PhilRice Magazine

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ABOUT THE COVER

With an open rice market, local farmers face a mighty, probably unknown competition. To provide them high-quality seeds that can help them become competitive, PhilRice works hand-in-hand with its partners, like the Bureau of Plant Industry-National Seed Quality Control Services (BPI-NSQCS), to ensure that quality processes are observed from varietal development to seed production. Farmers also need to adhere to the best crop management practices. This issue features stories of living up to this mantra: QUALITY RULES!

CONTENTS

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2018 Binhi Agri Magazine of the year · 2009 Binhi Agri Magazine of the year · 2007 Binhi Hall of Fame Awardee · 2001 Gawad Florendo Awardee

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EDITOR'S NOTE

Quality rules

In an open, highly competitive rice market, one thing rules – high-quality product! It actually usurps all other forces of the market. Hence, in the light of our quest to make our local rice farmers conquer the market and earn better, the common objective must not only be to raise yield and cut on cost, but also to produce high-quality rice products.

Quality here specifies achieving high standards in all spectrums of rice – from developing varieties (high-yielding, pest tolerant, good tasting, and nutritious) that are acceptable to farmers and seed growers to commercial production and marketing rices that are acceptable to traders, millers, and consumers. By so doing, we can guarantee that the rice we cook and eat is pleasing to the eyes and taste buds, not to mention good for our health.

This issue of the magazine trains the spotlight on the stories behind these processes, particularly how researchers, farmers, millers, and regulators endeavor to hurdle the benchmarks set to eclipse the standards of producing high-quality and preferred rice.

It is argued in this magazine that to produce quality rice is a group interest and responsibility, not an accident but a deliberate outcome of rigorous processes conditioned with the hard work and passion of the people who value rice.

Let's look at every grain of rice as life that fuels our existence. It reinforces our identity as Filipinos for our meal is not complete without it. •

With proper crop management practices, the use of high-quality inbred seeds can increase yield by 10% or more.

Guidelines on RCEF-financed seed distribution released

Implementation of the seed program under the Rice Competitiveness Enhancement Fund (RCEF) is now rolling with the early release of its guidelines. The Fund covers rice farm mechanization; inbred seed development, propagation, and promotion; expanded credit assistance; and extension services.

Dr. Flordeliza H. Bordey, PhilRice deputy executive director and RCEF program director, said the program will promote high-quality inbred rice seeds to farmers.

"Provinces with high potential for competitiveness will be prioritized. These areas are selected based on the evaluation of the size of their area harvested, yield level, production cost, and share of irrigated area. Selected areas must also have an annual area planted of more than 500ha for dry season 2019-2020," Bordey said.

Farmers will receive seeds for two consecutive cropping seasons until Dec. 2020. Implementers said that farmers can still avail of seeds once the target yield in their area is achieved.

Bordey emphasized that only farmers who are enlisted in the Registry System for Basic Sectors in Agriculture (RSBSA) will be provided with free seeds. Eligible farmers are entitled to a maximum of 80kg of inbred seeds depending on farm size for the October to December planting.

"We are targeting to distribute more than 2 million bags at 20kg/bag certified seeds in 2019, good for a million hectares. We expect to distribute more next season," Bordey was optimistic.

Farmer-beneficiaries will be provided with information, education, and communication materials to guide them achieve the yield potential of certified seeds. Varieties for distribution include NSIC Rc 160, Rc 216, Rc 222, and two location-specific inbred varieties.

"We are requesting the help of the local government units (LGUs) to validate and enlist farmers in the RSBSA. LGUs will also identify the distribution areas and schedules," she said.

Bordey added that the LGUs will be tapped to identify drop-off points and schedules for seed delivery and potential temporary seed storage facilities; assist in seed delivery inspection; and announce details of and facilitate seed distribution.

In preparation for program implementation, Bordey said they have reached provincial and municipal officials and agriculture workers nationwide. Technical briefings on seed preparation and other PhilRice technologies will also be conducted before seeds are released to farmers.

With the interventions, Bordey said the seed program is hoped to contribute in increasing yields up to 6t/ha in high-yielding provinces and 5t/ha in medium-yielding areas by 2024. The RCEF programs also aim to help lower production cost by 30%, reduce postharvest losses to 12%, and trim down marketing cost by P1/kg.

To be implemented from 2020 until 2025 Dry Season, the RCEF programs will be reviewed by the Congressional Oversight Committee on Agricultural and Fisheries Modernization on their third year. - **DONNA CRIS P. CORPUZ AND ALLAN C. BIWANG JR.**

Clustered farmers can assert a better price of their products by making collective sales to large-scale buyers.

Farmers urged to enlist, join groups for RCEF support

Individual farmers are being enjoined to enlist in the Registry System for Basic Sectors in Agriculture (RSBSA) and join organizations to access agriculture-related programs and services including the Rice Competitiveness Enhancement Fund (RCEF).

Under the Rice Tariffication Law (RA 11203), eligible RCEF beneficiaries include farmers, farmworkers, and their dependents who are listed in the RSBSA –an electronic database containing basic information of farmers and fisherfolks, and members of DA-accredited farmer organizations (FOs) such as multipurpose cooperatives, irrigators' associations, and people's organizations. Farmers who are already enlisted in the DA-updated RSBSA will be prioritized this 2019 dry season. Meanwhile, those who have just registered will receive RCEF seeds in the succeeding planting season.

"The program does not only aim to reduce the cost of production and increase farmers' yields, but it also intends to strengthen FOs through agro-enterprise and collective activities. We are partnering with local government units so they can guide the farmers on RSBSA registration and membership in existing or formation of new FOs," DA officials said.

The LGU of Sta. Ignacia, Tarlac and its Municipal Agriculture and Fishery Council helped its farmers complete the requirements in time for the RCEF-seed support to be given by October this year.

"We met with the farmer-leaders of the different organizations and cooperatives in Sta. Ignacia so we can identify strategies on obtaining the documents needed for the FO accreditation and thoroughly update the municipal RSBSA master list. We hope that every eligible farmer in our locality will receive support so we can simultaneously progress," James Ocampo, Sta. Ignacia MAFC chairperson said.

To register in the RSBSA, individuals must be 18 years old at the time of registration, a Filipino citizen, and must be a farmer, farm laborer/worker. They must also fill up the RSBSA form which can be acquired through their city or municipal agriculture office or online through the DA website.

Aside from the form, registrants must also present one original and photocopy of any valid identification card such as SSS/GSIS UMID card, postal ID, TIN card, passport, PRC ID, OWWA/iDOLE card, voter's ID or certification from the election officer with dry seal, PNP firearms license, senior citizen ID, or valid school ID for students.

For registrants without valid ID, a duly signed barangay certification containing his/her permanent residence may be secured. They must also present proof of farming activity such as evidence of land ownership (land title/ certificate of land ownership/ deed of donation/ lease agreement), municipal/city/ barangay business permit, or geo-tagged photos of their farm, if possible.

Ocampo affirmed that these requirements are means to ensure that the right people will benefit from the program.

"Getting enlisted in the RSBSA and accredited by the DA would mean that the recipients of the program are legitimate farmers. We can avoid [political] entities from interfering in RCEF, and we can be sure that there is equal distribution of the resources," he said. - **ANNA MARIE F. BAUTISTA**

PhilRice son back as new exec

Dr. John Calilan De Leon, 50, who led PhilRice's hybrid rice program in early 2000s, returns in Sept. 16, as its new acting executive director.

Designated by acting Agriculture Sec. William D. Dar, De Leon replaced Dr. Sailila E. Abdula who now serves as DA assistant secretary for the Bangsamoro Autonomous Region in Muslim Mindanao and concurrently Director I of PhilRice Midsayap in North Cotabato.

Working at PhilRice in various capacities for almost 20 years up to 2009, De Leon rose through the ranks starting as junior researcher. He then joined the private sector as senior breeder at DevGen and head of rice breeding at Syngenta based in South Cotabato.

An accomplished rice breeder, he led the development, testing, and registration of public and proprietary hybrid rice varieties in the Philippines and in Southeast Asia. In 2017, Mestiso 59, another variety he co-developed, emerged as the highest yielder at 12t/ha among 12 hybrids showcased in the Northern Mindanao Hybrid Rice Derby.

An alumnus of the Asian Youth Fellowship program of the Japan Foundation JICA and Monbusho Scholarship, he had analyzed the changes that rice had gone through in a hundred years through his paper, *Rice that Filipinos Grow and Eat,* published by the Philippine Institute for Development Studies in 2012. His researches also include genomic selection, aromatic traditional varieties, seed technology, and genetic diversity.

Dr. John C. De Leon

With nearly 30 years of well-rounded work experience, De Leon had managed rice R&D programs in public and international private institutions, specializing on commercial seed product development and testing, seed systems, and multi-national breeding programs.

His contributions in the development of better rice varieties were recognized by scientific bodies including the National Seed Industry Council and National Academy of Science and Technology (NAST) and Crop Science Society of the Philippines. He won the NAST-DuPont 2002 Talent Search Award for Young Scientists and the 2016 Sant S. Virmani Hybrid Rice Award. He is also a three-time recipient in Syngenta's Asia Pacific Seed Development Celebration of Success and two-time PhilRice outstanding employee awardee.

