2023
PhilRice R&D Highlights

SOCIOECONOMICS DIVISION

Philippine Rice Research Institute
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Contents

Socioeconomics Division

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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 2023, the Division had good accomplishments utilizing both qualitative and quantitative traditions in research. It provided voluminous data to back up some major discourses that shaped the industry.

The core projects of the Division in 2023 are: Statistical Series on the Philippine rice economy; Socioeconomic research studies on the PH rice economy; Policy research and advocacy; and Trajectories and drivers of the PH rice supply and demand. Three projects were implemented under extra core: Enhancing decision support systems to guide enabling rice policies; Policy, Monitoring and Evaluation of the RiceBIS Community Program 2.0; and OneRicePH Module 1: Validation of market-driven product concepts of priority provinces in 16 regions. The Division pursued three externally funded projects: Building capacity on promoting economically and environmentally efficient rice production through direct-seeded rice (DSR) in the Philippines. It also carried out the Monitoring and evaluation of midterm outcomes of the RCEF Seed Program.

Two studies were conducted under the Statistical Series project, the outputs of which provided the needed data backing for the position papers and other policy-related documents that were produced by the Division. The project on Socioeconomic undertook five research studies on technology-tracing, aspirations of Filipino farmers, mental well-being of farmers, and crop diversification. Most of these studies were presented in public fora such as PhilRice's Lifelong Learning Series. The Policy Research and Advocacy Project produced two brokered policy recommendations that evolved as municipal ordinances in Sta. Cruz, Zambales. A policy forum on climate change adaptation was also spearheaded, with importers, farmers, and municipal and provincial agriculturists in attendance.

The extra core EDGE project came up with several policy documents that will help shape directions in the Philippine rice industry. The Division's RiceBIS initiative helped frame program decisions and interventions that support market-oriented and agro-enterprising rice-based communities. The OneRicePH, on the other hand, developed 42 market-driven product concepts from the 42 major rice-

producing provinces. The DSR project funded by the FAO crafted policy briefs and an ordinance that was enacted in Sta. Cruz, Zambales. It also yielded a study on DSR constraints and enablers, and seminars on entrepreneurship.

Lastly, the RCEF M&E team put together important data about RCEF operations across the country.

The Division's collective outputs in 2023 amplify the interconnectedness of social research with policy recommendations that are expected to benefit the various rice stakeholders.

CORE PROJECTS

SED-231: Statistical series of the rice economy

Marco Antonio M. Baltazar, Jesusa C. Beltran, Aileen C. Litonjua, Imelda A. Arida, Ranxel M. Almario, Byronne C. Mendoza, Thich Eloise Paris, Janine P. Curibot, Aerone Philippe G. Bautista, and Roy F. Tabalno

Statistics are an essential part of project planning, implementation and policy development related to rice R&D. This project that responds to the need for primary stakeholders in rice production to have access to current statistics consists of two studies: (1) Updating and restructuring statistical series on the rice economy and (2) Integration of other rice statistics databases in the PalayStat system. The first study stores official sources of data in a publicly accessible repository, making sure that everything is kept up-to-date. This second study provides access to these databases through interactive web-based platforms on the present PalayStat System. The project provides data as input for projects like the Policy Research and Advocacy, which uses these data to create science-based policies for farmers. It also provides PhilRice's management with updated information about the rice industry, and all socioeconomic reports sent to the Department of Agriculture.

UPDATING AND RESTRUCTURING (STUDY 1)

This study restructures datasets to create manageable and easy-to-reconstruct matrices for faster data analyses. It coordinates with the PalayStat study to ensure that the data sets are in accordance with the system for easy storage. Final restructured data are compiled and forwarded to the system for testing, storing, and uploading.

About 100 statistical tables from the Philippine Statistics Authority (PSA) are being maintained and updated with the latest data available in rice production, area, and yield as well as imports and exports, prices, supply, and demand. Results from the

latest Rice-Based Farm Households Survey (2016-2017) in 42 major rice-producing provinces are also being made available through the PalayStat information system. Catered to 58 data requests were ranging from comprehensive data on rice production, area, and yield to specific data on regional and provincial performance. Provided datasets were mainly used in planning and policy creation, empirical research, and as references for reports and publications.

INTEGRATION (STUDY 2)

The PalayStat System, formerly named Rice-Based Socioeconomic Information System (RBSEIS), offers data users a platform with an interactive web-based information system. To enhance user experience, more features were developed, such as dynamic search options and broader keyword terms; increased database availability of publications, maps, and references; plus revamping the website design.

Ensuring the sustainability of the system, a Git repository was established. A Git is a software that track changes in any set of files especially the system source code for PalayStat and uploads it to the cloud via a private GitHub repository.

In 2022, the system was accessed 20,269 times by 6,177 unique users. Most traffic of PalayStat from the 2022 period is from search engine searches at 81%, with direct access at 16%, and 3% in referrals and through social media. The average session during the same period is 3 minutes and 56 seconds. There were also articles published through the PhilRice website regarding PalayStat: https://www.philrice.gov.ph/more-users-benefit-from-easy-access-to-rice-data/ and https://www.philrice.gov.ph/rice-data-in-a-click/

Socioeconomics Division (SED) as a major source of rice industry data, SED 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.

SED-232: Socioeconomic Researches of the Philippine Rice Industry

Rowena G. Manalili

This project conducts socioeconomic research to benefit PhilRice's target outcomes and support DA's defined directions through its eight paradigms. Specifically, it provides industry players with research-based data and information on pressing issues and concerns surrounding the development of the rice industry. Moreover, it aims to contribute to the effective and efficient monitoring, evaluation, and quantification of the performance of rice R4D products and

development programs through ex-ante, monitoring and evaluation activities, and ex-post impact evaluation studies.

In 2023, five studies that address important issues concerning the Filipino farming community were designed to achieve the following objectives:

- To locate the PhilRice-developed technologies.
- To better understand the aspirations of Filipino farmers.
- To identify ways to strengthen Filipino farming families.
- To explore the mental health issues faced by rice farmers in the Philippines in the light of the impacts of climate change.
- To analyze the affordances in crop diversification by examining three cases from the Philippines.

