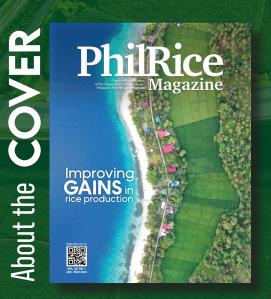
Aquarterly publication of the Department of Agriculture-Philippine Rice Research Institute

# Improving GAINS in rice production





PhilRice extends its services to remote islands, including one in Southern Leyte, transforming it from a low-yielding area into a productive rice field. The Institute boosts agricultural productivity by introducing superior crop varieties, adaptive farming technologies, and improved crop management strategies. These advancements focus on increasing farmers' yields, enhancing rice crop quality, and rehabilitating degraded fields, while also strengthening resilience against climate challenges. Through research, capacity building, and agribusiness support, PhilRice empowers farmers to sustain their progress and expand their opportunities.

#### Editor-in-chief: Hazel V. Antonio, PhD

Associate Editors: Charisma Love Gado-Gonzales • Hanah Hazel Mavi B. Manalo

Managing Editors: Christine Mae A. Nicolas • Rocel Dyan C. Silva Writers: Gerald Paul G. Aquino • Mhilton Arvy R. Bacarisa • Gio Anton T. Barroga • Aeron E. Calang • Christian Paul A. De Leon • Mishelle C. Domingo • Francis Roi G. Fernando • Precious Mae C. Gabato • Chennille K. Galvan • Marianne B. Loreto • Jannelle O. Manalili • HHMBManalo • Ben Raye B. Marco • Joshua P. Mendoza • Benson Z. Munar • CMANicolas • Mary Grace M. Nidoy • Minard F. Pagaduan • Michael L. Satuito • RDCSilva • Rolen G. Tabuada • Mike Daeniel R. Talplacido

Photographers: Amabel H. Achuela • Yobhel Louisse P. Beltran • Shannel M. Cabansag • Mark Phillip B. Castillo • Carlo G. Dacumos • Rhona Jane B. Fabros • FRGFernando • Cynthia May O. Lapat • Rhea Grace Y. Malapascua • JOManalili • BRBMarco • JPMendoza • Jaime F. Miguel III • Deo Bonifacio E. Pestio • RDCSilva • RGTabuada • Florencio Jr Diago Taer

Design and Layout: SJNRuiz • YLPBeltran Cover Artist: JFMiguel

Circulation Support: Derwin J. Villena Editorial Advisers: John C. De Leon, PhD • Karen Eloisa T.

Barroga, PhD • Eduardo Jimmy P. Quilang, PhD

The editorial team encourages readers to photocopy and circulate articles in this magazine with proper acknowledgment. Everyone is also invited to contribute articles (600-800 words plus at least four photos/illustrations with credits) and suggest topics, or refer individuals and organizations engaged in rice whose stories are worth featuring. Please email philrice@philrice.gov.ph or mail to: THE EDITOR, PhilRice Magazine, Development Communication Division, PhilRice, Maligaya, Science City of Muñoz, 3119 Nueva Ecija.







# CONTENTS 04 NEWS

12

16

Joint research project to help cut methane emissions Yogurt made healthier RCEF to energize rice farming for six years more

# **06** WHAT'S NEW IN RICE RESEARCH?

- 08 RICE ACROSS THE COUNTRY
  - PhilRice and the 4-decade narrative progress of rice production
  - Transformed landscapes through the power of seeds
- **20** Stress-free soil, happy farmers

24 Shielding rice crops, caring for farmers and environment

WHAT IS PHILRICE FOR YOU?

# **Executive Director's Note**

### ABUNDANT HARVESTS FOR A THRIVING FUTURE

The Philippines marked a historic milestone in 2023, achieving its highest *palay* production ever at 20.065 million tons. This record-breaking harvest reflects the dedication of Filipino farmers and the support they get from the government—not to mention the cooperation of the private sector.

For decades, PhilRice has driven innovations in rice farming. Through modern technologies, farmer training programs, and scaling innovations, it has helped transform unproductive lands into thriving sources of food and income. Key contributions include high-yielding rice varieties, improved crop management, and climate-resilient technologies, which have boosted yields nationwide.

In Apayao, over 60% of farmers have switched to hybrid rice, pulling up yields to 5.88t/ha and enabling investments in modern farming. In Albay, salt-tolerant varieties like Salinas 25 have more than doubled yields from 2 to 4.9t/ha.

Drought-tolerant rice has revitalized Bukidnon, where rainfed yields rose from 2 to 6t/ha. On the remote islands of Southern Leyte, the RCEF Seed Program has removed barriers to accessing quality seeds.

PhilRice's research stations have also achieved higher yields. The Central Experiment Station in Nueva Ecija recorded one of the most significant improvements, with average rice yields increasing from 3.28t/ha before PhilRice's establishment to 6.28t/ha in 2023. In Isabela, yields rose steadily from 3.83 to 5.04t/ha; and from 3.04 to 4.77t/ha in Los Baños.

Beyond increasing yields, PhilRice has championed initiatives like the Rice Business Innovations System to help farmers shift to agribusiness, unlocking value-adding opportunities and increasing incomes. It also promotes sustainable, climate-smart practices to ensure resilient rice production amid environmental changes.

As the country aims for rice self-sufficiency by 2028, PhilRice remains committed to equipping farmers with the tools and support their need for a brighter future.



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

# NEWS — Joint research project to help cut methane emissions

JANNELLE O. MANALILI

The Japan-based Sagri Co., Ltd., National Irrigation Administration-Upper Pampanga River Integrated Irrigation System (NIA-UPRIIS) Division 1, and PhilRice are jointly piloting a smart agriculture initiative aimed at reducing methane emissions in rice farming while providing carbon credit opportunities for farmers.

Methane is a greenhouse gas (GHG) that intensifies the greenhouse effect, trapping heat and raising Earth's temperatures.

The research project is utilizing Japan's satellite-based big data, artificial intelligence, and machine learning technology to monitor methane reduction through the Alternate Wetting and Drying (AWD) irrigation method.



PhilRice, NIA-Upper Pampanga River Integrated Irrigation System Division 1, and Sagri Co., Ltd., sign a Memorandum of Agreement on Jan. 21.

It is comparing AWD with conventional continuous flooding in Burgos, Sto. Domingo, Nueva Ecija this dry season. AWD is an irrigation technique that allows rice fields to intermittently dry before re-flooding, significantly reducing water use by up to 35% while maintaining yield.

