2016
MILESTONES

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Maligaya, Science City of Muñoz, 3119 Nueva Ecija

Writer and Managing Editor: Jaime A. Manalo IV
Design and Layout: Jayson C. Berto
Editorial Assistant: Allan C. Biwang
Editorial Adviser: Sailila E. Abdula
Consulting Editor: Constante T. Briones

NOTE: PhilRice Program and Project Leaders are the subject matter specialists of this publication.

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From the Executive Director

PhilRice remains committed to helping increase local rice supply. This is a tall order especially at a time when food production issues abound—brought about by either extreme weather events or regional and global trade agreements.

Backed by state-of-the-art rice research for development initiatives, we show how we are providing intellectual and practical leadership in rice S&T in the country. While this publication documents quite a number of achievements, we emphasize the following:

- 6 new rice varieties released for commercialization, including a hybrid that can yield as high as 11t/ha
- Established the protocols and methods in DNA fingerprinting and rice varietal identification—a long-awaited feat in local rice breeding
- 336 new materials from local and international sources for our genebank that will provide novel genes for our breeding initiatives
- 9 agri-machines developed, piloted, or deployed
- Millions of citizens reached through our development initiatives
- Close to 20,000 farmers educated on rice and rice-based production technologies
- 5 books, 2 book chapters, and 27 journal articles published
- 3 new patents

Backed by state-of-the-art rice research for development initiatives, we show how we are providing intellectual and practical leadership in rice S&T in the country.

We have simplified the reporting for you by coming up with the Significant Figures in 2016 section that presents major accomplishments in our operations. The specific sections report the combined accomplishments of our headquarters and branch stations to give you a consolidated and holistic view of what we have done. A separate section carries the development initiatives of our branch stations.

I thank our partners in implementing our rice R&D initiatives. They are the same partners who have helped us craft our Strategic Plan 2017-2022. Their unwavering support has significantly helped us in doing and achieving more for the Philippine rice industry.

SIGNIFICANT FIGURES IN 2016

RESEARCH

6 rice varieties released for commercialization, including a hybrid that can yield as high as 11.6t/ha

60% complete LCC android app, a high-tech version of the Leaf Color Chart

9 agri- machines developed, tested, or deployed

Continuing study on a rice pest we discovered in 2015

50-120% water-use efficiency of our capillarigation system compared with manual irrigation

50% reduction in methane emission by introducing azolla in the rice+duck farming system

76-79% increase in the population of beneficial organisms (predators and parasitoids) through ecological engineering

336 new materials from local and international sources for our genebank

41-47% more effective! Trichoderma isolates were more effective than fungicides in suppressing the mycelial growth of three rice pathogens causing blast, sheath rot, and brown spot diseases

50% reduction in rice bug population within a week after application of the fungus *Beauveria bassiana*

30 new authentic rice and rice-based recipes

Protocols and methods in DNA fingerprinting and rice varietal identification

3 new patents

27 journal publications (R&D)

5 books, 2 book chapters published (R&D)

ADMINISTRATION

5 new scholars

6 returned scholars

63 awards

20 infrastructure projects completed

Strategic Plan 2017-2022 crafted/ validated

26 sent to training programs, workshops, seminars, conferences

Being faithful to our key endeavor of helping increase local rice supply, we share with you some of the important figures distilled from our operations in 2016

DEVELOPMENT

76 titles of publications with more than 300,000 copies distributed to clients

Responded to 75,729 SMSs and 877 calls from 36,970 clients

20,137 users and 33,251 page visits in our PinoyRice

100 stories in our corporate website that were sent to 149 print publications, 70 news websites, 25 Metro Manila-based radio and TV stations

11,300 page likes and reached 602,230 people in our ricematters

7,000+ visitors to our rice paddy art creations

12,000+ messages from 4,000+ student-texters to the PhilRice Text Center

71% increase in enrollment in agriculture-related tracks in our project sites

345 books, reprints, and journals catalogued and inputted in the Online Public Access Catalog

24,704 downloads in the subscribed online databases

4 agroenterprises piloted and found feasible for rice farmers

15,964 shares for our video on testimonies of successful farmers

8 infographics on Philippine rice industry statistics

4,000 farmers trained/educated

4,000+ monthly visitors to our Rice Science Museum

197 technology demonstrations

4 new training modules

46,000 farmers/target clients directly reached through training programs, demonstrations, field days, and campaigns

INFOGRAPHICS S BY JOHN GLEN S. SAROL


RESEARCH

PLANT BREEDING AND BIOTECHNOLOGY

The National Seed Industry Council (NSIC) in 2016 approved six PhilRice-bred varieties for commercialization: NSIC Rc438 (Tubigan 38), Rc440 (Tubigan 39), Rc446H (Mestiso 73), Rc462 (Salinas 21), Rc472 (Salinas 26), and Rc476 (Sahod Ulan 23). These are widely adaptable in their respective ecosystems. Mestiso 73 hybrid can yield as high as 11.6 t/ha; Tubigan inbreds can yield as much as 10 t/ha.

Work continues on heat tolerance, hybrids, and nutrient-dense and direct wet-seeded rices. Six elite lines for heat tolerance, 3 for drought tolerance, 6 for direct wet-seeded, 2 for aromatic, and 2 for Zn-dense rices are entered in the National Cooperative Tests (NCT).

Breeding for heat and drought tolerance will enable farmers to get decent rice yields amidst increasing temperature, which shrinks yield by at least 10%. Our researchers have, thus far, zeroed in on three high-yielding elite lines that brandish drought tolerance.

Nutrient-dense rice helps to relax our malnutrition issues. Direct wet-seeded rice will greatly help reduce labor cost that makes Philippine rice one of the most expensive in Asia.

> We developed a software for predicting physical attributes in milled rice such as percent chalky grains and immature grains, and grain length and shape.

Meanwhile, a Nipponbare mutant line, which is japonica-type variety, has passed the NCT standards for special-purpose rice and is now for further deliberations of the Technical Secretariat of the NSIC. This is a potential high-value rice in special niche markets that can increase the income of farmers. Likewise, a blast-resistant line that outyielded a popular hybrid rice variety in Nueva Ecija in 2016 is being singled out.

We are pursuing our initiatives on hybrid rice, the major source of growth for our rice industry. We are identifying high-yielding parent lines for breeding purposes, and for improving seed yields.

Reflecting on our processes, we have identified 28 new sets of germplasm with outstanding traits that will help hasten the development of high-yielding cultivars, which could take a decade to complete. On the golden rice research, we have identified five lines that contain high beta carotene.

We developed a software for predicting physical attributes in milled rice such as percent chalky grains and immature grains, and grain length and shape. Now analyzing milled rice entries in the NCT, the software needs significantly less time and personnel.

GENETIC RESOURCES

Desirable rice varieties are drawn from superior materials in breeding, even for the most challenging environments. Many breeders make their first steps to success in our genebank.

Fig. 1. Using international standard rice descriptors in digital characterization, we are able to establish the identity of conserved rice germplasm.

Accomplishments were anchored on the collection and conservation of new genetic resources, characterization and evaluation of our collections/accessions, and responding to seed requests. We collected 336 new materials from local and international sources that hopefully contain more novel genes for our breeding work.

We introduce our collections and accessions;

- 275 confer resistance to blast; 34 to brown plant hopper; 338 to the rice tungro virus (RTV) at 45 days after transplanting under field conditions

- 9 confer resistance to 17 differential blast isolates [reaction patterns differ from the known broad-spectrum R genes in the rice blast differential system, hence they are potential sources of novel genes for blast resistance]

> We responded to 79 requests involving 580 rice accessions and distributed 47 traditional varieties to 338 farmers.

- 3 showed significant increase in L-type lateral root development under soil moisture fluctuations and progressive drought stresses [they are possible gene sources for drought and fluctuating soil moisture stresses]

We responded to 79 requests involving 580 rice accessions and distributed 47 traditional varieties to 338 farmers. We surveyed 321 farmers for feedback to improve our seed distribution service.

Fig. 2. Seeds with 6% moisture content are packed and vacuum-sealed in foil packets with barcode labels for medium- and long- term storage in the genebank. Seeds stored at 10°C (medium-) and -20°C (long-term) are expected to remain viable for more than 25 years.

AGRONOMY, SOILS, AND PLANT PHYSIOLOGY

We work on improved plant, water, soil, and nutrient management practices with focus on resource-use efficiency.

Below are the highest yields obtained using various fertilizer treatments from our on-farm trials:

Dry Season				Wet Season		
Treatment	**Highest Grain Yield**	**Place**	**Variety**	**Highest Grain Yield**	**Place**	**Variety**
Rice Crop Manager	10.1 t/ha	Pangasinan		8.9 t/ha	Sta. Cruz, Laguna	
LCC-based N application of 151 kg/ha	7.13t/ha (across varieties)	On-station (CES)	PSB Rc52, Rc158, Rc160			
Pure organic fertilizers	5.6 t/ha	On-station (CES)	PSB Rc82	5.28 t/ha	On-station (CES)	PSB Rc82
Without fertilizer application	4.6 t/ha	On-station (CES)	NSIC Rc160			

Note: Wet season trials on-station suffered lodging losses due to heavy rains (LCC-based and without-fertilizer treatments)

Agronomic efficiency of nitrogen (AEN)

Dry season	
Treatment	AEN (Kg grain/Kg N)
Pure inorganic fertilizers	26.3
Pure organic fertilizers	15.6
Chicken manure	26.38
Azolla	3.5

We are maintaining the 49-year-old Long-Term Soil Fertility Experiment at CES. We watch the sustainability of intensive double rice cropping and provide an early-warning indicator of nutrient imbalances and mining that can occur in farmers' fields. We wish to achieve high and stable rice production with full NPK application. During the 2016 DS, we found 77.3, 13.0, and 67.0 kg NPK/ha as most sustainable. The WS trials lodged due to heavy rains.

We looked into the corn-rice-rice cropping system. Our on-farm trial in Pangasinan, following the Corn Crop Manager (CCM) recommendation, had a higher yield of 9.01 t/ha than the farmer's practice (FP). CCM used less 185-35-65 NPK/ha than the FP (236-77-66), thus saved P3,698.93/ha on fertilizer cost. An average 0.44 t/ha rice yield increase was attained over the baseline (5.5 t/ha), hence returns were 24% for corn and 14% for rice.

We evaluated diagnostic tools for nutrient management. Here are some of our major findings:

- Decision Support System for Agrotechnology Transfer (DSSAT) generated crop genetic coefficients (CGC) for eight growth stages of PSB Rc82 and Mestiso 20 with their potential yields simulated and compared with observed yields. CGC are values that

describe the phenology and growth stages of each rice variety grown under ideal conditions. In validating the model, CGC obtained from calibration are used to simulate potential yields and compare them with observed yields (field trials). Calibrated and validated DSSAT CERES-Rice Crop Model can be used to simulate potential yields of inbred and hybrid rices under optimum crop management in different locations with varying weather conditions. .

- atLEAF chlorophyll meter (P15,000) can be as good as SPAD-502+ (P100,000) for the assessment of leaf nitrogen (N) status in the field prior to N fertilizer application. Yields from SPAD- (6.4 t/ha) and atLEAF-based (6.2) applications were, however, lower than those from fixed N rate (7.2 t/ha) and LCC-based (6.9).

- Yields from N-rich plot (7.9 t/ha), 90 kg N/ha + sensor-based (7.3), and 120 kg N/ha + sensor-based (7.5) were higher than the fix-time N treatment (7.2).

- Our work on the alpha version of the LCC android app is 60% complete! The app is after precise N-topdress application and increases its appeal by incorporating a "high-tech" essence to the LCC technology using smartphone cameras. It will be a helpful tool for farmers in the application of N fertilizer based on their desired yields.

We assessed the AEN, water productivity (WP), and interaction between tillage and varieties of six rices (NSIC Rc160, Rc222, Rc238, Rc240, Rc298, and Rc18). AEN ranged 18.77-26.07 kg grain/kg N in DS (highest for Rc160); 8.7-23.5 (highest for Rc298) during WS. This shows that varieties have different levels of efficiently assimilating N to produce yields, especially during DS when conditions for crop growth are ideal.

Under conventional tillage, WP ranged 0.59 to 1.13 kg grain/cubic cm water, higher than 2015 results. Rc160 had the highest WP under plowing, 3 harrowings and levelling, in contrast to minimum tillage (dry rotavation, 1 harrowing and leveling). AEN was significantly higher with PalayCheck LCC-based N application (28.20 kg grain/kg N) than the fixed-rate-and-time N application of 190 kg N/ha (13.03). The use of LCC enables more efficient use of N.

We screened 12 genotypes' responses to flooding in controlled conditions. PR41543-B-14-2-1-2 (PR entry) showed high tolerance to partial flooding (30 and 50cm) comparable with the FR13A check. Rc18, Ciherang Ag+Sub1, IR42, Rc194, and Rc82 also showed tolerance in terms of plant height, tiller number, shoot elongation, and biomass. In the field setup, Ciherang Ag+Sub1 showed higher tolerance and yield at 6.8 t/ha (comparable with Rc82's 6.2 but significantly higher than PR entry's only 3.3

t/ha). Yields from 30-cm floodwater depth (2.1-6.8 t/ha) were higher than those from 50 cm (1.7 to 4.2).

With food safety in mind, we studied the accumulation of light metals in mine tailings. Mine tailing sediments from Benguet are building up in the San Roque Dam in Pangasinan that provides water to the Agno River Irrigation System. Here are our most significant findings based on World Health Organization and Food and Agriculture Organization standards:

- Light metals (Zn, Cu, Fe, and Mn) were higher in rice straw than in grains but all within the allowed limit in plants, with Fe and Mn nearing toxic levels

- In WS, soil Fe was high (155.03 - 232.90 ppm), twice higher than in DS (62.23 - 168.31; Cu had 9.63 in - 125.74 in WS and 10.53 - 95.10 DS.

The data above characterize the health of our soils for rice production. Heavy and light metals that accumulate in soils are taken up by plants and affect the quality of the grains produced. We wish to determine the extent of accumulation in the grains that would affect the health of consumers, that we may provide management options.

We also looked into nutrient by pest interaction to identify approaches for integrating management of principal insect pests and diseases with compatible nutrient and crop management. Our results show that 221 kg N/ha produced the highest yield with appropriate ShB and BLB management (50% severity). At 158 kg N/ha, lower BLB severity was observed with inoculation of N2-fixing bacteria.

CROP PROTECTION

Ecological engineering helped bring about a 76-79% increase in the population of beneficial organisms (predators and parasitoids) and reduction in damage caused by defoliators and stemborers. On the reverse, we saw a 5-28% decrease in the population of herbivores, which were mostly hoppers and planthoppers.

The planting of flowering plants near rice fields helps diversify and engineer the ecology. Our researchers maintain that this pest management strategy is sustainable, cheap, and safe.

In our laboratories, we saw that endophytes, which are bacterial or fungal microorganisms, colonize the inter- and/or intra-cellular spaces of a healthy host plant without causing apparent symptoms of disease. Some of our findings about these biological control agents are the following:

- Nine endophytic fungal isolates inhibited the activities of mycelia of rice blast pathogen (*Pyricularia oryzae*) ; eight isolates worked against sheath blight pathogen (*Rhizoctonia solani)*

- Two isolates of endophytes can inhibit the mycelial growth of both *R. solani* and *P. oryzae*

Epiphytes are microorganisms found at the above-ground surface of plants that work as plant pathogens or their natural antagonists, and as plant growth promoters. Epiphytes in the leaves of rice can serve as biocontrol agents against the rice blast disease-causing pathogen. Further tests on their antagonistic activities and toxicity tests will be conducted.

We also looked into the effectiveness of two *Trichoderma harzianum* isolates in suppressing the mycelial growth of three rice pathogens causing blast, sheath rot, and brown spot diseases. We saw that the isolates were more effective than fungicides by 41-47%.

We found that the fungus *Beauveria bassiana* reduced rice bug population by 50% within a week after application.

We continued studying the biology of the rice grain bug, with more findings:

- Light trap catches of RGB increased in March and peaked in June (57-67 adults/ light trap) at two sites in Alegria, Surigao del Norte when the rice crop was at ripening stage

Rice grain bug

> We found three weedy rice biotypes from Aurora and Iloilo (WR-B3, WR-Ilo2 and WR-Ilo3) with resistance to tungro and a biotype from Tarlac (WR-B4) with resistance to BLB.

- Damage due to RGB is roughly similar to that caused by the rice bug: unfilled grains resulting from early infestation and spotted dark brown grains from later infestations

Here are some of our findings about planthoppers:

- Population peaked in March to April, and August to September

- Ricefields with hopperburn were observed in many towns in Nueva Ecija and some fields in Tarlac and Pampanga

We found three weedy rice biotypes from Aurora and Iloilo (WR-B3, WR-Ilo2, and WR-Ilo3) with resistance to tungro and a biotype from Tarlac (WR-B4) with resistance to BLB. They are to serve as parent materials for breeding tungro- and BLB- resistant rice varieties.

We sustained light trapping activities at CES to determine pest populations; testing 1,562 entries for diseases and 1,311 for pests in the NCT; and testing 43 high-yielding varieties for their resistance to major pests and diseases.

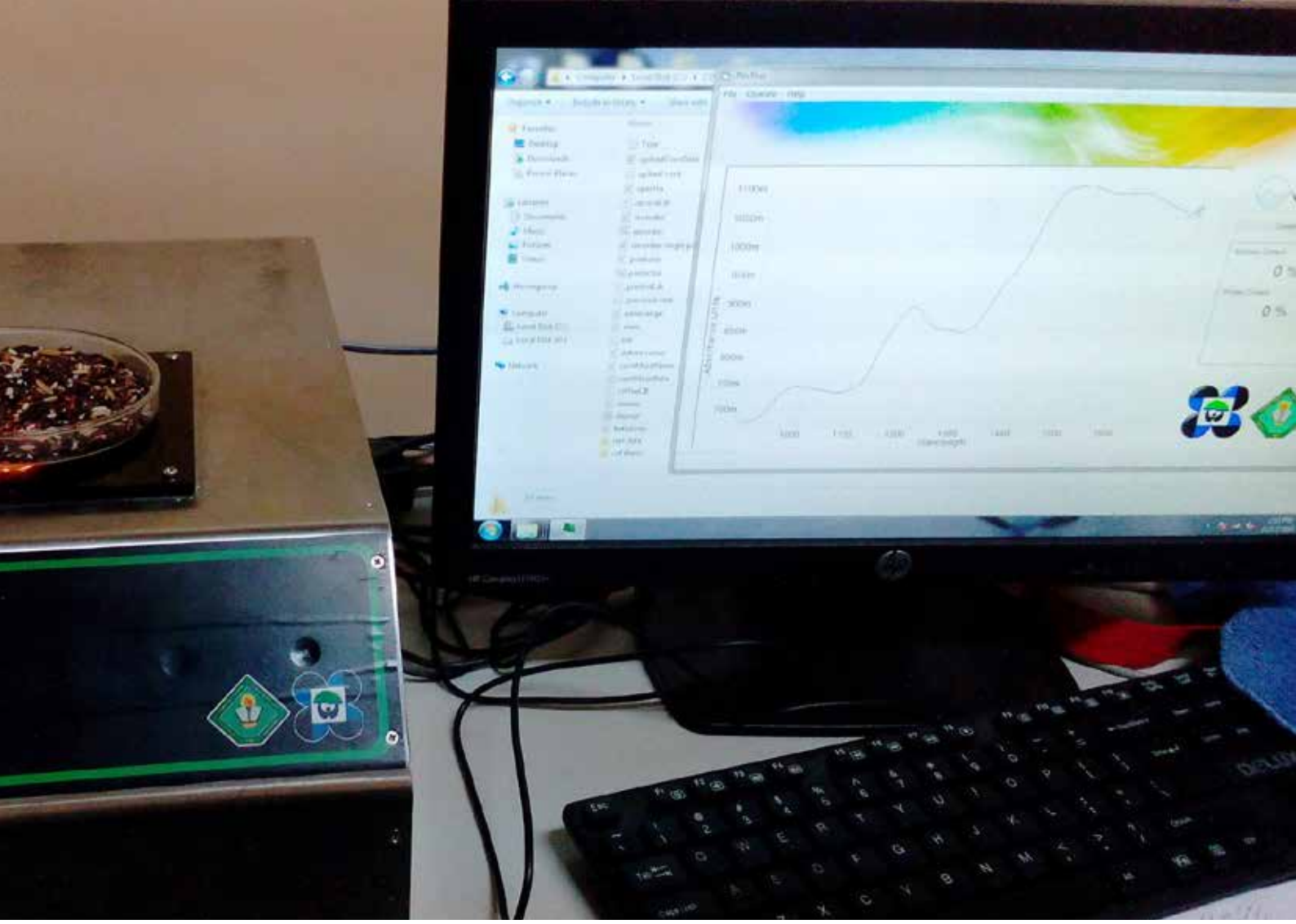
RICE CHEMISTRY AND FOOD SCIENCE

We participated in NCT activities on grain quality testing; screening of traditional varieties; product development and nutrition research on rice-based food crops; and capacity enhancement activities.

