Quality Rice. Quality Life.

2017 National Rice R&D Highlights

INFORMATION SYSTEMS DIVISION

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

TABLE OF CONTENTS

Information Systems Division

Jovino L. De Dios

Executive Summary

Rice production data, information, technological knowledge, innovations, and models are PhilRice resources that should be accessible by the users anytime. Using ICTs, standard procedures, good practices, policies, and information systems infrastructure encourage PhilRice clients to transact with the Institute regardless of time and their location.

The Information Systems Division (ISD) develops and improves Agricultural Information Systems (AgIS) for rice research and development and the Management Information Systems (MIS) for corporate services to deliver more stable, accurate, and timely information support. Development and improvement strategy is based on using man-to-machine and machine-to-machine concepts of operations (M2M2). It integrates multiple information technologies into unified system to provide timely services whenever and wherever needed.

These information systems infrastructures are being developed internally and/or in collaboration with other agencies or divisions to pool the resources and increase input efficiency. As mainstream infrastructure, AgIS assists PhilRice clients, researchers, and other rice stakeholders in collecting, transmitting, storing, analyzing and sharing rice-related data and information. The MIS helps in the administrative processes, including financial, human resource, material, and other PhilRice resource management processes.

ISD also provides technical services and helps in capacity-building. It also acquires, sustains, and maintains the systems and applications to safeguard their authenticity, availability, and security.

I. Business Continuity

Luis Alejandre I. Tamani

Business continuity or business continuity planning is the development of methods to prevent or recover from potential threats that may disrupt business process. With everyone having access to the institute ICT resources, security is very crucial for protection. With all the data that the Institute have accumulated throughout the years, valuable information were created and these are part of the Institute's assets. Hence, these assets must be saved and secured.

Adoption of new technologies comes with a price. Useful life of an IT equipment is set at five years. Repair and maintenance extends its life to more than five years. There are more than 400 computers in the Central Experiment Station and branch stations.

The project focused on the capacity enhancement of staff. This requires availability and access to current scientific and technical literature, as well as related fields covered by PhilRice research and development. Access and continuous upgrading of printed, web, and IT resources and infrastructure to support service on a 24/7 access basis is essential.

ICT Security, Connectivity, Viability, and Disaster Recovery for Resiliency (DIREC) (Including System Administration)
CD Diaz, LAI Tamani, JL De Dios, VJA Taylan, CU Sicat, DG Cargamento, RT Apuada and RF Lauriaga

ICT security is a crucial issue with the increase of information shared online and access to the Institute's ICT resources. The ICT infrastructure must be secured against external and internal threats. Disaster Recovery Plan (DRP) must be established to prepare, respond, and recover before and after disaster.

The main focus of this document is to provide a plan to respond to a disaster that may damage PhilRice computer systems. This plan is designed to fast track the recovery when disaster occurs. The DRP of PhilRice ICT was updated to include the new threats, solutions, and best practices. Procedures were crafted to guide the technical team in responding to disaster effectively and efficiently.

Maintenance and Improvement of ICT Infrastructure and Communications Requirements
LAI Tamani, VJA Taylan, CU Sicat, DG Cargamento, RF Santiago, RF Lauriaga, and RT Apuada

The study generally aimed to maintain the capability of the Institute's ICT resources to perform in its optimum capacity thereby providing good user computing experience. This can be done through maintenance of the Institute's ICT infrastructure and assets, making its network highly reliable, and maintaining the systems and databases always near to 100% operational. New applicable technologies are evaluated for adaption.

Library Management
EE Joshi, VP Salvador, M Pineda, and RJD Villanueva

The Library maintained its main operations including: acquisition of knowledge materials, cataloguing (classifying, descriptive cataloging, metadata) and made these available in its Online Public Access Cataloging (OPAC) Follett Destiny Library Manager for literature searching, indexing of rice and related articles including reprints, searchable in our xCardbox database, outsourcing of articles not available in our databases, harvesting of open and free access publications to populate our digital library, current awareness service promotes up-to-date news, announcements, advisories on information relevant to our researches e. g. daily news monitor, new books, referencing and citation styles. The Library website (http://philrice.gov.ph/libraryweb/), OPAC Follettt DLM ver. 14, and XCardbox underwent continuous upgrading and editing. The library surpassed its targets for all its activities and clippings scanning. Collection was increased to 7,388 OPAC entries; 25,877 indexed articles; and 44,767 pdfs in the Digital Library.

