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PHILRICE R&D HIGHLIGHTS



PhilRice Isabela



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PHILRICE ISABELA

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EXECUTIVE SUMMARY

The PhilRice Isabela Station continues to address the production constraints of Region 2 and the Cordillera Administrative Region (CAR) by developing rice and rice-based technologies and promoting through using appropriate and relevant media channels to next- and end-users. By working together with its various partners, PhilRice Isabela is committed to achieving this objective through the conduct of technology demonstrations, *Lakbay Palay*, trainings, seminars, and various knowledge-sharing and learning (KSL) activities using both written and oral communication channels.

In 2022, 19 research and development (R&D) projects were implemented. With RiceBIS as its banner development project, the initiative continued to engage its established communities of 928 smallholder farmers, with 28 production clusters, 20 farmer organizations, and one cooperative located in San Mateo, Isabela; Diffun, Quirino; and Alfonso Lista, Ifugao. Through this project, farmers' yields in all sites has increased. One of its established clusters is the MarDag RiceBIS Agriculture Cooperative, located in San Mateo, Isabela, which showed promising agroenterprises that scaled up its farmers' produce and allowed them to generate additional income.

Training sessions were also conducted through the Rice Development Initiative for Cagayan Valley and CAR Environments (RICCE) project and the station's Branch Development Initiative, engaging these clusters along with new organizations and individual smallholder farmers. A season-long training on F1 hybrid rice cultivation and another training on hybrid rice seed production were completed, involving 175 men and women farmers in Lapaz, Abra; Luna, Apayao; and San Isidro and San Mariano, Isabela. Moreover, 40ha of varietal demonstration was also established across four project sites to showcase the performance of a public hybrid (Mestizo 20). In addition, the station reached 921 farmers through *Lakbay Palay* activities at project sites. It also increased visibility in nearby communities through rice campaigns and enhanced its online presence through the sharing of relevant and up-to-date R&D activities on its official Facebook page. From January to November, 116 R&D activities were posted.

Another major activity initiated this year was a fertilizer derby, which showcased 11 companies and their products, including farmers' practice and PhilRice formulation. The top yielders were Philvin Trading with an actual yield of 9.39t/ha and farmers' practice of 7.93t/ha. In research, the station contributed to the development of varieties through the testing of numerous promising lines. A total of 226 lines were tested for agronomic and yield performance, while 607 lines were evaluated for insect and disease resistance under the National Cooperative Test (NCT) and screening of Cytoplasmic Male Sterile (CMS) and Thermo-sensitive Genic Male Sterile (TGMS) parental lines and hybrid rice elite lines. From the NCT, 1,042 lines advanced for further testing under the Multi-environment Advance Yield Trial (MAYT) for the dry season (DS) and stage 1 trials under OneRicePH for the wet season (WS) evaluated on-site where 46 entries achieved at least 7t/ha.

Pursuant to being the hybrid rice center, the station continues to implement research projects and studies that contribute to knowledge in hybrid rice production. One of these is to mechanize AxR seed production at the station; a seeding rate of 10kg/ha of A-line was found to be feasible for the PSB Rc72H variety.

Along with its station- and CES-based and externally funded project engagements, the station also serves as a technical auxiliary in the implementation of several projects under the Department of Agriculture. One of these is the PRISM project, which monitored and assisted partners in the collection of field datasets and validation points that generated maps with 96-99% accuracy, involving a total area of 348,794ha during DS and 367,800ha for WS for Region 2 and CAR.

The station also acknowledged the contexts and dynamics between and among stakeholders and how these were taken into consideration in every strategy and plan implemented across its programs and projects. Guided by the Philippine Commission on Women (PCW), the station adheres to a set of guidelines to further improve and support inclusiveness, cultural sensitivity, and gender responsiveness. As a result, two of this year's R&D projects were gender and development (GAD)-tagged —ensuring that equal opportunities were given to men, women, senior citizens, and persons with disabilities as beneficiaries of interventions. These interventions included capacity-building activities, *Lakbay Palay*, agroenterprise engagements, and the Be RICEpossible campaign, among others. Specifically, 977 men and 736 women benefited from the RICCE and RiceBIS projects.

