2019

PHILRICE R&D HIGHLIGHTS

LOS BAÑOS BRANCH STATION

Contents

STATION

PhilRice Los Baños

Branch Director: Rhemilyn Z. Relado-Sevilla

Executive Summary

Guided by the Institute's Strategic Plan (2017-2022), PhilRice Los Baños (LB) continues to implement relevant research, development, and extension initiatives to primarily serve the R4D needs of Regions IV-A and IV-B. It also supports the national hybrid rice program.

In 2019, PhilRice LB implemented five program-based, two station-initiated, and five externally-funded R&D projects. The station's research thrust mainly focused on hybrid rice, implemented in close partnership with the PhilRice Central Experiment Station (PhilRice CES). Agronomic nitrogen use efficiency of selected hybrid rice varieties was explored; showing that the average yield of hybrid rice varieties increased by 0.5t/ha, which translated to P5,000-P8,000 increase in net income for every additional 30kg/ha of N applied. However, it should be noted that the incremental yield increase started to decline when the 180kg/ha of N application was reached.

Knowledge on the genetic diversity and combining ability within a pool of breeding materials continued to be generated to increase the chances of developing good hybrids. The study showed low to moderate genetic diversity among the thermo-sensitive genetic male sterile (TGMS) lines that were tested based on single nucleotide polymorphism (SNP) marker analysis; and moderate degree of genetic differentiation among the two TGMS line populations tested was detected. With respect to combining ability, desirable and significant genetic combining ability (GCA) effects were obtained from one TGMS line on panicle length and one for plant height, implying both genotypes as good general combiners for the respective trait. On the other hand, good specific combining ability was noted on three hybrids for plant height, one for panicle length, and one for grain yield. Results also showed that best performing crosses across environments based on per se performance involved at least one good combining parent for grain yield. Computed mean yield heterosis of crosses for the two environments was more than 15% against the inbred and hybrid checks and the better parent. However, correlation analysis showed genetic distance as a weak indicator and predictor of hybrid performance at least for the set of genotypes used in the study.

Two-line hybrids based on TGMS system were also developed. This year, another TGMS hybrid, PRUP 12 (derived line of M19 and to be named as Mestiso 102 upon approval) was recommended for national cultivation by the National

Cooperative Test (NCT). This is the fifth hybrid developed through the project, in which two were used in the public hybrid rice commercialization of PhilRice. Meanwhile, 892 new experimental hybrids were generated in search for new promising hybrids. One of the four promising hybrids in the advance yield trial was identified as a potential candidate for submission to the NCT for hybrids. The project also produced the required amount of parental and F1 seeds for yield trials and NCT.

For the screening of hybrid parentals (S and P lines), segregating breeding lines, and promising experimental hybrids, 707 entries were evaluated for grain quality characteristics, while 218 entries were evaluated for reaction to major insect pests and diseases and found to be susceptible to the rice tungro virus (RTV). Excluding reactions to RTV, combined evaluation results for TGMS breeding materials identified two elite pollen parents to have good eating quality and bear resistance to moderate resistance to major insect pests and diseases.

In support of the national public hybrid rice commercialization of PhilRice, the project produced enough supply of breeder seeds (for M1 and M20) to plant around 60ha for foundation seed production (FSP). The project likewise distributed 180kg of IR58025A (with corresponding B-line) and 210kg PRUP TG102 breeder seed to PhilRice Isabela, Negros, and Midsayap. Furthermore, 30 genotypes, which are parent lines of 20 public released hybrids, are stored and closely monitored to ensure availability.

Another major work of PhilRice LB in 2019 is its efforts in conserving genetic resources of rice and Azolla species. To date, the PhilRice Los Baños Genebank, in collaboration with UPLB, holds 3,389 rice accessions that include traditional varieties, elite breeding lines, wide hybridization derived lines, TGMS breeding materials, and high-performing NCT lines. On the other hand, 260 Azolla sp. accessions are maintained, conserved, and distributed to the general public upon request.

