2020
PhilRice R&D Highlights

Socioeconomics Division

Contents

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EXECUTIVE SUMMARY

The Socioeconomics Division (SED) implements socioeconomic and policy research under the Office of the Deputy Executive Director for Research. SED generates rice and rice-related statistics; measures the impacts of rice technologies, products, and services; and conducts policy research and advocacy activities in support to the Science-based Policies in Advancing Rice Communities (SPARC) Program.

The division implemented projects on rice statistics; adoption and impact evaluation; research on rice production, marketing and trade; and monitoring and evaluation of Rice Competitiveness Enhancement Fund (RCEF) for seeds and extension programs. The first project on documenting the statistical series on the rice economy ensured that rice data, whether primary or secondary, were organized into a convenient storage and retrieval system. The second project on adoption and impact evaluation provided evidence of the usefulness of R4D products and services and offered feedback to researchers and development workers. The third project on rice production, marketing, and trade addressed the pressing concerns and issues that may affect the development of the rice industry. The last project dealt with the effect of the passage of Rice Tariffication Law (RTL) thru seasonal monitoring and evaluation (M&E) of the impacts of its RCEF seeds and extension component programs. Through the information provided by the division, policymakers and decision-makers can ensure that development programs and policies are science-based.

In 2020, SED implemented eight projects, five of which were externally-funded. Notable outputs included improved operational PalayStat website, which contains primary and secondary rice and rice-related data that clients can access to address their data needs; updated and restructured rice and rice-related datasets; DS 2019 baseline information of 55 RCEF provinces; and M&E report of RCEF Seeds and Extension programs for the first season of implementation. Papers delving into the drivers and pathways of changing production landscape; the value addition, constraints, and upgrading strategies on rice value chain; farmer's attitude and competencies towards technology adoption and their credit sources; crop diversification; and the socioeconomic impacts of hybrid rice, inbred and hybrid rice seed production, and combine harvester were produced and disseminated. An updated handbook, PowerPoint briefer, and a module on

understanding the Philippine rice industry were also crafted and disseminated. These outputs encouraged R4D managers, scientists, and researchers to have a better understanding of the dynamics of the rice industry, particularly amidst the profound challenges brought by the RTL. With SED directly analyzing key issues surrounding the rice industry, stakeholders can be in the best position to undertake appropriate actions, develop science-based policies, and shape beneficial rice programs. The division will continue its crucial role in providing the necessary rice information to its stakeholders.

PROJECT 1

Statistical Series on the Rice Economy

Marco Antonio M. Baltazar

With enormous thrust on government accountability, policymakers enjoined researchers and developmentalists to present project impacts quantitatively. Statistics play a vital role in planning and implementing projects as well as making policies in rice research and development. Understanding the rice trends has significant implications on planning and implementation of rice programs. Previous rice statistics will also inform policymakers and researchers on the value of government investments in agriculture.

This project gathered, processed, and updated rice statistics and made them available to primary rice stakeholders. Studies included: (1) updating and restructuring statistical series on the rice economy, and (2) integration of other rice statistics databases in the PalayStat system.

In 2020, the first study consolidated and restructured 39 statistical tables include 1970-2020 data on *palay*/rice supply and demand, input-use, costs and returns, and *palay*/rice marketing. Additionally, the study developed a video presentation based from the PowerPoint briefer and lesson module on the rice industry situation using secondary data gathered and restructured from Philippine Statistics Authority (PSA) and various sources. This served as reference and/or briefing material of PhilRice management, researchers, development workers, and students. The study also provided copies to DA-Agricultural Training Institute for use in their Rice Competitiveness Enhancement Fund Program briefings and other events.

The study on PalayStat restructured 8 new datasets (1970-2019) and uploaded these in the existing database for easier access and retrieval. The system also uploaded one rice-related publication as additional reference. Thirty-two (32) data requests from policymakers, scientists, students, and development planners benefitted from this system through answered data queries.