We evaluated the grain quality attributes of nine newly released varieties: NSIC Rc432, Rc434, Rc436, Rc438, Rc440, Rc442, Rc444, Rc446, and Rc448; 603 entries under the NCT; and 900 early-generation and pre-NCT lines.

We did a consumer preference study for raw and cooked rice qualities in rainfed and saline areas in Pangasinan to facilitate recommending location-specific release of varieties with grain quality (GQ) as among the major criteria. Soft to intermediate-textured rices such as NSIC Rc274, Rc288, Rc332, Rc336, Rc390, Rc416 to Rc430 are preferred in these areas.

We developed prediction models using Near-Infrared (NIR) spectroscopy for rapid, chemical-free, and non-destructive analyses of crude protein, amylose, and gelatinization temperature (GT) of rice. Among the chemical constituents, crude



> We developed prediction models using Near-Infrared (NIR) spectroscopy for rapid, chemical-free, and non-destructive analyses of crude protein, amylose, and gelatinization temperature (GT) of rice.

protein was predicted the easiest, with the best model obtained using floured rice. Amylose content and GT were best estimated on rough rice and brown rice, respectively. Results show promise in making the GQ evaluation process more efficient by eliminating preparatory steps and increasing sample throughout by more than 100%; lowering costs of analysis by cutting expenses on chemicals and laboratory equipment maintenance; and ensuring safety to the researcher and the environment.

We characterized 100 pigmented rice germplasm stored at our genebank for proximate composition, phytochemical content, and antioxidant potential. This was done to identify accessions with medicinal properties and as sources of traits for future breeding activities. From this work we confirmed that phytochemicals and nutrients in such rices are concentrated in the bran. Unpolished form of *Tininta* had the highest anthocyanin and phenolic contents, while *Tapol* had the highest flavonoid content and antioxidant activity.

Additionally, we profiled 37 traditional varieties collected from across the country chiefly in support of positioning them for export or providing valuable genetic materials for breeders. They have generally good eating quality based on their physicochemical properties and good milling recovery. Pigmented ones had significantly higher amounts of anthocyanins, phenolics, and antioxidants than other varieties.

We evaluated 41 commonly grown vegetables for their phytochemical contents and antioxidant activities in raw and cooked forms. Raw or boiled turmeric, water spinach, and eggplant consistently displayed the strongest antioxidant potential and the highest level of total phenolics. Their total phenolic contents and antioxidant capacities were significantly associated. These pieces of information guide policies on nutritional interventions in rice-based farm areas.

We consulted with government agencies, the academe, research, food industry, health, and nutritional products industry to categorize potentially marketable rice-based products. We came up with five major categories: flour-based food products, personal care/hygiene, drinks/beverages, special-purpose (e.g. for health and nutrition), and convenience products. These categories will guide the product development initiatives of the Institute relating to value-adding for rice.

We promoted our developed food products and the healthy consumption of rice-based vegetables and brown rice. To help increase the income of rice-based farm households, we assisted five cooperatives in Nueva Ecija, Pampanga, Tarlac, Bukidnon, and North Cotabato in food product development and preparation.

We wrote the paper *"Maternal factors affecting child nutrition of rice-based farm households in Central Luzon, Philippines"*. The findings can guide gender-sensitive policies and programs aimed at addressing malnutrition among rice-based families.

RICE ENGINEERING AND MECHANIZATION

We came up with six prototypes of machines for use in mechanized rice production. Through these machines, we hope to bring down the high cost of producing rice in the Philippines.

Zero-till planter with fertilizer applicator for direct seeding

Purpose: Mechanical dry seeding of rice, corn, and other crops in minimum or zero-tilled soil

Key features:

- Mounted on a 4-wheel tractor, 36 hp
- Has 9 rows with an effective width of 1.8 m, 20-cm row spacing for rice, and 60-cm for corn
- Field capacity of 2-3 ha/day
- Seeding rates of 20-60 kg/ha for rice and 15-20 kg/ha for corn

Technology status: To be tested on mungbean; 2 units being fabricated for pilot-testing

Combined conduction and far-infrared paddy dryer

Purpose: Achieve rapid paddy-drying

Key features:

- Uses burning rice husk as heat source at a consumption rate of 60 kg/hour.
- Employs combined conduction and far-infrared radiation (FIR) principles
- Rapid drying using only FIR energy; uses less input energy (only 3 kW)

Technology status: For further performance-testing

Local riding-type rice transplanter

Purpose: Mechanical transplanting both for inbred and hybrid rice production

Key features:

- Capacity of 2 ha/day
- Seeding rate of 40 kg/ha
- Requires only 2 persons to operate on field
- Powered by a 13-hp gasoline engine
- Locally manufactured and assembled

Technology status: For piloting (funded by DOST-PCAARRD prior to its promotion and commercialization) in 2017-2018

1.3m rice combine harvester (improved)

Purpose: Lower harvesting losses, more versatile machine that can operate even during the wet harvest season

Key feature:

- Can work on wet, muddy soil condition

Technology status: Ready for field-testing

Locally adapted and manufactured riding-type precision seeder

Purpose: Mechanical wet seeding both for inbred and hybrid rice production

Key features:

- Capacity of 2 ha/day
- 8 rows spaced at 25 cm, and 35 cm between the 4th and 5th rows
- Hydraulic system raises and lowers the seeding assembly
- 4wheel-driven, powered by a 16-hp gasoline engine

Technology status: Ready for piloting

Hand tractor-mounted multi-purpose seeder

Purpose: Mechanical dry seeding of rice and mungbean

Key features:

- Can seed 1.6 ha/day for corn and 2.6 ha/day for mungbean, both at 60-cm row spacing, 2.4 ha/day
- A multi-purpose seeder applicable to rice and other crops

Technology status: For adaptation trials in Regions 1-3, 6, and 12

We have finalized the technology bulletin on postharvest management keychecks and best-fit practices for improving the rice postproduction system. These will be incorporated in KeyCheck 8 of the PalayCheck System.

We renewed the licenses of our two partner manufacturers from Iloilo City. We also conducted a national manufacturers' forum with representatives and owners of 15 agri-machinery manufacturing firms.

SEED TECHNOLOGY

We produce inbred and hybrid seeds with high genetic purity to help farmers earn more. We maintained experiments aimed at ensuring our seed quality and purity; we inspected 306 varieties (nucleus, breeder, foundation, and registered seeds) in 324 field lots; and tested the purity of 31 varieties. For hybrids and parental lines, we did seed purity-testing through the conventional grow-out tests, and established their high genetic purity.

We looked into pre- and post-harvest strategies to boost seed yield and quality. Exogenous application of phytohormones significantly enhanced plant height, and increased panicle exsertion rate, productive tiller number, and total number of spikelets. We also did the following on the newly released TGMS hybrid NSIC Rc446H:

- Purification process was done and parental line seeds were sent to Davao Sur/Norte/Oriental, South Cotabato, and Negros Occidental.

- Evaluation of flowering behavior. Two protocols showed that the P-line had flowering duration of 6 – 8 days while the S-lines flowered longer by 2 days. Duration of flowering and days to heading were the same.

- Evaluation of pollen storage strategy. Initial results point out that pollen grains must be collected at anthesis and stored immediately in amber glass under cold storage at -5°C.

RESEARCH PROGRAMS

FARMING WITHOUT FOSSIL ENERGY

We want to reduce carbon footprint from rice farming, hence we develop machines and systems that will reduce use of fossil energy.

Below are some of the machines that we have:

Hybrid wind-solar pump system

Purpose: To use wind and solar energies to pump water for irrigating rice and rice- based crops

Key features:

- Uses wind and solar energies
- Has a monthly pump discharge capacity of 240 m^3 from an average of 50-ampere charging capacity
- Can irrigate approximately 1700 m^2 of tomato or 600 m^2 of rice

Technology status: For piloting in the Ilocos Region

Rice hull gasifier engine-pump system

Purpose: To promote the gasifier system in rainfed lowland areas

Key features:

- Reduces cost in pumping water as rice hull biomass will be used instead of gasoline
- Uses rice biomass

Technology status: Deployed in Occidental Mindoro and Ilocos Norte

Flatbed dryer

Purpose: To optimize the performance of the conventional flatbed dryer through the use of a more efficient air-moving device and heat source, which improve the quality and efficiency of the drying operation.

Key features:

- Uses continuous-flow rice hull gasifier and an s-blade-type tube axial air-moving device
- Lessens energy input utilized given the desired airflow and static pressure requirement
- Enhances the quality of dried palay since there is no more soot and fly ash in the plenum

Technology status: Installed at PhilRice CES

{ We have also started creating energy-self-sufficient communities, with Alabat in Quezon as pilot site. The main concept is to use rice wastes and their by-products as fuel to create energy for farming activities. We fabricated a customized continuous rice husk carbonizer as heat source for coco sugar-processing, which will soon be deployed in the community. }

HIGH-VALUE PRODUCTS FROM RICE AND ITS ENVIRONMENT

To look at rice as not merely a staple is to look past the high-value products that can be derived from it and its environment. These products can either add income to the rice-farming household or address persistent social concerns like malnutrition.

GABA rice

We further improved the high-quality *gamma-amino butyric acid* (GABA) rice by optimizing its soaking time and drying process, and characterizing its acid content, proximate composition, consumer preference and acceptability, and anti-diabetic properties. GABA is a neurotransmitter in the central nervous system and is seen to stimulate the immune system, lower blood pressure, and inhibit the proliferation of some cancer cells. It is incorporated in the **NutriRice Milk**, which is being manufactured by the Philippine Carabao Center and sold in several outlets in Nueva Ecija.

Consistent with our efforts to come up with healthier and more nutritious rice, we characterized 43 high-Fe and Zn rice lines for grain quality and mineral content.

Retort-processed rice:adlai and rice:corn meal

> With our interest in their biomedical applications, we optimized the extraction process for anthocyanins and evaluated the anti-cancer properties of black and red rice bran extracts.

Most of them have long and slender grains, amylose content of 7.7-25.6%, and crude protein content of 5.6-8.1%. Their iron contents in the unpolished form ranged from 10.20 to 74.79 mg/kg; zinc contents at 12.22 to 25.99.

We have improved the packaging of the rice-adlai energy bar, using polypropylene and aluminum-coated pouches. After detailed quality and shelf-life evaluation, this product will be pilot-tested.

With our interest in their biomedical applications, we optimized the extraction process for anthocyanins and evaluated the anti-cancer properties of black and red rice bran extracts. Some of our major findings are the following:

- The optimized process produced an extract with higher total anthocyanin, phenolic, and flavonoid contents, DPPH radical-scavenging activity, and ferric-reducing antioxidant power compared with the conventional process.
- Black rice (Ominio) bran extract significantly reduced the micronucleated polychromatic erythrocytes (MPCEs) in bone marrow cells of tetracycline-induced cancer white mice by 42-49%; red rice (Chor-chor-os) by 33-37%. This implies that the extracts have anti-cancer potentials.
- The rice bran extracts as they are showed no toxic effect on normal human blood lymphocytes, thus can be used as ingredient in food and pharmaceutical products.

We did multi-element and isotopic profiling of 236 rice samples, including Cu, Mn, Zn, Fe, Si, Ti, Sr, Zr, Rb, V, and S. Information on the isotopic fingerprints of rices from different regions is useful in identifying locally milled rice varieties to resolve rice authenticity problems. Isotopic analysis is an effective tool since isotopic ratio in a crop inherits the geological character of a production area.

COPING WITH CLIMATE CHANGE

In tackling climate change in relation to rice production, we looked into planting dates, crop protection, water management, and rice-based farming systems.

We are determining ideal planting dates for the Ilocos Region based on recent agro-climatic indices for rice and rice-based crops, given that rainfall patterns have changed across the country. We are also looking into an alternative way of describing the rice crop's so-called growing degree-days that could help in synchronizing the flowering of hybrid parentals.

Anticipating that climate change might have an impact on pest dynamics, we have started determining the behavior of white stemborers and their natural enemies at a temperature 2^{o}C higher than the normal. Using the insect growth chamber we developed,

results of the study will help formulate management options.

We have done our first field-test for the *capillarigation* system, a do-it-yourself type of irrigation system closely similar to the drip irrigation system. Aimed at helping farmers efficiently manage the limited water supply for farm operations, establishing the system, on average, costs 50 to 60% lower than the drip irrigation system. Some components can be fabricated from recyclable materials such as used cotton T-shirts for the capillary wick and tarpaulin sheets for the water channels. Its water-use efficiency is 50 to 120% higher than manual irrigation, using green pepper and tomato as test crops.

During destructive typhoons, the main problem of farmers is protecting farm investments. We then came up with the second prototype of the multi-purpose farm structure, which main feature is a simplified method of construction using prefabricated bamboo-reinforced concrete elements. With a floor area of 25 m^2, the second prototype costs a cheaper P70,000 to construct.

We saw that integrating azolla in the rice+duck farming system could reduce methane emissions from the system by 50%!

CENTERS

CROP BIOTECHNOLOGY CENTER

To help shorten breeding time, we analyzed the quantitative trait loci (QTLs) and genes associated with desirable traits to develop corresponding genetic markers. QTL is a section of DNA (locus) that correlates with variation in a phenotype (quantitative trait). QTL is usually linked to or contains the genes that control phenotype.

We have at last established the protocols and methods for DNA fingerprinting and rice varietal identification. Establishing the genetic identity of rice germplasm is of extreme importance at a time when claims to life forms are high.

We identified several QTLs associated with root plasticity at different soil depths under soil moisture fluctuation stress. Three QTLs (*qPLLR20-3* and *qPTLLR20-7* at 10-20 cm soil depth, and *qPLLR30-2* at 20-30 cm soil depth) are useful in improving rice adaptation and yield in rainfed lowlands. Root plasticity is the ability of a genotype

to change (promote) its root phenotype in response to changes in the soil environment.

We have also produced and sequenced the whole genome of one rice mutant with potential resistance to bacterial leaf blight (BLB). The sequences were compared with the wild type and the reference sequence of Nipponbare. Bioinformatics analysis hinted possible fragment deletion in the mutant line that caused a frame shift mutation, leading to its resistance to BLB, which is useful in our rice breeding program.

We have generated a few traditional rice variety (TRV) lines introgressed with both Glh14 (green leaf hopper-resistant gene) and tsv1 (tungro-resistant gene), which exhibited minimal symptoms when infected with tungro disease. Several TRV accessions were also identified as potential sources of Glh14, tsv1, or other resistance genes.

As to grain quality, we optimized and adopted two waxy gene markers that can hasten breeding. We have also completed the database of SSIIA alleles using three single-nucleotide polymorphism markers. Ten TRV and two improved lines with unique grain quality traits were also identified.

APPLIED BIOLOGY CENTER FOR THE RICE ENVIRONMENT

We focused on developing technologies for beneficial organisms to enhance plant/soil health and plant tolerance to abiotic stresses, manage rice pests and diseases; and on identifying useful organisms for food, feed, and industrial applications as well as remediation of toxicants in the rice environment.

Biofertilizers

We had four key studies on biofertilizers, which reduce use of chemical fertilizers and help solve diverse agri-environmental problems.

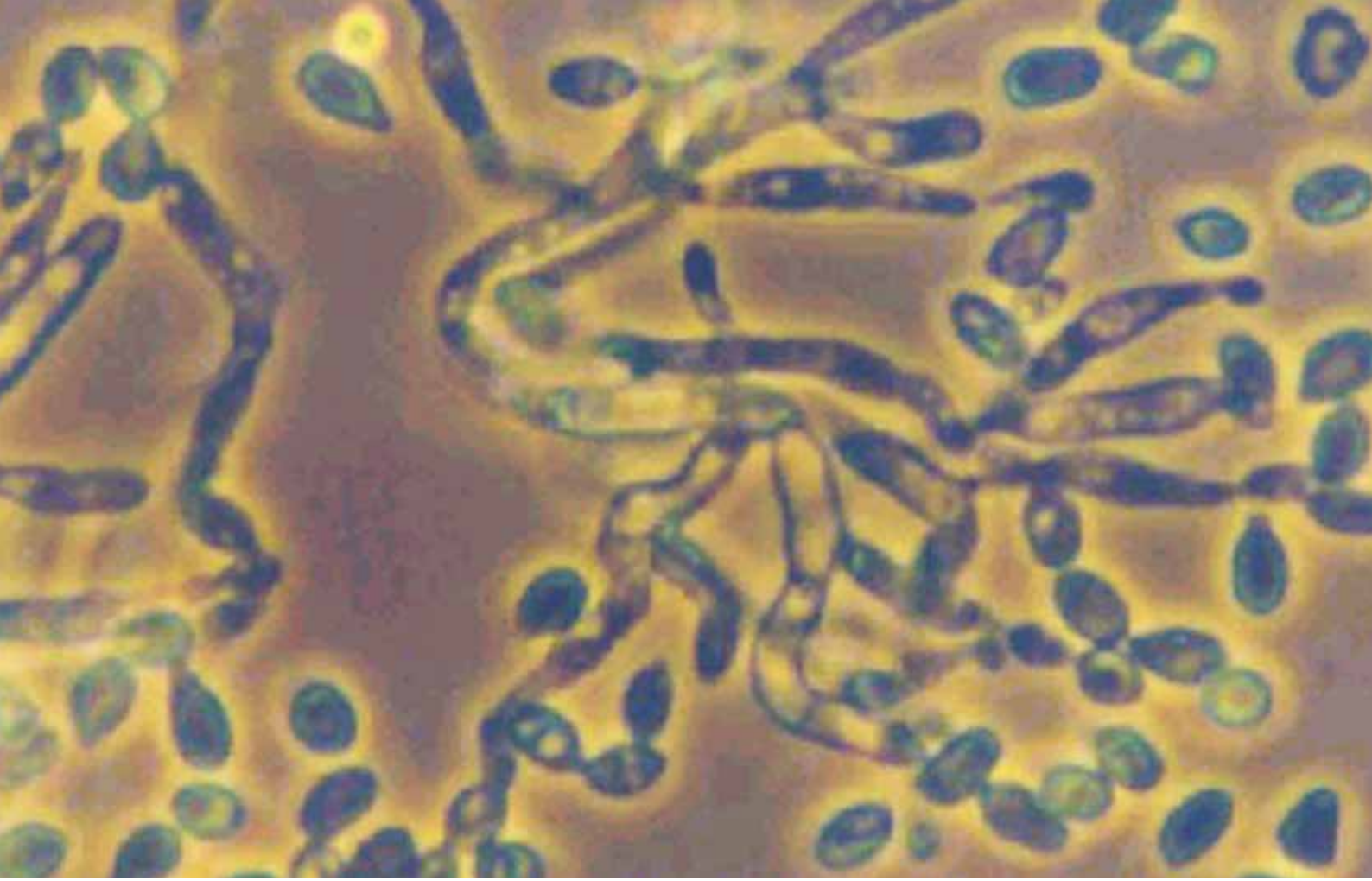
As fertilizers comprise around 50% of the total cost in rice production, we formulated a plant growth-promoting rhizobacteria (PGPR)-based inoculant that enhances rice productivity and overall crop health. The inoculant is a promising component for integrated solutions to agri-environmental problems as it can improve plant uptake of nutrients, which results in increased fertilizer-use efficiency. Under controlled conditions, the PGPR-based inoculant can spare farmers half of the total cost for inorganic fertilizers while maintaining

> Our study on the efficacy of vermicompost with rice straw as the main substrate in irrigated and upland rice made us recommend the best combinations of substrates that produce the most desirable product in terms of N content and high levels of plant growth hormones.

yield. Meanwhile, our actinomycete-based inoculant can provide a potential additional yield of at least 500 kg/ha in the upland area.

