2019

PHILRICE R&D HIGHLIGHTS

SOCIOECONOMICS DIVISION

Contents

DIVISION

Socioeconomics

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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.

SED's core projects include rice statistics and adoption and impact evaluation. The first project on documenting the statistical series on the rice economy ensures that rice data, whether primary or secondary, are organized into a convenient storage and retrieval system. The second project on adoption and impact evaluation provides evidence of the usefulness of R4D products and services and offers feedback to researchers and development workers. Through the information provided by SED, policymakers and decision-makers can ensure that development programs and policies are science-based.

In 2019, the division achieved notable outputs, which include improved PalayStat system that contains primary and secondary rice data; updated and restructured rice and rice-related datasets; and 41 profiled major rice-producing provinces for 2016 WS and 2017 DS cropping seasons. Information on the socioeconomic impacts of hybrid rice and rice seed production was generated. A handbook, powerpoint briefer, and a module on understanding the Philippine rice industry were also produced and disseminated. These outputs encourage R4D managers, scientists, and researchers to have a better understanding of the dynamics of the rice industry, particularly amidst the challenges of the new policy regime on rice tariffication. 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 craft 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

IA Arida

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 include: (1) updating and restructuring statistical series on the rice economy, and (2) integration of other rice statistics databases in the PalayStat system. The consolidated data in the first study was restructured and uploaded in the PalayStat system to cater the data needs of its intended beneficiaries.

In 2019, the first study in partnership with Philippine Statistics Authority (PSA), consolidated and restructured 21 statistical tables that include 2016-2018 data on *palay*/rice supply and demand, input-use, costs and returns, and *palay*/rice marketing. Additionally, the study developed a briefer and lesson module on the rice industry situation using secondary data gathered and restructured from PSA. This served as reference and/or briefing material of PhilRice management, researchers, and development workers. Copies were also sent to Agricultural Training Institute (ATI) for use in Rice Competitiveness Enhancement Fund program briefings and other events.

The study on PalayStat restructured 21 PSA provincial data (2016-2018) and uploaded these in the existing database for easier access and retrieval. The system also uploaded 16 rice-related publications as additional references. Thirty-six data requests from policymakers, scientists, students, and development planners have benefitted from this system through answered data queries.

PalayStat continuously improved the operation of the system leading to 9,120 unique page views and 2,021 unique sessions. The site usage consisted of 53% search engine, 38% direct access, 4% social media, and 5% referrals. Moreover, this study developed two additional features, Quick Pages and Rice Request Data tabs, to make the system more accessible and user-friendly.

Updating and Restructuring Statistical Series on the Rice Economy

AC Litonjua, IA Arida, RF Tabalno, RM Almario, and Socioeconomics Division Staff

The Philippine Statistics Authority (PSA) releases 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. The Socioeconomics Division (SED) partnered with PSA to identify and come-up with a more detailed rice data that are commonly needed by researchers and policymakers. These PSA data were consolidated and restructured into a more readable format for data users. In 2019, the study updated 21 statistical tables to include 2013-2018 data on *palay*/rice supply and demand, input-use, costs and returns, and *palay*/rice marketing. These were uploaded in the PalayStat Information System for use of the general public. Additionally, the study came up with a powerpoint briefer and a lesson module on the rice industry situation that mainly used the 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. It was also provided to Agricultural Training Institute (ATI) for use in their Rice Competitiveness Enhancement Program (RCEP) briefings and other events.

Integration of other Rice Statistics Databases in the PalayStat System

IA Arida, RM Almario, RF Tabalno, and Socioeconomics Division Staff

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 an accessible rice-related information. In 2019, there were 9,120 unique page views and 2,021 unique sessions in system. As PalayStat is an effective tool in providing data, 21 statistical tables from 2016-2018 PSA data were restructured and uploaded in the PalayStat time-series database. The system included, among other data, *palay*/rice supply and demand, input-use and production, and costs and returns covering 83 provinces in 16 regions. In addition, 16 rice related publications were uploaded to provide clients with additional references. Design and accessibility of the PalayStat system continuously improved through proper maintenance and development of dynamic search options and broader search keywords (Quick Pages and Rice Request Data tabs). With better website design 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

RG Manalili, JC Beltran, IA Arida, MAM Baltazar, D Kitongan, CP Austria, RF Tabalno, JD Chua, and TJP de Leon

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 of the usefulness of R&D and rice production-related services, while providing feedbacks to researchers and development workers to ensure efficient R&D work, research prioritization, and better management of projects and programs.

For 2019, the project focused on seed, which is the major product of PhilRice. Use of high-quality seed of improved or elite rice varieties is necessary to increase productivity and income of small farmers. Timely supply of sufficient quantity of high-quality seeds of high-yielding varieties increase yield and it can be further improved with timely applications and efficient management of other inputs such as fertilizer and irrigation water. High-quality seeds do not only increase productivity but also reduce production cost due to lower seed rate requirement and disease-free status of the good quality vigorous seed. Guaranteeing farmers' access to quality seed 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 include: (1) status and determinants of hybrid

rice adoption in the Philippines and (2) economics of hybrid and inbred seed production. This information on hybrid rice adoption provide valuable inputs to policymakers as well as research and development workers in its promotion and marketing strategies to hasten adoption.

