2023 PhilRice R&D Highlights

AGUSAN BRANCH STATION

Philippine Rice Research Institute
Central Experiment Station
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Contents

STATION

PhilRice Agusan

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EXECUTIVE SUMMARY

As PhilRice's Nutrient Management Center, the station develops, improves, and promotes location-specific and integrated nutrient management technologies suitable to the unique soil and agro-climatic conditions in Northeastern Mindanao Regions 10, 11, 13. This is intended to alleviate low yields in the regions, which are caused by unfavorable weather (e.g., low solar radiation and frequent rainfall), the prevalence of pests (e.g., white stemborer, bacterial leaf blight), and soil problems.

Projects provide farmers with access to advanced technologies to help increase yields, reduce production costs, and minimize postharvest losses. These efforts are implemented through technology demonstrations, field walks, trainings, seminars, and various Knowledge Sharing and Learning (KSL) activities. Co-implementers include the DA-Regional Field Offices (RFOs), Provincial/Local Government Units (PLGUs), farmer organizations, cooperatives, and other agencies/entities.

In 2023, 15 projects were implemented bannered by three station-initiated projects (Branch Development Initiative-BDI, Branch Research Initiative-BRI, and Operationalization of Agricultural and Biosystems Engineering Unit-ABEU); the rest are CES-based programs and projects. These projects develop rice crop management options for high productivity and profitability in Caraga, and promote area-based rice technologies.

The BDI project "Area-based Technology Promotion and Strategic Partnerships in Northeastern Mindanao, Davao, and Caraga Regions" started its upscaling activities on the use of High-quality Seeds (HQS), Rice Crop Manager Advisory System (RCMAS) for nutrient management, mechanical transplanters, and alternate wetting and drying (AWD) for water management. These technologies were demonstrated in Brgy. Parang, Cantilan, Surigao del Sur, and Sta. Monica, Siargao, Surigao del Norte. NSIC Rc 508 is the highest yielder, with 6.5 and 6.2t/ha for the two sites. Three techno-demos with nine inbred/hybrid varieties were also established in Brgy. Sto. Niño, Butuan City, Agusan del Norte; Brgy. Anomar, Surigao City, Surigao del Norte; and on-station. NSIC Rc 624 averaged highest with 6t/ha in all demo sites. Need-based capacity enhancements on Integrated Pest (IPM) and Integrated Nutrient Management (INM) were also pursued.

The station's Lakbay Palay, with the theme "RCEF, ano na?" on October 13, 2023 was attended by 1,007 farmers and stakeholders from the three regions. The station regularly posted rice-related information on its official Facebook page: 56 posts from the R&D unit, with 8,268 followers, of whom 59% are women, 152,336 people reached and 41,325 personalities engaged. Some 1,588 knowledge products (KPs) were distributed to partners in the three regions. Five exhibits were participated in by the station. The Palayamanan model 4 components were maintained with a total sales and profit of P204,505.50 and P69,833.60; mushroom production earned the most.

The ABE unit provided technical assistance to clients and partners; extended engineering support to operations; facilitated farm consolidation and mechanization services; and took over the operation and maintenance of farm machinery at PhilRice Agusan and CMU satellite stations.

The BRI developed POTs for the vulnerable rice environments in the regions. Baseline surveys were conducted during the 1st year of implementation with 50, 35, and 27 respondents respectively from the favorable environments of Trento, Agusan del Sur; the mine-affected rice fields of Carrascal, Surigao del Sur; and the river barangays of Talacogon, Agusan del Sur. Preliminary results from the favorable environment led to one inbred POT with 5.79–6.63t/ha yields and a hybrid POT with 6.61–9.05t/ha yields in a 1,000 m2 techno-demo site; higher than farmers' practices. Meanwhile, best rice production practices for mine-affected areas are: (1) application of inorganic and organic fertilizers to correct deficiencies in macro and micronutrients; (2) preventing the entry of laterites and draining the laterite-containing water to prevent the buildup of laterite, which is devoid of plant-essential nutrients. For flood-prone environments, varieties were screened on-station under the floating method of establishment.

