2023 PhilRice R&D Highlights

ISABELA BRANCH STATION

Philippine Rice Research Institute
Central Experiment Station
Maligaya, Science City of Muñoz, 3119 Nueva Ecija

Contents

STATION

PhilRice Isabela

Branch Director: JOY BARTOLOME A. DULDULAO

EXECUTIVE SUMMARY

Being PhilRice's public hybrid seed production center, the station has a farm area of 16ha, of which 14.5ha are for rice seed production and research. Palayamanan occupies the remaining area.

For 2023, the station busied itself with 21 R&D projects and studies with an approved budget of P28,896,249.88. The outputs of these projects help pull up the yields and incomes of farmers in Region 2 and Cordillera. The R&D unit is staffed by 7 permanent employees, 28 service contracts, and 10 field assistants. Three research and a development projects are initiatives of the station while the rest are anchored on projects and studies initiated by the Central Experiment Station. Here are the highlights of accomplishments for 2023:

An inventory of all farm machinery of the station was pursued by the Agricultural and Biosystems Engineering (ABE) unit to ensure that all machines are being properly maintained and used in the station's farm operations and in educating students, farmers, and other clients on rice mechanization. A study determined the soil NPK status of rice that practice rice-mung bean and rice-ratoon using the 4-row walk-behind transplanter. Mechanized crop establishment of PSB Rc72H at 10kg/ha seeding rate was validated starting 2023WS in three farmers' fields in Tabuk City, Kalinga. Seeding interval for R lines was five days while R1 to A-line was 17 DAS. Average yield of A-line was low at 0.34t/ha.

Rice mechanization level in the highlands of Cordillera was assessed as baseline information in the promotion of developed machines. Seen was a low level at 31.88% (land preparation), threshing (15.12%), and milling at 22.13% while production cost was high atP34.65/kg. Attributions on cost reduction and the time in using mechanical interventions were also determined. Results showed that through mechanization, a cost reduction of 37–90% in time can be achieved for land preparation; 14–80% for threshing; and 12–91% for milling. The project also fine-tuned and fabricated deployment prototypes of the wire-loop hold on-type thresher for long-awn heirloom rice varieties, and the axial-flow throw in-type thresher. Patent registration for the said machines is ongoing.

The Philippine Rice Information System (PRiSM) continues to be an important digital project of PhilRice particularly in estimating of yields, monitoring rice areas, flooding brought about by tropical cyclones as well as drought-affected rice areas, among others. Recently, the PRiSM staff were also mobilized to monitor the prices of fresh palay during harvest time with the data serving as important input to policy makers and top agriculture officials.

The station participated in the province-led Provincial Rice Technology Forum where Mestiso 1 and 20 were showcased in one-ha demonstration areas in Isabela and Cagayan with DS average yields of 6.89t/ha and 6.74t/ha. M1 yielded 5.03t/ha during the wet season across four demonstration sites in Isabela, Cagayan, Nueva Vizcaya, and Quirino. It also took part in the Fertilizer Derby where 13 (DS) and 20 (WS) private companies' fertilizer recommendations including farmers' practice in San Mateo were showcased to determine the best recommendation in terms of increasing yield and reducing production cost. Allied Botanical and VVZ Corporation demonstrated exceptional crop productivity in both seasons while WLEX Company Philippines and Agri-growth International Corporation incurred the lowest production cost. PhilRice ranked 6th during the DS and 12th during the WS averaging 5.56t/ha, 5.6t/ha and P11.99/kg, P10.89/kg, respectively.

The station remains a testing ground for promising lines and special rices through the National Cooperative Tests (NCT). Evaluated were 64 promising lines for yield and agronomic performance in the NCT Phase 1 while 24 lines have advanced to the Multi-adaptation Trials. For disease resistance, 126 lines were evaluated during the DS; 122 in the WS. For insect screening, 113 lines were evaluated during the DS; 124 in the WS. For special-purpose rices, 11 elite lines belonging to the micro-dense group and 10 pigmented lines were tested for their yield and agronomic performance.

The adaptability of japonica rices in temperate areas like the Philippines was tested in the station involving 106 GUVA breeding lines during the DS and 100 lines during the WS with remarkable results. Promising entries will advance from stage 1 to 2 trials. In the OneRicePH project, 300 lines were evaluated under set 1 during the DS; 300 lines under set 2 during the WS. Moreover, the station had been a key player in the implementation of various projects under the PhilRice's R4D banner programs – RiceBIS, RSS, and SMART Farm including Malusog Rice. For RiceBIS, all its projects on Process, Product, and Marketing Innovations with a common goal of increasing the income of selected Farmers Cooperatives and Associations (FCAs) were carried out. Three existing FCAs from the RiceBIS 1.0 were identified.

