

PHILRICE R&D HIGHLIGHTS

DA-PHILRICE LOS BAÑOS

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DA-PHILRICE LOS BAÑOS

Branch Director: Rhemilyn Z. Relado-Sevilla

EXECUTIVE SUMMARY

DA-PhilRice Los Baños continues to live up to its mandate through the implementation of 12 R&D projects, despite the challenges posed by the COVID-19 pandemic, in the pursuit of increasing the rice productivity and profitability of farmers and educating the general public on rice science technologies and conservation especially in its regions of responsibility, CALABARZON AND MIMAROPA. This, in turn, helps in the improvement and sustenance of rice quality and availability for consumers.

In 2021, the projects implemented were two (2) program-based projects [Rice Business Innovations System (RiceBIS) Community in Sariaya, Quezon and Philippine Rice Information System], three (3) division based projects [Development of Thermo-sensitive Genetic Male Sterile (TGMS)-based Two-line Hybrid Rice; Hybrid nucleus and breeder seed production research and maintenance (NBSP); and Screening of TGMS parentals, breeding lines, and promising hybrids for grain quality and resistance to major insects and diseases], four (4) extra-core projects [Rice Business Innovations System (RiceBIS) Community in Tiaong, Quezon; Physical attributes determination (grain quality) of National Cooperative Test (NCT) entries; Deployment of Genetic Resistance in the Management of Rice Black Bug *Scotinophara coarctata* (F.)]; and Performance evaluation of public hybrid rice varieties for commercialization, one (1) special project [Rice Competitiveness Enhancement Fund for CALABARZON (RCEF)], and two (2) station-based projects [Research Innovations for Sustained Improvement of R4D (RISe of R4D) and Rice Technology and Innovations Promotion in Regions IV-A and IV-B (RiceTIP)].

PROJECT 1

RiceTIP: Rice Technology and Innovations Promotion in Regions IV-A and IV-B

Michelle C. Quimbo

The Branch Development Initiative (BDI) of the station, “Rice Technology and Innovations Promotion in Regions 4A and 4B,” is composed of four components: (1) RicePATROL (2) RiceSHARE, (3) Technology Scaling of Nutrient Management, and (4) Monitoring and Evaluation, which maximized the blended use of digital technologies through online and face-to-face learning activities for the intended rice stakeholders amidst pandemic. The following outputs were accomplished based on the project objectives:

RICEPATROL: Providing assistance to the rice-farming organizations in target locations in Regions IV-A and IV-B

- One hundred seventy-one technical dispatch requests, mainly as resource persons on the PalayCheck System, wfrom different DA-attached agencies and LGUs were accommodated while 352 queries were responded to. They trained 914 (55% males and 45% females) farmers, extensionists, and research and development workers.
- Forty invitations from rice stakeholders were accommodated including seven courtesy calls with regional, provincial, and local government units; eight regional symposiums and other research, development, and extension events, 23 meetings on rice S&T, and two year-end reviews.
- Partnership with five SUCs, nine LGUs, four farm schools, nine DA-attached agencies, and one private company for the various activities in RiceTIP were established.
- Sixteen various trainings were conducted, which include Refresher Course on Inbred Rice Production and Farm Mechanization, Pest and Nutrient Management Training for farmers, Hands-On training on Minus-One Element Technique, Capacity Enhancement for Agricultural Extension Workers, and Refresher Course on PalayCheck System and Special Topics. Participant’s gain in knowledge ranged from 15–69%.
- Technology demonstrations of Palayamanan System were maintained where a return of investment of 3% and 6% was calculated for the dry and wet season, respectively.
- First-ever virtual station Lakbay Palay for Regions IV-A and IV-B was conducted on May 19. About 9,500 people were reached with 601 engagement through Facebook Live.