Rice Business Innovations Systems (RiceBIS) 2.0 activated three projects in 2023: process, product, and marketing innovations. The capacity of farmers for appropriate value chain-oriented rice-based enterprises and for strengthening partnerships with stakeholders was first assessed. Trainings on PhilGAP and benchmarking activities to strengthened the competencies of implementers in product innovations. Market scanning for milled rice was conducted at ANTOFEL Trading in Monkayo, Davao de Oro, and Manuel J. Santos Hospital in Butuan City. Additionally, focus group discussions (FGDs) on inbred rice seeds were held with the two largest IAs/FAs in Caraga, involving 81 farmer-leaders. This new approach of changing traditional product marketing practices into business-oriented marketing would help improve their competitiveness by increasing their farm income.

The Smart-ICM project organized over 100ha of rice farms in Sanghan and Calamba, Cabadbaran City, Agusan del Sur. The Local Government Unit, through its City Agriculture Office, and the Federation of Cabadbaran Irrigators and

Farmers Associations, Incorporated supported these clusters by providing the total fertilizer requirements through loan assistance. The clusters employed Minus-One-Element Technique (MOET) and Rice Crop Manager (RCM)-based recommendations, which were showcased at their techno-demo farms. Sanghan yielded 4.7t/ha through direct seeding and 4.9t/ha in Calamba through transplanting. The good yields indicate promising progress in enhancing their adoption of mature rice production technologies.

PRISM continued its operations in 206 monitoring fields (MFs) across the three regions. Regional implementers monitored 207 MFs distributed in 49 municipalities in 10 provinces during the first semester, with the PhilRice PRiSM team per station facilitating and assisting field activities. For the second semester, 195 MFs in 45 municipalities in 9 provinces were monitored by regional implementers, with PhilRice assistance. Regional partners (Regions 10, 11, and 13) validated and checked 684 RNR points, collecting 480 rice and 204 non-rice points during the 2023 cropping seasons.

The Fertilizer Derby showcases FPA-approved fertilizer materials, generates information on the effects of the materials on the growth and yield of rice, compares their economic performances, and generates the best package of nutrient management technologies for irrigated lowland rice. Seven companies, aside from PhilRice and farmers' practices, participated in the derby. In 2023DS, Allied Botanical Corp. had the highest actual yield of 5.02t/ha while Enviro Scope Synergy Inc. had the highest potential yield of 7t/ha. In 2023WS, Allied Botanical Corp. had the highest actual yield anew with 5.63t/ha while Inavet Nutrition Technologies, Inc. had the highest potential yield with 8.81t/ha. The WLEX Company Philippines Inc. had the lowest production cost of P10.10/kg and P9.30/kg during the DS and WS.

To support the seed production thrusts of the station, the RSS project created the Internal Seed Quality Control Team to help monitor and recommend necessary actions on the field. The entire seed production areas were monitored from the vegetative to the reproductive phases. One recommendation was final roguing in areas with observed off-types.

A collaborative project with Midsayap Station optimized the mass production, formulation, and application protocols for fungal entomopathogens. Infected insect cadavers suspected of entomopathogenic fungi (EPF) were collected in various field areas toward identifying and purifying EPF using morphological characteristics and cultural techniques. Cultures of Beauveria bassiana, Paecilomyces sp., and Metarhizium anisoplie were isolated, purified, and maintained in the laboratory until needed for bioassay tests.

Under the National Cooperative Tests (NCT) Project for inbred rice, 12 transplanted lines, 5 direct-seeded lines, and 3 submergence-tolerant lines were selected. Nine transplanted (TPR) lines and three direct-seeded (DSR) lines came

from the NCT, yielding up to 13% higher than the best check variety. The other three transplanted lines (5.1–5.2t/ha) and two direct-seeded lines (4.4–4.8t/ha) outperformed the best check varieties from the Multi-location Adaptation Trial (MAT) by up to 11%. On the other hand, the three top-performing flood-tolerant lines yielded 16–36% higher than the best tolerant check, PSB Rc68. The station also screened 126 rice lines against WSB, 129 lines for BLB, and several rice lines for ShB and RB for both seasons.

Under the OneRicePh project, 24 IR-lines, 33 C-lines, and 4 PR-lines tested yielded 5–36% higher than the best check (NSIC Rc160). The direct-seeded lines had 5–33% higher yields than the same check variety. These results will support the phenotypic selection and identification of suitable parents for recycling into breeding programs and varietal candidates for nomination into the national testing and release systems.