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.

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 farmers. Results from this study provide insights to our policymakers and planners in crafting sustainable development programs for the rice seed industry.

Status and Determinants of Hybrid Rice Adoption in the Philippines

RG Manalili, JC Beltran, IA Arida, MAM Baltazar, D Kitongan, CP Austria, RF Tabalno, JD Chua, and TJP de Leon

Adoption of yield-enhancing technologies helps increase total rice production in the country. The use of hybrid rice remains a technology that can contribute significantly to increase yield. This study aimed to provide information on the profitability, productivity, and comparison between using hybrid, high-quality, and low-quality inbred seeds. It also determined the extent of hybrid adoption and the perception of farmers on hybrid rice. Five-hundred rice farmers who planted hybrid, certified, and ordinary seeds were interviewed covering the 2018 DS and 2018 WS. The perception of farmers on hybrid rice adoption was also documented. The extent of hybrid rice adoption was determined using the 2016 WS and 2017 DS data from Rice-based Farm Households Survey (RBFHS).

Surveys covering 2018 dry and wet seasons in Nueva Ecija, Apayao, and Davao del Sur were conducted. Preliminary results showed that NSIC Rc 132H (SL-8H) is the most popular among the hybrid varieties, and commonly planted in Nueva Ecija and Apayao. PSB Rc 72H is very popular in Davao del Sur in both seasons. Other varieties planted include NSIC Rc 202H, Habilis, NSIC Rc 204H, Bigante Plus, PHB 79, PHB 73, and US 88. Major reason for choosing the variety is its high-yielding ability. Other reasons include good-eating quality, resistant to pests and diseases, higher/premium price command, and suitability in the area.

Most of the hybrid rice farmers became aware of the variety in 2000-2009 when Hybrid Rice Commercialization Program (HRCP) was the flagship of the Department of Agriculture, while non-hybrid users only learned about hybrid in 2010-2019. Nearly all hybrid users perceived hybrid rice to be higher in yield (97%) and more profitable (88%) than inbred rice. It is interesting to note that majority of non-hybrid users also perceived similar advantages of hybrid rice (74% and 64%, respectively). This suggests that combined effect of other factors has greater weight in their decision to adopt hybrid rice other than only yield and profitability.

Economics of Hybrid and Inbred Rice Seed Production

RG Manalili, JC Beltran, IA Arida, MAM Baltazar, D Kitongan, RF Tabalno, JD Chua, and TJP de Leon

Timely supply of sufficient quantity of high-quality seeds increases yield and can be further improved with timely applications and efficient management of other input such as fertilizers and irrigation water. Despite of its yield advantage, only about 57-60% of the farmers use high-quality seeds based on the results of the Regular Monitoring of Rice-based Farm Household survey. Some use their home-saved inbred seeds because they cannot afford certified or hybrid seeds. It is therefore vital to look at the status of hybrid and inbred seed production, to know how these high-quality seeds are produced until they become certified and are used by the farmers. This study is geared towards understanding the status of seed production for inbred and hybrid. Results from this study will provide insights to our policymakers and planners in crafting sustainable development programs for the rice seed industry. One-hundred fifty seed growers of hybrid and inbred rice were interviewed covering 2019 DS from Kalinga, Nueva Ecija, and Pangasinan. Descriptive statistics such as frequencies and means were used to analyze the data.

In Kalinga, PSB Rc 72H was planted in Kalinga was 1.86ha. Average seeding rate of A-line was 14kg/ha and R-line was 6kg/ha. Seed growers applied fertilizers at 126kg/ha of nitrogen, 15kg/ha of phosphorous, and 40kg/ha of potassium. These were applied in 2 splits on the seedbed, one pre-standing, and 4 splits on the standing crop. One-hundred twenty person-day/ha was utilized in hybrid seed production, dominated by hired labor and mostly employed on crop care and maintenance. Initial results showed an average F1 seed yield of 693kg/ha and R-line was 1,357kg/ha. Low yield was observed due to presence and damage of brown planthopper.

Data on inbred rice seed production in Pangasinan and Nueva Ecija are yet to be encoded while all of the 2019 WS provinces covered by the study are yet to be surveyed.