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- The 19th Ceremonial Rice Harvesting at the Rice Garden, Rizal Park in celebration of the National Rice Awareness Month was held virtually on Nov. 25, which was attended by 986 participants (36% males and 64% females). The video reached 17,900 with 20,600 engagements through Facebook Live.
- Techno-demonstration of popular and newly released inbred varieties and public and private hybrids recommended in the region were established in Los Baños and Pila (in collaboration with a farm school), Laguna, respectively, during the wet cropping season. Thirty farmers participated in a field walk at the off-station techno-demo while 68 farmers viewed the on-station techno-demo through a video presentation.
- In the dry season, seven sahod ulan and six saline tolerant rice varieties were evaluated on their adaptability on local strains of pests and diseases in CALABARZON and market acceptability. Only four rainfed varieties (Sahod Ulan 11, 13, and 18) and two saline tolerant varieties (Salinas 13 and 17) passed the evaluation, and their seeds were produced for distribution to interested farmers. Eighty-eight farmers from Quezon, Cavite, Laguna, and Batangas received 5kg seeds of saline tolerant and rainfed varieties in coordination with OPAG, ATI-4A, LGUs, and RCEF. Twenty-nine farmer recipients of climate-smart varieties were interviewed and gave positive feedback on the field performance and preference of the varieties they received.

RiceSHARE: Capacitating rice stakeholders through KSL Activities in Regions IV-A and IV-B

- Four exhibits were showcased in Laguna and Manila promoting DA-PhilRice and the #BeRICEponsible campaign of the National Rice Awareness Month, in which 3,727 audience were reached.
- One Stop Information Shop (OSIS) has continuously managed a safe and secure database (10 Google Drives) for photos, videos, reports, and studies conducted by the station. More than 9,000 IEC materials were also distributed in Regions IV-A and IV-B. “E-OSIS: Providing Rice Information in the New Normal” was promoted on Nov. 29 for the students and the general public to be aware of the station’s digital research tools. The webinar had 1,000 live views, 261 post views engagement, and 2,900 reach.
- The station’s Facebook Page maintained its 100% response rate while a 23% increase in likes was recorded from January to December. The PalayKonsulta responded to 352 (53% males, 47% females) queries from the DA-PhilRice Los Banos Facebook Page

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including internal consultations within the station. Majority of the queries responded to were about seed availability and management options for rice crop care and maintenance.

- Twenty-six news/feature stories were published/posted either on PhilRice Magazine, Facebook Page, PhilRice Newsletter, and PhilRice Online.
- Four webinars were conducted in the DA-PhilRice Los Baños Webinar Series (PRWS) and DA-PhilRice Lifelong Learning Series (LSS). PRWS was participated by 564 (31% males, 69% females) composed of farmers, students, researchers, educators, and extension workers while the LLS recorded 3,071 engagements, 40,578 reach, and 15,055 total views.

Technology Scaling of Nutrient Management using Decision Support Tools

- Six municipalities (Sariaya, Tiaong, General Nakar, Mauban, Candelaria, Infanta), three ATI-assisted farm schools, TESDA, RCEF, and RiceBIS in Quezon were engaged in the scaling of nutrient management and decision support tools (i.e., MOET, LCC, RCM) from January to December 2021 (dry and wet seasons). Interventions include training, technology-demonstration, and creation of agro-climatic maps.
- Two hundred forty-six (52% male, 48% female) farmers were trained in six Quezon municipalities. Participants were also provided with MOET and LCC kits.
- MOET-LCC and RCM were showcased in techno demos. Fertilizer recommendations resulted in yield increase of 1 to 3t/ha.
- Six batches of farmers' field walk highlighting nutrient management were conducted in six sites in Quezon province, which was participated by 188 participants (57% male, 43% female). A brochure on "Rekomendasyon ayon sa PalayCheck para tumaas ang ani at bumaba ang gastos sa pagpapalayan sa Quezon" was distributed to the participants.
- Thirty-eight percent of the 111 farmers adopted one or more of the nutrient decision support tools (MOET, LCC, RCM) in six municipalities while the frequency of farmers' adoption of specific nutrient decision support tools and its principles/recommendations is 71 for the 111 farmers. LCC registered the highest frequency of adoption followed by MOET and RCM.
- Thirteen agro-climatic maps (i.e., rice areas, irrigation points and areas, soil type, elevation, slope, climate, maximum and minimum temperature, humidity, solar radiation, rainfall, and drought-prone areas) were generated for Quezon to be used in the analysis of rice crop suitability.

