# On the Front Lines

## 2017-2022 Strategic Plan
## Terminal Report


DEPARTMENT OF AGRICULTURE
1898
PHILRICE

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## About the Cover

Amid challenging times, PhilRice soldiered on to meet the needs of its stakeholders, the rice farmers in particular. It was all systems go at PhilRice - innovations after innovations - the Institute invented and reinvented itself to ensure that the rice R4D is alive and relevant in the most trying times.

The photo captures the experience of the RCEF team in delivering certified inbred seeds to Jomalig, an island municipality of Quezon, during the pandemic.

**On the Front Lines: 2017-2022 Strategic Plan Terminal Report**



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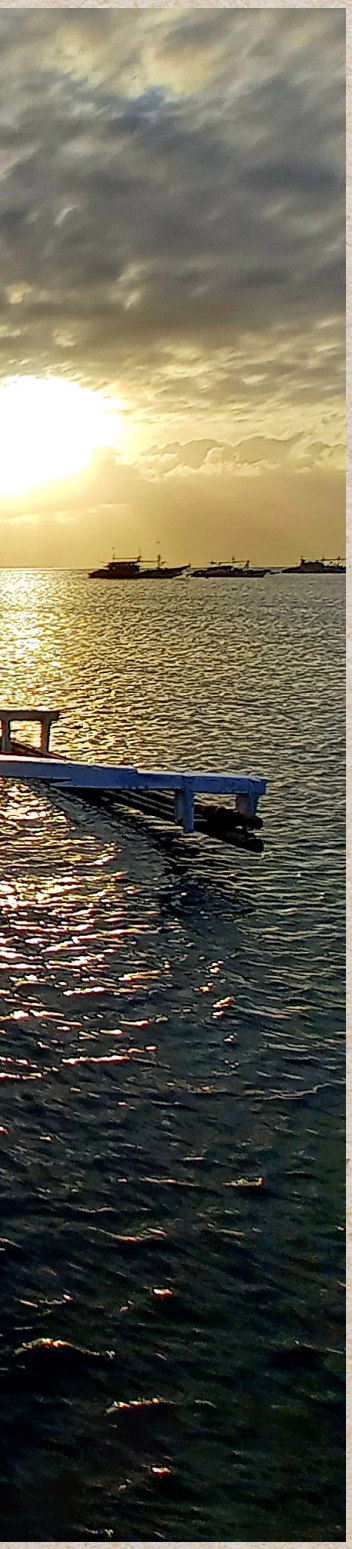
SAFETY +
RICE



# Executive summary

The period 2017 to 2022 must be generously described as game-changing, strategy-testing, and crucially challenging years. With COVID-19, among other major conundrums, the world has been forced to reorganize the order of things—from which Department of Agriculture-PhilRice (DA-PhilRice) cannot escape. The period could be summed up as time of pushing for innovations, both in terms of producing new technologies and implementing development interventions.

In this Exit Report, we show how DA-PhilRice has managed to deliver the self-imposed outcomes of its StratPlan. We report how we have created ripples of impacts on the lives of our stakeholders across the country, and how we have re-oriented our systems so we could fulfill our mandate better.

For Outcome 1, our commitment to increasing productivity and profitability is reflected in the 32 new rice varieties developed with impressive characteristics, improvements in our Genebank, as well as our work in Pest and Disease Risk Identification and Management (PRIME) and pest management technologies. Cost-effectiveness is shown by the new machines developed, with some of them already deployed for use.

As we promised to improve rice trade through efficient postproduction, better product quality, and reliable supply and distribution system under Outcome 2, our men and women continually crafted and adapted machines, systems, and technologies for rice and rice-farming systems to produce rice at the least expense. An example of this Outcome is our *PAG-AHON* project in 2020 that helped farmers realize sustainable sources of income during the peak of the pandemic by directly linking their association to the market, with assistance from local government unit, DA-PhilRice, and a private seed supplier. The project became the model of the DA's *Adopt-a-town* initiative and was replicated in the Rice Business Innovations System (RiceBIS) communities. RiceBIS is PhilRice's program on agroenterprise development that started in 2017.

At the end of the day, it is not just about rice as is. Rice must be made more versatile and palatable to the rice-eating nation. Under Outcome 3, the developed more nutritious rice, rice by-products, and the portable brown rice machine was made more accessible to consumers. The improved rice hull carbonizer helps farmers maximize their income from farm diversification, with many farmers' groups earning worth millions of pesos. Our work on Golden Rice and other varieties with special characteristics provides healthier options for rice consumers. Golden Rice's approval for commercial propagation demonstrates the robustness of the evidence-based biosafety regulatory system in the Philippines.

To secure an enabling environment for rice science, we need policies anchored on data, which we covered under Outcome 4. Our studies helped policymakers come up with well-informed decisions. Our work cuts across various issues within and of the value chain actors. We also improved the content and accessibility of our data repositories, which are now available online. Our work on *Truthful labelling of rice* was adopted by the Provincial Government of Nueva Ecija as a mother ordinance. Our study in collaboration with the International Rice Research Institute on *"Benchmarking the Philippine rice economy relative to major rice-producing countries in Asia"* has served as a major reference to many national policies on rice.

DA-PhilRice subscribes to the Japanese principle of *Kaizen* in all facets of its operations as described in Outcome 5. In the past 5 years, we embarked on developing cutting-edge technologies and platforms to step up our game. For example, Philippine Rice Information System (PRISM), which combines remote sensing, crop modelling, and ICT in monitoring and sharing data on rice cultivation, is now hailed as a model in Asia on how satellite-based rice monitoring can be harnessed to optimize gains in agriculture. Our biotechnology group has also stepped up its game as evidenced by new candidate genes and quantitative trait locus (QTLs) that could be used to develop new varieties that are more resilient to climate change impacts, among many other uses.

For Outcome 6, we have sealed 1,128 agreements with various stakeholders, both here and abroad. Our non-traditional partners MayanaPH and EastWest Seeds helped us in our various development projects that had direct impact on farmers. Thousands of stakeholders were reached through our various engagements, which resulted in better informed farmers and other players in the rice industry. Additionally, our trainees have been achieving significant strides in helping promote rice science and technology across the country.

Optimizing its institutional capabilities, DA-PhilRice has been in a much better position to deliver its mandate as shown in Outcome 7. Our scientists

and newly fielded staff members are crafting high-caliber proposals that would step up the game of rice R4D in the Philippines. We are doing this both with collaborators from within the country and abroad. Our processes and newly acquired properties have facilitated doing business with our clients within the Institute and outside. Our acquired intellectual properties will help make available our technologies to interested parties. In 2018, DA-PhilRice was lauded by the DOST for its record-breaking achievements in the areas of IP protection, utilization, and commercialization. The institute's gender mainstreaming initiatives have also been named as among the government's best practices as conferred by the Development Academy of the Philippines.

Over the years, DA-PhilRice has always been asked: When our flashes of insights and technologies coalesce, how will they manifest their impact on the ground? We have shown this through our Rice Business Innovations System (RiceBIS) program where we poured our interventions in participating communities. Cooperatives have managed to significantly improve their revenues by complying with DA-PhilRice's recommendations, specifically on crop and income diversification. Paradigm shifts among farmers—specifically the importance of being agripreneurs and being highly adaptable to various shocks that may come their way—have been fueled.

The year 2019 onward was also a test of DA-PhilRice's versatility as an organization as evidenced by its exemplary implementation of the Rice Competitiveness Enhancement Fund (RCEF) program. While not traditionally known for implementing humongous development projects, the Institute has hurdled the challenges of the operations-focused nature of RCEF, reaching the remotest rice-farming communities and bringing to them high-quality rice seeds and the much-needed extension support. DA-PhilRice reached more farmers through the rice specialists and trainers whose capabilities the Institute enhanced. In 2021, the country hit a record-breaking *palay* output of 19.96M metric tons with RCEF's efforts contributing significantly along with the DA National Rice Program. More top-performing varieties reached the farmers' fields through RCEF.

Toward the conclusion of this Report is a list of lessons as part of our self-reflection on the way we implemented the Strategic Plan. These lessons are expected to usher DA-PhilRice to a much more improved organization in the years to come.

With much enthusiasm, we invite you to savor this Report and see how we have lived up to the country's expectations. Count our accomplishments and how our intended clients have interacted and benefitted from our work. We have likewise reinvented ourselves so we are more adaptable and responsive to the needs of the times.

# Background

## Planning process and framework

Commissioned by the PhilRice Board of Trustees (BOT), an external program and management review (EPMR) of the Institute was carried out in 2015. Among its conclusions was the need to craft the 2017 to 2022 PhilRice Strategic Plan.

The Plan benefited from the inputs of major stakeholders in the rice industry, which were solicited during a series of consultations. The draft document was validated with partners and key stakeholders before its finalization and submission to the BOT for approval. The December 2015 consultation in Manila was participated in by some 100 representatives of PhilRice partners from the academe and private and nongovernmental organizations, including the PhilRice EPMR team. It mapped out our Vision, Mission, and Impact and Outcome statements. Targets for each outcome were also drafted. All technical staff members of PhilRice participated in the second consultation that set detailed targets. A series of expert consultations followed.

Our planning adopted the practice of global agriculture Research for Development (R4D) where outcomes and impacts drive the planning process. An impact pathway was first derived from the vision and mission, after which outcomes, strategies, program thrusts, and performance measures were identified. Outputs were linked with broader development outcomes (e.g. reducing hunger, poverty, and malnutrition) and impacts, hence, R&D was shifted to R4D (research for development).

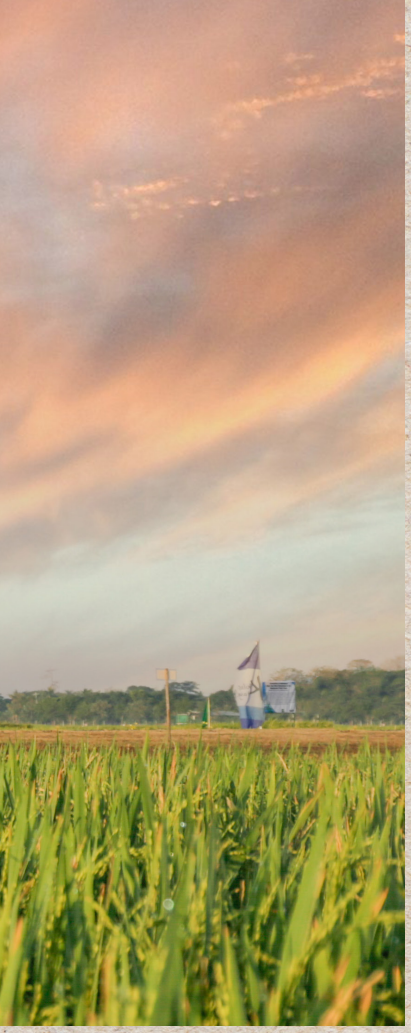
# Scenario at the time of planning

At the backdrop of the drafting period of the 2017-2022 Strategic Plan were a myriad of issues and events. Collectively, they made the planning process exciting and challenging at the same time.

In late 2015 when the planning work picked up, the country was approaching the national elections. It was a perfect opportunity to offer a fresh plan to the next Secretary of Agriculture and, by extension, new President of the Philippines.

At the global level, the United Nations adopted the Sustainable Development Goals (SDGs) in 2015, replacing the Millennium Development Goals that ended in the same year. The SDGs provided some global framework on which PhilRice could anchor its R4D agenda, such as on zero hunger, good health and well-being, gender equality, and climate action.

The plan also considered several major issues confronting rice cultivation, such as climate change, malnutrition, and trade liberalization. These issues and opportunities guided the crafting of the 2017 to 2022 Strategic Plan of PhilRice.



# Guiding principles, features, major targets

The 2017-2022 Plan was guided by the food security agenda of the Department of Agriculture, which was aimed at ensuring access to healthy and nutritious food. Hence, the institute carried the vision "Rice-Secure Philippines".

Mission:

> To improve the competitiveness of the Filipino rice farmer and the Philippine rice industry and transform it to be more profitable, resilient, and sustainable through responsive, balanced, environmentally sound and partnership-based research, development, and extension.

Core values and attributes (R-I-C-E):

- Relevance and Responsiveness **(R)**
- Integrity and Innovativeness **(I)**
- Collaborative and Collective Spirit **(C)**
- Excellence and Equity **(E)**

The Plan has three key features:

- A shift from business-as-usual to business-unusual working mode
- Movement from a production orientation to the development of the whole rice industry focused on four Cs (cultivation, commerce, consumption, and competitiveness)
- Refocusing by achieving strategic outcomes through impact-oriented and partnership-driven research for development

Major targets

- Increase average rice yields by 1.0t/ha (irrigated) and a minimum of 0.5t/ha (rainfed) in our target sites. Our target sites were provinces with yields of <4t/ha in irrigated and <2.98t/ha in rainfed areas; with more than 50,000 ha harvested area, and poverty incidence of >25.23%.
- Help reduce postharvest losses from 16% to 12%
- Help reduce the cost of rice production from the national estimate of P12/kg to P8/kg

# Strategic Outcomes

1. Increased productivity, cost-effectiveness, and profitability of rice farming in a sustainable manner;
2. Improved rice trade through efficient postproduction, better product quality, and reliable supply and distribution system;
3. Enhanced value, availability, and utilization of rice, diversified rice-based farming products, and by-products for better quality, safety, health, nutrition, and income;
4. Science-based and supportive rice policy environment;
5. Advanced rice science and technology as continuing sources of growth;
6. Enhanced partnerships and knowledge management for rice research for development (R4D); and
7. Strengthened institutional capability of PhilRice


102
27

# Challenges and Opportunities

## COVID

The COVID-19 is a game-changer for all of humankind. Aside from and due to its health implications, it has forced us to rethink the way we do things. At PhilRice, we have been coping by implementing a mix of highly innovative strategies. We have instituted flexible work arrangements as advised by the Civil Service Commission and the Inter-Agency Task Force. We have also put up a COVID Response Team so we could more effectively control the spread of the virus within our campuses to protect and respond to the needs of our staff members. PhilRice is among the first few agencies of the DA that have instituted a 24/7 facility, the *Kumusta ka-PhilRice*, to ensure the mental well-being of its employees during the pandemic in partnership with the Miriam College in Manila.

Amidst the pandemic, we soldiered on while ensuring adherence to minimum health and safety protocols. We have improved on our use of online platforms to ensure collaboration and engagement with our colleagues, partners, and clients while working from home. We adapted to these digital changes to create a workable setup. In 2020-2021 alone, we spent about P1.5M to enhance our ICT systems in the office in support of the COVID-safe mechanisms. For example, our Information Systems Division developed the PhilRice Contact-Tracing app that monitors entry and exit of employees in every office. This app includes a health declaration form with an alarm that goes off when an employee declares COVID-related symptoms.

## Rice Tariffication Law (RTL)

The enactment of *RA 11203* (RTL) resulted in much more and cheap rice imported into local markets. Consequently, farmgate prices of *palay* also decreased as local traders found ways to compete with imported rice. To alleviate the effects of low *palay* prices, which discouraged some farmers from planting rice, we intensified our policy research and advocacy to provide a basis for sound decision-making. The manner and form of providing financial assistance to farmers were influenced by this policy analysis.

## Rice Competitiveness Enhancement Fund (RCEF) Programs

The implementation of the RCEF programs required major shifts in the operations of the Institute. Right after the enactment of *Republic Act 11203*, we actively participated in the crafting of its Implementing Rules and Regulations as well as the Implementing Guidelines of the RCEF Seeds and co-implementing guidelines of the Rice Extension Service Programs (RESP).

**The RCEF-PMO adjusted its operational protocols in response to COVID-19 by strengthening partnership with LGUs. We ensured the delivery of sufficient volumes of seeds to drop-off points at the right time.**

We immediately proposed to the Department of Budget and Management the establishment of the RCEF Program Management Office (RCEF-PMO) and incorporated it in the Institute's organizational structure with a corresponding staffing pattern.

The RCEF-PMO developed projects and activities under the RCEF Seed Program and RESP components of PhilRice and drafted corresponding work and financial plans necessary for the release of budget and execution.

