PhilRice Magazine

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Philippine Rice Research Institute

HARNESSING INNOVATION FORCES

for better rice communities

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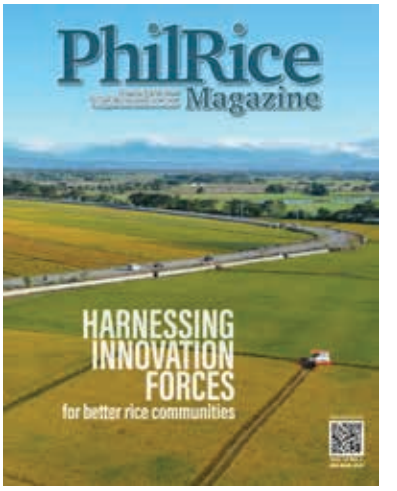
ABOUT THE COVER

Agricultural innovation is pivotal in addressing global food challenges. When fully realized, it empowers societies and boosts economies by increasing productivity, reducing production costs, enhancing climate change resilience and mitigation, fostering community-driven solutions, and actively involving farmers in the different pages of the rice value chain, among other things. Harnessing all forces within the innovations system, PhilRice continues to empower rice farmers through science-driven and market-oriented innovations, ultimately transforming rice-farming communities.



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2001 Gawad Florendo Awardee • 2006 Binhi Hall of Fame Awardee, "Agricultural Newsletter of the Year" • 2009, 2018, 2019 Binhi Agri Magazine of the Year • 2022 Outstanding Institution for Science Journalism • 2022 Best Free Food Publications • 2022 Binhi Hall of Fame Awardee, Best Agricultural Magazine

EXECUTIVE DIRECTOR'S
NOTE

Improving technology transfer performance

Technological innovation has become an important source of sustainable economic growth, thanks to the investments in Research and Development (R&D) made by national governments, private firms, and other organizations over the years. Investments in R&D improved our knowledge and technological capabilities. Closely associated with technological innovation is the concept of technology transfer, which is defined in a variety of ways.

It can be a process for converting research into economic development following the bi-directional model of science-push and market-pull (or supply-push and demand-pull). It can also refer to a process for conceiving a new application or use for an existing technology or the movement of technology by some channels from one site to another. Science-push means that a technology holder or supplier initiates the technology transfer process and pushes technology toward the market. On the other hand, market-pull means that the process is initiated by whatever entity is seeking a solution to satisfy a market need or demand.

The development of technology transfer has evolved as well from being largely legal, to administrative, and to underscoring more marketing perspectives – like designing a marketing strategy around segmentation, targeting, differentiation, and positioning. Technology management practitioners have also been exploring ways to improve technology transfer performance (TTP). Their objective is to make the commercialization of technologies commensurately satisfactory with the investments poured into R&D. Another goal is to accelerate technology transfer itself. Factors that influence TTP have been categorized into supplier/user/technological characteristics, the user-supplier relationship, transfer channels and mechanisms, context, and institutional factors.

From the foregoing, it can be surmised that TTPs can differ depending on the technology transfer direction and technology marketing strategy, and their interaction, among other concerns. For example, the ANOVA results from a recent study confirmed that TTPs indeed differ by direction. Moreover, the TTP of demand-pull is higher than that of supply-push, on average. The results also supported an earlier finding that needs-based technology transfer practices yielded better TTP. The authors, however, cautioned that demand-pull technology transfer may not always produce better TTP for R&D organizations, and argued its use with appropriate technology marketing strategies like market segmentation and customer targeting (see WJ Choe and I Ji, 2019; LinkedIn, 2023; www.cdeep.iitb/ent203-l2).

This issue of the DA-PhilRice Magazine puts together our varying experiences on the subject, including our deliberate attempts in the public sector to improve on TTP beyond its typical measure to generate patents, licenses, spin-offs, publications, or prototypes. The stories speak more of broader changes like community development and farmers' competitiveness outcomes resulting from our activities along the R-D-E and even marketing continuum of technology transfer – or technology promotion, as we prefer to call it at PhilRice, since way back. This is to imply the many field verifications and demonstrations we do as part of thorough data and evidence gathering to arrive at new and better technology alternatives to promote. "Transfer" is too physical in meaning (SR Obien, pers comm).

Still, in modern literature jargon, "technology transfer" has been replaced by "agricultural innovation systems" (AIS) and by "technology scaling" (TS) – to focus on social coordination, innovation networks, and the role of intermediaries (innovation facilitators or brokers) in spreading innovations. AIS recognizes that innovation is not a linear process but involves multiple actors, institutions, and the interactions of those involved in the innovations system, such as farmers, researchers, policymakers, extension agents, the private sector, and civil society. It is complemented by TS, which involves the broad and sustained utilization of innovations by the public and private sector to reach as many users as possible and transform agricultural systems and the sharing of smart technologies with Filipino rice farmers and their communities (RL Navarro, pers comm).

Now on its 6th year of implementation, the Rice Competitiveness Enhancement Fund regularly reviews its performance to further improve its services to rice farmers.

RCEF contributes to PH's record-breaking production

Amidst the country's feat of achieving the highest rice output of 20.06 million metric tons in 2023, Sen. Cynthia A. Villar has lauded implementers of the Rice Competitiveness Enhancement Fund (RCEF) programs led by PhilRice.

"Thank you, PhilRice, for [always giving your best efforts]. With this gain in rice production, I urge you to continue supporting our farmers to be more competitive," Villar, chair of the senate committee on agriculture and food, said during the recent RCEF annual review held in Nueva Ecija.

As a show of sustained backing, Villar announced the possible extension of the RCEF programs to reach the target average yield of 6t/ha from the current average of less than 5t/ha.

For his part, PhilRice Executive Director John C. De Leon noted the contributions of the RCEF Seed and Extension programs, led and co-led by the Institute.

"We recognize the commendable initiatives of the dedicated RCEF implementers. Thank you for your unwavering commitment to advancing our agricultural sector, which has not only increased rice competitiveness but has also contributed to attaining this record *palay* output," he said.

Implementers reported that seed recipients boosted their average yield as shown in the midterm and seasonal monitoring and evaluation surveys conducted in the 42 original target provinces of the RCEF Seed Program.

In the 2023 dry season (DS), their average yield grew from 3.63 in 2019 to 4.36t/ha while the use of the recommended packages of technologies in PalaySikatan demonstration sites averaged higher at 5.22t/ha.

As of January 21, 2024, data from the Rice Seed Monitoring System (RSMS), maintained that 15.85 million bags of certified seeds had been distributed from the 2020 DS to the 2024 DS, repeatedly benefitting over 2 million farmers.

Under the Seed Program, PalaySikatan techno-demo farms were established in 704 sites, more than 400 cities/ municipalities were given site-specific recommendations, and digital innovations, such as RSMS and Binhi e-Padala were improved for easy distribution and monitoring of seeds.

The Training of Trainers on Pest and Nutrient Management under the RCEF Extension Program conducted by PhilRice also significantly enhanced the participants' knowledge, boosted their confidence in technology dissemination, and empowered them to actively engage in carrying out training activities.

RCEF implementers said that each region now has 25-48 rice specialists who will help farmers diagnose field problems while more than 4,300 graduates of ToT nationwide are now capacitating farmers in more than 300 farm schools. More than 4,000 farmers were also trained on the season-long production of high-quality inbred rice, seed certification, and farm mechanization, and on pest and nutrient management.

The seed distribution activities and training courses were also complemented with more than 5 million copies of IEC materials that were produced and distributed nationwide, and with various formats of knowledge-sharing and learning events reaching various rice stakeholders. **- CHRISTINE MAE A. NICOLAS and YOBHEL LOUISSE P. BELTRAN**

DA's 3-year plan backed

PhilRice strategic plan for 2023-2028 aligns with and supports the three-year plan of the Department of Agriculture on smart, modern, and adaptive agriculture and fishery production systems to increase overall efficiency.

In a press statement, Sec. Francisco P. Tiu Laurel Jr. recently outlined the DA's plan, addressing key challenges in local agriculture, focusing on expansion, modernization, and logistics.

The plan involves the development of efficient logistics systems and a robust digitalization strategy to ensure accurate production data for effective supply chain management.

"In our three-year plan, we're investing over P90 billion in upgrading rice and corn post-harvest facilities. Four decades of neglect in this area have led to significant losses, estimated at 12.7% to 15% of rice production. We aim to rectify these shortcomings," Laurel said.

Agriculture Secretary Francisco P. Tiu Laurel Jr. (R) prioritizes science-based, data-driven governance, and investments in post-harvest facilities as part of the department's three-year plan.

He added that the department will establish new irrigation facilities, zoning and identification of key areas, and improve infrastructures to boost production in land and water areas.

The institute will roll out integrated research programs to enhance rice-farming communities. These include the Rice Seeds System for quality seed access, Scaling Modern Rice Technologies for smart processes, and Rice Business Innovations System for market connections.

"Implemented alongside RCEF and Malusog Rice Programs, these banner programs aim to significantly enhance farmers' productivity and income. We urge all stakeholders to join us in realizing our goal of achieving prosperous rice farming communities and ensuring food security for Filipinos, aligning with DA's objectives," said Dr. John C. de Leon, executive director.

- CHRISTINE MAE A. NICOLAS

New integrated farm management app launched

PhilRice recently launched the 'PalayCheck App,' a new smartphone application, designed to make PalayCheck, an integrated cropping system for rice, more interactive and accessible for stakeholders.

The PalayCheck System comprises nine key checks for crop management areas. The PalayCheck App serves as the mobile counterpart of this system with easy-to-use features for farmers, farm managers, and agricultural extension workers.

Nehemiah L. Caballong, lead developer, said that one of the app's main features is the cropping season calendar, which provides a comprehensive schedule of farm practices, from land preparation and planting to harvesting.

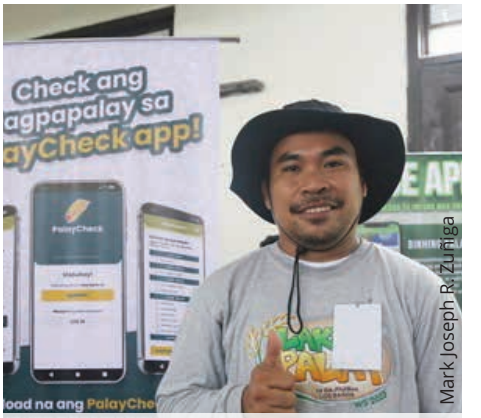
"For a successful harvest, rice farmers should adhere to the recommended schedule of farming practices from start to finish. This feature ensures the farmers' activities are monitored by the app for optimal efficiency," Caballong said.

The app also provides farming recommendations for crop care areas, including pest and disease management, water-use efficiency, and balanced fertilizer use. Caballong explained that these key check recommendations are available in text and video formats for the convenience of farmers.

Another feature is the farm record-keeping function, which provides a summary of the production costs and estimated net income at the end of the season, allowing farmers to accurately monitor their results for future improvement of their farming practices.

Dr. Leylani M. Juliano, lead of SMART Farm Digital Transformation, said that the smartphone application integrates essential farm app features into one, filling the information needs of rice farmers and helping them organize their farm records.

"We encourage our farmers to use this all-in-one app that integrates the agricultural apps developed by PhilRice. Farmers can now digitally access rice production technologies anytime, anywhere," Juliano said.



Mark Joseph R. Zuñiga

The PalayCheck App enables farmers to track their farming activities, expenses, and harvest data, and provides a summary at the end of the season.

The PalayCheck App is now available on Google Play Store at bit.ly/PalayCheckApp for Android users and can also be downloaded from the PhilRice website: www.palaycheckapp.philrice.gov.ph.

- MARK JOSEPH R. ZUÑIGA

NEWS

Zambales ordinances eye less rice production cost

The municipal government of Sta. Cruz has enacted two ordinances that aim to help farmers save on planting and fertilizer costs.

The ordinances espouse increased adoption of the direct-seeded rice (DSR) system and the integration of the balanced fertilization strategy (BFS) program or Abonong Swak, which PhilRice both promotes.

The Philippine Statistics Authority (PSA) reports that 20% of the total rice production cost is eaten up by hired labor. Through the DSR system, farmers can save PhP1.14/kg on hired labor costs as it only requires 1-2 labor days per hectare compared with transplanting that needs 20-25 labor days/ha.

Partial budget analysis also shows that rice farmers, especially in favorable rainfed areas, may gain as much as PhP3,500/ha additional net income by shifting to direct seeding.

Meanwhile, Abonong Swak, which recommends complementing inorganic fertilizer application with organic nutrients based on current yield, can help farmers save PhP2,000-PhP4,000/ha.

In implementing the ordinance on DSR adoption, PhilRice's Policy Research and Advocacy Project has encouraged the Sta. Cruz municipal agriculture office to integrate the technology in its agricultural extension efforts, develop a training curriculum on DSR, capacitate farmers on technology-use, allocate an annual budget for technology promotion, and ensure availability of DSR-related machines in the area.

Aileen C. Litonjua of PhilRice believes the Abonong Swak can be practiced with the municipal agriculturist as the focal person in training farmers on applying proper fertilizer management.

The office will also provide site-specific nutrient recommendations based on soil analyses, develop a training module, organize learning sessions and assessments, and monitor training programs. **- MARK JOSEPH R. ZUÑIGA**

Credible rice science info amplified on social media

Launched during the 2024 DS Lakbay Palay on March 20-21, PhilRice's pages on YouTube and TikTok were created based on stakeholders' demand for rice information on said platforms.

To give agriculture stakeholders easier access to science-based rice information, PhilRice launched new accounts on YouTube (https://www.youtube.com/@philricetv/shoarts) and TikTok (https://www.tiktok.com/@rice_matters).

"The spread of science misinformation can lead to the adoption of harmful practices, which can have unfavorable effects on crop yield, farmer income, and food security. We established these pages as credible sources, in which information was checked and based on rigorous research of rice experts," said Charisma Love Gado-Gonzales, project lead of PhilRice's Production and Sharing of Rice S&T Through Strategic Media.

Virginia Rihad, the president of the Casongsong Farmers Association in Guimba, Nueva Ecija, stated that as a lead officer, she bears the responsibility of disseminating the latest information on rice production, which she often sources from social media.

"We wanted to know more about the technologies we read on print, and videos provided us with an interactive platform to deepen our understanding and see these technologies in action," she said.