The ICT applications roadshow, "Accessing InfoSmart…Now downloading," was conducted in four branch stations (Los Baños, Negros, Bicol, and Midsayap) with 170 participants from PhilRice, DA agencies, LGUs, SCUs, and other stakeholders. This activity shared the information and knowledge available in the PhilRice information systems for wider access and usage. "Data Privacy Act of 2012 & product demo: PlagScan & Grammarly (plagiarism detection software)" was also conducted as institutional seminar at the Central Experiment Station.

II. Sustainable Enterprise Information System Solutions for PhilRice RD&E Operations

Jayson P. Gamilla

Information systems (IS) technologies were developed, acquired, and maintained by the Institute since the establishment of its Information and Communication Technology (ICT) arm in 1997. Over the years of the Institute's commitment to rice research and development, the IS manage a sizeable volume of data produced. However, there is a need to sustain and secure the authenticity and completeness of these data.

Currently, data and information on rice-related technologies are scattered among different PhilRice programs, divisions, and stations. The difficulty in obtaining complete information can sometimes be restricted due to different implementing policies. There is a need for an Integrated Information System that allow these data to be accessed, viewed, integrated, analyzed, and shared as needed by all users in one location. GIS technology

will also be helpful to locate PhilRice presence (project implementations, technology promotions, site-specific information) in an interactive map embedded to the system.

Agricultural Information Systems (AgIS) for Rice Production and Development Works

JL De Dios, JP Gamilla, AC Arocena Jr., AF Valenton, RD Rimando Jr., and HDC Cayaban

The use of information technology (IT) in agriculture has dramatically increased in rice research, extension, and production. The study aimed to develop a responsive, stable and timely information system and processes; integrate multiple information technologies and systems that can assist managers and stakeholders. It also aimed to help the agricultural industry in collecting, transmitting, storing data, and sharing information using the most cost-effective information systems infrastructure.

PhilRice Soil Information System: A Tool for Effective Crop Management

WB Collado, JL De Dios, SD Cañete, RV Bermudez Jr., RS Roberto, and ML Sevilla

The Philippine agriculture needs a user-friendly and readily-available data set on soils in achieving national food security. The available soil information in the form of survey reports or other similar publications are limited, too technical, and difficult to understand by farmers, agricultural extension workers, policy-makers/planners, and even technical people in agriculture. Thus, PhilRice shifted from a limited static printed soil survey reports and took advantage of information technology for large data management and wide-spread soil information dissemination.

In this study, IT was used to provide a comprehensive set of soil information in the selection of crops, establishment of appropriate and effective crop management, and enhancement of agricultural productivity.

Corporate Information Systems Development, Management, and Sustainability

AC Arocena Jr., BC Sotto, JP Gamilla, JL De Dios, and JQ Palileo

This study helped strengthens PhilRice by improving the existing information systems and developing new information systems to meet the present needs.

The study enhanced existing corporate operational systems and the monitoring and support systems to provide faster transactions, easier access of data, and real-time support for internal and external users. Corporate Systems include: (1) HRIS for Human Resource and Management Office, (2) PDTS and (3) DMS for Records Office, (4) Online Reservation System for Visitors and Conference Services Office, (5) Online Registration System (eTala) and e-raffle system for institute activities, (6) Service Request System (ICT HelpDesk) for Information Systems Division, and (7) PMS for Corporate Services Division.

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
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
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@philric
PhilRice Batac, MMSU Campus, Batac City, 2906 Ilocos 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: isabela.station@philrice.gov.ph
PhilRice Los Baños, UPLB Campus, Los Baños, 4030 Laguna; Tel: (49) 536-8620; 501-1917; Mobile: 0920-911-1420; Email: losbanos@philrice.gov.p
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