Abbreviations and acronyms

AYT - Advanced Yield Trial
ABE - Agricultural and Biosystems Engineering
AEW - Agricultural Extension Worker
ATI – Agriculture Training Institute
AESA - Agro-ecosystem Analysis
AC - Amylose Content
BLB - Bacterial Leaf Blight
BLS -Bacterial Leaf Streak
BCA - Biological Control Agent
BS - Breeder Seeds
BPH -Brown Planthopper
BPI - Bureau of Plant Industry
CGMS - Cytoplasmic Genic Male Sterility
COF - Commercial Organic Fertilizer
CDA - Cooperative Development Authority
DAS - Days After Sowing
DAT - Days After Transplanting
DF - Days to Flowering
DM- Days to Maturity
DAR - Department of Agrarian Reform
DA-RFOs - Department of Agriculture-Regional Field Offices
DoF - Department of Finance
DOLE - Department of Labor and Employment
DTI - Department of Trade and Industry
DSR - Direct-seeded Rice
DS - Dry Season
FBS – Farmers' Business School
FC - Farmers' Cooperative
FSM - Farming Systems Models
FAA - Fish Amino Acid
FGD - Focused Group Discussion
FSP - Foundation Seed Production
FRK - Farm Record Keeping
GABA - Gamma-aminobutyric Acid
GT - Gelatinization Temperature
GAD - Gender and Development
GYT - General Yield Trial
GCA - Genetic Combining Ability
GIS - Geographic information system
GEMS - Germplasm Management System
GAS - Golden Apple Snail
GL - Grain Length
GQ - Grain Quality
GW - Grain Weight
GY - Grain Yield
GLH - Green Leafhopper
GOT - Grow Out Test
HR - Head Rice
HRA - Heat Recovery Attachment
HIPS – Highly-intensified Production System
HQS - High-quality Rice Seeds
HON - Hybrid Observational Nursery
HPYT - Hybrid Preliminary Yield Trial
ICT - Information and Communication Technology
IEC - Information Education Communication
IBNM - Inorganic-based Nutrient Management
ICM - Integrated Crop Management
IPM - Integrated Pest Management
JICA - Japan International Cooperation Agency
IRRI - International Rice Research Institute
IA - Irrigators' Association
KP - Knowledge Product
KSL - Knowledge Sharing and Learning
LCC - Leaf Color Chart
LFT - Local Farmer Technicians
LGU - Local Government Units
LPS - Low Pressure Steam-operated
LE-CYPRO - Lowland ecotype Cyperus rotundus
MFE - Male Fertile Environment
MSE - Male Sterile Environment
MAS - Marker-assisted Selection
MRL - Maximum Root Length
MR - Milled Rice
MER - Minimum Enclosing Rectangle
MOET - Minus-one Element Technique
MC - Moisture Content
MAT - Multi-Adaptation Trials

MCRTP - Multi-crop Reduced Till Planter
MET - Multi-environment Trial
MYT - Multi-location Yield Trial
NAAP - National Azolla Action Program
NCT - National Cooperative Test
NFA - National Food Authority
NRAM - National Rice Awareness Month
NSIC - National Seed Industry Council
NSQCS - National Seed Quality Control Services
N - Nitrogen
NBSP - Nucleus and Breeder Seed Production Project
NFGP - Number of Filled Grains Panicle
ON - Observation Nursery
OSIS - One-Stop Information Shop
OBNM - Organic-based Nutrient Management
PL - Panicle Length
PW - Panicle Weight
PVS - Participatory Varietal Selection
PWD - Person with Disabilities
PHilMech - Philippine Center for Postharvest Development and Mechanization
PRISM - Philippine Rice Information System
PhilRice - Philippine Rice Research Institute
PSA - Philippine Statistics Authority
PTC - PhilRice Text Center
P - Phosphorus
PVS - Plant Variety Selection
K - Potassium
QTL - Quantitative Trait Loci
RCBD - Randomized Complete Block Design
RSP - Registered Seed Production
RBB - Rice Black Bug
RCEF - Rice Competitiveness Enhancement Fund
RCEP - Rice Competitiveness Enhancement Program
RCM - Rice Crop Manager
RHGEPS - Rice Hull Gasifier Engine Pump System
RPH - Rice Planthopper
RSTC - Rice Specialists' Training Course
RTV - Rice Tungro Virus
RBFHS - Rice-based Farming Household Survey
KQ - Kernel Quality
SV - Seedling Vigor
ShB - Sheath Blight
ShR - Sheath Rot
SMS - Short Messaging Service
SNP - Single Nucleotide Polymorphism
SWRIP- Small Water Reservoir Irrigation Project
SRB - Stabilized Rice Bran
SUCs - State Universities and Colleges
SB - Stem Borer
TESDA - Technical Education and Skills Development Authority
TDF - Technology Demonstration Farm
TRV - Traditional Rice Varieties
TOT - Training of Trainers
TPR - Transplanted Rice
URBFS - Upland Rice-Based Farming
WS - Wet Season
WCV - Wide Compatibility Variety
YSB - Yellow Stem Borer

Editorial team

We are a government corporate entity (Classification E) under the Department of Agriculture. We were created through Executive Order 1061 on 5 November 1985 (as amended) to help develop high-yielding and cost-reducing technologies so farmers can produce enough rice for all Filipinos.

With a "Rice-Secure Philippines" vision, we want the Filipino rice farmers and the Philippine rice industry to be competitive through research for development in our central and seven branch stations, coordinating with a network that comprises 59 agencies strategically located nationwide.

We have the following certifications: ISO 9001:2008 (Quality Management), ISO 14001:2004 (Environmental Management), and OHSAS 18001:2007 (Occupational Health and Safety Assessment Series).

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