The RCEF-PMO adjusted its operational protocols in response to COVID-19 by strengthening partnership with local government units (LGUs). We ensured the delivery of sufficient volumes of seeds to drop-off points at the right time. Meanwhile, the LGUs were engaged in the last-mile distribution of seeds to farmers to ensure compliance with health protocols. The PMO continually innovated to provide better services to farmers by making seed claims easier and less burdensome for farmers by the application of digital technology through *Binhi e-Padala.*

## New leadership in the DA and at PhilRice

The report period saw the transition from Secretaries Emmanuel Piñol to William Dar, along with the changes in their leadership agenda. We then aligned with these pillars: consolidation, modernization, professionalization, and industrialization. Alignment with the leadership agenda helped us contribute to providing impactful interventions to our clients, most especially our rice farmers, by being one with the rest of the DA entities. Alignment leads to a clear, measured, and focused move toward achieving fruitful outcomes for our common clients. PhilRice also had several changes in its management, especially with the appointments of the Deputies and Branch Station Managers.

## Surge in fuel and fertilizer prices

Prices of fertilizer and fuel climbed steeply partly due to rising energy cost, cutback in production, and logistics concern during the COVID-19 pandemic. Additionally, the Russia-Ukraine war has aggravated the situation with Russia being one of the world's major suppliers of fertilizer and fuel. This scenario has resulted in lower production due to reduced fertilizer use by farmers. PhilRice has always been at the forefront in providing policy analysis in relation to the forms of fertilizer support to give to farmers and in advocating integrated nutrient management.

## Insufficient budget subsidy

Declining support to agricultural research for development initiatives is a global phenomenon. Despite the smaller budget for R4DE operations coming from the general appropriations from 2017-2022, PhilRice has continued to seek funds from donors such as the DA-BAR and Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD). From 2017 to 2022, there were 103 externally funded projects at PhilRice that received P977 million in grants. Also, from 2019 to 2022, PhilRice received P3.1B annually from RCEF. All this was made possible because of the highly innovative thinking and excellent reputation of the R4DE workers of the Institute. PhilRice also managed to expand its income generation activities.

## Regulatory issues and cost in the use of drones

The 2017 to 2022 period witnessed increasing appreciation on the use of drones in various rice cultivation activities, particularly crop establishment and nutrient and pest management. We started using drones at our FutureRice Farm, which we demonstrate during field days.

While drones are useful as evidenced by the success in their applications in other crops such as pineapple and banana both here and abroad, a number of challenges prevent their optimization at PhilRice. For one, there are only a few label-expanded crop protection products for drone spray technology as required by the Fertilizer and Pesticide Authority (FPA). Cognizant of this, we then helped in efforts to fast-track label expansion by serving as resource persons in the Management Committee meetings of the DA and met with DA-FPA to explore ways to facilitate the process. The other challenge is the high acquisition cost of drones to which PhilRice responded by partnering with agricultural drone companies that served as partner service providers.


GENETIC RESOURCES DIVISION
GERMPLASM VIABILITY TESTING
19DS (1) 20WS (12)
20DS (5) 21DS (17)
SEASON / BATCH :
NO. OF ENTRIES : 35
DATE OF SOWING : 01 - 06 - 2021
DATE OF READING (1): 01 - 13 - 2021
(2): 01 - 20 - 2021
Collection No 17155
1334
Accession No
1334

# Notable accomplishments

## **OUTCOME 1:** Increased productivity, cost-effectiveness, and profitability of rice farming in a sustainable manner

- The Genebank currently contains 17,657 collections, of which 4,286 are ready for distribution. Through these collections, we have stored a complete representation of varieties with accessible passport data and profile. This means that "lost" varieties can now be easily repatriated. Moreover, the *Oryza* Germplasm Management System Online (https://gems.philrice.gov.ph/gems) is now publicly accessible, resulting in the timely delivery of requested germplasm for research and in the significant increase of genetic resource use in breeding and genetic improvement.
- The Genebank responded to 275 requests providing 107,830 grams of 10,783 varieties from 2017 to 2022.

- New donors for multiple abiotic stress tolerance (drought, saline, submergence, high temperature) through tissue culture, induced mutation and conventional breeding have been developed. These donors can be used in our breeding programs to develop new varieties with multiple or combined stress tolerance that can adapt to different rice ecosystems (irrigated, rainfed-drought, saline, submergence, high temperature). New donors have also been developed for Rice Tungro Disease resistance.
- Thirty-two new varieties developed, including NSIC Rc 600 and Rc 602 as the country's first heat-tolerant varieties; NSIC Rc 572 and NSIC Rc 686, both with combined abiotic stress tolerance. The nucleus and breeder seeds for all these varieties have been produced. The project "Genetic improvement and mechanism of resistance to stem borer in rice" has identified 38 resistant lines to stem borer based on natural field infestation.
- WeRise, an ICT-based tool for rice farmers that provides relevant information regarding the optimum timing of seed sowing and fertilizer application in rainfed areas, was turned over to PhilRice in March 2021. It was developed by the Japan International Research Center for Agricultural Sciences and IRRI. Collaboration with PhilRice started in 2017. This tool can also predict yield levels of different rice varieties.
- The , NextGen project helped identify top-performing varieties nationwide and in the regions through participatory varietal selection and performance testing and validation. The irrigated lowland varieties NSIC Rc 160, Rc 216, Rc 300, Rc 308, and Rc 402 were most preferred by farmers owing to their high yield, excellent grain and eating qualities, pest resistance, and wider adaptation. Specific varieties for adverse environments also help to enhance yields in problematic areas. In

**Our work attests to our commitment to the outcome that we have set. The new varieties developed, improvements in our Genebank, as well as our work in PRIME and pest management technologies increase productivity and profitability; cost-effectiveness is brought about by the new machines.**

another project, 73 lines were identified as having resistance to stem borer. This continuing on-farm variety evaluation process is jointly implemented by the network of the DA through the regional field offices, Bureau of Plant Industry (BPI), and local government units.

- Eight important breeding lines and mutants were registered under the *Plant Variety Protection Act of 2002*. These mutants have comparable yield, better bacterial leaf blight resistance, slightly later maturity, with retained aroma and eating quality. These germplasm are additional options for farmers, and can be used as pre-breeding materials.
- The project "*EcoWays*" has improved pest management decision-support through studies on the ecology of major rice pests and their management by non-chemical ways.
- The Pest Risk Identification and Management (PRIME) project aims to understand risk factors for pest outbreaks and identify appropriate management strategies and tactics to reduce crop losses. It focuses on five pests: rice blast (leaf and neck blast), bacterial leaf blight (BLB), rice tungro/green leafhopper (GLH), brown planthopper, and rats. Using cutting-edge technologies, PRIME performs pest surveillance and field experiments, remote sensing and mapping, pest modelling, and capacity building.
- There are 12 machines ready for use, commercialization or pre-commercial development; 12 other machines being improved. Ready for commercialization are: riding-type boat tiller for shallow-mud fields, multi-purpose seeder attachment for hand tractor, brown rice machines, multi-crop reduced-till planter attachment for 4-wheel tractor, mobile rice hull gasifier engine pump system, and gear-transmission power tiller. MP seeder attachment for hand tractor is already deployed in Regions 1, 2, 3, 4A, 5, 6, 12, and CAR; the village-type and motor-driven brown rice machines are scaled out in Regions 2, 3, 6, and 13.
- Our Varietal Mixture (VarMix) technology project is benefiting Sta. Barbara, San Miguel, and Oton towns in Iloilo. VarMix is a stopgap strategy in unfavorable rice-growing environments to overcome pest and disease and water stresses. This is made possible by sowing mixed seeds of two or more carefully selected varieties.
- We have developed a package of technologies for drip-irrigated aerobic rice, published in a technoguide, and two water pumping systems for hilly upland areas.
- We have started formulating biofertilizer and organic fertilizers to sustain soil fertility and enhance the microbial community structure, aside from meeting the target grain yields.


RICE STRIPPER
COMBINE HARVESTER


Kwebo


# **OUTCOME 2:** Improved rice trade through efficient postproduction, better product quality, and reliable supply and distribution system

- Three harvest and postharvest machines were developed - the Mini Rice Combine Harvester, Stripper Rice Combine Harvester, and Combined Conduction and Far-Infrared Radiation Paddy Dryer. The Mini Harvester is being improved to increase its capacity from 1ha to 2ha per day, reduce fuel requirement by 15% using a 30-hp engine, and meet national standards on grain loss. The Stripper Harvester was improved by incorporating a hydrostatic power transmission system to make operations easier and smoother. An intellectual property application for this technology has already been lodged in the Department of Science and Technology. The Dryer is already in its pre-commercialization phase. These machines help reduce postharvest losses and preserve the quality of rice grains.
- Our micro-tiller was customized and evaluated. A throw-in axial flow thresher for easy-shattering varieties harvested using a sickle, and a hold-on-type wireloop thresher for non-shattering (hard-to-thresh) rices were also developed and evaluated. These machines were endorsed to DA-Regional Field Office CAR for further testing and possible mass fabrication.
- Technologies for climate change adaptation were also developed: the *Kwebo*, Bag-Drying and Handling System, and Capillarigation System. The *Kwebo* is a multi-purpose structure with a dome or tunnel-like roof that can be used in farming communities for shelter, storage, and even commercial purposes. The Bag System minimizes the handling of paddy grains from harvesting to drying, which translates to savings on time and labor cost. With the *Kwebo* and Bag System, up to 4 tons of fresh harvest from wet fields can be dried and processed together. The Capillarigation system, a water management technology helps smallholder farmers in severe drought areas to have an alternative source of income from rice-based crops. These technologies work in synergy to help farming environments in typhoon and severely drought-prone areas.
- The PalayCheck System for Irrigated Lowland Rice, PAG-AHON (Sa Palay at Gulay, may Ani, Hanapbuhay, Oportunidad, at Nutrisyon), and Palayamanan Plus were improved. PalayCheck was revised in 2020


to include postharvest management. It remains the main platform for promoting yield-enhancing, cost-reducing, and environment-friendly rice technologies. In 2020, PAG-AHON helped farmers to have sustainable sources of income by directly linking them to the market, with assistance from LGU, PhilRice, and a private seed supplier. It became the model of the DA's *Adopt-a-town* initiative and was integrated in Rice Business Innovations System (RiceBIS) communities. We also continued to innovate with *Palayamanan* Plus as a flagship initiative especially in difficult rice-growing communities. These systems are meant to provide holistic interventions to specific rice-growing conditions.

- We enhanced the quality and shelf-life of brown rice, and improved its engineering technologies. While beneficial, Filipinos could not optimize brown rice owing to its high price, short shelf-life, and limited availability and accessibility. To improve the quality, various degrees of rice bran removal and combinations of amylose content and gelatinization temperature that affect its eating and nutritional qualities were evaluated to identify the most suitable parameters for its production. Salient findings were packaged in a book.
- Portable village-type and retrofitted brown rice machines were deployed in Isabela, Cagayan, Nueva Ecija, Tarlac, Negros Occidental, Iloilo, and Agusan del Norte/Sur. Many of the cooperators showed interest to use them. We also found that *Saclob* (hermetic storage technology) can effectively prolong shelf-life and preserve brown rice quality.

**Machines, systems, and technologies for rice and rice-based farming systems were crafted to be able to produce rice at the least expense.**

## **OUTCOME 3:** Enhanced value, availability, and utilization of rice, diversified rice-based farming products, and by-products for better quality, safety, health, nutrition, and income

- Golden Rice was finally approved for commercial propagation on 21 July 2021, after its field trials were allowed on 20 May 2019; its direct use as food, feed, and for processing was upheld on 10 December 2019. These developments made the Philippines the first country in the world to begin widely cultivating the nutritious genetically modified rice.
- NSIC 2021 Rc 648 (Zinc rice 2), a micronutrient-enriched rice; 1 special, 1 glutinous, and 5 pigmented non-glutinous special rices for irrigated lowland are also available for farmers and consumers alike.

- Snack, meals, and beverages to enhance the value and use of rice in improving the health of consumers were also developed: rice-adlai energy bar, monascus cookies, rice-corn hopia and soft cookies, brown rice cracker-ice cream sandwich (BRICS), healthy and nutritious biscuits with different levels of stabilized rice bran, flour blend from rice and taro, rice wine lees-supplemented noodles, instant GABA rice congee, ready-to-eat GABA rice meal with pork adobo, dietary supplement (prototype), instant 'am' (boiled rice water), rice malt-based beverages, three yogurt drinks with fermented rice bran, and the non-commercialized Nutri Rice Milk.
- A market study on the Red Mold Rice (RMR) as a natural dietary supplement found it to be among the samples with highest antioxidant activities. It also met the standards set by Taiwan and the European Union in terms of low citrinin content.
- We are upgrading the design of the continuous-type rice hull carbonizer to include built-in heat recovery attachments.


The development of more nutritious rice, rice by-products, and the portable brown rice machine has improved the accessibility to consumers of rice that has better safety, health, and nutrition. Our work on Golden Rice and other varieties with special characteristics provides healthier options for rice consumers. The improved rice hull carbonizer helps farmers maximize income from farm diversification, with many groups already earning millions of pesos.


NUTRI RICE MIL
a nutritious beverage
with germinated brown
and buffalo's milk
RICE-BASE
FOOD PRO
SHANGRICE


TRADITIONAL RICE VARIETIES
Pigmented rices, aromatic,
BLACK RICE
Iloilo
BALATINAO
Abra
RED RICE (RED DINORADO)
Iloilo
LASBAKAN
Benguet
MINDORO BLACK
Negros Occidental
TAPOL
Bukidnon
DINORADO
North Cotabato
RED RICE
Mountain Province
ADLAI and CORN GRITS
STABILIZED RICE BRAN
and
RICE BRAN OIL
NUTRI RICE MILK
TAPUY (RICE WINE)
RICE-BASED FOOD PRODUCTS
BROWNIES
PUTO PAO
ESPASOL
BUGGI
WAFFLE
RICE BRAN PANDESAL


# **OUTCOME 4:** Science-based and supportive rice policy environment

- Publications exploring issues within and of value chain actors include *"Rice value chain in the Philippines"* and *"Comparative efficiency of rice farming in Asia and the Philippines"*. These were cited in various policy pronouncements from DA.
- Our benchmarking work served as core reference of the *Rice Tariffication Law.*
- Five half-cup ordinances and 4 brown rice resolutions have been passed, resulting in a total of 60 policies in support of responsible rice consumption.
- The *Truthful Labeling of Rice*, which was our policy research, was passed as a provincial ordinance in Nueva Ecija and as a municipal ordinance in Balaoan, La, Union.
- Some 24 position papers, policy memoranda and briefs were crafted to clarify issues or push for certain advocacies in the rice sector.
- Issues of the *Rice Science for Decision-Makers* policy brief were sent to more than 300 members of both Houses of Congress, for their use as materials for policymaking.

Collectively, these research-anchored outputs have helped create a supportive rice policy environment. The outputs have evolved as either local ordinances or national policies all geared at alleviating the conditions of rice farmers and creating a more profitable rice industry.

