MILESTONES

2014-2015

Department of Agriculture

PHILRICE

PHILIPPINE RICE RESEARCH INSTITUTE

MILESTONES

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From the Acting Executive Director

Discoveries and reach

It is not easy to say we have done enough, as the clients that we intend to serve have yet to fully benefit from the fruits of our research and development undertakings. Nonetheless, we report in this Milestones our major accomplishments in 2014 and 2015.

While too many encouraging things happened in the past two years as far as rice R&D is concerned, we wish to direct your attention to the following:

- We reached millions of farmers through our advocacies and campaigns
- We discovered a new pest of rice
- We entered into new and interesting collaborations
- We explored/demonstrated new farming technology mixes
- We learned more about our traditional varieties especially as potential parents for drought or heat-tolerance breeding programs

As an answers-provider Institute, and cognizant of most of the rice production threats, we always try to maintain innovative and inquisitive minds to push for our shared rice research agenda. The milestones presented in this publication will prove that we have been diligently searching for answers to some of the most difficult questions surrounding rice R&D—and that we have made some significant progress through time.

As you leaf through the pages of the Milestones, we urge you not just to read and appreciate the beautiful photos, but also send us feedback on how we are doing in the work that we promise to deliver. Tell us the things that we might have glossed over so we can make up for them in the coming years.

DR. SAILILA E. ABDULA
Acting Executive Director

Research

Plant Breeding and Biotechnology

Three varieties were released in 2014 - NSIC Rc354 (Tubigan 28), Rc358 (Tubigan 30), Rc368H (Mestiso 55). They respectively mature in 112, 114, and 109 days, and can yield 9-10 tons/ha. They are moderately resistant to tungro and stemborers. Under unfavorable conditions, they may succumb to blight and blast. Their long and slender grains are soft and taste good when cooked. They have very high (70-72%) milling recovery, with grains that don't easily break.

More varieties were released in 2015 - NSIC Rc394, Rc396, Rc402- all for irrigated farms in Luzon (best for direct seeding in Isabela, Cagayan, Kalinga, Ilocos Norte, Pangasinan) and Visayas (Samar, Bohol). For rainfed farms nationwide are NSIC Rc416, Rc418, Rc424, Rc426, Rc428, and Rc434.

Breeding against bacterial leaf blight (BLB), blast, and tungro continues. Thus far, we have eight breeding lines with Xa4, Xa5, and Xa21 genes, which confer resistance to BLB. In 2014, 61 lines were identified to have resistance to BLB.

Two traditional varieties are now our sources of blast-resistant genes: *Pingas* is resistant while *Payakan* has intermediate resistance. In 2014, 138 lines were seen as tungro-resistant and 13 were putative herbicide-tolerant lines. We also work on heat and drought tolerance.

We know hybrid rice and its rich potentials. We have produced 496 new experimental hybrids, 10 usable maintainer (CMS) and restorer lines, and 10 potential parent lines. We pursue

research on male-sterile lines, two-line and TGMS-based hybrids, and hybrids with drought and salinity tolerance.

We are improving the yields of our traditional varieties, such as *Gal-ong* and upland rice cultivars in Mindanao. Through time we have learned that they are culturally and scientifically relevant. For instance, we have found that Payakan, Pingas, and C-7 are drought-tolerant.

Our weather bureau, PAG-ASA, maintains that climate extremes will worsen through time, at least until 2050. Globally, food experts agree that escalating temperatures will result in massive yield loss. We have anticipated this scenario. Hence, for heat-tolerance breeding, we now have 4 elite lines for multi-environment trials, and 6 lines for National Cooperative Tests. For drought tolerance, three elite lines from our work with wild rices have been forwarded to the trials. At the backdrop are massive screening works for salinity, submergence, and drought traits.

Nutritious and special-purpose rices are well within our priorities. We have one aromatic rice line for NCT evaluation, and another micronutrient-dense promising line. We have ongoing work for glutinous, pigmented, and iron/zinc-dense rice varieties.

Our farmers are after more direct-seeding and early-maturing varieties. Direct seeding significantly reduces labor cost while varieties that mature fast optimize land use and escape destructive typhoons or drought, especially if they are forecasted. Our varieties Tubigan 23, 32, 33, and 36 for direct seeding have made our long list of early-maturing varieties longer.

More rices for direct seeding will come. We also breed very early-maturing varieties (114 days or less). We now have a promising line.

Changing times, changing preferences. We will rise up to the challenge of breeding rice varieties so our stakeholders will continue planting rice.

Genetic Resources

Where is the next big thing in rice coming from? The answer will come from the meticulous search among our thousands of accessions in our Genebank.

Fundamental to success in rice breeding is having a rich germplasm of traits that breeders can work with. We have over 15,000 rice collections. Our work focuses on three major areas: germplasm conservation; characterization (agro-morphological, molecular, and biochemical); and utilization through different approaches.

In 2014 and 2015, we evaluated and processed 3,147 new and generated collections/accessions for conservation and storage. Here are major results of our assessment:

- 296 entries were resistant to blast; 9 showed intermediate reactions to bacterial leaf blight; 20 accessions were resistant and 7 were moderately resistant to brown planthopper; 27 were intermediate to green leafhopper; 35 were resistant to stemborer; 90 accessions from PhilRice Midsayap were resistant to tungro

- 6 genotypes showed drought tolerance based on biomass weight at 12% soil moisture content (MC); 12 germplasm had

potential drought tolerance; 8 accessions had zinc tolerance.

- 35 accessions had the (fragrance) fgr1 allele
- Indica (7,540), Japonica (164), and intermediate (2,333)
- 1 of the 121 accessions tested for complete grain quality had good brown rice yield

We have stepped up the game in gene discovery through the use of next-generation sequencing for whole genome sequence analysis. We have also invested in digitizing our operations to fast-track search and access processes from our database. This is expected to offer tremendous help to interested parties. The Genebank Documentation System contains salient information on passport data (agro-morphological characterization, grain quality, biotic and abiotic stresses evaluation, viability condition, and seed inventory). In 2015, for instance, PhilRice catered to 422 seed requests covering 1,582 accessions/collections with 4,079 seed packets. These requests were all covered with Standard Material Transfer Agreements and monitoring ensured that all seeds were used as agreed.

We know that our country does have an impressive collection of traditional varieties (TVs) that make our science and culture glitter even more. Thus far, we have found 550 TV in Mindanao, 81 of which were from Alamada in North Cotabato. Up north, 49 new TV collections were added to our database in PhilRice Batac in Ilocos Norte.

We have also started conserving other types of genetic resources important in the rice environment. These are 75 azolla accessions maintained in PhilRice Los Baños; 22 biocontrol agents including 11 strains *Beauveria bassiana*, 9 *Metarhizium anisopliae*, 1 *Peacilomyces sp.*, and 1 *Nomurea rileyi* conserved in PhilRice Agusan; 4 pure microbial isolates of *Trichoderma sp.*, *Streptomyces mutabilis*, *Magnaporthe grisea,* and *Rhizoctonia solani*.

Agronomy, Soils, and Plant Physiology

Our work in this area advances research on improved plant, water, soil, and nutrient management practices with focus on resource-use efficiency. Our researchers report findings that will accelerate technology generation and improve overall crop care.

We have maintained an experiment since 1968 on long-term fertility that studies the sustainability of intensive double rice cropping to provide indicators of nutrient imbalances and mining. In 2015, this study showed that yield potentials of 8-10 t/ha in the DS and 5.5-6.5 t/ha in the WS were yet achievable. The indigenous nutrient-supplying capacity of Maligaya soil clay at PhilRice CES was 60 kg N/ha, 10 kg P2O5/ha , and 64 kg K2O/ha.

From our 2003- onwards work on the long-term use of organic fertilizers, we now recommend the use of chicken manure plus rice straw (RS) with or without effective microorganisms (EM) for higher yields. Chicken manure or vermicompost may be used as basal and 500kg azolla as topdressed N under flooded conditions.

Agronomic-use efficiency was higher in WS than in DS. Mean agronomic efficiency of applied N (AEN) in rice varied across seasons and years. Higher AEN of 25-30 kg grain/kg N was achieved with the use of LCC at an application of 60-90 kg N/ha; only 10-15 kg grain/kg N from pure organic fertilizers.

> In 2015, we published a version of MOET App on Google play store, and developed a Facebook page to promote it and a webpage to facilitate its downloading and the viewing of the real-time rice fertility map gathered.

We evaluated tools and techniques for rapid data collection. The Decision Support System for Agrotechnology Transfer (DSSAT) is an application software that integrates the effects of crop genotype, soil, weather, and management options. We tested the DSSAT CERES-Rice Crop Model to establish a new protocol to determine the yield potentials of inbreds and hybrids.

Nitrogen management levels were tested in relation to attainment of yield potentials under different climate types in irrigated lowland rice areas. Based on tests in Isabela, Nueva Ecija, and North Cotabato for PSB Rc82 and Mestiso 20, DSSAT had an acceptable predictive capacity. In 2015, the DSSAT CERES-rice crop models for Rc82 and M20 were found applicable in Nueva Ecija conditions where yield was 7.8t/ha at 140kg N applied at different growth stages.

For fertilizer management, we tested atLEAF+, a chlorophyll meter much cheaper (P15,000) than SPAD-502+ (P100,000) being used at PhilRice. These tools assess predictive grain yield ability at different fertilizer rates. But atLEAF+ has yet to become available in the Philippines.

The MOET App is a mobile application that complements the MOET kit. It addresses the

general recommendations of the kit and considers the severity of nutrient deficiency. It facilitates fertilizer computation based on the results of the MOET setup. In 2015, we published a version of the MOET App on Google Playstore and created a Facebook page to promote it. A webpage was also put up to facilitate downloading of the App and viewing of the regularly updated MOET-based rice fertility map.

Under the ratooning study, yields of early-maturing (106-115 days) varieties were higher than those that matured later. Ratoon crops under direct seeding had significantly higher yields with LCC-based N (nitrogen) than with fixed application. Four of eight genotypes evaluated had additional ratoon yields of 0.7 to 2.1 t/ha (baseline yield 7t/ha).

Most varieties studied had higher AEN with LCC-based N application rates than 190 kg N/ha resulting in 22-59% N fertilizer savings. In 2014, grain yields of six varieties evaluated for water and nitrogen-use efficiencies did not significantly differ between controlled irrigation (CI) and continuous flooding (CF), and between LCC-based and fixed N application. Energy efficiencies were higher with CF and LCC-based, implying lower input costs. In 2015, the DS yield and AEN under LCC ranged 7.11- 7.65 t/ha and 23.87- 36.28%.

In 2014-15, we assessed the bioaccumulation of heavy metals at the San Roque Dam in Pangasinan from a Benguet mine tailings pond. Soil copper, chromium, arsenic, mercury, zinc, and iron from the sampling sites were higher than soil quality guidelines but did not exceed intervention values. Further, the bioaccumulation of the heavy metals in the grain may not be indicative of the distance of the rice areas to the origin of mine tailing leakage. The observed index of bioaccumulation was highest for cadmium, hence the most element to be accumulated in the rice grains.

Our laboratory supported our research studies and responded to test requests for theses of college students.


MOET
MINUS ONE ELEMENT TECHNIQUE
START
MINUS ONE ELEMENT TECHNIQUE

Crop Protection

Influencing the decisions of farmers in pest and disease management leads to higher rice yields. In 2014 and 2015, research focused on ecological engineering, screening for pests and diseases, rice grain bug, metabolites, weedy rice, and botanical extracts.

Ecological engineering involves the planting of ornamentals on the margins of ricefields that serve as refuge and food for beneficial organisms. Predator and parasitoid populations increased and herbivores diminished. The flowering plants provided food like nectar and honey to beneficial arthropods. Stemborer and defoliator damages were lower in fields with flowering plants. This pest management approach in rice is a new strategy.

In 2014-2015, close to 6,500 entries were screened for resistance to major rice diseases (blast, sheath blight, tungro, and bacterial leaf blight) and pests (stemborer, brown planthopper, and green leafhopper). Results of these tests formed part of the criteria for rice lines prior to commercialization. In 2015, we found two weedy rice biotypes from Pampanga and Pangasinan that are resistant to tungro.

To lessen reliance on synthetic pesticides, we have intensified work on biological control agents. The parasite *Sarcocystis singaporensis*, a Southeast Asian-endemic parasite, has been found virulent to rodents.

> Bringing our pest management research to the next level, we now work on secondary metabolites.

Among the new pests of rice being discovered is the rice grain bug (RGB) *Paraeucosmetus pallicornis* (Dallas) (*Hemiptera Lygaeidae*), which used to be a pest of legume but is now infesting rice near flood-prone areas in Caraga region. Knowing the biology of a pest is the best way to manage it. Research has established the life history, developmental stages, adult survival, host, biological control, and other significant information about the RGB. *Metarhizium anisopliae* can kill RGB 12 days post-treatment (96.7%). Chili pepper was also found effective (80% mortality rate).

For botanical controls, we found that croton solution to protect stored rice from insects is effective. We also continue our work on other fungal controls such as *M. anisopliae* and *B. bassiana.*

Bringing our pest management research to the next level, we now work on secondary metabolites. Genes involved in the production of metabolites such as sakuranetin, momilactone A, and oryzalin are reportedly associated with disease resistance, particularly blast. Rice lines with blast resistance have elevated levels of expressions of these defense-response genes. This work can lead to establishing a system for screening germplasm with secondary metabolites as biochemical markers. It can also help explain mechanisms of resistance against rice diseases of our uncharacterized germplasm.

Our findings are now in various forms of knowledge products: a poster guide in conserving natural enemies during fallow period; flyers and video clips for the management and biology of weedy rice and rice paddy eel; and a poster on major rice diseases in the Philippines.

Rice Chemistry and Food Science

We help create forms of rice that are healthier and more pleasing to the palate. We are most interested in softness, shelf-life, and nutritional content.

In 2014- 2015, we evaluated 2,342 entries for grain-quality screening that determines consumer acceptance. We also explored the use of Visible-Near-Infrared Spectroscopy for Rapid Assessment of Grain Quality of Philippine Rice. Preliminary findings suggest that analysis and modeling of the entire sample set showed good prediction models for crude protein. Once perfected, this means faster and safer assessment of a great number of rice samples every year.

We looked into factors causing spoilage and ways of extending the shelf-life of cooked rice. We share some of our major findings:

- Commercial varieties NFA and SL-8H spoiled 18 hours faster than NSIC Rc222 and Rc160
- Rice with 0% headrice that uses optimum cooking water spoiled faster than rice with much headrice, even with less or excess water used

- IR64, NSIC Rc340, Rc10, and Rc72H (intermediate to high AC-low to intermediate GT) were less prone to spoilage than the soft-textured low to intermediate AC-low to intermediate GT-type (Koshihikari, Rc140, Rc160, Rc142, and Rc158)

- Reheating cooked IR64 at 6-hour interval increased its sensory index - measure of cooked rice quality – from 24 to 42h, and from 30 to 42h for Rc160

- Refrigerating cooked rice samples can retard spoilage and reheating makes the quality of refrigerated rice comparable with that of freshly cooked rice

In 2014, we tested 40 rice samples for arsenic content and all were found safe for consumption. We tested 17 rice-based vegetables for their antioxidant contents, grown in the Science City of Muñoz, Nueva Ecija; San Rafael, Bulacan; and Sagada and Bontoc, Mt. Province. The dry weight antioxidant capacities, as measured by the DPPH radical scavenging activity, were highest in jute>eggplant>water>spinach>gabi tuber>okra. Jute had the highest concentration (31.78 mg GAE/g dry weight) of total phenolics (TPC), a group of compounds with known strong antioxidant potentials. Other vegetables with high TPC were chili pepper, oyster mushroom, and spinach. Boiling reduced the TPC and DPPH scavenging activities of most rice-based vegetables by as much as 73% and 92%, respectively.

Our team published papers in ISI-listed journals, and also received international, national, and institutional awards for our exemplary performance and dedicated service as R&D workers and for our involvement in promoting food and nutrition security.

We generated around P23M external funds, and established/expanded collaboration with state colleges and universities, and national and international private organizations.

Rice Engineering and Mechanization

Mechanizing more rice-farming operations has always been part of our priorities. We know that through mechanization, our farmers can net more profit that will afford them a decent living.

In 2014, we completed prototypes of the riding-type precision seeder and transplanter, and the improved 1.3m combine harvester (85%). A gasifier was applied on the recirculating dryer. We piloted a unit of the 100 kw gasifier prototype in PhilRice Negros and CES.

In 2015, we developed the ride-on stripper combine and CRH- insulated rice silo aimed at reducing postharvest losses. Work on these machines and the hydraulic ram pump for irrigating rice and rice-based crops is ongoing.

Toward curbing postharvest losses, we drafted keychecks for postharvest operations patterned after the PalayCheck System. Here are several of our major findings:

- Below-national-average (5.2%) losses if reaping or cutting, piling, and threshing are done on the same day or combine-harvested
- If harvest is 5 days delayed:
    - Negligible losses in using the combine are 2.9% (DS) and 3.5% (WS)
    - 10% losses can be incurred from cutting and piling
    - Up to 19% losses can be incurred if crop is reaped on the first day, piled on the second, and threshed on the third day
- Viability of rice seeds was preserved well through flatbed-drying and hermetic storage in a plastic cocoon (PhilRice SACLOB), with 98-99% germination rates after 6 months of storage

In 2014, we finalized two protocols on PalayCheck and postharvest management.

To hasten the adoption of our technologies, we have accredited two manufacturers from Davao del Sur and Laguna to produce the laboy tiller, seed cleaner, and flatbed dryer machines.

We installed an 8-ton reversible airflow dryer in Sitio Crossing, Malicboy, Pagbilao, Quezon; and a blower furnace for a 6-ton flatbed dryer in PhilRice Bicol.

For water management, Batac research found the use of treadle pump as successful in Bangued, Abra. The pump addresses SFR disadvantages such as the need for a sizable area of the farm; heavy water losses due to evaporation, seepage, and percolation; siltation; and the need for a pump to extract stored water.

Research on water-harvesting for rice intensification and crop diversification in the Ilocos Region focused on showcasing systems that can contain 45,000 L of rainwater. The technologies showcased in La Union, Ilocos Norte/Sur were low-cost drip irrigation systems and plastic mulch. The hybrid wind-solar pump system to irrigate rice-based crops and provide light source in the Station's experimental field was also tested.

