

2022

PHILRICE R&D HIGHLIGHTS



PhilRice Negros



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CONTENTS

Executive Summary	1
Core-Funded Project 1: Rice Research and Development for Water-scarce Environments in the Visayas	2
Core-Funded Project 2: Improvement and Validation of Organic Rice Management Practices	3
Core-Funded Project 3: Collaborative Rice Extension for Achieving Rural Transformation (CREATE) for Regions VI and VII	4
Program-based Project 1: Philippine Rice Information System for Regions VI and VII	4
Program-based Project 2: Rice Business Innovations System (RiceBIS) for Negros	5
Program-based Project 3: Nutritionally Enhanced Rice-finishing and Delivering Golden Rice and High-iron and High-zinc Rice Varieties	6
Externally-Funded Project 1: Evaluation of Agronomic and Yield-related Traits of Near-isogenic Lines (NILs) of qRL6.1 NSIC Rc 160 and NSIC Rc 240 Backgrounds at PhilRice Negros	7
Externally-Funded Project 2	7
Evaluation of CMS Parentals, Breeding Lines, and Promising Hybrids for Resistance to Major Insect Pests and Diseases	7

PHILRICE NEGROS

Branch Director: **LEO T. STA. INES**

EXECUTIVE SUMMARY

DA-PhilRice Negros addresses regional issues such as on low productivity, profitability, climate change impacts, labor scarcity, among other matters. Its research and development (R&D) projects are geared toward increasing the productivity and profitability of rice farmers and stakeholders of Western and Central Visayas. This year, the station implemented three station-based projects, two program-based projects, and four externally-funded projects, established both at the station and on-farm.

Station-based Projects

One of the station research initiative projects addresses water-scarcity challenges of Western Visayas. It consists of three component studies that aim to identify appropriate models for drought-prone areas, develop suitable rice crop management for quick-turnaround (QTA), and develop rice ratooning management strategies. Another research develops optimum management practices for organic rice production (Organic Rice Project). The project includes three components: (a) a baseline survey of organic rice farmers in the Visayas; (b) identification of suitable rice genotypes for organic rice production through participatory variety selection; and (c) validation and improvement of organic rice production management and practices. The station-based development project—Collaborative Rice Extension for Achieving Community Transformation (REACT) for Regions 6 and 7—envisioned to increase productivity and profitability of rice farmers by enhancing knowledge-sharing activities and addressing location-specific concerns through partnerships with other stakeholders. The project also maintains a *Palayamanan* Model at the station.

Program-based Projects

Two projects were implemented in 2022: Rice Business Innovations System (RiceBIS) and Philippine Rice Information System (PRiSM). RiceBIS Phase I and its expansion site aimed to improve competitiveness of rice and rice-based farming communities by promoting yield-enhancing and cost-reducing technologies in the Negros provinces. Meanwhile, PRiSM Visayas provided near real-time, season and location-specific data that can aid Department of Agriculture-Regional Field Office (DA-RFO) 6 and 7 in their decision-making roles.

Externally-funded Studies

A collaborative project between Japan International Research Center for Agricultural Sciences (JIRCAS) and PhilRice evaluated promising lines that have been introgressed with quantitative trait loci (QTLs) for efficient nutrient uptake, using popular varieties as background parents. Twenty-five lines were evaluated under PhilRice Negros conditions in two seasons. The OneRicePH study under Module 2 established field trials in two methods of crop establishment: dry direct seeding and transplanting. Both trials evaluated 480 promising lines including check varieties. Cytoplasmic Male-Sterile (CMS) parentals, promising hybrids, and breeding lines were assessed for their reactions to the rice tungro virus at the station in both seasons, involving 73 entries. Malusog Rice was made available to the general public with seed and rice production and distribution initiated by PhilRice Negros in Western Visayas.

CORE-FUNDED PROJECT 1:

Rice Research and Development for Water-scarce Environments in the Visayas

Leo T. Sta. Ines, Cielo Luz C. Mondejar, Gerald E. Bello, Chennille Kaye L. Galvan, Karla V. Canto, and June Nill Paclibar

Four treatments were established in this study. The Best Farmers' Practice (BFP) and Farmers' Practice (FP) were based on a previous survey of 37 rainfed farmers in Hinigaran, Negros Occidental. Most of these farmers used PSB Rc10, including NSIC Rc 216 and Rc 226. Their preferred fertilizers were complete fertilizers, ammonium phosphate, and urea, applied in two splits. Their average yields were higher during the wet season.

The two other treatments were based on the PalayCheck System of PhilRice. Yields at three sites—Oringao (Kabankalan City), PhilRice Negros Station, and Cambaog (Hinigaran)—for both seasons did not significantly differ among treatments, though there was considerable variation in Hinigaran. In Oringao, yields from the BFP were significantly higher than those from the FP during the dry season (DS), but were nearly the same during the wet season (WS). In Hinigaran, yields from the FP were significantly lower during the wet season.

