

2020

PhilRice R&D Highlights



Training Management and Services Division

Contents

SECTIONS	PAGE
Executive Summary	3
PROJECT 1: Training Design and Development	5
PROJECT 2: Technology Assessment and Mature Technology Identification	11

Training Management and Services Division

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EXECUTIVE SUMMARY

The Technology Management and Services Division (TMSD) develops and conducts training courses and provides technical assistance and demonstrations to improve the knowledge and skills of men and women farmers, agricultural extension workers (AEWs), and other development catalysts in their use and management of rice and rice-based technologies. The TMSD also leads in assessing the quality and acceptability of PhilRice-developed technologies before these are promoted to end-users. The Division continued to implement three projects this year to help enhance the competitiveness of Filipino farmers and the Philippine rice industry.

To ensure the development of appropriate training modules and courseware, the training needs of owners, managers, and trainers of farm schools and learning sites for agriculture were determined through an online survey nationwide. The training needs analysis results guided the development and updating of 10 training modules for farmers and farmer-leaders. Because of the COVID-19 pandemic that restricted mobility and face-to-face training, some courses were designed using the purely online or blended approach that combined face-to-face training with online sessions. In addition, four gender-sensitive training modules for rice extensionists were developed. Likewise, courseware materials refined and produced included: PowerPoint presentations and a set of infographics on the 2020 version of the PalayCheck System; 37 lecture videos on the PalayCheck System and other technical and additional topics for the season-long Rice Specialists' Training Course; 26 videos used for the virtual tour of PhilRice during the conduct of online *Lakbay Palay*; eight videos on technical and related topics used in the conduct of the Farmer Field School (FFS); four activity sheets to reinforce farmers' learning modified FFS; assessment exams for various online courses; templates of new training forms to better capture trainees' feedback on specific training activities and formats; and infographics on status of training courses conducted by PhilRice under the RCEF.

The pandemic has severely affected the handling of training. The conduct of customized face-to-face training courses was drastically reduced to 10 of last year; thus, reducing the number of trained AEWs, young farmers, other

EXECUTIVE SUMMARY

extension professionals, and other government employees to only 145 (83% male, 17% female) as compared with 292 last year. A blended learning approach was developed for the Rice Specialists' Training Course (RSTC), a major training program under the Extension Services component of the Rice Competitiveness Enhancement Fund (RCEF). In lieu of the conduct of the FFS, the RSTC participants established and managed their own technology demonstration, where they also conducted farmers' visit/field day. This supplemented the online delivery of topics with live question and answer with the experts and the intensive case study analysis. Twenty-one (21) of the 22 enrollees (11 male and 11 female) completed the pilot batch. Meanwhile, the January 2020 RSTC batch, which was discontinued toward the end of its second module, was continued through online delivery of the remaining modules. Additional requirements were complied with by the trainees to ensure learning despite the online topic delivery limitations. Of the 26 enrolled initially, only 16 (12 male and 4 female) completed the course. The RSTC achieved a 54% excellent overall rating while the customized courses obtained an average of 63% excellent overall rating.

The institutional *Lakbay Palay* was not conducted for DS 2020 due to mass gathering restrictions. For the wet season, a virtual *Lakbay Palay* was carried out using social media to continue giving the latest updates on technologies and results of studies at the PhilRice Central Experiment Station. Video presentations of rice experts showcasing the various PhilRice-developed technologies were live-streamed on PhilRice's Facebook page from October 14-16, 2020, and then uploaded to different PhilRice online media accounts for easy access. The three-day virtual *Lakbay Palay* reached out to more than 70,000 viewers (combined live and post views) and received 65% excellent and 35% Good ratings.

For this year, field validation was further conducted for three PhilRice-developed technologies: Leaf Color Computing Application (LCC App), Varietal Mixture Technology, and Brown Rice Machine. Among these technologies assessed, the LCC App was found to have a huge potential for promotion and adoption of men and women users based on the results of the Social acceptability, Technical feasibility, Economic viability, Environmental soundness, and Political acceptability (STEPP) analysis.

These activities all contributed to the development of men and women farmer intermediaries to provide science-based knowledge to farmers and the widespread promotion and adoption of the various technologies and opportunities in rice farming. Eventually, the knowledge will be translated into practices to help improve their rice productivity. Knowledge shared to the farmers, AEWs, and other stakeholders of all sex will then facilitate improvement of the Filipino men and women farmers' productivity in rice farming.