Our study on the efficacy of vermicompost with rice straw as the main substrate in irrigated and upland rice made us recommend the best combinations of substrates that produce the most desirable product in terms of N content and high levels of plant growth hormones. Below are some of our findings:

- Rice straw (RS) + animal manure is recommended if higher production and recovery of vermicast is desired. This combination also promotes higher P and K contents with total NPK ranging 3.3 to 3.6%.



- RS + cow manure also produces the highest hormonal content (IAA, Kinetin, AA and GA) in vermitea.

- RS + carabao manure produces the highest Kinetin and GA in vermicast.

- RS + green manure combination hikes production and recovery of vermicompost. It obtains more vermicompost, vermitea, and vermicast with high microbial population (bacteria and fungi).

- RS + Ipil-ipil leaves increases N content of vermicompost and vermicast.

- RS + Azolla produces the highest hormones in vermicompost.

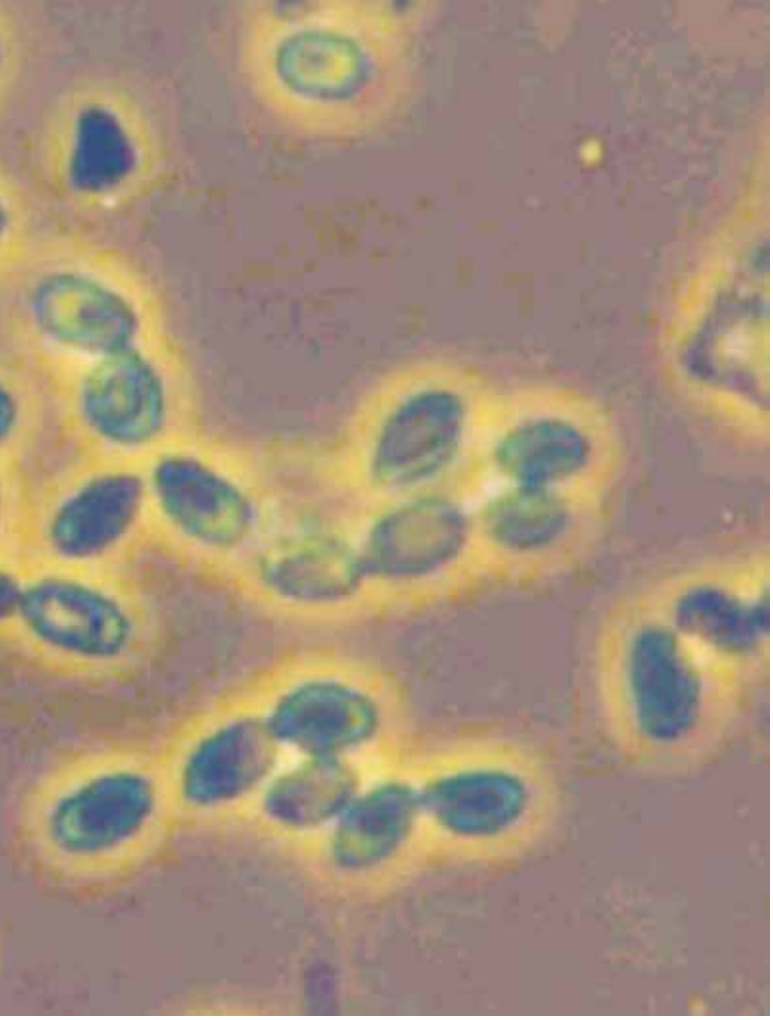
Azolla varieties, which are sources of biofertilizers that could perform well beyond optimum (20-30°C) temperature were identified. Under field conditions, the three selected azolla accessions doubled in 5 to 8 days.

We also worked on blue-green algae (BGA) as biofertilizer and as high-protein foodstuff in lowland rice paddies. BGA fixes nitrogen gas from the atmosphere, contributing to the overall fertility of paddy soils. We want to restore the dwindling population of BGA in rice paddies by understanding the cultural practices as well as the soil, water, and environmental factors affecting BGA growth.

Our initial pot experiments showed that substituting 50% of the recommended rate of NPK fertilizers with BGA did not diminish yield. Also, scalable systems for the production of the edible *Nostoc commune* ("tabtaba") using farm resources are being designed.

Bio-pest and -disease busters!

We improved the delivery methods of biocontrol agents against rats and rice bugs, and sheath blight. The microorganism *Sarcocystis singaporensis* zeroes in on *Rattus and Badicota* rodent pests that thrive in the Philippines. Body weights of infected rodents significantly



> We want to restore the dwindling population of BGA in rice paddies by understanding the cultural practices as well as the soil, water, and environmental factors affecting BGA growth.

declined starting 12 days after feeding on *S. singaporensis* under controlled favorable conditions. The developed rice-based bait laced with the microorganism is now ready for field-testing. Rodent damage on rice ranges from 10 to 50%.

Rice bug, a major pest, damages grain quality ranging 15 to 20%. Optimizing the application of the powder form of the fungi *Beauveria bassiana (Bals.) Vuill. and Metarhizium anisopliae* helps manage the pest. Our laboratory and screenhouse tests showed an 85-100% effectivity.

VAM and *Bacillus spp* as biocontrol agents were tried against sheath blight. The reactions to ShB of rice plants treated with *Bacillus* spp (24.08%) were not significantly different from those of the VAM-inoculated plants (24.40%). The untreated plants exhibited the highest ShB incidence (36.36%).

Biomass utilization

We also identified promising lignin-degrading bacteria that can hydrolyze starch and are useful in rice biomass degradation and saccharification for bioethanol production. We saw that the bacteria can proliferate at elevated temperatures (55^{0}C) and some of them can break down starch and produce substances with plant growth-promoting and biopesticidal properties.

Facility

We established in 2016 an integrated laboratory for transdiciplinary research studies. It caters to all researchers and students.

Patent application

We have applied to patent our work on applying a soil- and CRH-based bioinoculant containing a plant growth-promoting actinomycete, which can result in a 500 kg/ha yield increment. Actinomycetes are the most economically and biotechnologically valuable bacteria that produce half of the discovered bioactive secondary metabolites. They effectively colonize plant root systems and can endure unfavorable growth conditions like drought by forming spores.

DEVELOPMENT

DEVELOPMENT COMMUNICATION

We produce knowledge products for our stakeholders, as technologies become useful only if they are used. We utilize different platforms and approaches to win our discriminating audiences.

Publications

We came up with 76 titles of knowledge products, with over 300,000 copies distributed to our clients. We put together our knowledge products to roll out the La Niña handout series in response to the recurring phenomenon. We started producing Infographics—easy-to-grasp publication on topics of interest. An audiovisual format of these Infographics was also crafted called the Visuarice, which we uploaded in the social media.

The book *"Diversification, Intensification, and Integration: Stories outstanding rice-based farmers tell"* documents success stories of 12 *Gawad Saka* rice-based farmer-awardees.

Our evaluation study assures us that print products have remained useful and relevant as information sources and practical guides for farmers.

Our communication experts connected with our stakeholders through the 225 sharing opportunities – seminars, training programs, forums, symposiums, workshops, dialogues, radio & TV interviews, and conferences—that we conducted.

Info hubs

We have maintained our two powerhouse information hubs: the PhilRice Text Center and PinoyRice. For PTC, we had responded to 75,729 SMSs and 877 calls from 36,970 clients. Our response time was not longer than 15 minutes. PinoyRice has added 33 handouts, 32 broadcast releases, 35 audio clips, 14 packaged information on rice varieties, and 2 Q&As. The bank's updated offline version was packaged into an auto-play flashdrive for easier access and use of agri-extension workers and farmers alike. We recorded 20,137 users and 33,251 page visits, with rice varieties and seed selection as favorite topics.

Press releases

Thanks to our media partners, we uploaded 100 stories in our corporate website that were sent to 149 print publications, 70 news websites, 25 Metro Manila-based radio and TV stations. Average pick-up rate for our stories was 22 per month, resulting in more than 400 media exposures.

We also produced 36 broadcast releases, 43 radio scripts, 21 climate change interviews, 16 radio plugs, and 2 radio dramas regularly aired in four partner radio stations free of charge (e.g. *Maunlad na Magsasaka and Bagong Sigla sa Agrikultura*). It resulted in 110 radio and television exposures. A new feedback system called ***Palaytanungan*** was created to gather initial data on listenership. Initial data showed that we have altogether reached Regions 1-6 and NCR.

Microblogs

Our Facebook page, *Rice Matters,* climbed 38% in fans from 2015, with a total of 11,300 page likes. Our posts were organic (unpaid) yet they managed to reach 602,230 people, much higher than in 2015.

On the ground

We facilitated the establishment of nine knowledge-sharing and learning farms called ***PalaYamaNayon*** that propelled our advocacy on rice farm diversification, intensification, and integration in Ilocos Norte, Isabela, Nueva Ecija, Batangas, Laguna, Albay, Negros Occidental, Bukidnon, and Agusan del Norte.

We also reinforced the execution of three major campaigns: Infomediary, Be RICEponsible, and Rural Transformation Movement. These initiatives continue to help make rice research for development products and services reach our intended recipients and users.

Our communication experts connected with our stakeholders through the 225 sharing opportunities – seminars, training programs, forums, symposiums, workshops, dialogues, radio & TV interviews, and conferences—that we conducted.

Internally, we also improved access to our communication resources by upgrading our database system with 12,996 new photos and videos tagged, catalogued, and shared to media-sharing sites (Flickr/ YouTube). We also categorized and reorganized e-files of knowledge products and retrieved the old/missing ones through a Network-Attached Storage. We did communication research on listening groups, our corporate website, PinoyRice Jr., and KSL engagements.

TECHNOLOGY MANAGEMENT AND SERVICES

That technologies are seen working on the ground is our utmost concern. Thus, we sustained our work on conducting training programs, forging linkages with field partners, developing new training modules, and drafting assessment protocols in identifying mature technologies.

Our 68 training initiatives that reached more than 4,000 farmer-leaders, extension workers, and other development stakeholders were either short-term courses (3-5 days), technical briefings and technology updates (1 day), or season-long engagements (4 months), depending on the participants' needs and availability. Our 137 technology demonstration farms showcased integrated and diversified production systems.

To guarantee the relevance, appropriateness, and competitive advantage of a technology before commercialization, we developed an assessment protocol in identifying mature technologies. Factoring in the social, technical, economic, environmental, and political aspects of a technology, this protocol was used to assess the MOET App, which is the

> Our 36 new partnerships with DA-RFOs, LGUs, farmer-cooperatives and associations, and the private sector benefited our development initiatives in terms of widened visibility and adoption of technologies.

high-tech version of the Minus-One Element Technique. The protocol expedited the field validation of MOET App for three cropping seasons and results were referred back to the technology developers for refinements. It also set guidelines for R&D divisions to build up the readiness of their technologies and products before subjecting them to the assessment process.

Our 36 new partnerships with DA-RFOs, LGUs, farmer-cooperatives and associations, and the private sector benefited our development initiatives in terms of widened visibility and adoption of technologies. They also helped us better organize farmers and link them to service providers.

Our efforts at innovative service delivery made us develop four new training modules: *Resiliency to Climate Change through Game-Based Approach; Nutrient Management; Organic Fertilizer Management;* and *Insect and Pest Identification and Management.* The management modules were a brainchild of the Project IPaD. We have also started developing the training management and information system.

SOCIOECONOMICS

We produced six publications on different topics about rice production, on top of a book and a monograph on rice competitiveness being necessarily associated with trade liberalization and rice security. The book *"Competitiveness of Philippine Rice in Asia"* compares our rice industry with other Asian countries, and serves as a major general reference for various purposes. The monograph *"Helping the Philippines become competitive through improved hybrid rice seed production"* discusses farm-level competitiveness of producing F1 seeds in the Philippines relative to China and India.

Our papers were presented and recognized in national and international (Singapore and The Netherlands) conferences. *"Philippine rice competitiveness: Status, prospects, and directions"* was awarded as AFMA Best R&D Paper by the Bureau of Agricultural Research. Our paper *"e-Competency: Crossing the bridge toward digital extension in the Philippines"* presented at the Asia-Pacific Symposium in Social Science and Management in Singapore won for us the best presenter award. Our three technical posters—two on gender and one on labor use and mechanization—won awards in regional and national conferences.

Advocating science-based policies, we produced a policy brief and conducted a policy seminar. Our *Rice Science for Decision Makers* material centered on how *"Mechanizing postharvest work enhances farmers' competitiveness".*

Among the key recommendations were to make available machine services through the rental market, and to initiate land reconfiguration. We convened the seminar *"Toward a rice-secure Philippines: Identifying key priority government interventions for 2017-2022".* It gathered some of the best brains and major stakeholders in our rice industry. Recommendations crafted were primarily on enhancing growth in the industry.

Together with the Development Communication Division, we produced eight Infographics, which are expected to facilitate understanding and appreciation of our rice industry statistics. A video on women and rice is another product of the collaboration.

To more effectively reach our intended clients, we dispatched 12 technical updates on rice industry and trade policies, mostly during national training programs and technology updates involving different groups of stakeholders. We presented advisories in a farmers' congress in M'lang, North Cotabato with more than 800 farmers present.

We consolidated our socioeconomic data on rice production into one information portal called *PalayStat,* now available in the whole PhilRice system. From August to December 2016, there were 1,442 unique page views and 382 unique sessions. The web traffic consists mainly of 74% direct access and 26% referrals.

We have improved our archiving system with our own archive now containing 19 working papers, 444 news articles, 22 policy briefs, 111 bills/ laws, and 15 memoranda.

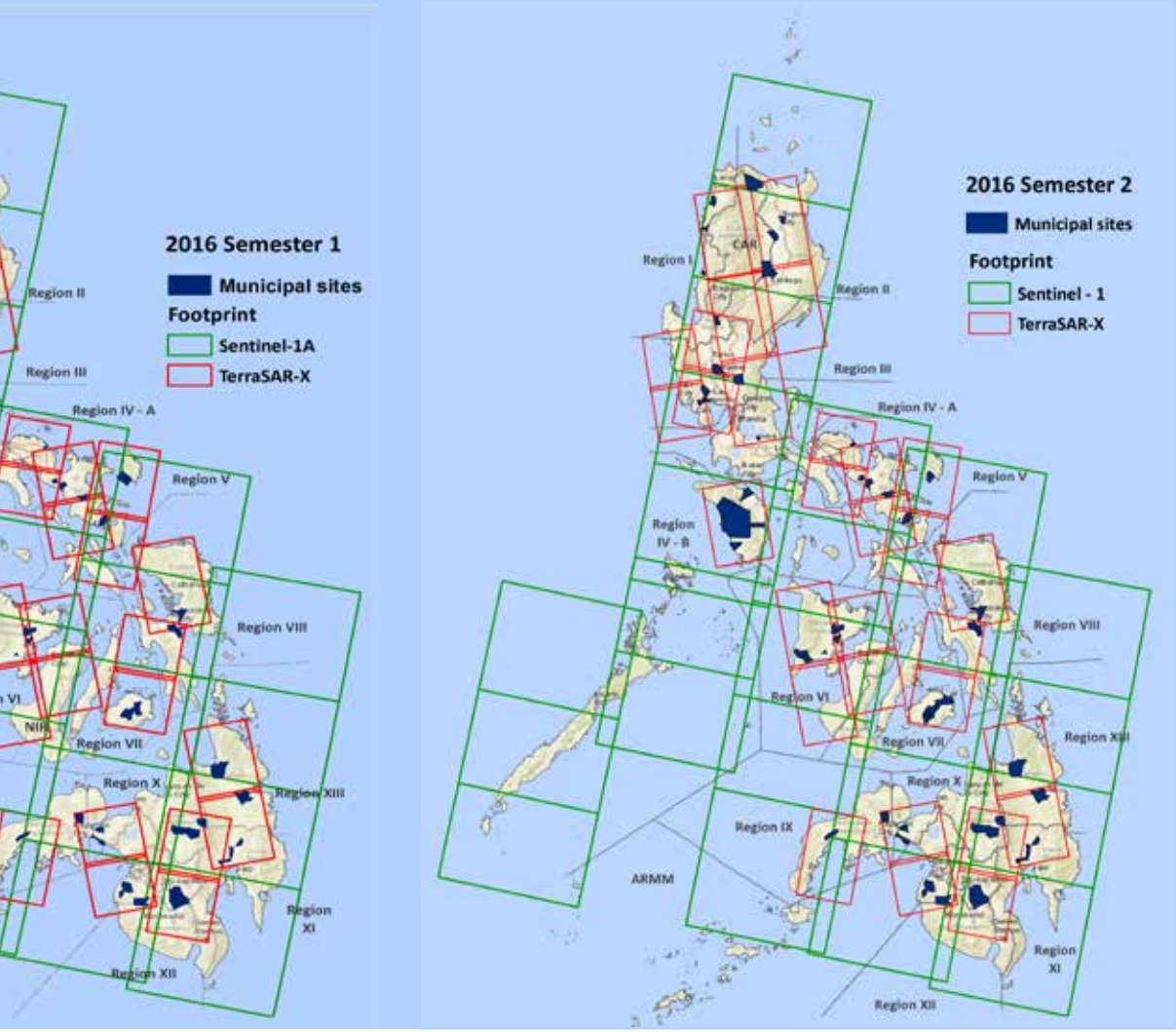
INFORMATION SYSTEMS

We optimize information and communications technology (ICT) in our operations. We developed management and information systems to more efficiently handle our wealth of research data, financial management, human resources, and property and procurement. We also stepped up the maintenance of our tracking system to expedite the processing of documents.

The PRISM monitoring fields during the 2016 1st Semester implementation.

PRiSM (Philippine Rice Information System) is an operational system for rice monitoring to support decision-making toward increased local rice production. It delivers actionable information on rice crop seasonality; area; yield; damage from flood, wind, or drought; and yield-reducing factors, such as diseases, animal pests, and weeds. Below are among its accomplishments:

- Processed 554 Synthetic Aperture Radar images (InfoTerra GmbH, TerraSAR-X satellites) and 286 SAR images from Sentinel 1A as illustrated in the figure below:
- Continued development of the web pages user access management system, database management system of rice area estimates and maps, production situation, pest injuries, and yield estimates.
- Conducted sustainability activities in DA, PhilRice, and DA-RFOs through planning workshops to develop national and regional sustainability plans, operations manual and work plans for the transition period and operationalization of the PRISM Unit at PhilRice.



