

# 2014 NATIONAL RICE R&D HIGHLIGHTS

PHILRICE ISABELA



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# PhilRice Isabela

Acting Director: Democrito B. Rebong II

## Executive Summary

For 2014, PhilRice Isabela took a more realistic approach on rice research and development. Starting with researches highlighting the growing of rice and venturing on rice-based commodities to promote a sustainable agribiosystem.

PhilRice Isabela has started developing and improving income-generating technologies to beat the challenge of 1 million per hectare per year. The station has established facilities for the development of technologies such as vermiculture, oyster mushroom, and milky mushroom. During the fallow period, the station planted mungbean to augment the station income.

PhilRice Isabela staff has also undergone knowledge retooling to improve and enhance knowledge and skills necessary for research and development work.

The station also has become more visible to public through development programs such as learning center, mobile advisory cum rice technology, and one-stop information shop. The station has reached rural farming communities in both CAR and Region 2.

The station also achieved 41 publications in local community newspapers, Philippine Information Agency website, and PhilRice magazine and website. Radio was also maximized to popularize PhilRice-developed technologies through radio program Madiskarteng Pagsasaka. PhilRice Isabela was also featured 4 times in a local television network (ABS CBN). With the utilization of mass communication mediums, PhilRice advocacies and technologies are anticipated to have a wider reach.

## I. Operationalization of agrometeorological service

*DB RebongII and MA Baliuag*

### Highlights:

- Regularly downloaded the Automatic Weather Station (AWS) data and sent to IRRI Staff. AWS data were also shared to researchers of the station via network;
- Regularly gathered weather data (rainfall, evaporation, solar duration) from the manual instruments installed in the agromet station;

- Maintained the cleanliness of the two Agromet stations including the installed instruments (Field Monitoring Unit FMON, AWS, raingauge, evaporation pan, casella);
- Highest average temperature recorded was 30.05°C. Maximum temperature was 39.60, recorded in the month of May (maximum temperature each day was found within the period of 2:15 to 4:00pm. Minimum temperature was 15.1°C, recorded in the month of January and was found within the period of 2:45 to 6:30am. Below is the graphical representation of 2014 weather data:

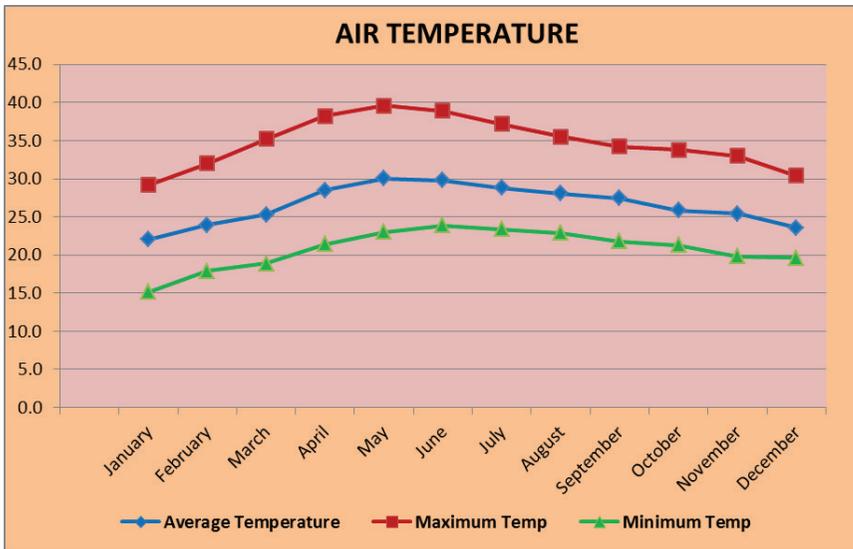


Figure 1. Highest and lowest recorded temperature in 2014.

- Heaviest rainfall was found in the month of October. Below is the graphical representation of 2014 rainfall amount:

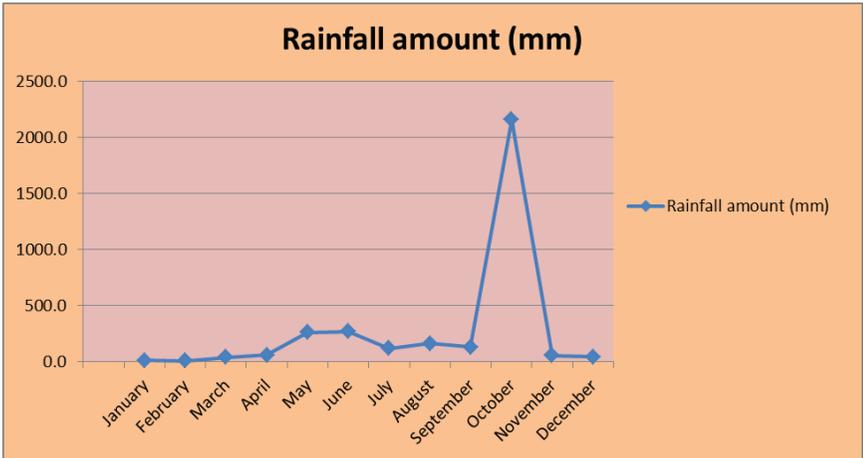


Figure 2. Amount of rainfall for 2014.

- The highest range of rain in terms of days occurred in October with 20 rain days. Below is the graphical representation of the number of rain days in 2014:

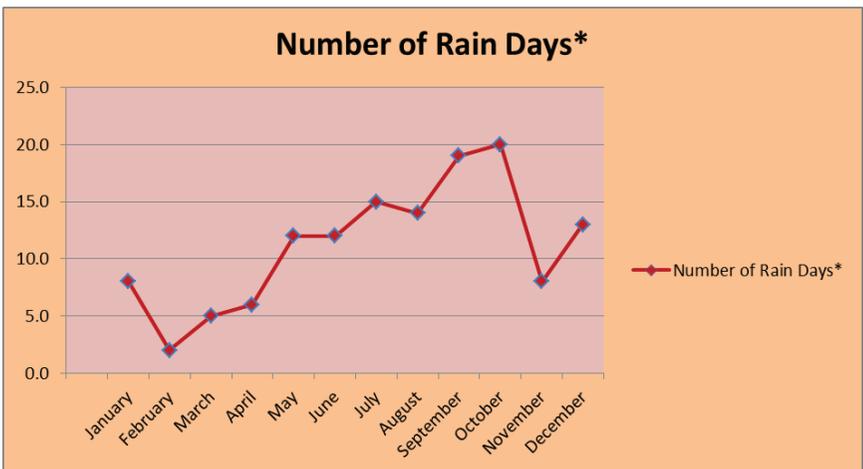


Figure 3. Number of rain days in 2014.

