

PhilRice Magazine

A quarterly publication of the
Philippine Rice Research Institute



**UNLOCKING
THE DOOR TO
RICE SECURITY**

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ABOUT THE COVER

PhilRice and its partners are now working together to unlock the door to rice security using different keys. This issue features how each key is designed to make the Filipino rice farmers and the Philippine rice industry more competitive.

CONTENTS

EDITOR'S NOTE		FEATURES	
NEWS		14	FACING GIANTS IN THE RICE SECURITY ARENA
PHILRICE WORKERS RECOGNIZED	02	16	HYBRIDIZING PH RICE FARMS
RECOMMENDED VARIETIES BARED	04	18	INFOGRAPHICS: MODERNIZING PHILIPPINE RICE FARMING
FUTURERICE FARM NOW GAP-CERTIFIED	06	20	EXPERT'S CORNER: THE NEED FOR A COMPETITIVE RICE YIELD
SHOWBIZ ICONS CAMPAIGN FOR RICE	07	22	REVOLUTIONIZING PH RICE SEED SYSTEM
SOON TO RISE: PHILRICE SEED CENTER IN ZAMBOANGA	08	24	HALF-CUP RICE AND THE ROAD TO SCIENCE-BASED POLICIES
WHAT'S NEW IN RICE RESEARCH?			
PHILRICE TO HOST DA'S BIGGEST CROP BIOTECH CENTER	09	26	MARKET? MARK IT!
NEW GENETIC RESOURCES FACILITY RISES	09	PARTNERS IN THE FIELD	
RICE ACROSS THE COUNTRY	10	28	AIRWAVES AND WAVELENGTHS
INFOGRAPHICS: ROADMAP FOR IMPACT	12	29	WOMEN ON A MISSION, PARTNERS IN COMMUNITY TRANSFORMATION
32 STAFF EXTRAORDINAIRE/GODSPEED			

Editor-in-Chief: Ronan G. Zagado • **Managing Editor:** Mary Grace M. Nidoy • **Writers/Photographers:** Ev P. Angeles • Anna Marie F. Bautista • Allan C. Biwang Jr. • Carlo G. Dacumos • Flordeliza H. Bordey • Pamela V. Carbungco • Donna Cris P. Corpuz • Christina A. Frediles • Charisma Love G. Gonzales • Andrei B. Lanuza • Hanah Hazel Mavi B. Manalo • Mary Grace M. Nidoy • Sonny P. Pasiona • Elsie E. Reyes • Renz Romyl C. De Joya • Ashlee P. Canilang • John Glen S. Sarol • **Design/Layout/Photography:** Jayson C. Berto • **Illustration/Cover:** Andrei B. Lanuza • **Circulation:** Christina A. Frediles • Harvey G. Divina • **Admin. Support:** Ronald M. Alquiro • **Consulting Editor:** Constante T. Briones • **Editorial Advisers:** Karen Eloisa T. Barroga • Eduardo Jimmy P. Quilang • Flordeliza H. Bordey • Roger F. Barroga • Sailila E. Abdula



Editor's NOTE

A CULTURE OF INNOVATION CONTINUES

This year, PhilRice turned 32! Since 1985, the Institute has committed itself to a lifelong service to help achieve the aspirations of the Filipino farmers and the Philippine rice industry through R&D work. Affirming its long-held reputation for innovations, PhilRice has ranked second in the Philippines based on the ranking web of national research centers (Annual 2017 Edition). With a pool of 31 PhD and 149 master's degree holders, it has lived up to the standards of science with over 30 publications for ISI and non-ISI journals, 8 book and book chapters, 11 best papers, and 124 best poster awards in 2016-2017.

As a result of this prolific scientific output, a wide range of rice varieties suitable for various ecosystems, machines, diagnostic tools, services (e.g., PhilRice text center), and many other knowledge products now come in handy to our clients, especially the farmers.

Our *Roadmap for Impact: The PhilRice StratPlan (2017-2022)* upholds this uncommon culture of innovation while closely taking into account current pressing issues, such as poverty, climate change, and ASEAN economic integration. With the vision "rice-secure Philippines", we seek to contribute to ensuring that high-quality, safe, and nutritious rice is readily available, accessible, and affordable to every Filipino at all times through high-impact research, development, and extension work.

This issue of the magazine helps you digest the salient points of our seven new R4D programs, namely: Climate Resiliency for Enhanced Agricultural Trade and Efficiency for Rice (CREATE-Rice), Rice Seed Systems (RSS), Rice Business Innovations System Community (RiceBIS Community), Public Hybrid Rice Commercialization (PHRC), Hybrid Rice Research (HRR), Science-Based Policies in Advancing Rice Communities (SPARC), and Rice Farm Mechanization and Modernization (RFMM).

To implement these programs, we have shifted our paradigm from R&D to R4D (research for development) to emphasize our strategic mode of delivery and impact pathway. We have designed the programs in such a way that they would address multi-faceted issues associated with four Cs (cultivation, commerce, consumption, and competitiveness) in rice. We believe that rice as a commodity must be viewed from a bigger perspective – from production to consumption – even at the research level. This task, however, is not only for us to carry out. It calls for multi-sectoral engagement. Various stakeholders both from government and non-government organizations are encouraged to collaborate with us.

Read on, and see which area of our rice R4D agenda can you take part in. •

PHILRICE WORKERS RECOGNIZED

A Nueva Ecija-based supervising science research specialist was conferred the 2017 Civil Service Commission (CSC) Pagasa Award during the Gawad Career Executive Service held in Malacañang, September 20.

Recently designated PhilRice Negros Branch Director Rizal G. Corales received his plaque from President Rodrigo Roa Duterte and CSC Chairperson Alicia Bala. Pagasa is one of the highest awards given to government employees for outstanding contributions resulting from an idea or performance, which directly benefit more than one department of the government.

"This award translates to motivation not just for me but also for the Institute to continue its function as a government agency—to help our farmers to be more successful in land cultivation," Corales says.

Corales leads PhilRice's *Palayamanan Plus* program, a rice-based farming systems model that helps increase farmers' income and profitability. It advocates the adoption of diversification, intensification, and integration of farming activities such as crops, livestock, mushroom, vermicomposting, etc.

Palayamanan Plus pilot sites were established in Aurora, Pampanga, Bulacan, Nueva Ecija, Pangasinan, Isabela, and Agusan del Norte in 2014. Their activities helped 627



PhilRice Negros Branch Director Rizal G. Corales receives the Civil Service Commission (CSC) Pagasa Award from President Rodrigo Roa Duterte and CSC Chairperson Alicia Bala during the Gawad Career Executive Service held in Malacañang, September 20.

farming households tilling 221 ha to reach average yields of 4.5-6t/ha during the dry and wet seasons.

In 2016, Corales managed the *Palayamanan Plus* model farm in Nueva Ecija, which grossed more than P1.0 million or P230,000.00/ha—much higher than the annual income (P180,000/ha) from rice production alone in Central Luzon.

He introduced the rice-duck and mushroom production systems in the model farm: rice-duck enhances control of golden apple snails while mushroom facilitates the utilization of rice straw, a farm waste.

Both farming systems, now being promoted nationwide, have earned additional income for farmers.

Also, the sorjan production system and floating vegetable gardens are among his projects for farmers in swampy and flood-prone communities to sustain their productivity and

food availability. These systems were adopted in PhilRice branch stations and by certain local government units.

Corales, 58, is a son of Sanchez Mira, Cagayan. He holds BS Entomology and MS degree in Agriculture from Ryukyu University in Okinawa, Japan. He joined PhilRice in 1992. His wife Aurora, also of PhilRice, was herself a CSC Pagasa awardee in 2007.

Meanwhile, CSC Region 3 recognized outstanding PhilRice family members during the Honor Awards Program Recognition Rites at the Clark Freeport Zone, Pampanga, September 21.

Jaimie Manalo IV of the Development Communication (DevCom) Division was one of the national semi-finalists for the Presidential Lingkod Bayan award. Manalo and Hazel Antonio also from DevCom were among the regional nominees for the same award under the individual category.

| ALLAN C. BIWANG JR.

PhilRice Scientist Dr. Ricardo F. Orge (4th from R, top photo) bagged second place in the Alfredo M. Yao Intellectual Property Awards 2017 (AMY IP 2017).

Orge's entry was the Continuous-type Rice Hull (CtRH) Carbonizer, a machine that processes rice hull biochar (carbonized rice hull) used to enhance the properties of the soil.

AMY IP is an annual competition that features promising Filipino-owned intellectual properties (IP) with the potential to promote the country's economic development and raise the people's social awareness.

Orge also received this year's Manila Water Foundation Prize for



ORGES FACEBOOK PAGE

Engineering Excellence Award, a nationwide search for engineers who showed competence, inspired to make a difference, and showed outstanding commitment in developing communities through water, sanitation, environment, and sustainability projects.



PhilRice Executive Director's Awardees Dr. Flordeliza H. Bordey (2nd from R), Dr. Ricardo F. Orge (3rd from R), Mario R. Ramos (4th from L), and Recille G. Aquino (2nd from L) receive their plaque of recognition during the *Dangal ng PhilRice* Awarding Ceremonies, November 7.

The Institute also honored more than 100 of its workers for their external and peer recognitions, scientific productivity, scholastic, and loyalty awards.



PhilRice researchers won the gold, silver, and bronze awards for Best R&D Papers for applied research category during the DA-BAR 29th National Research Symposium, held in Diliman, Quezon City on November 23.



PHILRICE PHOTO

RECOMMENDED VARIETIES BARED

To help rice farmers plant the most appropriate varieties in their areas, PhilRice has released a list of nationally recommended and region-specific inbred varieties good for both dry and wet seasons.