The Malusog Rice Project worked on the promotion of cultivation, commercialization, and consumption of MR for food security and improved nutrition. It conducted policy outreach activities, encouraged the development of recipes with MR as the main ingredient, distributed KPs, circulated newsletters, and engaged in public radio announcements. Acceptability evaluation was conducted among 98 lactating and pregnant women, 97 children (6 months–5 years old), and 25 lactating and pregnant women with children aged 6 months–5 years old from Agusan del Sur and Lanao del Norte.

CORE-FUNDED PROJECT 1:

Area-based Technology Promotion and Strategic Partnerships in Northern Mindanao, Davao, and Caraga Regions

GFEstoy Jr., CUSeville, PRGuindang, CMTNecesito, MBVillaruben, AMMRojo, SDDTaglucop, AELincuna Jr., JACMurillo, RJLibona, WGLibres, IBBCanoy, STRivas, and BMTabudlong

Facts and figures insist that the Philippine national rice average yield is still at ~4.2t/ha, far below the potential yields, which confirms that the best technologies and extension efforts have yet to reach and influence our farmers. Hence, this project aimed to develop and promote area-based rice technologies and modernized extension modalities. Specifically, the project (1) increased awareness and adoption of modern rice production technologies among farmers and other stakeholders; (2) established rice and rice-based technology learning platforms; (3) created a rice-based agribusiness and maintains community partnerships; and (4) maintained an accessible database on the station's development interventions.

- 132 ladies and 73 men were trained on Integrated Pest and Nutrient Management with an average GIK of 44.32%.
- Three varietal technology demonstrations were established in 2023WS, where NSIC Rc 624 stood out with an average of 6t/ha.
- Two WS scaling techno-demo were established: in Sta. Monica, Surigao del Sur, NSIC Rc 508 averaged 6.2t/ha; in Cantilan, Surigao del Sur, it was 6.5t/ha.
- In four farmwalks that were conducted, the 55 men and 92 women participants pointed to NSIC Rc 160 (100% of them), Rc 456H (100%), and Rc 604 (87.10%) as their preferred varieties.
- Five sets of baseline data per technodemo site were gathered from 200 respondents based on their profiles, technology awareness of rice production's ICT-based tools, machines, and equipment, and willingness to use technologies from seed to harvest.
- The One-Stop Information Shop (OSIS) in the station for visiting farmers, students, and other rice stakeholders welcomed 196 visitors who benefited from 13 new IEC materials in the OSIS. The WS Lakbay Palay had 1,007 participants from Regions 10, 11, and 13.
- 56 rice-related information were shared on the official page, which has 8,268 followers. These posts reached 152,336 people and engaged 41,325 followers. Nine types of knowledge products were distributed in some municipalities/cities in the three regions.
- Four exhibits were facilitated or participated in by the station, including Farmers' and Fisherfolks Month in Cabadbaran City, the 9th Regional Technology Forum 2023 of DA-Caraga, the Rice Industry Technology Convergence Workshop in Butuan City, and AgNor Tabo Provincial Farmers Kadiwa Display.
- Palayamanan model in the station was sustained with income and profit from various components (mushroom, vegetables, improved mushroom kropek, vermicomposting, rice production, poultry [egg] production, fish). Further, an herbal garden was established and maintained with 21 kinds of herbs.

CORE-FUNDED PROJECT 2:

Operationalization of Agricultural and Biosystems Engineering Unit in PhilRice Agusan

GFEstoy Jr., CDAbacahin, and RJValiao

The project aimed to operationalize the ABE unit of the station. Specifically, it aimed to: (1) compose the personnel of the ABE unit and designate a unit head; (2) manage, repair, and maintain farm machinery; (3) provide custom service and training; (4) cater to the R4D operations; and (5) ensure the sustainability of the unit. It therefore provided technical assistance to clients and partners, extended engineering support to operations, facilitated farm consolidation and mechanization services, and looked after the operation and maintenance of farm machinery at both PhilRice Agusan and CMU satellite stations. Other accomplishments include:

- Construction of the PhiRice Agusan ABE storage, organization of the necessary machines, attachments, and implements.
- Repaired and maintained 95% (20 out of 21) of farm machinery; testing of the multi-purpose seeder in La Union, Cabadbaran City.
- 100% of endorsed OJTs (ABE students) were accommodated according to the expected scope of work and functional objectives.
- Retooling on operation, repair, maintenance, and basic troubleshooting of agricultural machinery and equipment.