These studies are expected to provide invaluable insights into the challenges faced by the Filipino farming community and help identify potential solutions to these issues.

To what extent is the NSIC Rc 160 a success story?

Jaime A. Manalo IV, Louie Gerard F. Orcullo, Teresa Joi P. De Leon, Marife R. De Torres, Floper Gershwin E. Manuel, Anfernee M. Pascual, Camille C. Dumale, Perry G. I. Del Rosario, and Mark Joseph R. Zuñiga

This study inquired on the extent of success of NSIC Rc160, a PhilRice-bred variety known for its excellent eating quality and popularity across the Philippines. The study employs innovation-mapping in pursuing the inquiry. Stakeholders were invited and the initial findings were expounded upon through key informant interviews and focus group discussions in nine provinces - Nueva Ecija, Pangasinan, Tarlac, Bulacan, Samar, Leyte, Davao del Sur, Agusan del Sur, and Surigao del Sur - through criterion, snowball, and purposive sampling. The study finds that the variety was indeed successful in terms of how it spread across the country and the level of acceptance by various stakeholders. The extent of its success, however, is stifled by the weaknesses in the innovations system brought about by the competing and conflicting goals of its actors. The study brings insights on these conflicts in the innovations system that if resolved could benefit the future innovations that will be supported by this same innovation system.

What are the aspirations of Filipino rice farmers?

Jaime A. Manalo IV, Camille C. Dumale, Teresa Joi P. De Leon, Louie Gerard F. Orcullo, and Perry G.I. Del Rosario

The goal of this study is to gain insights into the aspirations of Filipino rice farmers, both related to farming and non-farming. Aspirations can indicate the direction that farmers aim to take, and understanding these aspirations can help the government and other interested parties provide effective initiatives to support farmers. This study is unique in that it is the first study in recent years to focus on their aspirations. The Role Identity Theory was used to analyze the data in this study, which was primarily qualitative, with focus group discussion as the main method of data collection. The research sites were located in Kalinga, Nueva Ecija, Laguna, Quezon, Northern Samar, Zamboanga del Sur, Sultan Kudarat, and Agusan del Norte. The study found that farming-related aspirations included property ownership, fair pricing, infrastructure, government support, and good governance. Non-farming aspirations included infrastructure development, progress, government support and governance, love, passion, peace, unity, wellness, and a long life.

The study suggests that individual aspirations are influenced by factors such as gender and resources. However, when aspirations are analyzed at the family level, gender and resources are insignificant factors. The study highlights the importance of paying attention to the aspirations of farmers, both in agriculture and beyond. It is important to note that farmers have aspirations that require the help of a third party to be realized. Among the many aspirations noted, the study emphasizes the importance of farm mechanization. This is a long-standing vision in the Philippines that should have been realized already. In addition to agriculture-related aspirations, farmers also aspire to become productive members of their communities. Addressing these aspirations requires collaboration among organizations beyond silos to better respond to farmers' concerns.

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

The study wants to find ways to support family farmers; it focuses on issues, needs, opportunities, and ways to strengthen them. Data was collected from agricultural areas in Siniloan, Laguna, and Sariaya, Quezon, which have undergone industrialization. Researchers conducted focus group discussions with 47 participants and interviewed 10 key informants, six in Siniloan and four in Quezon. The results show that the challenges faced by family farmers include

pests and diseases, water scarcity, climate change, infrastructure development, labor shortage, expensive production costs, aging farmers, and insufficient government support. These issues have been around for a while and have not received enough attention, which has made them more severe. For example, water scarcity has led to water theft in some communities. Critical reflection is necessary to identify effective strategies to address these issues. Policies have varying degrees of benefits for family farmers, who view their family as beyond blood relatives and include anyone connected to them through love and cooperation. The study suggests dialogue with the government and young people as an important step to strengthen family farming in the Philippines.

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

Jaime A. Manalo IV, Perry G.I. Del Rosario, Kristine R. Alagad, and Girlie Nora A. Abrigo

The study delves into the mental health concerns of rice farmers and suggests ways to provide proper assistance to them. It was conducted in Bulacan that is heavily affected by climate change impacts. The study included interviews with rice farmers, key informants, and government institutions. The biopsychosocial-spiritual model of mental health was used to guide the analysis of data. The results of the study suggest that farmers do not relate their experiences of natural disasters to climate change. Three themes emerged in farmers' coping mechanisms: evasion, keeping a positive mindset, and relying on social support. It appears that the difficulties in adapting to climate change lead to farmers suffering from mental health issues such as worry, fear, sadness, and poor quality of sleep. A systemic and holistic approach is necessary to deal with the mental health issues of rice farmers. This study adds to the body of research that establishes links between climate change impacts and mental health issues.

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 Batang-e

This study determined if crop diversification could be a viable alternative production system for rice farmers, taking into account the Rice Tariffication Law. The study used both quantitative and qualitative research methods, such as surveys, focus group discussions, key informant and in-depth interviews, and

windshield surveys. The most recent Rice-Based Farm Household Survey (RBFHS) data set (WS 2016 and DS 2017) shows that Nueva Ecija, Tarlac, and Ilocos Norte are the top-diversifying provinces (Figure 1), and were selected as study sites for the research. A municipality was randomly selected from each province, and four to five barangays from each municipality were chosen. Thirty-six crop-diversifying and 36 purely rice farmers were chosen using convenience sampling from each municipality to participate in the survey covering the 2021 cropping seasons.