Postharvest research developed a panicle thresher for traditional varieties and a village-type rice silo. Among the key features are its flexible unloading mechanism; its use of biological control agents like dried leaves of lagundi to avoid health hazards from chemicals; and it can be placed even under the rain.

In 2015, we saw heightened interest in our machines. Private and public entities purchased 89 units of them, mostly carbonizers and weeders, amounting to P 766,625.00.

We actively demonstrated our products in major local and national events, some of them in partnership with the Philippine Center for Postharvest Development and Mechanization. For everyone's convenience, we came up with a catalogue of all our machines. In tandem with our development communicators, we also launched promotional videos of our rice machines; now available in YouTube and Facebook with the tagline: Makina sa pagsasaka? Meron din tayo niyan!

Seed Technology

We continue to assure the quality of our seed stocks, improve pre- and postharvest technologies for commercial seed production, and do hybrid basic seed production and research. PhilRice is often, if not always, synonymous to high-quality inbred seeds. We rejuvenate this reputation by doing rigorous field inspection and seed vigor and viability testing using grow-out tests (GOT) and simple sequence repeat (SSR) markers. In 2015, we inspected 326 superior cultivars (nucleus, breeder, foundation, and registered seeds). NSIC Rc288 BS had 100% seed purity, and hybrids and parental lines had high genetic purity. Earlier tests found no major impurities.

Use of SSR markers proved effective in distinguishing pure lines from contaminants. The polymorphic markers RM127, RM1, RM511, and RM71 successfully detected and differentiated the genotypes.

Our seed quality-related findings in 2014 are:

- Use of SACLOB resulted in less insect-damaged seeds
- Seed vigor was higher in SACLOB-stored seeds than in ordinary sacks
- Use of combine harvester resulted in higher seed vigor and viability than manual harvesting

Pre- and post harvest technologies boost the quality of hybrids:

- Use of phytohormones resulted in increased plant height, prolonged

flowering time in both parents, and improved F_1 seed yield.

- In a 2014 study in Midsayap, we found that the best time to apply GA3 was at 20 - 30% heading stage that resulted in over 1.0 t/ha F_1 seed yield across seasons.

- Row ratio of 3 pollen:8 seed parent produced more filled grains and seed yield than the 3:10 ratio. This is an important finding for thermo-sensitive genic male-sterile (TGMS) hybrids, which produce higher seed yields than CTMS lines.

- A study in Negros found that Mestiso 20 had higher seed yield when effective accumulated temperature (EAT) and leaf age (LA) of 4.5 to 5.0 were achieved.

We recognize the major contribution of hybrids to increasing national production, hence, we ensure our public hybrids are not inferior to private hybrids. We identified the best locations and season for seed production, and the flowering behavior of their parental lines under different environments. Our key activities for hybrid research in 2014 to 2015 were:

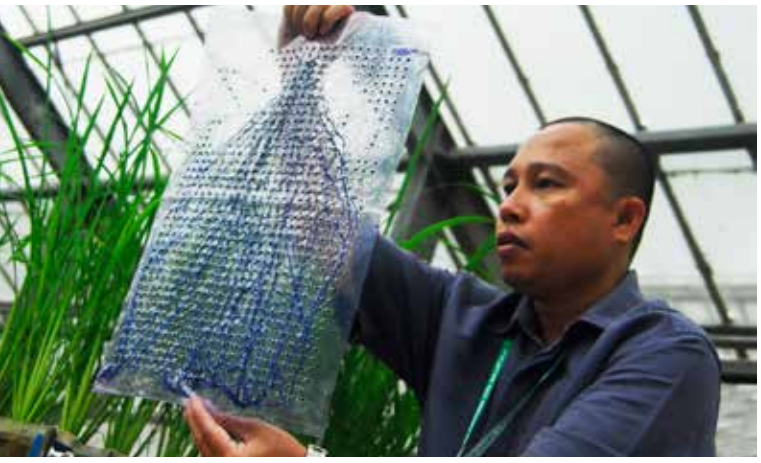
- Mestiso 32 (NSIC Rc350H) and Mestiso 55 (Rc368H) were investigated for genetic purity and identity, and characterized to develop protocols for basic seed production.

- Mestizo 1 and 7, and Mestiso 19 and 28 were purified and multiplied for distribution.

- Flowering behaviors and seed production capacities of TGMS parental lines were studied for eventual application in Nueva Ecija, Bicol, Negros, and Agusan. GOT determined the purity of the parentals.

Crop Biotechnology Center

When food production becomes far more complex, we go back to the genes. Our researchers and scientists are on a rat race to find solutions to rice production issues on biotic and abiotic stresses.



And there are some good news from our laboratories and screenhouses.

In 2014, we generated agro-morphological profiles of mutant lines. We sent to the Philippine Genome Center the DNA of a wild type and a mutant line for whole genome sequencing.

In 2015, we identified a set of Sequence Tandem Repeat (STR) markers for rice identification and developed allele ladders for standard profiling of rice cultivars. This work is important in establishing the genetic identity of rice germplasm at a time when claims to life forms abound.

Our researchers have submitted the publication *"STR markers for identification of rice varieties"* to the *Journal of Forensic Science*. Verification of the processes is ongoing, and soon we'll establish standards in profiling rice cultivars.

> We are identifying novel genes (crack resistance, low phytic acid, root plasticity), cloning salinity-tolerant genes, establishing a marker system for blast resistance, and addressing drought and heat tolerance.

Our breeders had used only traditional varieties ARC11554 and Utri Merah as sources of Glh14 and tsv1 genes that are resistant to GLH and Tungro. We found that 13 other traditional varieties could be potential sources of GLH resistance genes; 3 have Glh14; 8 have tsv1. The use of resistance to GLH and RTSV alone does not assure the prevention of tungro. The combination of Glh14 and tsv1 might prolong the durability of rice plants against tungro in fields.

In 2014, we identified six putative Quantitative Trait Loci (QTLs) to be associated to heat stress tolerance, and 30 to seedling vigor trait. In 2015, we pinpointed 34 QTLs to be associated to plasticity of root trait components at different soil depths under fluctuating soil moisture stresses. Results had been published as *"Developmental and QTL analyses of root plasticity in response to soil moisture fluctuation in rice"* in the *Philippine Journal of Crop Science.*

Likewise, we are identifying novel genes (crack resistance, low phytic acid, root plasticity), cloning salinity-tolerant genes, establishing a marker system for blast resistance, and addressing drought and heat tolerance.

Farming without Fossil Energy Program

We and researchers from the Mariano Marcos State University developed a bioethanol distilling facility, which was piloted in Cagayan and Quezon.

World leaders who gathered in France in 2015 during the Conference of Parties (COP) 21 agreed, among other things, to push the use of renewable sources of energy for a sustainable world. Inspired by the use of renewables, we put together this Program in 2014 to help make rice farming operations more efficient by utilizing available resources.

We have mapped out provinces with the highest available bioenergy sources such as rice, coconut, corn, and sugarcane bagasse. Nueva Ecija, Pangasinan, Cagayan, Isabela, and Iloilo account for 31% of the country's rice biomass. Quezon, Leyte, Davao Oriental/Occidental/Sur, and Zamboanga del Norte supply 29% of the coconut biomass, mainly husk and shell. For corn, Isabela, Bukidnon, North and South Cotaboto, and Maguindanao produce 44% of PH's total biomass. Batangas, Iloilo, Negros Provinces, and Bukidnon produce 82% of the sugarcane bagasse.

Developing energy-efficient machines is at the heart of this program. We and researchers from the Mariano Marcos State University developed a bioethanol distilling facility, which was piloted in Cagayan and Quezon. The facility is useful in a regionalized farm-based production system, and can be operated by just one person. Our fuel-feeding device can be operated using hydrous bioethanol instead of gasoline. The rice husk gasifier for shallow tube well-pumping of water consumes 12.5 kg of rice husk/hour.

The program also identified several PhilRice-developed technologies that can be adapted in the rice-based farming system to increase productivity:

- Continuous-flow rice husk gasifier for mechanical drying application
- Use of wind and solar energy sources for crop irrigation
- Azolla spore production as biofertilizer
- Rice hull-gasifier engine pump system for optimum application in rainfed lowland farms
- Utilization of alternative and potential non-fossil fuel-based nitrogen nutrition in rice farming

While we are not yet there, we will work harder to make our energy-use in rice farming extremely efficient.

High-Value Products from Rice and Its Environment

We looked at the biomedical applications from rice. We have begun using the rice cell and organ cultures as sources of secondary metabolites, i.e., lignans, flavonoids, and terpenoids, for pharmaceutical and health-related applications.

Rice-farming households remain poor and have a high incidence of malnutrition. We concentrated on what can be done on the rice grain itself, its by-products, and parts of the rice plant to add value and help increase farmers' income and alleviate malnutrition.

We intensified our work on the health benefits of brown rice, particularly its lipid -lowering effect. We have confirmed a 20% reduction in total cholesterol level among hyperlipidemic brown rice-fed experimental rats. It is said that phytoserols and y-oryzanols in the rice bran are its lipid-lowering agents. We found that variety NSIC Rc160 carries 74 mg/100g phytoserols.

Our NutriRice Milk is full-packed with protein, calcium, and gamma aminobutyric acid (GABA), which is known to enhance brain function and digestion. Thailand is incorporating GABA in foods owing to its nutritional benefits. We also worked on iron and zinc biofortification for our rice varieties.

Rice-and-adlai can be a perfect nutritious combination. Our researchers impressed adults (18-24 years old) and teens (12-17) with their blend of rice:adlai energy bars. Some 86% of adults would purchase the unpolished chor-chor-os:adlai blend. Teens favored the NSIC Rc160:adlai blend with 90% willingness to buy. Private companies may soon develop rice:adlai meals.

We looked at the biomedical applications from rice. We have begun using the rice cell and organ cultures as sources of secondary metabolites, i.e., lignans, flavonoids, and terpenoids, for pharmaceutical and health-related applications. We also did preliminary work on bioactive peptides from rice with potential anti-hypertensive activity. Looking at the nutritious rice bran as source of natural antioxidants and proteins, we found that Ominio bran, a black rice variety, supplies 110.8 mg/kg anthocyanin. Our chemists and food scientists also searched for the best rice variety and hydrothermal treatment that can yield much resistant starch, one of the prebiotics that enhance the growth of good bacteria in our intestines.

Bit by bit, we are elevating the quality of our research studies in our quest to deliver more for the rice and rice-based farming households. Surely, hunger and malnutrition should not be issues among our food producers.

Climate Change

Strong typhoons often devastate makeshift farm structures that resource-poor farmers can afford to build. We have developed at CES a prototype multi-purpose farm structure that matches their resource-poorness.

We especially enhance the adaptive capacities of rice farmers. We develop technologies for them, and gather and analyze climate data for our researchers.

Our basic work gravitated around three projects: generating and managing local knowledge and information on climate change; developing technologies that help farmers adapt to or manage the impact of climate change; and enhancing rice farmers' resilience by providing them opportunities for additional sources of food and income.

In 2014, we installed 13 automatic weather stations (AWS) in our Central and branch stations. An AWS developed by the DOST-Advanced Science and Technology Institute, Field Monitoring System (FMON), was used in transmitting data. It can send weather data from a remote location via wi-fi, Ethernet, or GSM/GPRS transmission. The AWS supported studies needing weather data.

Strong typhoons often devastate makeshift farm structures that resource-poor farmers can afford to build. We have developed at CES a prototype

multi-purpose farm structure that matches their resource-poorness. It is dome-shaped, reputed as the most climate-resilient design as it covers the most floor area with the least total combined area of the wall and roof.

Necessitated by drought, we are working on *capillarigation*, which basically makes water available at the root zone of plants. Drip irrigation could deliver too little or too much water resulting in stressed plants, while capillarigation provides just enough as the direction of water is dictated by capillary action. This saves a lot of water, and is best for drought-prone areas. Water loss due to evaporation is minimized, while percolation and seepage are eliminated.

To help create more income sources for farmers, we started in 2014 to develop attachments to the continuous rice hull carbonizer (CtRH). They are to make productive use of the otherwise wasted heat from the CtRH. We crafted the 500-mushroom-bag-capacity sterilizer, and used CtRH as heat source for a 40,000-bird poultry facility. The 2015 prototype multi-purpose dryer was tested on fish, and attracted the local government unit in Laoac, Pangasinan to buy it.

Development

Development Communication

With the recurrence of El Niño and major discourses on the ASEAN Economic Integration at the backdrop, our development communicators ensured that communication needs of the Institute and its clients were adequately covered in 2014 and 2015.

We produced 155 titles of knowledge products (leaflets, brochures, technology videos, bulletins) distributed to close to 250,000 clients nationwide. We actively engaged the DA regional information officers in airing our 74 broadcast releases on rice production technologies.

We had extensive coverage by the local and national media as evidenced by the more than P9M worth of our media exposure in 2015, even bigger than the budget of the whole Division in the same year, based on our media monitoring initiatives. This means that we reached millions of people through the major TV and radio stations as well as national dailies that covered our work.

The years 2014-2015 also saw significant increases in the number of our texters, mostly farmers, to our PhilRice Text Center. We had close to 42,000 new texters who interacted with our Text Center agents on rice production issues and technologies. Our official Facebook Page, rice matters, was liked by more than

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12,000 netizens. Active online discussions were also noted. In 2014, we noted close to 70,000 visits and about 50,000 unique visitors to our PinoyRice, an information portal on rice production in the Philippines.

We did have a number of innovations in our products and services.

Products

Handout Series. Noting that farmers want quick information on topics of interest, we decided to come up with one-page flyers on specific topics that give just the most important facts the reader should know.

Filipino Magazine. This is the long-overdue response to the feedback to have a separate magazine in the national language. We communicate tried-and-tested rice production technologies with more farmers this way.

Impact Videos. We document how the taxpayers' money is being spent on rice science and development. We feature impacts of completed projects of the Institute. The videos are available in our website.

Services

Online Service Request Form. This helps us manage the communication service requests. Our clients are also able to give us feedback through this platform, enabling us to improve our services.

Crowdsourcing. The PhilRice Text Center is used to waiting for texters to send in their queries. In 2014, we started with our crowdsourcing efforts where our agents initiate texting with registered clients. This leads to the release of more information to our stakeholders.

Our communication research initiatives took off quite well. We are currently working on the youth version of the PinoyRice, an information portal on rice called PinoyRice Jr. We are also studying the relevance of listening groups, a method once popular in Canada, in group learning activities under the Farmers Field School setup.

We contributed a chapter in the book *"Promoting Social Change and Democracy through Information Technology"* chiefly authored by scholars and practitioners in the area of ICT4D from Denmark, Sweden, Australia, and some Asian countries.

We won several awards, and one of our writers qualified in the Global Landscape Forum 21 in Paris, a highly selective international training for climate change beat reporters. Our works ranked 4th in the Bright Leaf Awards photo and agri-radio program categories, among more than 600 entries nationwide.

Technology Management and Services

Has interest in rice science waned? Our figures say no. In 2014-2015, close to 30,000 farmers participated in our training programs, technology briefings, field days, farmers' field schools (FFS), and other educational events at CES alone. Our core- and externally funded projects attracted the farmers.

Our team conducted 269 training courses and FFS on the PalayCheck System, rice-based farming system, farm machines operations, seed testing, entrepreneurial activities, and other fields. We had close to 7,000 participants, mainly farmers, agricultural extension workers, fresh agriculture graduates, and our curious staff members and personnel. Our training programs last according to the needs of clients. Some are for a week while others are season-long (4 months).

For clients who need quick rice information, we offer the 1-day Science and Technology Updates or Technical Briefings. We had 29 of them, participated in by 1,685 clients.

So we know that we are giving only the most relevant and updated information, we revised some of our modules. They were on PalaYcheck and PalaYamanan v2.0., module activity for appreciation course of non-technical PhilRice staff, and crash course on tour- guiding. We also developed the "FFS Curriculum Guide and

> Our team conducted 269 training courses and FFS on the PalayCheck System, rice-based farming system, farm machines operations, seed testing, entrepreneurial activities, and other fields.

Modified PalayCheck System for Highland Rice Production Areas".

We have a quick-response team called Experts' Dispatch that handles requests for on-site training occasions. In 2014-2015, we responded to 36 requests that attest to the unwavering interest of farmers and other rice stakeholders in rice.

To top it all, we had 17 field days serving close to 15,000 farmers to whom we show that our rice science works, and that they, too, can even do better than us.

Our externally funded projects distributed 300 bags of high-quality seeds, mostly for superstorm Yolanda-affected areas. Heirloom farmers received farm machines and equipment such as 14 panicle threshers, 9 micro tillers, 9 grain moisture meters, 3 mini threshers, 13 weighing scales , and 26 knapsack sprayers. We also helped to organize 75 upland farmers' associations, establish 96 Upland Community-Based Palayamanan sites in 34 provinces, and put up 101 community seed banks.

The external projects we carried out were the Upland Rice Development Program, NISRIP, Science and Technology-Based Farming on Rice Integrated Crop Management, Yolanda, Heirloom Rice, Seed Purification, Adaptability Trials of Green Super Rice, Reduced Tillage, and PalayCheck System.

Information Systems

We optimize benefits of information and communications technology (ICT) to our advantage. Most of our operations are now automated to facilitate the delivery of much-needed services to our clients. We lead staff capacity-enhancement activities for us to be "Information Systems-productive users".

In collaboration with our soil researchers, we are developing the online soil information system and simplified guidebooks that provide accurate and updated details on soil resources. In 2015, we completed the soil series guidebooks for Aurora, Cagayan, Apayao, and Ilocos and Negros provinces. Data include crop suitability, taxonomic classification, chemical and physical properties. E-books versions of some of these guidebooks are also available.

Our work with the Philippine Rice Information System (PRISM) has also taken off. PRISM assists in monitoring rice areas and yields at a particular location and time using satellite imagery, and shows pest incidences to support decision-making toward increased rice production.

As of 2015, all regions have been included in the monitoring activities starting from the seven pilot regions (CAR, III, IVB, V, VI, VII, and VIII) in 2014. More than 300 Synthetic Aperture Radar images were acquired from InfoTerra GmbH and processed as TerraSAR-X satellite images. The initial season maps are now useful in showing the differences in crop establishment dates among regions. The rice area maps give information on the spatial location,

distribution, and area planted to rice during the cropping season. Information on pests, diseases, and weed occurrences have also been provided.