This method is particularly valuable in regions facing water shortages, offering farmers a sustainable alternative to conventional flooding without compromising harvests.

"This project brings cutting-edge Japanese agri-tech to the Philippine rice sector, allowing us to optimize water management, reduce GHG emissions, and generate economic benefits through carbon credits," said PhilRice's Project Lead, Dr. Kristine S. Pascual.

She further said that the research will use on-the-ground and remote sensing approaches to validate AWD's effectiveness in reducing methane emissions.

"By integrating Sagri's satellitebased water level detection and carbon credit monitoring system, the research project aims to come up with a robust methodology as a way forward to the Joint Credit Mechanism setup, a program that promotes low-carbon technologies in partner countries including the Philippines," she explained.



Within 2020-2025, the RCEF Seed Program through PhilRice has distributed over 19.92 million bags of certified seeds to 2.02 million farmers.

# Yogurt made healthier

FRANCIS ROI G. FERNANDO

Filipinos looking for healthier food options will soon enjoy a new take on yogurt, as our food technologists have enriched it with nutrient-rich pigmented rice bran to enhance its health benefits.

Dr. Henry M. Corpuz and his team said that the improved yogurt incorporates stabilized rice bran the outer layer of soft-milled red and black rice known for its high dietary fiber, vitamins, minerals, and phytochemicals. These nutrients offer various health benefits, including antioxidant activity and anti-inflammatory, anti-cancer, antiobesity, and anti-diabetic properties, making the yogurt an even healthier alternative to conventional dairybased probiotics.

"Yogurt is already a good source of vitamins, protein, and beneficial microorganisms; we're making it even



The improved yogurt incorporates stabilized rice bran of red and black rice and uses buffalo milk.

better by using buffalo milk in partnership with the DA-Philippine Carabao Center," Corpuz said.

Initial studies indicate that co-fermenting yogurt with stabilized rice bran significantly increases antioxidant activity. The dietary fiber in rice bran also promotes digestive health, helps manage blood sugar and cholesterol levels, and supports a healthy gut microbiome.

Functional food products made from brown rice, low-glycemic index rice, and germinated brown rice have also been developed. To address post-harvest losses due to oversupply, rice-based ready-to-eat food products enriched with high-value crops are being concocted. These are acceptable food options that can be distributed during natural calamities like typhoons.

# RCEF to energize rice farming for six years more

GERALD PAUL G. AQUINO and YOBHEL LOUISSE P. BELTRAN

The government has extended the Rice Competitiveness Enhancement Fund (RCEF) up to 2031 under the amended Rice Tariffication Law (Republic Act No. 12078), ensuring that its benefits continue to reach farmers nationwide.

This decision follows six years since 2019 of RCEF providing rice farmers access to high-quality seeds, modern machinery, affordable credit, and appropriate training programs.

Based on the latest figures from the Rice Seed Monitoring System, the RCEF Seed Program through PhilRice has reached 1,411 municipalities across 77 provinces covering 1.2 million hectares in the wet season and 780,000 hectares in the dry season within 2020-2025. The RCEF Extension Program, where PhilRice collaborates with Agricultural Training Institute, Technical Education and Skills Development Authority, and Philippine Center for Postharvest Development and Mechanization, has trained 300,000 farmers, extension workers, and specialists in modern farming techniques under the RCEF Extension Program. More than 14M information, educational, and communication materials have also been distributed.

The budget of RCEF 2.0 has tripled to P30 billion, to reach more farmers and enable additional programs like soil health improvement, pest management, and solar-powered irrigation to strengthen the Philippine rice industry's competitiveness. /



Seedling stage: The shoots of plant samples were stained to reveal the amount of starch accumulated in the stem.



**Higher growth stage:** Rice seedling's roots were cleaned and scanned for analysis of growth.

# What's new in RICE RESEARCH?

### **MUTANT RICE** with an efficient root system developed

PRECIOUS MAE C. GABATO

A new mutant strain of rice, 11NB10, with enhanced root system was developed.

Studies have shown that enhanced root systems can improve a plant's resilience to environmental stresses, such as drought and nutrient deficiency. By developing root systems that are more efficient in extracting resources from the soil, plants can better withstand adverse conditions and still produce high yields.

The 11NB10 has significant potential for improving rice yields, particularly in phosphorus-deficient soils. Additionally, it efficiently allocates carbohydrates, focusing on root development without compromising above-ground growth.

"The 11NB10 mutant's efficient root system and carbohydrate allocation represent a significant step in our understanding of rice resilience," Dr. Nonawin L. Agustin, project lead, said.

"By identifying genes responsible for this trait of 11NB10 and incorporating them into breeding activities, researchers can develop rice varieties with superior root architecture, leading to increased nutrient uptake, better drought tolerance, and overall crop resilience," she emphasized.

This research is a collaborative effort among DA-PhilRice, DA-Crop Biotechnology Center, Central Luzon State University, and Nagoya University in Japan. /

### **FLORAL DIP-BASED GENE EDITING** boosts tungro resistance in Indica Rice

### BENSON Z. MUNAR

Researchers from the DA-Crop Biotechnology Center explored the use of floral dip, a non-tissue culture-based genetic transformation technique, to enhance the resistance of NSIC Rc 402, an Indica rice variety, to tungro—a disease that causes up to 30% crop loss every year in the Philippines, equal to 456,000 tons of rough rice.

Dr. Reynante L. Ordonio, the research team lead, explained that tissue culture for genetic transformation is very challenging to use for Indica rice varieties owing to their limited responsiveness to tissue culture manipulations.

With floral dip, rice flowers at the pre-anthesis stage were dipped in a solution of a soil-borne pathogen, *Agrobacterium tumefaciens*, carrying a construct expressing CRISPR-Cas9 (a gene editing tool) specifically designed to target a susceptibility gene (eIF4g) to the rice tungro spherical virus (RTSV), along with hygromycin (antibiotic) resistance gene that serve as a selectable marker for candidate plant samples.

In their initial experiment, out of 512 harvested T1 (first generation transgenic) seeds from floral dipped NSIC Rc 402, more than 400 grew into plants that survived antibiotic tests, and seven stayed tungro-resistant for three consecutive generations, unlike the wild-type NSIC Rc 402 (susceptible) variety.

These findings imply that like NSIC Rc 402, a wider range of Indica rice varieties could be made resistant to tungro/RTSV using floral dip-based gene editing. Rice breeding programs can leverage this technique to rapidly develop improved Indica rice varieties, targeting genes for yield, grain quality, and abiotic stress resistance, which are crucial for food security and sustainable agriculture.