De Leon, who hails from Angeles City, Pampanga and is also fluent in Ilocano, holds degrees in agricultural sciences from Iwate University in Japan, and plant breeding and agriculture from UP Los Baños. - **DONNA CRIS P. CORPUZ**

SEA to serve Mindanao

Dr. Sailila E. Abdula

After three years serving as PhilRice acting executive director, Dr. Sailila E. Abdula is assigned assistant secretary for Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). He will serve in concurrent capacity as Director I of PhilRice Midsayap effective Sept. 16.

As part of his new duties, acting Agriculture Sec. Dr. William Dar, said that the multi-awarded rice breeder from North Cotabato will harmonize rice programs in Mindanao and ensure that the region will receive assistance from the department.

"[The department wants] to help BARMM in a big way. Let's help achieve a realistic, autonomous BARMM," Dar said.

Under Abdula's leadership, PhilRice started the implementation of the seed component of Rice Competitiveness Enhancement Fund. Infrastructures such as Crop Biotech Center and Germplasm Resources Laboratory were also built.

"Leading the country's premiere research for development Institution is a prestigious opportunity. I will always be grateful for the chance to serve not with the highest position of PhilRice, but in capacity that would allow me to make positive and desirable difference... in the lives of rice stakeholders," Abdula said.

In 2018 alone, PhilRice had developed 22 rice varieties approved by the National Seed Industry Council, three of which were PhilRice-bred. Thirty-eight percent of its research for development projects were also gender-responsive.

Abdula, who started his PhilRice career 24 years ago, is a 2018 Presidential Lingkod Bayan awardee – the highest award given to a public servant. The ASEAN Rice Science and Technology Ambassadors Award Search Committee also recognized him as 2017 Outstanding Rice Scientist of the Philippines. - **DONNA CRIS P. CORPUZ**

PhilRice deputy executive director for administrative services and finance Abner Monticalvo (3rd from right), together with Human Resource Management Office head Maria Ethel Gibe (3rd from left), receives the PRIME-HRM Bronze Award from the Civil Service Commission-National Capital Region. The Institute adheres to high-quality standards in all its initiatives to improve the lives of the Filipino rice farmers.

CSC confers PRIME-HRM on PhilRice

The Civil Service Commission-National Capital Region (CSC-NCR) has recognized our excellence in human resource management systems, practices, and competencies by conferring the PRIME-HRM Bronze Award to the Institute, July 24.

The conferment, which is under the Program to Institutionalize Meritocracy and Excellence in Human Resource Management (PRIME-HRM), evaluated 345 government agencies in terms of recruitment, selection and placement; learning and development; performance management; and rewards and recognition.

PhilRice and 11 other agencies qualified for the bronze award. The Philippine Carabao Center, Bureau of Fisheries and Aquatic Resources, and the Philippine Information Agency are among the bronze awardees.

A CSC-promulgated resolution states that for being an awardee, the Institute is authorized to approve appoinments, subject to post audit. A 20% discount is granted to the HRMO or agency representative on trainings and conferences conducted by the CS Institute. Aside from these and other privileges, PhilRice will be granted other benefits that the CSC may approve in the future. - **ZENNY G. AWING**

PhilRice wins national, international awards

PhilRice studies were recognized during the 25th Federation of Crop Science Societies of the Philippines (FCSSP) and 1st Federation of Plant Science Associations of the Phils. (FPSAP), and 27th Asian-Pacific Weed Science Society (APWSS) conferences this September.

Four teams were awarded best posters in the FCSSP/FPSAP conference. The studies "Binhing Palay: Philippine modern rice variety catalogue app," and "Empowering rice-based farm communities towards a sustainable enterprise: The case of *Pinagbuklod* Coop in Zaragoza, Nueva Ecija" won under the Technology Development and Commercialization category.

The Binhing Palay App, already downloadable from Google Play Store, by Nehemiah L. Caballong and Paul Austian A. Alday, and Roger F. Barroga features a catalogue of all released varieties in the Philippines.

The other study focused on adding value to rice and other rice-based commodities to push up the income of rice-based farm households. The poster was authored by Riza G. Abilgos-Ramos, Josefina F. Ballesteros, El Shaira A. Labargan, Rogerine B. Miguel, Alice B. Mataia, and Aurora M. Corales.

The poster "Why farmers continue to plant unclassified rice lines?," which examines farmers' use of unknown varieties, authored by Marissa V. Romero, Gerome A. Corpuz, Rochelle C. Huliganga, and Henry F. Mamucod, won under the Crop Production Management/Protection category.

"Rice malt and soy beverage: A non-dairy health drink for children," which formulated a ready-to-drink malted rice beverage enriched with soymilk topped the Crop Physiology and Biochemistry/ Postharvest Handling, Processing and Utilization/Health and Nutrition category. Riza G. Abilgos-Ramos, El Shaira A. Labargan, Jolina F. Dasalla, Gwendilyn Ramirez, Carla G. Valderama, and Alma A. De Leon conducted the study.

Meanwhile, "Plasticity of lowland ecotype *Cyperus rotundus* l. in response to flooding, burying, and clipping interventions" garnered best poster award in the APWSS conference.Co-authored by Dindo King Donayre, Jobelle Bruno, Jessica Joyce Jimenez, Edwin Martin, the study explores possible management interventions on the emergence of the world's worst weed, locally known as *mutha,* in irrigated lowland rice production. - **REUEL M. MARAMARA**

Photo from the Presidential Communications

PhilRice scientist Ricardo F. Orge (3rd from left) receives the 2019 Presidential Lingkod Bayan Award (LBA) together with his family and former acting executive director Sailila E. Abdula (1st from right). Orge is the Institute's 5th Presidential LBA recipient.

Agri-engineer reaps highest award in public service

PhilRice scientist Dr. Ricardo F. Orge, 58, received from President Rodrigo R. Duterte himself one of this year's eight Presidential Lingkod Bayan Awards (LBA).

Given in Malacañang during the Awards Rites for 2019 Outstanding Government Workers, Sept. 10, the award is accorded to "individuals or groups of individuals for exceptional or extraordinary contributions resulting from an idea or performance that had nationwide impact on public interest, security, and patrimony."

Orge's research interests focus on helping rice farmers push up their income and overcome challenges brought about by climate change, such as drought, floods, and destructive typhoons. His inventions included the Continuous-type Rice Hull (CtRH) Carbonizer that processes rice hull into biochar while making use of the generated heat as alternative source of energy instead of petroleum. He also developed Kwebo, from the Filipino words – *kweba* (cave) and *kubo* (hut), an affordable multi-purpose and typhoon-resistant farm structure. This low-cost farm structure for small farm holders can withstand typhoon signal 4 and 200km/h wind.

The son of Merida, Leyte had earlier received the 2017 Manila Water Foundation Prize for Engineering Excellence Award and Alfredo M. Yao Intellectual Property Awards 2017 for the CtRH carbonizer.

"When I became a researcher and a scientist, I told myself that I wouldn't let local farmers experience the same hardships that my father went through. I promised to do my best to make sure that the farmers will get the help they need," the scientist said referring to inadequate technical support several decades ago.

Meanwhile, food scientist Dr. Marissa V. Romero garnered the LBA by the Civil Service Commission (CSC) Region 3.

Aside from Orge, PhilRice has produced other recipients of national and regional recognitions for their exemplary performance in public service. The Rice Varietal Improvement Group (1992) and Rice Engineering and Mechanization Division (2000) were conferred the Pagasa Award for the group category, and Virgilio M. Alata (2001), Imelda A. Dela Cruz (2002), Aurora M. Corales (2006), Rizal G. Corales (2017), and Roger F. Barroga (2018) for the individual category. The Presidential LBA has been given to Roel R. Suralta (2013) and Norvie L. Manigbas (2018), and to former executive directors Santiago R. Obien (1999) and Sailila E. Abdula (2018).

The Lingkod Bayan, Pagasa, and Dangal ng Bayan Awards are part of the Honor Awards Program of the CSC, an annual search for civil workers who have displayed outstanding work performance, given during the Philippine Civil Service anniversary celebration every September. - **REUEL M. MARAMARA**

Congratulations to our newly appointed/promoted staffers

ISAGANE V. BOHOLANO
Senior SRS, Research Division, Midsayap

JHUNN MARK C. BRAGAIS
Administrative Assistant II, Bicol

JOHN C. DE LEON
Chief SRS, Research Division, Midsayap

ABEGAIL T. DONAYRE
Senior Administrative Assistant III, CES

GERARDO F. ESTOY
Director I, Agusan

LEYLANI M. JULIANO
Chief SRS, Research Division, Batac

JAIME A. MANALO IV
Supervising SRS, Socioeconomics Division, CES

JOEL V. PASCUAL
Supervising SRS, Technology Management and Services Division, CES

JOVELYN P. ORDONIA
Administrative Officer III, Batac

More awards

PHILIPPINE RICE INFORMATION SYSTEM (PRISM)
2019 Information Visionary – Philippines, International Data Corporation

IVY PEARL B. DAHINO
Excellence Award, 2019 Korean Agricultural Policy Experience Academy

FUTURERICE FARM
Philippine Good Agricultural Practices (GAP) for rice and vegetables, Department of Agriculture Regional-Field Office 3

RONAN G. ZAGADO
Outstanding Alumnus for Extension and Community Development (Open Category), Central Mindanao University

MARY GRACE M. NIDOY
Outstanding Learner, Best Feature Story, and Best Audio Visual Presentation, SEARCA Information and Knowledge Management Program

DIADEM B. GONZALES-ESMERO
2019 Distinguished Alumna in Culture and the Arts, University of the Philippines Alumni Association

New* Knowledge Products

COMPILED BY HANAH HAZEL MAVI B. MANALO

MAGAZINES

We can compete! banners the use of yield-boosting high-quality inbred seeds coupled with appropriate cost-reducing integrated crop management (ICM) practices. It sheds light on practical insights and experiences regarding proper land preparation and nutrient management.