Implementation of PRISM in Regions IV-A and IV-B this 2019 focused on tracking 250 monitoring fields, of which 480 validation points, whether rice or non-rice areas, were checked across the two regions. Data submitted were used to generate seasonal rice area, start of season maps, and yield estimates.

To complement the research efforts of PhilRice LB, "Rice Technology and Innovations Promotion in Regions IV-A and IV-B (RiceTIP)" was implemented. PhilRice's knowledge products and information education communication materials were strategically distributed in *PalayAklatan* or the mobile One-Stop Information Shop in two collaborating schools and during the conduct of seven thematic exhibits by the station. The station catered to 1,580 visitors (31 tours), 523 UPLB students (33 batches of laboratory tours), and K-12 students who underwent the K-12 immersion program at the station.

Lakbay Palay with the theme, "Dekalidad na Palay, Bigas, Kanin, Masaganang Buhay Tataglayin!" was attended by 530 participants. The station also conducted four well-attended thematic quarterly seminar series on the latest research outputs, technologies, and issues on rice and the industry. Experts from various institutions were invited as resource speakers. This year's activities were concluded by the hosting of the 17th Ceremonial Rice Harvesting at the Rice Garden in Rizal Park with 248 elementary and high school students and representatives of partner agencies from Metro Manila. This is the station's share in the celebration of the National Rice Awareness Month with the theme "Buy Local. Eat Local. Support our Rice Farmers''. For the first time, a two-day farmers' market was also organized for the event. The farmers' market was participated by 16 farmer groups and was visited by approximately 350 walk-in buyers.

Other accomplishments include four hands-on training at the station's learning farm; two rice production training activities provided to four farmer groups in Quezon and San Pablo City; and 56 technical personnel dispatches to training activities requested by agencies. The station also participated in organizing seven Agri-Talakayan events, which were attended by 1,150 participants coming from DA Local Government Units (LGU), DAR beneficiaries, SUCs, and farming and extension communities. Meanwhile, the agricultural LGUs of Laguna, Rizal, Quezon, Batangas, Marinduque, and Romblon were visited by PhilRice LB development staffers to strengthen collaborations and initiate provision of technical support to the provinces in CALABARZON and MIMAROPA.

Another development project of the station is the Rice Seed Systems (RSS), in which the preferred rice varieties of the respondents, composed of farmers and researchers. These rice varieties were identified using the participatory varietal selection (PVS) approach. It was noted that NSIC Rc 216 was the most preferred variety. Various communication platforms to improve accessibility to registered seeds were also tested. Main issues identified were availability and low seed quality. Seed reservation and ICTs such as social media and mobile/text messaging were pilot-tested and deemed effective. Thus, PVS will be expanded and ICTs will be used.

The station also established Rice Business Innovations System (RiceBIS) Community in Region IV-A. The project achieved the following: (1) implementation of six localized communication campaign plans using KSL activities and multimedia strategies; (2) conduct of organizational/enterprise building workshops for 329 farmers (196 male, 133 female); (3) organization of five clusters composed of 70 (51 male, 19 female) farmers who were engaged in the selection, establishment, and development of their enterprise; (4) attainment of the projected return on investment of 5% for milled and 20% for pigmented rice production and marketing; (5) increase in average yield of 0.5t/ha was noted

by comparing the baseline data of 2016 versus 2019; (6) increase in the net income of farmers from P15,000 to P20,000, which is attributed to the increase in gross revenue and reduction of production cost; and (7) reduce in average cost of production per kilogram of palay in the RiceBIS site from P19.20/kg in 2017 DS to P11.77/kg.

