2024

PhilRice R&D Highlights

SOCIOECONOMICS DIVISION

Philippine Rice Research Institute
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DIVISION

Socioeconomics Division

DIVISION HEAD: **JAIME A. MANALO IV**

EXECUTIVE SUMMARY

The Division provides data support for various policies relating to the Philippine rice industry, using multiple methods and lenses in coming up with policy recommendations. In 2024, it had a good mix of accomplishments utilizing both qualitative and quantitative traditions in research. It has provided voluminous data to back up some major discourses that helped shape the industry. Its core projects were: Statistical Series on the Philippine rice economy; Socioeconomic research studies on the Philippine rice economy; Policy research and advocacy; Trajectories and drivers of the Philippine rice supply and demand; and Value chain analysis for rice commodity in the Philippines. Its externally funded project was: Understanding adoption trajectories of select rice production technologies.

The outputs of the Statistical Services project provided the needed data backing for the Division's position papers and other policy-related documents. The Socioeconomic research studies tackled weedy rice, crop diversification, and technology tracing. Aside from presentations in various fora, journal articles were also written to properly document the insights from most of these studies that could help craft policies for the rice sector. Policy Research and Advocacy had policy scoping, policy research, and policy advocacy as sub-studies. This project provided inputs to important matters needing technical assistance such as the Philippine Environment and Natural Capital Accounting System, which is now a law. Under the auspices of this study, SED also conducted numerous policy-brokering initiatives that ensured the continued ground presence of PhilRice when it comes to policy formulation.

The Trajectories project provided a comprehensive analysis of rice supply and demand dynamics, along with broader food consumption and expenditure patterns, which contributed to a more data-driven approach in formulating rice policies. The Value chain analysis team has prepared the manuals of operations and sets of questionnaires for the surveys that will be conducted. Focus group discussion guides were prepared for the qualitative aspect of the study. Methods trainings and workshops were conducted to ensure smooth data collection.

The Understanding adoption trajectories project provided insights into how the transplanter, drones, and saline-tolerant rice varieties could be scaled. The studies were conducted in (Saline) Camarines Sur; (Transplanter) Zambales; and (Drones) Nueva Ecija and Batangas.

CORE-FUNDED PROJECTS

SED-231-000: Statistical series of the rice economy

MARCO ANTONIO M. BALTAZAR

Effective planning, implementation, and policy development in R&D require the use of statistics. Researchers and development workers must quantify project impacts to support decision-making. This project addresses the need for primary stakeholders in rice production to access reliable and up-to-date statistical information. It has two components: 1) Updating and restructuring statistical series on the rice economy and 2) Integration of other rice statistics databases in the PalayStat system. The first component stores official sources of data in a publicly accessible repository, ensuring that all information is current. The second component provides interactive web-based platforms through the PalayStat System (formerly known as the Rice-Based Socioeconomic Information System or RBSEIS) for accessing these databases.

This project provides reliable data for division-based initiatives like Policy Research and Advocacy that relies on evidence-based analysis to develop policies for farmers. It also supplies PhilRice top management with updated information on the rice industry and serves as the primary source of socioeconomic reports submitted to the Secretary of the Department of Agriculture.

Updating and restructuring statistical series on the rice economy

This activity restructures datasets into manageable, interoperable matrices for faster analysis. Data are often collected in non-interoperable formats, requiring time to organize and process them. This project ensures that data remain in a standardized format, enabling efficient analysis. It collaborates with the PalayStat study to ensure that all data are compatible with the system for efficient storage. The finalized restructured data are then compiled and sent to the system for testing, storage, and uploading. The project maintains and updates 37 statistical tables from Philippine Statistics Authority (PSA) and other data sources on a weekly, monthly, quarterly, and annual basis. The most current data available are on rice production, area, yield, imports and exports, prices, supply, and demand.

Integration of other rice statistics databases in the PalayStat system

The System, formerly named Rice-Based Socioeconomic Information System (RBSEIS), offers data users a platform with an interactive web-based information system. To optimize the user experience, more features were developed, such as dynamic search options and broader keyword terms; increased database availability of publications, maps, and references. In 2024, the website was accessed 37,552 times by 1077 unique users. PalayStat's data provision services transitioned to RiceLytics, data requests through the website declined, though some users still reached out to the webmaster. One user requested information and was provided with a link to the data resource requested, while another was directed to RiceLytics. Meanwhile, two requests could not be fulfilled and were referred to the relevant agencies.