"With funding support from DA-Biotechnology Program Office, we could pave the way for more diseaseresistant Indica varieties. We are now improving and optimizing the protocol to suit our local varieties and other crops as well," Ordonio said.



Dipping exposed flowers in Agrobacterium suspension.



Compared with the wildtype NSIC Rc 402, the NSIC Rc 402 derived T1 seeds turn out to be resistant to the hygromycin, an antibiotic.

Wild-type NSIC Rc 402 treated with hygromycin (50mg/L).



# DYAN C. SILVA BY: ROCEL COMPILED

### PhilRice BICOL

## Farmer-trainers' practices on *PalayCheck* emulated

MICHAEL L. SATUITO

To further support farmers in Maasin City, Southern Leyte, the graduates of Rice Specialists' Training Course (RSTC) Batch 16 are extending their efforts to guide the rice farming community in their area.

They reechoed the extensive training in land preparation, pest management, and the use of different technologies that they learned from the RSTC under the Rice Competitiveness Enhancement Fund-Rice Extension Services Program.

"Since applying the proper techniques I learned from the *PalayCheck* System training, my rice production has become much more productive. My harvest increased from the usual 5t per hectare to as much as 8 tons. Now, other farmers in our *barangay* have also started adopting the improved practices and technologies I use—from land preparation to harvesting," Bonifacio A. Pusa, 64 attested.

*PalayCheck* System is a holistic, integrated method of rice crop management. It is a learning platform as well to develop location-specific rice production.

The Key Checks, which present technologies and recommended practices, not only guide farmers on what to do but also allow them to learn from their experiences.

"By continually improving their practices, farmers can see real improvements in their crop management, leading to better harvests and more successful farming," Marlyn C. Entuna, 29, soil expert and farm school trainer, expressed.



Weekly monitoring of plant height during AESA.

### PhilRice AGUSAN | BATAC LOS BAÑOS | MIDSAYAP

## Modern farm machines cut cost and time

AERON E. CALANG, MARIANNE B. LORETO, ROLEN G. TABUADA, and MHILTON ARVY R. BACARISA

RCEF's *PalaySikatan* 2.0 is introducing walkbehind transplanters and drone seeders to help farmers cut farm expenses, efficiently spread fertilizers and seeds, and transplant without hassle.

In Prosperidad, Agusan del Sur, RCEF seed recipients reduced manual broadcasting costs by up to P5,300 using a drone seeder, which plants a hectare in just 15 minutes for only P1,200. In Maguindanao del Norte, a farmer from Dados Irrigators Association cut seeding rates from 80-100kg/ha to 40kg/ha cutting seed costs by at least half. The same machine was used for pesticide and fertilizer application.



An agri drone seeds a hectare in maximum of 20 minutes.

### RICE ACROSS the country



Walk-behind transplanter speeds up rice planting to 1–1.5ha/day.

Meanwhile, 70 members of the Jasaan-Oogong Farmers Association demonstrated a faster, more efficient method of transplanting rice using a walk-behind transplanter during the 2025 *PalaySikatan* 2.0 ceremonial crop establishment held in Sta. Cruz, Laguna. Designed to be lightweight and suitable for women, the machine requires only four to five laborers to transplant a hectare in 12 hours—reducing manual labor costs by up to P7,000.

To further boost farmers' skills in farm mechanization, PhilRice Batac conducted hands-on training on engine maintenance, troubleshooting, and seedling preparation for mechanical transplanting in Burgos, Ilocos Norte. As part of the program, participants learned the modified *Dapog* technique, a cost-effective alternative to seedling trays that uses plastic sheets, banana leaves, and carbonized rice hull. With the help of a fabricated steel frame molder, farmers can now produce healthy, uniform seedlings ideal for walk-behind mechanical transplanters—paving the way for faster, more efficient rice farming in the region.seedlings for walk-behind transplanting.



Mestiso 20 has a yield of 6.4t to 11.7t/ha.

#### PhilRice ISABELA

### Rc 222, Rc 506, M20 are farmers' choices

### CHRISTIAN PAUL A. DE LEON

Farmers who participated in the 2025 Dry Season *Lakbay Palay* hosted by PhilRice Isabela continue to favor inbred and hybrid rice varieties with strong performance and adaptability, a varietal preference survey conducted during the event showed.

Out of 447 surveyed farmers, the majority selected NSIC Rc 222 as their preferred inbred rice variety while for hybrid, Mestiso 20 remained the top choice.

During the event, PhilRice Isabela introduced 14 rice varieties—10 inbred and four hybrid, which were developed to thrive in varying agro-ecological conditions. These included irrigated varieties such as NSIC Rc 222, Rc 506, Rc 622, Rc 624, Rc 626, Rc 628, and Rc 630; salt-tolerant Rc 604 and Rc 534; and rainfed variety Rc 596. Highlighted hybrids included Mestiso 20, Mestiso 99, Mestiso 132, and Longping 908.

Among inbred, Rc 222 ranked first with 73% of farmers citing its high tillering ability, long panicles, and strong resistance to pests and diseases. Rc 506 followed as the second most preferred.

The demonstration is part of the Rice Development Initiatives for Cagayan Valley and the Cordillera Administrative Region, a program led by PhilRice Isabela to inform and guide farmers in selecting rice varieties with higher yield potential and greater resilience.

In a separate *Lakbay Palay* event held in Marag Valley, Luna, Apayao, more than 70 farmers attended field activities following a four-month training in hybrid rice cultivation. Of the participants, 54% planted Mestiso 20 seeds provided by the Bureau of Plant Industry.

Supported by PhilRice and local government units, the initiative aims to increase productivity, improve livelihoods, and position Marag Valley as a hub of agricultural innovation through the adoption of modern technologies.

### RICE ACROSS the country

### PhilRice NEGROS

## Iloilo farmers to benefit from Climate-smart mapping initiative

### BEN RAYE B. MARCO and CHENNILLE K. GALVAN

To help lloilo rice farmers adapt to extreme weather conditions, PhilRice Negros, in partnership with the Office of the Provincial Agriculturist and DA-RFO 6, conducted a two-day workshop on climate risk-mapping and adaptation strategies.

Under the Climate-Smart Mapping and Adaptation Planning Project, farmers learned to use mobile data collection apps, GIS, and drone technology for real-time climate risk assessment to help them prepare for typhoons, droughts, floods, saltwater intrusions, and pest outbreaks. Representatives from 35 municipalities and key agencies collaborated to identify vulnerable areas and develop targeted adaptation plans.