Our PRISM partners are IRRI, DA-National Rice Program, sarmap (a remote sensing technology provider based in Switzerland), Bureau of Agricultural Research, DA-Field Programs Operational Planning Division, DA-Regional Field Offices, Philippine Statistics Authority- Bureau of Agricultural Statistics, Bureau of Plant Industry, Bureau of Soils and Water Management, and the local government units.

Our Human Resource Information System now helps us manage pertinent and voluminous personal data of our staff members especially those in relation to their benefits, and compliance with rules and regulations. We also improved the Financial Management, and Property and Supplies Information Systems to facilitate administrative processes.

In support of research, we now have a state-of-the-art library with subscriptions to some of the biggest scientific databases in the world including ScienceDirect, Proquest Agriculture, EBSCO, Food Science, Springer, and OECD iLibrary. Springer appears to be the most useful database. The DA-FSSP for Project IPaD funded the subscriptions. Our researchers and other stakeholders make full use of the library; 17,783 downloads so far. If calculated at $32/article, total cost would have been equivalent to $563,392 or PhP25.9M, which means that the investment has been recouped. PhilRice publications had a 47% increase: 34 papers in 2015 from 23 in 2014. Other DA agencies are informed of these resources and their requests are catered to.

XCardBox, a web-based catalog system for journal and article collections, was also integrated in our library. As of 2015, we have acquired more than 14,000 knowledge materials such as books, e-books, journals, and others. Our Online Public Access Catalog had close to 7,000 barcoded books.

Our librarian monitors citations of our experts using Google Scholar. We did have thousands of citations with our lead researcher having 654 citations for his 38 scientific articles. This attests to the scientific and pragmatic relevance of our work.

Socioeconomics

As we push rice R&D into the right direction, we guide policymakers by providing them accurate and timely socioeconomic data. We do this to ensure sound policymaking that will surely affect the fate of more than 2 million rice farmers and the close to 100 million rice eaters.

In looking at patterns and trends for the whole rice industry, we make sure that our rice statistics are relevant and updated. We use a combination of primary and secondary data, which we gather alongside the Philippine Statistics Authority (formerly the Bureau of Agricultural Statistics). Our division then consolidates data into socioeconomic profiles that are useful to our stakeholders.

Some of the findings we want to reiterate are:

- Yield is higher during dry season and in irrigated areas
- Use of high-quality seeds, higher nitrogen application, and attendance in training programs often contribute significantly to increasing yields
- Given that farmers spend more or less PhP40, 000 per hectare, increasing their yield and reducing their labor costs remain to be strategic interventions to lower the cost/kilogram

To step up our socioeconomic research, we benchmarked the status of the Philippine rice industry relative to other rice-producing countries in Asia.

Aside from establishing socioeconomic trends and patterns, we assess the impacts of rice technologies attesting to our commitment to provide and promote efficient and effective management practices. Given that water is a huge challenge to rainfed areas and ownership of small-scale irrigation systems is growing, we specifically focused on shallow tube wells (STW) and open surface pumps (OSP) in 2014 and 2015. We found that the major reason for using these alternative sources of irrigation is to support the dry season rice crop. Yields for users of STW (4.18 t/ha) and OSP (3.70 t/ha) were higher than the rainfed farmers' yields. Results also show that owners of STW and OSP earn higher net profits at more or less PhP13, 000 and PhP9, 000, respectively.

Assessing the Japan International Cooperation Agency-Technical Cooperation Project 5 in the Autonomous Region in Muslim Mindanao, we discovered that the services of Agricultural Development Officers and the implementation of the farmer-to-farmer approach were central to increasing the adoption of rice and vegetable technologies. These factors may greatly influence the project's sustainability. The least adopted technologies are those that require buying, using tools, and following procedures; most adopted are the simple, free, savings-oriented, and practice-compatible.

In 2014, we studied the rice seed marketing system in Central Luzon and we saw that it remains weak as there is no mechanism to match seed production with demand. This may pose problems in the future given that the seed supply of specific varieties is unstable. We recommend that the government should accredit capable and qualified individuals to produce more than one seed class and thus optimize the scale of production.

As local rice production moves toward full mechanization, it is necessary to assess the impacts of the initial diffusion of rice combine harvesters. We saw the pros and cons of the technology. Using the rice combine harvester indeed mitigates labor shortage, saves time during harvesting, and reduces costs. However, social issues need to be addressed. The major concerns forwarded are displacement of landless farm workers, strained personal relationships, and labor problems during the succeeding land preparation and crop establishment activities.

Another SED study recognizes the impacts of climate change. We delve on crop models and insurance to understand climate woes and their effects on rice production. We found that under various global climate change scenarios, there will be shifts in rice yields - some will have positive yield change while others will not.

At the micro level, the importance of crop insurance cannot be ignored. Our researchers did an exploratory study in Nueva Ecija, Iloilo, and Leyte and learned that only 10% of the farmer-respondents availed of crop insurance. About 27% of farmers from Leyte and Nueva Ecija who

have crop insurance bought weather-based index insurance.

In 2015, we started to analyze the local rice value chain. Several value chains exist in each of the 20 major rice-producing provinces studied, but we determined only the most common. We found that market players are connected along a chain-- producing, assembling, processing, and marketing or distributing rice to end consumers through a sequenced set of activities.

To step up our socioeconomic research, we benchmarked the status of the Philippine rice industry relative to other rice-producing countries in Asia. We assessed the competitiveness of Nueva Ecija vis-à-vis major rice-producing regions of Can Tho in Vietnam, West Java in Indonesia, Zhei Jang in China, Suphan Buri in Thailand, and Tamil Nadu in India. While a book on competitiveness is already published, we want to stress these findings:

- Fewer varieties are planted in Can Tho, Vietnam
- Nueva Ecija farmers have the lowest P application and second to the least in K application
- Besides India, Filipino farmers have the least pesticide usage
- Philippines has low level of mechanization that results in higher overall costs and low labor productivity that results in low rural incomes
- Cost of production in the Philippines, Indonesia, and China (importing countries) is higher than Thailand, Vietnam, and India (exporting countries)
- Expensive cost of paddy and high gross marketing margin contribute to high rice prices

With all these results from our socioeconomic projects and studies, we want to influence our national rice policies. Hence, we produce publications and sponsor seminars to ensure sound rice policies favorable to our major stakeholders. To widely disseminate our research results, we publish three issues yearly of the *Rice Science for Decision Makers*, which tackle highly sensitive issues such as rice trade in relation to the ASEAN economic integration and Philippines' rice competitiveness. We also create avenues to exchange thoughts and craft resolutions for the rice industry through our policy seminars on rice research investment and improvement of the agricultural insurance program.

Lastly, as PhilRice is a gender-sensitive organization, our Gender and Development initiative (GADi) group did come up with creative projects to uphold gender awareness and inclusion. Our researchers initiated the Fund for the Future Scholarship, which spared some amount for the education of selected school kids; trained women on mushroom production; and led entrepreneurial and gender training programs for our staff.

Palayamanan Plus: Intensified Rice-Based Agribio Systems (IRBAS)

We never stop dreaming for our rice-farming households. If small farm holders could be consolidated to form a large-scale intensified rice-based production system, we believe the chance is high that this will result in better livelihood outcomes.

Our IRBAS program is creating farming component mixes to optimize income among rice-based farming households. In 2014 and 2015, we demonstrated in our stations nationwide five key farming components, the first of which was crop production that showcased rice and cash crops. In CES, we earned P1.3M from 4.25ha for foundation seeds. The Midsayap and Isabela stations likewise succeeded. String beans, gabi, okra and other vegetables planted on bunds supplied the family's daily needs.

Garlic planted after rice in a 1000m2 area yielded 170kg earning a P17,000 additional income. Green corn in 2,000 m2 produced 900 kg corn ears worth P 18,000.00; mungbean yielded 130 kg worth P 7,800.00 in a 1000m2 area.

The livestock and vermicomposting components are being worked out. The mushroom component in CES grossed P500,000 from selling fruiting bags, fresh mushrooms, and grain spawns. Our station in Batac City spearheaded a contest to highlight the many dishes one can cook with mushroom.

Our sorjan food production model in our Agusan station was among the major field day attractions. The model showed optimum land use by growing vegetables on the elevated part, tilapia is reared in the deeper sinks, and rice is planted on the sink in between the raised vegetable beds. CES earned around P 50,000.00 from a 1,200-m2 area with the Rice+Fish+ Vegetables model.

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In 2015, we started putting up several facilities to support production. In CES, the Palayamanan Plus Complex is on its way to completion. The mushroom center is operational. Similar facilities are growing in our branch stations.

FutureRice Program

While the future has yet to happen, we are preparing for three imminent events—the peak oil phenomenon, globalization of rice trade, and climate change. In future scenarios, rice farming will be increasingly complex. Alternative farming techniques and high-tech solutions to meet global competition and changing environment will be needed.

The Program demonstrates innovative technologies that will help us prepare for the future. Key to this is knowledge management, which involves online inventory and assessment of local and global innovations that have practical value for our farmers. Our initial publication titled "Agritourism Farms of the Philippines" focuses on nine niche farms in Luzon and Mindanao, which advocate the use of natural and alternative farming techniques, care for the environment, safe food, and farm experience. Farmers, extension workers, policy makers, and the youth can draw inspiration from these farms.

A 5-hectare farm within the CES was developed to integrate natural and high-tech farming, clean and alternative energy, and water-harvesting innovations. The development of the accessible farm was supported by the local government unit of Nueva Ecija, the AGFUND, the DA-RFO 3, and the DA-FSSP. Farmers from nearby barangays witness demonstrations of planting and harvesting machines, and join Agrikapihan on various farming topics. More than 3,000 farmers have seen the farm through the Lakbay Palay annual field day activity of PhilRice. In 2015, the farm became the Rice Boot Camp of the new generation of rice extension workers – aptly called AgriDocs – implemented by the Project IPaD.

The farm serves as the converging point and test bed of various innovations. PhilRice does have natural farming practices and technologies that can well be carried over into the future. These include the reduced tillage technique in land preparation. Our organic rice farm yielded 4.7 t/ha using decayed rice straw, vermicompost, chicken manure, and green manure such as azolla and sesbania. The rotary weeder of the 80s was re-introduced in the farm. Rice-duck integration, ecological engineering, and control of weeds, snails, and insect pests without the use of chemicals were also featured.

The farm likewise showcased high-tech rice farming using the mechanical rice transplanter and the combine harvester. The MOET app enabled higher yield with more efficient use of fertilizers. The RCM app developed with IRRI was also introduced to farmers, which provided them with a personalized fertilizer guide. The historical yield of the area is 3 t/ha but with these innovations, we produced 7t/ha in 2014 with minimal fertilizer.

Farm automation is the key to the future of rice farming. The farm has wireless internet hotspot and CCTV, enabling farmers to remotely view and manage the farm. A prototype farm management approach, called AgriDoc app, will enable the farmer to view a geo-referenced digital map of the farm and all its parcels, showing details such as crop variety, date planted, other historical data such as farm inputs, labor, costs, and scheduled tasks. The app will be linked to various knowledge resources via internet. Ground sensors were also installed to send alerts on the water level. An automated weather station continuously sends temperature, RH, atmospheric pressure and wind speed data to our servers. Additional sensors will be installed to monitor soil pH and nitrates.

We know that this is, and the future will be, the age of unmanned aerial vehicles (UAVs) or more popularly called drones. We are now exploring their applications in rice farming. Through a series of "droneshops", our researchers have proposed the use of drones for pest monitoring, nutrient management, and aerial mapping. Coupled with ground sensors, drones can be used to gather agronomic data such as plant growth, biotic and abiotic stresses assessment, and field mapping.

FutureRice Program also showcased various clean energy innovations to demonstrate an off-grid farm. Bio-ethanol is used to power small water pumps and brush cutters; biogas from carabao manure for cooking fuel; and solar energy for farm lighting and domestic water pump. Work has started on the integration of the rice hull gasifier, biodiesel, hydroelectric, and wind energies to re-circulate harvested water that irrigates rice paddies. As the future belongs to the youth, so they say, we have geared the farm as agri- tourism site, where the youth and the public may have a different rice experience.

Be RICEPONSIBLE

Millions of Filipinos were made aware in 2014 to 2015 on how they could help our country achieve rice self-sufficiency through the Be Riceponsible Campaign. This awareness resulted in the assimilation of at least one responsible rice consumption behavior among 78% of the reached consumers – either they stopped wasting rice, started eating brown rice or rice mixed with other staples, or valued the hardwork of our farmers. We waged the campaign through different events – simultaneous national fun runs for rice, brown rice and rice mix days, cooking contests, exhibits, participation in major festivals, and presentation during conferences, general assemblies, and national events.

We were also successful in enjoining hundreds of government offices, non-government organizations, and private companies to endorse this advocacy. They supported the campaign by promoting it through their services and by incorporating it in their activities, events, or projects resulting in millions of savings and more efficient and cost-effective information dissemination. For instance, the National Telecommunications Commission and the Kapisanan ng mga Brodkaster sa Pilipinas asked all TV and radio stations nationwide to air the campaign ads for as long as they can; Sun Cellular and Globe Telecom sent through text to their subscribers our key campaign messages; Armed Forces of the Philippines and the Metro Manila Development Authority allowed us to use their respective LED screens along EDSA; Megaworld Malls, Robinsons malls and Seven-Eleven featured the advocacy messages in their products, stalls, and activities; and different hotels and restaurants started offering half-cup of rice and brown rice.

Mr. Piolo Pascual and Ms. Lucy Torres-Gomez also served as our rice ambassadors, free of charge, thus helping us influence more audience to support and heed the call of our advocacy.

Our success can also be seen in the support of local government units through the passage of more than 50 half-cup-rice ordinances and resolutions encouraging the serving of brown rice in provinces, major cities, and municipalities nationwide. We must have gained the support of local executives and legislators in this important advocacy.

At the national level, Sen. Ferdinand Marcos Jr. has filed a bill against rice wastage while several bills supporting the advocacy have also been sponsored in the House of Representatives.

Looking forward, we are enjoining more partners and champions through our national search for the BeRICEponsible Champions. To date, we have 39 contestants for Most RICEponsible schools; 15 for municipalities; 10 for provinces and cities; 3 government offices; and 1 university. This contest is expected to hammer down further our key messages through the localization of implementation.

In 2015, we also found, through the help of the Hotel and Restaurants Association of the Philippines, that rice wastage in food establishments in Metro Manila is 10g per person, which is close to the 9g household table wastage found by FNRI in 2008. We also studied the efficiency of the implementation of the half-cup-rice ordinance in Cebu City to refine its execution in other localities.

Campaigns and other development initiatives

Infomediary Campaign

Being PhilRice's initiative to engage young people in agriculture, its focus in 2014-2015 was on mobilizing youngsters as climate-smart agriculture information providers in their respective rice-farming communities. Our partners were the Consultative Group on International Agricultural Research Program on Climate Change, Agriculture, and Food Security, and the Department of Education.

We trained 186 teachers, mostly from Technical-Vocational high schools, on Climate Change and Rice Production. A DepEd memorandum encouraged the teachers to integrate lessons from their training into their curricula. Hence, we were able to reach roughly 200,000 students nationwide.

We conducted poster- (close to 100 entries) and film-making (12) contests that widened the reach of the Campaign especially among high schoolers in Metro Manila. During the judging period, which lasted for about a week, Facebook (FB) reach was more than 200,000 FB users daily.

The Campaign was a featured project in a 2015 youth event during the 42nd session of the UN Committee on World Food Security in the FAO Headquarters in Rome.

Roughly 50% of the participating schools have integrated their learnings from the training programs into their curricula using our materials about climate change and rice production. Teachers upload photos and videos of their activities in our closed Facebook group. As of 2015, 2,163 student-texters (infomediaries) have registered in our Text Center. Adopted were rice production technologies drawn from school activities such as in Cagayan, Occidental Mindoro, and Sarangani.

PalaYamaNayon
The Rural Transformation Movement

PalaYamaNayon
The Rural Transformation Movement

Despite massive technology and development interventions in rice farming, why do farmers remain poor? Data suggest that a farmer earns an average annual income of P50,000 per ha from rice, which is way below the poverty threshold. The movement is founded on these issues.

We want to enhance farmers' well-being through agripreneurship as well as strong moral and social value formation. This is a long way to go, but for a start, we have carried out a campaign to spur positive and relevant change in farmers' perceptions, attitudes, and practices toward rice-based agriculture as a lucrative enterprise.

We are partnering with certain successful farmers to serve as our champions. We have documented and shared their stories through various channels such as face-to-face (e.g., farmers' field days, fora, and conferences), radio, print, and television. We have also brought this advocacy online with emphasis on promoting farmers' successful stories through testimonial videos.

As we write, we have by far engaged 3,553 netizens on Facebook. Interestingly, we have also witnessed active sharing of our testimonial videos through meta tags on social media.

Our branch stations are doing an excellent job in promoting this movement in their respective areas of coverage. We had mindsetting workshops in all of our branch stations to ensure that all of our staff members are on one boat as far as our advocacy is concerned. In partnership with IpAD, we also trained 44 farmers on agripreneurship.

PROJECT IPaD

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

We care about our rice extension professionals and practitioners as they are our key partners in helping farming communities attain higher yield and income. Hence, we collaborated with the Agricultural Training Institute (ATI) and the International Rice Research Institute (IRRI) in reinvigorating the agricultural extension system by developing a new breed of rice extensionists; engaging and equipping other strategic groups of extension intermediaries; and enhancing the enabling environment for extension. Funding for the project comes from the Department of Agriculture's (DA) National Rice Program through the Bureau of Agricultural Research.

As of 2015, 50 extension professionals and practitioners (25 from Luzon and 25 from Visayas and Mindanao) have completed the season-long training. We now call them AgRiDOCs or Agricultural Development Officers of the Community, having undergone six modules that not only honed their competence in technology promotion and delivery of rice and rice-based farming technologies but also, more importantly, strengthened their sense of mission for community transformation and introduced them to agripreneurship, modern ways of farming, and project proposal development. Thirty-nine project proposals were generated and many of the AgRiDOCs have started implementing their proposals.