CORE-FUNDED PROJECT 3:

TECHNO-FARM: Package of Technologies for Favorable and Adverse Ecosystems in Northeastern Mindanao

Jehru C. Magahud, BMTabudlong, CUSeville, DBBastasa, AMGCalising, and IBBCanoy

Two of the important adverse rice ecosystems in Caraga are the rice lands mixed with soil from mining areas and the submerged rice areas in the Agusan Marsh. The lack of technologies in these unique areas is one of the reasons for the low yields, high production costs, and meager income of farming households.

Hence, this project aimed to develop location-specific packages of technologies (POT) for improved yields, reduced costs, and increased incomes of rice-farming households. Specifically, the study (1) characterized or profiles soil, crop, and socio-economic factors that affect productivity, cost, and income in selected favorable and adverse rice ecosystems; (2) identified and integrated best-practiced technologies for rice production in selected favorable and adverse rice areas; (3) validated and refined the POTs; (4) developed technology guides for the selected favorable and adverse rice areas; and (5) disseminated the POTs and best technologies.

- The best rice production practices for mine-affected rice areas were initially identified, as follows: (1) application of inorganic and organic fertilizers to correct the deficiencies in macro and micronutrients; (2) preventing the entry of laterites and draining the laterite-containing water to prevent the buildup of laterite, which is devoid of plant-essential nutrients.
- Preliminary results in a favorable environment showed one inbred POT with 5.79–6.63t/ha yields and a hybrid POT with 6.61–9.05t/ha yields in a 1,000 m2 techno demonstration site.

CORE-FUNDED PROJECT 4:

RICEBIS PROCESS INNOVATIONS: Enhancing Capacity and Business-enabling Environment for Farmers – Agusan

ABMataia, STRivas, RMBallenas, MRArban, SJGAcosta, and EARapil

The persistent poverty among farmers underscores the diverse challenges they confront, ranging from climate change to small farm sizes and high production expenses, ultimately leading to diminished incomes. In response to these hurdles, innovative agricultural approaches that focus on clustering and entrepreneurship need to be employed. They must empower farmers, boost their negotiation power, and amplify their involvement in the value chain.

- The business capacity of farmers for appropriate value chain-oriented rice-based enterprise engagement was assessed through the conduct of focus group discussions in 13 clusters and the identification of business interventions by FAs based on their capacities.
- Partnerships with support providers for the development and sustainability of value chain-oriented rice-based enterprises were strengthened through the reconstitution and orientation of the site working group (SWG) of the project.

Additional coordination meetings with partner agencies were conducted to facilitate the implementation of the F2C2 program.

CORE-FUNDED PROJECT 5:

RICEBIS PRODUCT INNOVATIONS: Setting Farm Products Standards for Safety and Quality – Agusan

OCMalonzo, STRivas, EARapil, MRArban, SJGAcosta, and RMBallenas

The project aimed to ensure the quality of farmers' products and enhance the competencies of implementers and farmers in product innovations and integrity assurance. Thirteen Agroenterprise (AE) groups were established under RiceBIS 1.0. With this project, efforts will persist in improving and adding value to products, benefiting the established RiceBIS AE Communities and additional areas now encompassed by the RiceBIS 2.0 program.

- To appreciate PhilGAP-certified products, two PhilGAP trainings were conducted in Trento and Esperanza, Agusan del Sur for the Southern Agusan Multi-purpose Cooperative (SAMPCO) and the Esperanza RiceBIS Producers Cooperative (ESRIPCO).
- A baseline survey was conducted among 25 seed growers in ESRIPCO, where the total collective land ownership is 100 hectares.
- Conducted a benchmarking activity for ESRIPCO with two well-established cooperatives, Davao Multi-Purpose Producers Cooperative (DAMSEPCO) and Davao Seed Producers Cooperative (DOSEPCO).

CORE-FUNDED PROJECT 6:

RICEBIS MARKETING INNOVATIONS: Connecting Farmers with Market

STRivas, SJGAcosta, EARapil, and RMBallenas

The project aimed to capacitate rice farmers to increase their profitability and transform them into entrepreneurs by introducing feasible and viable agro-enterprises in their locality. Through marketing innovations, farmers' cooperatives and associations (FCAs) were introduced for agroenterprises development.

Transforming FCAs enables them to produce large-scale quality products and sell directly to separate markets.

