# PhilRice Magazine

A quarterly publication of the
Philippine Rice Research Institute


## CRISIS-RESILIENT *Rice Farming*

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# ABOUT THE COVER

Filipino rice farmers have been going through many challenges to produce the country's main staple – rice. We have the changing climate and the need to adapt and mitigate as agriculture is one of its biggest victims; loss of arable lands; economic pressures such as trade liberalization and increased competition; and now the need to be food-sufficient as we battle against an invisible enemy – COVID-19. This issue of the PhilRice magazine highlights stories of resilience through these challenges as we move toward our vision "Rice-Secure Philippines."


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## EDITOR'S NOTE

# Beating the odds in rice farming

A recent report of the Philippine Statistics Authority has it that the country's *palay* production in the 2020 second quarter has improved by 7% from the same period last year. This development is a testament of our resiliency that despite fierce odds we are facing these days, we remain tough and firm to carry the torch of our aspirations toward a rice-secure Philippines.

This issue of the magazine lauds several stories of resilience in the face of various daunting crises, such as climate change, pest outbreaks, market pressures, and the COVID-19 pandemic. It aims to enkindle optimism that there's a silver lining in every predicament.

According to PhilRice Executive Director John C. De Leon in his article on page 10, the pandemic "has not blurred our vision for a rice-secure Philippines but rather it has deepened our understanding of the relationship of rice security with national security."

Under the current situation, the relevance and impact of our rice R4D work has become more pronounced to help address not only food security but also national security. Through the Rice Competitiveness Enhancement Fund (RCEF) programs implemented starting last quarter of 2019, we are able to extensively promote to farmers the use of high–quality seeds of modern inbred rice varieties. As a result of the RCEF seed distribution during 2020 dry season (DS), our farmers got an average yield of 4.14t/ha, which is 440kg higher than the baseline yield of inbred seed users in 2019 DS. Today, we continue to distribute seeds to rice farmers in partnership with the local government units and with guidance from our policymakers. For the 2020 wet season cropping, we have delivered more than 2.35M bags of certified inbred seeds for about 884,000 rice farmers from March to August. We have also conducted training for farmers but with the strictest implementation of precautionary measures to avoid COVID-19 infection.

Working under the lockdown is not easy (read story on page 16), but we need to fulfill our duties to bring the seeds to farmers by any means possible before the time of sowing. Farmers need us most in this time of crisis. As you flip through the pages of this magazine, you will see more stories on how farmers can cope with market pressures (12), pest outbreaks (20), and climate change (14, 18, & 24).

# RCEF farmers post higher yield and income

Farmer-recipients of inbred certified seeds from the Rice Competitiveness Enhancement Fund (RCEF)-Seed Program are reporting higher harvests and additional income for the first half of the year.

A survey by our Socioeconomics Division (SED) showed that rice yield of more than 4,000 farmer-beneficiaries in 55 provinces averaged 4.14t/ha.

Dr. Jesusa Beltran, SED head, said that the new average is higher by 0.44t/ha than the baseline yield of inbred seed users in the 2019 dry season.

The yield increment, valued at an average price of P17/kg, translates to almost P7,500/ha additional income per farmer-recipient that helps them cope with the financial slash brought about by the COVID-19 pandemic.

The DA-PhilRice survey, conducted through phone interview, also showed that more than half of respondents gained access to information materials circulated during seed distribution. About 97% of them reported that these helped improve their knowledge in rice farming.

Survey results were released following the recent Philippine Statistics Authority (PSA) report showing that first-semester palay production had increased from 8.27M tons in 2019 to 8.39M tons in 2020.

Dr. Flordeliza H. Bordey, the Institute's RCEF Program Management Office Director, said that yield mainly drove this year's rice production growth in the first semester. "Though still short of our peak yield in 2018, the observed yield recovery offsets the effect of the shrink in rice area harvested," she emphasized.

PHILRICE PHOTO

With the RCEF-Seed Program, farmers enjoy almost P7,500/ha additional income.

For DA's part, Sec. William D. Dar said the department had been intently monitoring the progress of RCEF implementation.

"We have been on our toes since last year, squarely confronting all challenges in the implementation of the Rice Tariffication Law, especially those on RCEF. We acknowledge the 'birth pains,' but we are now reaping the benefits, accruing to our farmer-beneficiaries. There's no better way to tell the stories than to come from farmers themselves," Dar said.

"We will continue to monitor, document, and share these farmers' stories to inspire millions of their counterparts nationwide; faithfully serving them all as we conscientiously implement RCEF program components in the succeeding years through 2025," the servant-leader added.

Rice grower Teodolfo G. Gindap of Barbaza, Antique gained his highest yield in his 20 years of farming thru the program that doubled his harvest to 3.8t. He used to harvest 1.5t from his 0.75ha even with good irrigation.

Gindap, who is enlisted in the Registry System for Basic Sectors in Agriculture (RSBSA), also saved P3,000 from the distributed seeds.

"Seeds from the program are good choices because they are of high quality. This wet season (WS), I planted NSIC Rc 402 - a new, early-maturing variety," he said.

From March to August 2020, the program has delivered about 2.35M bags to almost a thousand cities/ municipalities and distributed to 884,000 farmers.

"With more farmers reached this WS, a more positive outlook in rice production is expected this second

# More farmers laud RCEF-Seed Program

Farmers in Isulan, Sultan Kudarat happily receive their certified inbred seeds.

More than a hundred farmers from Talavera, Nueva Ecija have recently united themselves into the Farmers' Association of Bakal 2 in response to the advice that rice growers can benefit more from the government if they group together.

Their leader is 62-year-old Jesse I. Cuaresma. "These RCEF seeds are good news to us. Although they're given free, these are truly high-yielding," he said. Planting NSIC Rc 222 on his 2-ha farm, his harvest in April 2020 jumped to 180cav/ha from the lamentable 80cav/ha that he never talked about publicly.

Crossing five Mindanao rivers and creeks to reach the seed distribution site together with fellow farmers, Resurreccion T. Mansinaging said she is encouraged to continue farming with the Program's support.

"I received NSIC Rc 216 and planted it on my ¾ha. I'm thankful that [the Program] reached us despite the remoteness of our place," the Manobo rice tiller from Pigkawayan, North Cotabato said.

Meanwhile, Charlou A. Anito of Tago, Surigao del Sur said that in her more than a decade of farming, she for the first time received agricultural aid thru the RCEF Program.

"Thanks to the RCEF program for giving us free and high-quality seeds. Through 15 years of rice farming, I never imagined I would receive this kind of help. I got NSIC Rc 222 last planting season and I was amazed because my yield was so good; it reached 144cav/ha! Farming is now more rewarding," she said.

With the farmers' good feedback, program implementers expect that the 2020 wet season seeds already distributed will be planted on almost a million hectares, including rainfed areas.

Dr. Flordeliza H. Bordey, RCEF Program Management Office Director, has confirmed that from March to August, PhilRice had turned over 2.35M bags of inbred certified seeds (20kg/bag) in almost a thousand cities/municipalities within 55 provinces.

"From this total delivery, the local government units (LGU) have thus far distributed almost 2.2 million bags to about 884,000 farmers. With the guidance from our policymakers and the LGUs' continued strong support, we have surpassed our total deliveries during the first RCEF planting season," Bordey said.

• **CHARISMA LOVE B. GADO-GONZALES**

semester under favorable weather," Bordey said.

Other than yield increase, program implementers also noted renewed farmers' confidence to continue producing rice.

Flaviano H. Dator, president of Samahan ng Magpapalay ng Lucban in Quezon, used to describe farming as an unprofitable livelihood before the RCEF-Seed Program.

"Farm inputs including seeds are expensive, trapping many farmers in debt. But with the provision of free certified inbred seeds, farmers can save at least P1,500 per hectare that motivated us to plant anew," he said.

The RCEF-Seed Program is a component of Republic Act 11203 or Rice Tariffication Law, which was sponsored by Sen. Cynthia Villar, supported by the House of Representatives, and signed by Pres. Rodrigo Duterte. It allots a P10 billion fund every year for the rice farmers. The program is a 6-year government initiative to help the farmers defend themselves against open competition from the international rice market.

DA-PhilRice leads the implementation of the RCEF-Seed Program in partnership with the Department of Agriculture and local government units. It also co-implements the RCEF-Rice Extension Services Program along with the DA-Agricultural Training Institute, Technical Education and Skills Development Authority, and Philippine Center for Postharvest Development and Mechanization.

• **CHARISMA LOVE B. GADO-GONZALES**

# RCEF trains farmers under the 'new normal'

Training programs for farmer-beneficiaries of the Rice Competitiveness Enhancement Fund (RCEF) continue without taking the global pandemic for granted.

"There are modifications and adjustments in learning approach and delivery to optimize learning under the new normal. It is going to be different and difficult for the implementing agencies and the trainees but we need to fulfill our mission," said Dr. Rosana P. Mula, chair of the RCEF-Rice Extension Services Program (RESP) Technical Working Group (TWG) and Deputy Director of the DA-Agricultural Training Institute (DA-ATI).

Mula said the RCEF Farmer Field School (FFS) on the production of high-quality inbred rice, seed certification, and farm mechanization conducted by farm schools was redesigned to provide an option of reduced number of contact days while ensuring that rice production principles and practices at critical growth stages are taught, including financial literacy.

A total of 65 Nueva Ecija rice farmers from two barangays each of Sto. Domingo and the Science City of Muñoz are enrolled in the ongoing July to November FFS.

"The normal FFS has 14 contact days and involves 25 to 30 participants in a batch. Now, with the physical distancing protocol, we had to divide the single batch into two groups. This means that in a day, only 15 participants will attend and will meet only for 5.5 days throughout the cropping season," said Lea Abaoag, head of the Technology Management and Services Division of DA-PhilRice.


**Enrollees of the RCEF Farmer Field School conduct agro-ecosystems analysis, a way of studying factors in the field that affect rice growth and development.**

"We provide the farmer-scholars with masks and constantly remind them on hand washing and sanitizing. We make sure that we comply with health protocols," she added.

The FFS training covers a wide range of lectures and hands-on activities on the *PalayCheck* System, Agroecosystems Analysis (AESA), Integrated Pest Management (IPM), and more.

Mula clarified that the FFS is complemented with radio-based education, technical briefings, and information materials in various formats.

Dr. Karen Eloisa T. Barroga, vice-chair of the RESP-TWG and DA-PhilRice deputy executive director for development, said the Rice Specialists' Training Course (RSTC) will soon pilot-test combined online lectures with hands-on, face-to-face learning.

"The course aims to develop a high level of technical specialization such as field problems diagnostic skills to be able to help farmers. However, given our situation, we will now require trainees to establish techno-demos right at their areas and come to PhilRice for only a week for their field practicum. The trainees will also attend online lectures and exercises, analyze case studies, and collect pest specimens," Barroga explained.

DA-PhilRice, which leads the RSTC, had already produced 30 graduates with 112 farmer-students from Llanera and Rizal in Nueva Ecija, whom they trained on rice and seed production using the *PalayCheck* System. Graduates were mostly from the regional field offices of DA and DA-ATI.