These varieties were selected based on yield, maturity, market demand, seed reproducibility, and location-specific appropriateness.

"The information for the selection process of the nationally recommended varieties were taken from National Cooperative Tests (NCT) for rice and participatory varietal selection (PVS) data, farmers' preferences as reported by regional seed coordinators, value-chain analysis project, and Rice Seed System workshop output,"

explains Dr. Flordeliza H. Bordey, acting deputy executive director for development.

The five nationally recommended varieties are NSIC Rc 222, Rc 216, Rc 160, Rc 300, and Rc 238, with average yields ranging from 5.3 t/ha to 6.4 t/ha. These varieties can be planted in any season and location.

Meanwhile, PhilRice has also released a list of recommended newly approved varieties for each region based on PVS. The Next-Gen project identified the best inbreds among the newly released ones for dry and wet seasons.

"We pinpointed the best-performing varieties for each region based on yield, preference analysis, and sensory evaluation," relates Dr. Oliver

Manangkil, Next-Gen project lead at PhilRice.

Next-Gen is a collaborative research of the DA regional field offices, PhilRice, Bureau of Plant Industry, and IRRI to help accelerate the development and adoption of modern rice varieties.

"Newly released varieties (2011-2014) were tested for PVS in the dry and wet seasons. Breeding institutions participated by providing us seeds of their varieties that we evaluated across regions," says PhilRice's Thelma Padolina, one of the lead researchers of Next-Gen.

"We also gathered farmers' yield data on location-specific varieties as a means of customizing the adaptability of these new rices," Padolina adds.

| MARY GRACE M. NIDOV



Nationally recommended inbred rice varieties for dry and wet seasons

NSIC Rc 222		TPR	6.1	10.0	114	IRRI
		DWSR	5.7	7.9	106	
NSIC Rc 216		TPR	6.0	9.7	112	PhilRice
		DWSR	5.7	9.3	104	
NSIC Rc 160		DWSR	5.6	8.2	107	PhilRice
		TPR	6.4	7.3	122	
NSIC Rc 300		TPR	5.7	10.4	115	PhilRice
		DWSR	5.3	9.0	105	
NSIC Rc 238		TPR	6.4	10.6	110	IRRI

Recommended newly released inbred varieties for each region, dry and wet seasons

NSIC Rc 354	CAR,3,4A,4B,5,6,7,9,10,12,Caraga	TPR	5.4	9.0	112	PhilRice
NSIC Rc 400	2,8,9,10,ARMM,Caraga	TPR	5.8	9.5	120	IRRI
		DWSR	5.4	12.6	113	
NSIC Rc 308	CAR,11,12,ARMM	TPR	5.8	10.9	111	PhilRice
		DWSR	5.5	8.0	105	
NSIC Rc 302	4B,7,11	TPR	5.7	10.4	115	IRRI
		DWSR	5.1	9.5	106	
NSIC Rc 352	1,5	TPR	5.1	10.7	111	IRRI
NSIC Rc 402	2,3	DWSR	5.5	14.0	107	PhilRice
		TPR	5.5	10.0	114	
NSIC Rc 358	1,8	TPR	5.4	9.1	114	PhilRice
NSIC Rc 394	4A	DWSR	5.2	10.0	106	PhilRice
		TPR	5.3	9.1	112	
NSIC Rc 356	6	TPR	5.0	9.0	116	IRRI

Source: Data from National Cooperative Tests for rice.



FUTURERICE FARM NOW GAP-CERTIFIED

PhilRice's FutureRice Farm was good agricultural practices (GAP)-certified by the Bureau of Agriculture and Fisheries Standards at the DA-RFO 3, November 3.

According to Engr. Angel S. Tulabut, Region 3 GAP Inspector, Central Luzon currently has the most number of GAP-certified farms in the Philippines at 83, and 71 applicant-farms. Nueva Ecija hosts 61 of the 83 farms.

FutureRice received the GAP certification for ensuring food safety and quality while keeping high regard for environmental protection and workers' health, safety, and welfare; producing quality and safe agricultural crops for consumers; and facilitating access of Philippine agricultural crops to neighboring ASEAN and other foreign markets.

The farm underwent on-site evaluations of its current farming practices, such as record-keeping, maintenance of facilities, quality production, and management. Its farm produce also passed chemical tests performed by the Bureau of Plant Industry.

Aside from being a demo farm for rice-farming innovations, FutureRice is being developed as an agritourism destination. One of its attractions is the famous rice paddy art, which recently featured celebrities Kathryn Bernardo and Daniel Padilla. Students, farmers, government officials, and tourists from neighboring provinces come to view the unique art.



Roger Barroga (center), FutureRice Program Leader, is awarded the certification by Dr. Irene M. Adion (left), OIC-Regional Technical Director for Research and Regulation, and Engr. Roy M. Abaya (right), Regional Executive Director of Department of Agriculture-Regional Field Office (DA-RFO) III.

It also showcases clean energy facilities, drone technology, advanced farm machines, and an experimental field that demonstrates hybrid, inbred, and traditional rice varieties. It even has facilities for indoor and outdoor activities.

Led by Roger Barroga, PhilRice's acting deputy executive director

for administration and finance, the FutureRice program was started in 2013 to attract people, integrate knowledge and practices on sustainable agriculture through high-end technology, and promote clean, green, practical, and smart farming practices to farmers. It is supported by core fund, DA-RFO 3, AGFUND, and Project IPaD. | **PAMELA V. CARBUNGCO**



Entertainment personalities, led by Piolo Pascual (1st from L), graced the kick-off ceremonies of the National Rice Awareness Month (NRAM) in Diliman, Quezon City, November 6.

INSTAGRAM/TROY MONTERO

SHOWBIZ ICONS CAMPAIGN FOR RICE

Ready, SET rice!

Entertainment celebrities, led by Piolo Pascual, urged the public to be more "rice-conscious" during the recent kick-off ceremonies of the National Rice Awareness Month (NRAM) in Diliman, Quezon City, November 6.

"Together with my fellow personalities, I believe that being Riceponsible (word play between rice and responsibility) is not only good for our health, but also for our farmers and our country. Let's SET rice! Save rice, Eat healthy, and Try brown rice," Piolo, a rice ambassador, said in Filipino.

The multi-awarded actor stressed that on statistical average, each Filipino wasted three tablespoons of cooked rice every day in 2013. Altogether, the wasted rice could have fed 4.6 million Filipinos for one year.

"Kaya kung usapang-kanin, dapat sakto lang. Or, we are advised to try substituting white rice with healthier



CARLO G. DACUMOS

options like brown rice. *Iwas-sakit ka na, iwas-aksaya ka pa kung magiging RICEponsible ka* (Let's get just enough rice; it's about food security and health)," he says.

Artist Sonny Boy Pangilinan of our DOT-accredited Rice Science Museum also launched his work, *Si Malakas at Maganda*, as a medium in increasing awareness on the benefits of brown rice. It will be exhibited in QCX together with his other works inspired by national artist Fernando C. Amorsolo.

Not to be outdone, farmers and rice consumers in Nueva Ecija engaged the audience on the realities of farmers' lives and on the ways consumers can appreciate farmers.

"I'm overwhelmed with the farmers' performance; no pretensions and it struck emotions. It's been a while since I've witnessed such a performance," Cj Hirro, Ms. Global Philippines 2016, says.

Pascual and Hirro are joined by Aubrey Miles, Troy Montero, and Alyana Asistio as rice ambassadors.

DA Undersecretary Ariel Cayanan lauded the rice ambassadors for their commitment in encouraging their fans and followers to appreciate the farmers, not waste rice, and eat brown rice.

NRAM is celebrated every November pursuant to Presidential Proclamation No. 524, s.2004. | **CHARISMA LOVE GADO-GONZALES**

SOON TO RISE: PHILRICE SEED CENTER IN ZAMBOANGA

Farmers in Zamboanga Peninsula will soon have better access to quality rice seeds as the Philippine Rice Research Institute (PhilRice) and the Western Mindanao State University (WMSU) recently signed a memorandum of understanding to build the Institute's second satellite station in Mindanao.

The first satellite station is based at Central Mindanao University (CMU) in Musuan, Maramag, Bukidnon with a 96-hectare rice seed production farm.

"We are trying our best to increase the supply and access of quality rice seeds and having this additional seed center would be instrumental to materializing such vision," said PhilRice's Acting Executive Director Dr. Sailila E. Abdula.



ALLAN C. BIWANG JR.

PhilRice's Acting Executive Director Dr. Sailila E. Abdula (extreme L) handshaking with WMSU President Dr. Milabel Enriquez-Ho after the MOU signing. Witnessing the event were officials and staff from both institutions.

The P6-million-worth seed center, hosted by WMSU, is mainly designed to produce foundation, registered, and certified seeds of inbred and public hybrid rice varieties that are suitable for the region's climate and topography. WMSU is located along Normal Road, Zamboanga City, Zamboanga del Sur.

WMSU President Dr. Milabel Enriquez-Ho said hosting the satellite station at

the College of Agriculture in San Ramon would help the university position itself as the center for rice research in the region.

Under the supervision of PhilRice Midsayap, the satellite station will also conduct participatory varietal selection and multi-location testing of early-generation and elite lines of rice varieties. | **ALLAN C. BIWANG JR.**



ALLAN C. BIWANG JR.

A new two-storey administration building is being built at the PhilRice Central Experiment Station (CES). The P8.5M worth facility will support the implementation of an easier and faster way of processing documents and delivering the Institute's services. The building is expected to be operational by June 2018.



WHAT'S NEW

IN RICE RESEARCH?