## II. Growing rice and crop integration for sustainable agribiosystem

*DB Rebongll, AL dela Cruz, Jr., JV Galapon, MAU Tabil, and JB Tapeç*

Over the years, production systems are over-stretched in response to increasing food demands putting more pressure on land, water, and energy resources that resulted in environmental impacts like soil degradation, water and air pollution and habitat degradation and loss of biodiversity. Innovative farming systems and management approaches have been developed recently that are consciously being organized to balance and optimize farm output, economic returns, environmental footprint, and social welfare, to improve the economic performance and productivity, and to prevent and mitigate the potential negative effects on natural resources. In recent years, PhilRice actively promoted the Palayamanan System, a diversified integrated rice-based farming system directed towards farm diversification to increase farm productivity and profitability to address food security and economic instability of farm families. Upgrading the Palayamanan System into Palayamanan Plus - a large-scale intensified rice-based production system directed towards increasing income and profitability in the rice environments through farm mechanization and purposive integration and diversification of certain farming components to achieve higher level of intensification and probably allow higher crop productivity, enhanced resource use efficiency, value-adding, and marketing. Also, a poverty and unemployment reduction strategy by spin-off rural agribusinesses or industries can create employment and income-generating opportunities in the rice farming communities.

### Highlights:

- Established IRBAS enterprises such as rice-mungbean, vermiculture and mushroom production that includes oyster and milky;

**Table 1.** List of components with corresponding total produce and generated sales.

Component	Total Produce/Generated Sales
Rice-mungbean	P560,710 for rice P28,852 sales for mungbean
Vermiculture	1.25 tons of vermicast from the culture with total sales of P8,750
Milky Mushroom	P18,562 gross income from the 74.86 kg milky mushroom produced
Oyster Mushroom	603 oyster fruiting bags and generated P11,100 income pesos from the sold product

- Since the project was only in its pilot implementation, the model is still on its developmental stage. Below is the list of problem encountered and action undertaken.

**Table 2.** List of problems encountered and actions made in the establishment of IRBAS on station.

Problems	Actions Made
<b>Rice Component</b>	Strict rouging activity were conducted for this season to ensure and maintain quality of seeds.
<b>1. Downgraded seed quality</b>	
<b>Mungbean Component</b>	Use of early maturing variety of munggo to shorten exposure to uncontrollable factors like rain
<b>1. Low production due to rain</b>	
<b>Vermiculture Component</b>	
<b>1. Source of animal manure.</b>	-Sourced out for potential sources from the barangay. -Use compost from the MRF in the absence of animal manure.
<b>2. Housing and bins cannot accommodate all available substrates</b>	-alleys in between bins were converted into beds to maximize area -old pig pens were also converted into composting beds
<b>3. Low Production</b>	- Intensified production by continues collection and pre-decomposed crop biomasses -Focused on vermi production for new beds -Increased population of vermi per bed for shorter maturity of beds
<b>Milky Mushroom Component</b>	
<b>1. Low production due to poor housing</b>	-constructed mushroom house with built-in sprinklers -Production of fruiting logs and grain spawn -assembled pasteurizing system -Storage of fruiting log will be put on the laboratory for control and sanitized area
<b>2. Problem on marketing</b>	-contacted other potential buyers outside the san mateo (Adventist Hospital)
<b>Oyster Mushroom Component</b>	
<b>1. Contamination of fruiting bags</b>	-prolonged pasteurization
<b>2. Source of some substrates</b>	-source out from other localities
<b>3. Low Production</b>	-Purchased additional materials for the production of more fruiting bags -Produced own spawn -Improvement of mushroom house

### III. Learning Center

*DB Rebonll, HR Pasicolan, NR Gawat, JR Pagaduan, JB Tapeç, and AL dela Cruz, Jr.*

Rice field is the primary learning material for a farmer and for those who are interested to learn. With the establishment of the Future Rice Learning Center, rice production activities from seed to seed will be showcased coupled with farm mechanization. This will provide easy access to walk-in visitors who would visit PhilRice Isabela to learn about the science of rice production within one to two-hours briefing and hands-on experience.

#### Highlights:

- Established and showcased to farmers, students, Agricultural Extension Workers (AEWs) the resource-use efficient rice production technologies including mechanization;
- The following different crop establishment methods were established, compared and showcased:
  - Wetbed Seedling method: 21 Days
  - Modified Dapog Seedling: 14 Days
  - Dapog seedling method (for mechanical transplanter)
  - Mechanical Seeding using drumseeder at 40kg seeding rate
  - Manual seeding using broadcast seeding with 60kg seeding rate
  - Mechanical transplanting using walk behind transplanter at 60kg seeding rate
- In 2014 WS, the different crop establishment method in rice production showed that 14-day old Modified dapog seedling gave the highest yield of 5,408.0 kg/ha with the highest return of investment (ROI) of 98.3%; which means that in every one (1) peso spent there would be almost one (1) peso return profit;
- Farmers and students visited the learning center showcasing rice seedling method such as Wetbed method, Modified Dapog, and Dapog for mechanical transplanter;
- Below are the demonstrated technologies (lecture with demo):
  - Mechanical transplanting technology using walk-behind transplanter (with 45 participants)
  - Seedling pulling and transplanting of wetbed method (20 days) (with 19 participants)
  - Modified dapog seedling (14 days) (with 19

- participants)
- MOET demonstration (19 participants)
- Water management with emphasis on controlled irrigation (AWD)
- Installation of observation well (12 participants IA member and officials)

#### **IV. Palayabangan: 10-5 challenge**

*DB RebongII, HR Pasicolan, and JR Pagaduan*

The 10-5 challenge aims to raise the rice production standard to 10t/ha yield at PhP5.00 input cost for every kilogram of palay produced. Current average yield is about 4t/ha while input cost is about P11/kg of palay. This new initiative also aims to provide opportunities for all players in the rice sector to show what they can do to improve yield and reduce production cost.