These efforts will equip farmers with datadriven tools to mitigate climate threats, improve resilience, and secure their rice production. Policies to mitigate climate risks in line with the local strategies of government offices are being formulated.



Demonstrating tools and techniques for climate risk mapping.

# Knowledge PRODUCTS

COMPILED BY: CHRISTINE MAE A. NICOLAS

### **MAGAZINES | MAGASIN**

- Harnessing innovation forces for better rice communities
- Shielding the heartland with Agri 4.0 technologies
- To more competitive, happy rice farming communities
- Better together •
- The Best para sa magsasaka
- Byaheng Palay, tara!

### **GUIDES**

- PalayCheck App handout
- The Low-Cost Bamboo-Bin dryer
- Simplified Keys to Soil Series

### **PUBLICATIONS** (for researchers and policymakers)

- Rice-based Biosystems Journal •
- Rice Science for Decision-Makers: Diversification Mitigates Climate Change Impacts

### VIDEOS

- 37 TeknoShorts
- 4 Rice S&T videos
- 11 Advocacy videos

### **HANDOUTS and FLYERS**

- Pamamahala ng Daga
- Pamamahala ng Rice Grain Bug
- Pamamahala ng Bacterial Leaf Blight
- Pamamahala ng Stemborer
- Pamamahala ng Rice Bug
- Pamamahala ng Rice Black Bug



# PhilRice and the decade narrative progress of rice production

FRANCIS ROI G. FERNANDO and MARY GRACE M. NIDOY

# The birth of an institution 1985-1995

The year was 1983, and the Philippines had just barely come out of the Green Revolution. Yet progress from the 70s was stunted by low global commodity prices, straining efforts to supply rice to around 52 million Filipinos at that time.

Two years later in 1985, Philippine Rice Research Institute (PhilRice) was established under the then Ministry of Agriculture through Executive Order 1061 to develop high-yielding and cost-reducing technologies for farmers. After settling in Nueva Ecija in July 1989, the Institute's "cradle" at the UP Los Baños (UPLB) campus was converted into a branch station—the PhilRice Los Baños—in March 1990. Its first branch station in Mindanao was established in December 1987 in Bual Norte, Midsayap, North Cotabato. In August 1989, PhilRice Agusan was established; Isabela in 1991.

Partnering with State Universities and Colleges (SUCs), the International Rice Research Institute (IRRI), and Regional Integrated Agricultural Research Centers (RIARCs), PhilRice trained farmer-leaders in varietal selection, the Sorjan Cropping System, and modern seed multiplication. As a result, rice production increased from 163,000t in 1987 to 185,000t in 1988.

The Rice Black Bug, once an alien species in the country, devastated

farmlands in Palawan, prompting the start of the Integrated Pest Management (IPM) program. This initiative trained 159 farmers and technicians, provided seeds and production inputs, and cultivated 2,500m<sup>2</sup> of land with recommended varieties.

Releasing new pest-resistant varieties, along with the government's Rice Productivity Enhancement Program (RPEP) and Rice Action Program (RAP) that focused on price stabilization and improved irrigation in 1990 enabled the Philippines to achieve rice selfsufficiency and even export limited rice in 1991.



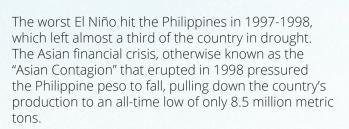
PhilRice, Nueva Ecija – captured in 1991.

The decade at a glance

**Production:** Rice production inched up from 8.8 million metric tons in 1985 to 10.5 million metric tons in 1995.

The National Rice Seed Production Network (SeedNet) was established to facilitate seed distribution of new varieties for farmers.

The Philippines' adoption rate of modern rice varieties in 1985-98 was at 89%.



Nevertheless, *palay* prices averaged over P10/kg from 1991 to 2002, the highest *palay* prices among Southeast Asian countries. This was 66% higher than Thailand.

Meanwhile, PhilRice also branched out to Batac City, llocos Norte in January 1999, focused on improving rice-based cropping systems in semi-arid areas and on-farm water conservation and storage techniques.

On March 4, 2002, PhilRice became the main implementing agency of the Hybrid Rice Commercialization Program (HRCP) in 2002, commercializing PSB Rc 72H or Mestizo 1, and later NSIC Rc 204H or Mestiso 20, covering 300,000ha by 2004 to further improve rice self-sufficiency while

# Strengthening the foundations 1996-2005

addressing the growing population, higher demands, and to keep up with neighboring Southeast Asian countries.

The "Strengthening the Development and Use of Rice Integrated Crop Management (RICM) for Food Security and Poverty Alleviation" project began in February 2004 with PhilRice and FAO, leading to the establishment of the *PalayCheck* System.

By 2005, *PalayCheck* was pilot-tested by 790 farmers across 15 provinces, which helped them gain an average yield of 5,924kg/ha, with a gross margin of P39,939/ha.

### The decade at a glance

**Production:** 14.6 million metric tons of paddy rice was produced in 2005, the highest output since 1985.

79 rice varieties were developed for different ecosystems in the country.



The PalayCheck System was first pilot-tested in 2005 improving farming practices and yields of farmers up to this day.



Palayamanan: a model for diversified and sustainable rice farming.

# Spreading its wings 2006-2016

By the end of 2002, PhilRice, along with Japanese engineers, developed the reaper, a harvesting machine that reduces time and labor costs.

PhilRice also developed four additional farm machines in 2006—the three-disc plow for hand tractors, two-wheeled riding tractor, mechanical dikemaker, and the engine-driven transplanter.

To cater to the specific needs of Visayan farmers, another branch was established in Murcia, Negros Occidental in 2003. The branch acts as a distribution hub for high-quality seeds of high-yielding and disease-resistant varieties suited for Western and Central Visayas, including the young Negros Island Region. In 2007, NSIC Rc 160 or the Tubigan 14 was approved.

In 2008, the Institute started its Location-Specific Technology Development Program to provide new technologies tailored to a wide range of ecosystems among different farm locations in the country. It covered 62 provinces and trained more than 10,000 farmers on PhilRice-developed technologies.

PhilRice's rice-based farming system, called *Palayamanan*, was developed to diversify rice farms by including crops such as vegetables and livestock to increase farmers' income. By 2010, PhilRice Bicol began farm operations in Batang, Ligao City, Albay. It is now the Institute's center for rice research and development for climate change adaptation and disaster risk reduction and mitigation.

The National Year of Rice was declared in 2013, with a focus on involving consumers in the effort to achieve rice self-sufficient again by also managing rice consumption. This program branched out as the Be RICEponsible campaign in 2014.