Before the Luzon-wide lockdown in March onwards, two batches of RSTC were on-going for regional staffers from DA-ATI and DA in the Visayas and Mindanao, and from the Technical Education and Skills Development Authority. Arrangements are being made for course completion. •

**CHARISMA LOVE B. GADO-GONZALES AND JULIANNE A. SUAREZ**

Techno-demo areas established in four PhilRice branch stations showcase two public and four private hybrid rice varieties.

REUEL M. MARAMARA

# Rice resiliency supported

In support of the DA's Rice Resiliency Project (RRP), DA-PhilRice, together with other public and private seed companies, has established technology demonstration (techno-demo) farms on hybrid rice this 2020 wet season nationwide.

The 14 techno-demo farms that occupy a total area of 11ha showcase Mestizo 1 or M1 (PSB Rc 72H) and Mestiso 20 or M20 (NSIC Rc 204H). With 123-day maturity, M1 averages 5.4t/ha with a maximum yield of 9.9t/ha. M20 matures in 111 days, averages 6.4t/ha, and reaches a yield of 11.7t/ha.

The Institute is part of the 11th National Rice Technology Forum (NRTF) that showcases hybrid rice and other technologies in the 100-ha techno-demo farm in Butuan City, Agusan del Norte.

It also joined the provincial hybrid rice derbies in Laoag City and Marcos, Ilocos Norte; Santo Domingo, Ilocos Sur; and Santa Barbara, Pangasinan.

DA-PhilRice helped put up hybrid rice techno-demo farms at the Tarlac Agricultural University in Camiling; Quirino State University in Diffun; Isabela State University in Echague; and Cagayan State University in Piat. Other hybrid techno-demo farms are established in the Institute's stations in Nueva Ecija, Isabela, North Cotabato, Negros Occidental, and project site in Dupax del Norte, Nueva Vizcaya.

The DA's RRP intends to produce more rice to lift our rice sufficiency level from the present 87 to 93 percent. To achieve this, one of the components of RRP is the expanded hybrid rice production. On-farm studies show that hybrid rice yields higher than inbreds by a minimum of 15%.

The RRP is under the administration's Plant, Plant, Plant Program that seeks to increase national agri-fishery output through the intensified use of quality seeds, appropriate inputs, and modern technologies to increase levels of productivity across all commodities, and thus ensure food productivity, availability, accessibility and affordability amidst the threat of the COVID-19 pandemic.

• **HANAH HAZEL MAVI B. MANALO AND LEMUEL L. VILLO**

# "Healthy diet for the planet" promoted

PhilRice joined the annual nationwide observance of Nutrition Month in July by promoting healthier and more sustainable diets.

In a webinar, in-house nutritionist-dietitian Dr. Riza Abilgos-Ramos stressed: "Food can fix it! A sustainable and healthy diet promotes all dimensions of an individual's health and well being. It has low environmental pressure and impact on our planet."

Adopting the theme "Batang Pinoy SANA TALL... Iwas stunting SAMA ALL!", the Institute partnered with 2020 TikTok Philippines' top educational content creator Ramon Christian "Arshie" O. Larga to promote brown rice consumption.

Four videos explaining the benefits of brown rice and more were posted on the Institute's official Facebook page and Larga's TikTok page.

"Brown rice can be considered one of the whole-grain cereals. It's healthier compared to white rice because it's rich in nutrients like protein, fiber, vitamins, and minerals," Larga said in one of his videos that reached 81,500 views in the TikTok app.

Meanwhile, as the observance was heating up nationwide, farmer-participants of the "Sa Palay at Gulay, may Ani, Hanapbuhay, Oportunidad, at Nutrisyon" (PAG-AHON) Project in Lupao, Nueva Ecija were planting vegetables.

From the initial implementation, three of them harvested 270kg of pechay and mustard in August that earned them a combined income of P10,400.

According to Dr. Roel Suralta of PhilRice, PAG-AHON project lead, market-matching is provided so that harvests won't go to waste. The Manila-based


The PAG-AHON farmers cleaning their produce for the market.

Dizon Farms, a market linked by project partner East-West Seed Company, bought the initial harvest. The project is part of the DA's Plant Plant Plant program and is also in partnership with the local government of Lupao, Nueva Ecija and Lupao Vegetable Growers Association. • **JULIANNE A. SUAREZ**

# Online stress debriefing offered

In view of the lockdown implemented by the government, a mechanism to help R4D and support workers manage to work despite the restrictions was simultaneously launched online on May 28 in Nueva Ecija, Albay, and Samar.

Dr. John C. De Leon, executive director, said the Institute, with its role in helping attain rice security, must always ensure that its services remain uninterrupted and relevant despite the pandemic.

"We established this psychosocial support to keep our staff protected from chronic stress and poor mental health. This will also try to ensure that we will be able to respond and perform our responsibilities in a better capacity during this time of pandemic," he said.

In partnership with the Quezon City-based Miriam College and United Registered Social Workers (URSW), who voluntered their services, admin/human resource coordinators in all branches were first trained to do Psychological First Aid being at the frontline of looking after staff welfare. They were trained on how to make the staff feel safe, connected to others, and have access to social, physical, and emotional support.

"We hope that this will further encourage our staff to help themselves, as individuals and communities," the executive director added.


The online stress debriefing was also conducted in other PhilRice stations. General evaluation results show that the activity helped ease the participants' mental stress, dealing with the possibility of contracting COVID-19 as they continued their works. • **REUEL M. MARAMARA**

## CONGRATULATIONS TO OUR NEWLY APPOINTED AND PROMOTED STAFFERS!

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# Measuring rice grain size and shape faster

PAUL JOHN P. VILLAMOR

The digital image processing of grain size and shape is four times quicker than the manual system – 12sec/kernel compared to the latter's 44-48sec/kernel.

RICE CHEMISTRY AND FOOD SCIENCE DIVISION

Our Rice Chemistry and Food Science Division (RCFSD) is developing an automated system that determines rice grain size and shape through digital image processing. The method will help breeders and regulatory bodies like the National Seed Quality Control Services measure grain size, one of the factors that reveal the yielding capacity of a variety.

## GOING DIGITAL

Measuring grain size and shape manually is time-consuming, laborious, and straining to the eyes.

Early results of a research by Evelyn H. Bandonill, Dr. Jasper I. Tallada, and Jerry D. Adriano show that it is possible to fast-track the physical evaluation of the rice kernel.

Their study involved a flatbed scanner and a singulation template to capture the images of kernels at 800 dots per inch. The digital measurements are then defined using OpenCV-Phyton, a pixel-editing software.

Automated measurement took only 12 seconds per kernel, four times quicker than the traditional way.

The newly developed method will be immensely advantageous compared with the routine procedure that measures grain length and width using an analog caliper.

"The manual system is also prone to human error because it requires dexterity in positioning the kernels on the caliper," Bandonill said.

## FOR BROWN RICE, TOO

The study also included trials on brown rice. Tallada explained that the grain size and shape characteristics are more intact and stable in the brown rice form than in white rice because of the polishing operations. Additionally, measuring the dimensions of brown rice grains reflects more of the effects of breeding and crop management on the yield outcome.

## LOCALIZED VERSION

The greater target is to produce a local grain measurement device for easier access.

The RCFSD aims to develop an alternative equipment that is cheaper yet has quick grain-scanning ability just like the commercially available flatbed scanners partnered with OpenCV-Phyton programming language. Bandonill said the instruments SeedCount SC4 and Satake's Grain Scanner RSQI 10A are available and may be imported but are expensive.

At PhilRice, a system called Milled Grain Classifier was developed with a capacity to process 6.2g of samples in less than 5min, much faster than the conventional approach that needs up to 96min for a set of only 30g samples. However, the system proves tiresome as the grains should be placed in straight rows and columns, which is difficult when hundreds of samples are involved.

"We need a system where the operator simply dumps a sample, images are quickly scanned, and the kernels are automatically measured," Bandonill challenged herself.

The capacity of this localized automated system to measure large samples defines the size distribution better. This helps provide an accurate insight in the expression of genes during the breeding process.

"Chances are, the more samples we can scan in a shorter time, the faster we can pinpoint good-quality rice varieties, which is a sure headstart for breeders," Bandonill said. •

# RICE ACROSS THE COUNTRY

**COMPILED BY: ZENNY G. AWING**


PHILRICE AGUSAN

SHERLYN DAWN D. TAGLUCOP

PHILRICE BATAC

DEEJAY JIMENEZ

PHILRICE BICOL

## FFS KICKS OFF IN AGUSAN

In partnership with the municipal government unit of RT Romualdez and the Technical Education and Skills Development Authority (TESDA), PhilRice Agusan welcomed 100 TESDA scholars for the 2020 wet season RCEF Farmer Field School (FFS). Entitled to a daily allowance and other support from the implementing agencies, the enrollees will be provided with technical guidance and introduced to agro-enterprise development to help them become agripreneurs as participants of PhilRice's RiceBIS Program. The intervention aims to increase farmers' yield by 1t/ha, pull down production cost by 30%, limit post-harvest losses to 12%, and stabilize household income. New strategies in the conduct of FFS will be in place to adhere with health safety protocols under the 'new normal' situation. • **MARELIE D. TANGOG**

## BATAC DISTRIBUTES SPECIAL RICE SEEDS

To help alleviate the plight of rice farmers amidst the persistent global pandemic, PhilRice Batac distributed free seeds of special and drought-tolerant rice varieties to 30 farmer-partners involved in its previous R4D programs. The rainfed varieties were NSIC Rc 346 (Sahod-Ulan 11) and Rc 420 (Sahod-Ulan 15), and Maligaya Special (MS) 5, 7, 8, and 10 rices. Results of varietal adaptability trials attest that these varieties are highly adaptable to the semi-arid conditions in the Ilocos region.

Made available in May and June, the seed support was in preparation for the 2020 wet season planting.

• **DEEJAY JIMENEZ**

## BICOL GOES ONLINE

As one of its mechanisms to cope with limited movements in response to the COVID-19 global pandemic, PhilRice Bicol joined the DA-Agricultural Training Institute Regional Training Center 5 for the conduct of the "Info Caravan and Technical Briefing On-Air," an online presentation of activities done under the Rice Competitiveness Enhancement Fund. The caravan aims to reach farmers thru online media and offer them learning experiences despite restrictions on mass gatherings that could compromise the protocol on physical distancing.

The presentations, which included updates on seed delivery and new protocols, were pre-recorded and will be published in the local Sarabay Channel and other platforms, such as social media and radio. • **MICHAEL L. SATUITO**

## ISABELA PUSHES RICEBIS

Without ignoring movement restrictions that help contain the worldwide pandemic, PhilRice Isabela launched Rice Business Innovation Systems Phase II, a program that aims to transform farmers into agripreneurs, in Diffun, Quirino.


JOILLIE NICOLE B. LACBAYAN

PHILRICE ISABELA

Baseline surveys were conducted in Barangays Villa Pascua and Bannawag Sur to pinpoint interventions needed by farmers. Interactive lectures on the *PalayCheck* System's KeyChecks 1 (variety/seed selection) and 2 (land preparation) were delivered on June 17 and 18, respectively.