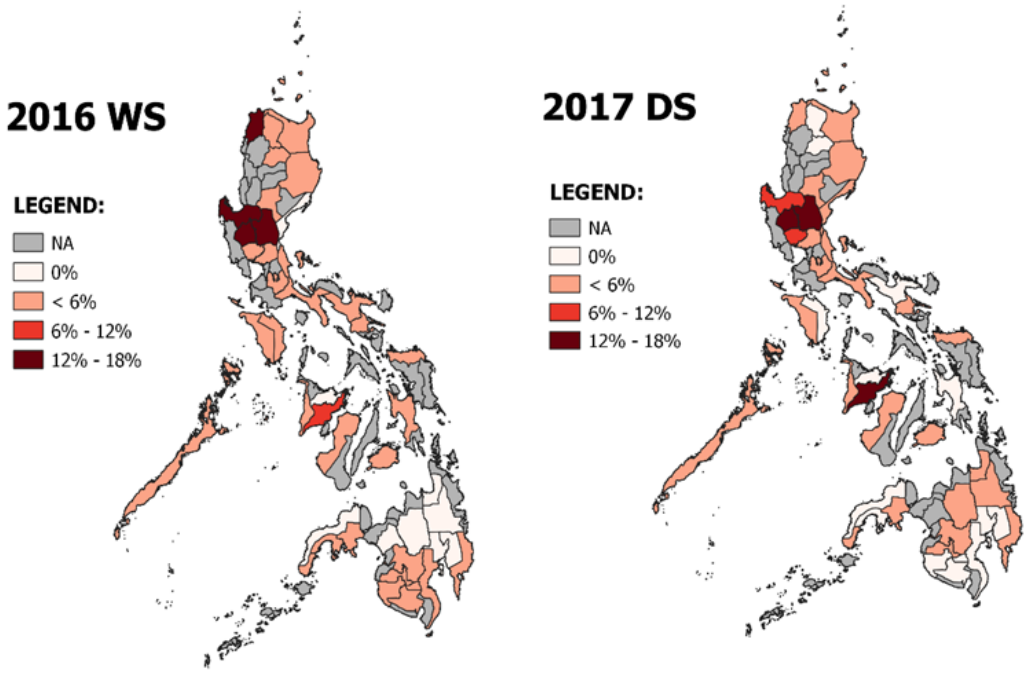

Figure 1. Distribution of farmers who practiced crop diversification, WS2016 and DS2017.

The study defined a farmer who crop-diversifies as someone with at least one parcel where rice is either intercropped or relayed with other crops, while a monocropping farmer has at least one parcel planted purely with rice in all cropping seasons. Descriptive statistics and regression analyses were used to profile and compare both groups of farmers and their fields. The study found that some sociodemographic characteristics (i.e., sex, years of schooling, farming experience, and attendance in relevant training/seminar), as well as physical characteristics of land (i.e., soil texture, distance of farm to the nearest market, and source of irrigation water during the rainy season), were significant factors that could influence a farmer's decision to diversify his farming practices. The study also found that the integration of other crops with rice was encouraged by essential production assistance and services, and farmers expressed willingness to diversify if production inputs, particularly seeds and fertilizer, were provided free or at subsidized rates. Credit/capital/financial assistance was also found to be a significant motivator for diversification among farmers, highlighting the interconnected nature of support services in fostering crop diversification.

The qualitative research employed inductive and deductive approaches to analyze the transcripts, with measures such as coding guides and informal member-checking used to ensure auditability. The Affordances Theory, Capabilities Theory, and Intuitive Decision-Making Theory were used to understand the decision-making process of rice farmers in Nueva Ecija, Ilocos Norte, and Tarlac when considering crop diversification. The study found that despite differences in provincial farming contexts, farmers shared a common cognitive process and variables when considering crop diversification. They rationally evaluated the suitability of crop diversification as to their sociocultural, economic, and farming contexts, but ultimately relied on intuitive decision-making for their final decision. Understanding these findings can help evaluate the effectiveness of existing strategies that use crop diversification for economic and non-economic gains.

SED-233: Policy Research and Advocacy

Aileen C. Litonjua

PRAP has three studies: policy scoping, policy research, and policy advocacy. The synergy among these components shall create a supportive and enabling policy environment by providing science-based data and information to guide and influence national and local decisions on rice-related issues.

The policy scoping study listed rice-related topics that may be prioritized for policy research from the results of the online survey that the team conducted during the first quarter of 2023. The survey solicited insights from key officials in the DA and attached agencies, DA-RFOs, the Rice Board, local government offices (PAO, RAFC), NGOs, and other stakeholders such as farmers, traders, and seed growers. The list guided the team in identifying relevant and timely topics for policy research and advocacy efforts.

The policy research component published a policy paper and two policy briefs, and provided technical support to the DA through its 11 policy-related materials such as position papers, technical reports, and presentations.

The policy paper titled "Adoption and performance of direct-seeded rice technology in the Philippines" was published in the Philippine Journal of Science in February 2023. Two policy briefs dubbed as Rice Science for Decision-Makers (RS4DM) were released: (a) "Enabling the shift from transplanted to direct-seeded rice systems in the Philippines" (b) "What does our balanced fertilization study say?". The former focused on the benefits of direct-seeded rice (DSR), its adoption constraints, and ways to promote it, while the latter presented some nutrient management options for farmers in the face of rising fertilizer prices.

Digital copies of these RS4DM issues were sent to 310 members of both Houses of Congress. Some 2,000 printed copies per issue were given to the DA-PhilRice management and other stakeholders.

The 11 policy-related materials were prepared in response to DA's and DA-PhilRice management's requests for inputs on emerging and pressing rice issues:

1. DA-PhilRice's position on the proposed Agricultural and Credit Governance Reform
2. Potential project for public-private partnership with Bayer
3. Inputs on the issue of the prices of agricultural inputs for the State of the Nation Address (SONA)
4. Price ceiling: A boon or bane in addressing onion smuggling
5. Estimated damages on rice due to Typhoon Egay
6. Review of studies indicating the presence/absence of rice cartel
7. Potential effects of the proposed reduction of the rice import tariff to 0-10%
8. Competitive Enhancement Measures Fund (CEMF) Discussion
9. Analysis of the possible extension of the Most Favored Nation (MFN) tariff rates on rice
10. Are farmers benefiting from the currently high palay prices?
11. Possible rice price manipulation and what would be the reasonable palay prices (wet and dry) with the milled rice price cap

For policy advocacy, the team organized and facilitated a policy seminar-workshop in November with the theme "Policy Talks: Strengthening climate change adaptation of rice-farming communities". The 59 participants were officials from DA offices and attached agencies, DA-RFOs, provincial local government units (PLGUs), and DA-PhilRice. The team likewise drafted four local ordinances on (1) digital agriculture, (2) drought adaptation, (3) balanced fertilization, and (4) direct-seeded rice. Two of these (i.e., balanced fertilization and DSR) were adopted by the municipal government of Sta. Cruz, Zambales. The team also established partnerships with Central Luzon State University (CLSU) and the Bulacan Agricultural State College (BASC) to enhance their engagements LGUs and assist them in ordinance-drafting.