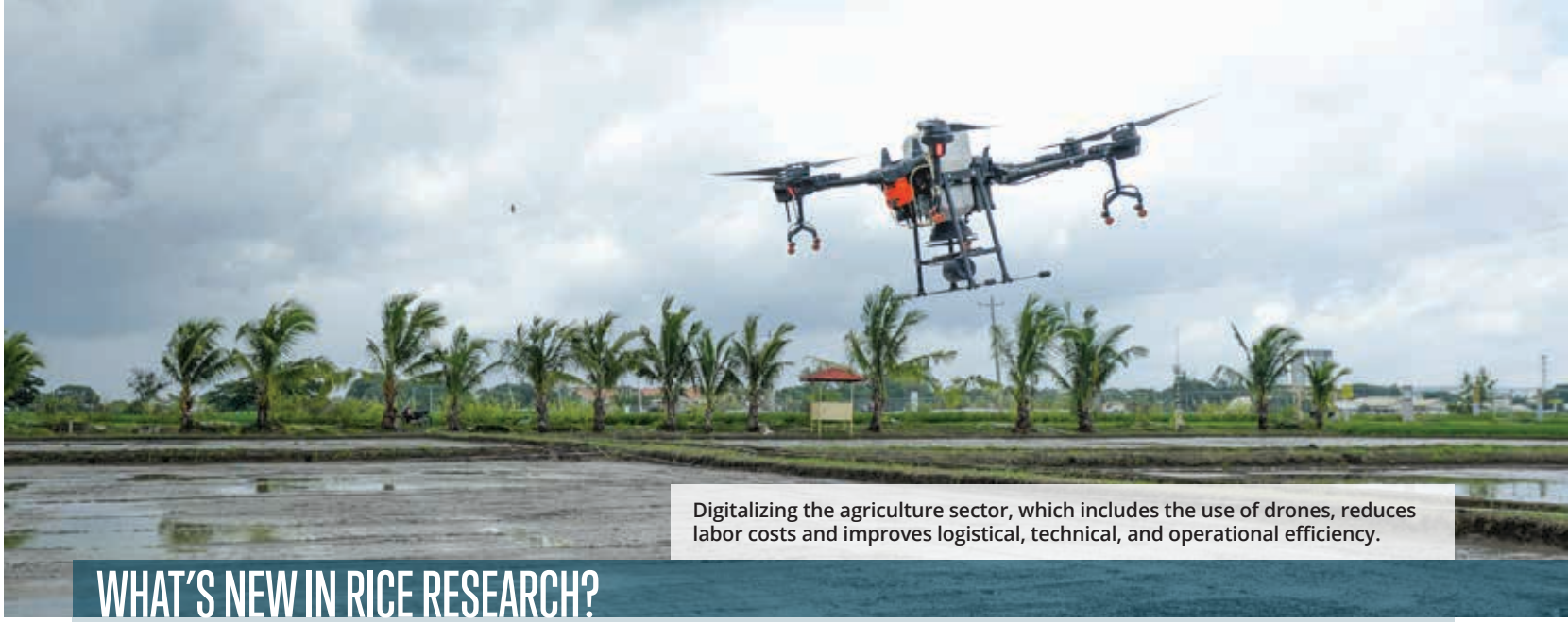
Meanwhile, farmer Jemalyn Ranjo from Morong, Bataan, expressed her enthusiasm for the PhilRice videos on social media as these will make farming more attractive to the younger generation.

"Through the videos, the youth see that agriculture has significantly improved through machines, making farming much easier," she said.

Ranzcel Lanz Reyes of Bataan Peninsula State University, expressed his excitement about the "new noble cause" of TikTok as he believes it serves a dual purpose of reaching more farmers and engaging the youth who will sustain agriculture.

In a survey conducted on the Institute's Facebook page, 87% of the 1,205 respondents indicated that they search for rice information on YouTube. In another poll, the majority of over 200 respondents expressed an interest in obtaining farming tips on TikTok.

- ARDIAN M. DOLERA



Digitalizing the agriculture sector, which includes the use of drones, reduces labor costs and improves logistical, technical, and operational efficiency.

Drone4Rice envisions producing more with less

ARDIAN M. DOLERA

With the rice sector facing perennial challenges, such as high production cost, aging farmers, ballooning population that entails more mouths to feed, and climate change, government agencies have lined up to digitally transforming the industry through the Drone4Rice project funded by the Department of Agriculture-Bureau of Agricultural Research, which aims to reduce production cost and need for manual labor, increase production efficiency, and entice the youth to farming.

According to project lead Dr. Jasper G. Tallada, PhilRice lead, this will revolutionize rice production by harnessing the capabilities of remotely piloted aircraft systems, more commonly known as agricultural drones; establishing new protocols for drone operations; optimizing parameters to maximize impact; and even implementing Variable Rate Application, the application of crop inputs based on varying needs, to further reduce input costs.

"By utilizing drone technology to optimize inputs, such as seeding rates, farmers could save substantial amounts on production cost. This optimization would also expand the distribution of seeds by expanding areas of coverage, particularly through initiatives like the Rice Competitiveness Enhancement Fund," Tallada explained.

More inclusive farming

The introduction of drones in agriculture is also expected to attract interest from the "techy" youth. Tallada emphasized that by showcasing the technological advancements in agriculture, the project could help dispel misconceptions about farming being hard and unappealing to the younger generation.

Women would also have increased opportunities to participate in rice production activities through light drone operations such as seeding and fertilizer application; thereby, promoting gender inclusivity in agricultural technology adoption.

The project also tries to establish Drone Service Providers (DSPs), who will deploy drones for farming operations.

"We all know that 50% of rice production costs is manpower, and if we have service providers that can efficiently and quickly deliver these operations, labor costs would diminish. Just imagine, it takes you half a day or a day to seed a hectare, which can easily be done in just 20 minutes by using drones," Tallada said.

> By utilizing drone technology to optimize inputs, such as seeding rates, farmers could save substantial amounts on production cost.
>
> **- DR. JASPER TALLADA**

Setting the trail

The use of drones in rice production was also included in a DA directive on the use of the PhP22.903-billion financial assistance intended for hybrid seeds, inorganic fertilizers, biofertilizers, and ameliorants through discount vouchers and e-wallets, like the interventions monitoring card.

While challenges definitely exist, Tallada is optimistic for these drones to be the entry point of other complementary digital technologies that can help in optimizing different aspects of rice production. "We see this agricultural drone as a trailblazer for the digital transformation of rice production," he figured it out.

RICE ACROSS THE COUNTRY

COMPILED BY VANNEZA B. ISIDRO

Perlene R. Guindang


Mhilton Arvy R. Bacarisa


Lalaine P. Perillo

New inbreds showcased in Caraga

To accelerate the adoption of new technologies, PhilRice Agusan showcased newly released varieties in Brgy. Sto. Niño, Butuan City, Agusan del Norte through field demonstration.

Among the varieties highlighted were NSIC Rc 604 for saline-prone, Rc 596 for rainfed, and Rc 630, Rc 622, Rc 626, and Rc 624 for irrigated lowland areas. With an average yield of 6t/ha, the demo was opened to stakeholders on Mar. 8 through a field day.

The demonstration is part of Techno PUSH, an area-based study for rice technology promotion and strategic partnerships in Northern Mindanao, Davao, and Caraga Regions. The study aims to heighten farmers' awareness and adoption of yield-enhancing and cost-reducing rice technologies.

- KRISTIANNE MARIE C. DAVID

Ilocos farmers upgrade skills

PhilRice and the local government of Dumalneg, Ilocos Norte have teamed up to upgrade the skills of local rice farmers through capacity-building and technology demonstration.

Mayor Francisco R. Espiritu Jr. emphasized the urgent need for technical advancements to improve their farming methods through the promotion of high-yielding varieties and innovative technologies.

Dr. Mary Ann U. Baradi, officer-in-charge of PhilRice Batac, said the Institute is focusing on promoting technologies that enhance yields and lower production costs.

The techno-demo in Dumalneg showcases mechanically transplanted high-yielding inbred and public hybrid varieties honing farmers to emulate recommended seeding rates and crop establishment methods to cut costs.

- FRANZEL MONIQUE D. BONILLA

Need-based KSL intensified in Eastern Visayas/Bicol

In its 6th year of implementation, the Rice Competitiveness Enhancement Fund implementation team of PhilRice in Eastern Visayas has magnified efforts to address farmers' specific needs through need-based Knowledge Sharing and Learning (KSL) activities in areas with no farm schools and limited access to rice-related information.

In collaboration with local government units, PhilRice Bicol is set to conduct KSL activities in the island municipalities of Capul, Biri, and Laoang in Northern Samar, Monreal in Masbate, San Jose de Buan and Pagsanghan in Samar, and Bulusan in Sorsogon.

In PhilRice's needs assessment, rice production constraints in these areas include nutrient and pest management challenges. **- MICHAEL L. SATUITO**

Isabela is after good agri practices

To ensure nutritious, high-quality, and safe produce, PhilRice Isabela has committed to advocating for good agricultural practices with its recently obtained Philippine Good Agricultural Practices (PhilGAP) certification, making its Palayamanan farm the first in the Institute to be certified.

The certified farm encompasses 1.2ha of rice and 0.3ha of vegetables, such as calamansi, eggplant, bitter gourd, lady finger, and pepper.

The branch station's move for PhilGAP certification aligns with PhilRice's RiceBIS 2.0 program, where farms are guided and assisted in getting certified.

"We take pride in this new feather in our cap. But more than the pride, we hope to inspire the farmers within our reach to aim for PhilGAP certification which easily translates to quality and safe food for everyone," expressed OIC-Branch Director Joy Bartolome A. Duldulao.

The certificate was issued on Jan. 15, by the Bureau of Plant Industry through its Plant Product Safety Services Division.
- GERALD PAUL G. AQUINO


Klyde Anne C. Barangan


Rhea Grace Y. Malapascua

New staffers, Grade 12 students appreciate rice

To deepen their appreciation of rice, PhilRice Los Baños conducted on Jan. 22-26 a rice appreciation course for 27 newly hired personnel and 20 Grade-12 STEM students from Colegio De Los Baños.

The course exposed the learners to various technologies, such as the PalayCheck System, rice machinery operations, and various ICT applications, to sharpen their comprehension of rice science and technology. Participants were also oriented on strategies for engaging stakeholders, such as farmers, students, and AEWs.

At the end of the course, the participants were tasked to conduct an Agro-Ecological System Analysis to test their knowledge in assessing a rice field and giving the right recommendations based on what they have learned.
- JOHN HERNAN M. TRINIDAD

Negros farmers to expand agribiz with BPI

The Bank of the Philippine Islands Foundation (BPIF) is supporting the expansion of a Negros-based cooperative, Quezon Codcod RiceBIS Farmers' Cooperative (QueCoRiFACo), by providing enterprise machines to enhance their agribusiness.

Anileen Pajarillo, implementer of the Rice Business Innovations System (RiceBIS) Community Program of the Philippine Rice Research Institute (PhilRice) in Negros, said QueCoRiFACo has received a truck and rice mill on March 19 as part of BPIF's PhP5.2 million grant.

"QueCoRiFACo currently comprises five associations with plans to expand their reach across 415 hectares, benefiting over 300 farmers," she said.

The turnover and blessing ceremony was held in Quezon Multipurpose Gym, San Carlos City, Negros Occidental with BPIF Executive Director Ma. Carmina Marquez and BPIF officers and PhilRice Deputy Executive Director for Development Karen Eloisa Barroga as lead officials. **- CLBGADO-GONZALES**

High-quality seed production taught

Twenty-five staffers of PhilRice Midsayap - Business Development Division were capacitated on Feb. 5-8 to strengthen internal seed quality control.

Led by crop protection and genetic resources experts from the Central Experiment Station, the training involved the participants in hands-on exercises on crop health monitoring, familiarization with descriptors for rice, conducting morpho-agronomic characterization, field inspection, varietal purity, and germination.

Seed quality expert Susan R. Brena explained that purity in the production of high-quality seeds starts in the field, hence, seed production personnel need to be equipped with the necessary knowledge and skills.

With hopes to improve the Institute's seed quality assurance system and its partner seed growers in Southwestern Mindanao, the training was supported by the Internal Seed Quality Control of the Rice Seed Systems Program.
- AMIL K. SANDAY

Harnessing a transformative innovation ecosystem

Usec. Cheryl Marie Natividad-Caballero

Undersecretary for High-Value Crops, DA

The scale of innovation varies from country to country, industry structure, and state of academic research and knowledge stream, among other factors that influence the generation of technology or sophistication of technological innovations.

Based on the Global Innovation Index (GII) 2023, the Philippines performed well in Business Sophistication (38th), Knowledge and Technology Outputs (46th), and Market Sophistication (55th) but needs further improvements in the areas of Human Capital and Research (88th), Infrastructure (86th), and Institutions (79th). The GII assesses the state of a country's innovation ecosystem and has elevated Switzerland, 13 years in a row, as the most innovative economy in 2023, followed by Sweden, the USA, the United Kingdom, and Singapore.

Deducing on the GII 2023 results and given PH's dismal ranking, conscious effort must be focused on strengthening human capital and research, infrastructure, and institutions to gain from scaling mature technologies and encourage continuous process/product innovations or improvements across the agricultural sector.

When determining the maturity of a particular agricultural innovation or technology, one may refer to the technology readiness level (TRL) employed by the National Aeronautics and Space Administration (NASA). However, when a mature technology is adopted to mainstream (beyond proof of concept and towards market penetration), the proponent must be able to secure the following: (1) project champion to provide overall policy mechanism and credibility; (2) stakeholders' buy-in; (3) leverage funding and wide financial portfolio; (4) effective communication to sustain transformational goals.

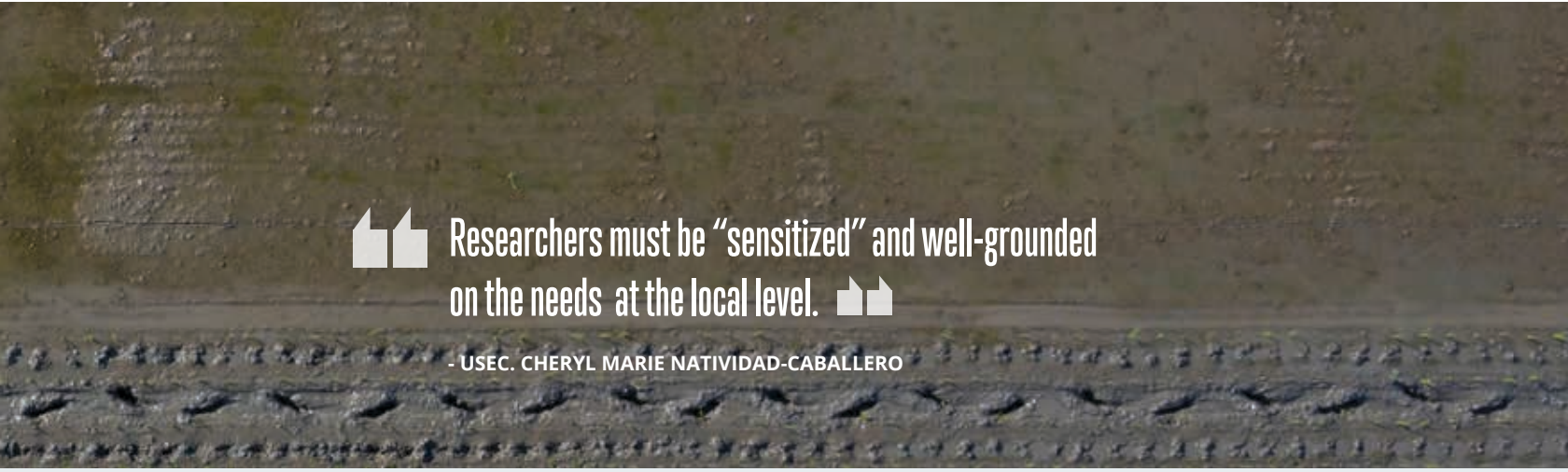
A simple but well-crafted technology roadmap can serve as a visualization in developing a strategic plan where activities can be built and capabilities evolved in support of the business or mandate of the organization.

Sterling technology-scaling initiative in flesh

The coconut hybrids developed by the Philippine Coconut Authority (PCA) over the years in its research centers is one good example of mature technology mainstreamed. Scientific breakthrough was achieved with the development, improvements, and mainstreaming of "superior open-pollinated coconut varieties that offer several advantages: faster growth, increased fruit production, higher copra yield, and better resilience to water stress."

Massive research work, technology validation, systems improvements, and recalibrations that span over decades were accomplished by dedicated and competent scientists under a well-structured institutional arrangement at the PCA. It was also supported by strong farmers' organizations, processors groups, exporters, and locally and internationally recognized industry alliances.

This breakthrough in coconut tissue-culture technology gained recognition from scientists worldwide. It became a national program for the PCA, aiming to intensify the Coconut Farmers and



> Researchers must be "sensitized" and well-grounded on the needs at the local level.
>
> - USEC. CHERYL MARIE NATIVIDAD-CABALLERO

Industry Development Plan (CFIDP). The goal is to invest in new technologies and initiatives, ensuring the resilience of the coconut sector and improving the living conditions of coconut farmers.