#RicePinas underscores the primacy of patriotism and cooperation to complement the technology interventions. It shares stories that cultivate love for rice and farmers.

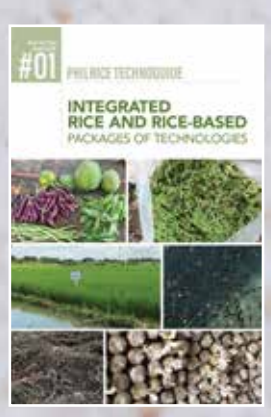
'Wag masindak sa imported na bigas. Kaya nating labanan ito! offers yield-enhancing and cost-reducing tips in rice farming, that farmers may improve their competitiveness.

PalayCheck System: Sama-samang matuto, Sama-samang umasenso features farmers' stories who successfully achieved each key check of the System, an ICM approach for improved productivity.

TECHNOGUIDES

Drumseeder details the steps on how to assemble and use the plastic drumseeder as well as the benefits of using it. It also introduces seed-to-seed management practices.

Integrated Rice and Rice-Based Packages of Technologies teaches strategies on how to maximize the potential of a given production area.



BOOKS AND BOOKLETS

The Science and Art of Palayamanan Plus documents the diverse experiences of the Palayamanan Plus implementers and communicates ideas on concepts of integration, diversification, and intensification in their farms. It also presents simple math on the cost and returns from this venture.

What is a climate change-adaptive school? chronicles, using case studies, how schools can play active roles in climate change adaptation in a rice-farming community.

MILESTONES

Milestones 2018 recounts the Institute's remarkable achievements in 2018.

HANDOUT

Pamamahala ng Rice Grain Bug gives away short management options for this emerging rice pest.

BROCHURE

Pampublikong Hybrid Rice spotlights the hybrid rice varieties being commercialized by the Institute.

*These knowledge products are available at www.pinoyrice.com, www.philrice.gov.ph, and PhilRice Development Communication Division.

Rice Across the Country

COMPILED BY ZENNY G. AWING

PHILRICE BATAC

Rice educators trained

Seventeen local farm technicians (LFTs) and 18 agriculture extension workers (AEWs) participated in the rice specialists training (RST) on sustainable production with emphasis on the PalayCheck System.

The station established a half-hectare participatory techno-demo area (PTD) utilized for five fertilizer treatments: Minus-One-Element Technique, soil analysis, Rice Crop Management, fertilizer quick guide, and farmer's practice.

The educators simultaneously conducted trainings for 150 farmers in five Farmer Field Schools (FFS) every week. The FFS sites included barangays Colo and Quiling Norte in Batac City, and Pasil, Cabagoan, and Cayobog in Paoay, Ilocos Norte.

Each site had a 0.5ha PTD where the LFTs/AEWs demonstrated to farmers the knowledge they gained during their training.

According to Rose Ann Cabaloan, Laoag City, the training further motivated her to help rice farmers. "The RST inspired me to learn more, so I could share more," she said. - **MARIBEL B. ALUPAY**

PHILRICE ISABELA

PHILRICE NEGROS

Partnership boosted

Bicol-Samar partnered with the Negros Women for Tomorrow Foundation Inc. (NWTF) in the business summit "Stabilizing Growth Through Business Formation," held in Palo, Leyte.

The stations showcased knowledge products through a one-stop information shop and introduced the Institute's technologies, campaigns, and products and services.

The event was attended by 388 micro-finance clients, mostly women from Dungganon communities, the NWTF service that finances their palay production through the Micro Agri project. It provides Grameen-based micro financing and developmental services to the marginalized urban and rural poor in Central Philippines. - **KRISTINE R. PALIZA**

Farmers get machines

PhilRice has granted brown rice milling machines to farmer groups in Isabela. A retrofitted-type machine was handed to the Ligaya Irrigators Association in Salvador, Santiago City while a village-type unit was given to the MarDag RiceBIS Association in Dagupan, San Mateo.

Project leaders Marissa Romero and Arnold Juliano led the demonstration and hands-on operation of the machines. Farmers also practiced proper operation, troubleshooting, repair, and maintenance, and evaluated their performance in terms of capacity, hulling efficiency, and purity of output.

Using these machines, the associations are expected to continuously promote the consumption and health benefits of brown rice and increase their income and market reach. - **CHRISTIAN PAUL A. DE LEON**

PHILRICE MIDSAYAP

Rice boot camp held

Twenty fresh agriculture graduates of three state universities and colleges in North Cotabato underwent a 3-day Rice Boot Camp to imbibe the essence of agriculture and be equipped with the latest innovations in rice science and technology.

They engaged in the PalayCheck System and in a hands-on activity on the Agroecosystem Analysis, Minus-One-Element Technique, soil sampling, and actual planting.

Quenifer Silvestre, Agri-Officer of Kabalikat Para sa Maunlad na Buhay, Inc., said that the knowledge she acquired from the Boot Camp helped her a lot in her everyday tasks. She's more confident to answer the questions of her farmer clients.

Based on pre and post-evaluation, 59% of the participants gained knowledge during the camp. - **MOHAMADSAID B. GANDAWALI**

PHILRICE AGUSAN

Brown rice pushed

In line with the July 2019 nutrition month celebration, station representatives lectured on the benefits of eating brown rice and other healthy foods to 300 students of the Agusan National High School bearing the buzzwords "BROWN RICE with a TWIST." After the lecture, the students enjoyed a feeding activity with brown rice, vegetables, and beef.

The youngsters acknowledged the health benefits of brown rice and even agreed to promote its consumption. Michael Regalado Mondejar, 14, admits that brown rice is sort of expensive but the rich nutrients it contains are worth the price. - **SARAH MAE A. BOQUIL**

PHILRICE BICOL

Rice stakeholders learn

To increase awareness and keep participants abreast of the current trends on rice research for development, the station and other research institutions nearby jointly conducted the seminar "Breeding for Brighter Future" for farmers, students, farmer- leaders, and professionals.

Topics included breeding for low-input agriculture, role of genetic plant resources in pre-breeding for rice varietal improvement, and local public hybrid rice production.

The stakeholders are to re-echo their learnings. - **VANESSA A. TINGSON**

PHILRICE LOS BAÑOS

Training for AgRiDOC

The Agricultural Training Institute Region IV-A, in partnership with PhilRice Los Baños, conducted the training "Enabling the AgRiDOC: A New Breed of Agricultural Development Officers of the Community." The season-long training was for 25 agricultural officers and workers from CALABARZON.

The new batch of AgRiDOC was immersed in six training modules that included hands-on activities designed to improve their capabilities in terms of technology promotion and delivery. How the Rice Tariffication Law affects the country was also tackled.

"I mostly enjoyed the AgRiDOC app topic. This mobile app makes it easier to give recommendations to our farmers especially in dealing with rice problems," participant Clarissa Briñas of Bay, Laguna said. - **RUBY MOSELLE O. TUMANGUIL AND MARY GRACE P. LEIDIA**

Drying *palay* the climate-smart way

ELSIE E. REYES

Farmers' hurdles especially during the rainy season do not end after harvesting as they still have to dry their produce. PhilRice engineers are now developing the ***paddy bag-drying system***, a technology that hopes to integrate and perform adjacent operations, such as grain hauling from the field to the drying facility and grain storage. Its drying function is largely based on a low-cost technology first crafted in Vietnam and introduced in Ilocos Norte in the early 2000s.

Capitalizing on bulk-handling that makes the process more efficient, the system aims to shorten the grain-handling time by eliminating the series of loading and unloading of grains.

System components

The drying system has five main parts: drying bag, bag carrier, multi-purpose shelter (kwebo), air-heating component, and the blower (air-conveying). The drying bag can hold up to 500kg of *palay*. It functions both as container in hauling the grains from the field to the shelter, and as drying bin. The bag carrier is designed to be pulled by a hand tractor that brings the grain-filled drying bag from the field to the drying facility.

The drying bag and bag carrier are designed to complement the kwebo, where the drying is done with the blower and the air-heating components. Air-heating makes use of the previously developed CtRH carbonizer fuelled

by rice hull that is almost smokeless. The charred rice hull (biochar) produced by the carbonizer can be used as soil enhancer, for better fertility and nutrient uptake.

System advantages

The system's grain-drying capacity varies from half a ton (one drying bag) to four tons (eight drying bags). Different rice varieties can be dried in each of the bags. The bags minimize grain-handling tasks, which significantly reduces time and labor requirements; thereby lessening grain exposure to possible contamination. These make the system ideal for use by seed producers.

According to lead designer Dr. Ricardo F. Orge, unlike existing dryers like the flatbed that is built only for drying, the new system's typhoon-resistant shelter, Kwebo, can also be used for other purposes like storage when not occupied for drying.

The estimated total cost of investment in the paddy bag-drying system is around P315,000, which is less than half of P730,000 needed to procure the flatbed dryer.

These features are still under development and have yet to come out for commercialization. •

500-series rice varieties released

Quality starts from seed selection, that is why breeders continue to develop varieties that respond to dynamic demands dependent on the ever-changing environment.