Palayabangan: The 10-5 Challenge supports the goal of the Food Staples Sufficiency Program of the country and the advocacies of the National Year of Rice to help increase farmers' productivity, make them globally competitive, and boost their morale.

##### **Highlights:**

- In 2014 DS, 9 competing participants joined the Palayabangan: 10-5 Challenge contest. Among the participants, 3 of which are individual farmers, 2 seed company, 1 chemical company, 1 gawad saka awardee, 1 Farmers Organization and 1 for LGU;
- Syngenta Philippines attained the highest yield of 2,193.60/kg at PhP4.94 input cost. Consolation prizes were also given to 5 other entries who achieved 80,000/ha net profit;
- Development and Research group of PhilRice Isabela also joined as non-competing participants;
- For 2015 DS, 10 participants joined the contest; of which, 5 are individual farmers, 2 from Seed Company, 2 from chemical company and 1 from LGU. PhilRice Isabela also joined as non-competing participant;
- All farm activities were monitored, recorded and encoded in Palayabangan website.

## V. Training of PhilRice Isabela Staff

### Highlights:

- Conducted a season-long PalayCheck training to 33 PhilRice Isabela staff from December 2013-April 2014;
- Conducted the following knowledge retooling seminars for PhilRice Isabela Staff wherein speakers/lecturers were from PhilRice CES:
  - Short courses on Public Speaking and Presentation Skills
  - Short courses on Technical Writing
  - Short courses on Layout of Posters and Photography
  - Log frame Preparation
  - Development of Varieties

## VI. Mobile advisory system cum techno clinic

*HR Pasicolan, NR Gawat, MA Baliuag, AL dela Cruz, MC Manubay, JB Tapeç*

The establishment of a mobile advisory clinic cum technology clinic helps provide advisory services on crop selection, agricultural inputs, best farming practices with emphasis on insect pests and diagnosis of diseases and management. Agriclincs act as knowledge provider and bring information to the farmers without taking much of their time. The provision of this advisory system to the farmers is also a good way of mitigating or preventing potential disaster consequences to the farmers and help in effective technology transfer thereby increasing the crop productivity and per capita income of the farmers. The components of the project were mobile advisory, technical briefings and distribution of flyers.

### Highlights:

- Conducted 3 mobile advisories in San Mateo, Isabela on rice blast control and Alternate Wetting and Drying (AWD);
- Two mobile advisories were also conducted in Maddela, Quirino; Cordon, Isabela, and Solana, Cagayan on Palaycheck overview;
- Conducted 6 technical briefings on Palaycheck system in three barangays of San Mateo, Isabela and one technical briefing in Mallig and Cordon in Isabela, and Maddela, Quirino with a total of 139 farmer-participants;
- During the wet season 7 technical briefings on AWD were conducted in San Mateo, Isabela since scarcity of irrigation

water was observed. A total of 165 farmers were informed on the said technology; and

- Leaflets/flyers, dealing with the topics discussed during the roving and technical briefing, were also distributed to farmers.

## **VII. Development of target-specific Information, Education, and Communication (IEC) materials**

*MC Manubay, HR Pasicolan, NR Gawat, NS Sosa, MA Baliuag, AL dela Cruz, Jr., JB Tapeç*

This study concerns the creation of target-specific IEC materials. In ‘target-specific’, it means using local dialect (Tagalog and Iloco) or language suited for the medium being used; as well as using location-specific farmer’s technology on rice-based integrated farming. The term also implies popularizing of on-station activities using the mass media. In this way, creating a name or brand for PhilRice will be helpful in establishing the station’s credibility as rice farming technology source for clientele. More specifically, this study aims to produce a primer series on the farmer’s practice of rice-based farming system; produce radio-spots on farmer’s practice and related PhilRice-developed technologies; and publish news/feature articles on farmer’s practice and related PhilRice-developed technologies.

### **Highlights:**

- Leaflets/Flyers
  - Created 1 flyer containing the following information: Sistemang PalayCheck overview, Madiskarteng Pagsasaka radio program, PhilRice Text Center and PinoyRice Knowledge Bank;
  - Created 7 flyers on rice pests and diseases based from PinoyRice Knowledge Bank handouts
  - Created 1 leaflet containing the following information: Sistemang PalayCheck overview, KeyChecks, and Be Riceponsible campaign;
  - All the produced flyers and leaflets were disseminated to rice stakeholders that includes farmers, policy-makers, students, and government employees during conduct of agro-fair exhibits and field tour; and
  - Random people visiting the station were also given flyers and leaflets.
- Posters
  - Created layout design for One-Stop Information

Shop banner title, Be Riceponsible signing pledge, Brown Rice Day banner layout, Heirloom Rice Collection overview, Rice-Mix Day luncheon, and Run4Riceponsibility banner title.

- Radio Spots
  - Written radio drama script using Iloco (local dialect) for the following topic: Bao (daga), Garami (dayami); Sistemang Reduced Tillage; Harvesting; Rice blast; and Rice Mechanization;
  - Created material for radio broadcast on PalayCheck Overview and KeyCheck 1 to 8;
  - The produced radio materials were aired at PhilRice Isabela radio program Madiskarteng Pagsasaka aired at DWSI Sonshine Radio 864khz and DWPE Radio ng Bayan 729khz.
- News and Feature Articles
  - Published the following articles:

