



**Asia-Pacific
Economic Cooperation**

The Current Status and Strategies on Food Losses of livestock products in Chinese Taipei

***Yun Chu Wu
Professor
Department of Animal Science
Tunghai University
Taichung, Taiwan***

July, 2015



Contents

- **Current Status**
- **Food loss assessment**
- **Challenges**
- **Policies and Strategies**
- **Suggestions for APEC Cooperation**

Current Status-1/2

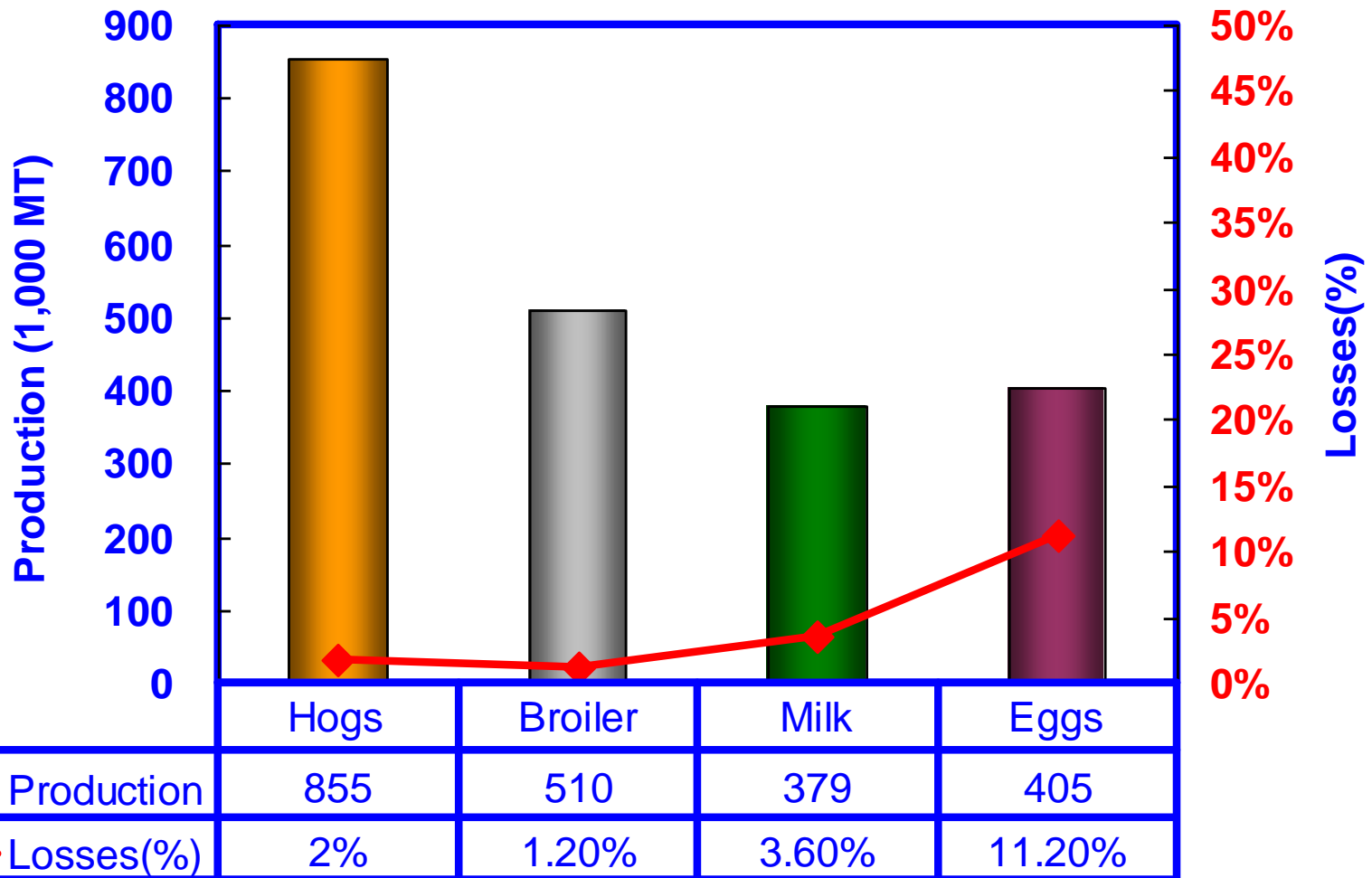


- **Size: 3,618,995 ha (2012)**
 - ground region (27.12%)
 - hilly & mountain region (72.88%)
- **Mainly animal industry:**
 - hogs
 - poultry (broiler & layer)
- **Farms numbers:**
 - hogs (8,137 farms)
 - poultry (5,716 farms)

Current Status- 2/2

Item	Value(%) (NT\$ billion)	Farmer(No.)	Livestock (10 ³ heads or birds)	Quantity (10 ³ m.t.)
Total	168.6			
Pig	76.8(45.6%)	8,137	5,545	855
Broiler	41.1(24.4%)	4,023	56,531	510
Egg	21.7(12.9%)	1,733	37,992	6.8×10 ⁹ pieces
Milk (cow, goat)	10.1(5.9%)	845	162	379
Duck	7.5(4.4%)	2,373	6,577	76

Food loss assessment



Food loss definition

- **FAO**

- Food loss means “any change in the availability, edibility, wholesomeness or quality of the food that prevents it from being consumed by people.”

