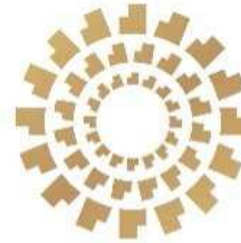




**Asia-Pacific  
Economic Cooperation**



**APEC PERU  
2016**

# **Reduction of Food Wastes in the Processing and Retail Stages in the Philippines\***

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# Presentation Outline

1. Introduction
2. Completed researches on food loss
3. Addressing food losses
4. Summary and Conclusion



# Introduction

**Food losses/wastes** – refer to the decrease in edible food mass throughout the **food supply chain (FSC)\*** intended for human consumption  
(FAO, 2011)

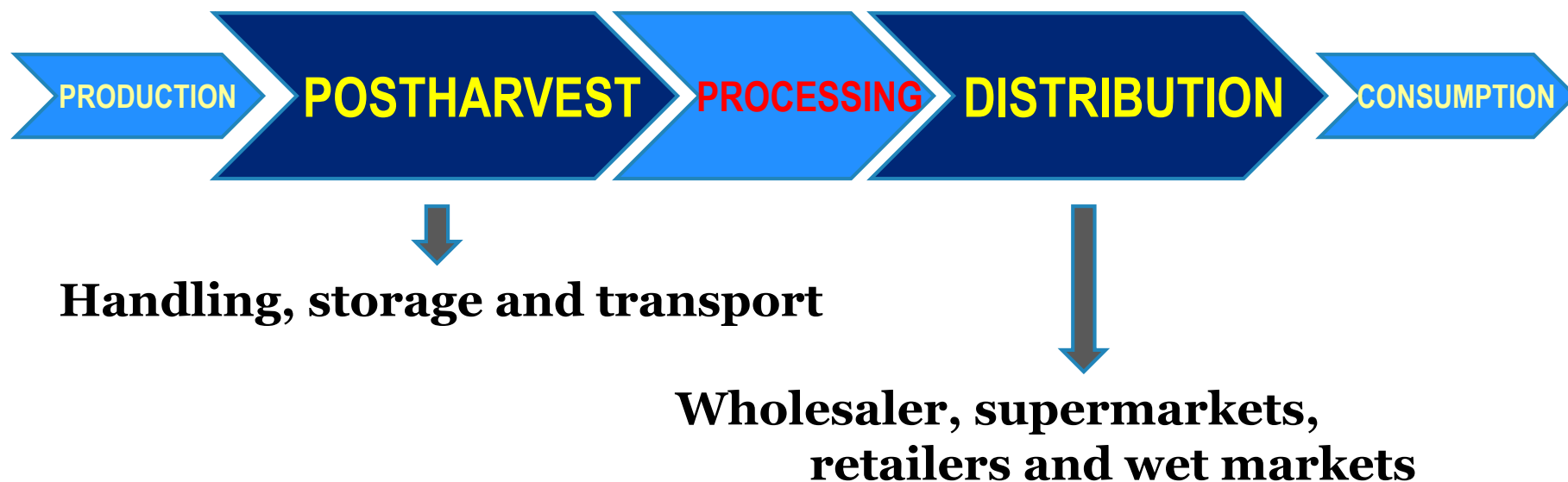
\*FSC includes:

**PRODUCTION** > **POSTHARVEST** > **PROCESSING** > **DISTRIBUTION** > **CONSUMPTION**



# Introduction

**PHilMech FSC R & D focus more on**



# Supply Chain of Sweet Potato (Flores et al, 2016)

## POSTHARVEST

### FARMER LEVEL/HANDLING



Loss = 17.12-18.42%

### HAULING/TRANSPORT



Loss = 0.13-1.18%

## DISTRIBUTION

### RETAILER (1-7 days)



Loss = 8.58-12.21%

### WHOLESALER



Loss = 0.0-5.84%

Total Loss  
25.83-37.65%





# PHilMech completed researches on assessing food losses/wastes

COMMODITY	LOSSES (%)		REFERENCES
	POSTHARVEST	DISTRIBUTION	
Sweet potato	17.25-19.60	8.58-18.05	Flores et al, 2016
Onion (red bulb)	3.90	27.86	Calica et al, 2016
Onion (shallots)	1.08-4.80	12.32-15.60	Calica et al, 2016
Carrots	0- 6.08	0.00-4.17	BPRE & PHTRC, 2009



