

Japan and IRRI

Japan and IRRI have been partners since the institute's establishment in 1960. Japan is represented on the IRRI Board of Trustees and is one of IRRI's most generous financial supporters, having given approximately USD 245 million as of 2017. In 1992, the Japanese government contributed USD 1.9 million to the construction of an IRRI research facility named after Dr. Kenzo Hemmi, an outstanding Japanese agriculturist. Japan also provided financial support for the construction of the Nyle C. Brady Laboratory, which houses the International Rice Genebank.

Over the years, Japan has shared with IRRI both knowledge and human resources. Forty-nine short course graduates and 119 scholars from Japan worked at IRRI between 1962 and 2017. These include 22 PhD and 17 MSc students, 50 on-the-job trainees, 17 interns, and 14 fellows.

Since 1984, Japanese scientists have been assigned by the Japan International Research Center for Agricultural Sciences (JIRCAS) to work on collaborative projects at IRRI headquarters under a special contribution of the Japanese government through the Ministry of Agriculture, Forestry, and Fisheries. Key achievements include the identification of genes that are resistant to various races of bacterial leaf blight disease, establishment of direct seeding technology, and a clearer understanding of the genetic mechanism for control of rice tungro. JIRCAS, alongside IRRI and four other research institutions, is a strategic founding partner of the CGIAR Research Program on Rice Agri-Food Systems (formerly Global Rice Science Partnership).



Key achievements

- **Breeding and crop improvement.** The Wonder Rice Initiative for Food Security and Health project of IRRI, Nagoya University and Japan International Cooperation Agency (JICA) developed 200 new rice varieties for Africa, which are high-yielding, disease-resistant and tolerant of many unfavorable conditions. For an IJCRP initiative, JIRCAS and IRRI scientists identified heat-sensitive popular varieties to develop early-morning flowering rice through future molecular breeding.
- **Climate change mitigation.** A key output of the greenhouse gas mitigation in irrigated rice systems in Asia (MIRSA) project was the establishment of a standard protocol for measuring greenhouse gas emissions in rice systems. MIRSA-2 crafted implementation guidelines on techniques to reduce greenhouse gas emissions from irrigated paddy fields and set up an information infrastructure to share findings of participating members. More than five scientific publications have been produced based on the implementation of Alternate Wetting and Drying technology in Vietnam, Thailand, Indonesia and the Philippines.
- **Capacity building.** From 2011 to 2019, JICA supported IRRI and the Philippine Rice Research Institute-led training activities for 258 extension officers, agronomists, young researchers, research technicians, breeders, and seed inspectors from 23 CARD countries, and 44 Filipino participants.
- **Catalyzing innovation for resilience.** Implementation plans to disseminate submergence-tolerant varieties and associated new production practices in Southeast Asia helped farmers reduce losses in production and income caused by typhoons and flooding.

Current collaborations

Climate Change Adaptation through Development of Decision-Support tool to guide Rainfed Rice Production (CCADS-RR) and Upscaling of WeRise in wider rainfed rice areas of Southeast Asia and Sub Saharan Africa through database development and capacity building. The IRRI-Japan Collaborative Research Project (IJCRP) has developed the Weather-rice-nutrient integrated decision support system (WeRise) to increase rainfed rice productivity and improve the livelihoods of rainfed rice farmers. WeRise is a computer-based application that provides farmers with crucial weather and rainfall distribution information during the crop-growing season. On-farm validation experiments were conducted in Laos, Indonesia, and the Philippines, with additional experiments currently ongoing in the latter two countries. WeRise is currently being localized for rainfed rice areas in the Philippines. Technology transfer pathways were developed with stakeholders to gain commitment and sustain project outputs beyond project life.

Development of greenhouse gas reduction technologies in the agricultural sector through international collaboration (MIRSA-3). MIRSA-3 aims to develop a comprehensive mitigation technology for rice paddies that reduces GHG emissions by 30% as well as conserves soil fertility and stabilizes rice productivity through integrating water management, fertilizer application, and organic amendment. Research on carbon sequestration is currently ongoing in field sites in Indonesia, Vietnam, and the Philippines.

Development of rice breeding materials with improved traits to facilitate crop intensification, JIRCAS president incentive, and Global Heat Stress Monitoring Project. These ongoing initiatives aim to develop rice breeding materials with varying heading dates, higher yield potential and high-temperature tolerance. Breeding materials developed under these projects are transferred to JIRCAS in Japan and evaluated under local environments. Selected elite lines with high yield potential and heat tolerance will be used for the development of Japanese rice varieties.

Extension Capacity Development for Rice Food Security in Africa. This program aims to improve rice production and the rice seed sector in Africa by strengthening human resources across the rice agri-food system in Coalition for Africa Rice Development (CARD) countries.

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International Rice
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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.