Training Design and Development

Ev P. Angeles

This project focuses on the design, development, and updating of TMSD's training programs through two component - training needs assessment or TNA (TMS 101-001) and module and courseware development (TMS 101-002). Through these components, training programs and their corresponding modules and courseware are kept responsive to the needs of the target participants – rice extension intermediaries and farmer-leaders as main end-users of technologies and disseminators of information – who operate in a constantly changing rice production landscape. The training design and the specific focus and style of their delivery were determined based on the results of the training needs analysis, the demand from requesting parties and partners, and the lessons learned from the implementation of similar courses in the past. All modules and courseware were produced in consultation with male and female members of the training management team, subject matter specialists, and training facilitators. Relevant and effective training programs help to develop or enhance the knowledge, skills, and other capacities of these target groups. This is hoped to translate into faster and more widespread reach of reliable information on rice and, ultimately, increased productivity and income of rice farmers. By increasing the capacities of these primary beneficiaries, PhilRice hopes to contribute to building a more productive, competitive, and resilient rice industry.

Training Needs Assessment

Renz Romyl C. De Joya, Ev P. Angeles, and Ellen P. De Leon

The study was conducted to help the TMSD identify the skills and training needs on rice and related technologies of farm schools (FS) and owners/operators/trainers of learning sites for agriculture (LSA) in the Philippines. A total of 92 respondents – representing 82 farm schools and learning sites from 15 regions – accomplished the online survey. Respondents were selected from the pool of accredited FS of TESDA) and LSAs of Agricultural Training Institute (ATI). The survey showed that based on respondents' self-assessment, relative to other key checks, they needed more training on Key Check 7. They also needed more training on other complementary technical topics such as information and communications technology (ICT) rice apps and ICT tools to assess nutrient deficiencies (Rice Crop Manager, Minus-One Element Technique); and characteristics of nationally/regionally recommended varieties. For non-technical topics, respondents also needed assistance from experts in conducting training relevant to the five Cs (character, capacity, capital, collateral, and conditions) of credit, government lending programs, and the rice industry situation. In addition, FS and LSA owners/operators/trainers needed more training courses on the conduct of farmers' field

day, final analysis, and in designing pre- and post-tests. Respondents suggested that organic rice production, entrepreneurial skills (rice farming as a business), and value-adding be added in the training for FS/LSA owners, operators, and trainers. To address their training needs, the respondents favored a three to five days of refresher course in the 2nd quarter of the year.

Module and Courseware Development

Ev P. Angeles, Renz Romyl C. De Joya, Ellen P. De Leon, Kremlin M. Del Castillo, and Juvy Jane E. Aungon

This study developed, updated, and tested training modules and courseware for target rice stakeholders such as rice extensionists, farmers, and farmer-leaders. Strengthening these partners' capacities is hoped to contribute to the broader reach of modern rice technologies and improved services for rice farmers. Four gender-sensitive training modules for rice extensionists and 10 for farmers and farmer-leaders were designed and tested as part of the training courses conducted in 2020. Because of the pandemic that restricted mobility and face-to-face training, some courses were designed using the purely online or blended approach that combined face-to-face training with online sessions. The design of the training modules, regardless of approach, received an overall excellent rating from the participants in terms of relevance, organization and content coverage, effectiveness of learning strategies, and ability to meet training objectives. In addition, the following courseware materials used in various training courses were produced or refined: PowerPoint presentations and set of infographics on the 2020 version of the PalayCheck System; 37 lecture videos on the PalayCheck System and other topics for the season-long RSTC; 26 videos used for the virtual tour of PhilRice during the conduct of online *Lakbay Palay*; eight videos on technical and related topics used in the conduct of the modified FFS; four activity sheets to reinforce farmers' learning during the modified FFS; assessment exams and quizzes for various online courses; templates of new training forms to better capture trainees' feedback on specific training activities and formats; and infographics on the status of training courses conducted by PhilRice under the RCEF.

Training Delivery

Lea dR. Abaoag

This project capacitated the agricultural extension workers, farmer-leaders, and other farmer intermediaries on rice and rice-based technologies. The three studies under this project are namely: (a) Enhancing the technical capability of the AEWs and other farmer intermediaries on rice and rice-based production technologies, (b) Enhancing Technology Awareness and Learning Through Mass-Based Technology Promotion, and (c) Enhancing Learning and Awareness Through

PROJECT 1

the Learning Farm. These studies were all directed to the conduct of various methodologies to facilitate the transfer of knowledge among the farmers, AEWs, and other intermediaries.