Under Process Innovations, the business readiness of organizations were assessed and if found ready for agroenterprise upgrading, they became the initial RiceBIS clusters under the new program. These FCAs were: Marasat-Dagupan Rice-BIS Agriculture Cooperative; Bannawag Sur Farmers Association; and Namillangan-

Calupaan Lateral F Irrigators Association with 117, 127, and 331 members, respectively covering, 101, 165.7, and 237ha production area. All three FCAs were engaged in milled rice trading, custom service provision, agro-inputs trading, and production loans. Under Product Innovations, 125 RiceBIS farmers were trained on the four modules of Philippine Good Agricultural Practices (PhilGAP) and their farms covering 146.38ha were identified and applied for certification. Twenty farms, including the station's Palayamanan Farm, have thus far passed certification audit with 100% rating. Under Marketing Innovations, the Small Brother-Big Brother market linkage, which was introduced by DA's F2C2 program was adopted. In 2023WS, the new RiceBIS cluster, Saint Vincent Multi-Purpose Coop in Nueva Vizcaya, was linked to the Philippine Disaster Risk Reduction Network, Incorporated for the procurement of 6,000 bags of well-milled rice amounting to P7,324,140 that were delivered to typhoon Egay victims in Cagayan.

The station also busied itself with the SMART-ICM project of the Rice Seeds System Program (RSS). A package of technologies on PalayCheck System with emphasis on MOET-based fertilization was showcased in a one-ha demonstration area. Through the project, 15 men and 11 women-members of the San Quintin Integrated Farmers Association in Alfonso Lista, Ifugao were trained on Integrated Nutrient Management. Following the approval of the biosafety permit for commercial propagation of Malusog Rice in July 2021, the station helped prepare for its public deployment. A 1.9ha seed production and 7.4ha technology demonstration in strategic areas in the region were established that obtained high yields. Harvests were used for market testing and product promotion. A number of technology briefings were also conducted, reaching 386 men and 340 women in target areas.

CORE-FUNDED PROJECT 1:

Operationalization of Agricultural and Biosystems Engineering (ABE) Unit in PhilRice Isabela Branch Station (SMI-212-000)

Jerry D. Batcagan and Quehly Jade Echanez

On its 2nd year, the station's ABE unit was able to update the inventory list of existing and functioning farm machinery. Old units were recommended for disposal, repair forms were put in place, and check-up schedules were planned for efficient maintenance. In view of future service provision outside the station, rental and service rates were set. The team effectively handled training requests on Rice Machinery Operation and Maintenance and mechanization topics during RCEF Training of Trainers and other development activities. One batch of on-the-job (OJT) participants from CLSU were mentored on the preparation of detailed cost and estimates including AutoCAD detailing of agricultural projects. As REMD arm in the Station, the Unit helped evaluate the performance of the boat tiller as part of the pre-commercialization process. The Automated Weather Station was installed to generate localized and accurate data for research use. For sustainability, the unit continuously explores the possibility of farm machinery acquisition. With available and proper hardware, rice mechanization technologies and management models will be effectively demonstrated to individual farmers, cooperatives, and associations to adopt that may help reduce their production costs.

CORE-FUNDED PROJECT 2:

NPK Levels and Yields in Soils Under Rice-Mungbean and Rice-Ratoon Cropping Pattern (SMI-231-000)

Joy Bartolome A. Duldulao and Jim Allen Tabirao

The project aimed to validate the observations on ratooning and mungbean production in Region 2 wherein these traditional/time-honored practices can be made scientific; and to determine factors that maximize yields of rice, ratoon, and mungbean production. Indeed, production and ratooning are important to farmers as additional income sources after rice cropping. Hence, the need to determine the soil NPK status of rice areas that are practicing rice-mungbean and

rice-ratoon technologies; and to identify the nutrients limiting rice crop growth and yield after planting mungbean and ratooning.

For 2023, baseline data of NPK levels for the cropping patterns were gathered. In terms of rice yield for wet season, Treatment 1 (74-28-58, PhilRice Seed Production) yielded of 6.97t/ha, Treatment 2 (167-40-40, PhilRice Derby) yielded 6.6t/ha, and Treatment 3 (Farmers' Practice, 104-35-65) yielded 6t/ha based on crop-cut assessments. For actual yield results, Treatment 1 hit 4.1t/ha, T2 made 4.05t/ha, and T3 yielded 4t/ha. Soil analysis before and after the set-up of 2024DS rice and mungbean are on-going.