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

Harold Glenn A. Valera (IRRI) and Jesusa C. Beltran (PhilRice)

This project aims to provide science-based information that will aid policymakers in projecting the rice supply and demand behavior in the country, understanding the complete food demand system, examining factors affecting rice supply and demand, and recommend actionable policy options that can contribute to the strategy of increasing rice supply and managing rice consumption in the country. Specifically, the project aims to examine the rice food demand behavior of Philippine households before and after the implementation of the rice tariffication policy. Particular emphasis is placed on estimating a complete food demand system and understanding the factors affecting rice demand using the 2018 and 2021 FIES data. Not only that, the project will develop a state-of-the-art dynamic partial equilibrium model of the Philippine rice supply, demand, and price linkages across regions. In 2023, the project's notable outputs include the following:

- Produced an updated database of rice supply, demand, and price at the national, regional, and provincial levels;
- Developed preliminary quarterly and monthly projection models of rice production, area, and yield at the national and regional levels;
- Developed quarterly projection models of total rice consumption, per capita rice consumption, ending stocks, beginning stocks, imports, farmgate prices, and retail prices of rice at the national level;
- Established database of Family and Income Expenditure Survey (FIES) to estimate the consumption of and expenditure on rice and other food commodities across different socio-economic classes and location characteristics; and
- Provided technical inputs and information using the preliminary trajectory model established for decision-making of policy makers in the Department of Agriculture.

EXTRA CORE

Enhancing decision support systems to guide enabling rice policies

Harold Glenn A. Valera (IRRI) and Jesusa C. Beltran (PhilRice)

This project aims at enabling policymakers to make informed decisions in addressing important challenges with respect to low yield and income, and unstable rice prices. It emphasizes the interface among rice production, competitiveness, prices and climate change by using quantitative and qualitative methods. Specifically, the project aims to refine the analyses of rice production growth, provincial competitiveness and price formation, and consider farmers' adaptation strategies to climate change. The overarching goal is to develop an enhanced decision support system where data, information and policy recommendations generated from quantitative and qualitative analyses are used to support government's priority-setting and investment. In 2023, the project's notable outputs include the following:

- Produced policy papers and briefers on sources of rice production growth and rice price formation;
- Produced provincial profiles of and policy papers on the rice competitiveness of 12 selected major rice-producing provinces categorized into four quadrants based on yield and production cost in Luzon, Visayas, and Mindanao;
- Prepared materials for the conduct of the 2-day policy forum on EDGE with different stakeholders on sources of production growth, price formation, and provincial competitiveness;
- Prepared preliminary report on farmers' perceptions on the impact of climate change on rice production from selected PH provinces; and
- Provided technical inputs and information for decision-making of policy makers in the Department of Agriculture.

Policy, Monitoring and Evaluation of the RiceBIS Community Program 2.0

Aileen C. Litonjua

This component of the Program provides baseline data, monitors the progress of the RiceBIS clusters, and offers policy recommendations for the RiceBIS communities. This information is vital in identifying strategic initiatives that best fit the needs of the farmer cooperatives/associations. It also helps to determine

site-specific problems and to better improve their current status by collaborating with the local government units in adopting policy recommendations that will be advantageous to the local farmers.

Information on the state of the RiceBIS clusters before full implementation of the RiceBIS 2.0 program in July-December 2023 was provided. Results were presented to the program and became basis of interventions in the latter part of the year. Relevant indicators such as resources (e.g., assets, financial, and human capital), FCA's income, and marketing practices were monitored and compared with baseline results to determine any intervention-induced changes in the sites. Initial results showed that:

- FCAs' income increased by more than PhP30,000
- Some FCAs gained additional capital through credit, postharvest and processing equipment, and trucks
- A few FCAs had transactions with institutional buyers.

The program also aimed to influence policy-making by reviewing local policies related to the rice industry, drafting and lobbying for resolutions endorsing the program to the LGUs, and creating an accessible database of policy problems and stakeholder analyses. These outputs contributed to the desired project outcome of delivering socioeconomic and policy-related information and recommendations to aid in informed program decisions and interventions, ultimately supporting market-oriented and agro-enterprising rice-based farming communities.

Process Innovations Project: Engaging Farmer Clusters for Agro-enteprise Development

Alice B. Mataia, Dia Marie S. Javier, and Shantel Anne Nicole E. Chavez

The Project worked to transform farmers from being solely production-oriented to market-driven farmer cluster-agripreneurs, engaging in commercially viable enterprises for them to actively participate in the market, thereby nourishing their economies of scale, access to markets and income. Specifically, it aimed to: (1) assess the business capacity of farmer clusters for appropriate value chain-oriented rice-based enterprise engagement; (2) engage farmer clusters in a commercially viable, sustainable value chain-oriented rice-based enterprise; and (3) establish and strengthen partnerships with support providers for the development and

sustainability of value chain-oriented rice-based enterprises. In this regard, ascertaining the readiness of farmer clusters such as farmer cooperatives or associations (FCAs) to engage with formal or institutional markets is essential.

- The business capacity of FCAs to participate with higher-level markets was assessed to determine the appropriate market that coincides with them.
- There were 62 FCAs in 23 RiceBIS communities assessed on their level of business potential for appropriate agroenterprise engagement (Table 1).
- There were 23 agro-enterprises engaged by FCAs that require highly qualified and skilled persons and higher investments, consisting of processing and marketing of milled/brown/pigmented rices, and palay trading (Table 2).
- Other enterprises that match the capacity of FCAs were identified such as custom service provision of machines, capital lending, agri-inputs trading, and collective marketing of palay and vegetables.
- In partnership with Go Negosyo, a training-workshop on preparation of business plan and basic accounting and bookkeeping was carried out to capacitate project implementers for empowering farmer-clusters for agro-enterprise engagement and development. As a result, 22 business plans and 22 business model canvases were crafted.
- Partnerships with government agencies were strengthened to facilitate the support for the development of the agroenteprises of FCAs, wherein 22 site working group (SWG) meetings were conducted throughout the 23 RiceBIS communities.
- Through the SWGs, 11 cluster development plans (CDP) were drafted. The CDP serves as roadmap, which outlined the support of SWG members to FCAs in the development and sustainability of their agro-enterprises.
- Other processes were also developed by the project team to improve the business operation of farmer clusters particularly in securing business permits, registrations, and other necessary documents.
- A database consolidating the business capacity assessment results for easier access was also maintained and updated.
- A baner accomplishment of the project is the approval of the business proposal submitted to the DA-AMAD of DA-RFO 3 on Enhanced KADIWA Financial Grant Assistance Program in collaboration with DA-LGU of Zaragoza that granted PhP5M to the Balitang FCA.