We improved our Agricultural Information System (AgIS). The *PhilRice Soil Information System: A tool for effective crop management* has updated data on rice soil resources. It has a guidebook for each province for easy identification of soil types.

We have expanded and improved our Data and Information Portal. It is a database that contains our precious datasets and collections. Further-improved subsystems are the Soil Information System, Rice R & D Highlights, Seed Producers Directory, Seed Characteristics, and Frequently Asked Questions. Among the changes and additions are user-friendly interface and interactive online maps.

We had major improvements in our library, with support from the IpAD project:

New online resources acquired, including Advances in Agronomy, Elsevier e-books, Gale databases, EBSCO Food Science Source & STM, OECD iLibrary, Taylor & Francis, Springer, Science Direct, and Proquest Agriculture -- the last three of which are the most used databases. The XCardbox containing the library's reprint and journal article collections is updated daily. The website includes the helpdesk "Ask a Librarian" where queries and requests for publications are received and acted on.

New materials acquired for the branch stations, including books, e-books, journals, reprints, digital files, outsourced resources, and newspapers. The 275 articles requested by researchers were outsourced from institutions and library networks.

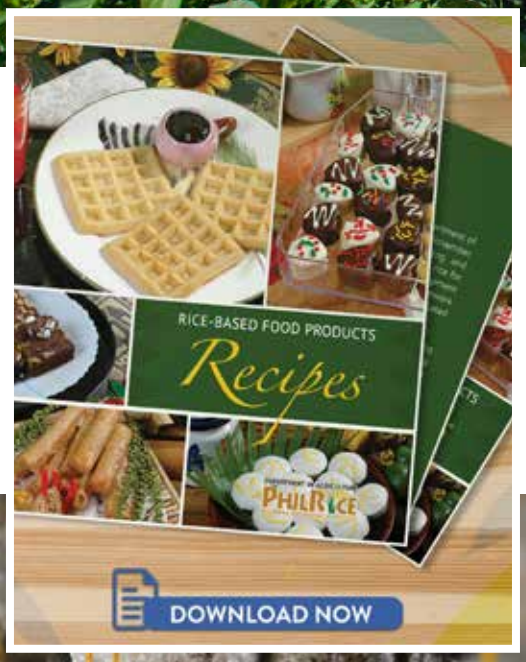
Destiny Library Manager, which runs the Online Public Access Catalog, was upgraded by incorporating resource description access features. Catalogued and inputted in the OPAC were 345 books, reprints, and journals.

Tablets distributed to branch stations with 459 E-books in each of them. These provided ready reference to stations with subjects in plant breeding, soils, climate change, fertilizers, pests and diseases, gender, and other related subjects.

DEVELOPMENT PROGRAMS

INTENSIFIED RICE-BASED AGRIBIOSYSTEMS

We want to show how agri-enterprises work, and how they can change the lives of our rice-based farm households. We then built basic infrastructure to better showcase a science-based model of Palayamanan Plus. The Complex houses a carabao dairy facility with 10-head capacity, an oyster mushroom-growing house and mini laboratory that can contain 7,000 fruiting bags, and a multi-purpose shed.



Our collaborator, the Philippine Carabao Center, donated 5 dairy buffaloes, which gave birth to 3 calves, for the livestock component. We developed a mushroom pasteurizer that can contain 500 fruiting bags, powered by the continuous rice hull carbonizer.

After publishing a recipe book and a technology bulletin for mushrooms, we invited local culinary experts in Nueva Ecija to the *"Going greens! A cook-off showdown!",* from which we obtained 30 original green leafy vegetable recipes! Altogether, these initiatives could inspire would-be entrepreneurs, not to mention promoting the nutritional benefits of mushroom and edible greens.

On average, we provided technical services to 50 clients monthly on the nitty-gritty of Palayamanan Plus. We trained 34 facilitators on the Catholic Relief Services' 8-step Clustering Approach in Agri-entrepreneurship, and 30 researchers on social entrepreneurship in agriculture. We also engaged 250 farmer-beneficiaries in crop, livestock, and mushroom components through our Palayamanan Plus community-based project in Regions 1-3 and Caraga.

On average, we provided technical services to 50 clients monthly on the nitty-gritty of Palayamanan Plus.

FUTURERICE

The future has yet to unfold but it's not too early to prepare for certain eventualities—peak oil, globalization of rice trade, and climate change.

Our FutureRice efforts revolved around farm automation, demonstration of yield-enhancing and cost-reducing technologies and cropping systems, agritourism, and media engagements.

We continued our work on the AgRiDOC App that enables a farmer to view a geo-referenced digital map of his/her farm and all its parcels. We finished the baseline design and prototype, now with the following functions: farmer profile, farm/crop objects, crop expense record, geographic visualization, links to useful tools, embedded information, and notes. More work on it will be done.

We tried the unmanned aerial vehicle-based imagery with the following applications: aerial photography and videography, photogrammetry, time lapse monitoring, location mapping, top down shot visual aide, and vegetation

index. It enables us to rapidly scout the rice areas, and be alerted on unusual shapes, patterns, and colors. This helps us pinpoint areas that require spot-checking for possibilities of weed infestation, pest and disease occurrences, water scarcity or excessiveness, and nutrient deficiency.

We demonstrated machines such as the solar-powered water pump, biodigester that decomposes organic materials to produce methane gas for cooking, rotary weeder, combine harvester, and mechanical transplanter. We also established a bioethanol processing area.

We put up demonstration areas for organic rice production, floating gardens, rice-duck integration, and many others. Complex rice production environments require options.

Fun activities were the harvest festival and hands-on experience on rice farming for our new staff members. The AgriHackathon attracted 168 students from 5 state universities and colleges from which 6 ICT innovations for the agriculture sector were generated.

Our efforts on mainstreaming agri-tourism have thus far won massive public attention. Our rice paddy arts cornered more than 7,000 visitors who shot selfies or groupies for their Facebook accounts. We featured Eat Bulaga's Al-Dub, President Duterte, and Vice-President Robredo.

Personnel from our ASPPD, REMD, GRD, and the IRBAS program supported us, together with several non-PhilRice benefactors.

CAMPAIGNS AND OTHER DEVELOPMENT INITIATIVES

Be RiCEPONSiBLE

Be RICEponsible

We pushed the production and consumption of brown or half-milled rice to help address issues relating to growing hunger, child undernourishment, and low income of farmers.

We helped set up a network of sellers at affordable prices to uncoil brown rice accessibility and availability issues.

To raise demand, we fired the #BROWN4good Challenge, optimizing social media, mass media, billboards, and other campaign routes—thus we:

- Told around 96M Filipinos about the goodness of brown (whole grain) rice;
- Saved more than P25M in free advertising and media mileage, in the form of TV and radio plugs, billboard ads, event plugs, and text blasts;
- Forged partnerships and enlisted the support of hundreds of agencies/ departments/organizations from the government, private, and non-profit sectors;
- Convinced several LGUs to go brown, and pass resolutions and ordinances requiring establishments to serve brown rice;
- Made brown rice more accessible and affordable to more Filipinos, even reducing its price by as much as 50% to target clients;
- Assisted farmers' cooperatives in marketing brown rice, thereby helping them raise their income to as much as six times.

Infomediary Campaign

We engage young people in agriculture by mobilizing high school students to serve as information providers in their respective rice-farming communities.

To enhance the replicability of our work for 4 years in rural communities, we published two journal articles that attracted more than 400 downloads in the SpringerPlus website of our article "Integrating climate-smart rice agriculture lessons into secondary-level curriculum: lessons from three high schools in the Philippines".

The book "Youth and agriculture: The Infomediary Campaign in the Philippines" is a process documentation of all the strategies and activities of the Campaign. It is for development communication students and practitioners, agricultural extension workers, and development workers whose interest is on young people and their role in rural welfare. State colleges and universities, DA regional offices, and other members of the national Rice R&D Network were also recipients of the book.

The Infomediary Website (www.infomediary4d.com) now has a comprehensive collection of all the presentations, modules, video documentations, photos, and blogs of Campaign-related activities. The intention is to make it as an information hub on youth engagement in agriculture. Related websites have also been consolidated for interested parties.

More than 4,000 student-texters have sent more than 12,000 messages to the PhilRice Text Center that ask about rice varieties, integrated nutrient/pest management, and other rice-related concerns.

We randomly monitored 8 schools and saw an average 71% enrollment increase in agriculture-related specializations.

RiCE SCIENCE MUSEUM

Rice Science Museum

From an unnoticeable exhibit of ragtag artifacts from Ifugao, the Museum has matured into a development initiative promoting rice science and technology in an unconventional manner. Farmers, the youth, foreigners, and ordinary educational tourists now frequent the place to experience agriculture and rice farming.

The Museum welcomes some 4,000 monthly visitors, with tours peaking in September-October. This is probably a consequence of the mobile exhibits, partnerships, accreditation from the Department of Tourism, and TripAdvisor enlistment, which currently ranks it as 9th of 14 things to do in Nueva Ecija.

We have reached about 70,000 viewers through our mobile exhibits. Visits to the Museum at Museo Pambata totaled 48,000 while about 18,000 viewed the exhibits at SM City Cauayan in Isabela; Central Luzon State University, Nueva Ecija; Balay Dingras, Ilocos Norte; Assumption College, Makati City; and DA, Quezon City.

We have crafted new partnerships forged from the exhibits: YanMar, SM City Cauayan, city and provincial LGUs of the Science City of Muñoz and Nueva Ecija, Dingras and Ilocos Norte, and IRRI Rice World. Collaborations with Ayala Museum, Center for Central Luzon Studies of CLSU, and Museo Pambata were enriched. We helped develop the diorama for mobile exhibits of the National Food Authority Museum in Cabanatuan City.

Transformations in Progress, the museum's major exhibit, featured the following galleries: 1) Farmer's Corner: Farmers'

> Farmers, the youth, foreigners, and ordinary educational tourists now frequent the place to experience agriculture and rice farming.

struggles in coping with changes and their unwavering duty in providing us with food, especially rice; 2) *Anong Akala Mo sa* Brown Rice?: Facts to dispel misconceptions about this healthy rice; 3) Traditional Implements; 4) Transitions: Chronicles rice from the precolonial era until the present; 5) Climate change-ready varieties; 6) Insects in the rice field; 7) Ecological Engineering: Recommended adaptive practice for climate change, and insects that farmers have to identify well to know if there is a need to apply chemicals; and 8) PalaYamaNayon.

To help improve children's nutrition and preach rice conservation in Nueva Ecija, a Rice-Based Food Art Contest was launched during the July Nutrition Month, in which 37 rice-based nutritious recipes were developed.

More than its aesthetic purpose and being a repository of information on rice farming, the Museum actively participates in confronting issues of our rice sector. It helps appreciate, study, and analyze the pulsating relation among the rice plant, the farmer, and the community. As such, we launched the Philippine Rice Material Culture Database and the Cultural History of Rice on November 3 during the exhibit launch of "Evolution of Novo Ecijanos' Rice Farming Systems and Filipino Costumes" at CLSU.

We drafted a monograph for rice material culture of Nueva Ecija. Results of our cultural research on three rice-based festivals – the Carabao-Carroza in Iloilo, Pahiyas in Quezon, and *Kuliglig* in Nueva Ecija – will serve as the bases of presenting rice through the seven arts.

We also presented 7 papers in international and national conferences. Our research Role of Rice Museum in Rice R&D garnered 3rd place in the *2016 International Commission on Museums Conference in Milan, Italy*.

PalaYamaNayon
The Rural Transformation Movement

#Palay #Yaman #Nayon

PalaYamaNayon: The Rural Transformation Movement

Enhancing rural communities' well-being through rice-based agri-enterprises is our key aim in this development initiative.

We identified, piloted, and found feasible four agri-enterprises as added sources of income for rice farmers in Pampanga, Agusan, Bukidnon, and North Cotabato: oyster mushroom; pigmented rice; kalamansi juice drink; and rice cream – in that order of profitability.

We holistically assisted our project sites by conducting capacity enhancement, marketing events, campaigns, mind-setting activities, and partnerships with local government and private organizations. Product marketing events were conducted in the four provinces.

In Pampanga, we executed the *"Di ako nagsusunog ng dayami, sana ikaw din"* campaign against open field burning. The campaign drew attention to developing enterprises utilizing rice straw as substrate for mushroom production.

Our mindsetting activities included agripreneurship workshops, farm visits, and educational trips in our pilot sites in Isabela, Ilocos Norte, Pampanga, Laguna, Albay, Negros Occidental, Agusan del Norte, Bukidnon, and North Cotabato. These activities were meant to titillate and condition the mindset of farmers toward agripreneurship.

We established strong partnerships with rice cooperatives, government and civil society organizations in our sites. In Pampanga, the DA-RFO provided P700,000 as project counterpart.

We had a very strong presence on Facebook that generated 8,826 likes. Our "Tularan si Mang Juan", a campaign promoting outstanding practices in farming, generated deep curiosity among netizens.

We established strong partnerships with rice cooperatives, government and civil society organizations in our sites.

We uploaded social memes, one per week. Our video on testimonies of successful farmers reached 360,192 netizens with 488,000 views, 342 comments, 3,839 likes, and 15,964 shares! Feedback suggests that more people were inspired by the stories of the farmers.

We produced functional promotional materials such as cowboy hats, mugs, and wall calendars, close to 16,000 pieces of which were distributed to our clients. Our exhibit "Transformations in progress" at the Rice Science Museum showcased our vision of a transformed rice-based community.

PROJECT IPaD

Improving Technology Promotion and Delivery through Capability Enhancement of the Next-Gen Rice Extension Professionals and Other Intermediaries (Project IPaD)

Project IPaD

Our aim is to help invigorate the country's rice extension system by developing a training curriculum for a new breed of rice extensionists; engaging and equipping other strategic groups of extension intermediaries; and facilitating other enabling mechanisms for people involved in extension or development work. We do these in partnership with ATI and IRRI.

In 2016, Project IPaD at PhilRice continued to support the cluster and regional rollouts of the training program for the new breed of rice extensionists called AgRiDOCs (Agricultural Development Officers of the Community), now totalling 116 nationwide. Developed and piloted mainly by PhilRice from 2014 to 2015, the training curriculum is composed of six modules on lessons and activities to prime and equip AgRiDOCs in their mission of catalyzing farm community transformation.

We also developed and piloted the AgRiDOC-inspired modular training course *#RiceUpPH: Help Transform Rice Farm Communities* aimed at helping strengthen the capacities of our development partners, such as those from the academe, civil society, and private sector in transforming rice-farming communities. We also facilitated the completion of the learning field at the *FutureRice* Farm to enhance hands-on learning experiences of our trainees.

We conducted 66 knowledge-sharing and learning (KSL) sessions, enabling us to reach 7,032 rice extension intermediaries (REIs) from different sectors. Positive

> Monitoring and evaluation (M&E) results revealed that the training had improved the technical knowledge, field experience, and core values and attributes of the AgRiDOCs.

feedback from the KSL participants has led to spillover events that accounted for 30% of the total engagements. We continued the integrated promotion of our ICT-based resources and tools through distribution of promotional materials during KSLs, AgRiDOC training programs, media events, and retooling events for agricultural extension workers.

We co-sponsored the 2016 *AFNR Extension Policy Symposium* that tackled policy and other recommendations to improve the country's extension system. We have acquired more books and databases for our library resulting in 60% increase in downloads, from 22,586 in 2015 to 36,131 in 2016.

Monitoring and evaluation (M&E) results revealed that the training had improved the technical knowledge, field experience, and core values and attributes of the AgRiDOCs. They had reached out to their clients and officemates and even applied learnings in their own farms.

Additionally, M&E on KSL showed that it was effective in engaging and equipping strategic REI groups to help more farmers and complement extension. Major recommendations include the need to further strengthen the AgRiDOCs' capacity to implement need-based and location-specific extension strategies and enhance post-training support mechanisms for AgRiDOCs. There is also a need for an improved support system for REIs to sustain their motivation and capacity to help farmers.

To promote our outputs and results, we participated in the 29th National Rice R&D Conference with one plenary and three concurrent presentations, and three posters. We also participated in three international conferences, and our colleague won the best presenter award in Singapore.

PALAYABANGAN
THE 10-5 CHALLENGE

(ANI: 10 tonelada o 200 kaban; GASTOS: P5 sa bawat kilo ng palay)

Palayabangan

A total of 107 participants slugged it out in this contest aimed at hitting a yield of 10t/ha at P5/kg in all PhilRice stations for 2 seasons.

Bayer made the highest DS yield in three stations: Bicol (8.37 t/ha at P6.71/kg cost); Negros (8.92/P9.23); and Isabela (7.29/P7.44).

Average DS cost was P10.30/kg, 56.28% of which (P6.10/kg) was on labor. Seeds, fertilizers, chemicals, and other inputs accounted for 38.11% (P4.10/kg); fuel/ oil, irrigation fee, transportation costs, machine rental and food costs completed the bill.

By and large, the winning technology formula listed the use of high-yielding inbred and hybrid seeds, seed treatments, 3-4 splits of fertilizer application, and anti-disease pesticides. Mechanical transplanter and combine harvester were used by Isabela participants.

For WS, Brando Bilaya of Isabela yielded 9.22 tons/ha at P6.38/kg cost. Average cost was P11.08/kg with labor eating up 60.19% of it (P6.67/kg); material cost was 33.41% (P3.70/kg). The DS technology ensemble also worked well in the WS on top of mechanized harvesting. The technology will be compiled and promoted.

Our branch stations ensure that our initiatives benefit our stakeholders in the stations' respective areas of coverage. Our development initiatives have directly reached more than 42,000 stakeholders, 42% of whom were served through our mass-based technology promotion, and information campaigns and advocacies. These include our BeRiceponsible campaign, Knowledge-Sharing and Learning activities, and Lakbay Palay. Close to 2,000 students were made aware of our rice S&T activities through these strategies.

Nearly 16,000 of our clients were served through our capacity enhancement initiatives chiefly for rice and rice-based farmers and seed growers. Batac trained 80 people under its customized training programs while Midsayap trained 40 Muslim religious leaders. The branch stations also catered to more than 1,500 walk-in visitors, and reached more than 2,000 clients through our One-Stop Information Shops.

FORCES ON THE GROUND

ISABELA • BATAC • LOS BAÑOS • BICOL • NEGROS •
AGUSAN • BUKIDNON • MIDSAYAP

INNOVATIONS IN

- **Paddy Art.** The President Duterte creation in Los Baños snared a front-page exposure in a national daily and attracted thousands of visitors who captured it through selfies or groupies.

- **Demonstration farms.** Batac, Isabela, Bicol, and Negros showcased rice and rice-based technologies. Isabela put up 47 learning sites in 25 towns; Batac had four demo sites of Korean varieties in pursuit of our collaboration with the Korea Project on International Agriculture; Bicol had nine upland Palayamanan model farms. Negros had 3 demonstrations on best-performing inbreds and hybrids as well as 9 demonstration areas under the Associated Technologies project funded under the Food Staples Sufficiency Program of the DA. Additionally, seven sites were also established by Negros for the Rice Crop Manager and Nutrient Omission Plot Technique.

- **Seminar series.** Los Baños conducted four seminars on the benefits of rice and rice-based farming systems, mechanization, genetic engineering, and developing diverse agriculture groups.

