# 2015 National Rice R&D Highlights

## **Development Communication Division**



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## **Development Communication Division**

Division Head: Jaime A. Manalo IV

#### **Exective Summary**

With the onset of El Niño and major discourses on the ASEAN Economic Integration at the backdrop, the Development Communication Division (DevCom) ensured that communication needs of the Institute were adequately covered in 2015. Massive information dissemination on said two major issues guided the operations of the Division. Various knowledge products produced were geared at helping farmers, particularly smallholder farmers, make informed decisions at a rather unfavorable time for farming.

In 2015, DevCom implemented two major core projects, and its staff members were engaged in various capacities in Special Projects listed under the Office of the Deputy Director for Development: BeRiceponsible, Rural Transformation Movement, The Infomediary Campaign, and IpAD. Golden Rice Communications was also managed by staff members from the Division.

## I. Promoting Rice Science for Development through Strategic Use of Communication Media

Project Lead: AB Lanuza

It has long been recognized that development interventions do not always get a significant space in the public sphere. They are oftentimes difficult to package. Hence, it requires well thought-through communication strategies so rice production technologies can reach the intended clients. The execution of the knowledge products, additionally, requires much creativity for the technologies to be appreciated and, eventually, used by the key stakeholders.

Hence, PhilRice has this project with four key studies that look into how to effectively strategize so that our rice production technologies are optimized on the ground.

#### Development and production of knowledge products

MG Layaoen, MGM Nidoy, AB Lanuza, JA Manalo IV, CG Dacumos, CA Frediles, SM Pasiona, JGS Sarol, JF Gamil, JC Berto, AP Canilang

It is in our knowledge products that we are able to communicate our technologies to our stakeholders. Over the years, the realization is that the Institute must do more in this area, always putting forward the audiencecentric perspective in all its work. The standards in KP development have continually been elevated as evidenced by the audience feedback and the industry requirements.

#### Highlights:

- DevCom distributed 140, 615 copies of KPs—78 titles, 38% of which were in Filipino.
- 39% of the KPs were distributed in September during the national rice R&D; 14% (19,000 copies) of the KPs were sent to the PhilRice branch stations.
- 13 titles directly tackled climate change, particularly El Niño, while the rest of the publications were produced in relation to the El Niño pronouncement by PAG-ASA in 2015.
- The first time that we had a hand-out series on important how-tos of rice production technologies. The handouts provided quick facts on topics of interest for farmers.
- KPs produced in 2014 were compiled in a DVD and rolled out to key stakeholders.
- DevCom started producing impact videos of PhilRice projects implemented in the past; 8 impact videos have been uploaded in the PhilRice website.
- A semi-permanent structure with padlock was constructed for the KPs room to safeguard the KPs.
- PhilRice Filipino Magasin was 2015 Agricultural Magazine of the Year given by the Philippine Agricultural Journalists and San Miguel Corporation's Binhi Awards.
- Carlo G. Dacumos, 4th Place, Bright Leaf Agri Photojournalism Awards (out of 600+ entries).

**Design and execution of information/social marketing campaigns** AB Lanuza, JGS Sarol, JC Berto, AP Canilang, F Saludes, JD Villalor, and AM Pagdanganan

Information and social marketing campaigns are needed for us to effectively hammer down key messages to our intended clients. Annually, there are many events being conducted to showcase the best in Philippine agriculture. We take advantage of these events to inform the public about what we have at the Institute to assure them that rice R&D is well-covered by the men and women of science of PhilRice.

#### Highlights:

- DevCom participated in 9 exhibit events, including highprofile ones such as the AgriLink, which is the biggest exhibit agricultural expo in the country.
- The Division also led in putting up side banners along the national highway in Bgy. Malayantoc, the barangay before barangay Maligaya where PhilRice is located (if from Metro Manila). The aim was to alert the public about the different advocacies and latest technologies of the Institute.
- New ottoman chairs were also bought for use in future exhibits.
- 12 Banner designs produced. Used for promotion purposes.

#### Management of communication resource base and services

MM Prado, CA Frediles, F Saludes, and CG Dacumos

The PhilRice Text Center, PinoyRice, and media databases are three information and knowledge hubs that are being maintained by the Division. It is for the best interest of PhilRice and its clients that these hubs are managed properly to ensure smooth knowledge exchange flow from PhilRice to its clients and vice-versa. The PTC, for one, has strongly established itself as an information frontline for PhilRice. PinoyRice is also on its way to serve as the richest knowledge bank on rice production in the Philippines. Our media database has also proven itself as useful resource not just for DevCom but also for other researchers as well.