# PHilMech completed researches on assessing food losses/wastes

COMMODITY	LOSSES (%)		REFERENCES
	POSTHARVEST	DISTRIBUTION	
Paddy/Rice	16.47*	-	Salvador et al, 2012
Corn	7.18	-	Salvador et al, 2007

\*Includes milling loss at 5.52% (rice mill processing)

Consumer loss = 9 gms of milled rice (FNRI, 2013)  
≈ 2 tablespoon of cooked rice\person\day





# Reducing food loss/waste

## ➤ Research and development

Issues and concerns	Recommendation	Program/Action Plan
Inefficient soil digging equipment causing mechanical damage of <b>sweet potato</b> at harvest	▪ Modification and improvement of the existing sweet potato digger	▪ Field testing and pilot testing of improved sweet potato digger



# Reducing food loss/waste

## ➤ Research and development

Issues and concerns	Recommendation	Program/Action Plan
<b>Onion</b> rejects due to discolored, oversized, rotten, sprouted and irregularly-shaped onions	▪ Search for potential markets of minimally processed onion	Further studies on the marketability of minimally processed onion



# Reducing food loss/waste

## ➤ Research and development

Issues and concerns	Recommendation	Program/Action Plan
Bruising of <b>carrots</b> due to manual washing	▪ Design and development of carrot washer	▪ Field testing and commercialization of the mechanized carrot washer



# Reducing food loss/waste

## ➤ **Research and development**

<b>Issues and concerns</b>	<b>Recommendation</b>	<b>Program/Action Plan</b>
<ul style="list-style-type: none"><li>▪ <b>Low milled rice recoveries</b></li><li>▪ <b>High milling losses</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>Introduction of more efficient and modern rice mills</b> <b>≥ 65% Milling Recovery</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>Distribution of rice processing complex (RPC) to qualified farmers' organization by the Department of Agriculture</b></li></ul>

# Reducing food loss/waste

## ➤ Research and development

Issues and concerns	Recommendation	Program/Action Plan
<ul style="list-style-type: none"><li>▪ Insufficient rice supply</li></ul>	<ul style="list-style-type: none"><li>▪ Design and development of a portable brown rice huller<ul style="list-style-type: none"><li>- capacity of 150kgs/hr</li><li>- milling recovery of 72.5%</li></ul></li></ul>	<ul style="list-style-type: none"><li>▪ Field testing of portable brown rice huller</li></ul>



wiseGEEK

wiseGEEK

# Reducing food loss/waste

## ➤ **Government Policies**

### **Republic Act of 9003**

- Ecological Solid Waste Management Act of 2000

**Purpose: To ensure the protection of public health and environment;**

**To set guidelines and targets for solid waste avoidance;**

**To ensure proper segregation, collection, transport, storage, treatment and disposal of solid wastes**

**Status: NOT fully implemented**



# Reducing food loss/waste

## ➤ **Government Policies**

### **Senate Bill 357 (Zero Food Waste Act)**

- an act providing for a system of redistributing and recycling food waste to promote food security
- focused on the generated food wastes from the manufacturing, processing, wholesaling, retailing and serving (restaurants, hotels, cafeterias) food products related businesses

# Reducing food loss/waste

## ➤ **Government Policies**

### Senate Bill 357 (Zero Food Waste Act)

#### Mechanism for implementation

##### *1. Food related business establishments (private)*

- submit to the Department of Social Welfare and Development (DSWD) and to the Department of Environment and Natural Resources (DENR) the amount of its **edible and inedible food wastes, organized in the manner of disposal including donation, composting and discarding**
- Enter contracts with food banks re: **redistribution of edible food wastes**
- Enter contracts with waste management and recycling enterprises re: **recycling of inedible food wastes into fertilizers or compost**

**REDUCE**

**REUSE**

**RECYCLE**

# Reducing food loss/waste

## ➤ **Government Policies**

### **Senate Bill 357 (Zero Food Waste Act)**

#### **Mechanism for implementation**

##### **2. *DSWD (government)***

- Coordinating agency between food business and food banks
- Provide guidelines and standards re: collection, storage, distribution of edible food donated to food banks

