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# Understanding the Philippine Rice Industry

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Philippine Rice Research Institute
Central Experiment Station
Maligaya, Science City of Muñoz, 3119 Nueva Ecija

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# ABBREVIATIONS AND ACRONYMS USED

| | |
|---|---|
| CIF | cost, freight, and insurance |
| DA | Department of Agriculture |
| DAS | days after seeding |
| DAT | days after transplanting |
| FAO | Food and Agriculture Organization |
| FSSP | Food Staples Sufficiency Program |
| ha | hectare |
| HQ | high-quality |
| IPP | import parity price |
| kg | kilogram |
| LQ | low-quality |
| M | Million |
| mt | metric ton (1000 kg) |
| PCRC | per capita rice consumption |
| PSA | Philippine Statistics Authority |
| RBFHS | Rice-Based Farm Household Survey |
| SSR | self-sufficiency ratio |

# FOREWORD

In 2011, the Philippine Rice Research Institute (PhilRice) published a primer on the Philippine rice industry primarily to help researchers understand the trends and current status of the rice sector, the beneficiary of their research results. It also became a useful reference material of other stakeholders such as extension workers, farmers, and policymakers who also need to be adept of the rice industry status. Data and information in the 2011 primer, however, need updating to keep stakeholders abreast with the rice industry situation.

This booklet updates the primer, with additional data and information about major issues in the recent past. It covers data on rice production, area, yield, production losses, rice consumption, prices, farmers' practices, production cost and income, and comparative performance of the Philippines and selected Asian countries.

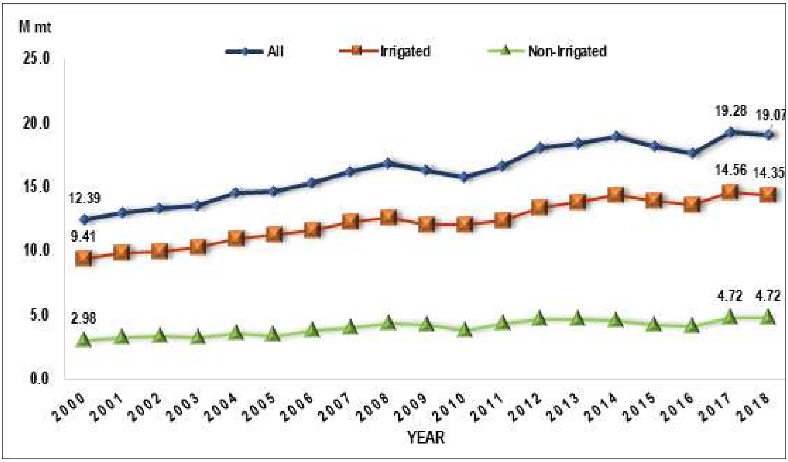
This publication is an initiative of the Science-Based Policy in Advancing Rice Communities (SPARC) program of PhilRice. It hopes to provide useful insights about the rice economy.

**SAILILA E. ABDULA**
Acting Executive Director

# A. PERFORMANCE OF THE RICE INDUSTRY

This section discusses changes in the status of the rice industry in terms of production, area, yield, production losses, total use of rice, imports, per capita rice consumption, and prices. Coverage of the Philippine Statistics Authority (PSA) data used is from years 2000 to 2018, unless otherwise indicated.

# PADDY RICE (PALAY) PRODUCTION, 2000-2018



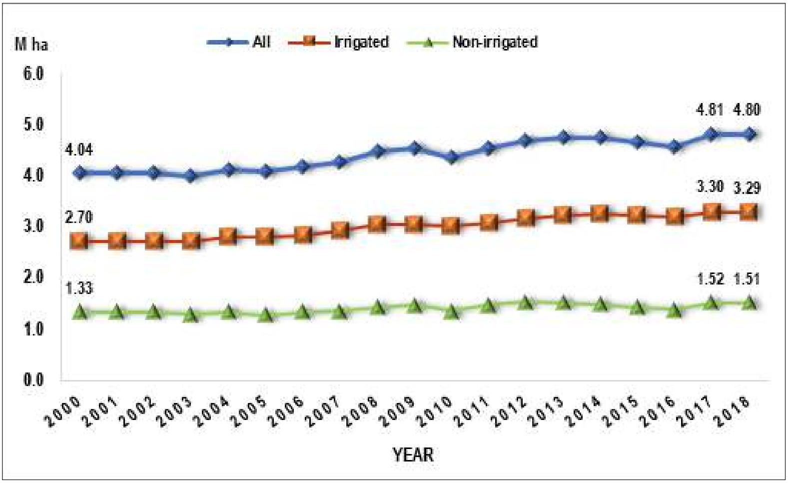

Source of basic data: PSA

In 2000-2018, paddy rice production in all ecosystems increased by 6.68 M mt at an annual growth rate of 2.38%. It peaked in 2017 at 19.28 M mt partly because of favorable weather condition; lowest was in 2000 at 12.39 M mt, consistently growing thereafter. Widened irrigation, adoption of hybrid varieties, training of rice farmers, use of high-quality seeds, and machine ownership contributed to production growth in 2000 onwards (Bordey, 2010).

Production slightly dipped in 2010 (15.77 M mt) and 2015-2016 (18.15 and 17.63) because of drought during the first semester and typhoons in the second that devastated top rice-producing provinces of Northern Luzon.

At least 75% of production came from irrigated areas in 2018.

# AREA HARVESTED TO PADDY RICE, 2000-2018

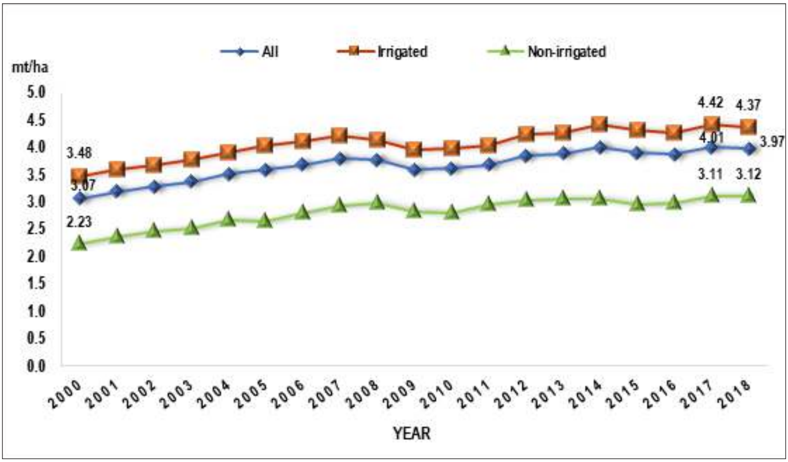



Source of basic data: PSA

Rice harvest area expanded from 4.04 in 2000 to 4.80 M ha in 2018, slightly descending in some years, owing to natural calamities. Total area grew by 1.12% annually in 2000-2018, more than 65% of which was irrigated. This is due to the government's bigger irrigation investment that intensified cropping.