CORE-FUNDED PROJECT 3:

Field Evaluation of Mechanical Production of F1 Seeds of PSB Rc72H (SMI-232-000)

Fernando D. Garcia, Gracia B. Amar, and Zarah Faith Lunag

Mechanizing the establishment of AxR seed production is a new scheme in hybrid seed production. Seeding rate is reduced from 15 kg to 10 kg of A-line; hence the need to evaluate its applicability under farmers' field conditions. For the 2023 wet season, the study was conducted in 3 sites at Tabuk City, Kalinga. The field experiment was started in August 2023 using IR34686R and IR58025A (Mestizo 1 parentals). Pre-germinated seeds were sown in 60 seedling trays for R-line and 240 trays for A-line. Seeding interval for R lines was 5 days while R1 to A line was 17 days. R line was transplanted at 17 days after sowing (DAS) of R1 and 12DAS for R2. Likewise, A-line was transplanted at 17DAS using the 4-row walk-behind mechanical transplanter. Field day was hosted during the transplanting of A-line, attended by officials and staff of the Office for City Agricultural Services of Tabuk; BPI-NSQCS CAR satellite station in Tabuk, and farmers and seed growers in the area.

The highest yield obtained was 500 kg/ha at farmer's field 3, while farmer's fields 1 and 2 yielded 180 and 330 kg/ha, in that order. The lower yields may be traced to bad weather with frequent cloudy days and rainshowers during flowering stage, inadequate water supply from heading to flowering, and presence of off-types in A-line.

Data on insect pests, mostly brown plant hoppers, showed negligible numbers among the trials. Only leaf folder damage was evident toward the latter stages of the crop growth. For natural enemies, spiders and mirid bugs were observed at different growth stages.

CORE-FUNDED PROJECT 4:

Promotion of Developed Machines to Advance Highland Rice Farming (SMI-233-000)

Jerry D. Batcagan and Quehly Jade Echanez

The project's activities are to generate data on mechanization in highland rice farming; continue test processes of 2 developed thresher designs toward technology transfer and commercialization; enhance and promote commercially available rice machines and small tools to address labor scarcity in the highlands; and to present findings and develop a sustainable machinery management system model in the community.

For FY2023, baseline data and initial mechanization indices were generated to better understand the needs in highland rice farming. Results showed that mechanization in highlands is relatively low, and cost of production is high estimated at P9.40/m2, equivalent to P34.65/kg palay based on 2713kg/ha average yield. Computed levels of mechanization on land preparation, threshing, and milling are 0.21, 0.09, and 0.19KW/ha, in that order; their average degrees of mechanization are 31.88%, 15.02%, and 22.13%. The data points to the need for additional machine units.

Attributions in the time and cost reduction of mechanical interventions were determined based on interviews. Cost for mechanical land preparation is about P1.56/m2, while manual labor costs P2.46/m2, a 37% reduction in cost, and 90% in time consumption. Using mechanical threshers incurs about P1.90/kg compared with hand-pounding or foot-threshing at P2.20/kg, reducing cost by 13.64% and time by 80%. Lastly, machine milling cost is P4.38/kg and manually at P5/kg, a reduction by 12.40% on cost and 91% on time.

The project fine-tuned and fabricated deployment prototypes of the wire-loop hold-on type thresher for long-awn heirloom rice varieties having an initial capacity of 60 kg/hr, and an axial-flow throw-in type thresher for "gapas" harvesting with an initial capacity of 150kg/hr. Design application for utility model or patent was drafted for submission, prior to deployment.

CORE-FUNDED PROJECT 5:

Philippine Rice Information System (PRiSM) (ASD-234-000)

Darlynne Kaye Matias Bumagat and Ederlina Carino

In 2023, PRiSM monitored 140 MFs located in 7 provinces/locations of Cagayan Valley Region (4) and Cordillera Administrative Region (3). Data on field profile, cultural management, crop status, production data, fertilizer usage, and crop cut were collected. Some 120 rice and non-rice validation points were gathered per region in the first semester while; 289 in the 2nd semester. Moreover, the team monitored 6 Tropical Cyclones with direct effects on both regions. PRiSM conducted 3 field damage assessments for TC Egay, Goring and Jenny with a total of 103 validation points; collected initial reports from the regions; and submitted them to the technical team. All available and validated field data for the two semesters were used for analysis and interpretation of satellite imagery, calibration of the thresholds used for rice classification, and accuracy assessment of rice area, yield, and flooded/drought-affected rice maps. PRISM also surveyed weekly prevailing prices of fresh and dry palay in both regions from January to September 2023 using the Palay Price survey; the Bantay Palay app was used starting in October. All survey data were submitted and stored in the PRiSM database and summary reports were submitted to the PRiSM Unit.

CORE-FUNDED PROJECT 6:

Evaluation and Packaging of Fertilizer Products for Balanced Nutrition of Irrigated Lowland Rice (Phase II) (ASD-236-000)

Fernando D. Garcia and Aileen S. Mateo

The project Fertilizer Derby was conducted to document and evaluate nutrient management strategies of participating companies promoting FPA-registered fertilizer products with the aim of improving nutrient management practices, enhancing fertilizer efficiency, mitigating environmental pollution from improper nutrient application, and bolstering documentation of field performance of FPA-registered fertilizer products. Number of participants from various companies was 13 in the 2023DS and 20 in the WS. PhilRice used a soil-based fertilizer as control

plot, while others employed diverse approaches such as nano-based technology, foliar-based nutrient supplements, and combinations of soil and foliar-based fertilizers. A 1,000m2 plot was used by each participating company.