Securing a technology-scaling initiative

Scaling a particular innovation can only be done when it has a well-defined technology roadmap. The agency should be guided by a sound agricultural innovation policy at the national and institutional levels and work along the innovation ecosystem that orchestrates and facilitates the flow of technology and information among people, enterprises, and institutions.

In the case of PhilRice, as a research facility with corporate functions and developmental objectives, its innovation ecosystem must be defined or aligned with its mandate to help achieve business goals and short-to-medium-term objectives and propagate to effectively leverage (generate income through service-based models, licensing, or joint ventures) on its generated or home-grown technologies.

At the technology level, the proponent or innovator must define the purpose of technology (why is it being pursued, what resources are needed [people, budget, timeline]), develop its technology roadmap, and define exit mechanisms as to when the product or process innovation will be further pursued or abandoned.

Decisions as to when a technology is scalable will be determined by its degree of success and technology life cycle (i.e., innovation stage, growth stage, maturity stage, and decline stage). Contextualizing the technology's usability in terms of investment decisions may be influenced by performance indicators depending on the action required, such as when the technology is in the growth stage and is ready for early adoption, dissemination to a selected audience, or mainstreaming for the entire population.

At the individual level, the innovator must secure project champions or influencers to support the developmental stages of its technology from prototyping to lab-scale production and market mainstreaming. The success of any technology will also depend on good market intelligence and its selling point that will help address risks and challenges (e.g., drought and climatic aberrations, pests and diseases, and novel discoveries) in the agriculture sector.

Researchers must be "sensitized" and well-grounded on the needs at the local level, such as providing a solution to a basic problem that confronts farmers' ability to address risks and challenges in their day-to-day farm activities, such as offering "doable" solutions that would address post-harvest losses and prolong shelf-life or behavioral interventions that will address social interactions and group cohesiveness when it comes to clustering farms as a productive resource.

They must be allowed to practice and share their expertise in a practical "open laboratory" setting to thoroughly establish a feedback mechanism that would allow them to communicate with their target audience, validate technology/product or process improvements, and recalibrate these innovative products/processes, as needed, to bring them to the market when needed.

Once local conditions are profiled and are effectively translated into a good research design, then innovations can be carried out or agreed on between the innovator, the funding agency or institution, and the target clientele. Stakeholders' buy-in is critical to making agricultural innovations successful and transformative.

The case of the PhilRice-developed multi-purpose (MP) seeder is a classic example of creative innovations taking off from local farmers' practice (i.e., reducing drudgery by substituting manual seeding with a mechanized tool that decreases labor costs and increases farm efficiency). It offered technology optimization whereby it can be used to systematically plant rice as well as corn and munggo and integrate it with an existing tool, that is, a small farm tractor for faster acceptability and adoption.

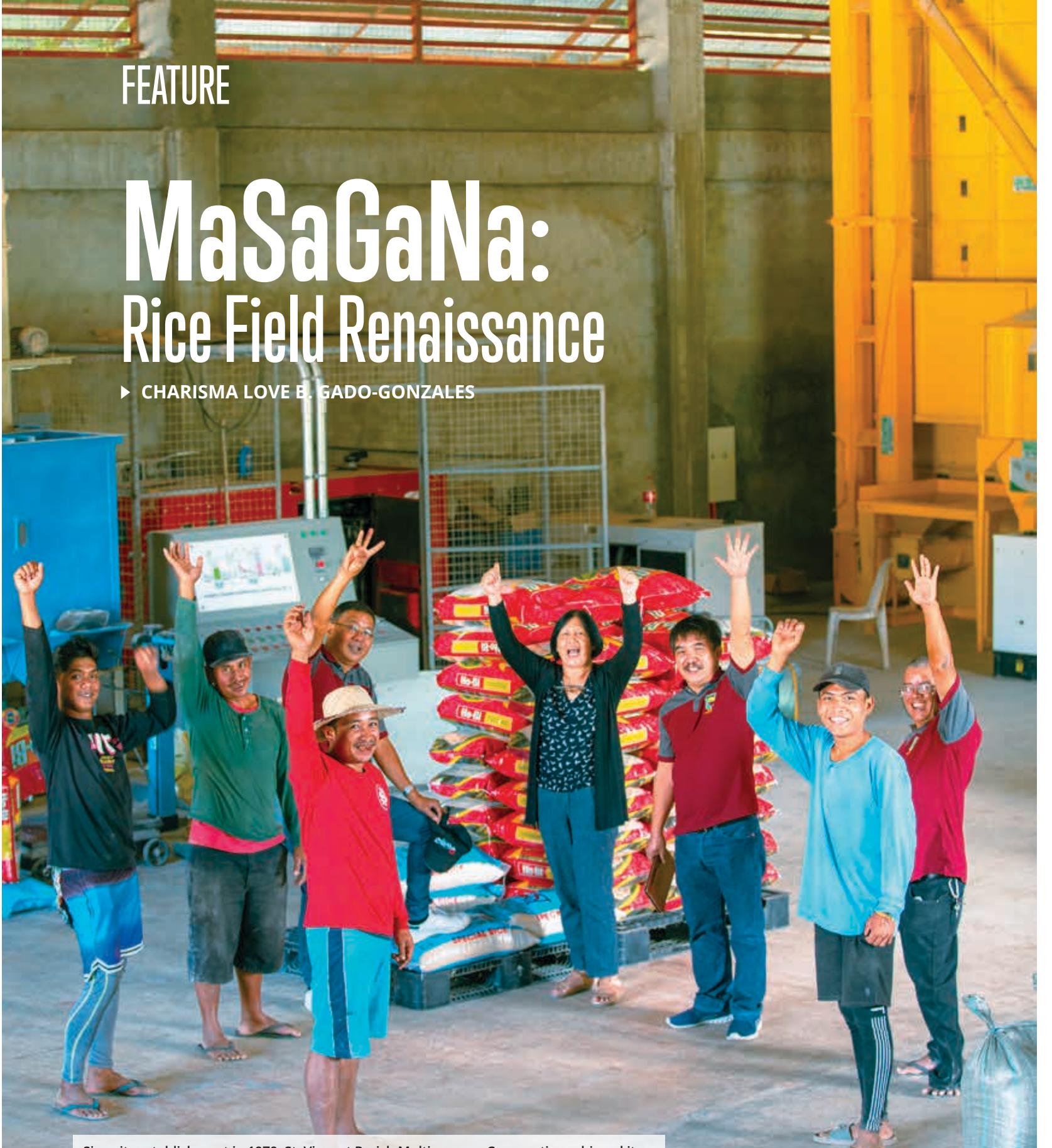
To level up the MP seeder technology, incremental innovation can be introduced, such as improving the ergonomic design (efficiency and comfort for the user), ease-of-use and mobility, added safety features, and overall look. Designers, investors, and local manufacturers may also be invited to take part in the process via contests, technology licensing, and commercialization approaches.

As the product is further improved (function, design, safety, reliability, and competitive price point) and end-users start adopting it (availability in the market) owing to its ability to improve farming efficiencies and profitability, then this innovation can be said to have reached its full potential.

An innovation has reached its full potential when it has served its purpose and its intended end-users are able to benefit from it. **(INTERVIEWED BY ANNA MARIE B. BERTO.)**

MaSaGaNa:
Rice Field Renaissance

CHARISMA LOVE B. GADO-GONZALES



Since its establishment in 1979, St. Vincent Parish Multipurpose Cooperative achieved its highest supply volume only in 2023, according to Coop records, through the support of two PhilRice programs. The RCEF Seed Program provided seeds of varieties preferred by their market while RiceBIS facilitated a connection with an NGO that placed bulk orders.

The scars of the COVID 19 pandemic still itch in the memories of the farmer-members of the St. Vincent Parish Multipurpose Cooperative in Dupax del Sur, Nueva Vizcaya; yet, these marks only make them stronger and the farming cadence more progressive in rhythm.

As they persevere in the post-pandemic recovery of the rice industry, the Masagana Rice Industry Development Program (MRIDP) of the Department of Agriculture (DA) catalyzes the sector's resurgence.

"MRIDP is unique among our interventions in terms of scale. Farmers adopting modern technologies are organized, and farms are consolidated for increased bargaining power. There's science to sustain rice production, experts are easily available, and digitalization helps ensure that our farmers are reaching the market," Director U-Nichols A. Manalo, officer-in-charge of the office of the assistant secretary for operations, said.

Approved by Pres. Ferdinand R. Marcos Jr. in May 2023, the program's core strategies are encapsulated within the MaSaGaNa acrostic: "MAtatag" (resilient), "SAmasama" (together), "GAnado" (motivated), and "NApapanahon" (timely). These strategies encompass a shift in planting calendars to adapt to climate change; the clustering and consolidation of farms to streamline interventions, the adoption of a value chain approach, and the integration of digital transformation.

Manalo said that the farmers are not only clustered, but public and private institutions are also called to "converge, cooperate, coordinate" to attain the expected potential of rice-farming areas. The DA will be joined by government and private financial institutions, national government agencies, local government units, state universities and colleges, non-government institutions, and civil society organizations in implementing MRIDP.

Currently, with the united efforts of DA agencies, Vincent G. Gonzales, chair of the St. Vincent Parish Coop, said that their farmer-members are recovering from the harshness of the pandemic when they experienced the world's longest and strictest lockdowns.

> **MRIDP is unique among our interventions in terms of scale. Farmers adopting modern technologies are organized, and farms are consolidated for increased bargaining power.**
>
> **- DIR. U-NICHOLS A. MANALO**

"We're composed of 70- 80% farmers, so our Coop was challenged then. It was harvesting time, and the travel restrictions limited our usual transactions in Bulacan, Pangasinan, and Nueva Ecija. Greedy traders wanted to buy our produce at very low prices," he lamented.

Three years after the lockdowns, the cooperative supplied for the first time a huge volume of 6,000 bags (25kg/bag) of well-milled rice to a non-government organization, through the assistance of two government programs. They also received machines from the Philippine Center for Postharvest Development and Mechanization and previously from the Department of Agrarian Reform.

"We received certified seeds of our preferred variety, NSIC Rc 218, from the RCEF-Seed Program. We're happy with what we've received as it's also our market's choice. This is the product we supplied to the buyer linked to us by PhilRice's RiceBIS Program," Gonzales, a 15-year board director and two-time chair said.

The coop capitalized on the machines given to them and became a service provider in their communities from planting to harvesting, which they rent out lower than the commercial providers.

"Usual rent for combine harvester is 10% of the harvest, but we only charge 8-9%. Although our service cost is quite low, our coop's overall income increased by almost 50% with the machine rentals," Gonzales revealed.

The impact of convergence on the Coop's improved status proves Director Manalo's point that addressing the urgency of revitalizing the rice sector in a post-pandemic era requires not only strong collective action but also a motivated drive from the farmers.

"In MRIDP, we provide technologies based on farmers' needs and the market. Surveys, databases, and digital applications will be utilized to guarantee these. Meanwhile, farmers must also invest their time and resources. Let's change farmers' mindset of only using the technologies because these are doled out. They need to play their part to sustain the gains from the technologies and good marketing," the National Rice Program director articulated.

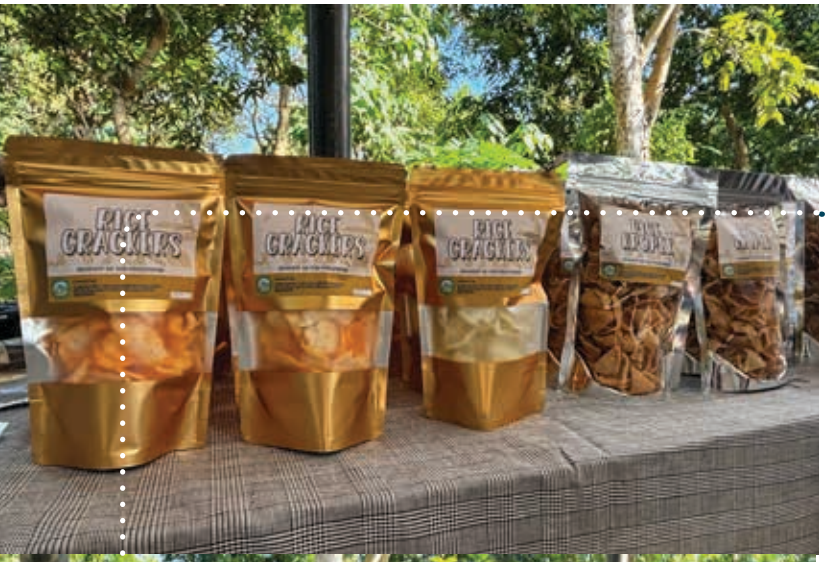
"One of the program interventions will be fertilizer support based on soil condition and analysis. We will support 5-ha clusters, beyond this, the farmers will invest. Market information will also be made easily available so we can match volume orders and price with their produce, but with this, farmers may also need minimal investment in transportation," Manalo added.

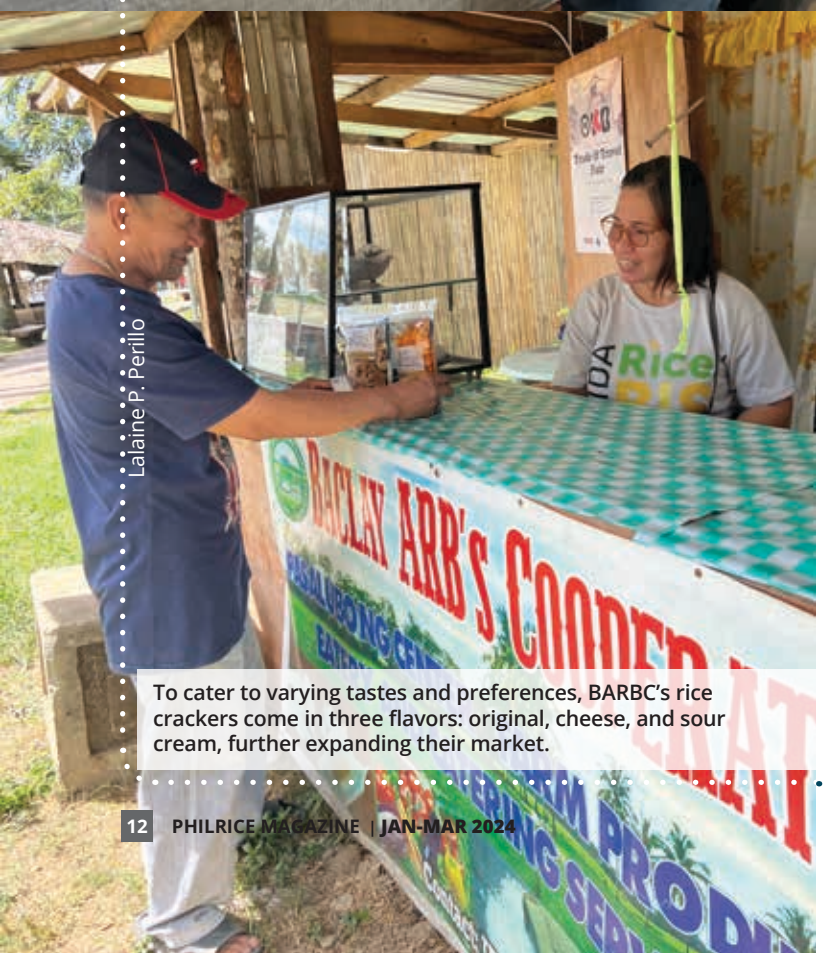
With the implementation of MRIDP, President Marcos sets a 97.4% target for rice self-sufficiency by 2028. But with adopting a "whole-of-society" approach stipulated in the Philippine Development Plan for 2023–2028, Manalo is confident that technology adoption will be sustained as farmers are incentivized by connecting them to the market.

The farmers, once burdened by the ghosts of the pandemic, can now find solace in the abundant and marketable harvests they are to gain through the MRIDP. The hum of prosperity resonates through the air, replacing the echoes of uncertainty that once blew in the wind, indeed a rice field renaissance.