For 2018, a total of 22 varieties have been approved by the National Seed Industry Council for commercial production, three of which were PhilRice bred. These are NSIC Rc 544H, Rc 528, and Rc 536.

	NSIC Rc 544H	NSIC Rc 528	NSIC Rc 536
LOCAL NAME	MESTISO 99	SALINAS 26	SALINAS 30
AVERAGE YIELD (T/HA)	6.6	2.9	2.7
MAXIMUM YIELD (T/HA)	10.6	4.9	4.8
MATURITY (DAS)	115	133	133
HEIGHT (CM)	112	90	87
ECOSYSTEM	IRRIGATED LOWLAND (HYBRID)	SALINE	SALINE

Zenny G. Awing

Reuel M. Maramara

What makes a quality rice?

WRITTEN BY DONNA CRIS P. CORPUZ
ILLUSTRATED BY JAYSON C. BERTO

Making a quality product requires work! Same principle also applies to rice.

To maintain its quality, rice has to conform with standards prescribed in the Philippine National Standard (PNS) for Grains- Grading and Classification for Paddy and Milled Rice. Aside from quality assurance, this standard also ensures safety and efficiency, and strengthens competitiveness in rice post-production and marketing. The standard specifications on quality, packaging, labeling of grains, specifically paddy and milled rice also ensure order and fair trade in the grains production and marketing system.

Because grain standardization is a key strategy to achieving global competitiveness in the agriculture sector, the Bureau of Agriculture and Fisheries Standards (BAFS) created a Technical Working Group (TWG) to facilitate the standardization process.

Quality Standards for Paddy

Grain size

- Extra long — 9.9mm and above
- Long — 8.8mm to 9.8mm
- Medium — 8.0mm to 8.7mm
- Short — 8.0mm and below

Purity and total foreign matter

PREMIUM	Highest grade requirement as set forth in the PNS **98%** pure; the total foreign matter (TFM) [weed and other seeds, etc.] should not be more than 2% of the total weight
GRADE No.1	Lower in quality than premium but higher in quality than no. 2 **95%** pure; the TFM should not be more than 5% of the total weight
GRADE No.2	Lower in quality than grade no. 1 but higher in quality than no. 3 **90%** pure; the TFM should not be more than 10% of the total weight
GRADE No.3	Any paddy variety that meets the lowest grade requirements as set forth in the PNS **85%** pure; the TFM should not be more than 15% of the total weight
OFF-GRADE PADDY	When paddy does not meet the requirements for any of the grades.

**Paddy that exceeds the maximum limit or falls short of the minimum requirements for any grade factor or parameter of a given grade shall be given the next lower grade.*

Quality Standards for Milled rice

Grain size

- Extra long — 7.5mm and above
- Long — 6.4mm to 7.4mm
- Medium — 5.5mm to 6.3mm
- Short — 5.5mm and below

Broken kernels

PREMIUM	broken kernels including brewers should be no greater than: **5%** of the total weight;
GRADE No.1	**10%** of the total weight;
GRADE No.2	**15%** of the total weight;
GRADE No.3	**25%** of the total weight;
GRADE No.4	**35%** of the total weight;
GRADE No.5	**45%** of the total weight;
OFF-GRADE RICE	when milled rice does not meet the requirements for any of the grades.

Degree of milling

UNDERMILLED RICE (UMR)

rice kernel from which the hull, germ, outer bran layer, and the greater part of the inner bran layers have been removed but parts of the lengthwise streaks of the bran layers remain in: more than **40%** of the kernels;

REGULAR MILLED RICE (RMR)

20% to 40% of the kernels;

WELL-MILLED RICE (WMR)

less than **20%** of the kernels;

OVERMILLED RICE (OMR)

rice kernel from which the hull, the germ, the bran layers, and part of the endosperm have been removed.

Packaging and Labeling

Only brand-new and food-grade packaging materials should be used for milled rice, and suitable food-grade ink shall be used for printing or labeling on the packaging material.

The information required on the label is common for both big and small packages:

- Name of product (e.g., milled rice) if the contents are not visible from the outside;
- Grade of milled rice;
- Degree of milling;
- Net weight;
- Moisture content, in percent; and
- Name and address of distributor.

Source: *Philippine National Standard (PNS) for Grains- Grading and Classification for Paddy and Milled Rice, Bureau of Agriculture and Fisheries Standards (BAFS)*

FEATURE

Guardians of seed quality

CHARISMA LOVE B. GADO-GONZALES

Every day of their lives, seed analysts count at least 20,000 paddy grains like devout Catholics holding rosary beads in contemplative and fervent prayer.

For a maximum of 30 minutes, they diligently check the "trueness" of a variety; comparing each grain collected from a seed grower's field with the passport data provided by the National Seed Industry Council and the plant breeders. Their trained, unfailing eyes cannot periodically rest longer than few minutes for they are on a mission – ensure that farmers get high-quality seeds, and on time.

The process called "varietal purity" is just one of the sub-systems involved in seed certification conducted by the National Seed Quality Control Services (NSQCS) of the Bureau of Plant Industry. NSQCS, which has 25 seed laboratories across the country, acts like a sentinel watching over grains produced by seed growers.

Through seed certification, said NSQCS chief Ruel Gesmundo, genetic identity, varietal purity, and high-quality standards of superior varieties are maintained.

"High-quality seeds reduce the seeding rate, minimize re-planting, and contribute in faster growth rate and uniform crop stand." he said.

Following the International Rules for Seed Testing, seed analysts check on the moisture content, varietal and physical purity, and germination of seeds.

"These tests ensure that the seeds are pure, weeds and other varieties and grains are left out, germination is good, and moisture content is right," said Jesusa Stephanie Calderon, NSQCS Region 3 senior agriculturist.

For the seeds to be called high-quality, they must record a minimum of 98% purity; 14% moisture content; almost no mixtures, weeds, and other seeds (maximum of 0.04%); contain a tolerable 2% inert matter such as soil and stone fragments; and germinate at least 85%. Grains of mixed varieties must not also exceed the maximum limit for each seed class.

Seeds passing the procedures are tagged with colors: white for breeder seeds; red, foundation; green, registered; and blue, certified. Farmers usually buy the certified and registered seeds.

Carlo G. Dacumos

Seed guardians see to it that farmers get the best from their chosen varieties by ensuring high-quality seeds.

Seed certification is tedious. We can't go wrong as it involves a farmer's cornerstone.

-JOSEPHINE REYES
NSQCS Chief, Region 3

Calderon said testing for buffer seed stock is more rigid as germination test is conducted three months after the last inspection, then monthly thereafter until seeds are distributed.

Seeds are not only certified but their growers must also be accredited. As of August 2019, the country has more than 4000 recognized inbred rice seed growers and close to 300 parental hybrid rice seed producers.

According to Calderon, prospective seed growers undergo a five-day basic training on inbred rice seed production and certification course. Seed inspectors will verify the prospects' capacity to engage in the activity including seed origin, field size, field sanitation and location, farm practices, and production area.

"Prospective seed growers can be disqualified outright if their field situations are unfavorable for seed growing. And if we'll discover inconsistencies or inaccuracies in the information they provided to us, they will not be accredited," she said.

Accreditation of seed growers would also be cancelled should they be caught conducting malpractices like submitting seeds for certification that are not from their farms.

Calderon also said fields are inspected at early vegetative stage until pre-flowering and at heading stage. They also conduct unannounced visits to fields and storage areas.

Meanwhile, seed analysts, said Josephine Reyes, NSQCS chief in Region 3, are re-tooled every year. They also regularly participate in referee testing, in which their Central Office sends seed samples to its regions for their seed analysts to test and analyze. Results are returned to the Central Office, which will determine whether its regions have same standards in analyzing the seeds.

"Seed certification is tedious. We can't go wrong as it involves a farmer's cornerstone," Reyes said.

As seed analysts meticulously scrutinize the trueness of at least 20,000 paddy grains for 30 minutes, farmers count on the seeds for bountiful harvest, in which every grain counts. •

FEATURE

The seed keepers

MARY GRACE M. NIDOY

Mohamadsaid B. Sandawali

Mastine Tamba, seed keeper of the B'laan community in Malungon, Sarangani, transfers the grains to the bamboo tube locally called as *Tiral*. Traditionally, seeds are stored in *Tiral* to protect them from pests.

Perched on a verdant hill where the traditional rice varieties (TRVs) of her tribe are planted, I hear her sing melodiously to the heavens for a bountiful harvest. Her voice, resonating and calming, blends with and flavors the afternoon breeze in her village. This is their tribal song to their God.

Her name is Mastine G. Tamba, the 73-year-old seed keeper of the B'laan community at the Lamlifew tribal village in Datal Tampal, Malungon, Sarangani.

Rice and the B'laan farmers

Tamba inherited the chant and the process of storing their tribe's seeds from their elders.

"The seeds, along with their names, came from our ancestors and passed on from one generation to the next," she said in the Visayan language.

Their ancestors taught them that it is their duty to till the soil and plant the seeds, but it is God who miraculously gives the grains. After years of growing TRVs, the seed keeper is precise in choosing the right grains for different purposes.

"When I separate the grains, I know exactly which ones will be used for seeds, for our family's consumption, and for our visitors," she said with certainty.

Rice is central in the lives of B'laan farmers. Each variety has a role to play, reminded Celito Terando, project manager of Sarangani's Sulung Tribu program.