PROJECT 1

Monitoring and Evaluation

Secondary data on rice production systems and farmers' profiles (provincial and municipal level) for socio-economic characterization were requested for 34 municipalities/cities in Quezon province, which were responded to by the OPAG Quezon and four municipalities in Quezon.

- Of the 246 farmers trained under the technology scaling component, 139 farmers (57%) were interviewed via phone call for baseline survey on general farmer information, cost profile per stage of rice production, pre-assessment on PalayCheck System, and farm and climate description.
- Among the 246 farmers trained on nutrient management, 111 farmers were assessed on the adoption of nutrient management decision support tools and PalayCheck System, and their willingness to adopt new farming technologies/practices. Differences in yield, cost, income, and fertilizer application before and after the intervention were also identified.
- Data gathered in the wet season showed that >50% of the 48 farmers are willing (with "5" as the highest rating) to adopt non-traditional farming practices (Candelaria-66.67%, Infanta-63.16%, and Mauban-52.17%).
- KSL activities were assessed using appropriate evaluation forms (customized as necessary) under each component. Data from face-to-face and online KSL activities were encoded through MS Excel or Google Forms. Evaluation forms, survey instruments, farmers' data per site, communication materials, administrative documents, directory of LGUs in Region IV-A and IV-B, and other relevant data for extension activities were stored in Google Drive.

PROJECT 2

Research Innovations for Sustained Improvement OF R4D (RISE of R4D)

Edelweiss E. Sajise, Lowel V. Guittap, Asha Bagunu, Michelle C. Quimbo, Kristina Concepcion S. Labita, Wendy B. Abonitalla

Guided by the DA-PhilRice Strategic Plan (2017-2022), the Institute has mandated DA-PhilRice Los Baños to address location-specific problems in Regions IV-A and IV-B. The Los Baños branch also conducts research that cuts across regions and of issues with national interest. Research on hybrid rice is continuously being conducted in close partnership with the DA-PhilRice Hybrid Rice Program.

DEVELOPMENT OF A RAPID METHOD FOR THE GENETIC PURITY ASSESSMENT OF HYBRID PARENTAL LINES

As a commitment in giving the best to the farmers, the branch initiated a study on ensuring delivery of pure hybrid parental and F1 seeds. In line with this, the applicability of alkali digestibility test as a rapid method to assess genetic purity of hybrid parental lines of Mestizo 1 and Mestizo 20 was explored.

- Five parental lines of public released hybrids Mestizo 1 or M1 (IR58025A, IR58025B, and IR34686R) and Mestizo 20 or M20 (PRUP TG102 and TG102M) were tested based on their alkali spreading response to varying KOH concentrations. Results showed that KOH concentration at 1.1%, 1.5%, 1.6%, and 1.7% can be used to identify the genotypes.
- Higher or lower KOH concentration is being tested to optimize KOH concentration that can readily distinguish off types in a seed lot.

PACKAGING SITE-SPECIFIC AND COST-EFFECTIVE NUTRIENT MANAGEMENT FOR IRRIGATED LOWLAND HYBRID AND INBRED RICE VARIETIES SUITABLE IN REGIONS IV-A AND IV-B

This study provided site-specific and cost-effective nutrient management options to attain maximum economic yield and profit for public-released hybrid and inbred varieties. The study was established at the UPLB Central Experiment Station in Los Baños, which has a Lipa loam soil with a medium level of soil organic matter content (SOM) at 4.09%. MOET was used in the diagnosis of soil nutrient

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limitations, while the LCC aided in assessing the nitrogen needs of the crop.