**Table 3.** List of published articles and press releases for 2014.

Title of the article	Type of Article	Date Published	Media Outfit	Type of Medium
Pests' shells can add income	News Release	13 January 2014	PhilRice	Website
Palayamanan	Feature	February 28 – March 6, 2014	Dyaryo Balisong	Community Newspaper
PhilRice-Isabela: Reaching farming communities is now possible	News Release	26 April 2014	PIA R02	Website
PhilRice-Isabela launches radio program for farming communities	News Release	26 April 2014	PIA R02	Website
PhilRice-Isabela to stage RICEExhibit	News Release	28 April 2014	PIA R02	Website
40kg certified seed enough for a hectare – PhilRice	News Release	29 April 2014	PIA R02	Website
PhilRice- Isabela to showcase agri-related machines on Santiago City's 20th cityhood anniversary	News Release	29 April 2014	PIA R02	Website
PhilRice-Isabela recommends 8-palay check system to improve rice yield	News Release	30 April 2014	PIA R02	Website
PhilRice: Planting after fallow period lowers pest damage	News Release	30 April 2014	PIA R02	Website
PhilRice urges farmers to use quality seeds	News Release	30 April 2014	PIA R02	Website
Farmers trained to be trainers	News Release	30 April 2014	PhilRice	Website
Technology promotion intensified in Cagayan Valley	News Release	30 April 2014	PhilRice	Website
Palay Checks inerekomenda sa Isabela	News Release	30 April 2014	DWDD 1134 khz	Website
PhilRice urges farmers to adopt 'Clean GPS for CSR'	News Release	17 May 2014	PIA R02	Website
Technology promotion intensified in Cagayan	News Release	17-23 May 2014	Luzonwide News Correspondent	Community Newspaper
PhilRice urges farmers to venture in mushroom cultivation	News Release	20 May 2014	PIA R02	Website
205 farmers undergo palaycheck, palayamanan farming system training	News Release	8 June 2014	PIA R02	Website
PhilRice naglunsad ng school-on-the-air	News Release	23-29 June 2014	Pinas	Community Newspaper
Farmers pledge to be more productive	News Release	25 June 2014	PhilRice	Website
Milky money	News Release	25 June 2014	PhilRice	Website

**Table 3.** List of published articles and press releases for 2014. (Con't...)

Kuru Saka: "Swertified" vs certified	Feature	July-September 2014	PhilRice	Magazine
PhilRice-Isabela Launched "Pinggang Pinoy"	News Release	26 August 2014	PIA R02	Website
PhilRice-Isabela introduces new farming technology	News Release	27 August 2014	PIA R02	Website
Water-saving technology to help farmers adapt to drought	News Release	29 August 2014	PhilRice	Website
Farmers urged to continue planting mungbean – PhilRice-Isabela	News Release	29 August 2014	DWDD 1134 khz	Website
Pinggang Pinoy launched in Isabela	News Release	29 August 2014	PhilRice	Website
PhilRice launches 'One-stop information shop'	News Release	31 August 2014	PIA R02	Website
PhilRice urges farmers to plant mungbean	News Release	28 August 2014	PIA R02	Website
Agriculture students urged to use web, social media to access research	News Release	27 August 2014	PIA R02	Website
PhilRice encourages farmers to adopt water-saving technology to mitigate drought effects	New Release	1 September 2014	DWDD 1134khz	Website
Crop Circles Take Over Landscape in Bontoc	Feature	September 28 – October 4, 2014	Luzon Morning Sun	Community Newspaper
PhilRice Celebrates "Brown Rice Day" In Cauayan	News Release	November 16-22, 2014	Luzon Morning Sun	Community Newspaper
'Dirty' rice promoted in Brown Rice Day	Press Release	November 12-21, 2014	Luzonwide News Correspondent	Community Newspaper
PhilRice launches 'brown rice day'	Press Release	November 18, 2014	PIA R02	Website
PhilRice-Isabela promotes rice mix	Press Release	November 25, 2014	Balita	Website
PhilRice urges farmers to join rural transformation movement	Press Release	November 27, 2014	PIA R02	Website
Brown Rice Day at SM City Cauayan	Press Release	November	The Patriot	Community Newspaper
Brown Rice For Healthier Option – PhilRice Isabela	Press Release	December 7 – 13, 2014	Luzon Morning Sun	Community Newspaper
PhilRice Urge Public To Try Rice Mixes	News Release	December 7 – 13, 2014	Luzon Morning Sun	Community Newspaper
PhilRice beefs up 'Be Riceponsible' campaign	News Release	December 09, 2014	PIA R02	Website
PhilRice pushes farmers to become millionaires	News Release	December 09, 2014	PIA R02	Website

- Copies of published articles were given to the following state universities as a supplemental IEC materials at PhilRice Isabela Satellite OSIS: Isabela State University Echague, Roxas, and Cabagan campuses; Nueva Vizcaya State University; Quirino State University; and Ifugao State University Potia Campus;
- Published articles were also posted at PhilRice Isabela Facebook page;
- Press releases were also sent to various national and local media partners. As a result, PhilRice Isabela activities were featured at TV Patrol Cagayan Valley such as Pinggang Pinoy Cooking Contest, Brown Rice Day celebration and Rural Transformation Movement launching. Videos were posted at PhilRice Isabela Facebook page.
- Primer/Techno Bulletin
  - Written draft of Mungbean after irrigated rice technology guide;

- On the process of writing a primer for the Season-long PalayCheck cum Palayamanan Training for Farmers in Santiago City: preliminary page and Part I of preliminary activities.

### **VIII. Promoting clean GPS for CSR through exhibit**

*MC Manubay, HR Pasicolan, NR Gawat, NS Sosa, MA Baliuag, AL dela Cruz, Jr., JB Tapeç*

PhilRice Isabela has been gaining its popularity as center of agricultural researches and innovations in Region 2 as evident by the growing number of people being catered. Farmers, researchers and students interested in the field of agriculture come to the station to gather relevant information on latest agricultural products, technologies and farming practices. There are also experts who voluntarily share their knowledge to the institution.

To cater the growing demand of people interested in the field of agriculture, PhilRice Isabela will bring information closer to the public in a more organized manner. Basically, the goal of this project is to create a one-stop information shop for farmers, researchers and students. The term 'one-stop information shop' means that clientele can get all information they need in just 'one-stop'. To achieve this, exhibit center which will serve as mini-library will be built on the station and satellite information centers on universities in Region II. It is at this particular area where books and other relevant materials on agriculture will be stored. Most specifically, Information, Education and Communication (IEC) reference materials on clean green, practical and smart (GPS) farming will be displayed.

By centralizing all Information, Education and Communication (IEC) materials, research will be easier for clientele. This will also open new learning opportunities among researchers of related field and it will strengthen linkage between PhilRice and universities in the region. Added to this, PhilRice Isabela will participate in festivals in Region 02 and CAR through RICExhibit booth.

