

Country Report:



PHILIPPINES

Presented by:

Engr. Ma. Cristine Concepcion D. Ignacio

Introduction

Source: Countrystat, Philippines accessed April 2018

The **Philippines** is still an **agricultural-based economy**.

- ❑ Total Population (2018): **106.5 million Filipinos**
- ❑ Agriculture total share of employment in the country: **11.06 million Filipinos (8.31 million men and 2.76 million women)**
- ❑ Agricultural products for food, feed, fiber and alternative fuel contributes to about **9%** of the **total GDP** of the country.

Introduction

Source: Countrystat, Philippines accessed April 2018

- ❑ The major staple food are **rice and corn** while other major products are **sugarcane and coconut**.
- ❑ The Philippines **ranked 8th** in terms of total rice production area of **4.5 million hectares**.
- ❑ However, it also ranked **11th among top 15 countries** depending on rice importation to feed its population.

Country Background

Source: Countrystat, Philippines accessed April 2018

PARAMETER	DESCRIPTION	DATA
Geographical Location	Latitude :	NL: 4.7 ° N SL: 21.5 ° N
	Longitude:	EL : 117 ° E WL:127 ° E
Meteorological conditions	Temperature	Min. 26.1 ° C Max. 28.4 ° C
	Annual Precipitation	2000 mm/year
Agricultural Conditions	Total Area	300,000 km ²
	Total Land Area	298,170 km ²
	Total Water Area	1,830 km ²
	All farm holdings (2012 CAF)	7,190,000 ha
	Temporary Crops	3,444,000 ha
	Permanent Cropland	3,329,000 ha
	Agricultural Farms (2012 CAF)	5,562,577 farms

Country Background

PARAMETER	DESCRIPTION	DATA
Agricultural Conditions	Staple foods	RICE: (2016) Area Harvested: 4.566 million ha Production: 17.627 MMT Farm gate Price: PhP 19.07/kg
		CORN: (2016) Area Harvested: 2.484 million ha Production: 7.219 MMT Farm gate Price: PhP 11.78/kg
	Other staples	Root Crops and Plantain
	Other major crops	Sugarcane, Coconut
	Top Export crops	Coconut Oil (22%), Banana (14%), Tuna (5%), Pineapple & Products (14%)

Source: Countrystat, Philippines accessed April 2018

Country Background

PARAMETER	DESCRIPTION	DATA
Population and Employment	Total Population	106.512 million
	Total Employment	41.00 million
	Employment in Agriculture (2016)	11.06million (27 % share) Male: 8.31 million Female: 2.76 million
	Ave Wage Rates (2016) Agricultural sector	PhP 267.03
Economy (2016)	GNI at current prices	PhP 17,430 billion
	GDP at current prices	PhP 14,481 billion (9% share from agriculture)
	GVA at current prices (agriculture and fishing)	PhP 1,395 billion

Source: Countrystat, Philippines accessed April 2018

Country Background

PARAMETER	DESCRIPTION	DATA	
Agricultural Conditions	Level of Mechanization (Mechanization Index)	Rice: (MAMI rice 2017)	
		Mindoro Or. 3.029 hp/ha Laguna: 1.836 hp/ha	
	Other Crops (2013):	1.23 hp/ha	
	Average Farmer's Land Holding	Rice (2013):	2.62 ha
		Corn (2013):	1.76 ha
		National Average:	2 ha
	Average Age of Farmer		57 years old