OUR BRANCH STATIONS

- **Expert dispatches.** Batac made six expert dispatches to respond to pressing concerns of farmers.
- **Coffeetable book and technology bulletin.** With funding from DA-RFO 5, Los Baños launched the 4-volume coffeetable book "Anthropological and socioeconomic characterization of selected indigenous farming communities in the Bicol Region". Phase 1 of the book was "Enhancing the capabilities of Bicol Agta IPs through the Palayamanan Approach. Isabela, with funding from DA-RFO 2, published a technology bulletin on biopesticides.
- **One-stop information shop (OSIS).** These are centers of rice and rice-based production technologies in printed form. Isabela engaged state colleges and universities; Los Baños targeted high schools. Bicol, Agusan, Midsayap, and Negros enabled general patronage.

Edible landscape garden. Bicol caught the attention of passersby through such a garden. It virtually converted the station into an agritourism site.

- **Beauty pageant.** PhilRice Negros organized and hosted the Ms. Rice World, a beauty pageant to promote our advocacies particularly the Be RICEponsible campaign.
- **Radio programs.** Isabela, Agusan, and Batac resorted to the airwaves to reach remote areas, serving the folks with information about topics of interest with station-based experts as their resource persons.

ADMINISTRATION

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Business Community

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Consumer Sector

TEODORO C. MENDOZA, PhD
Academic Community

Staff Members

Name of Employee	Position
Central Experiment Station(CES)	
Abadilla, Celia G.	Senior Science Research Specialist
Abaoag, Lea D.	Supervising Science Research Specialist
Abdula, Sailila E.	Chief Science Research Specialist (Acting Executive Director)
Abon, John Eric O.	Science Research Specialist II
Alfon, Hazel B.	Sales and Promotion Supervisor III
Alonzo, Fe G.	Property Officer V
Antonio, Anita V.	Supervising Science Research Specialist
Antonio, Hazel V.	Senior Science Research Specialist
Aquino, Recille G.	Executive Assistant III
Arida, Imelda A.	Science Research Specialist I
Arocena, Arturo C. Jr.	Information Systems Analyst II
Arocena, Emily C.	Supervising Science Research Specialist
Bajit, Renato B.	Chief Administrative Officer
Baldovino, Arlene S.	Administrative Assistant V
Bandonill, Evelyn H.	Supervising Science Research Specialist
Barroga, Karen Eloisa T.	Chief Science Research Specialist
Barroga, Roger F.	Information Technology Officer III (Acting Deputy Executive Director for Administrative Services and Finance)
Barroga, Wilhelmina V.	Science Research Specialist II
Bautista, Elmer G.	Senior Science Research Specialist
Beltran, Jesusa C.	Supervising Science Research Specialist
Bongat, Fidela P.	Development Management Officer IV
Bordey, Flordeliza H.	Chief Science Research Specialist (Acting Deputy Executive Director for Development)
Borja, Sophia T.	Supervising Administrative Officer
Brena, Susan R.	Supervising Science Research Specialist
Briones, Constante T.	Board Secretary IV
Briones, Teodora L.	Planning Officer V
Bulatao, Rodel M.	Science Research Specialist II
Cabusora, Christopher C.	Science Research Specialist II
Caguiat, Joanne D.	Senior Science Research Specialist
Caguiat, Xavier Greg I.	Senior Science Research Specialist
Cañete, Sandro D.	Science Research Specialist II
Capistrano, Ailon Oliver V.	Senior Science Research Specialist
Capistrano, Maureen P.	Sales and Promotion Supervisor III
Collado, Wilfredo B.	Senior Science Research Specialist

Staff Members

Name of Employee	Position
Corales, Aurora M.	Supervising Science Research Specialist
Corales, Rizal G.	Supervising Science Research Specialist
Corpuz, Henry M.	Senior Science Research Specialist
Corpuz, Mary Grace D.	Supervising Administrative Officer
Cosio, Aurea C.	Internal Auditor IV
Cruz, Jayvee A.	Senior Science Research Specialist
Cruz, Rodjason B.	Warehouseman II
Dacumos, Carlo G.	Science Research Specialist I
De Dios, Jovino L.	Supervising Science Research Specialist
De Gracia, Irmina R.	Planning Assistant
Dela Cruz, Arlen A.	Senior Science Research Specialist
Dela Cruz, Ronaldo J.	Administrative Aide V
Dela Peña, Fe A.	Supervising Science Research Specialist
Desamero, Nenita V.	Chief Science Research Specialist
Diaz, Consolacion D.	Information Technology Officer I
Diaz, Erla Q.	Internal Auditor II
Dilla, Myline A.	Records Officer II
Donayre, Abegail T.	Senior Administrative Assistant
Donayre, Dindo King M.	Senior Science Research Specialist
Duca, Ma. Salome V.	Science Research Specialist I
Duldulao, Joy Bartolome A.	Senior Science Research Specalist
Espiritu, Alex J.	Science Research Specialist I
Espiritu, Annie E.	Science Research Specialist II
Ferrer, Marilyn C.	Senior Science Research Specialist
Gagelonia, Eden D.	Supervising Science Research Specialist
Garcia, Fernando D.	Senior Science Research Specialist
Gibe, Ma. Ethel P.	Administrative Officer V
Giray, Adelaida B.	Supervising Administrative Officer
Gonzales, Roberto E.	Administrative Aide IV
Gonzales-Esmero, Diadem B.	Supervising Science Research Specialist
Gramaje, Leonilo V.	Senior Science Research Specialist
Grospe, Filomena S.	Science Research Specialist I
Hibionada, Felylee B.	Administrative Assistant III
Ilar, Glenn Y.	Supervising Science Research Specialist
Irang, Reynaldo E.	Farm Superintendent III
James, Joel G.	Land Management Officer II
Javier, Evelyn F.	Supervising Science Research Specialist
Javier, Leo C.	Chief Science Research Specialist
Joshi, Elaine E.	Librarian III

Staff Members

Name of Employee	Position
Juliano, Arnold S.	Senior Science Research Specialist
Juliano, Leylani M.	Supervising Science Research Specialist
Kalaw, Joselito A.	Development Management Officer III
Labay, Anna Liza P.	Administrative Assistant V
Lanuza, Andrei B.	Senior Science Research Specialist
Layaoen, Myriam G.	Senior Science Research Specialist
Litonjua, Aileen C.	Senior Science Research Specialist
Lumawag, Fe N.	Supervising Administrative Officer
Malabanan, Necitas B.	Chief Administrative Officer
Malabayabas, Myrna D.	Senior Science Research Specialist
Malasa, Ronell B.	Science Research Specialist II
Malonzo, Ofelia C.	Senior Science Research Specialist
Mamucod, Henry F.	Senior Science Research Specialist
Manalili, Rowena G.	Senior Science Research Specialist
Manalo, Hanah Hazel Mavi B.	Science Research Specialist II
Manalo, Jaime A. IV	Senior Science Research Specialist
Manangkil, Oliver E.	Supervising Science Research Specialist
Manaois, Rosaly V.	Senior Science Research Specialist
Manigbas, Norvie L.	Supervising Science Research Specialist (Scientist I)
Marquez, Leonardo V.	Senior Science Research Specialist
Martin, Edwin C.	Supervising Science Research Specialist
Mataia, Alice B.	Senior Science Research Specialist
Miranda, Guadalupe C.	Public Relations Officer II
Miranda, Ruben B.	Chief Science Research Specialist
Molina, Elizabeth P.	Human Resource Management Officer II
Morales, Amelia V.	Science Research Specialist I
Narca, Gina B.	Engineer II
Narvadez, Chona Mae S.	Sales and Promotion Supervisor IV
Newingham, Ma. Cristina V.	Science Research Specialist I
Niones, Jennifer T.	Senior Science Research Specialist
Niones, Jonathan M.	Chief Science Research Specialist
Noriega, Antonio S. Jr.	Engineer III
Ona, Rizzla S.	Executive Assistant III
Orcino, Jose A.	Sales and Promotion Supervisor II
Ordonio, Reynante L.	Senior Science Research Specialist
Orge, Hazel Jane M.	Supervising Administrative Officer
Orge, Ricardo F.	Supervising Science Research Specialist (Scientist I)
Pacada, Imeldalyn G.	Senior Science Research Specialist
Pariñas, Julieta F.	Science Research Specialist I

Staff Members

Name of Employee	Position
Pascual, Joel V.	Senior Science Research Specialist
Pascual, Kristine S.	Senior Science Research Specialist
Perez, Loida M.	Supervising Science Research Specialist
Pineda, Rowena A.	Science Research Specialist II
Quilang, Eduardo Jimmy P.	Chief Science Research Specialist (Acting Deputy Executive Director for Research)
Quimson, Alejandro C.	Administrative Aide V
Quiring, Sylvia Therese C.	Executive Assistant III
Ramos, Elizabeth C.	Administrative Assistant III
Ramos, Joel A.	Senior Science Research Specialist
Ramos, Paulino S.	Science Research Specialist II
Ramos, Riza A.	Supervising Science Research Specialist
Ravelo, Glenda D.	Supervising Administrative Officer
Razon, Shereen P.	Executive Assistant III
Regalado, Manuel Jose C.	Chief Science Research Specialist (Scientist I)
Relado, Rhemilyn Z.	Senior Science Research Specialist
Requito, Jasmin G.	Cashier II
Reyes, Babylinda O.	Accountant III
Rillon, Genaro S.	Chief Science Research Specialist
Rillon, Juliet P.	Senior Science Research Specialist
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Salvador, Marychelle B.	Administrative Officer V
Salvador, Virginia P.	Librarian II
Santiago, Errol V.	Senior Science Research Specialist
Santiago, Gilely D.	Senior Science Research Specialist
Santiago, Roy V.	Internal Auditor III
Serapion, Jerry C.	Senior Science Research Specialist
Sibayan, Evangeline B.	Supervising Science Research Specialist
Suralta, Roel R.	Supervising Science Research Specialist (Scientist II)
Tallada, Jasper I.	Supervising Science Research Specialist
Tamani, Luis Alejandre I.	Information Technology Officer II
Tanzo, Irene R.	Supervising Science Research Specialist
Tibayan, Ma. Cielo J.	Dormitory Manager III
Valdez, Evelyn M.	Science Research Specialist II
Valdez, Rene E.	Senior Science Research Specialist
Vasallo, Artemio B.	Division Chief III
Villaroman, Grace S.	Supply Officer III
Zagado, Ronan G.	Supervising Science Research Specialist

Staff Members

Agusan	
Abao, Nievalin B.	Warehouseman I
Bastasa, Dexter B.	Science Research Specialist II
Bondad, Rochelle Marie P.	Administrative Officer IV
Cadiz, Irma O.	Administrative Assistant II
Estoy, Gerardo F. Jr.	Chief Science Research Specialist
Mabayag, Noel O.	Farm Superintendent II
Montecalvo, Abner T.	Chief Science Research Specialist
Nemeño, Genevive A.	Senior Science Research Specialist
Rivas, Sharen T.	Science Research Specialist I
Tabudlong, Belen M.	Science Research Specialist II
Villarina, Jerry C.	Farm Superintendent I

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Dela Cruz, Dante C.	Science Research Specialist I
Dahino, Ivy Pearl B.	Warehouseman I
Galvez, Rizalina F.	Administrative Officer I
Ramos, Mario R.	Supervising Science Research Specialist

Batac	
Abrogena, Nida Q.	Supervising Science Research Specialist
Alibuyog, Anielyn Y.	Science Research Specialist II
Avellanoza, Eleanor S.	Science Research Specialist II
Baradi, Mary Ann U.	Supervising Science Research Specialist
Galera, Moises G.	Science Research Specialist I
Ganotisi, Rosana Sabella O.	Administrative Officer I
Maloom, Juanito M.	Senior Science Research Specialist
Penera, Mildred L.	Warehouseman I
Seguritan, Clarivel O.	Administrative Assistant II
Ullibac, Jennifer M.	Administrative Officer III

Bicol	
Castro, Reynaldo C.	Chief Science Research Specialist
Dela Torre, Neil P.	Warehouseman I
De Peralta, Melanie Aileen C.	Science Research Specialist II
Dela Cruz, Gideon F.	Administrative Officer I
Dollentas, Rona T.	Senior Science Research Specialist
Merced, Richelle Q.	Administrative Assistant II
Mirandilla, Jean Rochielle F.	Science Research Specialist I
Sienes, Junior A.	Farm Superintendent I

Staff Members

Isabela	
Acierto, April Joy B.	Science Research Specialist I
Amar, Gracia B.	Senior Science Research Specialist
Dela Cruz, Andres L.	Science Research Specialist II
Galapon, Jerome V.	Science Research Specialist I
Gawat, Nancy R.	Science Research Specialist II
Guillermo, Juanita C.	Administrative Officer I
Mandac, Hiyasmin R.	Administrative Officer I
Obana, Angelita B.	Warehouseman I
Padilla, Michelle C.	Administrative Officer III
Pasicolan, Helen R.	Senior Science Research Specialist
Ramos, Fidel M.	Farm Superintendent II
Sosa, Nymfa S.	Science Research Specialist I

Los Banos	
Angeles, Noriel M.	Senior Science Research Specialist
De Guzman, Kristofferson C.	Administrative Officer I
Gonzalvo, Belinda M.	Administrative Assistant II
Lapitan, Victoria C.	Supervising Science Research Specialist
Movillon, Mario M.	Chief Science Research Specialist
Olvida, Imelda D.	Science Research Specialist II
Quimbo, Michelle C.	Senior Science Research Specialist
Sajise, Edelweiss E.	Senior Science Research Specialist
Salazar, Babylyn T.	Science Research Specialist II
Tado, Caesar Joventino M.	Chief Science Research Specialist

Midsayap	
Abdulkadil, Ommal H.	Chief Science Research Specialist
Astillo, Marifel A.	Administrative Officer I
Balleras, Gina D.	Supervising Science Research Specialist
Boholano, Isagane V.	Science Research Specialist I
Cantila, Aldrin Y.	Science Research Specialist II
Ducao, Honalee A.	Administrative Officer III
Escabarte, Ma. Teresa A.	Administrative Officer I
Muyet, Virgilio F.	Farm Superintendent II
Perialde, Evelyn S.	Senior Science Research Specialist
Romarez, Marissa C.	Warehouseman I
Sabes, Peter Lyod P.	Science Research Specialist I
Tadle, Frezzel Praise J.	Senior Science Research Specialist
Torreña, Pernelyn S.	Senior Science Research Specialist

Staff Members

Negros	
Alcosaba, Grace O.	Administrative Officer III
Alvarez, Joey E.	Warehouseman I
Cabanayan, Maricris S.	Administrative Officer I
Cordova, Jose Arnel E.	Science Research Specialist I
Libetario, Edgar M.	Supervising Science Research Specialist
Pajarillo, Hermie A.	Farm Superintendent I
Palanog, Alvin D.	Science Research Specialist II
Seville, Cherryl U.	Science Research Specialist I
Sta. Ines, Leo T.	Senior Science Research Specialist
Suñer, Albert Christian S.	Senior Science Research Specialist

Loyaltee Awardees

Last Name	First Name	MI	Year
Esmero	Diadem	G.	15
Ilar	Glenn	Y.	15
James	Joel	G.	15
Malasa	Ronell	B.	15
Perialde	Evelyn	S.	15
Abdula	Sailila	E.	20
Duldulao	Joy Bartolome	A.	20
Lapitan	Victoria	C.	20
Torreña	Perelyn	S.	20
Abadilla	Celia	G.	25
Malabanan	Necitas	B.	25
Malonzo	Ofelia	C.	25
Miranda	Ruben	B.	25
Ramos	Riza	A.	25
Valdez	Rene	E.	25
Gagelonia	Eden	D.	35

Scholastic Achievements

Name of Scholar	Degree	University	Year Completed/Graduated
Arnold S. Juliano	PhD in Agricultural Engineering (Best Student Thesis (Graduate Level): Development of a Rice Hull Gasifier Engine-Pump System for Optimum Irrigation Application in Rainfed Lowland Farms)	Central Luzon State University	February 2016
Gerardo F. Estoy, Jr.	MS in Development Management	Development Academy of the Philippines	November 2016
Myline A. Dilla	MS in Agribusiness Management	Central Luzon State University	February 2016
Myriam G. Layaoen	MS in Development Management (Third Honors)	Development Academy of the Philippines	July 2016
Rhemilyn Z. Relado	MS in Development Management (Class Valedictorian and Most Relevant Re-Entry Project: Binhi para sa Magsasaka: Enhancing Delivery of and Farmer's Access to High-Quality Rice Seeds)	Development Academy of the Philippines	January 2016
Sailila E. Abdula	MS in Development Management (Best Re-entry Project: Improvement of Rice-based Farming Technology through Training of Religious Leaders in Maguindanao, ARMM: A Pilot Test of Madrasah sa Basak)	Development Academy of the Philippines	January 2016

Training Programs, Workshops, Seminars, and Conferences

No.	Type	Inclusive date (2016)	Title	Venue	Coordinator/ Facilitator	Participants
1	Training	Feb 5-9	Moral Recovery Program (MRP) Training of Trainers' (TOT) activity	Mati City, Davao Oriental	MROFI	Guadalupe C. Miranda
2	Training	April 22	DAP PMDP MMC Batch 12	DAP, Tagaytay City	DAP	Victoria C. Lapitan
3	Training	Feb 16-19	Training Course on Philippine Quality Award (PQA) Application Development	DAP, Ortigas, Pasig City	DAP	Aurora M. Corales Hazel Jane M. Orge
5	Training	April 7-8	Learning and Development Planning	CSI, Quezon City	CSI	Ma. Ethel P. Gibe
6	Seminar-workshop	March 16-18	Seminar-Workshop on Administrative Justice (SWAJ)	CSC- NCR, Kaliraya, Quezon City	CSC- NCR	Joy Bartolome A. Duldulao
7	Training	June 15 to Aug 2	Participatory Irrigation Management System for Paddies (B)	Japan	JICA	Melanie Aileen C. De Peralta
8	Seminar	April 5-7	ICT for Disaster Risk Reduction, Climate Change, Green Growth, and Sustainable Development	ICTO Bldg, CP Garcia Ave., Diliman, Quezon City	National ICT Competency Management Service (NCM) of the Information and Communications Office (ICTO)	Clarivel O. Seguritan Consolacion D. Diaz
9	Seminar	April 19-22	Values Restoration Program	Baguio City	Council for the Restoration of Filipino Values (CRFV)	Guadalupe C. Miranda Elizabeth P. Molina
10	Seminar-workshop	May 18-21	Contract Administration and Management	Baguio City	SCCE	Felylee B. Hibionada Necitas B. Malabanan Kristofferson C. De Guzman Juanita C. Guillermo Maricris S. Cabanayan Gideon F. Dela Cruz Clarivel O. Seguritan
11	Training	May 16-20	Basic Occupational Safety and Health (BOSH)		DOLE	Reynaldo E. Irang Henry F. Mamucod