Owing to the pandemic, the (RSTC) module was repackaged into a blended learning approach. Of the 22 enrollees (11 male and 11 female), 21 completed the pilot batch using this approach. One of the 11 male participants dropped the course when he and his family members became positive with COVID-19. The participants were staff members of Luzon-based DA regional offices, ATI centers, and the Provincial Agriculturists' Office. Meanwhile, the RSTC batch started in January with 26 trainees was discontinued toward the end of Part 2. The batch composed of 20 male and six female trainers from Technical Education and Skills Development Authority (TESDA) schools had to leave prior to the national lockdown declaration and thus were not able to complete the course. The rest of the modules were delivered online with additional requirements imposed to ensure learning. Only four customized courses were conducted this year for 78 (58 male and 20 female) AEWs, young farmers, and other extension professionals, and 67 (63 male and 4 female) employees/workers on the *palay* procurement program of the Nueva Ecija provincial government.

The study successfully achieved its major goals as evaluation results showed a 60% average rating and 56% gain in knowledge (GIK) from the first batch of RSTC and the 10 specialized training courses. This was high compared with the study's initial target of 30% GIK rating for the RSTC and 25% GIK for the other training courses. On the overall conduct of training courses, the RSTC achieved a 54% excellent rating while the specialized courses got a 63% excellent rating.

The regular conduct of the Farmers' Field Day and Forum, dubbed as *Lakbay Palay* since 2012, promotes high-yielding and cost-reducing technologies, establishes strong linkages with the local government units (LGUs) and other technology promotion partners, and provides immediate solutions to farmers' field problems. This institutional activity, conducted every season, is a mass gathering of thousands of people from different provinces throughout the country wanting to be updated on the latest technologies and innovations in rice farming. Because of the quarantine and limitations, the scheduled *Lakbay Palay* for dry season (DS) 2020 did not push through. For the wet season, a virtual *Lakbay Palay* was carried out using social media to continue giving the latest updates on technologies and results of studies at the PhilRice Central Experiment Station. Video presentations of rice experts showcasing various technologies developed by PhilRice were live-streamed on PhilRice's Facebook page from October 14-16, 2020. Evaluation results showed that the respondents were generally satisfied with their virtual *Lakbay Palay* experience (65% excellent; 35% good).

In support of the training activities being conducted by the Institute, a division-based Learning Farm was maintained and managed to serve as an actual laboratory and demonstration area where trainees can practice what they have learned from the lectures. The learning farm also served as a venue for the demonstration of

various technologies developed by the Institute during the conduct of 2019 DS and WS *Lakbay Palay*. By providing experiential learning opportunities to the trainees and the *Lakbay Palay* participants, enhancement and retention of the knowledge shared during discussions were further facilitated.

These activities all contributed to the development of the AEWs capability to provide science-based knowledge to farmers and the widespread promotion and adoption of various technologies and opportunities in rice farming. Eventually, the knowledge will be translated into practices to help improve their rice productivity. Knowledge shared with the farmers, AEWs, and other stakeholders will then facilitate the improvement of the Filipino farmers' productivity in rice farming.

Enhancing the Technical Capability of the Men and Women Extension Workers and other Farmer Intermediaries on Rice and Rice-based Production Technologies

Lea dR. Abaoag, Ev P. Angeles, Marvin dJ. Manalang, Kremlin M. del Castillo, Juvy Jane E. Aungon, Vanneza B. Isidro, Renz Romy C. de Joya, Jan Adriel M. Daligdig, Mark Edison T. Bautista, and Maureen B. Valiente

This study capacitated men and women AEWs, farmer leaders, and other farmer intermediaries on rice and rice-based technologies through holistic gender-sensitive training course offerings.

The occurrence of the pandemic in mid-March of this year has dramatically affected the targets under this study. The modular RSTC conducted with 26 trainees was discontinued towards the end of Part 2. The batch composed of 20 male and six female trainers from TESDA schools had to leave prior to the declaration of the national lockdown and, thus, were not able to complete the course. The rest of the modules were delivered online. The RSTC was repackaged into a blended learning approach, with 21 out of 22 enrollees (11 male and 11 female) completing the pilot batch. One of the 11 male participants dropped the course when he and his family members became positive with COVID-19. The participants were staff members of Luzon-based DA-regional offices, ATI centers, and Office of the Provincial Agriculturists. Only four customized courses were conducted this year for 78 (74% male, 26% female) AEWs, young farmers, and other extension professionals and 67 (94% male, 6% female) employees/workers on the *palay* procurement program of the Nueva Ecija provincial government.

In determining the effectiveness of these courses, various evaluation methods were applied by the study team. Pre- and post-test examinations were administered, from which the trainees' gain in knowledge from their respective courses were computed. The participants also evaluated the overall conduct of their respective

courses using a structured questionnaire.

