



Indonesia and IRRI



For more than 40 years, Indonesia and the International Rice Research Institute (IRRI) have nurtured a partnership that has resulted in increased rice productivity, improved livelihoods for Indonesian rice farmers, and increased capacity through a new generation of IRRI-trained scientists.

Collaboration began in December 1972, when Indonesia's National Rice Research Program and IRRI agreed to work together toward improving rice research in the country. Six years later, the two parties, through the Indonesian Agency for Agricultural Research and Development (IAARD), agreed to evaluate Indonesian rice genetic diversity, improve the country's rice-based systems, promote mechanization, and build capacity through research. At that early stage, support was received from sources such as the Ford Foundation, USAID, JICA, and the Government of the Netherlands.

Recognizing the institute's role in helping Indonesia achieve rice self-sufficiency in the 1980s, President Suharto presented

Key achievements

Varietal development. Average rice yield has increased from 2.4 tons per hectare back in 1972 to about 5 tons per hectare today. Of 250 varieties released in Indonesia from 1980 to 2015, 207 had progenies linked to varieties developed by IRRI. The first IRRI-bred varieties were introduced in Indonesia in the 1970s, after a brown planthopper (BPH) outbreak devastated rice fields. Two major IRRI-developed varieties, IR36 and IR64, became dominant rice in the country. Current breeding focuses on adaptability of rice to the effects of climate change, i.e., flooding, soil salinity, and drought.

Crop management technologies. IRRI and national partners have developed and disseminated technologies that not only help increase yield and reduce input costs but are also environment-friendly:

- **Ecologically based rodent management (EBRM)** is a set of practices that helps increase average rice yields by 5–6% while reducing yield losses from rat infestation by 33–50%. EBRM with weed management and labor-saving approaches were demonstrated successfully in 2013–14. This led to a rapid expansion in 2015 of dry season rice in the tidal rice deltas of South Sumatra.
- **Rice Agro-advisory Service (*Layanan Konsultasi Padi*)** is a web-based application that provides farmers site-specific management guidelines on rice based on supplied information. In February 2015, IAARD and IRRI launched LKP, an upgrade and replacement to the previous application.
- The **leaf color chart** helps determine optimum timing of applying nitrogen fertilizer.
- **Alternate wetting and drying** or AWD is a water-saving technology that helps farmers reduce use of irrigation water without yield penalty.
- The **Super Bag** is a storage technology that helps keep rice grains in optimum condition, maintaining high seed germination rate and resulting in less broken grains during milling compared to open storage systems.
- A **flatbed dryer**, which helps maintain the quality of rice grains, allows farmers to earn a 30% price premium over sun-dried paddy. It also increases milling yield by 2.5%.
- **Community seed banks**, or *Membangun Sistem Perbenihan Berbasis Masyarakat*, are a farmer-established system of producing and then exchanging or selling good-quality seeds (particularly of indigenous varieties), especially in times of disaster or seed shortage.

Increased capacity of Indonesian rice scientists. From 1962 to 2014, IRRI provided grants for the training and education of 1,075 Indonesian scientists, researchers, program and project managers, and policymakers on various aspects of rice production, handling, and marketing; and resource management.

the *Bintang Jasa Utama*, the country's highest merit award, to IRRI in 1989. It was received by then Director General Klaus Lampe.

Rice in Indonesia

Rice is the most important agricultural commodity in Indonesia, which has the

world's fourth largest population. The average Indonesian consumes about 126 kilograms of rice a year. Some 20.5% of Indonesia's land area of 39.7 million hectares is under paddy cultivation. It is estimated that 14.2 million Indonesian farming households directly obtain their livelihood from rice.

Through various strategies, the Indonesian government aims to reduce rice imports and achieve rice self-sufficiency by 2016, and for production to increase by 3% a year to reach 82.1 million tons by 2019. ■

Current collaboration

- IRRI supports Indonesian rice production through development of new rice varieties that adapt better to climate change and sub-optimal lands; development of hybrid rice; integrated crop, pest, and resource management in target areas; natural resource management; use of postharvest technologies; and evaluation of inbred and hybrid Green Super Rice varieties under rainfed and irrigated conditions.
- The CORIGAP (*Closing Rice Yield Gaps in Asia*) project, supported by the Swiss Agency for Development and Cooperation, began research activities in the tidal rice deltas of South Sumatra in 2013 and in Yogyakarta, Java, in 2014. The collaboration with the Indonesian Center for Food Crops Research and Development aims to alleviate poverty and improve gender equity by optimizing the productivity (resource-use efficiency) and environmental sustainability of irrigated rice production systems. Project members work closely with farmers using adaptive research and learning alliance approaches to promote best practices for pre- and postharvest in lowland irrigated rice cropping systems.
- The Consortium for Unfavorable Rice Environments is working with the Indonesian Center for Rice Research (ICRR) on reducing risks and improving rice livelihoods in Southeast Asia, and is funded by the International Fund for Agricultural Development.
- With breeders from the Indonesian Center for Rice Research (ICRR) and other partners, IRRI is developing Golden Rice versions of rice varieties (e.g., Ciherang) popular among local farmers.
- The RIICE (*Remote sensing-based Information and Insurance for Crops in Emerging economies*) project, implemented in 2012, aims to reduce the vulnerability of smallholders engaged in rice production through the use of remote-sensing technology. It also allows better access to information on the actual growth status of rice crops and forecasted yields, thus helping farmers manage land and resources better.

- WeRise, a decision-support tool being developed by the CCADS-RR (*Climate change adaptation through development of a decision-support tool to guide rainfed rice production*) project, builds on existing knowledge, data, and tools and integrates seasonal weather forecasts and real-time weather data with crop models and nutrient management tools to provide crucial weather information. Partners include the Indonesian Agricultural Environmental Research Institute and ICRR, with support from the Japan Ministry of Agriculture, Forestry, and Fisheries.
- Initiatives to accelerate delivery and impact of technology are strengthened through the systematic use of farmer field schools, information and communication tools, and capacity building.
- A study on rice price fluctuations and the impact of these on rural poverty in Indonesia, and other socioeconomic policy research.
- Capacity building and development of rice scientists and extension professionals (1,096).

International Rice Research Institute (IRRI)

The International Rice Research Institute (IRRI) is the world's premier research organization dedicated to reducing poverty and hunger through rice science; improving the health and welfare of rice farmers and consumers; and protecting the rice-growing environment for future generations. IRRI is an independent, nonprofit research and educational institute founded in 1960 by the Ford and Rockefeller foundations, with support from the Philippine government. The institute, headquartered in Los Baños, Philippines, has offices in 15 rice-growing countries in Asia and Africa, and about 1,180 staff members of some 40 nationalities.

Working with in-country partners, IRRI develops advanced rice varieties that yield more grain and better withstand pests and disease as well as flooding, drought, and other destructive effects of climate change. More than half of the rice area in Asia is planted to IRRI-bred varieties or their progenies. The institute develops new and improved methods and technologies that enable farmers to manage their farms profitably and sustainably, and recommends rice varieties and agricultural practices suitable to particular farm conditions as well as consumer preferences. IRRI assists national agricultural research and extension systems in formulating and implementing country rice sector strategies.

Contact:

Zulkifli Zaini
IRRI Representative and
Liaison Scientist to Indonesia
z.zaini@irri.org

