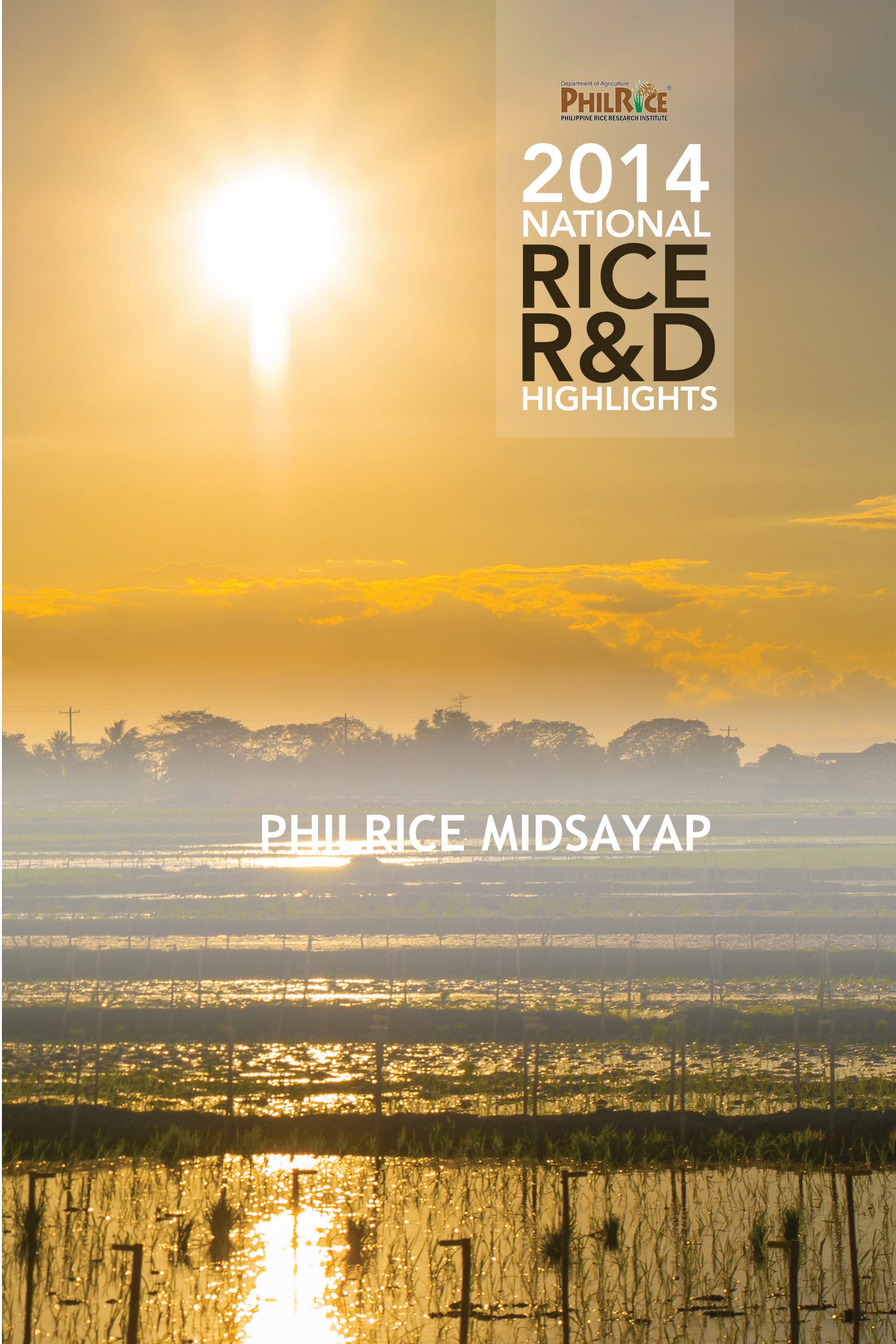

Department of Agriculture
PHILRICE
PHILIPPINE RICE RESEARCH INSTITUTE

2014 NATIONAL RICE R&D HIGHLIGHTS

PHILRICE MIDSAYAP

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PhilRice Midsayap

Acting Director: Sailila E. Abdula

Executive Summary

In 2014, the Development Unit of PhilRice Midsayap implemented studies and projects that contributed to the development of location specific technologies of rice and rice-based farming systems; and improving farmers' farming practices to help increase farmers' productivity and income through intensive package of technology demonstration, promotion and capacity building of the rice stakeholders (AEWs, Farmers, Professionals, Students and other individual) to accelerate technology adoption and adaptation in Region IX, XII and the Autonomous Region in Muslim Mindanao (ARMM).

There were 11 development studies & projects (7 studies and 4 projects) both internal and externally funded implemented in 2014 as follows; (1) Intensified Rice-based Agri-Bio System (IRBAS) : Palayamanan Plus Model Farm; (2) Boosting Frontliners' Capacity in Extending Agricultural Education and Extension Through Rice S&T Updates; (3) Empowering Stakeholders in Turning Rice Biomass into a profitable enterprise; (4) Accelerating Technology Adoption Through the Promotion of Rice and Rice-Based Technologies in Regions IX, XII and the Autonomous Region in Muslim Mindanao (ARMM); (5) Learning Center; (5.1) Relay Planting; (5.2) Palayabangan: The 10-5 Challenge; (5.3) Training of PhilRice Midsayap Staff; (6) Rural Transformation Movement; (7) Expert Dispatch; (8) JICA-TCP5: Rice-Based Farming Technology Extension Project for the Autonomous Region in Muslim Mindanao [(ARMM) (2012-2017)]; (9) National Irrigation Sector Rehabilitation & Improvement Project Agricultural Support Component [(NISRIP-ASC) (2012-2017)]; (10) Upland Rice Development Program in Region IX, XII & ARMM (2012-2015); and (11) FSSP: Accelerating the Dissemination of Associated Technologies for Increasing Yield and Profitability in Irrigated (NIS, CIP, SWIP) Environment.

