



# Philippine Rice R&D Highlights 2013

INFORMATION SYSTEMS  
DIVISION





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# INFORMATION SYSTEMS DIVISION

*Division Head: JL De Dios*

## Executive Summary

The project established several information systems for multi-mode data collection, transmission, organization, storage and retrieval/sharing required by its clientele. Realizing real-time to near real-time data reporting from different sites.

The development of multi-platform data collection, transmission and retrieval has been established in Web-based and Smartphone-based applications. A management monitoring information system has been established in the Palayabangan IS, combining socio-economic and technology identification data. The prototype of smartphone data gathering application has been elevated from Symbian to Android Platform embedding GPS-data in the process of data collection. The seed information system has been improved and restructured to cater barcode scanning for identification and traceability. The Dispatch System was transferred from a stand-alone into an online accessible web-page implementing systems improvement, database restructuring, and some modifications to satisfy user's and management's requirements.

Established the prototype of PCPO project monitoring information system to receive, track and compile reports, abstracts and protocols. With several levels of access, the system will cater to report, abstract and protocol submission of leaders. Another system established was the document management system and document tracking sub-system deployed in a stand-alone version in branch stations. A similar document bank has been developed for SED. A web-based registration and monitoring "e-Tala" subsystem has been established and tested in some previous institutional events. The library cardbox running on DOS platform has been converted to web-based application.

Another study developed a prototype for laboratory resources inventory, management and maintenance and sharing in near-real-time. The system is capable of managing stock inventory and borrowing, alerts for maintenance schedule.

The modified vehicle maintenance and inventory information system has been redesigned and restructured to comply with the requirements of an online system, it is composed of servicing data inputting, monthly and annual summary of parts replaced, date serviced, cost, and type of service performed.

The farm operation management system has been improved to cater to different types of crop establishment by researchers.

Established and strengthened the integration of local data and mashed-up with Google Maps API for an online presentation of different types of datasets. Providing users and managers an overview of the spatial distribution of the different stations of PhilRice, NCT/MAT sites, and project sites, among others. Another tested format was the conversion of GIS data into KML format that can be embedded into Google Earth application. This mashup has been tested using the developed smartphone application with embedded GPS data as data capture module and presented using Google Maps API, data refresh is dependent on the established rate on the server-side process.

**I. Use of information systems (IS) in collection, transmission, organization, storage and retrieval of field data and information from multiple sites**

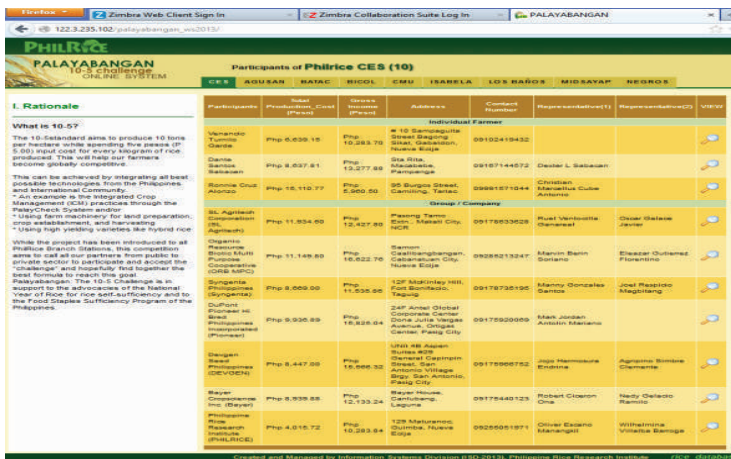
*AC Arocena Jr., LdR Abaoag, S Brena, and E Sibayan*

This study aims to facilitate efficient and real-time data collection, organization, storage, retrieval and sharing information with the use of existing information technology (IT) infrastructures.

**Highlights:**

*Palayabangan Database Systems*

- Developed an online management Information system for Palayabangan challenge data capture and monitoring systems.



