

The IRRI logo consists of the letters "IRRI" in a white, serif font, centered within a solid green rectangular background.A photograph showing several bundles of rice seedlings floating in shallow, reddish-brown water. The seedlings are green and have their roots exposed. The background is a blurred view of a rice field.

# Indonesia and IRRI

Rice is one of the most important agricultural commodities in Indonesia. It is the staple food for the majority of Indonesians, accounting for over half of the calories in the average daily diet. Rice production provides livelihoods for an estimated 14 million farming households, majority of which are smallholders with an average land area of less than one hectare.

The country is the world's third-largest rice producer after China and India, producing 31.3 million tons of milled rice in 2019. However it is also the third-largest rice consumer, with rice consumption reaching more than 29.7 million tons in the same year. The nation is a rice importer, mainly to keep rice reserves stable and prices low in local markets.



*Farmer inspecting Alternate Wetting and Drying (AWD) tubes.*



For almost six decades, 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 1962 and was formalized with an agreement in December 1972, when Indonesia's National Rice Research Program and IRRI agreed to work together toward improving rice research in the country. In 1978, 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 the Bintang Jasa Utama, the country's highest merit award, to IRRI in 1989. It was received by then Director General Klaus Lampe.



## Current collaborations

The **Closing Rice Yield Gaps in Asia (CORIGAP)** project, supported by the Swiss Agency for Development and Cooperation (SDC), began research activities in the tidal rice deltas of South Sumatra in 2013, and in irrigated areas of Yogyakarta, Java, and North Sumatra in 2014 and 2017, respectively. Also under CORIGAP, research on rat control project "*Contraceptive baits to limit fertility of rice fields rodents in SE Asia*" began in 2018.

The **Consortium for Unfavorable Rice Environments (CURE)** works 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 (IFAD).

The **Healthier Rice Program** works with breeders from the Indonesian Center for Rice Research (ICRR) and other partners to develop Golden Rice, Zn, and Fe versions of rice varieties. (e.g., Ciherang) popular among local farmers. Indonesia released Inpari IR Nutri Zn in 2019.

The **Remote Sensing-Based Information and Insurance for Crops in Emerging economies (RIICE)** project, implemented in 2012, aims to reduce the vulnerability of smallholders engaged in rice production through remote-sensing technology. It 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 developed by the Climate Change Adaptation through Development of a Decision-Support Tool to Guide Rainfed Rice Production (CCADS-RR) 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 (IAERI, AIATs) and ICRR, with support from the Japan Ministry of Agriculture, Forestry, and Fisheries (MAFF).

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## Key achievements

**Varietal development.** Average rice yield has increased from 2.4 tons per hectare back in 1972 to about 5.1 tons per hectare today. Of 341 varieties released in Indonesia from 1980 to 2017, 210 had progenies linked to varieties developed by IRRI. The most widely-adopted 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, drought, and nutritious rice. The most recent varieties released include Inpari 30 Ciherang Sub 1, Inpari 34-35, Inpari 42-43 GSR, and Inpari IR Nutri Zn. Inpari IR Nutri Zn contains higher Zn needed to tackle stunting among children.

**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. These include:

- 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%.
- 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.
- Community seed banks, or *Membangun Sistem Perbenihan Berbasis Masyarakat*, are a farmer-established system of producing and exchanging or selling good-quality seeds i.e. indigenous varieties, especially in times of disaster or seed shortage.
- 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.
- Flatbed dryers help maintain the quality of rice grains, allowing farmers to earn a 30% price premium over sun-dried paddy. It also increases milling yield by 2.5%.

**Increased capacity of Indonesian rice scientists.** From 1962 to 2019, IRRI provided training and education for 1,135 Indonesian scientists, researchers, program and project managers, and policymakers on various aspects of rice production, handling, marketing, and resource management.



International Rice  
Research Institute

IRRI aims to improve livelihoods and nutrition, abolishing poverty, hunger, and malnutrition among those who depend on rice-based agri-food systems. In doing so, IRRI's work protects the health of rice farmers and consumers, and the environmental sustainability of rice farming in a world challenged by climate change. IRRI's work promotes the empowerment of women and supports opportunities for youth in an equitable agri-food system.

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