Ponce and Inocencio (2016) reported that the rice sector's budget on irrigation climbed from 6% in 2005-2010 to 15% in 2011-2016. Additionally, harvested area in the non-irrigated ecosystem widened from 1.33 M ha in 2000 to 1.51 M ha in 2018 with an annual growth rate of 0.81%.

# PADDY RICE YIELD, 2000-2018




Source of basic data: PSA

Paddy rice yield jumped from 3.07mt/ha in 2000 to 3.97mt/ha in 2018. Highest yield was attained in 2017 on account of favorable weather. It slightly dropped in 2009-2010 and 2015-2016 because of drought in the first semester and followed by typhoons.

Irrigated areas were consistently more productive than the non-irrigated farms that include the uplands. In 2018, the irrigated areas averaged 4.37 mt/ha; only 3.12 mt/ha elsewhere. As water is a very critical input in rice production, investing in irrigation facilities leads to bigger farmers' yields that make them competitive.

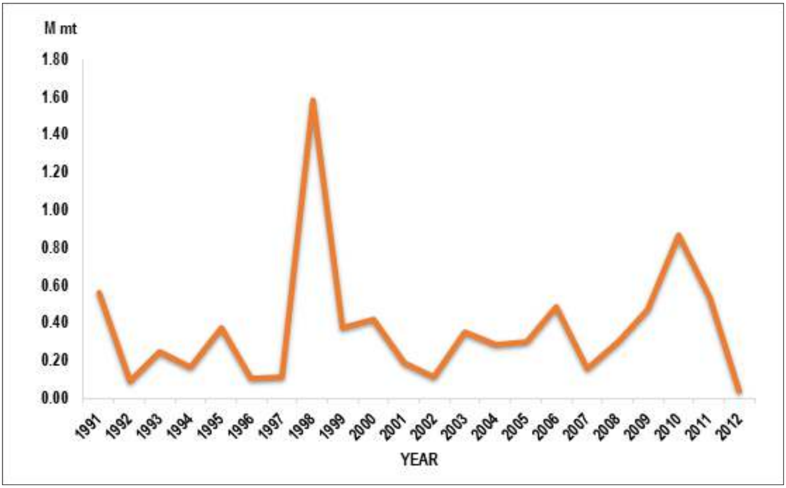
# FACTORS AFFECTING YIELD

| Factors Affecting Yield | Increase in Yield (%) |
|---|---|
| Seed | 0.070 |
| Nitrogen | 0.079 |
| Phosphorous | 0.018 |
| Herbicide | 0.018 |
| Insecticide | 0.030 |
| Pre-harvest labor days | 0.175 |
| Machine days | 0.010 |
| National irrigation system/communal irrigation system | 21 |
| Small-scale irrigation system | 11 |
| Hybrid | 45 |
| Registered/certified seed-user | 12 |
| Season | 7 |
| Technical efficiency | 2.6 |

Adopted from Bordey, et al. (2017).

Based on the 2017 study of Bordey, et al., the factors that positively and significantly affected yield were quantities of material inputs, labor, adoption of technologies such as machine and high-quality seeds, access to irrigation system, and management practices of farmers. However, planting hybrid seeds and accessing large-scale irrigation systems could respectively give 45% and 21% more yield. Government efforts may focus on these factors to substantially boost yield.

# PRODUCTION LOSSES, 1991-2012

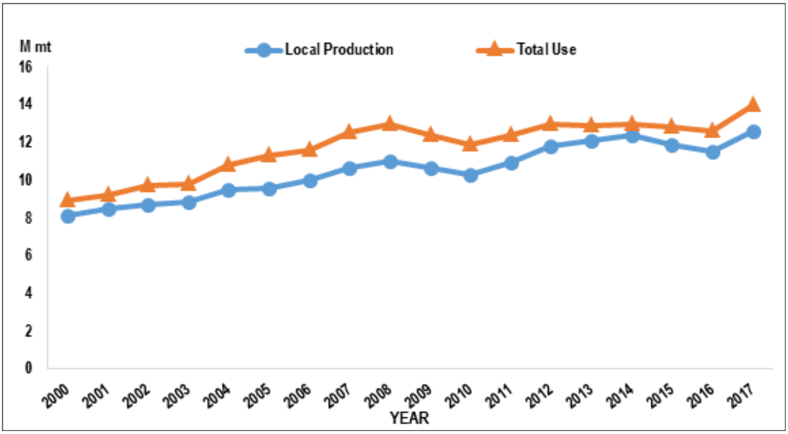



Source of basic data: PSA

Rice production losses, due mainly to flashfloods and typhoons, drought, and pests and diseases, fluctuated from 1991 to 2012. Highest loss was incurred in 1998 because of climate change, a global phenomenon involving more frequent temperature changes and rising sea levels caused by burning fossil fuels. This adds up to the level of carbon dioxide in the atmosphere. The severe drought in 1997 lasted until mid-1998 and was followed by La Niña in the same year. These two phenomena devastated rice areas and resulted in a production loss of 1.5 M mt in 1998.

In 2010, production loss was also high at 0.85 M mt. This was due to drought in the first semester and a super typhoon in the second, which hit Cagayan Valley and Central Luzon during the harvesting period.

# VOLUME OF LOCAL RICE PRODUCTION AND TOTAL USE, 2000-2017



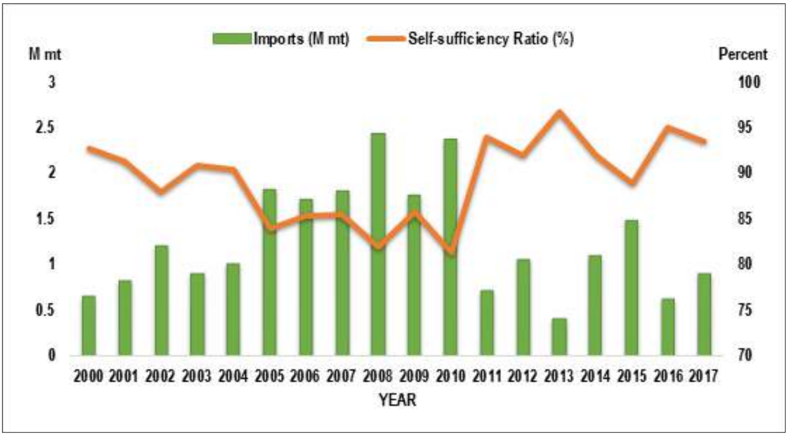

Source of basic data: PSA

*Milling recovery rate used: 65.4%*

Total use comprises allotments for food, seeds, processing, and feeds and wastes. In 2017, food (89%) had the biggest share in total use of milled rice; feeds and wastes (6%), processing (3%), and seeds (2%).