PalayStat was continuously improved leading to 13,467 unique page views and 2,849 unique sessions. Its traffic consisted of 71% search engine searches, 25% in direct access, 2% in referral, and 2% in social media. For PalayStat to stay relevant and up-to-date, two additional rice statistics algorithms and eight statistical tables from 1970 to 2019 PSA data were uploaded in the time-series database. The updated database now includes quantity and value of rice imports and rice exports in the Philippines covering 21 importers and 28 destinations countries, and 2019 data rice production, yield, farmgate, wholesale, and retail prices of ordinary and special rice, which cover 83 provinces in 16 regions.

Updating and Restructuring Statistical Series on the Rice Economy

Marco Antonio M. Baltazar, Ranxel M. Almario, and Roy F. Tabalno

PSA releases a lot of rice-related data through their Openstat website, which can be easily accessed. However, some of these data do not offer provincial statistics, which are relevant for location-specific policy intervention and program implementation. In 2020, the study updated 39 statistical tables to include 1970-2020 data on *palay*/rice supply and demand, input-use, costs and returns, and *palay*/rice marketing. Aside from the tables obtained from collaborating with PSA, there were new datasets regularly updated from various sources. These were uploaded in the PalayStat Information System for public use. Additionally, the study came up with a video presentation based on the PowerPoint briefer and module on the rice industry situation that mainly used secondary data gathered and restructured from PSA. The briefer was already provided as reference and/or briefing material of PhilRice management, researchers, and development workers. ATI used it in their RCEF briefings. It was also presented in two student-organization-sponsored events in Batangas State University and Polytechnic University of the Philippines.

Integration of Other Rice Statistics Databases in the PalayStat System

Marco Antonio M. Baltazar, Ranxel M. Almario, and Roy F. Tabalno

This study developed and initially introduced an interactive web-based information system called the Rice Socioeconomic Information System (RBSEIS) and later the PalayStat. The PalayStat system was designed to provide researchers and policymakers accessible rice-related information. In 2020, there were 13,467 unique page views and 2,849 unique sessions. For PalayStat to stay relevant and up-to-date, two additional rice statistics algorithms and eight statistical tables from 1970 to 2019 PSA data were uploaded in the time-series database. The updated database now includes quantity and value of rice imports and rice exports in the Philippines covering 21 importers and 28 destination countries, and 2019 data rice production, yield, farmgate, wholesale and retail prices of ordinary and special rice in 83 provinces in 16 regions. The design and features of the PalayStat system are continuously being improved through proper maintenance and development of an internal feedback system. With better search engine visibility and user-friendly experience, PalayStat aims to be the main one-stop portal for rice researchers on Philippine rice-related information.

PROJECT 2

Adoption and Impact Evaluation of Rice R&D Products and Development Projects

Rowena G. Manalili

PhilRice continually generates research products such as new rice varieties, improved crop management practices and tools, farm machineries and implements, rice value-added products, and other technologies to help achieve sustained food security and reduced poverty and malnutrition. These research products are then promoted and deployed to extension and development workers and farmers through various knowledge products, information materials, and extension and deployment platforms hopefully to hasten commercialization and technology adoption in farmers' fields. The effectiveness or success of PhilRice-generated rice R&D products and related rice production support services depend on their impacts or on how they contribute to meeting the goals of increasing rice yield and farmers' income, and reducing poverty and malnutrition incidence in the rice sector. Evidence on the adoption of R&D technologies and knowledge products, implementation of development programs and projects, or implementation of production support services are important not only for R&D workers, but also for national and local policymakers and funding donors.

This project aimed to contribute in the effective and efficient monitoring, evaluation, and quantification of the performance of rice R&D products and development programs through ex-ante, monitoring and evaluation activities, and ex-post impact evaluation studies. It aimed to provide evidence on the usefulness of R&D and rice production-related services and feedback to researchers and development workers to ensure efficient R&D work, research prioritization, and better management of projects and programs.

For 2020, the project focused on quality seeds, the major product of PhilRice. Guaranteeing farmers' access to quality seeds can only be achieved if there are viable seed supply systems to multiply and distribute the seeds that have been produced and if mechanisms to assist farmers in emergency situations have been established. The two studies included: (1) status and determinants of hybrid rice adoption in the Philippines, and (2) economics of hybrid and inbred seed production.