DONNA CRIS P. CORPUZ

PHILRICE TO HOST DA'S BIGGEST CROP BIOTECH CENTER

The biggest crop biotechnology center (CBC) of DA that is expected to generate technologies and innovations will be located at PhilRice in Nueva Ecija.

"The center will generate improved technologies, increase productivity, and enhance the commercial value of DA's priority crops such as rice, abaca, coconut, white and yellow corn, cotton, cassava, sweet potato, yam, tomato, and eggplant," says Dr. Roel R. Suralta, Center head and one of the project proponents.

The center will not only provide equipment and facilities, but also training and support for Filipino biotech researchers. It also aims to build a network among

local and international researchers to sustain and continually advance biotechnology.

The more than P300 million funding of the said facility was granted by the US government through its Public Law 480 program, also known as the Agricultural Trade Development and Assistance Act.

According to Suralta, the budget will cover the construction of new buildings, purchase of state-of-the-art biotech equipment and laboratory furniture, and monitoring and evaluation of the project in coordination with the Philippine Council for Agriculture and Fisheries.

NEW GENETIC RESOURCES FACILITY RISES

The facility under construction will cater to the needs of the Genetic Resources Division and expand its intensive collection and characterization of existing germplasm.

"The existing genebank can no longer hold the growing collection of seeds. With this bigger facility, we hope to better preserve our germplasm and modernize our genebank. Our genetic resource is one of our most valued treasures," says Dr. Eduardo Jimmy P. Quilang, acting DED for research.



RICE ACROSS THE COUNTRY

ALLAN C. BIWANG JR.

Isabela intensifies radio broadcast initiatives

Farmers in Cagayan Valley now have more options to reach PhilRice through its *Madiskarteng Pagsasaka* radio program aired over seven stations in the region. Conceptualized in 2014, the radio program assists rice farmers by airing topics on the latest in rice farming. Its weekly airings revolve around the *PalayCheck* System and *Palayamanan* program with subtopics on integrated pest/nutrient management, reduced tillage technology, alternate wetting and drying, and use of information and communications technology in rice farming. Pete Campo, a farmer and loyal radio program listener from Alcala, Cagayan said he is learning plenty of management technologies from the broadcasts. Andres Dela Cruz, Jr., Isabela R4D coordinator, said a tracer study will soon be conducted to gauge the impact of the radio program on farmers.



Los Baños seals new partnership

In support of the RiceBIS Community program, PhilRice Los Baños signed an agreement with local project partners in Sariaya, Quezon, August 30. Under the agreement, representatives from DA-RFO 4A, PLGU-Quezon, LGU-Sariaya, ATI 4A-Cavite, PhilRice, and the MORAN Irrigators' Association will facilitate, monitor, and document the implementation of an agro-enterprise project. R4D coordinator Imelda Olvida said the program will turn farmers into agri-preneurs. The station will provide knowledge products and other informational materials to cater to the farmers' needs through increased knowledge in rice production and technologies.



Bicol trains agri-students

Twenty-five agriculture students from different state colleges and universities in Bicol Region participated in the Rice Boot Camp activity, September 18-29. The learning farm inside PhilRice Bicol showcased to them different farm technologies including machines. Branch director Dr. Victoria Lapitan said this annual activity aims to encourage promising young minds to invest their knowledge and skill to help boost the country's rice industry. The training included interactive discussions, field practicum, and community immersion. Lapitan added that this boot camp will not only train students but will also build a roster of potential researchers or development workers who can be recommended for hiring in agricultural public and private agencies.



Batac trains farmers on climate resilience



To capacitate farmers on climate change adaptation, PhilRice Batac trained 45 farmers from Lagangilang, Abra on water-harvesting and coping with climate change, July 14 – September 4. The training course involved hands-on training for six days on new technologies and farm techniques. With its partner, Abra State Institute of Sciences and Technology, topics on climate change adaptation were discussed, which included soil drought-proofing; selection of drought-tolerant and short-maturing crops/varieties and development of planting calendars; conservation practices; rainwater-harvesting and storage; diversified and integrated farming systems (Palayamanan Plus); and the low-cost gravity-type drip irrigation system. Branch Director Dr. Reynaldo C. Castro presented the simple community-based climate change mitigation plan.

Negros to benefit from new shed facility

A multi-purpose processing shed was inaugurated at PhilRice Negros, July 31. Connecting its warehouse and its mechanical dryer, the shed can shelter fresh or dried *palay*, equipment, and postharvest processing chores. The facility makes easier and faster the transfer of dried and processed samples from dryer or seed cleaner to the warehouse for storage. Officer-in-Charge Rizal G. Corales said a portion of the shed is for storage of smaller equipment, and the dehuller or brown rice machine. The shed will also accommodate the station's activities such as farmers' field days, training, and workshops.



ATI-North Cotabato turns over facilities to PhilRice Midsayap

Agricultural Training Institute (ATI) has turned over its training facilities to PhilRice Midsayap through a memorandum of agreement signed on December 11. The facilities include training rooms, a dormitory, and multi-purpose hall contained in about-a-hectare area. PhilRice will use them to boost its development and extension activities through training programs for farmers, seed growers, extension workers, and agricultural technologists.

Present during the signing were (from L-R): PhilRice Midsayap Acting Branch Director Ommal H. Abdulkadir, ATI Region 12 Center Director Abdul I. Daya-an, PhilRice Acting Deputy Executive Director for Administration Roger F. Barroga, ATI Director Dr. Luz A. Taposok, PhilRice Acting Executive Director Dr. Sailila E. Abdula, and DA RFO 12 Regional Executive Director Engr. Milagros C. Casis.

Agusan finishes infra projects

PhilRice Agusan has finished over P1.5 million worth of infrastructure projects as of October 2017. Seed processing in the station is now faster with its new shed worth almost P1.3M that also stocks fertilizers. Improved ventilation at the training building is seen to benefit trainees as the station regularly conducts workshops on rice and rice-based farming technologies. The station's flatbed dryer is fully operational again after the replacement of its roofing.





ROADMAP FOR IMPACT

Data from the PhilRice Strategic Plan 2017-2022.
Infographics by John Glen S. Sarol

OUTCOME 1



Increased productivity, cost-effectiveness, and profitability of rice farming in a sustainable manner

OUTPUTS



Genetic resources conserved and their profile made available to increase utilization for direct use and in support of breeding new rice varieties



Yield-enhancing risk-and cost-reducing technologies developed



Technologies/Systems packaged for specific growing conditions

OUTCOME 7



Strengthened institutional capability of PhilRice

OUTCOME 6



Enhanced partnerships and knowledge management for rice research for development (R4D)

OUTPUTS



Improved PhilRice governance



Strengthened organizational structure and staffing



Strengthened support systems and processes



Enhanced capacity-building of PhilRice CES and branch stations

OUTPUTS



National and island-wide/regional consultation workshops conducted with partners and stakeholders; Collaborative rice R4D projects and capability-building thrusts developed and implemented with partners



Presence of PhilRice in the R4D communities



Partnerships/dialogues with regulatory institutions



Workshops conducted with BPI, seed growers, and other stakeholders on rice seed distribution



Feedback gathered from partners



Context-specific and innovative knowledge management system

OUTCOME 2



Improved rice trade through efficient postproduction, better product quality, and reliable supply and distribution system

OUTPUTS



- Technologies and information developed/generated
- Localized rice combine harvester
 - Continuous-flow microwave system dryer for brown rice
 - Low-cost typhoon-resistant pre-fabricated multi-purpose farm structure

OUTCOME 5

Advanced rice science and technology as continuing sources of growth



OUTPUTS



ICT-based land resources management (model/system/process)



Advanced water resources management (model/system/process)



Rice and rice-based agricultural information systems (model/application/solution)



Rice and rice-based farm automation (process/model/system)



New methods developed for rice and rice-based quality and chemistry



Advanced biotechnology solutions

OUTCOME 3



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

OUTPUTS



Rice varieties with value-added traits



Products from rice and diversified rice-based farming commodities with improved quality, nutritional value, and income



Value-added technologies to improve quality



Technologies and systems for diversified rice-based farming

OUTCOME 4



Science-based and supportive rice policy environment

OUTPUTS



Systems and policies; Policy briefs/papers; Policy ordinances



Campaigns/Advocacies



Inclusion of rice technology adoption and yield gap reduction in provincial agricultural development programs



Maintained/updated databases

FACING GIANTS IN THE RICE SECURITY ARENA

ANNA MARIE F. BAUTISTA

Dry areas will be drier while wet areas will be wetter. More intense El Niño will recur frequently while sea level will continue to rise. This is the 2020-2050 outlook where extreme weather events are expected to occur because of the giant named climate change.

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change identifies small-island states as among the most vulnerable countries to the adverse impacts of climate change.

For the Philippines, it means frequent and stronger typhoons, floods, droughts, hotter weather, unprecedented changes in rainfall patterns, and salt water intrusion. For the rice plant and farmers, it means increasingly challenging production seasons that may result in lower yields.

Then here comes another intimidating giant called the ASEAN Economic Integration that will bring in cheaper imported rice for consumers, probably more saleable than local rices sold in the local market. While it is good for consumers, the cheaper rice will dislocate the produce of Filipino farmers.

Such overwhelming giants tower over and scare everyone in the rice security arena. To win the battle, a "missile" must be shot in between the eyes of these giants - a feat similar to the story on how David defeated Goliath through a slingshot. The question is: what kind of stone should be thrown at them?