#### Highlights:

• In 2015, there were 24, 189 new texters to the PhilRice Text Center, a 36% increase from 2014 (17, 695). This can be attributed to the intensive promotion of this platform as well as to the crowdsourcing initiatives that the staff members did.

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In crowdsourcing, the Text Center agents send messages to the clients as opposed to just waiting for the clients to text.

- For PinoyRice, there were 36,260 users (44,497 in 2014); 192,742 pageviews (256,980 in 2014); Decreases were due to the shift in the new domain address from Pinoy Rice Knowledge Bank to PinoyRice.
- For the databases, there were more than 26,209 photos in our Lightroom, a local storage software for our photos; 10,570 photos were tagged, 97 keywords were generated, and removed 4,620 photos.
- An 81% increase in our social media platforms in terms of the number of people engaged (4,347 in 2014; 7,908 in 2015).
- 6,283 views for 2015 uploaded videos in YouTube.
- The Division achieved an almost excellent rating in the 65 communication service requests that it handled : 4.78 (responsiveness), 4.80 (quality), 4.76 (timeliness); 5 was highest.

#### Management of stakeholders' perception of PhilRice

MGM Nidoy, JA Manalo, SMP asiona, CA Frediles, JGS Sarol, AP Canilang, and JF Gamil

- There were 104 stories published in PhilRice Online.
- We commissioned a media surveillance company, Media Meter, to monitor pick ups of our press releases and overall publicity of PhilRice. Several keywords were given to Media Meter.
- 149 print publications, 70 websites, and 25 radio and TV stations were monitored.
- From August-December 2015, 38 media outlets published about PhilRice, its technologies, or quoted PhilRice experts.'
- PhP 9.5M PR value was generated. PR value is computed on a per square centimeter advertisement rate of the media outlet where the story was seen. The PR Value was even higher than the budget of the whole division in 2015.

- Business Mirror, The Philippine Star, and Manila Bulletin were the media champions in 2015 i.e. the media outlets that published the most number of stories about PhilRice.
- The Division produced 50 new broadcast releases distributed to regional information officers of the Department of Agriculture and other media outlets nationwide.
- PhilRice had close to 100 media exposures in 2015 in terms of our staff members being tapped as resource persons or as coordinators in radio and television programs either local, national, or international including BBC News during their data collection in Central Luzon for the areas devastated by typhoons.
- In all these media engagements, the Division can be said to have reached millions of rice stakeholders made possible through partnership and collaboration.
- Redesigned PhilRice website was well-received by PhilRice staff members (ease of navigation-77%; visual appeal-60%; quality and recency-71%; and downloadable contents-69%). Percentages refer to those who rated that the website "meets their expectations" in the areas considered for rating. Likewise, 91% of the respondents noted the links were active and updated.
- Bagong Sigla sa Agrikultura (RW 95.1FM), Finalist, 22nd Golden Dove Awards (Regional Category).
- Christina A. Frediles, 4th Place, Bright Leaf Awards (Agri radio program) (out of 600+entries).
- Mary Grace Nidoy, Qualifier, Global Landscape Forum 21 in Paris, a highly selective training for Climate Change beat reporters from around the world.

## II. Enhancing knowledge sharing and learning (KSL)

Project Lead: KET Barroga

Central to successful adoption or adaptation of complex and simple technologies are well thought-through knowledge sharing and learning processes. Over the years, there has been a recognition of the fact that KSL is a science in itself as one cannot just develop technologies and expect people to use them. This study aims to look at strategies that will enhance the way we do KSL. The premise is we should continue to innovate and be reflexive with our processes so we can come up with highly relevant strategies for our intended clients.

#### An Ethnomethodological Study of How the PalayCheck has been integrated into Farmers' Farming SystemUnderstanding the Culture of Rice Knowledge Sharing Online: An Epistemological Online Ethnographic Study of the Pinoy Rice Knowledge Bank (RKB) Exploration and fieldtesting of KSL-enhancing mechanisms JA Manalo IV

Conveying complex technologies is always a work in progress given audience dynamics and the continually changing rice farming landscape. It is in this regard that the Division houses a study that explores and field-tests new knowledge sharing and learning mechanisms. In 2015, there were two sub-studies under this study.