Table 1. Farmer cooperatives/associations assessed.

Station	RiceBIS Community	No. of farmer clusters assessed	No. of FCAs by Business Capacity Level	
			Medium	Low
PhilRice CES	1. Bayambang, Pangasinan	1	1	
	2. Zaragoza, Nueva Ecija	3	3	
	4. Gerona, Tarlac	1	1	
	5. Sta. Ignacia, Tarlac	1	1	
	6. Castillejos, Zambales	1	1	
Batac	7. Batac City, Ilocos Norte	1	1	
	8. Banna, Ilocos Norte	1		
Isabela	9. San Mateo, Isabela	1	1	
	10. Alfonso Lista, Ifugao	9	8	1
	11. Diffun, Quirino	9	8	1
Los Banos	12. Tiaong, Quezon	11	8	3
	13. Sariaya, Quezon	3	1	2
Bicol	14. Mandaon, Masbate	1		1
	15. Milagros, Masbate	1	1	
	16. Albay	1	1	
Negros Occidental	17. Murcia	1	1	
	18. San Carlos City	1	1	
Agusan	20. Cabadbaran City, Agusan del Norte	6		6
	21. Buenavista, Agusan del Norte	5		5
	22. Esperanza, Agusan del Sur	2	1	1
Midsayap	23. Libungan, North Cotabato	1	1	
	24. Midsayap, North Cotabato	1	1	
Total		**62**	**41**	**20**

Note: Only Banna, Ilocos Norte had high business capacity level.

Table 2. Agroenterprises engaged by FCAs in 22 RiceBIS communities, Y1: 2023

STATION	RICEBIS COMMUNITY	FARMER CLUSTER	BUSINESS CAPACITY LEVEL	RICE-BASED ENTERPRISE
Agusan	Cabadbaran City	Calamba 1 Farmers' Association	Low	Milled rice trading
	Buenavista	Malpoc Farmers' Association	Low	Milled rice lending
	Esperanza	Esperanza RiceBIS Producers Cooperative (ESRIPCO)	Medium	Seed production
Batac	Batac City	Rayuray Farmers Agriculture Cooperative	Medium	Brown rice
	Banna	Zanjera Sto. Niño Agriculture Cooperative	Medium	Milled rice
Bicol	Mandaon	Cabitan Masipag Farmers' Agriculture Cooperative	Low	Black glutinous rice
	Milagros	Baclay Agrarian Reform Beneficiaries' Cooperative	Medium	Red rice
	Albay	Balangibang FFS PalayCheck Palayamanan Farmers' Association	Medium	Milled rice
CES	Tarlac	Macaguing Primary Multi-Purpose Cooperative (MPMPC)	Medium	Milled rice
	Tarlac	Sembrano Climate-Resilient Farmers' Agriculture Cooperative (SCRFAC)	Medium	Milled rice
	Castillejos	Castilllejos Farmers' Agriculture Cooperative (CFAC)	Medium	Brown rice
	Zaragosa	Batitang Agriculture Cooperative (BAC)	Medium	Milled rice
Pantabangan	Bayambang	RiceBIS Bayambang Agriculture Cooperative (RBAC)	Medium	Brown rice
LOS BAÑOS	Tiaong	Sintorisan-Behia Rice Farmers' Association	Low	Organic pigmented rice
	Sariaya	Manggalang Agrarian Reform Beneficiaries' Cooperative (MARBENCO)	Medium	Fresh palay
Isabela	San Mateo	Marasat - Dagupan Rice Business Innovations Sytem (BIS) Agriculture Cooperative	Medium	Brown rice
	Alfonso Lista	Namillangan - Calupaan Lateral F. Irrigators' Association	Medium	Milled rice
	Diffun	Bannawag Sur Farmers' Association	Medium	Milled rice
Midsayap	Libungan	Libungan RiceBIS Farmers' Association	Medium	Milled rice trading
	Midsayap	SanGlad RiceBIS Farmers' Association	Medium	Milled rice trading
Negros Occidental	Murcia	RiceBIS Negros Agrarian Reform Cooperative (RiceBISNARCO)	Medium	Brown rice
	San Carlos	QueCoRiFACO	Medium	Milled rice

PRX-230-009 (Policy Research and Advocacy in Support of MRIDP)

Aileen C. Litonjua

This project aimed at creating a supportive and enabling policy environment for the rice industry by providing reliable science-based data and information to guide and influence national and local decisions on rice-related issues. In October-December 2023, the project produced and disseminated 2 issues of the Rice Science for Decision-Makers (RS4DM) with titles "Enabling the shift from transplanted to direct-seeded rice systems in the Philippines" and "What does our balanced fertilization study say?" The main readers of these policy briefs were the Department of Agriculture (DA), DA-PhilRice, and the Congress of the Philippines. Two policy-related materials were submitted and presented to the DA, which involved an analysis of the pressing issues on Competitiveness Enhancement Measures Fund (CEMF) and the extension of the Most Favored Nation (MFN) tariff rates on rice. The policy research paper "Understanding current issues in the Philippine rice sector: Policy options to protect farmers' and consumers' welfare" was prepared and presented during the 35th National Rice Research for Development (R4D) Conference in November. The policy seminar-workshop themed "Policy talks: Strengthening climate change adaptation of rice-farming communities" was held in November. The event was organized to (a) present the existing climate-change policies, programs, projects, (b) identify bottlenecks in their implementation, and (c) formulate strategies to address the identified policy issues and concerns. It was attended by 59 participants from the DA offices and its attached agencies, DA-RFOs, and provincial local government units (PLGUs), among others. The team also successfully lobbied for two local ordinances on direct-seeded rice and balanced fertilization in Sta. Cruz, Zambales in October. The draft local ordinance on balanced fertilization was also presented to a Sangguniang Panlalawigan Member of Pampanga for possible adoption.