Helping

ROCEL DYAN C. SILVA





Lalaine P. Perillo

To cater to varying tastes and preferences, BARBC's rice crackers come in three flavors: original, cheese, and sour cream, further expanding their market.

Selling out more than 700 packs of rice crackers every month is far different from what Elvie M. Albao, 46, the acting chairperson of Baclay Agrarian Reform Beneficiaries Cooperative (BARBC) in Milagros, Masbate, had expected when she joined their then association.

"I was just a regular member back then and never thought anything phenomenal would happen. But now, it's different. We are directly engaged with the market and supplying it with our products," Elvie began telling her story.

Contrary to the belief that everything comes easy after crossing the starting line, BARBC ran a couple more miles on a bumpy road before they got to the pedestal.

Perseverance is the key

Who would trust an association with a track record of bankruptcy? That may be the daunting question of some people who know about the group's past. In 2016, despite great efforts to keep it strong, BARBC, then an association, had to file for bankruptcy after some mismanagement issues.

Struggling with the "ruins" of the association, a new management was installed with Jessie M. Dadula, 43, from

farmers rise in the market

> The RiceBIS Program made us realize that we can be farmer-entrepreneurs who can develop and produce new products that are healthier using ingredients that are conveniently available to us. The program taught us that we are not just farmers, we are progressive farmers.
>
> **- ELVIE M. ALBAO**

the same town, being appointed as head and entrusted with new survival plans. Some members departed but many joined as Dadula gained their trust through his dedication and perseverance when he faced the tedious process of registering their association as a cooperative.

"Chair Dadula showed us how persistent he was, and that's how people have come to trust us. The process was surely intimidating, but he did not give up because he knew that better opportunities awaited beyond the struggles," Elvie recalled.

Against all odds, the association officially became a cooperative in 2017 and was later assisted and named one of the PhilRice RiceBIS communities in 2021.

"Progressive" perspective

From only selling milled rice, BARBC is now producing red rice and the sought-after rice crackers. It was developed by Jean E. Barwa, 20, a member of the cooperative, as one of the final requirements as an Accountancy, Business, and Management strand student.

Through a series of capacity-building in agro-enterprise and network establishment with partners who can provide support for advancement as coordinated by the Rice Business Innovations System (RiceBIS) 2.0, the rice cracker delicacy quickly became a star.

At first, the rice cracker was sold only in Jean's school food bazaar but was later noticed by Chair Jessie, who had the cooperative adopt and market it.

"When I tasted it," Jessie Dadula pieced it together, "I instantly thought it would be a good substitute for commercialized crackers. It is also healthier because it has no preservatives and only four ingredients. Cheaper for the producers and consumers."

Geared at connecting farmers to the market and minimizing the need for traders, RiceBIS 2.0 envisions more profit for farmers through new perspectives and better opportunities.

"The RiceBIS Program made us realize that we can be farmer-entrepreneurs who can develop and produce new products that are healthier using ingredients that are conveniently available to us. The program taught us that we are not just farmers — we are progressive farmers," Elvie recalled.

For their potential, DA-RFO 5 is granting them a brown rice mill, and they are also set to receive assistance from DOST once their production facility is built and enhanced.

Taming the market

The Coop's primary market, to date, is the Agraryo Merkado, which allows them to sell most of their rice products. They were also able to build a Pasalubong Shop where their members can introduce their products, such as Sampaloc candy, Carmelado, Atsara, and Banana.

To widen its market, the RiceBIS program also led the cooperative to reach numerous institutions within their area. They have entered into a Memorandum of Agreement with the Aroroy District Jail, Masbate BJMP, Mobo District Jail, Dadula Food Products, and Galve Store.

With the help of PhilRice scientists Riza A. Ramos and Rosaly V. Manaois, BARBC is now enhancing the uniformity and packaging of their rice crackers to satisfy the quality needs of the market, aspiring to have their products displayed and sold in supermarkets where they can proudly say 'Gawa 'yan ng magsasaka.'

Given the high nutritional value of brown rice compared with white rice, PhilRice has been identifying varieties with good cooking and eating qualities to help address market challenges like customer acceptability.

Recalibrating the brown rice machine

CHRISTINE MAE A. NICOLAS

Experts argue that bringing innovations to social and economic use, that is, having them scaled and utilized to their maximum potential, is a function of a system that involves many factors, such as social actors, enabling environment, relative advantage, complexity, and if they are needed. For the brown rice machine, this meant constantly lending an ear to potential users and hammering it to fit what they wanted.

Unpolished gem

Brown rice, unlike its polished counterpart, retains its bran layer housing essential nutrients such as dietary fiber, proteins, antioxidants, vitamins, minerals, and other phytonutrients that are good for our health. When dehulled, any rice variety, including black or red rice, can be considered brown rice.

Despite its undeniable nutritional value, brown rice struggles with widespread commercialization and consumption owing to poor post-milling management, longer cooking time and rough texture compared with white rice, shorter shelf-life, and challenges in packaging and storage conditions.

To improve access to brown rice, even in small farming communities, came the development of brown rice milling (BRM) machines.

A step forward

To demolish barriers surrounding brown rice commercialization and consumption, a team of multidisciplinary experts from PhilRice was created to implement the DA-Bureau of Agricultural Research-funded project "Improving Brown Rice Quality, Shelf-life, and Engineering Technologies."

"This paved the way to creating strategies to enhance the quality and shelf-life of brown rice, and develop machines that were pilot-tested in different regions in the Philippines," said food scientist Dr. Marissa V. Romero.

To date, PhilRice has already produced three BRM — the village-type, motor-driven/tabletop, and pedal-powered versions.

The village-type model stands out with its up to 300kg capacity, making it suitable for farmers and farmer associations.

Consequently, the motor-driven is a convenient solution for rice mills or stores with its manageable capacity of around 5-10kg. Its portability ensures flexibility in usage, enabling businesses to cater to consumer demand without the need for large-scale equipment.

The pedal-powered version, also known as the brown rice pedal, is popular for allowing users across genders to engage in physical exercise while milling.

Carlo G. Dacumos

Developed in 2014, the brown rice pedal has a milling recovery of 74-77% and capacity of 1-2kg/h depending on pedaling speed.

> Donating these machines to barangays would be truly beneficial, providing them with the means to produce brown rice.
>
> **- SEN. LOREN LEGARDA**

Listening to feedback

"Establishing the design idea for the pedal-type BRM was inspired by Gender and Development focals who proposed creating a gender-friendly machine," shared Dr. Arnold S. Juliano, project lead.

Currently, there is a hybrid version of the machine featuring both pedal and motor options that can be shifted. This upgrade stemmed from feedback received at a demonstration trial during one of the Institute's Lakbay Palay events, where senior citizens experienced some difficulty using the pedal.

The pedal-type garnered attention at the "Palay. Bigas. Kanin. Alamin" exhibit in the Senate building in Pasay City, held to celebrate the BeRICEponsible campaign during National Rice Awareness Month (NRAM) in November 2023.

Impressed by the pedal-operated BRM, Sen. Pia Cayetano expressed interest in proposing its distribution to small rice farm shareholders. Sen. Loren Legarda supported this idea, suggesting "Donating these machines to barangays would be truly beneficial, providing them with the means to produce brown rice." The machine's gender-friendly design, promoting simultaneous physical exercise, intrigued the lady lawmakers.

"PhilRice prioritizes gender inclusivity, making the machine gender-friendly. It's designed to serve areas without electricity and able to produce enough for a family of five in one hour," emphasized Engr. Joey P. Miano.

The ongoing improvement and development of additional machines to accommodate a broader consumer base reflect the dedication to making brown rice more accessible. One such machine, currently in pilot testing at the Institute, incorporates cleaning and destoning functions, expanding its capabilities to meet consumer demands.

"Through this push for brown rice, we strive to bolster its supply and create opportunities for manufacturers. Moreover, this effort will contribute to enhancing brown rice sufficiency, potentially curbing rice imports, given the 10% higher recovery rate," explained Miano.

While the machine has yet to reach the market, farmers who attended the Lakbay Palay, as well as provincial and local government units that participated in demonstrations at Robinsons San Nicolas, Ilocos Norte, have already highlighted the beneficial improvements emphasizing its potential for deployment at the barangay level.

The village-type machine was the first to be commercialized. According to Juliano, the other two variants are now under assessment and are being deployed to RiceBIS communities and single entrepreneurs.

Soon, farming communities will be producing brown rice through these innovations that have been hammered through time.

FROM CONCEPT TO MARKET

Commercialization of PhilRice's Multipurpose Seeder

Written by: Christina A. Frediles
Infographics by: Sarah Joy N. Ruiz
Subject Matter Specialists: Atty. Jerry C. Serapion, Dr. Elmer G. Bautista, Chona Mae S. Narvadez, Fidela P. Bongat

To date, manufacturers across the country are commercializing eight PhilRice machine technologies. Before these innovations hit the market, their journey began with a concept inspired by market demand.

1 DEVELOPMENT OF TECHNOLOGY

1 Situation of rice farmers

- Low productivity and income
- High labor cost
- Limited mechanization interventions for rainfed areas
- Water scarcity
- Crop failure after delayed monsoon rains

2 Purpose of development

- Reduce crop establishment cost
- Increase farmers' income
- Save time
- Ease of seeding
- Efficiency of crop establishment

3 Technology generation

- Development of a multipurpose seeder [MP seeder] (with concept validation and 1st prototyping)
- Crafting of best management practices using MP seeder in rice, corn, and mungbean
- Identifying management options for improving crop establishment under direct seeding
- Completing best nutrient and weed management packages for mechanized dry direct seeding for rice, corn, and mungbean
- Summarizing existing developed technologies for corn and mungbean

4 Technology verification

- Validation of mechanized dry direct seeding technology (DDST) package using MP seeder

5 Development of pathways for the uptake of the Modified DDST

- Stakeholder engagement and identification of opportunities and challenges in direct seeding
- Awareness-raising on MP seeder technology (field days, tours/walks, demonstrations, national forum)
- Capacity-building for farmer-cooperators, LGUs, and researchers: Technical briefing, hands-on training on conducting on-farm verification trials, specialized course on MP seeder operation, troubleshooting, and maintenance

COMMERCIALIZATION OF TECHNOLOGY

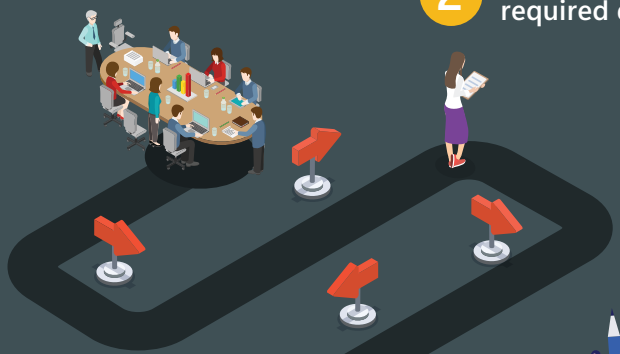
(The process of deriving income or profit from a technology, which ensures the accessibility and availability of the MP seeder to the public)

3

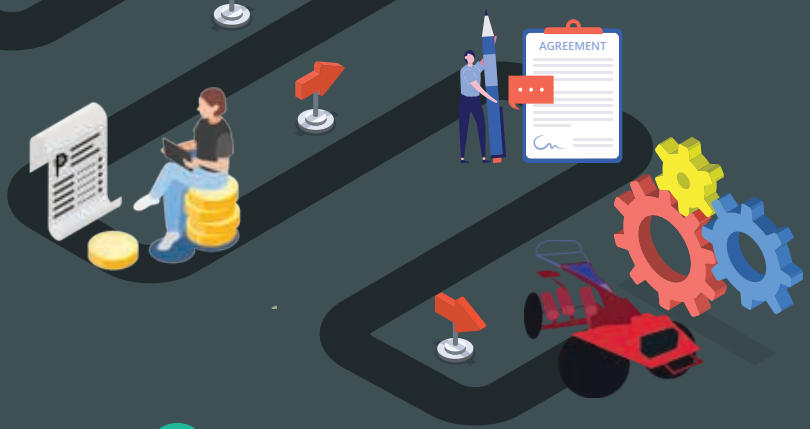
1 **Consultation meeting with fabricators and PhilRice**

- Orientation on the Philippine Technology Transfer Act of 2009
- Acquisition of documents required by the DOST-Fairness Opinion Board

2 **Submission of the required documents**



4 **Signing of Technology Licensing Agreements by PhilRice and manufacturers**



5 **Fabrication of multipurpose seeders by accredited manufacturers**

2

3 **Rendering of favorable Fairness Opinion based on financial terms**

ASSESSMENT FOR TECHNOLOGY TRANSFER OR READINESS LEVEL FOR COMMERCIALIZATION*

(The review and evaluation of the maturity of the technology)

1 Technology Management and Services Division assesses the social, technological, technical, economic, environmental, and political (STEEP) indicators

2 Declaration of maturity

3 Business Development Division conducts further technology assessments to determine readiness for transfer and identify any potential breach of existing intellectual property

4 Development Communication Division prepares promotional materials of the developed technologies

* The indicators for STEEP were formulated following the commercialization of the MP seeder, which was funded by DA-BAR from its development to commercialization.

TRANSFORMING THE RICE INDUSTRY, ONE STEP AT A TIME

WRITTEN BY: MINARD F. PAGADUAN
SUBJECT MATTER SPECIALISTS: LUZVIMINDA F. TOLENTINO AND RONALDO S. CADDARAO, DA

With a myriad of transformational innovations to help develop the rice industry, the Department of Agriculture (DA), in partnership with various agencies, has been implementing programs to bring innovations closer to farmers and other rice stakeholders, capitalizing on pushing for adoption and pulling market insights to improve available technologies.

DID YOU KNOW?

The DA fosters **COLLABORATION** among DA-attached agencies, bureaus, and various government entities to **ADVANCE RICE INNOVATIONS;** thereby, enhancing agricultural development, food security, and rural livelihoods. These collaborations include that of DA, Department of Trade and Industry, and National Irrigation Administration that aims to **ENHANCE RICE DISTRIBUTION AND ACCESSIBILITY** benefiting producers and consumers.

DID YOU KNOW?

The DA is also digitalizing the sector, allowing more precise decisions among program implementers and farmers. Available **DIGITAL APPLICATIONS** include the PalayCheck App, Binhing Palay App, eDamuhan App, Leaf Color Chart App, and the MOET App. There is also the Philippine Rice Information System (PRISM), a **SATELLITE-BASED MONITORING SYSTEM** that provides information on area, yield, and risk factors, among other things.

DID YOU KNOW?

The DA invests in initiatives that support **RICE VALUE CHAIN DEVELOPMENT,** which includes farmer consolidation, entrepreneurship, and enhancing post-harvest handling, milling efficiency, and marketing strategies. These initiatives include:

DA-Agribusiness and Marketing Assistance Service's (AMAS) Kadiwa program directly links agricultural products to consumers at reasonable prices through Kadiwa retail stores in strategic locations. The term "Kadiwa" signifies "one idea, one thought."

National Food Authority's procurement program directly purchases dry *palay* from both individual farmers and Farmer Cooperatives and Associations at a set support price, which ensures that farmers have a reliable market for their produce at a price that guarantees reasonable income.

PhilRice's Rice Business Innovations System program is a community intervention thrust that clusters farmers, introduces new/modern farming technologies, and fosters agripreneurship. It aims to transform rice farmers into inclusive, competitive, and sustainable agripreneurs capable of supplying their products to institutional buyers.

Philippine Center for Postharvest Development and Mechanization's enterprise development program empowers rice-processing farmers with technical support, training, and mentoring for successful mechanization and postharvest technology adoption. They offer feasibility studies, learning activities, and partnerships to promote wider technology adoption within Farmers Cooperative and Associations, including recipients of the Rice Processing System.