Source: Amongo, et al. 2013; Amongo et al. 2017; Amongo, et al., 2018

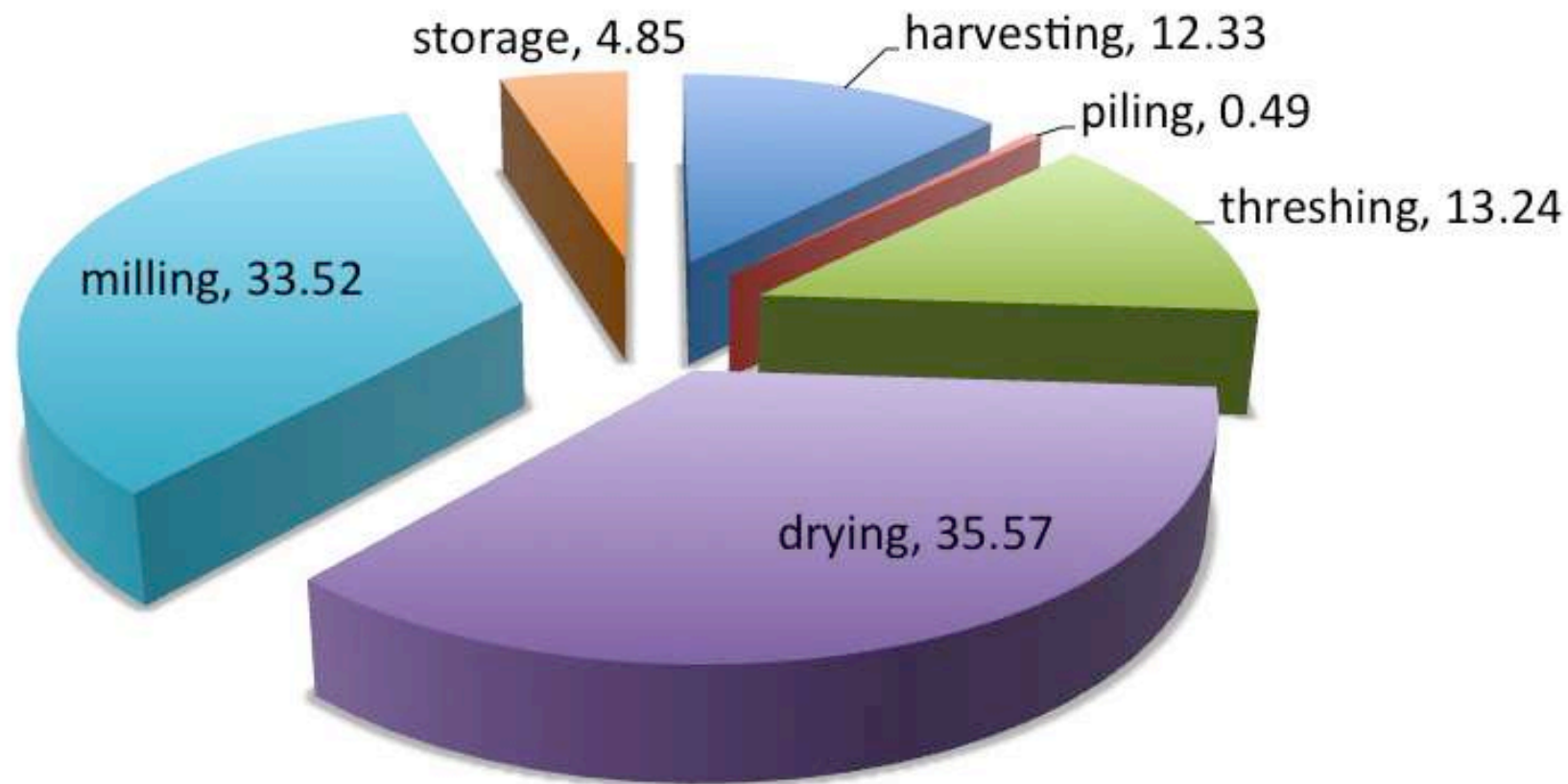
Harvesting and Post-harvesting Practices for RICE

Operation	Practice	
	Traditional	Modern
Land Preparation	Hand operated tools, animal driven with implements	Using hand tractors and 4-wheel tractors and implements
Planting	Manual planting (broadcasting)	Row planters/seeders and transplanters using animals, hand tractor and or 4 wheel tractor driven)

Harvesting and Post-harvesting Practices for RICE

Operation	Practice	
	Traditional	Modern
Harvesting	done with the use of hand tools such as sickle, scythe, yatab and others	Use of reapers and combine harvester
Threshing	done with the use of sticks, hampasan, foot threshing, and animal treading	Mechanical threshers
Drying	Sun drying	Mechanical dryers
Storage	Container type, bags	Bags and bulk (vertical silos, flat warehouses)