**Collectively, these research-anchored outputs have helped create a supportive rice policy environment. The outputs have evolved as either local ordinances or national policies all geared at alleviating the conditions of rice farmers and creating a more profitable rice industry.**

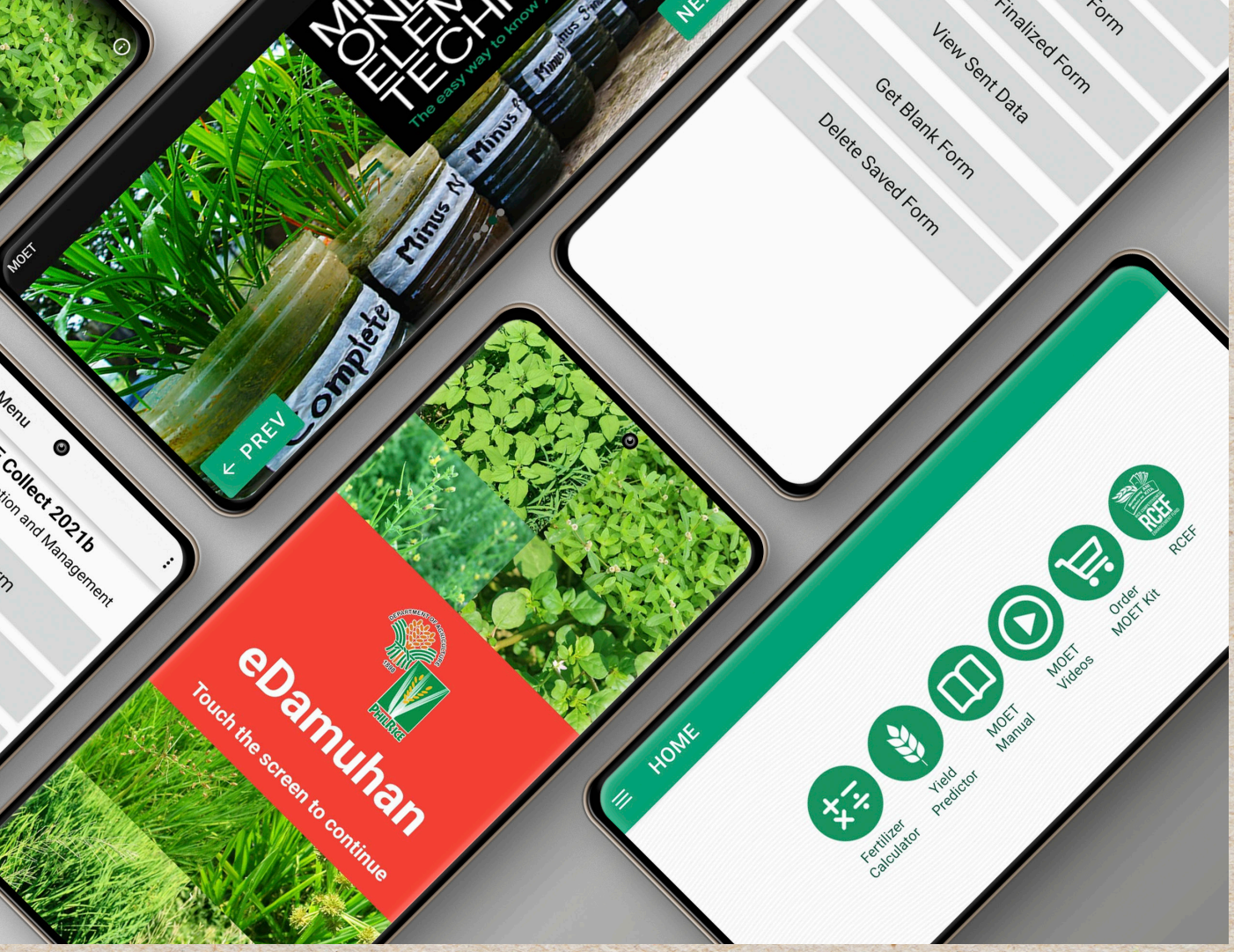
Water level monitoring device

# **OUTCOME 5:** Advanced rice science and technology as continuing sources of growth

- The PhilRice Soil Information System (PSIS) is a comprehensive, accessible and user-friendly tool for effective crop management. It helps decision-makers and planners in selecting suitable crops along with appropriate management strategies in their respective provinces (https://dbmp.philrice.gov.ph/soils/). Soil information from 23 provinces are currently uploaded in the system, while 31 soil series field guide books were developed.
- AutoMonPH is an Internet-of-Things (IoT)-based irrigation advisory service that features an automated field water level monitoring system for improving and sustaining water management based on safe alternate wetting and drying (AWD) irrigation technology. While International Rice Research Institute (IRRI) is tasked with hardware or sensor development, PhilRice develops user-friendly online applications for water level sensor evaluation and monitoring user interfaces— the WateRice Web App (https://www.waterice.philrice.gov.ph). The app has a home dashboard; a sensor profile user interface, which provides data gathered by a specific AutoMonPH sensor; and a graphical presentation of the collected data.
- The PRiSM is hailed as a model in Asia on how satellite-based monitoring systems can result in significant gains for agriculture. It integrates state-of-the-art digital technologies such as remote sensing, geographic information and global positioning

systems, crop growth simulation modeling, smartphone-based field data collection, and ICTs in monitoring and sharing data on rice cultivation. This was developed jointly by PhilRice and IRRI with funding support from DA. The website (https://www.prism.philrice.gov.ph) gives public access to data on actual rice areas planted, planting dates, yield and production estimates, and the rice areas affected by floods and droughts.

- RiceIntel is an intelligent digital platform for rice RDE planning and executive monitoring that provides information about the country's rice situation, relevant research data, and ground partner directory.
- Through the PRIME Collect app, the protocol for Rapid Crop Health Assessment was developed to confirm potential pest risks reported in areas not covered by monthly pest surveillance by the PRIME Project. This protocol is being used by the DA-Regional Crop Protection Centers, Regulatory Division, and LGUs. This is also intended for the BPI, which oversees the data collection and management, prepares and provides pest management recommendations.
- Two android apps were developed and released to help in rice crop nutrient management: Leaf Color Computing (LCC App) and the Minus-One-Element Technique (MOET App). Released in 2020, the LCC App is a real-time nitrogen recommendation tool that can help farmers reduce their fertilizer costs and increase their yield by applying the precise amount of N at the time it is needed by the rice crop. The MOET App v2.0 (2020) complements the MOET soil nutrient diagnostic kit. It offers site-, variety- and time-specific nutrient management recommendations thereby increasing farmers' yield and fertilizer-use efficiency.
- The *e-Damuhan*, *Binhing Palay*, and *AgRiDoc* apps were developed. The *e-Damuhan* is a weed photo recognition and catalog mobile application to aid in proper weed identification and management. It provides a proof of concept in employing artificial intelligence in weed identification. From 2018 to 2022, the app recorded 21,428 users.
- *Binhing Palay* mobile application provides information on agronomic characteristics, pest and disease resistance, and grain quality of rice varieties. In 2018 to 2022, around 47,000 users installed the app and used it for a total of 613,000 sessions.
- *AgRiDOC* is a mobile rice farm management app for crop monitoring and record-keeping, and decision-making for digitally enabled farmers. With this, farmers and extension workers can easily plan their whole-season operations, record activities and expenses, and be provided with insights about their rice crop. From 2018 to 2022, around 10,000 people have used this app.



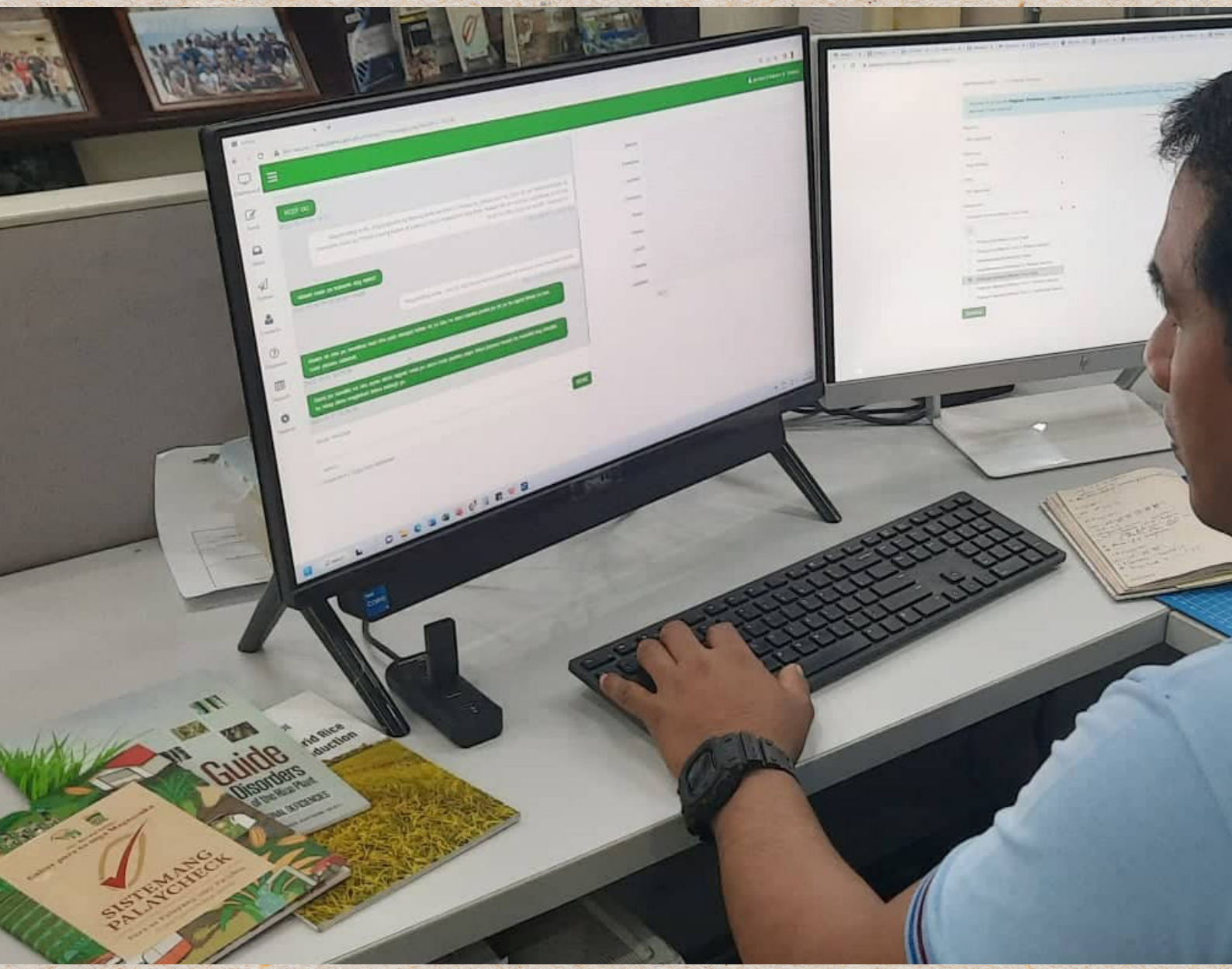
- Rice Seed Information System (RSIS) helps address issues of seed production traceability, distribution monitoring, and seed demand forecasting. It is designed to collect, process, generate, and share data using the integrated systems of smartphones, computers, internet, and global positioning system. It was co-developed with the BPI-National Seed Quality Control Services.
- Applications of IoT sensors were explored, developing prototype designs for monitoring water and air quality, and microclimate. One design measures water temperature, pH, electric conductivity, dissolved oxygen, and water level. The air design senses the level of ammonia, which greatly affects the respiratory health of livestock. The microclimate prototype monitors air temperature and relative humidity. The field-collected data are automatically transmitted to the remote database servers ready for analysis.
- An IoT system design prototype composed of a soil moisture sensor, a smartphone app, and an electric valve was explored to automate the drip irrigation system. The system alerts the farmer through the app, whenever a lower-than-threshold moisture level is sensed. The farmer, then, can send a command to remotely turn on and close the valve. The status of the solenoid valves and soil moisture are also displayed on a small LCD screen at the microcontroller. The system is powered using a low-wattage solar power kit.

- Field trials using agricultural drone (DJI Agras T16) significantly reduced seed requirement to about 20kg/ha for inbred and about 10kg/ha for hybrid rice with comparable yields compared to other crop establishment methods in multi-year dry and wet seasons. Drone fertilizer application could reduce rates as well with similarly comparable yields.
- A two-wheel robotic platform for rice seeding that runs on 1,000W brushless DC motors was developed. It was remotely operable through a bluetooth using a smartphone. An Arduino-based ESP32 microcontroller platform provided both control through a motor driver, and communications. Also, in partnership with the University of Santo Tomas, a RoboTractor was developed that can run completely autonomous through a GPS-RTK (real time kinematics) with 1cm precision.
- A farm irrigation sluice gate control system was developed using an Arduino-based microcontroller and a 300mm linear motor actuator. A solar power system allows independent operation of the system. The control of the gate was either accomplished using a timer or through a Wi-Fi communication.
- We also have quantitative trait loci (QTLs) and candidate genes: rice grain crack resistance, yield under drought, stay-green under drought, root plasticity traits, GLH/BLB/ tungro/ stem borer resistance, heat tolerance, silicon content, and flowering.

- We have a protocol for fingerprinting beneficial microorganisms and a marker system for the development of S-lines with resistance to tungro and BLB critical for improving disease resistance in two-line hybrids. The rDNA fingerprinting protocols for the molecular characterization of fungi, bacteria, and cyanobacteria were optimized. Compared to morphological or microscopic identification of organisms, and using biochemical test kits or assays, this molecular technique is relatively more accurate and cost-efficient.
- We have advanced lines: with root plasticity traits under drought, with GR2E introgressions, 3-in-1 (GR2E lines with resistant and intermediate response to BLB and tungro).

Outputs under this section have provided ways to push rice R4D forward. For example, advanced elite lines at different generations carrying QTLs or candidate genes, are now in the pipeline, which will be either used in developing new inbred and hybrid rice varieties that are more resilient to climate change impacts, exhibit biotic stress tolerance, or can even be nominated as new varieties themselves. These outputs also show how advances in science such as the use of the IoT could be harnessed to give a glimpse of the future of rice farming in the Philippines.


MAYS
ISABELA


Guide
Disorders
SISTEMANG
PALAYCHECK

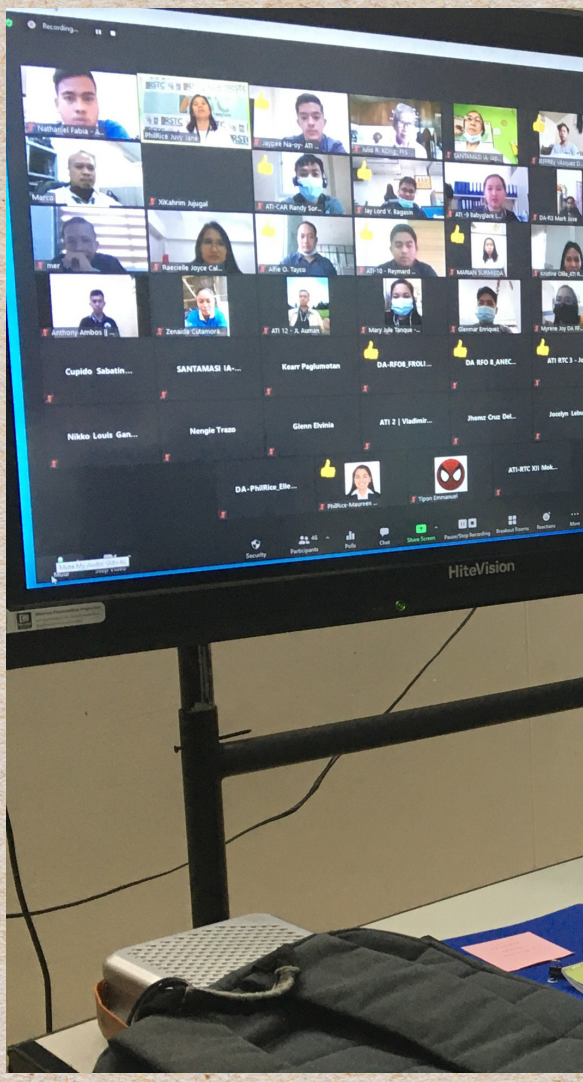
# **OUTCOME 6:** Enhanced partnerships and knowledge management for rice research for development (R4D)

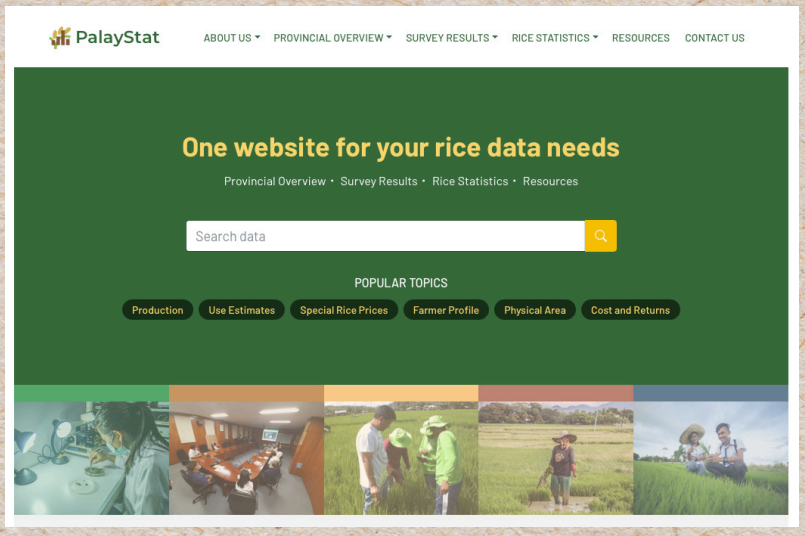
- Partnerships have accelerated and knowledge management systems gained momentum with the continued access of clients and stakeholders to training programs. The programs included prospective trainers and staff members of farm schools and other farmer cooperatives and associations, in addition to state universities and colleges and LGUs. These trainers effectively widened PhilRice's scope and reach. With COVID-related restrictions, we shifted to online training courses. In 2022, we trained online 28 staff members from the Rice R&D Institute (RRDI) of Sri Lanka under a technical cooperation between the Department of Foreign Affairs-Technical Cooperation Council of The Philippines (DFA-TCCP) and DA.
- A total of 1,128 agreements were executed, including non-traditional partners MayanaPH and EastWest Seeds, which helped implement various initiatives such as RiceBIS and Pag-AHON. New international partners are the Louisiana State University Agricultural Center and Hungarian University of Agriculture and Life Sciences (MATE).
- RiceLytics (www.philrice.gov.ph/ricelytics) is an online data analytics dashboard that provides a comprehensive automated bulletin report on the historical and current information about the Philippine rice industry, the profile/characteristics of the Filipino rice farmers, and the rice farming practices in national, regional, and provincial situations. RiceIntel was connected to RiceLytics in 2020 to serve as a data warehouse component. RiceLytics is ready for use in decision-making by policymakers.
- On communication for development efforts: 591 knowledge products produced as of 2022; 4,480 total media hits; 796% increase in Facebook engagement from 150,082 in 2018 to 1,344,969 in 2021. In a 2022 survey among clients messaging the social media page, 96% of the respondents found the overall contents useful in improving their practices. A 2021 dissertation by a UPLB graduate student showed that PhilRice page users had a positive attitude toward the Facebook page. They agreed that its use improved them personally as well as their efficiency and effectiveness. Contents uploaded in the PhilRice website and PinoyRice Knowledge Bank also gained at least 90% user satisfaction rating. News releases resulted in some P48.5M public relations value savings.