Total use was consistently higher than local rice production, which says that domestic supply cannot meet the total demand. The gap widened until 2010 and then narrowed down through 2013. The wide gap alarmed the government as it necessitated continuing importation. This prompted the launching of the *Food Staples Sufficiency Program* (FSSP) 2011-2016 that implemented strategies to help the country attain rice self-sufficiency. The Department of Agriculture (DA) also waged the *BeRICEponsible* campaign to help manage rice demand. Since then, the gap shrank as production continued to rise while total use almost did not change. The narrowest gap was seen in 2014.

# RICE IMPORTS AND SELF-SUFFICIENCY, 2000-2017

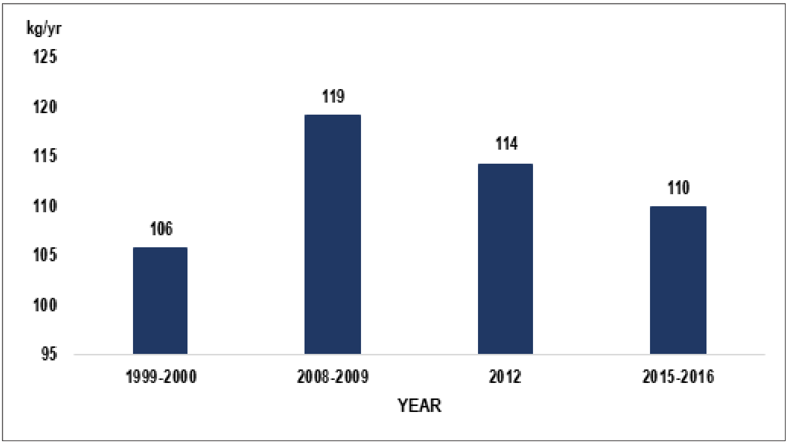



Source of basic data: PSA

Volume of imported rice peaked in 2008 at 2.43 M mt when India and Vietnam banned exports that limited the international rice supply (Manzano and Prado, 2014). Moreover, the increasing demand for rice of non-traditional rice-eating countries also caused the thinning of rice stocks in the global market (Bordey and Castañeda, 2011). These countries in Africa, Middle East, South America, and USA competed with traditional rice-eating countries. The Philippines then imported so much rice to secure local supply. Volume of imports in 2010 was also high because of an expected shortfall of domestic rice available relative to domestic requirements (Dawe, 2010).

If a country imports more rice, its self-sufficiency ratio (SSR) lowers, making that country more dependent on imports. Self-sufficiency was highest in 2013, thus imported rice was limited to 0.4 M mt; lowest in 2008 and 2010, necessitating big importations.

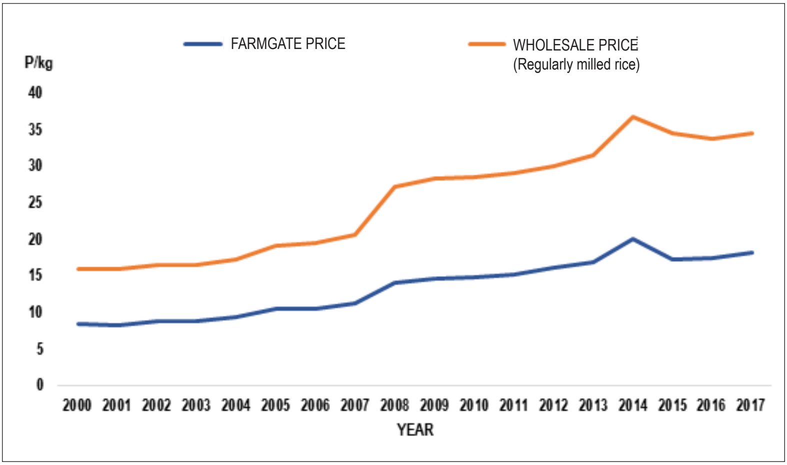
# PER CAPITA RICE CONSUMPTION, 1999-2016




Source of basic data: PSA

Per capita rice consumption (PCRC) peaked in 2008-2009 at 119 kg/year of milled rice, equivalent to approximately 4.5 cups of cooked rice per person per day; lowest in 1999-2000 at 106 kg. PCRC stabilized at 110 kg in 2015-2016 resulting from the intensified campaigns of the DA in managing rice consumption such as eating brown rice, reducing rice wastage, and diversifying staples (Bordey and Castañeda, 2011). In 2014, the DA also launched the *Be RICEponsible* campaign to promote prudent rice consumption. Reducing PCRC helped lift up the self-sufficiency ratio.

# FARMGATE AND WHOLESALE PRICES, 2000-2017




Source of basic data: PSA

The gap between farmgate and wholesale prices of rice was wide because of the high gross marketing margin (Beltran, et al., 2016). The sharp price increase in 2008 was caused by the rice crisis, which was triggered by the trade restrictions of major exporters, panic buying by large importing countries, weak dollar, and oil prices in the world market (Childs and Kiawu, 2009). Prices remained high in 2008 onwards.

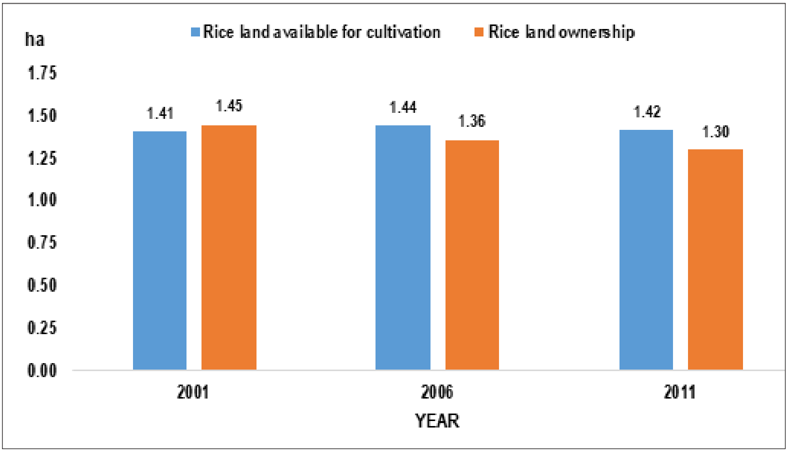
The price spike in 2014 was due to the tight domestic supply brought about by the impact on rice production of super typhoon Yolanda in late 2013 and the lower volume of rice importation, which was aligned with the government's goal of achieving self-sufficiency (Cruz, 2014).

