Philippine Rice Research Institute
Central Experiment Station
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2024 NOTABLE ACCOMPLISHMENTS

DA-PhilRice fulfills its mandate of developing high-yielding and cost-reducing technologies so farmers can produce enough rice for all Filipinos by implementing 87 rice research for development (R4D) projects. These efforts also enhance national capabilities in rice R4DE, generating vital insights, new and improved rice varieties, innovative machinery, and advanced crop management strategies. The results are disseminated through trainings, field demonstrations, exhibits, and various knowledge products, in collaboration with partners, using both online and offline platforms.

Highlights of accomplishments were as follows:

Strategy 2: Mechanize and modernize agri-fishery production systems
PAP 1.1: Conduct of regional rice R4D programs for Luzon, Visayas, and Mindanao

Germplasm Conservation and Variety Development

1. Rice genetic resources were conserved and updated, with 513 germplasms fully assessed for amylose content (AC) and gelatinization temperature (GT). Grain quality evaluation was conducted on 895 pre-NCT rice lines and 50 parental lines and hybrids, including 31 restorers, 5 potential maintainers, 7 F1 test crosses, and 7 potential restorers. Of these, 81 pre-NCT lines (9%) were identified as promising, meeting the standards for milled rice, head rice recovery, chalky grains, grain length, grain shape, AC and GT. Most parental lines and hybrids (96%) exhibited low to intermediate AC.

   Over 1,000 elite and donor rice lines were evaluated for resistance to major rice diseases and insect pests. Six mutant rice lines were identified as potential donors for breeding brown planthopper-resistant rice. Three rice varieties/germplasm with putative resistance to rice tungro bacilliform virus (RTBV) were identified for verification, supporting tungro-resistant rice development. The antibiosis testing protocol for screening green leafhopper resistance was enhanced.

2. A gene-editing construct targeting root traits for drought stress tolerance was created using CRISPR-Cas technology.

3. Pre-breeding donor lines for developing high-yield, short-duration rice varieties were identified from mutant-derived rice lines of modern varieties, with maturities ranging from 97 to 106 days after sowing. Genotyping of four lines confirmed the presence of QTLs for earliness and traits related to resistance or tolerance to key abiotic and biotic stresses. Validation of additional traits, such as yield, was conducted for complete characterization. PSB Rc10, a widely popular early-maturing variety, is among the parent stocks of these mutants. The selected elite lines were being purified.

4. Thirteen elite lines for irrigated lowlands passed early multi-environment trials (MET) and were nominated to the NCT. These include 6 lines for direct wet seeding, 5 for transplanting, and 2 special rice lines with elevated zinc content. Additionally, a high-yielding F1 hybrid demonstrated an exceptional yield exceeding 10 t/ha. All these lines outperformed NSIC Rc222 in terms of yield.

   For adverse ecosystems, 19 new elite lines were advanced to the NCT: 4 lines for rainfed drought, 4 with multiple resistance for saline environments, 5 for submergence-prone areas, and 6 tolerant to cool temperatures with blast resistance. All lines exceeded the target yield of 5t/ha. Selected promising lines were advanced to the Multi-Adaptive Trial, the final stage of NCT. Additionally, 19 promising lines tolerant to complete submergence were developed and are ready for nomination to the NCT for submergence-prone rice ecosystems.

5. Three micronutrient-dense rice varieties -- NSIC 2024 Rc 760SR (Zinc Rice 4), Rc 762SR (Zinc Rice 5), and Rc 764SR (Zinc Rice 6) -- co-developed with IRRI, have been commercially released with national recommendation for irrigated lowland areas. These varieties yield 5.58 to 5.74 t/ha during the WS and 6.63 to 6.99 t/ha in the DS. Seed increase is ongoing in the 2025 DS to prepare for distribution to farmers in upcoming planting seasons.

6. A saline-tolerant breeding line has been approved for commercial release as NSIC 2024 Rc 766 (Salinas 40). Seed production is underway in 2025 DS for distribution in subsequent seasons. Another line, PR45274-3, has been registered under Plant Variety Protection and was informally deployed to farmers in saline areas of Cagayan. It is currently being demonstrated in the Bicol Region.