Rice Business Innovations System (RiceBIS)

Ofelia C. Malonzo

In 2022, the RiceBIS project achieved significant milestones in promoting sustainable agriculture and rural development. Ten learning farms were established, showcasing three yield-enhancing and cost-reducing technologies in the 2022 DS. Eight profitable agroenterprises were operationalized and sustained, with three agroenterprise plans carried over from Phase I, including *Bigasan sa Barangay* (community rice store), custom service provision, and Kadiwa ni Ani at Kita outlet. Furthermore, three plans have been prepared and implemented in Phase II, focusing on agri-inputs trading, custom service provision, and Bigasan sa Barangay. Two plans have also been prepared and executed in the RiceBIS Expansion site, emphasizing agri-inputs trading and custom service provision.

To assess the impact of the project, seasonal surveys for 2021 WS and 2022 DS were conducted in three RiceBIS communities, gathering feedback from farmers and stakeholders. Additionally, six Site Working Group (SWG) meetings were held with partner agencies to ensure effective coordination and collaboration. Overall, the RiceBIS project has achieved noteworthy strides in establishing learning farms, operationalizing of profitable agroenterprises, conducting of seasonal surveys, and active engagement with stakeholders, all of which have facilitated market linkages for farming communities and contributed to sustainable rural development.

Rice Initiative for Cagayan Valley and CAR Environments (RICCE)

Fidel M. Ramos

The RICCE project made significant progress in promoting hybrid rice cultivation and improving rice production practices. It has developed a Branch Development Initiative (BDI) technology scaling modality to disseminate knowledge and skills to farmers.

Several batches of season-long training were conducted, including those on hybrid rice seed production in Apayao and San Mariano, and hybrid rice commercialization in Abra. Additionally, National Rice Awareness Month (NRAM) activity and GAD Rural Day celebrations were conducted in San Mariano and Diffun, Quirino, respectively, to raise awareness and promote gender equality in agriculture.

Nine *Lakbay Palay* activities were organized, involving 446 area-based and 317 on-station participants. Six learning farms were established to showcase F1 public hybrid rice cultivation and AxR seed production.

Field demonstrations have been conducted, including varietal demonstrations of Mestizo 1 and newly released inbred varieties in Luna, Apayao, as well as techno-demos showcasing F1 cultivation using rice crop manager (RCM) and PalayCheck System fertilizer recommendations, alongside both mechanical and manual transplanting methods using M1.

Demonstration sites established under the project included four 15ha M20 demonstration sites in Luna, Apayao; San Mariano and San Isidro, Isabela; and La Paz, Abra, as well as one 25ha drum seeder demonstration site in Casala, San Mariano.

The project has also utilized social media, with 59 Facebook posts highlighting RICCE project activities shared and uploaded to create awareness and disseminate information. Moreover, the RCM fertilizer recommendation and PalayCheck system were promoted and adopted in three scaling sites to improve rice production practices and increase yields.

Optimizing Hybrid Rice Seed Yield through Mechanized Rice Production System

Fernando D. Garcia

During the DS, different seeding rates and fertilizer levels were tested, and the highest yield of 0.63t/ha was obtained with a seeding rate of 13kg/ha, next was 0.53t/ha at 10kg/ha; 15kg/ha yielded 0.5t/ha. In manually transplanted AxR setups, the highest yield of 0.73t/ha was achieved using a fertilizer rate 5 at 134-42-102kg NPK/ha. These yields were not statistically different at a significance level of 5%.

During the WS, the 10kg/ha seeding rate yielded 0.59t/ha, which was not significantly different from manually transplanted AxR yield of 0.48t/ha obtained, with a fertilizer rate of 120-90-60kg of NPK applied at various crop stages. The level of insect pest populations, natural enemies, and diseases remained the same across all treatments, regardless of seeding rates and fertilizer levels in both seasons.

Rice Competitiveness Enhancement Fund (RCEF) Training

Andres L. Dela Cruz Jr. and April Joy A. Bernardo

The Rice Specialists Training, which involved 29 participants, resulted in a 46% gain in knowledge and receive an excellent overall course evaluation of 4.96. The Training of Trainers (ToT) on Pest and Nutrient Management (PNM) was conducted seven times and reached 199 farmer-participants, with an overall course evaluation of 4.81. One ToT on the Production of High-quality Seeds was attended by 30 participants, resulting in a 73% knowledge gain and an excellent overall course evaluation of 4.86. Two ToTs on PNM, with 58 participants, yielded a 63.5% knowledge gain and an excellent overall course evaluation of 4.72. Lastly, a short course on PNM was conducted with 35 participants, resulting in a 30.05% knowledge gain with an excellent overall course evaluation. Overall, these training programs were successful in imparting knowledge and skills to the participants who gave positive feedback through their course evaluations.

