

PhilRice Magazine

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of the Department of Agriculture–
Philippine Rice Research Institute



**Scaling
technologies
for impact**

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ABOUT THE COVER



For a technology to make a meaningful impact – transforming lives and communities – it must reach a multitude of users. This entails extensive resources. But with consolidated efforts and well-thought out strategies, technologies can reach more even with less resources. This issue of our magazine unveils stories of technology scaling that are expected to make or have already made an impact on farmers and their communities.

CONTENTS

NEWS

- 4 PH hits new record-high *palay* output
- 5 Nueva Ecija enacts ordinance on truthful labeling of rice
- 6 LGUs' role in RCEF lauded
- 6 Food science expert is new scientist
- 7 WHAT'S NEW IN RICE RESEARCH: More rice varieties, more options, more diversity
- 8 RICE ACROSS THE COUNTRY
- 10 REACHING FAR, HELPING MORE
- 12 **EXPERT'S CORNER:** Scaling science-based rice technologies

FEATURES

NORTHERN LUZON

- 14 Farmers' participation, complete package hasten wide techno adoption
- 15 Conquering more with less

CENTRAL LUZON

- 16 Reaching more through local intermediaries

SOUTHERN LUZON

- 18 Assessing needs: First step in determining what technology to scale
- 20 Partnership makes resilient varieties widely available

VISAYAS

- 21 Outsmarting fertilizer problems by promoting use of decision support tools

CARAGA

- 22 Policy advocacy to broaden techno adoption

CENTRAL MINDANAO

- 23 Partners' commitment makes AWD scaling successful

- 24 Collaboration to maximize impact
- 26 Rooted and growing
- 28 Shaping mindsets through communication
- 29 **Q&A:** Technology licensing
- 30 Golden Rice up for deployment
- 32 **STAFF EXTRAORDINAIRE:** Cheers to our retirees
- 33 Awardees, newly conferred scientist, appointed and promoted staffers
- 34 **VOX POP:** Key lessons on technology scaling learned from our retirees

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Scaling technologies and innovations for social outcomes and impacts

JOHN C. DE LEON



In the agricultural research for development (AR4D) context, scaling is considered as the result of deliberate efforts and interventions that lead to defined societal outcomes – like sustained food availability or improved nutrition. Scaling is normally associated with positive changes and with target numbers, usually high, as indicators of success or demonstrated impact. Often taken along the tracks of adoption, diffusion or extension, it is by scaling technologies and innovations that they become part of the broader processes of interdependent changes in society. And for scaling to be successful, attention should also be given to the unique conditions surrounding specific contexts of technological use.

The multidimensional nature of scaling includes simultaneous processes of scaling up (bigger), scaling out (more), scaling deep (quality), and scaling down (reduce). Scaling out spreads a new technology within the community of farmers through horizontal exchange of ideas. Scaling up happens

when the new technology becomes part of the local government policy or is integrated into provincial programs. The scaling out or scaling up (increase) of a technology or innovation could simultaneously imply the down scaling of an existing one in different levels of scale like field, farm cluster, community enterprise, provincial initiative, or regional implementation. Such consideration of impact (pros and cons) should also be clear in scaling technologies and innovations.

Although AR4D organizations, like PhilRice, can scale technologies and innovations themselves, collaborating with other government agencies and private sector partners (OneDA agenda) with mutual interests, and who have the mandate and capacity to deliver at scale, is vital to sustain the delivery of services including scaling activities for target societal outcomes and impacts. It is as well in this storyline that this maiden issue of our PhilRice Magazine this 2022 is framed. 🍌



RCEF, NRP, and RRP are the DA programs that helped boost 2021 rice production.

PH hits new record-high *palay* output

RICE FARMERS had produced almost 20 million metric tons (MMT) of *palay* in 2021, attaining an all-time-high record, based on data released by the Philippine Statistics Authority.

The output of 19.96MMT, which was driven by the strong rice harvests from the first through the fourth quarters, is 3.45% higher than the previous production of 19.29MMT in 2020.

"We could have easily breached 20MMT had Typhoon Odette not damaged more than 130,000MT of *palay*. [This] shows, however, that we are on the right track in our continuing efforts to increase the production of our major staples, in partnership with millions of our farmers, local government units, private sector, and agri-fishery industry stakeholders," Agriculture Sec. William D. Dar said.

The DA implements complementary measures to boost rice production

through the Philippine Integrated Rice Program, which includes programs under the Rice Competitiveness Enhancement Fund (RCEF), the National Rice Program (NRP), and the Rice Resiliency Project (RRP).

DA-PhilRice led the RCEF-Seed Program that distributed 1.65M bags (20 kg/bag) of certified inbred seeds during the 2021 dry season and 1.76M bags during the wet season. These seeds respectively benefited more than 660,000 and 713,000 farmers.

Under the program, 231 techno-demo sites dubbed as *PalaySikatan* were also established, where the use of farm machines and certified seeds of nationally and regionally recommended inbred rice varieties were showcased. Seed grower associations were also strengthened to ensure adequate supply of high-quality seeds. These techno-demo sites aim to produce higher yields compared to the usual yields of farmers.

Results of a monitoring and evaluation survey conducted among 6,154 farmers who had received free certified seeds showed that their yields jumped from 3.65t/ha in 2019 DS to 4.22t/ha in 2021 DS.

Their profit also went up from P19,576/ha to P26,637/ha in the same seasons. With additional savings from free RCEF seeds and RRP fertilizers, their income further increased to P31,681/ha.

DA-PhilRice also helped capacitate 261 rice specialists and 1061 trainers across the country, who are tapped to facilitate learning activities on high-quality inbred rice and seed production. These activities are supplemented with science-based information materials delivered through various platforms to reach millions of farmers and extension intermediaries.

Under the Institute's Rice Business Innovations System (RiceBIS)

Nueva Ecija enacts ordinance on truthful labeling of rice

RICE RETAILERS in Nueva Ecija are now required to indicate valid, reliable, and complete information about the milling classification, price, and source of rice (local or imported) on rice sacks, box labels, and price tags.

This, after a provincial ordinance was passed anchored on the recommendations of the DA-PhilRice and Central Luzon State University (CLSU) Policy Research and Advocacy team.

Under our Community Relations Office then led by Dr. Diadem G. Esmero, these recommendations were presented to the LGU through the Rice S&T Updates of PhilRice. This aims to inform and promote technologies developed by the Institute among farmers, extension

Community program, meanwhile, rice yields of irrigated farmer-partners increased from 3.89 to 4.34t/ha and from 1.08 to 2.12t/ha under rainfed. The cost of palay production was reduced from P15.26/kg during the 2020 DS to P14.67/kg in 2021 DS.

DA-PhilRice also provides technical assistance through its seven branch stations and continues to develop technologies that increase yields and reduce costs to make our farmers more competitive. **WEB TEAM**

“The country attained record harvest years in a row. The Filipino farmers have always been persistent in overcoming agricultural challenges. We thank them for this harvest. The LGUs and the policymakers were also instrumental in delivering this milestone—truly a whole-of-nation approach.”

- DR. JOHN C. DE LEON
Executive Director, DA-PhilRice



Novo Ecijanos will be able to choose easier which rice to buy with the new ordinance on truthful labeling enacted by Nueva Ecija's LGU.

intermediaries, and legislators, and establish strong linkages with the LGUs and other technology promotion partners.

Truthful labeling aims to empower consumers to choose between imported and locally produced rice, ensure food safety, and end up with the best buy. “Specifying rice source in rice packages, box labels, and price tags will aid consumers who want safe and quality local rice to make easy choices,” PhilRice’s Alice B. Mataia, team co-lead, said.

Agricultural economist Mataia explained that demand for local rice may spur when more consumers are

able to spot local rice and buy it over imported ones. “This will encourage rice traders to source their supply from local farmers,” she said.

The ordinance provides that labels should follow the guidelines in the Philippine National Standard on Grains – grading and classification – paddy and milled rice.

As recommended by the team, a local task force (LTF) headed by the governor will be formed. The LTF will set the general implementation guidelines and will ensure that the task forces of all cities and municipalities are doing their functions.

Meanwhile, violators will be penalized with a payment of P1,500 or suspension of business permit until fine is paid for the first offense; P3,000 and suspension of business permit until fine is paid for second offense; and P5,000 and revocation of business operations until compliance with the prescribed labeling for the third offense.

MERVALYN O. TOMAS



MAGUINDANAO



KALINGA



SAMAR

PAMPANGA

Thanks to the provincial and municipal/city LGUs that helped deliver and distribute RCEF certified seeds to farmers.

LGUs' role in RCEF lauded

Local government units (LGUs) in the 42 covered provinces of the Rice Competitiveness Enhancement Fund (RCEF)-Seed Program were recognized for helping DA-PhilRice facilitate the rollout of certified seeds to their rice farmers.

Crisostomo Rabaca, provincial agriculturist of Zambales, said that the systematic implementation of the RCEF-Seed Program enabled them to distribute the seeds on the ground.

"Your agency's system — from planning, delivery, distribution, up to monitoring and evaluation, is convenient for us and friendly for our farmers. More importantly, RCEF greatly contributed to the increase of high-quality seeds utilization in our province. Around 16% of our total area harvested in 2018 was planted with farmers' home-saved seeds. This was reduced significantly to 5% in 2019, and in 2021, it is only at 0.06%! We commit to continue working with you as we aim to achieve 100% high-quality seeds utilization this 2022," Rabaca pronounced during the Program's

annual review and workshop held on Feb. 15-18 at DA-PhilRice in Nueva Ecija.

Rabaca also said that Zambales farmers are thankful to Sen. Cynthia Villar who sponsored the Rice Tariffication Law, which allots a P10 billion fund every year for rice farmers to help them compete in the international rice market.

Dr. John de Leon, DA-PhilRice executive director, said the combined efforts of the Institute, its partner-LGUs, other implementing agencies, seed growers' cooperatives and associations, and the legislators were instrumental in achieving the Program's goals amidst the pandemic.

"All the hard work we've done together in RCEF (and the DA's National Rice Program) had paid off. Together, we have enabled and empowered our rice farmers to achieve yet another milestone. For the second year in a row, our rice farmers produced an all-time-high record production of 19.96 million metric tons of palay," he said.

Dr. Flordeliza Bordey, DA-PhilRice RCEF Program Management Office head, reported that the contribution of RCEF-Seed to the country's overall rice production in 2021 is estimated at 31%, and as high as 78% to the output of its covered provinces. Both percentages are estimated under the premise that farmers have used the recommended seeding rate of 40kg/ha for transplanting and 60kg/ha for direct seeding. Based on DA-PhilRice studies, following the recommended seeding rates allows the rice plants to grow vigorously and produce productive tillers that translate to increased potential for higher yield.

In 2021 dry season (DS), 1.65 million bags were distributed to more than 600,000 farmers; 1.76M bags to more than 700,000 recipients in the wet season (WS). Area planted with RCEF seeds was 466,578ha DS and 572,203ha WS.