Training Programs, Workshops, Seminars, and Conferences

No.	Type	Inclusive date (2016)	Title	Venue	Coordinator/ Facilitator	Participants
12	Training	May 23-27	Construction Operational Safety and Health (COSH)		DOLE	Gina B. Narca Joel A. Ramos Froilan A. Serrano Sally Grace B. Osorio
13	Seminar	June 21-23	Managing Records with the Law in Mind	Puerto Princesa City, Palawan	Philippine Records Mngt Assoc., Inc.	Joy Bartolome A. Duldulao Myline A. Dilla
14	Seminar	May 18-19	Records Recovery and Disaster Preparedness	Baler, Aurora	NAP	Hiyasmin R. Mandac Belinda M. Gonzalvo
15	Conference	July 6-7	Jung Conference: Salubungan on Depth Psychology- Our Psyche, Our Earth (Ang Kwentuhan sa Ilalim ng Punongkahoy)	San Juan City, Metro Manila	CESB	Eduardo Jimmy P. Quilang Flordeliza H. Bordey
16	Seminar-workshop	June 21-24	Contract Administration and Management	Baguio City	SCCE	Rochelle Marie P. Bondad
17	Training	June 28-July 1/Oct 4-7	Training Course on Extension Management	ATI Compound, Elliptical Rd, Diliman, QC	ATI	Lea D. Abaoag Ommal H. Abdulkadil
18	Seminar	Sept.26-30	Seminar on eGovt Project Management	ICTO Bldg., C.P. Garcia Avenue, Diliman, QC	DICT	Consolacion D. Diaz Luis Alejandre I. Tamani
19	Conference	Sept.23-24	1st Philippine Engineers' Summit/"Advancing Women Engineers' Role in the ASEAN Community: A Sharper Focus"	Manila	Women Engineers Network (WEN) of the Philippine Technological Council	Evangeline B. Sibayan Eden D. Gagelonia Kristine S. Pascual
20	Training	Oct.4-7	Training on Extension Management Phase II	Davao City		Lea D. Abaoag Ommal H. Abdulkadil
21	Conference	Oct.5-8	Govt Procurement: Comprehensive Updates on the Implementation of RA 9184 feat. The 2016 Revised Implementing Rules and Regulations	Baguio City	SCCE	Grace S. Villaroman Leo C. Javier Ofelia C. Malonzo

Training Programs, Workshops, Seminars, and Conferences

No.	Type	Inclusive date (2016)	Title	Venue	Coordinator/ Facilitator	Participants
22	Seminar	Oct.19-22	AGAP, INC. (Financial Management Practitioners: Rising to the Challenge of Change)	Tagbilaran City, Bohol	AGAP	Erla Q. Diaz
23	Seminar-Meeting	November 16-19	3rd PAGBA Quarterly Seminar and Meeting/"Steering and Managing Public Financial Management/Governance Reforms in the Transition Year"	Davao City	PAGBA, Inc.	Adelaida B. Giray Marychelle B. Salvador Mary Grace D. Corpuz Honalee A. Ducao Jennifer M. Ullibac Michelle C. Padilla Grace O. Alcosaba
24	Conference-Workshop	November 8-11	18th Moral Recovery Program Natnl Convention/Workshop	New Washington, Aklan	MROFI	Guadalupe C. Miranda
25	Conference	November 28-30	2016 Luzon Convention of HRMPs	Philippine International Convention Center	CSC- NCR	Kristofferson C. De Guzman Gideon F. Dela Cruz Clarivel O. Seguritan Hiyasmin R. Mandac Maricris S. Cabanayan Glenda D. Ravelo Ma. Ethel P. Gibe Elizabeth P. Molina
26	Training	November 16	4th Quarter -Conduct of the CSI Leadership Series	Pasay City	CSC	Flordeliza H. Bordey

2016 Outstanding Employee Awards

Name	Awards
Abner T. Montecalvo	Outstanding Official
Ailon Oliver V. Capistrano (Special Citation)	Outstanding Senior Researcher
Andres L. Dela Cruz (Special Citation)	Outstanding Junior Development Worker
Arniel P. Beglilio (Midsayap)	Outstanding Field/Laboratory Worker
Belen M. Tabudlong (Special Citation)	Outstanding Junior Researcher
Christopher C. Cabusora	Outstanding Junior Researcher
Clarivel O. Seguritan	Outstanding General Administrative Support Staffer
Dindo King M. Donayre	Outstanding Senior Researcher
Eduardo D. Diamante (Midsayap)	Outstanding Utility Worker
Edward P. Asuncion (CES)	Outstanding Skilled Worker
Elizabeth C. Ramos (Special Citation)	Outstanding General Administrative Support Staffer
Erwin E. Fulgencio (CES)	Outstanding Utility Worker
Ev P. Angeles (CES)	Outstanding Senior Development Worker
Evelyn S. Perialde	Outstanding Administrative Middle Manager
Genaro S. Rillon	Most Outstanding Principal Investigator (International Peer Recognition

2016 Outstanding Employee Awards

Name	Awards
Gina B. Narca (Special Citation)	Outstanding Administrative Middle Manager
Henry D. Cayaban	Outstanding Junior Development Worker
Honalee A. Ducao (Special Citation)	Outstanding Administrative Middle Manager
Ivan Q. Clerigo (Special Citation)	Outstanding General Administrative Support Staffer
Jean Rochielle F. Mirandilla	Outstanding Junior Development Worker
Jonathan M. Niones	Outstanding Senior Researcher
Karen Eloisa T. Barroga	Outstanding Senior Development Worker
Kharen P. Robillos	Outstanding General Administrative Support Staffer
Mary Grace C. Lapurga	Outstanding Junior Researcher
Mary Grace M. Nidoy (Special Citation)	Outstanding Junior Development Worker
Michael Jake Anthony P. Bagasol (Batac-Special Citation)	Outstanding Field/Laboratory Worker
Ommal H. Abdulkadil (Special Citation)	Outstanding Senior Development Worker
Roberto D. Baybado (CES)	Outstanding Field/Laboratory Worker
Roger I. Quilban (Batac)	Outstanding Skilled Worker
Rustum C. Braceros (Special Citation)	Outstanding Junior Researcher
Tedmar D. Geronimo (Isabela-Special Citation)	Outstanding Skilled Worker


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Scientific Productivity 2015

Author/s	Title	Journal/Book/Conference
Alice B. Mataia, Resi O. Olivares, Rowena G. Manalili, Ronell B. Malasa, Aileen C. Litonjua, Guadalupe O. Redondo, Rhemilyn Z. Relado, Suenie Jane Paran, and Charis Mae A. Tolentino	Impact of Farmer Field School-PalayCheck in the irrigated rice areas in the Philippines	The Philippine Journal of Crop Science. December 2015. 40(3):49-61
Antonio A. Alfonso, Eleanor S. Avellanoza, Ronalyn T. Miranda, Emilie Q. Espejo, and Nelson S. Garcia	Production and characterization of gamma ray-induced rice mutants with Broad-spectrum Resistance to the Bacterial Blight Pathogen *Xanthomonas oryzae pv. Oryzae*	The Philippine Journal of Crop Science. December 2015. 40(3):1-9
Caesar Joventino M. Tado, Dexter P. Ona, John Eric O. Abon, Eden D. Gagelonia, Nguyen Thanh Ngi, and LE Quang Vin	Development and promotion of the Reversible Airflow Flatbed Dryer in the Philippines	Annals of Tropical Research. January-June 2015. 37(1):97-109
Emi Kameoka, Roel R. Suralta, Shiro Mitsuya, and Akira Yamauchi	Matching the expression of root plasticity with soil moisture availability maximizes production of rice grown in an experimental sloping bed having soil moisture gradients	Plant Production Science. July 2015, Vol. 18, pp. 267-276
Evelyn F. Javier, Virginia Isabelle G. Mapa, and Eufemio T. Rasco, Jr	Vermicomposting: A Review of its potential use in rice-based farming system	Rice-based Biosystems Journal. February 2015. 1(1):19-38
Jehru C. Magahud, Pearl B. Sanchez, Pompe C. Sta. Cruz, and Rodrigo B. Badayos	Levels and sources of Potassium, Calcium, Sulfur, Iron and Manganese in major paddy soils of the Philippines	International Journal of Philippine Science and Technology
Jesiree Elena Ann D. Bibar and Bayani M. Espiritu	Isolation of Methanogens and Methanotrophs from a tropical lowland rice soil	Rice-based Biosystems Journal. February 2015. 1(1):11-18
Kenji Yano, Koichiro Aya, Ko Hirano, Reynante L. Ordonio, Miyako Ueguchi-Tanaka, and Makoto Matsuoka	Comprehensive gene expression analysis of rice aleurone cells probing the existence of an alternative gibberellin receptor	Plant Physiology. Febuary 2015. Vol. 167, No. 2, pp. 531-544
Kenji Yano, Taiichiro Ookawa, Koichiro Aya, Yusuke Ochiai, Tadashi Hirasawa, Takeshi Ebitani, Takeshi Takarada, Masahiro Yano, Toshio Yamamoto, Shuichi Fukuoka, Jianzhong Wu, Tsuyu Ando, Reynante L. Ordonio, Ko Hirano, and Makoto Matsuoka.	Isolation of a novel lodging resistance QTL gene involved in Strigolactone signaling and its pyramiding with a QTL gene involved in another mechanism	Molecular Plant. February 2015. Vol. 8, No. 2, pp. 303-314
Len J. Wade, Violeta Bartolome, Ramil Mauleon, Vivek Deshmuck Vasant, Sumeet Mankar Prabakar, Muthukumar Chelliah, Emi Kameoka, K Nagendra, KR Kamalnath Reddy, C. Mohan Kumar Varma, Kalmeshwar Gouda Patil, Roshi Shrestha, Zaniab Al-Shugeairy, Faez Al-Ogaidi, Mayuri Munasinghe, Veeresh Gowda, Mande Semon, Roel R. Suralta, Vinay Shenoy, Vincent Vadez, , Rachid Serraj, HE Shashidhar, Akira K Yamauchi, Ranganathan Chandra Babu, Adam Price, Kenneth L. McNally, and Amelia Henry	Environmental response and genomic regions correlated with rice root growth and yield under drought in the *Oryza* SNP panel across multiple study systems	PLoS ONE 10(4): e0124127. doi:10.1371/journal.pone.0124127

Scientific Productivity 2015

Author/s	Title	Journal/Book/Conference
Marissa V. Romero	Rice Proteins. In Applied Food Protein Chemistry.	Zeynep Ustunol (Ed). John Wiley & Sons Ltd, West Sussex, United Kingdom. January 2015, pp. 305-322
Marjohn C. Niño, Hye-Jung Lee, Joonki Kim, Sailila E. Abdula, Yu-Jin Jung, Kwon-Kyoo Kang, Illsup Nou, and Yong-gu Cho	Enhancement of rice resistance to Bacterial Blight by Overexpressing BrCP3 Gene of *Brassica rapa*	Plant Breeding and Biotechnology. November 2015. Vol. 3, No. 4, pp. 355-365
Mirco Boschetti, Andrew Nelson, Francesco Nutini, Giacinto Manfron, Lorenzo Busetto, Massimo Barbieri, Alice Laborte, Jeny Raviz, Francesco Holecz, Mary Rose O. Mabalay, Alfie P. Bacong, and Eduardo Jimmy P. Quilang	Rapid Assessment of Crop Status: An application of MODIS and SAR Data to rice areas in Leyte, Philippines Affected by Typhoon Haiyan	Remote Sensing. May 2015, Vol. 7, pp. 6535-6557
Norvie L. Manigbas, April T. Badajos, ES Romero, Fe L. Porciuncula, PJ Alvaran, and Quirino D. Dela Cruz	Agro-morphological traits associated with genotype by system interaction of rice genotypes under inorganic and organic system: Implications to Breeding	Journal in Organic Agriculture. December 2015. Vol. 1, No.1, pp. 27-41
Norvie L. Manigbas and Leslie Angela F. Lambio	Rapid generation advance in developing recombinant and backcrossed inbred lines for high-temperature tolerance in rice *(Oryza sativa L.)*	Rice-based Biosystems Journal. February 2015. 1(1):39-48
Roel C. Rabara, Marilyn C. Ferrer, Mark Ian C. Calayugan, Malvin D. Duldulao, and Jennifer Jara-Rabara	Conservation of rice genetic resources for food security	Advance Food Technology Nutritional Science. 2015; SE(1): S51-S56
Rolando T. Cruz, Kevin N. Salarda, Hazel F. Makahiya, Shirley A. Balidiong, and Flordeliza H. Bordey	Simulating potential yield of rice *(Oryza sativa L.)* under different Nitrogen levels, climate types, and projected increase in air temperature due to climate change with DSSAT Ceres-Rice model	Rice-based Biosystems Journal. February 2015. 1(1):49-63
Rubenito M. Lampayan, Kristine C. Samoy-Pascual, Evangeline B. Sibayan, OP Jayag, Romeo J. Cabangon, and Bas M. Bouman	Effects of Alternate Wetting and drying (AWD) threshold level and plant seedling age on crop performance, water input and water productivity of transplanted rice in Central Luzon	Paddy and Water Environment. July 2015. Vol. 13, No. 3, pp. 215-227
Sophia Maria M. Cuevas, Juan Emmanuel Capiral Fernandez, and Imelda D. Olvida	Where peasants are kings: food sovereignty in the Tagbanua traditional subsistence system	ASEAS - Austrian Journal of South-east Asian Studies. June 2015. Vol. 8, No. 1, pp. 24-44
Woon-Ha Hwang, Soo-Kwon Park, Dong-Jin Shin, Norvie L. Manigbas, Min-Hee Nam, In-Jung Lee, Do-Hoon Kim, and Dong-Soo Park	Enhanced organic phosphate utilization by over-expression of OsACP1 and OsPAP1 genes in rice *(Oryza sativa L.)*	Philippine Journal of Crop Science. April 2015, Vol. 40, No. 1, pp.17-23

Scientific Productivity 2016

Author/s	Title	Journal/Book/Conference
Ailon Oliver V. Capistrano, Juvy Jane E. Aungon and Jose Emmanuel G. Hernandez	Development and evaluation of an Android application of the MOET-Based mathematical model or MOET APP	The Philippine Journal of Crop Science vol. 41 (1):33-41. April 2016
Aldrin Y. Cantila, Sailila E. Abdula, Haziel Jane C. Candalia, and Gina D. Balleras	Multiple statistical tools for divergence analysis of rice *(Oryza sativa L)* released varieties	The Philippine Statistician. Dec 2016, 65(2):121-134
Alvin D. Palanog and Le-Ann G. Dogeno	Mining for Glyphosate-resistant genes in rice genotypes of the Philippines	IAMURE Multidisciplinary Research. October 2016, Vol. 16:127-141
Antonio A. Alfonso, Rhodora R. Aldemita, Ma. Gina M. Babb, Nenita V. Desamero, Glenn Y. Ilar, Edilberto D. Redoña, Renando O. Solis, Dindo Agustin Tabanao, Xavier Greg I. Caguiat, Reynante L. Ordonio, and Roel R. Suralta	Mga tanong at sagot: Rice biotechnology	Mga Tanong at Sagot: Rice Biotechnology, ISSN 1655-2814 Series No. 15 Agosto 2016 FILIPINO
Arvin Paul P. Tuaño, Manuel Jose C. Regalado, and Bienvenido O. Juliano	Grain quality of rice in selected retail stores and supermarkets in the Philippines	International Journal of Philippine Science and Technology. September 2016. Vol. 9, No. 1, pp. 15-22
Cheryll U. Seville and Albert Christian S. Suñer	Changes in the flowering behavior of two-line hybrid rice parental lines based on different planting dates in Negros Occidental Province, Philippines	Asia Life Sciences. May 2016. 25(2):577-584
Cheryll C. Launio, Constancio A. Asis, Rowena G. Manalili, and Evelyn F. Javier	Cost-effectiveness analyses of farmers' rice straw management practices considering CH4 and N2O emissions	Journal of Environmental Management. Elsevier Ltd. 2016, Vol. 183: 245-252
Daniel Makori Menge, Emi Kameoka, Mana Kano-Nakata, Akira Yamauchi, Shuichi Asanuma, Hidetoshi Asai, Mayumi Kikuta, Roel R. Suralta, Takuya Koyama, Thiem Thi Tran, Joel De La Cruz Siopongco, Yoshiaki Inukai, and Daigo Makihara	Drought-induced root plasticity of two upland NERICA varieties under conditions with contrasting soil depth characteristics	Plant Production Science. February 2016, Vol. 19, No. 3, pp. 389-400
Danica Riza D. Macaisa, Susan R. Brena, Clint Henry D. Pablo, and Jennifer M. Manangkil	Effects of seed priming and coating on germination and seedling establishment of hybrid rice Mestiso 19 direct-seeded under submerged soil conditions	Rice-Based Biosystems Journal. September 2016. Vol. 2, No. 1, pp. 1-12
Dindo King M. Donayre, Edwin C. Martin, and Madonna C. Casimero	Incidence, growth, and agronomic characteristics of weedy rice variants from Iloilo Province, Philippines under field and screenhouse conditions	IAMURE International Journal of Ecology and Conservation. July 2016. Vol. 19, pp. 37-52
Dindo King M. Donayre and Lucille T. Minguez	Histopathology of *Puccinia philippinensis Syd & P. Syd*, a fungus that causes Leaf Rust disease to *Cyperus rotundus L.*	Annals of Tropical Research. July 2016. 38(1):221-228
Dindo King M. Donayre and Teresita U. Dalisay	Identities, characteristics, and assemblages of dematiaceous-endophytic fungi isolated from tissues of barnyard grass weed	Philippine Journal of Science. June 2016. Vol 145(2), pp 37-47

Scientific Productivity 2016

Author/s	Title	Journal/Book/Conference
Dindo King M. Donayre, Edwin C. Martin, Salvacion E. Santiago and Jeong-Taek Lee	Weeds in irrigated and rainfed-lowland ricefields in the Philippines	Philippine Rice Research Institute, KOPIA. December 2016, 143p. (ISBN:978-621-8022-19-5)
Emi Kameoka, Roel R. Suralta, Shiro Mitsuya, and Akira Yamauchi	Developmental plasticity of rice root system grown under mild drought stress conditions with shallow soil depth; comparison between nodal and lateral roots	Plant Production Science. May 2016, Vol. 19, No. 3, pp. 411-419
Flordeliza H. Bordey, Piedad F. Moya, Jesusa C. Beltran, and David C. Dawe	Competitiveness of Philippine Rice in Asia	Philippine Rice Research Institute and International Rice Research Institute. June 2016. ISBN No. 9786218022140
Flordeliza H. Bordey, Gelia T. Castillo, Piedad F. Moya, and William G. Padolina	Rice self-sufficiency under the lens of provincial analysis: A new way of looking at the national rice security	National Academy of Science and Technology. July 2016
Gertrudo S. Arida, Belen S. Punzal, Leonardo V. Marquez, Rizal G. Corales, Josef Settele	Impact of Palayamanan fields on conservation biological control in rice-based cropping systems	The Philippine Entomologist, April 2016 Volume 30 No. 1 pp. 85-94, ISSN 0048-3753
Gina D. Balleras, Marjie S. Doverte, and Leah E. Endonela	Alarming presence of three rice stem borer species in irrigated lowland rice agroecosystem in Midsayap, North Cotabato, Philippines	Journal of Biodiversity and Environmental Sciences (JBES). November 25, 2016. 9(5): 105-109
Henry M. Corpuz, Melissa B. Dacumos, Ma. Jophine C. Ablaza, Gemmabelle G. Corpuz, and Marissa V. Romero	Grain quality, cooking time, textural property, phenolic content, and antioxidant capacity of brown rice varieties with different amylose contents	Asia Life Sciences. January 2016. Vol. 25, No. 1, pp. 111-126
Jaime A. Manalo IV, Katherine P. Balmeo, Jayson C. Berto, and Fredierick M. Saludez	Youth and agriculture: The Infomediary Campaign in the Philippines	Philippine Rice Research Institute and DA-Bureau of Agricultural Research. July 2016.
Jaime A. Manalo IV, Myriam G. Layaoen, Christina A. Frediles, Katherine P. Balmeo, Jayson C. Berto, Fredierick M. Saludez, Argie M. Pagdanganan, and Jennifer D. Villaflor	Climate-smart agriculture: Do young people Care?	Asian Journal of Agriculture and Development. 2016, 13(1): 59-77
Jaime A. Manalo IV, Katherine P. Balmeo, Jayson C. Berto, Fredierick M. Saludez, Jennifer D. Villaflor, and Argie M. Pagdanganan	Integrating climate-smart agriculture into secondary-level curriculum: Lessons from three high schools in the Philippines	SpringerPlus. 2016, 5:1592
Janina Schneiker, Wolfgang W. Weiser, Josef Settele, Nguyen Van Sinh, Jesus Victor Bustmanate, Leonardo V. Marquez, Sylvia Villareal, Gertrudo Arida, Ho Van Chien, Kong Luen Heong, and Manfred Turke	Is there hope for sustainable management of golden apple snails, a major invasive pest in irrigated rice?	Wageningen Journal of Life Sciences. NJAS-222. doi: 10.1016/j.njas.2016.04.001. August 29. 2016