# B. FARMERS' PERFORMANCE

This section briefly discusses farmers' practices, production costs, and incomes. Farming practices include seed selection, land preparation, crop establishment, nutrient harvesting and threshing management, and machine use.

Majority of the historical data presented in this section cover the years 2000-2017; some cover 2010 onwards. These data are from the PSA, the Food and Agriculture Organization (FAO) of the United Nations, and PhilRice's Rice-Based Farm Household Survey (RBFHS) results.

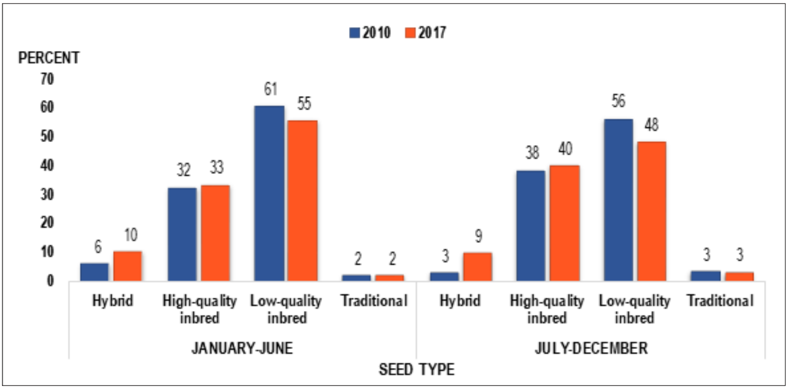
# RICE LAND AREA PER FARMER, 2001, 2006, and 2011




Source of basic data: Socioeconomics Division – PhilRice (RBFHS)

Based on the results of the every-5-year survey of the PhilRice, rice land owned by sample farmers slightly reduced by less than 10%. From 1.45 ha in 2001, it declined to 1.36 ha in 2006, then to 1.30 ha in 2011. Meanwhile, the total cultivated rice lands per farmer (owned and rented alike) expanded from 2001 to 2006; slightly dropped by 0.02 ha only in 2011. Ownership gradually reduced, but the area grown to rice did not significantly shrink. This implies that rice land cultivated per farmer was maintained within the 15-year period.

# DISTRIBUTION OF FARMERS BY SEED TYPE, 2010-2017

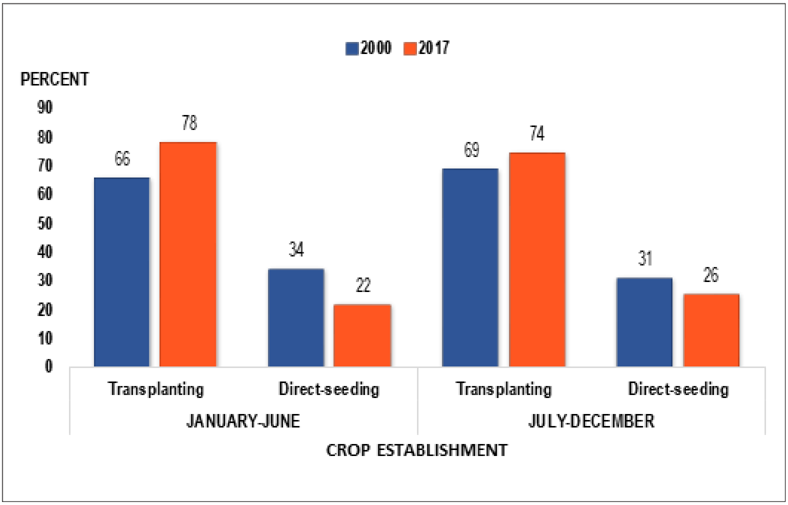



Source of basic data: PSA

In both years and semesters, more than 85% of farmers used inbred varieties, mostly low-quality (LQ). Adoption of high-quality (HQ) seeds grew slightly from 2010 to 2017. Through its *Food Staples Sufficiency Program (FSSP) 2011-2016*, the DA intensified its promotion of the use of high-quality seeds to raise productivity and competitiveness of rice farmers. The DA adopted approaches such as development of seed production systems and seed certification activities, improvement in distribution of HQ seeds, increase in the availability of HQ seeds especially during calamities, and establishment of community seed banks to maintain buffer seed stocks (DA, 2012).

Adoption of hybrid seeds also slightly increased from 2010 to 2017 at only 10%, owing to limited availability, higher price as compared with inbred seeds, perceived susceptibility to pests and diseases, and management practices involved in its production (Bordey, et al., 2016). During the wet season, hybrid rice is more susceptible to pests and diseases, thus, use of hybrid seeds usually drops in July-December when typhoons are more frequent.

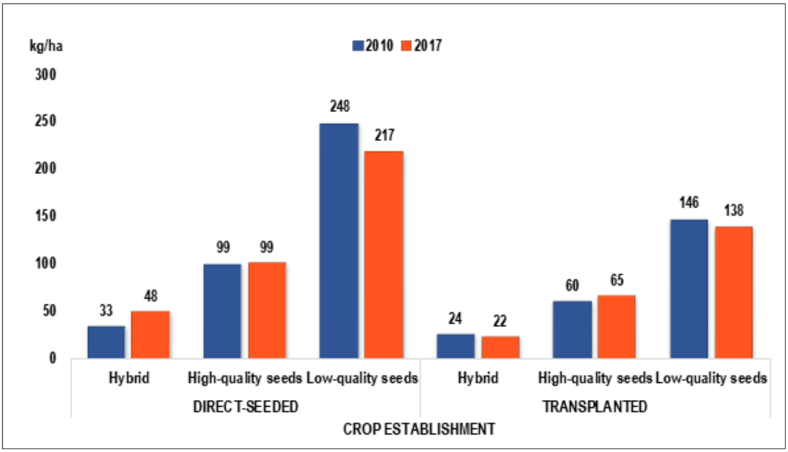
# DISTRIBUTION OF FARMERS BY CROP ESTABLISHMENT, 2000 and 2017




Source of basic data: PSA

Transplanting method is preferred by farmers over direct-seeding, with more than 65% of them transplanting rice in year 2000; up to at least 70% in 2017. Even if direct-seeding is less laborious and incurs less stress on plants, farmers still choose transplanting because it requires less seeds, and weeds are more easily managed.