**Figure 1.** The Palayabangan main page

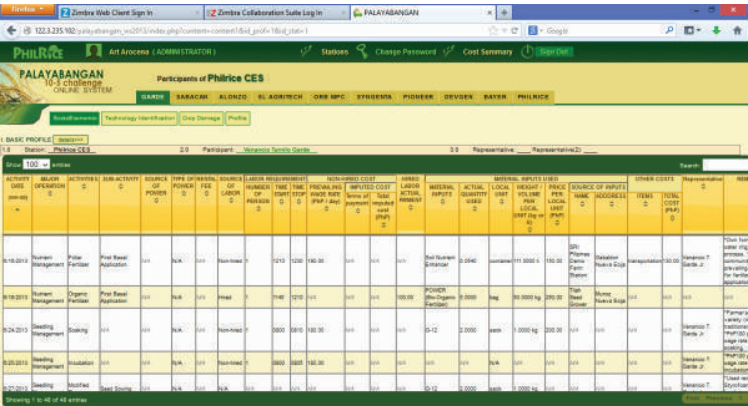


Figure 2. The Socio-economic data inputting user interface

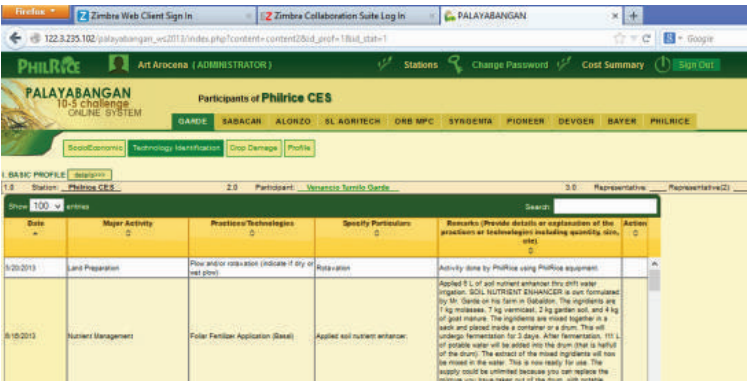


Figure 3. The Technology identification data inputting user interface

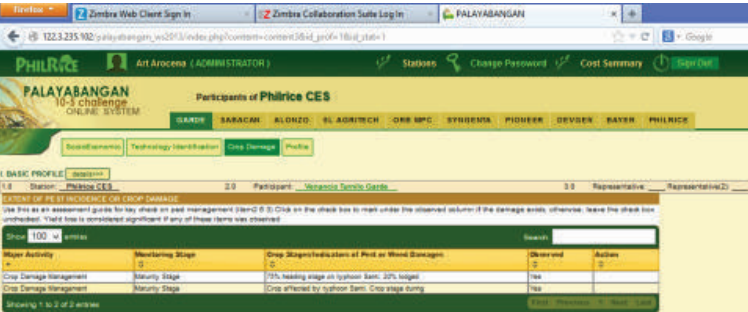


Figure 4. The Crop damage data inputting user interface



**Basic Profile**

Station:	Philrice CES	Area Planted (ha):	0.2
Category:	Individual Farmer	Seed Source:	
Participant:	Venerable Fernando Sando	Sex: (M/F):	10
Age:	35	Height (cm) (m):	40.00
Recommended (kg):		Seeding rate (kg/ha) (kg):	14.00
Recommended (kg/ha):		Seedling source:	22.36 %
Address:	# 10 Sampaguita Street Baysang Subd. Bantayan, Bantayan Bridge 0912818422	Seeding rate (kg/ha):	0.85
Contact No.:		Land received (ha):	0.80
E-mail Address:	gandoverano1@gmail.com		
Area planted (ha):	0.2		

Information about machine owned used in the project

Machine	Year acquired	Acquisition cost (PHP)	Repair and Maintenance cost (PHP)	Action

**Workplan for economy**

FARM ACTIVITY	DATE	PACKAGE/VERIFIED TECHNOLOGY	ACTION
1. Seed Quality			
2. Seedling Management			
3. Planting			
4. Harvesting			
5. Post-harvest			

Figure 5. The Participant Profile data inputting user interface

#### *PhilRice Vehicle Information Systems*

- Enhanced the PhilRice Vehicle Information System to comply with the new requirements of the vehicle dispatch unit.
- Transformed the stand-alone database system to an online Information System (IS).
- Restructured the database structure, presentation and printing modules of the IS.
- Established a working model for public users of the dispatch system.
- Linked the IS to the PhilRice Information System.

#### *IGO Point of Sale and Warehouse Database Systems*

- Perform initial inventory of the sales and warehouse operational process, equipment requirement and reports generated.
- Recommended equipment requirements.
- Presented a process flow design to validate conformity of suggested check points with existing process.
- Restructured the database systems to incorporate BARCODING.
- Gathering useful toolkits to better implement modification to the system.
- Conducted orientation and immediate response to queries from different stations.
- Enhanced the barcode layout of rice wine barcode.



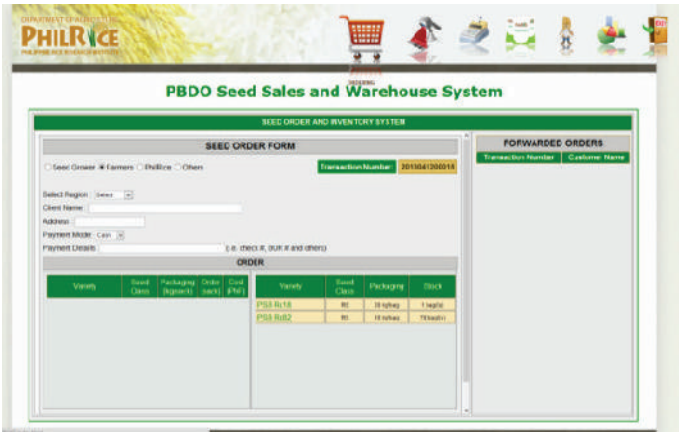


Figure 6. IGO Point of Sale and Warehouse Database Systems user interface.

Mobile-phone Applications development

- Developed a prototype for gathering GPS coordinates using SMS as mode of transmitting data into a database.
- Concept proof of the developed application in Bulacan, Pampanga, Nueva Ecija and Tarlac provinces.



Figure 7. Interactive PhilRice Telephone Directory.

**II. Online rice research and development abstract information system**

MA Gacutan, TL Briones, and RZ Relado

This is a web-based management information system that monitors reports and protocols of programs, projects and studies. It is an interactive portal where reports can be submitted and status can be tracked. It has different access privilege and customized user interface based on log-in credentials. Project and Program Leaders can monitor submitted reports and has the privilege to check, put remarks or accept submitted reports.

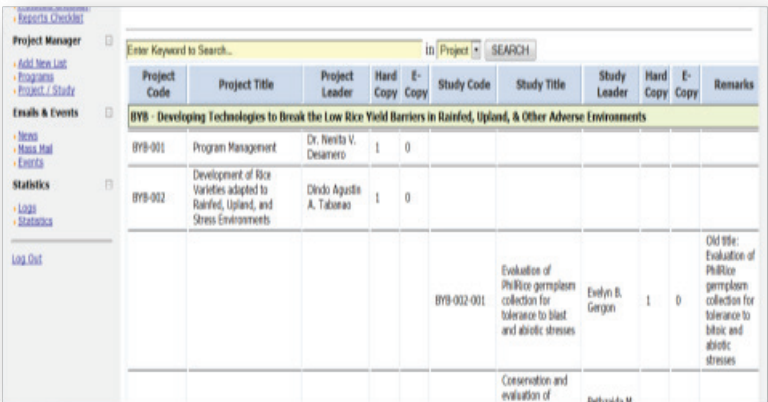
The PCPO can monitor status, track history, view profile (study, project, program), update and manage the reports and protocols submitted.