Seed Production

7. Nucleus seeds were produced for five nationally recommended RCEF rice varieties (NSIC Rc 216, Rc 222, Rc 160, Rc 480, and Rc 506), with 5,000 panicles each. Additionally, 9,000 panicles each were produced for nine regionally recommended RCEF varieties and 7,000 panicles each for seven replacement varieties. For adverse or stress-prone ecosystems, 800 panicles each were produced for 18 suited rice varieties.

8. Breeder seed production yielded 225 to 300 kg for the five nationally recommended varieties, 139 to 345 kg for eight regionally recommended varieties, 125 to 257 kg for four replacement varieties, and 75 to 245 kg for 14 varieties adapted to stress-prone ecosystems.

9. Foundation seeds ranging from 330 to 1,055 kg were produced for 16 rice varieties suited to stress-prone environments under the Local Seed Support to Rice Production Project.

10. At CES, 226,532 kg of registered seeds (RS) were produced from 47.705 ha (99.74% seed production efficiency) in the 2024 DS, alongside 42,853 kg of foundation seeds (FS) from 9.07 ha (94.82% SPE). During the WS, 173,327 kg of RS were produced from 51.175 ha (99.43% SPE), and 14,431 kg of FS from 4.82 ha (92.42%). The CES distributed 72,305 kg FS and 291,858 kg RS in 2024. The BPI has certified the BDD seed production areas at CES for Good Agricultural Practices.

11. High temperature-tolerant NSIC Rc600 seeds were distributed to farmers in Luzon and Mindanao provinces for planting and testing during the 2025 DS in preparation expected high temperatures in the next season.

12. Seed production of Mestiso 20 hybrid parental lines -- PRUP TG102 (female) and TG102M (male) – yielded 624 and 99 bags (15kg/bag), respectively, with 100% SPE. These seeds were distributed to the Davao Oriental Seed Producers Cooperative (DOSEPCO) and Seed to Rice (S2R) for F1 hybrid seed production.

13. M20 hybrid seed production conducted at DA-PhilRice Midsayap and Negros stations produced 100 bags (18kg/bag) F1 seeds. These seeds will be used for technology demonstrations across various regions to create awareness among farmers about the yield performance of public hybrid rice varieties.

Integrated Crop Management

14. Primers for RTBV and rice tungro spherical virus (RTSV) were optimized for faster, more accurate polymerase chain reaction (PCR)-based diagnosis of tungro viruses in the Philippines. In collaboration with the DA-Regional Crop Protection Center, tungro infection in field-collected rice plants was verified via PCR. Diversity analysis of tungro viruses from hotspot areas helps to better understand their genetic variability and impact on disease management. Recombinant bacteria expressing the tungro virus coat protein were generated, enabling large-scale production of the protein for characterization and potential use as an alternative antigen in antisera production. To produce antisera for the immunological detection of tungro viruses for more effective diagnostic tools, virus purification from plants and GLH was conducted.

15. The camera-aided light trap prototype was field-evaluated. Optimization on accurate identification and counting of five major rice pests was conducted.

Safe and nutritious rice and rice-based food products

16. Malusog Rice was grown in 156.39 ha during the 2024 DS, following earlier plantings on 38.15 ha (2022 WS), 47.09 ha (2023 DS), and 117.0 ha (2023 WS). It grows similarly to other inbred rice varieties with the same management and inputs. However, all commercial propagation related activities halted due to a Court of Appeals (CA) cease and desist order issued in April 2024. DA-PhilRice filed a Motion for Reconsideration and is awaiting the final decision.

17. Three popular rice varieties -- white, red, black -- were found to have high, medium, and low glycemic index (GI), respectively, as determined *in vivo*, with all exhibiting a medium glycemic load. These results support ongoing rice breeding efforts for low-GI varieties and offer valuable guidance for consumers focused on weight management and disease prevention.

18. The optimal duration of low-temperature rice storage was identified to lower the GI of cooked rice without compromising its eating quality. This approach offers a health improvement strategy while breeding efforts for naturally low-GI varieties are underway. Researchers and food product developers can also adopt this method to create rice-based products with lower GI, desirable texture, and high consumer acceptability.

19. The phytochemical content and antioxidant activity of 70 pigmented rice accessions were analyzed. Initial results suggested direct correlation between total flavonoid content and antioxidant activity. *In vitro* mutagenesis of four accessions with high phytochemical content and antioxidant activity was conducted. Five rice samples were screened to quantify gene expression levels associated with anthocyanin synthesis.

20. Eight gene primers were tested for rice phytochemicals. Three molecular markers linked to rice grain zinc content were optimized for potential use in marker-assisted selection.