During the review/workshop, provincial and municipal/city LGUs and their respective agriculture offices that achieved high rates of seed delivery and distribution under set categories were awarded plaques and certificates of appreciation. **ANNA MARIE B. BERTO**

More rice varieties, More options, More diversity

► MERVALYN O. TOMAS



Fifteen new inbred rice varieties were approved for commercial release in December 2021 by the National Seed Industry Council (NSIC).

Eight among these are PhilRice-bred: three for irrigated lowland (NSIC Rc 622, Rc 624, and Rc 626,) and five special-purpose pigmented non-glutinous (NSIC Rc 638 SR, Rc 640 SR, Rc 642 SR, Rc 644 SR, and Rc 646 SR). The other seven are IRRI-bred: five for irrigated lowland (NSIC Rc 628, Rc 630, Rc 632, Rc 634, and Rc 636), one zinc-biofortified (Rc 648), and one for rainfed lowland (Rc 650).

“With these new rice varieties, we are providing more options to farmers as to what variety is most suited to their farms’ conditions so they can further increase their production and achieve

the best quality of their produce,” Dr. Oliver E. Manangkil, head of our Plant Breeding and Biotechnology Division, said.

These varieties will be introduced to farmers through techno-demo farms under our various extension programs.

“We have introduced new varieties to farmers through the NextGen PLUS project in the past years,” Manangkil recalled.

Under the project, multi-location trials were done in all major irrigated and rainfed rice-growing regions under the supervision of DA-regional field offices, and state colleges and universities across the country. Adaptation trials were set up in farmer-partners’ fields.

“Thru NextGen, we were able to introduce newly released varieties to farmers even in far-flung areas. We did participatory performance trials and validation; whereby, farmers planted varieties and were given the chance to choose the best rice adapted to their local conditions,” he explained.

As this project ended in 2021, Manangkil said his team is looking ahead to a new project called “One Rice PH: Development of product concepts for target market segments and establishment of the breeding network” that will introduce new varieties to farmers at the provincial level.

“It will take about two more years for farmers to have access to the 15 new varieties because the breeder seeds available now have yet to be multiplied,” he clarified. 🍌

“With the release of these new rice varieties, we are providing more options to farmers as to what variety is most suited to their farms’ conditions so they can further increase their production and achieve the best quality of their produce.”

- DR. OLIVER E. MANANGKIL

RICE ACROSS THE COUNTRY

Compiled by ALDRIN CASTRO

► PHILRICE BATAC

New rice pest and disease experts, ready for dispatch

By Franzel Monique D. Bonilla

Twenty-eight farmer-leaders and agricultural technologists in Tagudin, Ilocos Sur completed the Short Course Training on Pest and Nutrient Management under the Rice Competitiveness Enhancement Fund-Rice Extension Services Program on Jan 10-14.

The participants hurdled the 5-day intensive training facilitated by the PhilRice Batac RCEF Training Management Team in collaboration with the Local Government Unit of Tagudin.

The training focused on identifying and diagnosing pests and diseases, and nutrient deficiency.



PHOTO BY: ARIANNE JOY TABANGAY

► PHILRICE BICOL

PalaySikatan continues rice production modernization campaign

By Lalaine Pago Perillo

Mapanique, San Pascual, Masbate - This dry season 2022, the PhilRice Bicol techno-demo team has established an additional 6-ha varietal technology demonstration site under the RCEF - Seed Program. This aims to help small-scale farmers in Burias Island become competitive and breeze into modern rice production through the use of high-yielding inbred varieties and new farming technologies and machinery.

In partnership with the LGU San Pascual and its municipal agriculture office headed by Alona Morales, seven local farmers will become primary beneficiaries of PalaySikatan. It will help promote the adoption of inbred certified seeds and integrated crop management (PalayCheck) through efficient and cost-reducing rice mechanization interventions.



PHOTO BY: RANDY T. MOMBASE



PHOTO BY: ADRIENNE V. TANDANG

► PHILRICE LOS BAÑOS

Los Baños hits 100% RCEF targets

By Christine M. Reyes

DA-PhilRice Los Baños has fully achieved its targeted delivery of 99,100 sacks of RCEF seeds and 41,800 tekno-kalendaryo to 79 municipalities in Cavite, Laguna, and Quezon for the 2022 dry season before the end of 2021.

RCEF Coordinator Jacqueline Lee Canilao thanks DA-Region IV-A and the local government units (LGUs) of the RCEF-covered municipalities for the assistance they have provided. The LGUs also oversee the distribution of the seeds and calendars.

Despite the distances and narrow roads that posed as challenges during delivery, the Los Baños team met its targets by having early travels and transferring the seeds and calendars to smaller trucks.



PHOTO BY: REYNICK M. NAMALATA



PHOTO BY: MOHAMADSAID B. GANDAWALI

► PHILRICE AGUSAN

RCM application pilot-tested

By Kristianne Marie C. David

The DA-PhilRice Agusan RCEF group, in coordination with the Davao de Oro Provincial Agriculture Office, pilot-tested the Rice Crop Manager (RCM) application in Montevista.

RCM is designed to generate fertilizer recommendations.

Over 50 farmers from selected areas participated in the activity. A validation of land area, through Global Positioning System (GPS), helped determine the accurate fertilizer recommendation for each farmer-beneficiary.

Together with IRRI, this is under a DA-integrated approach involving the RCEF Program and the Rice Crop Manager Advisory Services (RCMAS), which is fully and operationally managed by the DA-PhilRice and DA-ICT this year.

► PHILRICE MIDSAYAP

Capacity-building under RCEF-RESP intensified

By Sylvia Therese C. Quiring

Some 380 trainers and farmers are to be trained under the RCEF - RESP in 2022. The trainings, short courses, and farmer field schools will include rice stakeholders from Regions 9, 12, and the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). Sixty rice specialists and 90 trainers will be trained on production of high-quality inbred rice seeds and farm mechanization; and on pest and nutrient management.

Dr. Sailila E. Abdula, PhilRice Midsayap director and DA assistant secretary for BARMM, said that aside from producing more trainees, the intensified training activities will also strengthen partnerships among RCEF implementing agencies.



PHOTO BY: CHRISTIAN PAUL A. DE LEON



PHOTO BY: GIRLIE A. CARREON

► PHILRICE NEGROS

Farmers start their year learning

By Vanessa A. Tingson and Girlie A. Carreon

Farmers from seven LGUs in Antique, Aklan, and Capiz participated in the establishment of the Minus-One-Element Technique setup and RCEF *PalaySikatan* Techno-Demo Farmers' Field Day. The 130 farmers learned how to determine the right fertilizer amount and element for their rice fields, as well as the results, if they follow the technology practices recommended by DA-PhilRice.

The setting up of MOET is a project under the RCEF-Seed Program.

Meanwhile, *PalaySikatan* showcased the recommended varieties in every province and the unique rice production practices farmers must adapt appropriately to their locations to maximize the potentials of their rice fields. The techno-demos in Roxas City, Capiz and Bugasong, Antique showcased PSB Rc 10, Rc 18, NSIC Rc 216, Rc 222, Rc 402, Rc 442, and Rc 506.

Farmers in both provinces singled out NSIC Rc 506, describing it as resistant to pests and disease, non-lodging, and has glistening grains.

► PHILRICE ISABELA

Farmers trained on hybrid rice commercialization

By Christian Paul A. De Leon

Thirty-six farmers in Brgy. Bacsay, Luna, Apayao have learned how to produce hybrid rice and market it through the recently concluded Training on Hybrid Rice Commercialization. This is under the station's Community-Organized Hybrid Rice Farming and Marketing (COHFarM) project.

The training was an initial step to prepare the participants for the Season-long Training on Hybrid Seed Production and Certification, simultaneous with the establishment of learning fields on AxR hybrid seed production this 2022 dry season.

The training was carried out in partnership with DA-Regional Field Offices, Municipal/City Agriculture Offices, local government units, and lawmakers in the implementation of the Rice Development Initiatives for Cagayan Valley and CAR Environments.

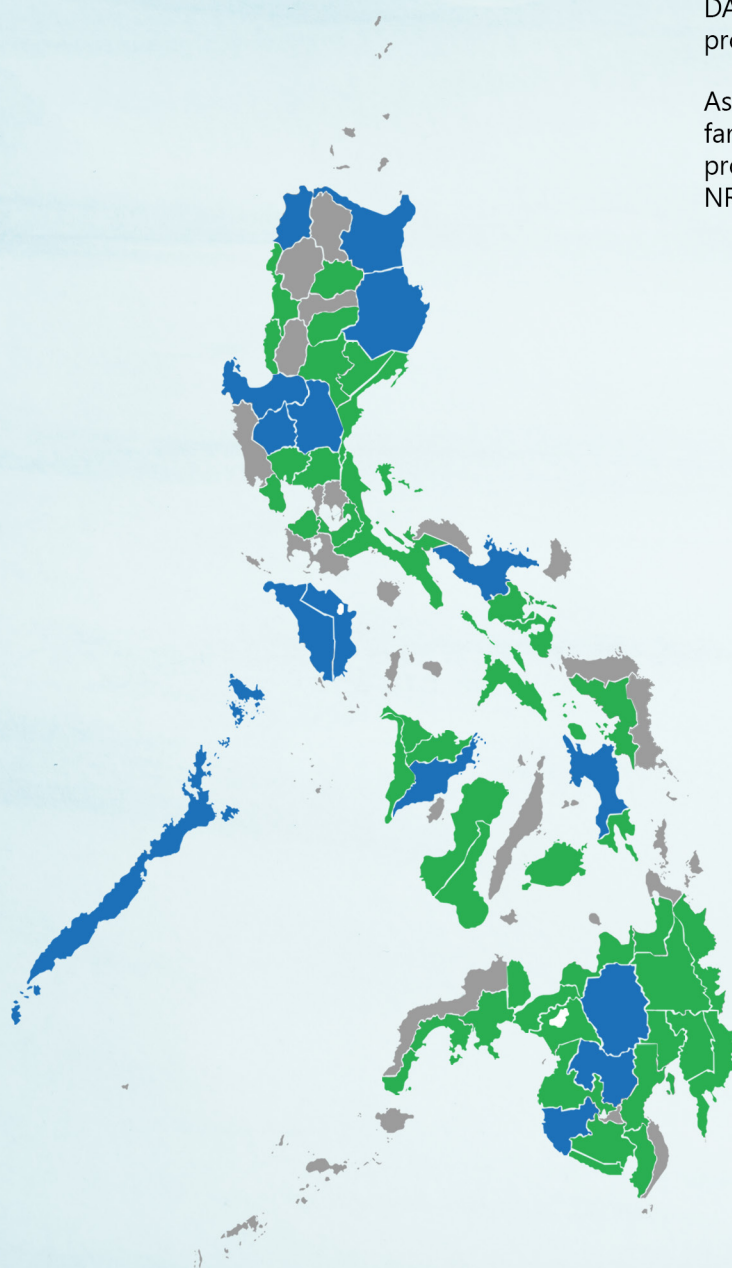
REACHING FAR, HELPING MORE

► SARAH JOY N. RUIZ and
ANNA MARIE B. BERTO

The Rice Tariffication Law (Republic Act No. 11203) has created the Rice Competitiveness Enhancement Fund (RCEF) to help Filipino rice farmers prosper and become globally competitive. Along with RCEF, the National Rice Program (NRP) also aims to boost the country's rice sufficiency and augment the income of farmers and other stakeholders in the agricultural sector.