- As of 2022, there were 276,558 registered users of the PhilRice Text Center from only 42,425 users in 2017 clinching a 551.875% increase, an achievement made possible through RCEF program.
- The following modalities and campaigns were rolled out to hype up the promotion of PhilRice technologies: Rice Patrollers—farmers, agricultural technologists, and youth who share farm experiences on social media; *PalayWakin ang Galing*; *Golden Rice Malapit na 'to*; *Abonong Swak*, and *Oplan Iwas Peste*. Posts of Rice Patrollers generated 3.2 million reach and 429,000 engagement in social media. A quick survey showed that PalayWakin increased the interest to learn new farming techniques by 100%. The Golden Rice campaign increased Facebook followers, from 3,688 to 13,851; post engagements, from 4,573 to 13,309; and Facebook reach, from of 169,494 to 390,319. Abonong Swak, a campaign promoting strategic nutrient management practices, reached 8,652 farmers in 23 provinces through briefings. The Facebook posts on Abonong Swak have 821,186 reach; 33,782 engagements; and 2,472 shares.



- Rice demand was managed through the National Rice Awareness Month. From 2017 to 2021, it promoted healthier rice and the buying and consumption of local rice, while the 6-year theme “Be RICEponsible” was relaunched in 2022. Calls were echoed to eat brown or unpolished rice, try rice mixed with other staples, conserve and buy local rice. With interventions since 2017 through the support of the entire Department of Agriculture, other public agencies, and the private sector, it is estimated that the campaign has reached tens of millions while saving the government hundreds of millions of pesos from free media mileage and celebrity rice ambassadors.
- The PinoyRKB (Rice Knowledge Bank) and PalayMan Chatbot were developed, maintained, and enhanced. The PinoyRKB app enhances access to rice information, while Chatbot app, used in Facebook chat conversations, was found useful by 81% of the users.
- More than 200 technology demonstration sites were established nationwide, and 7,539 farmers, extension workers, and other development catalysts were trained. These techno demo sites showcased newly released varieties. High-quality seeds of these varieties were produced and distributed through the informal seed system.


- The protocol has been finalized, and the Technical Working Group that assesses mature technologies at PhilRice has been formed. Thus far, the LCC app is one technology that has passed assessment.
- From 2017 to 2022, the PalayStat rice data repository had 81,101 views, 20,554 sessions, and 12,686 users, all unique, from domestic and foreign visitors.
- PalayAralan, a non-certificate training was conceived to cater to PhilRice's clients and visitors who want and need information and knowledge on specific topics but do not wish to enroll in a long-term, in-depth and intensive rice training course. Among its intended audience are researchers, students, farmers or random individuals. It was fully launched in 2019 as part of the RCEF extension program. PalayAralan seeks to engage the community in and around, including


nearby towns, PhilRice's campus to promote our technologies and services. To expand its reach, we livestreamed our PalayAralan in our Facebook page that increased viewership. In 2021, PhilRice tapped and worked with the Agricultural Training Institute (ATI) to help promote PalayAralan, particularly to its client base. From 2020 to March 2022, PalayAralan has aired 47 livestreams on topics related to rice and rice-based production, reaching farmers and other clients nationwide. During the same period, live viewership has totaled 5,398, with 296,200 viewing uploaded video streams on PhilRice's official Facebook page. Engagement and people reached totaled 133,064 (live) and 818,186 (uploaded video streams). Between 2020 and 2021, live viewership increased by 43%, post-views increased by 42%, engagement by 50%, and people reached by 8.5%.

# OUTCOME 7:
# Strengthened institutional capability of PhilRice

## People

- Despite the status quo at the PhilRice Board of Trustees (BOT), the significant institutional targets needing BOT endorsement were achieved, including 1) Creation of the Procurement Management Division and RCEF-Program Management Office; 2) Appointment of full-fledged Executive Director and Deputy Executive Directors; 3) Acquisition of new vehicles; 4) Annual Corporate Operating Budgets; 5) PhilPRAISE and Staff Learning and Development Revised Guidelines; and 6) Organizational Restructuring proposal.
- Branch station directors were appointed.
- Staff development as of 2022: 14 conferred scientists; 28 (17 PhD and 11 MS/MA) staff members sent to degree training; 84%, average of 6 years (2017-2022), of regular staff members availed themselves of non-degree training; 138 magna carta recipients. These figures speak volumes of PhilRice as an R4D organization. Also, continual improvement of the workforce's competencies and motivations heighten their efficiency and productivity in the workplace.

**The PhilRice Competency Manual will serve as general guide in implementing competency-based human resource management systems to ensure that the talent requirements of the Institute are met.**

- The PhilRice Competency Manual will serve as general guide in implementing competency-based human resource management systems to ensure that the talent requirements of the Institute are met. Since 2021, PhilRice availed of the GSIS Directors and Officers Liability Insurance (DOLI) that insured all signing authorities in CES and Branch Stations. We have acquired affordable life insurance premiums for our Contract of Service personnel.
- To continually guide administrative support staff in the branch stations and ensure conformance to government rules and regulations of transactions, the central office initiated a regular conduct of capacity-building activities (e.g., coaching on procurement management; business development workshops; values formation seminars; financial management workshops; updates on RA 9184; integrated management and information systems orientation; retooling of AAs).
- In the "WokTok: Walk your Talk Challenge" conducted in 2021 wet season until 2022 dry season, our stations increased their yields by at least 1t/ha with PhilRice Negros yielding highest at 6.44t/ha or a 2.45t/ha increment. Moreover, 1,346 staff members participated in more than 100 knowledge-sharing and learning activities on rice cultivation science and technologies where gain in knowledge ranged from 25% to 233%.
- The Community Relations Office was created in 2018 to provide general rice science education, serves as PhilRice's corporate communication arm. In 2020, PhilRice created the Agricultural and Biosystems Engineering (ABE) Unit in its branch stations in compliance with the provisions set forth under the Agriculture and Fisheries Modernization Act. These centers aim to improve better ABE service provision in the regions. Among the functions of the centers is to conceptualize and implement research studies in relation to the four areas of agricultural engineering: farm mechanization; crop processing, farm structures, and energy; land and water management; and agrometeorology.

## Processes and budget utilization

- We were granted Program to Institutionalize Meritocracy and Excellence in Human Resource Management (PRIME-HRM) Level II accreditation in 2018 by the Civil Service Commission in recognition of our process-defined HRM capabilities resulting in the provision of quality service to our internal and external clients.
- Our efforts to digitalize our processes resulted in the creation of the Financial Management Information System; Property Supply and Inventory System; Human Resource Information System; and Rice Seed Information System. These systems have improved our financial and administrative processes in terms of speed and overall efficiency.
- We have achieved 100% implementation of the Integrated Management System internal audit and been awarded the ISO 9001 (Quality), 14001 (Environmental) and OHSAS 18001:2007 (until 12 March 2020) certifications.
- The FutureRice Farm received its Good Agricultural Practice in 2017 and was given renewal in 2022.
- From 2017 to 2022, we have utilized 98% of our budgets, which indicates high absorptive capacity. It attests to the effective and efficient collaboration of the financial and procurement personnel in ensuring that transactions abide by government rules and regulations. Our corporate income augmented the funds for capital outlay.
- We have been awarded the Certificate of Compliance in 2018-2021, with the set of Freedom of Information requirements.
- The DA has commended us for 100% resolution of 8888 citizen's complaints.

**Collectively, our outputs in this section have put PhilRice in a much better position to fulfill its mandate. Our scientists and newly fielded staff members are crafting high-caliber proposals that would step up the game of rice R&D in the Philippines.**

- The DBM-approved creation of our Procurement Management Division in August 2019, with 10 new positions and 1 renamed, has established clear patterns of accountability and enhanced coordination. It improved the preparation of Annual Procurement Plans and Reports.
- The DBM also approved 43 contractual positions for the RCEF Program Management Office and PhilRice Branch Stations to help the institute perform its mandates under the RA 11203.
- In compliance with law and as a strategy to make our programs, projects, and activities more equitable and inclusive, the Institute has mainstreamed Gender and Development (GAD) in its entire operations (see infographics, p. 46).

## Properties, infrastructure, and products

- Some 20 hectares of rice land with P46M were acquired to augment our registered seed production areas that address the needs of seed growers under the RCEF and DA-National Rice Programs.
- A total of 134 new infrastructure and repair and maintenance projects were completed amounting to P440M to ensure a safe and conducive workplace and shelter for employees. Some 53 new vehicles (P85.3M) were procured through various fund sources, and deployed to all PhilRice stations; 69 units of IT and Office equipment with unit cost of P100,000 and above were purchased. The Institute's Property, Plant, and Equipment had greatly increased with a total net book value of P1.1 B. This indicates expansion of facilities, machines, and equipment to cope with the operational demand of R4D to better serve our clients.
- We have produced 758 tons (DS) and 945 tons (WS) of registered seeds on average from 303ha and 342ha areas planted for DS and WS, respectively, which were purchased and multiplied into certified seeds by seed growers.
- Our efforts in Intellectual Property protection and utilization were recognized: *Gawad Yamang Isip in 2018: Special Awards* and *Top Patent Grantee in 2019*. For 2017-2022, we garnered 8 granted patents, 41 utility models, and 10 industrial designs from a total of 110 applications filed. The protected technologies are now being pitched to manufacturers.


Collectively, our outputs in this section have put PhilRice in a more favorable position to fulfill its mandate. Our scientists and newly fielded staff members are crafting high-caliber proposals that would step up the game of rice R4D in the Philippines. We are doing this both with collaborators and fund donors from within the country and abroad, led by BAR and the DOST-PCAARRD. Our processes and newly acquired properties have facilitated doing business with our clients and delivering services within the Institute and outside. Our protected intellectual properties will help make available our technologies to interested parties.

DA-PHILRICE

# GAD MAINSTREAMING

## POLICY

**57**

**GAD-enabling policies issued**

(2019-2022)

## PAPs (Programs, Activities, and Projects)

**116**

**GAD-tagged projects**

(2018-2022)

## PEOPLE

**60**

**GAD training, activities, & webinars conducted**

both for internal & external clients
(2019-2022)

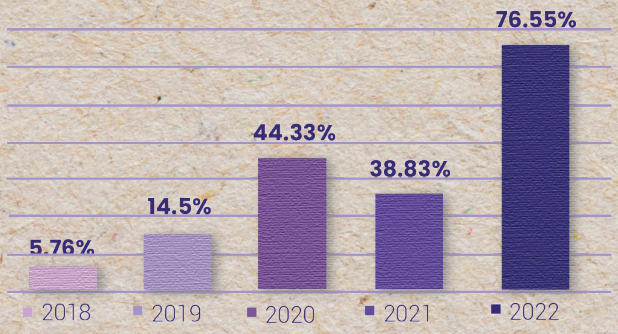
## ENABLING MECHANISMS

**8** **enabling mechanisms established**

(GAD Focal Point System, GAD Corner, Gender-fair Language Guidelines, sex-disaggregated database, Committee on Decorum and Investigation of Sexual Harassment Cases, Project Review and Evaluation Committee, Day Care Center, Breastfeeding Rooms)

## GENDER AND DEVELOPMENT

BUDGET ATTRIBUTION 2018-2022




## AWARDS & RECOGNITIONS

**3 Commission on Audit commendations**

(2019, 2020, 2021)

**Development Academy of the Philippines**

**Government Best Practice Recognition Recipient (2022)**

# Blockbusters

## **OUTCOME 1:** We are the rice we breed, produce, and promote

Hardworking farmers live in a ricescape that is complex and dramatic with the value chain keeping them on their knees. In the past 5 years, our interventions on increasing their productivity, cost-effectiveness, and profitability have helped unburden some of the farming drudgery as shown by the narratives and results we gathered from our stakeholders.

From 2017 to 2022, 32 of our newly bred varieties were approved for commercial cultivation by the National Seed Industry Council. These were: 5 inbreds; 2 hybrids; 9 special-purpose rice (1 japonica, 1 glutinous, 5 pigmented non-glutinous, and 2 micronutrient-rich); 6 rainfed lowland dry-seeded; 5 saline-prone; 3 cool-elevated; and 2 heat-prone irrigated lowland.

We do not stop at developing quality rice; they must also be nutritious. Vitamin A-rich Golden Rice, launched to the public on 30 September 2021, is now commercially propagated in seven provinces after its biosafety permit was issued. We also ensure that the better, improved rices we bred are adopted and reached by our farmers.

In Buenavista, Quezon, Mestiso 20 or the popular M20 hybrid was previously not favored. But now, Alvin Ray Rivera, vice-mayor, said that farmers always request for M20 as it showed good yield, resistance to pests and diseases, and drought tolerance. The variety also has good grain quality.

“Most of the farmers here used to harvest 2.5-3t/ha. But with hybrid, they’re harvesting as high as 8.3t/ha,” Rivera said. The project in Buenavista is a partnership among PhilRice CES through the Public Hybrid Rice Seeds System Project, PhilRice LB, DA-RFO CALABARZON, and the LGU.

Inbred certified seeds have also reached 57 provinces through the Rice Competitiveness Enhancement Fund (RCEF)-Seed Program. From 2020DS to 2022WS, the RCEF Seed Program distributed about 10.5M bags of certified seeds to about 1M farmers planting roughly 1.5M ha annually.

As rice is our staple food, we also protect the Philippine varieties by conserving the genetic resources. We conduct activities supporting this endeavor such as the Rice Diversity Seed Fair. In Tadian, Mountain Province, traditional varieties had slowly disappeared from their fields with the introduction of modern rice – so-called high-yielding varieties—as pest attacks hastened their near extinction. Through the Fair, farmers regained some of their old varieties from other villages, which are at least an hour by foot away from them, and oftentimes separated by rugged mountains and hills. From 2017 to 2019, the Fair allowed farmers to identify about 400 lost varieties and most of them were recovered during its seed exchange activity.

The quality of seeds and varieties is only a mole in the entirety of the production system. Decision support and diagnostic tools and machines are also vital in achieving high yield and reduced production cost. In Tiaong, Quezon, yields in plots that benefited from the Minus-One Element Technique – Leaf Color Chart (MOET-LCC) and Rice Crop Manager (RCM) increased by 2.6t/ha and 2t/ha, translating to a corresponding growth in net income of 388% (MOET-LCC) and 165% (RCM). Meanwhile, farmers in Banna, Nueva Era, City of Batac, Paoay, Currimao, and Pasuquin in Ilocos Norte benefited from the Multipurpose Seeder (MPS) with their recorded reduction in seeding rate by 14-51% and labor cost (70-110%). Other than rice, the MPS was also integrated in corn production.

**The quality of seeds and varieties is only a mole in the entirety of the production system. Decision support and diagnostic tools and machines are also vital in achieving high yield and reduced production cost.**

# **OUTCOME 2:** Improved post-production and better product quality

Rice engineering and mechanization technologies were delivered to farmers and other rice stakeholders through partnerships and stakeholder engagement.