I. Intensified Rice-based Agri-Bio System (IRBAS): Palayamanan Plus Model Farm

SE Abdula, OH Abdulkadil, VV Casimero, ES Perialde, GD Balleras,IML Bauzon, MS Doverte

Establishment of a diversified and an integrated rice-based farming systems is expected to ensure food availability and increases the productivity that will ultimately return to an increased income of the farmers thereby stabilizing the economy of the farm families. It also an alternative system of production that can solve intensive rice production and effective approach to combat malnutrition and poverty.

This Palayamanan plus or farm intensification showcases to rice farmers the purposive integration of various components such as rice and other crops such as mungbean and mushroom production, livestock and biomass recycling so that nothing is wasted and everything in the farm is a precious resource. This model farm secured healthy and quality foods for the family and provided additional income thus, it alleviated poverty. This project generally aimed to showcase the Palayamanan plus for intensified cost effective rice-based farming systems in Central Mindanao specifically to (1) utilize rice straw and stubbles for spawn and mushroom commercial production (V. volvacea and P. ostreatus); (2) utilize rice waste materials and other farm wastes for commercial production of vermicompost and vermitea; (3) intensify the production of rice + mungbean + azolla farming systems; (4) intensify and sustain rice and vegetable farming systems; (5) establish marketing scheme of rice by products in the neighboring provinces and (6) conduct cost and return analysis of different components.

Highlights:

Mushroom Enterprise

- Out of 600kg target of fresh oyster mushroom, only 40kg was produced due to some difficulty in production process such as high contamination and other production factor.
- Produced 80kg of fresh paddy straw mushroom (1,080kg target)
- Produced 700 packs of spawn for oyster mushroom (600 packs target)

Vermicompost Production Enterprise

- Produced 2,800kg of vermicast (2,800kg target)
- Produced 7,200kg of vermicompost (7,200kg target)
- Produced 100kg of ANC (100kg target)

Rice Intensification Enterprise

- 18.85 tons (4.81) t/ha) of registered seeds [(DS & WS), 5.86 t/ha target]

Non-rice crops:

- Produced 29 kg of Sesame seeds (25kg target)
- Produced 555.76kg Okra (960kg target)
- Produced 269.16kg string beans (1250kg target)
- Ampalaya 177.58kg Ampalaya (19,000kg target)

II. Boosting Frontliners' Capacity in Extending Agricultural Education and Extension Through Rice S&T Updates

OH Abdulkadil, SE Abdula, VV Casimero, STC Quiring and RS Salazar

Significant accomplishments have been achieved in recent years by the government in rice production. However, the increasing food demand of its increasing population needs to be addressed. Recent developments and breakthroughs in rice science and technologies have to be disseminated to Agricultural Extension Workers and other extension service providers to expedite the promotion of technologies, thereby, increasing the production and income of rice farmers.

The need for collaboration and partnership is therefore necessary to elicit technical assistance and support from various sectors to improve farm productivity and the sharing of resources-manpower & financial will hasten the introduction of new technologies and eventually the adoption of these technologies by farmers.

The capacity to create, share, apply and exploit knowledge among farmers is the primary duty of extension workers. Puran (2011) emphasized that the role of extension service provider is to diffuse the research results (technology transfer) to the farmers on all crop commodities not only in rice and provide infrastructural support for improvement of the agricultural sector.

However, the ability of agricultural extension worker to effectively deliver technologies to farmers in all the subsectors of agriculture requires that extension workers be exposed to refresher courses and short trainings (Ruttan, 1985; Idrisa and Ogunbameru, 2012). Training is crucial to the performance of the duties of extension workers as knowledge gained through training keeps the extension workers abreast of new development in their profession. Knowledge sharing is also the main tool used to achieve success in modern economies. It is only when extension workers are given the opportunities to upgrade their current level of knowledge that they can be competent to train farmers (Idrisa andOgunbameru, 2012).

Thus, this study is geared towards providing extension service providers, specifically the Agricultural Extension Workers of the Local Government Units to be equipped in the recent innovations, inventions, and discoveries in rice science and technology. The researcher is, therefore, hopeful that this could help enhance their extension service delivery in their respective locality. Specifically, this study aimed to enhance knowledge and skills of extension service providers on the recent rice innovation, invention, and discoveries.

Highlights:

- Trained 19 agricultural extension workers (AEWs) on Rice S&T Updates and Appreciation Seminar to 25 Local Executives of PPALMA areas (Pigcawayan, Pikit, Aleosan, Libungan, Midsayap and Alamada) with emphasis on PalayCheck System and Palayamanan Plus.

- For Rice S&T Updates for the AEWs, there were 13 male and 6 were female participants. Five of them belong to the age bracket 21 to 30 year old, 6 belong to 31 to 40, one of them is belongs to the bracket 41 to 50 and 6 were belong to 51 to 60 years old. Six participants were still single while the rest are married (16 participants). Among the 19 participants, 15 were college graduates while the rest have master's degree.