Following instructions from DA Secretary Alcala to immediately scale-out the training program, a

> As of 2015, 50 extension professionals and practitioners (25 from Luzon and 25 from Visayas and Mindanao) have completed the season-long training.

training of trainers was conducted that produced 24 and they now comprise the AgRiDOC Regional Roving Training Teams (ARRTTs). The ARRTTs then trained 84 agricultural technologists (in four clusters) from LGUs and ATI centers nationwide. Secretary Alcala also made possible the distribution of computer tablets to the AgRiDOCs and the ARRTTs to enable them to use the many ICT-based tools and resources that have been developed to facilitate field problem diagnosis, production management, and extension work.

We also conducted 57 Knowledge Sharing and Learning (KSL) events engaging 20 groups with 6,457 current and potential extension intermediaries coming from the academe, media, private companies, and community-based organizations. We informed them about the challenges faced by the agriculture sector to underscore the importance of us working together for the farmers. We also introduced them to products and services from PhilRice, ATI, and IRRI that they can avail of in helping farming communities.

ICT-based tools form an integral part of the work that we do to help farmers. We reached 15,169 community-based intermediaries through our ICT briefings. Additionally, this project helped increase by 19% the total number of SMS received by the PhilRice Text Center (from 57,412 in 2014 to 68,422 in 2015). The total number of active texters also increased by 24% (from 27,274 in 2014 to 33,910 in 2015).

To enhance the enabling environment for extension, 15 policy recommendations were drafted and presented for comments during the PhilEASNet Symposium, a gathering of extension professionals and practitioners. The recommendations were products of the first national Rice Extension Forum held in 2014 at PhilRice and from consultations with extension experts. Project IPaD co-sponsored the Symposium and also facilitated the membership of the AgRiDOCs in PhilEASNet in support of their professional growth.

During our monitoring and evaluation, we found that the Luzon batch considers the quality of resource persons and the holistic training approach as key strengths of the AgRiDOC training program. The batch recommended improving the delivery of the topics on water and pest management, among others. On the other hand, the Visayas-Mindanao batch suggested that they need more pest/disease familiarization activities as well as health and wellness activities given the training's long duration. Although all modules were generally appreciated, both batches appreciated most the module on transformational leadership.

We also evaluated the KSLs and we found a generally positive feedback on this activity. The three videos regularly shown during the KSL to explain challenges faced by agriculture and the need to support agriculture and our farmers, were generally found to be clear, with sufficient information, and highly relevant to extension intermediaries. The same goes for the ICT-based resources and tools being promoted during the KSL. More importantly, the KSL event was perceived as effective in moving the extension intermediaries to action. In fact, 6 months after the event, we found that they, especially those from private and academe groups, have actually made their own efforts to reach more than 5,000 farmers. Examples of these efforts are: promoting the contact centers to give farmers access to information through their mobile devices; using the ICT-based apps in classroom-related activities and promoting them to students; reproducing the brochure on the ICT-based resources/tools and distributing to prospective users; and sharing to others the concepts and insights they gleaned from the event.

Rice Science Museum

Our Central Experiment Station in Nueva Ecija houses a Department of Tourism-accredited museum—the Rice Science Museum. In Central Luzon, we share this status with the Aquino Center and Museum in Tarlac City. Our museum attracts an average of 2,000 visitors monthly.

Why a rice science museum? A museum takes us into a completely different experience, cerebral or emotional, which can motivate us to adapt and act. In our case, the Rice Science Museum serves as our creative platform on providing access to rice knowledge, which are often published on highly technical publications. As a repository of knowledge, our museum creates profound awareness that is easily available and reachable by the farmers and the public.

> We brought the museum closer to communities through mobile exhibits for the public, especially in the urban areas, to gain a deeper perspective and appreciation of rice – that it is not merely a food on the plate.

Relaunched on Sept. 3, 2014, our museum is primarily used as a unique extension tool to help raise farmers' competitiveness through four major thematic and two special exhibits. The exhibits were titled Lovelife with Rice, Bountiful Harvest, Colors of Rice, and Transformations in Progress. The displays reinforced the connection between Filipinos and rice; the practices and technologies that brought abundance to traditional and modern farming; the staple food's healthy aspect; and the changing landscape from pre-colonial to the modern world.

The special exhibits featured Palay Kamalayan, which aimed to raise awareness on the culture of rice and the social issues affecting it, and the Botong Francisco: A Nation Imagined, courtesy of the Ayala Museum—were hoped to encourage the youth to think of their role in feeding the nation.

As we write, more than 100 artifacts have been added to our collection, thanks to our museum branches in San Mateo, Isabela and Batac City, Ilocos Norte.

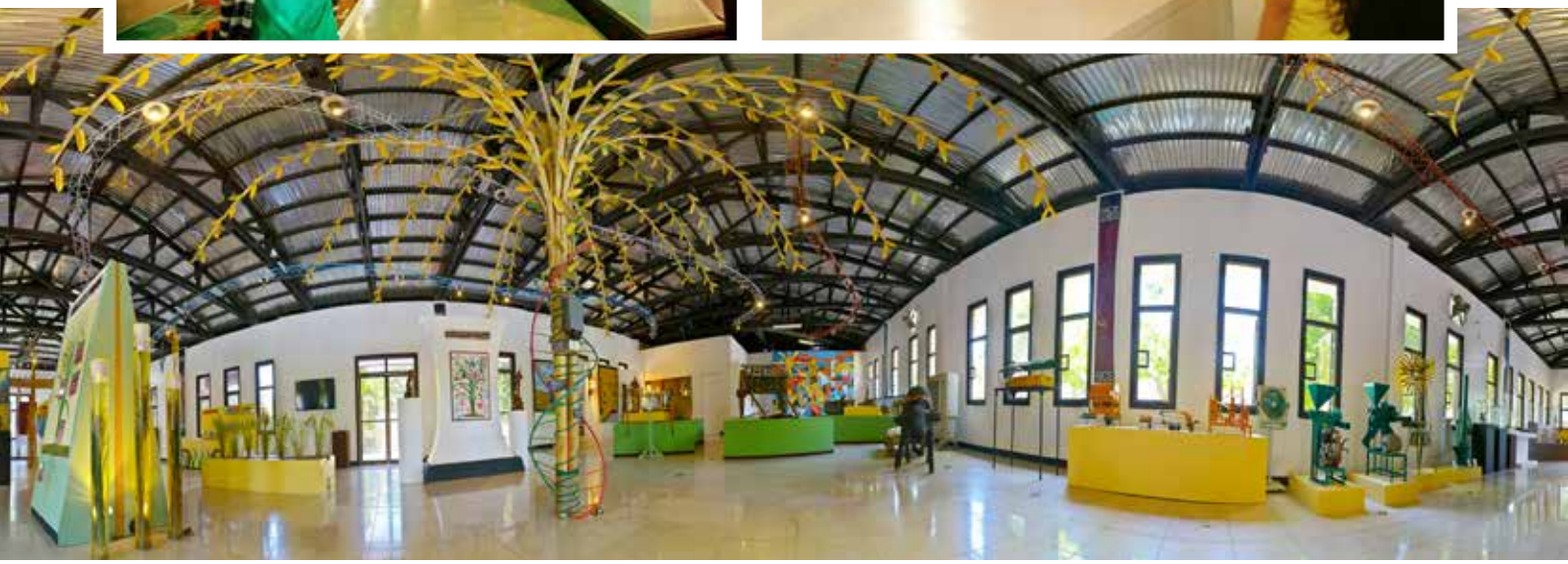
We wrote two papers—Interactive Learning Behavior of Museum Visitors: The Rice Science Experience and Bringing Rice Science Closer: A PhilRice Rice Science Mobile Museum Journey—which were presented during the 2015 University Museums and Collections International Conference facilitated by the International Council of Museums.

We brought the museum closer to communities through mobile exhibits for the public, especially in the urban areas, to gain a deeper perspective and appreciation of rice – that it is not merely a food on the plate. Through this initiative, we engaged close to 30,000 people by roving around 11 schools, parks, government offices, and malls in Romblon, Metro Manila, and Pampanga.

We also engaged 16 students from Metro Manila in the Rice Science and Art Summer Camp. Decoding the young artists' drawings showed a transition from merely sympathizing with the farmers to becoming empowered in helping them. Moreover, almost all of the participants considered a career in agriculture after the camp.

Our displays motivated visitors to try new farming technologies (farmers); encouraged them to eat healthier rice varieties, conserve rice, and appreciate the value of rice and its past (public); and inspired them to be engaged in agriculture (youth).

Our efforts seem to have caught the interest of rice stakeholders as we managed to land in the front pages of our major national dailies, with the Philippine Star and Manila Bulletin carrying editorials about our work. The museum's print coverage comprised 15% of the total media visibility of PhilRice in 2015.



Palayabangan

Is it possible to produce 10t/ha of palay at P5/kg in one season? Our Palayabangan Challenge confirms it is not impossible!

The contest is open to all players in the rice industry to demonstrate how cost of rice production can be reduced while not sacrificing yield. Our studies show that reduced cost is among the key strategies for our farmers to be competitive under the ASEAN Economic Integration regime.

Syngenta in 2014 hit the target (10.54t/ha at P 4.94/kg), and the record has yet to be broken. Pioneer in the same season produced 10.23t/ha at P6.92/kg. Other competitors had 9.72t/ha at P4.67/kg, 9.69t/ha at P5.67/kg, and 9.62t/ha at P7.56/kg.

In 2015 DS, 73 contestants were each provided an area of 2000 m^2 in CES and all branch stations except Batac. Gem Agrologic Inc. was the lone entry in PhilRice Isabela to achieve 10t/ha (P7.44/kg). Seven entries had high yields (8.35-9.25t/ha) at reduced costs (P4.34-6.46/kg). Fourteen entries achieved P80,000 profit.

Of the 69 participants in WS 2015, no one was able to hit the target. Yields ranged from 4.93-6.79t/ha while cost of production was P5.97-10.17/kg. None of the entries achieved P80,000 profit.

The key lesson from this contest is it is entirely possible to reduce cost while maintaining high yield. We will package the winning technologies employed by participants for subsequent promotion in the learning centers of our branch stations. Our data show cost-reducing technologies such as the use of machines, and efficient utilization of inputs such as right time and kind of fertilizer application.

On all fours on the ground

Our seven branch stations are strategically positioned nationwide to ensure that our science and advocacies reach our stakeholders. From research to development activities, the stations are always on their toes. Aside from their own research initiatives, they also expedite the conduct of the National Cooperative Tests for candidate varieties.

Institutional campaigns such as the Rural Transformation Movement, BeRiceponsible, and Palayabangan are being implemented in all our branch stations. External initiatives include the National Irrigation Sector Rehabilitation and Improvement Project (NISRIP)[Agricultural Support Component], Upland Rice Development Program, JICA Technical Cooperation 5, PRISM, Heirloom, Associated Technologies under the DA-Food Staples Sufficiency Program, and projects funded by the DA regional field offices.

Our branch stations reached more than 35,000 farmers through training programs, community briefings, field days, and trip exposures alone. The radio programs of PhilRice Agusan, Isabela, and Batac catered to separate audiences. Of the said number, 105 were top fresh graduates of state colleges and universities who were engaged in a week-long rice appreciation course to prepare them for possible work in the rice sector.

More than 7,000 farmers, students, and other stakeholders underwent training on various rice-related topics. We engaged 240 farmers in our School-on-the-Air programs in PhilRice Agusan and Isabela. We trained more than 500 farmers, agricultural extension workers, and women were educated on rice and rice-based farming systems. Some 105 AEWs trained in PhilRice Midsayap became FFS facilitators in their respective areas.

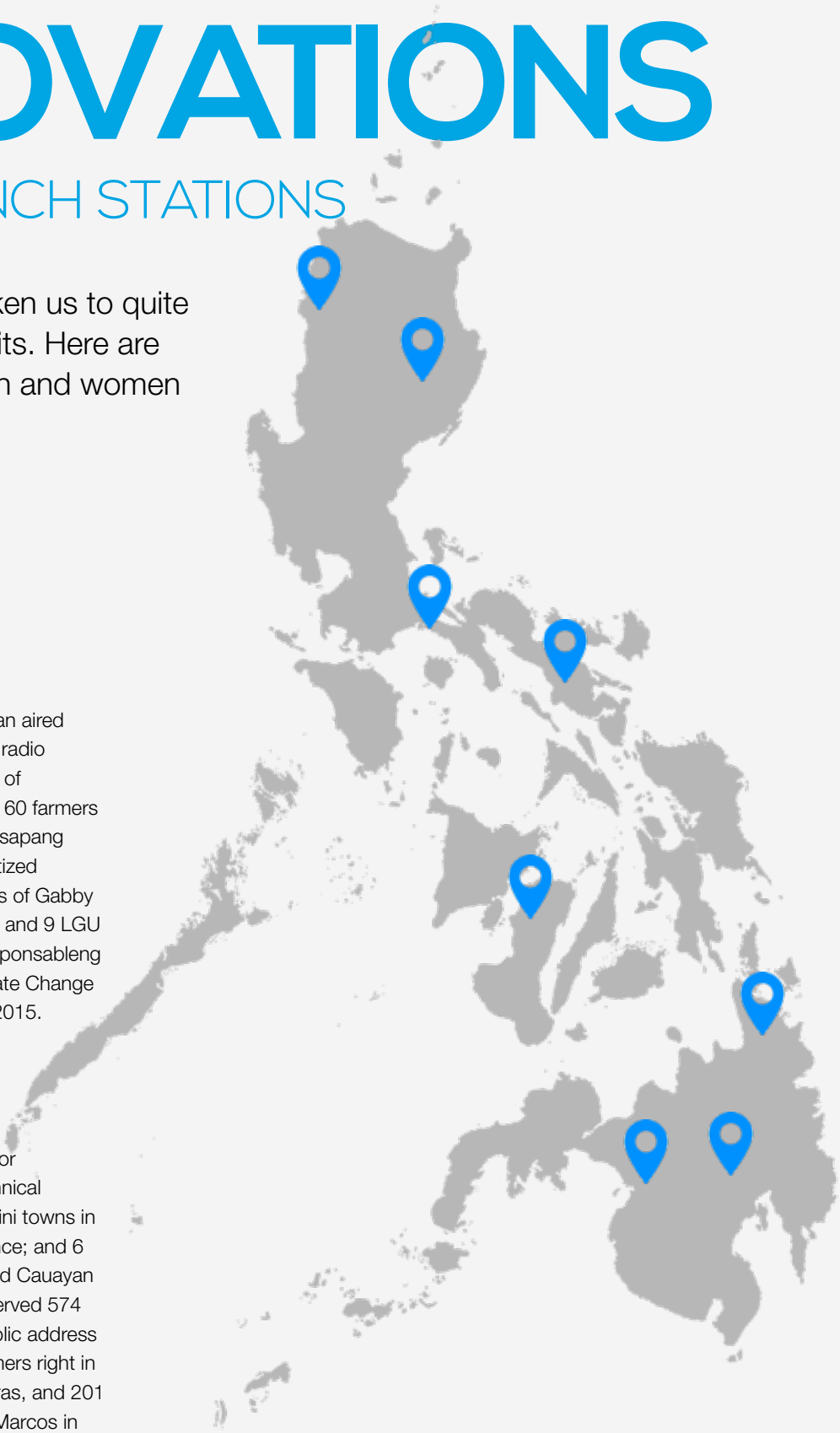
Close to 10,000 students, farmers, teachers, and other stakeholders were served through our One-Stop Information Shops in the branch stations. PhilRice Isabela even collaborated with Cagayan, Isabela, and Quirino State Universities to make the shops more functional.

We distributed more than 7,000 kg of rice seeds to farmers under our project with PCAARRD-DOST. The Farmers' Primer on Production of Quality Inbred Rice Seeds and CDs of the instructional video Usapang Magsasaka: Pagpaparami ng purong binhi ng palay were distributed to more than 1,000 farmers and LGU technical personnel on rice.

INNOVATIONS

IN OUR BRANCH STATIONS

Our imagination has taken us to quite far and engaging pursuits. Here are the initiatives of our men and women in our branches:



RADIO PROGRAMS

PhilRice Isabela, Batac, and Agusan aired weekly broadcasts over their local radio stations. Isabela had 30 episodes of "Madiskarteng Magsasaka" where 60 farmers graduated in 2015. Batac aired "Usapang Milyonaryo" that featured a dramatized series in Ilocano of the "Adventures of Gabby Ghas". It graduated 1,317 farmers and 9 LGU partners. Agusan had "Giya sa responsableng pagpapanguma: An SOA on Climate Change in Caraga" having 70 enrollees in 2015.

MOBILE SERVICES

To bring PhilRice closer to our major stakeholders, Isabela had five technical briefings in San Mateo and Tumauini towns in 2015 with 163 farmers in attendance; and 6 mobile advisories in San Mateo and Cauayan City. The Batac Service Express served 574 farmers in 2014; and used the public address system in reaching out to 749 farmers right in their farms in San Marcelino, Dingras, and 201 farmers in Elizabeth and Escoda, Marcos in Ilocos Norte in 2015.

FARMER-TO-FARMER EXTENSION

Midsayap used this approach under the JICA Technical Cooperation Project 5, in which farmers champion rice production technologies to their co-farmers. It resulted in 44% adoption of rice technologies taught in Maguindanao, and 80% in Lanao del Sur in 2014.

FILM-MAKING

Isabela involved four state colleges and universities in Cagayan Valley in a rice technology videos competition in 2014. The aim was to creatively engage young people with rice and come up with materials that can be shown to farmers who turn up in the Station during field days or other activities led by the station.

4PS COLLABORATION

Midsayap and the local Department of Social Welfare and Development trained 4Ps recipients in the area for rice production.

ORGANIC RICE PRODUCTION SYSTEM PROTOCOL

In keeping with Negros being an organic agriculture advocate, PhilRice Negros developed the protocol for its researchers in 2014. It contains key production components and recommended practices in their area.

DATABASE MANAGEMENT

As of 2015, Batac has organized for easy retrieval its database that contains close to 50,000 photos of R&D studies and activities of the station, records of 57 studies, 569 e-copies of literature, and other important documents of the station.