The Division's staff members are regularly informed of the data updates through corporate email or various social media platforms. The project also provided datasets on rice industry status to the PhilRice Management Committee. Building on the established data processing and analysis workflow of the PalayStat System, the RiceLytics dashboard adopts a similar framework to streamline development and updates. The insights gained from creating PalayStat were crucial foundations for RiceLytics, influencing its data structure and user experience. By adopting the similar methods in restructuring rice-related data and utilizing processed RBFHS datasets from PalayStat, the development of RiceLytics was accelerated and further widened the scope of datasets available.

SED-232-000: Socioeconomic research studies on the Philippine Rice Industry

ROWENA G. MANALILI

In 2024, nine studies addressed important issues concerning the Filipino farming community. Five of these were continuations from 2023 studies, designed to achieve the following objectives:

1. To locate the PhilRice-developed technologies;
2. To gain a better understanding of the aspirations of Filipino farmers;
3. To identify ways to strengthen Filipino farming families;

4. To explore the mental health issues faced by rice farmers in the Philippines in light of the impacts of climate change; and
5. To analyze the affordances in crop diversification by examining three cases from the Philippines.

Four new studies were added in collaboration with the Crop Protection Division, the Rice Chemistry and Food Science Division, and the Rice Competitiveness Enhancement Fund – Seed Program. These had the following objectives:

6. To update the PhilRice inventory of rice-based food products;
7. To access Sariaya (Quezon) stakeholders' lived experience with weedy rice so as to be be on the same page as them;
8. To determine the most significant changes in the lives of RCEF stakeholders; and
9. To provide a developmental overview of how social science plays out in rice research.

Where are our technologies?

JAIME A. MANALO IV, LOUIE GERARD F. ORCULLO, AND TERESA JOI P. DE LEON

This study series traces the adoption and adaptation of PhilRice-developed technologies by farmers or entities that work with them. Specifically, it focused on documenting where these technologies are being used. The study following the popular NSIC Rc160 rice variety brought attention to the conflicting goals among different actors in the rice industry, which limit its success. The study following the Laboy Tiller highlighted the importance of altruism as an ingredient for the scaling of an innovation in how it motivated the initial owners to value and maintain the innovation. Now, the study is looking into the PhilRice Tapuy Rice Wine and is exploring the successes and constraints of this innovation.

What are the aspirations of Filipino rice farmers?

JAIME A. MANALO IV, CAMILLE C. DUMALE, TERESA JOI P. DE LEON, LOUIE GERARD F. ORCULLO, PERRY GI. DEL ROSARIO, AND CHRISHTINE JOY P. LIMOS

The foundational phase of this study, completed in 2023, was extended in 2024 through derivative papers. One paper, *Derisking the rice sector: bridging misaligned aspirations*, examines how varying aspirations across productivity levels require tailored policies. It also critiques the status quo on siloed operations that overlook farmers' broader needs. The second paper, *Crippled aspirations: Examining aspiration failure among Philippine rice farmers*, explores how aspiration failure happens among farmers, and how it is more of a systemic issue than the concept of lacking in hope. It also notes that women and better-abled farmers are marginalized in the sector, but have much potential to contribute if a more inclusive approach to rice sector development were in place. Overall, the papers suggest that embracing diversity, moving beyond technical training, and strengthening partnerships can effectively address these gaps.

Identifying ways to strengthen family farming in the Philippines

JAIME A. MANALO IV, GIRLIE NORA A. ABRIGO, ROWENA M. DE GUZMAN, PERRY G.I. DEL ROSARIO, AND RHEMILYN Z. RELADO-SEVILLA

This study explores key factors influencing the strengthening of family farming in the Philippines, highlighting the complex interplay of environmental, technological, socio-cultural, and political drivers. Climate change and environmental challenges, such as water scarcity and pests, grossly impact agricultural production. Technological innovations, including farm machinery and internet access, offer promising solutions for improving efficiency and marketing, yet farmers face barriers to fully benefiting from these advancements. Government support, such as providing necessary infrastructure and resources, remains crucial to facilitating these technological transitions. Not only that, demographic challenges, particularly the aging farming population and the declining interest of younger generations in agriculture, further complicate

the situation. Addressing these issues requires targeted policies that focus on sustainability, youth engagement, and the equitable distribution of resources to ensure the continued viability of family farming.