DA-PhilRice leads the RCEF-Seed Program which provides inbred rice seeds in 42 provinces.

As these programs continue to reach and help more farmers across the country, let's travel through the 57 provinces that benefited from RCEF Programs and NRP-RRP.



Legend:

- All RCEF Programs
- National Rice Program - Rice Resiliency Program; RCEF Extension, Credit, and Mechanization
- Non-inclusive provinces

42 Provinces served by all RCEF Programs

Ifugao	Negros Occidental
Kalinga	Negros Oriental
Ilocos Sur	Biliran
La Union	Samar
Nueva Vizcaya	Southern Leyte
Quirino	Zamboanga del Sur
Aurora	Zamboanga Sibugay
Bataan	Lanao del Norte
Bulacan	Misamis Oriental
Pampanga	Davao De Oro
Zambales	Davao del Norte
Cavite	Davao del Sur
Laguna	(+Davao City)
Quezon	Davao Oriental
Albay	Sarangani
Masbate	South Cotabato
Sorsogon	Agusan del Norte
Bohol	Agusan del Sur
Aklan	Surigao del Sur
Antique	Lanao del Sur
Capiz	Maguindanao

15 Provinces covered by National Rice Program - Rice Resiliency Program (NRP-RRP); RCEF Extension, Credit, and Mechanization

Ilocos Norte	Isabela
Pangasinan	Camarines Sur
Nueva Ecija	Leyte
Tarlac	Bukidnon
Occidental Mindoro	North Cotabato
Oriental Mindoro	Sultan Kudarat
Palawan	Cagayan
Iloilo	

Funded by DA-Bureau of Agricultural Research, RiceBIS program is geared at developing rice and rice-based enterprises within a province to address men and women farmers' needs - from production, to processing, to marketing-in a resilient and sustainable manner, ensuring available and affordable rice.




While it strengthens the production system, it also deals more on a market-driven approach catering to its demand. Unlike the conventional technology transfer approaches which are production-driven, this program draws more on the agribusiness framework.

The program also involves strong strategic collaborations. Through a multi-disciplinary team, PhilRice initiates the development of rice and rice-based enterprises through the formation of site working groups within rice clusters.



23 RiceBIS Communities
with **193 clusters** composed of **6,158 farmer members** with **6,870.20 ha** who undertook organized rice production and group marketing

Legend:

-  Phase I
-  Phase II
-  Expansion Site

PHILRICE BATAC

- Batac City, Ilocos Norte ✓
- Banna, Ilocos Norte ✓

PHILRICE CES

- Zaragoza, Nueva Ecija ✓
- Castillejos, Zambales ✓
- Mangatarem, Pangasinan ✓
- Gerona & Sta. Ignacia, Tarlac ✓
- Bayambang, Pangasinan ✓

PHILRICE LOS BANOS

- Sariaya, Quezon ✓
- Tiaong, Quezon ✓

PHILRICE ISABELA

- ✓ San Mateo, Isabela
- ✓ Diffun, Quirino
- ✓ Alfonso Lista, Ifugao

PHILRICE BICOL

- ✓ Polangui and Ligao City, Albay
- ✓ Milagros, Masbate
- ✓ Mandaon, Masbate

PHILRICE NEGROS

- Murcia and Victorias City, ✓
Negros Occidental
- Canlaon City, Negros ✓
Oriental
- San Carlos City, Negros ✓
Occidental

PHILRICE AGUSAN

- ✓ Esperanza, Agusan del Sur
- ✓ Cabadbaran City,
Agusan del Norte
- ✓ RTRomualdez,
Agusan del Norte

PHILRICE MIDSAYAP

- ✓ Midsayap, North Cotabato
- ✓ Libungan, North Cotabato

Scaling science-based rice technologies

(This article is based on the PICRP review report dated April 2020, with this author as the lead writer.)



► DR. REX L. NAVARRO

Strategic Extension-Communication
Consultant, DA-PhilRice

“A beautiful music made by a bird in a forest has no utility value if nobody hears it.”

Scaling in the context of rice R4D

During a series of webinars sponsored by the UPLB Alumni Association in 2020, one of the resource persons said, “A beautiful music made by a bird in a forest has no utility value if nobody hears it.” This piece of wisdom provides impetus to the importance of scaling science-based innovations. Since time immemorial, technologies not being used or not reaching end-users at all has always been an overarching challenge.

In a review of the Philippines - IRRI Collaborative Rice Program (PICRP) in 2020, the topmost recommendation of the Panel (this author was a member) was the intensive scaling of the utilization and application of R4D products to respond to the contemporary needs of a critical mass of next users and end users especially those covered by the Rice Competitiveness Enhancement Fund (RCEF). Next users are those who provide an enabling environment for the application of R4D innovations and practices (e.g., policy and decision makers, DA/LGU officials, extension workers, input/machine suppliers and manufacturers). End users are those who apply technologies (e.g., farmers, farming communities, producer groups).

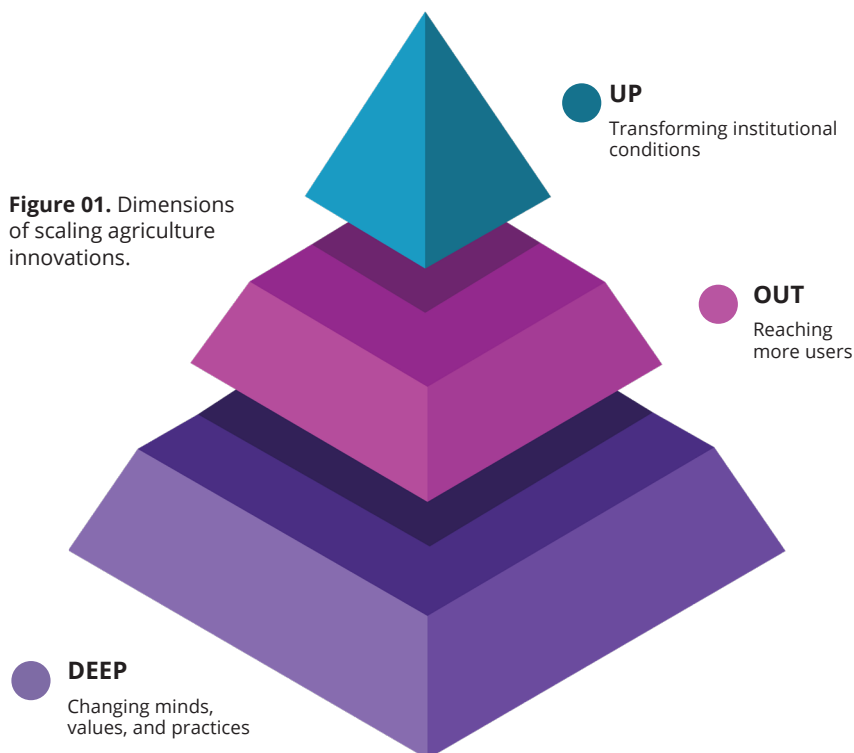
Likewise, the review was focused from a perspective of Research for

Development (R4D) — the achievement of outcomes and impacts that catalyze the development of the rice industry. In the context of rice R4D, such an achievement can only be attained through scaling. Beyond reaching a critical mass (e.g., millions), scaling aims to achieve sustainable change that endures beyond an R4D program, significantly transforming institutions and communities. This view heavily relies on the public and private sectors to drive the scaling process, with emphasis on transforming agricultural systems by reaching big numbers of users.

What is technology scaling?

Scaling is the process of spreading R4D innovations and practices to reach large numbers of next users and end users. Scaling should be holistically used to cover ‘scaling out,’ ‘scaling up’ and ‘scaling deep.’ Scaling out is spreading R4D innovations geographically (i.e., from barangay, municipal, provincial to national) in big numbers (millions). Scaling up is transforming institutional mechanisms (i.e., policies, strategic partnerships, value chains) to enable scaling out. It involves reforming institutions, partnerships, policies and regulations, altering the “rules of the game.” Technological innovations must be codified in law, policy, and institutions. Scaling deep is changing values and cultural practices, making use of the

Figure 01. Dimensions of scaling agriculture innovations.



innovation as a routine. It ensures enduring technological change by changing people's hearts and minds, their values and cultural practices, and their quality of relationships (Figure 01). These dimensions are interdependent. Aside from optimally spreading technological outputs to produce outcomes of R4D, successful scaling requires non-technological requirements (i.e., markets, credit, knowledge, partnerships and related support services).

Pathway of scaling rice technologies

Scaling essentially is a core function of extension. Hence, attaining the three dimensions of scaling requires a vigorous extension system that is strongly linked with research and farmers. Under the Local Government Code and Executive Order 138 (i.e., Mandanas Doctrine), frontline extension services are fully devolved to LGUs, particularly at the municipal level, where provinces have no administrative and operational control. However, for scaling to be effective, it must be done at the provincial level for wider coverage and bigger economies of scale. To effectively pursue scaling up, the current institutional arrangement

for extension must be reformed so that provinces are given the mandate to lead extension services. This new setup enables PLGUs to mobilize DA agencies in the province, municipal LGUs, SUCs, the private sector and civil society under a Province-led Agriculture and Fisheries Extension System (PAFES) — a new and emerging institutional arrangement for extension.

On another note, the research and extension process traditionally is like a relay game where research generates technologies to be passed over time to extension and eventually to farmers. The process is usually research-led, with extension workers only getting involved toward the end when researchers pass on technologies to extension for 'transfer' to farmers. This is the primary reason why agricultural innovations are not scaled and take a very long time to reach farmers or do not even reach farmers at all.

Scaling provides a big window of opportunity in linking rice R4D with provincial LGUs, DA's research and extension agencies, SUCs, the private sector and civil society. Since a majority of the rural poor depend on agriculture, strategic solutions should come from agricultural innovations,

REQUISITES FOR A SUCCESSFUL SCALING:

1. Superiority of the technology in addressing challenges in the rice value chain.
2. Scientific evidence and government support for scaling.
3. Demand among users and DA institutions for the technology.
4. Capacities to adopt and scale technologies at the individual (i.e., farmer) and institutional (i.e., DA and LGU) levels.
5. Strategic linkages, collaboration and coordination among partners (research-extension-farmers) to scale agricultural innovations.

Requisites #1-3 are already existent in the context of rice R4D. However, the other two requisites must be intensively pursued. When optimally scaled, cutting-edge R4D outputs (e.g., NextGen rice varieties and ICT-enabled decision-making tools like PRISM, PRIME and RCM) could respectively increase the productivity of rice farmers and elevate the efficiency of DA operations.

scaled through strong research-extension-farmer linkages and public-private partnerships. To optimize investments in rice R4D, outputs must be scaled to an ideal level that could modernize and make the Philippine rice industry competitive and resilient, and endure beyond political regimes.