- For the Appreciation Course for the Local Executives, there were 21 male and 3 female participants. Five of them belong to the age bracket 31 to 40 years old, 8 belong to 41 to 50, and 11 belong to 51 to 60 years old. Four of the participants were single while 20 participants were married. Among the 24 participants, 16 were college graduates, one has a master's degree, two were able to study up to the college level, three were high school graduates and the rest are elementary graduates.

- Average knowledge gained of 50% in both AEWs and Local Executives training was obtained.

III. Empowering Stakeholders in Turning Rice Biomass into a profitable enterprise

SE Abdula, OH Abdulkadil, VV Casimero, STC Quiring and RS Salazar

With the impending danger of climate change and global warming, several organizations are looking into ways to mitigate the effects of these threats to the planet. There are various research undertakings that focus on green agriculture. The Philippine Rice Research Institute, for instance, is looking into strategies in utilizing rice biomass as resource.

Rice biomass is one of the contributors in greenhouse gases emissions and other toxic in the atmosphere. Annually, large volumes of rice straw are produced as agricultural by-products. Rice straws are disposed off through open-field burning, which leads to serious environment pollution problem.

Vermicomposting and spawn and mushroom productions can generate additional income for farmers. Stakeholders can turn this simple technology into a progressive and profitable enterprise. Thus, this study intends to empower stakeholders in turning rice biomass to a useful resource through vermicomposting and spawn and mushroom production. Thus, this study aimed to empower stakeholders in turning rice biomass to a profitable enterprise. Specifically this study also intends to: (1) equip knowledge and skills in vermicompost production; (2) equip knowledge and skills in spawn and mushroom; (3) draft plans for the technology transfer and commercialization; (4) evaluate the impact on the technology promotion, dissemination and adoption.

Highlights:

- Trained 50 farmers from barangay Bual Norte, Bual Sur and Agriculture on Mushroom and vermicompost production.

- There were 18 male and 32 were female participants. Fourteen (14) of them belong to the age bracket 21 to 30; six belong to 31 to 40, thirty (13) of them are aged from 41-50, fourteen (14) of them belong to 51 to 60 and three of them are aged beyond 60 years old. Eleven (11) of the participants are single while the 35 participants were married, 3 widows and 1 separated. Among the 50 participants, 4 were able to study up to high school, 17 were high school graduates, 13 were able to study up to college and 16 were college graduates.

- Average knowledge gained of 50.5% was obtained in 3 batches of training for farmers conducted.

IV. Accelerating Technology Adoption Through the Promotion of Rice and Rice-Based Technologies in Regions IX, XII and the Autonomous Region in Muslim Mindanao (ARMM)

SE Abdula, OH Abdulkadil, VV Casimero, STC Quiring and RS Salazar

There are a number of cost-reducing rice and rice-based products and technologies developed to help increase farmers' farm productivity and profitability. Research organizations unceasingly devote their time and resources to search for innovations, inventions, and discoveries to produce outputs that would help contribute to increase the yield and income of the farmers. Behind the innovation and discoveries in agriculture is the motivation to address social issues such as food security, poverty and malnutrition, and economic development.

To encourage adoption of new technologies, pro-poor agricultural researchers must look beyond simply boosting productivity. They should emphasize certain variables which reduce the farmers' vulnerability to loss of income, bad health, natural disasters, and other factors. In addition, an understanding of local cultural practices and preferences is important if smallholder farmers are to benefit from agricultural technologies developed through research (Muzari et al. 2012). Hall and Khan (2012) also stated that the obvious determinants of new technology adoption are the benefits received by the user and the costs of adoption.

The challenge now is how these technologies will be transferred from research institutions to the intended audiences. Baumüller (2012) stated that information regarding the existence of (new) agricultural technologies is of course a pre-requisite for technology adoption. Such information can be obtained from various external sources, such as extension agents, fellow farmers or different media such as mobile phones, TV or radio.

Hence, this study will intensively conduct promotional activities to enhance technology transfer and adoption that will eventually help farmers increase their farm productivity and profitability. Furthermore, this study will also test extension delivery strategies to hasten the proliferation of information and technologies in reaching the target audiences. This study aimed to accelerate rice technology adoption through the promotion of rice and rice-based products and technologies in Regions IX, XII, and the Autonomous Region in Muslim Mindanao (ARMM). Specifically, it aimed to: (1) create awareness among stakeholders on rice and rice-based technologies adaptable to the community; (2) empower students/youth to be agents of information and technology transfer in their communities; (3) assess the level of technology adoption among farmers.

Highlights:

- Participated and exhibited rice and rice-based technologies during the 53rd Founding Anniversary of Libungan municipality on August 4 to 7, 2014 and during the Centennial celebration/Kalivungan Festival of North Cotabato at Provincial Capitol, Amas. Kidapawan City on August 25 to September 1, 2014.

- Conducted information campaign/ /awareness on PhilRice e-services, opportunities in the rice industry, and rice conservation to 155 high school students of Southern Christian College (SCC), Notre Dame of Midsayap & Agriculture high school, Midsayap, Cotabato, respectively. November 10, 2014.

- Conducted feeding activity to the 800 elementary pupils from barangay Agriculture, Salunayan (July 23, 2014) & Simeon Panganiban (July 28, 2014) elementary schools, Midsayap, Cotabato, respectively.

