2017 National Rice R&D Highlights

SPECIAL DEVELOPMENT INITIATIVE





Philippine Rice Research Institute Central Experiment Station Maligaya, Science City of Muñoz, 3119 Nueva Ecija

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Special Development Initiative

I. Promotion and Conservation of Rice Science through Museum

Diadem G. Esmero

Rice Science Museum serves as the repository of Philippine rice heritage/ scientific collections, influence generations of Filipinos to appreciate rice science through different educational exhibits and learning materials, and encourage farming communities to practice advance rice farming technologies. The Rice Science Museum intensified its activities in helping the Institute attain its vision of a Rice-Secure Philippines and in supporting Department of Agriculture achieve two of its 10 basic foundation: intensive technology updating and sharing, modernization and mechanization program; and re-introduction of basic agriculture in the primary and elementary grades of the Philippine schools system. Exhibition programs are operationalized as a continuum, in which at one end, collections to be included are results of research and at the other end, and these collections, their representations, and their packaging as learning materials are presented to the public. Cultural researches, intensive review of literature, subject matter consultations, and community dialogues were employed to produce the learning materials, exhibitions, and performances. Moreover, the curatorial outputs are the result of our collaborations with the workers in the museum, tourism, agriculture, and education sector and the farmers. In implementing the exhibition programs, strong linkages with the schools, museums, and non-profit foundations were established.

Making Sense of Rice Science: Development of Multisensory Media Exhibits through Seven Arts

DG Esmero, FGE Manuel, CLB Gado, SBB Pangilinan, JKC Pangilinan, and KA Ricafort

For technologies and practices to be adopted and used, the science and principles governing them must be understood. Curtis, Reid and Ballard (2012) have strongly noted the importance of using art as another medium of presenting science and scientific research to the public. The Rice Science Museum, as a science museum, aims to make knowledge easily understandable, accessible, and available to the public. Furthermore, it intends to influence farmers and the general public to adopt technologies and have favorable attitude towards rice advocacies. For 2017, the Rice Science Museum accomplished its role in the rice R&D through development of seven sets learning materials, implementation of 14 exhibits, and innovating rice education through digital animations, kid song, and theater arts.

Mapping and Collection of Philippine Rice Material Culture

DG Esmero, FGE Manuel, CLB Gado, SBB Pangilinan, JKC Pangilinan, and KA Ricafort

The study on mapping the rice material culture of major rice producing provinces in the country provides insights on how rice farming in these areas have evolved over time. For 2017, data gathering were conducted in two major rice-producing provinces in the Philippines-- Ilocos Norte, Isabela and baseline study in Nueva Ecija. Both upland and lowland rice-farming were documented. Since cultural mapping is to be done in different stages, the researchers, thus far, has covered the most in depth documentation in Ilocos Norte and Isabela. Beliefs and practices during rice production have been noted to exist until this time, even with the changes in technology used for rice production. These documents are necessary to deeper understanding of the socio-cultural history of rice production in the Philippines, which is lacking in literatures.

II. PALAYABANGAN: THE 10-5 CHALLENGE

LM Juliano, DP Dela Cruz, and JB Grospe

The 10-5 challenge aimed to raise the rice production standard to a yield of 10t/ha at input cost of P5 per kilo of palay produced. The current average yield is about 4t/ha while input cost is about P11/kg of palay. This new initiative also aimed to provide opportunities for players in the rice sector to show what they can do to improve yield and reduce production cost. It supports the country's goal of food security and help increase farmers' productivity for global competitiveness.

Highlights:

The study was conducted for two seasons, dry and wet season 2017 at PhilRice Central Experiment Station, Maligaya, Nueva Ecija. Dry season was conducted December and wet season in June. This year's challenge was participated by 20 entries, comprised of seed companies, individual farmers, and fertilizer companies.

The study aimed to set up 20 experimental fields for two season. The field served as venue for field demonstration area for Palayabangan technologies showcased by each participant. The particular technologies were documented based on the PalayCheck System and costs are recorded for the cost and benefit analysis. The results were gathered and analyzed by the technical and socio-economics team and a board of judges. In DS 2017, Rolando San Gabriel, farmer of Maligaya, Nueva Ecija showcased his technology using the high yielding inbred variety NSIC Rc 402. He harvested 8.9t/ha at P5.96/kg. In the wet season, highest yield was achieved by a farmer from Cabanatuan, Nueva Ecija, who gained 7.1t/ha at P6.33/kg of palay.

Abbreviations and acronymns

ABA – Abscicic acid Ac – anther culture AC – amylose content AESA - Agro-ecosystems Analysis AEW - agricultural extension workers AG – anaerobic germination AIS – Agricultural Information System ANOVA - analysis of variance AON – advance observation nursery AT – agricultural technologist AYT - advanced yield trial BCA – biological control agent BLB – bacterial leaf blight BLS – bacterial leaf streak BPH – brown planthopper Bo - boron BR – brown rice BSWM - Bureau of Soils and Water Management Ca - Calcium CARP - Comprehensive Agrarian Reform Program cav – cavan, usually 50 kg CBFM – community-based forestry management CLSU - Central Luzon State University cm - centimeter CMS – cystoplasmic male sterile CP – protein content CRH - carbonized rice hull CTRHC - continuous-type rice hull carbonizer CT – conventional tillage Cu – copper DA – Department of Agriculture DA-RFU - Department of Agriculture-Regional Field Units DAE – days after emergence DAS – days after seeding DAT – days after transplanting DBMS - database management system DDTK – disease diagnostic tool kit DENR – Department of Environment and Natural Resources DH L- double haploid lines DRR – drought recovery rate DS – dry season DSA - diversity and stress adaptation DSR – direct seeded rice DUST - distinctness, uniformity and stability trial DWSR – direct wet-seeded rice EGS – early generation screening EH – early heading