ONERICEPH MODULE 1:

Validation of market-driven product concepts of priority provinces in 16 regions in the Philippines (Year 2)

Alice B. Mataia, Shantel Anne Nicole E. Chavez, and Aerone Philippine G. Bautista

The project aims to improve breeding programs in the country. DA-PhilRice, IRRI, and UPLB have been developing rice varieties based on product concepts encompassing the preferences of key value chain actors - rice producers, miller-traders, and consumers. Module 1 provides the information necessary to develop product concepts by identifying market segments and their respective trait requirements. During the 1st year of the project, market-driven product concepts were developed from the 42 major rice-producing provinces and results were presented during IRC2023. For its second year, the accomplishments are:

- Led in identifying the market segments and their respective trait requirements from the remaining 30 provinces.
- Created a presentation briefer for the orientation of focal persons from the 12 provinces assigned to PhilRice Module 1 team.
- Baseline data were collected, consolidated, and validated in 11 provinces.
- Stakeholders' consultation workshop covering 15 provinces in Luzon was participated in by farmer-leaders, seed growers, miller-traders, AEWs; and rice focal persons and seed coordinators from DA-RFOs in Cordillera and Regions 4-5.
- Total of 17 market segments were identified from 15 Luzon provinces covering a total harvested area of 439,668.89 hectares. Each market segment is based on: planting method, maturity, grain length and shape, cooked grain texture, and ecosystem.

Table 1. Identified priority market segments and descriptions.

Market Segment	Descriptions
TELS-I	Transplanted, Early-maturing, Long and slender grains, Soft cooked texture - Irrigated
TELS-R	Transplanted, Early-maturing, Long and slender grains, Soft cooked texture - Rainfed
TMeLS-I	Transplanted, Medium-maturing, Long and slender grains, Soft cooked texture - Irrigated
DELS-I	Direct-seeded, Early-maturing, Long and slender grains, Soft cooked texture - Irrigated
DELS-R	Direct-seeded, Early-maturing, Long and slender grains, Soft cooked texture - Rainfed
DELS-U	Direct-seeded, Early-maturing, Long and slender grains, Soft cooked texture - Upland
TELF-R	Transplanted, Early-maturing, Long and slender grains, Firm and dry cooked texture - Rainfed

RCEF-FUNDED

Monitoring and Evaluation of Midterm Outcomes of the RCEF Seed Program

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To ensure that the Seed Program delivers as envisioned by the law, monitoring and evaluation (M&E) must be done to comprehensively gauge its emerging outcomes. The project has four component studies: (1) Midterm Monitoring Survey of RCEF Seed Program farmer-beneficiaries, (2) Seasonal M&E of the RCEF Seed Program, (3) M&E of RCEF PalaySIKATAN Techno-Demo Sites, and (4) Understanding farmer-behavior toward technology adoption.

Component 1: Midterm monitoring survey

The survey covered 2021 WS and 2022 DS rice production across 41 RCEF priority provinces, including 18 provinces under the DA - National Rice Program (NRP). For 2022, midterm 2021 WS outcomes on the adoption rate of certified seeds among rice farmers, reach of the RCEF Seed Program, seed utilization, and actual

area planted were produced. Yield, cost, and income estimates were especially generated and compared relative to the 2019 WS Baseline.

Component 2: Seasonal M&E

For 2022, a phone survey on RCEF seed recipients was conducted across 41 provinces in DS and 42 provinces in WS. National and provincial estimates on seed utilization, seed support, actual area and number of bags planted, yield, seeding rate, and access to other RCEF key components were generated. Usual planting months for adjusted seed distribution schedules and future plans of farmers on unused seeds were especially determined. Findings of the study were used to cater to data requests from the DA and RCEF implementers.

Component 3: M&E of RCEF PalaySIKATAN

The Techno-Demo sites are being established nationwide to help farmers boost their productivity by showcasing mechanized farming, location-specific technology packages, and other yield-enhancing and cost-reducing crop management practices. For 2022, the study conducted a baseline survey thru phone interviews covering the 2021 seasons and generate baseline profiles on socioeconomic characteristics, farm profile, seed and variety, input use, yield, and costs and returns as well as comparative analysis on yield, costs, and income of techno-demo cooperators by type of mechanization.

Component 4: Understanding farmer-behavior

PalaySIKATAN sites established nationwide were given the same level of support in terms of inputs and financial assistance, yet varying results surfaced some praiseworthy while some need significant improvement. Owing to this gap, a socio-technical inquiry was conducted to understand the unimpressive performance of select PalaySIKATAN sites. The overarching research question was: Why is it that some PalaySIKATAN sites do not perform as impressively as others?

The research was conducted for 13 months commencing in 2021, with data collected intermittently from Zambales, Aklan, Bulacan, Bataan, Cavite, and Negros Occidental. Qualitative research methods were employed, with 143 interviews conducted either through mediated platforms (e.g., Messenger and Zoom) or face-to-face, each ranging from 1 to 2 hours. Interviewees were farmers, cooperators and non-cooperators; key informants from the municipal and provincial agriculture offices, and random people whom the researchers think could significantly contribute to the research.

Building capacity on promoting economically and environmentally efficient rice production through direct-seeded rice (DSR) in the Philippines

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While DSR brandishes a host of advantages such as reduced workforce requirement and being a climate-adaptive mechanism, its adoption remains low in the Philippines. Adopting DSR could increase the income of farmers and enhance their adaptive capacity to climate change impacts. It is for this reason that this project was implemented in Sta. Cruz, Zambales from May 2022 to July 2023. It focused on achieving four key outputs: (1) enabling policy for promoting the adoption and scaling of DSR drafted and refined; (2) farmers/ farmers' cooperatives or organizations as mechanization service providers (MSPs) capacitated and strengthened; (3) PalayCheck standard adopted and integrated in DSR; and (4) stakeholders' awareness on DSR improved by undertaking project workshops and field exhibitions of successful cases within and among beneficiary countries.