Scientific Productivity 2016

Author/s	Title	Journal/Book/Conference
Jayvee A. Cruz, Josef Mikhail R. Bautista, and Lanie Alejo-Alejandro	Assessment of Actinomycete for enhancing the growth and yield of upland rice *(Oryza sativa L.)*	IAMURE International Journal of Ecology and Conservation. July 2016, Vol. 19, pp. 87-107
Jupiter L. Grospe, Evaristo A. Abella and Norvie L. Manigbas	Quantitative trait loci for high-temperature tolerance in rice *(Oryza sativa L.)*	Philippine Agricultural Scientist. March 2016. Vol.99, No. 1, pp. 7-18
King B. Bergonio, Leny Grace G. Lucatin, Gerome A. Corpuz, Nerissa C. Ramos, and Joy Bartolome A. Duldulao	Improved shelf-life of brown rice by heat and microwave treatment	Journal of Microbiology, Biotechnology and Food Sciences DOI: 10.15414/ jmbfs.2016.5.4.378-385. Feb 1, 2016.5(4): 378-385
Mary Ann U. Baradi, Romeo G. Ancheta, and Marissa V. Romero	Effects of storage methods and time on the quality of traditional rice	The Philippine Agricultural Scientist. September 2016, Vol. 99, No. 3, pp. 238-245
Norvie L. Manigbas, Leslie Angela F. Lambio, Monaliza B. Magat, and VI Bartolome	AMMI and GGE Biplot analyses of multi-environment tests in rice *(Oryza sativa L.)* for irrigated lowland conditions in the Philippines	The Philippine Journal of Crop Science vol. 41 No. 1, pp. 58-67. April 2016
Reynante L. Ordonio and Makoto Matsuoka	Increasing resistant starch content in rice for better consumer health	Proceedings of the National Academy of Sciences, Vol. 113, November 2016
Ricardo F. Orge	Biochar-based engineering technologies for rice-based farming communities in the Philippines: The challenges of agro-environmental research in monsoon Asia	National Institute for Agro-Environmental Sciences (NIAES) Tsukuba, Japan and Food and Fertilizer Technology (FFTC) for the Asian and Pacific Region Taipei, Taiwan R.O.C. , NIAES Series 6 (p. 125-132)
Richard D. Romanillos, Josefina T. Dizon, Maria Ana T. Quimbo, Pompe C. Sta. Cruz, and Ruben B. Miranda	Community development strategies and other factors affecting rice productivity in inland valleys in Quezon Province, Luzon, Philippines	The Asian International Journal of Life Sciences. ASIA LIFE SCIENCES. May 2016, Vol. 25, No. 2, pp. 603-620
Rodel M. Bulatao, Jose Marie M. Asuncion, Jenny C. Lambanicio, Caryl Lizette D. Delos Santos, Joana Marie D. Tejada, Evelyn M. Labastilla, and Henry M. Corpuz	Screening of Philippine traditional pigmented rice brans with maximum nutrients and health-promoting properties	The Philippine Agricultural Scientist. June 2016, 99(2):135-141
Roel R. Suralta, Mana Kano-Nakata, Jonathan M. Niones, Yoshiaki Inukai, Emi Kameoka, Thiem Thi Tran, Daniel Menge, Shiro Mitsuya, and Akira Yamauchi	Root plasticity for maintenance of productivity under abiotic-stressed soil environments in rice	Field Crops Research. July 1, 2016. (DOI:10.1016/j. fcr.2016.06.023, published online)

Scientific Productivity 2016

Author/s	Title	Journal/Book/Conference
Roland Mumm, Jos A. Hageman, Mariafe N. Calingacion, Ric C. H. de Vos, Harry H. Jonker, A Erban, Joachim Kopka, TH Hansen, KH Laursen, Jan K. Schjoerring, JL Ward, MH Beale, Supanee Jongee, Ahmed Rauf, Fatima Habibi, SD Indrasari, S.Sakhan, A.Ramli, Marissa V. Romero, Russell F. Reinke, Kenichi Ohtsubo, Chanthakhone Boualaphanh, Melissa A. Fitzgerald, Robert D. Hall	Multi-platform metabolomics analyses of broad collection of fragrant and non-fragrant rice varieties reveal the high complexity of grain quality characteristics	Metabolomics. 2016, 12(38):1-19
Ronan G. Zagado and Michael J. Wilmore	Texting as a discoursive approach for the production of agricultural solutions	International Journal of Scientific and Technology Research. 2016, Vol. 5 Issue 7., pp. 286-304
Rosa Mia F. Cabanting and Loida M. Perez	An ethnobotanical study of traditional rice landraces *(Oryza sativa L.)* used for medical treatment in selected local communities of the Philippines	Journal of Ethnopharmacology. December 24, 2016. 194:767-773
Sailila E. Abdula, Hye Jung Lee, Joonki Kim, Marjohn C. Niño, Yu-Jin Jung, Young-Chan Cho, Illsup Nou, Kwon-Kyoo Kang, and Yong-Gu Cho	BrUGE1 transgenic rice showed improved growth performance with enhanced drought tolerance	Breeding Science vol. 66 No. 2, 226-233
Sandro D. Canete, Wilfredo B. Collado, Rodrigo B. Badayos, and Pearl B. Sanchez	Evaluating the potential of Quingua soil series towards a more productive and sustainable lowland rice-based farming in the Philippines	IAMURE International Journal of Ecology and Conservation. April 15, 2016, Vol. 17, pp. 40-63. ISSN 2244-1573
Sandro D. Cañete, Wilfredo B. Collado, Rodrigo B. Badayos, Pearl B. Sanchez, and Pompe C. Sta. Cruz.	Suitability assessment of Maligaya soil series for potential enhancement of rice-based cropping systems	Rice-Based Biosystems Journal. September 2016. Vol. 2, No. 1, pp. 44-54
Sophia Maria M. Cuevas, Jacqueline Lee O. Canilao, Mario M. Movillon, Imelda D. Olvida, Ferdinand S. Aguilar, H. Francisco V. Peñones Jr, Constante T. Briones, Abelardo R. Bragas, Elena B. Delos Santos, Edgar R. Madrid, Luz R. Marcelino	Anthropological and socioeconomic characterization of selected indigenous farming communities in the Bicol Region (Volumes 1 to IV). PhilRice Los Baños and DA-RFO V	Philippine Rice Research Institute, Los Baños Branch Station in cooperation with DA-RFO V
Xavier Greg I. Caguiat and Dindo Agustin A. Tabanao	Phylogenetic similarity of popular rice varieties from different sources	Journal of Phylogenetics & Evolutionary Biology. Aug 5, 2016. Vol. 4, No. 3

Best Stations

Station	Place
PhilRice Midsayap	1st
PhilRice Agusan	2nd
PhilRice Batac	3rd

Best Team

AWD	PhilRice Agusan staff (Gerardo F. Estoy Jr., Rolando R. Narisma and Edel S. Moñeva) are members of the AWD Team facilitating/implementing AWD activities in Regions VIII, X, XI and XIII
Benchmarking Project Group	Jesusa C. Beltran, Flordeliza H. Bordey, David C. Dawe, Cherylle C. Launio, Aileen C. Litonjua, Ronell B. Malasa, Rowena G. Manalili, Esther B. Marciano, Alice B. Mataia, Samarendu Mohanty, Piedad F. Moya, Suennie Jane C. Paran, Rhemilyn Z. Relado, Mary Rose L. San Valentin, Irene R. Tanzo, Ma. Sheila D. Valencia, and Charmaine G. Yusongco
PRISM	PhilRice Agusan staff (Gerardo F. Estoy Jr., Meriam V. Coñado and Glorie Belle L. Berja) are members of the PRISM Team facilitating/ implementing PRISM activities in Regions X, XI and XIII

Best Office

Division	Award
ASPPD - Agronomy, Soils, and Plant Physiology	Finalist
PBBD - Plant Breeding and Biotechnology	Finalist
RCFSD - Rice Chemistry and Food Science	Finalist

Best Papers

Author/s	Title	Journal/Book/Conference
Arnold S. Juliano, Romeo B. Gavino, Melissa E. Agulto, Victorino T. Taylan, Armando N. Espino, and Emmanuel V. Sicat	Improvement of PhilRice-designed rice hull gasifier engine-pump system for rainfed lowland irrigation	13th International Agricultural Engineering Conference & Exhibition, 66th PSAE Annual National Convention, and 27th Philippine Agricultural Engineering Week. April 24-30, 2016. Teatro Ilocandia, MMSU, Batac City, Ilocos Norte
	Optimizing water utilization from a developed rice hull gasifier engine-pump system for rainfed lowland farm	
Christopher C. Cabusora, Gelyn D. Valida, Martha V. Chico, Marry Anne L. Tadique, Jonathan M. Niones, Marie Antoinette R. Orbase, Jonathan Concepcion, Via Ann C. Marcelo and Nenita V. Desamero	Genetic improvement of submergence-tolerant rice cultivar FR13A through in vitro mutagenesis	10th PAPTCB Inc. Scientific Convention, City of Laoag, Ilocos Norte. September 22, 2016
Evelyn H. Bandonill, Henry M. Corpuz, Melissa B. Dacumos, Nevah Rizza L. Sevilla, Lydia M. Morales, Rosanna H. Cinense, and Milagros R. Martinez-Goss	Potential of algae as aquaculture feed ingredient	46th Crop Science Society of the Philippines Scientific Conference. June 13-18, 2016. General Santos City, South Cotabato
Flordeliza H. Bordey, Jesusa C. Beltran, Piedad F. Moya, Cheryll C. Launio, Aileen C. Litonjua, Rowena G. Manalili, Alice B. Mataia, Rhemilyn Z. Relado, Ronell B. Malasa, Irene R. Tanzo, Charmaine G. Yusongco, Suenie Jane Paran, Esther B. Mariano, Ma. Shiela D. Valencia, Mary Rose L. San Valentin, David C. Dawe	Philippine rice competitiveness: Status, prospects, and directions	28th National Research Symposium. Diliman, Quezon City. October 27, 2016
Gerardo F. Estoy, Jr. and Belen M. Tabudlong	Biology, ecology and management of the rice grain bug (RGB) in Caraga Region	12th Caraga RDEN Symposium. DA Conference Hall, Butuan City on September 15-16, 2016
Imelda D. Olvida, Leonardo G. Alipio, Jr., Juniel G. Lucidos, Gregorio Florendo, Jr., and Genaro O. San Valentin	Strengthening resiliency and food security of climate-vulnerable communities in Tablas Island, Romblon	PAEPI, Inc. and The University of San Carlos. 5th Biennial Convention and 1st International Conference. October 26-28, 2016, CAFA Theater, University of San Carlos, Cebu City
Imelda D. Olvida, Leonardo G. Alipio, Jr., Juniel G. Lucidos, Gregorio Florendo, Jr., and Genaro O. San Valentin	Strengthening resiliency and enhancing food security of Tablas Island's rainfed and upland rice-farming communities through climate change adaptation	International Society for Southeast Asian Agricultural Sciences 2016 National Congress and General Meeting. October 17-18, 2016, Philippine Carabao Center. Science City of Munoz, Nueva Ecija

Best Papers

Author/s	Title	Journal/Book/Conference
Imelda D. Olvida, Leonardo G. Alipio, Jr., Juniel G. Lucidos, Gregorio Florendo, Jr., and Genaro O. San Valentin	Strengthening resiliency of Romblon rainfed and upland rice-farming communities to climate change	Philippine Network of Educators on Environment 9th International Conference and Scientific Meeting. August 23-25, 2016. Surigao del Sur State University, Tandag City, Surigao del Sur
Isagane V. Boholano, Gina D. Balleras, Sailila E. Abdula, and Irish B. Cantila	Optimizing rice yield performance through varietal demonstration and ecological engineering	25th Research, Development and Extension Agency In-house Review. Nov 4, 2016 at Balindog, Kidapawan City, North Cotabato
Joy Bartolome A. Duldulao, Lexter R. Natividad, King M. Bergonio, and Danilda S. Paraga	Development and Validation of Rapid Amylose Test Kit	International Society for Southeast Asian Agricultural Services. 2016 National Congress and General meeting. Science City of Muñoz, Nueva Ecija. October 17-18, 2016, PCC
Juniel G. Lucidos, Imelda D. Olvida, Leonardo G. Alipio Jr., Gregorio A. Florendo Jr., Sophia Maria M. Cuevas, Genaro O. San Valentin	Strengthening resiliency of Romblon rainfed and upland rice-farming communities to climate change	3rd Philippine Association of Extension Program Implementors, Inc. (PAEPI-Global) International Annual Convention. 22-23 February 2016. Diliman, Quezon City
Lex C. Taguda, Delilah P. Dal-uyen, Mary Ann U. Baradi, Bethzaida M. Catudan, Fidela P. Bongat and Susan R. Brena	Carbonized rice hull (CRH)-insulated rice silo: Reducing rice storage losses	3rd Industry and Energy Research and Development Symposium and Competition. DMMSU-NLUC, Bacnotan, La Union, September 29-30, 2016
Manuel Jose C. Regalado, Alexis T. Belonio, Marvelin L. Rafael, Katherine C. Villota, Phoebe R. Castillo, and Eden D. Gagelonia	Design, Testing, and Evaluation of Hydrous Bioethanol Distiller for the Production of Fuel-Grade Alcohol from Nipa Sap *(Nypa fruticans)*	13th International Agricultural Engineering Conference & Exhibition, 66th PSAE Annual National Convention, and 27th Philippine Agricultural Engineering Week. April 24-30, 2016. MMSU, Batac City, Ilocos Norte
Riza A. Ramos and Josefina F. Ballesteros	Maternal factors associated with child nutrition of rice-based farm households in Central Luzon, Philippines	2nd International Conference on Public Health. Colombo, Sri Lanka. July 28-29, 2016
Romeo S. Liwag Jr., Purisima P. Juico, and Evelyn F. Javier.	Responses of different *Azolla spp* to different organic-based soil media	19th PSSST Annual Meeting and Scientific Conference. May 18-20, 2016. Legazpi City, Albay
Ronan G. Zagado, Genesis C. Martin, Perry Irish H. Duran, Anna Marie V. Bautista, Jayvee P. Masilang, and Jerickson D. Ruz	Kabutehan para sa mga magsasaka: Production of oyster mushroom as an added source of income among rice farmers in Candaba, Pampanga	International Society of Southeast Asian Agricultural Sciences (ISSAAS) National Congress. Philippine Carabao Center (PCC), Science City of Muñoz, Nueva Ecija. October 17-18, 2016
Wilfredo B. Collado and Joey G. Ramos	Soil nutrient status of the Long-Term soil fertility experiment at the Philippine Rice Research Institute	19th PSSST Annual Meeting and Scientific Conference. Legazpi City, Albay. May 18-20, 2016

Best Posters

Author/s	Title	Journal/Book/Conference
Alice B. Mataia, Jesusa C. Beltran, Flordeliza H. Bordey, Ronell B. Malasa, Rowena G. Manalili, Aileen C. Litonjua, Cheryll C. Launio, and Piedad F. Moya	Labor-use and mechanization: Impacts on labor productivity in rice production in the Philippines and selected major rice-producing countries in Asia	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Alvin D. Palanog, BP Mallikarjuna Swamy, Noraziyah Abd Aziz Shamsudin, Shalabh Dixit, Jose Emmanuel G. Hernandez, Teresita H. Borromeo, Pompe C. Sta.Cruz, and Arvind Kumar	Grain yield QTLs for reproductive stage drought stress in rice	1st International DOST-SEI ASTHRDP-NSC Scholars' Conference. April 7-8, 2016, Philippine International Convention Center, Pasay City
April M. Jose, Lea D. Abaoag, Joel V. Pascual, and Ailon Oliver V. Capistrano	Field validation and assessment: Key to effective technology promotion and adoption	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Arnold S. Juliano, Romeo B. Gavino, Melissa E. Agulto, Victorino T. Taylan, Armando N. Espino and Emmanuel V. Sicat	Improvement of PhilRice-designed rice hull gasifier engine-pump system for rainfed lowland irrigation	13th International Agricultural Engineering Conference & Exhibition, 66th PSAE Annual National Convention, and 27th Philippine Agricultural Engineering Week. April 24-30, 2016. Teatro Ilocandia, MMSU, Batac City, Ilocos Norte
	Optimizing water utilization from a developed rice hull gasifier engine-pump system for rainfed lowland farm	
Christian Flor C. Guittap, Joel V. Pascual, and Aurora M. Corales	Agricultural cooperatives: Key partners in technology promotion and rural development	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Femia R. Sandoval, Edwin C. Martin, Ma. Salome V. Duca, Clarence B. Codod, Crisanto A. Valdez, and Emmanuel R. Tiongco	Reactions of weedy rice variants to rice tungro and bacterial leaf blight	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Henry F. Mamucod, Amelia V. Morales, Rosaly V. Manaois, and Marissa V. Romero	Suitability of adlai in complementing rice as staple food	46th Scientific Conference | Crop Science Society of the Philippines. June 16, 2016 General Santos City, South Cotabato
Henry T. Ticman, Emily C. Arocena, Martha V. Chico, Alvin D. Palanog, Gina C. Nuñez, Dante A. Dela Cruz, and Jonathan M. Niones	Adaptability and stability performance of rice breeding lines in the multi-location yield trials	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Imeldalyn G. Pacada, Evelyn H. Bandonill, Thessa Marie M. Pascual, Fredi Jan A. Francia, Thelma F. Padolina, and Alvin Paul P. Tuaño	New tools for predicting chalkiness and immature grains in milled rice	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Irene R. Tanzo, Edwin C. Martin, Mary Grace C. Lapurga, and Marco Antonio M. Baltazar	Women and weedy rice: Gender differences in knowledge and practices	1st GAD Regional Research Congress. December 14-15, 2016