V. Learning Center

OH Abdulkadil, SA Balidiong, STC Quiring, RS Salazar and Ruben MB Miranda

A paradigm shift is needed in our agricultural efforts to help achieve the food security and sufficiency. Our common ways of rice farming should be revolutionized, transformed, and metamorphosed to alleviate the bottlenecks in food production and delivery. Furthermore, to address these problems and create opportunities for economic growth and development in the countryside, Philippine rice-based farms must be transformed into competitive, sustainable, and resilient agri-biological production systems. One key element to realize this is through integrated and diversified rice-based production systems wherein demonstrations and deployment of these technologies and systems will be carried out in an on-farm learning center or area (Miranda 2014 Program proposal).

Field demonstrations, aptly named on-farm demonstrations, of new or innovative practices carried out on actual farms have long been a key hallmark of program delivery and teaching in extension work. These on-farm demonstrations gained the confidence of farmers who toured the farms, and has led to successful growth and development of the extension system. Such farm based demonstrations are being used extensively in extension work in other countries as a means of showing and telling farmers exactly what a new or innovative practice is and showing how it will fit under local conditions. Soil types, fertility levels, climatic conditions such as frequency, amounts and periods of rainfall, availability of inputs or their applications, knowledge levels of the farmers and extension workers, available infrastructure and many other factors all come into play when on-farm demonstrations are considered as a program delivery method.

Thus, this project was conducted to establish and maintain relay rice planting to showcase the major growth stages of the rice plant intended for training and re-evaluation of agronomic and yield performance of variety used at different planting dates; fine-tune best practices identified among Palayabangan 10-5 Challenge outstanding yielders to develop and package a new craft of high yield rice technologies or package of outstanding yielder and conduct Appreciation Course on Enhanced PalayCheck and Palayamanan Plus for PhilRice Staff utililizing the learning center as learning fields (Miranda, 2014 Program proposal).

Highlights:

Component 1: Relay Planting

- Showcased different crop stages; seedling, tillering, flowering, and maturity (80-85%) planted with rice varieties (NSIC Rc160, Rc240, Rc238 and Raeline 7, NSIC Rc300, Rc160, Matatag 11, 17, and NSIC Rc238)) in a monthly basis to:

- Served as practicum area for 25 participants on Rice S&T Updates and Appreciation Course for Local Executives and 19 participants of Rice S&T Updates and Training Course on Mushroom and Vermi Compost Production for AEWs (PPALMA) and 72 participants in 5-Day Specialized Training of Agricultural Extension Workers(AEWs) on Rice –Based Farming System and Facilitation Skills(JICA TCP5).

Component 2: Palayabangan: The 10-5 Challenge

- In 2014 DS, there were three participating team competed:
  - Research (0.89 t/ha@20.50) per kg of palay)
  - Development (3.3t/ha @10.00 per kg of palay)
  - Business Development (2.4t/ha@13.00) per kg of palay)

- In 2014 WS, there were 5 groups participated including the 2 private companies who competed in the contest.
  - Syngenta(0.613t/ha@ 110.00/kg using Front Line Gold)
  - Bayer (3.07t/ha @16.00/kg using Bigante Plus)
  - Research (4t/ha @12.00/kg using Mestiso 19)
  - Development (3t/ha@8.00/kg using NSIC Rc 300) and

- Business Development (2.9t/ha @9.00 / kg using NSIC Rc302)

Component 3: Training of PhilRice Midsayap Staff

- Trained 40 non-technical staff (34 BDD field workers & 6 Admin staff) on Enhanced PalayCheck and Palayamanan Plus Training Course at PhilRice Midsayap from August 22-December 22, 2014.

- Among the participants, there were 34 male and 6 were female. Twenty of them belong to the age bracket 21-30 year old, 10 belong to 31-40, 8 belong to 41-50, and 3 of them belong to 51-60 years old. Moreover, 10 participants were still single, 29 were married and one of them is a widow.

- For educational attainment of the participants, 1 reached up to the elementary level, 16 were up to high school, 10 graduated high school, 3 were able to study up to college, 7 were able to finish college and 3 were able to finish vocational courses. Their average knowledge gained was 31%.

VI. Rural Transformation Movement

Sailila E. Abdula, Gina D. Balleras, Ommal H. Abdulkadil, and Sylvia Therese Quiring

The proposed campaign uses 'change intervention' over 'technological intervention' to encompass its holistic approach aimed at addressing both technical/technological and psychological constraints of the target population towards rural transformation. It assumes that by focusing attention on the target's population's lifestyle, attitudes, values, production scheme, and through effective marketing we can more effectively bring about rural transformation. This campaign proposal aims to support this initiative. Technical briefing to PhilRice staff, identified barangay key officials, and stakeholders was conducted in PhilRice Midsayap, Experiment station.

Highlights:

- Conducted 1 briefing with 175 participants from 57 barangays of Midsayap at PhilRice Midsayap on December 1, 2014.

- Commitment wall, billboards,and field banners were installed at PhilRice station and identified barangay.

- Identified 2 Millionaire farmers: Mr. Catalino F. Fugata, Jr. – Vice Chair in Agriculture Farmers Credit Cooperative and Mr.

Lope Amandoron – Seed Grower.

- Delivered 271T-shirts to farmers, extension workers, educators, and policy makers.

VII. Experts Dispatch-PhilRice Midsayap

Vic V. Casimero

Highlights:

- Several PhilRice Midsayap staff who are specialists in certain fields were either dispatched as lecturers or reviewers during the conduct of training and technical review programs by partner agencies that are under the operational sphere of PhilRice Midsayap branch station.