- **U.S**

- Food loss represents the edible amount of food, postharvest, that is available for human consumption but is not consumed for any reason. It includes cooking loss and natural shrinkage (e.g., moisture loss); loss from mold, pests, or inadequate climate control; and food waste.
- Food waste is a component of food loss and occurs when an edible item goes unconsumed, as in food discarded by retailers due to color or appearance and plate waste by consumers.

- Canada 、 UK 、 EU 、 Taiwan(Chinese Taipei) ...etc.

Food losses on livestock products

	Production	Storage / Handling/ Transportation	Packaging / Processing	Distribution/ Marketing	Consumers/ Households
FAO (2011)	<ul style="list-style-type: none"> • Animal death during breeding. • For milk, losses refer to decreased milk production due to dairy cow sickness (mastitis). 	<ul style="list-style-type: none"> • Death during transport to slaughter and condemnation at slaughterhouse. • For milk, losses refer to spillage and degradation during transportation between farm and distribution. 	<ul style="list-style-type: none"> • Trimming spillage during slaughtering and additional industrial processing, e.g. sausage production. • For milk, losses refer to spillage during industrial milk treatment (e.g. pasteurization) and milk processing to, e.g., cheese and yoghurt. 	Losses and waste in the market system, at wholesale markets, supermarkets, retailers and wet markets.	Losses and waste at the household level.
UK Canada Chinese Taipei	<ul style="list-style-type: none"> • Overproduction • Poor Husbandry practices • Machine Inefficiencies • Severe Weather • Diseases • Poor feeding • Improper use of vet medicine 	<ul style="list-style-type: none"> • Shortened shelf-life • Unnecessary inventory • Losses in slaughter house to ensure hygiene/sanitation standards • Freezer burn due to improper packaging 	<ul style="list-style-type: none"> • High retail grading standards • Food trimming • Freezer burn form incorrect procedures or systems, often when simpler approaches would be more effective • Contamination • Temperature control failures induced by excessive piling 	<ul style="list-style-type: none"> • Packaging failures • Shrinkage or product recalls • Labelling errors • Cold-chain failures • Contamination • Poor stock rotation • Discards due to quality deterioration from improper procedures/facilities in traditional market 	<ul style="list-style-type: none"> • Prepared, Served, or Cooked too much⁷⁷ • Not used in Time • Date labelling • Poor shelf-life of fresh products after purchase • Low awareness of food handling or safety and optimal storage (including correct storage options, refrigeration maintenance or freezing practices)

Food losses on livestock products

- Stage of Production
- Animal death during breeding.
- For milk, decreased milk production due to dairy cow sickness.
- For egg, low quality shell egg due to hot climate.
- Improper use of vet medicine.

Food losses on livestock products

- Stage of Storage/Handling/Transportation
- Death during transport to slaughter house.
- For milk, losses refer to degradation during transportation.
- Shorten shelf-life, freezer burn.

Food losses on livestock products

- Stage of Packaging/Processing
- Trimming spillage during slaughtering and processing.
- For milk, losses refer to spillage during heat treatment and further processing.
- Food trimming, contamination, temp. control.

Food losses on livestock products

- Stage of Distribution/Marketing
- Losses and waste in the market system.
- Shrinkage of product.
- Packaging failures, cold chain failures.
- Contamination.

Food losses on livestock products

- Stage of Consumers/Households
- Losses and waste at the household level.
- Data labeling.
- Poor shelf-life after purchased.
- Low awareness of food handling and safety.