# SEEDING RATE BY CROP ESTABLISHMENT, 2010 and 2017




Source of basic data: PSA

Seeding rate in all seed classes was higher for direct-seeded than transplanted rice. From 2010 to 2017, seeding rate of direct-seeded hybrid seeds increased; slightly reduced for transplanted. In both methods, seeding rate of high-quality (HQ) inbred seeds did not noticeably change; that of low-quality (LQ) seeds reduced.

Farmers exceeded the recommended seeding rate for inbred seeds (40-80 kg/ha) in both methods. They usually grow extra seedlings to replant missing hills on account of early pest damage.

Seeding rate of LQ is expectedly higher than that of HQ inbred seeds to compensate for the low germination rate of LQ seeds. Though LQ seeds are cheaper, farmers spend more because of higher seeding rate. HQ inbred seeds offset lower seeding rate with higher germination rate.

# FERTILIZER RATE, 2000 and 2016

| TYPE OF FERTILIZER | FERTILIZER RATE | | | |
|---|---|---|---|---|
| | Irrigated | | Non-irrigated | |
| | 2000 | 2016 | 2000 | 2016 |
| **Fertilizer (in 50-kg bags/ha)** | | | | |
| Urea | 2.10 | 2.61 | 1.62 | 1.76 |
| Ammosul | 0.44 | 0.47 | 0.42 | 0.38 |
| Ammophos | 0.57 | 0.55 | 0.46 | 0.43 |
| Complete | 1.54 | 1.90 | 0.96 | 1.29 |
| **Component Nutrients (in kg/ha)** | | | | |
| Nitrogen (N) | 68 | 83 | 52 | 57 |
| Phosphorus (P) | 16 | 19 | 11 | 13 |
| Potassium (K) | 11 | 13 | 7 | 9 |

Source of basic data: PSA

Farmers in irrigated farms applied more fertilizer than those in non-irrigated fields in both years. According to Bordey and Castañeda (2011), farmers know they should have reliable water source to optimize their fertilizers, hence non-irrigated farmers expectedly apply less fertilizer.

Urea and complete were the two most preferred fertilizers in both years, as these have substantial nitrogen content, the most limiting factor in improving crop growth and grain yields.

In 2000-2016, farmers increased their use of urea by only up to 25 kg; complete by some 18 kg. Consequently, N increased by 9%-21%, P by 15%-18%, and K by 24%-34%. These quantities, however, still fall short of the PhilRice-recommended rate of 100 kg N, 35 kg P, and 35 kg K to achieve at least 5 mt/ha yield. This asserts that farmers can still boost yield through more fertilizer.

# ADOPTION OF SELECTED RICE FARMING PRACTICES, 2006-2011

| Rice Farming Practices | Adoption (%) |
|---|---|
| No high/low soil spots after leveling | 76 |
| Straight-row planting | 42 |
| Synchronous planting | 50 |
| Basal fertilizer application | 29 |
| Organic fertilizer application | 27 |
| Alternate wetting and drying/ observation well | 19 |
| No spraying within the first 30DAT or 40DAS against defoliators | 14 |
| Agroecosystem analysis | 15 |
| Harvest palay when 80% of grains are ripe | 73 |
| Thresh palay 0-1 day after harvest | 84 |

Source of basic data: Socioeconomics Division – PhilRice (RBFHS)

In years 2006-2011, majority of farmers adopted practices that can be easily followed and do not call for mechanical power. The top practices were harvesting and threshing at the right time, and no high/low soil spots after leveling.

Lowest adoption was on water and pest management practices, specifically on the use of the alternate wetting and drying (AWD) technique, no spraying within the first 30DAT or 40DAS against defoliators, and the agroecosystem analysis. Some farmers may not be aware of these practices or consider them as cumbersome.

# DISTRIBUTION OF FARMERS BY MACHINE USE, 2016

| Machine used | All ecosystems (n=2967; 94%) |
|---|---|
| **Land Preparation** | |
| Hand tractor | 69 |
| Four-wheel tractor | 13 |
| Floating tiller/turtle | 27 |
| Rototiller | 2 |
| **Irrigation** | |
| Pump | 3 |
| **Crop Establishment** | |
| Drum seeder | <1 |
| Transplanter | <1 |
| **Harvesting and Threshing** | |
| Combine harvester | 30 |
| Reaper | <1 |
| Thresher | 57 |

Source of basic data: Socioeconomics Division – PhilRice (RBFHS)

Land preparation and threshing are highly mechanized operations. In 2016, farmers used hand tractor in preparing their lands (69%) because it is readily available for rent. Few of them used the floating tiller/turtle (27%) and four-wheel tractor (13%). More than 50% of the sample farmers used the mechanical thresher.

Some 30% of the sample farmers used combine harvester; few resorted to mechanical reapers. Farmers have earlier used reapers and combine harvesters. Malanon and Dela Cruz (2017) reported that in 2012-2013, farmers in Pangasinan and Nueva Ecija were already using reapers. Those in Oriental Mindoro preferred the combine harvester because of its larger capacity, which is suitable to huge paddy areas of the province.

Mechanized crop establishment, however, was still unpopular among farmers.

# RETURNS TO PADDY RICE PRODUCTION, 2000 and 2017

| ITEM | Nominal Values | | Real Values (base year = 2006) | |
|---|---|---|---|---|
| | 2000 | 2017 | 2000 | 2017 |
| Yield (kg/ha) | 3,081 | 4,006 | 3,081 | 4,006 |
| Farmgate price (P/kg) | 8 | 18 | 10 | 10 |
| Gross returns (P/ha) | 25,942 | 72,957 | 30,961 | 41,168 |
| Total production cost (P/ha) | 21,495 | 49,745 | 25,650 | 28,073 |
| Net returns | 4,447 | 23,212 | 5,310 | 13,095 |
| Net returns + returns to own land | 7,468 | 30,976 | 8,912 | 17,481 |
| Net returns + returns to own land and labor | 10,874 | 36,874 | 12,976 | 20,809 |

Source of basic data: PSA

Gross returns of rice farmers rose from 2000 to 2017 both in nominal and real terms[1] because of increased yield. Production cost did not significantly change in real terms. This means that after removing the effect of inflation, production cost did not change much. The real net returns still increased by 147% from P5,310/ha in 2000 to P13,095/ha in 2017 because of higher yield.