- During calendar year 2014, a total of 686 training participants which were composed of new inbred rice seed growers, inbred rice farmers, hybrid rice farmers, agricultural extension workers (AEWs), local farmer technicians (LFTs), local executives and even PhilRice Midsayap staff were trained by the PhilRice specialists especially on PalayCheck system and Palayamanan (Table 1).

- During the Re-enforcement facilitation skills training for the Rice Technologists (RiceTechs) working under the National Irrigation Sector Rehabilitation and Improvement Project (NISRIP), staff from the station were also dispatched as lecturers or facilitators.

- One specialist from the station was dispatched as technical reviewer during the R&D review and planning workshop of DA RFO XIII in Agusan del Norte on November 26-27, 2014. During the two-day activity, 35 completed and ongoing projects and 8 new project proposals were presented by the respective researchers and proponents and reviewed by a panel of experts including the station's specialist.

VIII. JICA Technical Cooperation Project (TCP5) : "Rice-Based Farming Technology Extension Project for the Autonomous Region in Muslim Mindanao", (ARMM) (March 2012-2017)

Ommal H. Abdulkadil, Sailila E. Abdula, Vic V. Casimero, Rizal G. Corales, Teodora L. Briones, Jo-Anne Lynn Joy E. Duque, Abdullah M. Matucan, Nixon Abdilla, Ilmie Ibama, Datua Ali N. Sumlay, Nasrullah Mohammed Patadon, Jr., Sulaiman B. Tamamay, Jr., Alexander Mangondaya, Jack D. Amer, Basher Macaumbang, Baltazar Jauhari, Abubakar Abdulhalim, Zaldy Amilassan and Sherwina Lukman

The Autonomous Region in Muslim Mindanao (ARMM) continues to face challenges affected by conflict, and records one of the highest poverty incidences in the Philippines, despite the region's high agricultural potential owing to its favorable climate, fertile soil, and vast land. The region cannot produce its own rice requirements for the growing population (5.5% annual growth rate) with per capita consumption of 144 kg per year, which is the highest among regions. From 2003 to 2009, the region had rice sufficiency level of 66%. In 2009, the region's yield averaged 2.83 mt/ha, which is below the national (3.59mt/ha), and Mindanao (3.49mt/ha) averages. A part of the reasons for the low yield per hectare can be attributed to famers' inadequate technical knowledge.

Extension services were devolved in 1991 from the national (Department of Agriculture) to the local governments (provincial), resulting in weakened extension support system in the Philippines, worsened by the lack of support from the locals, and the discontinuity of agriculture programs by elected authorities/officials. In ARMM, due to its autonomy, the extension function remains in its Department of Agriculture and Fisheries (DAF), though in some areas, the local government (provincial/municipal) also provides extension support. It has been observed that extension support at the local level faces challenges due to the limited number of agricultural technologists (ATs) and lack of their technical capabilities. Furthermore, because of limited budget, the region cannot provide continuous training and other activities to enhance their capabilities in providing technical assistance and conducting training for farmers.

JICA has provided "Rice-Based Farming Systems Training and Support Program for the ARMM (TCP4)" from February 2005 to February 2010, to improve the farming system utilized by farmers in the target areas. According to the evaluation conducted from August to September of 2009, the TCP4 was found to have brought significant impact not only to the improvement of the farming system utilized by farmers but also to their livelihood.

Hence, the TCP5 was formulated to build on the success of the previous project to further enhance government's capacity in delivering agricultural extension services and improving farmers' technologies, thereby contributing to improvement of livelihood and building peace. Therefore, this project aimed to improve the living standards of farmers in the target areas specifically to strengthen the location-specific extension system and enhance technical services on production/post-production support for target farmers by developing location-specific rice-based farming technologies/ practices and extension approaches; and training agricultural technologists and farmers.

Highlights:

- The rice technology adoption showed that number of rice technologies/practices adopted by over 70% farmer field school (FFS) farmer-participants of Year 1 (2011-2012) increased from 0 to 12 out of 20 from 2011-2013. For the Year 2 (2012-2013) farmers, adoption by 70% of the farmers increased from 1 to 10 out of 20 from 2012-2013.

- For vegetable technology adoption, number of practices adopted by over 70% of Year 1 FFS farmer-participants, increased from 2 in 2011 to 7 (out of 10 vegetable practices introduced) in 2013. For the Year 2 farmers, adoption by 70% of the farmers increased from 2 to 5 out of 10 in 2012 - 2013.

- The adoption of technologies by farmer-to-farmer (FTF) - FFS farmers, showed that 88% of FTF-FFS farmers in Maguindanao and 100% of FTF-FFS farmers in Lanao del Sur adopted vegetable technology being introduced. On the other hand, 44% of FTF-FFS farmers in Maguindanao and 80% of FTF-FFS farmers in Lanao del Sur adopted rice technology. Data showed that target rate of adoption by FTF farmers (at least 1 technology adopted by over 40% of farmers) had been achieved in Maguindanao and Lanao del Sur.

- For the capacity building of agricultural extension workers (AEWs) of DAF ARMM, 105 AEWs trained on Rice-based farming system for Year 3 (2014-2015). These AEWs, 64% served as facilitators of the Farmers Field School established across ARMM.

- Moreover, there were 136 women trained on Food Preparation and Processing for the Year 3 (2014-2015) held in the Palayamanan Model Farm to enhance the knowledge and skills of women in food production, food processing and entrepreneurship to help them augment their family income).

Total number of participants exceeded the initial target of 75 by 81%.