21. Rice koji and a sweet fermented rice drink were developed based on the optimized formulation and production process, with the drink's physicochemical properties, proximate composition, microbial counts, and key sensory attributes evaluated.

Extension Support, Education, and Training Services (ESETS)

22. DA-PhilRice utilized a combination of ICT and non-ICT platforms to sustain its presence in R4DE communities.
    - ✓ The 360 virtual tour site recorded 2,837 users and 11,021 visits since its launch. A total of 222 groups (3,688 males and 2,803 females) toured the Institute, most of whom were walk-ins, collaborators, or scientists.
    - ✓ Thirty-one RCEF *PalayAralan* sessions on rice production and management were livestreamed via the DA-PhilRice Facebook page, reaching 336,142 users, with 2,654 live viewers, 166,728 post views, and 14,845 engagements.
    - ✓ Thirteen *Lakbay Palay* activities at CES and branch stations, conducted from February to October 2024, drew 10,720 in-person participants. The CES activity alone reached 143,711 people online through the DA-PhilRice Facebook page.
    - ✓ Fifty-two printed and audio-visual materials on RCEF Extension Services Program and science-based rice production were distributed based on the needs of RCEF beneficiaries.
    - ✓ Eighty-eight text blasts on topics such as rice production, El Niño, nutrient management, pest management, farm mechanization, and RCEF-related relevant information reached 1,223,666 farmers in areas not covered by RCEF farm school via the DA-PhilRice Text Center.
    - ✓ Eighty-six news pieces were uploaded to the DA-PhilRice website, and 52 radio segments aired across seven radio stations. The DA-PhilRice Facebook page published 463 original posts, including training updates, rice crop management tips, and RCEF success stories. In addition, 32 cropping calendar-based videos uploaded to the DA-PhilRice YouTube channel garnered 15,844 views.

23. Launched in February 2024, the Training Management Information System (TMIS) now has 869 users. It digitizes pre-training processes, such as participant registration, course creation, enrolment, management, as well as evaluation and testing through online forms. Future enhancements include online certificate generation.

24. To ensure relevance and accuracy, DA-PhilRice updated the PalayCheck System for Irrigated Lowland Rice through consultations with researchers, staff, and trainers. The update integrates feedback from training activities and direct seeding technology, and was pilot-tested in three training batches. PalayCheck remains the primary platform for disseminating research-based technologies aimed at increasing yields and reducing costs.

25. In 2024, 4,624 farmers nationwide attended 132 training sessions on rice production, achieving an average gain-in-knowledge (GIK) of 57%.

Technologies developed for coping with negative impacts of climate change

26. DA-PhilRice maintained various climate-resilient farming systems at the CES *Palayamanan* model farm, where harvests and net margins were evaluated. Aerobic rice production using NSIC Rc 576 and Rc 578 yielded 8.4 and 7.96 t/ha in DS and 3.25 and 3.38 t/ha in WS, with lower WS yields attributed to rat infestation. The rice-duck-vegetable system generated a net margin of ₱17,924.25 from rice, ₱903.68 from vegetables, and ₱10,142.50 from duck eggs, with rice yields of 7.0 t/ha in DS and 4.7 t/ha in WS. The Sorjan cropping system yielded a net margin of ₱44,903.19 from vegetables, rice, and gabi. Vertical hydroponics produced leafy vegetables with a net margin of ₱7,113.00, while the net tunnel vegetable production generated a net margin of ₱7,415.85. Rice-based mushroom production yielded 195.27 kg of oyster mushroom and 1.27 kg of *Volvariella* mushroom, having a net margin of ₱16,081.60.

Socioeconomics and Policy Research and Advocacy

27. Topics identified for policy briefs for DA and DA-PhilRice management and policymakers were crop diversification, carbon credit, farmer clustering, provincial rice competitiveness, ratooning, and challenges in implementing climate change policies and programs/projects. Published policy briefs (Rice Science for Decision-makers, RS4DM) were: (1) *Policy imperatives for carbon trading in the Philippine rice sector* (Aug 2024), and (2) *Crop diversification mitigates climate change impacts* (Oct 2024). The rice industry briefer was updated and helped in assessing current trends in the rice sector.

