year of establishment	Main Research Area
BRRI RS, Barisal	1970	Tidal non-saline ecosystem
BRRI RS, Habiganj	1970	Deep water ecosystem and Boro
BRRI RS, Comilla	1970	Favourable ecosystem
BRRI RS, Sonagazi	1977	Coastal ecosystem
BRRI RS, Rajshahi	1978	Drought prone ecosystem
BRRI RS, Bhanga	1986	Deep water ecosystem and Boro
BRRI RS, Rangpur	1991	Cold and upland ecosystem
BRRI RS, Kusthia	1996	Upland ecosystem of gangetic flood plain
BRRI RS, Satkhira	1999	Saline ecosystem
BRRI RS, Sirajganj	2017	Ex-boundary rice pest (BPH, WBPH and SBPH) management strategies in Chalan Beel areas
BRRI RS, Gopalganj	2018	Deep water and saline ecosystem
BRRI RS, Dinajpur	2023	
BRRI RS, Tangail	2023	
BRRI RS, Netrokona	2023	
BRRI RS, Cox-bazar	2023	
BRRI RS, Khagrachari	2023	
BRRI RS, Sunamganj	2023	
<b>Satellite station</b>		
Satellite Station, Khulna	2023	
Satellite Station, Chittagong	2023	
Satellite Station, Patuakhali	2023	
Satellite Station, Panchagarh	2023	
Satellite Station, Sylhet	2023	
Satellite Station, Mymensingh	2023	

Annual research programme is developed and finalized in three steps:

- a) Intra and inter-divisional interaction within the scientists,
- b) Programme area meeting and
- c) Programme committee meeting.

Annual research plans are prepared based on priority areas and implemented under different ecosystems. After finalization, the research programme is executed by the programme performing units at HQ and as well as at regional stations and at the farmers' field. The concerned heads of the research division monitor the programme approved for execution. In addition, Director (Research) and the Director General supervise the overall research activities of the institute. Thereafter, results of the executed programme are presented in the Annual Internal Research Review workshop, where all the scientists of the institute and also expert members from other institutions take part as a final evaluation process. Director (Research) is the chief coordinator of all research activities of the institute assisted by a Coordinator for Advanced Studies and Research (CASR).

### **Major achievement**

Since its establishment in 1970, BRRI has made outstanding contribution to the national development through the release of high yielding varieties of rice and improved packages of production technologies. The major achievements are:

- Released 113 high yielding rice varieties having 2-3 times higher yield potential than traditional rice, 105 are inbred and Eight hybrid rice. Table-1 presents the details of the varieties developed over the last 14 years.
- Developed more than 50 improved technologies on soil, water, fertilizer and cultural practices of rice.
- Developed 39 profitable rice-based cropping patterns for different AEZs
- Developed and improved 34 agricultural machinery for farm mechanization
- Identified 32 rice diseases (10 major) and 232 species of rice insect pests (25 major), and developed control measures for the major insects and diseases including IPM
- Preserved more than 8,749 germplasms of rice in the BRRI Gene bank collected from home and abroad.
- Trained more than 1,59,873 scientists, progressive farmers and extension personnel from GOs and NGOs.
- Published 363 books, booklets, folders and extension materials for technology dissemination.

## Impact

The impacts of BIRRI's research are as follows:

- During the last four and half decades, rice production has increased nearly four folds against the scenario of increasing population @ around two and half folds.
- In 1970, population of our country was 71.21 million and yield of clean rice was 1.05 t/ha, The population has increased to about 170 million and yield of clean rice reached to about 3.05 t/ha in 2022-23.
- In 1970, total rice area was 10.31 million ha and clean rice production at that time was 10.82 million ton (MT). In 2022-23, net rice area increased to about 11.72 million ha due to higher cropping intensity. However, production of clean rice increased to about 41.3 (2022-23) MT
- At present BIRRI varieties cover more than 80% of rice area and account for about 91% of the total annual rice production of the country
- Rate of return per one taka investment in rice research and development is Tk 54
- A number of BIRRI developed rice varieties are cultivated in different countries of the world.