It was during the decade that PhilRice introduced its FutureRice Farm—a 5ha demonstration farm for modern and nature-based rice-farming technologies.

### The decade at a glance

**Production:** Total harvest reached 19 million metric tons in 2014 achieving another record.

Rice importation contracted dramatically from over 2 million metric tons in 2010 to only 0.5 million metric tons in 2012.

Average seeding rate was 94kg/ha in 2017, 11% lower than in 2006.

# Going above and beyond 2017-present

The year 2017 marked the launch of the Rice Business Innovations System (RiceBIS) program, which was created to help farmers increase their income through improved business and marketing skills.

Two years later, RA 11203 or the Rice Tariffication Law was enacted, allocating P10 billion per year to the Rice Competitiveness Enhancement Fund (RCEF), with the following components: mechanization, credit, seed, and extension programs.

PhilRice led the first six years of the RCEF Seed Program, providing high-quality inbred certified seeds to 77 provinces. Under RCEF Extension, PhilRice trained more than 10,000 farmers, extension workers, and rice specialists on the *PalayCheck* System, along with other advanced courses on rice farming. It produced more than 10 million knowledge products, which were printed and distributed to farmers and other stakeholders.

The COVID-19 pandemic paralyzed the world in 2020, while another El Niño hit the country in 2022-2023. Despite these challenges, PhilRice still pushed its operations, especially in implementing the RCEF Seed and Extension programs. In 2021, the Philippines reached 19.9 million tons in total production despite the pandemic. From 2017 to 2022, PhilRice's strategic plan guided efforts to increase productivity, enhance postharvest systems, promote value-added rice products, advance rice science, and strengthen partnerships to make the rice industry more competitive and resilient.

In 2023, the Philippines reached 20.06M metric tons in total production despite the pandemic. In the same year, PhilRice launched three flagship programs: Scaling Modern and Adaptive Rice Technologies for prosperous farming communities (SMART Farm), the Rice Seed System, and Rice Business Innovations System (RiceBIS) 2.0.

In 2025, PhilRice launched the Healthier Rice Program to help improve nutrition security in the country through healthier rice options such as unpolished rice, low-GI rice, and high-zinc rice.

RCEF has been extended until 2031, ensuring continued support for rice farmers. Complementing this, PhilRice's Strategic Plan 2023–2028 takes a people-centered approach aimed at improving farmer well-being through science-based, inclusive, and climate-smart technologies.

### The decade at a glance

**Production:** The country's highest rice production in 40 years, recorded 20.065 million metric tons in 2023.

Distributed were 19.86 million sacks of certified seeds to over 2 million farmer-beneficiaries over the first 6 years of RCEF. Based on the 2017-2022 PhilRice data, 91% of farmers used inbred certified seeds at least once during the last five years.

The PhilRice RCEF-Extension Program had trained 4,633 farmers; 634 graduates from the Rice Specialists Training Course; and 3,339 graduates from the Training of Trainers course. More than 10 million information, education, and communication materials were also distributed to farmers and other stakeholders.

RCEF was extended through RA 12078 signed in December 2024.

PhilRice had earlier established its field office in Bukidnon, and satellite stations in Samar, Mindoro, and Zamboanga to cater to the needs of specific provinces.

## **RICE YIELDS PER REGION**

Station/ Year Est.	Covered Area	Ave. Yield (one year prior to establishment) Mt/ha	Ave. Yield (2024) Mt/ha
<b>Los Baños</b> Est. 1987	R4-A	2.59	3.48
	R4-B	2.53	3.78
<b>Midsayap</b> Est. 1987	R9	2.35	4.13
	R12	3.04	3.65
	BARMM	2.24	3.51
<b>Agusan</b> Est. 1989	R10	3.18	4.60
	R11	3.64	4.52
	R13	2.63	3.48
<b>CES</b> Est. 1990	R3	2.68	5.17
<b>Isabela</b> Est. 1991	R2	3.35	4.67
	CAR	2.56	3.20
<b>Batac</b> Est. 1999	R1	2.83	4.81
Negros Est. 2003	R6	2.96	3.31
	R7	2.26	3.13
Bicol	R5	3.33	3.60
Est. 2010	R8	3.49	3.61

Source of data on rice production: Philippine Statistics Authority

# Transformed **landscapes** through the **power of seeds**

MINARD F. PAGADUAN and GERALD PAUL G. AQUINO

n 2023, the Philippines recorded its highest rice production, having produced 20.065 million tons—the most notable in the past 40 years. With seeds as the foundation of the interventions and technologies, PhilRice aims to sustain and improve these gains in rice production through its 121 rice varieties developed for diverse conditions. These include 58 irrigated lowland inbreds, 13 hybrids, 19 rainfed lowland dry-seeded, 2 rainfed upland, 4 cool-elevated, 21 salt-tolerant, 2 submergence-tolerant, and 2 heat-tolerant rice varieties. Under its 2023-2028 Strategic Plan, PhilRice is setting the stage for an even brighter future, with an ambition to boost rice yields by 4-5% annually.

From cracked soil to thriving harvests, Valencia's fields now flourish with drought-tolerant rice varieties.

### No more barren fields in Valencia City, Bukidnon

While relishing the picturesque view in Valencia City, one can see the towering mountains standing like mute guardians seemingly hugging the vast rice fields below—offering comfort to those who call this land home. Farmers here could not help but reminisce; just a few years ago, these fields were almost barren. Back in 2018, a dry spell hit hard. About 80% of the 212-ha cultivated land of Lumbo Farmers Association (LFA) were dependent on the sky's mercy, leaving farmers an average yield of 4t/ha per cropping season. During the dry season of that year, the rain never came. The sun blazed, the fields cracked, resulting in more than 50% of the rainfed areas becoming dehydrated, shooting down the average yield to 2t/ha.

Through the RCEF Seed Program in 2019 onwards, PhilRice Agusan introduced new inbred certified rice varieties such as NSIC Rc 216, Rc 272, and Rc 288 to tolerate drought. Hence, the yields climbed to an average of 6t/ha, something they had never reached before in rainfed rice areas. The Rc 216 quickly stood out as a clear favorite. Although challenged by dry spell in 2023, its impact was 20% lower than in 2018, allowing an average yield of 4t/ha.

"Since we tried NSIC Rc 216, fewer rice fields were affected by dry spells. Our yields increased," said Ricardo E. Salmoy, LFA president.