For the customized courses, only two (2) had the pre- and post-tests. The young farmers' customized course achieved an average rating of 82% GIK, which was way above the standard target rating of 45%. On the other hand, the other course failed to achieve the 40% target GIK for extension professionals as it only averaged at 38%. Prior knowledge on hybrid and inbred rice production, in general, might have contributed to the low GIK. On the other hand, the customized course for the Bohol Province Officials did not include the pre- and post-tests in its design. However, the three courses still had an overall excellent (88%) rating. A specialized course on grain quality evaluation and classification was also conducted for employees/workers of the Nueva Ecija Provincial Food Council. This training was in support of the provincial government's *palay* price support program.

Enhancing Technology Awareness and Learning through Mass-based Technology Promotion

Lea dR. Abaoag, Joel V. Pulian, Rowena A. Pineda, Marvin dJ. Manalang, Kremlin M. del Castillo, Vanneza B. Isidro, Renz Romyl de Joya, and Gee Christine Perez

This study increased technology awareness and dissemination through various knowledge sharing and learning (KSL) activities. Among the activities being employed by PhilRice to promote high-yielding and cost-reducing technologies, establish strong linkages with the LGUs and other technology promotion partners, and provide immediate solutions to the farmers' field problems is the regular conduct of the Farmers' Field Day and Forum, dubbed as *Lakbay Palay* since 2012. This institutional activity, usually done twice a year towards the end of each cropping season, has brought in thousands of interested people and different extension intermediaries from various provinces throughout the country wanting to be updated on the latest technologies and innovations in rice farming.

For this year, the conduct of KSL activities, primarily the S&T Updates, was led by the Community Relations Office. Thus, *Lakbay Palay* became the only focus of this study. However, because of the quarantine and limitations brought about by the pandemic in the early part of the year, the scheduled *Lakbay Palay* for 2020DS did not push through. For the wet season, a virtual *Lakbay Palay* at the PhilRice Central Experiment Station was carried out using social media. Video presentations of rice experts showcasing various PhilRice-developed technologies were live-streamed on PhilRice's Facebook page from October 14-16, 2020. Discussions and question-and-answer portions were also live-streamed to serve as another KSL activity during the event. The video presentations were then uploaded on PhilRice's website, YouTube channel, and other online media accounts for easy access of anyone interested. The three-day virtual *Lakbay Palay* reached out to

more than 70,000 viewers (combined live and post views), translating to 10 times the usual number of physical participants. The online viewers, with age ranging from 20 to 62 years, were mainly from Nueva Ecija, Laguna, Camarines Sur, and Misamis Oriental. This virtual activity received a generally positive evaluation, with an excellent rating from 65% and a good rating from 35% of the randomly selected respondents.

Enhancing Learning and Awareness through the Learning Farm

Marvin dJ. Manalang, Lea dR. Abaoag, Kremlin M. del Castillo, Paulino Ancheta, Reynaldo B. Fulgencio, Jayson A. Patayan, and Bernardo B. Alfonso

The learning farm is an avenue to showcase and demonstrate yield-enhancing and cost-reducing technologies. It is also a hands-on area for training and practical application and demonstration of farm machines. Several training programs offered by the Institute thru TMSD conducted their practicum part in the learning farm.

The demonstration field was 1.5ha in 2020DS and 3.5ha in 2020WS. It showcased mechanically transplanted public hybrids and national and regional recommended and newly released inbred rice varieties, manually and mechanically-transplanted hybrid seed production, varietal trial, and participatory technology demonstration (PTD) on farmers' practice vs. recommended technologies.

The varieties tested in 2020 were inbreds NSIC Rc 506, Rc 508, Rc 510, Rc 512, and Rc 514, and the public hybrid PSB Rc 72H or Mestizo 1. All of these varieties tested were found to be suitable for the mechanical transplanting method. The PTD showed that during 2020DS and WS, NSIC Rc 506 had the highest grain yields with 13.5t/ha and 7.1t/ha, respectively; while Mestizo 1 yielded the lowest (6.8t/ha and 4.0 t/ha, respectively). All other varieties tested performed well during the dry and wet seasons, except for Mestizo 1.

Mechanically transplanted hybrid rice seed production for Mestizo 1 also showed promising potential for the synchronized flowering of both parents following the seeding interval of 19 days between R1 to A-line and seven (7) days between R1-R2 with no remedial measure.