DID YOU KNOW?

The DA **MONITORS** the prices of *palay* and rice. Daily price updates of agricultural and basic commodities in major markets **NATIONWIDE** are available at the *Bantay Presyo* website (https://www.bantaypresyo.da.gov.ph/). The website also provides insights on price and supply dynamics to help **STAKEHOLDERS** respond effectively to market changes through its Trading Post Commodity Volume Watch that can be accessed at www.bantaypresyo.da.gov.ph/tradingpost/comvolwatch.

The DA also **MAINTAINS** the Farmers and Fisherfolk Enterprise Development Information System (www.https://ffedis.da.gov.ph/) that enables the government to conveniently **MONITOR PALAY** and rice prices to enhance program planning for farmers and fisherfolk enterprises, making initiatives more effective.

DID YOU KNOW?

To mainstream R&D products, DA is **STRENGTHENING COLLABORATION** among its agencies, and other government offices with similar interventions, and fostering public-private partnerships to expedite technology transfer, training, and market access. Consequently, along with **"SCIENCE-PUSH" EFFORTS,** the DA also explores **"MARKET-PULL" STRATEGIES**, driven by actual market demands. To achieve this, the DA prioritizes market-led R&D, lobbies for favorable policies, collaborates with private entities and farmer organizations, develops extension programs showcasing technology benefits, facilitates knowledge-sharing among farmers, and establishes contacts with market players.

DID YOU KNOW?

The Agricultural Credit Policy Council synchronizes credit policies and programs for smallholder farmers, offering tailored **FINANCIAL SERVICES**. Through Partner Lending Conduits (PLCs), farmers gain access to **INNOVATIVE FINANCING SCHEMES**. There are also financial support programs through RCEF and AMAS, such as the KAYA (Kapital Access for Young Agripreneurs), ANYO (Agri-Negosyo), SIKAT SAKA, Expanded Rice Credit Assistance, and the DA Kadiwa's Financial Grant Program.

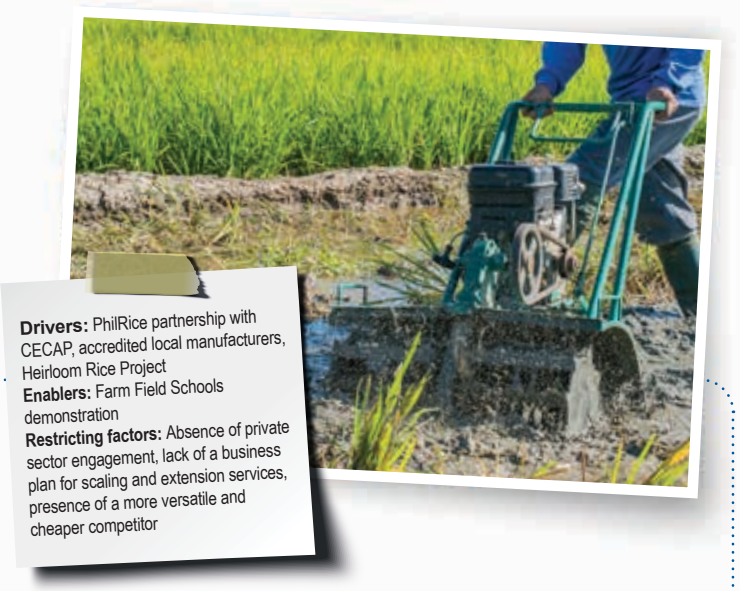
These nuggets of information are just a peek at the whole-of-government initiatives to enhance agricultural productivity, promote food security, and support rural development, benefiting from all factors in the agricultural innovations systems and transforming the rice industry, one step at a time.

What happened to our INNOVATIONS?

MARK JOSEPH R. ZUÑIGA

Rice farmers reap the benefits of new agricultural technologies, thanks to promotion and scaling efforts. A technology reaching them and impacting on their livelihood is a success in itself; however, invaluable lessons await those who trace technology adoption efforts in the hope of improving future scaling initiatives.

At PhilRice, a team led by Dr. Jaime A. Manalo IV looks into the scaling efforts of our technologies. Thus far, Manalo's team has investigated scaling efforts on the microtiller, laboy tiller, and the rice variety NSIC Rc 160.



Drivers: PhilRice partnership with CECAP, accredited local manufacturers, Heirloom Rice Project
Enablers: Farm Field Schools demonstration
Restricting factors: Absence of private sector engagement, lack of a business plan for scaling and extension services, presence of a more versatile and cheaper competitor

MICROTILLER

"In 2021, our cooperative received three microtillers given to us by the Office of the Provincial Agriculturist. It has been very helpful because we had only used foot-trampling and *bolos* to prepare my rice fields. The microtiller made land preparation easier," said Cristeta Nasuchod, 60, a farmer in Tonglayan, Natonin, Mt. Province.

The PhilRice-developed microtiller was meant as a solution to the highly laborious land preparation problem in the Cordillera highlands.

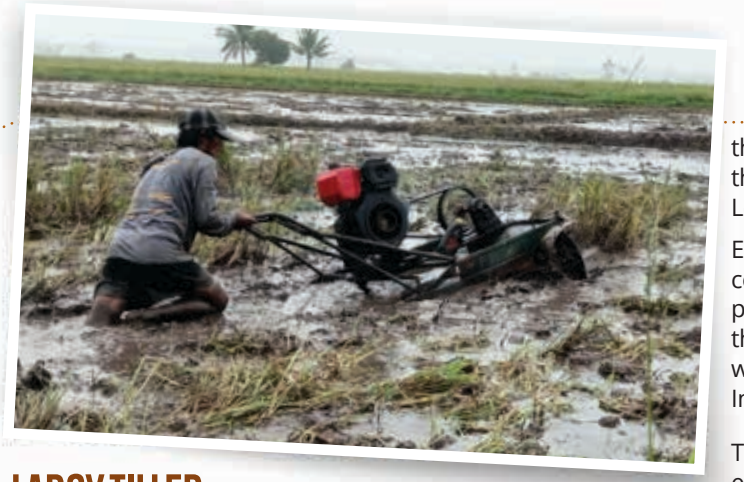
In a paper published in 2022, Manalo's team asserted that partnership with the Central Cordillera Agricultural Programme (CECAP) helped the PhilRice engineers conduct various workshops and activities to introduce the microtiller to numerous villages in the region.

PhilRice enlisted the help of local manufacturers by accrediting them to produce and sell the microtillers. Adhering to the tested specifications provided to them, they accommodated official orders and adjustments to suit their clients' needs.

From 2014 to 2016, units of microtiller were distributed to several farmer associations that plant heirloom rice through the Heirloom Rice Project, a PhilRice-IRRI collaboration, aiming to improve the heirloom rice productivity of indigenous communities in unfavorable areas.

"Despite these efforts, the study identified factors that hampered the microtiller scaling, such as the absence of private sector engagement, lack of a business plan for scaling, lack of extension services, and the presence of a more versatile and cheaper competitor, the multitiller," Manalo said.

Today, regardless of the advent of the multitiller, which has the advantage of also cultivating vegetables, the microtiller continues to be included in Farmer Field Schools demonstrations in the Cordilleras as a suitable machine in the area.



Drivers: Altruism, personal networks of owners, service providers
Enablers: Soft loan program of PhilRice, LGUs initiatives
Restricting factors: Lack of concerted efforts addressing some of the scaling ingredients like collaboration

LABOY TILLER

The investigating team also noted the concept of altruism as a primary factor that helped in the increasing uptake of the laboy tiller. Developed in 2003, it was meant to solve issues in laboy fields, areas characterized by soft, deep mud that can reach up to the waist. In 2010, there were about 15,000ha of laboy rice fields in Aurora, Cagayan, Pampanga, Oriental Mindoro, Samar, Surigao, Agusan del Sur, and North Cotabato.

"It became evident that the element of altruism played a big part in the acceptance, sharing, and continued use of the laboy tiller in Aurora. The use of the machine spread in Bacong, San Luis was mostly due to the service providers and the network of the people in the area," said co-researcher Louie Gerard F. Orcullo.

Elias B. Lachica, 62, the farmer-cooperator during the test period of the Laboy Tiller said that after less than a year, he was allowed to buy the machine paid in tranches under the Institute's soft loan program.

The study also noted the warmth and sincerity the PhilRice engineers showed while introducing the laboy tiller to the rice farmers of Aurora. The researchers relished that this could have resulted in the farmer valuing the machine, demonstrating the merit of showing goodness to others which is highly regarded in Filipino culture.

"Evidently, the lead actors for the laboy tiller's scaling were the beneficiaries themselves; thus, we identified lack of concerted efforts addressing some of the scaling ingredients, such as collaboration, evidence and learning, leadership and management, and public sector governance," Orcullo expounded.

As of this writing, laboy tiller units are available through procurement from LGUs and PhilRice-licensed manufacturers.

Drivers: Excellent eating and milling quality, word of mouth, RCEF seed distributions
Enablers: Trials in farmers' fields across Regional Field Offices in favorable irrigated lowland ecosystems
Restricting factors: Sustainability plan on varietal supply seed distribution programs, communication of new varieties to all rice stakeholders, susceptibility to major diseases in hot spot regions

NSIC Rc 160

"Based on the study's results, the variety is a rice breeding success, which spread like wildfire in the country. Seed sales of this variety reached up to P4.9 million in 2017 and grew in the succeeding years. According to an expert we interviewed, among the 16 regions in the country where they distributed seeds, all preferred the variety except for Regions 5 and 8," Orcullo revealed.

Thanks to its competitive yield and excellent milling and eating quality, Rc 160 or Tubigan 14 became popular among consumers, millers, and traders through word of mouth and various channels.

There is a high preference for Rc 160 regardless of income status. *Karenderias* prefer to serve the variety to their customers; the variety is even given as a token during high-end social functions. Certain outlets of major fast food chains serve it to their customers.

"When NSIC Rc 160 first entered the market, the consumers liked it immediately. That is why we continue to mill it and will do so for the foreseeable future. I hope PhilRice promotes the variety more, produces it more," said Marivic V. Belena, 63, a rice miller in Nueva Ecija.

Currently, Rc 160 reaches farmers across the country through the RCEF seed distribution program and on-farm trials that conduct farmers' field tests on released varieties in accordance with the regions' requests.

Although Rc 160 was replaced as a nationally recommended variety, it remains as a regional preference, according to test results in 2021.

To enhance scaling efforts for varieties, the researchers recommend a clear sustainability plan for supply distribution programs and strong promotion to communicate all the merits of new varieties to rice stakeholders, including millers and traders.

Moreover, PhilRice seed complementation must be strong to support the needed rice supply. Under its breeding program, varieties in the likes of Rc 160 are being replaced using modern augmentation strategies to improve their weak traits while retaining their excellent eating quality.

PhilRice and its partners have been establishing techno-demo areas in various provinces to showcase the harvest of public hybrids like Mestiso 20.

Klydel Anne C. Barangan

Mura, maani, masarap, at matibay make M20 mighty

▶ **REUEL M. MARAMARA**

Developed for a decade, seeds produced for more than a year, and grown by farmers for almost 20 years now, hybrid rice variety Mestiso 20 still lives up to being the "Mighty M20" for farmers and seed growers.

With a 15% yield advantage over inbreds, NSIC Rc 204H, popularly known as M20, is one of the major agricultural innovations developed by PhilRice and UP Los Baños. Released in 2009, this public hybrid has a yield of 6.4t-11.7t/ha, matures in 111 days after sowing, and is moderately resistant to yellow stem borer, green leafhopper, and brown plant hopper.

Farm worker-turned-boss

"I was once a worker in my father's field. Now, I'm the boss managing more than 200 people. From inbred commercial production to hybrid rice seed production, my income increased by 300%," said Clemente A. Alingalan, 42, Banaybanay, Davao Oriental.

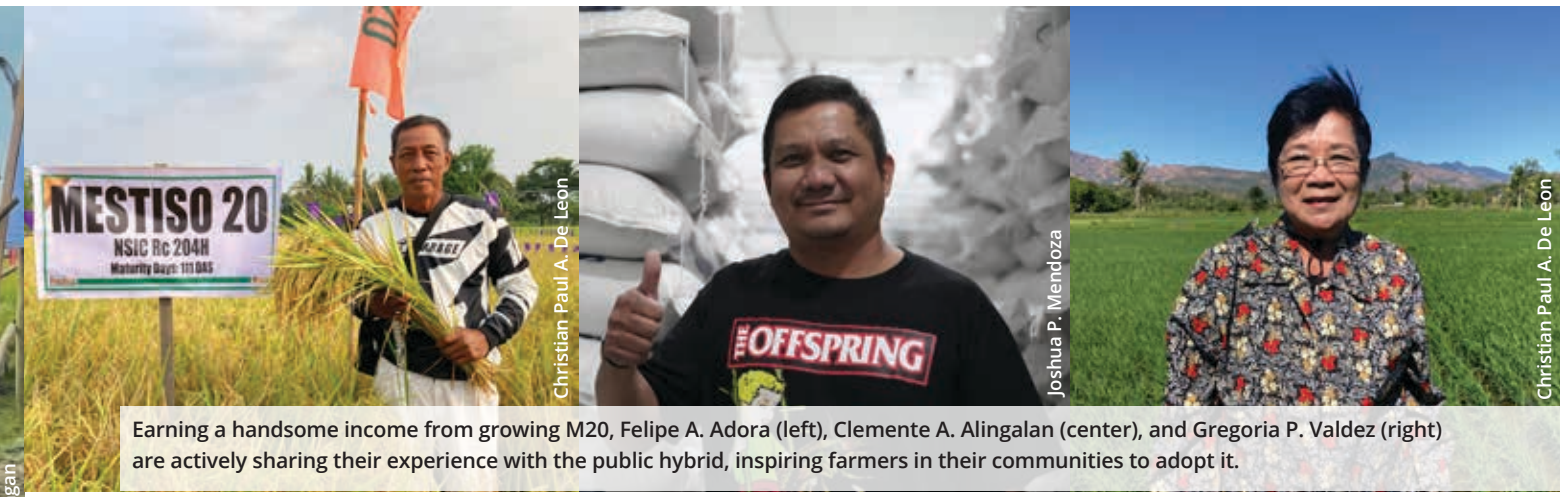
His loyalty to M20 started in 2016 when his Coop requested the Bureau of Plant Industry (BPI) and PhilRice to offer a season-long training on hybrid rice seed production. Alingalan stepped forward to be one of the training participants as he saw a bright future in producing the hybrid seeds.

He confided that he could now produce an average seed yield of 2.6t/ha after mastering the protocol of growing M20 seeds that PhilRice shared with them. His Coop, the Davao Oriental Seed Producers Cooperative, bought his produce at P160 per kilo. Now, he plants his 22ha with M20.

According to Dr. Fidel M. Ramos, former lead of PhilRice's Public Hybrid Rice Seeds System Project, hybrid rice seed production costs from PhP120,000 to PhP150,000 per hectare and seed yield ranges from 1.5t/ha to 3t/ha. He also said that a kilo of public hybrid rice seeds costs PhP212, allowing seed growers a net income of PhP198,000-PhP516,000 per hectare per season.

Alingalan's income from M20 helped him send his children to schools, purchase vehicles, buy additional lands to till, and support other families.

His loyalty to M20 never fades because the variety has never failed him. "I'm also a farmer," he said with conviction. "I know how a farmer feels. I don't need to lie about the performance of M20."



Christian Paul A. De Leon | Joshua P. Mendoza | Christian Paul A. De Leon

Earning a handsome income from growing M20, Felipe A. Adora (left), Clemente A. Alingalan (center), and Gregoria P. Valdez (right) are actively sharing their experience with the public hybrid, inspiring farmers in their communities to adopt it.