Varieties NSIC Rc 512 and Rc 222 were involved. Used were Turbo Prime Multi Elements with various essential elements, Polysulphate with K, Mg, Ca, and S, and Quantum VSC and Quantum Light, acting as a plant inoculant. VVZ Corporation used Vitalgro Carrageenan as a foliar enhancer, and Nature Tech Innovation Group Inc. employed Nature Tech and Bio N for their unique compositions. Performance was gauged through actual yields and production cost analyses.

Allied Botanical Corporation obtained the highest actual yield of 7.32t/ha during 2023DS, while WLEX Company Philippines snared lowest cost of P8.63/kg with an actual yield of 5.09t/ha. In the WS, VVZ Corporation grabbed the highest actual yield of 6.43t/ha, while Agrigrowth International Corporation spent the lowest cost of P8.3/kg at an actual yield of 6.1t/ha. The Fertilizer Derby project provided valuable insights into the performance and economic aspects of various fertilizer materials, contributing to the goal of enhancing rice farming productivity and sustainability.

CORE-FUNDED PROJECT 7:

Scaling Modern, Matured, and Adoptive Rice-ICM Technologies for Increased Yield and Reduced Production Cost (SMART-ICM Project) (SMF-231-001)

Jerome Galapon and Joferson Concha

The project was initiated by organizing a RiceBIS 2.0 community into a farm cluster in Ifugao covering 100ha. PhilRice's matured technologies, particularly the Minus-One- Element Technique (MOET) and Package of Technologies (POT) of the PalayCheck System were showcased through a one-hectare field demonstration in tandem with the San Quintin Integrated Farmers' Association, Alfonso Lista, Ifugao. The site was validated and mapped. A series of project briefings was conducted with different local and provincial government units and DA-RFO CAR. MOET-based fertilizer recommendations were introduced and applied in the field demo. A two-day training on Integrated Nutrient Management was conducted for 26 cluster members covering advanced agricultural practices. The field demo used NSIC Rc 222 and a riding-type mechanical transplanter at a per hill rate of 2–3 seedlings. A yield of 6t/ha was targeted following the recommended rate of 94kg of complete, 121kg of urea, and 22kg of MOP.

Regular monitoring of the demonstration site observed a thriving and almost pest-free crop. Upon witnessing the actual crop conditions during the field day, over 100 farmers expressed satisfaction with the demonstration site. The event also attracted attention on the improved PalayCheck App. Actual yield was 6.32t/ha, surpassing both the baseline and target yields of 6t/ha.

CORE-FUNDED PROJECT 8:

Technology Demonstration of Public Hybrid Rice Varieties in the Provincial Hybrid Rice Derby (PRX-230-010)

Joy Bartolome A. Duldulao, Fidel M. Ramos, Jerry D. Batcagan, Joselito J. dela Cruz, Christian Paul de Leon, Jim Allen Tabirao, and Jerome Marquez

The Provincial Rice Technology Forum for public and private hybrid rice varieties showcased in six sites innovative agricultural practices, techniques, and equipment related to hybrid rice cultivation. This is in support of the DA's strategy to increase farmers' yield and productivity. The Station participated in the PRTF conducted in Isabela, Cagayan, Nueva Vizcaya, and Quirino showcasing public hybrids Mestizo 1 (PSB Rc 72H) and Mestiso 20 (NSIC Rc 204H). Other participants were Syngenta, Bioseed, SL Agritech Corp, Bayer Crop Science, Longping Tropical Corp, Pioneer, Seedworks, Taofoods Company Inc., Leads Agri Product, Green and Grow Technologies, and Advanta to put on the spotlight their high-yielding hybrid rice varieties and products. Six field days were conducted, engaging 1,399 farmers (865 men and 534 women).

During the 2023 dry season, Mestizo 1 averaged 6.89t/ha, while Mestiso 20 had 6.74t/ha based on actual yields across two sites (Roxas, Isabela and Allacapan, Cagayan). For the wet season, Mestizo 1 averaged 5.03t/ha across four sites (Mallig, Isabela; Tuao, Cagayan; Kasibu, Nueva Vizcaya; Cabarroguis, Quirino).

In the DS, M1 ranked 15 out of 26 entries while M20 ranked 25th out of 26 entries in Roxas; in Allacapan, M1 was 26th out of 28 while M20 was 27th out of 28 entries. In the WS, M1 ranked 10th out of 18 in Cabarroguis; Quirino; 21st out of 23 in Kasibu; and, 14th out of 23 in Tuao all in terms of actual yield.