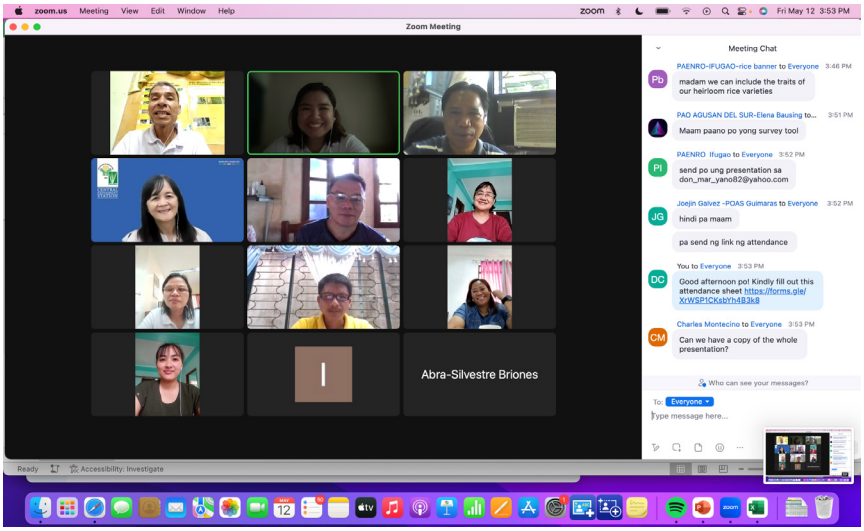
For output 1, the team produced a policy document on increasing uptake of DSR published as an issue of the Rice Science for Decision-Makers. Risks in crop establishment, greater weed, insect and disease incidences, availability of suitable cultivars, higher seed use, and water availability are among the issues that must be ironed out to scale DSR. The team also found no key policies on DSR by the DA prior to the start of this project, only verbal pronouncements to include DSR in major DA programs such as the Masagana Rice Industry Development Program.

As for Output 2, a training module has been developed on mechanization service provision (MSP); and a training for two farmer-cooperatives on MSP and entrepreneurship. These associations are now providing dry direct seeding services for rice using the MP Seeders provided by the project. Output 3 adopted and integrated DSR in the PalayCheck System of the Philippines, PalayCheck standards were updated and a Training Manual and Modules to cover the entire cycle of mechanized DSR from seeding to harvesting were developed.

Output 4 produced a number of communication materials, and field days and exhibitions were conducted. Seven demonstration plots were established using the drum seeder and precision seeder in the wet season of 2022. Yield improvements were achieved at 0.34t/ha and 1.68t/ha using the drum seeder

and precision seeder, respectively. In DS 2023, four demonstration plots were established using the precision seeder with a yield increase of 0.66t/ha.

Under the auspices of this project, the National Inception Meeting in 2022 was participated in by researchers, municipal and provincial agriculturists as well as practicing DSR farmers. From the workshop, some of the best practices in DSR were presented such as those in Sultan Kudarat presented by PhilRice Midsayap. During the National Terminal Meeting for this project, the partner LGU from Sta. Cruz, Zambales presented their best practices on DSR as well as what happened during project implementation in their town.



Virtual orientation about the OneRicePH project and Module 1 baseline data collection on May 12, 2023.

OneRicePH Module 1 Batch 1 Stakeholders' consultation workshop on Validation of trait requirements per market segment, March 21-22, 2024.

Market-Driven Product Concepts for Priority Market Segments in the Philippines

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INTRODUCTION

Rice production in the Philippines has not been competitive with neighboring Asian countries because of relatively lower productivity and higher production cost (Bordey, et al., 2016), attributed to many confronting challenges such as the high cost of inputs and labor, globalization, and the increasing threat of climate change. Climate change increases the incidence of extreme climatic events and intensifies the effect of biotic stresses such as diseases and insect pests. These challenges resulted in low yields, poor grain quality, and low head rice recovery. Hence, breeding programs in the past focused on varietal yield improvement, abiotic stress tolerance, and biotic stress resistance. However, market players like millers, traders, and consumers have less preference for these traits, ensuing low varietal turnover. Matching the needs of farmer-producers and the preferences of market players is therefore crucial in varietal development to encourage high varietal turnover. This research aims to identify market segments and develop market-driven product concepts for the specific market segments with clearly defined trait minimums to guide product development for a well-targeted breeding program.

METHODOLOGY

1. Developed and disseminated baseline survey tool to regional and provincial partners (DA RFOs & PLGUs)
2. Conducted face-to-face and virtual baseline data collection in 42 provinces
3. Segmented the 42 provinces based on the 5 parameters representing the preference of each rice value chain actor

PLANTING METHOD	MATURITY	GRAIN SHAPE	COOKING QUALITY	ECOSYSTEM
Direct-Seeded Transplanted	Very early (<100 days) Early (100-115 days) Medium (115-125 days) Late (>130 days)	Long slender Medium Bold Small/Round Basmati type	Firm & dry Soft Sticky Waxy	Irrigated Rainfed Upland
SEED GROWERS & FARMERS		TRADERS, MILLERS, & CONSUMERS		SEED GROWERS & FARMERS

4. Identified priority market segments based on the size of the rice area
5. Characterized the priority market segments based on the following:

Size & location (province) | Essential abiotic & biotic traits | Essential grain quality & nutritional traits | Benchmark varieties

6. Validated the priority market segments and their respective trait requirements through multilevel stakeholders' consultation and breeders' forum
7. Conducted breeders' workshop

UPLB, IRRI, and PhilRice plant breeders convened to develop product concepts based on the market segmentation results. The product concepts developed have 1:1 ratio with the priority market segments.