### Highlights:

- Revisiting the relevance of listening groups in group learning initiatives study started with initial data collection in Aurora. The participants were farmers who are involved in an ongoing PhilRice project in Aurora. They were asked to listen to an audio material on mushroom production, as part of the rice-based farming system initiative of the Institute. Pre-and posttest evaluations were administered to the participants. Focus group discussion with some key informants followed. Data collection and analysis are ongoing.
  - Development and piloting of the PinoyRice Jr study commenced. This is basically creating a youthful version of the PinoyRice. This portal will contain games and other materials on rice packaged for easier understanding by young people. As of 2015, the website has already been designed. Content development is ongoing.

#### Application and promotion of field-tested KSL processes/practices KET Barroga

PhilRice has always been keen on sharing its knowledge and technologies to its key stakeholders and other interested parties. It is only in talking about our initiatives in a larger audience that we are able to influence usage of the cost-reducing and yield-enhancing technologies on rice. In this study, we basically took note of all our sharing opportunities while at the same time reflecting on how things can best be shared to our clients.

#### **Highlights:**

- There were 136 sharing opportunities documented, local and international.
- Infomediary Campaign was a featured project during the 42nd session of the UN Committee on World Food Security on youth and agriculture in Rome, Italy, 15 October 2016. The team lead sat as panelist for Asia.
- 3 KSL Tips were uploaded in PinoyRice on the Rice Boot Camp, Rice Science Museum, and Exhibits. KSL Tips are a two-page publication, which aims to succinctly share best-fit practices in development strategies developed.
- A series of KSL Hour activities were also conducted. Here, the aim is to discuss, in small groups, several matters that pertain to how best communication initiatives can be carried out for optimum impact.
- A book chapter was published in a US-based publication "Promoting Social Change and Democracy through Information Technology". Book chapters were authored by scholars and practitioners in the area of information and communications technology for development from Denmark, Sweden, Australia and some Asian countries. Book chapter title was "The Infomediary Campaign in the Philippines as a strategy to alleviate information poverty".

## III. Creating Favorable Mindset and Attitude Towards an Enterprise-driven Rice-based Agriculture: The Rural Transformation Movement

RGZagado (Project Lead), JS Maloles, PIH Duran, JP Masilang, RE Tumale, SP Razon, LM Tapec, A CruzJr., RT Dollentas, ACS Suner, CK Rubillos, ST Quiring, and EM Gaquit

#### Highlights:

Interest Raising & Information Awareness

- A mind-setting workshop was conducted in all PhilRice stations with a goal of inculcating the value of entrepreneurship in the minds of the researchers.
- Three seminars were organized on: Agro-enterprise Development (by Mr. Lionel Mendoza of the Catholic Relief Services), Why Farmers Need to be Agripreneurs (by Mr. Ramon D. Peñalosa Jr., agri-prenuer), and Saemaul Undong: A Rural Transformation Movement in Korea" (Dr. Jeong Taek, KOPIA Director). They were participated by PhilRice researchers and partners.
- RTM Briefing was conducted to: DA MANCOM, PhilMech, CLSU, IRRI, UPLB, Bayer, Bohol Farmers' Cooperative, Siniba-an Farmers' Association, Bantug Primary Multipurpose Cooperative, Pansinao Multipurpose Cooperative, Candaba LGU, Masiglang Kababaihan of Nueva Ecija, PhilRice branch stations (during field days with mostly farmers as participants).
- A series of workshops on the operationalization of RTM were conducted among the PhilRice staff.
- A series of visit to the farms of successful farmers were organized with some 157 farmers participating in the said event.
- RTM presented as a poster during the Federation of Crop Science Society of the Philippines 23rd Scientific Conference.
- Two batches of farmers (Luzon and VizMin) trained on agripreneurship in partnership with project IPaD. The training was led by Mr. Rene SL. Resurreccion, Director of Passion for Perfection, Inc. with a total of 44 participants coming from the provinces of Ilocos Norte, Isabela, Nueva Ecija, Pampanga, Albay, Laguna, Agusan del Sur, Midsayap, and Bukidnon (Fig. 1).