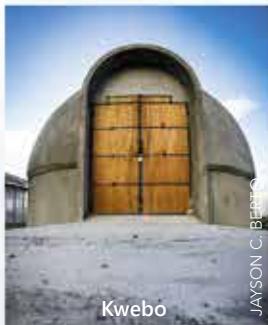
THE FIRST SHOT

At PhilRice, the battle against climate change has long begun. Research results have proven that a variety of adaptation mechanisms can help farmers handle the phenomenon. Since 2013, the Coping with Climate Change Program (CCP) has been generating knowledge on adaptation and mitigation in agriculture.

The program has also established a number of strategies and technologies for farmers. To name a few, the "capillarigation" technology was



JAYSON C. BERTO



JAYSON C. BERTO



JAYSON C. BERTO

developed for areas with scarce water, and "kwebo," a multipurpose farm structure meant for typhoon-prone areas. Both technologies are being honed in field trials.

An adjusted planting calendar for rice farmers in the Ilocos region that struggles with changing rainfall patterns was also developed by PhilRice Batac, while the coping mechanisms of a flood-prone farming community in Agusan were documented for possible adoption. Rice-based farming systems like the *Palayamanan Plus* approach were also promoted, and value-adding technologies like the rice hull carbonizer with its attachments were developed to allow farming households to earn additional income. Yes indeed, little money is better than no money at all.

Beyond the program, climate change-ready technologies including drought-, submergence-, saline-tolerant varieties; rice-duck technology, floating garden, sorjan cropping system, and others, are now in many farmers' hands. More outputs and outcomes are to be engendered.

"CCP will conclude this 2017 but the battle does not end here. The rice industry will still reel from the unusual impacts of climate –related risks, and its players also need to brace themselves for ASEAN economic integration," CCP lead and scientist Dr. Ricardo Orge explains.

HITTING TWO GIANTS WITH ONE STONE

Introduced as Climate Resiliency for Enhanced Agricultural Trade and

Efficiency for Rice or CREATE-Rice, this new program takes on the threats of climate change and economic integration, by helping our rice farmers become more resilient and competitive.

"CREATE-Rice is challenged to raise the income of our rice farmers and be able to compete with other rice-producing nations, even with the risks of climate change," Orge expounds.

Promising research outputs from previous initiatives will be capitalized on and new heights in the R4D sphere will be explored.

New rice varieties will be developed to have multi-tolerance to climate-related stresses. In addition, the Aerobic Rice Technology (ART) will be further refined. Research information from the Bulacan Agricultural State College shows that aerobic rice can save up to 50% of water, can withstand weed and pest infestation, and can yield 10-20% higher than traditional upland rainfed farming.

Under the ART Project, a mechanized and cost-efficient irrigation system shall be developed together with yield-enhancing and cost-reducing technologies. A second generation multi-purpose power tiller will be designed and equipped with attachments so it can be used in drought-mitigating operations such as drilling shallow tube wells and digging small ponds for rainwater-harvesting.

Capillarigation and kwebo, together with other climate change adaptation

technologies, will level up under the new program. These technologies have undergone first-stage trials in PhilRice stations and will now be tested in farmers' fields.

"We want to make sure that these technologies are effective and efficient in the farmers' fields. For instance, we must prove that farmers can afford, and easily assemble the pre-fabricated materials and construct their own kwebo with minimal supervision from skilled workers," Orge assures.

Like CCP, CREATE-Rice will also focus on rice-based farming systems to explore new frontiers for highly intensified, diversified, and integrated models.

"Several studies have already proven that resiliency to climate change can be best achieved by diversifying farmers' sources of income. There is a need to complement rice production with other farming activities to optimize farmers' resources," Orge elaborates.

Producing and marketing rice and rice-based products are also at the core of achieving resiliency and competitiveness. In CREATE-Rice, value-adding technologies will be developed for this purpose. Orge says that farmers can earn bigger if they market their produce as milled rice and use its by-products such as rice hull, bran, and straw for other profitable undertakings.

The new program is not being intimidated by the uncertainties that it knows truly exist.

Surely, it takes enormous spectacles as climate change and ASEAN economic integration to pursue the vision for rice farmers to become more resilient and competitive. But, there is no turning back. With CREATE-Rice in the arena, the modern-day representation of David demolishing Goliath is doable. Maybe, these giants would do well to keep their bronze helmets on. •

"Hybrid seed failed me before but it still deserves a second chance. We have the government right behind us." These are the words of Edwin M. Dumayas Sr., 55, of New Ilocos, Magsaysay, Davao Del Sur.

Dumayas recalls that his hybrid seeds before succumbed to bacterial leaf blight. However, for him, it's not game-over yet. He still wants to give hybrid rice a try.

Dumayas' story is just one of the many inspirations of the government to push for hybrid rice again. Back in 1998 and 2002, hybrid rice was launched as a national program.

Hybrid rice is one of the interventions eyed to help Filipino farmers become more competitive. It could increase rice

production and help them earn the same income despite lower prices. In a recent study led by PhilRice senior economist Dr. Flordeliza H. Bordey, hybrid rice yields 7.20t/ha, which is 36% and 74% higher than the yields of certified inbred seeds and farmers' own seeds. Furthermore, to produce a kilogram of dry paddy, it takes only P9.85 for hybrid rice, P11.66 for certified seeds, and P13.72 for farmers' own seeds.

The DA aims to unleash the adoption of hybrid rice to a million hectares by 2022, with 25% share for public hybrids to help raise and eventually sustain productivity. In support of this, PhilRice will be implementing two programs on hybrid rice in 2018—the Hybrid Rice Research Program (HRRP) and the Public Hybrid Rice Commercialization

Program (PHRCP). These are expected to complement the "hybridization" efforts of the private sector.

RAISING THE BAR FOR PUBLIC HYBRID RICE DEVELOPMENT

With HRRP, widely adaptive and high-yielding hybrid rice varieties with good agro-morphological traits, acceptable grain and eating quality traits, and resistance to major insect pests and diseases will be developed.

According to Dr. Nenita V. Desamero, HRRP lead, their team would focus on rice breeding research to develop high-performing, good-quality, and pest and disease-resistant cytoplasmic male-sterile three-line and thermo-sensitive genetic male-sterile two-line hybrids.

'HYBRIDIZING' PH RICE FARMS

HANAH HAZEL MAVI B. MANALO

Desamero and her team would also research on seed production and crop management practices to further increase yield, reduce cost, and widen the adoption of hybrid rice.

Their research also includes seed purification and multiplication techniques to develop nucleus and breeder seeds, seed quality-testing, improvement of seed quality standards, and provision of technical support in hybrid seed production and seed certification training.

"To support PHRCP, the program would ensure that adequate supply of quality nucleus and breeder seeds of parents and F₁ hybrids will be sustained," Desamero confirms.

BRINGING HYBRID RIGHT TO THE FIELD

"Despite the proliferation of private hybrid seeds in the market, the availability and affordability of F₁ seeds

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To support PHRCP, the program would ensure that adequate supply of quality nucleus and breeder seeds of parents and F₁ hybrids will be sustained

- Dr. Nenita V. Desamero

are two major issues that should still be addressed. These could be resolved by increasing the production and intensifying the promotion of public hybrid rice," calculates Leylani M. Juliano, PHRCP lead.

However, Juliano admits that the limited amounts of breeder and foundation seeds of hybrid rice parents saddle the large-scale production and commercialization of F₁ seeds of public hybrids. Hence, there is a need to expand the seed production area of public hybrids.

With PHRCP, Juliano is optimistic that public hybrid parental seeds would be produced and their availability to those willing to venture into F₁ seed production would be ensured.

Juliano and her team would produce breeder and foundation seeds of the S- and P-lines and A- and R-lines, market these seeds to F₁ seed growers of public hybrids, and train them and farmers on hybrid seed and commercial production.

While Edwin Dumayas still believes in the benefits of hybrid rice, PhilRice hopes to fuel this optimism among farmers with its programs on hybrid rice. •



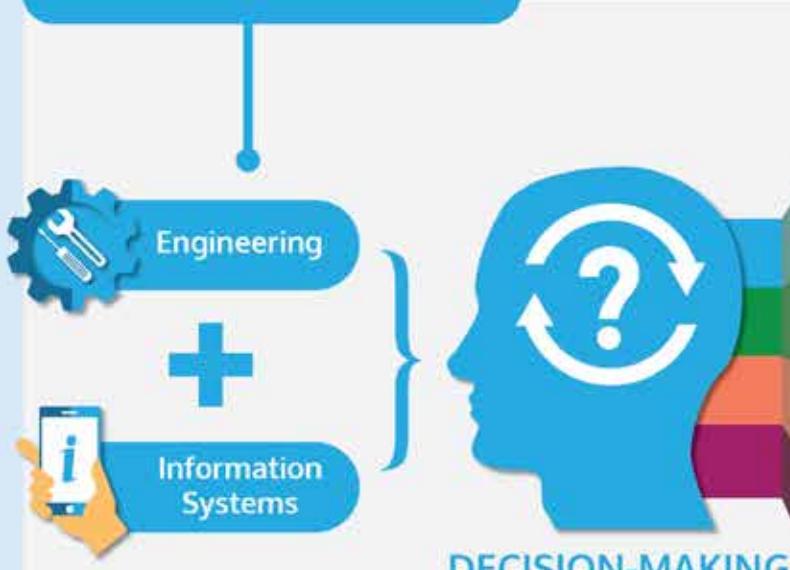
MODERNIZING PHILIPPINE RICE FARMING



Andrei B. Lanuza

For many decades, modern technologies and techniques have fueled the growth of rice farming in Asia. As the Philippine population grows and farming land dwindles, more efficient means of producing crops are needed. Studies have shown that rice farm operations can increase net income through higher yield and reduce cost by mechanization alone. This is indeed promising and efforts have been made to modernize local rice farming to make it globally competitive, environmentally friendly, and climate change-resilient.