Exploring mental health issues among rice farmers in the Philippines in relation to climate change impacts

JAIME A. MANALO IV, PERRY G.I. DEL ROSARI, KRISTINE R. ALAGAD, AND GIRLIE NORA A. ABRIGO

Exploring the mental health challenges of rice farmers in the Philippines reveals the complex relationship between climate change and well-being. Despite experiencing natural disasters such as droughts and floods, farmers were reluctant to attribute these events to climate change. Adapting to these changes was moreover found to contribute to mental health challenges, including anxiety, fear, sadness, and disrupted sleep. The study underscores the critical connection between climate change adaptation and emotional well-being, suggesting that these mental health impacts should be considered when addressing the broader challenges faced by rice farmers.

Crop Diversification: An alternative production system for farmers

AILEEN C. LITONJUA, JAIME A. MANALO IV, TERESA JOI P. DE LEON, ROWENA G. MANALILI, AND JONABEL T. BATANG-E

In provinces practicing crop diversification, such as Nueva Ecija, Ilocos Norte, and Tarlac, farmers navigate a complex decision-making process when deciding on planting other crops than rice. While some view diversification as an opportunity for increased income and resilience, their decisions are shaped by both rational assessments, such as irrigation availability and financial sufficiency, and more intuitive factors, including personal experiences with long-term acquired knowledge. Environmental factors, like soil quality, also play a vital role in this

decision-making process. For instance, farmers whose farm soil classification is clay may find that rice is the only viable crop, limiting their ability to diversify into vegetables or other alternatives. The same results were found as when disaggregated per site for the short case summaries. This study suggests that for crop diversification to become a successful and sustainable production system, policymakers must thoroughly understand environmental contexts, expedite farmers' access to resources, improve market linkages, and provide targeted training. These efforts will help farmers better assess the viability of alternative crops and make informed decisions toward diversification.

RCF-232-000: Consumer-driven rice-based products for farming communities and micro- to small-scale enterprises

RIZA A. RAMOS, ROSALY V. MANAOIS, JAIME A. MANALO IV, MARK JOSEPH R. ZUÑIGA, CHRISHTHINE JOY O. LIMOS, LOUIE GERARD F. ORCULLO, AND TERESA JOI P. DE LEON

Rice-based food products in public markets were surveyed in this study with the aim of exploring the diversity of rice delicacies across the Philippines. SED provided assistance to RCFSD in the Luzon inventory of rice food products. Results revealed that such products are not only a means of livelihood for local communities but are also an integral part of their local customs. The geographic variations reflect not just regional preferences and innovation, but also networks of trade and natural resource availability.

The survey found at least 35 varieties of rice-based products from 14 Luzon municipalities. For example, Sariaya in Quezon had a wide variety of locally produced *maruya, kalamay,* and *tikoy*, while Balaoan in La Union showcased rice cakes such as tupig and bibingka that were traded or outsourced from other La Union towns. The *kakanin* are considered souvenirs or tokens for both local and international tourists, upon which the producers and vendors proudly tag their products as export-quality.

Tackling the 'wicked problem' of weedy rice in Sariaya, Quezon, Philippines

JAIME A. MANALO IV, TERESA JOI P. DE LEON, EDWIN C. MARTIN, CHRISHTHINE JOY O. LIMOS, AND FEMIA R. SANDOVAL

This study explored the challenges of managing weedy rice in Sariaya, Quezon, where it inflicts heavy damage on rice production. It investigated farmers' perceptions, farming practices, and their barriers to effective management. Using a mixed-method approach, including surveys, focus group discussions, and key informant interviews, the study highlighted key issues such as conflicting views on whether weedy rice is a weed or a rice variant, low farmer knowledge on salient information about weedy rice, and the challenges posed by their ongoing transition to direct seeding from transplanting due to economic and labor advantages. Drawing on Resonance and Protection Motivation Theory as frameworks, as well as the concept of wicked problems, the findings show that there are no existing speedy solutions to address weedy rice. While strong stakeholder collaboration is in place, improved farmer education, policy changes - including reclassifying weedy rice as a weed - and accelerated research on this unfamiliar science is needed in developing viable weed rice management solutions. The paper underscores the urgency of addressing this issue to prevent future economic losses and to derisk Sariaya from the likelihood of having 1 in every 4 farmers threatened by it in 2025.