CORE-FUNDED PROJECT 9:

Rice Development Initiatives for Cagayan Valley and CAR Environments (SMI-210-000)

Fidel M. Ramos, Ofelia C. Malonzo, Christian Paul DeLeon, and Jerome Marquez

This project aims to make public hybrid rice (F1 seeds) available in two regions through: (1) Participatory Rural Appraisal (PRA) on the factors affecting the adoption of hybrid and marketing; (2) strategic communication and partnerships; and, (3) testing of hybrid rice technology-scaling models. Under Component 1, gender roles were examined among men and women farmers from Luna, Apayao; La Paz, Abra; and San Mariano, Isabela covering productive, reproductive, community management, and leisure activities in a 24-hour study. Men engaged more in productive tasks (95%) than women (19.6%); women focused more on reproductive activities (33%) than men (14%). Men also had more leisure time (55.3%) compared to women (47.3%). Also, survey results showed increased adoption rates of rice production technologies across the three sites: Abra (54% to 65.89%); Apayao (53.90% to 79.09%); and Isabela (55.26% pre-survey).

Under Component 2 on strategic communication and partnership, the Station expanded its social media presence by posting 44 RICCE-related activities on its official Facebook page that garnered 1,506 positive reactions and 265 shares. Also, 11 requests were granted for technical resource persons during trainings, seminars, conferences, among others. These efforts reached 828 clients (476 men and 352 women), with high ratings for service quality and effectiveness. The project also facilitated various rice awareness activities that involved 685 farmers, and organized 10 batches of Lakbay Palay, reaching 1,513 farmers (891 men and 622 women) and receiving positive feedback.

In 2023, inbreds and hybrids were demonstrated both on-station and off-station (Tuao, Cagayan). Among the 12 newly released varieties showcased on-station NSIC Rc 596 (4.19t/ha), Rc 506 (4.09t/ha), and Mestiso 20 (4.08t/ha) were the top DS yielders. In the WS NSIC Rc 506, Rc 534, and Rc 512 yielded 8.14t/ha, 8.08t/ha, 8.04t/ha. In the WS off-station demo, NSIC Rc 204H (M20), Rc 222, and Rc 604 were the top performers.

Under Component 3, an LGU-led scaling model was executed in the abovementioned sites. An F1 cultivation training was conducted in each municipality, involving a total of 85 farmer-participants, (40 were ladies). Additionally, a batch of training on AxR seed production was held in Abra, with 31 farmer-participants (24 men). Not only that, trained public hybrid seed growers in Apayao were accredited by BPI-NSQCS and collectively managed a 17-hectare

AxR seed production area in Luna, under the Lagayan Irrigators' Association. DA-RFO R02 and CAR procured 2,400 bags of public hybrid Mestizo 1 from DA-PhilRice Isabela for deployment in 19 municipalities in the same regions. The team organized 9 batches of technical briefings on F1 cultivation focused on pest and nutrient management, which served 564 farmers (268 women).

Planting guides and fertilizer recommendations based on MOET and RCM were generated and distributed in Mestiso 20 project sites and in the 19 M1 deployment sites.

During the 2023DS, farmers' average yields in Apayao, Isabela, Abra and Diffun, Quirino surpassed their 2022DS averages. Unfortunately in the 2023WS, farmers in Apayao, Isabela, and Abra harvested less due to damages from typhoons Egay and Falcon.

CORE-FUNDED PROJECT 10:

RiceBIS 2.0 – Process Innovations: Transforming Farmers Towards Value Chain-Oriented Rice-Based Farm Cluster Enterprises(RBS-231-000)

Ofelia C. Malonzo and Jamie Baligat

The Process Innovations component of the RiceBIS 2.0 program specifically aims to assess the business capacity of farmer clusters, establish and strengthen partnerships with support providers, and engage farmer clusters in a commercially viable and sustainable value chain-oriented rice-based enterprise. With the use of the Business Capacity Assessment Tool, the project identified and assessed its three existing RiceBIS clusters, namely: Marasat-Dagupan Rice Business Innovations System (BIS) Agriculture Cooperative (Isabela); Bannawag Sur Farmers' Association (Quirino); and Namillangan-Calupaan Lateral F Irrigators' Association (Ifugao). All three clusters were assessed and found ready for product and agroenterprise upgrading with "medium" level of business capacity rating. At present, these clusters are all engaged in milled rice trading and custom service provision. They are also recipients of the Farm and Fishery Clustering and Consolidation (F2C2) Program of the DA-RFO 2 and CAR.

The Saint Vincent Multi-purpose Cooperative in Dupax del Sur, Nueva Vizcaya, which is currently engaged in milled rice trading and custom service provision was endorsed by RCEF implementers from PhilRice CES to be a new RiceBIS cluster.