- A total of 243 farmers trained (73=Maguindana0; 60=Lanao del Sur; 40=Basilan; 30=Sulu and 40=Tawi-Tawi) on Rice-based Farming System (RBFS) through farmer to farmer extension approach. The FFS (24 sites) classes were facilitated by the identified and trained FTF farmer cooperators during critical stages of the crop and as need arises.

- Established 24 model farms (7=Maguindanao; 6=Lanao del Sur; 4=Basilan; 3=Sulu and 4=Tawi-Tawi) that served as learning fields of the FTF-FFS and other walk-in farmers with in the community who were not directly involved in the core FFS.

Generally, the project objectives are in line with GOP/ARMM plan for the agriculture sector and Japanese aid policy for the Philippines particularly in Mindanao. The Project addresses the need to improve rice-based farming technology in ARMM through farmers' training and upgrading the extension skills of AEWs. Other perceived effects include: savings on production cost; savings on household food expenses; increased participation by women in farming activities; and increased government presence in FFS sites.

IX. National Irrigation Sector Rehabilitation & Improvement Project Agricultural Support Component

OH Abdulkadil, SE Abdula, VV Casimero, RP Jayme, PM Ostique, CMN Casco, SC Lastimosa, W Bugtay, LD Abaoag and AM Corales

National Irrigation Sector Rehabilitation and Improvement Project (NISRIP) is a project under the loan agreement between the Government of the Philippines and the Japan International Cooperation Agency (JICA). The project aims to contribute to the national rice self – sufficiency by strengthening the irrigation sector in the country. This project has two primary components, the hard and soft components.

To ensure the increase in the yield of the farmers benefiting from the improvement and rehabilitation of the irrigation facilities, corresponding capacity enhancement through the conduct of the FFS shall be taken for the 11 NIS covering around 35,670 ha of service area. Three levels of training shall be conducted for the Ias with the establishment of three (3) participatory demonstration farms per IA (45 IAs) cum seed production area and corresponding information and communication support. Basic agricultural machinery to be provided to each of the 45 IAs are seed cleaner, thresher, bag closer, weighing scale, hand tractor with trailer, and moisture meter.

Thus, this project is being implemented in Davao del Sur in Mal River Irrigation System, MalRIS with 5 Irrigators Association as project beneficiaries and Sultan Kudarat in Lambayong River Irrigation System, LamRIS with 12 Irrigators Associations to: (1) provide Rice S and T updates to each of the 11 NIS; (2) conduct one (1) season – long training FFS per IA for two (2) cropping seasons using the PalayCheck System with focus on water management and the use and maintenance of agricultural machinery; (3) develop at least 10 Farmer Technicians (FT) per IA who shall lead the FFS in the subsequent seasons; (4) establish three (3) participatory demonstration farm (PDF) per IA; (5) produce quality seeds from the PDF cum seed production area; to provide one (1) lot of agricultural machinery per IA; (6) train the members of the IA on the use and maintenance of the basic farm tools and machinery (7) increase awareness and enhance the access of Agricultural Extension Workers (AEWs) and farmers to rice information and decision support tools with the use of tri-media; and (8) accelerate the adaptation and integration of new technologies into the irrigation systems.

Highlights:

- In 2014, 17 participatory demonstration farms (PDFs) cum seed production were established in 17 Irrigators Association (IAs) in 2 National Irrigation Systems; the LamRIS and MalRIS, namely: (1) BUCATILL IA, (2) BAHE IA, (3) CONTA IA, (4) NALDAN CREEK, (5) KATTAM, (6) KAPNOLA, (7) PARADIMA, (8) TUMIAO-MAMALI IA, (9) BILTUM, (10) KAMAKAT, (11) POBLEX IA and (12) PODIMID IA in Lambayong Irrigation System. For Mal Irrigation System (MalRIS), Matanao, Davao del Sur, there were 5 participatory demonstration farms cum seed production established in (1) BURLAN IA, (2) LOTOFIA, (3) TIFIA, (4) LABAKAFIA and (5) MABAFIA.

- A total of 516 farmers were trained through the season-long FFS in both LamRIS and MalRIS both in DS&WS 2014. For the season-long training of farmers through FFS in Lambayong Irrigation System, there were 341 farmers trained on PalayCheck System while in MalRIS, a total of 175 farmers were trained.

- For the capacity enhancement, a 5-day reinforcement training on facilitation skills and leadership of selected IA farmer members (FFS participants). There were 71 selected farmers who trained as Local Farmer Technicians and will conduct their own season long FFS in each IA both in MalRIS and LamRIS for the 2015 dry season (October 2014 to February 2015) planting.

- The participatory demonstration farms (PDFs) showed yield increment in each PDFs using the PalayCheck System platform both in 2014 dry and wet seasons (Table 1,2, and 3). However, some Irrigators' Association showed negative yield increment due to severe damaged of pests (20-60% damaged of stem borer).

- The performing varieties during dry season and wet season 2014 based on the participatory demonstration farm were NSIC Rc238, NSIC Rc160, NSIC Rc224, NSIC Rc226, NSIC Rc222 and PSB Rc18. These varieties are commonly used by the farmers in the area that is already adoptable

Table 1. 2014 Wet Season (WS) yield performance of PDFs in LamRIS, Lambayong and Tacuring City, Sultan Kudarat 2011.