Currently the system is getting ready for its alpha testing. Additional modules are still on process. The database system for MOAs and other agreements are still on its development stage. Alert system and some restructuring of layouts and presentation are on-going.

**Highlights:**

PCPO Interface

- a.      Project Monitoring Option – Reports and protocols monitoring page. General view to check and monitor whether if they already submitted protocols or reports.



The screenshot displays the Project Monitoring Option interface. On the left is a sidebar with navigation links: Home, Reports Checklist, Project Manager, Add New List, Programs, Project / Study, Email & Events, News, Mass Mail, Events, Statistics, Logs, and Statistics. The main content area features a search bar with the text 'Enter Keyword to Search...' and a dropdown menu set to 'Project'. Below the search bar is a table with columns for Project Code, Project Title, Project Leader, Hard Copy, E-Copy, Study Code, Study Title, Study Leader, Hard Copy, E-Copy, and Remarks. The table contains three rows of data. The first row is for 'BYB - Developing Technologies to Break the Low Rice Yield Barriers in Rainfed, Upland, & Other Adverse Environments'. The second row is for 'BYB-001 Program Management' by Dr. Nestor V. Desamero. The third row is for 'BYB-002 Development of Rice Varieties adapted to Rainfed, Upland, and Stress Environments' by Cirilo Agustin A. Tabanao. A fourth row is partially visible for 'BYB-002-001 Evaluation of PhilRice germplasm collection for tolerance to blast and abiotic stresses' by Evelyn B. Gergan.

Project Code	Project Title	Project Leader	Hard Copy	E-Copy	Study Code	Study Title	Study Leader	Hard Copy	E-Copy	Remarks
<b>BYB - Developing Technologies to Break the Low Rice Yield Barriers in Rainfed, Upland, &amp; Other Adverse Environments</b>										
BYB-001	Program Management	Dr. Nestor V. Desamero	1	0						
BYB-002	Development of Rice Varieties adapted to Rainfed, Upland, and Stress Environments	Cirilo Agustin A. Tabanao	1	0						
					BYB-002-001	Evaluation of PhilRice germplasm collection for tolerance to blast and abiotic stresses	Evelyn B. Gergan	1	0	Old title: Evaluation of PhilRice germplasm collection for tolerance to biotic and abiotic stresses
						Conservation and evaluation of	PhilRice, M.			

**Figure 8.** Project Monitoring Option

- b. Project Manager Page Option – Page to update/ add new list of study/project/program, add remarks, track history, monitors status, view profile and delete projects profile.

Project Manager

• Add New List

• Programs

• Project / Study

• Events & Events

• News

• Press Mail

• Events

Statistics

• Logs

• Statistics









Log Out

Enter Keyword's to Begin Search

in Program...

Status... SEARCH

Filter view by Program...

Proj/Study Code	Proj/Study Title	Proj/Study Leader	Location	Implementing Agency	Duration	Status	Remarks	Action
BYB-001	Program Management	Dr. Nestla V. Desanero				Ongoing		 
BYB-002	Development of Rice Varieties adapted to Rainfed, Upland, and Stress Environments	Dindo Agustin A. Tabano	Nueva Ecija, Isabela, more...			Ongoing	11-001 - change in PDM (specific QVT/Targets)	 
BYB-002-001	Evaluation of PhilRice germplasm collection for tolerance to blast and abiotic stresses	Evelyn S. Gergoo	Nueva Ecija and other stress-prone areas		2011-01 to 2013-12	Ongoing	Old title: Evaluation of PhilRice germplasm collection for tolerance to biotic and abiotic stresses	 
BYB-002-002	Conservation and evaluation of traditional rice varieties in Northwest Luzon	Beltranda M. Cabutan	Northwest Luzon	PhilRice Batas	2011-01 to 2014-12	Ongoing		 

Project Monitoring > History

History Track: BYB-002-001

Fund Code	Description	Author	Date Entered
BYB-002-001	Old title: Evaluation of PhilRice germplasm collection for tolerance to biotic and abiotic stresses	Flor Gacutan	2012-05-24 13:26:32

Cancel Add Remarks

Figure 9. Project Manager Page Option

c.      Reports' Uploader Page



**Figure 10.** Reports Upload Page

PhilRice Document Tracking System (PDTs). PDTs is a web-based application that keeps track of the movement of the documents. The upgraded version or PDTs ver. 02 includes an admin monitoring page for top and middle management. The monitoring page features the summary report of transactions of each division, the total and list of overdue documents, and the historical view and details of each document. Created scripts to automatically calculate and store the time spent by each concerned office in processing documents. Developed scripts to archive and set time timer delay for documents. Different pages were also developed for different type of users (AAs, division heads, deputies and directors). The application was optimized to upscale the speed performance and conduct different tests to check and fix the bugs and compatibility issues. Conducted system back-up. The new version was already tested and launched last June 2013.

PDTs was already deployed and used by branch stations. Since the start in 2010, there are already 250,000 transactions logged at PDTs and an average of 60, 000 transactions per year. The front end administration was managed by the Records Office.