As a practicum area, the learning farm was used to conduct Agro Ecosystem Analysis (AESA), rouging exercises, hands-on training on methods of seedling and crop establishment, crop care, and farm machinery operations in the conduct of all TMSD-led training programs. More than 150 participants (63% male, 37% female) experienced these various learning farm activities. To ensure their safety, especially during machine operations exercises, the female participants were ably assisted by competent machine operators.

Technology Assessment and Mature Technology Identification

Joel V. Pascual

This project aimed to develop and implement an institutional system to identify and evaluate newly developed technologies and ensure their appropriateness and acceptability before promotion and commercialization. It also aimed to validate and assess all identified PhilRice technologies' performance and effects on a specific community, and determine their degree of maturity for promotion and commercialization using the Social Acceptability, Technical Feasibility, Economic Viability, Environmental Soundness, and Political Acceptability (STEEP) evaluation criteria.

This year, a project meeting with men and women experts of various disciplines from different PhilRice divisions was conducted in September 2020. The draft manual for the operational guidelines in assessing PhilRice-developed technologies was presented during the said activity and is being finalized in consideration of the participants' comments and suggestions. Among the contents of the manual was the method of scoring to be employed for the STEEP Analysis to evaluate PhilRice-developed technologies.

An internal memorandum reconstituted the members of the Technical Working Group (TWG) on Technology Assessment and Mature Technology Identification and specified their functions and responsibilities to formally revitalize and strengthen the group's role in the project.

Validation activities for the technologies identified to undergo the assessment process were also continued. These technologies included the Varietal Mixture (VarMix) Technology, Leaf Color Computing Application (LCC App), and Brown Rice Machine. The LCC App technology validation results and all sex-disaggregated data that the Technology Assessment (TA) team gathered were submitted to the technology generators and the Office of the Deputy Executive Director for Research. All other information that the TA team will acquire from the validation activities of the other technologies under assessment will also be consolidated and relayed to the technology generators for technology improvement. These activities will then be subjected to further analysis and evaluation using the STEEP criteria with the project's TWG. They will determine whether to endorse the technology under assessment for promotion/commercialization, or whether to request slight refinements or further R&D work.

Technology Validation of PhilRice-developed Technologies

Gee Christine R. Perez, Lea dR. Abaoag, and Joel V. Pascual

This study aimed to demonstrate and validate technologies developed by PhilRice. Specifically, it aimed to determine the field performance of the technologies being assessed and gather feedback and information from both men and women users and concerned stakeholders.

For this year, the validation of the technologies identified to undergo previous year's assessment process was continued. These technologies were the VarMix Technology, LCC App, and Brown Rice Machine. On-field trials of these technologies were established in various sites identified by the TA team to determine the performance of these technologies in local-specific conditions and identify gaps and risks associated with their use. Additional information and feedback on the technologies' performance and effects on communities were gathered through surveys with technology-users and stakeholders.

Results of the LCC App technology validation and all sex-disaggregated data were submitted to the technology generators and the Office of the Deputy Executive Director for Research for further technology improvement. All information acquired by the TA team from the validation activities of the other technologies under assessment will also be consolidated and relayed to the technology generators once all target activities are completed. These will then be subjected to further analysis and evaluation of the TWG on Technology Assessment and Mature Technology Identification using the STEEP indicators of assessment.

Analysis and Evaluation of PhilRice-developed Technologies

Joel V. Pascual, Lea dR. Abaoag, and Gee Christine R. Perez

This study analyzed and assessed the readiness and maturity for promotion and commercialization of new PhilRice-developed technologies based on the results of technology validation activities. In particular, it revived and strengthened the functions of the TWG on Technology Assessment and Mature Technology Identification. The study also intends to review and evaluate the consolidated results of the table and field validation of technologies using the STEEP criteria to recommend a set of interventions that will address the gaps, risks, and issues associated with each technology being assessed.

Validation activities for the technologies identified to undergo the assessment

PROJECT 2

process were also continued. These involved the Varietal Mixture (VarMix) Technology, Leaf Color Computing Application (LCC App), and Brown Rice Machine. The LCC App technology validation results and all sex-disaggregated data that the TA team had gathered were already submitted to the technology generators and the Office of the Deputy Executive Director for Research. The other technologies are still in the technology validation stage, wherein information on the technology's performance and feedback from the target users are being gathered.

The TA team coordinated and met with the experts from various PhilRice divisions to revive the TWG on Technology Assessment and Mature Technology Identification, which will lead the analysis and evaluation of the technologies, and to update the processes involved in technology assessment.

The results of those activities shall serve as the basis of the TA team and the TWG in forming a recommendation on whether to endorse the technology under assessment for promotion/commercialization, or whether to request slight refinements or further R&D work.