Meanwhile, rice areas with three croppings per year in selected areas in Negros Occidental were mapped using available secondary data from DA-RFOs, National Irrigation Administration (NIA), and Philippine Rice Information System (PRiSM). DA-RFO 6 data showed that 55% of the physical rice area of Negros Occidental planted three crops a year. Bago City had almost 6,000ha

or 50% of its total rice areas planted for the third crop. Areas under the NIA's Bago River Irrigation System (BRIS) planted five croppings in two years with a fixed planting schedule. Available data from PRiSM were used to detect rice areas that were planted thrice a year. These areas had access to supplemental irrigation such as deep wells and natural streams (rivers).

Also under Project 1, 15 genotypes were evaluated in the screenhouse (five traditional and 10 high-yielding varieties). Eight varieties were evaluated in the field under rainfed conditions at PhilRice Negros. The main crop was rainfed, and supplemental irrigation was provided for the ratoon crop. Yields of the main crop ranged 1.5-4.7t/ha, with Cuevas yielding the lowest and NSIC Rc 222 the highest. For the ratoon crop, Rc 480 and Cuevas yielded the highest.

Seven varieties were evaluated under irrigated tail-end conditions at Damsite, Murcia, Negros Occidental. Two direct-seeded yielded the highest. The transplanted-ratoon cropping sequence failed.

CORE-FUNDED PROJECT 2:

Improvement and Validation of Organic Rice Management Practices

Alvin D. Palanog, Cielo Luz M. Mondejar, Carla V. Canto, and Ellie Zandrew G. Ganela

Of the 199 organic rice farmers surveyed from Negros Occidental, only 20.1% had organic certification from third-party representatives. Two-thirds (67.5%) were certified by the Negros Island Certification Center of the Philippines (NICERT). Focus group discussions with organic rice farmers from Iloilo, Antique, and Capiz were conducted to identify their best crop management practices that yielded 5t/ha.

A baby trial was conducted in Candoni during DS, while two baby trials were conducted in Bago City, Negros Occidental, during WS. These trials included the top four high-yielding and farmer-preferred varieties, along with a check variety. The varieties tested were NSIC Rc 400, Rc 18, Rc 216, Rc 10, Rc 440, and Mailum Black (check). The tested varieties out-yielded the check variety, making them suitable for recommendation to organic rice farmers or for use as parental lines in breeding programs.

CORE-FUNDED PROJECT 3:

Collaborative Rice Extension for Achieving Rural Transformation (CREATE) for Regions VI and VII

Alvin D. Palanog, Cielo Luz M. Mondejar, Carla V. Canto, and Ellie Zandrew G. Ganela

The performance of 14 modern and four popular traditional varieties was showcased at the station using the PalayCheck System. The modern varieties yielded 3.17-4.87t/ha, while others varieties produced 1.52-2.55t/ha.

The eggplant-mungbean cropping was identified as the most profitable pattern during WS, onion showed potential during DS. Small-scale rice straw-based production generated 1,250kg of vermicast and mushroom production yielded 200 fruiting bags.

Organic rice production, along with organic practices such as rice-azolla cropping system, use of locally available inputs, and farmers' best organic practices were demonstrated at the station. A net income of P88,266/ha was attained using high-yielding varieties with rice-azolla. In addition, the rice-azolla-fish-duck production under the *Palayamanan* netted P52,198. Two field days gathered 600 farmers from various communities and associations in Negros Occidental. Eight techno-demo sites showcased mature nutrient management tools, and a Rice Boot Camp trained 29 agriculture graduates about PalayCheck System and other relevant topics.

PROGRAM-BASED PROJECT 1:

Philippine Rice Information System for Regions VI and VII

Gerald E. Bello, Chennile Kaye L. Galvan, Jimmy Eledia, Fernando S. Doroy, and Eduardo Jimmy P. Quilang

In Western Visayas, the PRISM project had 121 active sites, achieving 63% of the expected data collection output. In Central Visayas, 20 active sites were maintained, with 71% of the expected data collected and submitted within the set period. The collection and submission of datasets were hampered by typhoons.

In addition to harvest-season *palay* prices monitoring, 27 *palay* price surveys were conducted over two semesters, generating 158 datasets. A preliminary quick survey on fertilizer prices and response was also conducted.

Two rounds of rice and non-rice (RNR) validations were conducted in each region. In the first RNR activity, 198 validation points were recorded in Western Visayas and 165 points in Central Visayas, covering 218 rice areas and 134 non-rice areas such as sugarcane fields, grasslands, and corn areas. In the second RNR activity, 361 points were collected with 187 of which were rice areas. In Western Visayas, most points were submitted within a week, with only three delayed points. In Central Visayas, the points were submitted within three weeks.