#### **Highlights:**

- One-Stop Information Shop
  - Satellite One-Stop Information Shop were established in six state universities in Region 02 and Cordillera Administrative Region: Isabela State University (ISU)– Echague, Roxas, Cabagan campuses; Nueva Vizcaya State University; Quirino State University; and Ifugao State University Potia campus. This last quarter, OSIS were established in Cagayan State University Piat,

- Gonzaga, and Sanchez Mira campuses;
- A baseline survey on awareness and utilization of agriculture students in state universities on rice and rice-related information was conducted. It was found that the respondents' information seeking and use is influenced by their desire to help farmers, specifically their parents and relatives, improve rice productivity and profitability. Tri-media still play an important role as information source. World Wide Web and Social Media has not yet recognized by the respondents as information source for rice and rice-related topic. The survey, however, focused only on information sources available to students and their information source preferences and not on the frequency of information use;
- To monitor the frequency of use of IEC materials, each site was required to submit a consolidated report of users log. The highest total number of users is with ISU Cabagan.

**Table 4.** Frequency of use of IEC materials

<b>State University</b>	<b>Users log</b>
<b>Isabela State University – Echague Campus</b>	15
<b>Isabela State University – Roxas Campus</b>	288
<b>Isabela State University – Cabagan Campus</b>	555
<b>Nueva Vizcaya State University</b>	115
<b>Quirino State University</b>	76
<b>Ifugao State University – Potia Campus</b>	did not submit report

- Users of OSIS were encouraged to fill-in the Literature Search Service to determine their assessment of OSIS. However, only ISU Cabagan, ISU Roxas, and QSU complied. With the result of the assessment form, users rated OSIS as excellent in terms of Availability of needed IEC materials, suitability of available IEC

- materials to research queries, and accessibility of IEC materials;
- Initial assessment through survey form were also distributed to users from each site. The following are the result of the assessment:

**Table 5.** Initial Assessment of Satellite One-Stop Information Shop.

State University	Initial Assessment
ISU Cabagan	Students used the available IEC materials as their guide for their activities and exercises particularly in pest management and crop production. According to them, searching for related topics were made easier and accessible. However, students are requesting for more updated IEC materials specifically journals or publications. Students also requested Rice technology videos in CDs. Moreover, for teachers, OSIS is a highly commendable project. Providing desktop computer for e-learning was suggested.
ISU Roxas	According to users, OSIS provided enough materials for their research and related subjects. However, it was suggested that an English version of handouts and books on soils would be provided
Quirino State University	Users suggested field trip/walk and actual presentation of research. Users also requested additional books, testimony videos, and desktop computers for e-learning
Ifugao State University	PinoyRKB was generally used by the users
<b>Note: ISU Echague and Nueva Vizcaya State University did not comply.</b>	

- To maximize the use OSIS, faculty members of the School of Agriculture from each state university were encouraged to incorporate in their course syllabus PhilRice IEC materials. Below is the list of state universities and the corresponding IEC materials used:

**Table 6.** Summary of incorporated IEC materials in course syllabi.

State University	IEC materials used
ISU Cabagan	<ul style="list-style-type: none"> <li>• Principles and practices: plant breeding, propagation, and nursery – PinoyRice Knowledge Bank</li> <li>• Principles and practices of crop science – Rice production technologies</li> <li>• Agricultural extension and communication – Rice extension activities</li> <li>• Methods of agricultural research – Research Methodologies for Rice Specialists</li> <li>• Plant Genetics – Rice Technology Bulletin on Hybrid Rice, PinoyRKB</li> <li>• Approaches and practices in pest management – Insect pest diagnostic kit, Outsmarting rice pests and diseases</li> <li>• Fundamentals of crop protection - Insect pest diagnostic kit, Outsmarting rice pests and diseases</li> </ul>
ISU Roxas	<ul style="list-style-type: none"> <li>• Fundamentals of horticulture – PhilRice post-production technologies found in PinoyRice Knowledge Bank</li> <li>• Cereals and legume production - Lets produce more rice, Hybrid rice seed production training manual, Philippine rice production training manual, PalayCheck field operations manual</li> </ul> <p>Introduction and familiarization of PhilRice</p> <p>OSIS was also incorporated in the learning content of their course syllabi</p>
Quirino State University	<ul style="list-style-type: none"> <li>• Principle and practices of crop production - PinoyRice Knowledge Bank, Field guide on major disorder of the rice plant in the Philippines</li> </ul>
<b>Note: ISU Echague, Ifugao State University, and Nueva Vizcaya State University did not comply.</b>	

- Participation in Agro-fair exhibit (RICEExhibit)
  - The RICEExhibit included display of PhilRice-developed machines such as rice hull stove, plastic drum seeder, micromill, multicrop flourmill, open-type carbonizer, microtiller, and laboy tiller;
  - Handouts on climate change varieties and integrated pest management are available for free;
  - National Year of Rice (NYR) advocacy and PalayCheck video and voice records in Iloco are also played in the booth;
  - While seeds, knowledge products and souvenir items such as t-shirts, mugs, and cap are for sale;
  - Rice and rice machine experts were also present in the booth for technical briefing
  - Below is the summary of agro-fair festivals participated by PhilRice Isabela:

**Table 7.** Summary of participated Agro-fair festivals.

Festival	Date	Total Number of Visitor
<b>Bambanti Festival</b>	January 27-31, 2014	130
<b>Ullalim Festival</b>	February 10-15, 2014	200
<b>Pattaradday Festival</b>	April 28-May 9, 2014	96
<b>Balatong Festival</b>	May 13, 2014	67
<b>Ammungan Festival</b>	May 21-24, 2014	170

## IX. Provision of Timely Agricultural Information through Radio Plug-ins and SMS

*MABaliuag, DBRebong, HRPasicolan, NRGawat, MCManubay, ALDelaCruz*

The study aims to provide farmers and rice stakeholders access to Agricultural updates and technologies in rice production through programs in the air (radio) and Short Message Service (SMS). It has been recognized that the most effective and practical means of information dissemination is through broadcast media. Radio is the only mass communication medium popular to rural areas because of its cheap cost and it allows multi-tasking activity to the listener. Cellular phone, on the other hand, has become a necessity to every Filipino. Both radio and cellular phone can cross distances and allows immediate feedback. Agricultural updates will be done through radio plugs while the listener's feedback will be monitored through SMS.