To maximize the research and development potential of the station, five extra-core funded R&D projects benefitting rice stakeholders were implemented. The station handled fund management of the NCT Los Baños while Component A-Grain Quality Evaluation for Physical Attributes was conducted at PhilRice LB. For the NCT screening, 594 entries from 13 different ecosystems were analyzed for their physical attributes following the NCT method of grain quality evaluation. Progress of the DA-BAR funded project, "Market Segmentation for Brown Rice: The Case of Metro Manila", showed the presence of brown rice consumers in the four districts of Manila. It was observed that there are fewer brown rice consumers than non-brown rice eaters. Availability of brown rice is also limited as observed in the markets and stores in Metro Manila.

Another DA-BAR project, "Development of Sustainable Rice Straw Management Practices and Technologies for Food (Rice Straw-based Mushroom Production) and Bioenergy in the Philippines (RiceStrawPH)" was implemented with the assistance of the station. For this year, rice straw management and uses in mushroom production, ruminant fodder, and mechanized collection were identified. Likewise, machines for rice straw utilization (rice straw baler, mushroom substrate bagger, and mushroom dryer) were developed and the prototypes are now being manufactured.

A new DA-BAR funded project, "Deployment of Genetic Resistance in the Management of Rice Black Bug Scotinophara coarctata (F.)" was approved and preliminary activities for the project were initiated.

"Enhancing the Capabilities of Bicol's Agta IPs through *Palayamanan* Approach" was completed. The development of a policy brief is ongoing. The policy brief will highlight the insights of project implementation and the technologies that should be promoted and adopted in the Agta communities.

These projects specifically contribute to the following PhilRice's organizational outcomes: (1) increased productivity, cost-effectiveness, and profitability of rice farming in a sustainable manner; (2) enhanced value, availability, and utilization of rice, diversified rice-based farming products and by-products for better quality, safety, health, nutrition, and income; (3) science-based and supportive rice policy environment; (4) advanced rice science and technology as continuing sources of growth; and (5) enhanced partnerships and knowledge management for rice R&D.

PROJECT 1

Research Innovations for Sustained Improvement of R4D (RISE of R4D)

EE Sajise

PhilRice Los Baños conducts researches geared towards further strengthening the hybrid rice technology.

Knowledge on genetic diversity and the combining ability that exist within a pool of breeding materials is necessary to increase the chances of developing good hybrids; thus, this study. Results showed low to moderate genetic diversity among the TGMS lines tested based on single nucleotide polymorphism (SNP) marker analysis. On the contrary, a moderate degree of genetic differentiation among the two TGMS line populations tested was detected. With respect to combining ability, desirable and significant genetic combining ability (GCA) effects were obtained from one TGMS line on panicle length and one for plant height implying both genotypes as good general combiners for the respective trait. On the other hand, good specific combining ability was noted on three hybrids for plant height, one for panicle length, and one for grain yield. Results also showed that best-performing crosses across environments based on per se performance involved at least one good combining parent for grain yield. Computed mean yield heterosis of crosses for the two environments was more than 15% against the inbred and hybrid checks and the better parent. However, correlation analysis showed genetic distance as a weak indicator and predictor of hybrid performance at least for the set of genotypes used in the study.

The station also shares its efforts on conserving genetic resources of rice and Azolla species. Conservation and maintenance of genetic resources guarantees its availability for present and future use. To date, the Genebank at PhilRice Los Baños, in collaboration with UPLB, holds 3,389 rice accessions including traditional varieties, elite breeding elite lines, wide hybridization derived lines, TGMS breeding materials, and high-performing NCT lines. On the other hand, 260 Azolla sp. accessions are being maintained and conserved. Rice and Azolla accessions are also distributed upon request. Germplasm conservation efforts at the station also support the hybrid and inbred breeding projects in Los Baños.

To provide fertilizer management options towards optimum yield in hybrids, agronomic nitrogen use efficiency of selected hybrid rice varieties was explored. Baseline data gathered on the varietal performance against different N level applications showed an average yield of hybrid rice varieties increased by 0.5t/ha or equivalent to P5,000- P8,000 increase in net income for every 30kg/ha of N applied. However, it was noted that incremental yield increase started to decline above 180kg/ha of N level of application.