RESULTS & DISCUSSION

1. PRIORITY MARKET SEGMENTS IDENTIFIED

- Out of the 33 market segments (MS) identified, 11 were prioritized – seven are for TPR, and four are for DSR (Table 1).
- **Market segment** - a homogeneous group of producers and consumers with a unique set of preferences

LEGEND		
Marker	Priority Market Segment	Area (ha)
	DELS-I	492,316
	DELS-R	191,024
	DELSt-I	159,209
	DELS-U	40,566
	TELS-I	1,239,209
	TELSt-I	389,937
	TELS-R	326,107
	TMeLSt-I	143,441
	TELSt-R	109,598
	TMeLS-I	54,268
	TEMS-I	45,557

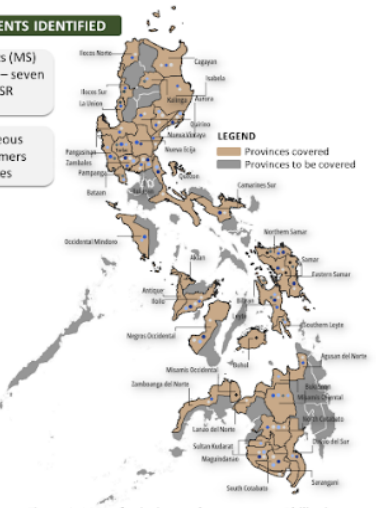

Figure 1. Map of priority market segments, Philippines

Table 1. Description of priority market segments, Philippines

PRIORITY MS	DESCRIPTION
TELS-I	Transplanted, Early maturing, Long slender and Soft grains, Irrigated
TELSt-I	Transplanted, Early maturing, Long slender and Sticky grains, Irrigated
TELS-R	Transplanted, Early maturing, Long slender and Soft grains, Rainfed
TMeLSt-I	Transplanted, Medium maturing, Long slender and Sticky grains, Irrigated
TELSt-R	Transplanted, Early maturing, Long slender and Sticky grains, Rainfed
TMeLS-I	Transplanted, Medium maturing, Long slender and Soft grains, Irrigated
TEMS-I	Transplanted, Early maturing, Medium and Soft grains, Irrigated
DELS-I	Direct-seeded (puddled), Early maturing, Long slender and Soft grains, Irrigated
DELS-R	Direct-seeded (dry) Early maturing, Long slender and Soft grains, Rainfed
DELSt-I	Direct-seeded (puddled), Early maturing, Long slender and Sticky grains, Irrigated
DELS-U	Direct-seeded (dry), Early maturing, Long slender and Soft grains, Upland

2. PRODUCT CONCEPTS DEVELOPED

- Eleven product concepts were developed detailing the critical traits required by each priority market segment: yield, agronomic traits, grain quality traits, and biotic and abiotic traits.

- **Product concepts** capture the trait requirements of a market segment to be translated into breeding targets.
- Below is the product concept developed for the TELS-I market segment as an example.

Agronomic Traits
- **Yield Potential:** ≥5% advantage over dominant variety
- **Lodging:** ≤5% lodged plants at flowering to maturity stage
- **Plant height:** Medium (110-130 cm)

Biotic Stresses (Diseases)
- **Bacterial Leaf Blight** (% leaf area diseased at vegetative-reproductive stage): 6-12%
- **Bacterial Leaf Streak** (% leaf area diseased at vegetative): 13-25%
- **Leaf Blast** (SES scale at vegetative stage): Small brown specks of pinpoint size or larger brown specks without sporulating center
- **Neck Blast** (SES scale at reproductive stage): Less than 1%
- **Brown Spot** (% leaf area diseased at vegetative-reproductive stage): 1-3%
- **False Smut** (% infected florets, dough-maturity stage): 1-5%
- **Sheath Blight** (lesion height, reproductive-dough stage): Lesions limited to lower than 20% of the plant height
- **Sheath Rot** (% diseased tillers, reproductive-maturity stage): 1-5%
- **Tungro** (vegetative-booting stage): 1-10% height reduction, no distinct yellow to yellow-orange leaf discoloration

Biotic Stresses (Insects)
- **BPH** (vegetative-maturity stage): Leaves partially yellow but with no hopperburn
- **Stem Borer** (Dead hearts % 10 days after flowering): 11-20%
- **Stem Borer** (Whiteheads % 10 days after flowering): 1-5%
- **Green Leaf Hopper** (vegetative-maturity stage): First and 2nd leaves yellowing
- **Leaf Folder** (% affected plants): 11-20%

Grain Quality Traits
- **Head Rice Recovery** (rough rice): ≥65%
- **Amylose Content:** Intermediate (17.1-21%)
- **Chalkiness** (% of kernel area) *non-stress environment: Small (1-10%)
- **Gel Consistency:** 3 (61-80 mm; soft)
- **Aroma:** Preferred
- **Grain Color:** White
- **High Nutritive Value** (Fe, Zn. Protein): Preferred
- **Grain Zinc Content** (polished rice): Medium (16.1-25 mg/kg)

Abiotic Stresses
- **Submergence:** ≥ 90% survival under 15 days of submergence
- **Heat** (% spikelet fertility): More than 80%
- **Salinity/Alkalinity** (seedling): Growth nearly normal, but there is some reduction in tillering, and some leaves discolored (alkali)/ whitish and rolled (salt)
- **Salinity** (Reproductive): ≥5% advantage over tolerant check

Other Key Traits
- **Panicle Threshability:** Intermediate (6-15%)
- **Phenotypic Acceptability** (visual score at maturity): ≤ 3 Good

Benchmark Variety
- **Yield:** NSIC Rc 222
- **Grain Quality:** NSIC Rc 216

Hybrid Traits
- **Seed Yield:** 2-2.5 t/ha
- **Nick:** 0-4d
- **Male:** <2:10

WAYS FORWARD

- Following the outputs during the breeders' forum and workshop, the identified priority market segments were deployed in 18 provinces for the 2023 wet season. The remaining provinces, with their corresponding market segments, will be included in subsequent cropping seasons.
- To cover the entire Philippines, market segmentation of the remaining 28 rice-producing provinces will be completed in 2023.

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6TH INTERNATIONAL RICE CONGRESS

Poster paper presented during IRC2023, which covered the results of product concepts developed for priority market segments from 42 major rice-producing provinces in the country.


RICE CROP MANAGER


for consumption
Donation
Improved life
Increase in Yield
Technology adoption
Confidence due to graduated children