28. Technical inputs were provided to: (a) TWG on IAC-IMO regarding rice tariff impacts and price increases; (b) DA-International Affairs Division on '*Principles to Prevent and Reduce Food Loss and Waste in APEC Economies*'; (c) ARTA on reducing rice production costs; and (d) Congress of the Philippines on PENCAS law.

29. In February 2024, two municipal ordinances on drought adaptation and digital agriculture were enacted in Bongabon, Nueva Ecija. Policy brokering activities continued in four sites in Mindanao.

30. This year's National Rice Awareness Month (NRAM) featured the theme "*Be RICEponsible*,´ highlighting the importance of responsible rice consumption. The campaign focused on reducing rice wastage and supporting farmers. A key initiative, the 'Half-Cup, Full Heart' challenge, encouraged Filipinos dining out to order only the amount of rice they could finish.

PAP 1.2: Location-specific rice R4D projects in support of the National Rice Program and in line with the National Agriculture and Fisheries R4D Agenda

Integrated Crop Management

31. Fall armyworm (FAW) infestations have been recurring in Gonzaga and Sta. Ana, Cagayan since 2021. In 2024 DS, infestations were recorded from February to June in Nueva Ecija (DA-PhilRice CES), Bontoc in Mountain Province, and Gonzaga and Sta. Ana in Cagayan, causing damage to seedlings of hybrid, inbred, and heirloom rice varieties. Five new weed species were identified as larval hosts of FAW. Additionally, nine entomopathogenic fungi from infected FAW larvae were screened as potential biological control agents (BCAs). Two fungal isolates showed promise as BCAs against FAW, with further experiments planned to confirm their effectiveness.

32. Eighty-six participants conducted DS 2024 *Fertilizer Derby* field trials across six sites: CES (20), Isabela (22), Bicol (10), Negros (11), Agusan (9), and Midsayap (14). Various nutrient management protocols were tested, including (a) granular inorganic fertilizers, (b) inorganic foliar, (c) inorganic + biostimulant, (d) inorganic +

biofertilizer and biostimulant, (e) inorganic + biofertilizer, (f) inorganic + inorganic foliar, and (g) biostimulant foliar application.

The average fertilizer cost per hectare was ₱18,316.29, with a production cost of ₱56,286.50. The highest yield, 7.49 t/ha, was achieved using inorganic fertilizer with biostimulants, though its profitability was slightly lower compared to yields ranging 7.23 – 7.45 t/ha. Top nutrient management protocols, all from DA-PhilRice CES, included (1) 80.75-17.5-17.5 kg NPK/ha + biostimulant (7.29 t/ha at ₱7.18/kg cost), (2) 93.7-22.4-22.4 kg NPK/ha + biostimulant (7.25 t/ha at ₱7.39/kg cost), and (3) DA-PhilRice CES protocol using 161.5-35-35 kg NPK/ha (7.23 t/ha at ₱8.02/kg cost).

During the 2024 WS, DA-PhilRice Los Baños became a new trial site, with 92 participants across seven stations. The best protocols identified during the season included (1) inorganic foliar + biofertilizer (5.67 t/ha at ₱7.32/kg cost) from Negros station, (2) 69.5-35-35 kg NPK/ha + biostimulant (6.03 t/ha at ₱9.65/kg cost) from Isabela station, and (3) 27.2-4.2-4.2 kg NPK/ha + biostimulant (5.67 t/ha at ₱9.65/kg cost)

The DA-PhilRice nutrient management protocol and Farmer's Practice remained as standard comparison protocols for both seasons. Each trial site was prominently showcased during the *Lakbay Palay* programs held at respective locations.

Strategy 3: Develop and improve postharvest systems and infrastructure
PAP 1.1: Conduct of regional rice R4D programs for Luzon, Visayas, and Mindanao

Machines and Mechanization

33. A locally designed eight-row riding-type paddy seeder for direct wet-seeding was evaluated at the REMD Model Farm during the DS 2024. It has a field capacity of 2.1 ha for inbred varieties (30 kg/ha seeding rate), and 2.4 ha for hybrid varieties (20 kg/ha seeding rate).

34. Remote-controlled machines were tested. The second RoboSeeder prototype, powered by a pair of 1000W brushless DC motors and a micro-controller unit, had a field capacity of about 0.3 ha/hr. It features five independently controlled plastic seeding drums capable of variably drilling pre-germinated seeds into 10 rows in a prepared field. The AutoBoat Tractor, designed for land preparation, performed well with a roto-tiller implement for harrowing operations. However, adjustments were needed for the disc plow implement to enhance its performance.