"You might wonder why a certain rice is planted in only one plot while the other one grows in a hectare. That is because we have varieties specifically intended for festivals, birthdays, weddings, and some are used as dowry – each has its precise use and value," he educated me.

Protecting the seeds

Revering their tradition, the B'laans have their own way of preserving their seeds. Once separated from the bulk harvest, the seeds are stored for six months inside a bamboo tube locally called *Tiral*. Each tube is filled with a can of seeds of one variety. Tamba has lost count on how many TRVs her community is gifted with. Unfortunately, many of the varieties are gone and lost–forever.

"Some were devoured to the last grain by birds or rats," the seed keeper of the tribe disclosed.

The list of reasons for the loss could extend to diseases, low germination rate

of seeds, declining soil fertility, and climate change making the lost TRVs now only a fragment in the tribe's memories.

"The seeds are gone and irretrievable. That's what disheartens us as if a part of our heritage has been stolen away," Mastine lamented.

Unearthing treasures

According to Sarangani's provincial agriculturist Jonathan Duhaylungsod, the province is 90% mountainous. Aside from the B'laans, it is also home to the T'boli and Tagakaolo ethnic groups. About 1,400ha are planted with upland rice.

In a 2007 Mindanao State University study on Sarangani's biocultural diversity, 76 traditional varieties were documented in 16 upland sites in seven municipalities. In 2017, PhilRice's Genetic Resources Division (GRD) researchers headed by Dr. Jonathan Niones began their quest for collecting TRVs in Sarangani for conservation, protection, and characterization.

"The province is one of our priority areas as it had no record of documented or deposited rice germplasm at our Genebank prior to our research," said Jess Bryan Alvarino, one of the project researchers.

One reason is that TRVs in Sarangani are protected by the Indigenous Peoples Right of 1998. Collecting the seed samples required hefty documents and consultations.

Keen at preserving the TRVs, the Institute then took the necessary steps to obtain the free, prior, and informed consent as required by the National Commission on Indigenous Peoples and established memorandum of agreements with the provincial and local government units.

Collection and characterization

Since 2017, PhilRice has collected more than 100 traditional varieties from Sarangani that are being "accessioned" or documented in the Genebank.

The two seed keepers, Mastine Tamba and Alvarino, met again in July 2019 for the collection of another set of germplasm

Young seedkeepers at PhilRice's Genebank conserve, protect, and characterize the collected traditional rice varieties.

materials. Every collection, Alvarino gets at least 500g of the grains in panicles and conducts interviews to get the information about the seeds, such as their history and cultivation process.

He labels the samples with the name of the variety, year collected, place/number of collection, and name of seed source. The samples are transported to the PhiRice Genebank in Nueva Ecija for registration and seed cleaning. Once cleaned, 100g of seeds are stored in two packets (50g each) for long-term use and 200g (100g each) for short-term purpose.

Alvarino told me that the seeds for short-term use are utilized to conduct two kinds of characterization to validate their passport data: molecular (through DNA analysis) and morphological (plant morphology).

In morphological characterization, researchers study the physical and external structures of the plant, such as leaf color, plant height, number of grains per panicle, and number of tillers. The process involves planting the collected varieties in the collection site (*in-situ*) and at PhilRice (*ex-situ*) for dry and wet seasons.

As of writing, the researchers are characterizing the collected TRVs from Sarangani.

"We hope to submit application documents to the Bureau of Plant Industry (BPI) for TRV registration," Alvarino said. If approved, the BPI will grant a certificate of Plant Varietal Registry (PVR) to the donors of the TRVs.

Protection

The collected samples are safely kept inside the Genebank along with more than 16,000 germplasm collections, more than 6000 of which are TRVs. The Genebank is now housed in a new facility at PhilRice that was soft-inaugurated in 2018. Niones shared that the seeds can last up to 100 years if properly stored.

"In science, it is vital for us to collect and preserve the seeds since they become the gene pool or raw materials for rice breeders," Niones said.

Culturally, it is important to protect the country's genetic wealth as they are part of our national heritage.

Breeders select the best traits from TRVs and integrate them in parent lines. These become the building blocks in developing new varieties that are climate-resilient and higher-yielding.

Some TRVs collected from Sarangani have been found to be resilient to climate change.

"If not for this research, we wouldn't have known that some of our varieties can withstand El Niño and La Niña," Terando endorsed the initiative.

But for the B'laan community at Lamlifew village, the research has helped them preserve a part of their heritage; assured that this time around, it won't be lost forever. •

FEATURE

A decade of developing high-quality varieties

HANAH HAZEL MAVI B. MANALO

Each promising rice line has to undergo a series of yield and multi-environment trials for three years. These lines must show an actual yield advantage over the high-yielding check varieties.

-DR. OLIVER E. MANANGKIL
PhilRice Plant Breeder

If you think that developing a new rice variety is merely a bit more tedious than ordering another cup of cooked rice, think again! The plant breeders have a lot to do.

A breeder's dream to bring a new variety in the farmer's field would take more than nine years to be realized. It's about a decade of ensuring that high-quality rice varieties are developed.

Dr. Oliver E. Manangkil, who presently heads PhilRice's Plant Breeding and Biotechnology Division, said high-quality varieties are elite lines that have hurdled several plant selection and performance tests that run for years.

Manangkil explained that varieties are dynamic and adapted to future farming conditions in many locations with varying degrees of climatic conditions, and soil, pest, and disease issues.

Best of the 'elites'

"Each promising rice line," Manangkil explained, "has to undergo a series of yield and multi-environment trials for three years. These lines must show an actual yield advantage over the high-yielding check varieties."

The performance trials are simultaneously done with the screening for grain quality, and pest and disease resistance/tolerance. "Promising lines that pass these trials become elite lines that will undergo the national cooperative tests (NCT) for two years," Manangkil discussed.

NCT ensure that only lines with the desired important characteristics are recommended to the National Seed Industry Council (NSIC) for accreditation and registration as commercial variety.

Implemented by NSIC's Rice Technical Working Group, NCT are nationwide coordinated trials that further establish the relative merits of promising lines in terms of yield, quality, and resistance/tolerance to various stresses.

While waiting for the conduct of NCT, Manangkil elaborated, the elite lines' seeds in panicles are kept by each breeder to ensure their purity and viability. Aside from NCT, the elite lines undergo the so-called distinctness, uniformity, and stability tests to see if their distinct characteristics are expressed uniformly and do not change over time.

According to Manangkil, the NSIC finally approves the release of rice varieties after 9 years of tests, or even longer. •

Allan C. Biwang Jr.

FEATURE

To help other farmers after the devastation of super typhoon Yolanda, Jun Paredes co-established the Ormoc Rice Seed Growers Multipurpose Cooperative. The coop now produces and commercially sells black rice at P3,200/kg.

Quality process earns higher profit

ALLAN C. BIWANG JR.

Devastating super typhoon Yolanda in 2013 paralyzed Leyte farmers from cultivating major crops for six months. This made rice farmer Olegario "Jun" Paredes, owner of a 2-hectare farm in Kananga town, almost give up farming.

Jun, 47, however, found a way to slowly recover from farm losses. Would you believe that only 2.5kg of black rice seeds elevated his farming status beyond the ordinary? With his knowledge and the quality processes he devised, he now earns more than P280,000 per cropping season from his organic rice seed production farm.

Seeds to succeed

Jun Paredes finished a master's degree in agriculture major in agronomy, and had training on inbred rice production.

In 2014, he acquired 2.5kg seeds of black rice from Davao City while attending a convention, knowing nothing except that this rice matures in 125 days. With his stock knowledge as a former rice production technician, Jun focused on multiplying the seeds.To ensure seed purity, Jun conducts roguing 3-4 times from initial growth stage to flowering. Monitoring and cleaning the dikes regularly also helped him guarantee the quality of his produce.

Averaging 80 cavans/ha every cropping season, Jun normally sells 60% of his harvest as good seeds at P100/kg and processes the 40% to unpolished rice sold at P70/kg. At P25,000 production cost, he pockets a whopping P282,000 income without incident.

He sustains black rice seed production not just for his own leverage but also for his neighboring farmers, who are now also producers of black rice for commerce.

Wastes not wasted

Poultry farms and sugarcane milling centers oversupply Kananga with chicken dung and sugarcane press mud. Turning

it into his advantage, Jun uses these wastes as organic fertilizers (OF) for seed production.

"I was not fond of organic farming, but as I kept on reading materials about it, I gained more knowledge and I was triggered to try it," he said.

Jun mixes 30% animal wastes (chicken dung) and 70% plant source (sugar cane press mud and rice straw) for his fertilizers. To achieve the 30-40% moisture content for organic fertilizers, he also adds *kuhol* ferment, indigenous microorganisms (IMO), and vermitea, a solution produced from worm castings. Fertilizer rate per hectare ranges from 20 to 30 bags at three to five splits.

According to Evelyn Javier of PhilRice, OF increases microbial population and diversity that promotes efficient transformation of fertilizer materials into usable forms. Home-made OFs are safer to use than those sold commercially, as you are sure of their ingredients and how they've been processed.

"Although the market price of commercial organic fertilizer is low, its nutrient content is also proven to be low. There is a need then for more quantity, thus more frequent application, whether it is granular or liquid to meet the nutrient demand of the rice plants to grow and yield better," Javier pointed out.