Market-scanning for milled rice was conducted at ANTOFEL Trading in Monkayo, Davao de Oro, and Manuel J. Santos Hospital, Butuan City. A Focus group discussions (FGD) on inbred rice seeds of the top 2 largest IAs and FAs producing rice within the Caraga region were participated in by 81 farmer-leaders. This new approach of redirecting the traditional product marketing practices into business-oriented marketing would help improve their competitiveness by increasing their farm income.

- Produced one market pitch for the marketing of inbred certified rice seeds and streamlined it for the Board of Directors of the Esperanza RiceBIS Producers Cooperative (ESRIPCO).
- Conducted 8 Focus Group Discussions (FGD) of market-scanning on inbred certified rice seeds together with the BOD of ESRIPCO.
- The market-scanning for milled iron-fortified rice found that ANTOFEL TRADING does not sell large quantities of iron-fortified rice because of the absence of an institutional market.

CORE-FUNDED PROJECT 7:

Scaling Modern and Adaptive Rice Technologies Through Location-Specific Packages of Integrated Crop Management (SMART-ICM)

STRivas, JCMagahud, and AELincuna Jr.

This project aimed to intensify farmers' adoption of mature rice production technologies and practices under the PalayCheck System through their deployment to farm clusters. Specifically, the project (1) identified and organized SMART-ICM farm clusters; (2) introduced mature PhilRice technologies; (3) strategized for effective involvement of partner-stakeholders; (4) monitored and evaluated productivity and cost efficiency; and (5) collected farm profiles.

During the 2023 wet season, the project organized over 100ha of rice farms in Sanghan and Calamba, Cabadbaran City. The local government unit (LGU) through the city agriculture office and the Federation of Cabadbaran Irrigators and Farmers Associations Incorporated supported these clusters by providing the total fertilizer requirements through loan assistance. The clusters employed

MOET and RCM-based recommendations for essential nutrient management, which were showcased at the technology demonstrations. Sanghan yielded 4.7t/ha direct seeding; 4.9t/ha in Calamba through transplanting. These results indicate promising progress in enhancing the adoption of mature rice production technologies, laying the foundation for future advancements in sustainable and efficient rice farming practices.

- Two fertilizer recommendations utilizing the MOET (63-21-36) and RCM (75-17-17) were provided for the Sanghan and Calamba farm clusters.
- One training/lecture on nutrient management (MOET/RCM) for each cluster was conducted and facilitated.
- Three local partners, namely, LGU-CAO of Cabadbaran, Avanceña Multi-Purpose Cooperative, and the Federation of Cabadbaran Irrigators and Farmers Incorporated were mobilized.

CORE-FUNDED PROJECT 8:

Philippine Rice Information System (PRiSM)-Field Monitoring of Rice Areas in the Philippines

BPGepiga and JAPeligro

PRiSM monitored 206 farmers' fields across Regions 10, 11, and 13. Data collectors in the DA-RFOs and LGU's were coordinated weekly through phone calls and texts, ensuring on-time gathering and sending of data using smartphones. The data underwent manual and systematic validation to ensure their quality and accuracy. All data sent were validated through PRiSM Analytics, and these are: field profile, cultural management, and monitoring data. This data was used to support PRiSM's remote sensing and mapping team in distinguishing rice from non-rice areas. On the other hand, semestral purposive rice and non-rice validation was conducted by DA-RFO's and PRiSM's Regional Facilitators to further supplement ground data in assessing satellite-captured land cover images. In determining the actual land cover of a particular area, 480 rice and 204 non-rice areas were validated. Thus, to help with mapping and remote-sensing, team field validation was conducted to support satellite-captured images in producing accurate and reliable data products.

Data on field profile, cultural management, field status, fertilizer usage, crop cut, and production data were collected from 206 active MFs for both semesters.

Regional implementers monitored 207 MFs spread across 49 municipalities in 10 provinces during the first semester, with the PhilRice PRiSM team per station facilitating and assisting with field activities; 93% of the active MFs were in irrigated ecosystems, while 7% were in rainfed lowlands. The majority of the MFs used certified (82%), while others used hybrid (8%) and registered (6%) seeds. Only 3% of farmers preferred good seeds. Farmers practiced the transplanting method (69%); direct-seeded (31%). The PRiSM team surveyed the PRiSM MFs production, revealing a 2019–2023 yield trend and an average yield of 5.35t/ha.