Conservation and Management of Rice Genetic Resources in PhilRice Los Baños

WB Abonitalla, EE Sajise, TH Borromeo, SG Bon, and MI Calayugan

Germplasm conservation and management is essential in preserving genetically diverse resources in a population. Hence, materials were thoroughly characterized and evaluated.

This study maintained and conserved the rice genetic resources for variety development and research. PhilRice Genebank in Los Baños, in collaboration with UPLB, holds 3,441 rice accessions (1,849 for PhilRice; 1,592 for UPLB) that include traditional rice varieties (TRVs), selections, breeding and elite lines; wide-hybridization derived and TGMS lines, promising hybrid pollen parents, and highly selected NCT lines. Two hundred accessions of TRVs were manually cleaned, processed, packed in aluminum foil, and stored for short-term conservation. These accessions were randomly sampled and tested for viability. Seed viability remained at >85% indicating proper conservation and management of the germplasm. Moreover, 221 TRVs (UPLB collection) were seed increased/regenerated and characterized for quantitative and qualitative traits using IRRI's rice descriptor. Characteristics were identified in support of breeding and diversity analysis. A database is being maintained for monitoring and tracking rice germplasm. The Genebank is conserved and maintained with temperature ranging from 16-18°C and relative humidity of 40% to 60%.

Conservation, management and distribution of Azolla species

GP Flancia, EE Sajise, EA Aguilar, and SS Reano

Two hundred sixty Azolla sp accessions were maintained and conserved at the stations' Tissue Culture Laboratory under the Research Innovations for Sustained Improvement of R4D (RISE of R4D) project. Azolla sp accessions were also distributed to approved requests. By establishing the biofertilizer for rice germplasm at PhilRice Los Baños, this study will help build strong linkage with the Los Baños science community, particularly on making biofertilizer germplasm material accessible to scientists and students.

Combining Ability and Genetic Diversity of Selected Thermo-Sensitive Genic Male Sterile (TGMS) Lines and Pollen Parents

MLG Ortiguero and EE Sajise

The study assessed the genetic diversity and combining ability of selected parental lines (TGMS lines and pollen parents) and evaluated field performance of hybrid combinations for yield and yield-related traits. SNP marker analysis showed low to moderate genetic diversity among the TGMS lines but moderate degree of genetic differentiation was detected among populations. Results also showed a higher degree of TGMS lines developed by hybridization and selection. The TGMS lines formed three major clusters based on the SNP marker analysis.

Field performance testing showed highly significant differences of the genotypes with respect to all measured traits; indicating availability of sufficient genetic variability. Differential response of genotypes across environments was significant for plant height, productive tiller, and grain yield. Among the parents, desirable and significant GCA effects were obtained from TGMS 60 for plant height and RS ON 4 for panicle length. This implies that both genotypes are good general combiners for the said traits. Good specific combining ability was noted on three hybrids for plant height, one for panicle length, and one for grain yield as evident by the significant SCA effects. Best performing crosses across environments based on per se performance involved at least one good combining parent for grain yield. Moreover, mean yield heterosis of crosses over environments were 51.06%, 21.53%, and 84.06% against the inbred check, hybrid check and the better parent, respectively. However, correlation analysis showed genetic distance as a weak indicator and predictor of hybrid performance at least for the set of genotypes used in the study.

PROJECT 2

Rice Seed Systems Los Baños: Improving the quality and rice seed availability and accessibility in CALABARZON and MIMAROPA

MAT Talavera, JLO Canilao, RG Pedron, JM Montesines, AD Calimlim, and AD Bueza

To cascade the RSSP initiatives in Region IV-A and IV-B, PhilRice Los Baños forged partnership with rice stakeholders through consultative meetings, developed key strategy to optimize varietal adoption by identifying preferred rice varieties of farmers in the region, and tested communication platforms to improve the accessibility of registered seeds by the registered seed growers.