PHILRiceOnline Document Tracking System

Home · ASPPD Account

Welcome magacutan | June 17, 2010 - 1:41 pm Log out

New Transaction Incoming Documents Active Documents Outgoing Documents Tracking History / Summary Comments?

Incoming Documents

[A] [C] [F] [E] [O] [R] All

Enter Barcode Number

Accept

DATE SENT	FROM	TYPE	PARTICULARS	ATTACHMENTS	TO
06-17-2010, 11:37 am	oed	C	Letter of Analysis Tels dated June 11, 2010 to RAB re invitation for the Global Environment Facility (GEF) 5 Portfolio Identification Exercise on June 22-23, 2010 at Imperial Palace Hotel, Queens City (oed).		ASPPD-Obisery R. Jemmy Q.
06-17-2010, 11:04 am	mms	C	Letter from Akira Yamashita (Professor from Nagoya University) dated May 31 re establishment of research partnership with PhilRice, October 2010 to March 2014. (oed) (mms).		ASPPD-Rosel

Figure 11. PDTS incoming page for AAs

PHILRiceOnline Document Tracking System					
REPORTS OVERDUE DOCUMENTS TRACKING SUMMARY			Welcome director, Profile   February 4, 2014 Log out		
			Enter keyword to search document...		SEARCH
Office (click linkers to sort)	Overdue (a)	Not properly tracked (b)	Properly tracked and immediately responded (c)	Total Transactions (d) a+b+c	Performance Rate [1-((a+b)/d)]*100
ADHIN	1	72	1123	1196	93.9
ADHIN_Agusan	56	0	0	56	0.0
AGUSAN	129	0	5	134	3.7
ASPPD	41	11	393	445	88.3
BATAC	4	0	8	12	66.7
BDO_LB	3	0	0	3	0.0
BDO_Midsayap	6	0	0	6	0.0
BICOL	7	0	2	9	22.2
BUDGET	0	23	32	55	58.2
CASH	0	1	0	1	0.0
CASH_LB	1	0	0	1	0.0
CCC	9	0	313	322	97.2
COA	49	2	0	51	0.0
CPD	0	1	188	189	99.5
DEVCOH	1	0	354	355	99.7
FBIANCE	275	358	158	791	20.0
FBI_LB	29	0	0	29	0.0
GRD	1	7	199	207	96.1
HRM	98	40	2609	2747	95.0
----	-	-	----	----	----

Figure 12. PDTS monitoring page for top and middle management

PhilRice Document Management System (DMS). DMS is a web-based databank system that manages PhilRice documents and records from 1987 up to the present. It has a search function with restrictions depending on the user access privilege and a compartmentalized storage system that allows divisions to store and retrieve their documents. This was already introduced to branch stations and used to search issuances and related documents. The additional layer that

was integrated in the system is the hash encryption of the file when uploaded to the database. Script optimization and compatibility issues were also addressed to upscale the speed performance of the system.

Currently it contains more than 9, 600 different types of documents. It has an average of 12, 000 views and/or downloads in a year.

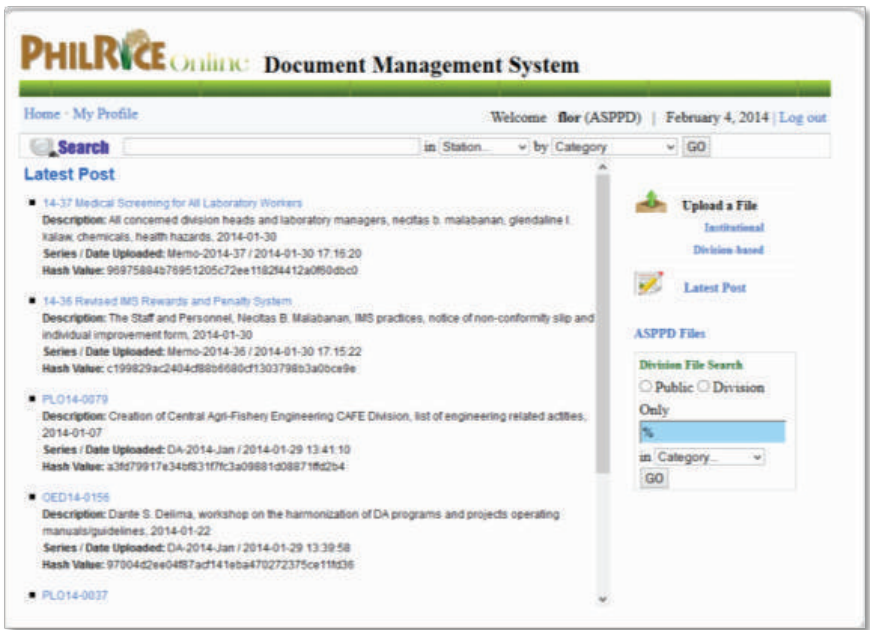


Figure 13. DMS Search Page

Socio Economics Division (SED) Databank. This is an online repository of SED abstracts, working papers, policy briefs, rice situationers, rice related laws and position papers. It has a search engine that enables users to view and download documents depending on the restrictions made by the document uploader or administrator. Documents were classified as for public, for division only, and confidential. At present, it contains 185 different types of documents. This can be accessed at [dbmp.philrice.gov.ph/databank/](http://dbmp.philrice.gov.ph/databank/).