Malusog (Golden) Rice Program

In collaboration with partner-agencies and farmers, initiated the deployment of Malusog Rice (MR). To ensure the availability and accessibility of quality MR seeds and milled rice, the program established a 2.1ha seed production and 2ha grain production in DA-Cagayan Valley Research Center (DA-CVRC), Ilagan City, Isabela; DA-Southern Cagayan Research Center (DA-SCRC), Iguig Cagayan; Cabarroguis and Saguday, Quirino; and on-station with an average yield of 3.4t/ha. Cultural practices such as seedling preparation, transplanting, and water management followed the PalayCheck System for irrigated lowland rice.

To increase knowledge, promote acceptability, and encourage positive behavioral change toward adoption, a series of stakeholder meetings, technical briefings, knowledge-sharing and learning (KSL) sessions, and promotional activities were conducted. In support of a science-based supportive policy, enabling environment, and governing structures for the smooth deployment of MR in target areas, a series of local resolutions supporting its cultivation, commercialization, and consumption were passed in Saguday and Cabarroguis, Quirino, and in Isabela.

National Rice Cooperative Testing (NCT) Project

Joy Bartolome A. Duldulao, Gracia B. Amar, Nymfa S. Sosa, Angelita B. Obaña, Zarah Faith T. Lunag, and Jim Allen T. Tabirao

The NCT Project evaluated 330 promising rice lines for yield and agronomic performance, 11 of which outperformed hybrid varieties and 27 yielded inbreds. Additionally, 534 NCT lines were evaluated for disease resistance and stem borer damage: 272 showed resistance to various diseases; 95 lines were resistant to blast; 145 were resistant to bacterial leaf blight (BLB); and 20 lines were resistant to sheath blight.

Efficient Deployment Systems for NextGen Varieties Enhanced Genetically through Modern Breeding Technologies Contributing to Increased Productivity in the Philippines (NextGen PLUS) (2022 DS only)

April Joy A. Bernardo

A total of 562 lines of Multi-environment Advance Yield Trial (MAYT) with two replications, were evaluated on-station in 2022 DS. The entries were divided into early (232) and mid-early stages (330). Of the early entries, 41 yielded higher at 7-8t/ha than check entries at 4-8t/ha. Likewise, 30 mid-early entries yielded higher at 7-8t/ha than check entries at only 3-6t/ha.

OneRicePH Stage 1 Trial (2022 WS only)

April Joy A. Bernardo

Approximately 480 elite lines were evaluated on-station for 2022 WS; and 68 entries yielded 6-7t/ha while the check entries averaged 3-6t/ha.

Evaluation of CMS and TGMS Parentals and Promising Hybrids for Grain Quality and Resistance to Major Pests

Gracia B. Amar and Zarah Faith T. Lunag

A total of 517 lines were evaluated under Isabela conditions for reactions to BLB, rice blast, sheath blight, tungro, and stem borer. Among these, 85 were resistant to rice blast, 103 to BLB, and 22 to sheath blight. The data gathered on stem borer reactions were not included in the report due to very low infestation levels.

Philippine Rice Information System (PRiSM)

Darlynne Kaye B. Matias and Ederlina I. Cariño

Four PRiSM locations/provinces were monitored within the area of responsibility (AOR). Reliable and validated field data were marked as “active” in PRiSM Analytics, and end-season outputs included rice area, planting calendar, and yield estimates.

Selection and Dissemination of Elite Salt-tolerant Rice Varieties to AFACI Member-countries

Delbert A. Santos

In 2022 DS, the project developed saline-tolerant rice seeds and distributed them to 82 farmers in Cagayan, along with a techno-guide. During the 2022 WS, 100 breeding lines and six global check varieties were planted with specific plant spacing and fertilizer application rates. Of the 100 entries, 25 had yields of 3t/ha and above, with the top five entries being IR17K1037 (4.65t/ha), IRRI 202 (4.26t/ha), IR 139736-B-28-1-2 (4.26t/ha), IR15K1604 (4.24t/ha), and IRRI 236 (4.06t/ha).

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

Fernando D. Garcia and Aileen Joy S. Mateo

In the DS, Chemrez Technologies Inc. achieved the highest potential yield of 10.59t/ha and the lowest production cost of P6.52/kg by using Biomate Optima (16-8-8) with a soil application rate of 70-12-42kg NPK/ha, along with Biomate Forte as foliar fertilizer.

In the WS, PhilRice recorded the highest potential yield of 8.75t/ha. Farmers' practice obtained the highest actual yield of 8.35t/ha. VVZ Corporation Inc. had the lowest production cost of P6.84/kg, with an actual yield of 7.60t/ha.