To facilitate the distribution of inbred rice registered seeds in the region, an initial rice seed consultative workshop was conducted with Region IV-A stakeholders, in which common problems by seed growers were raised and discussed. Information generated/compiled will be used in developing key strategies to better facilitate flow, adoption, and timing of tagged seeds dispersal for Regions IV-A and IV-B.

To improve facilitation of information on seed availability and RS seed distribution, social media (through mobile/text messaging) was pilot-tested for seed reservation and information dissemination. Using the new reservation scheme, 25% of the registered seed growers in the PhilRice Business Development Division master list reserved seeds through text messaging. Information on seed availability was also facilitated more efficiently using the FB group. The two schemes will be utilized for wider client reach.

Identification of the preferred rice varieties from the six recommended inbred rice in Region IV-A and IV-B was initiated using the participatory varietal selection approach. Participants included rice researchers from UPLB and PhilRice farmers, and LGU staff members from Los Baños, Bay, Calauan, Pila, and Sta Cruz. Results showed that farmers and researchers had different preference in plant characteristics. This discrepancy resulted in the selection of preferred and least preferred varieties by the two groups. Female and male farmers, however, selected the same plant characteristics.

Identification of the preferred inbred rice varieties in Region IV-A and IV-B through participatory varietal selection

MAT Talavera, RG Pedron, and AD Bueza

A participatory varietal selection (PVS) was conducted to determine the preferred rice varieties of rice stakeholders in Region IV-A. The PVS trial was composed of six inbred varieties recommended by RFO IV-A. Agronomic, resistance against pests and diseases, and yield were used as parameters. There were 297 participants from UPLB, PhilRice, and municipalities of Los Baños, Bay, Calauan, Pila, and Sta. Cruz who joined the event. Preference score (PS) was used to identify the most and least preferred inbred varieties. Pearson analysis was also employed to identify the correlation between male and female PS, farmer and researcher PS, and profession PS; and grain yield.

During WS, NSIC Rc 160 recorded the highest grain yield (6,890kg/ha) followed by Rc 222 (5561kg/ha). The lowest-yielding inbred varieties were PSB Rc 18 (5,110kg/ha) and Rc 218 (4,660kg/ha). Results showed that researchers preferred NSIC Rc 160 and Rc 216; while PSB Rc 82 and NSIC Rc 222 were their least preferred inbred rice varieties. The traits considered were yield, actual plant appearance, and resistance to insect pests and diseases. The farmer participants preferred PSB Rc 82 and NSIC Rc 216 while PSB Rc 18 and NSIC Rc 218 were the least preferred varieties. They based their preference on resistance, maturity, and yield. In terms of gender, male and female prefer NSIC Rc 216 and PB Rc 82 while NSIC Rc 218 and PSB Rc 18 were their least preferred. The male and female participants used maturity, plant height, resistance, and yield as bases for selection. Strong correlation (0.9647, $\alpha < 0.05$) was detected between the male and female PS. This result indicates that gender does not play a role on the selection of preferred varieties and that the participants' decision is now market-driven.

Strengthening institutional linkages with seed growers and rice stakeholders in Region IV-A and IV-B

JLO Canilao, JM Montesines, and AD Calimlim

This study aimed to improve the accessibility of certified inbred seeds in the regions by strengthening the linkages and roles of rice stakeholders. Activities such as conducting a rice seed consultative workshop with Region IV-A

stakeholders, baseline survey of seed grower's profile, gender research and their issues on seed availability, and accessibility and seed distribution were conducted. Seed growers identified unavailability of preferred varieties, location of source of foundation and registered seeds, and low price and bidding process of seed buyers as their common problems.

To improve the dissemination of information on seed availability, a Facebook group and page was created where available seeds are posted every Wednesday. Mobile/text messaging was also used to promote the information to seed growers. Seed growers preferred reservations made through text messaging.