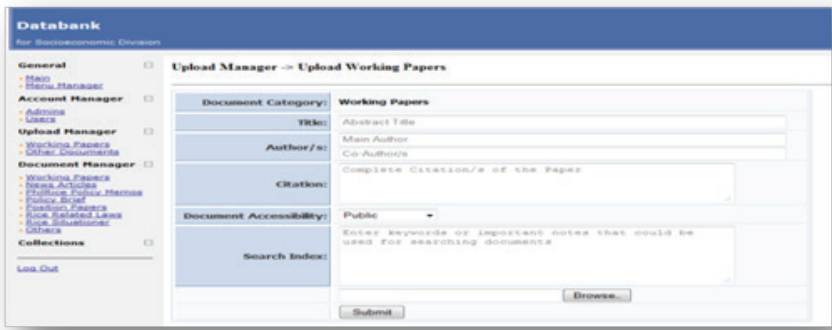


Figure 14. SED Databank Administration Panel for Uploading Documents



Figure 15. SED Databank Search/View Page

- e. Tala: Registration and Attendance System. eTala is a web-based registration and attendance system piloted last April 2013 during the Lakbay Palay (Field day) event. More than 1500 participants attended the said event and it took 2 hours to register them all with an average of 4.5 seconds for each participants. Before, using the manual system, it took 3 to 4 hours to finish the registration of participants and the tedious task of counting the total attendees were done manually. eTala system conducts a pre-registration of participants and sends a barcoded e-ticket. During the event the e-ticket will be presented to confirm and log the participants' attendance.



Their names will also be tagged or included in the electronic raffle list. The system also stores the profile of participants for future references. It also provides an immediate information about the number of the expected attendees, the total number of participants who attended and the number of walk-in participants. The system was already used in 3 events of PhilRice: the 2 regular Lakbay Palay (field days) and the Run4Rice.

The development of eTala version 2 is now on process which includes multi-events function, scheduler feature, directory and profiling module, and reports and monitoring functions.



**Figure 16.** eTala - Lakbay Palay Attendance Page. Keyin the e-ticker number or use a barcode reader to log participants

Figure 17. Run4Rice Pre-registration Page

**Lakbay Palay Evaluation Survey Form.** This is a web-based input form used by SED to enter and organize the filled-out survey forms of Lakbay Palay. Stand-alone and web-based versions were designed for SED encoders. The database results were used by SED to generate different types of statistics and analysis.

Figure 18. Lakbay Palay Evaluation Survey Form.

Conversion of the Library Card Box data to a web-based platform. The Library Card Box application runs on a DOS platform and stand-alone desktop computer. There is difficulty in indexing and retrieving information because the interface is not user-friendly. In order to access the book details you need to key in query command lines in the system. Since the system is already obsolete, the maintenance and data back-up is also tedious because you need a floppy disk to back-up or you need to detach the hard disk to perform the back-up. Currently, some of the contents were already converted to a structured database and web based access. The formatting and data population is still on-going. The prototype portal of the card catalog was already developed but not yet transferred to production. The main feature is the search function which includes author, title and keyword search.



**Figure 19.** Library Card Box user interface

### III. Unified information system of Philrice laboratories for quality service and efficient research utilization (LUIS)

MA Gacutan, and PhilRice laboratory managers

LUIS is a web-based tool that will help manage the laboratory resources inventory, data management, equipment performance and maintenance records. This system will provide “near real time” assessment of equipment performance and stocks inventory. An information system will help laboratory technicians and administrators to manage supplies and equipment efficiently in which it has an impact on the quality of the services provided by the organization. The system has 3 modules: Borrowing, Available Stock, and User Management. It provides up-to-date information

on available stocks of all laboratory resources (chemicals, supplies, materials and equipments), equipment maintenance, data management and information sharing. The system is designed to multi-users and multi-laboratory platform. Once the user successfully logged in, the system will automatically route to its assigned laboratory and defined user access privileged.

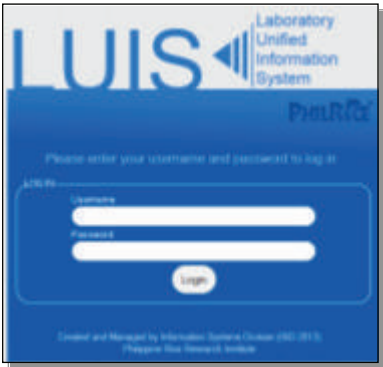


Figure 20. Login form for LUIS

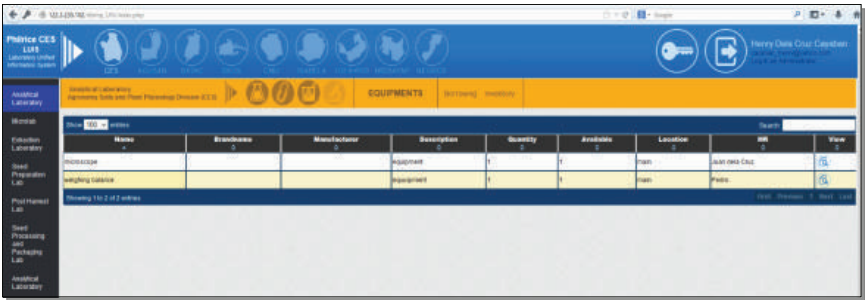


Figure 21. LUIS main page

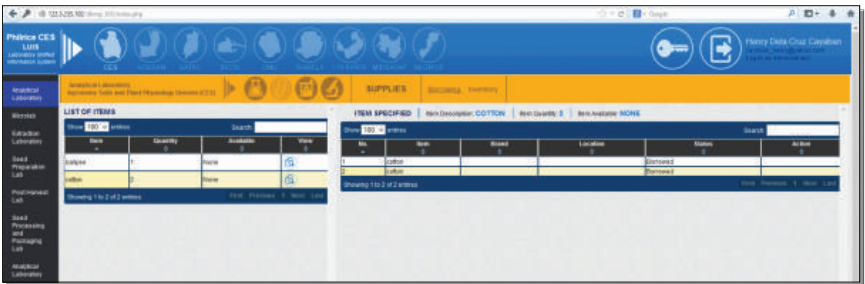


Figure 22. LUIS borrowing page

Gene Bank Management Information System (GEMS). Report Monitoring System was added in GEMS. It monitors the monthly movement of accessions and collections of the Gene Bank. Reports are in tabular and graphical formats that can be printed or downloaded.