### A tale of bounty in coastal rice areas of Tiwi, Albay

In the coastal town of Tiwi, farming has always been a battle against saltwater intrusion from the Pacific Ocean.

For decades, traditional varieties used by the farmers of Baybay Balinad Rice Farmers Association barely produced 2t/ha. Change came when PhilRice introduced salt-tolerant varieties like NSIC Rc 290, Rc 292, Rc 462, and Rc 470 (Salinas 25), boosting their farm yields to 4.9t/ha.

Farmers like Gina C. Glimacosa call Salinas 25 a miracle, saying, "After 30 years of farming, this is the first time I have reached 4.9t/ha. It also reduced my production costs by P7/kg and boosted my income by over 29%."

As the sun sets over Tiwi, one can almost feel the quiet satisfaction of its farmers, known for their strength and unwavering resilience. In Luna, Apayao, misty fields cradled by mountains now thrive with hybrids—proof that quiet valleys can lead bold farming changes.

In Tiwi, Albay, where sea meets field, farmers turned struggle into strength, and now, green stretches wide with hope.



### Hybrids in the valley of Luna, Apayao

Formerly known as Macatel, Luna, a landlocked municipality, rests at the foot of mountains. Once planted exclusively with inbred rice, the rice fields in Luna had a dramatic shift when its farmers embraced hybrid rice varieties. Today, over 60% of farmers have adopted hybrids, significantly boosting productivity.

Ryan H. Miguel, a farmer with over 15 years of experience, who used to harvest 3.58t/ha from inbred varieties. After switching to Mestiso 20, a public hybrid, his yield leaped to 4.75t/ha. Following his participation in PhilRice Isabela's PalayCheck System seminar, his yield further improved to 5.88t/ha. The reduced production costs also allowed him to invest in farm machinery, further enhancing his farm's efficiency.

### Quality seeds accessible in San Pedro Island and San Francisco, Camotes

Across the scattered islands of the Philippines, where the sea demarcates the life of one island from another, humanity moves to the rhythm of the tides. In the midst of the pristine waters of Southern Leyte, San Pedro Island in Hinunangan, and San Francisco in the Camotes Islands, Cebu, are inhabitants who plant and eat rice as a staple, too.

Farmers once struggled to journey to lands where they could access quality seeds. But change has arrived with one humongous wave. The RCEF Seed Program delivered high-quality inbred seeds to over 20 remote islands across the country. This effort has transformed the lives of more than 20,000 farmers, ensuring that even in the most secluded corners, rice fields thrive, harvests grow richer, and food security becomes achievable.

For years, local farmers boated for hours to the mainland or neighboring islands at huge expense to access inbred rice seeds. Through the RCEF Seed Program, farmers now receive inbred certified seeds such as NSIC Rc 508, Rc 216, Rc 222, Rc 442, Rc 18, and Rc 27. They have improved yields—from 3t/ha to 3.9t/ha in San Pedro and from 2.1t/ha to 3.3t/ha in San Francisco.

"We used to source our seeds from the mainland, purchasing inbred varieties harvested by farmers we know. This process incurred additional transportation costs. At times, we opted to exchange seeds with fellow farmers to avoid expenses. We are grateful that, despite being on an island, we now receive free seeds through the RCEF Seed Program. This initiative significantly reduces our costs, not only for seed procurement but also for transportation, which exceeds P1,000," said Iren M. Matilac, 43, a farmer for more than 20 years in San Pedro Island. This experience is also shared by farmers in San Francisco.

On San Pedro Island in Hinunangan, beauty meets quiet farming revolutions, with each grain showing progress taking root.

# **Stress-free Soil, HAPPY FARMERS**

JOSHUA P. MENDOZA and JANNELLE O. MANALILI

Farmers have long depended on commercial fertilizers for bountiful harvests, but their spiraling costs have made it difficult for them to achieve abundant yields.

For years, they have relied on a mix of trial and error, instincts, and inherited practices, all of which lacked a scientifically proven basis. This necessitated the development and introduction of technologies that address nutrient deficiencies and water scarcity, providing personalized, affordable solutions accessible to every farmer.



Once wary of change in farming, 66-year-old Rosario C. Clemente from Barangay Kumunal, Calapan City, Oriental Mindoro, found comfort in traditional practices and viewed new technologies as risky. That changed when PhilRice introduced her to innovative solutions.

In 2022, Clemente participated in the RCEF Extension Program's Rice Specialists' Training Course. She learned about the Alternate Wetting and Drying (AWD) technology, which helps reduce irrigation water consumption without diminishing rice yield. The technology employs an observation well to monitor groundwater levels.

"It's not just about water; it's about managing it properly. By reducing overflooding and regulating moisture, my crops are healthier and more pestresistant while I save on fuel and water," she shared.

Before adopting AWD, her yields barely reached 2.5t/ha due to unstable water management.

"Back then, we had no exact formula. Sometimes the field would dry up completely; other times it remained soaked. There was no set schedule," she shared.

Practicing AWD stabilized her yields, ranging from 6.5 to 7.5t/ha, occasionally peaking at 10.9t. She achieved these results using NSIC Rc 218, Rc 160, and Rc 508. What once appeared to be a risk is now a path forward, reminding her that growth comes from embracing change.

Alternate wetting and drying saves water, boosts rice growth, and improves harvesting efficiency.

## Savings from localized MOET recommendations

For years, Homer N. Herradura, 56, chair of the committee on agriculture in Victoria, Laguna, witnessed their town struggle with the high cost of branded fertilizers containing only nitrogen, which cost P1,700 per bag.

When the RCEF Minus-One-Element Technique recommendations were presented to them, they signed a resolution and gathered all their rice farmers in the municipal center. They encouraged the adoption of the location-specific results. The recommendations promote balanced fertilization, known as the right EAT (Element, Amount, and Timing) method.

Herradura was surprised to harvest 27.5t from his 5-ha rice field, saving a remarkable amount on fertilizers while enriching his yield.

> Minus-One-Element Technique ensures better crop yields by identifying soil nutrient deficiencies.

21

Leaf Color Chart (LCC) evaluates leaf color levels to guide nitrogen application for optimal plant health.



SE PA

### Walk the talk

Marivic N. Viray, 46, from Madalag, Aklan, admitted that she and her fellow farmers used to overfeed their rice crops with fertilizer, believing it would lead to a good harvest.

After learning how to use the Leaf Color Chart in an RCEF farmer field school, she accurately identified the best time to apply the right amount of nitrogen to her rice crop.