PhilRice, through its Rice Farm Modernization and Mechanization Program, aims to modernize rice agriculture through the development of appropriate machinery and the employment of smart information and communications technologies that reduce labor and operational costs, provide timely irrigation and drainage, minimize grain losses, use alternative sources of farm power, allow access to strategic information, and assist in farm decision-making. It focuses on improving two key aspects that are believed to improve rice production and decision-making: engineering and information systems.



TARGET OUTCOMES

Increased productivity, cost-effectiveness, and profitability of rice farming in a sustainable manner.

Improved rice trade through efficient postproduction, better product quality, and reliable supply and distribution system.

Enhanced value, availability, and utilization of rice, diversified rice-based farming products, and by-products for better quality, safety, health, nutrition, and income.

Advanced rice science and technology as continuing sources of growth.

Since rice is a water-sensitive crop, new and improved irrigation and drainage technologies will have to be looked into. Effective dissemination of efficient water and soil management technologies and methods, particularly those that can be readily adopted by small farmers in on-farm conditions, is very important to cushion the effects of climate change such as drought and high temperature.

Precision agriculture would be aptly optimized by using up-to-date real-time information guided by decision support software systems. Satellite and unmanned aerial vehicles will allow remote pinpointing of poor production areas and cross-match the information with historical databases to maximize and realize production potentials.



GASOLINE PRICES IN PH



One hurdle in modernization and mechanization is the increasing fuel and energy costs. Thus, PhilRice is also exploring non-conventional and renewable energy sources such as biomass, wind, hydro, and solar energies.

PhilRice believes in the need to configure a good combination of machine systems to reflect current needs and social acceptability. The Program brings in an ensemble of advanced technologies to take advantage of whatever benefits that they may bring toward realizing higher levels of productivity. Because of the complexity of cropping systems and the newness of the technological concepts, implementation will be done through the isolated component approach in pursuing the technologies. However, PhilRice will package technologies into a holistic system that is relevant to the target areas and achieve more robust site-specific technological management.



EXPERT'S CORNER



DR. FLORDELIZA H. BORDEY

Agricultural Policy Economist and
Deputy Executive Director for Development, PhilRice

THE NEED FOR A COMPETITIVE RICE YIELD

Some experts maintain that targeting a national average rice yield level of 6t/ha is too much for achieving self-sufficiency and that 4.5t/ha would be enough. This might be true if the country is only interested in achieving self-sufficiency per se, disregarding competition from imported rice. But in the context of ASEAN economic integration, we must produce rice at a competitive price so that we will be able to profitably sell it in a common regional market.

The Philippine rice industry is now staring at a different scenario. Because of our commitment to the World Trade Organization (WTO), we need to replace our quantitative restriction (QR) policy with its tariff equivalent. QR is a trade restriction placed on the amount of an item or service that can be imported into a country. Tariff refers to a tax levied on a commodity imported from another country.

Along with this, there are now bills pending in Congress to have the tariff policy fully implemented. Under a tariff regime, the government can no longer restrict the total amount of rice to be imported into the country. As a consequence, importers can bring in rice from abroad as long as they see it profitable after paying for transportation, insurance, port charges, and most especially the tariffs or taxes imposed by the government. This will mean stiff competition between domestically produced and imported rices.

If rice will be imported from an ASEAN member-country such as Thailand or Vietnam, the tariff will be 35% of the value. At this tariff level, the landed cost in Manila of white Thai rice with 25% broken grains will be around P31/kg; P27/kg if from Vietnam. This is based on a PhilRice-IRRI study. While this will benefit consumers, especially the poor who spend about a third of their income on food, it will distort and reduce the prices of domestically produced rice. This will further disadvantage the income of Filipino rice farmers who, at present, only produce an average of less than 4t/ha/season at a high cost of P12/kg.

If the landed cost of imported rice prevails in our wholesale market, and wholesalers, rice millers, and paddy

traders maintain their marketing margins, this will mean that a rice farmer, say, in Nueva Ecija, will need to produce a kilo of paddy at around P8 to hold on to his current profit margin. At an average production cost of P48,000/ha, the Filipino farmer must produce a yield of around 6 tons in order to put up a semblance of competitiveness with Thai and Vietnamese farmers.

equally fruitful economic activities. If and when this happens, the area planted to rice will surely shrink. This means that those who will remain in the rice industry must attain higher yields to help feed the country. This gives impetus to the urgent need of modernizing Philippine agriculture that systematically links and manages the whole value chain from pre-production, production, processing, marketing, and consumption. Modernization will continuously



Modernization will continuously improve agricultural productivity and add value to all the players in the system, especially poor and marginalized farmers.

- Flordeliza H. Bordey

Thus, averaging 6t/ha with a production cost of P8 per kilo, courtesy of strategic government support such as cost-reducing technologies, free irrigation, and post-harvest facilities in the medium term (until 2022) will make Filipino farmers competitive. Likewise, this will probably sustain the country's rice industry in the long run. Beyond this period, more efficient marketing and production measures will need to be pursued for the country to remain competitive.

In less favorable areas where it is more difficult to increase rice yields and farmers incur higher production costs, farmers are at higher risk of bowing out of the rice business. The government must then provide safety-nets such as training on diversified farming systems and start-up production support, so they will have an easier transition into

improve agricultural productivity and add value to all the players in the system, especially poor and marginalized farmers. The main drivers in this transformation are programs propelled by science-based innovations, policy reforms, sound management and governance systems, a new breed of entrepreneurs, mobilized farming communities, and market-oriented agro-based processing industries.

In the aegis of ASEAN economic integration, the Philippines needs to maintain the profitability of rice production and make Filipino farmers competitive in a common regional market. If our farmers can produce enough rice for all Filipinos at competitive prices through modern agriculture, then the country will achieve our much-cherished quest for sustainable rice security. •



REVOLUTIONIZING THE PH RICE SEED SYSTEM

SONNY P. PASIONA

It's planting season again in San Miguel, Bohol. Under the blazing sun, seed grower Leonardo Hormachuelos, 51, meticulously prepares his 10-ha rice farm. The problem, however, is his seeds are good for only half of that expanse.

"I only got a few bags of seeds from the regional seed station," says Leonardo who's been producing certified seeds for Boholano farmers since 2004.

Still eager to maximize his seed production, Leonardo opts to outsource more seeds either from PhilRice Negros or from its field office in Bukidnon. Much to his dismay, freight-handling costs would make this attempt impractical.

"We were surprised when freight costs skyrocketed to P2,100 from P800 just for a 20-kilo bag of seeds," regrets Leonardo.

THE RICE SEED SYSTEMS (RSS) PROGRAM

Limited access and availability of seeds in some areas, as in the case of Leonardo, have been perennial issues of not only farmers and seed growers but also government agencies. In response to this and other seed issues, a team of PhilRice experts now embarks on a revolutionary bid to a new RSS program.

The Seed Industry Act of 1992 mandates PhilRice to "develop appropriate rice varieties designed under Philippine conditions and propagate them into breeder, foundation, and registered seeds." It also requires the Institute to provide technical assistance for proper utilization of such seeds.

Susan Brena, one of PhilRice's seed specialists, admits that in spite of having a strong seed research, initiatives have to be strengthened to make the entire rice seed system an efficient one — from basic research down to farmers' utilization.

"We will tackle issues in our seed production and supply chain, and provide new solutions toward the attainment of seed security," says Brena, RSS program leader.

The program aims to address three basic parameters of a seed security framework: availability, access, and utilization. Composed of projects and several activities, the program seeks to improve seed production protocols, increase accessibility of released varieties, and establish a responsive ICT-based rice seed information system.

IMPROVING SEED QUALITY AND DISTRIBUTION PATHWAYS

The program kicks off with an evaluation of the current rice seed production systems at all PhilRice stations.

"Once existing systems are assessed, we will establish appropriate production and postharvest protocols and operations to improve seed quality assurance and production efficiency," Brena discusses. For one, she cites that warehouse management shall ensure high-quality and viable seeds while in storage.

Current seed accessibility and utilization schemes will also be assessed to identify strategies for efficient seed utilization. One of the proposed activities is to increase the number of location-specific adaptability trials across the country.

"With this, farmers can choose the varieties that they want and those that are well-adapted in their areas, thereby increasing adoption," she adds.

SEED DEMAND-FORECASTING

A feature of the RSS program is institutionalizing seed demand-forecasting of the farmers' top-preferred varieties.

Following a bottom-up approach, consolidated regional seed demand data shall be collected from the barangay, municipality, and provincial coordinating offices.

"Data on farmers' seed demands will enable breeding institutions to calculate the volume of breeder seeds to be



produced to meet the requirements of all regions," Brena explains.

PhilRice, UP Los Baños, and IRRI are the country's inbred rice breeding institutions. From breeder seeds, foundation seeds are then planted across PhilRice branch stations and its national R&D network. Harvested registered seeds are distributed among seed growers who will mass-produce certified seeds for farmers' use.

"If we forecast the demand for seeds and fix the distribution system, we can manage the amount of foundation seeds to be produced because we know the number of takers," says Brena, adding that this will also promote a reasonable volume of buffer stock for future cropping seasons.

SEED MATCHING IN THE REGIONAL LEVEL

With over 5,000 accredited seed growers, six PhilRice branch stations, and several seed centers nationwide, are the areas for seed production enough to meet the seed requirements of farmers in each region?

Brena noted that seed matching at the regional level can address seed shortage. Total area planted for rice, the number of seed growers, and areas for seed production will be identified to match the total seed requirements of a region.