Barangays San Isidro, Isidro Paredes, and Gulac will also be surveyed before introductory lectures are offered.

• **JOILLIE NICOLE B. LACBAYAN**

## MIDSAYAP PARTNERS FOR RICEBIS

The National Irrigation Administration-12, Philippine Crop Insurance Corporation-12, Department of Agrarian Reform-12, Gumaga and Baguer Farmers' Associations, and the Municipal Agriculture Office of Libungan, Cotabato have all signed a memorandum of understanding with PhilRice Midsayap to boost the yields, incomes, and entrepreneurship capacity of farmers in Barangays Gumaga and Baguer, Libungan.

As a highlight of the launching of RiceBIS Phase II, the agencies vowed to technically assist the associations.

• **MOHAMADSAID B. GANDAWALI**


MICHAEL L. SATUITO


RUBY MOSELLE O. TUMANGUIL

PHILRICE LOS BAÑOS

MOHAMADSAID B. GANDAWALI

PHILRICE MIDSAYAP

## LOS BAÑOS PROVIDES VEGGIE SEEDS

In direct support of DA's "Plant, Plant, Plant" program, PhilRice Los Baños turned over 1,420 packets of free vegetable seeds that included cucumber, okra, tomato, pole beans, wing beans, sponge gourd, and mustard to officers of Gawad Kalinga Los Baños Ville. Recipients are expected to grow the vegetables in their backyards as a sustainable source of food that helps ensure household food-security during these especially difficult situations.

The Bureau of Plant Industry-Los Baños National Crops Research, Development and Production Support Center sponsored the seeds.

• **RUBY MOSELLE O. TUMANGUIL**

## LGUS SUPPORT NEGROS

Notwithstanding the global pandemic, PhilRice Negros is addressing the essential needs of farmers in the water-scattered islands of Panay, Iloilo, and Bohol. Strong partnerships with local government units have facilitated inspection and distribution of RCEF seeds, and the implementation of other continuing projects. LGUs have allowed the unhampered mobility of project implementers even as additional local personnel were likewise provided whenever necessary.

As of this writing, Antique has already received 100% of its RCEF seed allocation for the 2020 wet season.

• **VANESSA A. TINGSON**


FENNELYN A PANTIN

PHILRICE NEGROS

Expert's Corner

# Coping with the 'new normal'

**JOHN C. DE LEON, PhD**
**Executive Director, DA-PhilRice**

## RESEARCH AND DEVELOPMENT (R&D)

The context of R&D as the harbinger of 'new normal' is not an overstatement or an adaptation to the COVID-19-induced turn of events. Research for Development encapsulates it better, suggesting progress and broader impacts with the spread of new technologies - making our normal way of life better.

The protracted battle with the coronavirus disease (COVID-19) defines the 'new normal' in the context of varying strictness of community quarantine levels in order for governments to contain public health challenges. And suddenly, common-fare R&D practices especially in laboratories, such as the use of face masks (the surgical type), the frequent washing of hands with soap, the use of hand sanitizers, disinfection with alcohol or the use of other chemical disinfectants, among others, became widespread and normal. Also, compliance with physical distancing admonitions while conducting or visiting experiments is not hard to achieve in vast and open agricultural fields.

> *The COVID-19 pandemic and its 'new normal' aftermath has not blurred our vision at PhilRice for a rice-secure Philippines. It deepened instead our understanding of another intersystem linkage - that of food security with national security. Our R&D is determined, thus, to contribute to both.*

PHILRICE PHOTO

Amidst the global health pandemic, DA-PhilRice continues to pursue rice security through its research for development activities.

Even under the state of national health emergency, thus, opinions that we are not going back to normal are controverted by careful thoughts that there is nothing new about the 'new normal.' The World Health Organization says that living with the coronavirus will be part of the 'new normal' going ahead. But in our 'previous normal', we were also exposed to many contaminants, bacteria, viruses, microbes, and germs going to work and doing daily routines - including R&D.

The work environment is still abnormal and unpredictable. It has also become more complicated with new learnings. As food workers, our line of sight should not only see increasing production along the whole value chain. To build resilience, our food system's interconnectedness with health, economy, ecosystems, and other sectors or systems must

be recognized. A recent report by the Committee on World Food Security of the Food and Agriculture Organization also found that more pillars are needed for a truly secure food system. Sustainability and agency (or the ability of people to engage with food systems on their own terms) must now be added to the four current pillars of availability, access, utilization, and stability to be effective.

The COVID-19 pandemic and its 'new normal' aftermath has not blurred our vision at PhilRice for a rice-secure Philippines. It deepened instead our understanding of another intersystem linkage - that of food security with national security. Our R&D is determined, thus, to contribute to both. •

## SURVIVE, REBOOT, GROW: FOOD AND AGRICULTURE'S PREEMINENCE

The lockdowns that quickly happened to derail the novel coronavirus and its pandemic's geographical spread inadvertently slowed down the national economy. In fact, our GDP contracted by 0.2 percent in Q1 this year. The agriculture and industry sectors respectively declined by 0.4 and 3.0 percent. Under a sudden state of national emergency, 'stay at home' became a mantra along with the 'World War C is not over' reminder. The DA leadership meanwhile rallied everyone under its fold to hold the agriculture fort together and cause it to 'survive, reboot, and grow' as the times become better.

The COVID-19 pestilence has underscored many things, including the preeminence of food and agriculture in our society. To a large extent, survival became synonymous with not getting infected with the virus and with having enough food to nourish the body, battle the disease, and sustain one's self and family during the lockdowns. Here, the centrality of rice as a consumer commodity became clear again in the preparation and distribution of relief goods and food packs all over the country. Still, we need not lose sight of a whole value chain approach to render for a whole-of-the-nation outcome.

The easing up of community quarantines to more liberal levels (General Community Quarantine [GCQ], Modified GCQ) in many places in the country is a signal that the process of renewal (reboot) has taken place. We should be ready now to pursue with vigor the stalled growth of agriculture's 'Ani at Kita' to pump up the economy. We certainly hope that overall rice harvests will show growth this year, or at least indicate increments in per-unit-area yields despite the problems on movement and logistics, especially under the Enhanced Community Quarantine (ECQ) and Modified ECQ scenarios. Giving up is not an option though if the desired results do not come about. We may also have to "fight this battle more than once to win it." •

ROEL R. SURALTA

**The "Sa Palay at Gulay, may Ani, Hanapbuhay, Oportunidad, at Nutrisyon" or PAG-AHON Project, which aims to boost food production in Lupao, Nueva Ecija, is one of the Institute's initiatives on partnership to help communities survive some of the challenges brought about by the COVID-19 pandemic. PAG-AHON is implemented with the local government of Lupao, Nueva Ecija, Lupao Vegetable Growers Association, and East-West Seed Company. It is part of the DA's Plant, Plant, Plant program.**

# Promoting resilience in a cooperative

ZENNY G. AWING AND ALDRIN G. CASTRO

Our battlecry for rice security is not a no-contest bout! We must overcome challenges that come along the way. For one thing, in 2019 the country replaced import limits with tariffs that intensified foreign competition for our local rice farmers.

To weather these challenges, collaborative efforts and support are essential. This is why a cooperative exists - to extend members a helping hand and help make them stronger and resilient. A number of coop members across the country testify on their pleasant experiences:

Yolanda T. Bicaldo

Teodolfo G. Gindap

## YOLANDA T. BICALDO

*69, Camambugan, Libmanan, Camarines Sur, Check Farmers Producers Cooperative (CFPC)*

"Cooperatives provide a big help in community development, more so in *palay* production," the retired government employee now president of CFPC said.

As a farmer, Bicaldo felt the need for a resilient coop, especially in a community that is frequented by typhoons. She has thus far increased the number of active farmer-members from 30 to 46 and counting. She also assured that all of their members are RSBSA-listed, making them qualified for the support from the Rice Competitiveness Enhancement Fund (RCEF).

"Being a member of a cooperative makes you steadfast," said Bicaldo.

Members build confidence in selling their produce at a better price. During the 2020 dry season, CFPC's members were able to sell their milled rice at P2,500 per 50kg sack of the NSIC Rc 160 variety.

The variety basically commands a higher price for its premium eating quality but through partner-establishments, coop members can sell it at an even better price.

"Cooperatives are channels that bring the government closer to the people," the farmer-accountant maintained.

Bicaldo expressed her gratitude for the support and subsidies provided through the Coop including free inbred rice seeds and fertilizers, which encourage farmers to enlist in their organization.

"To those who are not yet members, I enjoin all of you to become one. This is for you to enjoy the benefits from the government. If we are organized, we become stronger and our voices are louder," she encouraged.

For Bicaldo, as they get more of the government's support through the RCEF programs, farming will become a happy experience even more.

## TEODOLFO G. GINDAP

*50, Magtulis, Barbaza, Antique Barbaza Multi-Purpose Cooperative*

Being a coop member since 2004, Gindap has always felt empowered by the services they are provided with, such as affordable crop production loans that they can avail of anytime. The loan

amount can even get higher if a member pays on time.

"It is crucial to be in a cooperative especially in times when we are financially short. Applying for loans in most lending companies and even in the government takes time and has a lot of requirements. Other lenders don't even trust farmers and look down on us. But the cooperative always gives you a chance, especially when you face unexpected problems like the drop of *palay* prices in 2019" Gindap recalled.


Nilo S. Gevero


Rose M. Catalbas

For Gindap, the Coop is a safe haven in times of need that always helps him grow. "You just have to be disciplined and active to make the trust mutual," he concluded.

## NILO S. GEVERO

*52, Liton, Kabacan, North Cotabato*
*Liton Free Farmers' Cooperative (LFFC)*

Gevero has been a cooperative member for more than 10 years, the last 6 years of which as LFFC president. For him, being in a coop shaped him to become a better farmer and a leader at the same time.

"A cooperative is very helpful when it is well-managed. In LFFC, we think of strategies to strengthen the services we offer. It is our goal to empower our members," said Nilo.

During the Rice Tariffication Law (RTL) implementation, LFFC immediately tapped the National Food Authority (NFA) to buy *palay* from them so their members can still cope. While it was initially reported that prices of fresh *palay* dropped to P10/kg that time, the Coop still bought dry *palay* from farmer-members at P18/kg because they sold it to the NFA at a higher price.

"Also, 30% of the farmer's profit is directly deposited to his capital share. He benefits from a higher price and even grows his capital share, a double gain," he added.

Gevero contends that it is important to think about how to make his fellow farmers competitive especially in times of transitions.

"I always brief my members on the government services. I make sure that they are RSBSA-covered so they can avail of these services like those from RCEF. We also conduct an annual general assembly where we spare cash, rice, and some merchandise from the coop's income. This engages them and makes us more united," he said.

"You should be a member of a cooperative because it will help you in many ways especially in times of crisis and market change. Moreover, it will develop your personality, improve your social skills, and make you more hopeful for the future," Gevero advised.

## ROSE M. CATALBAS

*61, Barcenaga, Naujan, Oriental Mindoro, Oriental Mindoro Seedgrower and Multi-Purpose Cooperative*

A newbie in rice farming, Catalbas testifies that the Coop helped hone her to be a competitive farmer and businesswoman.