**Department of Agriculture  
PhilRice**

**Public**

Encourage  
responsible rice  
consumption

**Producers**

Encourage adoption of  
efficient production  
technologies

**NYR  
2013**

**Policy-makers**

Negotiate advocacy of policies  
supporting NYR goals

# Reducing food loss/waste

## ➤ Campaigns

### 1. Farmers/producers

- Encouraged to adopt efficient production technologies such as better use of seeds, better crop management, use of farm machines

# Reducing food loss/waste

## ➤ Campaigns

### 2. Consumers

- Encourage responsible rice consumption  
(consume just the right amount of rice)

2 tbsp rice wasted/day  $\approx$  330MT/year from the bits of  
rice they leave on the plate  
 $\approx$  Php 10B (USD 209M)

- Eat alternative food such as cassava, sweet potato and banana
- Encourage Filipinos to eat brown rice



# Reducing food loss/waste

## ➤ Campaigns

3. **Government sectors** in partner with social media
  - information dissemination through text messages, media technologies (TV, radio, internet)
  - inclusion in health curriculum of students, conference and exhibit themes focused on rice
  - Lobbying of policies - restaurants to serve half cup rice; restaurants to serve brown rice

# Reducing food loss/waste

## ➤ Implementing Policies, Ordinances



**HALF RICE.** Restaurants post a yellow tag at the door indicating that they serve half rice.

Photo by Sonny Pasiona

Source: <http://www.rappler.com/move-ph/issues/hunger/141196-half-rice-food-security>

**Ordinances:** *no leftover rice on plates; half-cup rice servings; serving of brown rice*

# Reducing food loss/waste

## ➤ Campaigns



Food guardian advocacy campaigns  
- spearheaded by the National Food Authority since 2015



**Be A Food Guardian! #IAmAFoodGuardian  
#1for100iNFAntry <http://FoodGuardian.me>**

# Reducing food loss/waste

## ➤ Campaigns



## Target Food Guardians

- **100M volunteers nationwide** i.e. youth, students and stakeholders who are passionate about social media, food security and safety

## Pledges of Food Guardians

- Not to waste rice;
- Help in ensuring that rice in all public markets is available, accessible, affordable and visible
  - prevent the NFA rice to be sold as commercial rice (higher price)
- Monitor the entrance of smuggled rice in the Philippines

# Summary and Conclusion

- 1. Identification of the magnitude of losses along the food supply chain should be done primarily as basis for addressing how to reduce these losses/waste.**
- 2. The concept of reduce, reuse and recycle is extremely vital in reducing food waste.**
- 3. Reducing losses/wastes is a systems approach; collaborative interaction of the non-government (producers, distributors, consumers) and government sectors are deemed necessary to arrest food waste.**



**MARAMING SALAMAT PO  
(THANK YOU)**

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## References:

- CALICA, G.B., K. LINGBAWAN, J. CEYNAS, M. DULAY, Z. CABANAYAN and R. DELA CRUZ.** 2016. Establishment of Benchmark Information on Postharvest and Mechanization on Selected Commodities: Cardava, Shallot and Bulb Onion. Paper presented to the 37<sup>th</sup> PHilMech In-house Review. May 23-24, 2016.
- FLORES, E. DELA CRUZ, R., ANTOLIN, M.C., TESORERO, D. and ANINIPOT, G.**2016. Benchmark Studies of Postharvest Handling of Eggplant and Sweet Potatoes. Paper presented to the 37<sup>th</sup> PHilMech In-house Review. May 23-24, 2016.
- SALVADOR, A.R., D. MIRANDA, V.E. CAMASO, R. GUTIERREZ AND R. PAZ.** 2012. Assessment of the State and Magnitude of the Paddy Grains Postproduction Losses in Major Rice Production Areas. PHilMech Journal Vol 2, No. 1
- SALVADOR, A.R., H.G. MALANON, G.B. CALICA, P.C. CASTILLO, R. VERENA AND R. RAPUSAS.** 2012. Quantitative and Qualitative Assessment of Corn Postharvest Losses.

[www.nfa.gov.ph](http://www.nfa.gov.ph)