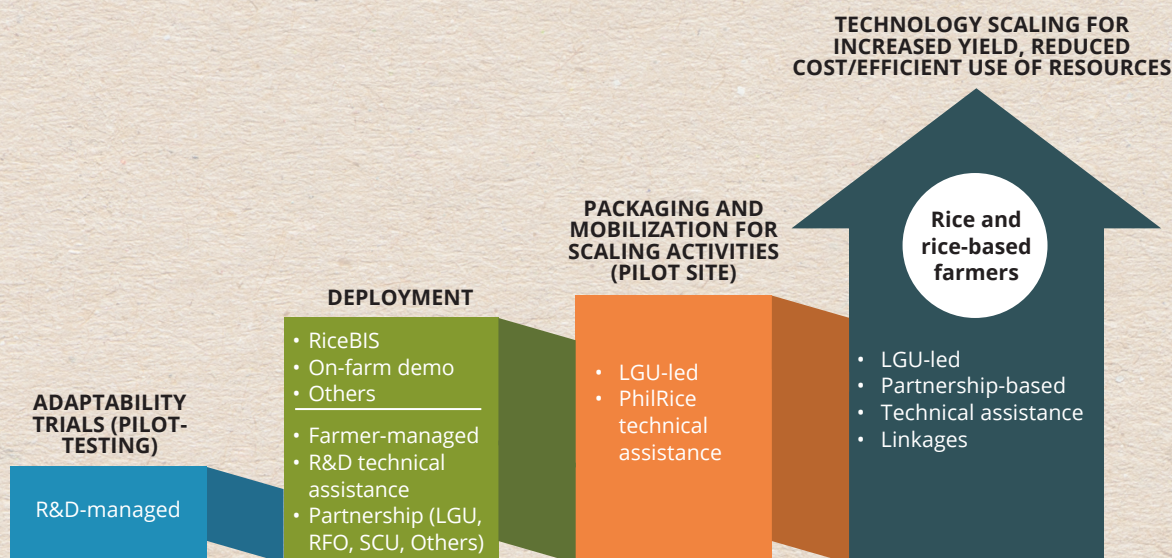
Scaled agricultural innovations propelled by strong international and national R4D partnerships spurred the Green Revolution in Asia. Optimal scaling could yet ignite the emergence of the much-needed second Green Revolution in the Philippines. 🌱

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Farmers' participation, complete package hasten wide techno adoption

► CHARISMA LOVE B. GADO-GONZALES



In the coarse rice fields of Ilocos Norte, farmer-partners of DA-PhilRice Batac project are in a hopeful rhythm as they await the availability of more multipurpose seeders (MPS) in their towns.

The seeder, a machine attached to a handtractor, reduces seeding rate and labor, and facilitates accurate direct seeding of rice, corn, and mungbean.

“We employ an integrated participatory approach in scaling the MP Seeder.”

ANIELYN Y. ALIBUYOG
DA-PHILRICE BATAc

“The MP seeder was presented to us in 2018. I volunteered as a cooperator so I can try this machine as labor is scarce here,” said Noel D. Galut, rainfed farmer in Nueva Era.

Anielyn Y. Alibuyog, senior researcher and one of the project implementers, said that farmer-cooperators are indispensable in catalyzing the scaling of the machine. “They participate in technology generation, verification, and promotion,” she said.

From a small setup in the station’s experimental field, the machine is now out in the farmers’ fields in Currimao, Paoay, Pasuquin, Nueva Era, and Banna. Since 2018, 40 farmers tried the machine in their farms while 20 acquired the MPS after witnessing its performance in a demo farm.

Alibuyog said they work closely with the agriculture office of the local

government units in identifying sites for technology demonstration. Criteria are determined to ensure that the machine is relevant for the farmers’ needs. Farmers practicing direct-seeding in the rainfed or drought-prone areas or with fields at the tail-end irrigated areas are prioritized.

Dr. Elmer G. Bautista of DA-PhilRice CES, project lead and technology developer, said that the project was scaled up with funding from the Bureau of Agricultural Research and current partnership with UP Los Baños.

“Back then, it would take four persons hired for P300 each per day to plant half a hectare. But with the MP seeder, I can now plant my 0.80ha by myself. Not only did it save me on labor but my seeding rate was also reduced from 90 to 60kg. I can’t wait for more of us to have this machine,” Noel Galut said. 🍌

DA-PhilRice Isabela is piloting a scaling strategy to increase yield in areas needing improvement in nutrient management techniques, as part of the Rice Development Initiatives for Cagayan Valley and CAR Environments (RICCE) Project.

According to Dr. Ofelia C. Malonzo who leads this initiative, they are collaborating with provincial and municipal LGUs in implementing the

“We are tapping existing farm schools and farmers’ cooperatives to optimize resources and improve communication within farming communities.”

OFELIA C. MALONZO
DA-PHILRICE ISABELA

Conquering more with less

► ELOUEZA MARIE P. DELA CRUZ

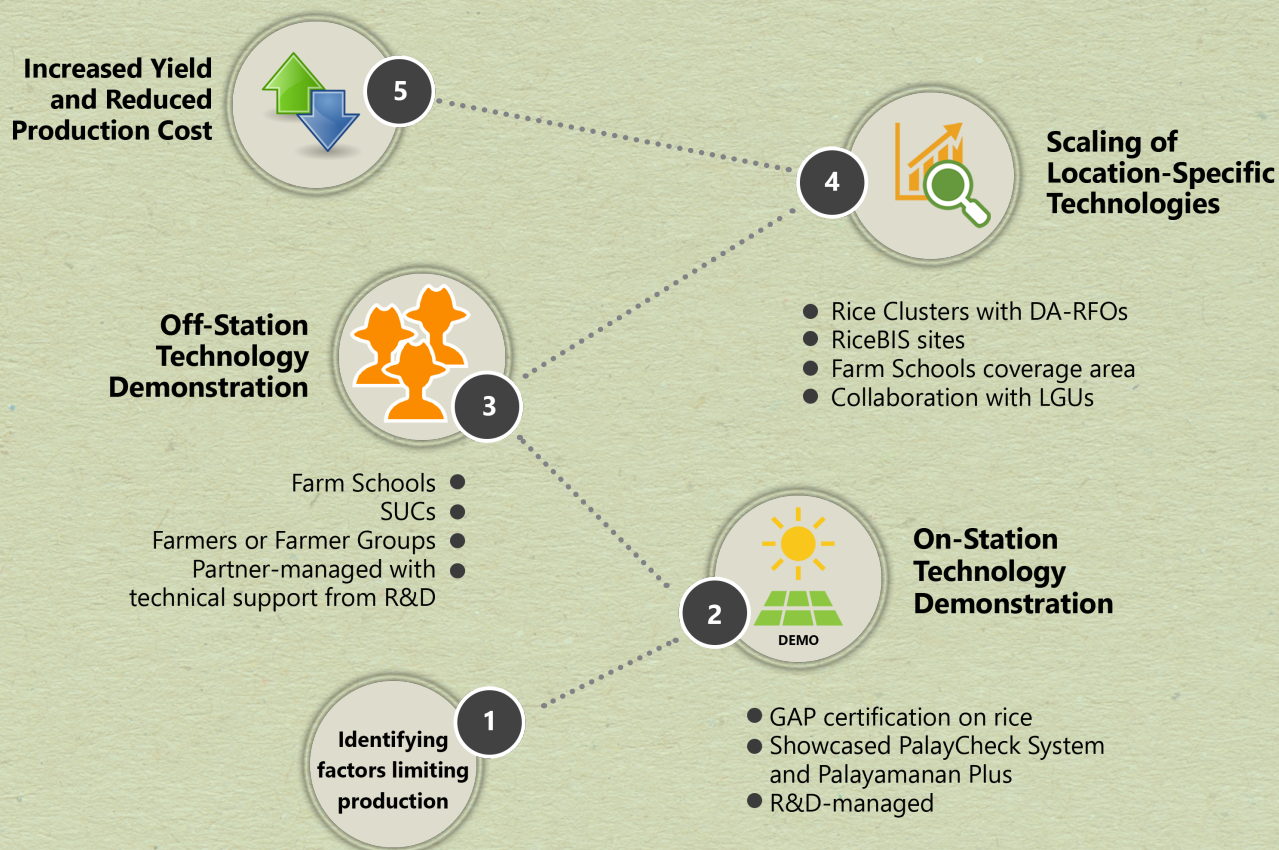
scaling strategy. They are tapping existing farm schools and farmers’ cooperatives to optimize resources and improve communication within farming communities. This will eventually lead to increasing farmers’ yields and reducing their production costs.

In sites identified to have low adoption of nutrient management strategies such as San Mariano and

San Isidro in Isabela, farmers are being trained on the PalayCheck System with focus on use of the Rice Crop Manager (RCM).

Twenty-one RCM recommendations have been generated and disseminated to farmers in Bannawag, Diffun, Quirino.

The station is hoping to continue using its scaling strategy in Apayao and Abra. 🌾



Reaching more through local intermediaries

► AURA SHAZNAY P. TUMULAK

The Scaling Rice Development Initiatives in Central Luzon project under DA-PhilRice seeks to strengthen the capacity of partner LGUs through their AEWs to facilitate scaling of latest rice technologies to increase yield and income of farmers.

Scaling technologies can be daunting if only a few people are working. Fortunately, in Bulacan, agricultural extension workers (AEWs) and farmers are willing to serve as intermediaries - trainers who will equip other farmers with science-based rice production principles thru the PalayCheck System.

"It is important to enhance the capacity of our partners who are doing most of the on-the-ground work because they are essential in successful technology scaling," lead person Mark Angelo A. Abando emphasized.

The "Scaling Rice Development Initiatives in Central Luzon" project under DA-PhilRice aims to strengthen the capacity



Bulacan farmers and AEWs learn about the PalayCheck System, with focus on use of recommended rice varieties and on pest and nutrient management.



PHOTO BY EMERARD DE CASTRO

“It is important to enhance the capacity of our partners who are doing most of the on-the-ground work because they are essential in successful technology scaling.”

- MARK ANGELO A. ABANDO
DA-PHILRICE CES

of partner LGUs through their AEWs in promoting the latest rice technologies.

With the support of provincial and municipal agricultural offices, it was easier to identify and assemble target farmers.

The project zeroed in on seven Bulacan municipalities and one city where major interventions are being conducted. San Miguel, San Ildefonso, San Rafael, Baliuag, Pulilan, Malolos City, Bocaue, and Balagtas were chosen because of their large rice areas, need for pest and nutrient management interventions, and have intermediaries and LGUs that are willing to participate.

A “rollover scheme” strategy was used to help scale the technologies. AEWs in the province who were trained under the RCEF Rice Specialists’ Training Course and Training of Trainers in 2021 led the on-site farmers’ training.

Farmer-intermediaries were then chosen after the training based on the recommendations of their partner AEWs and their willingness to train other farmers. They are expected to train new batches of farmer-participants this year.

Since the PalayCheck System, specifically pest and nutrient management principles, needs to be followed, the project team identified learning fields in the specified sites to demonstrate the use of diagnostics tools such as MOET, MOET App, LCC App; and best pest management practices.