POSTHARVEST LOSSES in RICE



Source: PHilMech, 2018

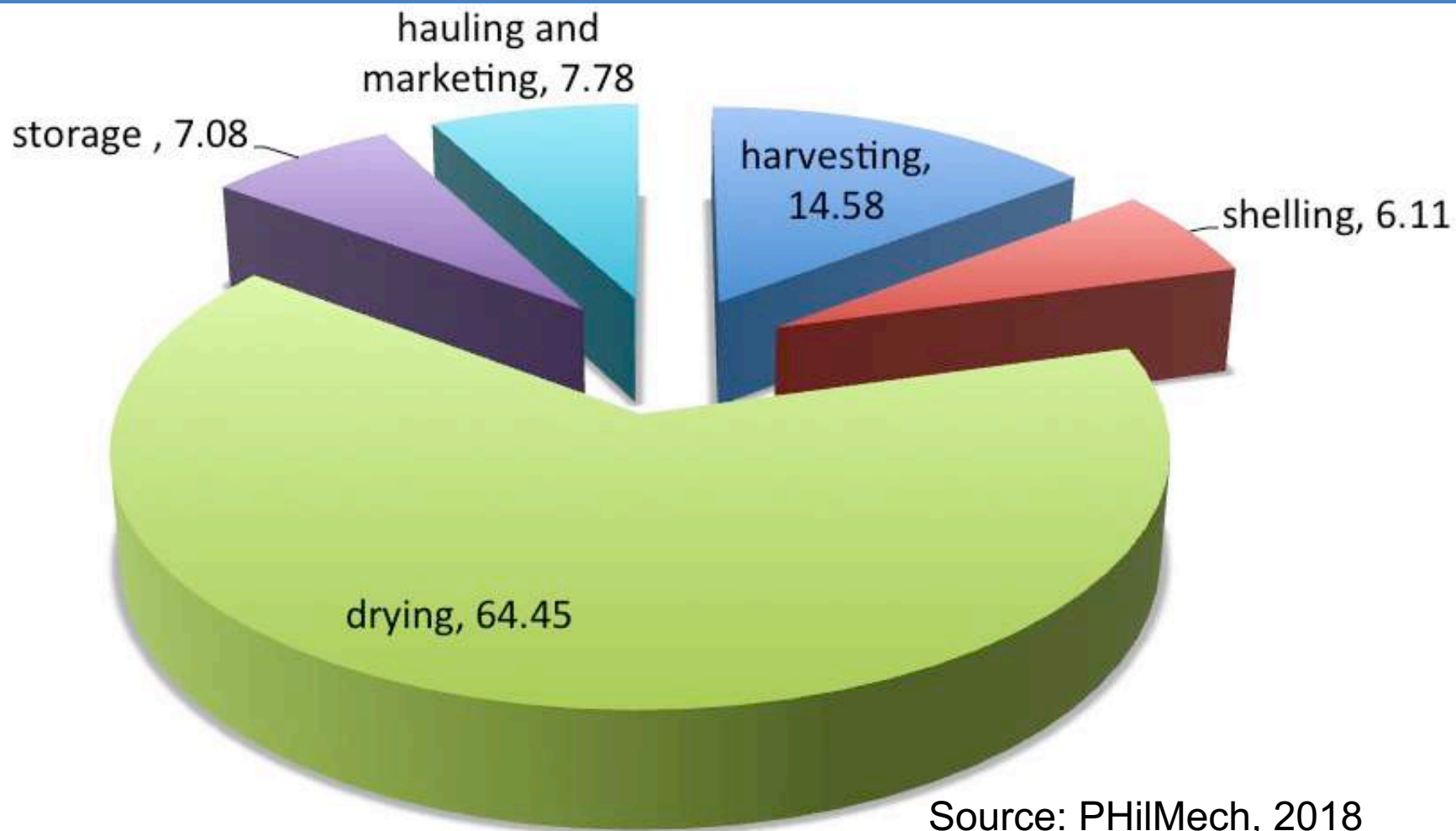
Harvesting and Post-harvesting Practices for CORN

Operation	Practice	
	Traditional	Modern
Land Preparation	Hand operated tools, animal driven	Using hand tractors and 4-wheel tractors
Planting	Manual planting Animal driven planters	Row planters/seeders and transplanters (hand tractor/4 wheel tractor driven)

Harvesting and Post-harvesting Practices for CORN

Operation	Practice	
	Traditional	Modern
Harvesting	done with the use of handtools	Corn pickers
Shelling	manual	Mechanical shellers
Drying	Sun drying	Mechanical Dryers
Storage	Container and bag types	Bag and bulk storage (vertical silos)

POSTHARVEST LOSSES IN CORN



Source: PHilMech, 2018

Status of Agricultural Mechanization

(PHilMech, 2018)

The Philippines has one of the lowest levels of mechanization in Asia although it has improved considerably from **0.52 hp/ha** in 1990s to **1.23 hp/ha** for all crops in 2011.