Name of IAs	Baseline Yield (t/ha)	Actual Yield (t/ha)	Yield Increment (t/ha)
BAHE IA	4.4	5.43	1.03
BILTUM IA	4.9	4.66	-0.23
PARADIMA IA	4.9	4.33	-0.57
TUMIAO-MAMALI IA	5.2	6.23	1.03
CONTA IA	3.8	4.61	0.81
NALDAN CREEK IA	4.48	5.20	0.72
KATTAM IA	7.5	6.1	-1.4
KAPNOLA IA	4.5	5.00	0.50
KAMAKAT IA	4.85	5.09	0.25
POBLEX IA	4.98	4.68	0.30
PODIMID IA	5.13	5.84	0.71
BUCATILL IA	5.00	4.18	-0.83

Table 2. 2014 Dry Season (DS) yield performance of PDFs in MalRIS, Matanao, Davao del Sur 2014.

Name of IAs	Baseline Yield (t/ha)	Actual Yield (t/ha)	Yield Increment (t/ha)
BURLAN IA	6.51	7.24	0.73
LOTOFIA	5.20	6.10	0.90
LABAKAFIA			
TIFIA			

Table 3. 2014 Wet Season (WS) yield perfomance of PDFs in MalRIS, Matanao, Davao del Sur 2014.

Name of IAs	Baseline Yield (t/ha)	Actual Yield (t/ha)	Yield Increment (t/ha)
BURLAN IA	6.60	8.13	1.47
LOTOFIA	6.32	7.43	1.11
LABAKAFIA	5.23	7.18	1.95
TIFIA	5.43	6.57	1.14
MABAFIA	5.78	6.50	0.72

X. Upland Rice Development Program in Region IX, XII & ARMM (2012-2015): Development of Community-Based Palayamanan System in the Upland for Increased Productivity and Food Sufficiency in Southern and Western Mindanao

OH Abdulkadil SE Abdula, VV Casimero, JJ Cordero, ED Maraganas, MP Tuico, EG Kiko and RB Miranda

The country's rice sufficiency by 2013 has become the primal policy for food security and alleviating the hunger incidence. The allocation of irrigation systems is covering fifty one (51) percent of the irrigable areas in the country, the establishment of grains terminals and post-harvest facilities to reduce post-harvest losses and market intermediaries are among the major thrusts of the Department of Agriculture to achieve rice self-sufficiency. But these infrastructure projects require a period of gestation to fruition. Thus, the Department of Agriculture shall undertake an upland rice development program that will establish a community-based seeds system for traditional upland rice varieties and promote a "farming systems approach" anchored on sustainable agricultural practices.

Generally, it aims to (1) increase yields in the upland rice areas by 0.5 t/ha. and production of other crops; (2) sustain models of Community-based Seed Banks (CSB) strategically established and a viable seed production system that help to ensure the availability of Upland rice seeds; (3) capacitate the LGUs, Upland farmers and other stakeholders in the implementation of URDP; (4) institutionalized collaboration and sustained partnership among NGAs, LGUs, NGOs, SCUs and the private sectors in the planning and implementation of development program and interventions and (5) to create and manage a data-based system in upland rice production.

Highlights:

- A total of 9 Palayamanan model farms with CSB established in PhilRice Midsayap AOR: namely; 4 in North Cotabato (Alamada; Arakan; Banisilan and Matalam); 1 in South Cotabato (Lake Sebu); 1 in Sultan Kudarat (Senator Ninoy Aquino); 1 in Zamboanga Peninsula (Roxas, Zamboanga del Norte); 2 in ARMM (Datu Hoffer, Mag and Ganassi, Lanao del Sur (LDS).

- There were 567 Upland rice farmers trained in season-long Upland Rice FFS in PhilRice Midsayap AOR (Table 4).

Table 4. Number of upland rice farmers trained in season-long Upland Rice FFS (upland rice production) in region IX, XII, and ARMM.

Region	Province	Municipality	No. of farmers trained
XII	Sultan Kudarat	Senator Ninoy Aquino	103
	South Cotabato	Lake Sebu	71
	North Cotabato	Alamada	116
		Arakan	30
		Matalam	45
		Banisilan	32
IX	Zamboanga del Norte	Sergio Osmena	30
	Zamboanga del Sur	Mahayag	35
		Dimataling	35
ARMM	Maguindanao	Upi	35
		Ganassi	35
TOTAL			**567**

- A total of 3,734 upland farmers with 2,708 ha upland areas were masterlisted from ten different municipalities in North Cotabato. Planting months of upland rice starts from February to April and local upland varieties planted were Dinorado, Hinumay, Guyod, Awot, Minoslem, Palaweño and UPL Ri5 as modern upland variety. A continuous profiling and masterlisting of upland areas/farmers was employed as a gauge or basis by the government on conceptualizing effective strategies in future upland programs.

- Moreover, upland varieties that performed well across site were Dinorado with 2.8t/ha, followed by Awot with 2.7t/ha, NSIC Rc23 attained the yield from 1 to 2.6t/ha.

  The varieties with lowest yield were Azucena with 1.3 to 2 t/ha, Bihod with 1.8t/ha, Hinomay and Pilit with a lowest yield 0.5t/ha.

XI. FSSP: Accelerating the Dissemination of Associated Technologies for Increasing Yield and Profitability in Irrigated (NIS, CIP, SWIP) Environment

OH Abdulkadil, EB Sibayan, MJC Regalado, LM Juliano, P Ramos and RS Salazar

This project is in support to the Philippine Food Staple Sufficiency Program of the Department of Agriculture (DA) which include prioritizing investment that can increase and sustain production growth especially interventions that have long term effects on rice production.