CORE-FUNDED PROJECT 11:

Product Innovations: Setting Farm Productivity Standards for Safety and Quality – Isabela (RBS-232-000)

Ofelia C. Malonzo, Karen Grace Lipor, and Richzen Magno

The project generally aimed to contribute in increasing the income of farmers and the cluster by offering quality products for the market. Particularly, it assessed products and capacity of farmers, ensured farmers' product quality, and strengthened competencies of implementers and farmers on product innovations and integrity assurance. It operates hand in hand with RiceBIS 2.0 components - Process and Marketing Innovations - to ensure that farmers will gain more by offering quality and market-based products. The project undertook cluster product and community assessments; product enhancements or development; standards setting, certification, and registration; and capacity enhancement of farmers and their groups related to product innovations in all RiceBIS communities.

In 2023, the project started with the conduct of product assessment in the three RiceBIS communities in San Mateo, Isabela; Diffun, Quirino; and Alfonso Lista, Ifugao that resulted in the identification of products for the market. As milled rice is the main product of all RiceBIS clusters, the training on Philippine Good Agricultural Practices (PhilGAP) Standards and Certification was initiated. Based on the PhilGAP database system, majority of the PhilGAP-certified farms in the country were planted with vegetables and high-value crops. Following the training of 125 RiceBIS farmers (74 men and 51 ladies) on the four modules of PhilGAP, their farms covering 146.38ha were identified and applied for PhilGAP certification. Thus far, 20 farms including the DA-PhilRice Isabela Palayamanan Farm, have been assessed and passed the PhilGAP certification audit with 100% rating.

CORE-FUNDED PROJECT 12:

Marketing Innovations: Linking Farming Communities with the Market (RBS-233-000)

Ofelia C. Malonzo and Rogelio Visitacion III

Project has two main studies focusing on partnerships and marketing of rice and rice-based products. It aims to identify successful collective marketing models, analyze their effectiveness, and offer implementation recommendations. In San

Mateo town, 12 rice retailers and 6 rice millers were identified during the market scanning as potential markets for the MarDag RiceBIS Community requiring a monthly supply of 1,116 bags of milled rice. MarDag maintains its market linkage with its F2C2-identified Big Brother – the Good Samaritan Multi-Purpose Cooperative (GoodSam). GoodSam offers P0.50/kg price advantage compared with prevailing market buying price. This Small Brother-Big Brother market strategy has also been practiced in Diffun, Qurino by the Bannawag Sur Farmers' Association (Small Brother) and Diffun Saranay and Development Cooperative (Big Brother). RiceBIS farmers marketed 30,124kg of fresh palay through this scheme. Late in 2023 wet season, the Saint Vincent Multi-purpose Cooperative in Nueva Vizcaya was linked to the Philippine Disaster Risk Reduction Network, Inc. for the procurement of 6,000 bags of well-milled rice worth P7,324,140.00 that were delivered to the typhoon Egay victims in Cagayan.

RCEF-FUNDED PROJECT 1:

NCT Phase 1 (TPR/DWSR) (RCS-003-002A.1)

Joy Bartolome A. Duldulao and Jim Allen Tabirao

Promising lines developed by PhilRice, IRRI, and UPLB ultimately advance to the National Cooperative Tests (NCT) for nationwide testing. Development and introduction of new rice varieties with higher yield potentials, better resistance to insect pests and diseases, and with good eating qualities are necessary components in the development of the rice industry.

For 2023DS, NCT Irrigated Lowland Phase I under Direct-Seeded and Transplanted rice culture evaluated 64 promising lines for yield and agronomic performance. Ten test entries with excellent phenotypic acceptability and uniform stand, and with 5% yield advantage outperformed 17 inbred check varieties under Isabela conditions. For the test entries, yields ranged from 5.4 to 7.4t/ha while check varieties ranged from 4.10 to 7.4t/ha. For the wet season, 3 of the 64 promising lines evaluated beat 17 inbred check varieties under Isabela conditions. Their yields ranged from 5.1 to 6.7t/ha.

RCEF-FUNDED PROJECT 2:

Multi-adaptation Trials (RCS-003-002A.2)

Joy Bartolome A. Duldulao and Jim Allen Tabirao

For 2023DS in NCT-MAT under Direct-Seeded and Transplanted rice cultures, 24 promising lines were evaluated for yield and agronomic performance. Three test entries with excellent phenotypic acceptability and uniform stand, and with 5% yield advantage outperformed 10 inbred check varieties under Isabela conditions. Their yields ranged from 5.2 to 8t/ha. For 2023WS, no trial was established due to minimal promising lines that qualified.

NCT evaluated 88 promising lines, 24 of which outperformed 44 inbred varieties.

RCEF-FUNDED PROJECT 3:

Disease Screening (RCS-003-002A.5)

Gracia B. Amar and Zarah Faith Lunag

The project determined the reactions of NCT lines to bacterial leaf blight, sheath blight, and rice blast. It uses the induced method where entries are inoculated with the inoculums of the diseases' causal organisms.