RTM Facebook Page was maintained with 3553 likes. The RTM videos uploaded on the page received a number of likes and shares (Table 1).

Table 1. Likes and shares of the RTM videos as of December 14, 2015.VideoLikesSharesPeñalosa's Testimonial (Agriculture is the way to go)7352,044How to earn 1M per hectare per year1,7528,043The importance of working together (The Bagumbayan MPC<br/>Experience)423997



Figure 1. Agripreneurship Training.

Press releases on RTM were written and published (Table 2).

Table 2.RTM Press releases.

Link	Date	Title	
www.philrice.gov.ph	02/25/2015	Strategies, partnerships	
		needed for rural change	
www.philrice.gov.ph	06/02/2015	PhilRice goes entrep to help	
		farmers	
www.philrice.gov.ph	05/04/2015	Right attitude leads to	
	00,01,2010	progress Korean partner	
		confirms	
		commis	
www.philrice.gov.ph	08/20/2015	PhilRice prepares farmers to	
		be 'agripreneurs'	
www.philrice.gov.ph	12/14/2015	Agri-preneurial mindset,	
		inculcated among rice R&D	
		workers	
www.irriseminars.blogspot.com	01/19/2015	Gusto Namin, Milvonarvo	
<u>0</u>		Kayo: the Rural	
		Transformation Movement	
www.da.gov.ph	05/15/2015	Right attitude leads to	
		progress, Korean partner	
	02/12/2015	<u>Confirms</u>	
<u>news.pia.gov.ph</u>	02/13/2015	Philkice promotes Kural	
		farmers	
visavandailystar.com	06/08/2015	PhilRice goes entrep	
······································		0 1	
www.ilocostimes.com	07/12/2015	Batac farmers embrace rural	
wordpross.com	06/04/2015	transformation movement	
worupress.com	00/04/2015	farmers	
www.cebu-philippines.net		Bicol Region Economy	
		Propelled by Agriculture,	
		Tourism	

Development, production, and distribution of campaign collaterals

- Designed and installed RTM billboard and field banners featuring RTM key messages (Figure 2) in all PhilRice stations and on the farms of farmer-partners.
- Designed and distributed the following campaign collaterals: RTM shirts (1500 pieces), cowboy hats (750), ecobags (2000), 2015 wall calendars (2000), note pad (2000), arm cover (2000), face towel (2000), reflectorized sticker (2400), logo stickers (70), and RTM kicker video (shown during RTM briefing).
- Reproduced and distributed the following RTM collaterals: cowboy hat (400), commitment shirts (1500), and reflectorized stickers (1000).



Figure 2. RTM Field Banners featuring DAIG.



Figure 3. Some of the RTM campaign collaterals.

#### Social Mobilization

- Partnerships were inked with some successul farmers to serve as the RTM champions. These farmers are: Mr Ramon Peñalosa (Bacolod), Romeo Ganiron (Ilocos Norte), Bonifacio Dumagay (Kalinga), Romeo Vasquez (Isabela), Gerardo Esteban (Nueva Ecija), and Rodolfo Plopinio (Occidental Mindoro).
- Agencies that signified their support to RTM are: Philippine Center for Postharvest Development and Mechanization, Philippine Carabao Center, International Rice Research Institute, Department of Labor and Employment Region 1, Department of Science and Technology Region 1, DA Regional Field Office 3, Mariano Marcos State University, University of the Philippines Los Baños Crop Science Cluster, University of Southern Mindanao, Southern Christian College, Santiago Ammos Credit Development Cooperative (SACDECO), Pansinao Farmers' Multipurpose Cooperative, Llanera Cooperative, Maporong Farmers' Association, Maayong Magbalantay Farm, Costales Farm, Duran Farm, Penalosa Farm, LGU Oas, Albay, LGU/CAO Nagbacalan, Ilocos Norte, LGU Bual Norte, LGU Candaba, Pampanga, Korea Program on International Agriculture, Kababaihang Masigla ng Nueva Ecija.
- Established collaboration with the Korean Project on International Agriculture (KOPIA); KOPIA granted RTM with 2

study tours to Korea on May 17 to 22 and on August 24 to 28 to study the Saemual Undong Project in Korea.