"In the event that a region could not meet its seed requirements, it can tap other regional outreach stations to offset the deficit," Brena further. The Davao region trails a good example of seed demand-forecasting and matching mechanisms. Evelyn Basa, regional seed coordinator, leads a Regional Seed Council with rice focal persons and representatives from seed growers' cooperatives and line agencies.

"In a workshop, we identify the seed requirements of each province then distribute the volume of seed requirements according to the coops' production capacity. With an updated seed stock inventory, we can also forecast coops with surplus that can then supply coops with deficits," Basa says.

One of the active members of the Council is the Davao Multipurpose Seed Producers Cooperative (DAMSEPCO) that has been producing high-quality seeds since the 1970s.

"The Council gives us the opportunity to voice out concerns and discuss with other coops on how to market surplus or handle deficits. When we run out of stocks, we source out from other coops in the region," says Dario Ybañez, operations manager of DAMSEPCO.

Meanwhile, the Council also ensures that seed growers stay updated on the latest rice technologies. Led by

Alejandro Yadao Jr., rice focal person, training and retooling programs are done to boost their seed production capabilities.

In a national scale, the RSS program also intends to continually conduct technical briefings and training for potential seed growers.

SEEDS WITH LOW DEMAND

The RSS program will also attend to seeds for rainfed and saline ecosystems. Brena observed that not many seed growers are willing to produce for these ecosystems that have low demand, thus less profitable.

"There are so many rice areas with salt water intrusion but farmers are not using varieties developed for that ecosystem," Brena claims.

To increase utilization of varieties suited for saline and rainfed areas, local adaptability trials and other activities under the RSS program will be complemented with communication strategies for the promotion and use of appropriate varieties.

SEEDS INFORMATION SYSTEM

Lastly, a responsive ICT-based rice seed information system will be established for traceability of seeds produced by PhilRice from line development to distribution.

In these initiatives, PhilRice's R&D network members will have to be strengthened more than ever. Brena adds, "we have to rely on a very strong partnership with the local government units, and state universities and colleges. We can't do it alone."

With the RSS program, PhilRice and its partners will progressively pick up the pieces of a puzzle for a seed system that favors the Filipino rice farmers and seed growers. After all, good yields start with good seeds — the very basic material for growing the country's staple food. •

HALF-CUP RICE AND THE ROAD TO



CARLO G. DACUMOS

SCIENCE-BASED POLICIES

MARY GRACE M. NIDOY

It is an ordinary morning in Cebu City. The no-frills *carinderia* is teeming with people about to start their daily routines, some just finished their duties in a nearby hospital. Random travelers like us cannot wait to load our tummies with today's breakfast after taking the earliest flight from Manila.

Bulging with our bulky backpacks and feeling groggy due to on-off sleep, we choose from a plethora of breakfast viands. I then ask for half-cup rice. The server gives my order without incident.

"This is a rare response," I tell myself.

In most cases, whenever I order half-cup rice in a food establishment, I am told they don't serve it. When I insist, I would have to pay the price of the whole-cup serving. For fastfood chains, it is non-negotiable.

But not in Cebu. After all, this eatery is simply complying with a regulation.

In 2014, the queen city of the south passed *The Rice Conservation Ordinance of Cebu City* requiring all food establishments and businesses involved in the preparation of meals to include half-cup rice as an option in their menu.

WASTAGE, CONSERVATION, AND HEALTH

Do Cebuanos love rice and its unlimited version?

"Yes they do, but they have to be mindful of their wastage," Cebu City Councilor Mary Ann De los Santos tells me.

She says two poles drove her to sponsor the said ordinance: wastage and conservation.

"There's so much waste. When people go out to eat, they are not very keen on avoiding rice wastage."

The councilor adds that if people are conscious of conserving, then the country will save millions of pesos from rice imports.

The 2008 survey of the Food and Nutrition Research Institute (FNRI) saw Filipinos wasting an average of 2 tablespoons each of cooked rice, or 9 grams of raw rice daily.

This was equivalent to more than 12% of our imported rice in 2008, valued at P7.27 billion.

FNRI conducts the National Nutrition Survey (NNS) every 5 years and in 2013, it reported that in 2008-2013, plate waste among households increased by 5 grams (1 teaspoon).

"The increase was noted in rice and rice products (9g per capita/day in 2008 to 14g in 2013). Discarded food from fish and fish products (3g), meat and meat products (1g), and vegetables (2g) remained unchanged in 2008 to 2013," the survey results said.

These data were cited by the team behind the 2013 National Year of Rice (NYR) observance that enjoined Filipinos (consumers, farmers, and policymakers) to do their part in helping the country be rice-self-sufficient. Led by DA-PhilRice, NYR encouraged policymakers to craft policies that support productivity among farmers and reduce rice wastage.

"From NYR to the current Be Riceponsible Campaign, we have tapped local government units to issue ordinances and resolutions to promote responsible rice consumption by reducing rice wastage in households, and eating healthier foods like brown rice," explains campaign director Myriam Layaoen.

FROM RESEARCH TO POLICY

"PhilRice came to me and provided me with data," Councilor De los Santos recalls.

Recounting her journey in lobbying for the half-cup-rice ordinance, she found herself as the bridge that connected the experts and scientists to the public.

"I asked for the minutest details from the experts as they were very specific with their data. I articulated the science and formalized it into a draft ordinance, presented, and defended it before the council," she narrates. And it made all the difference as she was already prepared for the possible questions. Well, science of course is hard to dispute – as the Councilor learned in lobbying for the evidence-driven policy.

"I'm very thankful that the institute came to me and made me realize the importance of coming up with such a legislation," she says.

“

Collaborations and partnerships of the different agencies are needed in order to come up with successful policies.

- Cebu City Councilor Mary Ann De los Santos

In the data provided by the Be Riceponsible team, 8 provinces, 20 cities, and 17 municipalities have already issued half-cup-rice ordinances and resolutions since 2013.

ALLIANCES AND PARTNERSHIPS

Responsive legislators like Councilor De los Santos who know the importance of listening to experts are a rarity in a web tangled by bureaucratic procedures in the government.

"We are representing our city, our district, and we are their voice. It would be good if many legislators would focus on something like this. Which, unfortunately, I would be candid to say to you, that there are not many of us," the councilor laments.

And like many policies in the Philippines, implementation is also another challenge.

Councilor De los Santos emphasizes that collaborations and partnerships of the different agencies are needed in order to come up with successful policies.

SCIENCE AND LEGISLATION

The half-cup-rice ordinance is a classic example of a science-based policy that PhilRice wants to spread.

A new program of the Institute called *Science-based policies in advancing rice communities* (SPARC) will scrutinize existing policies; draw up new ones based on data collected from its

own R4D initiatives; and advocate for policies of local and national significance to the Philippine rice industry.

While crafting policies is an art, SPARC program lead Dr. Jesusa C. Beltran believes that communicating them is another complex skill in itself.

"As an organization, PhilRice is able to come up with data that can significantly influence policies at the national and local levels. But data from research is inaccessible to policymakers, much less to lay people," Beltran contends.

Hence, SPARC will fill this gap and translate policies into something actionable.

"For them to become actionable, they must be understood and felt."

Beltran adds that they will likely lobby for policies on seeds and mechanization as these are the priority areas of the Institute's strategic plan.

PhilRice hopes that more and more legislators like Councilor De los Santos will trust our experts and researchers. It is high time that they start digging for knowledge, oftentimes buried in the databases of journals, to guide them in making informed decisions.

"No one has really mastered the art of bridging science and legislation. There is no blueprint. But we simply have to just keep trying. If we could develop the science of doing it in this program, that would be our major accomplishment," Beltran concludes. •

.Market? MARK IT!

ELSIE E. REYES

ILLUSTRATIONS BY JEFFERSON SADDI AND AARON TORRES

Suppose that Mang Johnny and Aling Marian are farmers who have been painstakingly tending their rice farm for more than 20 years. They are seasoned crop growers by the sound of it. But how come they haven't cashed in much on it? On the average, they earn P50,000/ha/season from rice, which is below the poverty threshold.



Dr. Aurora Corales, senior community development specialist, commiserates with our farmers. She leads the new program – Rice Business Innovations System or RiceBIS Community for brevity. According to her, compared with past interventions of PhilRice, RiceBIS Community views rice farming not simply from a production but also from a business perspective. It is implemented with a three-pronged objective: increase farmers' yield; reduce their production cost; and link them to the market and business development service (BDS) providers.