Said Catalbas, being a member of a coop easily links a farmer to the government for services intended for them. Members also discuss their farm experiences so they can exchange ideas with each other. Free training is also provided.

"Alone, it's harder to access information and requirements are more tedious," Catalbas said.

She also vouched that the Coop helped boost her credibility and integrity selling her harvest.

"When you are still starting, it's hard to establish yourself. It's difficult to market and sell your products. The Coop will help you become credible so buyers will trust and patronize your products. With the Coop's network, someone is already waiting for your products," Catalbas reiterated.

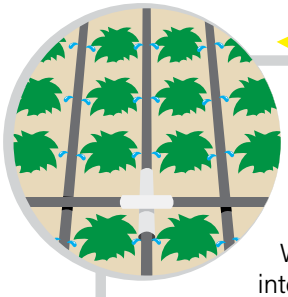
In addition, the Coop automatically secures 10% of a member's profit to his personal savings called *Balik Tangkilik*. Annually, the accumulated money is declared to them in a general assembly.

"They say no man is an island! The same is true in farming, it's hard to stand alone, and you cannot compete alone. You need a team to help you succeed. A cooperative will do just that − they will lift you and together you take home the windfall," ensured Catalbas. •

While the current global health emergency indirectly impairs rice production, climate change is the much older threat that the rice sector must focus on as its impact is both global and long-term.

According to PhilRice's multi-awarded scientist Dr. Ricardo F. Orge, farmers should learn to be crisis-resilient as they are in the frontlines in addressing the looming food insufficiency. To do that, strategies should be mainstreamed and incorporated into farmers' daily lives.

Orge articulates five major climate change-related concerns that threaten farmers' yields and income, and the strategies that can be used to overcome them. He walks us through the most real challenges to rice farmers from the perspective of a scientist, climate change expert, and a farmer himself.

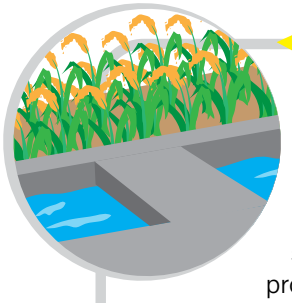


## 1 Drought

Even before the 21st century descended on us, drought has become more prevalent. Climate predictions have even noted that droughts in the Philippines might become more extreme, intense, and frequent.

With climate change, El Niño, a natural cycle of drought that recurs every 2-6 years, is intensified and has become a very serious threat to the rice sector. Among the worst that hit the country is the 1998 El Niño that brought enormous damage to agriculture and resulted in extremely low yields that led to chronic *palay*-supply insufficiency.

Some of the strategies smallholder farmers can adopt to cope with this phenomenon are the use of drought-tolerant varieties, such as NSIC Rc 346 (Sahod-ulan 11), Rc 416 (Sahod-ulan 13) and Rc 472 (Sahod-ulan 22), and water-saving options like the Alternate Wetting and Drying technology. They may also try the aerobic rice technology, which grows rice as though it were corn. For vegetable and cash crop production, the capillary irrigation or "capillarigation" practice may be resorted to. It is an affordable do-it-yourself water management system that uses capillary wicks to dispense scarce water supply.

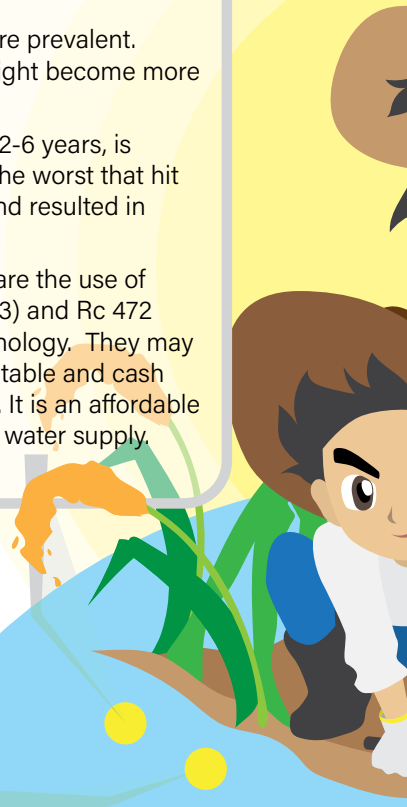


## 2 Flood

With the Pacific Ocean to reckon with, our country is often hit by disastrous floods owing to strong typhoons and heavy rainfall.

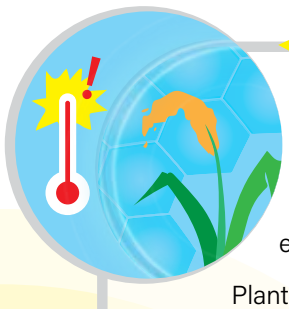
To be resilient, being ready in times of flood is the key. A rice field should always have a well-maintained drainage system to prevent prolonged submergence. Farmers in flood-frequented areas may also try submergence-tolerant varieties like NSIC Rc 194 (Submarino 1) that can survive several days underwater during the vegetative stage. Other technologies are sorjan farming and the floating vegetable garden.

**Other strategies for farmers to be crisis-resilient:**
1) Use of dry land preparation, direct-seeding, and climate change-adaptive technologies, such as machines, sorjan farming, floating garden;
2) Having a stable food source in households through vegetable gardening;
3) Diversification, intensification, and integration of other food and income sources, such as *saba*, *kamote*, mushroom, poultry, and livestock;
4) Value-adding and farm-to-market linkages for sure income;
5) Organizing into farmers' cooperatives and associations for more stable support.



CULTIVATING
CHANGE R

Written by Julianne A. Suar
Infographics by Pe



## 3 Rise in temperature

Experts agree that global temperature is rising, an alarming accord especially in crop production as plants are temperature-sensitive. *Palay* in particular will limit its yield when exposed to high temperatures during the flowering stage. According to Orge, studies show that every one-degree-Celsius increase in temperature drags down yields.

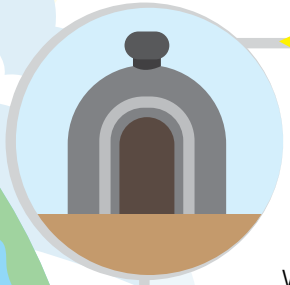
Plant breeders are doing their best to develop heat-tolerant varieties, along with drought and water submergence-insensitive rices to help farmers cope.

## 4 Sea-water level rise

With the temperature heating up, sea-water level in affected places also rises. For rice farmers, this means reduced yields owing to salt water invading their fields.

The Food and Agriculture Organization points to 400,000ha of coastal saline soils in the Philippines. In 2001 alone, saline water intrusion affected 70,000ha of rice farms in Bicol and Cagayan Valley.

Using salt-tolerant rice varieties can ease the impacts of sea surges and saltwater intrusion on rice production. Some of these varieties are NSIC Rc 290 (Salinas 6), Rc 324 (Salinas 10), and Rc 462 (Salinas 21).



## 5 Erratic rain and typhoon pattern

Rice is a crop highly dependent on water. This means that farmers' yields and income heavily rely on water availability.

When impacts of climate change were not yet as evident as now, even unirrigated farmers could easily tell the best time to plant, harvest, and do other farm activities. Now, with the unpredictable weather cycle, the traditional planting calendars are no longer reliable.

Climate change has also caused extreme rainfalls and even super typhoons that devastated crops and ricefields.

During strong typhoons, even stored rice seeds could be blown away or soaked, making resource-poor farmers lose the little that they have. To help protect the seeds and farm equipment, Orge and his team developed the kwebo, a farm structure inspired by the resilience of a *kweba* (cave) and the simplicity of a traditional *bahay kubo*.

CLIMATE-
RESILIENCE

rez & Donna Cris P. Corpuz
rry Irish H. Duran


JUDY ANN S. MENDOZA

# Round-the-clock while locked

CHARISMA LOVE B. GADO-GONZALES

Partnership with agencies, such as local government units and DA-Regional Field Offices and attached agencies/bureaus, facilitates timely delivery of high-quality inbred seeds even in remote areas.

Albeit worried and uncertain, two PhilRice women-leaders did not lose their reins in handling the Rice Competitiveness Enhancement Fund (RCEF) programs when the Luzon lockdown was resorted to beginning in mid-March. Amidst the intimidating pandemic, their worries were beyond contracting COVID-19 and their own welfare. Selfless, their foremost concern was helping drive national programs crucial in motivating farmers to continue planting rice.

For about two months, Dr. Flordeliza H. Bordey, PhilRice RCEF Program Management Office director and Lea dR. Abaoag, member of the Rice Extension Services Program (RESP) Technical Working Group and head of PhilRice's Technology Management and Services Division, with ample support from their respective teams, seemed restless, in a positive way, while the situation ordered most Filipinos to stay home and slow down. They could not loosen up.

Bordey dealt with implementing RCEF seed distribution given travel restrictions everywhere; delayed production of sacks that nearly froze seed bagging, sampling, and seed certification; unsettled payments for seed growers; and staff quarantine impositions.

Meanwhile, Abaoag managed several stranded trainees at PhilRice CES who were then undergoing the Rice Specialists' Training Course (RSTC) before the lockdown, and led in developing concepts or strategies on resuming the training in adherence to safety and health protocols while fulfilling its objectives.

## MINIMIZING RISKS DURING SEED DELIVERIES

Bordey, an economist, knew that agriculture is vital in the country's recovery from COVID-19, especially that the lockdown occurred during harvesting with some farmers incurring losses owing to restricted mobility. The program's free, high-quality inbred rice seeds would help farmers increase their yields come wet season (WS) planting.

While enhanced community quarantine (ECQ) was already in effect, memoranda on postponing early seed deliveries during the first week of ECQ and later on allowing cooperatives to use alternative packaging for RCEF seeds were released. A specific protocol for seed delivery and distribution in locked-down areas, which also identified RCEF personnel as part of the skeleton force, was issued thereafter in time for the WS sowing in certain Luzon areas.

The program's strategies resulted in more than a million bags of seeds delivered, reaching 64% of target municipalities amidst the two-month lockdown ending in mid-May.

"While seed delivery was postponed, we coordinated with the DA-regional field offices and local government units (LGUs). The specific protocol was shared immediately to DA offices and the National Rice Program, branch RCEF focal persons, regional and provincial coordinators, and LGU partners," Bordey, also a PhilRice deputy executive director, said.

To remedy mobility, RCEF personnel were given IDs from the Inter-Agency Task Force on Emerging Infectious Diseases while seed cooperatives were issued food lane accreditation-certification and stickers. Inter-island transportation to ferry personnel during seed deliveries was also successfully sought from the Bureau of Fisheries and Aquatic Resources.

Suppliers of sacks for seed growers cooperative's were likewise requested to continue printing the RCEF seed sacks. Payments for partner-seed-growers were then expedited by maximizing limited transaction days with banks.

To cope with strict quarantine measures, two operation teams were created. One team would be delivering seeds to municipalities, while the other team was being isolated as a precautionary practice. Temporary but exclusive quarters were provided for workers traveling outside Nueva Ecija and an isolation area was put up for personnel who would show the mildest symptom of the feared disease. Providentially, the entire PhilRice CES family remains COVID-free, thanks to the Institute's close coordination with the barangay and city rural heath unit.