## Commercialization

Through the years, PhilRice and Val-Agri Machineries held hands in research, development, and most recently, commercialization of technologies. In 2020, Val-Agri was the first agricultural equipment manufacturer to go through the Fairness Opinion Board (FOB), a group convened by DOST, to determine fairness of a commercial transaction to the Philippine government. PhilRice prepared the DOST requirements such as commercialization plan, valuation report, licensing agreement, due diligence and freedom-to-operate (FTO) and facilitated the conduct of the FOB evaluation. Val-Agri eventually secured a technology licensing agreement and commercialized four PhilRice machines – microtiller, laboy tiller, reversible flatbed dryer, and seed cleaner. In the past, partnership with Engr. Lugto in terms of drafting patent claims also helped him win second runner-up in the prestigious Alfredo M. Yao (AMY) Intellectual Property Awards.

Val-Agri proprietor Engr. Roman Lugto in 2004 helped the Institute develop the ride-on hand tractor attachment, and later mass-manufactured the implement. Val-Agri was also heavily involved in the prototyping of the Multipurpose Seeder.

In 2021, other manufacturers that have gone through FOB evaluation and into commercialization of the PhilRice Riding-type Buoyant Tiller and the MP Seeder were: 1) ACT Machineries and Metalcraft Corporation, Cauayan City, Isabela; 2) New Era Industries, Laoag City, Ilocos Norte; 3) Global Marketing & Construction Corporation, Muntinlupa City; and 4) Green Valley Machineries, Koronadal City, South Cotabato. They are also licensed to manufacture either or both machines.

In 2022, PhilRice licensed the Davao Beta Spring, Inc. to manufacture the: 1) Mini-Combine Harvester; 2) Reversible Dryer; 3) Seed Cleaner; 4) Ride-on Buoyant Tiller; 5) Laboy Tiller; and 6) Microtiller. The ACT Machineries and Metalcraft Corporation was licensed for the: Microtiller, Laboy Tiller, and Seed Cleaner. GCG Welding Shop at Sto. Domingo,

Nueva Ecija was licensed for the Seed Cleaner and Reversible Dryer; PI Farms in Valenzuela City was licensed for the Laboy Tiller and Microtiller. These licensees had undergone FOB evaluation and secured favorable written recommendation from the DOST. Seven farm machines were licensed to 8 manufacturers for the period 2020-2022. The aesthetic and ergonomics designs of PhilRice machines are being improved in partnership with the Design Center of the Philippines. The mini combine harvester, multipurpose seeder, and the localized riding-type mechanical transplanter are undergoing aesthetic improvement with Manufactured Dream Design Innovation, Inc. in Caloocan City and Rollmaster Machinery and Industrial Services Corporation in San Pedro, Laguna. Under the auspices of this project, the BDD has implemented 4 workshops on prior art searching, Freedom to Operate, and patent drafting, which were participated in by 130 participants.

**Establishment and operation of mechanized model farms and Agricultural and Biosystems Engineering (ABE) units in all PhilRice branch and satellite stations is one way to achieve sustainability and efficiency in rice mechanization.**

## Pre-commercialization

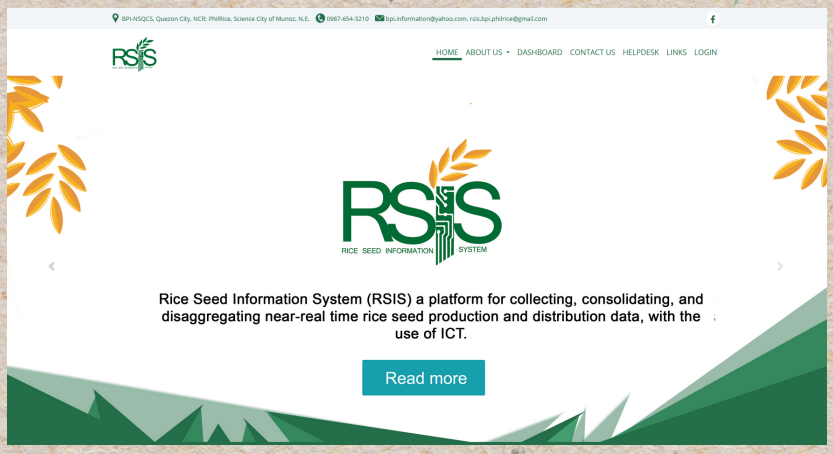
Production practices are boosted while our technologies are yet in the pre-commercialization phase, like the riding-type boat tiller for land preparation, 8 units of which were deployed to all PhilRice branch stations, and a memorandum of agreement is currently in force with 5 manufacturers. Hundreds of farmers and other rice stakeholders attended the training and field days in the branches where the units were demonstrated.

The Multicrop Reduced-Till Planter for dry land direct seeding can plant several crops such as rice, corn, and mungbean without going through conventional tillage. Its pre-commercial unit had been released by ACT Machineries and Metalcraft Corporation in Echague, Isabela, in collaboration with Isabela State University. Training programs in laser-guided land leveling and dapog techniques were conducted. Establishment and operation of mechanized model farms and ABE units in all PhilRice branch and satellite stations is a way to achieve sustainability and efficiency in rice mechanization.

## Technology use

The idea behind the *Kwebo* technology came in the aftermath of super typhoon *Yolanda* in late 2013 to respond to the need of farmers to secure their farm equipment, rice seeds, and farm animals during such calamities. *Kwebo* is a farm structure that can be easily built like a hut *kubo* but with the structural integrity of a cave (kweba), hence its name. One of the initial sites for this technology is Mayamot, Zaragoza, Nueva Ecija through the Ugat-Uhay Farmers Association as a partner-cooperative of the PhilRice RiceBIS program. The group earned profits from this technology as they used this not only as a storage facility but also in mushroom production.

Another technology that gained following is the use of the low-cost Bamboo-bin Dryer, which reduced farmers' average drying expenses by 70.34%. Farmers in Ilocos Norte reported that the dryer is better than sundrying in terms of capacity, cost, convenience of operation, and quality of dried *palay* (milling and head rice recoveries).



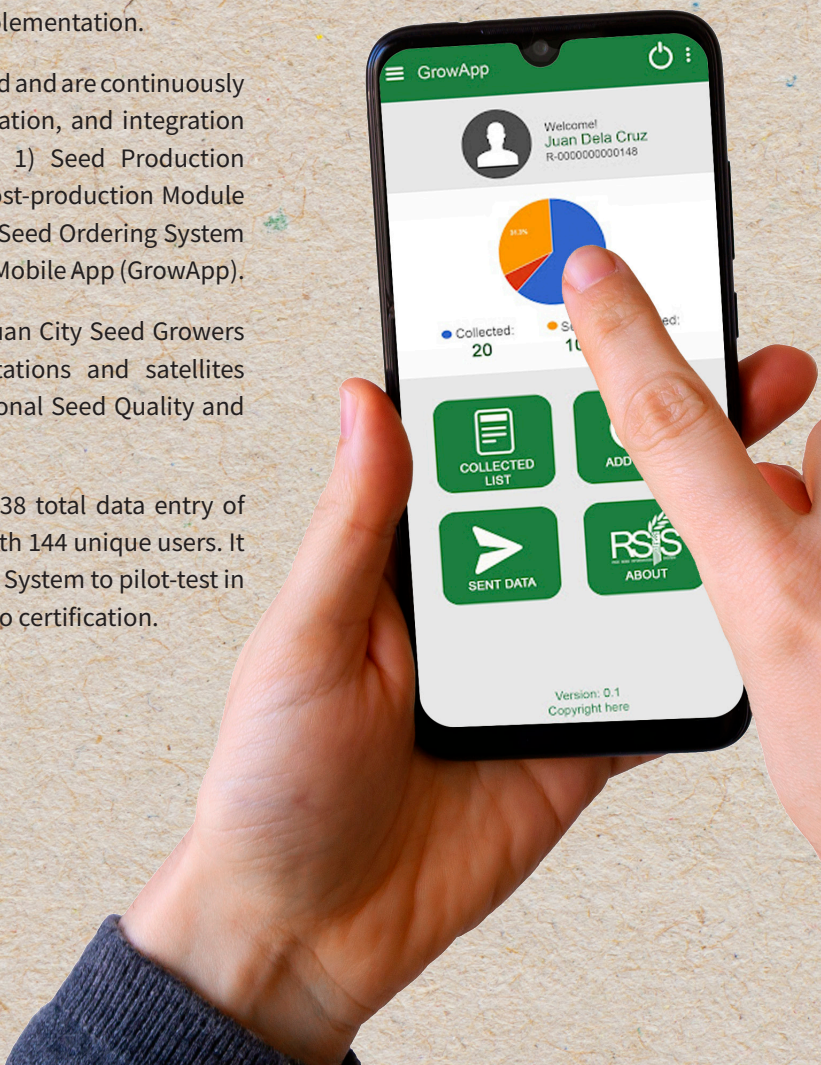

## Reliable supply and distribution system

An ongoing joint project with the BPI is putting the Rice Seed Information System (RSIS) in place as a tool for collecting, generating, processing, and sharing data through the use of ICT. The system integrates the use of smartphones, servers, internet, and global positioning system data with the industry players such as seed producers/growers, seed coordinators, and seed inspectors in the collection, processing, and monitoring rice seed availability estimates on seasonal basis. This project is expected to pave the way toward automation and mobile-based collection of field data that can provide accurate, timely, and reliable information to DA agencies and policymakers for project/program planning and implementation.

The following RSIS modules and apps were developed and are continuously being enhanced to facilitate data collection, generation, and integration among industry players and within the system: 1) Seed Production Planner Web Online; 2) Seed Production App; 3) Post-production Module (prototype); 4) Warehouse Online System (WOS); 5) Seed Ordering System (SOS); 6) Seed Releasing App); and 7) Seed Grower's Mobile App (GrowApp).

Beta testing was also conducted with the Cabanatuan City Seed Growers Cooperative (CABSEEDS) and PhilRice branch stations and satellites with their respective Bureau of Plant Industry-National Seed Quality and Control Services (BPI-NSQCS) regional offices.

As of December 2022, the system has received 1,538 total data entry of seed growers' applications through the GrowApp with 144 unique users. It has also integrated with the RCEF's Seed Monitoring System to pilot-test in Region 3 the complete process of seed distribution to certification.




# OUTCOME 3:
## Reaping the benefits of diversification

The call of PhilRice for farm diversification has been resounding and persistent for more than a decade. But it was not until recently that farmers realized its true importance in terms of income, access to healthy and safe food, and household food security.

The Pinagbuklod na Adhika Multipurpose Cooperative (PNAMC) in Zaragoza, Nueva Ecija boosted its entrepreneurial skills in marketing the Macarse Rice Brew (MRB) or "kapeng bigas," a non-caffeinated coffee-like drink produced from roasted rice grains. Aiming to increase the income of its members, MRB's upscale production and marketing began in 2019 through product displays at local markets and trade fairs. Despite fears of contracting COVID-19, they were able to bring their products to DOST-OneStoreHub in the Science City of Muñoz and Eva's Grocery Store in Zaragoza. The cooperative also ventured into online selling as an alternative way of reaching customers. Farmers were mentored on e-commerce utilization through social media management and online transactions. By and large, the enhancement of the value and utilization of rice by producing MRB through its by-product did not just increase farmers' profitability. It also taught other members of the family, particularly the women who are often neglected and disadvantaged, how to be income generators.

## Our Palayamanan's impact on the Agta-Tabangnon tribe in Bicol

The indigenous people tribe is known for planting Dinorado and Hinawa, colored-type rices, and coconut on the mountain slopes of Danao, Polangui, Albay. While they cultivate rice and is their main staple food, it is not their cash crop. Unfortunately, a strong typhoon washed out their rices leaving them no food to eat, no seeds to plant, and no copra to sell. Some members of the tribe tried their luck in the city, without success.

PhilRice Bicol introduced to the community the *Palayamanan* approach and production of organic fertilizers. A series of training programs, seminars, and field demonstrations taught them how to properly cultivate tomatoes, eggplant, chili pepper, and ampalaya, including organic fertilizer production. Water scarcity forced them to stop rice cultivation, however. In 2018, their *Palayamanan* Model Farm earned P25,400 per hectare from vegetables alone, which was higher than the baseline of P16,695. It allowed them to earn money faster and even put up some capital to venture into other business. This livelihood diversification approach proved highly useful for them during the peak of the pandemic, From the small initiative of PhilRice, more donors came in to work with the Agta community.

***"This time of pandemic, our learnings became more relevant because we have enough source of food from our backyards. I will be forever grateful to PhilRice because of their compassion and patience to us, even if we are from the outskirts and are less educated. I thank the Lord because He led them to us."***
**– Edelita Bodino, of the Agta-Tabangnon Tribe.**


# OUTCOME 4:
## How PhilRice's R4D activities guide policies

On 26 October 2021, the Provincial Government of Nueva Ecija passed an ordinance prescribing the truthful labeling of rice sacks, boxes, and price tags, providing for a monitoring mechanism of rice labeling practices of rice retailers and wholesalers in the province, and providing penalties for the violation thereof. This ordinance was drawn from the science-based information generated by the Policy Research and Advocacy Project team of PhilRice.

Truthful labeling in rice is the act of putting valid, reliable, and complete information about the milling degree, source, and price of rice sold loose in display boxes based on the prescribed labeling standards from the DA - Bureau of Agriculture and Fisheries Standards. The National Food Authority (NFA) issued guidelines on truthful labeling in 2018. The Rice Tariffication Law (RTL), however, repealed NFA's regulatory functions including its role to enforce the national grains standards.

"Observing truthful labeling helps consumers exercise their power to choose," the team explains. Likewise, specifying the source of rice may guide consumers' choices regarding preferences relating to origin and safety of rice. From 2017 to 2018, 54 LGUs including key cities such as Baguio, Davao, and Bacolod passed resolutions on half-cup serving of rice and brown rice promotion. This advocacy is a longstanding commitment of PhilRice, which started as one of the key activities of the National Year of Rice. It was triggered by the massive rice wastage documented in studies conducted by the Food and Nutrition Research Institute. The wastage is even more unacceptable given that the Philippines continues to import rice.

Senior staff members of PhilRice have regularly been consulted and provided staff work to major policy pronouncements of DA on rice.

# **OUTCOME 5:** That extra edge in rice science and technology

To say that the word innovation is everywhere these days is a criminal understatement, says one writer on building a culture of innovation.

What ignites the inventiveness fires to create and advance technologies? R4D experts are on the trail of when and where it arises. Remarkably in the past 5 years, advanced technologies have been helping reshape the frontiers of rice science, research, and farming. In bolstering this, the Institute straddled from robotics for precision agriculture to informatics, resource management, revolutionized data gathering, and a lot more. It adopted viable solutions that spell progress in rice security. Advanced rice science and technology burst forth as continuing sources of growth with some of PhilRice's initiatives like MOET app, LCC app, and drone technology.

## Drones

Unmanned aerial vehicles (UAV) for precision agriculture like drones could radically lessen farmers' arduous and tedious work. At PhilRice, the benefits of using drones for herbicide spraying were validated by a 3-year experiment trial from 2019 to 2021. Drones noted having the least consumed time and spray volume applied, hence, the most economical.

Use of agricultural drones for direct seeding, likewise, reduces time of operation, seeding rate, and production cost. Drones can finish direct seeding at only 30min/ha while manual direct seeding takes around 2.5h/ha. It reduces seeding rate for inbred to 40kg/ha instead of the average 96kg/ha with manual broadcasting; 20kg/ha and 60kg/ha are also viable options.

*"Mga 5.5t/ekt ang ani ko sa dati. Sa tulong ng MOET app ay sumirit ito sa higit na 7 tonelada. Sa mga tulad kong magsasaka na gusto pang umangat ang ani, hinihikayat ko kayong wag matakot sumubok ng mga makabagong teknolohiya. Makatutulong ang mga ito upang mapagaan ang buhay natin."*

The reduction of seeding rate results in lesser seed input and cheaper cost. Rent cost per drone is only minimal at P850/ha. The reduced cost translates to increased net profit.

## MOET Kit and App

Gone are the days of guessing what fertilizer your soil needs to boost yield and income. The MOET kit and app customize fertilizer recommendations with desired yield or budget. As a complementary device for the MOET kit, the MOET app provides the right amount, combination, and type of fertilizer to be applied. The soil nutrient calculator, which is used before crop establishment, helps farmers prevent excessive or inadequate fertilizer application.