Khydel Anne C. Barangan

> M20 is made in the Philippines so it thrives well in local soil. This is its advantage over the hybrids produced from other countries.
>
> **- CLEMENTE A. ALINGALAN**
> Seed grower, Banaybanay, Davao Oriental.

Growing and showcasing M20 during provincial, regional, and national technology forums or derbies for more than a decade, he proudly enunciated, "M20 is made in the Philippines so it thrives well in local soil. This is its advantage over the hybrids produced from other countries."

He vividly recalled that despite being flooded, beaten by strong winds, hit by drought, or infested with stem borer, M20 stood strong and produced good yields, unlike the other hybrids.

Alingalan felt a sense of fulfillment seeing their M20 seeds reach farmers in different parts of the country, such as Cordillera and Regions 2, 5, 7, 8, 9, 10, 11, 12, and 13 thru the help of BPI bringing hopes of better yield.

Public hybrid rice fanatics

The M20 seeds produced by Alingalan's coop have finally grown on the soils of Abra in 2022. Abra farmers gave M20 a thumbs-up recognition.

Gregoria P. Valdez, 71, of La Paz, gave a second chance to cultivating hybrid rice. Her first try of hybrid rice was in the '90s. She was disappointed with the low eating and milling qualities of the hybrid distributed then so she went back to planting inbred rice.

Farming for more than three decades, she happily said, "Finally, I found the right variety with high yield and good eating and milling qualities. I used to harvest 80 cav and earn P20,000 per hectare using inbred. With M20, I produced 150 cav with an income of P56,000. Thanks to PhilRice for bringing M20 to us!"

"With my income from planting M20, I had my house improved. I converted my "kalapaw" (hut) into a small house for a more comfortable sleep. I could now provide school allowance to my grandchildren. I could also provide support to my relatives," Valdez said.

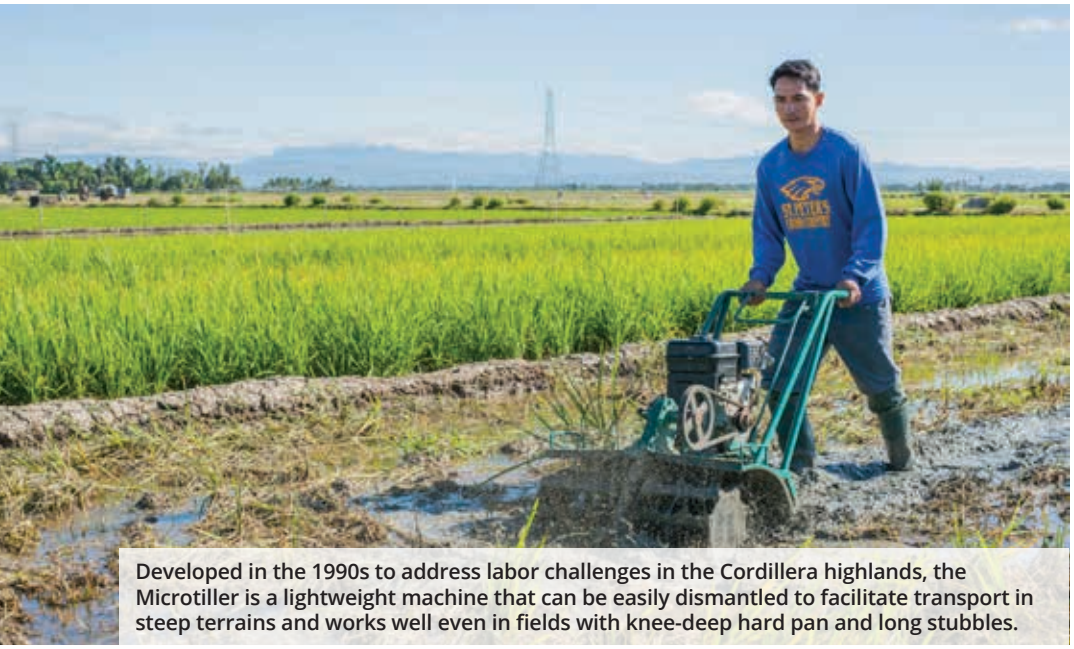
Also from La Paz, Felipe A. Adora, 59, who has been farming for more than three decades, did not regret deciding against his second thoughts in trying M20.

"M20 gives a higher yield and is resistant to pests and diseases compared with other hybrids that I planted before," Adora said with satisfaction.

"We didn't find any difficulty in managing M20, we only need to address labor scarcity in our area during crop establishment and harvesting to maximize the benefits of M20," he added.

For a tenant like Adora, he really couldn't hide his joy after harvesting 9t/ha from M20 because he used to harvest only 4t/ha using inbred. The increase in yield assured him that his family had rice to eat enough for one cropping season and that he had money to use for the next season.

After being trained on hybrid rice cultivation in 2022 and hybrid rice seed production in 2023 by PhilRice Isabela through its branch development initiatives, Adora and Valdez looked forward to producing their own M20 seeds to make M20 available and accessible for their community. They wanted to share how mighty M20 is as an innovation to better the lives of their fellow farmers.



Developed in the 1990s to address labor challenges in the Cordillera highlands, the Microtiller is a lightweight machine that can be easily dismantled to facilitate transport in steep terrains and works well even in fields with knee-deep hard pan and long stubbles.

Collaboration helps deploy farm machines in fields

▶ **YOBHEL LOUISSE P. BELTRAN**

Making machinery available and accessible to more farmers is a big challenge, but thanks to our partner manufacturers, it became possible.

The two-decade partners PhilRice and Guimba, Nueva Ecija-based Val Agri signed a licensing agreement in 2020 to manufacture and commercialize the machines for land preparation and post-harvest, such as microtiller, laboy tiller, reversible flatbed dryer, and seed cleaner.

Microtiller is a lightweight equipment used for tilling small-sized paddies, while laboy tiller does land preparation, particularly for puddling soil with deep hardpans. The reversible batch-type mechanical dryer dries *palay* by first introducing heated air at the bottom layer of the grains, then reversing its flow before completing the drying process. The seed cleaner is used to remove foreign materials from the seed mass.

Val Agri is also acknowledged as one of the inventors of the multipurpose (MP) seeder, with the involvement of its owner, Roman S. Lugto, in prototyping, testing, and modifying the equipment.

According to Lugto, the machines have landed in different provinces across the country. Laboy tiller was brought to Aurora, Palawan, Iloilo, Agusan, Davao del Sur, and Bukidnon. The seed cleaner has reached Ilocos Sur. Meanwhile, MP seeders were brought to PhilRice stations.

Good effort pays off

As time passes, these collaborative efforts will not go in vain as farmers find the machines beneficial to their rice fields.

"As seed growers, the seed cleaner is useful to us; it can properly separate the full grains, half grains, and rice hull. Its blower is also easy and faster to use, we can finish 500 cavans per day", Josephine S. De Guzman, 63, a seed grower from the Science City of Muñoz, Nueva Ecija is proud of her implement.

Meanwhile, Jose A. Turzar from Casiguran, Aurora reported that the laboy tiller improved his farming productivity.

"I started using the laboy tiller in 2010," Turzar recollected," and since then, I find it more convenient to prepare our rice field. Before, it took one whole day to finish preparing our 1,000sqm field, but with the help of the machine, it only takes us 30 min to finish the whole area."

Lugto is also delighted that the microtiller has reached Iloilo, Ifugao, Mountain Province, Benguet, and some parts of Mindanao. The reversible flatbed dryer was installed in PhilRice Isabela and Batac, and its parts were brought to Ilocos, Tarlac, Nueva Ecija, and Cagayan.

> Before, it took one whole day to finish preparing our 1,000sqm. field, but with the help of the machine, it only takes 30 min to finish the whole area.
>
> **- JOSE A. TURZAR**
> Farmer, Casiguran, Aurora

Gains and pains in commercializing hybrid rice

HANAH HAZEL MAVI B. MANALO

Data from the Philippine Statistics Authority show that, over the years, rice production in the Philippines has consistently exceeded previous records. In 2000, rice production stood at 12.4 million metric tons, and by 2023, it had risen to 20.06Mmt. This can be attributed to new agricultural innovations, including the use of machines, new management systems, and high-yielding varieties like hybrid rice.

When first commercialized in the Philippines under the Hybrid Rice Commercialization Program (HRCP), hybrid rice initially faced resistance from rice stakeholders including farmers. The high production cost of hybrid rice had made the growers regard it as an all-risk and an unsure-of-gain enterprise.

Geared toward increasing yields by at least 15%, the HRCP was launched as the flagship program for agricultural development of former President Gloria Macapagal-Arroyo in December 2002 with PhilRice as lead implementing agency.

Dr. Karen Eloisa T. Barroga, PhilRice Deputy Executive Director for Development, shared that the Institute seized this opportunity, with backing from the national government, owing to the technology's great potential in boosting local rice production.

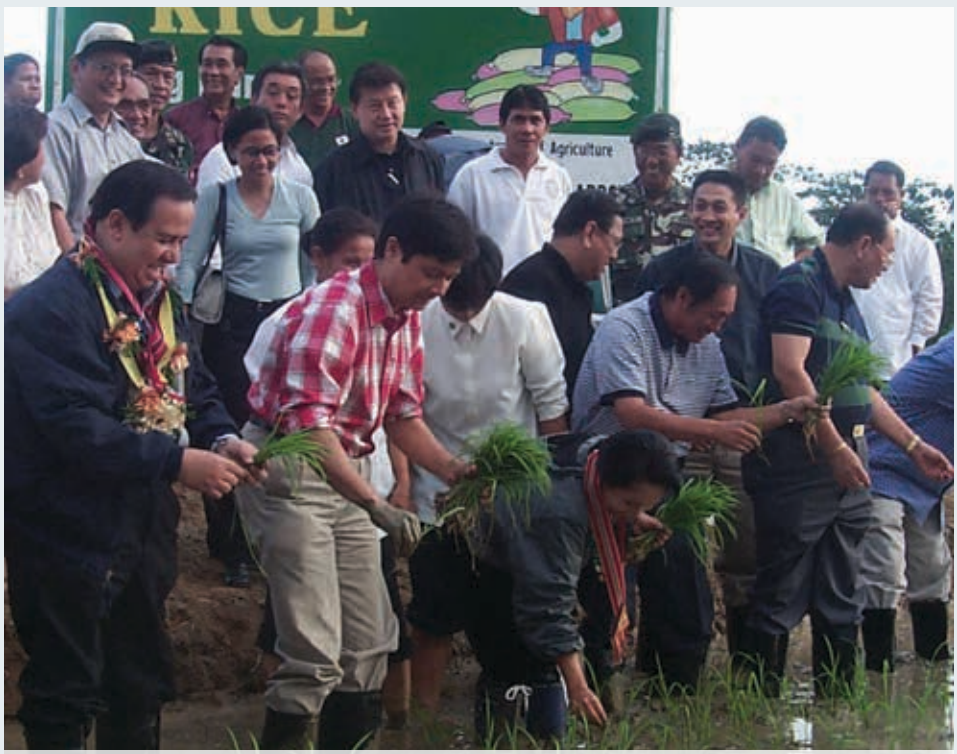
Despite being faced with skepticism, the program also achieved significant gains during that time including yield of not lower than 5t/ha, 15% increase in income from hybrid rice seed production compared with inbred rice, and savings of at least US$23 million from rice importation.

Documenting the HRCP's pains and gains, the book "Pains of Success in Hybrid Rice Commercialization in the Philippines" asserts that greater gains could have been achieved had a detailed master plan been mapped out before promotion and the technology recommended only in suitable areas and for progressive farmers.

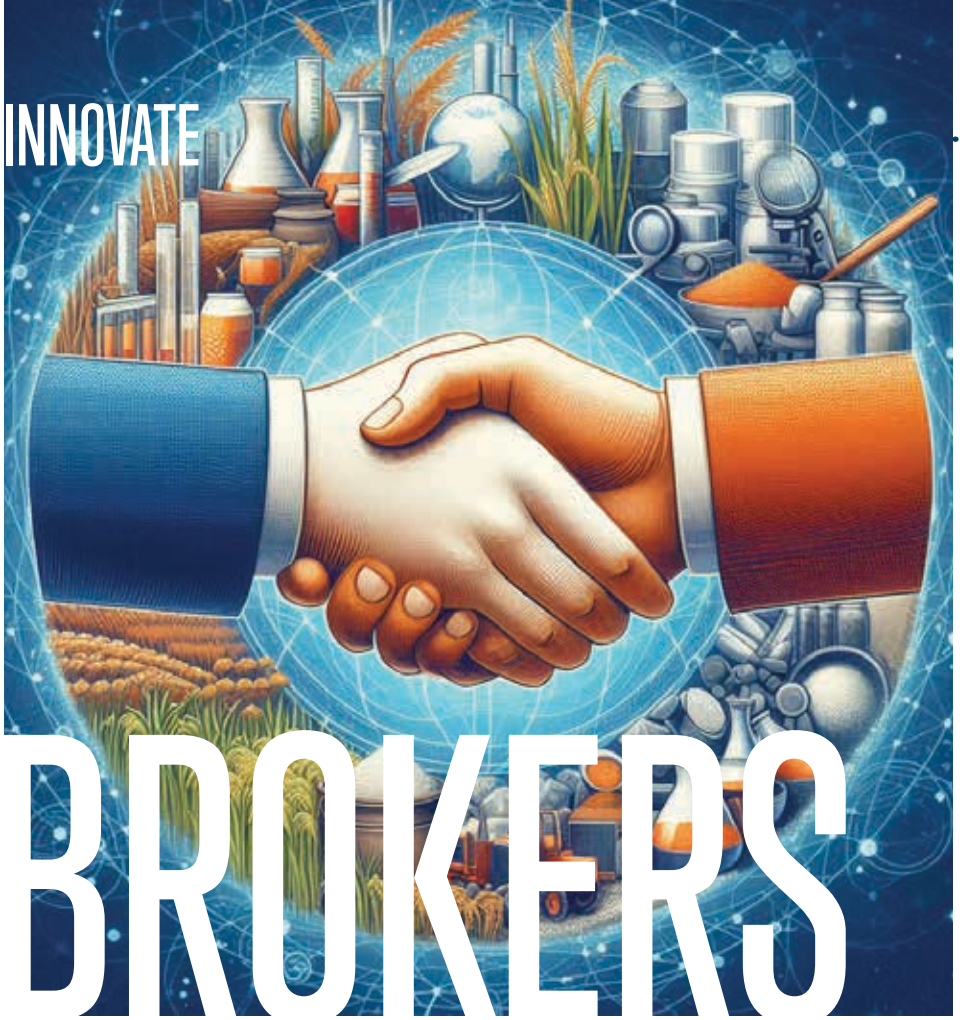
The experience in implementing HRCP also taught that program management and policymakers should be adept with farmers and specific LGUs' socioeconomic and geographical conditions, readiness, and acceptance, including their fears and apprehensions in the adoption process; farmers should be prepared to unlearn their traditional farming practices gradually; and the sociocultural dimensions should be taken into account to establish greater connection between farmers and implementers for a more effective and realistic planning and targeting, policymaking, and more sustainable program.

After all that has been said and done around hybrid rice commercialization, Barroga emphasized, "we took the opportunity, along with the risks, and we now have a thriving hybrid rice industry."

The 2021 report by the PSA stated that *palay* production in the July to September 2021 season was 3.75Mmt. The harvest area for that season grew by 71% from the previous year's 851,885ha. In 2021, the country recorded a *palay* harvest of 19.96Mmt with 33% of it coming from hybrid rice, introduced years earlier by the government. A remarkable feat indeed.



Then Pres. Gloria Macapagal Arroyo (3rd from left, front row), who launched the HRCP in 2002, believed in hybrid rice technology as key toward food sufficiency.