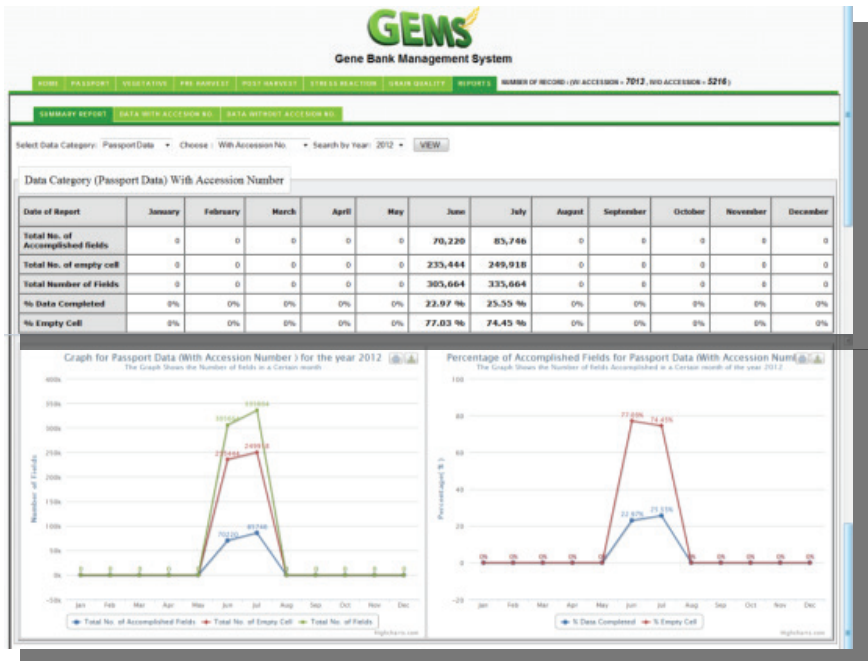


Figure 23. GEMS user interface

#### IV. Computer-aided farm operations management and maintenance system

AC Arocena Jr., and PBDO Office

Farm operations for the research and seed production farms are tedious tasks. Manual monitoring and scheduling of farm activity requests, progress and accomplishments take a lot of time and effort. Similarly, farm equipment maintenance and status checks need equal importance for smooth field operations. When these processes are not well-planned and coordinated, these oftentimes cause problems, confusion, delays or waste of resources.

The implementation of a computer-aided farm operations management and maintenance system can resolve these problems by providing a system to facilitate feedbacks, good planning and monitoring to farm manager. The efficient database driven inputting module systematically

organizes and stores data and processes. The equipment inventory subsystem provides equipment monitoring and maintenance scheduling to maintain top condition of farm equipment. An integrated MIS will simplify the tedious task handled by the FOM unit to efficiently perform personnel and equipment management. These can maximize the use of all available resources and systematically document the processes for better improvement in the future.

The whole system shows the current, overdue and future activities within a week span of time. This console can also be used to post activity request, accomplishments and problems as internal communications channel by the FOM unit and all concerned PhilRice staff.

The FOM task manager can be accessed online to remotely monitor the progress of day-to-day field operation activities to farm manager and all concerned PhilRice staff anywhere and any time. This online availability of the system can possibly integrate a cellphone-based requests form that increases its functionality.

The objective of the study is to upgrade the existing FOM task manager into an FOM Information Systems to increase functionality in managing farm operations at PhilRice.

**Highlights:**

- Performed modification on the systems' request inputting form to simplify farm activity request for researcher.
- Established a more stable user management system to accommodate all PhilRice staff and researchers.
- Started concept design on the development of a farm machinery inventory and management sub-system, the component which will complete the transformation of the FOM task manager into FOM Information Systems.
- Gathering data and information required for the development of the machine inventory system.
- Establishing a prototype for the machine inventory system.

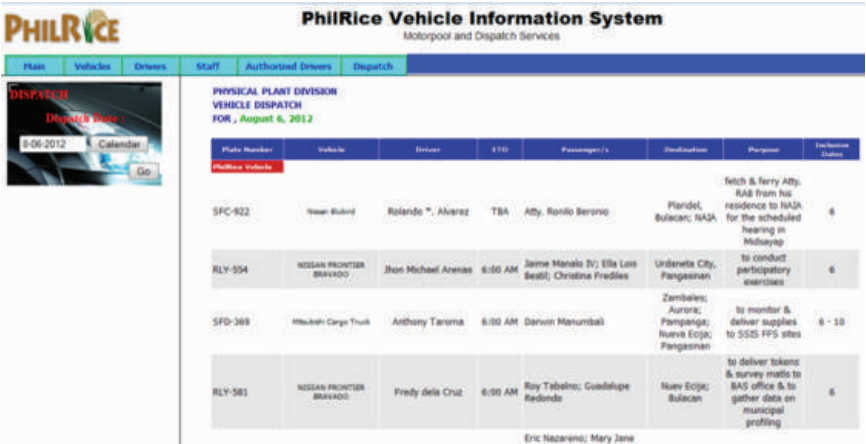


Figure 24. The PhilRice Vehicle Information System

V. Electronic map creation and conversion for interactive GIS-aided presentation

AC Arocena Jr., WB Collado, MA Gacutan, and JL de Dios

Maps are the visual representation of the spatial distribution of any data throughout an area. It is mostly used for land evaluation, spatial planning and agricultural research, development and extension activities. Through information technology, interactive electronic maps are now becoming commonly available online which are free and easy-to-use. Maps clearly present, summarize or detail geo-related information from specific location anywhere in the world. It is generally being developed using GIS/GPS technologies which allow more interactivity among users and developers.