"We only minimize the risks by providing PPEs and vitamins, but we could not eliminate them. RCEF people braved the risks of contracting COVID-19. Being responsible for their welfare, the heavy toll would be on me if something undesirable happened to them," the program director said.

A day's work for an RCEF staffer on field largely involves mobilizing partners so that seeds are delivered on time. The job demands more than the normal working hours; being on site before 8 am until way past 5 pm, many times until midnight.

Imagine that at 5:30 pm, when many workers and their families would probably be getting ready for a decent dinner, you would be kicked out from your rented apartment. This happened to Leyte provincial coordinators Jahseel M. Bien and Michelle L. Manabat when their neighbors learned that they came from a place where a positive case was confirmed.

"We were traumatized. When we arrived, a drum of disinfectant was ready at our door. We were told through text to abandon the apartment in 30 minutes! We're not familiar with the place and with the short notice given to us, we didn't know where to go then," Jahseel recounted.

"I once felt like leaving the work I started here. But the experience was a blessing in disguise. I became more emphatic. I also became more focused on serving the farmers and on fighting for what's in my heart," she narrated.

## CONTINUING LEARNING FOR COMPETITIVE FARMERS

Like Jahseel, Alladin G. Abdul of Cotabato City, an RSTC trainee from the Technical Education and Skills Development Authority (TESDA) in Region 12, also felt that he turned out to be a stronger person after becoming a locally stranded individual (LSI) at PhilRice CES for 3 long months.

"It's hard to be stuck in a place where all I could think of was my family. I'm thankful that the training management team, especially Ma'am Lea, did their best to help us. Anytime, I am now ready to educate farmers," Alladin, a family man said.

While on lockdown, he and three other LSI-trainees from Mindanao were encouraged to read rice production materials; but it was difficult for him to focus as he constantly thought of his wife who is a nurse, a medical frontliner who was required to report for duty despite being almost 9-month pregnant.

"I tried to read the books, but nothing seemed to register. Peace of mind was wanting. It's good that Ma'am Lea invited us to try harvesting in the FutureRice Farm and we attended rice-based production activities in the *Palayamanan* Plus (*PalayPlus*)area," he said. The Farm exhibits modern farming technologies and new rice varieties while *PalayPlus* is a rice-based production system that integrates vegetables and livestock with rice growing.

"Because of that exposure, our 2,000m$^2$ home lot does not only have a house, but it's now also planted with vegetables and some space for livestock. I also look forward to improving our fish pond," Alladin articulated.

Other than securing the physical and mental health of the four stranded trainees, Abaoag also worked on


JULIANNE A. SUAREZ

**Strictly following health and safety protocols, DA-PhilRice continues to train participants of the RCEF Farmer Field School.**

strategies to continue the training programs while maintaining the safety of the implementers and trainees. Amidst community quarantine, her team and the DA-Agricultural Training Institute launched the online updating of *PalayCheck*, a dynamic rice production system, for the Agricultural Development Officers of the Community or the AgRiDOCs who will be tapped in conducting the Farmers Field School. She also said that her team will soon pilot-test combined online lectures with hands-on, face-to-face learning.

At long last in early June 2020, when Central Luzon was put under the more lenient general community quarantine, an official PhilRice vehicle delivered "door-to-door" Alladin and his batchmates to their families in different addresses in Southern Mindanao. Alladin was finally home, with his newborn child, his sixth! He and his fellow TESDA employees didn't bring home any dreaded virus. They've arrived safe. Their minds no longer locked up. •

# Surviving COVID-19 through PALAYAMANAN

MARY GRACE M. NIDOY

On Sundays, Romeo B. Meman sings hymnals every morning in his house at Bantug, Science City of Muñoz. Since the beginning of community quarantine in March 2020, the born-again Christian has never been to the church, one of the practices he sacrificed to keep himself and his family safe.

In June, Meman celebrated his 83rd birthday with his family in a low-key manner, without the usual visitors and other relatives. Yet he is thankful.

"We had bananas from the farm during my birthday!" Meman exclaimed. And for him, that is enough.

## THE FOREST

Amid the country's war against COVID-19 and four months under community quarantine, it is farming that kept Meman going. After all, his farm provided the basic needs of his family, from rice to vegetables and fruits. Unfazed by this pandemic, Meman has virtues that prepared him to face the challenges and threats most farmers in the country are facing: foresight and patience.

After working at the National Irrigation Administration (NIA) for 31 years, he bought a 6.3ha lot from his former instructor at the Central Luzon State University (CLSU).

"I was 65 and a retiree in 2002. I was looking for something productive that I could do," the BS Agricultural Education graduate from CLSU explained.

What his farm, located at adjacent Bagong Sikat, looks like today is far different when he acquired it.

"It was like a forest then," he described. Surrounded by tall bushes, the farm was also not irrigated until 2004.

Over the years, Meman had patiently planned the overall layout of his farm focusing on rice as his main crop and diversifying it by integrating various productions such as vegetable, fruit trees, fish, and livestock.

"It took almost two years to completely clear the areas where we could plant. I never stopped planting crops, depending on the terrain and type of soil, until all the spaces in the field were utilized," he shared.

REUEL M. MARAMARA

***Palayamanan*** **farm, a rice-based production system, employs diversification, intensification, and integration of sources of livelihood with rice as the main crop.**

Meman learned the concept of crop diversification from farmers he used to train on irrigation best practices when he was working as a training officer at NIA.

"The farmers were way more knowledgeable than I was," he confessed.

But he never stopped learning. He became a member of the Cabisuculan Farmers Association and a regular attendee of DA-PhilRice's *Lakbay Palay* where the Institute showcases its latest technologies on rice production.

Eighteen years after, diversifying, integrating, and intensifying his farm had prepared him to be resilient.

## THE PARADISE

Since the quarantine, he and his wife have not gone to the public market. Thanks to his farm, it has most of the commodities for their daily needs. What was once a forest now looks like what he describes as a "paradise." Everything grows and lives in harmony.

"Everyday, I would bring home newly harvested vegetables, fruits, and eggs for our consumption," he said.

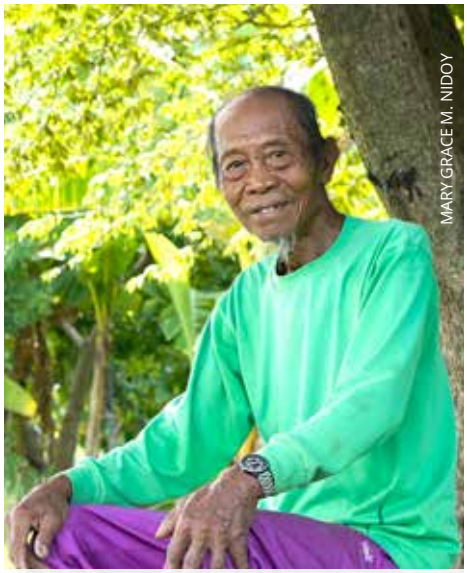
On his now 4.8ha farm (he has sold the 1.5ha), Meman dedicates 4.3ha to rice while the rest is for various productions. In March 2020, he earned P193,000 net income from a combined harvest of 430 cavans of NSIC Rc 216, Rc 222, and Rc 160.

In some portions of his farm, he has planted vegetables that you could think of and standouts of the Ilocano diet "pinakbet," such as okra, eggplant, string beans, ampalaya, mungbeans, and malunggay.

"If bagoong could be planted, I would have planted it already," Meman, who hails from Tuguegarao City, Cagayan, said in jest.

The fruit trees he planted in the early years of his farming are now bearing fruits, such as mangoes, papayas, sineguelas, and coconuts.

The farm is also surrounded by five fishponds. Before the pandemic, Meman would sell *tilapia* and *hito* to his nearby


MARY GRACE M. NIDOY

**Romeo B. Meman relishes comfort on his farm.**

community. Now, he does not earn money from it but shares them with his neighbors as he has been doing with all his fruits and vegetables even before the pandemic.

The 12 heads of ducks provide eggs for his family's consumption, in fact, during the time of interview, Meman brought home 30 eggs. He then uses plant residues and animal manure for vermicomposting. Medicinal plants and herbs can also be found in his farm such as insulin, oregano, dill, lemongrass, turmeric, and snake grass.

As if these are enough to help anchor his household food security and economic stability, the octogenarian farmer took the opportunity to keep on planting during the quarantine. Among the items he has added are fruits, such as bananas, longan, and berries.

"This pandemic is not ending anytime soon, and farmers like us cannot stop planting crops under the new normal. Otherwise, we won't have enough food," Meman said.

## THE *PALAYAMANAN*

Meman has applied the principles of diversification, intensification, and integration that are under the PhilRice-enriched rice-based production system called Palayamanan, which aims for household food security. With these purposive principles, the system aims to enhance crop productivity, resource-use efficiency, value-adding, and marketing by integrating various sources of produce in a synergistic manner. It supports increasing biological diversity, expanding productivity, improving input efficiency, and reducing environmental and health risks thus ensuring farm household food security and economic stability.

The original concept in the early 2000s has now evolved into *Palayamanan* Plus (PalayPlus) with the addition of various components from crops, livestock, and vermicomposting plus rice-duck system and mushroom production that now aims for community food security.

According to PhilRice chief science research specialist Rizal G. Corales, who pioneered the *PalayPlus*, the development platform has helped various farmers increase their productivity and sustainability.

"In our *PalayPlus* experience here at the Central Experiment Station (CES), which we implemented from 2015 to 2017, we generated an average total annual gross margin of more than P2.2 million from the 3.5-ha seed production, netting more than P1.3M," he said.

He added that they also generated an average annual gross margin of more than P100,000 from the 1-ha cash crop and vegetable production; P123,000 from livestock; and P650,000 from mushroom.

The *Palayamanan* Farm at CES has continuously supplied nutritious vegetables to PhilRice housing since the imposition of the quarantine measures.

For Meman, it is time to take the initiative under the new normal; he advised his fellow farmers who gamble on monocropping to diversify their crops.

"They could start with vegetables and plant them along their paddy bunds or available spaces," he encouraged.

He added that this could help them provide food for their families and be healthy at the same time while waiting for the next harvest season of rice.

Through diversified, intensified, and integrated farming, Romeo B. Meman has a place where he feels secured and "self-quarantined", healthy, and productive at this time of pandemic – his farm where he also infects no one, and no one infects him. •

# No pests can bring these farmers down

HANAH HAZEL MAVI B. MANALO

Joel C. Tabing of Guimba, Nueva Ecija also can win the battle against other pests, such as weeds and snails, by ensuring that his field is well-leveled.

OLIVER E. MANANGKIL


MARELIE D. TANGOG

Estrello S. Banayawon now debunks his belief that spraying pesticide would save his Rice Black Bug (RBB)-stricken field. He testifies that practicing synchronous planting and using light traps can manage RBB effectively.

Rice black bugs (RBB) and tungro once deprived Mang Estrello and Mang Joel of their dreams of a bountiful harvest, but giving up on rice farming just crossed their minds then.