BINHING PALAY FARM
The Seed Production cum Varietal Demonstration Trial
Irrigated and Rainfed/Drought-tolerant Varieties
NSIC Rc436
NSIC Rc420
NSIC Rc478
Jaime M. Cardenas
Farmer-Partner
Macagtas, Catarman, Northern Samar


# OUTCOME 6:
# Partners in successful technology dissemination

For years, farmers, seed growers, agriculture extension workers (AEWs), and other agencies served as PhilRice's helping hands in bringing technologies to farmers. Partners who are willing and eager to be part of the Institute's projects made the work more efficient and easier.

## Seed growers and farmers

Seed growers and farmers in Bicol and Eastern Visayas regions joined PhilRice Bicol in establishing *Binhing Palay* farms in their areas. These farms are built to make new inbred rice varieties, particularly those adapted to drought, saline-prone, upland, and areas prone to flooding widely accessible to farmers. This effort also aims to encourage farmers to use these seeds and accelerate their dissemination.

Demonstrated in the farm of 17 seed growers and 18 ordinary farmers, the initiative has reached 10 provinces in the two regions, with 80 sites established. Twenty-two rice varieties were made accessible, which benefited 168 rice farmers in the target areas.

## Rice specialists

Training programs are crucial in the dissemination of information and technologies to AEWs and farmers. With the numerous training programs PhilRice conducts, it is vital to know their impact on the trainees and the communities they serve.

A 2017 tracer study showed impressive impacts from the cohort of trainees under the Rice Specialists' Training Course (RSTC) on *PalayCheck* and *Palayamanan* Systems from 2008 to 2010. The said course is among the major training courses that our Technology Management and Services Division offers. The study team members interviewed 135 of the 347 rice sufficiency officers and AEWs. The study found that 87% were with the government, particularly in the agriculture sector doing research, extension work, and training. The specialists reached an average of 29,211 farmers, AEWs , and other rice stakeholders through capacity enhancement activities from 2008 to 2017.

The knowledge they shared in their communities were mostly on management of pests and diseases, water-saving technologies, high-quality seeds and recommended seeding rates, and nutrient deficiency and management.

The interviewees shared that the training was very helpful in doing their work and in finding new jobs or getting promoted (77%). Some 44% of them got promoted while 30% had secured permanent positions. They testified that the training boosted their confidence in doing their work as extension worker, facilitator, resource person, and technical staff.

## Other agencies

The National Irrigation Administration-M'lang/Malasila Rivers Irrigation System (NIA-MMRIS), with alternate wetting and drying (AWD) as a water management method, improved yields from 4.78 to 6.84t/ha. NIA-MMRIS members learned about the AWD technology through PhilRice Midsayap. The branch station promoted this technology because of the frequent water supply shortage in M'lang, North Cotabato. Complementary methods for AWD such as the use of high-quality seeds and integrated nutrient management were included in their training curriculum. The trainees practiced these methods even after the training, which led to positive results. They increased their service area from 7,190.19ha to 7,338.63ha and their cropping intensity from 97% to 100%.

The success of NIA-MMRIS led to the local NIA-RIS office and their federation of irrigators' associations working together to pass a board resolution for the institutionalization of alternate wetting and drying.

Currently, NIA-MMRIS is mentoring three other irrigators' associations, two in North Cotabato and one in Sultan Kudarat, in adapting and institutionalizing the AWD technology.

**Training programs are crucial in the dissemination of information and technologies to AEWs and farmers. With the numerous training programs PhilRice conducts, it is vital to know their impact on the trainees and the communities they serve.**


## RiceBIS: More than the Million Dream

Never did they think they could earn millions from farming!

But this materialized for most, if not all, RiceBIS farmers' cooperatives, such as the Esperanza RiceBIS Producers Coop (ESRIPCO) cluster in Agusan del Norte as they embraced seed production. A Site Technical Working Group was formed for each RiceBIS community composed of various organizations such as the Agricultural Training Institute and local government units. In 2019, members felt that rice farming alone was not optimal and that there was a need to raise their yield to maximize income. Thus, they joined the RiceBIS program phase 1. Individual net incomes grew from around P20,000 to P82,000 per year – which is an astounding 4.41 times more. From barely making ends meet, the farmers were now able to expand their rice production areas, invest in farm machinery, and even buy cars.

This success is not a fluke. Other farmers' groups organized by the RiceBIS program that engaged in seed production, such as the Rayuray Farmers Agriculture Coop (RFAC) in Batac City, Ilocos Norte also made it. The six clusters with 27 farmers (now 52 farmer-partners) from originally three associations were organized into a cooperative in 2018 to create a combined area of 36.47ha. They have engaged in product consolidation, processing, and marketing of products since they started, which resulted in the growth of their P68,793 initial capital to P4.1M total assets composed of cash, equipment, and machinery. This success even rewarded them with the Most Outstanding Cooperative in Ilocos Norte (Micro level) in October 2021.

The RiceBIS clustering approach has also greatly helped farmers in Bicol. The Balangibang Palayamanan Farmers Incorporated (BPFI) used to make just about P250,000 a year. After RiceBIS, they started to make millions as they learned to communicate and negotiate with institutional buyers.



With 41 members and 149 associate members, their cooperative was able to supply rice to LGUs in Bicol and several foundations that brought them sales amounting to approximately PhP4M. RiceBIS interventions were among the significant factors in elevating their association's income from P2.3M in 2019 to P6.3M in 2020. Thus, they are worth P19.2M in assets in 2021.

Broadly speaking, while the RiceBIS project aims to increase the productivity, cost-effectiveness, and profitability of rice farming as evidenced by the stories of the cooperatives above, these can also prove that the project did more than that. It has also changed the general mentality of the organized farmers. Specifically, many of them felt the need and the benefits of being agripreneurs.

"It was difficult at first but as time went by, we gained knowledge and confidence. We realized that in farming, we should also pay attention to processing and marketing our harvests so that our net income would not stagnate," officials summarized the experience of Marasat Grande and Dagupan RiceBIS Association in San Mateo, Isabela.

The MarDag cooperative, as we write, is engaged in three agroenterprises, namely *Bigasan sa Barangay*, custom service provision, and *KADIWA* ni *Ani at Kita* outlet, which, in 2022, respectively reported net surplus of P29,729; P81,685; and P40,627.

The same could be said of Pinagbuklod na Adhika Multipurpose Coop (PNAMC) facility in Macarse, Zaragoza, Nueva Ecija. While they took pride in their increase in yield, they decided to process their *palay* to milled rice to avoid being at the mercy of traders. "After buying paddy rice and selling milled rice, we saw how our profit increased, individually and as a group. We are now trying to acquire a facility for *palay* storage so that we can continue this business," leaders of PNAMC narrated.

In Murcia, Negros Occidental, the RiceBIS Negros Agrarian Reform Cooperative has also achieved significant strides. They have made significant income from brown rice, which they sell at P50-70/kg giving

**These are but some of the joyful stories of farmers showing that the RiceBIS project made them internalize the power of working together. It has changed their mindsets from individualism to collectivism and from being mere farmers to agripreneurs that enlightened their views and attitudes toward farming.**

them P9.00 profit per kilogram. This strategy is better than selling their fresh *palay* harvest at P17-23.00. In 2020, the 44-member cooperative generated P50,000 net income. In Midsayap, North Cotabato, PhilRice introduced to farmers inbred rice seed production. This initiative has encouraged farmers to step up their game by preparing themselves to become seed growers.

RiceBIS has also enkindled new aspirations among farmers, making them realize that they can do more as individuals for their families and communities. This is the case of the *Samahan ng mga Magbubukid sa Barangay Antipolo* in Sariaya, Quezon Province. The farmers decided to form the organization to change the old portrayal of farmers as poor and helpless. By forming the organization, they have taken a major step towards changing their story as a community.

Additionally, RiceBIS has even inspired some to expand their business beyond agriculture. "After I learned the basics of how to be an entrepreneur, I started my own business. I made *espasol* and *leche flan* so I gained additional profit," a PNAMC lady member related.

RiceBIS must have also helped farmers feel fulfilled and gratified, especially those members of cooperatives who started buying the produce of other farmers in the community. Thus, it is not astonishing that many of them developed the sense of contentment in farming.

These are but some of the joyful stories of farmers showing that the RiceBIS project made them internalize the power of working together. It has changed their mindsets from individualism to collectivism and from being mere farmers to agripreneurs that enlightened their views and attitudes toward farming. The breed of new farmers who used to be seafarers, engineers, and bankers who have now invested their time, money, and effort in farming because of RiceBIS can attest to this.

# OUTCOME 7:
## Strengthened institutional capability

Through the concerted efforts of the Institute's divisions, offices, and branch stations, spearheaded by the Integrated Management Systems and Services Office and Internal Audit Unit, PhilRice has sustained its ISO Certifications. The Central Experiment Station (CES) is certified for ISO 9001 (Quality) and 14001 (Environmental Management), while the branch stations are ISO 9001 (QM)-certified.

The Institute has 14 new and upgraded Scientists: 1 Scientist III, 2 Scientist II, and 11 Scientist I. The DOST lauded the Institute for having the highest number of active scientists in the Scientific Career System (SCS) across the country. As a testament to the Institute's innovative culture, PhilRice was recognized by the Intellectual Property Office of the Philippines for having the most number of patents among government institutions in the past 20 years (granted with 15 patents, 47 utility models, 10 industrial designs, 7 trademarks, 11 plant variety protection, and 280 copyrights for a total of 416 filings).

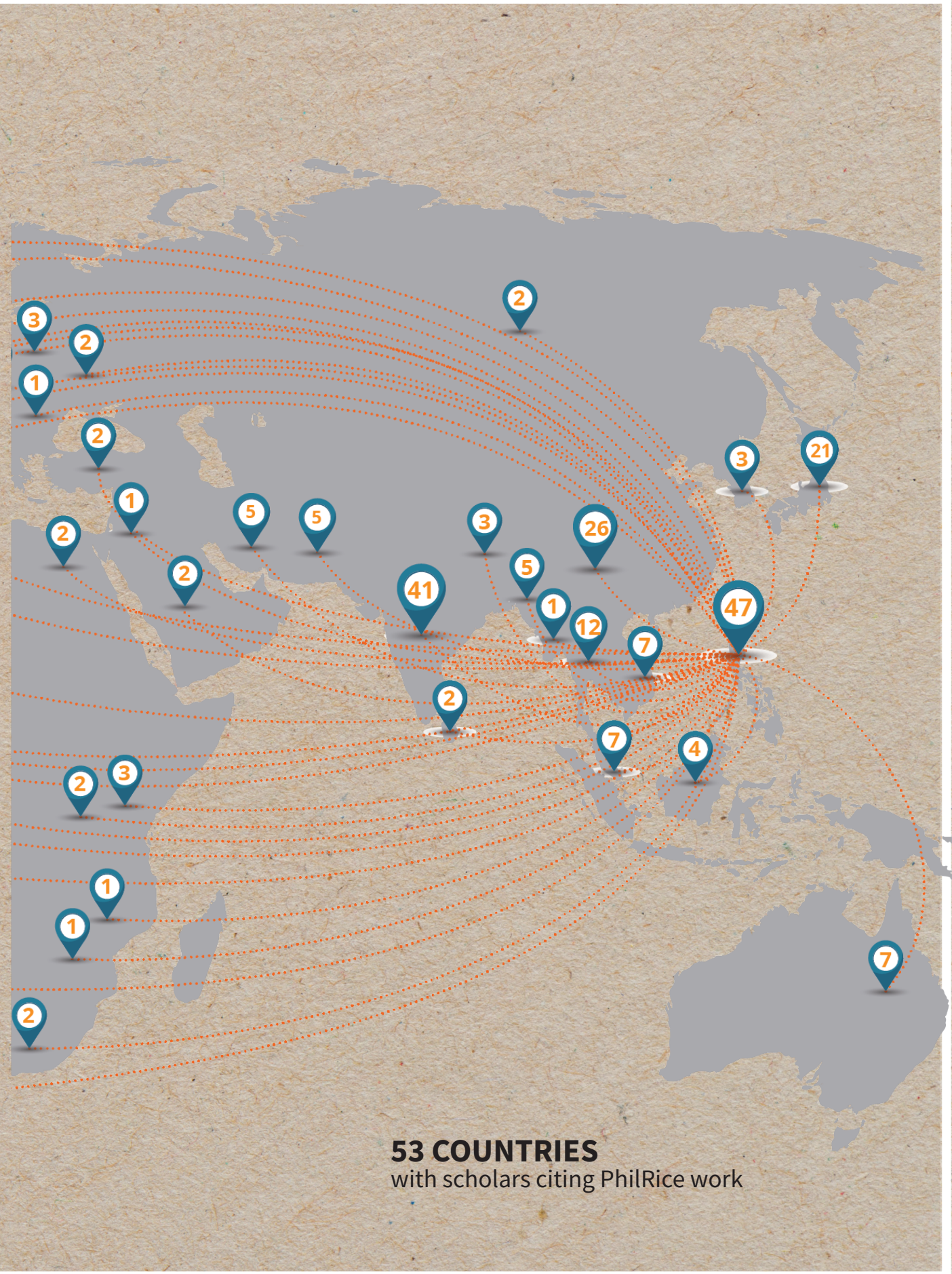
**The DOST lauded the Institute for having the highest number of active scientists in the Scientific Career System (SCS) across the country.**

**To cope with the requirements of rice R4D, the Institute also prioritizes infrastructure projects including the establishment of the state-of-the-art DA-Crop Biotechnology Center (CBC) that is developing plant products to help ensure food security.**

To cope with the requirements of rice R4D, the Institute also prioritizes infrastructure projects including the establishment of the state-of-the-art DA-Crop Biotechnology Center (CBC) that is developing plant products to help ensure food security. The Center also helps enhance and develop a core of suitably trained and specialized personnel on various levels for R&D in biotechnology and related fields. The P277.3-million CBC was funded under the US Public Law (US PL) 480 Program. It has thus far hosted various research studies, theses, or internships on epigenetics, molecular breeding, bioinformatics, and biotech for non-rice scientists, college and postgraduate students.

By combining and improving its human and physical resources, the Institute has realized the outputs, strategies, and impacts indicated in the previously discussed outcomes to achieve optimal quality of its services and to advance rice science for the benefit of its stakeholders.

# PhilRice leads and participates in global discourses in rice




**53 COUNTRIES**
with scholars citing PhilRice work

RiceBIS
BUSINESS INNOVATIONS SYSTEM
Community

RiceBIS aims to develop rice and rice-based enterprises in key provinces nationwide to address men and women farmers' recurring problems of low productivity and competitiveness as well as cross-cutting issues of food insecurity and poverty in rural farming areas.

Established **23** rice-based farming communities with **214** clusters composed of **125** farmer organizations. Through various capacity building and business development activities, the program was able to reach out to **7,503** farmer-members and **9,563**ha.

RiceBIS had two phases of implementation: Phase 1 from 2017-2022; and Phase 2 and Expansion sites from 2020-2022.

**PHASE 1:**
**50** farmer-clusters covering **807** farmers with **900**ha

**PHASE 2:**
**67** farmer organizations covering **94** farmer- clusters with **3,957** farmers and **4,487**ha

Meanwhile, **expansion sites** have **6** communities composed of **70** clusters with **2,739** farmers covering **4,176**ha

## YIELD INCREASE

PHASE 1

**5.22t/ha**
which is 0.59 tons higher than its baseline yield of 4.63t/ha.

Average Dry Season (DS) Yield, Irrigated (2018-2022)

PHASE 2

**4.38t/ha**
which is 0.38 tons higher than its baseline yield of 4.0t/ha

Average Dry Season (DS) Yield, All Ecosystems (2021-2022)

## EXPANSION SITES

## POSTHARVEST LOSSES

Postharvest losses were also collected in the project sites with focus on the losses incurred from harvesting, piling, and threshing operations, which occupy the 4.29 percentage points of the 16.47% national average PH losses.

**15.28%**
PH losses 2021WS

**14.67%**
PH losses 2022DS

# REDUCE UNIT COST

**4.57t/ha**
resulting in an average per season increment of 0.41 tons from their baseline yield of 4.16t/ha

Average Wet Season (WS) Yield, Irrigated (2016-2021)

The average DS unit cost in 2018-2022 is **P10.41/kg** and **P10.60/kg** in WS within the 2017-2021 period.