35. A redesigned motorized weeder with a 30 cm spiked plate, adaptable to both 30 cm and 20 cm row spacing, was tested in weed management trials.

36. The infrared heating system (IHS) aims to prolong the shelf life and preserve the quality of brown rice. A new panel/frame increased surface area by 62%, allowing for more effective spacing of the ceramic infrared heaters.

Strategy 7: Promote science and information-driven decision-making through digitalization
PAP 1.2: Location-specific rice R4D projects in support of the National Rice Program and in line with the National Agriculture and Fisheries R4D Agenda

37. Updated rice statistics, policy briefs, and memos on emerging issues were provided to the DA and other research institutions. Position papers, policy notes, and infographics were also submitted to DA for policy and technical support.

    Around 100 statistical tables from local and international agencies were regularly updated and made available through *PalayStat* (https://palaystat.philrice.gov.ph), which received 37,552 views from January to December 2024. Majority of users were female (81%), with an average session duration of 2 minutes 25 seconds.

38. The Philippine Rice Information System (PRiSM, https://prism.philrice.gov.ph) regularly provided timely and accurate rice area, yield, production, and flood/drought-affected area estimates to DA-NRP, DA-RFOs,

and other stakeholders. By leveraging satellite technology, remote sensing, crop models, and ICT, PRiSM effectively monitored and mapped rice areas across the country. PRiSM released two end-season bulletins and 12 monthly rice areas estimates, delivering updates on planting dates, yield, production, and rice areas impacted by weather systems. To enhance accessibility, PRiSM created and disseminated a variety of infographics.

PRiSM also strengthened partnerships and built capacity through six regional retooling sessions and seven GIS trainings. It also responded to 276 data requests, covering rice areas (126), yield estimates (64), damage assessments (28), and planting dates (58). PRiSM's Facebook page, with 3,500 followers and 2,800 likes, provided regular updates on rice areas at risk of floods or drought, as well as reports on planted area, yield, and production.

To improve food commodity price and supply monitoring, PRiSM developed the *Bantay Palay* app. This tool collects real-time data on palay prices by variety, covering farmgate, dry, and milled rice (both well-milled and regular) across the country. The data are compiled into the *Bantay Palay* dashboard, which offers advanced analytics, including monthly and weekly price averages at the regional, provincial, and municipal levels. This platform serves as a key decision-making tool, helping stakeholders track and respond to price fluctuations.

39. The Climate-Smart Maps for Strengthening the Adaptation Plans of Farming Communities (CS Map) project supports the development of a sustainable rice sector to address the impacts of climate change. By mapping climate-related risks and conducting agro-ecological characterization, the project helps create adaptation and sustainability plans for rice-producing provinces. To date, the CS Map project had facilitated 38 provincial participatory mapping activities and developed adaptation plans for 31 rice-producing provinces. It had also produced 87 drought and 76 flood vulnerability maps, supporting El Niño and La Niña strategies, used by the DA and other stakeholders. Additionally, 51 participants attended GIS and spatio-temporal mapping training in September 2024.

    Participatory policy-writing workshops were held in Zambales, Bataan, and Bulacan, providing stakeholders with a collaborative platform to review and refine draft ordinances, resolutions, and special orders prepared by the CS Map team. These drafts aim to support the approval of climate adaptation plans by the *Sangguniang Panlalawigan*.

40. A rice grain measuring app automates grain measurement (length, width, and shape ratio), cutting time from 10 to 2 minutes and achieving 98% accuracy. The app comes with a 3D-printed platform for accurate grain placement. It will be available on Google Play Store and is being patented.

41. The web-based Grain Quality – Rice Information System (GQ-RIS) allows researchers, breeders, students, and stakeholders to access and analyze rice grain quality data. It provides up-to-date information on National Cooperative Test (NCT) lines, pre-NCT lines, and rice varieties released by the National Seed Industry Council, enabling users to track and compare grain quality attributes. Public access will be available soon.

42. The Rice Seed Information System (RSIS) was deployed across the DA-PhilRice branch and satellite stations and RCEF-contracted seed growers. Eight onsite evaluation and coaching activities were conducted in the branch and satellite stations. Orientations and trainings were conducted for new versions and upgrades.