- Collaborated with KOPIA and produced a Saemaul Rice packaging to help Boholano farmers to market their produce (Figure 4).
- Established collaboration with Korea Rural Economic Institute (KREI) through its program called "Center for International Agricultural Partnership (CIAP)"; RTM was granted with a 6-month training/research fellowship to study Korean experience with regard to rural transformation.
- Established partnership with the Project IPad to conduct entrepreneurship Training for the farmers as reported earlier.



Figure 4. Saemaul Rice Packaging.

#### Feedback

A quantitative survey on PhilRice staff and stakeholders' awareness and understanding of RTM was conducted. Results indicate that the respondents find RTM acceptable and relevant (75.8) with clear message (72.9%). They have signified their willingness to participate and spread the RTM message (81.7%). They see their role as more of advocates (30.8) rather mere beneficiaries (for farmer-respondents) and technology generator (for researchers). Overall, the mood meter survey indicates that they are hopeful (44.1%), inspired (38.6%), and happy (35.2%) when they knew about the RTM. A quick survey to gauge the effectiveness of the the mindsetting workshop (reported earlier) was also conducted. Results show that 82% of the respondents have changed their view of farming. They said farming should not be viewed merely as a production activity but rather as a business enterprise. They (75%) further said they are willing to share their gained knowledge from the workshop to the farmers. Most of them (62%) were inspired by the RTM inititive. Lastly, they (99%) said mindsetting activity is an effective development strategy.

### **IV. Rice Science Museum**

DB Gonzales-Esmero and RB Bajit (Project Leads), ,SMM Cuevas, CLB Gado, FGME Manuel, CN Bibal, and RN Bibal

Since its relaunching on September 2014, the Rice Science Museum disseminates the history, culture, arts, science, and technology behind the Filipinos` staple." Through thematic, special, and mobile exhibits, the museum exerts influence on learning, technology adoption, and call for action.

As extension modality, studies show that museum goers can gain the following skills: intellectual such as thinking critically and analytically; information management skills such as locating and evaluating information; and social skills. Studies also show the transformative power of museums; effecting change in attitudes and values and increasing motivation. To realize these impacts, the Rice Science Museum implemented activities categorized as collection, research, education, and partnership. These are initial works leading to the establishment of Rice Science Exploratorium, which was approved in the Institute`s Board of Trustees Meeting on July 2014.

#### Highlights:

Collection

- Prior to its relaunching, the museum was set-up to raise awareness on rice culture, but focused only on few collections about the Cordillera; thus, limiting rice appreciation in the highlands. The museum was reformatted in a dynamic way to help farming communities keep up with the steady generation of knowledge in the rice science and development sector through transitory exhibits every six months. This way, knowledge is always keep fresh and updated.
- To help preserve and promote cultural heritage and foster human development, we have increased and expanded our collections through the establishment of our branches in Batac, llocos Norte and San Mateo, Isabela.

- With their opening on March 1 and October 12, respectively, more than 100 artifacts were added to our collection, mostly on rice varieties and traditional farming implements in the regions.
- Furthermore, 16 artwork and 20 photographs portraying the colored rices, youth appreciation on rice and rice farmers, visual narratives on unique rice landscapes, rice biodiversity, and colorful characters in the rice field augmented our visual collection. These were showcased to the museum visitors, which average 2,000 a month.
- PhilRice collections on pigmented rice were displayed during the Colors of Rice exhibit from July 2015 to February 2016.
   Traditional pigmented rice varieties and brown rice and their comparison with white rice and the impact of rice on our health, in our life, and in our communities were highlighted.
   The exhibit was launched as support to the government's effort on improving the nutritional status of Filipinos.

#### Research

- Two researches were presented during the 2015 University Museums and Collections International Conference facilitated by the International Council of Museums.
- Interactive Learning Behavior of Museum Visitors: The Rice Science Experience highlighted how the visitors learn during their stay in the museum. The study found three interactions leading to their acquisition of knowledge: visitor-visitor interaction, visitor-display interaction, and visitor-docent interaction. Meanwhile, barriers to learning include: visitors desire to take photos instead of focusing on the displays, visitors' inability or hesitations to ask questions, and some interactive exhibits only require a person to operate.
- Bringing Rice Science Closer: A PhilRice Rice Science Mobile Museum Journey presented the influence of mobile museums to two most populous schools in Metro Manila and in Luneta, which were visited by 19,400 students and passersby. Study shows that the mobile exhibits affected cognitive and affective learning to the visitors. These learnings were indicated through asking sequence of related questions—clarifying, probing, and challenging questions; expressing deeper appreciation on the production of rice and how difficult it is to grow rice; showing

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emotional response to the exhibit; and increasing empathy of other people's beliefs and actions. This paper was also presented during the 2015 R&D Conference.