If a farmer were the landowner, he would receive a real net returns of about P18,000/ha.  If he also used his own labor instead of hired laborers, he would earn a total real net returns of approximately P21,000/ha.

Using the 2017 nominal net returns, P8,240 is the computed monthly income of rice farmers from cultivating 1.42 ha average area. This is P800 short of the poverty threshold level for a family of five (P9,064 per month[2]). Therefore, rice farm income alone is insufficient to support the monthly basic food and non-food needs of the rice-farming household.

1 A nominal value reflects the effect of inflation on a variable. Converting it into a real value removes the influence of inflation on the variable. Comparing real values, therefore, means examining two values in different time periods as if the general price levels did not change.
2 Source: PSA

# C. PHILIPPINES VIS-À-VIS SELECTED ASIAN COUNTRIES

This section compares the Philippines with its neighboring Asian countries in terms of yield, area harvested, production cost, and income. It also tackles how competitive Philippine rice is compared with those of exporting countries Vietnam and Thailand.

The earliest available data for this section are in year 2000, which were sourced from the Food and Agriculture Organization of the United Nations, and from relevant publications.

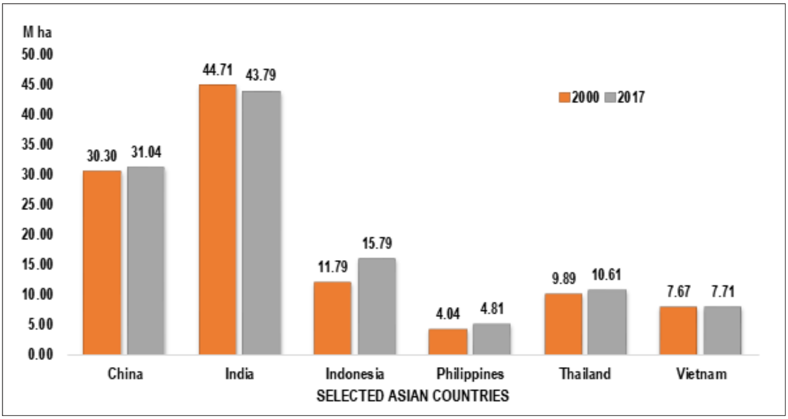
# COMPETITIVENESS LEVEL

| Item | Vietnam | Thailand |
|---|---|---|
| Cost of commodity, freight, and insurance (CIF) (P/mt) | 19,321.87 | 21,965.76 |
| CIF + tariff payment + estimated local transport cost (P/mt) | 27,316.52 | 30,885.77 |
| Import parity price (P/kg) | 27.32 | 30.89 |
| Philippine wholesale price, regular milled rice (P/kg) | 34.47 | 34.47 |
| Price difference (%) | -20.76 | -10.4 |

Source of data: Bordey, et al. (2016)

Import Parity Price (IPP) is the estimated price of an imported product at the wholesale market of the importing country. Vietnam rice had a cheaper IPP in 2015 at P27.32/kg than Thai rice at P30.89/kg – both less expensive than Philippine rice at P34.47/kg wholesale. This implies that domestic rice is hardly competitive with the imported. Removal of trade protection like quantitative restriction (import limit), therefore, could push down the domestic price level as it would try to adjust to a level comparable with that of imported rice (Litonjua and Bordey, 2014).

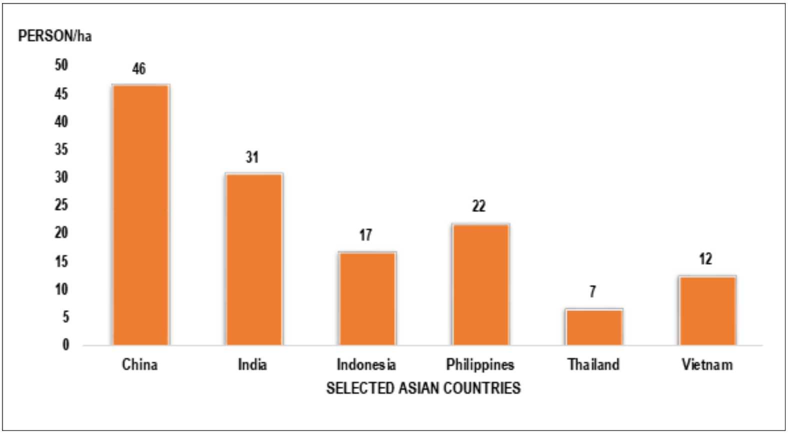
# COMPARATIVE RICE AREA HARVESTED IN SELECTED ASIAN COUNTRIES, 2000 and 2017




Source of basic data: FAO

India and China had the biggest area harvested; the Philippines had the smallest area because of limited land resource. This partly explains the country's dependence on imported rice. Nevertheless, its area harvested expanded from 4.04 M ha in 2000 to 4.81 M ha in 2017.

# RATIO OF POPULATION TO RICE AREA HARVESTED IN SELECTED ASIAN COUNTRIES, 2017

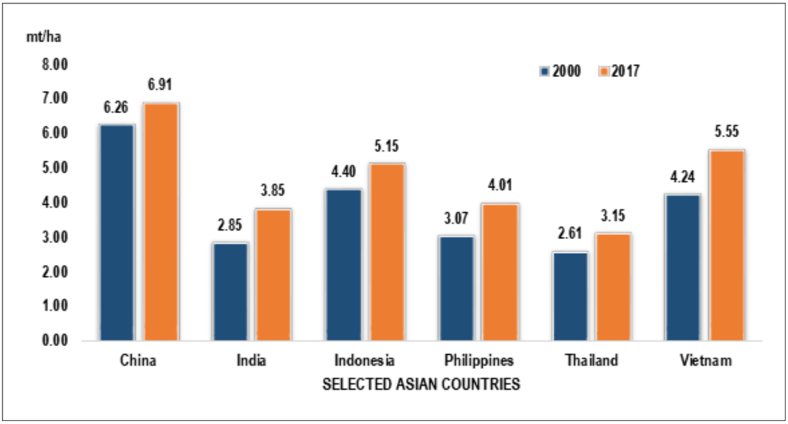



Source of basic data: FAO

The ratio of population to rice area reflects the number of people who can be fed by the produce of a hectare of rice land in a year. In 2017, China and India had the highest ratio while Thailand and Vietnam had the lowest. This asserts that China and India had many more people to feed per hectare than Thailand and Vietnam.

The Philippines had to support around 22 persons per hectare, which partly explains why Thailand and Vietnam are able to export to our country.