Technology adoption will be analyzed at the end of the implementation to determine the effectiveness of the strategy used.

Abando said that the team is also developing an information system to determine and harmonize rice interventions in the area. 🌱



PHOTO BY: CHRYSOSTOFER DIONISIO

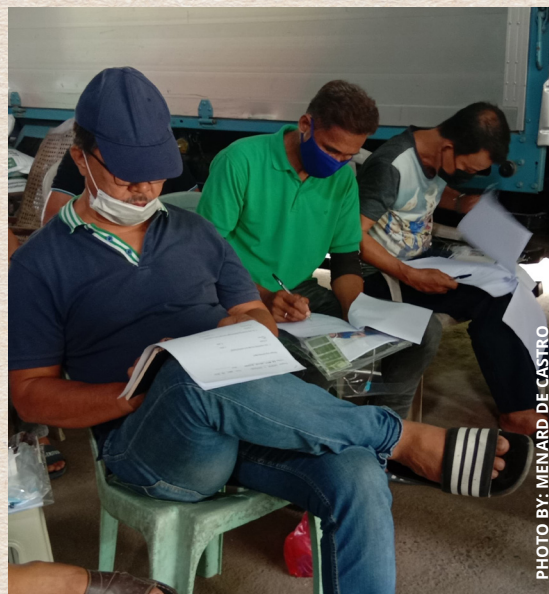


PHOTO BY: MENARD DE CASTRO



PHOTO BY: MENARD DE CASTRO



PHOTO BY: MENARD DE CASTRO

ASSESSING NEEDS:

First step in determining what technology to scale

► MERVALYN O. TOMAS

“We need to see the wider picture. For example, if rice yield in the area remains low, we must assess why it is not increasing...”

DR. MICHELLE C. QUIMBO
DA-PHILRICE LOS BAÑOS

Creating solutions to problems that do not exist is a waste of effort and resources. The springboard to success of projects that impact lives and transform communities is assessment of the real need before providing solutions to it.

Dr. Michelle C. Quimbo, R&D Coordinator at DA-PhilRice in Los Baños and Rice Technology and Innovations Promotion (RiceTIP) project leader, strongly believes in this principle.

“We need to see the wider picture. For example, if rice yield in the area remains low, we must assess why it is not increasing. Is the place prone to

natural disasters? Is the soil infertile or is it prone to flooding?” she explained.

Her team analyzed Quezon’s agro-climatic and biophysical characteristics to evaluate rice crop suitability. They also studied the farmers’ socio-economic situation that affects rice production and income.

Continuing effort

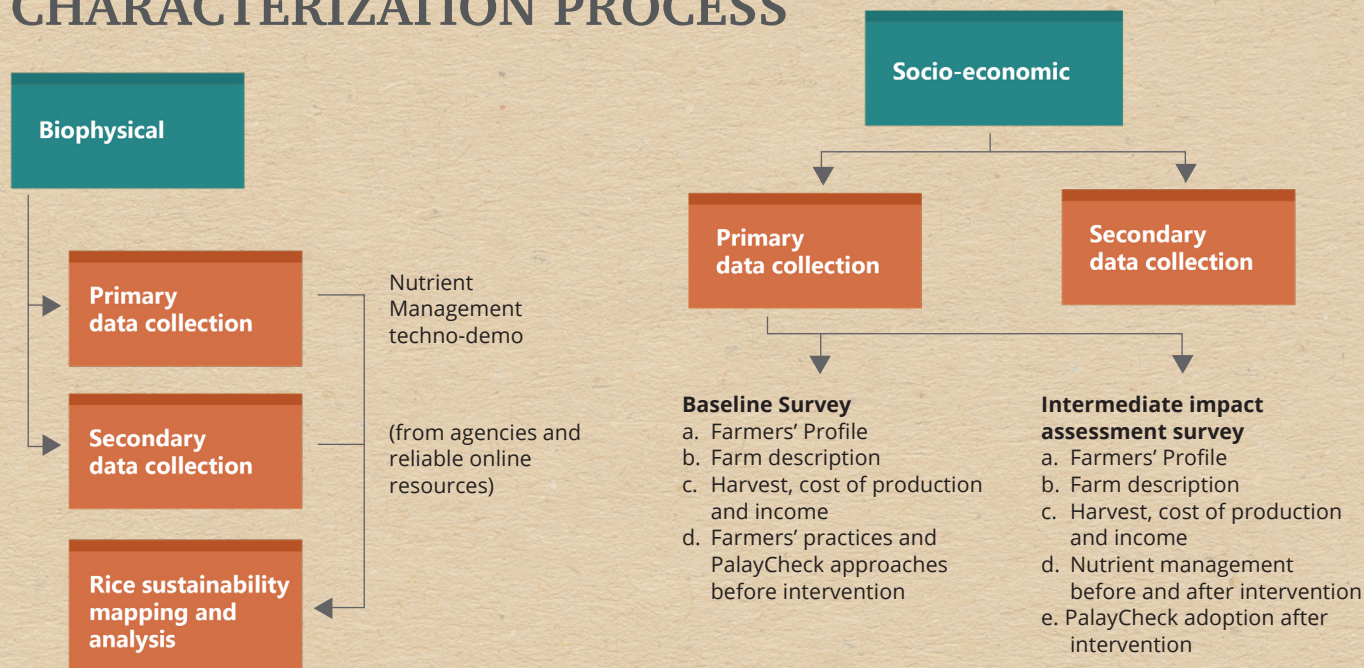
The agro-climatic and biophysical characterization generated 13 maps, which sketch rice areas, irrigation points and areas, soil types, elevations, slopes, climate, maximum & minimum temperatures, humidity, solar radiation, rainfall, and drought-prone areas in Quezon province.



PHOTO BY: MARIA SOFIA S. CANILAO



BIOPHYSICAL AND SOCIO-ECONOMIC CHARACTERIZATION PROCESS



“Soil types alone could determine distinct characteristics that would be applied on the rice crop suitability analysis,” Quimbo explained.

She said that the characterization data were turned over to the LGUs of the partner municipalities for their use in planning pro-farmer interventions. 🍌

“Documentation of the results of the techno-demo and site characterization was presented to the partner LGUs for appropriate recommendation of rice production practices, especially on nutrient management, so that the LGU’s technology scaling activities are better informed.” DR. MICHELLE C. QUIMBO



PHOTO BY: MARIA SOFIA S. CANILAO

PHOTO BY: MARIA SOFIA S. CANILAO

The needs assessment done by DA-PhilRice in Los Baños revealed that Quezon rice farmers need assistance in nutrient management.

Partnership makes resilient varieties widely available

► MERVALYN O. TOMAS

It was a joy for Gil N. Del Barrio, 56, a seed grower in Camarines Norte to allow part of his farm to be planted with foundation or registered seeds of new inbred varieties. He wanted to help show other farmers the vast array of rice varieties available that they can try to see which suits their area.

Del Barrio is one of the 35 seedgrower-cooperators for the *Binhing Palay* farms in Bicol and Eastern Visayas Regions (EVR).

“We tapped seed growers as partners because they are already trained to produce seeds, and it will expedite the process.”

RONA T. DOLLENTAS
DA-PHILRICE BICOL

The *Binhing Palay* farm is a scaling strategy to make new inbred rice varieties, particularly those adapted to drought, saline-prone, upland, and areas prone to flooding widely accessible to farmers in Bicol and EVR. This is being done in partnership with 17 seed growers and 18 farmers in various areas to accelerate dissemination, make the seeds accessible, and encourage farmers to use the seeds.

“We tapped seed growers as partners because they are already

trained to produce seeds, and it will expedite the process,” Rona T. Dollentas, supervising SRS of DA-PhilRice in Bicol and project lead, explained.

She added that the seed growers are interested in the new inbred rice varieties, especially that these are adapted to adverse environments, which are common in the target areas.

BINHING PALAY FARMS		
Scaling of rice varieties for adverse and irrigated (newly released inbred) environments		
REGIONS	PROVINCES	NUMBER OF SITES PER PROVINCE
BICOL	Masbate	5
	Catanduanes	11
	Camarines Sur	4
	Albay	3
	Sorsogon	15
EASTERN VISAYAS	Northern Samar	11
	Eastern Samar	14
	Western Samar	4
	Leyte	2

Varieties introduced

The *Binhing Palay* farms introduced and made 22 HQiS accessible, which benefited 168 rice farmers in Bicol and EVR. These are NSIC Rc 416, Rc 420, Rc 434, Rc 478 for rainfed areas; NSIC Rc 330, Rc 332, Rc 532, Rc 534, Rc 536 for saline-prone environment; NSIC Rc 27 for upland farms; NSIC Rc 480 or Green Super Rice (GSR), a multi-stress

adapted variety; NSIC Rc 508, Rc 460, Rc 438, Rc 436, Rc 400, Rc 226, Rc 224 for irrigated fields; NSIC Rc 218 SR, a special rice; and NSIC Rc 31SR, Rc 19, Rc 15, glutinous rice.

Limitations and recommendations

Promotion of these new varieties was, however, challenging for the team. There is no demand yet for rice varieties for adverse environments.

“Seed growers prefer to plant irrigated varieties that are well known by the farmers and are supplied by RCEF or NRP. Our strategy was to give the seeds to the seed growers and farmers for free to create demand,” Dollentas said.

In addition, most of the rice varieties for adverse environments available from DA-PhilRice warehouses are foundation seeds, which seed growers are not allowed by law to plant.

“With the limited seed production area of DA-PhilRice Bicol, we opted to propagate these seeds at the *Binhing Palay* farms, either at seed growers’ or farmers’ fields, making them not eligible for certification. It would be helpful if rice varieties for adverse environments were excluded from regulations until market demands are created,” Dollentas recommended.

She also proposes partnership with LGUs to propagate and distribute the seeds to affected rice areas for effective and efficient dissemination of the varieties for stress-prone rice areas. 🌱



FEATURE

TECHNOLOGY SCALING IN THE VISAYAS

Outsmarting fertilizer problems by promoting use of decision support tools

► REUEL M. MARAMARA

“With this project, we hope to correct fertilizer use and increase farmers’ yield by 1t/ha— a step closer to a rice self-sufficient Negros Occidental. With good results, we will then facilitate scaling of the project in other provinces through our local partners.”

ALVIN D. PALANOG
DA-PHILRICE NEGROS

The role of science is crucial in guiding farmers to make important decisions for them to achieve higher yield with less production cost.

In Negros Occidental, DA-PhilRice has started advocating the use of diagnostic and decision support tools - the Leaf Color Chart (LCC) app, which determines nitrogen levels of the crop through its leaves; Minus-one Element Technique (MOET) app, which identifies the limiting nutrients in the soil; and the Rice Crop Manager Advisory Services (RCMAS), an ICT-based system that gives fertilizer and crop management recommendations.

Dr. Gerardo F. Estoy Jr., DA-PhilRice Negros branch director, said that the project aims to scale the use of nutrient management technologies that reduce production cost and increased yield.

Not just a dream

According to Alvin D. Palanog, branch research and development coordinator, rice self-sufficiency has always been an elusive dream for the province. While it is consistently one

of the top rice-producing provinces, its average yield has remained below 4t/ha.