- The result showed no significant yield increases beyond 40kg N/ha during the 2021 dry and wet season for inbred and hybrid varieties that were subjected to increasing N rates from 0 to 120kg N/ha for inbred and up to 240kg N/ha for hybrid varieties.
- Production cost at 40kg/ha N with or without P and K applied for both inbred and hybrid varieties was also lower and the resulting Agronomic Efficiency of Nitrogen (AEN) was higher than the treatments with >40kg/ha N plus additional 40kg/ha P and K rates.
- Grain yields and production cost obtained from the treatment plots, which utilized MOET and LCC for fertilizer recommendations, mostly showed better performance than that of the plots with high N rates (≥ 120 kg/ha N) during the dry and wet seasons.

CONSERVATION AND MANAGEMENT OF RICE GENETIC RESOURCES IN PHILRICE LOS BAÑOS

The station's rice conservation initiatives in collaboration with UPLB commenced way back in the late 1990s. Since then, the Rice Germplasm Conservation project remains as one of the station's main thrusts and it likewise supports the hybrid and inbred breeding projects at Los Baños.

- There were 3,580 rice accessions maintained including traditional rice varieties (TRVs), hybrid and inbred breeding lines, original seeds of public hybrid released varieties, and selected NCT lines.
- There were 259 accessions seed increased/regenerated and characterized for 58 agromorphological characters. Random viability tests from different accessions in storage showed that the germination rate of the materials remained high and within the minimum of at least 85%.
- Seven seed requests for research and breeding purposes were accommodated.

PROJECT 2

DEVELOPMENT OF THERMO-SENSITIVE GENETIC MALE STERILE (TGMS)-BASED TWO-LINE HYBRID RICE

PhilRice LB: Mel Anthony T. Talavera, Edelweiss E. Sajise, Kathleen P. Gonzales, Mary Jane P. Vasquez

Hybrid rice research is one of the key strengths of the station, which involves the development of TGMS-based two-line hybrid rice; maintenance and production of nucleus and breeder hybrid seeds; screening for grain quality, insect, and disease resistance of inbred and hybrid lines; and assessment of public hybrid rice varieties for commercialization.

- In developing a two-line hybrid with excellent eating quality (soft-textured) preferred in CALABARZON and MIMAROPA, 26 crosses were made using NSIC Rc 160, Rc 218, and Jasmine for female development while seven crosses were made using SN 705, NSIC Rc 160, and NSIC Rc 218 as the donor for low amylose content and gelatinization temperature in the male development. The segregating generation will be observed in the 2022 wet season.
- For female parent development, seven fixed lines for female line development were selected in TGON nursery during the 2021 wet season. These were completely sterile with plant height ranging from 77 to 85 cm. Recorded days to 50% heading is from 87 to 90 days and tiller count ranged from 11 to 20 per hill.
- For male parent development, seven pollen parent lines were selected in the F6 generation and were characterized phenotypically. These lines are medium maturing, have a plant height of at least 100cm, mostly have intermediate AC and GT combination, and show intermediate resistance to sheath blight, rice tungro virus (RTV), and bacterial leaf sheath (BLS).
- In advance yield trial (AYT), hybrid entry AYT 205 s passed the standard set by the study. This elite hybrid has a 5% yield advantage over Mestiso 99, had shown intermediate resistance against sheath blight, resistant against bacterial leaf blight and sheath rot and had an intermediate AC and GT.
- 50kg of F1 seeds of the promising two-line hybrid, PRUP 14, were produced during the 2021 wet season seed production, which will undergo grow-out testing to determine the genetic purity of the seeds. Once verified, these will be nominated in the NCT in 2022.

PROJECT 2

SCREENING OF TGMS PARENTALS, BREEDING LINES, AND PROMISING HYBRIDS FOR GRAIN QUALITY AND RESISTANCE TO MAJOR INSECT PESTS AND DISEASES

PhilRice: Edelweiss Sajise, Via Cabuyao, Asha Bagunu, Dara Faye Rivera
UPLB: Ester Magsino, Bernard O. Budot

Reactions of TGMS parentals (TGMS or S-line and Pollen parents or P-lines) to major pests and diseases were determined using the induced method.