For the second semester, 195 MFs distributed in 45 municipalities in 9 provinces were monitored by regional implementers; the PhilRice PRiSM assisted them; 95% of the active MFs this season were in irrigated ecosystems, while 5% were in rainfed lowlands. The majority of the MFs used certified (44%) seeds, while others used hybrid (24%) and registered (26%) seeds. The PRiSM team surveyed the PRiSM MFs production, discovering a 2019–2023 yield trend and an average yield of 11t/ha.

CORE-FUNDED PROJECT 9:

Field Evaluation of FPA-approved Fertilizers for Irrigated Lowland Rice Ecosystem for the Packaging of Best Nutrient Management Technology – Agusan

JCMagahud, CSAgting, JPCGasta, and AMGCalising

The project helped address the low adoption of nutrient management recommendations, low fertilizer efficiency, environmental pollution due to improper nutrient application, and inadequate documentation of the field performance of fertilizer products. It is expected to showcase the performance of FPA-approved fertilizer materials, generate information on the effects of their materials on the growth and yield of rice, compare the economic performance of the different fertilizer materials, and generate the best package of nutrient management technologies for irrigated lowland rice. The project aimed to sustainably increase the productivity and cost-effectiveness of rice farming. Seven companies, aside from PhilRice and farmers' practices that used soil-based fertilizers and served as controls, participated in the project. In 2023DS, Allied Botanical Corp. had the highest actual yield of 5.02t/ha, while Enviro Scope Synergy Inc. had the highest potential yield of 7t/ha. In 2023WS, Allied Botanical Corp. again had the highest actual yield of 5.63t/ha while Inavet Nutrition Technologies, Inc. had the highest

potential yield of 8.81t/ha. The WLEX Company Philippines Inc. incurred the lowest production cost of 10.10/kg(DS) and 9.30/kg (WS).

CORE-FUNDED PROJECT 10:

Rice Seeds System – Agusan

DBBastasa, JBCuliao and PhilRice Agusan Internal Seed Quality Control Team

PhilRice produces high-quality seeds for accredited seed growers, who in turn multiply these seeds for farmers. Strict monitoring during critical stages of the rice crop started in the July–December 2023 cropping season. Toward maturity, only 87% of the seed lots were monitored since some of them were already rejected by the Regional Seed Quality Control Services inspection team while still standing in the field due to severe pest and disease damage.

CORE-FUNDED PROJECT 11:

Optimization of Mass Production, Formulation, and Application Protocols of Fungal Entomopathogens

Belen Tabudlong

Various entomopathogens infect many insects from different orders. Infected insect cadavers suspected of being entomopathogenic fungi (EPF) were collected from different areas to identify and purify EPF based on morphological characteristics and cultural techniques. However, one undetermined entomopathogen from a spider-infected host collected at the base of the rice plant was recorded. Cultures of Beauveria bassiana, Paecilomyces sp., and Metarhizium anisoplie were isolated, purified, and maintained in the laboratory until needed for bioassay tests. Moreover, preliminary spore production of EPF is ongoing.

List of entomopathogenic fungi collected in Caraga region, with rice as host plant.

Pathogen	Host Insect	Place Collected	Code Name
Beauveria bassiana	Rice bug	Mahayahay, Trento, Agusan del Sur	RB.R
	Undetermined pupae	Poblacion 1, Trento	Pu.R.
Nomuraea rileyi	Undetermined pupae	Basilisa, RTR, Agusan del Norte	Pu.R.
Paecilomyces sp.	Rice black bug	Poblacion 1, Trento	RBB.R.
Metarhizium anisopliae	Rice black bug_1	Poblacion 1, Trento	RBB_1.R
	Rice black bug_2	Mahayahay, Trento	RBB_2.R
	Grasshopper	Poblacion 1, Trento	Gh.R.
Batkoa sp.	White planthopper	Basilisa, RTR	Ph.R.
Zoophthora sp.	Stemborer	Basilisa, RTR	Sb.R.
Undetermined	Spider	Kapatungan, Trento	Sp.R

RCEF-FUNDED PROJECT 1:

National Cooperative Testing (NCT) Project for Inbred Rice

DBBastasa and JBCuliao

The Station is one of the sites of the NCT Project for inbred rice, the final phase in variety development. In 2023, 12 transplanted, 5 direct-seeded, and 3 submergence-tolerant lines were selected. Nine transplanted (TPR) and three direct-seeded (DSR) lines came from the NCT yielding up to 13% higher than the best check variety. The other three transplanted lines (5.1-5.2t/ha) and two direct-seeded lines (4.4-4.8t/ha) outyielded the best check varieties from the Multi-location Adaptations Trials (MAT) by up to 11%. The growth duration of these top-yielding lines ranged from 104 to 119 DAS. On the other hand, the three top-performing flood-tolerant lines yielded 16-36% higher than the best tolerant check PSB Rc68.