The study aims to establish an interactive GIS mash-up as geo-referenced data presentation through the internet.

Highlights:

- a. Performed data modelling and presentation selection process.
- b. Converted more than 35 different map data into online accessible GIS mash-up presentation with Google Earth.
- c. Established a web-link for easy accessibility of the converted maps.



- d. Established partial map for PhilRice projects sites map in kml format.
- e. Provide PhilRice projects site map to Devcom and ODEDD.

#### VI. Improving security, viability and connectivity of the center's data AC Arocena Jr., LA Tamani, MA Gacutan, and JL de Dios

Systems (IS) have been the most essential means to properly administer processes and manage data within an organization. The integral parts of an IS are persons, records, and activities that collect, store, process, and communicate the data and information within a domain. The Management Information System (MIS) now uses the inter-linkages among modern information technologies. Most common are the internet, short messaging system (SMS), geo-tagging techniques (GPS, GIS and RS), and database systems. These are tools used to collect, store, and deliver data and information in a real-time or near-real-time mode and facilitate information flow among a wide range of stakeholders, from farmers to decision-makers.

A well-maintained and secured MIS effectively shares data and information presented online. Ensured web presence enables clients to access valuable information 24/7. The study aims to establish a system of data security against man-made natural causes of data losses.

#### **Highlights:**

- Performed data and system back-up regularly.
- Restructured the systems' user management to systematically identify and provide access only to sub-systems that has privilege with the logged user.
- Established a stand-alone version of the Document Management and PhilRice Document Tracking Subsystem.
- Deployed these subsystems to PhilRice Isabela; the version serves as back-up in case internet connectivity is not available.
- Updated the Farmer's Q and A database.
- Installed and evaluated Network Attached Storage (NAS) back-up system.
- Started the initial web design/layout of PRISM website.
- Redesigned the rice seed stock inventory system to conform to PRISM website.

- Transferred the user management system to the PRISM server.
- Implemented a more complex user access management.
- Updated the telephone directory.
- Encoded the seed sales data in Geographic Information System data management system.
- Disabled all RSO access in the user database.
- Database all participants in the 25th R&D conference.
- Local database build-up of 15th to 25th R&D conference participants.
- Updated the seed growers database of Region 3.
- Retrieved and databased Irrigations Systems in Region 3.

**Corporate Website.** Configured additional features and enhancement of PhilRice website backend and content administrator functionalities. Inserted the thumbnail label/field for the homepage articles. Created the staff profile database and form for managing staff profiles. Developed the rice science database and form for managing rice science page. Provided technical assistance to PhilRice corporate website for upgrade and enhancement concerns. Evaluated and configured a news mailer for sending electronic articles to PhilRice partners and stakeholders.

**Online Library.** Currently developing the library website and management system for backup and transfer of some data to web-based applications for accessibility and availability of information.