EMBI - effective microorganism-based inoculant EPI – early panicle initiation ET – early tillering FAO – Food and Agriculture Organization Fe – Iron FFA – free fatty acid FFP – farmer's fertilizer practice FFS – farmers' field school FGD – focus group discussion FI – farmer innovator FSSP - Food Staples Self-sufficiency Plan g – gram GAS – golden apple snail GC – gel consistency GIS – geographic information system GHG – greenhouse gas GLH - green leafhopper GPS – global positioning system GQ - grain quality GUI – graphical user interface GWS - genomwide selection GYT – general yield trial h – hour ha – hectare HIP - high inorganic phosphate HPL – hybrid parental line I - intermediate ICIS – International Crop Information System ICT – information and communication technology IMO - indigenous microorganism IF – inorganic fertilizer INGER - International Network for Genetic Evaluation of Rice IP – insect pest IPDTK - insect pest diagnostic tool kit IPM – Integrated Pest Management IRRI – International Rice Research Institute IVC – in vitro culture IVM – in vitro mutagenesis IWM – integrated weed management JICA – Japan International Cooperation Agency K – potassium kg – kilogram KP – knowledge product KSL – knowledge sharing and learning LCC – leaf color chart LDIS - low-cost drip irrigation system LeD – leaf drying LeR – leaf rolling lpa – low phytic acid LGU – local government unit

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LSTD - location specific technology development m – meter MAS – marker-assisted selection MAT – Multi-Adaption Trial MC – moisture content MDDST - modified dry direct seeding technique MET – multi-environment trial MFE - male fertile environment MLM - mixed-effects linear model Mg – magnesium Mn – Manganese MDDST - Modified Dry Direct Seeding Technique MOET – minus one element technique MR – moderately resistant MRT – Mobile Rice TeknoKlinik MSE - male-sterile environment MT – minimum tillage mtha⁻¹ - metric ton per hectare MYT – multi-location yield trials N – nitrogen NAFC - National Agricultural and Fishery Council NBS - narrow brown spot NCT – National Cooperative Testing NFA – National Food Authority NGO - non-government organization NE – natural enemies NIL – near isogenic line NM – Nutrient Manager NOPT - Nutrient Omission Plot Technique NR – new reagent NSIC – National Seed Industry Council NSQCS - National Seed Quality Control Services OF – organic fertilizer OFT – on-farm trial OM – organic matter ON – observational nursery OPAg - Office of Provincial Agriculturist OpAPA - Open Academy for Philippine Agriculture P – phosphorus PA – phytic acid PCR – Polymerase chain reaction PDW - plant dry weight PF – participating farmer PFS – PalayCheck field school PhilRice – Philippine Rice Research Institute PhilSCAT – Philippine-Sino Center for Agricultural Technology PHilMech – Philippine Center for Postharvest Development and Mechanization PCA - principal component analysis

PI – panicle initiation PN – pedigree nursery PRKB – Pinoy Rice Knowledge Bank PTD – participatory technology development PYT – preliminary yield trial QTL - quantitative trait loci R - resistant RBB – rice black bug RCBD - randomized complete block design RDI - regulated deficit irrigation RF – rainfed RP – resource person RPM – revolution per minute RQCS – Rice Quality Classification Software RS4D - Rice Science for Development RSO – rice sufficiency officer RFL – Rainfed lowland RTV – rice tungro virus RTWG – Rice Technical Working Group S – sulfur SACLOB - Sealed Storage Enclosure for Rice Seeds SALT – Sloping Agricultural Land Technology SB – sheath blight SFR – small farm reservoir SME – small-medium enterprise SMS - short message service SN – source nursery SSNM - site-specific nutrient management SSR – simple sequence repeat STK – soil test kit STR - sequence tandem repeat SV – seedling vigor t – ton TCN – testcross nursery TCP – technical cooperation project TGMS – thermo-sensitive genetic male sterile TN – testcross nurserv TOT – training of trainers TPR – transplanted rice TRV - traditional variety TSS - total soluble solid UEM – ultra-early maturing UPLB – University of the Philippines Los Baños VSU – Visayas State University WBPH – white-backed planthopper WEPP - water erosion prediction project WHC – water holding capacity WHO - World Health Organization WS – wet season WT – weed tolerance YA – yield advantage Zn – zinc

ZT – zero tillage



Philippine Rice Research Institute Central Experiment Station Maligaya, Science City of Muñoz, 3119 Nueva Ecija

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).

PhilRice Central Experiment Station; Maligaya, Science City of Muñoz, 3119 Nueva Ecija; Tel: (44) 456-0277 • Direct line/Telefax: (44) 456-0112; Email: prri.mail@philrice.gov.ph; PhilRice Text Center: 0917 111 7423; Websites: www.philrice.gov.ph; www.pinoyrice.com

BRANCH STATIONS:

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

SATELLITE STATIONS:

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