ON YOUR MARK

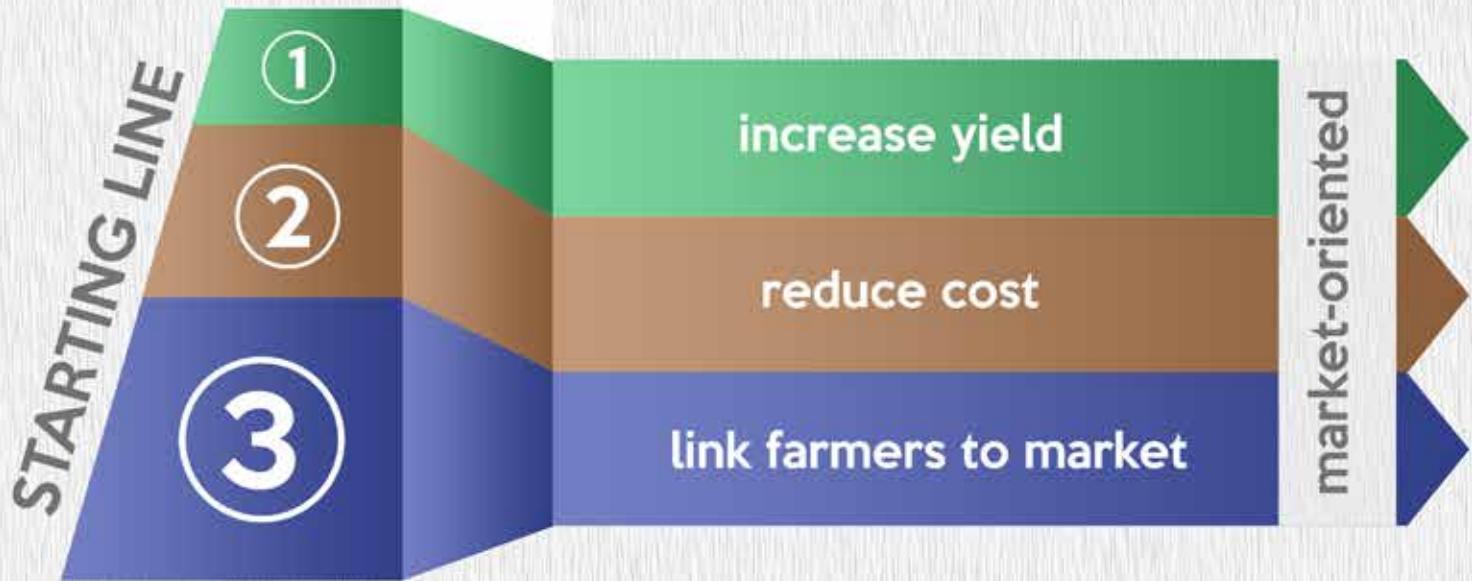
RiceBIS Community makes the mark of levelling up PhilRice's interventions in rice farming. Corales says fulfilling the first prong of the objective could mean a lot, but it is not necessarily the highlight of the program. Past interventions have always been focused on increasing rice farmers' yields. "High yield, however, would mean less if the production cost is still high. The farmers should learn technologies and practices to reduce cost and eventually increase net profits," she sets a condition.

Meanwhile, Corales emphasizes that linking farmers to the market is an essential component of the program. Yet, she explains that this can be challenging for PhilRice because while farmers are good crop growers they are not business-oriented or they lack the skills and resources to engage in a business venture.



GET SET

To prepare the farmers, the program will carry out intensive mind-setting exercises, transforming farmers' mindsets from being production to market-driven. Capacity-building will also be conducted, teaching them through a multi-disciplinary module covering rice production and processing, enterprise development, and organization-building. The program will also make farmers appreciate the importance of community-organizing. RiceBIS Community will reach out to 16 provinces with 134 clusters each running a rice-based enterprise. It has commenced this year in Ilocos Norte, Isabela, Nueva Ecija, Quezon, Albay,



Negros Occidental, Agusan del Sur, and North Cotabato where the PhilRice stations are based.

Partnership will seal the success of the program. Various stakeholders both from government and NGOs will be tapped and mobilized. Corales emphasizes that the local government units, in close collaboration with other government agencies, play a central role in ensuring program sustainability.

Moreover, partnership with those who have expertise on subject matters such as enterprise development and marketing is highlighted by Corales. "We didn't usually touch these aspects before because we were focused on production," she says.



MARKET!

Do farmers have what it takes to market? Describing them, Corales says Filipino farmers have good traits that can serve as good assets in ensuring on-target implementation of the program. These traits are their being hardworking, obedient, and humble.

But, she also sees farmers as shy, probably feeling inferior. According to her, being shy makes them compromise with informal lenders who collect higher interest rates than banks. Moreover, Corales observes that farmers tend to be individualistic in terms of managing their farms and even selling their produce. She also senses that farmers need empowerment in the aspect of organization-building.

The program has deliberately considered all these factors, and has espoused group marketing. Corales says when farmers are organized, connecting them to key stakeholders like institutional buyers will be easier. Selling in bulk will help them gain bigger profits. Accessing resources such as machines, credit, and other vital support is even facilitated.

Under the program, farmers will be organized into clusters, and linked to individual and institutional buyers to ensure market for their produce. Clusters will also be connected to BDS providers (e.g., financial institutions, knowledge centers) for resource access.



Corales offers the words "*magkaisa at makiisa*" for the RiceBIS Community farmers to keep in mind. Expounding on this, she asks them to be united and also to cooperate with the implementers for a better rice-farming community at the end of the program. •



PARTNERS
IN THE
FIELD



DA RFO III

AIRWAVES AND WAVELENGTHS

CHRISTINA A. FREDILES

PhilRice believes that communicating with farmers in rural communities through radio broadcasting is still effective. For more than 3 years now, it runs a regular segment in the weekly *Maunlad na Agrikultura sa Nayon* (MANA) radio program of DA-RFO 3 that broadcasts information on rice research for development (R4D), doable solutions to food insecurity, poverty, and malnutrition.

The program also provides practical tips on how to easily access services of the government. It starts with agricultural news, an interview with experts and a farmer champion, and relevant views from the hosts who are also involved in agriculture. MANA airs live simulcast on the Tarlac City-based DZTC 828 AM and RW 95.1 FM stations every Saturday at 10AM.

The PhilRice-maintained program segment was recognized in 2014 and 2016 by the Philippine Agri-Journalists' BINHI awards as outstanding radio farm program.

"MANA assists farmers as well as the general public on getting updated agricultural information through broadcast communication. The program capitalizes on R4D-based knowledge, extending its reach to transform lives in

more farming communities," DA RFO 3 Chief of Information Section and lead MANA broadcaster Felicito Espiritu Jr. says.

PhilRice's topics on MANA revolve around rice farming technologies, climate change adaptation and mitigation, responsible rice consumption, and science-based policies. Scripts are also provided that include a brief description of the topic, guide questions for the hosts, and PhilRice announcements. Resource speakers are supplied weekly.

MANA'S BENEFICIARY

Efren Gatbonton, 66, of Candaba, Pampanga started listening to MANA in 2016. The PhilRice segment guides him in making decisions in the field, he says.

Efren is now more confident in applying fertilizers in his 10-ha farm. He learned from the program that too much nitrogen could increase pest infestation owing to excessive vegetative growth. Lanky stems are weak and may cause rice plants to lodge.

"Too much or too little fertilizer has negative effect on rice plants. That is why PhilRice recommends to apply fertilizer at the right time, amount, and kind," Efren quotes the segment.

SUPPORT FROM PHILRICE TEXT CENTER (PTC)

PhilRice's segment encourages farmers to send messages or call PTC for their questions related to rice farming. Mang Efren has become a regular texter of PTC. He even asks for advice on crop insurance.

PTC is a digital communication platform that acts as a helpdesk and customer support to its subscribers and texters. It aims to link experts, agricultural extension workers, and farmers by answering rice-related queries through text messaging and voice calls.

MORE THAN JUST A PARTNER

DA RFO 3 and PhilRice motivate farmers to innovate and adopt the latest technologies that increase their yields at less cost.

"We want to open avenues for farmers to intensify and diversify their production to optimize their farms' potentials," Espiritu reveals.

MANA is heard in Tarlac, Pampanga, Nueva Ecija, Pangasinan, Aurora, and Isabela. •

WOMEN ON A MISSION, partners in community TRANSFORMATION

EV P. ANGELES



Two young women with a strong sense of mission: this is the story of Ronna Frianeza of the Office of the Provincial Agriculturist in Pangasinan, and Marianne Rikka Añora of PhilRice's FutureRice farm, both Agricultural Development Officers of the Community (AgRiDOCs).

SHIFT IN FOCUS

For Marianne who participated in the training as a PhilRice researcher, living up to the AgRiDOC vision meant that she also needed to change focus. From pure research, Marianne directed her attention to changing mindsets and perceptions about farming and agriculture among the youth.

Putting her degree in agribusiness to good use, Marianne helped plan and design an agritourism site for the FutureRice Program where the youth and all other rice stakeholders can see first-hand new and promising rice technologies.

"Its design and strategic location are meant to be a pathway for easy access to new and needed technologies and agriculture alternatives to lead students and other individuals into believing that farming is a profitable venture," Marianne says.

"As a research institution, many look to PhilRice for ideas on how to improve their farming so the Institute is the best venue to showcase technology packages and farming systems," she continues.



FUTURE RICE

YOUTHFUL PURPOSE

At 25 years old, Marianne is determined to lead by example to the youth, being both farm manager and researcher. As farm manager, she oversees the day-to-day operations to include documentation of all aspects of farm operations, site development, record-keeping, logistics, and even supervision of personnel. Thus, the FutureRice team developed the AgRiDOC app, a tablet-based tool to help the likes of Marianne who manage production planning of many farm areas. She also does basic research and viability studies of specific technologies.

"Here, we showcase hi-tech farming because we associate ourselves with our vision for rice. I want to convince especially the young ones that agriculture or farming is not a boring thing to do," Marianne self-imposes.

BEYOND SEED TECHNOLOGY

Ronna's chosen target is the group of rice seed growers in the first district of Pangasinan (Alaminos City, Mabini, Sual,

and Dasol). As seed inspector, Ronna guides them as they supply seeds to the local government units and other agencies, and to farmers in neighboring areas.

Ronna takes pride in her meticulous and high standards in ensuring quality of the farmers' produce and in maintaining trust among her clients. Between her preliminary and final inspection are random and on-demand visits to farmers' fields.

"It is important that your clients feel that you are with them throughout the process, you make yourself available to help, and that you keep your word," Ronna declares.

To this trait of Ronna, PNP pilot retiree-turned-farmer Col. Antonio Miranda of Palawis, Alaminos can attest. He has been multiplying rice seeds sourced mostly from PhilRice for 16 years. "If you need her, she will be there. If she can't for some reason, she will be honest with you but she will be there the

next moment she is available. I trust her so much that I follow everything she recommends," the former pilot confesses.