**4.04t/ha**
which is 0.19 tons higher than its baseline yield 3.85t/ha

Average Wet Season (WS) Yield, All Ecosystems (2021-2022)

Consequently, the unit cost is reduced from **P14.18/kg** in 2020DS to an average of **P11.91/kg** in the 2021-2022DS; and from **P14.84/kg** in 2019WS to an average of **P12.71/kg** in 2020-2021WS.

In irrigated areas, farmers harvested **0.22t/ha** more during DS implementation; reaping more by **0.63t/ha** in the WS. In rainfed areas, harvest was **26%** higher in the DS but had slightly reduced by **11%** in WS compared with the baseline data. Overall, the average WS yield in 2020-2021 is **12%** higher than the baseline yield of **3.52t/ha** and **3%** higher than the baseline yield of **3.67t/ha** in 2021 to 2022DS.

# INCREASE IN FARMING HOUSEHOLD INCOME

**25%**
Increase in annual real income from rice production and rice-based agroenterprises.

**PHASE 1**

**47%**
Increase in annual income (real values)

**PHASE 2**

**100%**
Increase in annual real income

**EXPANSION SITES**

# RCEF

(DA-PhilRice-led Seed & Extension Programs)

## Toward improving the competitiveness of the Filipino rice farmers

OUTCOMES ACHIEVED:

## Improved rice yield through higher technology adoption

### Increased adoption of certified seed of inbred varieties

Since its maiden implementation, the RCEF Seed Program and its partner-LGUs distributed around 10.5 million bags of certified inbred rice seeds to about one million farmers in 57 provinces (data as of 2022 wet season). The farmer-recipients also received reading materials on recommended rice production technologies and practices from the PhilRice-led component of the RCEF Extension Program.

There were also 333 unique PalaySikatan technology demonstration sites that were established from 2020 DS to 2022 DS. PalaySikatan showcases the benefits of using recommended rice varieties and modern farm technologies in select areas in the country.

### Improved adoption of yield-enhancing technologies

From late 2019 to mid-2022, the PhilRice-led component of the RCEF Extension Program conducted 11 batches of RCEF Rice Specialist Training Course with 297 graduates, 54 batches of RCEF Training of Trainers with 1,349 graduates; and 59 batches of Farmer Field School with 1,729 famer-graduates.

Under the program, the Institute also developed 275 titles of information, education, and communication materials in various formats. More than three million copies of these materials were distributed to farmers and intermediaries (eg., rice specialists, trainers, AEWs) in the 57 provinces covered by the program.

More than 18.6M beneficiaries (not unique) were also reached through various knowledge-sharing and learning activities.

## Enhanced partnerships

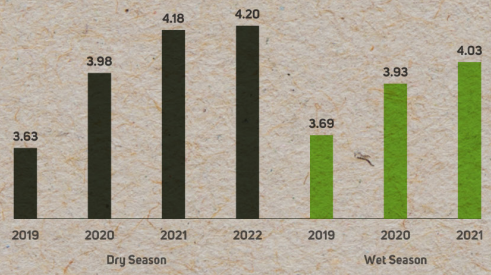
DA-PhilRice through its RCEF Seed and Extension Programs also engaged various public and private groups in its implementation mechanisms.

In 2021, the Philippines reached its record-breaking palay production output of

# 19.96 MILLION METRIC TONS

Report from DA-PhilRice showed that the national *palay* output increased by around 670,000 tons. More than 390,000 tons or 59% of these were gained in the 42 provinces served by the RCEF Seed and Extension Programs implemented by the Institute.

## Increase in yield




Baseline (2019) vs monitored (2020-2021) yield performance of RCEF-covered provinces

## Increase in seed utilization

**96%**
in 2022 DS, from 85% in 2020 DS

**97%**
in 2021 WS, from 94% in 2020 WS

## Reduction in seeding rate

from 88kg in 2019 WS to

**61kg/ha**

in 2021 WS

## Gain in knowledge (GIK)

Graduates of the following training courses achieved an average GIK of:

RSTC **62%** | TOT **60%**

## Increase in information access

**71%**
of the surveyed RCEF Seed beneficiaries said they had access to the various communication materials produced in 2021

## Increase in technology adoption

**97%**
of the 71% farmer-recipients who had access to communication materials applied the knowledge they learned

**57** Provincial LGUs

**at least 1K** City/ Municipal LGUs

**58** Seed Growers Cooperatives & Associations

**388** Farm School Owners

# Lessons

1. We need to document and publish our strategic plan; align it with higher goals; and have a participatory process with an impact and outcome-driven R4D paradigm.
2. We need to have a risk management plan to be more responsive; more realistic and focused targets that consider administrative and financial aspects; creative funding strategy; and a rubric or system of monitoring outputs and outcomes, coupled with clear baseline data and performance metrics utilizing IT-based tools, such as dash/scoreboards and Project Management Information System. In relation to the latter, a well-defined extent of control of the accountable office may lessen the likelihood of unmet targets. Performance indicators should correspond to the capacity of the responsible office to achieve them despite the factors beyond control.
3. We also need to recognize behavioral issues of stakeholders especially the farmers in development target-setting. Thus, we may need to deconstruct our concept of development: from information, education and communication to behavioral change communication; from public relations to stakeholder engagement and advocacy; from specialized training to adaptive learning. This may require a new skills set, hence capacity enhancement should be administered to the staff.
4. We need to increase efforts in using a holistic and clustering approach to rural transformation; stakeholder consultation in our impact areas; playing our role as catalysts or innovations broker; and in scaling our work with strategic partners, such as what we did in the RiceBIS program and the PAG-AHON project that gained good traction and received recognition.
5. We need to conduct extensive industry benchmarking and branch stations planning workshops, engaging stakeholders in their area of responsibility to pinpoint location-specific needs and gaps to come up with more demand-driven and outcome-based action research and development intervention plans and targets. We also need these, along with periodic reviews, to ensure we come up with viable products.

# PhilRice Employees*

| | |
|---|---|
| Briones, Constante T. | Board Secretary IV |

**Internal Audit Unit**

| | |
|---|---|
| Diaz, Erla Q. | Internal Auditor IV |
| Osorio, Sally Grace B. | Internal Auditor II |

**OFFICE OF THE EXECUTIVE DIRECTOR**

| | |
|---|---|
| Alvarez, Rolando F., | Administrative Aide V |
| De Leon, John C. | Executive Director |
| Gaspar, Marjorie Ann B. | Senior Administrative Assistant III |
| Kalaw, Glendaline L. | Executive Assistant III 1 |

**Corporate Services Division**

| | |
|---|---|
| Aquino, Recille G. | Development Management Officer III |
| Duldulao, Patricia Jean B. | Planning Assistant |
| Kalaw, Joselito A. | Development Management Officer IV |

**Rice Competitiveness Enhancement Fund - Program Management Office (RCEF-PMO)**

| | |
|---|---|
| Bordey, Flordeliza H. | Deputy Executive Director IV |
| Briones, Teodora L. | Planning Officer V |
| Corales, Rizal G. | Chief Science Research Specialist |
| Dilla, Myline A. | Supervising Administrative Officer |
| Padilla, Michelle C. | Accountant II |
| Quimson, Alejandro C. | Administrative Aide V |
| Ramos, Elizabeth C. | Administrative Officer III (Cashier II) |

**OFFICE OF THE DEPUTY EXECUTIVE DIRECTOR FOR ADMINISTRATIVE SERVICES AND FINANCE**

| | |
|---|---|
| Conversion, Rosielyn P. | Executive Assistant III |
| Dela Cruz, Ronaldo J. | Administrative Aide IV |
| Montecalvo, Abner T. | Deputy Executive Director IV |

**Administrative Support Division**

| | |
|---|---|
| Borja, Sophia T. | Chief Administrative Officer |
| Clariz, Ma. Teresa R. | Administrative Officer IV |
| Gibe, Ma. Ethel P. | Supervising Administrative Officer |
| Lamson, Florencio B. | Administrative Officer III |
| Miranda, Guadalupe C. | Administrative Officer IV |
| Molina, Elizabeth P. | Administrative Officer V |

**Financial Management Division**

| | |
|---|---|
| Agudia, Joy T. | Supervising Administrative Officer |
| Corpuz, Mary Grace dG. | Chief Accountant |
| Padolina, Maria Romina F. | Administrative Officer V |
| Pantaleon, Michelle E. | Administrative Assistant III |
| Requito, Jasmin G. | Administrative Officer III |
| Salvador, Marychelle B. | Supervising Administrative Officer |

**Physical Plant Division**

| | |
|---|---|
| Alonzo, Fe G. | Supervising Administrative Officer |
| Bajit, Renato B. | Chief Administrative Officer |
| Dela Cruz, Violy S. | Administrative Assistant III |
| Pajarillo, Raymond T. | Engineer II |

* As of 2022

**Integrated Management Systems and Services Office**

| | |
|---|---|
| Narca, Gina B. | Administrative Officer V |

**Business Development Division**

| | |
|---|---|
| Alfon, Hazel B. | Sales and Promotion Supervisor III |
| Bongat, Fidela P. | Development Management Officer V |
| Capistrano, Maureen P. | Sales and Promotion Supervisor III |
| Cruz, Rodjason B. | Warehouseman II |
| De Gracia, Irmina R. | Dormitory Manager III |
| Narvadez, Chona Mae S. | Sales and Promotion Supervisor IV |
| Orcino, Jose A. | Sales and Promotion Supervisor II |
| Serapion, Jerry C. | Intellectual Property Rights Specialist IV |

**Procurement Management Division**

| | |
|---|---|
| Angellano, Phebe Gayle M. | Administrative Officer II |
| Donayre, Abegail T. | Administrative Officer V |
| Hibionada, Felylee B. | Administrative Officer IV |
| Labay, Anna Liza P. | Administrative Officer II |
| Miguel, Marjorie T. | Administrative Officer II |
| Musa, Christopher Dave B. | Administrative Officer IV |
| Ravelo, Glenda D. | Chief Administrative Officer |
| Seguritan, Clarivel O. | Administrative Officer IV |
| Tibayan, Maria Cielo J. | Administrative Officer V |
| Villaroman, Grace S. | Supervising Administrative Officer |

**OFFICE OF THE DEPUTY EXECUTIVE DIRECTOR FOR RESEARCH (ODR)**

| | |
|---|---|
| Bulaon, Irish D. | Librarian II |
| Francia, Shereen R. | Executive Assistant III |
| Quilang, Eduardo Jimmy P. | Chief Science Research Specialist |
| Rimocal, Geraldine | Administrative Assistant V |
| Salvador, Virginia P. | Librarian III |

**Plant Breeding and Biotechnology Division**

| | |
|---|---|
| Barroga, Wilhelmina V. | Science Research Specialist II |
| Braceros, Rustum C | Science Research Specialist II |
| Cabusora, Christopher C. | Senior Science Research Specialist |
| Caguiat, Joanne D. | Senior Science Research Specialist |
| Gramaje, Leonilo V. | Senior Science Research Specialist |
| Manangkil, Oliver E. | Chief Science Research Specialist |
| Manigbas, Norvie L. | Chief Science Research Specialist/Scientist II |
| Pacada, Imeldalyn G. | Senior Science Research Specialist |
| Pariñas, Julieta F. | Science Research Specialist I |
| Waing, Frodie P. | Senior Science Research Specialist |

**Rice Chemistry and Food Science Division**

| | |
|---|---|
| Bandonill, Evelyn H. | Supervising Science Research Specialist |
| Bulatao, Rodel M. | Science Research Specialist II |
| Corpuz, Henry M. | Senior Science Research Specialist |
| Mamucod, Henry F. | Senior Science Research Specialist |
| Manaois, Rosaly V. | Senior Science Research Specialist/Scientist I |
| Morales, Amelia V. | Science Research Specialist I |
| Ramos, Riza A. | Supervising Science Research Specialist/Scientist I |
| Romero, Marissa V. | Chief Science Research Specialist |

**Agronomy, Soils and Plant Physiology Division**

| | |
|---|---|
| Alosnos, Elmer D. | Senior Science Research Specialist |
| Asilo, Sonia L. | Supervising Science Research Specialist |
| Cañete, Sandro D. | Senior Science Research Specialist |
| Capistrano, Ailon Oliver V. | Supervising Science Research Specialist |
| Cruz, Jayvee A. | Senior Science Research Specialist/Scientist I |
| De Dios, Jovino L. | Supervising Science Research Specialist |
| Espiritu, Alex J. | Science Research Specialist II |
| Espiritu, Annie E. | Science Research Specialist II |
| Grospe, Filomena S. | Science Research Specialist I |
| Juliano, Leylani M. | Chief Science Research Specialist |
| Mabalay, Mary Rose O. | Supervising Science Research Specialist |
| Malabayabas, Myrna D. | Supervising Science Research Specialist |

**Crop Protection Division**

| | |
|---|---|
| Avellanoza, Eleanor S. | Science Research Specialist II |
| Donayre, Dindo King M. | Senior Science Research Specialist/Scientist I |
| Duca, Ma. Salome V. | Science Research Specialist II |
| Marquez, Leonardo V. | Senior Science Research Specialist |
| Martin, Edwin C. | Supervising Science Research Specialist/Scientist I |
| Niones, Jennifer T. | Supervising Science Research Specialist |
| Rillon, Genaro S. | Chief Science Research Specialist |
| Rillon, Juliet P. | Supervising Science Research Specialist |
| Santiago, Gilely C. | Senior Science Research Specialist |
| Santiago, Salvacion E. | Science Research Specialist I |
| Valdez, Evelyn M. | Senior Science Research Specialist |

**Rice Engineering and Mechanization Division**

| | |
|---|---|
| Abon, John Eric O. | Senior Science Research Specialist |
| Bautista, Elmer G. | Supervising Science Research Specialist/Scientist I |
| General, Daryl F. | Farm Superintendent I |
| Irang, Reynaldo E. | Farm Superintendent III |
| Juliano, Arnold S. | Supervising Science Research Specialist |
| Martin, Rachelle Marie S. | Science Research Specialist I |
| Miano, Joey P. | Science Research Specialist II |
| Orge, Ricardo F. | Supervising Science Research Specialist/Scientist II |
| Pascual, Kristine S. | Senior Science Research Specialist |
| Ramos, Joel A. | Supervising Science Research Specialist |
| Ramos, Paulino S. | Senior Science Research Specialist |
| Regalado, Manuel Jose C. | Chief Science Research Specialist/Scientist I |
| Tallada, Jasper G. | Supervising Science Research Specialist |
| Villota, Katherine C. | Science Research Specialist II |

**Genetic Resources Division**

| | |
|---|---|
| Brena, Susan R. | Supervising Science Research Specialist |
| Caguiat, Xavier Greg I. | Senior Science Research Specialist |
| Duldulao, Malvin D. | Science Research Specialist I |
| Ferrer, Marilyn C. | Senior Science Research Specialist |
| Mananghaya, Teodora E. | Science Research Specialist II |
| Niones, Jonathan M. | Chief Science Research Specialist/Scientist I |
| Perez, Loida M. | Supervising Science Research Specialist |

**Crop Biotechnology Center**

| | |
|---|---|
| Dela Cruz, Arlen A. | Supervising Science Research Specialist |
| Ordonio, Reynante L. | Senior Science Research Specialist/Scientist I |
| Suralta, Roel R. | Chief Science Research Specialist/Scientist III |
| Zagado, Ronan G. | Chief Science Research Specialist |

**Socioeconomics Division**

| | |
|---|---|
| Baltazar, Marco Antonio M. | Science Research Specialist II |
| Beltran, Jesusa C. | Chief Science Research Specialist/Scientist I |
| Litonjua, Aileen C. | Senior Science Research Specialist |
| Manalili, Rowena G. | Senior Science Research Specialist |
| Manalo, Jaime A. IV | Supervising Science Research Specialist |
| Mataia, Alice B. | Supervising Science Research Specialist |

**OFFICE OF THE DEPUTY EXECUTIVE DIRECTOR FOR DEVELOPMENT**

| | |
|---|---|
| Barroga, Karen Eloisa T. | Deputy Executive Director IV |
| Gonzales, Roberto E. | Administrative Aide V |
| Lisondra, Joybeth N. | Executive Assistant III |
| Mamaril, Joselito Jr. R. | Administrative Assistant V |

**Community Relations Office**

| | |
|---|---|
| Lanuza, Andrei B. | Senior Science Research Specialist |
| Mandia, Laarnie L. | Planning Officer II |