For 2023DS, 126 NCT multi-adaptation trial lines, Phase I lines, hybrid lines, special-purpose and heat-tolerant lines were evaluated: 15 lines were resistant to BLB; 47 to rice blast and 36 lines to sheath blight. All other lines were intermediate or susceptible to the diseases. For the wet season, 122 NCT hybrid, phase I lines, special-purpose, submergence, and upland rice lines were screened: 47 lines were resistant to BLB, 34 to rice blast, and 22 lines to sheath blight. All other lines were intermediate or susceptible to the diseases.

RCEF-FUNDED PROJECT 4:

Insect Screening (RCS-003-002A.4)

Nympha Sosa and Zarah Faith Lunag

The study screened and evaluated promising lines under the NCT for their resistance to major insect pests like stemborers (SB). Test entries consisting of 113 (DS) and 124 (WS) were evaluated. These were planted one month after the

regular planting season to align with the peak of insect pest activity. Test entries were screened under natural field conditions.

For the DS, no SB damage at vegetative stage-deadhearts (35-50 days after transplanting) - was recorded. The susceptible check IR 8 was rated resistant. At maturity stage-whiteheads - IR 8 was moderately resistant (7.75 rating) to intermediate (11.86 rating) to SB damage. Out of the 113 entries, 56 were resistant, 52 were moderately resistant; five entries did not germinate. For the WS, IR 8 was damaged by brown planthopper but it remained resistant. No SB damage was observed among the entries. Stemborer rating at ripening stage (whitehead) was evaluated: IR 8 showed moderately resistant (10.6 rating) to intermediate reactions (13.7 rating). Out of the 124 entries tested, 5 were resistant, 96 were moderately resistant, 20 were intermediate, and 3 were moderately susceptible to stemborers.

RCEF-FUNDED PROJECT 5:

Special-Purpose Rice (RCS-003-002A.6)

Angelita Obana and Jim Allen Tabirao

The market demand for special-purpose rice has dramatically increased over the years. The on-station trials focused on yield performance, better eating quality and aroma, and insect pest resistance.

For the micronutrient-dense group, 11 elite lines were evaluated; for the pigmented group, 10 elite lines, including 5 check varieties were tested. For the dry season, all test entries for the micronutrient-dense group significantly outyielded the highest check NSIC Rc222 with a yield advantage of 27.23%; pigmented group index no. 14 (8181.3kg/ha) significantly outyielded the check variety Rc19 with a yield advantage of 30.88%. For the wet season, the micronutrient-dense group, index 1 (8,653.4kg/ha) significantly out-yielded Rc 460 (6068.5kg/ha); pigmented group index 13 (8,405.49kg/ha) had a 31.2% yield advantage over the check Rc19 (6,407.65).

RCEF-FUNDED PROJECT 6:

RCEF Trainings

April Joy A. Bernardo , Andres L. Dela Cruz, Jr., , Aina Marie D. Magsino, Danessa Cynthia Mae Pacleb, and Jayson S. Naniong

Conducted were 12 batches of training: Training of Trainers (TOT) on the Production of High-Quality Inbred Rice and Seeds, and Farm Mechanization; 10 TOT on Pest and Nutrient Management (TOT on PNM); 1 Refresher Course for Rice Trainers. Participants totaled 332 (177 men, 155 ladies) across Region 02 and Cordillera.

Three batches of RCEF-Techno Gabay: A Technology Awareness Forum for Farmers were conducted with a total of 281 farmer-participants (152 men, 129 ladies). These were conducted in Tinungdan, Itogon, Benguet; Buenavista, Sta. Maria, Isabela; Bananao, Paracelis, Mt. Province. The topics discussed included land preparation; crop establishment; pest management specifically on the emerging pests in the community; and nutrient management.

EXTERNALLY-FUNDED PROJECT 1:

High Yielding, Stress-tolerant Rice Varieties Suitable for AFACI Member Countries (RTF-011-338)

Andres dela Cruz and Delbert Santos

Japonica rice varieties are not as common as indica in the Philippines because Japonica thrive better in temperate areas and are not well adapted to tropical weather like indica varieties. However, japonica rice commands higher prices than typical Indica varieties because of their excellent eating quality, making them more profitable for farmers. The primary objective of this project is to extend the cultivation of temperate japonica to tropical regions. This could be achieved by testing and screening rice lines from the Germplasm Utilization for Value Added (GUVA) project under well-irrigated conditions, with a focus on identifying key grain quality traits.

GUVA Set 1 Stage 1 trial (2023DS)

During 2023DS, 106 GUVA breeding lines underwent testing at PhilRice Isabela, 38 of which yielded 5t/ha and above. Two entries had remarkable yields: 8.09t/ha (IR 134422-B-7-1) and 8.03t/ha (IR17K1021). Average yield was 4.41t/ha for

Eighty entries that achieved yields of 3t/ha and higher, which is a benchmark used to assess breeding lines in yield trials under stress conditions like salinity.