PROJECT 3

RICETIP: Rice Technology Innovations and Promotions in Regions IV-A and IV-B

VA Ompad, KCS Labita, EE Sajise, JLO Canilao, LV Guittap, MAT Talavera, FS Aguilar, BR Punzalan, WB Abonitalla, GP Flancia, AQ Jumawan, RMO Tumanguil, PJD Alborida, RG Pedron, TR Punzalan, KP Gonzales, AKM Bagunu, and MSM Canilao

Rice Technology and Innovations Promotion (RiceTIP) in Regions IV-A and IV-B is implemented through the RiceShare and RicePATROL studies. RiceShare aimed to share knowledge and information using different KSL activities while RicePATROL aimed to enhance the capacity of farmers through dissemination of PhilRice mature technologies.

Under RiceShare, information regarding mature rice technologies and research findings were packaged into information, education, and communication materials for Knowledge Sharing and Learning (KSL) activities. The study has six sub-components: (1) Palay-Aklatan, (2) mobile OSIS in schools, (3) database management, (4) exhibits, (5) visitors and station tours, and (6) K-12 Training courses.

RicePATROL showcased PhilRice mature technologies through the PhilRice LB Learning Farm, rice production training programs, *Agri-Talakayan*, *PalayAralan*, technical expert dispatch, and collaboration with offices of provincial agriculturist in selected provinces. For the learning farm, 31 batches visited the station and four hands-on training courses were conducted from January to November 2019. Meanwhile, 523 UPLB students were toured in the seed processing and storage facility of the research sector. Farmers totaling 120 from San Pablo, Laguna and Mulunay, Quezon were trained. Fifty-six technical resource persons were dispatched to handle seven Agri-Talakayan, which were attended by 1,150 participants from DA Local Government Units, DAR beneficiaries, and SUCs farming extension communities. Meanwhile, collaboration with the local government units in Laguna, Rizal, Quezon, Batangas, Marinduque, and Romblon was strengthened.

RiceSHARE: Capacitating Rice Stakeholders through knowledge sharing, and learning activities in Regions IV-A and IV-B

KCS Labita, EE Sajise, JLO Canilao, LV Guittap, MAT Talavera, VA Ompad, FS Aguilar, BR Punzalan, WB Abonitalla, GP Flancia, AQ Jumawan, RMO Tumanguil, PJD Alborida, RG Pedron, TR Punzalan, KP Gonzales, AKM Bagunu, and MSM Canilao

To cater to the rice information needs of the general public, the study conducted Pinoy Rice Seminar Series (PRSS), *Lakbay Palay*, and Ceremonial Rice Harvesting. The Palay-Aklatan and mobile one-stop information shop (OSIS) in schools helped in providing rice information to students, farmers, researchers, and visitors. Two mobile OSIS were maintained through regular distribution of IEC materials and KPs. An additional mobile OSIS was established. In line with the Scientists' Corner, the Farmers' Corner was launched in the first quarter featuring the CALABARZON's Gawad Saka awardees. Files from the Development Sector of PhilRice LB were added to the database. Eleven regional thematic exhibits (4 major and 7 minor) were conducted. For station visits, 1,580 guests were briefed about PhilRice and toured around the station while 523 UPLB students were educated on seed processing and storage. Two batches of training on rice production and farm machinery were conducted for K-12 students. For a wider audience reach, the station conducted 4 PRSS seminars with 305 participants, one *Lakbay Palay* conducted in DS featuring the experimental fields and the Rice Competitiveness Enhancement Program with 530 participants, and one Ceremonial Rice Harvesting at Rizal Park with 284 participants. IEC materials totaling 40,567 were distributed to rice farmers and stakeholders in CALABARZON and MIMAROPA.