- Combined insect evaluation results showed that RPP3 8615, RPP3 8646, RPP3 8674, RPP3 8683, and RPP3 8723 have resistant to moderately resistant reaction to stemborer, brown planthopper, and green leafhopper.
- For disease resistance, promising results were observed in RPP3 8721, RPP3 8723, RPP3 8731, RPP3 8737, and RPP4 2139, which showed resistant reactions to blast and intermediate reaction to sheath blight. Seven TGMS lines and six experimental hybrids showed resistance to blast and intermediate reaction to bacterial leaf blight and sheath blight based on the 2021 wet season screening;
- Four promising hybrids (AYT 7, 22, 23, and 28) in the AYT were identified with good milling quality as indicated by their Pr to GI classification on percent head rice and percent total milled rice. In addition, these hybrids have soft to moderately tender cooked rice texture.
- Combining the pest and grain quality evaluation results, eight parent lines were identified to have good eating quality and resistance to intermediate reactions to major insect pests and diseases. However, all entries tested were susceptible to the rice tungro disease. The promising entries evaluated from the pollen parent nursery were RPP3 8723, RPP3 8737, and RPP4 2139. TGMS lines that performed well in all the tests during the wet season were TGMS 72, RSON 3-2, RSON 3-4 RSON 11, and TGON

HYBRID NUCLEUS AND BREEDER SEED PRODUCTION

Lowel Guittap, Wendy Abonitalla

- The project supplied the required amount of breeder seeds of public hybrid parental lines of Mestizo 1 (NSIC 1997 Rc72H) and Mestiso 20 (NSIC 2009 Rc204H) through purification and seed production to meet the national hybrid target. There were 225kg A/S lines and 20kg R/P breeder seed of Mestizo 1 and Mestiso 20 dispatched to DA-PhilRice Isabela and Negros for foundation seed production.

- Nucleus seed of parent lines of Mestiso 55 (NSIC 2014 Rc368H), Mestiso 73 (NSIC 2016 Rc 446H), Mestiso 99 (NSIC 2014 Rc544H), and Mestiso 103 (NSIC 2019 552H) were produced anticipating possible commercialization.
- Breeder seed production of pollen parentals of Mestiso 73, Mestiso 99, and Mestiso 103 were produced to support the hybrid pre-commercialization activities of DA-PhilRice.

PROJECT 3

Philippine Rice Information System

Gabriel Flancia

The station is actively involved in the operational system for rice monitoring to support decision-making towards increased rice production in the country through the Philippine Rice Information System (PRISM) in Regions IV-A and IV-B.

- Together with the DA-Regional Field Offices and local government units (LGUs), 140 monitoring fields are maintained to collect data on crop management practices, yield estimation, and crop injuries due to extreme weather events. Thirty-two satellite image acquisitions were monitored and processed to generate seasonal rice area, start of season maps, and yield estimates. There were 455 rice and non-rice area points validated in the two regions.
- Online meetings and evaluation workshops were conducted to capacitate regional facilitators and discuss the updates on the new protocol to be implemented in the upcoming season. Regional implementers also attended the national retooling and evaluation meeting conducted online.

Extracore Project 1

Development of Genetic Resistance in the Management of Rice Black Bug *SCOTINOPHARA COARCTATA* (F.)

PhilRice: Edelweiss Sajise, Genaro S. Rillon, Ronel G. Discaya, Nikki Arivel P. Larazo, Sophia Karla S. Vergara, Mel Anthony Talavera, Pernelyn Torrena, Oliver E. Manangkil, Juliet P. Rillon
UPLB: Ester A. Magsino, Babylyn T. Salazar

The station was granted with external funds to conduct an extensive study on the control management and breeding of varieties with resistance to rice black bug (RBB).