On the other hand, aside from radio airing, a demo field, served as learning field on each area will be established wherein listeners/enrollees performed an actual implementation of all the topics aired.

### Highlights:

- Conducted a school-on-the-air program entitled "Madiskarteng Pagsasaka", aired every Wednesday, 5:00 to 5:30am, from March 26 to October 29, 2014 in partnership with DWSI Sonshine Radio 864khz and DWPE Radyo ng Bayan 729khz;
- The said program featured Palaycheck System, new developed PhilRice technologies, PhilRice new programs and other new information on rice production through various formats such as drama and interview. Table below is the list of topics aired:

**Table 8.** List of topics aired in radio program indicating the date and the format used.

<b>Topics</b>	<b>Date Aired</b>	<b>Format</b>
Launching of SOA/Overview	March 26	Interview
Munggo Production	April 2	Interview
Vermicomposting	April 9	Interview
Mushroom	April 16	Interview
Ampalaya	April 23	Interview
Kamatis	April 30	Interview
Pakwan	May 7	Interview
Sitao	May 14	Interview
Sitao continua...	May 21	Interview
MOET	May 28	Interview
Rice Straw Benefits	June 4	Interview
Pagpili ng Binhi	June 11	Drama
Paggamit ng 40 kg na binhi	June 18	Drama
Paghahahanda ng lupa	June 25	Drama
Pagtanim	July 02, 2014	Drama
Reduced tillage technology	July 09, 2014	Interview
Nutrient management	July 16, 2014	Drama
Water management	July 23, 2014	Interview
May Pera sa Agriculture	July 30, 2014	Drama
Pamamahala ng peste	August 06, 2014	Drama
Riceblast o Neckrot	August 13, 2014	Drama
Tungro	August 20, 2014	Drama
Disease management	August 27, 2014	Interview
Bao o daga	September 03, 2014	Interview
Ruot ti kapagayan	September 10, 2014	Interview
Climate Change	September 17, 2014	Interview
Harvesting	September 24, 2014	Drama
Combine harvester	October 01, 2014	Drama
Gusto Namin Milyonaryo Kayo	October 08, 2014	Drama
El Nino	October 15, 2014	Drama
Farm record keeping	October 22, 2014	Interview

- Based from the consolidated texts from PhilRice Text Center, a total of 92 texters (46 SOA enrollees and the rest were from other municipalities in Region 02 and CAR) participated in the Question-of-the-Day aired every episode. The table below provides the list of municipalities with the corresponding number of texters. Highlighted are the SOA enrolees;

**Table 9.** Number of texters per municipality participated in the Question-of-the-Day segment of the radio program Madiskarteng Pagsasaka.

<b>Municipality</b>	<b>No. of texters</b>
Cordon, Isabela	9
Cabaruan, Maddela, Quirino	11
Carilucud, Solana, Cagayan	9
Turod, Quezon, Isabela	10
San Juan, Quirino, Isabela	4
Lasam, Cagayan	3
Alcala, Cagayan	1
Bantug, Tumauini	1
Bulagao, Tuao	2
Fugu, Ballesteros	1
Roxas, Solano, Nueva Vizcaya	3
San Juan, Alicia	2
San Manuel, Isabela	1
Sto Nino, Cagayan	2
Santiago City	1
Allacapan, Cagayan	2
Antagan, Tumauini	2
Baggao, Cagayan	1
Benito Soliven	1
Calaoagan Dackel, Gattaran	1
Bagabag, Nueva Vizcaya	1
Jones, Isabela	1
Gattaran, Cagayan	2
Lallo, Cagayan	1
Libertad, Echague Isabela	1
Maddela quirino	4
Quezon, Nueva Vizcaya	2
Piat, Cagayan	3
Quezon Isabela	2
Kalinga	2
San Mariano Isabela	1
San Mateo Isabela	2
San Guillermo Isabela	1
Sta Maria Cauayan Isabela	1
Tuguegarao, Cagayan	1

**Table 10.** Total rice yield per site and the problems encountered by each site in the establishment of learning field.

Site	Area	Yield	Problems Encountered
Cordon, Isabela	368 sq. m.	5.5 cavans	Seedbed – damaged by rats
Cabaruan, Maddela, Quirino	2,500 sq. m.	30 cavans	Seedbed – eaten by birds, flowering stage was affected by typhoon Luis & Mario
San Juan, Quirino, Isabela	7,000 sq. m.	67 cavans	Affected by typhoon Luis & Mario
Carilucud, Solana, Cagayan	5,000 sq. m.	40 cavans	Affected by typhoon Luis & Mario
Turod, Quezon, Isabela	6,800 sq. m.	87 cavans	Affected by typhoon Luis & Mario
Nicholas, Lasam, Cagayan	4,000 sq. m	51 cavans	Affected by typhoon Luis & Mario

- Out of 110 farmers enrolled from 6 sites, 94 of them graduated on November 26, 2014 at PhilRice Isabela Conference Rooms, Malasin, San Mateo, Isabela. Below is the list of sites and corresponding number of graduated participants:
  - Brgy. Nicholas Lasam Cagayan - 12
  - Brgy. Carilucud, Solana Cagayan – 24
  - Brgy. San Juan Quirino Isabela – 16
  - Brgy. Turod Quezon Isabela - 18
  - Brgy. Cabaruan Maddela Quirino – 24
  - Cordon Isabela - 16
- During the graduation, 20 participants were recognized for their active involvement in the SOA. Awardees came from municipality of Cordon (6), Quirino, Isabela (2), Maddela, Quirino (4), Quezon, Isabela (3), Lasam, Cagayan (2), Solana Cagayan (3); and
- All aired episode in the Madiskarteng Pagsasaka program were packaged into a CD and distributed to all the participants and guests during the graduation program.

## **X. Film making and Documentation – an interactive, entertaining and fast approach in learning rice production**

*MA Baliuag, HR Pasicolan, NR Gawat, MC Manubay, AL dela Cruz, Jr.*

Videos transfer new technologies and provide farmers new Agricultural information the easiest and interesting way. According to Alaku (1998) video play vital role in teaching and learning. When used effectively, it stimulates interest among viewers and induces longer retention of factual ideas.