The yield from her 0.75-ha rice field increased by up to 10%, while her farming expenses were minimized by P6,000. Over time, these additional income helped her send her children to school, build a concrete house, buy a motorcycle, and support her family. Encouraging other farmers to adopt the technology became easier since she led by example.

Viray (middle) teaches her fellow farmers about the benefits of using modern farming practices and technologies learned from PhilRice.

### Growing more with less

Antonio H. Rubinos, 64, from Barangay Tinongco, Tantangan, South Cotabato, struggled with high fertilizer costs for years. Like many farmers in the area, he relied on traditional methods, excessively using urea until he realized it harmed his crops, making them vulnerable to pests and reducing yields.

"We used to fertilize twice—first at 20 days and again at 45 days. Urea was used initially, then 14-14-14 to strengthen the rice. But I learned it's not right because excess nitrogen attracts pests," he recalled.

In search of alternatives, Rubinos was introduced to *Abonong Swak* by a PhilRice-trained technician. Through proper application using Combo 1, he switched to smaller, timely doses every 10 days instead of large amounts in two splits.

Farming a direct-seeded, rainfed field under coconut trees, Rubinos adjusted his fertilization technique. At 10-12 days after sowing, he applied half a sack of 14-14-14 to boost root and stem strength. At 22–23 days, he added 25kg of urea for leaf development.

After adopting this method, his half-hectare farm now yields over 1.25t of NSIC Rc 222, up by 25 to 39% from 0.9-1t. His fertilizer expenses have dropped by almost 50%, from P5,000 to P2,400.

With DA providing two free sacks, he now only buys one sack of 0-0-60 potash (P1,700) and one sack of 21-0-0 (P700), cutting costs significantly.

"It's cheaper now, but my rice is still thriving. I don't spend much on fertilizer, and the rice continues to absorb nitrogen and phosphorus, so it stays healthy until harvest," he reported.

Rubinos now guides fellow farmers on *Abonong Swak* through farmer field schools and demo sites, helping them adopt wiser fertilization practices for higher yields at lower costs.



Abonong Swak helps farmers save P2,000-P4,000 per hectare with smart fertilizer recommendations.



Harnessing the power of drones for precise pesticide application.

# SHIELDING RICE CROPS, caring for farmers and environment

HANAH HAZEL MAVI B. MANALO and MIKE DAENIEL R. TALPLACIDO

**R**ice farmers often risk their health while protecting their crops to prevent yield losses. While synthetic pesticides are widely regarded as effective against pests, their prolonged exposure and improper use pose worrisome health hazards to farmers and the environment.

Studies indicate that farmers acquire acute and chronic health problems due to frequent pesticide exposure and improper handling. Collateral damage to the environment includes pollution of ground and surface water, increased pest resistance, and negative impacts on nontarget organisms.

In response, PhilRice developed safe and ecofriendly pest management technologies and practices, making them accessible to farmers through digital tools like mobile apps. These efforts aim to reduce reliance on synthetic pesticides.

Among these technologies are pest-resistant rice varieties (e.g., Matatag rice against green leafhoppers), diagnostic kits, and the *eDamuhan* application. Biocontrol agents like *Metarhizium anisopliae* were also developed to help contain rice black bugs (RBB). Best practices such as synchronous planting, conserving beneficial organisms, and using pesticides as a last resort provide peace of mind among environmentloving farmers.

Here are firsthand accounts from PhilRice workers and farmers who have either contributed to or benefited from these advancements.

# **BOO BOO RAT:** Info campaign



I led the Campaign in 2007 to tackle rat infestations in Zaragoza, Nueva Ecija. Pest infestations are a complex issue that cannot be addressed solely by technologies. Our multi-disciplinary, community-based approach involved scientists, farmers, and local stakeholders. The campaign's success was due to the community's active participation and strong support from the LGU and other entities like schools. Our role was to mobilize, empower, and provide technical backstopping to the community.

### Dr. Ronan G. Zagado, Former Chief SRS

Development Communication Division, PhilRice

I provided technical advice on ecologically based rodent management. By understanding rat biology and ecology, we devised effective strategies. I shared with them that rats can cause an average of 3-10% yield loss and as high as 40% if the rice crops are attacked at the reproductive stage. We promoted the community trap barrier system and synchronous planting to scatter rat populations and minimize yield losses.

Ulysses G. Duque, Senior SRS

Crop Protection Division, PhilRice (during the campaign)

As a technical expert in the information campaign on rat management, I conducted hands-on activities and lectures on integrated rodent management. We emphasized the right timing for rat-hunting, which was during the start of the pest's breeding season, proper burrow management, and safe bait-handling. This knowledge-based approach reduced rat damage and yield loss.

### Leonardo V. Marquez, Senior SRS

Crop Protection Division, PhilRice





**Plaridel F. Tagudin 64, farmer** Zaragoza, Nueva Ecija

Participating in the rat management campaign made a significant difference. Managing rats alone was difficult, but involving the community resulted in a 34% reduction in losses. Since then, rats haven't been a problem in our area.

Safe handling of rodent bait.

# eDamuhan APP

eDamuhan



I led the development (conceptualization to design) of the App, launched in 2018. It all started with observations that farmers carried a booklet to help them identify the weeds in their fields. So, we thought of making this process more convenient for them, using a mobile application. This was around the time that artificial intelligence was gaining popularity. We used photo recognition technology; farmers can take a photo of a weed, and the app identifies it and provides management options. The app also includes a weed species catalog and herbicide-use guidelines anchored in the *PalayCheck* System. Since its launch, it has gained almost 37,000 users.

**Nehemiah L. Caballong, ISA II** Information Systems Division, PhilRice



As the technical person behind the *eDamuhan* App, I developed its content and took most of the photos. The App helps farmers identify and manage weeds effectively, preventing significant yield losses. If weeds are left unmanaged, a farmer could lose 40% of his harvests in irrigated areas, 60% in directseeded areas, and 90% in the upland areas. We're currently enhancing its accuracy and real-time recommendations.

**Dindo King M. Donayre, Senior SRS/Scientist I** Crop Protection Division, PhilRice



Hanan K. Abedin 36, farmer Maguindanao del Sur

New to farming, I discovered the *eDamuhan* App on the Google Play Store. It helped me identify weeds and learn proper management practices. I also learned from the app how to properly prepare my land and manage water to help control weeds. I've been using this app for three years, and my harvest increased from 4t/ha to almost 7t/ha, while my production costs dropped by 40%.