- The project focused on understanding the biology of RBB, development of rearing and screening methodologies, and assembly and characterization of germplasm materials to evaluate RBB resistance.
- Among the lines and varieties evaluated for RBB resistance using natural and artificial infestation, 16 entries were identified as resistant composing of two NSIC varieties, elite lines, and genotypes. The resistance reaction is being confirmed under a caged condition with higher insect pressure of 60 field-collected adult RBB/hill.
- There were 134 crosses generated from the 16 genotypes, of which, only 97 produced F1 seeds, will be evaluated in the 2022 dry season. Methodology for linkage map construction and QTL mapping was also developed, which will be used in identifying markers linked to RBB resistance.
- There were 1,273 germplasm materials assembled and considered for evaluation of RBB resistance. The collection is composed of 1,009 elite lines from DA-PhilRice, IRRI, and UPLB irrigated and hybrid breeding programs; 199 PSB/NSIC released varieties; and 41 NCT entries.

Extracore Project 2

Performance Evaluation of Public Hybrid Rice Varieties for Commercialization

Mel Anthony Talavera, Lowel Guittap, Ysabel Aurora Alcachupas

The project focused on the basic seed production of cytoplasmic male sterility (CMS)-based pre-commercialization hybrid, Mestiso 55, characterization of pollen parent line of Mestiso 73 (M73) and M99, and the development of F1 seed production protocols for M99 and M103.

- Using the Standard Evaluation System (SES) for rice, the full passport information of the parent lines of M73 and M99 was completed, which include the morphological characteristics, and the Test Guidelines for Rice of The International Union for the Protection of New Varieties of Plants (UPOV) for Distinctness, Uniformity, and Stability Test (DUST). Information compiled were used as basis of the National Quality Control Services staff during the seed accreditation process.
- The F1 seed production protocol for M73 and M99 was completed under Los Baños conditions. Using the F1 seed production setup of 3:10 male to female ratio, the female parent of M73 has to be seeded in synchrony with the first set of the pollen parent. As for M99, the female parent should be seeded a day after the second set of the male parent was seeded.

Extracore Project 3

Physical Attributes Determination (GRAIN QUALITY) of NCT Entries

Mel Anthony Talavera, Lowel Guittap, Ysabel Aurora Alcachupas

In support of the National Cooperative Testing (NCT), Rice Chemistry and Quality Laboratory of DA-PhilRice Los-Baños conducted grain quality evaluation (i.e., physical attributes including % chalkiness, % immature grains, and grain size and shape) for NCT rice selections.

- There were 401 entries (258 were harvested from the 2020 wet season NCT trial and 143 from the 2021 dry season NCT trial) analyzed from 18 different ecosystems for physical attributes using the standard NCT method for grain quality evaluation.
- Along with the eating quality control check (Koshihikari), results showed that only 14 entries (3.49%) met the standard requirement for percent chalky grains while 89 entries (22.19%) for percent immature grains. In terms of size and shape, majority (48.63%) of the entries had long and slender grains. Among the entries, only 10 entries had Grade 1 to Premium percent chalky grains and had long, slender grains.

Extracore Project 4

Rice Business Innovations Systems (RICEBIS) Community in Quezon (Sariaya and Tiaong)

*Kristina Concepcion S. Labita, Ruby Mossel Tumangil,
Carl Matthew Q. Pangilinan, Ruby Candano*

The goal of the RiceBIS Community in Sariaya and Tiaong, Quezon is to transform rice farming communities to become productive in terms of their yield through the use of high yielding and cost-reducing technologies and farmers' engagement to sustainable enterprise, as well as increase their income (by 25%) from rice farming. This has been accomplished through the conduct of three studies namely: (a) Communication Strategies in Strengthening Rice Farmers' Engagement in Agripreneurship in the RiceBIS Community, (b) Development of Sustainable Enterprise in the Rice Farming Communities in Sariaya and Tiaong, Quezon, and (c) Socioeconomic Indicators of RiceBIS Community in Sariaya and Tiaong, Quezon.