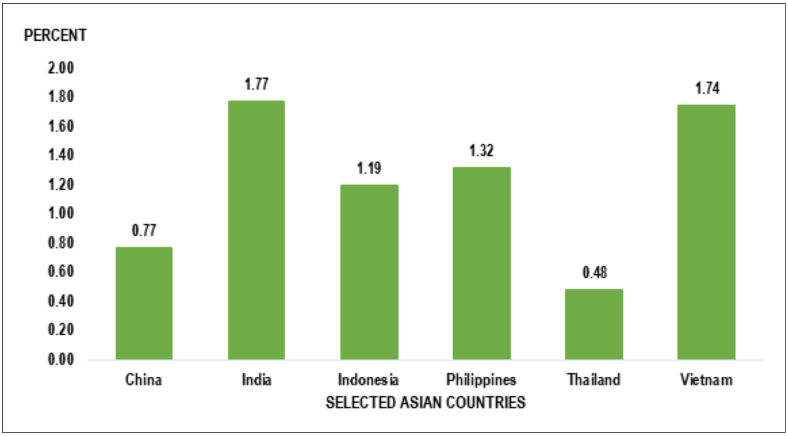
# COMPARATIVE PADDY RICE YIELD OF SELECTED ASIAN COUNTRIES, 2000 and 2017




Source of basic data: FAO

All yields grew from 2000 to 2017, with China, Vietnam, and Indonesia having the highest. China widely adopted hybrid seeds and enjoyed favorable growing conditions (GRiSP, 2013). Lowest yields were in Thailand and India in both years, with Thai farmers preferring to plant high-quality but low-yielding traditional varieties because of their premium prices. India has uneven rainfall distribution affecting yields (GRiSP, 2013). But their area harvested was big, allowing them to export rice. Filipino farmers produce more rice per hectare than those in Thailand and India, but they are limited by their lowest area harvested (see page 22).

# COMPARATIVE YIELD GROWTH OF PADDY RICE IN SELECTED ASIAN COUNTRIES, 2000-2017

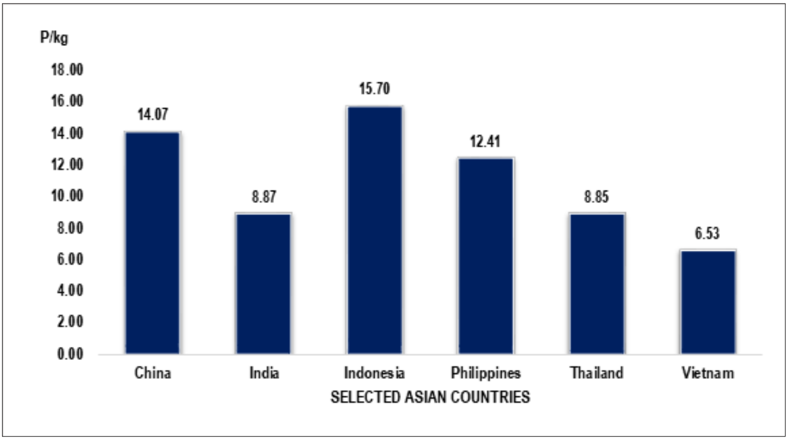



Source of basic data: FAO

India's (1.77%) and Vietnam's (1.74%) yields grew fastest from 2000 to 2017, while Thailand's (0.48%) and China's (0.77%) grew slowest. High yield growth in Vietnam is due to the adoption of modern varieties, adequate fertilizers, and expansion of its irrigated areas (GRiSP, 2013). Thailand is predominantly rainfed and farmers use high-quality but low-yielding varieties, which command higher prices in the market (GRiSP, 2013).

The Philippines had a higher yield growth rate than exporters China and Thailand.

# COMPARATIVE COST OF PADDY RICE PRODUCTION IN SELECTED ASIAN COUNTRIES, 2013-2014

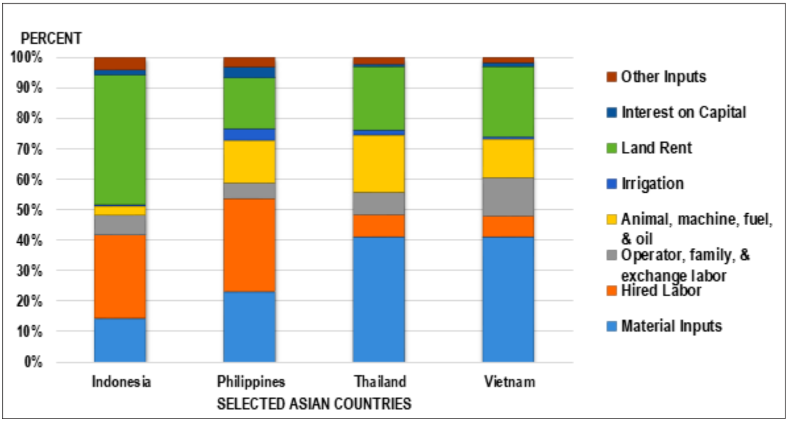



Source of data: Moya, et al. (2016)

Exporters Vietnam, Thailand, and India had lower unit cost of producing paddy rice than importers Indonesia and the Philippines (Moya, et al., 2016).

Farmers in Can Tho, Vietnam had the lowest unit cost at P6.53/kg; West Java, Indonesia incurred the highest at P15.70/kg.  Farmers in Nueva Ecija, Philippines spent P12.41/kg, which is twice as much as Vietnam, our country's main source of imported rice. This is the most compelling reason why Philippine rice is not price-competitive with imported rice.

# PERCENTAGE BREAKDOWN OF COSTS OF PADDY RICE PRODUCTION IN SELECTED ASIAN COUNTRIES, 2013-2014




Source of data: Moya, et al. (2016)

*Note: Material inputs include seeds, fertilizers, and chemicals; other inputs are sacks and plastic sheets and twines etc.*

Rice production in exporters Vietnam and Thailand was more capital-intensive; more labor-intensive in importers Philippines and Indonesia (Moya, et al., 2016). Material inputs comprised the biggest share in the production cost of Vietnam and Thailand (40%). Hired labor cost was the most expensive for the Philippines (30%) and Indonesia (27%) because majority of field activities were done manually.

Animal, machine, fuel, and oil costs were higher in Vietnam and Thailand because their operations were highly mechanized. The Philippines mainly uses manual labor, but the share of power cost was almost the same with these countries because thresher rental cost here was high.