The first study documented the productivity, profitability, and farm management practices of hybrid vis-à-vis inbred rice production in three major hybrid rice-producing provinces. Among the notable results was that hybrid rice has 0.80 to 1.15t/ha advantage over high-quality inbred and 1.66 - 2.30t/ha advantage over low-quality inbred. It also provided information on the involvement of women in rice production. Though farmer-respondents were mostly men, the

study looked into the activities where women were mostly involved. Women participated mostly on crop establishment activities, i.e., pulling and hauling of seedlings, transplanting, and replanting. They are also involved in manual weeding and harvesting. Furthermore, the study also tried to look at the perception on hybrid rice by farmers of all seed classes. This information on hybrid rice adoption provided valuable inputs to policymakers as well as R&D workers in its breeding, production, promotion, and marketing strategies to hasten adoption.

The last study determined the status of hybrid and inbred rice seed production in selected provinces. It assessed the yield and input use, examined the costs and returns of seed production, and identified problems besetting the rice seed producers. Seed producers in Nueva Ecija got the highest yield in inbred seed production. Hybrid seed growers in Kalinga improved their yields in clean F1 seeds on their second year of production. Results from this study provided insights to policymakers and planners in crafting sustainable development programs for the rice seed industry.

Status and Determinants of Hybrid Rice Adoption in the Philippines

Rowena G. Manalili, Jesusa C. Beltran, Imelda A. Arida, Marco Antonio M. Baltazar, Daphne Kitongan, Chona P. Austria, James D. Chua, Teresa Joi P. de Leon, and Roy F. Tabalno

Recent programs and policies have been anchored on the development and adoption of high-yielding rice varieties to achieve the goal of a rice-secure Philippines. This paper aimed to compare the profitability, productivity, and crop management practices of hybrid with that of high- and low-quality inbred rice. The adoption and perception of farmers on hybrid rice production were documented. Surveys in major hybrid rice-producing provinces were conducted covering 2018 DS and 2018 WS. The study also used the Rice-based Farm Household Survey (RBFHS) data covering 2016 WS and 2017 DS, complemented by secondary data.

At the national level, hybrid rice contribution to total rice production ranged from 15 to 20% from 2017-2019. Across seasons, hybrid rice contribution to total rice production during the DS ranged from 19 to 28% while 11 to 14% during WS for the same period. Results of the 2018 survey showed that farmers in all seed classes were predominantly male (75-98%). Male and female farmers did not differ much in age and in educational attainment, but male farmers have more years of farming experience. Hybrid rice got the highest yield during 2018DS at 7.08t/ha and with the lowest cost of production at P10.99/kg. High quality inbred obtained a yield of 5.98t/ha and produced at P11.24/kg, while low quality inbred got the lowest at 4.78t/ha with a cost of P12.63/kg (Fig.2). Same trend was observed at the national level with hybrid having the highest yield (5.15t/ha) and lowest production cost

per kilogram (P12.30/kg) during 2017DS (Fig.3). High yield and profit are the top factors that encourage farmers to adopt the technology, while high cost of seeds is the primary discouraging factor of hybrid adoption.

Economics of Hybrid and Inbred Rice Seed Production

Rowena G. Manalili, Jesusa C. Beltran, Imelda A. Arida, Marco Antonio M. Baltazar, Daphne Kitongan, Chona P. Austria, James D. Chua, Teresa Joi P. de Leon, and Roy F. Tabalno

This study aimed to (1) assess the yield and input use in hybrid and inbred rice seed production, (2) estimate the costs and returns, and (3) identify problems encountered by seed producers. A survey on hybrid seed production was conducted in Kalinga covering the dry seasons of 2018 and 2019. The 2019DS survey areas for inbred seed production included Nueva Ecija, Pangasinan, and Kalinga.