- In Sariaya, three farmer organizations (FO) have been organized since 2017 to develop a gender-sensitive business model that can be adopted and sustained by the farming community. They were engaged in three enterprises including inputs trading, milled, and pigmented rice production. Of the three FO, Manggalang Agrarian Reform Beneficiaries Cooperative (MARBENCO) maintained the growth of their fund amounting to PhP450,000. Profits from the previous t season were added to the 2021 wet season credit benefits of the members. The enterprises helped increase the net income of the 21 rice farmers (male 16; female 5) by up to 10%.
- The project produced and disseminated communication materials to promote and market agricultural products of the Sariaya RiceBIS farmers. A digital marketing platform was developed through Facebook. Eight gender-sensitive stories were generated and posted on the PhilRice Los Baños Facebook page.
- End-season monitoring survey in Sariaya showed that during the 2021 dry season, there was a slight decrease in yield compared with the baseline data (3.64 vs. 3.68t/ha in irrigated and 3.32 vs. 3.82t/ha in rainfed ecosystem) due to water stress. The community produced their palay at PhP12.58/kg. Cost for labor contributes to more than 50% of the production cost. Given this, most of the farmers shifted to direct seeding

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from manual transplanting. Decreased use of inputs such as fertilizers and pesticides was also observed. The postharvest losses from harvesting have decreased due to more farmers utilizing combine harvesters. Use of quality seeds (80%) is the most adopted among the technologies, followed by seeding rate at 60%.

- Eighty farmers (43 male; 37 female) were reached in Tiaong; 73 of them (52 male; 21 female) underwent values formation and organizational building workshops. The first version of the localized IEC, “Rekomendasyon Ayon Sa PalayCheck para Tumaas ang Ani at Bumaba ang Gastos sa Pagpapalay sa Quezon,” was distributed to 140 farmers during capacity enhancement activities.
- Eight technology demonstration (techno-demo) sites were established to showcase three yield-enhancing and three cost-reducing technologies including use of high quality seeds, integrated nutrient management, proper water management, proper seeding rate, integrated pest management, and use of farm machinery during planting and harvesting. These sites resulted in yield advantages over farmers’ practice and from their previous yield.
- The project reached 278 male and female rice farmers in 16 barangays of Tiaong, Quezon covering 344.56ha of rice area, while 105 rice farmers (79 male; 26 female) were trained on rice production and 37 rice farmers (29 male; 8 female) on agroenterprise development.
- Eight FO were engaged in milled rice production, which consolidated, processed, and marketed 6t of fresh and dried palay in Tiaong, Quezon, and Los Baños and Bay, Laguna. Two FO including Del Rosario and San Isidro farmer-associations were engaged in pigmented rice production. A total of 1.5t of fresh and dried palay were consolidated from 10 rice farmers, 20% of which were marketed and the remaining served as stock for the market engagement with MAYANI PH.
- A 1t/ha yield increase in the irrigated ecosystem and a 2t/ ha increase in the rainfed ecosystem were observed during 2021 dry season. Factors that contributed to the increase in yield were: (1) increased number of high-quality seeds used, (2) majority of the training activities were conducted before the planting date, (3) techno-demo sites were strategically established in areas accessible to the farmers, and (4) favorable weather conditions during the dry season. The target of increasing the net income to 25% was not achieved because only 27.68% of the rice farmers shared a part of their harvest for group marketing. Production cost currently ranged from PhP12.92 to

Extracore Project 4

PhP15.40. The number of users of the combine harvester also increased to 45.09% among rice farmers engaged.

- The use of quality seeds and recommended variety (95.79%) gained the highest adoption percentage followed by the proper level of water during tillering stage (86.81).
- Due to restrictions in mass gatherings, one gender-neutral communication plan composed of blended learning activities including online and face-to-face interaction was implemented in Sariaya and Tiaong through various modes of communication and media channels such as PalayTxtmate, PalayTalakay, DigiTalakay, and KSL activities.