# COMPARATIVE RETURNS TO PADDY RICE PRODUCTION IN SELECTED IMPORTING AND EXPORTING COUNTRIES, 2013-2014

| Item | Philippines | Thailand | Vietnam |
|---|---|---|---|
| Gross revenue (GR) (P/ha/year) | 163,857 | 147,471 | 198,242 |
| Yield (14% MC in mt/ha/year) | 9.52 | 10.47 | 20.59 |
| Price (P/mt) | 17,192 | 14,093 | 9,636 |
| Total production costs (P/ha/year) | 118,138 | 92,711 | 134,354 |
| Total paid-out costs (P/ha/year) | 87,617 | 65,415 | 85,537 |
| Net returns (P/ha/year) | 45,719 | 54,761 | 63,845 |
| Income from rice (GR less paid-out costs) (P/ha/year) | 76,240 | 82,056 | 112,705 |

Source of data: Moya, et al. (2016)

Despite having the lowest paddy price, Vietnam still had the highest annual net returns per hectare (P63,845.00) because of high yield produced in three cropping seasons. On the contrary, the Philippines had the lowest returns at P45,719.00 despite a higher farmgate price than Vietnam. This is because of a relatively lower yield harvested in only two cropping periods. Moreover, producing rice in the Philippines was more expensive; hence, lower net returns (Moya, et al., 2016).

# REFERENCES


Beltran, J.C., Bordey, F.H., Moya, P.F., Launio, C.C., Manalili, R.G., Marciano, E.B., San Valentin, M.R.L., Valencia, M.S.D., and Dawe, D.C. (2016). Rice Processing and Marketing Margins. In: Bordey F.H., Moya P.F., Beltran J.C., and Dawe D.C. (eds.) Competitiveness of Philippine Rice in Asia. Science City of Muñoz (Philippines): Philippine Rice Research Institute. 172p.

Bordey, F.H. (2010). The Impacts of Research on Philippine Rice Production (Doctoral Dissertation, University of Illinois at Urbana Champaign, Urbana, Illinois). Retrieved from https://www.ideals.illinois.edu/bitstream/handle/2142/16072/1_Bordey_Flordeliza.pdf?sequence=2&isAllowed=y

Bordey, F.H. and Castañeda, A.C. (2011). Philippine Rice Industry Primer Series. Science City of Muñoz, Nueva Ecija (Philippines): Philippine Rice Research Institute. 32p.

Bordey, F.H., Beltran J.C., Moya, P.F., Manalili R.G., San Valentin M.L., and Rebong D.B. II. (2016). Helping the Philippines Become Competitive Thru Improved Hybrid Seed Production. Science City of Muñoz, Nueva Ecija (Philippines): Philippine Rice Research Institute, and Los Baños, Laguna (Philippines): International Rice Research Institute. 31p.

Bordey F.H., Moya P.F., Beltran J.C., Launio, C.C., and Dawe, D.D. (2016). Can Philippine Rice Compete Globally? In: Bordey F.H., Moya P.F., Beltran J.C., Dawe D.C., (eds.). Competitiveness of Philippine Rice in Asia. Science City of Muñoz (Philippines): Philippine Rice Research Institute. 172p.

Bordey F.H., Beltran J.C., Arida I.A., Litonjua A.C., Lapurga M.G.C, Collado W.D. (2017). Comparative Efficiency of Rice Farming in Asia and the Philippines, Science City of Muñoz (Philippines): Philippine Rice Research Institute. 121p.

# REFERENCES

Childs, N. and Kiawu, J. (2009). Factors behind the Rise in Global Rice Prices in 2008. Washington, DC, USA: United States Department of Agriculture

Cruz, C.F. (2014). Surveillance of the Philippine Rice Market March-April 2014. Malate, Manila: Bangko Sentral ng Pilipinas. 4p.

Dawe, D. (2010). The Rice Crisis: Markets, Policies and Food Security. Rome, Italy: Food and Agriculture Organization of the United Nations and Washington, DC, USA: Earthscan

Department of Agriculture. (2012). Food Staples Sufficiency Program 2011-2016: Enhancing Agricultural Productivity and Global Competitiveness. Quezon City, Philippines: Department of Agriculture

Food and Agriculture Organization of the United Nations (FAO) [n.d.]. Database. http://www.fao.org/faostat/en/#data. Accessed September 2018

Global Rice Science Partnership (GRiSP). (2013). Rice Almanac, Fourth Edition. Los Baños, Laguna: International Rice Research Institute. 283p.

Litonjua, B.C. and Bordey, F.H. 2014. How Can Rice Trade Liberalization Affect Producers and Consumers? Rice Science for Decision-makers, Septemer 2014.

Malanon, H.G. and Dela Cruz, R.S. (2017). On-Farm Mechanization of Paddy in the Philippines. Los Baños, Laguna: Asian Journal of Postharvest and Mechanization. 13p.

Manzano, G. and Prado S.A. (2014). Distributional Impact of the 2008 Rice Crisis in the Philippines. Switzerland: United Nations Conference on Trade and Development. 75p.

Moya, P.F., Bordey, F.H., Beltran, J.C., Manalili, R.G., Launio, C.C., Mataia, A.B., Litonjua, A.C., and Dawe, D.C. (2016). Costs of Rice Production. In: Bordey F.H., Moya P.F., Beltran J.C., Dawe D.C., (eds.). Competitiveness of Philippine Rice in Asia. Science City of Muñoz (Philippines): Philippine Rice Research Institute. 172p.

Moya, P.F., Bordey, F.H., Beltran, J.C., Mohanty, S., and Dawe, D.C. (2016). Profitability of Rice Farming. In: Bordey F.H., Moya P.F., Beltran J.C., Dawe D.C., (eds.). Competitiveness of Philippine Rice in Asia. Science City of Muñoz (Philippines): Philippine Rice Research Institute. 172p.

PalayStat System. (n.d.). https://dbmp.philrice.gov.ph/palaystat/statistics/. Accessed September 2018.

Philippine Statistics Authority (PSA) [n.d.]. Database. http://countrystat.psa.gov.ph/. Accessed September 2018.

PSA. (2016). Official Poverty Statistics of the Philippines Full Year 2015. Quezon City: Philippine Statistics Authority. 60p.

Ponce, E.R. and Inocencio, A.B. (2016) Towards a more resilient and competitive Philippine rice industry: the extension agenda, a paper presented at the policy seminar-workshop on Toward a rice-secure Philippines: identifying key priority government interventions in 2017-2022 held at Quezon City on September 30, 2016.

Socioeconomics Division - Philippine Rice Research Institute. (n.d.). Rice-Based Farm Household Survey (RBFHS).

# NOTES

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We are a chartered 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 cost-reducing, and environment- friendly 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 more competitive through research for development (R4D) work in our central and seven branch stations, coordinating with a network that comprises 60 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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