PROGRAM-BASED PROJECT 2:

Rice Business Innovations System (RiceBIS) for Negros

Anileen O. Pajarillo, Rodrian A. Repique, Christer John M. Celiz, and Retchie Ann Artigosa

The RiceBIS Negros Agrarian Reform Cooperative (RiceBISNARCo) has maintained 39 dedicated members since its establishment in 2017. The cooperative is divided into three clusters: Angelica, Bordagul, and Calatrava. No new members have been admitted to the cooperative due to strict requirements on regular meeting attendance and active participation. As a result, the capital share, of P2,000 per member has increased to P100,000 per share. The cooperative has expanded its enterprises from milled and brown rice into custom service provision.

In 2022, the project expanded to 10 clusters by partnering with two associations comprising 160 farmers from Canlaon City, Negros Oriental. These farmers actively participated in the project's activities, bringing the total number of beneficiaries to 115 women and 45 men.

Four clusters actively engaged in agroenterprise development (AED) identified two promising enterprises: financing for Cluster Panun-an Alibabay Farmers Association (PAAFA) and milled rice for Cluster Alibabay Farmers Irrigators Association (AFIA). Clusters BAPALMA and Bayog Farmers Irrigators Association (BFIA) focused on agricultural inputs.

To foster inclusive growth and improve farmer livelihoods, five AED-active clusters decided to merge and form a cooperative. Their ultimate goal is to

acquire a post-harvest facility and a rice milling complex. Among the clusters, the Anahaw Lagha Lupaw Habuyo Farmers Association (ALLFA), already started a custom service provision enterprise. The newly formed cooperative, QueCoRiFaCo, plans to focus on milled rice and agricultural inputs as its core enterprises. Throughout this process, the cooperative members were guided and assisted by Community Development Facilitators (CDFs) and the San Carlos City Cooperative and Livelihood Development Office (CLDO).

PROGRAM-BASED PROJECT 3:

Nutritionally Enhanced Rice-finishing and Delivering Golden Rice and High-iron and High-zinc Rice Varieties

Gerardo F. Estoy, Jr., Albert Christian S. Suner, Francis L. Tejada, and Gary R. Roda

In Western Visayas, the pilot-scale deployment of Malusog Rice (MR) was launched in Antique—one of the seven provinces identified with increasing cases of Vitamin A Deficiency (VAD). The deployment yielded positive results throughout the cropping season, with partners producing a total of 15,970kg of paddy MR at 14% moisture content. This included seed production output from the Western Visayas Agriculture Research Center (WESVIARC) in Jaro, Iloilo City. The milled Malusog Rice was used in communication and promotion efforts in targeted areas. Additionally, the LGU of Antique passed a resolution supporting the cultivation and consumption of modern biotechnology products including MR. The program also supported the celebration of National Women's Month in March by distributing packs of milled MR to the PhilRice Negros staff.

The MR project had two main components: seed and commercial production. The seed production was conducted on-station at WESVIARC and through by on-farm seed growers in Sibalom, Antique. The commercial production involved two farmers cultivating MR for milling in the Patnongon and Sibalom sites.

EXTERNALLY-FUNDED PROJECT 1:

Evaluation of Agronomic and Yield-related Traits of Near-isogenic Lines (NILs) of qRL6.1 NSIC Rc 160 and NSIC Rc 240 Backgrounds at PhilRice Negros

Ellie Zandrew E. Ganela, Alvin D. Palanog, and Jonathan M. Niones

Twenty NILs (near-isogenic lines) developed under the JIRCAS Project, including check varieties NSIC Rc 160 and NSIC Rc 240, were evaluated during the dry and wet season for grain yield and selected agronomic traits.

Grain yields among NILs ranged from 2.86-3.78t/ha, with an average yield of 3.27t/ha. Among these, JiRice-12 yielded the lowest while JiRice-13 recorded the highest yield. In addition to yield measurements, data were collected on various yield component traits including shoot dry weight, 1,000-seed weight, spikelet fertility, and number of grains.

EXTERNALLY-FUNDED PROJECT 2

Evaluation of CMS Parentals, Breeding Lines, and Promising Hybrids for Resistance to Major Insect Pests and Diseases

Ellie Zandrew E. Ganela, Alvin D. Palanog, and Juliet P. Rillon

During 2022 DS, 73 materials were evaluated for resistance to rice tungro virus (RTV) disease. The data collected included the total number of hills per row and the number of infected hills per row. Of these materials, 50 entries were resistant, 22 were intermediate, and one was classified as susceptible. In WS, 31 entries were assessed, with 26 identified as resistant and five categorized as intermediate-resistant.