Jun admitted that using inorganic fertilizers gives better yield. However, he can sell his organic produce at a higher price. His records attest that a combination of organic and inorganic fertilizers can yield up to 140 cavs/ha.

Yes to RI-DUKU

Jun had been depending heavily on pesticides to control pests but his exposure to various learning programs made him realize otherwise. He then tested RI-DUKU, an integrated farm management system that he improved based on the rice-duck (RI-DU) farming system but with *kuhol* (KU) or golden apple snail as one of the major components.

To control weeds, he depends on *kuhol* that are controlled by ducks. Based on his experience, *kuhol* cannot endanger a month-old rice crop because the snails prefer the emerging weeds instead. Four to five weeks after transplanting, he broadcasts 16-20kg of *kuhol* per ha and let them demolish the young weeds for 3-5 days.

Thereafter, he releases 30-50 hungry muscovy ducks that devour most of the *kuhol* and their eggs, allowing them in and out of the field. He next confines the ducks at grain- filling stage to keep them from eating the luscious grains.

Experts concur that this system ensures oxygenation of soils that releases valuable nutrients, as well as carries out natural weeding just like the use of a rotary weeder.

A 2019 Visayas State University study reports that the paddling movement of the ducks stimulates plant growth, while duck manure naturally fertilizes the soil.

Although RI-DUKU is not a common practice, this system works well for Jun. In fact, some farmers in the area are starting to emulate him.

"*Kuhol* is reputed as an invasive pest but is actually very useful especially in organic farming," Jun highlighted.

Experts do not endorse broadcasting of kuhol but they confirm that the snails naturally control weeds when the rice crop is already 25 days after seeding or 15 days after transplanting.

Moreover, the ducks generate an additional income of up to P50,000 annually when they start laying eggs. Muscovy ducks can be productive for 10 years.

Outpouring recognition

"For 10 years now, I have avoided using inorganic chemicals to control pests and I think this contributed to the minimal occurrence of pests and diseases, such as stem borer, green leaf hopper, and blast, which are common in black rice production," he opined.

Employing all these environment-friendly practices, his farm – the Juanito Eco-Farm School for Practical Agriculture (JEFSPA) – was accredited by the Agricultural Training Institute (ATI) as a learning-site partner.

In fact, JEFSPA is a certified organic farm as assessed by the Negros Island Certification Services, Inc. (NICERT), a third-party organic certifying body recognized by the Bureau of Agriculture and Fisheries Standards. This attests that the farm produces high-quality organic rice that has export standards. In 2018, the Technical Education and Skills Development Authority (TESDA) also tapped JEFSPA as one of its farm schools.

"The practices I am following are a combination of principles I've acquired from several trainings by PhilRice, ATI, NSQCS, and DA-Regional Field Offices, and seasoned by my actual experiences in the field," he clarified.

Producing black rice seeds organically is the path Jun has chosen as he counts more profit from it. Just like in the inbred seed production business, his income is also "bankable."

"On our farm, we assure you that purity of seeds is at 99%," Jun promised.

As demand for black rice seeds rises, he is willing to comply with BPI-NSQCS testing to ensure high purity and germination level especially for procurements under government and private organizations.

What he has achieved now did not happen effortlessly. For Jun, you need burning passion to make it in agribusiness, help your neighbors grow, and constantly ask assistance from the government.

"You will need to be more proactive to gain attention and support," he concluded. •

On our farm, we assure you that purity of seeds is at 99%.

-OLEGARIO "JUN" PAREDES
Farmer

Officials of the Butuan Agusan Farmers Multipurpose Cooperative

Sherly Dawn Taglucop

Set it up with SETUP

ANNA MARIE F. BAUTISTA

In any enterprise, quality is king. The Department of Science and Technology (DOST) is living up to this principle through its now 17-year-old initiative, the Small Enterprise Technology Upgrading Program (SETUP), which aims to help its clients improve their operations and boost their productivity and competitiveness.

SETUP prioritizes micro, small, and medium enterprises (MSMEs) by infusing appropriate technologies to improve their products, services, and operations (see infographics).

Quality in technology

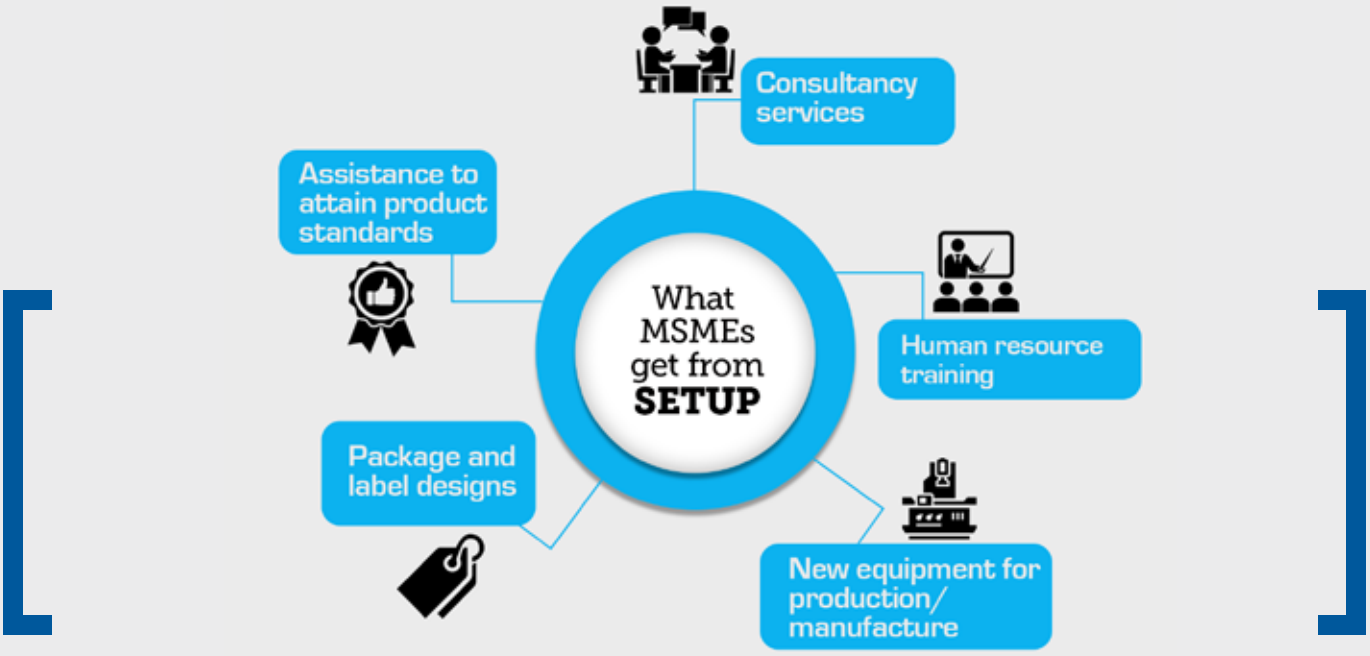
In Caraga Region, SETUP introduced itself to farmers and farmer groups who have ventured into rice milling.

"While the program's mission focuses on processing and manufacturing, DOST acknowledges that agriculture is essential in Caraga's economy. Thus, we are partnering with rice farmers who wish to progress in their business venture," said Ricardo Varela, DOST-Caraga Assistant Regional Director for Technical Operations.

The Philippine Statistics Authority has it that agriculture and fishery accounted for the third largest share in this region's economy in 2018. However, Varela said that the productivity level of farmers here, especially those involved in processing like rice milling, is still low.

"Some of the rice mills being used by farmer groups here are obsolete, inefficient, and require high energy to operate. This results in poor product quality and profitability. Even if they want to upgrade their facilities, rice millers would rather buy *palay* than advance their equipment," he added.

Affirming this claim, Butuan Agusan Farmers Multipurpose Cooperative (BAF-MPC) Board of Directors chair Alfonso



SETUP PRIORITY ENTERPRISES:

Food processing, gifts, decors, handicrafts, metal and engineering, pharmaceutical and health products, furniture, agriculture, marine and aquaculture, information and communications technology, and halal products

Noynay recalled their two-decade-old dilemma in the said enterprise. According to him, their rice milling machine in the early 2000s was bad enough to cause them income losses.

"Our old machine only had 55-60% milling recovery. A lot of rice grains were broken so the quality of our rice products suffered. Every month, we could only groan about the negative amount highlighted in our financial statements," Noynay recalled.

Even worse, some of their consumers returned products that they were not satisfied with.

Quality enterprise

After learning about SETUP in 2018, Noynay reached out to DOST for possible interventions. In no time, the 59-year-old farmer was highly grateful because the requirements that DOST asked from them were easy to accomplish.

The Coop acquired a rice mill worth P2.9M from the program, payable in 3 years, interest-free. "Somehow, it gave us full responsibility and ownership over the machine, knowing that it is our hard-earned money that's being used to pay for it," Noynay said.

They are paying P80,000/month for the amortization, and the group is proud to say that they have advanced payments at present. The machine started milling in January 2019.

With at least 70% milling recovery, the Coop produces high-quality rice (with 15% broken grains) worth P1,900/cav and with 40% broken grains priced at P1,750. BAF-MPC also benefited from free consultations about energy-saving techniques to minimize their operational cost. Even the design of their product package and labels was refined.

"We were told we had to innovate so that we can offer better products in the market. We must know who our buyers are so we can package our products to suit their preference," Noynay explained.