    Three apps already in use for FS and RS production were revamped for use in nucleus and breeder seed production. The RSIS team, alongside the Bureau of Plant Industry – National Seed Quality Control Services, conducted 18 orientation and hands-on trainings in 16 regions, with 673 participants (471 males, 202 females).

43. The Data Analytics Center (DAC) provided 17 rapid response analytics on various topics for DA and DA-PhilRice management. It also participated in 16 training sessions and exhibits, responded to 32 rice and rice-related data requests, and ensured timely, accurate data provision.

The DAC developed an improved Palaycheck App (version 1.1.2) with 14 releases for continuous improvement to help farmers plan and track crop seasons. New features include season planning, real-time data syncing, soil type-based MOET recommendations, and app stability improvements.

44. DAC also soft-launched an improved Ricelytics with upgraded features and location-centric insight. This web-based platform enables policymakers to craft targeted and area-specific strategies, researchers to conduct precise and impactful studies, and farmers to optimize their practices based on local conditions. Full access will be available soon.

45. The DAC contributed to the DA-NRP Impact Pathway Planning through two key innovations: the Yield Model Dashboard and the Sufficiency and Utilization Account (SUA) Projection Dashboard. The SUA Dashboard helped the DA refine rice yield and self-sufficiency targets for 2025-2028 by integrating factors like calamity losses, area changes, yield growth, utilization, and buffer stocks. The Yield Model Dashboard further guided the DA in assessing the impact of interventions on yield targets, supporting data-driven planning to achieve agricultural goals.

46. Added to the Rice Crop Manager Advisory Service (RCMAS, https://rcm.da.gov.ph) database were 1,261 farmers with 19.78 ha of verified farms. The dashboard had been updated and integrated with Google Analytics. RCMAS generated 22,427 recommendations, responded to 31 queries from the website's Contact Us page, and sent 75,877 SMS advisories.

Strategy 8: Establish strong partnerships with the farmers, fisherfolk, private sector, and other stakeholders
PAP 1.1: Conduct of regional rice R4D programs for Luzon, Visayas, and Mindanao

Rice Business Innovations System (RiceBIS) Community Program

47. Monitoring and evaluation results revealed notable improvements in the financial and operational performance of RiceBIS clusters from 2023 to 2024. Average net income increased across all FCA capacity levels: low-capacity FCAs saw a 20% rise, from ₱35,089 to ₱41,995; medium-capacity FCAs recorded an 11% increase, from ₱211,935 to ₱234,890; and high-capacity FCAs experienced a 19% growth, from ₱380,852 to ₱454,440. Operating capital also surged significantly, particularly for low-capacity FCAs, with a 302% increase from ₱39,063 in 2023 to ₱157,110 in 2024. Medium-capacity FCAs reported a 104% increase, from ₱443,149.89 to ₱902,119, while high-capacity FCAs achieved a 36% rise, from ₱5,013,191 to ₱6,832,344. These gains in operating capital were largely driven by grants and loans from partner agencies supporting the RiceBIS clusters.

48. The most common agroenterprises among RiceBIS clusters include custom service provision (CSP), milled rice, agro-inputs trading, brown rice, and microfinancing. Microfinancing recorded the highest income growth, rising by 150% from ₱22,800 in 2023 to ₱56,965 in 2024. Other agroenteprises also showed significant gains: CSP increased by 72%, milled rice by 60%, brown rice by 56%, and agri-inputs trading by 29%.

49. Currently, there are 44 FCAs from 28 municipalities, located in 21 provinces, being assisted by the Program. There are relatively more associations (24) than cooperatives (20) and a higher number of female members (5,945) than males (5,253).

50. The progress of FCAs in income, marketing, and empowerment was monitored. Policy recommendations advocating for the promotion and support of local agricultural products and services, under the proposed "*Agroenterprise Mainstreaming Ordinance of 2024*," were presented to 17 LGUs.

51. RiceBIS communities secured 51 new market deals for rice and rice-based products. Through the assistance of DTI, partnerships with All Day Supermarket and Waltermart were in progress, and GAP-certified rice was being positioned for distribution to 7-Eleven Corporation. RiceBIS products were also promoted on DTI's Rice2Rise Ph website. In collaboration with GlowCorp and its partner institutions, RiceBIS Zaragoza will begin pilot deliveries to PureGold and Robinsons Supermarkets during the first half of 2025.