Focusing on rice and corn crops, with a smaller area of production and with nearly all of the available machines finding application in production and postproduction operations, **level of mechanization or farm power available is 2.32 hp/ha** in 2011.

Status of Agricultural Mechanization

(Suministrado DC, 2013)

Operation	Rice/Corn	Vegetables, Legunes and rootcrops	Coconut, fruits/fiber crops	Sugarcane, pineapple
Land Preparation	Intermediate to High	Low		Intermediate to high
Plating/trans planting	Low	Low	Low	Low to intermediate
Crop care/cultivation	Low	Low	Low	Low to high
Harvesting	Low	Low	Low	Low

Status of Agricultural Mechanization

(Suministrado DC, 2013)

Operation	Rice/Corn	Vegetables, Legunes and rootcrops	Coconut, fruits/fibe r crops	Sugarcane, pineapple
Threshing/sh elling	Intermediate to High	Low (legunes)		
cleaning		Low		
drying	Low	Low (legunes)	Low	
Milling/villa ge level processing	High	Low	Low	

Agricultural Machinery Industry in the Philippines


(Suministrado DC, 2013)

Characteristics:

1. Import of heavy machines and prime movers, and local assembly and fabrication
1. Locally manufactured machines have high import content sometimes constituting more than half of the total machinery cost.

Laws Adopted in the Philippines for Agricultural Mechanization

- Agricultural and Fishery Modernization Act (AFMA) of 1998
- Agricultural Engineering Law in 1998
- Agricultural and Fishery Mechanization Law (AFMech Law in 2013)



mandates the formulation of a comprehensive national policy on cost-effective and environmentally-safe agriculture and fisheries to achieve food security and increase farmers' income.

Republic Act 10601 or the Agricultural and Fisheries Mechanization (AFMech) Law (2013)

- ❑ Under the new law, the Department of Agriculture will craft a five-year National Agri-Fishery Program to **promote a conducive-environment to the local assembling and manufacturing of equipment for agricultural and fisheries production, processing and marketing.**
- ❑ It also mandates the local government units to undertake **applied research, extension, dispersal, management and regulation of agricultural and fisheries machinery and equipment, including the collection of fees.**
- ❑ The new law directs the DA to **encourage the production of locally-made engines and other machinery for agricultural and fisheries purposes. Incentives will be given to local manufacturers and assemblers of agri-fisheries machinery.**