Positive progress

More than the positive reports that now sparkle in the BAF-MPC monthly financial statements, the group maintains that the quality of their members' livelihood and their group's operations have also improved. They were recently awarded as the Best Adapter of SETUP during the DOST-Caraga's Science and Technology Week.

"We've learned that SETUP clients appreciate the importance of upgrading their technology to improve the quality of their products and business productivity. The growing number of proposals is one indicator of the need to help our MSMEs, specifically farmer groups engaged in agricultural processing," Varela capped the dialogue.

Indeed, SETUP makes the difference. •

EXPERT'S CORNER

Quality rice for every Filipino

MARISSA V. ROMERO

Our slogan "Quality Rice. Quality Life." puts premium on "quality" in the entire value chain of the rice industry-from the varieties breeders develop, seeds produced by seed growers, *palay* grown by farmers, *bigas* processed by millers, to the *kanin* that we all eat at least thrice a day. We want Filipinos to always enjoy accessible, affordable, safe, and nutritious rice.

The intricacies of rice quality

Quality is well-defined for each player in the industry, except for consumers who take into account grain quality, nutritional value, health-promoting properties, and safety–but not necessarily in that order. Their preferences are rather subjective and dependent; thus taming them to regularly buy a particular rice proves challenging unless they happen to loyally favor the variety.

Grain quality, rice chemists swear, covers a gamut of parameters, such as milling recovery (% brown rice, total milled rice, head rice); physical attributes (grain length, shape, chalkiness); physicochemical characteristics (amylose, protein, gelatinization temperature, gel consistency); cooking quality (cooking water/time, volume expansion, weight increase); and sensory properties anchored on those that the basic human senses are attracted to. Nevertheless, Filipino consumers generally prefer long, slender, and translucent grains; low to intermediate amylose content; good expansion volume upon cooking; aromatic, moderate cohesiveness, soft texture, and tasty when cooked.

In terms of safety and nutritional value, quality can mean good health-promoting properties, such as rices that are micronutrient-dense (e.g., iron, zinc, and beta carotene-enriched), high in anthocyanin and phenolic compounds that fight disease-causing free radicals (antioxidant-rich pigmented rices), have high starch resistance or with low glycemic index, and fiber, vitamin, and mineral-rich (unpolished rice). Quality can also mean freedom from pesticide residues, heavy metals, molds, and insects, as many consumers are safety-conscious.

Specialty rices have very unique quality traits, distinguishing them from the ordinary. Also called fancy or premium rice, these include aromatic, glutinous, pigmented, and japonica-type varieties.

Local and international standards

Warranting rice quality starts from the rice breeders who incorporate qualities of existing varieties in developing new ones to cater to various likes and dislikes of industry players, especially farmers. Next, the bacon is passed on to the producers of foundation, registered, and certified seeds, which are evaluated and certified by the BPI-National Seed Quality Control Services. This system follows national standards and protocols to guarantee high genetic purity, germination, and quality so that farmers can plant high-quality seeds that will hopefully translate, along with proper management practices, to high-quality and quantity harvest.

Our quality standards in developing rice varieties are specified in the National Cooperative Tests (NCT) that indicate classifications based on milling, physical, cooking, and eating qualities. We also have the National Standards for Grains of the DA-Bureau of Agriculture and Fisheries Standards (BAFS) for grading and classification of paddy and milled rice.

Other countries have their own quality standards for rice. For instance, America sticks to the standards of the US Department of Agriculture, with specifications for paddy, brown rice, and milled rice. The Food and Agriculture Organization (FAO) has a Codex Standard for Rice that covers paddy, milled rice, and parboiled rice for human consumption. The specified quality factors include the safety and the state of being fit for human consumption; absence of abnormal flavors, odors, and living insects; maximum 15% moisture content; and the allowable amount of extraneous matters.

Implications in the market

Just like any product, better quality whether in seeds, paddy, milled, or cooked rice, translates to better market value. This is especially evident in the huge gap between prices of different classes of ordinary and special rices. Consumers usually buy rice that is affordable yet with superior quality.

There is a multitude of reasons to say that locally-produced rice is the better choice when it comes to quality and safety. Let us all have quality life by patronizing our own quality rice.

In retail outlets, prices of rice are usually based on grading in terms of milling quality (e.g., regular, well-milled) and the amount of broken grains. Well-milled rice with less brokens is priced higher than the regular-milled. Specialty rices usually command 2-3 times higher market value than ordinary rice.

Having said all this, farmers should strive for quality processes in producing rice, such as employing the PalayCheck System, an integrated crop management approach, to ensure higher value of their produce.

Competitive edge of our local rice

We are blessed with a long list of traditional rice varieties (TRVs), most of which have a myriad of unique quality traits. The recently concluded project "Profiling and Seed Purification/ Multiplication of Selected TRVs in Support of DA's Initiative for Exporting Quality Rice" unearthed these treasures through comprehensive analysis of the agro-morphological characteristics, pest and disease resistance, grain quality, and health-promoting properties, and DNA fingerprinting. The project was funded by the DA-Bureau of Agricultural Research. It identified as export-quality certain varieties, such as the aromatic Dinorado, Ominio (black), and Chor-chor-os (red).

Consequently, in the ongoing Specialty Rice Project, we are comparing the qualities of our local aromatic, glutinous, and pigmented varieties with their counterparts imported from other Southeast Asian countries. Not surprisingly, we have varieties that are either as good as or better than the imported ones.

We also have commercially released modern rice varieties that have superior eating quality, like the PhilRice-bred NSIC Rc 160 that has long, slender, and translucent grains, which is now established as the standard for eating quality because of its soft cooked rice texture. Also, Rc 218 has an appetizing *pandan*-like aroma.

Aside from availability and accessibility, our local rice is more fresh and less prone to storage problems than imported rice, which are shipped from afar and stored for unknown periods before distribution. Our rice is also safer as there had been reports of high pesticide residue levels on imported rice. The book "Competitiveness of Philippine Rice in Asia" confirms that Filipino farmers use less pesticide than those in rice-exporting countries included in the study. Another PhilRice study also corroborates that some imported rice have heavy metal content exceeding the maximum residue limit.

There is a multitude of reasons to say that locally-produced rice is the better choice when it comes to quality and safety. Let us all have quality life by patronizing our own quality rice. •

Quality rice begins with quality seeds

CHRISTINA A. FREDILES

Business owners Patrick Francois Renucci and Rachel Tan-Renucci of ChenYi Agventure's rice processing center in Mudburon, Alang-alang, Leyte buy *palay* only from farmer-partners in both their Renucci Partnership and Renucci *Palay* Procurement programs to ensure production of high-quality grains.

Patrick understands that quality grains start from planting high-quality seeds, onwards to proper harvesting and milling processes. That is why their programs provide technical and production-input assistance for farmers.

"We have 10 field technicians to monitor and guide farmers in decision-making," Patrick said. The program covers 500-ha farms or 700 farmer-partners in Leyte.

Agventure begins

Before the 2016 construction of the two-hectare processing center, 4000 farmers from Leyte were surveyed to better understand their needs. The study saw the farmers having limited access to high-quality seeds that forced them to grow "neighbor-certified seeds," most of them living on debts and loans, aggravated by the scarcity of farm laborers.

"With this scenario, my wife and I decided to build a processing center coupled with technical and production-input assistance," Patrick opened up.

From the usual 80 bags/ha (4t), farmer-partners of the Renucci program yielded up to 200 sacks/ha (10t). The farmers are technically guided in the field from high-quality seeds, proper land preparation, water, nutrient, and pest management; inputs can be availed of at only 2% interest rate per month in contrast with 20% per month imposed by some lenders; and their produce are bought by the processing center higher than the prevailing market price.

High-quality seeds

"Our biggest challenge was sourcing high-quality seeds for our farmers. It took us 4 years of searching for the right seeds. Luckily, we were able to commission high-quality seeds through the assistance of PhilRice," Patrick said.

The Renucci farmers planted NSIC Rc 300 (Tubigan 24), a PhilRice-bred variety that can yield as high as 10.4t/ha, has medium eating quality, moderately resistant to brown planthoppers and green leafhoppers, and can tolerate bacterial leaf blight.

Mechanized rice

Perceived as the most advanced rice processing center in Southeast Asia,

ChenYi Agventure is fully automated from harvesting, handling, drying, storage, and milling. The center is earthquake-proof at 21m deep and typhoon-resilient at maximum sustained winds of 350km/hour.

ChenYi has 12 tractors for land preparation and 10 self-loaded combine harvesters available for service-rental of its farmer-partners.

"Our farmer-partners don't need to come to the processing center to sell their produce. We have truck vans to go around Leyte and immediately pay their *palay* in cash," Patrick assured. To ensure security, the van is equipped with CCTV for monitoring.

Upon arrival at the processing center, the *palay* can be dried immediately. If wet, the center has 2 wet bin-storage that can keep it in good condition for 2 days. Each bin can store 90t of wet *palay*.

Drying and milling

Before drying, the machine first removes the dust and stones then weighs the grains. The center has 10 dryers that can each dry 30t of *palay* in 12 hours. The operator can set the drying temperature. According to Patrick, no human mistake could occur because the computer will automatically stop depending on the set temperature.

To ensure that the grains are free from dust and pest, which can harm them, the dried grains are cleaned again.