ONE-STOP INFORMATION SHOPS

Our branch stations have each devoted a space for a mini-library to accommodate students, researchers, or anyone who wants to avail of our information materials. Los Baños, for instance, has 912 accessions, and has accommodated hundreds of students.

> Different stakeholders, a multitude of rice production issues–our branch stations are on all fours to respond wherever their reach allows them to.

RICE GARDEN IN LUNETA

Probably the only rice garden in Metro Manila, it is being maintained by PhilRice Los Baños and has attracted about 10,000 walk-in guests. The Garden is our way of engaging urban dwellers with rice farming. It has become a field trip destination especially for those visiting the National Museum, Museo Pambata, Intramuros, and Manila Ocean Park.

CLIMATE CHANGE RESILIENCY

Los Baños and Romblon State University assisted 132 farmers in Romblon to enhance their adaptive capacities to climate change. Interventions ranged from rice varietal selection, conduct of FFS, to spearheading a seminar on climate change.

ANTHROPOLOGICAL AND SOCIOECONOMIC CHARACTERIZATION OF BICOL'S AGTA INDIGENOUS PEOPLES

In collaboration with DA-RFO5, phase 2 of this project focused on enhancing the capabilities of Bicol's Agta IPs through the Palayamanan approach. Los Baños prepared four volumes of coffeetable book documenting this seminal work on Bicol's IPs.

Administration

PHILIPPINE RICE RESEARCH INSTITUTE
Board of Trustees

HON. PROCESO J. ALCALA
Ex-Officio Chairperson

Members:

BACANI, SENEN C.
Agribusiness Community

CASTILLO, GELIA T.
Science Community

CO, HERCULANO JR. C.
Grains Business Sector

CONCEPCION, JOSE JR. S.
Business Community

CORVERA, WINSTON C.
Farming Sector

DELA TORRE, EDICIO G.
Consumer Sector

DOMINGO, THELMA G.
Consumer Sector

FAJARDO, PACIFICO M.
Community Development Group

MENDOZA, TEODORO C.
Academic Community

SOLIVEN, MARIA LUISA R.
Science Community

VELASCO, LUIS REY I.
Academic Community

Staff Members

No.	Name of Employee	Position
	Central Experiment Station (CES)	
1	Abadilla, Celia G.	Senior Science Research Specialist
2	Abaoag, Lea D.	Supervising Science Research Specialist
3	Abon, John Eric O.	Science Research Specialist II
4	Alfon, Hazel B.	Sales and Promotion Supervisor III
5	Alonzo, Fe G.	Property Officer V
6	Antonio, Anita V.	Supervising Science Research Specialist
7	Antonio, Hazel V.	Senior Science Research Specialist
8	Arocena, Arturo Jr C.	Information Systems Analyst II
9	Arocena, Emily C.	Supervising Science Research Specialist
10	Bajit, Renato B.	Chief Administrative Officer
11	Bandonill, Evelyn H.	Supervising Science Research Specialist
12	Barroga, Karen Eloisa T.	Chief Science Research Specialist
13	Barroga, Roger F.	Information Technology Officer III
14	Barroga, Wilhelmina V.	Science Research Specialist II
15	Bautista, Elmer G.	Senior Science Research Specialist
16	Beltran, Jesusa C.	Supervising Science Research Specialist
17	Bibal, Carlito N.	Creative Arts Specialist II
18	Bordey, Flordeliza H.	Chief Science Research Specialist
19	Borja, Sophia T.	Supervising Administrative Officer
20	Brena, Susan R.	Supervising Science Research Specialist
21	Briones, Constante T.	Board Secretary IV
22	Briones, Teodora L.	Planning Officer V
23	Bulatao, Rodel M.	Science Research Specialist II
24	Cabusora, Christopher C.	Science Research Specialist II
25	Caguiat, Joanne D.	Senior Science Research Specialist
26	Caguiat, Xavier Greg I.	Senior Science Research Specialist
27	Cañete, Sandro D.	Science Research Specialist II
28	Capistrano, Ailon Oliver V.	Senior Science Research Specialist
29	Capistrano, Maureen P.	Planning Officer II
30	Clariz, Ma. Teresa R.	Administrative Assistant V
31	Collado, Wilfredo B.	Senior Science Research Specialist
32	Coloma, Melquiades V.	Administrative Aide V
33	Corales, Aurora M.	Supervising Science Research Specialist
34	Corales, Rizal G.	Supervising Science Research Specialist
35	Corpuz, Henry M.	Senior Science Research Specialist
36	Corpuz, Mary Grace D.	Supervising Administrative Officer
37	Cosio, Aurea C.	Internal Auditor IV
38	Cruz, Jayvee A.	Senior Science Research Specialist
39	Cruz, Rodjason B.	Warehouseman II
40	Dacumos, Carlo G.	Science Research Specialist I
41	De Dios, Jovino L.	Supervising Science Research Specialist

Staff Members

No.	Name of Employee	Position
42	De Gracia, Irmina R.	Planning Assistant
43	Dela Cruz, Arlen A.	Senior Science Research Specialist
44	Dela Cruz, Ronaldo J.	Administrative Aide V
45	Dela Peña, Fe A.	Supervising Science Research Specialist
46	Desamero, Nenita V.	Chief Science Research Specialist
47	Diaz, Consolacion D.	Information Technology Officer I
48	Diaz, Erla Q.	Internal Auditor II
49	Dilla, Myline A.	Records Officer II
50	Donayre, Abegail T.	Senior Administrative Assistant
51	Donayre, Dindo King M.	Senior Science Research Specialist
52	Duca, Ma. Salome V.	Science Research Specialist I
53	Duldulao, Joy Bartolome A.	Senior Science Research Specialist
54	Esmero, Diadem G.	Supervising Science Research Specialist
55	Espiritu, Alex J.	Science Research Specialist I
56	Espiritu, Annie E.	Science Research Specialist II
57	Ferrer, Marilyn C.	Senior Science Research Specialist
58	Gagelonia, Eden D.	Supervising Science Research Specialist
59	Gaoat, Brenda S.	Administrative Assistant V
60	Garcia, Fernando D.	Senior Science Research Specialist
61	Gibe, Ma. Ethel P.	Administrative Officer V
62	Giray, Adelaida B.	Supervising Administrative Officer
63	Grospe, Filomena S.	Science Research Specialist I
64	Hibionada, Felylee B.	Administrative Assistant III
65	Ilar, Glenn Y.	Supervising Science Research Specialist
66	Irang, Reynaldo E.	Farm Superintendent III
67	James, Joel G.	Land Management Officer II
68	Javier, Evelyn F.	Supervising Science Research Specialist
69	Javier, Leo C.	Chief Science Research Specialist
70	Joshi, Elaine E.	Librarian III
71	Juliano, Arnold S.	Senior Science Research Specialist
72	Juliano, Leylani M.	Supervising Science Research Specialist
73	Kalaw, Joselito A.	Development Management Officer III
74	Lanuza, Andrei B.	Senior Science Research Specialist
75	Lanuza, Mary Grace V.	Executive Assistant III
76	Layaoen, Myriam G.	Senior Science Research Specialist
77	Lisondra, Joybeth N.	Executive Assistant III
78	Litonjua, Aileen C.	Senior Science Research Specialist
79	Lumawag, Fe N.	Supervising Administrative Officer
80	Malabanan, Necitas B.	Chief Administrative Officer
81	Malabayabas, Myrna D.	Senior Science Research Specialist
82	Malasa, Ronell B.	Science Research Specialist II
83	Malonzo, Ofelia C.	Senior Science Research Specialist
84	Mamucod, Henry F.	Senior Science Research Specialist

Staff Members

No.	Name of Employee	Position
85	Manalili, Rowena G.	Senior Science Research Specialist
86	Manalo, Hanah Hazel Mavi B.	Science Research Specialist II
87	Manalo, Jaime IV A.	Senior Science Research Specialist
88	Manangkil, Oliver E.	Supervising Science Research Specialist
89	Manaois, Rosaly V.	Senior Science Research Specialist
90	Manigbas, Norvie L.	Supervising Science Research Specialist (Scientist I)
91	Mariano, Rachelle A.	Sales and Promotion Supervisor III
92	Marquez, Leonardo V.	Science Research Specialist II
93	Martin, Edwin C.	Supervising Science Research Specialist
94	Mataia, Alice B.	Senior Science Research Specialist
95	Miranda, Guadalupe C.	Public Relations Officer II
96	Miranda, Ruben B.	Chief Science Research Specialist
97	Molina, Elizabeth P.	Human Resource Management Officer II
98	Narca, Gina B.	Engineer II
99	Narvadez, Chona Mae S.	Sales and Promotion Supervisor IV
100	Newingham, Ma. Cristina V.	Science Research Specialist I
101	Niones, Jennifer T.	Senior Science Research Specialist
102	Niones, Jonathan M.	Supervising Science Research Specialist
103	Noriega, Antonio Jr. S.	Engineer III
104	Ona, Rizzla S.	Executive Assistant III
105	Ordonio, Reynante L.	Senior Science Research Specialist
106	Orge, Hazel Jane M.	Supervising Administrative Officer
107	Orge, Ricardo F.	Supervising Science Research Specialist (Scientist I)
108	Pacada, Imeldalyn G.	Senior Science Research Specialist
109	Pariñas, Julieta F.	Science Research Specialist I
110	Pascual, Joel V.	Senior Science Research Specialist
111	Pascual, Kristine S.	Senior Science Research Specialist
112	Perez, Loida M.	Supervising Science Research Specialist
113	Pineda, Rowena T.	Science Research Specialist II
114	Protacio, Calixto M.	Executive Director
115	Quilang, Eduardo Jimmy P.	Chief Science Research Specialist
116	Ramos, Elizabeth C.	Administrative Assistant III
117	Ramos, Joel A.	Senior Science Research Specialist
118	Ramos, Paulino S.	Science Research Specialist II
119	Ramos, Riza A.	Supervising Science Research Specialist
120	Ravelo, Glenda D.	Supervising Administrative Officer
121	Regalado, Manuel Jose C.	Chief Science Research Specialist (Scientist I)
122	Relado, Rhemilyn Z.	Senior Science Research Specialist
123	Requito, Jasmin G.	Cashier II
124	Reyes, Babylinda O.	Accountant III
125	Rillon , Juliet P.	Senior Science Research Specialist
126	Rillon, Genaro S.	Supervising Science Research Specialist

Staff Members

No.	Name of Employee	Position
127	Romanillos, Richard D.	Senior Science Research Specialist
128	Romero, Marissa V.	Chief Science Research Specialist
129	Salvador, Marychelle B.	Administrative Officer V
130	Salvador, Virginia P.	Librarian II
131	Santiago, Errol V.	Senior Science Research Specialist
132	Santiago, Gilely D.	Senior Science Research Specialist
133	Santiago, Roy V.	Internal Auditor III
134	Serapion, Jerry C.	Senior Science Research Specialist
135	Sibayan, Evangeline B.	Supervising Science Research Specialist
136	Suralta, Roel R.	Supervising Science Research Specialist (Scientist I)
137	Tado, Caesar Joventino M.	Chief Science Research Specialist
138	Tado, Nelita M.	Chief Accountant
139	Tallada, Jasper I.	Supervising Science Research Specialist
140	Tamani, Luis Alejandre I.	Information Technology Officer II
141	Tanzo, Irene R.	Supervising Science Research Specialist
142	Tibayan, Ma. Cielo J.	Dormitory Manager III
143	Valdez, Evelyn M.	Science Research Specialist II
144	Valdez, Rene E.	Senior Science Research Specialist
145	Vasallo, Artemio B.	Division Chief III
146	Villaroman, Grace S.	Supply Officer III
147	Zagado, Ronan G.	Supervising Science Research Specialist
	AGUSAN	
1	Bastasa, Dexter B.	Science Research Specialist II
2	Bondad, Rochelle Marie P.	Administrative Officer IV
3	Cadiz, Irma O.	Administrative Assistant II
4	Conejero, Irine M.	Administrative Officer I
5	Estoy, Gerardo Jr. F.	Chief Science Research Specialist
6	Mabayag, Corsennie A.	Senior Science Research Specialist
7	Mabayag, Noel O.	Farm Superintendent II
8	Montecalvo, Abner T.	Chief Science Research Specialist
9	Nemeño, Genevive A.	Senior Science Research Specialist
10	Tabudlong, Belen M.	Science Research Specialist II
11	Villarina, Jerry C.	Farm Superintendent I
	Central Mindanao University Field Office	
1	Dela Cruz, Dante C.	Science Research Specialist I
2	Ramos, Mario R.	Senior Science Research Specialist

Staff Members

No.	Name of Employee	Position
	BATAC	
1	Abrogena, Nida Q.	Senior Science Research Specialist
2	Alibuyog, Anielyn Y.	Science Research Specialist II
3	Avellanoza, Eleanor S.	Science Research Specialist I
4	Baradi, Mary Ann U.	Supervising Science Research Specialist
5	Bongat, Fidela P.	Development Management Officer IV
6	Galera, Moises G.	Science Research Specialist I
7	Ganotisi, Rosana Sabella O.	Administrative Officer I
8	Maloom, Juanito M.	Senior Science Research Specialist
9	Orcino, Jose A.	Farm Superintendent I
10	Penera, Mildred L.	Warehouseman I
11	Seguritan, Clarivel O.	Administrative Assistant II
12	Ullibac, Jennifer M.	Administrative Officer III
	BICOL	
1	Castro, Reynaldo C.	Chief Science Research Specialist
2	De Peralta, Melanie Aileen C.	Science Research Specialist II
3	Dela Cruz, Gideon P.	Administrative Officer I
4	Dollentas, Rona T.	Senior Science Research Specialist
5	Gomez, Karen B.	Administrative Officer III
6	Mirandilla, Jean Rochielle F.	Science Research Specialist I
7	Ordonio, Juaymah V.	Administrative Assistant II
	ISABELA	
1	Amar, Gracia B.	Senior Science Research Specialist
2	Dela Cruz, Andres L.	Science Research Specialist II
3	Galapon, Jerome V.	Science Research Specialist I
4	Gawat, Nancy R.	Science Research Specialist II
5	Guillermo, Juanita C.	Administrative Officer I
6	Mandac, Hiyasmin R.	Administrative Officer I
7	Obana, Angelita B.	Warehouseman I
8	Padilla, Michelle C.	Administrative Officer III
9	Pasicolan, Helen R.	Science Research Specialist II
10	Ramos, Fidel M.	Farm Superintendent II
11	Rebong, Anna Theresa O.	Senior Science Research Specialist
12	Rebong, Democrito II B.	Senior Science Research Specialist
13	Sosa, Nymfa S.	Science Research Specialist I

Staff Members

No.	Name of Employee	Position
	LOS BANOS	
1	Angeles, Noriel M.	Senior Science Research Specialist
2	Bulawit, Mark Joseph B.	Administrative Officer III
3	Castillo-Quimbo, Michelle B.	Senior Science Research Specialist
4	De Guzman, Kristofferson C.	Administrative Officer I
5	Gergon, Evelyn B.	Supervising Science Research Specialist (Scientist 1)
6	Gonzalvo, Belinda M.	Administrative Assistant II
7	Lapitan, Victoria C.	Supervising Science Research Specialist
8	Movillon, Mario M.	Chief Science Research Specialist
9	Olvida, Imelda D.	Science Research Specialist II
10	Ramos, Diego G.	Supervising Science Research Specialist
11	Sajise, Edelweiss E.	Senior Science Research Specialist
	MIDSAYAP	
1	Abdula, Sailila E.	Chief Science Research Specialist
2	Abdulkadil, Ommal H.	Senior Science Research Specialist
3	Astillo, Marifel A.	Administrative Officer I
4	Ayudan, Inocencio L.	Administrative Officer I
5	Balleras, Gina D.	Supervising Science Research Specialist
6	Boholano, Isagane V.	Science Research Specialist I
7	Cantila, Aldrin Y.	Science Research Specialist II
8	Ducao, Honalee A.	Administrative Officer III
9	Escabarte, Ma. Teresa A.	Administrative Officer I
10	Muyet, Virgilio F.	Farm Superintendent II
11	Perialde, Evelyn S.	Science Research Specialist II
12	Romarez, Marissa C.	Warehouseman I
13	Sabes, Peter Lyod P.	Science Research Specialist I
14	Tadle, Frezzel Praise J.	Senior Science Research Specialist
15	Torreña, Pernelyn S.	Senior Science Research Specialist
	NEGROS	
1	Alcosaba, Grace O.	Administrative Officer III
2	Alvarez, Joey E.	Warehouseman I
3	Cabanayan, Maricris S.	Administrative Officer I
4	Cordova, Jose Arnel E.	Science Research Specialist I
5	Libetario, Edgar M.	Supervising Science Research Specialist
6	Pajarillo, Hermie A.	Farm Superintendent I
7	Palanog, Alvin D.	Science Research Specialist II
8	Salazar, Babylyn T.	Science Research Specialist II
9	Seville, Cherryl U.	Science Research Specialist I
10	Sta. Ines, Leo T.	Senior Science Research Specialist
11	Suñer, Albert Christian S.	Senior Science Research Specialist

Loyalty Awardees

2015						
No.	**LAST NAME**	**FIRST NAME**	**MI**	**POSITION**	**Station**	**Year**
1	Borja	Sophia	T.	Supervising Administrative Officer	CES	10
2	Capistrano	Maureen	P.	Planning Officer II	CES	10
3	Noriega	Antonio Jr.	S.	Engineer III	CES	10
4	Pascual	Joel	V.	Senior Science Research Specialist	CES	10
5	Ramos	Joel	A.	Senior Science Research Specialist	CES	10
6	Rebong	Anna Theresa Isabel	O.	Senior Science Research Specialist	Isabela	10
7	Desamero	Nenita	V.	Chief Science Research Specialist	CES	20
8	Javier	Leo	C.	Chief Science Research Specialist	CES	20
9	Javier	Evelyn	F.	Supervising Science Research Specialist	CES	20
10	Montecalvo	Abner	T.	Chief Science Research Specialist	Agusan	20
11	Lumawag	Fe	N.	Supervising Administrative Officer	CES	25
12	Ravelo	Glenda	D.	Supervising Administrative Officer	CES	25
13	Rillon	Juliet	P.	Senior Science Research Specialist	CES	25
14	Santiago	Errol	V.	Senior Science Research Specialist	CES	25
15	Sta. Ines	Leo	T.	Senior Science Research Specialist	Negros	25
16	Arocena	Emily	C.	Supervising Science Research Specialist	CES	30
17	Sibayan	Evangeline	B.	Supervising Science Research Specialist	CES	35
18	Ayudan	Inocencio	L.	Administrative Officer I	Midsayap	40