Palanog explained that another possible contributor to the low yields is the incidence of low fertilizer use in the province. The rice crops are just not given enough nutrients.

“With this project, we hope to correct that and increase farmers’ yield by 1t/ha— a step closer to a rice self-sufficient Negros Occidental. With good results, we will then facilitate scaling of the project in other provinces through our local partners,” Palanog said.

The station tapped local government units (LGUs), state universities and colleges, and other stakeholders, who are in-charge of sustaining the project. Some LGUs have already agreed on providing materials for the project.

“Eventually, we want the LGUs to play a vital role through the policies they create. For now, we’ll focus first on promoting and showing farmers that these technologies exist and work through our technology demonstration sites,” Palanog concluded. 🍌

Policy advocacy to broaden techno adoption

► MINARD F. PAGADUAN

DA-PhilRice Agusan is employing policy advocacy in urging local government units (LGUs) in Surigao del Norte to organize farmers' associations for them to produce high-quality inbred seeds.

The branch station's Technology Promotion, Utilization, and Supply of High-Quality Seeds (TechnoPUSH) project team has found out that one of the reasons for low rice yield in the province is the continued use of poor-quality seeds.

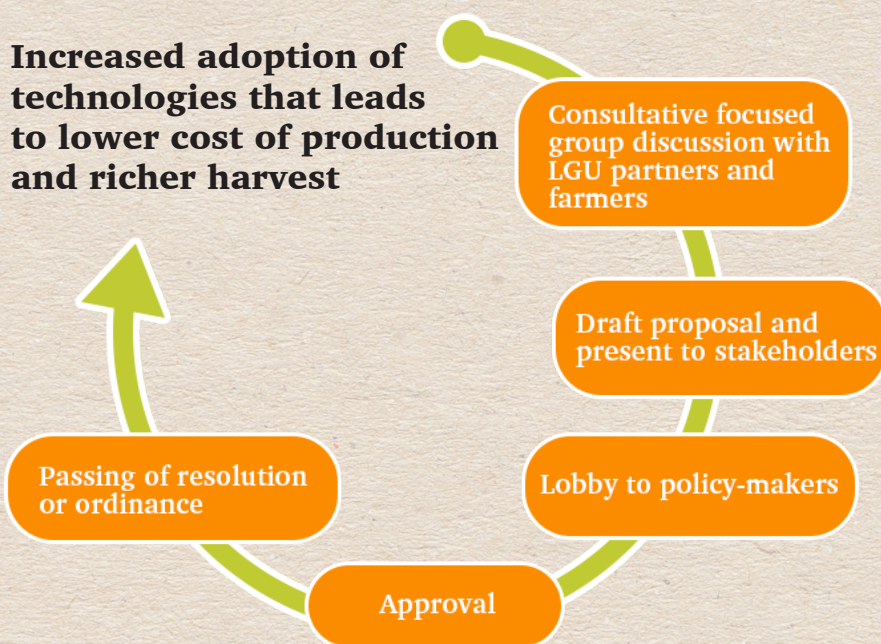
"Farmers in the province are beneficiaries of the National Rice Program (NRP) but there is a lack of seed growers, which limits farmers' access to high-quality seeds," Sherlyn Dawn D. Taglucop, project lead, said.

They further encouraged LGUs of Surigao City, Gigaquit, and Claver towns to allow for more farmers' training in their areas.

"We, however, need to partner with LGUs to scale these technologies faster."

SHERLYN DAWN D. TAGLUCOP
DA-PHILRICE AGUSAN

Increased adoption of technologies that leads to lower cost of production and richer harvest



"These areas are considered major rice producers in Caraga Region but their average yield is 2.84 t/ha only. Through our baseline survey, the team found out that they need interventions in pest management, use of high-quality seeds, and use of machines," Taglucop said. She added that rice production cost is also high.


The team set up techno-demo farms to showcase the performance of high-quality inbred seeds, use of combine harvester, mechanical transplanter, rice crop manager, and integrated pest management.

"We, however, need to partner with LGUs to scale these technologies faster," Taglucop emphasized.

She said that the project team felt the support of LGU partners during the initial implementation of TechnoPUSH.

"They have expressed their willingness to continuously support and provide interventions to farmer-cooperators even after the project," Taglucop said.

The policy-advocacy campaign proposal was submitted to LGUs of the three towns for further discussion and approval. 🍌



Use of AWD, complemented with use of high-quality seeds and IPM, helped increase yield of farmers.

PHOTO BY: BERNEDETH PACIO

Partners' commitment makes AWD scaling successful

► AURA SHAZNAY P. TUMULAK

With frequent water supply shortage in M'lang, North Cotabato, the team of Mr. Ommal Abdulkadil of DA-PhilRice Midsayap promoted Alternate Wetting and Drying (AWD) as a water management method to the National Irrigation Administration (NIA) - M'lang/Malasila Rivers Irrigation System (MMRIS).

Their training curriculum also included complementary methods for AWD such as the use of high-quality seeds and integrated nutrient management.

Members of NIA - MMRIS practiced these methods even after PhilRice

AWD is a common practice in irrigated lowland rice that uses less water than the usual system of maintaining continuous standing water in the rice field.

Midsayap's training, which led to positive results. They increased their service area from 7190.19 ha to 7338.63 ha and their cropping intensity from 97% to 100%, and improved their yield from 4.78 to 6.84 t/ha.

The success of NIA - MMRIS became the branch station's most relevant intervention that led to developing a policy to promote the practice of AWD. The local NIA - RIS office and their federation of irrigators' associations worked to pass a board resolution for the institutionalization of AWD.

According to Abdulkadil, the successful development of the policy was due to the consistency and commitment of their partners on the ground, members of NIA - MMRIS, who always had the initiative to assist and attend to the needs of farmers.

A lesson learned, he said, is that they will create exit plans for all their interventions to provide a smoother transition for the communities they are helping.

Currently, NIA - MMRIS is mentoring three other irrigators' associations, two in North Cotabato and one in Sultan Kudarat, into adapting and institutionalizing the AWD technology.

Through M'lang/Malasila RIS, DA-PhilRice Midsayap hopes to replicate this success in other parts of Central Mindanao as well. 🍌

Collaboration to maximize impact

► SARAH JOY N. RUIZ

Technology in agriculture affects many areas such as fertilizers, pesticides, seed technology. Biotechnology and genetic engineering have resulted in pest resistance and increased crop yields. Mechanization has led to efficient tilling, harvesting, and a reduction in manual labor. Irrigation methods and transportation systems have also improved.

Hence, DA-PhilRice continues to build strong partnerships with other agencies and projects to scale-up agriculture technologies. The advantage of partnerships is that they enhance farmers' access to farming inputs, thus refining the quality of improved and relevant technologies.

Mandanas-Garcia Ruling (RA 7160)

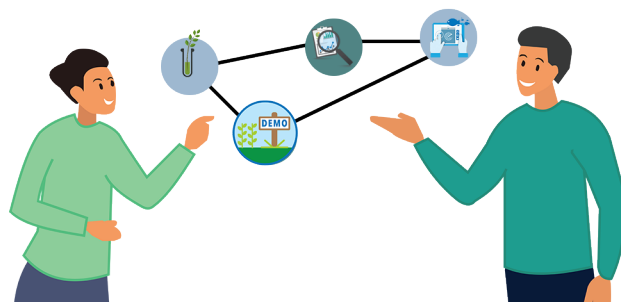
RA 7160 increases the Internal Revenue Allotment (IRA) of LGUs, which they can spend on infrastructure, agriculture, social welfare, healthcare, and livelihood.

The bigger IRA will also enable LGUs to fully implement the Province-Led Agriculture & Fisheries Extension Systems (PAFES) in partnership with the DA.

PAFES will pave the way for the crafting of a food security program that will benefit farmers, fishers, rural folk, and agri-fishery industry stakeholders.

PAFES is expected to effectively, efficiently and economically promote a program that will be sustainable, inclusive, transparent and with accountability.

All provinces, cities, municipalities, and barangays shall manage the following agriculture services for scaling:



Provinces

Agricultural extension and on-site research services and facilities which include the prevention and control of plant and animal pests/diseases; dairy farms, livestock markets, animal breeding stations, and artificial insemination centers; assistance in the organization of farmers and fishermen's cooperatives or associations, as well as transfer of appropriate technology.



Cities/ Municipalities

Agricultural extension and on-site research services and facilities related to agriculture and fishery activities such as dispersal of livestock, poultry, fingerlings and seedlings; operation of demonstration farms; improvement of local distribution channels, interbarangay irrigation systems; and enforcement of fishery laws; fish ports.



Barangays

Agricultural support services which include distribution of planting materials, and operation of farm produce collection and buying stations.

Technologies from R4D scaled by DA-BAR Funded Projects



Philippine Rice Information System (PRISM)

Technologies used to generate rice information and transmit data:

Remote sensing (RS), Crop-Growth Simulation Modelling (CGSM), Geographic Information System (GIS), Smartphone-based survey and online information system.

PRISM is using multi-temporal **Synthetic Radar Aperture Remote Sensing Technology**.



Multi-Purpose Seeder (MP Seeder)

Mechanized Seed Technology

Improving crop productivity and increasing income in rice-based rainfed and water-scarce environments.



Improving Technology Promotion and Delivery (IPaD)

IPaD's work to help scale use of digital agri tools

The use of ICT-based tools and resources is promoted to farmers and various intermediaries. Users of Pinoy Rice Knowledge Bank, PhilRice Text Center and e-Extension increased through the project. Extension workers were provided with computer tablets to enable use of digital agri tools.

Rice Crop Manager (RCM)



RCM Advisory Service (RCM)

An optimized digital agriculture application for improved crop and data management to benefit Filipino rice farmers and agricultural extension workers.

How RCMAS Works

Navigate to rcmuser.da.gov.ph/register and (1) Create an account, (2) Add farmer and farm-lot, (3) Get recommendation.

Pest Risk Identification & Management (PRIME)



PRIME COLLECT

A data collection tool for conducting rice pest surveillance. The tool is used for encoding data gathered from field observations and farmer interviews.

PRIME also does field experiments, remote sensing and mapping, pest modelling, information and communications technology.

Water-efficient and risk mitigation technologies for enhancing rice production in irrigated and rainfed environments



Technologies used:

AutoMonPH sensors, user-friendly interface/app for water level monitoring and irrigation advisories, Database of AutoMonPH system of data interchange with other projects, Laser levelling and machine transplanting.



Rooted & growing

► ANNA MARIE B. BERTO

PHOTO BY: JACQUELINE CANILAO

At a glance, the chief goal of the Rice Competitiveness Enhancement Fund (RCEF) Seed Program seems pretty simple – to distribute certified seeds to rice farmers. Looking deeper, it is not an easy pursuit, especially if we add the pandemic to the equation.

Since the start of the program in September 2019, various partners in the field mushroomed. Among them were the local government units (LGU).