**Table 1. Characteristics of BIRRI developed varieties, 2009-2023.**

Designation	Season	Life cycle (day)	Varietal speciality	Average yield (t/ha)	Releasing year
BIRRI dhan51	Aman	142	Submergence tolerant	4.5	2010
BIRRI dhan52	Aman	145	Submergence tolerant	5.0	2010
BIRRI dhan53	Aman	125	Tolerates 8 dS/m salinity in seedling and reproductive stages	4.5	2010
BIRRI dhan54	Aman	135	Tolerates 8 dS/m salinity in seedling and reproductive stages	4.5	2010
BIRRI dhan55	Boro	145	Moderately tolerant to salt,	7.0	2011
	Aus	105	drought and cold	5.0	
BIRRI dhan56	Aman	110	Drought tolerant; tolerates rainless condition for 14-21 days at the reproductive stage without losing much yield	4.5	2011
BIRRI dhan57	Aman	105	Drought escaping, tolerates rainless condition for 10-14 days at the reproductive stage without losing much yield	4.0	2011
BIRRI dhan58	Boro	155	Five-day earlier than BIRRI dhan29	7.2	2012

Designation	Season	Life cycle (day)	Varietal speciality	Average yield (t/ha)	Releasing year
BRRi dhan59	Boro	153	Flag leaf erected and deep green, non lodging	7.0	2013
BRRi dhan60	Boro	151	Early maturing, yield potential equivalent to BRRi dhan29, extra long grain	7.3	2013
BRRi dhan61	Boro	150	Salt tolerant	6.3	2013
BRRi dhan62	Aman	100	Moderately zinc enriched (19 mg/kg), and early maturing	4.5	2013
BRRi dhan63	Boro	148	Slender and long	7.0	2014
BRRi dhan64	Boro	152	Zinc enriched	6.5	2014
BRRi dhan65	Aus	99	Drought tolerant	3.5	2014
BRRi dhan66	Aman	113	Drought tolerant	4.5	2014
BRRi dhan67	Boro	143	Salt tolerant, tolerates 8dS/m salinity during whole life cycle	6.0	2014
BRRi dhan68	Boro	149	Green leaf at maturity	7.3	2014
BRRi dhan69	Boro	153	Flag leaf erected	7.3	2014
BRRi dhan70	Arnan	130	Long slender grain, Aromatic	4.5	2015
BRRi dhan71	Aman	115	Drought tolerant	5.0	2015
BRRi dhan72	Aman	130	Zinc enriched	6.0	2015
BRRi dhan73	Aman	125	Salt tolerant	5.0	2015
BRRi dhan74	Boro	125	Zinc enriched, moderately blast resistant	5.5	2015
BRRi dhan75	Aman	115	Early maturing, slightly aromatic	5.0	2016
BRRi dhan76	Aman	163	Suitable for non-saline tidal low land	5.0	2016
BRRi dhan77	Aman	155	Suitable for non-saline tidal low land	5.0	2016
BRRi dhan78	Arnan	135	Suitable for saline tidal prone zone/area		2016
BRRi dhan79	Aman	135	Tolerates three weeks submergence	5.5	2016
BRRi dhan80	Aman	130	Jasmine type with strong aroma	5.0	2017
BRRi dhan81	Boro	143	Long slender, high protein	6.5	2017
BRRi dhan82	T. Aus	102	Short term	4.7	2017
BRRi dhan83	T. Aus and B. Aus	103	Drought tolerant upland rice, short duration, suitable for Charland areas	3.8	2017
BRRi dhan84	Boro	141	Zinc enriched (27.6 mg/kg)	6.5	2017
BRRi dhan85	T. Aus	107	Short Water logging tolerant	4.5	2017
BRRi dhan86	Boro	140	Long slender, protein enriched, suitable for mechanical harvesting	6.5	2017
BRRi dhan87	Aman	127	Long slender, taller plant height, suitable for high land and medium high land (Phase 1)	6.5	2017
BRRi dhan88	Boro	142	Suitable for haor and other areas as short duration variety	7.0	2018
BRRi dhan89	Boro	156	3-5 days earlier than BRRi dhan29, higher yielder	8.0	2018
BRRi dhan90	Aman	122	Small grained premium quality: protein enriched	5.0	2019