RicePATROL: Providing assistance to the rice farming organization in target locations

VD Ompad, EE Sajise, JLO Canilao, LV Guittap, MAT Talavera, KCS Labita, BR Punzalan, WB Abonitalla, GP Flancia, AQ Jumawan, RMO Tumanguil, PJD Alborida, RG Pedron, KP Gonzales, AKM Bagunu, and MSM Canilao

The study aimed to improve the capacity of women and men rice farmers through training programs and field demonstration of holistic and comprehensive rice production technologies. This was attained through establishment of PhilRice LB learning farm; conduct of rice production training programs, *Agri-Talakayan*, *PalayAralan*, and technical expert dispatch; and

collaboration with offices of provincial agriculturist in select provinces. The learning farm catered 31 batches of station visits and four hands on training courses from January to November 2019. The PhilRice-led rice production training programs were held in San Pablo, Laguna and Mulunay, Quezon. Seven *Agri-Talakayan* were organized with 1, 150 participants. Fifty-six technical resource persons were dispatched to 590 trainees.

Collaboration with office of provincial agriculturist in select provinces was fostered to strengthen and sustain the engagement with the farmers. To date, PhilRice had partnered with six local government units in Laguna, Rizal, Quezon, Batangas, Marinduque, and Romblon.

The impacts of all these undertakings were randomly validated through visits with farmers' field and interviews. It was found that farmers adopted the knowledge gained from the station activities. Interviewed farmers said they now use certified seeds, venture into mushroom production, and practice *Palayamanan*.

Figure 1. Farmers visit the learning farm during the DS Farmer's Field Day 2019

Table 1. Training programs conducted by PhilRice Los Baños, 2019

Title of Training	No. of Training	Number of Participants
Training Course on System of Rice Intensification (SRI) and Product Stewardship for Local Farmer Technicians	4	120
Capability Enhancement Course for Agriculture Extension Worker	4	120
BREAKTALK mini forum	1	90
Hybrid Rice Production for Seed Inspectors	1	30
Assessment and Sustainability Planning Workshop cum Graduation on Major Crop-Based Block Farm Productivity Enhancement (using *PalayCheck* System) under Climate-Resilient Farm productivity Support Program	3	110
Rice Production Training in Brgy. Bagupaye, Mulanay, Quezon: *Palay* KeyChecks 1-9	2	60
Varietal Selection and Characteristics of the Approved NSIC Varieties	1	30
Training on Inbred Rice Seed Production & Certification	1	30
TOTAL		**590**

Abbreviations and acronyms

AYT - Advanced Yield Trial
ABE - Agricultural and Biosystems Engineering
AEW - Agricultural Extension Worker
ATI – Agriculture Training Institute
AESA - Agro-ecosystem Analysis
AC - Amylose Content
BLB - Bacterial Leaf Blight
BLS -Bacterial Leaf Streak
BCA - Biological Control Agent
BS - Breeder Seeds
BPH -Brown Planthopper
BPI - Bureau of Plant Industry
CGMS - Cytoplasmic Genic Male Sterility
COF - Commercial Organic Fertilizer
CDA - Cooperative Development Authority
DAS - Days After Sowing
DAT - Days After Transplanting
DF - Days to Flowering
DM- Days to Maturity
DAR - Department of Agrarian Reform
DA-RFOs - Department of Agriculture-Regional Field Offices
DoF - Department of Finance
DOLE - Department of Labor and Employment
DTI - Department of Trade and Industry
DSR - Direct-seeded Rice
DS - Dry Season
FBS – Farmers' Business School
FC - Farmers' Cooperative
FSM - Farming Systems Models
FAA - Fish Amino Acid
FGD - Focused Group Discussion
FSP - Foundation Seed Production
FRK - Farm Record Keeping
GABA - Gamma-aminobutyric Acid
GT - Gelatinization Temperature
GAD - Gender and Development
GYT - General Yield Trial
GCA - Genetic Combining Ability
GIS - Geographic information system
GEMS - Germplasm Management System
GAS - Golden Apple Snail
GL - Grain Length
GQ - Grain Quality
GW - Grain Weight
GY - Grain Yield
GLH - Green Leafhopper
GOT - Grow Out Test
HR - Head Rice
HRA - Heat Recovery Attachment
HIPS – Highly-intensified Production System
HQS - High-quality Rice Seeds
HON - Hybrid Observational Nursery
HPYT - Hybrid Preliminary Yield Trial
ICT - Information and Communication Technology
IEC - Information Education Communication
IBNM - Inorganic-based Nutrient Management
ICM - Integrated Crop Management
IPM - Integrated Pest Management
JICA - Japan International Cooperation Agency
IRRI - International Rice Research Institute
IA - Irrigators' Association
KP - Knowledge Product
KSL - Knowledge Sharing and Learning
LCC - Leaf Color Chart
LFT - Local Farmer Technicians
LGU - Local Government Units
LPS - Low Pressure Steam-operated
LE-CYPRO - Lowland ecotype Cyperus rotundus
MFE - Male Fertile Environment
MSE - Male Sterile Environment
MAS - Marker-assisted Selection
MRL - Maximum Root Length
MR - Milled Rice
MER - Minimum Enclosing Rectangle
MOET - Minus-One Element Technique
MC - Moisture Content
MAT - Multi-Adaptation Trials