2014						
1	Aguinaldo	Alma	C.	Supervising Science Research Specialist	Batac	10
2	Balleras	Gina	D.	Senior Science Research Specialist	Midsayap	10
3	Narvadez	Chona Mae	S.	Sales and Promotion Supervisor IV	CES	10
4	Relado	Rhemilyn	Z.	Senior Science Research Specialist	CES	10
5	Sajise	Edelweiss	E.	Senior Science Research Specialist	Los Baños	10
6	Serapion	Jerry	C.	Senior Science Research Specialist	CES	10
7	Bibal	Carlito	N.	Creative Arts Specialist II	CES	15
8	Bordey	Flordeliza	H.	Chief Science Research Specialist	CES	15

Loyalty Awardees

2014						
No.	**LAST NAME**	**FIRST NAME**	**MI**	**POSITION**	**Station**	**Year**
9	Castro	Reynaldo	C.	Chief Science Research Specialist	Bicol	15
10	Ganotisi	Rosana Sabella	O.	Administrative Officer I	Batac	15
11	Guillermo	Juanita	C.	Administrative Officer I	Isabela	15
12	Marquez	Leonardo	V.	Science Research Specialist II	CES	15
13	Niones	Jonathan	M.	Supervising Science Research Specialist	CES	15
14	Niones	Jennifer	T.	Senior Science Research Specialist	CES	15
15	Salvador	Virginia	P.	Librarian II	CES	15
16	Amar	Gracia	B.	Senior Science Research Specialist	Isabela	20
17	Bandonill	Evelyn	H.	Supervising Science Research Specialist	CES	20
18	Bongat	Fidela	P.	Development Management Officer IV	Batac	20
19	Tamani	Luis Alejandre	I.	Information Technology Officer II	CES	20
20	Villaroman	Grace	S.	Supply Officer III	CES	20
21	Barroga	Roger	F.	Information Technology Officer III	CES	25
22	Abaoag	Lea	D.	Supervising Science Research Specialist	CES	25
23	Agbayani	Rodrigo	S.	Science Research Specialist II	Mindoro	25
24	Alonzo	Fe	G.	Property Officer V	CES	25
25	Briones	Constante	T.	Board Secretary IV	CES	25
26	Briones	Teodora	L.	Planning Officer V	CES	25
27	Collado	Wilfredo	B.	Senior Science Research Specialist	CES	25
28	Giray	Adelaida	B	Supervising Administrative Officer	CES	25
29	Gonzalvo	Belinda	M.	Administrative Assistant II	Los Baños	25
30	Irang	Reynaldo	E.	Science Research Specialist I	CES	25
31	Obana	Angelita	B.	Warehouseman I	Isabela	25
32	Pasicolan	Helen	R.	Science Research Specialist I	Isabela	25
33	Redondo	Guadalupe	O.	Science Research Specialist II	CES	25
34	Tanzo	Irene	R.	Supervising Science Research Specialist	CES	25
35	Tibayan	Ma. Cielo	J.	Dormitory Manager III	CES	25
36	Orcino	Jose	A.	Farm Superintendent I	Batac	30

Scholastic Achievements

No.	Name of Scholar	Degree	University	Year Completed/ Graduated
1	NIONES, Jennifer T.	PhD in Agricultural Science	Nagoya University, Japan	March 2014
2	DE PERALTA, Glenn C.	MS in Soil Science	UP Los Baños	April 2014
3	MAGAHUD, Jehru C.	MS in Soil Science	UP Los Baños	April 2014
4	MALASA, Ronell B.	MA Sociology	UP Diliman	April 2014
5	RAMOS, Joel A.	MS in Agricultural Engineering	Central Luzon State University	April 2014
6	CORPUZ, Mary Grace D.	Master in Public Management	Ateneo School of Government	August 2014
7	DIAZ, Consolacion D.	Master in Public Management	Ateneo School of Government	August 2014
8	LUMAWAG, Fe N.	Master in Public Management	Ateneo School of Government	August 2014
9	REBONG, Democrito B. II	Master in Development Management	Development Academy of the Philippines	August 2014
10	REYES, Babylinda O.	Master in Public Management	Ateneo School of Government	August 2014
11	ORDONIO, Reynante L.	PhD in Agricultural Science	Nagoya University, Japan	September 2014
12	RAMOS, Paulino S.	MS in Agricultural Engineering	UP Los Baños	December 2014
1	SUÑER, Albert Christian S.	Master in Development Management	Development Academy of the Philippines	January 2015
2	BAUTISTA, Elmer G.	PhD in Agricultural Science	Tohoku University, Japan	March 2015
3	NEWINGHAM, Maria Cristina V.	MS in Biology	Central Luzon State University	April 2015
4	CAÑETE, Sandro D.	MS in Soil Science	UP Los Baños	July 2015
5	FERRER, Marilyn C.	MS in Plant Genetic Resources and Conservation Management	UP Los Baños	July 2015
6	GARCIA, Fernando D.	Master in Public Management	Ateneo School of Government	August 2015
7	JAVIER, Leo C.	Master in Public Management	Ateneo School of Government	August 2015
8	TAMANI, Luis Alejandre I.	Master in Public Management	Ateneo School of Government	August 2015
Postdoctoral Fellowship Program				
1	SURALTA, Roel R.	Post-doc fellowship	Nagoya University, Japan	April 2015

Training Programs, Workshops, Seminars, and Conferences

Type	Inclusive Date	Title	Venue	Participant
Training Workshop	January 21-24, 2014	Advanced Training Workshop on Satellite Image Processing and Applications	Singapore	Juanito M. Maloom
Workshop	March 24-28, 2014	3rd GRiSP Global Rice Phenotyping Network Workshop	Montpellier, France	Thelma F. Padolina
Fellowship Training/Program	April 01, 2014-April 30, 2015	Fellowship Training/Program	National Food Research Institute (NFRI), Tsukuba, Ibaraki, Japan	Rosaly V. Manaois
Training Workshop	April 20-May 3, 2014	Rice Technology Transfer Systems (RTTS) in Asia	Rural Development Administration (RDA), Suwon, Korea	Jaime A. Manalo IV
Training	May 19 - June 06, 2014	2014 Rice: Research to Production Course	IRRI, Los Baños, Laguna	Alvin D. Palanog Mark Ian C. Calayugan
Workshop	June 13-18, 2014	Biotechnology Literacy Project, Risk and the Future of Food: How Can Scientists Best Engage the GMO Debate with a Skeptical Public?	Florida, USA	Antonio A. Alfonso/ Dindo Agustin A. Tabanao
Seminar	July 8-Aug 4, 2014	2014 Seminar on Hybrid Rice for Developing Countries	Changsha, China	Dante C. Dela Cruz
Conference	September 9-12, 2014	CPRsouth 2014 Conference	Maropeng Visitors Centre, Sterkfontein, South Africa	Jaime A. Manalo IV
Fellowship Training/Program	September 14-December 6, 2014	Fellowship Training/Program	Norman E. Borlaug International Agricultural Science & Technology Fellowship Program	Victoria C. Lapitan
Workshop	September 22-23, 2014	Proposal Preparatory Workshop for a Pilot Project on Climate Change Impact Assessment on Rice in Southeast Asia using SEACLID/ CORDEX Southeast Asia Output Products	Bangkok, Thailand	Evangeline B. Sibayan
Workshop	September 24-October 2, 2014	2014 Capacity-Building Workshop of Satellite Remote Sensing for Southeast Asian Scientists	Taiwan	Mary Rose O. Mabalay
Congress	October 27-Nov 1, 2014	4th International Rice Congress (IRC 2014)	Thailand	Marlon M. Prado/ Ev P. Angeles
	November 10-16, 2014	Foreign Study Mission (as scholar under PMDP-NGCESDP)	Jakarta, Indonesia	Eduardo Jimmy P. Quilang
Training	November 10-15, 2014	2014 2nd KOPIA Group Training on Rice Production Technology	Suwon and Jeonju, Korea	Aurora M. Corales Ma. Salome V. Duca Ricardo F. Orge Mary Grace V. Lanuza Rodel M. Bulatao Jesiree Elena Ann D. Bibar

Training Programs, Workshops, Seminars, and Conferences

Type	Inclusive Date	Title	Venue	Participant
Conference	November 7-11, 2014	2014 International Symposium and Conference	Tokyo, Japan	Glenn Y. Ilar
Workshop	December 15-19, 2014	Workshop on Vegetable Production	Fruit & Vegetable Institute, Trau Quy, Gia Lam, Hanoi, Vietnam	Rizal G. Corales
Workshop	April 19-22, 2015	Rice Research Initiative Scoping Workshop	Bangkok, Thailand	Nenita V. Desamero Aurora M. Corales
Symposium	May 3-5, 2015	American Society of Agricultural and Biological Engineers (ASABE) First Climate Change Symposium: Adaptation and Mitigation	Chicago, Illinois, USA	Manuel Jose C. Regalado
Visiting Program	June 1-November 27, 2015	Visiting Program	Seoul, Korea	Ronan G. Zagado Mary Ann U. Baradi
Training	June 7-20, 2015	Rice Technology Transfer Systems in Asia	RDA, Jeonju, Korea	Imelda D. Olvida
Workshop Planning	June 15-17, 2015	Workshop Planning and Execution of Action-and Decision-Oriented Research	Berlin, Germany	Aurora M. Corales
	July 5-19, 2015	2015 Hybrid Rice Breeding and Seed Production Training	Jiangxi Acad. Of Agricultural Sciences (JAAS), Nanchang, China	Joanne D. Caguiat
	August 17-28, 2015	Training Course on Remote Sensing at sarmap SA (with focus on the use of MAPscape-Rice and on the processing of Sentinel-1A and TerraSAR-X data for the generation of rice products	Sarmap SA premises in Switzerland	Juanito M. Maloom,/ Arturo C. Arocena, Jr.
	Sept 1-3, 2015	International Workshop on Digital Object Identifiers for Rice & on the Co-development and Transfer of Rice Technology	Bogor, Indonesia	Marilyn C. Ferrer
	Aug 23-30, 2015	MIRSA-2 Project Annual Meeting and Monsoon Asia Agro-Environmental Research Consortium Symposium	Tsukuba, Japan	Evangeline B. Sibayan/ Kristine S. Pascual
	Aug 23-30, 2015	2015 Saemul Training Program	RDA, Korea	Fidela P. Bongat
	Aug 25-29, 2015	Workshop on Integration of Adaptation Measures against Climate Change for Asian Rice-Based Agriculture	Tsukuba, Japan	Ricardo F. Orge
	September 1-9, 2015	2015 Capacity-Building Workshop of Satellite Remote Sensing for Southeast Asian Scientists	NCU, Taiwan	Pristine E. Mabalot Mabel I. Barroga
	Sept 8-15, 2015	International Conference “Social and Academic Policies for Women”	Iasi, Romania	Anita V. Antonio

Training Programs, Workshops, Seminars, and Conferences

Type	Inclusive Date	Title	Venue	Participant
	Sept 14-19, 2015	Rice Farm Mechanization Seminar	International Technology Cooperation Center (ITCC), RDA, Jeonju, Korea	Caesar Joventino M. Tado
	Sept 28-Oct 15, 2015	Training Program for Young Leaders Rural Development Course	JICA, Japan	Hazel V. Antonio
	Oct 4-11, 2015	9th International Society of Root Research Symposium "Roots Down Under: Below ground solutions to global challenges"	Canberra, Australia	Roel R. Suralta
	Oct 5-9, 2015	Vegetable Production Training Workshop	Vietnam	Salvacion E. Santiago Andres L. Dela Cruz, Jr. Rolando R. Narisma Isagane V. Boholano
	Oct 15-Nov 11, 2015	Seminar on Management of Eco-Agriculture for Developing Countries	China	Ma. Cristina V. Newingham
	October 18-25, 2015	KAPEX Workshop	Korea	Elmer G. Bautista
	Oct 4- Nov 28, 2015	Capacity-Building Course on Rice Seed Production, Certification, and Field Inspection	Korea	Errol V. Santiago Hermie A. Pajarillo Jose A. Orcino Jerry C. Villarina
	Nov 6-16, 2015	ISSAAS International Congress 2015/ 2015 ISSAAS International Symposium & Conference	Tokyo, Japan	Victoria C. Lapitan
	Nov 9 to 16, 2015	2015 Asia Pacific Extension Network Conference (APEN) & Extension Study Visit	Adelaide City, South Australia/ Yanco Agricultural Institute and the Rice Growers Association in New South Wales, Australia	Irene R. Tanzo Lea D. Abaoag
	Nov 23-27, 2015	MARCO Symposium 2015 Satellite Workshop MINCErnet	Tsukuba, Japan	Norvie L. Manigbas
	Nov 15 to 28, 2015	Capacity-Building Course on Rice Seed Production and Management Policy	Korea	Evangeline B. Sibayan Susan R. Brena Artemio B. Vasallo
	Nov 23 to 27, 2015	Global Leadership Forum	Daegu, Republic of Korea	Calixto M. Protacio
	Nov 22 to Dec 5, 2015	Seminar on Technology of Hybrid Rice Production for APEC Members	Beijing, China	Jerome Galapon

Training Programs, Workshops, Seminars, and Conferences

Type	Inclusive Date	Title	Venue	Participant
	Nov 23 to Dec 22, 2015	Capacity-Building Course on Seed Processing Facility Equipment Operation and Maintenance	Korea	Antonio S. Noriega, Jr. Paulino S. Ramos Reynaldo E. Irang Caesar Joventino M. Tado Ricardo F. Orge Eden D. Gagelonia Gina B. Narca
	Dec 5 to 26, 2015	The ASEAN +3 (China, Korea and Japan) Workshop and Training Program of Modern Production and Molecular Breeding Technology of Rice	Yangzhou, Jiangsu Province, China	Aldrin Y. Cantila Arlen A. Dela Cruz

2015 Outstanding Employee Awards

Ramos, Riza A.	Outstanding Official
Romero, Marissa V.	Outstanding Senior R&D Researcher
Abaoag, Lea D.	Special Citation Senior R&D Researcher
Manigbas, Norvie L.	Special Citation Senior R&D Researcher
Conejero, Irine M.	Outstanding Administrative Middle Manager
Mamucod, Henry F.	Outstanding Junior Researcher
Bulatao, Rodel M.	Special Citation Junior Researcher
Malasa, Ronell B.	Special Citation Junior Development Worker
Penera, Mildred L.	Outstanding General Administrative Support Staffer
Gramaje, Leonilo V.	Outstanding Researcher
Morales, Amelia V.	Outstanding Researcher
Catudan, Bethzaida M.	Outstanding Development Worker
Manubay, Maritha C.	Special Citation Development Worker
Cargamento, Dennis G.	Outstanding Skilled Worker
Cayona, William L.	Special Citation Skilled Worker
Baldovino, Arlene S.	Outstanding General Administrative Support Staffer
Milla, Benjamin R. Jr.	Outstanding Field Worker
Estalilla, Jerry S.	Special Citation Field Worker
Quemquem, Leonora S.	Outstanding Utility Worker
Fulgencio, Erwin E.	Special Citation Utility Worker

Scientific Productivity

Author/s	Title	Journal/Details
Ailon Oliver V. Capistrano	A Minus-One Element Technique-based mathematical model to customize fertilizer recommendations for Philippine rice cultivars	Asia Life Sciences. January 2015. 24:95-109
Alvin D. Palanog, Cherry A. Endino-Tayson, Ian Mark G. Ciocon, Leo T. Sta. Ines, Babylyn U. Tizon, Jesiree Elena Ann Bibar, Cherryl U. Seville, May Osana-Palanog, Dindo King M. Donayre, Albert Christian S. Suñer and Edgar M. Libetario	Grain yield performance and stability analysis of rice varieties under rainfed lowland conditions of Western Visayas, Philippines	Asia Life Sciences. January 2015. 24: 399-408
Arvin Paul P. Tuaño, Noriaki Aoki, Naoko Fujita, Naoko F. Oitome, Florinia E. Merca and Bienvenido O. Juliano	Grain and Starch Properties of Waxy and Low-Apparent Amylose Philippine Rices and of NSIC Rc222	Philippine Agricultural Scientist. December 2014. 97:329-339.
Aurora M. Corales, Josefina T. Dizon and Virginia R. Cardenas	Assessing PalayCheck ® Institutionalization in Selected Municipalities in Luzon, Philippines	Philippine Journal of Science. December 2014. 143:167-176
Aurora M. Corales, Evangeline B. Sibayan and F.G. Palis	Dissemination of Natural Resource Management Technology for Irrigated Rice in the Philippines: On-Farm Validation to National Extension	Pertanika Journal of Tropical Agricultural Science. May 2015. 38:219-233
Aurora M. Corales, Genaro S. Rillon, Ronell B. Malasa, Gerly D. Martin, Vivienne Leigh D. De Guzman, Dindo M. Patonona and Rizal G. Corales	Enhancing Capacities to Increase Crop Productivity and Climate Change Resiliency: A Community-Based Approach in Aurora Province, Philippines	Philippine Journal of Crop Science. August 2015. 40:66-73
Babylyn U. Tizon-Salazar, Pompe Sta. Cruz, Bong Salazar, Edna Aguilar, and Rodrigo Badayos	Grain-filling process in lowland rice (Oryza sativa L. 'PSB Rc18') under water deficit is enhanced by nitrogen fertilization	Asia Life Sciences. July 2015. 24: 715-725
Dindo King M. Donayre, Edwin C. Martin, Madonna C. Casimero, Leylani M. Juliano	Prevalence of Lowland Ecotype Cyperus rotundus L. and Weed Management of Rice Farmers in Aliaga, Nueva Ecija, Philippines	IAMURE International Journal of Ecology and Conservation. January 2015. 13:14-27
Dindo King M. Donayre, Cherry A. Endino-Tayson	Competitive Ability, Critical Period of Competition, and Density Level of Hydrolea zeylanica (L.) Vahl against Transplanted-Irrigated Lowland Rice	IAMURE International Journal of Ecology and Conservation. March 2015. 14:191-214
Edwin C. Martin and Irene R. Tanzo	Competitive ability of weedy rice against cultivated rice in the Philippines	Asia Life Sciences. January 2015. 24:1-7.
Edwin C. Martin and Irene R. Tanzo	Enhancing awareness on weedy rice management in Iloilo Province, Philippines	Asia Life Sciences. January 2015. 24:285-294.
Edwin C. Martin, Dindo King M. Donayre, Madonna C. Casimero	Prevalence, Agronomic Characteristics and Biology of Weedy Rice Biotypes of Nueva Ecija, Philippines	IAMURE International Journal of Ecology and Conservation. October 2014. 12:86-99
Evelyn H. Bandonill and Gemmabelle G. Corpuz	Grain Quality of Irrigated Lowland Rice Varieties as Affected by Season and Crop Establishment	Philippine Journal of Crop Science. August 2015. 40:74-77