Keeping it wide

In Binalbagan, Negros Occidental, many farmers are challenged by distance. Travelling to the municipal center is tedious and expensive for those residing in remote barangays like Amontay, Santol, and Bi-ao. One *habal-habal* (rented motorcycle) ride would cost them P400.00.

Barangay Umiray in General Nakar, Quezon also contends with the same

predicament. Although its farmers occupy the largest rice area in the municipality, they are also the farthest from the warehouse where RCEF seed distribution usually happens.

Community lockdowns imposed due to the Covid-19 pandemic limit San Miguel, Bulacan farmers from easily going to seed distribution points. The province is part of the NCR Plus Bubble, with Rizal, Cavite, and Laguna. Travel restrictions were among the precautionary measures against the onslaught of the Delta variant of the virus.

In Alfonso Lista, Ifugao, unpaved roads, slopes, and distance, plus restricted mobility due to the pandemic slowed down the farmers from their farm activities and attendance to seed distribution.

These situations pushed the LGUs of the four municipalities to bring the

program closer to the farmers. The Municipal Agriculture Offices (MAO) coordinated with the seed delivery teams to drop the RCEF seeds even to the farthest barangays.

“We believe the on-site distribution eased the difficulties faced by our farmers, especially the marginalized,” Cesar Gayem, Binalbagan municipal agriculturist (MA), said.

The LGU of San Miguel also established a system whereby the barangay officials collect the seeds at the municipal drop-off point after they receive the go-signal from the MAO, and later distribute them to their farmer-constituents.

“The committee assigned by our barangay LGU in Sta. Rita, San Miguel would call us when we are scheduled to receive the RCEF seeds. Their system was beneficial because it is near, it is safer with lesser crowd, and the queue is shorter,” farmer-beneficiary Tirso Yasis acknowledged.



“We believe the on-site distribution eased the difficulties faced by our farmers, especially the marginalized.”

CESAR GAYEM,
Binalbagan municipal agriculturist

John Leo Tena, General Nakar’s MA said they organized seed deliveries by barangay cluster, especially in areas where there is limited access to vehicles.

“Clustered deliveries were successful; thanks to the cooperation of other offices in the LGU such as the Municipal Environment and Natural Resources Office, Municipal Engineering, and the Office of the Municipal Mayor. They supported us by lending their service vehicles,” Tena gave credit to where it is due.

Working deep

In San Juan, La Union, MAO officer-in-charge Jovita Abengona said their staffers always ensure that storage buildings and warehouses are available when seeds are up for delivery and inspection.

In New Corella, Davao del Norte, the MAO prepares a well-planned planting

calendar per barangay as basis for scheduling all their activities. They vowed that their assistance to farmers must always be on time. They also use media platforms to reach a massive number of farmers.

“We have a local radio program in MON 88.9 station. Here, we broadcast the schedules of seed distribution per barangay. We also optimize our official facebook page for the same purpose,” New Corella MA Robert Oracion said.

Under DA-PhilRice Midsayap, the only municipality that has completed the encoding in the RCEF Seed Monitoring System was Midsalip, Zamboanga del Sur. They therefore planned their distribution activities well and gathered the needed information in the farmers’ acknowledgment receipt properly.

“We maximized the use of digital technologies [tablets] to encode and

immediately send our records to the system of the DA-PhilRice,” Midsalip MA Imelda Sarcauga noted.

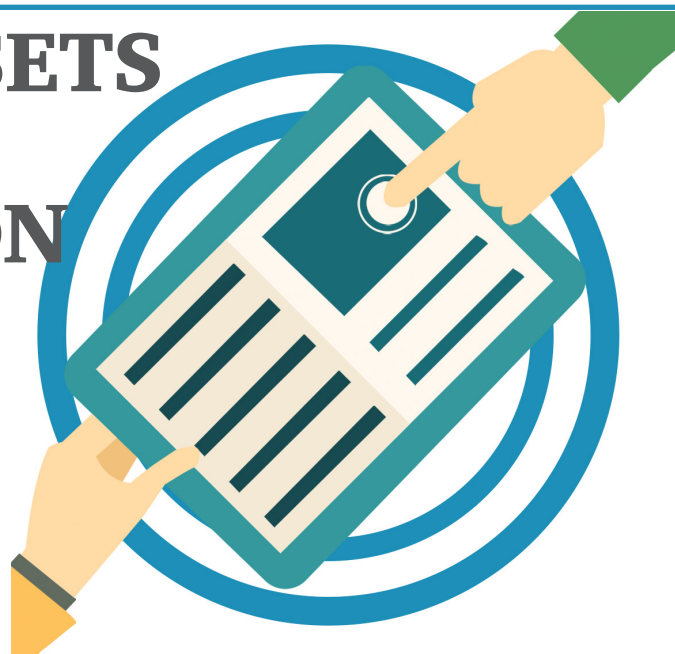
Fruits of cooperation

After four seasons, from Sep 2019 to Sep 2021, DA-PhilRice and the LGUs were able to distribute 7.08 million bags of certified seeds, benefitting an average of almost 700,000 farmers across all seasons. A more meaningful insight – the Philippine Statistics Authority recorded an all-time high palay production data of 19.96 million metric tons in 2021. While these successes must not be exclusively attributed to the activities of the program implementers, these are proof that the efforts and the cooperation among the workers in agriculture are not in vain. Instead, these exercises of service are rooted and growing. 🌱

SHAPING MINDSETS THROUGH COMMUNICATION

► SARAH JOY N. RUIZ

Communication is an integral part of technology scaling. Various strategies can be used for information to reach a large number of farmers in different parts of the country. It also plays a vital role in changing farmers' perspectives or mindsets - helps them understand the importance of various technologies in making their lives better and how to use them, which will guide them in decision making.



RADIO BROADCAST



- Airing of radio plugs
- Expert dispatch to School-On-The-Air (SOA)
- Radio interviews
- Production and circulation of broadcast releases

SOCIAL MEDIA



- Posting of infographics, quote cards, and photo news to station facebook page
- Sharing of rice and rice-based contents, and important announcements

ONE-STOP INFORMATION SHOP



- Displaying of knowledge products and IEC materials in partner establishments (LGUs, Agri Stores, Farmers' Information and Technology Services (FITS) centers, Seed Coop Stores) for easy access to farmers

CAPACITY BUILDING AND KNOWLEDGE SHARING



- Technical briefings
- Farmer Field School
- Training
- Expert dispatch to training by partner agencies
- Social mobilization activities with partner agencies
- e-Lakbay Palay, PalayAralan, Lifelong Learning Series (LLS), Field days

KP PRODUCTION/DISTRIBUTION



- Localization of KPs
- Production and distribution of newsletter
- KP distribution during Rice Competitiveness Enhancement Program (RCEF) Seed distribution and other RCEF activities
- Provision of KPs to partner agencies, farm schools, and state universities and colleges
- Establishing and maintaining KP/IEC distribution pathways

Q&A



TECHNOLOGY LICENSING

▶ **ATTY. JERRY SERAPION**
Intellectual Property Rights Specialist, PhilRice

Q: What is Technology Licensing Agreement (TLA)?

A: The transfer and use of proprietary technologies are usually governed by a TLA. This agreement spells out key terms and conditions such as the subject matter and nature of the license, royalty rate, upfront fee, and others.

Under RA 10055, technology refers to knowledge and know-how, skills, products, processes, and/or practices. The technology is proprietary when it is owned or controlled by a person or organization whose authorization is required prior to commercialization by any other party. Such technologies are usually protected by a patent, utility model, trade secret or other forms of intellectual property (IP) rights. Such rights grant monopoly to the IP holder or to the licensee.

These IPs are considered as intangible assets and as such may confer economic benefit to the holder. Such economic value may be estimated using valuation techniques such as cost, market, and income approaches which tend to produce a range of numbers without taking into account whether the same would be acceptable to another party during the negotiation process.

Q: What process is followed in technology licensing?


A: The transfer of government-funded technologies through direct negotiation is governed by RA 10055 otherwise known as Philippine Technology Transfer Act of 2009. This law allows Research and Development Institutions (RDIs) to directly negotiate agreements for the commercialization

of IPs, provided, that it shall obtain a written recommendation from the Secretary of the Department of Science and Technology (DOST) and secure a fairness opinion report (FOR) from an independent third-party body composed of experts from the public and private sectors as may be determined by the DOST.

Under the law, the FOR shall contain a statement expressing the opinion of the body (FOR) as to the fairness to the RDI of the proposed transaction, particularly its financial terms. Per amended implementing rules and regulations of RA 10055, the request for an FOR may now be received by a DOST regional office. However, RA 10055 does not preclude the RDI from resorting to other modes of commercialization such as public bidding and build-operate-and-transfer scheme.

Q: What technologies developed by DA-PhilRice are licensed to private outfits?

A: For 2021, DA-PhilRice had six technologies licensed to five private outfits. Nueva Ecija's Val Agri Machineries inked a TLA for the hand tractor-drawn multipurpose (MP) seeder, microtiller, laboy tiller, reversible dryer, seed cleaner, and buoyant ride-on tiller. ACT Metal Craft Corporation of Isabela, signed its first TLA with DA-PhilRice to also manufacture the MP seeder and buoyant ride-on tiller. New Era Industries of Ilocos Norte Global Marketing and Construction Corporation in Muntinlupa City, and Green Valley Machineries in South Cotabato also qualified as licensees for the MP seeder. 🍌



*Finally, a rice that is infused
with vitamin A will soon
be served on the tables of
Filipino households.*

Golden Rice

up for deployment

► RONAN G. ZAGADO

Finally, a rice that is infused with vitamin A will soon be served on the tables of Filipino households.

After almost two decades of painstaking research and regulatory review, Golden Rice has wholly satisfied all biosafety regulatory requirements in the Philippines. The biosafety permit for commercial propagation issued in July 2021 was the final stage of regulatory approval, which means that Golden Rice may now be deployed.

Golden Rice is just like our ordinary rice, superior in the sense that it is enriched with beta-carotene, which the body converts into vitamin A as needed. The beta-carotene compound gives this grain its yellow-orange or golden color, hence its name.

It is the first genetically engineered rice with nutritional benefit in the world, and the first in Asia to have been granted a biosafety permit for commercial propagation. This will open the door for the first direct community or public experience of Golden Rice in the world, which will take place in the Philippines.

DA-PhilRice, in close collaboration with the International Rice Research Institute (IRRI), is now working on the next important steps in preparation for Golden Rice deployment, such as varietal registration through the National Seed Industry Council (NSIC) and seed production. Considering the amount of time to produce the seed planting materials following the

standard seed production process, a sufficient supply of its seeds will be made available for broader commercial rice production by the fourth quarter of 2023.

While seeds are being multiplied, DA-PhilRice will carry out a parallel pathway for the pilot-scale deployment of Golden Rice in selected areas with high incidence of malnutrition. Following the overwhelming public interest in Golden Rice after its regulatory approval, this pathway seeks to initially introduce it at the soonest time possible to its selected beneficiaries. It also serves as a pilot test to explore and assess its deployment strategies.