Discovering the Most Significant Changes from the RCEF program

JAIME A. MANALO IV, TERESA JOI P. DE LEON, LOUIE GERARD F. ORCULLO, AND MARK JOSEPH R. ZUÑIGA

We traveled across the country to look for some best examples of what farmer and seed grower groups could do when engaged by a government program like RCEF. This study details exciting stories of profound positive change beyond yield and income. Farmers joyfully related that their quality of life has greatly improved, saying that they think big these days, i.e. they do not consider themselves as just farmers but as businesspeople. They are now able to act as a big person as well for other cooperatives, providing help until they have built strength for

independence. RCEF has also given them a sense of security – that their seeds will not rot in a warehouse because their seeds will be bought. The seed growers have stepped up their practices as well with lessons in land cultivation and water management. They have lost the old attitude of "anything goes", and are now wise and up-to-standards in their farming practices. Increased income has meant improved life chances for their future and their children's. It has also meant feeling a sense of personal security in terms of daily rice supply for consumption, and a great joy in having funds for other non-farming purposes.

Updates on sociology and anthropology in rice research

JAIME A. MANALO IV, TERESA JOI P. DE LEON, LOUIE GERARD F. ORCULLO, AND MARCO ANTONIO M. BALTAZAR

Anthropological and sociological perspectives in Philippine rice research provide a deeper understanding of how cultural and social factors shape agricultural practices. Reflections on various studies reveal persistent challenges in aligning development initiatives with the realities of rural communities. These literatures suggest that agricultural programs often overlook farmers' social contexts, such as their differing agricultural calendars or economic priorities. These also account for the ritual and social value of rice, which makes it not just a food source to the farming communities but also a core element of their identities and practices. As such, this oversight of cultural realities in policy and research calls for a more inclusive approach that incorporates farmers' perspectives in shaping research and development.

SED-233-000: Policy Research and Advocacy (PRA)

AILEEN C. LITONJUA AND JAIME A. MANALO IV

The PRA Project (PRAP) creates a strong science-based, supportive and enabling policy environment to guide and influence national and local decisions on rice-related issues. Socioeconomic research outputs and results from completed research for development (R4D) projects/studies are used to back-up and come up with advocacies.

The project is composed of two studies – Policy Research and Policy Advocacy. The Research component generates and provides relevant science-based information and policy recommendations on rice and rice-related issues. Results of its studies are published in scientific journals, books, monographs, and/or presented in scientific conferences for dissemination and public discussion. Policy Advocacy is the project's mechanism to actively link research to policy and action. It employs various communication modalities and methods to engage stakeholders, especially policymakers and policy conduits.

Last year, policy brokering was further optimized by the PRAP team. It is a proactive policy advocacy activity that the PRAP does to link research to policy and action. The approach can help ensure that the studies made by the Institute create an impact on our stakeholders at the ground level. Additionally, it can facilitate the formulation of local policies that are supported by science-based information drawn from these completed studies. This way, policies can be more effective and uncertainties or problems during implementation can be minimized.

Two issues of Rice Science for Decision-Makers, a policy brief on rice-related issues, were published in the DA-PhilRice website. They are titled, 'Policy imperatives for carbon trading in the Philippine rice sector', and 'Crop diversification mitigates climate-change impacts'. The first introduces policymakers to carbon trading, which is a mechanism to reduce GHG emissions through the selling and buying of carbon credits, potentially benefiting farmers if structural reforms are put in place. The second policy brief presents recommendations that could maximize the potential of crop diversification as an income source to farmers and as a strategy to alleviate climate-change impacts on farming. With this, 2,000 physical copies of the issue on carbon trading were printed and disseminated through the various divisions of DA-PhilRice.

The team also led a national policy seminar-workshop on the impact of digitalization on agri-food systems that occasioned dialogue among concerned stakeholders about their digitalization efforts to assess the level of modernization utilized by the public sector and determine gaps wherein solutions can be offered. Participants came from Provincial Agriculture Offices and representatives from national agencies, academic institutions, civil society organizations, and private sector. The workshop agreed to form a steering committee of various government agencies and private entities to craft a holistic national digital transformation plan.

The Policy Research leg of PRAP also came up with a total of 11 issues of the 'Conversations on Rice', a document compiling all rice-related news in a given month, which were exclusively provided year-round to the PhilRice Management Committee that guided strategies and directions of the Institute.

Policy brokering of the PRAP's Policy Advocacy initiative succeeded in Bongabon, Nueva Ecija when it enacted two of PRAP's drafted ordinances on drought adaptation and digital agriculture in February 2024. Seven other local government

units (LGUs) were successfully engaged with policy brokering that promoted DA-PhilRice technology recommendations on nutrient management, Direct-Seeded Rice, drought adaptation, and digital agriculture. These LGUs are Cantilan and Carrascal in Surigao del Sur, Cabadbaran City and Las Nieves in Agusan del Norte, Naujan in Oriental Mindoro, Lucban in Quezon, and Abucay in Bataan.

