

Quality Rice. Quality Life.



2017
National Rice R&D
Highlights

PHILRICE
AGUSAN



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

PhilRice Agusan

Branch Direction: Abner T. Montecalvo

Executive Summary

In 2017, the station's major final outputs are categorized into research and development (R&D); extension support, education and communication services; capacity enhancement; partnerships; and development of extension modalities and production models.

Significant accomplishments on crop protection included the understanding of rice grain bug biology and the development of powder form of entomopathogenic fungi *Metarhizium anisopliae* and *Beauveria bassiana*. Several rice lines were found adaptable to Agusan environment including submerged and zinc-deficient soils. Partial result on nutrient management indicated that the optimum rate of nitrogen application for irrigated lowland rice is 95 kg/hectare.

PhilRice products and services were showcased in several public events. Several knowledge sharing and learning processes and platforms were conceptualized, pilot-tested, and used for capacity enhancement undertakings. The 10-5 challenge was instrumental in packaging of location-specific best practices that can achieve 8t/ha at P9/kg cost in wet season, and 7.5t/ha at P7/kg cost in dry season. The One-Stop-Information Shop offered farming technologies and solutions to more than 2,000 farmers, students and other stakeholders. PhilRice knowledge products were also translated into local language.

A first-of-its-kind rice boot camp for out-of-school youth in RT Romualdez, Agusan del Norte was organized. The agro-enterprise clusters of the RiceBIS project sold their produce to a high-price buyer with a difference of P2/kg. Lakbay Palay was participated in by more than 500 and 800 participants in the first and second cropping seasons, respectively.

Partnerships with local government units, regional field offices of the Department of Agriculture, Department of Agrarian Reform, Caraga State University, Father Saturnino Urios University, and Land Bank of the Philippines were either created or revitalized. Memorandum of agreements were forged. The Palayamanan and Agroenterprise projects were also initiated in neighboring communities.

The station obtained a net annual income of more than P5M in 2017, which was derived from seed production; rental from postharvest facilities, guest house, and dormitory; and from components of rice-based enterprises such as swine fattening, and production of mushroom, vegetables, and poultry eggs.

Learning Farm

Abner T. Montecalvo

The Learning Farm, is primarily used to demonstrate integrated and diversified rice-based production systems. It will provide experiential learning opportunities to learners or trainees (i.e., farmers, student-trainees) on-farm options or components. The farm options or components refer to the fundamentals/elements or composition of the whole production system as envisioned in the Clean GPS On-farm Learning Field. It aimed to achieve a holistic and comprehensive technology packages and developing alternative inputs to come up with sustainable and cost-effective rice and rice-based farming systems while preserving our natural resources.

Rice Relay Planting showcased the three growth phases of rice in a 3,000 m² plot and with sequential planting of every 30 days.

Palayabangan: The 10-5 Challenge

Abner T. Montecalvo

Despite advanced rice technologies, rice grain yield in Caraga is about 4t/ha while input cost is about P11 a kilo of palay. Thus, a study Palayabangan: The 10-5 Challenge was developed to document high-yielding technologies of hybrid and inbred varieties, which can be fine-tuned in the region.

The dry season (January to June) and wet season (July to December) 2017 cropping period of Palayabangan: The 10-5 Challenge field demonstrations were conducted at PhilRice Agusan Experiment Station. Six competing entries participated in the competition: SL Agritech Corp. (dry and wet cropping seasons), Syngenta Phil's. (dry cropping seasons), Bayer Crop Science Inc. (dry and wet cropping seasons), KAYAKAPA (dry and wet cropping seasons), Fill Rise/RJamisola (dry and wet cropping seasons), and Good Harvest/ILauzon (dry and wet cropping seasons). The participants were provided with 0.2ha plot area as demonstration farm. All activities such as costing, application of technology, and yield and agronomic data were documented for Economic Rate of Return (ERR) analysis and technology performance.

PhilRice Agusan: One-Stop-Information Shop

GF Estoy Jr., EM Gaquit, AT Montecalvo, and GA Nemeño

PhilRice Agusan is identified as one of the agro-eco tourist destinations in the province of Agusan del Norte because of its dynamic rice research and development activities.

The One-Stop-Information shop (OSIS) generally aimed to develop the skills and enhance the technical capacity of the rice farmers, agricultural extension workers, researchers and students through exhibits, field exposure and briefings, display and distribution of knowledge products. It also welcomes walk-in visitors from other regions.

The station has accommodated 2,234 visitors composed of students (46%), farmers (28%), agricultural extension workers (16%), and few (10%) visitors who did not affix their affiliations. The visitors were briefed on the current projects and activities of the station and they were toured to observe showcased technologies.

Four exhibits were displayed during field days and local events; and KPs such as books, leaflets, and rice technology bulletin were also distributed. Farmers were also encouraged to replicate the rice technologies and business enterprises of the station such as swine, mushroom, and vegetable production as other source of income.

Intensified Rice-Based Agribio System: PhilRice AES Mushroom Production

AT Montecalvo, BS Mejia, JS Darasin, and WG Libres

Mushroom production was operationalized in the station from January to November 2017 to generate income and livelihood, and maximize the utilization of rice-based biomass to increase farm income and enhance the use of resources in the rice environment. The station produces mushroom grain spawn, fruiting bags, and harvested fresh mushroom fruit.

Mushroom production component gave a station gross income of P161, 700.80 from last year's P115,583.20. Production costs was P110, 535.75 with a gross margin of P51, 165.05 resulting in a net income of P 49,598.27.

Training programs on mushroom production for students, extension workers, stakeholders, private sector, and individual farmers were also conducted. A collaborative project between the local government unit of Cabadbaran and PhilRice on mushroom production was also conducted.

Integrated Rice-Duck Organic Seed Production

GF Estoy Jr., AT Montecalvo, RR Narisma, AE Lincuna Jr., and C Jugalbot

This project aimed to explore the positive integration of ducks in the irrigated rice farm for increased yield and reduced rice seed production cost. It also aimed to generate additional income by producing good duck meat and eggs.

After two cropping seasons (DS & WS 2017), the 1ha rice-duck demo farm seed production gained an income of P90,277.22 per hectare and harvested 3,883 pieces of good eggs. Pateros ducklings was also mass produced in the project. Four low-cost incubators (homemade incubator) were fabricated at PhilRice Agusan and successfully produced 215 Pateros ducklings.

Rice Community Business Innovations System in Caraga and Northern Mindanao

AT Montecalvo, GF Estoy Jr., ST Rivas, RS Parejo, AP Tape, EM Gaquit, RR Narisma, ES Moneva, and SMB Catubig

Three agro-enterprise clusters are developed in Esperanza, Agusan del Sur composed of 43 clustered farmers. The agro-enterprise clusters are developed using the 8-step approach to agro-enterprise development. A techno-demo covering 53.1 ha was established; 31.1, irrigated, while 22, rainfed. The irrigated techno-demo had an average yield of 4.05t/ha, a half ton difference from the baseline yield of the same cropping season.

The rainfed areas had an average yield of 3.73t/ha, a stark contrast from the 3.0 t/ha yield of WS 2016. Clustered farmers used high-quality seeds and 25 of 43 clustered farmers used Minus One Element Technique.

Farmers are also linked to the market through market chain study and building of relationships with Business Development Services providers. Clusters has contacted buyers and delivered to the buyer with the highest price.

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 – cytoplasmic 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

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 nursery
 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

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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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