#### Education

As part of its educational role, the Rice Science Museum implemented the Rice Science and Art Summer Camp and mobile exhibits. The educational programs were implemented as studies show that museum activities affect teens for a lifetime. A 2015 survey commissioned by four of the world's top museums showed that teenagers consider museum programs as the most positive influence on their own lives, surpassing family, school and their neighborhoods. Survey results also showed that attending to museum activities is one of their most important experiences and that they were often in situations where their experience in museums affected their actions or thoughts.

Conducted on May 19-22 in Science City of Muñoz, Nueva Ecija, 16 elementary and high school students from Manila attended the Rice Science and Art Summer Camp. The drawings, which the participants presented in the closing activity, provided perspectives on how the youth's perception on rice and farming were changed. Extracting their art work revealed five main themes: "Rice is very valuable to be wasted," "There's more to rice than its white color,"
"Ignorance of the colored rice varieties degrades our health,"
"Every grain contains the hardship of farmers," and "Scientists work hard to breed and produce high-yielding and nutritious rice." Decoding the drawings further showed a transition from merely sympathizing with the farmers to becoming empowered in helping the farmers as almost all of the participants considered a career in agriculture after the camp.

Despite the depth and richness of learning offered by the Rice Science Museum, the public cannot maximize these benefits owing to its location. To bring rice learning experience closer to wider audience, the museum executed mobile exhibits in eight parks, government offices, schools, and malls in Romblon, Metro Manila, and Pampanga, which were viewed by about 10,000 students and passersby. Visitors said the displays motivated them to try new farming technologies (farmers); encourage them to eat healthier rice varieties, conserve rice, and appreciate the value of rice and its past (public); and inspired them to be engaged in agriculture (youth).

#### Partnership

- The Department of Tourism (DOT) has accredited the Rice Science Museum as a tourist facility and as a Local Government Unit-licensed tourist establishment. With its accreditation, the Rice Science Museum is the only DOT and LGU-listed tourist facility in Nueva Ecija registered in the http://visitmyphilippines.com, a DOT-maintained website. In Central Luzon, the Rice Science Museum shares similar accreditation with the Aquino Center and Museum in Tarlac City.
  - To increase our visibility and wider our reach, the museum cultivated partnership with the National Committee of Museums, Central Luzon Association of Museums, UPLB Museum of Natural History, and Museo Pambata. We have collaborated with the Ayala Foundation in hosting the Botong Francisco: A Nation Imagined exhibit in which the 25 painting reproductions of the country's second national artist show themes that tie up the cycle of life in a rice-farming town in the 1940s and 1950s. During the exhibit launch, about 20 municipal tourism officers led by Cristina Wycoco-Paulino, signified their commitment in including the museum in their campaigns.
  - Moreover, the provincial government of Ilocos Norte and the museum worked on developing the Balay Dingras, which was one of the three museums launched on November 19 as part of the province's initiatives to boost its Paoay Kumakaway! tourism campaign. With a concept resembling a rice miller's house, Balay Dingras features collections from the Rice Science Museum.
- Our activities had gained media attention featuring us in 33 print and online dailies, in which Philippine Star and Manila Bulletin devoted an editorial about the role of museum on rice self-sufficiency and engaging the youth in agriculture. The print coverage comprised 15 percent of the total media visibility received by PhilRice. We were also featured in Biyahe ni Drew, Umagang Kay Ganda, and local TV and broadcast stations.

#### Abbreviations and acronymns

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

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

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

PI - panicle initiation PN - pedigree nursery PRKB – Pinoy Rice Knowledge Bank PTD – participatory technology development PYT – preliminary yield trial QTL - quantitative trait loci R - resistant RBB - rice black bug RCBD – randomized complete block design RDI – regulated deficit irrigation RF – rainfed RP - resource person RPM - revolution per minute RQCS – Rice Quality Classification Software RS4D - Rice Science for Development RSO – rice sufficiency officer RFI – 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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