Designation	Season	Life cycle (day)	Varietal speciality	Average yield (t/ha)	Releasing year
BRRi dhan91	Aman	156	Suitable for semideep deepwater areas with up to 1.0-meter flood height	3.5	2019
BRRi dhan92	Boro	160	Long duration boro with highest yield, low water requiring	8.4	2019
BRRi dhan93	Boro	135	Leaf deep green, reddish colour grain, replacement of Swarna	5.8	2019
BRRi dhan94	Aman	134	Leaf colour is deep green reddish colour grain, replacement of Swarna	5.9	2019
BRRi dhan95	Aman	125	Leaf colour deep green, grain deep red, replacement of Swarna	5.8	2019
BRRi dhan96	Boro	145	Swarna type short duration variety, protein enriched	6.5-7.0	2020
BRRi dhan97	Boro	152	Salt tolerant, tolerates 8-10 dS/m salinity at whole life cycle	4.89	2020
BRRi dhan98	Aus	112	Long slender, high amylose	5.09	2020
BRRi dhan99	Boro	155	Tolerates 8-10 dS/m salinity at whole life cycle	5.4	2020
BRRi dhan100	Boro	148	Zinc enriched, 25.7 mg/kg Zn with BRRi dhan49 type grain	8.8	2020
BRRi dhan101	Boro	142	Bacterial Blight resistant	8.9	2022
BRRi dhan102	Boro	150	Zinc enriched, 25.5 mg/kg Zn	8.1	2022
BRRi dhan103	Aman	132	Long slender grain, taller plant height, suitable for high and medium high land (Phase 1)	6.2	2022
BRRi dhan104	Boro	147	Extra-long slender aromatic, non-sticky cooked rice	7.30-8.71	2022
BRRi dhan105	Boro	148	Diabetic rice with 55 GI	7.6-8.5	2023
BRRi dhan106	Aus	117	Non-saline tidal wetland T. Aus with lodging tolerance and bold grain	4.8-5.5	2023
BRRi hybrid dhan1	Boro	155-160	medium slender grain	7.5-8.5	2001
BRRi hybrid dhan2	Boro	145	medium bold grain	8.0	2008
BRRi hybrid dhan3	Boro	145	Short duration	9.0	2009
BRRi hybrid dhan4	Aman	118	Short duration	6.5	2010
BRRi hybrid dhan5	Boro	145	Slender and longer grain	8.5-9.0	2016
BRRi hybrid dhan6	Aman	110-115	Slender and longer grain	6.0-6.5	2017
BRRi hybrid dhan7	Aus	105-110	Suitable for Chattagram, Khulan and Rangpur, Slender and longer	6.5-7.0	2020
BRRi hybrid dhan8	Boro	145-148	Slender and longer grain	10.5-11	2022

## Recognition

BRRI, along with some of its scientists, is honoured with 28 prestigious national and international awards for its outstanding contribution to the science and technology including the followings:

- Bangabandhu Award in 1974
- President's Gold Medal in 1977
- Independence Day Gold Medal in 1978
- President's Gold Medal in 1980
- FAO Bronze Plaque in 1980
- President's Gold Medal in 1984
- Independence Day Gold Medal in 1992
- Independence Day Gold Medal in 1997
- IRRI Plaque of Honour in 2004
- Senadhira Award (IRRI) in 2006
- Bangabandhu National Agriculture Award (Gold Medal) in 2016
- Bangladesh Academy of Agriculture Gold Medal in 2016.
- Standard Chartered Bank Agro Award 2017
- Bangabandhu Agriculture Award 2017
- Bangladesh Academy of Science padak 2018
- RTV Krishi Award 2021
- Shenadhira Rice Research Award 2021
- Ekusey Padak 2022
- Digital BD Award 2022

## Future strategy

To sustain surplus rice production BRRI has initiated research and development programmes with the following major objectives:

- Harnessing frontier technologies like genome editing, genetic transformation, haplotype-based breeding, speed breeding coupled with genomic prediction, bioinformatics, high through-put phenomics, artificial intelligence, digitization, etc. techniques in variety development.
- Accelerating genetic gain of BRRI breeding programmes @ 2.0% per year for the both favourable and unfavourable areas.
- Breaking yield ceiling through the development of MVs capable of yielding more than 12.0 t/ha.
- Development and scaling up of super hybrid rice technology.
- Development of nutraceutical healthier rice like low GI, anti-oxidant rice.

- Improvement of nutritional quality of rice with high zinc, iron and vitamin A.
- Development of premium quality rice varieties with national and international standards for meeting up local and export markets.
- Development of sticky rice varieties for the Jhum areas and for the export perspectives.
- Development of multiple stress tolerant varieties.
- Pyramiding of disease and insect tolerances leading to pest resistant varieties.
- Development of mitigation and adaptation technologies in relation to climate change.
- Development of location and genotype specific technologies with low-cost perspectives.
- Development of climate change model for agricultural mitigation and Adaptation.
- Development of biorational pesticide, organic fertilizers and nano technologies.
- Validation and scaling up of the region specific technologies including varieties and management practices.
- Soil health improvement to address soil degradation for higher productivity.
- Development of appropriate farm machinery with local environment suitability, reasonable price and their up scaling through PPP.
- Impact assessment of climatic change on crop production practices.
- Enhancing dissemination of Bangladesh Rice Knowledge Bank (BRKB) based rice production technology and strengthening training programmes.
- Maximizing rice production of different unfavorable environments namely deep water, rainfed, coastal saline and non-saline, haor, water logging, drought-prone, flood-prone, hill, etc. areas.
- Accelerating technology transfer to end users.
- Determination of genetic trends of BRRI breeding programmes and stability parameters.
- Weather forecast-based agro-advisory services to the grass root levels.
- Forecasting of rice area, production and yield in Bangladesh.
- Assisting government in policy formulation and socio-economic issues.

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