"She is very strict, very particular with details. And she has never failed me or my crop," Miranda adds.

INSPIRATION AND ASPIRATION

Staying true to her mission as an AgRiDOC, Ronna expands her duties to her clients. "My training opened up more opportunities and responsibilities for me at work. I realized I can do more with my current position so I see to it that I share with others what I learned from PhilRice," she says.

Ronna also holds trainings on values and leadership, seminars, and even knowledge-sharing and learning events for her colleagues, students at the Pangasinan State University, and

“

It is important that your clients feel that you are with them throughout the process, you make yourself available to help, and that you keep your word.

-Ronna Frianeza

farmers. She also helps farmer groups link their produce to the market. Such was her experience with the Hundred Islands Multi-Purpose Farmers' Association that has recently evolved into an integrated seed growers' association through her prodding.

Between planning sessions and report writing, she coordinates events spearheaded by her office, and serves as a seed inspector for corn in two municipalities. She helps reorganize farmers' and irrigators' associations as an Institute Development Officer for irrigation.

More than just promoting technologies, Ronna inspires and challenges seed

growers to aspire more. Determined to see them grow, she convinces them to invest in rice machinery individually or as a group. True enough, her clients, like Col. Miranda, are reaping the benefits.

"The combine harvester we use finishes the job of 15 people harvesting one hectare in three hours. It's easier, cheaper, more convenient, and time-saving," Miranda explains.

Ronna explains that while doing multiple tasks and filling different roles is challenging, focusing on her goal and vision for the community of seed growers in Pangasinan keeps her from getting tired.

"When you see them exceed their expectations as farmers, when you see your impact on the lives of farmers, it's a different kind of happiness. You are fulfilled," she goes deeper.

Ronna and Marianne belong to the first batch of the AgRiDOC training program, one of the strategies of Project IPaD to help invigorate rice extension in the country. The project is led by PhilRice in partnership with ATI and IRRI. Aimed at priming a new breed of agricultural extensionists, the AgRiDOC curriculum shifted its focus from enhancing trainees' knowledge on rice technologies. It invested in deepening and strengthening the AgRiDOC's sense of mission and purpose for catalyzing development in farm communities. These officers are "missionaries." •



RENZ ROMYL DE JOYA

STAFF

EXTRAOR

Getting to know more

COMPILED BY DONNA CRIS P. CORPUZ



KAREN ELOISA T. BARROGA

Birthplace: Los Baños, Laguna

Academic Profile:

- Master in Development Management (Development Academy of the Philippines [DAP], with honors, 2017)
- PhD degree by research (University of Western Australia, 2010)
- MS in Development Communication (UPLB, 1991)
- BS in Development Communication (UPLB, 1986)

Barroga's passion has been on sharing and innovatively applying her knowledge and skills in communication and extension to help improve development operations and sustain outcomes.

Some of the notable projects she led or initiated include the development of the *PalayCheck* System and the training curriculum and courseware for a new breed of agricultural extension workers, which have been both scaled out nationally; the nationwide promotion of hybrid rice; the management of rice S&T information and visual resources for computerized access; and the institutionalization of Rice S&T updates, Rice Science Museum, Rice Garden at the Luneta, knowledge-sharing and learning (KSL), communication research, area-based technology promotion, and publications such as *Rice Science for Decision-makers*.



RIZAL G. CORALES

Birthplace: San Andres, Sanchez Mira, Cagayan

Academic Profile:

- MS in Agriculture, major in BioProduction (Ryukyu University, Japan)
- MS in Crop Protection, major in Biocontrol (Central Luzon State University)
- BS in Agriculture, major in Crop Protection (Mariano Marcos State University, Batac City, Ilocos Norte)

Corales is the project leader of the Development of *Palayamanan Plus Models*, (*PalayPlus*) *Exploring market opportunities for rice-based products under the PalayPlus Program, and Accelerating the development, demonstration, and adoption of PalayPlus in lowland farms*. Being a Supervising SRS of the Agronomy, Soils, and Plant Physiology Division at PhilRice CES, he was recently designated as Officer-In-Charge of PhilRice Negros.



RONA T. DOLLENTAS

Birthplace: Irosin, Sorsogon

Academic Profile:

- Master in Development Management, DAP, 2017
- MS in Soil Science (UPLB, 2011)
- BS Agriculture, Major in Soil Science (UPLB, 2001)

For almost 14 years, Dollentas has served Filipinos through the Institute by doing soil science research. She is a Senior SRS and finished DAP's Public Management Development Program (PMDP) middle managers' class. Recently, she was designated as Business Development Coordinator of PhilRice Bicol.

DINAIRE

of PhilRice R&D brains

These have resulted in recognitions inside and outside PhilRice, as well as in international engagements for Barroga, who also led the multi-million-peso project Improving Technology Promotion and Delivery through Capability Enhancement of Next-Gen Rice Extension Professionals and Other Intermediaries (IPaD) that helped reinvigorate the agriculture extension system in the country.

As Chief SRS in the DevCom Division, Barroga leads its research component, the communication activities under the Golden Rice Project, and the KSL about solutions to operational challenges at PhilRice.

His research interest is attached to diversified and intensified farming systems, farm biomass resource recovery systems, microbial technology, and climate change. He received in September 2017 the Civil Service Commission Pagasa Award, one of the highest recognitions for government employees.

Upon her transfer to Bicol in 2012, her work focused on extension and development. She is also the focal person for the implementation and coordination of the station's R4D projects and initiatives.

Some of the projects she used to handle include PalaYamaNayon, One-Stop Information Shop, and KSL activities under Project IPaD.

GODSPEED

We recognize our January 2018 retirees' dedication and commitment in serving Filipino farmers through the Institute.



RUBEN B. MIRANDA, 62

Position: Chief SRS
Division: CES/ TMSD
Years in Service : 35 years



EVANGELINE B. SIBAYAN, 61

Position: Supervising SRS
Division: CES/ REMD
Years in Service : 37 years

Miranda has led the Heirloom Rice project, Upland Rice Development Program, and Location-Specific Technology Development Program. In 2009, he was designated as the first Deputy Executive Director for Development and PhilRice OIC from March-July 2011. He also headed TMSD. Among his fields of expertise include rice integrated management, rural development, and extension.



EDEN D. GAGELONIA, 60

Position: Supervising SRS
Division: CES/ REMD
Years in Service : 36 years



NANCY R. GAWAT, 64

Position: SRS II
Station: PhilRice Isabela
Years in Service : 26 years

Among the technologies that she helped develop include the multi-purpose seeder and 8-row riding-type precision seeder. In 2015, she was recognized by the Philippine Society of Agricultural Engineers as Outstanding Agri-Engineer.

She also served as head of REMD and led the Farming without Fossil Energy Program.

Gawat received the DA Gawad Saka Regional Award as Most Outstanding Employee in 2001. She actively participated as a technical worker for several learning and development interventions and training programs. She also supervised various training programs to teach farmers on organic agriculture.

A person, seen from the side and back, is standing in a field and sowing rice seeds from a small container. The seeds are falling in a long, thin stream onto the dark, moist soil. The background shows a vast, rolling landscape under a clear blue sky.

Feeding a world population of
9.1 BILLION
people in 2050 would
require raising overall
food production by
some 70%.

- Food and Agriculture Organization

PhilRice Central Experiment Station; Maligaya, Science City of Muñoz, 3119 Nueva Ecija;
Tel: (44) 456-0277 • Direct line/Telefax: (44) 456-0112

BRANCH STATIONS:

PhilRice Agusan, Basilisa, RTRomualdez, 8611 Agusan del Norte • Telefax: (85) 343-0768 • Tel: 343-0534; 343-0778 • Email: agusan.station@philrice.gov.ph
PhilRice Batac, MMSU Campus, Batac City, 2906 Ilocos Norte • Telefax: (77) 772-0654; 670-1867 • Tel: 677-1508 • Email: batac.station@philrice.gov.ph
PhilRice Bicol, Batang, Ligao City, 4504 Albay • Tel: (52) 284-4860; -4859 • Mobile: 0918-946-7439 • Email: bicol.station@philrice.gov.ph
PhilRice Isabela, Malasin, San Mateo, 3318 Isabela • Mobile: 0908-895-7796; 0915-765-2105 • Email: isabela.station@philrice.gov.ph
PhilRice Los Baños, UPLB Campus, Los Baños, 4030 Laguna • Tel: (49) 536-8620; 501-1917 • Mobile: 0920-911-1420 • Email: losbanos@philrice.gov.ph
PhilRice Midsayap, Bual Norte, Midsayap, 9410 North Cotabato • Tel: (64) 229-8178; 229-7241 to 43 • Email: midsayap.station@philrice.gov.ph
PhilRice Negros, Cansilayan, Murcia, 6129 Negros Occidental • Mobile: 0932-850-1531; 0915-349-0142 • Email: negros.station@philrice.gov.ph
PhilRice Field Office, CMU Campus, Maramag, 8714 Bukidnon • Mobile: 0916-367-6086; 0909-822-9813
Liaison Office, 3rd Floor, ATI Bldg, Elliptical Road, Diliman, Quezon City • Tel: (02) 920-5129

SATELLITE STATIONS:

Mindoro Satellite Station, Alacaak, Sta. Cruz, 5105 Occidental Mindoro • Mobile: 0908-104-0855; 0948-655-7778
Samar Satellite Station, UEP Campus, Catarman, 6400 Northern Samar • Mobile: 0948-800-5284; 0909-370-1332



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(0920) 911-1398



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prri.mail@philrice.gov.ph