BROKERS to the rescue

REUEL M. MARAMARA

While many rice farmers are now reaping the rewards of agricultural innovations, such as reduced production costs, increased yields, and improved efficiency in nutrient, pest, and disease management, the situation of a rice farmer in the outskirts of town may be less rosy. Unfortunately, owing to challenges in agricultural extension, these valuable innovations struggle to reach the less privileged rice farmers.

Providently, when all efforts falter, innovation brokers step in to save the day.

An honest broker

Interestingly, the term "broker" has acquired a negative connotation, often linked to individuals who exploit the division between system actors, prioritizing self-interests in their work. Innovation brokers, however, emerged from the concept of an 'honest broker,' bridging actors together mainly for altruistic or unselfish purposes.

"When agricultural innovation systems do not work, innovation brokers are needed the most. They bridge the gaps within the system, ensuring continuous interaction among various actors facilitating the adoption or creation of innovative solutions from the wider environment," said PhilRice's social scientist Dr. Jaime A. Manalo IV.

The Food and Agriculture Organization defines innovations system as a "network of individuals, organizations and enterprises, together with supporting institutions and policies in the agricultural and related sectors that bring existing or new products, processes and forms of organization into social and economic use."

Setting the trail

In a research paper titled "PhilRice as an innovations broker: The case of 'What is a climate change-adaptive school?' project," Manalo explained that innovations-brokering among public institutions has been underutilized and is often performed subconsciously. "Many institutions have primarily focused on traditional technology transfer functions, yielding predictable results rather than exploring more intricate processes like innovations brokering. We are also limited by bureaucracies and what-not," he added.

At PhilRice, this function has been performed through various programs and projects, such as the Rice Business Innovations System that connects various players in the rice value chain enhancing farmers' competitiveness and fostering innovation; and the 'What is a climate change-adaptive school?' project, which developed high schools offering crops production as key information hubs on climate change-ready rice production technologies.

"Through these projects, the Institute served as an innovations broker articulating demand, connecting actors within the system, and overseeing the innovation process," Manalo clarified.

In the case of the school project, PhilRice, as a consequence of brokering innovations, has also empowered participating schools to become brokers themselves. These schools now serve as the go-to entities within their communities providing rice farmers with innovative solutions to production challenges, encouraging them to fix their field problems, and facilitating connections with local partners to enhance their rice farming further. Let us explore some of these remarkable schools that have selflessly taken on the role of brokering.

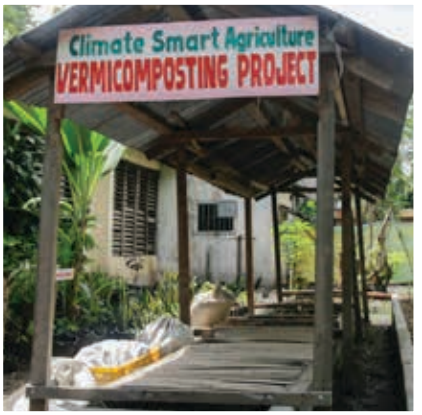
BATAC NATIONAL HIGH SCHOOL (BNHS)

Batac City, Ilocos Norte

Array of interventions: Rice garden, vegetable and fish production, and vermicomposting

Technology highlights: Certified seeds, carbonized rice hull (CRH), vermicast, and water-harvesting

The school conducted a seminar on climate change-ready rice technologies that involved *Gulayan sa Paaralan Program* coordinators in the city. As part of their rice garden initiative, BNHS collaborated with landowners who lent portions of their land to showcase rice technologies to the community. The adoption of these technologies was immediately noticed. For instance, a rice-tobacco farmer who was previously unaware of the uses of CRH learned about it from his son, who was a student at BNHS. Now, he actively uses CRH on his farm.



LIBON AGRO-INDUSTRIAL HIGH SCHOOL (LAIHS)

Libon, Albay

Array of interventions: Rice garden, vermicomposting, and vegetable garden

Technology highlights: Use of high-quality seeds of a recommended variety

During project implementation, one rice-related problem that surfaced in the area was the tungro virus. In response, the school planted NSIC Rc 222, a variety with moderate resistance to the green leafhopper, the tungro virus carrier. Naturally, their rice garden yielded better than other fields, which sparked the curiosity of farmers in the community. Consequently, farmers and teachers collaborated with our partners at LAIHS to implement the program effectively and reach more farmers in the area.

LEYTE AGRO-INDUSTRIAL SCHOOL (LAIS)

Leyte, Leyte

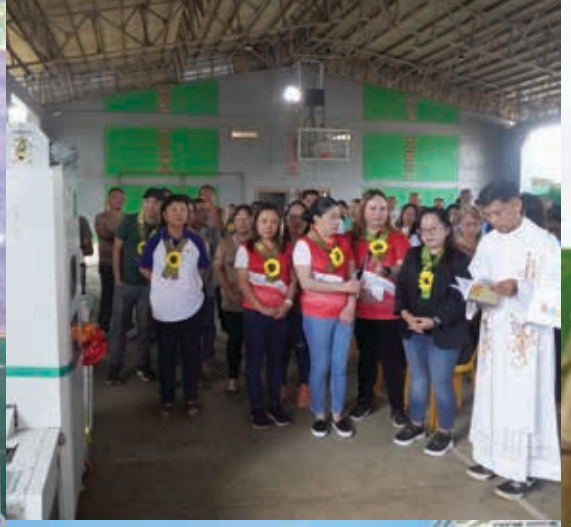
Array of interventions: Rice garden and compost production

Technology highlights: Use of high-quality seeds

Before the RCEF seed program, farmers in the area had to source seeds from not-so-near Ormoc City or rely on saved seeds. The school addressed this by producing high-quality seeds and became the source for neighboring barangays. This exposed farmers to new varieties and sparked interest in the community. Even pedicab drivers started sharing information leading to a quick spread of information about LAIS's showcased technologies.

Drawing on these outcomes of this apparently subconscious function, Manalo recommends that practitioners and experts explore the scope of innovations brokering in public agriculture research institutions to understand its operationalization.

"It is interesting to know how much transformation can transpire when public institutions take innovations brokering as a primary role," Manalo concluded.



Quezon Codcod RiceBIS Farmers' Cooperative (QueCoRiFACo) is set to expand its cooperative, which will benefit 300 farmers, through the PhP5.2 million grant from the Bank of the Philippine Islands Foundation.

A tale of footwear

▸ **JOSHUA P. MENDOZA**

A farmer, wearing worn-out slippers, stood in front of traders whose footwear were brand-new—a scene many farmers were accustomed to but never befriended, tinged with a certain pain that throbs every time it is remembered.

Their dry *palay* is outside, waiting to be sold at a fair price that would give justice to the hardship and fatigue they invested for four months. Yet, it's just another harvest season that would incur further loss, perhaps break-even.

"We're left with no option but to sell our *palay*. We can't have it milled because the expenses are higher," lamented Hernan M. Samson, 56, chair of the Quezon Codcod RiceBIS Farmers Agriculture Cooperative (QUECORIFACO) in San Carlos City, Negros Occidental.

Disheartened by this recurring situation, they would walk home carrying meager earnings that are only enough to pay for another round of farming inputs and their nagging debts. Despite this, they are still holding on to a stroke of hope that the tables will finally turn for the better next cropping season.

Little did they know, help was stealthily taking shape that would change their lives.

Wish granted

The dream finally turned into reality with the partnership of PhilRice with the Bank of the Philippine Islands (BPI) Foundation Incorporated through the two-year project "BPI Foundation Farm-to-Table in San Carlos, Negros Occidental: Enhancing Market Potential, Opportunities, Welfare, and Economic Resilience (EMPOWER) of RiceBIS Farmers".

The BPI Foundation has granted the Coop, thru PhilRice, a PhP5.2-million assistance, which was allocated for trucks (2.3M), rice mill (P900K), and capital (P2M) to help strengthen the competitiveness

Aside from planting rice, members of the Cooperative also earn additional income from planting various vegetables, which was further enhanced through another partnership with East-West Seed Company.

and improve the economic well-being of its smallholder rice farmer-members.

The Foundation said that they reached out to PhilRice to explore potential collaboration for farmers in the Visayas similar to their already established programs in Luzon and Mindanao. Thus, an agreement was made to support the RiceBIS Community in San Carlos.

"While farmers serve as the backbone of the economy, they often lack the proper support and opportunities. Through our program, we aim to provide them with additional knowledge, skills, and opportunities to enhance their livelihoods and achieve a better future for their families and communities," said Ma. Carmina T. Marquez, BPI Foundation Executive Director.

Turning tables

According to Samson, their members were excited when they first learned about the grant from BPI Foundation. However, they still see it as a challenge to develop and utilize it for the cooperative's success. Nevertheless, they have calmed down as they are confident that the RiceBIS program team in Negros will guide them.

Additionally, Samson stressed that to ensure the effective use of the granted machinery, they are counting on PhilRice personnel to train them in proper utilization and maintenance. Their new truck will also ease the transport of their products. They can now mill their *palay* on their own. Hence, they see their expenses contracting while their income are climbing.

> In the next 10 years, we hope to see our rice farmers prosper and become self-reliant. We aspire to witness their success in the field with sufficient income through sustainable farming practices and modern production technologies.
>
> **- MA. CARMINA T. MARQUEZ**

"In the next 10 years, we hope to see our rice farmers prosper and become self-reliant. We aspire to witness their success in the field with sufficient income through sustainable farming practices and modern production technologies," Marquez said in delight.

Emerging opportunities

Through another alliance with Merzci Bread and Pastries, a well-known food brand in the country, RiceBIS enabled QUECORIFACO to supply 500 sacks of milled rice in 2023.

"We are saddened every time we witness the traders oppressing the farmers. I believe the partnership will help lessen that by providing farmers with a reliable support system and ensuring they no longer have to rely on traders who take advantage of them," said Joana Beth F. Paypon of Merzci about their partnership with the RiceBIS Community.

Brand-new shoes

The cooperative vowed that once they gain the capacity to buy the produce of other farmers, they will purchase it at a fair price and won't perpetuate the dilemma they were once in.

"I've been saying in our meetings that our hardships will soon come to an end. We'll be able to buy shoes, not just slippers because we ourselves will buy *palay* and produce milled rice for other communities," Samson shared with excitement.

VOXPOP

How do you think can government programs be more effective in technology scaling?

COMPILED BY MARIEL M. ESPINOZA

ENGR. MILBREND ANNE B. ALBURO
NIA M'lang Malasila RIS, North Cotabato

The government should **STRENGTHEN** its measure and **MONITORING** of all programs that introduce innovations to effectively evaluate their progress or impact. We must continue to **SUPPORT INNOVATIONS** in several ways, such as the inclusion of funding for research and development and programs that **ENCOURAGE THE ADOPTION OF INNOVATIONS**. Policies that encourage or create favorable environments for adoption, such as the provision of incentives, must be established.

SUNDAY S. COMBO
Tiwi, Albay

We need to continuously conduct and provide **SEMINARS, WORKSHOPS, AND TRAININGS,** which include actual demonstrations in each municipality about new farm technologies. This will **ENCOURAGE FARMERS TO BE ADVANCED** in farming, making their farm activities easier and contributing to **INCREASED PRODUCTION** through modern technologies introduced by government programs.

LEA S. GINETE
Murcia, Negros Occidental

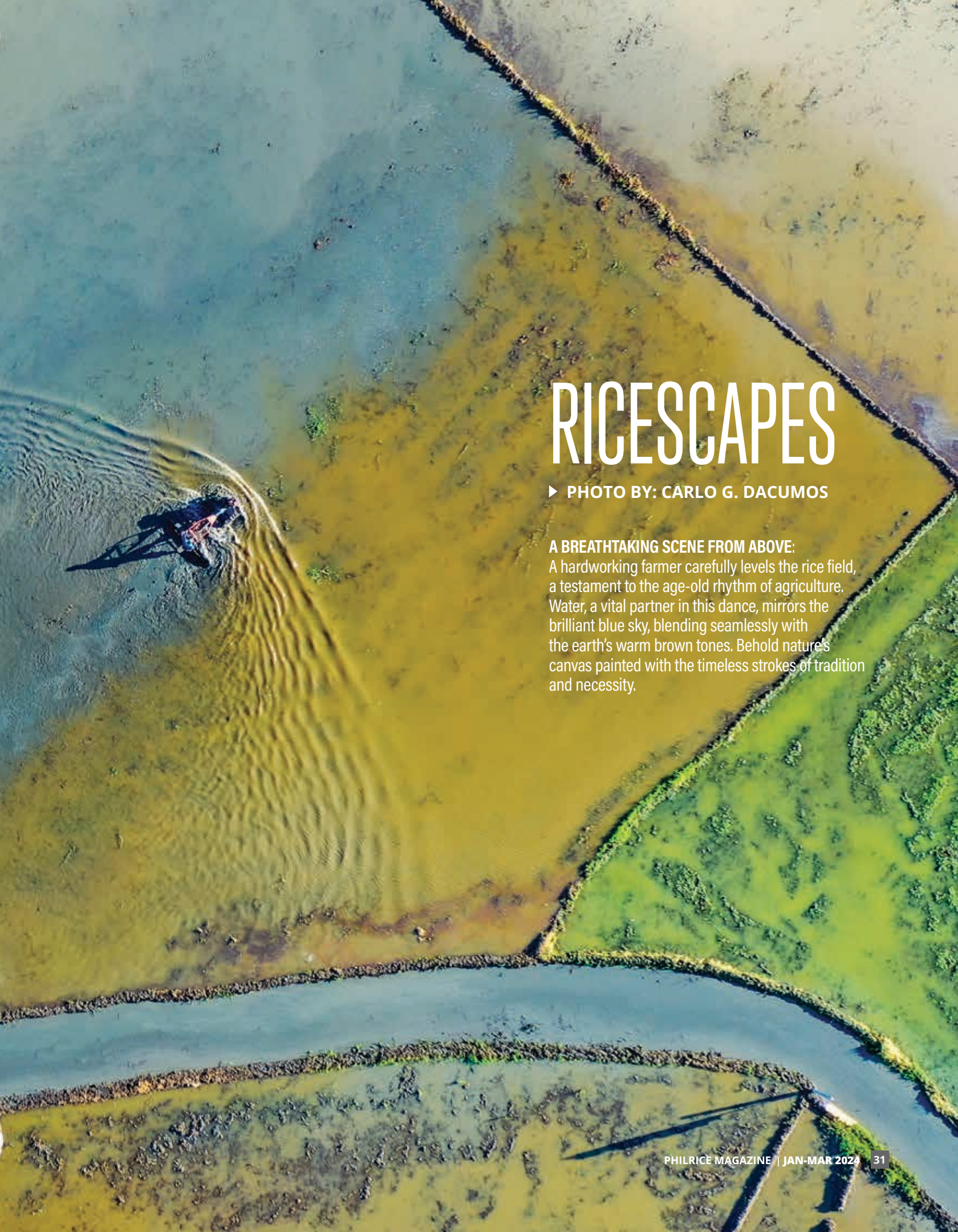
For effective technology and innovation transfer, the government must prioritize **FARMERS' PERSPECTIVES AND WILLINGNESS TO ADOPT MODERN** farming technologies. Encouraging **UNITY AMONG FARMERS** to serve as living testaments of these technologies would facilitate their widespread adoption and integration into farming practices.

FRANKIE E. BOLOCON
Canaman, Camarines Sur

We should focus on conducting and increasing **SITES FOR TECHNOLOGY DEMONSTRATION.** Farmers tend to have a 'to see is to believe' mindset and look for evidence of relative advantage before trusting the technologies promoted by the government. We must give utmost importance to efforts that lead to the **ADOPTION** of these **MODERN TECHNOLOGIES** as they are meant to help give us better lives.