Thus, the production of new videos in rice production and other rice-based technology will be essential. Clients and walk-in-visitors will be interested to visit the station frequently if we present new technology videos. This can also be used to minimize the time in conducting training for farmers.

### **Highlights:**

- Conducted a Rice-on-lens: a short-film making competition on rice and rice-based technology;
- Out of 19 state universities invited, 7 scripts entries were received.
  - Isabela State University – Cabagan Campus - 1
  - Isabela State University – Roxas Campus - 1
  - Cagayan State University – Piat Campus - 1
  - Cagayan State University – Carig Campus – 4
  - University of Saint Louis – Tuguegarao City - 1
- Only 4 scripts continued with the film making competition;
- Conducted the evaluation/judging of film entries on December 8, 2014;
- On the judging of film entries, evaluators consisted of two technical rice experts, two farmers and one from DevCom. Table 11 shows the winners and their corresponding topics:

**Table 11.** Winners in the Rice-on-Lens short-film making contest with their corresponding topic

<b>First Prize</b>	Isabela State University Cabagan Campus	Topic: Vermicomposting
<b>Second Prize</b>	Cagayan State University Piat Campus	Topic: Vermicomposting
<b>Third Prize</b>	Cagayan State University Carig Campus	Topic: Golden Apple Snail

- These 3 videos will become the property of PhilRice but the copyright will remain to the School. Videos are still on the editing stage for the final output before it will be mass produced.

## DA RFO2 Funded

### Evaluation of Rice Mechanization in Irrigated Areas in Region 02: Level of Adoption and Feedback from Users

*JC Portilla*

Mechanizing farm operations, according to studies, had lowered production cost and improved labor productivity. Today, the Department of Agriculture (DA) is targeting to make farm mechanization in our country at the same level with the neighboring countries like Thailand, Malaysia and Vietnam. The rice mechanization program aimed to optimize the utilization of rice farms and labor productivity using modern farm technologies from production to postharvest operations. Different technologies from land preparation to postharvest have been developed and adopted by farmers. This study aimed to determine the level of adoption and level of rice mechanization of rice farmers in irrigated areas in Region 02.

#### Highlights:

- In the 2nd phase of the survey, a total of 926 farmers were interviewed;
- Initial finding showed that for land preparation, the two-wheel tractor (hand tractor) was predominantly used by the farmers (75%) from plowing to leveling, while 84% of the interviewed farmers used carabao for side plowing only;
- During crop establishment, 92% manually transplant the seedling; while only one out of the 926 respondents used drumseeder and the other 74 respondents out of the 926 (8%) were using manually direct seeding. Manual labor dominated during crop establishment;

- During harvesting, manual labor was widely used (93%) and the 7% were using either reaper or combined harvester;
- For threshing, 99% of the respondents were mechanically threshing the palay with the use of thresher or the combined harvester, while only 1% uses manual labor for threshing.
- Eighty four percent (84%) of the farmers were still using animal-drawn kariton for hauling activity;
- Sun drying was still preferred by farmers (100%). Sun drying was done in Multi-Purpose Drying Pavements or along the roads.
- In summary, low level of mechanization was found in planting/transplanting, harvesting and drying. Intermediate to high level of mechanization in land preparation and high level of mechanization in threshing and milling;
- On the other hand, high adoption of rice mechanization was during land preparation (plowing, rotavating and levelling) and post harvest (particularly threshing and milling). Field activities dominated by use of animals were during side plowing and hauling. While activities dominated by manpower were during planting, harvesting and drying.

### **Accelerated Rice Learning Center**

*JR Pagaduan, HR Pasicolan, NR Gawat, JB Tapeç*

The rice field is the primary learning material for a farmer and for those who are interested to learn. With the establishment of the Accelerated Rice Learning Center, rice production activities from seed to seed will be showcased coupled with farm mechanization. This will provide easy access to walk-in visitors who would visit PhilRice Isabela to learn about the science of rice production within one to two-hours briefing and hands-on experience. Hence, this project aimed to demonstrate and hands-on practice the available technologies for different rice phases during field days and walk-in visits.

#### **Highlights:**

- Established different growth phases of rice through relay planting at one month interval;
- Gathered the agronomic data from different growth stages and evaluated the yield performances of the variety planted

in different planting dates. The set 1, transplanted on July 31, 2014, had the highest yield of P5, 504 kg/ha;

- For arthropod species, in Set 1, there was an average diversity of 3 species represented in insect pests with 61 abundance and average diversity of 4 species represented in natural enemies of 33 abundance. Data suggested that the diversity of the natural enemies compensated the diversity of the insect pest. While in set 2, the diversity of natural enemies is greater than the diversity of insect pest which suggest that the given transplanting date favors the species and diversity of the natural enemies as biological control of the insect pest;
- The established set-up was showcased to farmers and students visiting the area. Briefing and lecture about the following technologies was done in each field visit:
  - Wetbed method;
  - Modified Dapog; and
  - Dapog for mechanical transplanter.
- Below were the demonstrated technologies (lecture with demo):
  - Mechanical transplanting technology using walk-behind transplanter (45 participants);
  - Seedling pulling and transplanting of wetbed method (20 days) (19 participants);
  - Modified dapog seedling (14 days) (19 participants);
  - MOET demonstration (19 participants);
  - Water management with emphasis on controlled irrigation (AWD); and
  - Installation of observation well (12 participants IA member and officials).
- The following were the schools visited the learning center:
  - Claveria Rural Vocational High school, Claveria, Cagayan (25 students and staff)
  - San Mateo Vocational and Industrial School, San

Mateo, Isabela (40 students)

- Coordinated and conducted planning workshop with 3 DA-research stations of RFO2 in establishment of the learning center

## **DA-CARFO funded**

### **Location Specific Technology Development with Promotion of Palayamanan in CAR**

*AL dela Cruz, Jr.*

Productivity of many rice farmers remains low because of the declining profitability of growing monocrop rice. Income of farmers has decreased tremendously because of high input and labor cost. Because of the minimal profitability in monocrop rice, PhilRice has embarked on promoting highly diversified and well-integrated farming systems called Palayamanan in some parts of the country. The Palayamanan System is composed of well-integrated components that maximize use of farm resources. Modern available technology components are integrated with rice and other high value crops, fish, poultry, livestock and fruit trees. This concept makes use of the available farm resources and highlights the integration between each resource and by-product in the various technology components of the farming systems.