The magnitude of and variation in yield gaps associated with production constraints in rice need to be addressed through continuous research, development and promotion of appropriate technologies. Increase in yields through adoption of best crop management practices, reduced labor inputs (direct seeding, mechanization, tillage) and to ensure that market returns are optimized are important factors to address the problem. Thus, this project is being conducted to increase production and reduce inputs through the development, dissemination and adoption of appropriate crop management technologies in irrigated environment.

Highlights:
Rice self-sufficiency in the Philippines is hard to achieve because of its relatively high production cost and the threat of water scarcity. This three-year study was initiated to increase production and reduce inputs through development, dissemination, and adoption of appropriate crop management technologies in irrigated ecosystem. Out of 277 irrigators association (IA) in Region 12; 36 IA's were targeted to participate in the adaptive trial cum research on out scaling activities to showcase the best crop management practices on variety selection, water management, nutrient management, pest management, and post-harvest management. In 2014 cropping season, a total of 11 IA's (30.6% of the total target) participated in the establishment of pilot technology demonstration farms (TDFs), where 2 IAs' (5.6% of the target) in dry season (DS) and 9 IA's (25% of the target) during wet season (WS).

2014 Dry Season

- Briefed 21 IA members, 2 NIA staff and 1 LGU staff on rice production that are resource-use efficient with emphasis on water management or alternate wetting and drying (AWD) technique and other associated rice production technologies in Marbel 2 River Irrigation System (RIS), South Cotabato Irrigation Management Office (SCIMO) during the on-site briefing.

- Palay Gulayan and Dew Drops Irrigators' Associations (IAs) of Marbel 2 RIS participated in the establishment of pilot technology demonstration farm (TDF) showcasing AWD and other associated technologies. Plastic drum seeder helped reduce the seeds requirement to 40-60 kg per hectare from 100-120 kg per hectare using manual broadcasting.

- A total of 102 farmers were informed about the scaling-up activities of DA-FSSP with emphasis on AWD/CI during the farmers' field day and forum in collaboration with PhilRice, NIA, IRRI, DA, LGU and IA's at Barangay Namnama, Koronadal City on March 21, 2014.

- PhilRice provided a total of 2 drum seeder; 51.9 bags fertilizer input, and 590kg seeds to farmer cooperators. The drum seeder was given to the IA and encouraged farmer members who were practicing broadcasting to use it for row seeding. The seeds that were distributed were usually first to be used variety in their fields and given at 60kg per hectare seeding rate to the farmer cooperator for variety trial. Some of the varieties given were NSIC Rc18, NSIC Rc238 and NSIC Rc226.

- Reported watering frequency on the rice field from crop establishment until crop harvesting based on water availability on the observation well installed in the demo farms, the AWD gave a significant difference in frequency of water delivery, thus water consumption decreased. The frequency lowers from an average of 12 times to an average of 5 times.

- A total of 71 farmers were briefed/informed on TDF that showcased variety trials, AWD, crop manager and the use of drum seeder for row seeding during the farmers' field day and forum in collaboration with PhilRice, NIA, IRRI, DA, LGU and IA's at Barangay Rajah Muda, Tacurong City last March 21, 2014.

- Reported grain yield of the demonstration farms managed by PhilRice Midsayap branch station obtained mean yield of 6.25t/ha in Sultan Kudarat and Koronadal City, respectively during dry season (DS) (Table 5); and 5.74t/ha during the wet season (WS) across 9 IAs.

- PhilRice provided a total of 2 drum seeder, 51.9 bags fertilizer, and 590 kg seeds to farmer cooperators. The drum seeder was given to the IA and encouraged farmer members who were practicing broadcasting to use it for row seeding. The seeds that were distributed were usually first to be used variety in their fields and given at 60kg per hectare seeding rate to the farmer cooperator for variety trial. Some of the varieties given were NSIC Rc18, NSIC Rc238 and NSIC Rc226.

Table 5. Frequency of water release and yield performance of rice crop practicing AWD.

Irrigators' Associations	Water Delivery Frequency Before Intervention	After Intervention	Baseline Yield (t/ha)	Actual Yield (t/ha)	Yield Increment
2014 Dry Season					
Dew Drops IA	14	6	7.0	7.3	0.3
Palay Gulayan IA	14	8	7.0	5.2	-1.8
2014 Wet Season					
Kapamagayon IA	13	6	6.9	4.2	-2.7
Bag-ong Paglaum IA	12	7	5.8	4.2	-1.6
Dikalongan IA					
Motawali Guialodin	12	5	4.5	4.5	0
Mando Malasigan	12	2	4.2	5.0	0.8
Mabini San Andres IA	12	6	5.0	5.9	0.9
Highway Katilingban IA					
Mechie Castillo	12	6	4.8	7.2	2.4
Agustin Flaga	12	6	6.4	7.6	1.2
Sitio Bag-o IA	12	3	7.0	7.2	0.2
Rajah Muda IA	12	6	6.0	6.2	0.2
Bayaning MAgsasaka IA	13	5	5.0	5.4	0.4

XII. Philippine Rice Information Management System (PRiSM)

Gina D. Balleras

Highlights:

- Facilitated during the conduct of PRiSM Training for Component A Implementers.

- Gathered LAI data during the dry season of 2014 to monitor key crop growth parameters suitable for analysis by IRRI and PhilRice CES teams.

- Assisted the Region 7 during the on-field crop management data in digital formats

- Participated also during the training-workshop on Mapping of Rice areas using Synthetic Aperture Radar (SAR) imagery conducted on May 26 to 30, 2014 at PhilRice CES.

Abbreviations and acronymns

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

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

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