Scientific Productivity

Author/s	Title	Journal/Details
Hanah Hazel Mavi Biag-Manalo, Benjamina Paula G. Flor, Madeline M. Suva, Merlyne M. Paunlagui and Ruben B. Miranda	Knowledge-Sharing Enablers and Disablers in the Palayamanan Farmer Field School in the Uplands of Silang, Cavite	Philippine Journal of Crop Science. April 2015. 40:54-63
Jayvee A. Cruz and M.K.M. Cadiente	Survival of an actinomycete in a soil-based carrier: A potential microbial inoculant	Asia Life Sciences. January 2015, 24: 343-348
Jayvee A. Cruz, E.F. Delfin, and E.S.Paterno	Promotion of upland rice growth by actinomycetes under growth room conditions	Asia Life Sciences. January 2015. 24:87-94
Jayvee A. Cruz, M.K. Cadiente	Survival of an Actinomycete in a Carbonized Rice Hull-Based Carrier	IAMURE International Journal of Ecology and Conservation. July 2015. 15:192-199
Jayvee A. Cruz, M.K. Cadiente, Truong Hoai Xuan, Eufemio T. Rasco, Jr.	Endophytic Bacteria Isolated from Nipa Palm (Nypa fruticans) in Bulacan, Philippines	IAMURE International Journal of Ecology and Conservation. March 2015. 14:68-79
Jayvee A. Cruz, N.B. Lantican, E.F.Delfin and E.S. Paterno	Characterization and Identification of growth-promoting actinomycetes: A potential microbial inoculant	Asia Life Sciences. January 2015, 24: 383-397
Jayvee A. Cruz, N.B. Lantican, E.F.Delfin and E.S. Paterno	Enhancement of growth and yield of upland rice by actinomycetes	Asia Life Sciences. January 2015. 24:575-584
Jehru C. Magahud, Niña Grace B. Dimaano	Extent, Methods, and Determining Factors of Pesticide Application in Irrigated Rice Areas of the Philippines	IAMURE International Journal of Ecology and Conservation. July 2015. 15:169-191
Jehru C. Magahud, P.B. Sanchez, and R.B. Badayos	Concentrations of Rare Trace Elements in Major Irrigated Rice Areas in the Philippines	IAMURE International Journal of Ecology and Conservation. March 2015. 14: 111-133
Jehru C. Magahud, Rodrigo B. Badayos, Pearl B. Sanchez, Pompe C. Sta Cruz	Levels and Potential Sources of Heavy Metals in Major Irrigated Rice Areas of the Philippines	IAMURE International Journal of Ecology and Conservation. July 2015. 15:28-59
Jennifer T. Niones, Daigo Takemoto	VibA, a Homologue of a Transcription Factor for Fungal Heterokaryon Incompatibility, Is Involved in Antifungal Compound Production in the Plant-Symbiotic Fungus Epichloe festucae	Eukaryotic Cell. January 2015. 14:13-24
Jonathan M. Niones, Roel R. Suralta, Yoshiaki Inukai, and Akira Yamauchi	QTL associated with lateral root plasticity in response to soil moisture fluctuation stress in rice	Plant and Soil. Feb.19, 2015. (DOI 10.1007/s11104-015-2404-x, published online)
Juanito M. Maloom, Ronaldo B. Saludes, Moises A. Dorado and Pompe C. Sta. Cruz	Development of a GIS-Based Model for Predicting Rice Yield	The Philippine Journal of Crop Science. December 2014. 39:8-19.
Mary Ann U. Baradi and Noel Geronimo T. Martinez	2-Acetyl-1-Pyrroline Levels in Fragrant Rice as Affected by Storage Condition and Packaging	Philippine Agricultural Scientist. June 2015, 98:142-147

Scientific Productivity

Author/s	Title	Journal/Details
Michelle C. Quimbo and Cezar P. Mamaril	Organic Fertilizer Efficacy and Financial Viability of Rice Production, In Los Baños, Philippines	Philippine Agricultural Scientist. June 2015, Vol. 98: 174-189
Noriel M. Angeles, Jose E. Hernandez, Antonio C. Laurena and Hei Leung	Agarose-based ecoTILLING detection of candidate gene SNPs for evaluating quantitative resistance to rice blast	Asia Life Sciences. January 2015. 24:323-334.
Riza G. Abilgos-Ramos, Rosaly V. Manaois, Amelia V. Morales and Henry F. Mamucod	Quality Characteristics and Consumer Acceptabilty of Salt Bread Supplemented with Chili Pepper (Capsicum sp.) Leaves	Food Science and Technology Research. November 7, 2014. 21(2015) No. 1:117-123
Roel R. Suralta, Maria Corazon N. Julaton and Democrito B. Rebong II	Functional Roles of Constitutive Root System Development in Maintaining Higher Water Use and Grain Yield under Post Flowering Drought Stress in Hybrid Rice	Philippine Agricultural Scientist. March 2015. 98:81-88
Roel R. Suralta, Nonawin B. Lucob, Loida M. Perez, Jonathan M. Niones and Henry T. Nguyen	Developmental and quantitative trait loci analyses of root plasticity in response to soil moisture fluctuation in rice	Philippine Journal of Crop Science, August 2015. 40:12-24
Victoria C. Lapitan, Katrina Leslie C. Nicolas and Eufemio T. Rasco, Jr.	Tissue culture technique for clonal propagation of nipa palm (Nypa fruticans Wurmb., Arecaceae) from embryo culture	Asia Life Sciences. January 2015. 24:111-125
Flordeliza H. Bordey and Imelda A. Arida	Adoption of Rice Crop Insurance in the Philippines: Lessons from a Farmer's Experience	Philippine Journal of Crop Science, April 2015. 40:24-34
Sailila E. Abdula, Hye-Jung Lee, Hojin Ryu, Kwon Kyoo Kang, Illsup Nou, Mark E. Sorrells & Yong-Gu Cho	Overexpression of BrCIPK1 Gene Enhances Abiotic Stress Tolerance by Increasing Proline Biosynthesis in Rice	Plant Molecular Biology Reporter. October 2015. 33. DOI 10.1007/s11105-015-0939-x

Best Team
Upland Rice Development Program Team
Special Citation
JICA TCP5 - Rice-Based Farming Technology Extension-Project for the Autonomous Region in Muslim Mindanao
Rainfed Lowland/Adverse Environment Breeding Team
Best Office
Socioeconomics Division
Special Citation
Rice Chemistry and Food Science Division

Best Papers

Author/s	Title	Conference Details
Jennifer T. Niones and Daigo Takemoto	Plant Disease Supression by a Plant-Symbiotic Endophytic Fungus Depends on its ability to produce an antifungal compound (First Place)	17th Annual Scientific Meeting and Symposium of Mycological Society of the Philippines (MSP). Quezon. April 25, 2015. Southern Luzon State University , Lucban, Quezon
Dindo King M. Donayre and Lucille T. Minguez	Histopathology of Puccinia Philippinensis Syd. & P. Syd., A Potential Biological Control that Causes Leaf Rust Disease to Cyperus rotundus L. (First Place)	Pest Management Council of the Philippines, Inc. May 5-8, 2015. Davao City
Jayvee A. Cruz, Mea Katreena M. Cadiente, Truong Hoai Xuan, Eufemio T. Rasco, Jr. and Erlinda S. Paterno	Endophytic Bacteria Isolated from Nipa Palm (Nypa fruticans) as Growth-Promoters for Upland rice (Oryza sativa L.)(Downstream)(First Place)	Federation of Crop Science Societies of the Philippines (FCSSP). May 11-16, 2015. Clark, Pampanga
Ruben B. Miranda, Celia G. Abadilla, Julian C. Macadamia, Mark Angelo A. Abando, Marvin DJ. Manalang, Laarni L. Mandia, Melvin B. Ruiz, John Harold T. Cortez	When Parking The Plow Has More Benefits (First Place)	Federation of Crop Science Societies of the Philippines (FCSSP). May 11-16, 2015. Clark, Pampanga
Michelle C. Quimbo, Cezar P. Mamaril, Erlinda S. Paterno, Pearl B. Sanchez, Rodrigo B. Badayos, Pompe C. Sta Cruz	Soil Chemical and Physical properties with rice straw management during fallow period (Outstanding Scientific Papers)	National Academy of Science and Technology, Philippines. July 9, 2015, Manila, Philippines
Jayvee A. Cruz, Erlinda S. Paterno, Lanie Alejandro Alejo and Mea Katreena M. Cadiente	Assessment of Actinomycete for Enhancing the Growth and Yield of Upland Rice (Applied Research TG/IG-Agriculture Category) (Finalist)	27th National Research Symposium. October 14-15, 2015. Diliman, Quezon City
Roel R. Suralta Nonawin B. Lucob, Arlene B. Aguelo, Jonathan M. Niones, Maria Corazon N. Julaton and Democrito B. Rebong II	Analysis of Deep Root System Development, Soil Water Uptake and Dry Matter Production of Rice under Upland Drought Condition (AFMA R&D, Silver & Best Paper Finalist)Basic Research Category	27th National Research Symposium. October 14-15, 2015. Diliman, Quezon City

Best Posters

Author/s	Title	Conference Details
Arjay P. Sabasaje, Kristine S. Pascual, Felomina S. Grospe, Evangeline B. Sibayan	Water Productivity and Yield Performance of Rice Under Different Irrigation Regimes in Irrigated Lowland Environment (Irrigation and Water Management) (First Place)	26th Philippine Agricultural Engineering Week. April 23, 2015 General Santos City.
Arnold S. Juliano and Joey Miano	Development for Pilot-testing of a Local Riding-type Transplanter (Machinery and Mechanization) (First Place)	26th Philippine Agricultural Engineering Week. April 23, 2015 General Santos City.
Christian Paul M. Ariola, Kristine S. Pascual, Manuel Jose C. Regalado	Energy Efficiency, Cost Effectiveness and Productivity of Rice under Rainfed Conditions with Improved Tillage and Direct seeding Method. (Soil and Water Conservation) (First Place)	26th Philippine Agricultural Engineering Week. April 23, 2015 General Santos City.
Eden D. Gagelonia, Harvey V. Valdez, John Eric O. Abon, Leo B. Moliñawe	Development of a Locally Adapted and Manufactured Ride-on Precision Seeder (Machinery and Mechanization) (Second Place)	26th Philippine Agricultural Engineering Week. April 23, 2015 General Santos City.
Paulino S. Ramos, Arnold R. Elepano, Jessie C. Elauria, Delfin C. Suministrado, Manuel Jose C. Regalado	Influence of Length of Rice Straw on Gasification Rate and Producer Gas Heating Value (Environmental and Waste Utilization) (Second Place)	26th Philippine Agricultural Engineering Week. April 23, 2015 General Santos City.
Amelita Angeles, Femia R. Sandoval, Dindo King M. Donayre, Nenita Desamero	Inhibitory Effect of Fungal Endophytes and Bacterial Isolates on tubers of Cyperus rotundus L. (Second Place)	17th Annual Scientific Meeting and Symposium of the Mycological Society of the Philippines, Inc. (MSP). April 25, 2015. Southern Luzon State University , Lucban , Quezon
Val C. Garcia, Laarni L. Mandia, Melvin B. Ruiz, Ruben B. Miranda	Training Program for New Graduates of Agri and other related Sciences to help boost rice industry (First Place)	23rd Federation of Crop Science Societies of the Philippines (FCSSP) Scientific Conference. May 11-16, 2015. Clark, Pampanga
Perfecto S. Ramos, Jr., Annie E. Espiritu, Evelyn F. Javier	Does Nitrogen stabilizer-treated urea improve Nitrogen-use efficiency of paddy Rice in Silty Loam Soil? (First Place)	18th Philippine Society of Soil Science and Technology (PSSST) Annual Meeting and Scientific Conferences. May 15, 2015. SEARSOLIN, Xavier University, Fr Masterson, Upper Balulang, Cagayan de Oro City
Johanna C. Portilla, Ju-Mark R. Pagaduan, Jean Rochielle F. Mirandilla	Documentation of Indigenous Practices in Upland Rice Production Areas and Site Characterization in CAR	25th HARRDEC and 5th Joint HARRDEC-CIERDEC Regional Symposium on RDE Highlights in Agriculture, Forestry, Natural Resources, Industry, Energy and Emerging Technologies. September 4, 2015. BSU Compound, La Trinidad, Benguet.
Evelyn H. Bandonill, Henry M. Corpuz, Melissa B. Dacumos, Nevah Rizza L. Sevilla, Lydia M. Morales, Rosanna H. Cinense, Milagrosa R. Martinez	Screening and Evaluation of Green Algae as Feed Supplement (AFMA R&D Gold Award & Best Paper Finalist)	27th National Research Symposium. October 14-15, 2015. Diliman, Quezon City

Peer Recognition

Name	Award	Award-Giving Body	Place/Date
Ricardo F. Orge	2015 Regional Winner for Gawad Saka Outstanding Agricultural Scientist	DA RFO No. 3, San Fernando City, Pampanga	San Fernando City, Pampanga February 16, 2015
	Outstanding Agricultural Engineer (Environmental & Waste Management)	Philippine Society of Agricultural Engineers (PSAE)	General Santos City. April 23, 2015
	2015 Gawad Saka Finalist Outstanding Agricultural Scientist	DA-Bureau of Agricultural Research	Diliman, Quezon City. October 15, 2015
Manuel Jose C. Regalado	Most Outstanding Agricultural Engineer (Maramba Award)	Philippine Society of Agricultural Engineers (PSAE)	General Santos City. April 23, 2015
Eden D. Gagelonia	Outstanding Agricultural Engineer (Postharvest Technology & Agricultural Processing)	Philippine Society of Agricultural Engineers (PSAE)	General Santos City. April 23, 2015
Caesar Joventino M. Tado	Service Award PSAE Immediate Past President 2013-2015	Philippine Society of Agricultural Engineers (PSAE)	General Santos City. April 23, 2015
Dindo King M. Donayre	Marcos R. Vega Memorial Award in Weed Science	Weed Science Society of the Philipppines	Davao City, May 8, 2015
Norvie L. Manigbas	2015 CSSP Achievement Award in Research by FCSSP	Crop Science Society of the Philippines (CSSP)	Clark, Pampanga. May 14, 2015
Victoria C. Lapitan	Most Outstanding Principal Investigator	Asian Food & Agriculture Cooperation Initiative (AFACI) and Rural Development Administration (RDA)	Colombo, Sri Lanka. September 16, 2015
Roel R. Suralta	2015 Gawad Saka Finalist Outstanding Agricultural Scientist	DA-Bureau of Agricultural Research	Diliman, Quezon City. October 15, 2015
Riza Abilgos-Ramos	IFP Alumni Award	Institute of International Education (IIE)	September 1, 2015 to August 31, 2016

Externally Funded Projects

International Donors	Project Title
Food and Agriculture Organization (FAO)	AMICAF Step 3: Livelihood Adaption to Climate Change (Enhanced Capacities of Vulnerable Communities to Adapt to Climate Change)
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
Nagoya University, Japan	Interaction Between Soil Stresses and Root-Related Traits Quantitative Trait Loci (QTL) in Rainfed Lowland and Upland Rices
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	Monitoring for Clarification of Near-Canopy Environment and Occurrence of Heat-Induced Spikelet Sterility (HISS) of Rice under Various Types of Climate - Japan and Philippines
	Technology Development for Circulatory Food Production Systems Responsive to Climate Change: Development of Mitigation Option 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
National Institute of Crop Science (NICS), RDA	Development of Elite Heat Tolerance Rice Using the Common Germplasm and Analyzing QTLs Related to Heat Tolerance
Korea Rural Economic Institute (KREI)	Joint Research for Enhancing Agricultural Mechanization through Efficient Land Reformation 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
	Genetic Improvement for Upland Rice through Marker-Assisted Selection (MAS) for Tolerance to Phosphorus Deficiency
BMGF thru IRRI	The Deployment and Validation of High Beta Carotene-Rice Varieties in the Philippines and Bangladesh to Combat Vitamin A Deficiency
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)

Externally Funded Projects

International Donors	Project Title
German Development Cooperation (GIZ) thru IRRI	Remote Sensing-Based Information for Crops in Emerging Economies (RIICE); Study Title: Area-Based Yield Index Insurance for Irrigated Rice (ARBY) Identification using Crop Cut in Three National Irrigation Systems (NIS) in Leyte
UNU-ISP	Co-Generation of Biochar and Heat from Agricultural Wastes: Enhancing Farmers' Productivity and Income while Fighting Climate Change (On the Job Research Capacity-Building for Sustainable Agriculture in Developing Countries)
AGFUND	Future Rice : Green, Practical, and Smart Farming
International Rice Research Institute (IRRI)	Field Performance Evaluation and Selection of GUVA Lines in the Tropics
	Implementation Plans to Disseminate Submergence-Tolerant Varieties and Associated New Production Practices to Southeast Asia
	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-Environment Testing for Irrigated Lowland Rice -Stage 1 (MET 1-IR,2011 DS)
	Improving Livelihoods in the Drought-prone Lowlands of Southeast Asia (IRRI Ref: DPPC2009-119)
	Multi-Location Hybrid Rice Yield Trial at PhilRice Experiment Station in Muñoz, Nueva Ecija Philippines (IRRI Ref: DPPC 2008-49)
	Greenhouse Gas Emissions under Alternate Wetting and Drying in Rice Fields in Central Luzon (IRRI Ref: DRPC2011-183)/ Assessing the Greenhouse Gas (GHG) Mitigation Potentials of Water-Saving Technologies in Different Irrigation Systems for Rice Fields in Central Luzon
	Increasing Productivity of Direct-Seeded Rice Farmers Areas by Incorporating Genes for Tolerance of Anaerobic Conditions during Germination (IRRI Ref. No. DRPC2012-18)
	Green Super Rice (GSR) for the Resource-Poor Farmers of Africa and Asia Phase II (DRPC 2012-01)
	Pre-MET (Multi-Environment Testing) Evaluation of Elite Irrigated Rice Breeding Lines under the project, "Transforming Rice Breeding" (PLA ID: C-2014-84)
	Phenotyping and Genetic Analysis of Rice Traits for Lodging Resistance (project under the Scientific Know-how and Exchange Program SKEP II-Syngenta)
	Improving Crop Productivity in Drought-Prone Rainfed Lowlands in the Philippines with Mechanized Dry Seeding Technology