DA-PhilRice and its partners will



produce and distribute the Golden Rice seeds for farmers and milled rice for consumers in seven initially targeted provinces. These provinces were identified based on several factors such as stunting rates, inclusion in the list of priority provinces of the National Nutrition Council's Philippine Plan of Action for Nutrition (PPAN), and rice production. They also represent the three major island groups: Quirino and Catanduanes (Luzon); Samar and Antique (Visayas); and Agusan del Sur, Lanao del Norte, and Maguindanao (Mindanao).

On top of the plan is to ensure that there are enough Golden Rice seeds; farmers and consumers are

willing to plant and eat it; and that the necessary policy support is in place to facilitate its integration in existing government programs that address malnutrition. Together with our partners at all levels, we will gradually make available quality Golden Rice seeds through targeted seed production and stewardship. We will also continue to increase knowledge and positive receptivity to Golden Rice in the target communities through communication, education, and marketing. Policy advocacy activities will likewise be integrated at multiple levels. All of these efforts will contribute toward preparing the target communities to own Golden Rice as a complementary intervention

to increase vitamin A intake of at-risk populations in line with the food and nutrition security strategies of the DA.

Along its way, the project has been funded by a number of donors, including the Rockefeller Foundation, the Bill & Melinda Gates Foundation (Grand Challenges in Global Health Initiatives), USAID, the Philippine Department of Agriculture, HarvestPlus, the European Commission, Swiss Federal Funding, and the Syngenta Foundation.

For more updates about the Golden Rice Program, you may follow us on Facebook, Twitter, and Instagram at @goldenriceph or visit our webpage at www.philrice.gov.ph/golden-rice/about-gr/. 🌱

Cheers to our retirees!

► ALDRIN G. CASTRO



EVELYN FERNANDEZ JAVIER, 65

Pinili, Ilocos Norte
Supervising SRS, CES/ ASPPD

Length of Service: 43 years

Javier earned her BS Agriculture major in crop physiology and minor in agricultural economics from Mariano Marcos State University in 1978. She also earned a master's in Botany major in plant physiology, and cognate in soil science (soil chemistry, fertility, and microbiology) from the University of the Philippines Los Banos.

She started working in government in 1978 as Research Aide at the Philippine Tobacco Research and Training Center receiving only around P500 per month. In 1995, she transferred to PhilRice.

She authored and co-authored scientific papers published in various platforms, for which she received various awards.

Javier's research interests are Soils Plant Atmosphere Continuum, Soils and Plant Nutrition, and Stress Physiology on drought and salinity.

Holding on to the principle of self-duplication, she passionately mentored young researchers. As she always says, "One can be a good leader, if he can produce another leader."

"All my hardwork, it's for the Filipino rice farmers and stakeholders," Javier reiterates as she waves goodbye and welcomes retirement.



NIDA QUIMOYOG ABROGENA, 65

Batac City, Ilocos Norte
Supervising SRS, DA-PHILRICE BATAc

Length of Service: 34 years

Abrogena graduated cum laude in BS Agriculture major in Ag-Economics from Mariano Marcos State University in 1978. With a PCAARRD scholarship, she finished MS Agricultural Economics at UP Los Banos in 1983. She earned 30 units PhD in Economics, UP Diliman in 1987.

In 1987, she worked as research assistant at the Philippine Tobacco Research and Training Center (now National Tobacco Administration). In 1999, she transferred to DA-PhilRice Batac station starting as a research fellow. She initiated the identification of Socio Economics-related problems and researchable areas on Rice and Rice-based crops in Northwest Luzon, which led to the development of the research agenda of the station. PhilRice Batac garnered the Executive Director's Award in 2002 and Most Outstanding Station in 2003-2004.

She helped win the Best AFMA Technology award given by the DA-BAR in 2002 as co-senior author of the research on Modified Dry-Direct Seeding: Alternative Technology Package for Rainfed Areas. She was also a senior author of an AFMA R&D Paper Awardee in 2003. She led several socio-economics studies which included Impact Studies and Agri-business development until 2013. She co-led the implementation of the Palayamanan Project. She then served as coordinator of the Business Development Unit of the Station.



NENITA VIYAR DESAMERO, 65

Santa Cruz, Laguna
Chief SRS, CES/ PBBD

Length of Service: PhilRice- 26 years; University of the Philippines Los Baños – 6 years

Desamero finished BS Agriculture major in agronomy, minor in plant breeding in 1978 and MS in Horticulture major in plant breeding and genetics in 1983, both at UP Los Baños. Years later, she obtained her Ph.D. in Plant Physiology (plant tissue culture with emphasis on plant breeding) at Clemson University, USA.

Desamero specialized in plant breeding, plant tissue culture, and plant physiology. Credited to her are 32 new varieties of rice approved by the National Seed Industry Council; primarily for the drought-prone rainfed lowland ecosystem and saline-prone environment.

As a senior rice breeder, Desamero was in-charge of developing varieties with tolerance to abiotic stresses. She conceptualized and designed the breeding program for drought-prone rainfed and abiotic stress (saline- and flood-prone) environments. She spearheaded the establishment of simple working facilities; development and improvement/modification of published protocols for mass screening of breeding materials for abiotic stress tolerance. Also, she was a program leader of the Hybrid Rice Breeding Program of PhilRice.

She served in various committees under DA-PhilRice - Chair of the Scientific Integrity and Ethics Committee; Institutional Biosafety Committee; member of the PhilPRAISE Committee; and Chair of the Rice Technical Working Group. She was elected President of the Philippine Association of Plant Tissue Culture and Biotechnology, Inc. and the Federation of Crop Science Societies of the Philippines (now Federation of Plant Science Associations of the Phils.).

Desamero authored and co-authored various publications presented and published in different platforms. In 2002, 2005, and 2008, she was awarded as Outstanding PhilRice Employee; received the CSSP Achievement Award in Research in 2010; and her research team was honored with the CSSP Achievement Award in Technology Development in 2017. She also accumulated numerous best research paper and poster awards in various scientific conferences.

Congratulations!

AWARDEES, NEWLY CONFERRED SCIENTIST

DR. ROEL R. SURALTA

2021 National Research Council of the Philippines (NRC) Achievement awardee

DR. NORVIE L. MANIGBAS

2021 Outstanding Agriculturist

ROSALY V. MANAOIS

Newly conferred Scientist I

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Key lessons on technology scaling learned from our retirees

Compiled by CHRISTINA A. FREDILES

On use of certified seeds

Dr. FRISCO M. MALABANAN



Use of quality rice seeds, either certified inbred or hybrid rice, can help increase the yield of farmers.

During the implementation of any fertilizer, irrigation, extension, loans, dryers, or seeds program, use of certified seeds (CS) is one key component that aims to ensure enough supply of available and affordable rice

for every Filipino.

Technology demonstration is very crucial. Techno-demo sites should be strategically established in every municipality. With the "to see is to believe" mentality of most farmers, demo sites serve as the living proof that CS can help increase yield. What is often not fully considered in programs is the timely availability of CS of varieties preferred by farmers. Techno-demo and seed production should work side by side. We should ensure not only the high performance of varieties during the demonstration but also seeds availability at any given time especially after creating demand. The Institute should produce enough seeds ahead of time, so that farmers can buy seeds and plant them next cropping season. Otherwise, farmers will be disappointed and adoption will be stunted.

Collaborations or partnerships with DA-regional field offices and local government units should also be strengthened. With this, the Institute can get information from the ground that will serve as a guide or basis for which varieties to produce.

Optimizing the use of radio or social media could be of good help during the implementation of a program. Radio is still a very powerful tool in communicating with farmers. This is their source of entertainment and information especially in the rural areas. Today, social media is also a powerful tool in reaching more farmers.

In addition, the use of CS or any development program should always be sustained. The promotion and production of quality CS must be a continuing program. Success of programs cannot be measured in 1 or 2 years' time. Also, let's still maintain our relationships with our partners and stakeholders even after the program so that we can monitor the development and sustain our partnership with them.

On use of technology demonstrations

Engr. LEO C. JAVIER



The difficulty of scaling technologies is the many different conditions in the field, which include climate or weather, soil's physical and chemical conditions, farming system practices of farmers, resources of farmers, and needs or demands of the market. These conditions interact with each other.

Ideally, there should be a systematic identification of climate or weather, soil conditions and other boundaries. In their absence, the usual use of provincial and municipal boundaries is resorted to.

In addition, strong linkage with local government units both provincial and municipal, as well as the DA-RFOs is very important. Collaboration with LGUs is essential in the localization of technology because the local conditions of our stakeholders are better understood by their agricultural extension workers. PhilRice cannot cover everything.

Another important consideration is the process of localizing the technology rather than the transfer of technology itself.

Capacitating our extension workers in the LGU should also be considered. It is best to train all of the extension workers in the municipality, not just the one assigned in the project.

On tapping partners and organizing farmers

Mr. RUBEN B. MIRANDA



The 2002 - 2004 project Partnership for Agricultural and Rural Transformation (PART) has helped farmers from Nueva Ecija, Negros Occidental, and the Agusan provinces become full-fledged cooperatives. It's a collaboration project of DA-PhilRice with the municipal agriculture offices, Agricultural Training Institute, and farmer-traders.

Organizing farmers and partnership with development partners were very crucial in the project. Commonality among farmers is imperative to ensure a strong foundation in building a cooperative.

If the foundation is shallow then their organization or group will easily be shaken when challenges arrive. Development partners who offer financial assistance will only invest in farmers who are organized. Hence, PhilRice should always ensure the strong bond among farmers.

A good strategy is to check our farmers from time to time. Sharing of farmers' experiences and technologies through monthly meetings helped the project strengthen the relationships among farmers.

Some of the technologies that were taught to farmers are use of quality seeds, strategic application of nutrients, 3-5cm water depth, and integrated pest management.

Aside from the high-yielding technologies, DA-PhilRice should maintain its relationships with farmers and development partners. This relationship should not stop even when the project ends. Success of any development program cannot be measured in just one or two seasons. It is a continuing process where we can learn how our stakeholders adopt our technologies.

On use of hybrid rice

(excerpts from the book "The pains of success in hybrid rice commercialization in the Philippines" by the late Dr. MANUEL G. GASPAR †)

One of the major problems encountered by the Hybrid Rice Commercialization Program was the lack of storage rooms for F1 Mestizo hybrid seeds. Proper storage was necessary in order to answer the needs of farmers of having viable seeds available for their next planting activity.

As a solution, most of the seeds were stored under ambient condition as the rooms utilized were not intended for the purpose. Consistent monitoring of seeds from time to time was the strategy used to ensure that the seeds to be distributed will reach farmers in good state.

For the distribution of hybrid rice seeds, decisions should not only come from PhilRice, it should also be in consultation with proper authorities. A bilateral rather than unilateral approach is recommended. Involvement of higher authorities in the program should be considered for them to understand the purpose and techniques employed in attaining objectives to help the farmers.

Assignment of people who are not really interested in the program and are afraid to take the risks may affect the success or failure of the program. 🍌



“Optimal scaling could ignite the emergence of the much-needed second Green Revolution in the Philippines.”

DR. REX L. NAVARRO
STRATEGIC EXTENSION-COMMUNICATION EXPERT



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