52. GAPproved Rice was launched at the 2024 WS *Lakbay Palay*. The campaign will be further promoted in 2025 through partnerships with various agencies. Meanwhile, marketing plans for *Lakambini* Rice were being finalized in coordination with DTI, with logos and packaging templates prepared for market research.

53. The BPI Foundation's "Farm-to-Table: *Enhancing Market Potential, Opportunities, Welfare, and Economic Resilience (EMPOWER)*" spin-off project donated a brand-new truck and compact rice mill to the San Carlos RiceBIS Community through the Quezon Codcod RiceBIS Farmers' Agriculture Cooperative, benefiting over 320 farmers. Additionally, the Baclay Cooperative in Milagros, Masbate, received over ₱5.5M for their pigmented rice marketing and Kropeck processing initiatives.

54. Trained in Philippine Good Agricultural Practices (PhilGAP) were 720 RiceBIS farmers (377 males, 343 females). An estimated 3,829 tons of fresh palay would be produced by 512 PhilGAP-certified farms by year-end through partnerships with BPI, DA-Regulatory Division, ATI, FPA, provincial/ municipal LGUs, and FCAs.

55. In 2024, eight new partner FCAs were selected, one from each branch station. Results from the Organizational and Business Capacity Assessment (OBCA) tool showed that four FCAs (MASIKAP Multipurpose Cooperative, Greater Bani Multipurpose Cooperative, Pangkalahatang Samahan ng Magsasaka ng Siniloan, and Bagonbon Small Farmers Association) were at a medium capacity level. This indicates that they are nearly ready to engage with established and sustainable rice markets but require improvements in certain organization and business capacities. Three FCAs (Southern Agusan Multipurpose Cooperative, Saint Vincent Parish Multipurpose Cooperative, and Upper Salug Daku Multipurpose Cooperative) were assessed at a high-capacity level, suggesting readiness to connect with formal markets such as institutional buyers. One FCA, the Ayaoan Multipurpose Cooperative, was assessed at a low-capacity level. This FCA is better suited to service-oriented enterprises like custom machine services or lending and low-capital investment enterprises.

    Based on the OBCA results, the next step involves developing agro-enterprises tailored to each FCA's capacity level. Core agro-enterprises identified for these FCAs include palay trading, milled rice processing and trading, custom milling services, and milled rice marketing. The OBCA assessment also identified capacity gaps, enabling the creation of targeted capacity-building action plans. Training sessions on management, strategy, financial literacy, and governance were conducted to equip the FCAs with necessary skills. Additionally, one core agro-enterprise was identified per FCA, and eight business plans were developed. Six FCAs are set to implement their business plans, with two already operational.

56. Conducted were 28 Site Working Group (SWG) meetings across all branch stations. Sixteen SWGs were established this year, bolstering collaboration among 26 partner agencies and institutions. These partnerships provided critical support to FCAs in developing agro-enterprises, including financial grants for facilities and vehicles, equipment and machinery provision, infrastructure development, governance and organization training, food processing, pricing, labeling, and market assistance.

Partnerships

57. DA-PhilRice strengthened the local seed supply network in collaboration with 56 members of the National Rice Seed Network and Regional Seed Coordinators to produce registered seeds of selected rice varieties adapted to adverse environments.

58. Close collaborations were established with key stakeholders in the rice industry, including government and non-government agencies, state universities and colleges, and private academic institutions. A total of 291 agreements were forged and executed.

59. DA-PhilRice contributed to the Expert Committee tasked with developing the Joint Crediting Mechanism (JCM) methodology for Alternate Wetting and Drying (AWD) under Article 6.2 of the Paris Agreement. This initiative, led by Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Asian Development Bank (ADB), completed a draft methodology, which will be submitted to the National JCM Secretariat for approval.

60. The 36th *Ugnay Palay* National Rice R4DE Conference, themed *Advancing Rice R4DE para sa Masaganang Bagong Pilipinas*, was held on December 3-5 at the DA-CBC Plenary Hall. The event gathered around 600 rice R4DE professionals nationwide and was livestreamed on DA-PhilRice Facebook page, reaching 27,700 viewers and generating 51,308 engagements. The conference received an excellent overall rating of 4.7, with participants praising the quality of plenary sessions, panel discussions, open forums, concurrent sessions, and networking opportunities. Attendees also commended the venue, food, and CPD point provision.