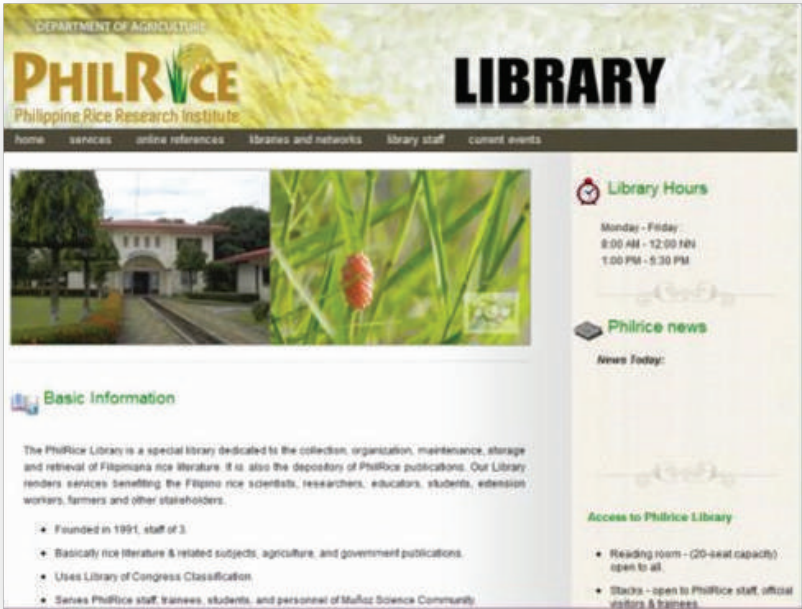


Figure 25. The PhilRice Online Library user interface

## Abbreviations and acronymns

ABA – Abscicic acid	EMBI – effective microorganism-based inoculant
Ac – anther culture	EPI – early panicle initiation
AC – amylose content	ET – early tillering
AESA – Agro-ecosystems Analysis	FAO – Food and Agriculture Organization
AEW – agricultural extension workers	Fe – Iron
AG – anaerobic germination	FFA – free fatty acid
AIS – Agricultural Information System	FFP – farmer's fertilizer practice
ANOVA – analysis of variance	FFS – farmers' field school
AON – advance observation nursery	FGD – focus group discussion
AT – agricultural technologist	FI – farmer innovator
AYT – advanced yield trial	FSSP – Food Staples Self-sufficiency Plan
BCA – biological control agent	g – gram
BLB – bacterial leaf blight	GAS – golden apple snail
BLS – bacterial leaf streak	GC – gel consistency
BPH – brown planthopper	GIS – geographic information system
Bo - boron	GHG – greenhouse gas
BR – brown rice	GLH – green leafhopper
BSWM – Bureau of Soils and Water Management	GPS – global positioning system
Ca - Calcium	GQ – grain quality
CARP – Comprehensive Agrarian Reform Program	GUI – graphical user interface
cav – cavan, usually 50 kg	GWS – genomwide selection
CBFM – community-based forestry management	GYT – general yield trial
CLSU – Central Luzon State University	h – hour
cm – centimeter	ha – hectare
CMS – cytoplasmic male sterile	HIP - high inorganic phosphate
CP – protein content	HPL – hybrid parental line
CRH – carbonized rice hull	I - intermediate
CTRHC – continuous-type rice hull carbonizer	ICIS – International Crop Information System
CT – conventional tillage	ICT – information and communication technology
Cu – copper	IMO – indigenous microorganism
DA – Department of Agriculture	IF – inorganic fertilizer
DA-RFU – Department of Agriculture-Regional Field Units	INGER - International Network for Genetic Evaluation of Rice
DAE – days after emergence	IP – insect pest
DAS – days after seeding	IPDTK – insect pest diagnostic tool kit
DAT – days after transplanting	IPM – Integrated Pest Management
DBMS – database management system	IRRI – International Rice Research Institute
DDTK – disease diagnostic tool kit	IVC – in vitro culture
DENR – Department of Environment and Natural Resources	IVM – in vitro mutagenesis
DH L– double haploid lines	IWM – integrated weed management
DRR – drought recovery rate	JICA – Japan International Cooperation Agency
DS – dry season	K – potassium
DSA - diversity and stress adaptation	kg – kilogram
DSR – direct seeded rice	KP – knowledge product
DUST – distinctness, uniformity and stability trial	KSL – knowledge sharing and learning
DWSR – direct wet-seeded rice	LCC – leaf color chart
EGS – early generation screening	LDIS – low-cost drip irrigation system
EH – early heading	LeD – leaf drying
	LeR – leaf rolling
	lpa – low phytic acid
	LGU – local government unit

LSTD – location specific technology development	PI – panicle initiation
m – meter	PN – pedigree nursery
MAS – marker-assisted selection	PRKB – Pinoy Rice Knowledge Bank
MAT – Multi-Adaption Trial	PTD – participatory technology development
MC – moisture content	PYT – preliminary yield trial
MDDST – modified dry direct seeding technique	QTL – quantitative trait loci
MET – multi-environment trial	R – resistant
MFE – male fertile environment	RBB – rice black bug
MLM – mixed-effects linear model	RCBD – randomized complete block design
Mg – magnesium	RDI – regulated deficit irrigation
Mn – Manganese	RF – rainfed
MDDST – Modified Dry Direct Seeding Technique	RP – resource person
MOET – minus one element technique	RPM – revolution per minute
MR – moderately resistant	RQCS – Rice Quality Classification Software
MRT – Mobile Rice TeknoKlinik	RS4D – Rice Science for Development
MSE – male-sterile environment	RSO – rice sufficiency officer
MT – minimum tillage	RFL – Rainfed lowland
mtha <sup>-1</sup> - metric ton per hectare	RTV – rice tungro virus
MYT – multi-location yield trials	RTWG – Rice Technical Working Group
N – nitrogen	S – sulfur
NAFC – National Agricultural and Fishery Council	SACLOB – Sealed Storage Enclosure for Rice Seeds
NBS – narrow brown spot	SALT – Sloping Agricultural Land Technology
NCT – National Cooperative Testing	SB – sheath blight
NFA – National Food Authority	SFR – small farm reservoir
NGO – non-government organization	SME – small-medium enterprise
NE – natural enemies	SMS – short message service
NIL – near isogenic line	SN – source nursery
NM – Nutrient Manager	SSNM – site-specific nutrient management
NOPT – Nutrient Omission Plot Technique	SSR – simple sequence repeat
NR – new reagent	STK – soil test kit
NSIC – National Seed Industry Council	STR – sequence tandem repeat
NSQCS – National Seed Quality Control Services	SV – seedling vigor
OF – organic fertilizer	t – ton
OFT – on-farm trial	TCN – testcross nursery
OM – organic matter	TCP – technical cooperation project
ON – observational nursery	TGMS – thermo-sensitive genetic male sterile
OPAg – Office of Provincial Agriculturist	TN – testcross nursery
OpAPA – Open Academy for Philippine Agriculture	TOT – training of trainers
P – phosphorus	TPR – transplanted rice
PA – phytic acid	TRV – traditional variety
PCR – Polymerase chain reaction	TSS – total soluble solid
PDW – plant dry weight	UEM – ultra-early maturing
PF – participating farmer	UPLB – University of the Philippines Los Baños
PFS – PalayCheck field school	VSU – Visayas State University
PhilRice – Philippine Rice Research Institute	WBPH – white-backed planthopper
PhilSCAT – Philippine-Sino Center for Agricultural Technology	WEPP – water erosion prediction project
PhilMech – Philippine Center for Postharvest Development and Mechanization	WHC – water holding capacity
PCA – principal component analysis	WHO – World Health Organization
	WS – wet season
	WT – weed tolerance
	YA – yield advantage
	Zn – zinc
	ZT – zero tillage

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We are a chartered 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, cost-reducing, and environment-friendly 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 (Environment Management), and OHSAS 18001:2007 (Occupational Health and Safety Assessment Series).

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