RCEF-FUNDED PROJECT 2:

National Cooperative Testing (NCT) Project for Insect Pests and Rice Diseases Screening under Agusan Conditions

BMTabudlong

Promising rice lines from separate ecosystems were evaluated for resistance against insect pests and rice diseases, such as white stemborer (WSB), sheath blight (ShB), bacterial leaf blight (BLB), rice blast (RB), and tungro that can be used as potential new varieties. Out of 126 rice lines, 124 with resistant (R) reaction and 2 lines with moderately resistant (MR) reaction to WSB during the vegetative stage resulted in 1.41%–11.54% deadheart damage in the January–June 2023 cropping season; 122 lines with R and 4 with MR reactions ranged 1.21%–9.08% whitehead damage during the reproductive stage. In July–December 2023, all lines were R to deadheart; 14 lines were resistant, 78 were MR, 30 were intermediate (I), and 2 had MR reactions to whitehead damage.

Among the diseases, 19 rice lines reacted R and 110 intermediate (I) to BLB, ranging from 3–7 ratings; 40 lines with R and 89 rated I to sheath blight (ShB) ranged from 3-5 ratings; 123 lines with R and 6 rated I reaction to rice blast (RB) ranged from 1 to 7 ratings in the 1st season. In the July–December 2023 season, 46 rice lines from six ecosystems reacted R and 74 rated I reactions to BLB; 103 lines reacted R and 13 rated I reactions to ShB; and all lines were R to RB.

EXTRA CORE PROJECT 1:

Nutritionally Enhanced Rice Finishing and Delivering Golden Rice and High-Iron and High-Zinc Rice Varieties

GFEstoyJr., DCNoja, MDTangog, ACMagbanua and HAJimenez

In the Philippines, 15.5% of children aged six months to 5 years have moderate VAD, with little improvement over the past decade. Malusog Rice (MR), given its prevalence in vitamin A-deficient communities, offers a unique opportunity to address nutritional needs in conjunction with other interventions, as fruits and vegetables are not commonly consumed by young children in these areas. The Philippines is the first country in the world to approve a genetically engineered rice with nutritional benefits.

- Cultivation, commercialization, and consumption of MR for food security and improved nutrition were promoted through the conduct of outreach activities in Lanao del Norte, Dinagat Islands and Bukidnon, and in Esperanza, Agusan del Sur. A cooking contest compiling six recipes with MR as main ingredient, participation in 10 exhibits, conduct of 21 program briefings, and 2 feeding programs were also carried out.
- Acceptance and uptake of MR among the general public, stakeholders, and beneficiaries were addressed through the distribution of 2,922 IEC materials in Regions 10, 11 and 13. Further, 11 newsletters were circulated thru e-mails and 5 public radio announcements were aired in 2023.
- 98 lactating/pregnant women, 97 children (6 months–5 years), and 25 lactating/pregnant women with children aged 6 months –5 years. from Agusan del Sur and Lanao del Norte were recipients of 5kg MR for the monitoring and acceptability evaluation.
- Feasibility and acceptance of MR through local retailers were measured in Agusan del Sur and Lanao del Norte. Agusan del Sur sold it out in just two days; Lanao del Norte was skeptical.

EXTRA CORE PROJECT 1:

OneRicePH: Development of Product Concepts for Target Rice Market Segments and Establishment of the Breeding Network

DBBastasa and JBCuliao

A national unified rice breeding strategy is adopted to address challenges in rice production; network established for multi-location testing of high-value breeding lines. PhilRice Agusan is one of the testing sites for direct-seeded and transplanted breeding lines. Among the hundreds of transplanted entries, 24 IR -lines, 33 C-lines and 4 PR-lines yielded 5–36% higher than the best check (NSIC Rc160) at 3.5t/ha to 4.5t/ha. Direct-seeded lines had 5–33% higher yields than the same check variety, namely: 34 IR- lines, 6 C-lines, and 13 PR-lines at 4.2 t/ha to 5.3 t/ha. These results will support the phenotypic selection and identification of suitable parents for recycling into breeding programs and varietal candidates for nomination into the national testing and release systems.