Average area devoted to hybrid seed was 1.85ha. F1 clean seed average yield in 2018 DS was only 693kg/ha. Low yield was observed due to presence and damages of brown planthoppers. Yield performance increased significantly to 1,234kg/ha in 2019DS. The average area planted for inbred seed production was 2.97ha. Average yield of inbred seed for the three provinces was 4.99t/ha. Across provinces, Nueva Ecija had the highest yield at 6.04t/ha; followed by Kalinga, 4.39t/ha; and Pangasinan, 4.37t/ha.

PROJECT 3

Socioeconomic Researches on Production, Marketing, and Trade

Aileen C. Litonjua

Since rice is a significant crop in the country, any issue concerning the industry is a major concern of the nation. In recent years, some of these issues emerged because of policy shifts like the Tax Reform for Acceleration and Inclusion (TRAIN) Law and Rice Tariffication Law (RTL). These issues can affect the operations of industry players and stakeholders. Their power, and even survival, in the industry lies on their coping-up strategies or actions. To be effective, these strategies have to be based on reliable data and information about the issues. This project provided research-based data and information on production, marketing, and trade that can serve as the industry players' decision guide.

For 2020, only two studies were proposed: (1) Knowledge, attitude, and perception of RCEF Beneficiaries on the Rice Tariffication Law (RTL), and (2) Crop diversification: a production option for RTL-affected farmers. Unfortunately, during the in-house mid-year review of the division, the team decided to terminate Study 1 because of the limitations brought about by the pandemic situation. Even if its major activities would be pursued in 2021, the information that may be derived from this study are no longer relevant in 2021. Study 2, however, utilized the Rice-based Farm Household Survey data covering the 2016 WS and 2017 DS. Information may be used by DA in their effort to help farmers mitigate RTL impacts through crop diversification. A policy brief on this was drafted to serve as a reference of policymakers and DA officials in designing support for farmers who would like to engage in crop diversification

Crop Diversification: A Production Option for RTL-Affected Farmers

Aileen C. Litonjua, Janine P. Curibot, and Jesusa C. Beltran

Crop diversification was identified as one of the DA's strategies to help farmers cope with the impacts of RTL. To properly plan for interventions, information on the current status of its adoption in the country and its socioeconomic aspects would be very useful for implementers. For 2020, the study utilized the 2016-2017 rice-based farm household survey data. Descriptive statistics were used to profile crop-diversifying farmers and their fields, and regression analysis to determine the factors that could hasten adoption of this production system by farmers. Preliminary results showed that despite recognizing the benefits of crop

diversification, very few farmers engaged in crop diversification because of issues on land suitability, water supply, lack of supporting infrastructure, technology, price variability, high capital and labor requirement, and some sociodemographic factors. Crop perishability was a major issue that added to farmers' reluctancy in planting non-rice crops. Availability of better facilities and infrastructures for processing and storage to reduce postharvest losses is recommended. Farmers also need to be capacitated on the best growing and marketing practices for non-rice crops, especially for first-time producers.

Assessing the Production and Marketing of Philippine Specialty Rice

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As the Philippines faces a more liberal rice trade and with influx of cheaper rice imports, prices of ordinary white rice are expected to go down in the domestic market. Production of specialty rice (SR) such as glutinous, aromatic, and pigmented rice could serve as a viable enterprise for the local farmers given that Philippine rice exports are composed mostly of SR. To nurture the potential of Philippine SR, a clear understanding of its industry encompassing multidisciplinary approaches must be done.

During its four-year run, the project generated information on specialty rice and produced a book. These outputs contained information on sociocultural uses and potentials. With the goal of expanding the niche market, supply and demand were assessed and profitability was evaluated. SR varieties were characterized through analysis of grain quality attributes and health-promoting properties. Lastly, local SR was compared with international SR to assess if the former can be competitive in the global market. These findings were synthesized into a recommended action plan that encompassed recommendations from input provision to marketing and provided directions for R&D, and policy making.