## LIGHT TRAP FOR RBB

Estrello S. Banayawon, 42, of Esperanza, Agusan del Sur recalls that in 2017, the sight of his 4-ha field that was heavily infested and damaged by RBB for the first time really broke his heart. He said that in every plant from booting to milking stage, he found some 100 RBB. He used to believe that spraying pesticide every day would save his crops. He felt helpless as he watched his crops die.

However, this heartache was not enough to put an end to his 27-year 'love affair' with rice farming. PhilRice gave him reason to still hold on by introducing ways on how to manage RBB.

Mang Estrello only learned the ways to get rid of the sap-sucking insect pest when he became a member of the PhilRice Rice Business Innovations System community.

Now, he knows the importance of practicing synchronous planting.

He planted his crops late owing to continuous flooding in his area. Then, his fields were hardly hit by RBB. According to PhilRice experts, RBB can cause yield loss of up to 35 percent.

For him, the most effective way to manage RBB is through the use of a light trap to check early for the presence of the pest in the field. A PhilRice staffer assisted farmers in requesting for a light trap from their barangay. They installed the 500-watt light traps few meters from their fields. In 2018, they collected 50 bags of dead RBB in a month.

According to PhilRice experts, RBB are strongly attracted to high-intensity light. They advised farmers to activate the light traps at night during and after harvest as more RBB adults could be collected. They also said that light-trapping of insects should start five days before and after the full moon.

Now, Mang Estrello is thankful that they only collect few RBB and it has not been a problem in their fields again. He now enjoys 100cav/ha at 65kg/cav.

Just like any other farmer, Mang Estrello was also affected by other pests and diseases such as rice bugs and tungro but it is only his experience with RBB that had hurt him most.

## RESISTANT VARIETY FOR TUNGRO

Joel C. Tabing, 42, of Guimba, Nueva Ecija who has been farming for 20 years also shares his heartbreaking story on tungro, one of the major rice diseases caused by a virus in the Philippines that leads to 70-100 percent yield loss especially if crops are infected during early vegetative stage.

He recalls that when the variety IR64 was so popular owing to its high yield, early maturity, disease resistance, and excellent eating quality, almost all farmers in their area, including him, planted it. Unluckily, most of their fields were infected with tungro. He thought of spraying pesticide and hoped that it would help him win the battle against tungro. However, he found himself empty-handed from his 1-ha field after harvest. This was the same sentiment that his fellow farmers shared, too.

But Mang Joel has not experienced another heartache from tungro. He no longer plants rice varieties susceptible to the virus disease. From the advertisements of PhilRice via radio and social media, he was encouraged to plant varieties that are resistant to pests and diseases like NSIC Rc 222, which has intermediate resistance to tungro and is moderately resistant to green leafhopper (GLH).

Together with the use of resistant varieties, which is the most economical way of escaping the disease, Dr. Oliver E. Manangkil, head of PhilRice's Plant Breeding and Biotechnology Division, encourages farmers to practice synchronous planting. This practice enjoins farmers in an area cluster to plant 14 days before or after the regular planting schedule, after a fallow period to reduce the food sources available to insect pests like the tungro virus-carrier GLH. He also emphasized the importance of a well-levelled field in managing other pests, such as weeds and snails.

Apart from tungro, Mang Joel has also suffered from damages caused by RBB and brown planthopper.

Even though giving up on rice farming crossed their minds then, Estrello S. Banayawon and Joel C. Tabing remains strong. After all, rice farming is not always about heartaches. •

RICARDO ORGE

REUEL M. MARAMARA

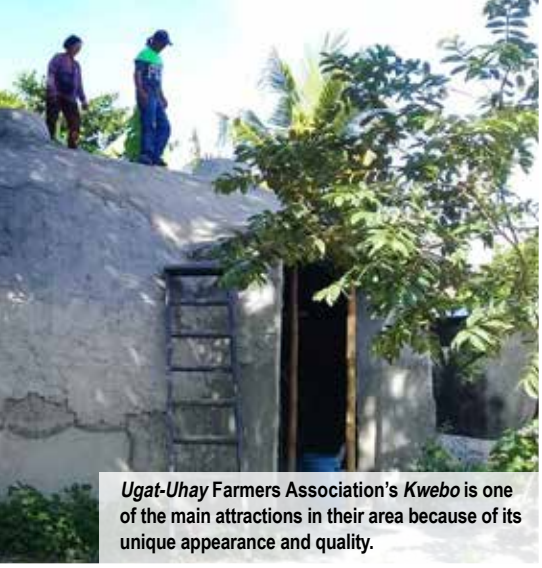
The PhilRice-designed *Kwebo* serves as a storage, drying, and housing facility. It can withstand winds of up to 250km/h.

# Refuge from the storms

**ANNA MARIE F. BAUTISTA**

When senior scientist Ricardo F. Orge visited his hometown Merida, Leyte in May 2014, several months after super Typhoon Yolanda had devastated Eastern Visayas, he still saw the dead coconut trees mostly uprooted and scattered like matchsticks near their family house.

While the house where he grew up was heavily ruined, he was still thankful that none of his family members was harmed and still had food to eat. Ricardo felt more sorry for his relatives and *kababayans* who lost lives, properties, including farm animals and equipment, livelihood, and much of their hope.



***Ugat-Uhay* Farmers Association's *Kwebo* is one of the main attractions in their area because of its unique appearance and quality.**

> *Kwebo had to be built easily like a hut, but with a structural integrity like a cave.*
>
> **- DR. RICARDO F. ORGE,** SCIENTIST II

## BUILT OUT OF COMPASSION

How could have farmers secured their farm equipment, rice seeds, and animals against a killer typhoon? This question sparked the agricultural engineer's imagination to develop the *kwebo*, a typhoon-resilient farm structure that can shelter farm animals and machines, paddy rice, and other farm resources. It was coined from the marriage of two Filipino words *kweba* (cave) and *kubo* (hut).

*"Kwebo* had to be built easily like a hut, but with a structural integrity like a cave," Dr. Orge figured out.

This farm structure is shaped like a dome or a tunnel so that the roof is strongly connected with, and appears to be just an extension of its wall to prevent strong winds from pulling the roof away.

*Kwebo* is formed using mostly pre-fabricated parts called basic construction units (BCU), which function more than just bricks or hollow blocks. The BCUs are made by combining common construction materials like cement and wire screen, and indigenous materials like bamboo. Orge's team at the Rice Engineering and Mechanization Division made sure that the materials are durable enough to resist weather and pest damage.

They also ensured that these units can withstand strong winds of up to 250km/h. To address the need for easy-to-fabricate structures, the BCUs only require simple tools and minimal skills in construction. Putting up the structure promotes household, even community participation, as it allows both men, women, and youngsters as co-laborers.

## BUILT FOR FARMERS

A year after its conceptualization, k*webo* found its spot in Mayamot, Zaragoza, Nueva Ecija. The *Ugat-Uhay* Farmers Association (UUFA), one of the partner-cooperatives of our Rice Business Innovations System (RiceBIS) Community Program, warmly welcomed the technology.

"We were excited to try *kwebo* after learning about it from Sir Orge. As partners, PhilRice committed to providing the materials and assistance while our group offered labor. We completed the construction around April 2019. We now use it as a shelter for our oyster mushroom production," said Daniel N. Parubrub, chairperson of the said association.

Daniel described the *kwebo* as "weather-proof" because it has good ventilation, which is advantageous during summer, and durable to withstand strong typhoons. Their *kwebo* has an area of 45m$^2$ and is divided into two portions. The first one currently houses 1,500 mushroom fruiting bags, and the other is for the pasteurizer, which PhilRice committed to giving them soon.

"During construction, our men and women members worked together to assemble the BCUs and form the *kwebo*. It was difficult because most of us were unskilled for the job, but we are grateful that Sir Orge's team was there to teach us. From how I see it, the cost of the whole structure was worth it," Daniel noted. Previous study results of Orge's team showed that UUFA's *kwebo* was worth P125,151, 30% of which was accounted for labor cost.

Today, the group steadily earns income from its mushroom production. At most, they can harvest 5kg of oyster mushroom every day, which they sell at P150-P200/kg. The 40-year-old farmer hopes that other farmers' groups that wish to build their own *kwebo* would look at the structure as more than a storage facility, rather a business opportunity.

"That way, they could optimize this shelter, which was meant to be multipurpose," Daniel believed.

## BUILT AS AN HEIRLOOM

*Kwebo* was not the only thing that Dr. Ricardo Orge had in mind when he planned to help farmers become resilient not only during typhoons, but also under the changing climate. He also developed the rice hull carbonizer, capillary irrigation system, pasteurizer, and researched on some value-adding strategies.

For now, his goal is to bring the *kwebo* to his *kababayans* in Leyte, who have to endure every strong storm, especially the kinds that tear off their roofs away.

"Before I retire, I want to leave a legacy to my hometown, and to the Filipino farmers. I should be able to help provide practical and best-fit solutions, like this safe and secure farm structure in the time of storms, for the people who bring food to our tables," the 59-year-old scientist aspired. •

FEATURE

# "Dancing" with climate change

CHRISTINA A. FREDILES

Climate change is undeniably re-designing the agricultural landscape. Extreme floods, droughts, unpredictable temperatures from high to low, and seawater invading arable lands have pestered many farmers for years resulting in low yields. In today's language, this is the "new normal" that the agriculture sector must face and hopefully hurdle.

Rice, the primary food staple of more than half the world, is one of the most affected crops for being so water-dependent. PhilRice, in partnership with other research institutions, is refining developed technologies that could help lessen the ill effects of climate change. Here are some of these technologies funded by the Department of Agriculture - Bureau of Agricultural Research:

PHILRICE PHOTO

Capable of remote water-sensing, AutoMon$^{PH}$ operates through sensory objects and automatically gauges water level and alerts farmers via SMS.


PHILRICE PHOTO

The observation well guides farmers in conducting the alternate wetting and drying technology, which can help save water by as much as 50 percent.

## SAVING WATER WITHOUT LOSING YIELD

Rice production itself contributes to greenhouse gas emission, which is one of the factors that trigger changes in climate.

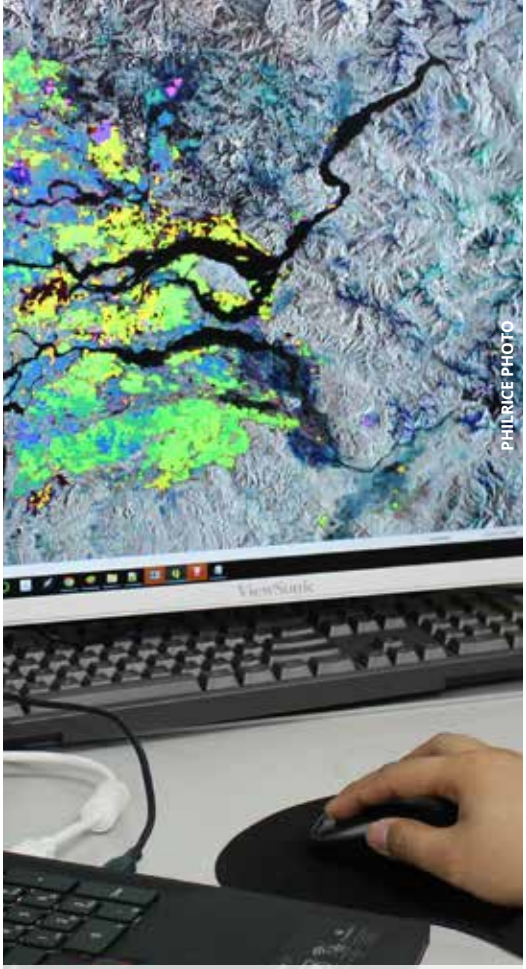
Alternate wetting and drying (AWD), a water-saving technology that rice farmers could adopt to reduce use of irrigation water without penalizing crop yield, could reduce emissions of greenhouse gases especially methane.