The Palayamanan System have inter-related activities focused on developing farmers and farmer groups as partners in developing and promoting location-specific rice-based farming systems technologies. These activities are 1) capacity enhancement of farmers and extension workers; 2) establishment of technology demonstration farms which are the farmers' farms where they put into use the technologies they learned; and 3) information and communication support which include the setting-up of farmers' learning centers.

The approach emphasizes the active participation of farmers as partners in the adaptation and fine-tuning of integrated farming systems to make it location-specific and suit their needs. Integrated farming systems (IFS) are not new and have been practiced by farmers. Farmers have proven that income and productivity are increased. However, there are only few farmers who have embraced IFS as a farming strategy maybe because of unsustained efforts to promote the system. There is therefore a need to promote diversified and integrated farming systems to generate higher income. More importantly, there is a need to integrate diversification strategies to achieve a meaningful impact in terms of increasing household income and productivity of rice farmers.

A 3-year project was funded by the Department of Agriculture-Cordillera Administrative Region to develop and promote the Palayamanan System in four provinces of CAR namely: Kalinga, Ifugao, Mt. Province and Benguet starting 2012. The project aimed to improve the capacity and productivity of rice farmers; develop and promote sustainable and location specific integrated rice-based farming technologies developed in partnership with farmers and other stakeholders of the rice industry; and showcase integrated and sustainable rice-based farming systems models that can be adapted by local government units and farmers.

### Highlights:

- 103 farmers completed the PalayCheck and Palayamanan Systems Training in their respective areas. Below is the list of municipalities and number of participants:
  - Itogon, Benguet – 24
  - Rizal, Kalinga – 29
  - Bontoc, Mt.Province – 32
  - Lagawe, Ifugao – 18
- Collaborated with 4 Local Government Units (LGUs) of Itogon, Benguet; Rizal, Kalinga; Lagawe, Ifugao and Bontoc, Mt.Province in the conduct of training and lectures on PalayCheck and Palayamanan System for farmers in the area; and
- Established 4 PalayCheck learning fields and Palayamanan model farms in Benguet, Ifugao, Mt.Province and Kalinga for each cropping season.

### **Documentation of indigenous practices in upland (traditional) rice producing areas and site characterization in CAR**

*JC Portilla*

The Cordillera Administrative Region (CAR) is known for its rich cultural heritage and ethnic diversity. Rice production practices especially in the upland are tied up with the Indigenous People's (IPs) culture and tradition. Planting of upland rice has already been practiced in the Philippines. These are usually done in small areas in the highlands where most of the IPs live. The rice varieties they plant are usually connected with their identity as a clan or a tribe. Production of upland rice has not been recorded since researches on rice mainly focused for lowland areas (irrigated and rainfed) and little or nothing for the upland rice. Thus, upland rice farmers follow traditions in cultivating upland rice.

This project aimed 1) to gather and document the different indigenous practices in upland rice production from seed selection and post-harvest management; 2) to characterize selected upland rice production areas in CAR; and 3) to produce a catalog of information on the indigenous practices in upland rice areas.

**Highlights:**

- Conducted Focus Group Discussions (FGD) upland rice farmers in Paracelis and Natonin in Mt. Province; Lamut, Lagawe and Asipulo in Ifugao; Pinukpuk and Tanudan in Kalinga; and Sablan and Bakun in Benguet. One on one interview to selected upland rice farmers was also done. Key informants such as elders were also interviewed;
- Documented the practices in the upland areas in different provinces of CAR from crop establishment, nutrient management, pest management, harvest management and post-harvest management; and
- 45 soil samples were collected and analysed

**Other activities**

**Season-long training on PalayCheck cum Palayamanan**

**Highlights:**

- Conducted a season-long training on PalayCheck cum Palayamanan system in Gunot, Rizal, Santiago City. Thirty seven (37) participants completed the training;
- The said training was composed of lectures and hands-on activities on PalayCheck and Palayamanan; and
- PhilRice Isabela initiated the conduct of this training; however funded by the City Government of Santiago.

**National Rice Awareness Month**

**Highlights:**

- Conducted Brown Rice Day celebration on November 14, 2014 at SM City Cauayan highlighting the different brown rice recipes through a cooking contest participated by members of womens' organization in Cauayan City;

- 286 rice stakeholders including policy-makers, teachers, and students attended the said event;
  - Exhibited heirloom rice collection;
  - Launched the Rice Mix advocacy through a press conference participated by policy-makers, researchers, teachers, and members of the local media on November 21, 2014 at PhilRice Isabela Conference hall.
  - Lunch was served to the visitors highlighting the different rice mixes such as rice-corn, rice-banana, and rice-camote
- Spearheaded the Run4Riceponsibility on November 29, 2014 at San Mateo, Isabela. 73 runners from the local government unit of San Mateo, Agricultural Training Institute, National Seed Quality and Control Services, Bureau of Fisheries and Aquatic Resources, Bureau of Fire and Protection, Philippine National Police San Mateo Station, San Mateo Vocational and Industrial High School, Isabela State University Echague Campus On-the-Job trainees, and San Mateo Bikers participated in the 5km run.
  - All activities are in partnership with DA-RFO 2, city government of Cauayan and Santiago, local government of San Mateo, SM City Cauayan, and state universities of Quirino and Isabela; and
  - NRAM activities were published on-line, in community newspapers, and in the local television network (ABS-CBN).

## **Rural Transformation Movement awareness campaign**

### **Highlights:**

- Launched the Rural Transformation Movement in the following rural farming communities:
  - Quirino, Isabela – 185 farmers
  - San Mateo, Isabela – 265 farmers
- A Talakayan with successful farmers and policy-makers was conducted.

## **PhilRice Isabela seminar series**

### **Highlights:**

- Conducted the following seminars attended by PhilRice Isabela Staff:
  - Short courses on Public Speaking and Presentation Skills
  - Short courses on Technical Writing
  - Short courses on Layout of Posters and Photography
  - Log frame Preparation
  - Development of Varieties
  
- Speakers/Lecturers were from PhilRice CES

## Abbreviations and acronyms

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
ALS – 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  
 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<sup>-1</sup> - 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

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