I produce *Metarhizium anisopliae*, a fungal biocontrol agent. Collected from infected rice black bug (RBB), it's purified in the lab to obtain pure culture. Since RBB is one of the major rice pests in the Philippines, causing up to 35% yield loss when as many as 10 RBBs are found per hill, we promote the use of the agent against RBB in techno-demos. Studies assert that it leaves no toxic residues and doesn't harm beneficial organisms. Farmers can save as much as 50% on insecticide costs by using *Metarhizium*.

**Belen M. Tabudlong, Senior SRS** PhilRice Agusan

# Anti-RBB fungus







**Elenita L. Limpag 52, farmer** Agusan del Sur

In 2018, RBB infestation hit our *barangay*. Thanks to *Metarhizium*, my field was spared from severe damage. I no longer lose 20% of my harvest due to RBB. After learning about it from PhilRice, fellow farmers adopted *Metarhizium* and saw reduced yield loss. My production costs decreased, and I stopped using synthetic pesticides. Now, I have safe rice to eat.

# PhilRice @40



**Dr. Norvie L. Manigbas** *Career Scientist III Plant breeder, PhilRice* 

PhilRice is my global partner in delivering agricultural research and technologies to Filipino farmers, and because of its support, it has strengthened and empowered me as an expert in my field. It has also played a significant role in my journey to becoming a scientist.

**Ramon Christopher V. Acosta** Student, Bachelor of Science in Biology Isabela State University - Echague

During my senior high school years as a Science, Technology, Engineering, and Mathematics (STEM) student, PhilRice was an invaluable resource. I frequently consulted its researchers, who provided expert insights and guidance on various rice varieties for our research.



COMPILED BY: CHRISTINE MAE A. NICOLAS and GIO ANTON T. BARROGA



### Divina C. Fontanilla

Mayor, Bacnotan, La Union

PhilRice has helped our town achieve rice security and agricultural sustainability through research, innovations, and training programs that equip farmers with modern rice technologies, including climate-resilient varieties. These efforts have contributed to higher yields, lower production costs, and improved livelihoods, leading to our recognition with the DSWD's 2024 "Walang Gutom Award from Galing Pook," the Top Model Municipality title from The Manila Times, and a special award as a Food Security Enabler. With support from the DA and other agencies, we also achieved a 165.42% rice self-sufficiency rate. To sustain these gains, we implement policies that further strengthen agricultural programs, boost rice production, and create better opportunities for farmers.

### / Milvin I. Zabala

Master Teacher I Libacao National Forestry, Vocational High School, Libacao, Aklan

PhilRice has greatly supported me as a teacher through training programs that enhanced my knowledge and skills in rice farming, allowing me to better educate my students. The recognition I received as one of the 10 Outstanding Best Implementers of the Infomediary campaign boosted my confidence and motivation to keep learning. Additionally, the resources PhilRice provided, such as books and magazines, helped me develop self-learning modules during the pandemic, which contributed to my promotion.





**Luzviminda L. Ednalino** *City Agriculturist Cabuyao City, Laguna* 

PhilRice helped improve rice farming in Cabuyao with seeds and technologies. Through the RCEF Seed Program, farmers gained access to free certified seeds, leading to increased adoption as they saw higher yields and better resistance to pests and diseases. Farmers use PalayCheck but have also started learning from PalaySikatan to directly compare rice varieties. With PhilRice's support in MOET, Farm Field School, and demo trials, extension work has become more effective. As a result, nearly all farmers now use certified seeds, boosting average yields from 4t to 4.89t in the dry season and 4.57t in the wet season (2020-2024).



Eduardo R. Policarpio Palagay, Cabanatuan City Magsasakang Siyentista (with Good Agricultural Practices-certified farm) PhilRice has been my guide in rice farming—where I learned about proper variety selection, pest and nutrient management, and modern technologies. Because of this, I achieved my highest yield of over 300 cavans per hectare using hybrid seeds in 2003 and have since harvested abundantly multiple times. PhilRice also played a key role in my recognition as a *Magsasakang Siyentista*, allowing me to share my knowledge through the *Tekno Gabay* Program, support fellow farmers, and continuously learn new farming technologies.



Jasmin G. Requito Cashier, PhilRice

In my 33 years of working here, I have witnessed that PhilRice doesn't just provide technologies and training courses for farmers; it also becomes an excellent training ground for fresh graduates and new employees. I was honed here to work efficiently and properly, learn to get along with others, value my work, and treat people with respect. PhilRice has been a big help for me and my family.



**Aurelio L. Dayag Sr.** Municipal Indigenous Peoples' Mandatory Representative Sugpon, Ilocos Sur

PhilRice has improved the livelihoods of indigenous farmers in Sugpon. Before the implementation of RCEF, farmers in our community only planted traditional rice varieties for their family's consumption. Now, we are producing and selling highquality rice and seeds, which are competitive with other rice products available in the urban market.



Rice certified with the Philippine Good Agricultural Practices (PhilGAP).

Safe

Quality Servironment-friendly Supports local farmers

# WHERE **TO BUY?** SCAN THIS QR CODE



https://bit.ly/bigaspinas



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



www.philrice.gov.ph www.pinoyrice.com





philrice@philrice.gov.ph



rice\_matters

#### **BRANCH STATIONS:**

DA-PhilRice Batac, MMSU Campus, City of Batac, 2906 llocos Norte; Mobile: 0998-975-6335; Email: batac 1.station@mail.philrice.gov.ph DA-PhilRice Isabela, Malasin, San Mateo, 3318 Isabela; Mobile: 0999-889-3027; Email: isabela.station@mail.philrice.gov.ph; philriceisabela3318@gmail.com DA-PhilRice Los Baños, UPLB Campus, Los Baños, 4031 Laguna; Tel: (49) 501-1917; Mobile: 0993-631-9175; Email: losbanos.station@mail.philrice.gov.ph DA-PhilRice Bicol, Batang, Ligao City, 4504 Albay; Tel: (52) 431-0122; 742-0690; 742-0684; Email: bicol.station@mail.philrice.gov.ph DA-PhilRice Negros, Cansilayan, Murcia, 6129 Negros Occidental; Mobile: 0909-129-3763; Email: negros.station@mail.philrice.gov.ph DA-PhilRice Agusan, Basilisa, RTRomualdez, 8611 Agusan del Norte; Telefax: (85) 806-0463; Email: agusan.station@mail.philrice.gov.ph DA-PhilRice Midsayap, Bual Norte, Midsayap, 9410 Cotabato; Mobile: 0938-374-1040; Email: midsayap.station@mail.philrice.gov.ph

#### SATELLITE STATIONS:

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

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