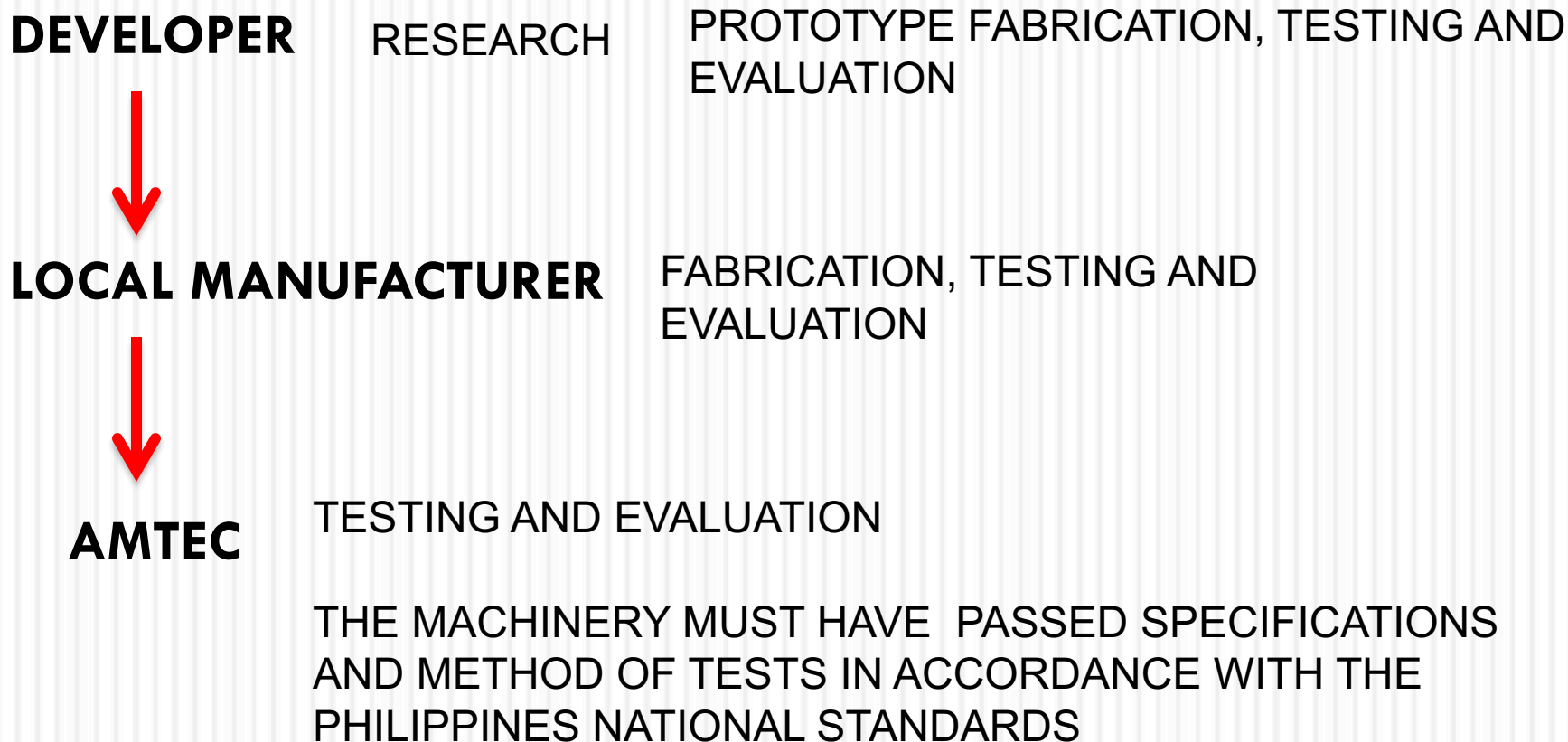
Agencies/Institutions involved in Agricultural Mechanization

- Department of Agriculture
 - PHilMech (Philippine Center for Postharvest Development and Mechanization) - *research, extension and development of machinery*
 - PhilRice (Philippine Rice Research Institute) – *research, extension and development of machinery*
 - BAFS (Bureau of Agriculture and Fisheries Standards) – *drafting standards for Agricultural Machineries and Fisheries Technologies*

Agencies/Institutions involved in Agricultural Mechanization

- University of the Philippines Los Baños
 - **BIOMECH (Center for Agri-Fishery and Biosystems Mechanization)** - *research, extension and development*
 - **AMTEC (Agricultural Machinery Testing and Evaluation)**-
research, extension and drafting standards and testing Agricultural machineries
- **IRRI (International Rice Research Institute)**
-research and development of agricultural machinery for rice

DEVELOPMENT OF AN AGRICULTURAL MACHINERY



Harvesting Technologies Developed



combine harvester



corn harvester/picker



reaper

Threshing/Shelling Technologies Developed



Corn Sheller



Improved Corn Sheller



Thresher/Sheller
Axial Thresher

Drying Technologies Developed



Commercial Scale Fluidized Bed Dryer

Green House Type Solar Dryer with Biomass Furnace

Rice Hull Fed Furnace

PHilMech Flatbed Dryer

Far infrared and Convection Heating

IRRI Batch Dryer

Cassava Belt Type Dryer

UPLB Flatbed Dryer

AMDP Recirculating Flow Dryer

Hulling/Milling Technologies Developed



Impeller Huller^b



Compact Corn Mill^b

IRRI Micromill

IRRI Portable Grain Cleaner

Coffee Huller

UPLB Village Ricemill

PhilRice Micromill

Impact Type Huller for Brown Rice

PHILIPPINE AGRICULTURAL ENGINEERING STANDARDS (PAES)