With the help of an observation well, perched water table is monitored and farmers are guided to irrigate only when needed. The well is used during the tillering stage of the rice crop onwards. According to PhilRice engineer Kristine Pascual, AWD could help save water by as much as 50% when properly adopted without compromising yield. Saved water can then irrigate farms at the tail-end of the service area. For those using ground water as source of irrigation, the direct incentive of applying AWD technology is the reduction of fuel for pumping water.

"AWD increases the number of productive tillers, resulting further in more filled grains per panicle," Pascual said.

Farmers who find AWD laborious may opt to use AutoMon$^{PH}$ (Automated Monitoring), a high-tech version of the technology.

Dr. Manuel Jose C. Regalado, project lead at PhilRice of the *Water-Efficient and Risk Mitigation Technologies for Enhancing Rice Production in Irrigated and Rainfed Environments (WateRice)*, describes AutoMon$^{PH}$ as an electronic device for measuring the paddy field water level by means of a sensor, logging the water level data, and transmitting the data via a wireless network to a server or to the water user. Through an AutoMon$^{PH}$-based irrigation advisory service, farmers get to receive via SMS water level information and advice whether it is time to irrigate. It also automatically sends information to a central database that can disseminate via SMS an advisory




The Philippine Rice Information System provides near-real-time and integrated information on rice production nationwide.

to the farmers' association and irrigation system manager on which areas need water.

## NEXTGEN

Using biotechnology tools and other breeding techniques, PhilRice develops rice varieties that can withstand multiple biotic and abiotic stresses. The project *Accelerating the Development and Adoption of Next-Generation (NEXTGen) Varieties* aims to speed up the development and adoption of higher-yielding inbred and hybrid varieties resistant to major pests and diseases and tolerant to adverse environments. The project has also identified adaptive varieties that could perform well in specific locations and are tagged as regionally preferred varieties.

Said Dr. Oliver E. Manangkil, project lead at PhilRice, NEXTGen helps shorten the total breeding time for varieties, which normally takes 6 years of breeding work, 3 years of testing, and 2 years of commercial seed production. It is


The Rice Crop Manager provides easy-to-adopt and unique advisories through computers, smart phones, and tablets.

a collaborative project of DA-PhilRice and the International Rice Research Institute (IRRI) as breeding institutions, DA-Regional Field Offices (DA-RFOs), selected state colleges and universities that supervise the conduct of multi-location trials in major irrigated and rainfed rice-growing regions, and farmer-partners for regional adaptability trials and provincial profiling.

"NEXTGen ensures the availability of newly released varieties and hastens their adoption among farmers," Thelma F. Padolina, senior research fellow at PhilRice added.

## PHILIPPINE RICE INFORMATION SYSTEM (PRISM)

PRiSM captures rice production data and delivers information at the right time using online digital technologies. It provides reliable, timely, and location-specific information on rice production particularly rice areas and yields nationwide. According to Jovino L. De Dios, head of the Institute's PRiSM Unit and Agronomy, Soils, and Plant Physiology Division, the information supplied could help rice stakeholders prepare and mitigate the effects of natural disasters.

"This is very useful for action planning and decision-making, and provides immediate response to emergency situations," De Dios said.

PRiSM uses technologies, such as satellite-captured ground image analysis or Remote Sensing to determine where and when rice is planted, including some growth parameters; Crop Growth Simulation Modeling with inputs from satellite, ground, crop and environmental data to estimate probable yields; and Geographic Information System to plot, calculate, and present information in a map and tabulated values for better interpretation. For more information, visit https://prism.philrice.gov.ph.

## RICE CROP MANAGER (RCM)

RCM is a location-specific decision support software that helps farmers calculate the right kind, source, and amount of fertilizer needed in their rice fields.

PhilRice's Wilfredo B. Collado, RCM national and technical coordinator, explains that the software is easy to use as farmers only need to honestly answer more or less 20 questions related to field information, rice variety, sowing date, and other crop management practices using smartphones or tablets. Then they will be given recommendations specific for their farms.

Collado ensures that generated recommendations are accurate as they are renewed every cropping season.

"With RCM, farmers have better chances at producing quality rice using accurate inputs or activities," Collado said.

Aside from fertilizer concerns, RCM is complemented with insect pest, weed, and water management recommendations to irrigated and rainfed lowland farmers before the planting season.

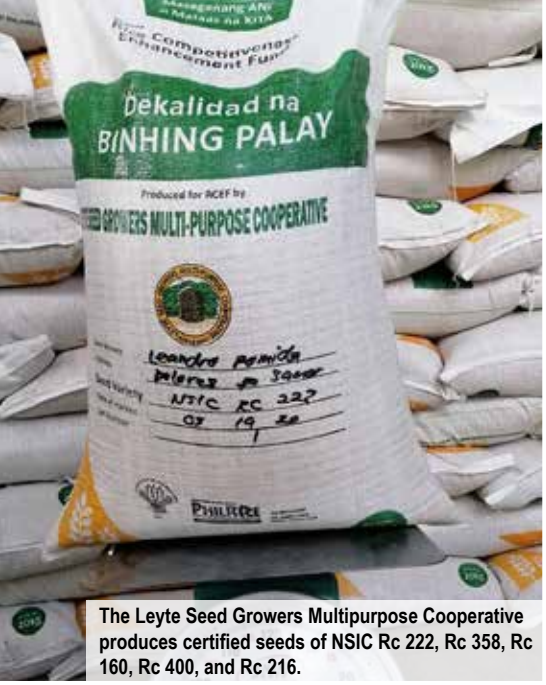
RCM is a collaborative project of IRRI, DA-PhilRice, DA-Agricultural Training Institute, and DA-RFOs.

With the technologies developed by PhilRice and other agencies, it is hoped that agriculture can keep up with the challenges imposed by climate change to ensure food security, and maintain soil and water resources while protecting humans, the environment, and biodiversity. •

# Moving toward a seed-secure region

ALLAN C. BIWANG JR.

CARLO G. DACUMOS




The Leyte Seed Growers Multipurpose Cooperative produces certified seeds of NSIC Rc 222, Rc 358, Rc 160, Rc 400, and Rc 216.

Eduardo R. Palejaro, 57, from Dulag, Leyte looked back at his rough 2019 experience of transporting five sacks of certified seeds to Marabut, Samar, which is 78km away from his hometown, just to deliver orders and promote the varieties.

Despite successful efforts to organize seed growers, increasing the production and popularity of high-quality seeds in the area remained an elusive dream. Demand for certified seeds further slackened and efforts were disconnected, which is tantamount to the Filipino word "kanya-kanya" (to each his own), even with the existence of farmer groups.

To help alleviate the situation, the Rice Competitiveness Enhancement Fund (RCEF)-Seed Program launched the project "Strengthening Seed Growers Association in Region 8". According to project lead Dr. Aurora M. Corales, they saw a real shortage of certified inbred seeds and weak organizational strategies by seed growers in the area that could stunt efforts to raise the competitiveness of the rice farmers.

Eduardo R. Palejaro

"The prerequisite to producing more certified seeds is having more established groups and committed seed growers. These are the weaknesses we found of our Eastern Visayas partners that we are addressing together," PhilRice's Corales said.

## THRIVING SEED INDUSTRY

Eastern Visayas has eight seed growers' associations but when the RCEF-Seed Program started rolling for the 2020 dry season (DS), only the Leyte Seed Growers-Multipurpose Cooperative (LSG-MPC) qualified to supply certified seeds. This covered only 35% of the seed requirement in the region. The bigger 65% was trucked from seed growers in Central Luzon.

After a series of training and orientations by DA agencies in 2019, the San Isidro De Leyte Farmers' Association (SIDLFA) became qualified to supply RCEF seeds.

For years, SIDLFA had been annually producing only 16,000 to 20,000 bags (20kg/bag) that satisfied the demand of individual farmers, local government units, and DA-Regional Field Offices (DA-RFO). Under RCEF, the 5-year-old association supplied 25,000 bags for the 2020 wet season (WS) also and has committed 30,000 bags for the 2021 DS.

> *Now that we have engaged growers of high-quality seeds, we are getting there. Our goal of creating a seed-secure region is about to be achieved.*
>
> **-DR. AURORA M. CORALES,** PROJECT LEAD

Palejaro, President of SIDLFA, together with his 16 co-members asserted their full support and positive outlook for the program.

"This opportunity is huge. My association was tapped to help address the low supply, and seemingly stagnant adoption of inbred certified seeds in Region 8. This move is what we have been waiting for on behalf of our farmers," admitted Palejaro.

With LSG-MPC and SIDLFA now in tandem, data from PhilRice Bicol show that the percentages have been turned upside down: 65% of RCEF seeds distributed in Eastern Visayas this 2020 WS now comes from local seed growers!

By year end 2020, the Eastern Samar Seed Grower Association, New Ormoc City Seed Grower Association, Southern Leyte Seed Grower Association, and Samar Seed Grower Cooperative will also make it as accredited RCEF seed suppliers.

## SCALING EFFORTS FOR VISAYAS FARMERS

The average yield of Region 8 is 500kg lower than the targeted 4t/ha (4000kg) national average for medium-yielding areas like Eastern Visayas. This prompted the DA agencies to strengthen altogether the capacity and institutional ability of some 150 seed growers and their organizations in producing inbred certified seeds for the farmers. The enlistment and "regrouping" of SIDLFA is a proof that partnership can go beyond papers for the welfare of the Waray farmers. Seed growers' associations in Eastern Visayas now have 164 members from only 126 before.

"If not for the assistance of PhilRice, DA-RFO8, DA-Bureau of Plant Industry, and DA-Agricultural Training Institute, I could still be struggling under the hard way of selling certified seeds, and we may not be producing and selling seeds as one for our rice farmers," reiterated Palejaro.

"Now that we have engaged growers of high-quality seeds, we are getting there. Our goal of creating a seed-secure region is about to be achieved," Corales foresaw. •

# Nothing beats this persistent farmer

REUEL M. MARAMARA

It was a restless afternoon for Gil N. Del Barrio as he helplessly watched the rain fall in buckets for hours. Not too far away was his 3-ha ricefield supposedly ready for harvest. The next morning, he woke up to a farmer's worst nightmare–his drowned crop flattened to the muddy ground, all beyond saving.

Another time, his crop was infested by worms unknown to him that shredded the entire ricefield in just three days.

"It was pathetic then and so heartbreaking," the 54-year-old farmer from Daet, Camarines Norte recalled.

To some, these adversities could have pushed them to give up. But for Gil, these are challenges to continuously improve his ways.