Best Posters

Author/s	Title	Journal/Book/Conference
Irene R. Tanzo, Mary Grace C. Lapurga, and Marco Antonio M. Baltazar	Farm Roles of Filipino Women: Results of a national survey	1st GAD Regional Research Congress. December 14-15, 2016
Jan Lois Zippora A. Libed, Marian Rikka O. Añora, Roger F. Barroga, and Nehemiah L. Caballong	Building rice agritourism: Challenges and opportunities	46th Scientific Conference | Crop Science Society of the Philippines. June 16, 2016 General Santos City, South Cotabato
Joanne D. Caguiat, Frodie P. Waing, John Oscar S. Enriquez, Xavier Greg I. Caguiat, Reneth A. Millas, Jasmin II C. Santiago, and Alvin D. Palanog	Introgression of drought-tolerant QTLs into high-yielding rice varieties	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Joana Andrea C. Maningas, Herma D. Villanueva, Jonathan M. Niones, Roel R. Suralta, and Leylani M. Juliano	Seed germination and root system development in rice as influenced by pre-sowing treatment with radiation-modified carrageenan (RMC)	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Ma. Victoria Stephanie G. Asio, Fatima R. Leya, Lea D. Abaoag, Karen Eloisa T. Barroga, Ev P. Angeles, Irene R. Tanzo, and May Angelica A. Saludez	Homestay as a learning strategy: A look at farm families' coping mechanisms	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Mariechelle M. Rosario, Virginia P. Luciano, Marie Stella F. Ablaza, Jake E. Carampatana, and Joanne D. Caguiat	Field performance of PR47592H with AC-Derived restorer line in various hybrid rice nurseries	10th PAPTCB Inc. Scientific Convention, City of Laoag, Ilocos Norte. September 22, 2016
Moises G. Galera, Noel D. Ganotisi, Mark Lester O. Quigao, C.T. Dangcil, Mary Ann U. Baradi, Manuel Jose C. Regalado, and Alexis T. Belonio	Go renewable! Hybrid wind-solar pump system for crop irrigation	13th International Agricultural Engineering Conference & exhibition, 66th PSAE Annual National Convention, and 27th Philippine Agricultural Engineering Week. April 24-30, 2016. MMSU, Batac City, Ilocos Norte
Moises G. Galera, Noel D. Ganotisi, Clarence T. Dangcil, Mark Lester O. Quigao, Marry Ann U. Baradi, Manuel Jose C. Regalado, and Alexis T. Belonio	Harnessing wind and solar energy for crop irrigation in Ilocos Region	ICIEERD Regional Symposium. Bacnotan, La Union, September 2016
Raffy S. Salazar, Ommal H. Abdulkadil, and Evangeline B. Sibayan	Increasing farmers' productivity through adoption of AWD and associated rice production technologies in regions IX, XI, XII, and ARMM	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Richie Eve G. Ragas, Alpha Grace S. Ferriol, Fryne Krystal Jay R. Pardon, Jennifer M. Manangkil, and Susan R. Brena	When trait clears yield threats: Understanding floral traits of parent lines of Mestiso 19 and 20 in relation to hybrid rice seed production	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES
Richie Eve G. Ragas, Fryne Krystal Jay R. Pardon, Alpha Grace S. Ferriol, Jennifer M. Manangkil, and Mary Yole Apple D. Ruedas	Farm-wise despite water-scarce: Characterization of post-rice garlic cultivars grown in Occidental Mindoro	29th National Rice Research and Development Conference, September 7-8, 2016. PhilRice CES

Peer Recognitions

Name	Award	Award-Giving Body	Place/Date
Sonny P. Pasiona	2016 Agricultural Journalist of the Year	Philippine Agricultural Journalists (PAJ) and San Miguel Corporation Binhi Awards	Makati City, March 22, 2017
John Glen S. Sarol	2016 Agricultural Journalist of the Year (2nd Place)		
Jayson C. Berto	2016 Agricultural Photo Journalist of the Year	As above	
#Brown4good Challenge	2016 Best Agricultural Information and Media Campaign of the Year	As above	
PhilRice MAGASIN	2016 Agricultural Magazine of the Year	As above	
Maunlad na Agrikultura sa Nayon	2016 Best Regional Agricultural Radio Program	As above	
Ashlee P. Canilang and Jayson C. Berto	Assisting Technical Extension Workers. Regional Awarding of Gawad Saka: Parangal sa mga Natatanging Magsasaka at Mangingisda and Organic Agriculture Achievers		San Fernando City, Pampanga, October 25, 2016
Genaro S. Rillon	Most Outstanding Principal Investigator	Asian Food and Agriculture Cooperation Initiative and Rural Development Administration	Siem Reap, Cambodia. September 21, 2016
Gusto Namin Milyonaryo Kayo	Best Agricultural Information and Media Campaign, 2015	Philippine Agricultural Journalists (PAJ) and San Miguel Corporation Binhi Awards	Makati City, March 29, 2016
Jaime A. Manalo IV	Outstanding Australian Alumnus for Development Communication	Philippine Australian Alumni Association Incorporated	June 18, 2016
Jaime A. Manalo IV, Jayson C. Berto	Rice Hull is Not a Waste. Winner, 2016 Advancing Asia: Investing for the Future Youth Video Contest	International Monetary Fund (IMF)	New Delhi, India. March 11, 2016
Jayson C. Berto	Youth in Rice Farming. Winner, 2016 5th Annual Make a Better World Photo Contest	International Research and Exchanges Board (IREX)	May 10, 2016
Jayvee A. Cruz	Outstanding Researcher of the Philippines 2015. Citation, World Publication Award.	IAMURE Multidisciplinary Research	Nagoya, Japan. April 1, 2015
Karen Eloisa T. Barroga	2016 UPLB CDC Distinguished Alumnus. Agricultural Extension and Communication	University of the Philippines Los Baños	Los Baños, Laguna, October 10, 2016

Peer Recognitions

Name	Award	Award-Giving Body	Place/Date
PhilRice-HRMO	Certificate of Recognition. PRIME HRM Maturity Level 2 for Performance management, Rewards and Recognition	Civil Service Commission - National Capital Region	Quezon City. March 7, 2016
Philippine Rice Information System (PRISM)	Outstanding Research and Development Award	Los Baños Science City Community Foundation Inc.	2016 National Science and Technology Week. July 29, 2016
PhilRice MAGASIN	2015 Binhi Awards Best Agricultural Newsletter	Philippine Agricultural Journalists (PAJ) and San Miguel Corporation	March 29, 2016
Ricardo F. Orge	2016 Regional Winner of Outstanding Public Officials and Employees Award (PLB)	CSC Region 3	September 26, 2016
Ricardo F. Orge	Most Outstanding Agricultural Engineer (MARAMBA Awards)	PSAE, Philippine Society of Agricultural Engineers	April 29, 2016
Riza A. Ramos	2016 Regional Gawad Saka Outstanding Agricultural Researcher	DA-RFO3	San Fernando City, Pampanga, October 27, 2016
Roel R. Suralta	2016 Regional Gawad Saka Outstanding Agricultural Scientist	DA-RFO3	Heroes Hall, San Fernando City, Pampanga, October 25, 2016
	2016 Eduardo A. Quisumbing Medal, Outstanding Research and Development Award for Basic Research	NAST-DOST	Bicutan, Taguig City, Metro Manila, July 25, 2016
	Conferment of Scientist II	DOST-Scientific Career System	September 7, 2016
	Outstanding Alumnus of the Year Award, 2016	Visayas State University	ViSCA, Baybay City, Leyte. August 10, 2016
Sailila E. Abdula	2016 National Finalist Gawad Saka Award (Outstanding Agricultural Researcher)	Department of Agriculture - Bureau of Agricultural Research. 28th DA-BAR National Research Symposium	October 27, 2016
	2016 Regional Gawad Saka Outstanding Agricultural Researcher		
	Outstanding Alumni Awards (Research Category)	University of Southern Mindanao, Kabacan, North Cotabato	October 1, 2016
Victoria C. Lapitan	Outstanding Principal Investigator	Asian Food and Agriculture Cooperation Initiative and Rural Development Administration	Siem Reap, Cambodia. September 26, 2016


PHILRICE
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Externally Funded Projects

International Donors	Project Titles
International Atomic Energy Agency (IAEA)	Mutation Breeding and Molecular Genetics of Adaptation to High Temperature in Rice / Screening of Mutant Rice Lines for Drought and Heat Tolerance
Japan International Cooperation Agency (JICA)	Technical Cooperation on Rice-Based Farming Technology Extension Project for the Autonomous Region in Muslim Mindanao (TCP 5)
JICA thru NIA	National Irrigation Sector Rehabilitation and Improvement Project (NISRIP)
National Institute for Agro-Environmental Sciences (NIAES), Japan	Technology Development for Circulatory Food Production Systems Responsive to Climate Change: Development of Mitigation Options for Greenhouse Gases Emissions from Agricultural Lands in Asia "Greenhouse Gas Mitigation in Irrigated Rice Paddies in Southeast Asia (MIRSA2)"
Korea International Cooperation Agency (KOICA)	Enhancing the Capacity of Production and Distribution of High-Quality Rice Seeds
Rural Development Administration (RDA), Korea	Collaborative Project on the Establishment of Korea Project on International Agriculture (KOPIA) Center in the Philippines
Asian Food and Agriculture Cooperation Initiative (AFACI)	Construction of Epidemiology Information Interchange System for Migratory Disease and Insect Pests in Asia Region (IPM): Assessment of Rice Planthoppers Populations and Viruses in the Philippines
	Assessment of Brown Planthopper, White-Backed Planthopper Populations and Virus Diseases in Rice and Selected Solanaceous Crops
Helmholtz Center for Environmental Research (UFZ, Germany)	LEGATO (Land-use intensity and Ecological EnGineering-Assessment Tools for risks and Opportunities in irrigated rice-based production systems)
AGFUND	Future Rice : Green, Practical, and Smart Farming
CGIAR	CGIAR Research Program 7: Climate Change, Agriculture and Food Security (CCAFS) (DRPC2011-117)
Australian Center for International Agricultural Research (ACIAR)	Weedy Rice in the Philippines and Vietnam (CIM-2015-010)
International Foundation for Science (IFS), Sweden	Antimicrobial Potential of Phenolic Compounds from Rice Bran
International Rice Research Institute (IRRI)	Field Performance Evaluation and Selection of GUVA Lines in the Tropics
	Expanded GxE Experiments in Different Agro-Ecologies in Support of Bangladesh and Eastern India High-Zinc Rice Profiles: Multi-location (Philippines) Evaluation of Recombinant Inbred Lines for Identifying Most Adapted Lines for Varietal Promotion
	Multi-Location Hybrid Rice Yield Trials at PhilRice Experiment Station in Muñoz, Nueva Ecija (IRRI Ref: DPPC 2008-49)
	Increasing Productivity of Direct-Seeded Rice Areas by Incorporating Genes for Tolerance of Anaerobic Conditions during Germination (IRRI Ref. No. DRPC2012-18)
	Improving Crop Productivity in Drought-Prone Rainfed Lowlands in the Philippines with Mechanized Dry Seeding Technology
	Pre-MET (Multi Environment Testing) Evaluation of Elite Irrigated Rice Breeding Lines Under the Project "Transforming Rice Breeding" CPLA ID: C-2016-94
IRRI - Global Rice Science Partnership (GRiSP)	Phenomics of Key Adaptation and Yield Potential Traits within GRiSP Global Rice Phenotyping Network "Foundation Experiment for Analysis and Modeling of Key Yield Potential Traits" Short title: Phenomics of Rice Adaptation and Yield (PRAY)

Externally Funded Projects

Local Donors	Project Titles
DA-Rice Program	Rice Self-Sufficiency Plan (RSSP)
DA thru BAR DA-IRRI Partnerships (FSSP)	Benchmarking the Philippine Rice Economy Relative to Major Rice-Producing Countries in Asia
	Rice Crop Manager: A Comprehensive Decision Support Tool for Increasing Yields and Income for Farmers in the Philippines
	Philippine Rice Information System (PRISM) - An Operational System for Rice Monitoring to Support Decision-Making Toward Increased Rice Production in the Philippines
	Accelerating the Development and Dissemination of Associated Rice Production Technologies that are Resource-Efficient
	Improving Technology Promotion and Delivery through Capability Enhancement of the Next Generation of Rice Extension Professionals and Farmer Intermediaries (IPaD)
	Raising Productivity and Enriching the Legacy of Heirloom/Traditional Rice through Empowering Communities in Unfavorable Rice-Based Ecosystems (Heirloom Rice Project)
	Accelerating the Development and Adoption of Next-Generation (Next-Gen) Rice Varieties for the Major Ecosystems in the Philippines
Support to FSSP	
	Profiling and Seed Purification/Multiplication of Selected Traditional Rice Varieties in Support of DA's Initiative for Exporting Quality Rice
	Rice Yield Gap and Economic Efficiency in the Philippines
	Identification and Selection of Transgressive Segregants in Philippine-Released Hybrid Rice Varieties
	Value Chain Analysis of the Rice Industry in the Philippines
	Development of an Integrated and Mechanized System of Handling and Drying for Fast Processing of Typhoon-Affected Palay
	Field Assessment of Actinomycete Inoculant for Enhancing the Growth and Yield of Rainfed Lowland and Upland Rices
	Analysis of Cropping System in Relation to Pest Profile and Crop Yields in Asynchronous Rice Production of Nueva Vizcaya
	Development of Mechanization Protocol for Improved Commercial Inbred Seed Production and Seed Quality
	Collection and Evaluation of Farmers' Rice Lines in Irrigated and Rainfed Lowland Areas in the Philippines
	Mechanisms of Rice Insect Pest and Disease Resistance in Traditional Rice Varieties, and Development of Genetic Stocks with Novel Sources of Resistance Genes
	Improving Crop Productivity in Drought-Prone Rainfed Lowlands in the Philippines with Mechanized Dry Seeding Technology
	Accelerating Development, Demonstration, and Adoption of Palayamanan Plus in Lowland Farms
	Assessing the Production and Marketing of Philippine Specialty Rices

Externally Funded Projects

International Donors	Project Titles
	Varietal Mixtures of Rice to Enhance Yield and Mitigate Effects of Climate Change in Stress-Prone Areas
	Assessment of Farming Systems in the Rice-Based Communities and Development of Palayamanan Plus Model
	Evaluation and Adaptation of Rice Integrated Crop Management Technologies to Enhance Yield and Reduce Input Costs in Irrigated Lowland
	The 5th Round of the Regular Monitoring of Rice-Based Farm Households in the Philippines
DA-Biotech	Gene Mining of Yield-Related Traits in Philippine Rice Landraces
	Genetic and Phytochemical Characterization of Pigmented Rice Accessions in PhilRice Genebank
	Genome-Wide Association (GWA) Mapping of Selected Philippine Rice Germplasm for Root Plasticity Alleles
DA - RFO 2	Rice Accelerated Learning Center
DA - RFO 3	Improving Productivity and Livelihood in Swamp and Flood-Prone Rice-Based Farming Communities in Region III
DA - RFO 4B	Development of Integrated Crop and Nutrient Management for Upland Ecosystems in Region IVB
DA - RFO 5	Intensifying Rice and Rice-Based Production in Bicol Region Amidst Changing Climatic Conditions (with 5 component studies)
Department of Agrarian Reform (DAR)	Capacity Development for Climate Change-Resilient ARC
Philippine Crop Insurance Corporation (PCIC)	Development of a Standard Procedure of Weather Index-Setting in Support of the WIBI Mindanao Project


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Completed Infrastructure/Facility Projects

	Title	Location	Date Completed
1	Construction of Screen House with Head House for Plant Breeding	PhilRice CES	5/18/2016
2	Construction of Learning Center for Future Rice Farm	PhilRice CES	2/8/2016
3	Construction of Intensified Rice-Based Agribiosystem (IRBAS) Facilities	PhilRice CES	4/10/2016
4	Construction of 1-Kilometer Fence (Labor & Equipment)	PhilRice CES	7/29/2016
5	Repair & Improvement of TMS Training Rooms 3 & 4	PhilRice CES	2/12/2016
6	Repair and Improvement of Main Building (Phase I)	PhilRice LB	1/24/2016
7	Repair and Improvement of Various PhilRice Facilities	PhilRice CES	1/22/2016
8	Construction of Various Facilities for Rice Boot Camp at Future Rice Farm (Phase II)	PhilRice CES	7/1/2016
9	Construction of Intensified Rice-Based Agribiosystem (IRBAS) Facilities	PhilRice Negros	3/16/2016
10	Construction of Irrigation Canal and Perimeter Fence for Future Rice Farm	PhilRice CES	7/15/2016
11	Construction of Intensified Rice-Based Agribiosystem (IRBAS) Facilities	PhilRice Mindoro	2/9/2016
12	Construction of Screen House with Head House-2 for Plant Breeding	PhilRice CES	6/20/2016
13	Repair & Improvement of Comfort Room of Admin Building	PhilRice Batac	1/25/2016
14	Improvement of Genetic Resources Division	PhilRice CES	3/5/2016
15	Repair & Improvement of Fine Instrument Room	PhilRice CES	1/31/2016
16	Construction of Various Facilities and Site Development	PhilRice Mindoro	7/20/2016
17	Repair & Improvement of Cold Storage for PBBD	PhilRice CES	3/28/2016
18	Construction of Head House and Repair of Screen House at Wheat Area	PhilRice CES	5/6/2016
19	Improvement of Genetics Laboratory/ Freezer Room (TCL)	PhilRice CES	5/27/2016
20	Concreting of Engine Base of Shallow Tube Well (STW)	PhilRice CES	12/28/2016

PHILIPPINE RICE RESEARCH INSTITUTE

COMPARATIVE STATEMENT OF FINANCIAL POSITION
ALL FUNDS (Corporate, Trust, and BDD Funds)
For the Years Ended December 31, 2016 & 2015

December 31

	Note	2016	2015
ASSETS			
Current Assets			
Cash	5/	1,233,958,269.08	1,140,505,359.66
Receivables	6/	231,392,240.01	184,357,903.32
Inventories	7/	92,828,752.50	90, 623,321.27
Prepayments	8/	1,449,544.37	4,994,570.83
Other Current Assets	9/	457,373.16	501,871.83
Total Current Assets		**1,560,086,179.12**	**1,420,983,026.91**
Non-Current Assets			
Property & Equipment net	10/	811,458,511.48	752,936,943.77
Other Assets	11/	22,070,289.63	14,238,873.09
Total Non-Current Assets		**833,528,810.11**	**77,175,816.86**
TOTAL ASSETS		**2,393,614,989.23**	**2,188,158,843.77**
LIABILITIES & GOVERNMENT EQUITY			
Current Liabilities			
Account Payable	12/	340,125,140.67	266,340,409.90
	12/	408,988,577.35	27,624,375.86
	12/	23,587,701.54	23,087,957.39
	12/	403,139,472.90	755,495,852.09
Total Current Liabilities		1,175,850,892.46	1,072,548595.24
Non-Current Liabilities	13/	11,288,870.66	10,404,321.90
Total Non-Current Liabilities		11,288,870.66	10,404,321.90
Government Equity	**15/**	**1,206,475,226.11**	**1,105,205,926.63**
TOTAL LIABILITY & GOVERNMENT EQUITY		2,393,614,989.23	2,188,158,843.77

CERTIFIED CORRECT:

AUREA CABANA-COSIO

OIC, Financial & Management Division

NOTED BY:

ROGER F. BARROGA

Acting Deputy Executive Director for Administrative Services and Finance

We are a government corporate entity under the Department of Agriculture. We were created through Executive Order 1061 on 5 November 1985 (as amended) to help develop high-yielding and cost-reducing technologies so farmers can produce enough rice for all Filipinos.

We accomplish this mission through research and development work in our central and seven branch stations, coordinating with a network that comprises 57 agencies and 70 seed centers strategically located nationwide.

To help farmers achieve holistic development, we will pursue the following goals in 2010-2020: attaining and sustaining rice self-sufficiency; reducing poverty and malnutrition; and achieving competitiveness through agricultural science and technology. We have the following certifications: ISO 9001:2008 (Quality Management), ISO 14001:2004 (Environmental Management), and OHSAS 18001:2007 (Occupational Health and Safety Assessment Series).

PhilRice Central Experiment Station; Maligaya, Science City of Muñoz, 3119 Nueva Ecija; Tel: (44) 456-0277 • Direct line/Telefax: (44) 456-0112; Email: prri.mail@philrice.gov.ph; PhilRice Text Center: 0920-911-1398; Websites: www.philrice.gov.ph; www.pinoyrice.com

BRANCH STATIONS:

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

SATELLITE STATIONS:

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