PAES 201:2000 Agricultural Machinery - Heated-Air Mechanical Grain Dryer – Specifications
PAES 202:2000 - Methods of Test

PAES 203:2000 Moisture Content Determination for Rice and Corn

PAES 204:2000 Agricultural Machinery - Mechanical Rice Thresher – Specifications
PAES 205:2000 Methods of Test

PAES 206:2000 Agricultural Machinery - Rice Mill – Specifications
PAES 207:2000 Methods of Test

PAES 208:2000 Agricultural Machinery - Power-Operated Corn Sheller – Specifications
PAES 209:2000 Methods of Test

PAES 210:2000 Agricultural Machinery - Corn Mill – Specifications
PAES 211:2000 Methods of Test

PHILIPPINE AGRICULTURAL ENGINEERING STANDARDS (PAES)

PAES 212:2004 Agricultural Machinery - Rice Reaper-Specifications

PAES 213:2004 Methods of Test

PAES 214:2004 Agricultural Machinery - Rubber Roll for Rice Mill-Specifications

PAES 215:2004 Methods of Test

PAES 216:2004 Agricultural Machinery - Hammer Mill- Specifications

PAES 217:2004 - Methods of Test

PAES 218:2004 Agricultural Machinery - Forage Chopper- Specifications

PAES 219:2004 -Methods of Test

PAES 224:2005 Agricultural Machinery - Rice Combine - Specification
(Circulated)

PAES 224:2005 Agricultural Machinery - Rice Combine –Specifications

PHILIPPINE NATIONAL STANDARDS (PNS) AND PHILIPPINE AGRICULTURAL ENGINEERING STANDARDS (PAES)

PNS PAES 201-2015 - Agricultural Machinery - Heated Air Mechanical Grain Dryer – Specifications
PNS PAES 202-2015 Methods of Test

PNS PAES 204-2015 - Agricultural Machinery - Mechanical Rice Thresher – Specifications
PNS PAES 205-2015 - Methods of Test

PNS PAES 206-2015 - Agricultural Machinery - Rice Mill – Specifications
PNS PAES 207-2015 - - Methods of Test

PNS PAES 212-2015 - Agricultural Machinery - Rice Reaper – Specifications
PNS PAES 213-2015 - Methods of Test

PNS PAES 224-2015 - Agricultural Machinery - Rice Combine Harvester – Specifications
PNS PAES 225-2015 Methods of Test

PHILIPPINE NATIONAL STANDARDS (PNS) AND PHILIPPINE AGRICULTURAL ENGINEERING STANDARDS (PAES)

PNS PAES 260-2015 - Agricultural Machinery - Paddy Seed Cleaner –
Specifications PNS PAES 261-2015 Methods of Test

PNS PAES 262-2015 - Agricultural Machinery - Multipurpose Thresher –
Specifications PNS PAES 263-2015 Methods of Test

PNS PAES 264-2015 - Agricultural Machinery - Rice Husk Fed Heating System
– Specifications PNS PAES 265-2015 - Methods of Test

PNS PAES 419-2015 - Agricultural Structures - Warehouse for Bag Type
Storage of Grains

CHALLENGES FACING THE PHILIPPINES

- ❑ LOW FARM GATE PRICES
- ❑ LACK OF ALTERNATIVE MARKET OUTLETS
- ❑ DICTATED PRICES OF MIDDLEMEN
- ❑ HIGH COSTS OF FARM INPUTS
- ❑ INCIDENCE OF PEST AND DISEASES
- ❑ ENVIRONMENTAL PROBLEMS
- ❑ LACKS OR INADEQUATE SUPPORT INFRASTRUCTURES
(IRRIGATION, ROADS)
- ❑ LACK OF ACCESS TO CURRENT FARMING TECHNOLOGIES

(Suministrado DC, 2013)

POLICY RECOMMENDATIONS

- Non-interference by government on price levels of commodities
- Increased availability of loans/less stringent requirements
- More cooperative buying stations
- More machinery center(custom hiring, repairs)
- Support to manufacturers
- More support infrastructures
- Discourage land division



THANK YOU!