"If I couldn't save my crop, something must be off with my farm management," he thought.

REUEL M. MARAMARA

A farmer uses the mechanical rice transplanter to hasten crop establishment.

## LEVEL UP

According to a Food and Agriculture Organization report, the Bicol Region, where Cam Norte belongs, owing to its location, is highly vulnerable to climate-related hazards, which include droughts, floods, and typhoons.

This fact even upheld Gil's determination to level up his farm management. He enriched himself with technical knowledge and appropriate technologies to ease inevitable obstacles in rice farming that are bound to happen in a way or another.

"If you want to compete against the odds, it is necessary to upgrade yourself. I don't want to fall behind what's trending in rice production," he said.

Farming for 32 years, Gil is a devout user and advocate of new rice technologies. These include the PhilRice Agricultural Development Officer of the Community or AgriDOC App that helps farmers in farm management, *Binhing Palay* App that helps users identify the perfect rice varieties for each farming ecosystem by season, and the *PalayCheck* System, an integrated rice crop management system that presents the best technology and management practices as Key Checks.

More than being determined, Gil is innovative as well. With units in engineering and automotive mechanics, he fabricated his own drying system and bought farm machines to hasten farm operations.

"With these machines, I saved a lot of resources. I can also harvest my produce ahead of the storms," he testified.

## COMPETITIVE FARMER

With increased competition brought about by the freer rice trade system under the Rice Tariffication Law, some experts argue that uncompetitive farmers will have to grow other crops or shift to other livelihoods. However, this did not faze Gil. He is confident he could defend himself against imported and tariffied competition.

Gil Del N. Barrio (left) is making money from rice seed production.

Long before the said law was enacted, Gil had put systems in place to prepare for any crisis. Apart from his technical knowledge, he geared himself with machines that he believes will help him even more. With a 4-wheel-drive tractor, 2 hand threshers, 2 hand tractors, 1 rice transplanter, 4 combine harvesters, and a rice mill, he lowered his production cost and hoisted profitability by processing his produce. To further maximize the use of these machines, he also provided rental services to fellow farmers thereby increasing his income.

He completed a training on inbred rice seed production and was accredited by the Bureau of Plant Industry- National Seed Quality Control Services in 2011. As a seed grower, he multiplies nationally recommended varieties, such as NSIC Rc 222, Rc 216, and Rc 160. In 2018, PhilRice Bicol introduced to him NSIC Rc 346, a drought-resistant variety that yields up to 6.2t/ha, to help rainfed farmers adapt to an impending El Niño.

Through all these blessings, Gil admits he never thought that a farmer could earn as much as P36,000 in one blissful day.

"Farmers must become entrepreneurs to maximize their earnings. That's why I simplify things and take every opportunity to do business," he advised.

He now supplies seeds to the Rice Competitiveness Enhancement Fund-Seed Program that provides seed support to farmers.

## DREAM-COME-TRUE

Gil's love affair with rice farming is so deep-rooted that giving up is just not in his vocabulary.

"In grade school, our teacher asked us what we wanted to become in the future. While most of my classmates mentioned highly glamorized professions, I simply said, a 'farmer.' That's my dream! I have traveled many places, enrolled in different courses, and tried many jobs, but my heart really belongs to farming. That's why I never gave up on it," he professed.

Now, Gil Del Barrio has become a *Magsasaka Siyentista,* a title earned by farmers who have been consistently successful in utilizing science-based technologies in their farms, and is often invited as a resource speaker in various local training programs on rice production. He is also a Regional Gawad Saka and Outstanding Seed Innovators awardee.

"Before, I was that farmer who silently sat in a corner during seminars and trainings. Now, I am the one who speaks in front," he proudly characterized himself.

"Other farmers can also achieve what I have amassed. They just have to bounce back every time they stumble. Never give up," Gil advised. •

# PhilRice engaged in DA's 8 Paradigms

GRAPHICS BY JAYSON C. BERTO

Secretary William Dar has clustered the strategies of the Department into 8 paradigms, which he collectively terms as the **"New Thinking in Agriculture".** PhilRice sees itself helping to achieve the goals of the Department through its ongoing and realigned research-for-development thrusts.

## Legislative Support

- Rice policy research and advocacy (Science-based Policies in Advancing Rice Communities Program)
- Advocacy-laden observance of National Rice Awareness Month

## Promotion of Exports

- Promotion of heirloom and specialty rices for export
- Endorsement of organic rice farming and judicious pesticide use for food safety

## Higher Investment

- Increasing budgets for development work (Rice Competitivenes Enhancement Fund or RCEF-Seed/ Extension Programs)
- Tapping carbon-trading mechanisms (e.g., Alternate Wetting and Drying technology to reduce methane gas emission)
- Sponsoring information and communication campaigns & capacity-building efforts
- Attracting private sector investments (*Sa **P**alay at **G**ulay, may **A**ni, **H**anapbuhay, **O**portunidad, at **N**utrisyon* or PAG-AHON Project)

## Farm Consolidation

- Farmers' organized marketing thru clustering approach (Rice Business Innovation System or RiceBIS Program)
- Model Farm Development

## Infrastructure Development

- DA-Crop Biotechnology Center
- Improvement and establishment of new PhilRice infrastructures and stations development plans

## Modernization

- Implementation of RCEF-Seed and Extension Programs (RA 11203)
- IT-based crop management and decision-making tools (Philippine Rice Information System, Pest Risk Identification and Management, Rice Crop Manager, Rice Intel, Minus-One Element Technique App, Weed App, WateRice, etc.)
- Resilient rice farming (Strategically Modernized and Robust Technologies for Competitive and Secure Rice Industry Program); Big data analytics (i.e., weather rice model)
- Modernized farming thru the *PalayCheck* System
- Development of nutrient-enriched rice-based food products with local crops & plant-sourced ingredients
- Development of high-yielding and cost-reducing technologies, such as varieties and machines

## Industrialization

- Rice-based enterprise establishment through the RiceBIS Program
- Commercialization of rice-based food and drink products (e.g., NutriRice); use of nano-fertilizer
- Development of market-driven rice and rice-based products
- Crop diversification through the *Palayamanan* Plus Project
- Agri-Farm Tourism (FutureRice)
- Processing of rice weeds as food

## Roadmap Development

- Business-unusual Rice R4D Programs
- Value chain approach in rice farming systems (RiceBIS Program)
- Public-private partnerships (Hybrid rice, PAG-AHON Project)
- Institutional Capability-Building
- Golden Rice Project to address malnutrition
- Rice seed production value chain analysis

VOX POP

# As a policymaker, in what ways can you help farmers become crises-resilient?

COMPILED BY: REUEL M. MARAMARA
AND JULIANNE A. SUAREZ

## Senator Cynthia A. Villar

As a policymaker, we can help farmers become crises-resilient by providing legislative support. Most of the bills we have pursued and passed into law are helping rice farmers during crises or not. These measures strengthen and empower them to overcome barriers, such as lack of technical expertise, inadequate access to socialized credit, and lack of mechanization and financial literacy, that prevent them from being more competitive and profitable.

The COVID-19 pandemic is something we have not experienced before and has hit all sectors including agriculture and the various activities and businesses related to it. The sector nonetheless faces numerous challenges at any given time. While Filipinos are naturally resilient, the government has put in place measures to help farmers cope in times of crisis.

Since day one, our priority has been to improve the plight of rice farmers who are among the poorest in the country. There are 8M crop farmers in the Philippines— 3.5M of them are rice farmers. So, if we can lift them out of poverty, by increasing their harvest and income through appropriate policies—that would help solve the poverty in our country.

During the 17th Congress, among the agriculture-related bills we have principally authored and passed is Republic Act No. 10969 or the Free Irrigation Service to Small Farmers Act. We have institutionalized free irrigation services for small farmers or those with 8ha or below. It is truly a landmark law that will benefit generations of Filipino farmers. For the first time in our country's history, irrigation is now free for farmers.

Another notable law we have passed is the Rice Tariffication Law or RA No. 11203, "An Act Liberalizing the Importation, Exportation and Trading of Rice, Lifting for the Purpose the Quantitative Import Restriction on Rice, and for Other Purposes." The law created the P10-B Rice Competitiveness Enhancement Fund (RCEF) from the Annual Appropriations as government investment for the next six years to help the rice industry survive global competition in its transition to a more open rice trade system. P5B of the yearly RCEF will be appropriated to the Philippine Center for Postharvest Development and Mechanization (PHilMech) for the

mechanization of local rice production; P3B to PhilRice for the development, propagation, and promotion of high-quality inbred rice seeds and strengthening of organizations toward seed production; P1B to Land Bank and Development Bank of the Philippines for the provision of subsidized credit to rice farmers and cooperatives; and P1B to PhilRice, PHilMech, Agricultural Training Institute, and Technical Education and Skills Development Authority for rice extension initiatives

Under the rice tariffication law, the government, through DA, was able to provide a very timely intervention, especially amidst the global pandemic. There are so many testimonies from farmers themselves about how RCEF has helped increase their yield.

In the recent 18th Congress, we will continue to pursue legislations for the agriculture sector. Among which is the bill we have already filed, Senate Bill 140 or the Free Index-Based Agriculture Insurance Act that seeks to establish the enabling policy, regulatory, and funding support for a more effective crop insurance program and to strengthen the resiliency of small farmers against climate change and extreme weather risks.

Legislative support is important because laws are more permanent, these are institutionalized in the system and government departments and agencies are mandated to implement the laws to the letter, so to speak. We remain firm and steadfast in our commitment to make Filipino farmers more competitive and profitable, so they will be resilient with or without a crisis. •

## Councilor Ralph O. Abella

*Davao City*

Farmers can become crises-resilient when they are encouraged and motivated to plant. Rice farmers or those who want to engage in rice production should be given tax incentives by the local government unit (LGU) such as deduction from business and real property taxes. Plantations other than rice may also be provided with tax incentives if at least 25% of its plantation will be allocated to rice production.

To reduce the effect of the tariff on local farmers, the 35% tariff on rice must also be increased during the local harvest season to cater to local farmers and allow them to compete with imported rice.

On a more long-term approach, once local rice production has increased, LGUs must engage in market price mechanisms by establishing government-run rice mills and storage facilities, buy produce from farmers, and sell it to other entities or individuals.

There is always no single way of resolving crises in agricultural production, but with proper legislative measures with strong implementation in a more coordinated local and national government, we will be able to balance the economy as we have always envisioned. •

## Governor Matthew Joseph Marcos Manotoc

*Ilocos Norte*

The impact of extreme weather conditions, scarcity of water, and unproductive soil continue to demand for our disaster-preparedness. Thus, the provincial government of Ilocos Norte has implemented initiatives to empower our agriculture sector to ensure affordable and healthier food for every Ilocano. We have been assisting our farmers by providing them organic soil conditioners, improving irrigation systems, rehabilitating diversion dams, and providing production and post-harvest facilities. Besides, we have had a series of programs including regular training in agriculture, product development, and good manufacturing practices. •

Diversification, intensification, and integration of sources of livelihood with rice as the main crop can provide a more stable source of nourishment and additional income to rice farmers, helping them become less vulnerable to crises.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