The milling process of the "Renucci rice" involves 3 gentle passes to ensure that nutrients are kept in the grains, after which the 2-pass mist-polishing makes the grains shiny and removes any bran remnant. Patrick swore that the mist doesn't have chemicals, only pure water.

The operator can then control the percentage of headrice recovery. To ensure the quality of the milling process, a mini milling machine was created to first test the result in small volume.

Following the drying and milling processes, the grains can be kept fresh for over a year inside the silo at 21°C maintained temperature. The center has 4 silos that can hold 1500t of grains each.

Through all this, only 50% of the *palay* are processed as milled rice, with the premium rice packed and broken grains deemed as byproducts.

Rules and bounty

For Patrick and Rachel, farming and rice processing offer generous rewards if you only stick to good practices.

"Just like baking, you need to follow the instructions precisely and consistently," Patrick divulged.

On their end, changing farmers' perspectives toward quality processes in *palay* production comes first. They need to consider their work as a business, not a part-time job. He also said that a sustainable processing center business should start from building the confidence of farmers.

"Quality rice will follow after we have changed the mindsets of farmers, coupled with the right technical and input assistance," Patrick said.

He also added that right time of harvesting, proper drying and milling, and marketing support plays an important role in producing quality rice.

Renucci rice will be available in all major supermarkets in Metro Manila and via e-commerce starting August 2019. ChenYi Agventures hopes to sell 3000t of premium rice in Sep-Dec 2019 and 15,000t in 2020. •

Good practices ensure the production of quality rice. ChenYi Agriventures heeds to this principle with its state of the art rice processing center.

Our farmer-partners don't need to come to the processing center to sell their produce. We have truck vans to go around Leyte and immediately pay their *palay* in cash.

PATRICK FRANCOIS RENUCCI
Owner, ChenYi Agventures

PARTNERS IN THE FIELD

Making farmers their own boss

REUEL M. MARAMARA

Utang, tanim, bayad. Utang, tanim, bayad. For many farmers, this is the vicious cycle they cannot seem to escape from. Fortunately, many of our partners are championing initiatives to never let this recur.

The Local Government Unit (LGU) of Bayambang, Pangasinan and its partner Mangabul Seed Growers Marketing Cooperative (MSGMC), for example, are working hand-in-hand to make farmers produce better and earn higher.

Record breaking

Holding two Guinness World Records for the longest barbecue (8.016km) and tallest bamboo sculpture ([supported] 50.23m), Bayambang, an agricultural town, has set eyes on a new mission - making each family earn a benchmark income of no less than P10,000/month. Not to achieve a world title but to improve the lives of its people.

"We have declared a revolt against poverty. This is just our starting goal and if it succeeds, we can say we've won," Dr. Cezar Quiambao, town mayor, said.

For rice farmers, who are among the poorest, the endeavor started with MSGMC. The LGU helped strengthen and modernize the cooperative by providing technical personnel, who can guide farmers, and machines for the entire production process to increase their efficiency. This also helped expand their coverage throughout the municipality.

MSGMC chair Jayson Gene Sagom explained that through the cooperative, farmers are provided with financing up to P50,000/ha that comes without interest as farm inputs, such as seeds, fertilizers, irrigation, and machine services. In this scheme, they do not borrow less or more than what they need in the farm.

"We also offer them discounted services. Let's say for the tractor (single pass), the cooperative only charges P1800/ha compared with P2000-P2500 from outside providers; P3800/ha for the rotovator compared with P4000-P4500 outside," he elaborated.

> **Many farmers often question us for breaking their common practices, but slowly, they've come to understand seeing better results in our pilot farms.**
>
> **MARICEL SAN PEDRO**
> Municipal consultant

Reuel Maramara

Using the mechanical transplanter requires less time and labor than manual transplanting. It is fast, efficient, and ensures uniform spacing and optimum plant density.

Reuel Maramara

The conveyor machine automatically prepares seedling trays with rice seeds to be used for the mechanical transplanter.

Additionally, the cooperative sees to it that farmers use appropriate crop management practices. For instance, they ensure that farmers apply only the right amount of the right fertilizers needed by the rice plants at the right time. They also prepare seedlings in trays using the conveyor machine. The seedlings are transplanted mechanically and the cooperative determines the right time for transplanting.

Municipal consultant Maricel San Pedro revealed that some farmers even wait until the seedlings reach 30 days after seeding (DAS) before transplanting, a practice to which experts disagree. With the cooperative, they plant 12-15 DAS.

"Many farmers often question us for breaking their common practices, but slowly, they've come to understand seeing better results in our pilot farms," San Pedro said.

Cut on cost

Farmer Mario Barnachea, testified that with Bayambang's farm modernization program, farming has never been smoother.

"Before, it's really difficult for us. We borrow money and pay with great interest almost beyond what we get from our farms. Today, with the cooperative, we only pay the exact amount we borrowed. Plus, we pay less for their services," Mang Mario cheerfully narrated.

Customarily, Mang Mario explained that he hires 12-15 individuals for transplanting at P350/person. In total, he pays P4200-P5250 for transplanting excluding the laborers' snacks. Now, with MSGMC's service, he only pays P2,500/ha for the transplanter and its operation. The cooperative also prepares the seedlings.

"We really thank the LGU for this program. It's a big help," the 56-year-old farmer said.

Double sources

Farmers may choose to let the cooperative manage their farms; those who labor in their fields also get compensated. Come harvest time, the cooperative buys the produce at a higher price than local traders and farmers get the whole net income. The cooperative then markets the product and earns from it.

"This way, farmers become the boss. They just command the cooperative," Quiambao smiled.

With farming being fully mechanized and farmers spending less time in their farms, Quiambao clarifies that they must exhaust their spare time to generate more income, such as planting vegetables and raising livestock.

"It's part of the agreement," he said.

Like many, this initiative did not start easy. The LGU, together with the cooperative, conducted multiple seminars/orientations about the project in all its 76 barangays. It took several months to convince farmers to enlist and until now, many are still skeptical. Others only joined after seeing the good results in farms already under the cooperative.

For now, the LGU and MSGMC hope for the good results to continue. After rice, they plan on modernizing the production of other crops, such as corn and sorghum.

"We really hope for this program to succeed so farmers no longer need to be servants of their debts," Quiambao concluded. •

VOX POP

COMPILED BY TEOFILO F. PAULINO AND FREDIERICK M. SALUDEZ

What is high-quality rice for you?

JOHNMAR PASCUA, 20
Pasuquin, Ilocos Norte
Student

High-quality rice seeds should be free from seeds of other varieties and have uniform size and color. For milled rice, it should not be broken with no weed seeds.

JEMSEAL TIGBAO, 24
Cabanglasan, Bukidnon
Farmer/Agriculturist

High-quality rice starts with high-yielding varieties that are adapted to local climate conditions and have resistance to pests and diseases. The grains should be long, less chalky when milled, and soft when cooked.

RONALD PUJEDA, 43
Panukalan, Quezon
Government employee

It is pure, has the right size, shape, and color according to the variety, soft, and does not spoil easily when cooked.

NORMAN PATUNGAN, 26
Malasiqui, Pangasinan
Project Evaluation Officer

It is soft to eat with low sugar content especially that a lot of people get diabetes these days.

GAIWA HAMID, 25
Sofronio Española, Palawan
Entrepreneur

It is aromatic, unbroken, evenly colored, and free from rice hull.

RICE RECIPES

COMPILED BY REUEL M. MARAMARA

Onde-Onde

From: Lutong FNRI Brown Rice Recipes Para sa Lahing Kayumanggi

INGREDIENTS:

Rice Ball
1 ½ cup *malagkit* rice, ground
½ cup brown rice, ground
½ cup water

Filling
¼ cup *Panutsa*, cubed
½ cup Latik

Coating
1 cup Desiccated coconut, toasted

PROCEDURE:

For the filling, combine the *panutsa* and *latik*. Blend well and set aside.

Mix water, *malagkit* and brown rice until it forms a soft dough and no longer sticks in the hand.

Divide the dough into 22 equal parts and form each part into a ball. Flatten each ball using your palms.

Put a small amount of filling in the middle of the flattened dough and fold the edges to seal tightly. Carefully roll the dough back into a ball. Repeat the process for the rest of the dough.

Boil water over high heat. Drop each ball to boiling water. Once it floats, scoop it out and put into a bowl of tap water for a minute, then drain. Roll it in desiccated coconut.

Brown Rice Macaroons

From FNRI's 2013 Menu Guide Calendar

INGREDIENTS:
1 ½ cup brown rice, cooked
½ cup all-purpose flour, sifted
½ tsp baking powder, sifted
½ cup butter, softened
½ cup white sugar
2 pcs eggs, slightly beaten
2 cups desiccated coconut
1 can condensed milk
½ tsp vanilla flavor
48 pcs fluted cups

PROCEDURE:

Combine butter and sugar in a mixing bowl. Cream until light and fluffy.

Add eggs and blend well.

Add flour, baking powder, desiccated coconut, milk, and brown rice. Blend well.

Add vanilla. Blend well.

Line a 12-hole muffin molder (small-size) with fluted cups. Put 2 tablespoons of the mixture in every cup.

Bake at 375^{o}F (190.6^{o}C) preheated oven for 15-20 minutes or until golden brown.

Remove from the oven and place in a wire rack to cool.

Filipino farmers use less pesticide than
their counterparts in neighboring countries.

Buy local. Eat local.
#SupportOurRiceFarmers.

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