



The Department of Agriculture and IRRI

Rice research toward food security in the Philippines

The Philippine Department of Agriculture (DA) and the International Rice Research Institute (IRRI) share the goals of reducing poverty and hunger, improving farmer and consumer health, and ensuring environmental sustainability.

DA and IRRI are working together to achieve and sustain food security for all Filipinos, many of whom still go hungry every day. Both work closely with Philippine partners through the following initiatives:

Cross-country research

Benchmarking the competitiveness of Philippine rice

The project assessed the competitiveness of Philippine rice relative to those of selected rice-producing countries in Asia. Major findings of the benchmarking study are:

- Production cost per kilogram of paddy in the Philippines, as represented by Nueva Ecija province—the country's gold standard in rice production—was higher than in similarly intensively cultivated sites in Vietnam, Thailand, and India but lower than in other rice-importing countries such as China and Indonesia.
- Labor and mechanization account for the cost difference between the Philippines and exporting countries. The Philippines spends much more on labor for transplanting and harvesting than countries (exporters) that have mechanized these processes.
- Rice produced in Nueva Ecija is thus unable to compete pricewise in Manila wholesale markets with imported rice from Vietnam, Thailand, or India—even with a 35% tariff.
- Higher yields from use of better seeds or growing hybrid rice and reducing labor costs through direct seeding and use of combine harvesters/threshers have been found to be crucial in improving competitiveness and farmer profit.
- Improving milling efficiency and capacity utilization are also important in protecting production gains.

Heirloom rice

Raising productivity and enriching the legacy of heirloom rice through empowered communities in unfavorable rice-based ecosystems

The project sought to enhance the productivity and, thus, the livelihoods of indigenous peoples in the highlands or upland rainfed rice areas through conservation of on-farm and farmer-preferred 'heirloom' or traditional climate-proof varieties.

A major focus was on product development through varietal characterization, in which nutrition, texture or sensory profiles, grain quality, susceptibility to pest, tolerance for drought, and other biological assays established the unique traits of 55 and 25 traditional rice varieties and their identified variants from the Cordillera region and North Cotabato, respectively.

A season-long Farmers' Field School for members of indigenous farming communities was held, as were other training activities and workshops that gave the farmers exposure to recommended farming practices as well as added to their knowledge of management options before, during, and after rice production.

The project also helped farmers develop entrepreneurial skills and identify opportunities for value addition (packaging and branding) and market linkages for premium heirloom rice. To provide traceability and protection for these varieties, selected heirloom rice from Benguet, Ifugao, Kalinga, and Mountain Province were prioritized for Geographic Indication (GI) registration.



Other project outputs include a catalogue of varieties, a community registry, and a code of practice.

Rice Crop Manager

A climate-informed agro-advisory and information service for rice

The project facilitates the continuing development, upgrade, and maintenance of computer- and mobile phone-based tools that provide farmers with customized rice farming recommendations. Field research has shown, from 647 trials, that rice farmers from 10 municipalities in the Philippines harvested an average of 370 kg more rice (unmilled) following recommendations from Rice Crop Manager (RCM). Use of RCM advice resulted in an average increase in income of PHP 4,337 per hectare per season. For individual farmers who have no access to the online tool, some 920,000 printouts of RCM recommendations were distributed from 2013 to 2016.

PRISM

Philippine Rice Information System

To support decision-making toward securing rice production in the Philippines, the project continually provides estimates of rice area, potential and actual yield, and crop damage from flooding or drought based on a combined remote sensing and crop modeling approach, in conjunction with household surveys. It will also assess and characterize rice production situations in major rice environments in the Philippines and determine attainable yield or yield gains from optimized disease-, pest-, and weed-control practices.

Major PRISM outputs:

- Detailed maps of rice area, start of season, and yield by semester;
- Unbiased damage assessment in times of capacity (nine flood and two drought assessments);
- Efficient and standardized protocols for data collection using smartphones;
- Accurate information on production situation and pest injuries based on standardized procedure; and
- Improved capacity of national and regional DA staff and local partners in identifying and assessing rice pest injuries and characterizing production situations in farmers' fields.

WaterRice

Water-efficient and risk mitigation technologies for enhancing rice production in irrigated and rainfed environments

The project aims to develop an ICT tool that follows the principles of alternate wetting and drying (AWD) to alert farmers, irrigation associations, and extension personnel when irrigation is needed. Such a tool will improve water-use efficiency and reduce inputs and production risks in both irrigated and rainfed areas.

Laser leveling and other mechanized crop establishment methods will also be assessed for impact on adoption of AWD and on improving the productivity of rainfed environments.

The project also aims to develop ICT tools for integrated weed management practices for both irrigated and rainfed environments.

WaterRice will operate in Regions I, II, III, VI, and XII, focusing on small water irrigation system associations as well as communal and national irrigation schemes. As the

complexity of decision-making on water management lies in water governance, the project has done stakeholder mapping for Region III. At this stage, project focus is on automation of irrigation scheduling using a tool that automatically sends a text message to the farmer, water user association lead, or agricultural technician. The AutoMon (sensor) has been developed and is now being tested at the IRRI and Philippine Rice Research Institute stations.

IPaD

Improving technology promotion and delivery through capability enhancement of the next generation of farmer intermediaries and rice extension professionals

The project continues to support the efforts of the DA in accelerating the spread and use of relevant and reliable knowledge on rice by making farmer intermediaries more effective. Since its inception, IPaD has seen 117 AgRiDOCs (30% female) finish its capacity-building programs nationwide and is preparing to train another batch of more than 100 extension professionals.

IPaD has also engaged more than 10,000 strategic extension intermediaries from the private sector, academe, media, and rural organizations; sponsored the involvement of more than 85 DA professionals and researchers in international fora, conferences, and training programs; and supported the participation of 160 extension workers, researchers, and staff from the DA and local government units in IRRI-facilitated non-degree training activities.

Next-Gen

Accelerating the development and adoption of next-generation rice varieties for major ecosystems in the Philippines

The project continues to facilitate the development and field testing of next-generation high-yielding and climate change-ready rice varieties. It employs new methods to boost the adoption of high-yielding rice varieties through participatory varietal selection (PVS), thus hastening production of high-quality seeds within and for an ecosystem. Farmers are able to choose specific varieties for their targeted ecosystem through the PVS trials.

- From 2014 to 2016, the National Seed Industry Council (NSIC) approved 45 rice varieties for release to farmers. These varieties are included in the 2016 and upcoming 2017 PVS trials.
- In 2016, 148 and 212 PVS trials were done for the dry and wet seasons, respectively, covering irrigated inbreds and hybrids; varieties for rainfed/drought-prone, saline, flood-prone, and cool elevated areas; and other special purposes. Best performing varieties were identified based on yield, preferential analysis, and sensory evaluation.

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