MERLINDA J. BENTINGANAN
Murcia, Negros Occidental

To bolster its effectiveness, the government should continue providing **SPECIFIC TRAINING ACTIVITIES TAILORED TO TECHNOLOGY AND INNOVATION**. Reflecting on my experience with programs like RiceBIS, I've witnessed first-hand the transformative power of entrepreneurial thinking. Not only do I personally reap the rewards, but my family and our community as well.



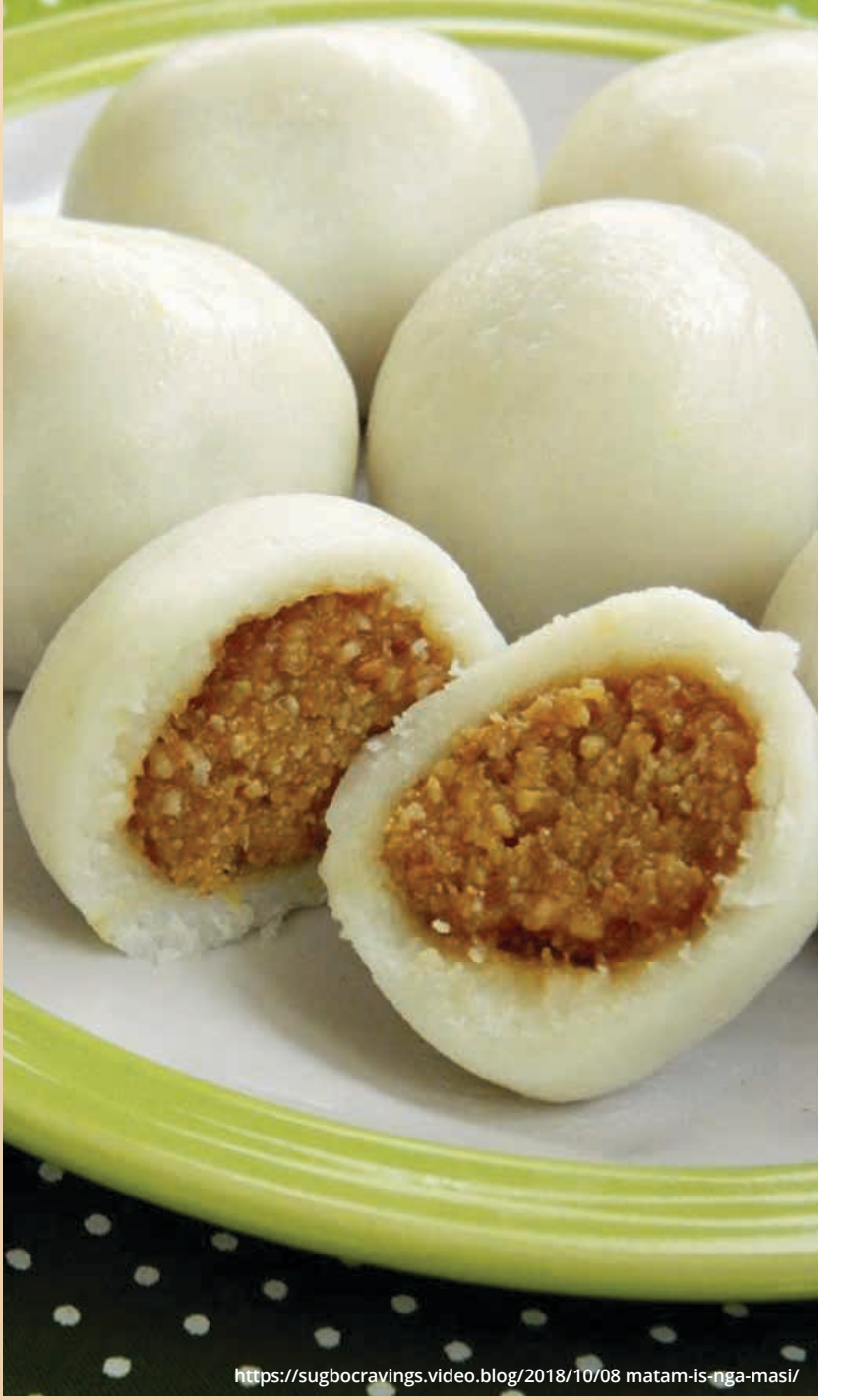
RICESCAPES

PHOTO BY: CARLO G. DACUMOS

A BREATHTAKING SCENE FROM ABOVE: A hardworking farmer carefully levels the rice field, a testament to the age-old rhythm of agriculture. Water, a vital partner in this dance, mirrors the brilliant blue sky, blending seamlessly with the earth's warm brown tones. Behold nature's canvas painted with the timeless strokes of tradition and necessity.

RICE RECIPE

COMPILED BY MARIEL M. ESPINOZA



https://sugbocravings.video.blog/2018/10/08 matam-is-nga-masi/

Let's try Masi

(Peanut-stuffed Sticky Rice)

With a multitude of choices, it can sometimes be overwhelming to choose the rice recipe that is right for both the young and the once young. Try these rice balls filled with crushed peanuts and muscovado/brown sugar that are surely a delight for all ages. It is easy to prepare — just boil it for a few minutes and when it floats, it is done!

INGREDIENTS

1 cup	glutinous rice flour
2 tablespoons	muscovado/brown sugar
2 tablespoons	peanuts, finely crushed
½ cup	hot water

INSTRUCTIONS

1. Mix brown sugar and peanuts in a bowl.
2. In a separate bowl, combine the glutinous rice flour and hot water using chopsticks to create the dough. Knead until a smooth ball is formed.
3. Take approximately 2 tablespoons of the dough and flatten it into a circle. Shape your hands to create a cup with the dough and fill it with the peanut-sugar mixture.
4. Seal the dough by pinching the edges together and rolling it into a smooth ball.
5. Repeat the process for the remaining dough and place the rice balls on a plastic-wrapped plate.
6. In a pot, boil enough water to submerge the rice balls. At boiling point, add the rice balls.
7. Remove the rice balls from the water when they float. Serve and enjoy!

*Makes 8 servings

PEOPLE

JUDEA B. BALLAGAN

A legacy of dedication and excellence

In a world spiced up with hustle and bustle, there exist individuals whose unwavering commitment and passion not only illuminate their path but also imprint an enduring legacy in the institutions they serve. For Rosana and Guadalupe, who both happen to be widows, these virtues have guided and kept them true to public service.

ROSANA S. OBIEN-GANOTISI

60, Sitio Mariit, Dariwdiw, Batac City, Ilocos Norte
Administrative Officer III, PhilRice Batac
BS Commerce major in Accounting, Divine Word College - Laoag City

Rosana's journey in public service began at the Philippine Tobacco Research and Training Center. In 1999, she joined PhilRice Batac, embracing every administrative challenge as a learning experience for her career growth. This enabled her to navigate with determination and excellence, contributing to the station's growth over the years.

Rose recalled that her 24-year service, which concluded on November 1, 2023, was not miles away from being effortless. There were moments when surrendering seemed tempting, yet her unwavering dedication overruled, carrying her through those difficult times until the path smoothed itself out.

Her contributions to the Institute were recognized with several awards, including the Most Outstanding Administrative Staffer Level 2 in 2004 and the Gantimpala Agad Award in 2022. Beyond her professional achievements, Rosana actively participated in community service and held positions as treasurer for various organizations. The retiree now focuses on her community and family.

GUADALUPE B. CARBONEL-MIRANDA

65, Bagong Sikat, Science City of Muñoz, Nueva Ecija
Administrative Officer IV, PhilRice CES-ODEDASF
BS Agricultural Economics, Central Luzon State University (CLSU)
Master in Public Management, Ateneo de Manila

Guada considers her journey with PhilRice a remarkable one spanning over two decades.

Way back to her career journey, Guada began at CLSU as a clerk in 1995, moved to PhilRice in 1997.

At the Seed Production and Health Division, Guada later assumed leadership roles in the seed processing, storage, and distribution projects. Her commitment to excellence manifested in her continuous pursuit of knowledge through various training programs, keeping herself updated in the field of agriculture.

Guada's journey shifted when she became the Public Relations Officer, pioneering an online request system and advocating PhilRice's contributions to diverse audiences. Subsequently, as head of the Records Office, she spearheaded the digitization of records, ensuring compliance with the National Archives standards, and served as the Freedom of Information receiving officer.

The fruits of her labor garnered numerous awards, including the Outstanding Administrative Staffer-level 3 in 2009 and Gantimpala Agad recognition. Her dedication extended to serving the Apostolic Faith organization in the Philippines, as a member of its board of trustees, reflecting her devotion to spirituality and drawing strength from the miracles that God has shown throughout her life.

Her 26-year service at PhilRice stands as a testimony to dedication, knowledge, and compassion. As she embarks on a new journey, Guada's words resonate: "Love your work; do things right proactively; be of good courage in the face of pressing challenges; always put your trust in the Lord; and recognize and appreciate those around you."

APPLAUSE TO OUR SERVANT STAFF

Appointed and promoted staffers

MAICA JANE C. GARCIA
Accountant II, CES-ODEDASF

ROLDAN G. ANTONIO
Executive Assistant III, CES-ODEDASF

JOSE MARI Z. NOMBRERE
SRS II, CES-GRD

PAMELA GRACE J. MARIQUIT
Accountant II, Agusan

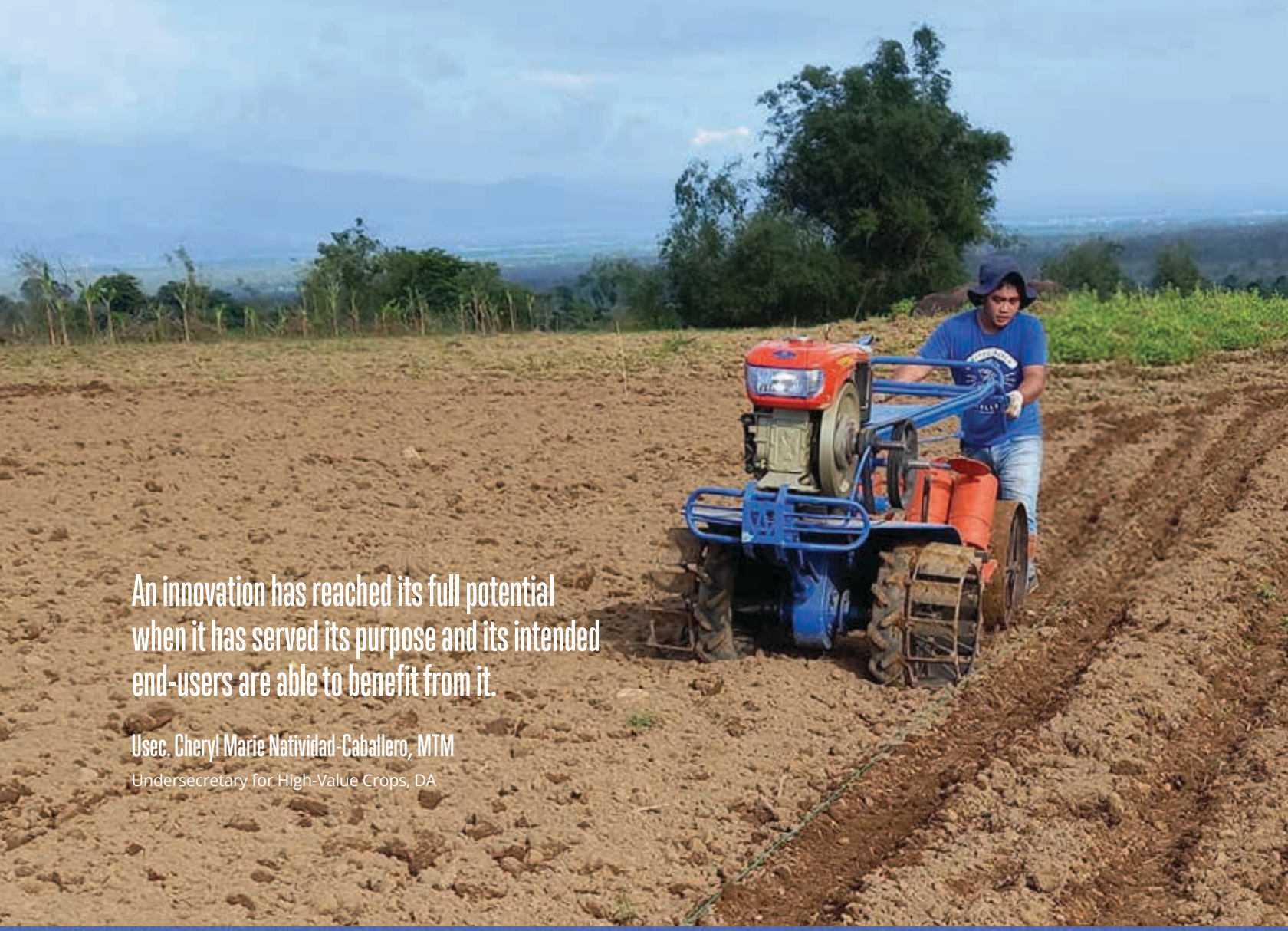
SHEILA MARIE P. CATACUTAN
Administrative Officer III, Batac

AMELIA V. MORALES
SRS II, CES-RCFSD

DARYL F. GENERAL
Engineer II, CES-PPD

JOHN MARK M. BUMANGLAG
SRS I, Batac

SAUD I. MAMA
SRS I (Contractual), Midsayap



An innovation has reached its full potential when it has served its purpose and its intended end-users are able to benefit from it.

Usec. Cheryl Marie Natividad-Caballero, MTM
Undersecretary for High-Value Crops, DA

DEPARTMENT OF AGRICULTURE
PHILRICE
PHILIPPINE RICE RESEARCH INSTITUTE

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

PhilRice TV | www.philrice.gov.ph www.pinoyrice.com | 0917-111-7423 | DA-PhilRice | prri.mail@philrice.gov.ph

BRANCH STATIONS:

DA-PhilRice Batac, MMSU Campus, City of Batac, 2906 Ilocos Norte; Mobile: 0919-944-3016; Email: batac_1.station@mail.philrice.gov.ph
DA-PhilRice Isabela, Malasin, San Mateo, 3318 Isabela; Mobile: 0999-889-3027; Email: isabela.station@mail.philrice.gov.ph; philriceisabela3318@gmail.com
DA-PhilRice Los Baños, UPLB Campus, Los Baños, 4031 Laguna; Tel: (49) 501-1917; Mobile: 0993-631-9175; Email: losbanos.station@mail.philrice.gov.ph
DA-PhilRice Bicol, Batang, Ligao City, 4504 Albay; Tel: (52) 431-0122; 742-0690; 742-0684; Email: bicol.station@mail.philrice.gov.ph
DA-PhilRice Negros, Cansilayan, Murcia, 6129 Negros Occidental; Mobile: 0909-129-3763; Email: negros.station@mail.philrice.gov.ph
DA-PhilRice Agusan, Basilisa, RTRomualdez, 8611 Agusan del Norte; Telefax: (85) 806-0463; Email: agusan.station@mail.philrice.gov.ph
DA-PhilRice Midsayap, Bual Norte, Midsayap, 9410 Cotabato; Mobile: 0938-374-1040; Email: midsayap.station@mail.philrice.gov.ph

SATELLITE STATIONS:

Mindoro: Alacaak, Sta. Cruz, 5105 Occidental Mindoro; Mobile: 0919-495-9371
Samar: UEP Campus, Catarman, 6400 Northern Samar; Mobile: 0921-555-5500; 0948-754-5994; Email: philricesamar@gmail.com
Zamboanga: WMSU Campus, San Ramon, 7000 Zamboanga City; Mobile: 0975-526-0306

DA-PhilRice Field Office, CMU Campus, Sayre Highway, Musuan, Maramag, 8714 Bukidnon; Mobile: 0909-822-9813; Email: philricefocmu.2019@gmail.com
Liaison Office, 3rd Floor, ATI Building, Elliptical Road, Diliman, Quezon City; Mobile: 0928-915-9628