SED-234-000: Trajectories and drivers of the Philippine rice supply and demand

JESUSA C. BELTRAN, NEFRIEND R. FRANCISCO, ROCHELLE H. CALIWAGAN, ADRIELLE C. FLORES, AND JHON BENSON R. SANTOS

A collaborative project between IRRI and PhilRice, it is developing a dynamic partial equilibrium model of the Philippine rice supply, demand, and price linkages at the national level. This will help provide recommendations for planning, designing, and implementing government programs toward improving Filipinos' food supply and nutritional status. The project also estimated food consumption and expenditure patterns using FIES data across different socio-economic groups, offering valuable insights into their food consumption behaviors and providing critical information on price sensitivity and consumer behavior.

The developed partial equilibrium model incorporates (1) rice supply, which includes production, beginning stocks, and imports; (2) rice demand, which consists of domestic consumption, ending stocks, and exports; and (3) other factors influencing supply and demand. This model was instrumental in generating monthly rice projections at the national level, informing rice policy decisions and program development. Utilizing this model, the project produced baseline projections for rice supply, demand, and prices. Additionally, scenarios were analyzed to assess the impact of various shocks on the Philippine rice industry. Projections examined the effects of tariff reductions and exchange rate fluctuations, as well as climate-related phenomena such as El Niño and La Niña. These findings equipped policymakers with data-driven recommendations for responding to market and environmental shocks.

Estimates of rice and other food consumption and expenditure patterns across regions and various socio-economic classes were also provided by the project. The analysis utilized 24 commodities including rice, corn, meat, fish, fruits, and vegetables. Further, two estimates of per capita consumption were generated using the original FIES prices and the PSA OpenStat published commodity prices.

SED-236-000: Value Chain Analysis (VCA) for the Rice Commodity in the Philippines

ALICE B. MATAIA

Jointly implemented by the DA-Philippine Rural Development Project (DA-PRDP), DA-PhilRice, and DA-National Rice Program (DA-NRP), the project is facilitating investment prioritization by analyzing the chain structure, understanding end-market opportunities, identifying opportunities for improving competitiveness and resilience, and developing strategic interventions for upgrading the industry.

Six sets of questionnaires were developed for the regional VCA teams' quantitative survey of key rice value chain actors – farmers, palay traders, rice miller-traders, rice importers, rice wholesalers/wholesaler-retailers, and rice retailers. A questionnaire for palay and rice agents was also developed to capture their involvement in the rice value chain. A manual for each questionnaire, outlining the sampling methodology, some general reminders, definition of terms, and proper delivery of questions, was provided to the regional VCA teams to ensure that they properly administer the questionnaire during their data collection. For the qualitative part, a guide including the prescribed groupings for the focus group discussions (FGD), post-workshop reminders, and a set of minimum guide questions for each group was developed and provided.

To facilitate data consolidation for the national report, a database encoding system for the farmer's interview questionnaire has been developed in partnership with the DA-PRDP. The system was initially presented to the regional VCA teams; systems for the other questionnaires are being developed. Furthermore, secondary data on the regional costs and returns of palay production were gathered from the Philippine Statistics Authority (PSA) and sent to the regional VCA teams for their report.

EXTERNALLY FUNDED PROJECT

RTF-070-365: Understanding adoption trajectories of select rice production technologies

JAIME A. MANALO IV

Many factors influence adoption trajectories of agricultural technologies. This study looks into the socio-technical factors concerning the uptake of three identified climate change-adaptive technologies in rice: drones, transplanters, and saline-tolerant varieties. The research sites were in Nueva Ecija (Drones); Iba and Sta. Cruz, Zambales (Transplanters); and Canaman and Pamplona, Camarines Sur (Salt-tolerant varieties). Focus group discussions, key informant interviews, windshield surveys and reviews of secondary documents were the data collection methods employed. Overall, it was found that of the 10 scaling ingredients, the three technologies were strong only in the technology and awareness scaling ingredient. This means that developers successfully established the need for the technologies. The other nine scaling ingredients require intensive work and support to realize a successful scaling. This study also highlights that many aspects to technology uptake must be dealt with at the national level, like the enhancement of the manufacturing industry in the case of drones if the intent is to come up with machines that are competitive with their counterparts from abroad. With Systems Thinking as its research philosophy, this study sheds light on the multitude of factors that could enhance or hinder scaling of agricultural technologies.