Externally Funded Projects

International Donors	Project Title
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)
IRRI/sarmap s.a.	Remote Sensing-Based Information and Insurance for Crops in Emerging Economies (RIICE)
Local Donors	
Department of Agriculture through the Bureau of Agricultural Research	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 of Farmers in the Philippines
	Philippine Rice Information System - 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
	Upland Rice Development Program
	Profiling and Seed Purification/Multiplication of Selected Traditional Rice Varieties in Support of DA's Initiative for Exporting Quality Rice
	Identification and Selection of Transgressive Segregants in Philippine Released Hybrid Rice Varieties
	Accelerating Development, Demonstration, and Adoption of Palayamanan Plus in Lowland Farms
	Varietal Mixtures of Rice to Enhance Yield and Mitigate Effects of Climate Change in Stress-Prone Areas
	Value Chain Analysis of the Rice Industry in the Philippines

Externally Funded Projects

Local Donors	Project Title
	Gene-Mining of Yield-Related Traits in Philippine Rice Landraces
	Youth and Agriculture: The Infomediary Campaign in the Philippines
	Development of an Integrated and Mechanized System of Handling and Drying for Fast Processing of Typhoon-Affected Palay
	Mechanisms of Rice Insect Pest and Disease Resistance in Traditional Rice Varieties, and Development of Genetic Stocks with Novel Sources of Resistance Genes
	Development of Mechanization Protocol for Improved Commercial Inbred Seed Production and Seed Quality
	Rice Yield Gap and Economic Efficiency in the Philippines
	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 CAR	Conservation of Traditional Rice Varieties in Abra and Apayao
	Development of Appropriate Farming Systems in the Uplands of Abra through Palayamanan
	Water-Harvesting and Soil and Water Conservation for the Uplands of Abra
	Agroclimatic Profiling and Analysis of Key Rice-Growing Areas in Abra and Apayao
	Development of Postharvest Technologies for Traditional Rice Varieties
	Municipal-Level Database of the Rice Industry Statistics of the Cordillera Administrative Region
	Adaptability Trials of Special Rice Varieties with Export Quality
DA - RFO 2	Building an Architecture of Golden Harvests to Enhance Biodiversity in Rice
	Influence of Rice-Mungbean Cropping Pattern on Yield and Pest Status in Rice-Mungbean Production Areas of San Mateo, Isabela
	Enhancing Profitability and Productivity of Upland Rice Areas through Crop Diversity
	Identification and Assessment of Flooded Rice Areas in Region 2 using GIS

Externally Funded Projects

Local Donors	Project Title
	Utilizing Plant-Microbial Interactions in Controlling Rice Major Diseases and Increasing Rice Yield
	Nutrient Management for Upland Rice
	Evaluation of Rice Mechanization in Irrigated Areas in Region 2: Level of Adoption and Feedback from Users
	Rice-Accelerated Learning Center
	Evaluation of Carbonized Rice Hull (CRH) in Enhancing Water Retention and Minimizing Rice Blast Disease in the Rainfed Ecosystem
DA - RFO 3	Community-Based Approach to Increasing Farm Productivity through Effective Pest Management Strategies and Integrated Rice-Based Farming Systems
	Effects of Intensified Rice Cropping Systems on the Dynamics of Key Rice Insect Pests and their Natural Enemies and Occurrence and Severity of Major Rice Diseases
	Multi-Environment and Adaptability Tests of Advanced Inbred Lines of Upland Rice in Region III
	Improving Productivity and Livelihood in Swamp and Flood-Prone Rice-Based Farming Communities in Region III
	Increasing Rice Yield and Productivity through the Promotion of Small-Scale Irrigation and Integrated Crop Management Systems in Rainfed Areas: Expansion Project for Region III (Aurora, Bataan, Bulacan, Nueva Ecija, Pampanga, Tarlac & Zambales - 84 sites)
	Factors Influencing Food Intake and Nutritional Status of Rice-Based Farm Households in Region III
	Collection of Indigenous Rice Cultivars and Assessment of Rice Genetic Diversity for Yield Stability in Region III
	Multi-Location Trials of High-Yielding Hybrid and Inbred Rice Lines/Varieties for Location-Specific Adaptability and Acceptability in Favorable Rainfed Lowland Rice Sub-Ecosystems in Region III
	Development and Evaluation of a Rice Vulnerability Assessment Tool (RVAT) for Climate Change Impacts in Rainfed Rice Ecosystems of Region III
	Structure, Conduct, and Performance of the Inbred and Hybrid Rice Seed Industry in Region III
	Delineation of Rice Ecosystems in Central Luzon Using Synthetic Aperture Radar (SAR) Images
	Validation of the Regional Rice Fertilization Guide Maps via MOET kit and Fertilizer Requirement Calculator (FRC)

Externally Funded Projects

Local Donors	Project Title
	SAGOT KO ANG MAGULANG KO!: An Infomediary Campaign for the Filipino Youth (Region III)
	Deploying the Near-Real Time Rice Seed Information Support System for Region 3 through the Quick Acquisition of Rice Data Information System (QARDIS)
	Evaluation of Hybrid Rice-Based Diversified and Intensified Cropping Systems
	Pilot-Testing of Fermentation and Distillation Plant for Hydrous Ethanol Production from Nipa Sap and other Plant Sources
	FutureRice: Building Competitive, Sustainable, and Resilient Rice Farms for the Future
	From Flip Charts to Farm Ville: Effective Use of Digital Media to Boost Competitiveness of Farmers and AEWs in Region III
	Enhancing Plant Breeding Research Facility
	Palayabangan: The 10-5 Challenge
	Market Evolution and Product Life-Cycle: A Case of Nutritious Germinated Brown Rice Milk in Region 3
	Development of an Android Application Version of the Leaf Color Chart (LCC) for Estimating Vegetative-Phase Requirements of Rice for Nitrogen and Phosphorus Fertilizers
	Communicating Climate Change: Communication Research and Development of Knowledge Products to Educate the Filipino Farmers on Climate Change Mitigation and Adaptation in Rice Farming
	Reduced Tillage in Irrigated Rice Production for Achieving and Sustaining Farmers' Productivity and Income
DA - RFO 4A	Upland Community-Based Palayamanan System for Increased Productivity and Profitability of Upland Farming Communities in Region 4A
DA - RFO 4B	Molecular Profiling of Philippine Traditional Rice Varieties (TRVs) using SSR and Gene-Specific DNA Markers in Relation to Tolerance of Abiotic Stresses
	Development of Integrated Crop and Nutrient Management for Upland Ecosystem in Region IVB
	Development of Community-Based Palayamanan Model Farms in the Uplands of Mindoro, Marinduque, and Palawan for Increased Productivity and Food Sufficiency

Externally Funded Projects

Local Donors	Project Title
DA - RFO 5	Development of Integrated Crop and Nutrient Management Options for Irrigated Lowland, Rainfed and Upland Rice Environments in Southern Luzon (with 4 component studies)
	On-Farm Adaptability and Acceptability Evaluation of Newly Released Rice Varieties and Elite Lines in Selected Irrigated, Rainfed, and Upland Areas in Southern Luzon
	Energy in Rice Farming: The Potential of Nipa Palm for Alcohol Production
	Harnessing Wind Energy for Irrigation
	Compact Techno Demo cum Seed Production for TGMS Hybrids
	Climate Change Adaptation in Camarines Sur thru Appropriate Rice-Based Farming Systems
	Technology Development and Promotion (with 3 component studies)
	Implementation of the Upland Rice Development Program by the DA-RFO 5 and PhilRice Bicol
	Intensifying Rice and Rice-Based Production in Bicol Region Amidst Changing Climatic Conditions (with 5 component studies)
DA - RFO 11	Development of Powder Form *Metarhizium anisopliae (Deuteromycotina: Hypomycetes)* for the Control of the Rice Black Bug *Scotinophara coarctata (Hemiptera: Pentatomidae)*
	Development of Best Formulation and Utilization of *Croton tiglium* for Storage Insect Pest Management
	Utilization of Green Muscardine Fungus, *Metarhizium anisopliae (Metsch) Sorokin* as Biological Control Agent of the Brown Plant Hopper, *Nilaparvata lugens Stal (Homoptera: Delphacidae)*
	Evaluation of Eco-Friendly Management Strategies Against the Brown Plant Hoppers, *Nilaparvata lugens Stal.* in Hybrid Rice Production
	Development of High-Yielding Inbred Lowland Rice Varieties Tolerant to Major Biotic and Abiotic Stresses
	Nutrient and Pest Interaction Based on Yield Potential of Promising Rice Lines and New Rice Varieties in Mindanao
	Translation of PhilRice Knowledge Products from English to Cebuano
	"Talamdan sa Maayong Pagpanguma": A Learn-on-the-Air Program in Support of Location-Specific Technology Development (LSTD) Implementation in Mindanao
	Upland Rice Farmers' Capacity Advancement and Resource Empowerment (Upland Rice FarmCARE): Using the Palayamanan Approach

Externally Funded Projects

Local Donors	Project Title
DA - RFO 13	Adaptation-Testing of Rice Technologies for Flood-Prone, Saline-Prone, and Drought-Prone Ecosystems (in support of AMICAF Step 3 DA-FAO Project)
	Response of Upland Rice Varieties to Varying Levels of Vermicompost in Caraga Region
	Insect Pests, Diseases, and Natural Enemies Associated with Upland Rice in Caraga Region
	Profiling, Seed Multiplication, and Purification of Selected Traditional Rice Varieties in Caraga Region in Support of DA's Initiative on Rice Exportation
	Multi-Environment Testing and National Cooperative Test of Rice Lines in Caraga Region (NCT/MET3)
	Green Super Rice Performance Evaluation in Rainfed and Adverse Lowland Environments
	Pest Monitoring and Surveillance System in PhilRice Agusan
	Planting Organically Grown Cash Crops: A Sustainable Food Production Approach amidst Climate Change in Upland Environments in Caraga Region
	Biology, Ecology, and Management of the Rice Grain Bug (Hemiptera: Lygaeidae) – A New Emerging Pest of Rice
Bureau of Agricultural Research (BAR)	Development of Philippine Rice Cultivars with Elevated Levels of the Provitamin A Beta Carotene (Golden Rice 2) and Resistance to Tungro and Bacterial Blight through Marker-Assisted Breeding
	Reduced Tillage and PalayCheck System in Irrigated Rice Production for Increased Productivity and Income in Agrarian Reform Communities in Nueva Ecija
	Detection of Rice Viruses in Infected Plants and Viruliferous Insects by Loop-Mediated Isothermal Amplification (LAMP) and its Application for Virus Disease Management in the Philippine Rice Cropping System
	Philippine Rices as Substrates in the Production and Utilization of Biopigments from Monascus Purpureus Went
	Screenhouse and Field Evaluation of Wide Cross-Derived Rice Breeding Lines for Drought Tolerance
Department of Science and Technology (DOST)	Increasing Farmers' Access to High-Quality Rice Seeds Through Efficient Seed Production Systems

Externally Funded Projects

Local Donors	Project Title
DOST- PCAARRD	Science and Technology Community-Based Farm (STCBF) on Seed Security for the Rehabilitation and Growth of the Rice Sector as Adversely Affected by Typhoon Yolanda in the Provinces of Leyte and Samar, Philippines
	Science and Technology Community-Based Farm on Rice Integrated Crop Management (STCBF on Rice ICM) in Increasing Farmers' Productivity and Profitability in Selected Irrigated Provinces in the Philippines
	Application of Nuclear Analytical Techniques for Efficient Nutrient and Water Management in Rice Production (Project 1 under the Program, "Smart Farming-Based Nutrient and Water Management for Rice and Corn Production")
	Development and Pilot-Testing of Combined Conduction and Far-Infrared Radiation Paddy Dryer
	Development and Pilot-Testing of Improved 1.3-Meter Rice Combine Harvester
	Development and Pilot-Testing of a Local Riding-Type Transplanter
	Development of a Locally Adapted and Manufactured Riding-Type Precision Seeder
	Elucidation of Growth Promotion Mechanism of Radiation-Modified Carrageenan and Chitosan on Rice (Project 2 under the Program "Plant Bio-Stimulants and Elicitor from Radiation-Modified Natural Polymers")
Department of Agrarian Reform (DAR)	Capacity Development for Climate Change-Resilient ARCs
Philippine Crop Insurance Corporation (PCIC)	Development of a Standard Procedure of Weather Index-Setting in support of the WIBI Mindanao Project

Completed Infrastructure/Facility Projects

Project Year	Title	Location	Date Completed
2013			
1	Upgrading of Three-Phase Lines of PBDO Seed Processing Area	PhilRice CES	2/3/2014
2	Retiling of Comfort Rooms at Training Dormitory I	PhilRice CES	2/21/2014
3	Improvement of the Office of the Deputy Executive Director for Development	PhilRice CES	3/20/2014
2014			
1	Construction of Six-Door Apartment	PhilRice CES	1/20/2015
2	Construction of Screen House and Seed Processing Shed with Fertilizer and Chemical Storage	PhilRice CES	2/13/2015
3	Construction of Waiting Shed	PhilRice CES	2/15/2014
4	Construction of Vermi-Composting Facility	PhilRice CES	3/7/2014
5	Construction of Screen House	PhilRice CES	3/9/2015
6	Construction of Six-Door Apartment II	PhilRice CES	5/18/2015
7	Improvement of the Office of the Deputy Executive Director for Research	PhilRice CES	6/9/2014
8	Fabrication of Three (3) Sets Seed Rack at PBBD	PhilRice CES	7/4/2014
9	Construction of Two Units Reversible Flatbed Dryer	PhilRice CMU	8/12/2014
10	Fabrication and Installation of PhilRice Logo and Marker and Aluminum Composite Panel	PhilRice LB	8/30/2014
11	Supply & Installation of Roofing and Windows for Old Eight-Door Apartment	PhilRice CES	9/18/2014
12	Construction of Comfort Rooms at Material Recovery Facility	PhilRice CES	10/8/2014
13	Repair/ Improvement of Hybrid Rice Warehouse Building	PhilRice CES	10/14/2014
14	Replacement of Windows and Doors Screen at Training Dormitory I	PhilRice CES	11/18/2014

Completed Infrastructure/Facility Projects

Project Year	Title	Location	Date Completed
2014			
15	Fabrication & Installation of Garden Fence	PhilRice CES	11/25/2014
16	Fabrication & Construction of Two Units Energy Shed	PhilRice CES	12/6/2014
17	Construction of Seed Warehouse Building	PhilRice CMU	12/17/2014
2015			
1	Fabrication of Gate at Training Dorm Fence	PhilRice CES	2/27/2015
2	Retiling of PCAARRD House	PhilRice CES	3/27/2015
3	Installation of Sun Visor	PhilRice CES	4/13/2015
4	Repair/ Improvement of PhilRice Liaison Office	Agricultural Training Institute	8/30/2015
5	Fabrication of Mobile Panel Exhibit for Rice Science Museum	PhilRice CES	9/2/2015
6	Improvement of Seed Processing Shed	PhilRice CES	10/12/2015
7	Fabrication of 30 pcs Steel Shelves for Finance and Management Division	PhilRice CES	10/28/2015
8	Repair of PBBD Screen House	PhilRice CES	11/17/2015
9	Construction of Laboratory and Lodging Facilities	PhilRice Bicol	12/27/2015

Note: Preliminary site development activities were carried out in January 2015 at the PhilRice Satellite Station in Sta. Cruz, Occidental Mindoro. At the PhilRice Satellite Station within the University of Eastern Philippines Catarman Campus in Northern Samar, field operations began in January 2015; initial land development in May 2015.

Comparative Statements of Financial Position

For the Years Ended December 31, 2015 & 2014

	2015	2014
ASSETS		
Current Assets		
Cash	1,140,505,359.66	1,034,307,544.88
Receivables	184,357,903.32	164,836,005.74
Inventories	90,623,321.27	81,599,575.96
Prepaid Expenses	4,994,570.83	1,912,728.89
Other Current Assets	501,871.83	7,048,314.89
Total Current Assets	**1,420,983,026.91**	1,289,704,170.36
Non-Current Assets		
Property & Equipment net	752,936,943.77	692,722,830.35
Other Assets	14,238,873.09	14,145,745.57
Total Non-Current Assets	**767,175,816.86**	706,868,575.92
TOTAL ASSETS	**2,188,158,843.77**	1,996,572,746.28
LIABILITIES & GOVERNMENT EQUITY		
Current Liabilities		
Accounts Payable	266,340,409.90	239,962,314.63
Due to National Government Agencies	27,506,188.84	12,094,075.97
Due to GOCCs	63,187.02	63,187.02
Due to Local Government Units	55,000.00	50,000.00
Trust Liabilities	752,079,993.82	676,326,356.92
Other Current Liabilities	26,503,815.66	50,163,415.27
Total Current Liabilities	1,072,548,595.24	978,659,349.81
Non-Current Liabilities	10,404,321.90	16,570,820.75
Government Equity	**1,105,205,926.63**	1,001,342,575.72
TOTAL LIABILITIES & GOVERNMENT EQUITY	**2,188,158,843.77**	1,996,572,746.28

CERTIFIED CORRECT:

NELITA M. TADO

Chief Accountant

Department of Agriculture

PHILRICE

PHILIPPINE RICE RESEARCH INSTITUTE

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).

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