Corporate Social Responsibility

61. In partnership with Kiwanis International Philippines Luzon District (KIPLD) and Lingap Leads Foundation Inc., DA-PhilRice organized a medical mission on 23 February 2024, providing free consultations and check-ups to 110 field and laboratory workers.

62. Collaborating with the BPI Foundation, DA-PhilRice distributed school supplies and equipment to two public elementary schools in Negros Occidental, benefiting 1,148 students and 36 teachers. Maranon Elementary School also expressed gratitude to DA-PhilRice Negros for sharing its water source.

63. During the Nutrition Month celebration on 30 July 2024, DA-PhilRice, in partnership with the Kiwanis Club of Rice Granary and East-West Seed Philippines, served hot rice caldo, fruits, nutritious drinks, and snacks to 100 schoolchildren in Pandalla, Science City of Muñoz, Nueva Ecija. Vegetable seeds were also distributed for gardening activities.

64. To mark its 39th founding anniversary, DA-PhilRice, in collaboration with the Philippine Red Cross Nueva Ecija Chapter, held a blood donation drive on November 8, aiming ensure safe and sufficient blood supplies for patients in Nueva Ecija and nearby areas. A tree-planting activity was conducted on November 22 at the CES compound in collaboration with the Association of PhilRice Employees. Fifty dwarf coconut seedlings were planted in a designated site. On December 19, DA-PhilRice organized a relief operation in Diome, Maria Aurora, Aurora, assisting 100 families affected by Typhoon Pepito with grocery packs and clothing donations. Additional CSR activities were carried by various divisions, offices, and branch stations.

PAP 2.1: General Administration and Support Services / Support to Operations

Human Resources

65. DA-PhilRice appointed 21 staffers to plantilla positions, while 247 permanent employees participated in in-house and external training programs. Six staff received study grants (2 MS, 3 PhD, 1 Special Assistance Program). Currently, 12 R&D personnel are DOST/CSC career scientists (9 Scientist I, 1 Scientist II, and 2 Scientist III), including four women. Additionally, 137 staff received Magna Carta benefits.

66. DA-PhilRice received 26 recognitions from national and international award-giving bodies for exemplary performance, including the 2024 Presidential *Gawad* Career Executive Service (CES) Award and Regional Presidential *Lingkod Bayan* Awards. Ten best paper and 11 best poster awards were also secured. Seventeen research papers were published in Scopus-indexed and International Scientific Indexing (ISI) journals. Four technologies were protected with 2 patents and 2 utility models.

67. DA-PhilRice achieved Maturity Level III in the Program to Institutionalize Meritocracy and Excellence in Human Resource Management (PRIME-HRM), as assessed by the Civil Service Commission-National Capital Region.

Financial Resources (Subsidy Utilization)

68. As of December 2024, DA-PhilRice achieved a 96.34% obligation rate and a 69.53% disbursement rate. The government subsidy reached ₱746.325 million, a 15% increase from 2023's ₱650.073 million, enabling continued modernization and facility improvements. External grants further supported R4DE operations.

Physical Resources

69. Eleven infrastructure and repair projects were completed across all stations, with 18 still ongoing. Seed warehouses with cold storage in DA-PhilRice Isabela (₱17.10 million) and DA-PhilRice Batac (₱17.98 million) are 100% and 86% complete, respectively, and expected to be inaugurated by the first quarter of 2025.

Additionally, a seed warehouse with cold storage (₱20.44 million) at DA-PhilRice CES was completed in August 2024, and the seed processing facility (₱27.92 million) building is undergoing equipment installation, targeted for completion in the first quarter of 2025. These projects were funded by the Korea Rural Community Corporation.

Integrated Management Systems and Good Governance

70. DA-PhilRice maintained its ISO certifications. The CES passed surveillance audit for ISO 9001:2015 (QMS), ISO 14001:2015 (EMS), and ISO 45001:2018 (OHSMS) standards with zero major non-conformities while all branch stations passed QMS surveillance audits, ensuring compliance with international standards and long-term improvement capabilities.

71. The Board of Trustees (BOT) was reconstituted with five new members. Recent BOT meetings, including the 64th meeting on December 17, focused on strategic direction and addressing critical challenges in rice production.

72. The Agronomy, Soils, and Plant Physiology Laboratory sustained its License to Operate as a Soil Laboratory and received a Certificate of Recognition from the Bureau of Soils and Water Management.

73. DA-PhilRice upgraded ICT tools in procurement, financial, and human resource management to enhance efficiency and operations.