**Development Communication Division**

| | |
|---|---|
| Antonio, Hazel V. | Senior Science Research Specialist |
| Dacumos, Carlo G. | Creative Arts Specialist II |
| Esmero, Diadem B. | Supervising Science Research Specialist |
| Frediles, Christina A. | Science Research Specialist I |
| Gado-Gonzales, Charisma Love B. | Senior Science Research Specialist |
| Manalo, Hanah Hazel Mavi B. | Senior Science Research Specialist |
| Nidoy, Mary Grace M. | Science Research Specialist II |

**Technology Management and Services Division**

| | |
|---|---|
| Abando, Mark Angelo A. | Senior Science Research Specialist |
| Abaoag, Lea dR. | Chief Science Research Specialist |
| Angeles, Ev P. | Supervising Science Research Specialist |
| Corales, Aurora M. | Chief Science Research Specialist/Scientist I |
| Del Castillo, Kremlin M. | Science Research Specialist II |
| Ilar, Glenn Y. | Supervising Science Research Specialist |
| Manalang, Marvin DJ. | Senior Science Research Specialist |
| Pascual, Joel V. | Supervising Science Research Specialist |
| Pineda, Rowena A. | Senior Science Research Specialist |
| Rivera, Jesusa M. | Science Research Specialist I |

**Information Systems Division**

| | |
|---|---|
| Arocena, Arturo Jr. C. | Information Systems Analyst II |
| Diaz, Consolacion D. | Information Technology Officer I |
| Tamani, Luis Alejandre I. | Information Technology Officer III |

**AGUSAN**

| | |
|---|---|
| Bastasa, Dexter B. | Science Research Specialist II |
| Bequibel, Manny Caesar M. | Farm Superintendent I |
| Bondad, Rochelle Marie P. | Administrative Officer IV |
| Cadiz, Irma O. | Administrative Officer III (Cashier II) |
| Galvez, Kharen R. | Administrative Officer II |
| Magahud, Jehru C. | Senior Science Research Specialist |
| Odtojan, Jesse D. | Warehouseman I |
| Olofernes, Ma. Claire P. | Administrative Assistant II |
| Reyes, Jasmin J. | Chief Science Research Specialist |
| Rivas, Sharen T. | Science Research Specialist II |
| Sarate, Jobelle O. | Accountant II |

| | |
|---|---|
| Seville, Cherryl U. | Supervising Science Research Specialist |
| Tabudlong, Belen M. | Senior Science Research Specialist |
| Tado, Caesar Joventino M. | Director I |
| Tape, Alona P. | Science Research Specialist I |

**BATAC**

| | |
|---|---|
| Alibuyog, Anielyn Y. | Senior Science Research Specialist |
| Baradi, Mary Ann U. | Chief Science Research Specialist |
| Catudan, Bethzaida M. | Supervising Science Research Specialist |
| Ganotisi, Rosana Sabella O. | Administrative Officer III (Cashier II) |
| James, Joel G. | Land Management Officer II |
| Martin, Nonilon I. | Science Research Specialist II |
| Ordonia, Jovelyn P. | Accountant II |
| Orge, Hazel Jane M. | Supervising Administrative Officer |
| Pascual, Sheila Marie C | Administrative Officer II |
| Penera, Mildred L. | Administrative Officer III |
| Pojas, Sonia V. | Science Research Specialist I |
| Salem-Baptista, Camille Shane G. | Administrative Assistant II |
| Sienda, Erven Jay U. | Warehouseman I |
| Taguda, Lex C. | Senior Science Research Specialist |
| Tapec, Leah May DC. | Science Research Specialist I |

**BICOL**

| | |
|---|---|
| Bragais, Jhunn Mark C. | Administrative Officer III |
| De La Torre, Neil P. | Warehouseman I |
| De Peralta, Melanie Aileen C. | Senior Science Research Specialist |
| Dela Cruz, Gideon F. | Administrative Officer III (Cashier II) |
| Dollentas, Rona T. | Supervising Science Research Specialist |
| Enot, Gian Carlo C. | Science Research Specialist II |
| Espiritu, Lovely P. | Accountant II |
| Lapitan, Victoria C. | Director I |
| Mirandilla, Jean Rochielle F. | Science Research Specialist I |
| Palima, Ian Stallone G. | Administrative Officer II |
| Retumban, Ma. Jemah D. | Administrative Assistant II |

**Samar Satellite Station**

| | |
|---|---|
| Sienes, Junior A. | Farm Superintendent I |

**ISABELA**

| | |
|---|---|
| Amar, Gracia B. | Senior Science Research Specialist |
| Batcagan, Jerry D. | Science Research Specialist II |
| Bernardo, April Joy A. | Science Research Specialist I |
| Dela Cruz, Andres Jr. L. | Senior Science Research Specialist (CTI) |
| Dela Cruz, Joselito J. | Farm Superintendent II |
| Duldulao, Joy Bartolome A. | Supervising Science Research Specialist |
| Galapon, Jerome V. | Science Research Specialist I |
| Garcia, Fernando D. | Supervising Science Research Specialist |
| Garcia, Maria Aster Joy A. | Administrative Officer II |
| Malonzo, Ofelia C. | Supervising Science Research Specialist |
| Mandac, Hiyasmin R. | Administrative Officer III (Cashier II) |
| Melegrito, Rouella S. | Administrative Officer II |
| Obana, Angelita B. | Warehouseman I |
| Paggao, Kristine M. | Accountant II |
| Ramos, Fidel M. | Senior Science Research Specialist (CTI) |
| Reyes, Kevin G. | Administrative Officer III |
| Sosa, Nymfa S. | Science Research Specialist I |

**LOS BAÑOS**

| | |
|---|---|
| Angeles, Noriel M. | Senior Science Research Specialist |
| De Guzman, Kristofferson C. | Administrative Officer III |
| Gonzalvo, Belinda M. | Administrative Assistant II |
| Lataza, Elgie M. | Accountant II |
| Merin, Ma. Carmela R. | Administrative Officer III (Cashier II) |
| Olvida, Imelda DG. | Senior Science Research Specialist |
| Ompad, Virginia D. | Science Research Specialist I |
| Quimbo, Michelle C. | Senior Science Research Specialist |
| Relado, Rhemilyn Z. | Director I |
| Talavera, Mel Anthony T. | Senior Science Research Specialist |

**Mindoro Satellite Station**

| | |
|---|---|
| Collado, Wilfredo B. | Chief Science Research Specialist |

**MIDSAYAP**

| | |
|---|---|
| Abdula, Sailila E. | Director I |
| Abdulkadil, Ommal H. | Chief Science Research Specialist |
| Astillo, Marifel A. | Administrative Officer III |
| Balleras, Gina D. | Supervising Science Research Specialist |
| Boholano, Isagane V. | Senior Science Research Specialist |
| Cacanindin, Claire Minette B. | Accountant II |
| Camino, Rhea Ann Jessa I. | Administrative Officer II |
| Cantila, Aldrin Y. | Senior Science Research Specialist |
| Escabarte, Maria Teresa A. | Administrative Officer III (Cashier II) |
| Galvez, Rizalina F. | Administrative Officer I |
| Gandawali, Mohamadsaid B. | Science Research Specialist II |
| Quiring, Sylvia Therese C. | Science Research Specialist II |
| Romarez, Marissa C. | Warehouseman I |
| Sabes, Peter Lyod P. | Supervising Science Research Specialist |
| Salazar, Raffy S. | Science Research Specialist I |
| Sumlay, Datu Ali N. | Science Research Specialist II |

**CMU Field Office**

| | |
|---|---|
| Glang, Mansor K. | Administrative Officer II |
| Imbat, Jenalyn B. | Warehouseman I |
| Noja, Dionrill C. | Farm Superintendent I |

**Zamboanga Satellite Station**

| | |
|---|---|
| Ignacio, Clara Cleopatra T. | Warehouseman I |
| Makakua, Abdulradzak P. | Farm Superintendent I |

**NEGROS**

| | |
|---|---|
| Alvarez, Joey E. | Warehouseman I |
| Bello, Gerald E. | Science Research Specialist I |
| Cabanayan, Maricris S. | Administrative Officer III (Cashier II) |
| Cordova, Jose Arnel E. | Science Research Specialist II |
| Estoy, Gerardo F. Jr. | Director I |
| Jungco, Jason F. | Administrative Officer II |
| Librodo, Rommel John C. | Accountant II |
| Meneses, Glensie G. | Administrative Officer III |
| Mondejar, Cielo Luz C. | Science Research Specialist II |
| Noriega, Antonio S. Jr. | Engineer III |
| Pajarillo, Hermie A. | Farm Superintendent I |
| Palanog, Alvin D. | Senior Science Research Specialist |
| Palanog, May O. | Science Research Specialist I |
| Sta. Ines, Leo T. | Senior Science Research Specialist |
| Suñer, Albert Christian S. | Supervising Science Research Specialist |
| Valdez, Rene E. | Supervising Science Research Specialist |

Philippine Rice Research Institute

**CONDENSED STATEMENT OF FINANCIAL POSITION**

ALL FUNDS (Corporate, BDD and Trust Funds)

As at December 31, 2021

(With Comparative Figures for CY 2020)

| | NOTES | 2021 | 2020 |
|---|---|---|---|
| **ASSETS** | | | |
| Current Assets | | | |
| Cash and Cash Equivalents | 3.4, 4 | 2,945,475,452.05 | 1,509,077,442.32 |
| Receivables, Net | 3.5, 5 | 302,823,529.11 | 1,127,796,577.57 |
| Inventories | 3.6, 6 | 985,502,536.87 | 350,498,957.49 |
| Other Assets | 7 | 33,601,960.16 | 777,441,487.98 |
| Total Current Assets | | 4,267,403,478.19 | 3,764,814,465.36 |
| Non-Current Assets | | | |
| Property, Plant and Equipment, Net | 3.7, 8 | 1,180,419,325.40 | 1,223,248,501.38 |
| Biological Assets | 9 | 103,740.00 | 92,740.00 |
| Total Non-Current Assets | | 1,180,523,065.40 | 1,223,341,241.38 |
| TOTAL ASSETS | | 5,447,926,543.59 | 4,988,155,706.74 |
| **LIABILITIES** | | | |
| Current Liabilities | | | |
| Financial Liabilities | 3.3b, 10 | 382,762,663.04 | 1,036,133,394.89 |
| Inter-Agency Payables | 3.3b, 11 | 370,207,857.59 | 464,434,837.61 |
| Intra-Agency Payables | 3.3b, 12 | 0.00 | 190,618,221.44 |
| Trust Liabilities | 3.3b, 13 | 5,897,003.00 | 5,331,699.85 |
| Deferred Credits/Unearned Income | 3.3b, 14 | 29,574,937.93 | 49,251,145.44 |
| Provisions | 3.3b, 15 | 136,054,411.82 | 125,748,091.69 |
| Other Payables | 3.3b, 16 | 396,169,473.59 | 370,363,326.37 |
| Total Current Liabilities | | 1,320,666,346.97 | 2,241,880,717.29 |
| TOTAL LIABILITIES | | 1,320,666,346.97 | 2,241,880,717.29 |
| TOTAL ASSETS LESS LIABILITIES | | 4,127,260,196.62 | 2,746,274,989.45 |
| **NET ASSETS/EQUITY** | | | |
| Equity | | | |
| Government Equity | 27 | 4,127,260,196.62 | 2,746,274,989.45 |
| TOTAL NET ASSETS/EQUITY | | 4,127,260,196.62 | 2,746,274,989.45 |

Philippine Rice Research Institute

**CONDENSED STATEMENT OF FINANCIAL POSITION**

ALL STATIONS - ALL FUNDS (Consolidated - Corporate, BDD,RCEF and Trust Funds)

As at December 31, 2022

| | NOTES | 2022 | 2021 |
|---|---|---|---|
| **ASSETS** | | | |
| Current Assets | | | |
| Cash and Cash Equivalents | 3.4, 4 | 3,019,888,136.30 | 2,945,475,452.05 |
| Receivables | 3.5, 5 | 311,872,688.57 | 302,823,529.11 |
| Inventories | 3.6, 6 | 669,121,301.32 | 985,502,536.87 |
| Other Current Assets | 7 | 27,301,874.07 | 33,601,960.16 |
| Total Current Assets | | 4,028,184,000.26 | 4,267,403,478.19 |
| Non-Current Assets | | | |
| Property, Plant and Equipment | 3.7, 8 | 1,124,049,664.36 | 1,180,419,325.40 |
| Biological Assets | 9 | 88,340.00 | 103,740.00 |
| Total Non-Current Assets | | 1,124,138,004.36 | 1,180,523,065.40 |
| TOTAL ASSETS | | 5,152,322,004.62 | 5,447,926,543.59 |
| **LIABILITIES** | | | |
| Current Liabilities | | | |
| Financial Liabilities | 3.3b, 10,11 | 416,538,139.23 | 382,762,663.04 |
| Inter-Agency Payables | 3.3b , 12 | 318,493,476.36 | 370,207,857.59 |
| Trust Liabilities | 3.3b, 14 | 4,029,396.66 | 5,897,003.00 |
| Deferred Credits | 3,3b, 15 | 17,666,593.43 | 29,574,937.93 |
| Provisions | 3,3b, 16 | 135,725,421.89 | 136,054,411.82 |
| Other Payables | 3.3b, 17 | 398,571,217.68 | 396,169,473.59 |
| Total Current Liabilities | | 1,291,024,245.25 | 1,320,666,346.97 |
| TOTAL LIABILITIES | | 1,291,024,245.25 | 1,320,666,346.97 |
| TOTAL NET ASSETS (Total Assets less Liabilities) | | 3,861,297,759.37 | 4,127,260,196.62 |
| **NET ASSETS/EQUITY** | | | |
| Equity | | | |
| Government Equity | 29 | 3,861,297,759.37 | 4,127,260,196.62 |
| TOTAL NET ASSETS/EQUITY | | 3,861,297,759.37 | 4,127,260,196.62 |

**DA-PHILRICE CENTRAL EXPERIMENT STATION**
Maligaya, Science City of Muñoz, 3119 Nueva Ecija

**BRANCH STATIONS:**

**DA-PhilRice Batac**, MMSU Campus, Batac City, 2906 Ilocos Norte; Mobile: 0919-944-3016; Email: batac_1.station@mail.philrice.gov.ph
**DA-PhilRice Isabela**, Malasin, San Mateo, 3318 Isabela; Mobile: 0947-996-2554; 0905-797-4406; Email: isabela.station@mail.philrice.gov.ph
**DA-PhilRice Los Baños**, UPLB Campus, Los Baños, 4030 Laguna; Tel: (49) 501-1917; Mobile: 0915-919-5150; Email: losbanos.station@mail.philrice.gov.ph
**DA-PhilRice Bicol**, Batang, Ligao City, 4504 Albay; Tel: (52) 431-0122; 742-0690; -0684; Email: bicol.station@mail.philrice.gov.ph
**DA-PhilRice Negros**, Cansilayan, Murcia, 6129 Negros Occidental; Mobile: 0912-638-5019; 0936-160-2498; Email: negros.station@mail.philrice.gov.ph
**DA-PhilRice Agusan**, Basilisa, RTRomualdez, 8611 Agusan del Norte; Telefax: (85) 806-0463; Mobile: 0908-880-8976; Email: agusan.station@mail.philrice.gov.ph
**DA-PhilRice Midsayap**, Bual Norte, Midsayap, 9410 North Cotabato; Mobile: 0938-374-1040; Email: midsayap.station@mail.philrice.gov.ph

**SATELLITE STATIONS • FIELD OFFICE • LIAISON OFFICE:**

**Mindoro Satellite Station**, Alacaak, Sta. Cruz, 5105 Occidental Mindoro; Mobile: 0919-495-9371; 0956-632-1002
**Samar Satellite Station**, UEP Campus, Catarman, 6400 Northern Samar; Mobile: 0948-754-5994; 0921-555-5500
**Zamboanga Satellite Station**, WMSU Campus, San Ramon, 7000 Zamboanga City • Mobile: 0975-526-0306; 0975-275-1175
**DA-PhilRice Field Office**, CMU Campus, Maramag, 8714 Bukidnon; Mobile: 0909-822-9813; 0975-174-3531
**Liaison Office**, BSWM Ground Floor, Elliptical Road, Diliman, Quezon City; Mobile: 0928-915-9628

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