MCRTP - Multi-crop Reduced Till Planter
MET - Multi-environment Trial
MYT - Multi-location Yield Trial
NAAP - National Azolla Action Program
NCT - National Cooperative Test
NFA - National Food Authority
NRAM - National Rice Awareness Month
NSIC - National Seed Industry Council
NSQCS - National Seed Quality Control Services
N - Nitrogen
NBSP - Nucleus and Breeder Seed Production Project
NFGP - Number of Filled Grains Panicle
ON - Observation Nursery
OSIS - One-Stop Information Shop
OBNM - Organic-based Nutrient Management
PL - Panicle Length
PW - Panicle Weight
PVS - Participatory Varietal Selection
PWD - Person with Disabilities
PHilMech - Philippine Center for Postharvest Development and Mechanization
PRISM - Philippine Rice Information System
PhilRice - Philippine Rice Research Institute
PSA - Philippine Statistics Authority
PTC - PhilRice Text Center
P - Phosphorus
PVS - Plant Variety Selection
K - Potassium
QTL - Quantitative Trait Loci
RCBD - Randomized Complete Block Design
RSP - Registered Seed Production
RBB - Rice Black Bug
RCEF - Rice Competitiveness Enhancement Fund
RCEP - Rice Competitiveness Enhancement Program
RCM - Rice Crop Manager
RHGEPS - Rice Hull Gasifier Engine Pump System
RPH - Rice Planthopper
RSTC - Rice Specialists' Training Course
RTV - Rice Tungro Virus
RBFHS - Rice-based Farming Household Survey
KQ - Kernel Quality
SV - Seedling Vigor
ShB - Sheath Blight
ShR - Sheath Rot
SMS - Short Messaging Service
SNP - Single Nucleotide Polymorphism
SWRIP- Small Water Reservoir Irrigation Project
SRB - Stabilized Rice Bran
SUCs - State Universities and Colleges
SB - Stem Borer
TESDA - Technical Education and Skills Development Authority
TDF - Technology Demonstration Farm
TRV - Traditional Rice Varieties
TOT - Training of Trainers
TPR - Transplanted Rice
URBFS - Upland Rice-Based Farming
WS - Wet Season
WCV - Wide Compatibility Variety
YSB - Yellow Stem Borer

Editorial team

We are a government corporate entity (Classification E) 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.

With a "Rice-Secure Philippines" vision, we want the Filipino rice farmers and the Philippine rice industry to be competitive through research for development in our central and seven branch stations, coordinating with a network that comprises 59 agencies strategically located nationwide.

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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