Rice-Based Farm Household Survey for the Additional 19 Provinces

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The regular monitoring of rice-based farming households nationwide addresses the need to provide rice and rice-related information to PhilRice major stakeholders. Additionally, in support to the data requirement of RCEF Seed and Extension Program Components, results from survey will serve as baseline information for the monitoring and evaluation (M&E) of the program implementation. RCEF provinces will be profiled to provide inputs to researchers, development workers, and policymakers for planning and informed decision-making. In 2020, 2019 DS

and 2019 WS data collection on organization membership, area planted, variety planted, seed class, crop establishment, seeding rate, and yield for 18 provinces were conducted, with the latter being done thru phone interviews. Provincial preliminary 2019 DS results were presented during the RCEF Annual Review and Assessment Workshop. Initial output tables on farmers' attitude and competencies behind rice technology adoption were processed and generated.

Baseline Information Survey of RCEF Rice-Based Farm Household Beneficiaries on the 38 Provinces

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The Rice Competitiveness Enhancement Fund (RCEF) was created to help farmers cope with these challenges. It is a P10-B fund aimed to support: (1) farm mechanization (50%); (2) inbred seeds development, propagation, and promotion (30%); (3) expanded credit assistance (10%); and (4) extension services (10%). A six-year initiative, RCEF intends to complement and supplement the National Rice Program implemented by the Department of Agriculture (DA). DA-PhilRice was mandated to implement the RCEF Seed Program starting 2020 DS. It covers 57 major rice-producing provinces, which were selected based on yield, area harvested, cost of production, and percentage of irrigated area harvested.

Given the magnitude of public resources poured in RCEF, it is important to determine if the outputs of the program led to its expected outcomes and impacts. This entails the need for the monitoring and evaluation (M&E) and impact assessment to gauge the success of the interventions and to determine constraints to implementation. To carry out this goal, a baseline information is needed to characterize sample target recipients from 57 RCEF-Seed Program priority provinces. Nineteen of the 57 provinces are being covered by the ongoing RBFHS project (2019 DS – 2019 WS). The remaining 38 were covered by the previous RBFHS project (2016 WS – 2017 DS). However, both surveys differ in their target populations and cropping seasons. Therefore, a new baseline survey for the 38 provinces is needed to complete and synchronize the current survey of the 19 provinces. This survey is related and complemented the PSA data collection on rice, but with detailed information on the rice-based farm households and their farming practices.

One-shot (2019 DS and 2019 WS) survey for three provinces was conducted. Provincial preliminary results of 2019 DS and 2019 WS were presented during the RCEF Annual Review and Assessment Workshop. Initial output tables on farmers'

attitudes and competencies behind rice technology adoption were processed and generated. A national dataset consolidating 2019 DS data sets for 37 provinces is already for thematic editing.

Pilot-Scale Deployment and Seed Production Plan of Golden Rice in Selected Provinces in the Philippines 2019-2023

Fidela P. Bongat, Jesusa C. Beltran, Kristine Marie A. Daplin, Ralph Homer L. Ante, and Rochelle H. Caliwagan

Golden Rice is a new type of rice that contains beta-carotene, a precursor of vitamin A, in its grain similar to what is found in green and yellow vegetables, and is converted to vitamin A by the body as needed. With proper deployment, this healthier type of rice will complement existing interventions for good nutrition for those who need it the most, ensuring that vulnerable children and women (pregnant and lactating mothers) will have improved immune system and better health and nutrition outcomes.

To deliver Golden Rice to the communities, a pilot-scale deployment plan must be crafted, which is aligned with national policies and development plans. On a bigger picture, the project has two deployment pathways: market-driven approach and program-based approach. These two pathways envision Golden Rice to flow efficiently with the existing rice production and marketing systems, and to be incorporated with existing health and nutrition, and agriculture programs.

The project generally aimed to develop and pilot test GR deployment strategies in target sites in the Philippines. In 2020, the farm-level database for the development of the strategic pilot-deployment plan of Golden Rice was partially accomplished. Notable outputs included refinement and pre-testing of survey instruments for key informant interviews, focus group discussions, and participatory rural appraisals. Similarly, the market- and consumer-level databases for the pilot-scale deployment plan of Golden Rice were partially completed.