GUVA Set 2 Stage 1 trial (2023WS)

Of the 100 entries, 68 successfully germinated and were established on-station, achieving an average yield of 3.61t/ha, with 40 entries surpassing the 3t/ha benchmark Entry no. 65 (IR22K1082) recorded the highest computed yield at 7.09t/ha. Six entries yielded 5- 6t/ha.

Promising entries will be further evaluated in Stage 2 trials.

EXTERNALLY FUNDED PROJECT 2:

OneRicePH: Demand-driven Production Development and Deployment in Target Market Segment – PhilRice Component A (RTF-022-340A)

April Joy A. Bernardo

Set 1 Stage 1 Trials- TELS-I (2023DS)

For the Transplanted, Early, Long, Soft, Irrigated (TELS-I) trials, the station established and evaluated the yield performance of 300 promising entries and 12 check entries. A total of 25 the 300 elite lines obtained the highest yields of > 8-9t/ha, and 63 and 84 entries yielded 7t/ha and 6t/ha, respectively. Check entries yielded 3-6t/ha.

OneRicePH Set 2 Stage 1 Trial- TELS-I and TMeLS-I (2023WS)

For TELS-I, out of the 300 elite lines, 7 entries obtained the highest yield of 6 to >7t/ha, and 69 entries achieved a yield of 5–< 6t/ha. On the other hand, check entries achieved a yield ranging from 0.72 to 6.05t/ha. On the other hand, for the Transplanted, Medium, Long, Soft, Rainfed (TMeLS-I), out of the 300 elite lines, 1 entry only obtained the highest yield of 6t/ha, and 18 entries achieved a yield of 5- >6t/ha. On the other hand, check entries achieved a yield ranging from 1.91 to 4.37t/ha.

EXTERNALLY FUNDED PROJECT 3:

Detection and Mapping of Rice Areas Converted to other Land Cover using Remote Sensing (RS) and Geographical Information System (GIS) Techniques (RTF-022-353)

Darlynne Kaye Matias and Ederlina Cariño

Ground truth points are needed to calibrate, train, and validate the algorithm in generating the land cover maps using remote sensing and GIS techniques. There are two sources of ground data used in this study: (1) rice and non-rice area validation points in 2016-2023 and (2) validation points of converted rice areas as of this year. From Isabela as a ground validation point, 30 points were validated and submitted to the mapping team for processing. These points will aid in the classification of rice areas converted from 2016 to 2021.

EXTERNALLY FUNDED PROJECT 4:

Nutritionally Enhanced Rice, Finishing, and Delivering Golden Rice and High-Iron and Zinc Rice Varieties(RTF-019-283/ RTF-019-283A)

Joy Bartolome A. Duldulao, Fernando D. Garcia, Rainhart C. Inovejas, and Lea Concepcion B. Flores

The project established a 1.9ha of seed production area in San Mateo, Isabela that averaged 5t/ha. Techno-demo plots covering 7.4ha were established at DA-CVRC and DA-SCRC, located in Cabarroguis and Saguday, Quirino, as well as Cabagan, Isabela, achieving an average yield of 4.2t/ha. In 2023DS, DA-CVRC yielded the highest of 8.3t/ha, a significant increase from 2022. The harvest was used for market testing of MR in Diffun and Cabarroguis, Quirino, and distributed to stakeholders, station partners, and farmer-cooperators as part of promotional activities.

A series of technical briefings on MR cultivation in the Cordillera region was conducted together with ATI-CAR. The briefings with DA-RFO CAR, NIA, IAs in Quirino, and various local executives in Isabela and Quirino reached 726 clients

and enhanced the involvement of local policymakers in integrating MR into existing agri-nutrition programs in their municipalities and provinces. Moreover, there is now considerable interest among farmers and partners in planting and producing MR in their areas.

Sensory evaluation and distribution of 5kg for acceptability studies were conducted among 100 households in Saguday and Cabarroguis. Market testing activities were carried out in Diffun and Cabarroguis, where active and passive promotion approaches led to the full sale of 500kg milled MR stocks within 3 and 5 days respectively. A cookfest featuring the nutrient-packed dish, dubbed as 'Golden Chao Fantastique', involved 10 groups, including RIC and 4-H Club teams from Cagayan and Isabela, along with participation from the RiceBIS team and external participants. Not only that, a series of impactful events including 12 exhibits, 10 taste tests, and 8 feeding activities were conducted at notable occasions such as the Provincial Rice Technology Forum (PRTF) field days in Region 02, agriculture information caravans, National Rice Awareness Month (NRAM) celebrations, and various station activities.

Significant progress had been achieved through the successful mobilization, establishment, and effective management of two Municipal Technical Working Groups (TWGs) in Quirino and one Provincial TWG in Isabela. Lastly, a noteworthy accomplishment is the procurement of 10 tons of Malusog Rice by the PLGU-Quirino and MLGU-San Mateo, Isabela, which were used in agricultural nutrition programs.