Challenges on meats



Summary on Food Loss (Meat Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

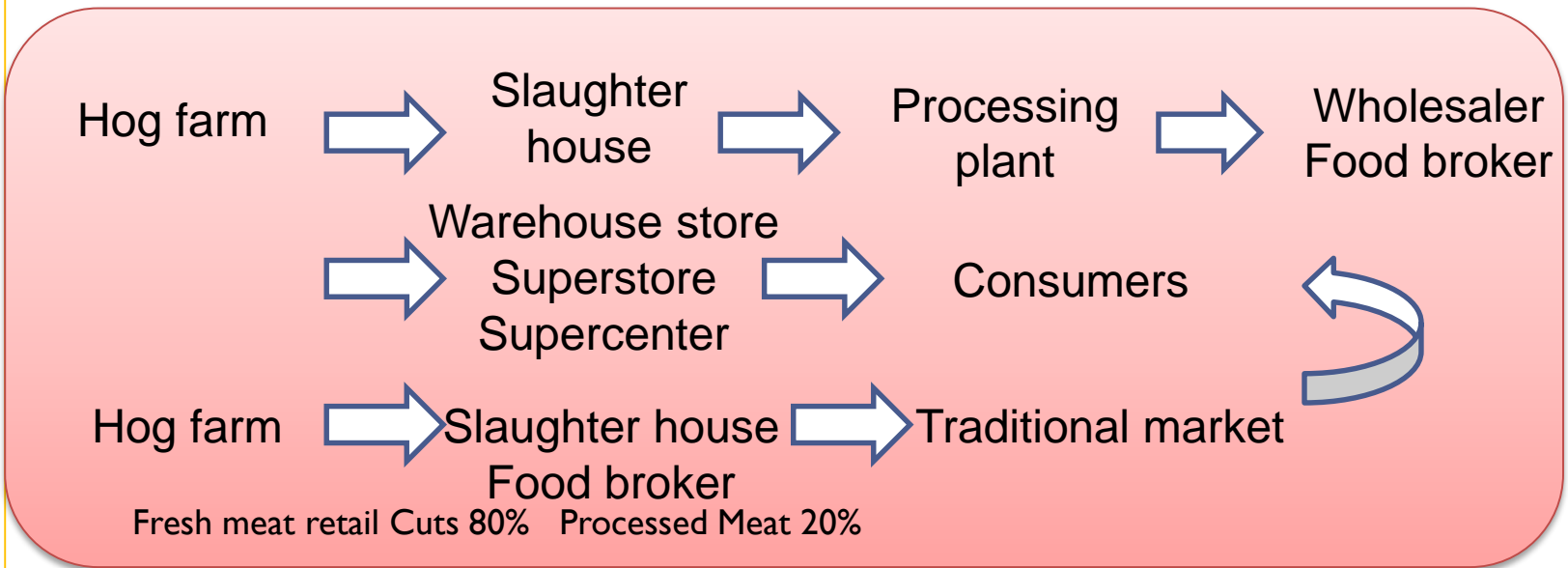
Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Reasons for Loss



Summary on Food Loss (Meat Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Reasons for Loss

- Food loss due to mishandling and storage
- Due to processing and packaging
- Due to marketing and distribution
- ...

Challenges on milk



Summary on Food Loss (Milk Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

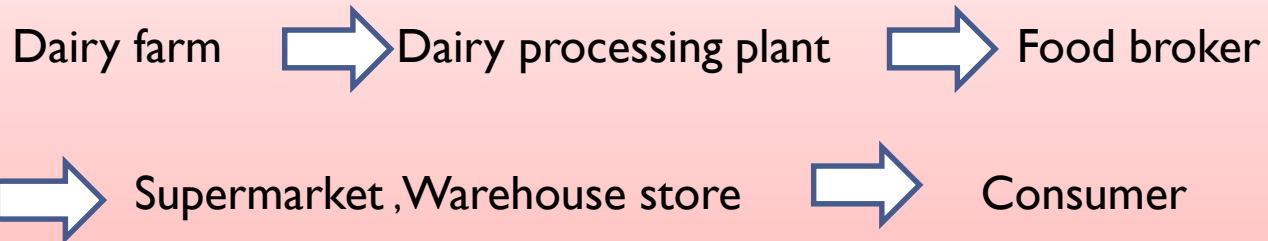
Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Reasons for Loss



Fresh Milk 70%

Yoghurt, flavored milk 30%

Summary on Food Loss (Milk Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Reasons for Loss

- Food loss due to mishandling of storage and transportation
- Due to product spoilage or deterioration caused by higher temperature ($>7^{\circ}\text{C}$) during cold chain storage
- ...

Challenges on eggs



Summary on Food Loss (Egg Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

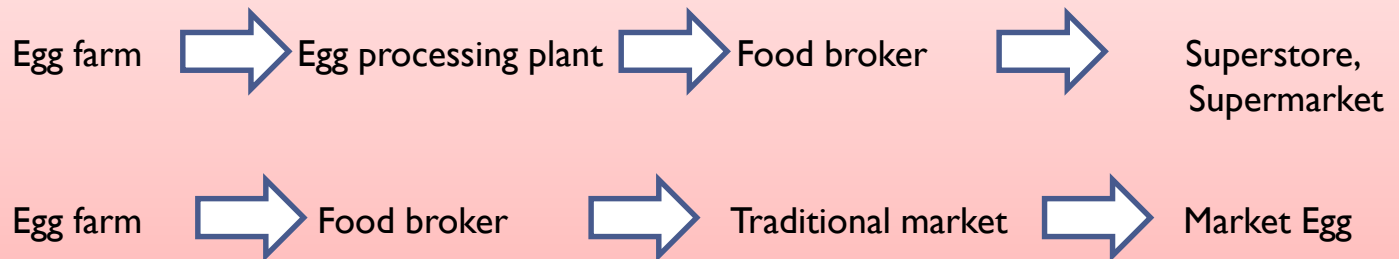
Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Reasons for Loss



Processed egg product < 5%

Summary on Food Loss (Egg Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Reasons for Loss

- Food loss due to mishandling during collection process and transportation
- Due to mishandling of storage temperature
- ...



Strategies on Food Loss of Animal Products during the Food Supply Chain

Strategies on Food Loss (Meat Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Solutions for Loss

- Follow proper collection and transportation
- Select proper breeds with a higher dressing percentage
- Avoid incorrect packaging and storage
- Educate consumer on a first come first served basis

Strategies on Food Loss (Milk Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Solutions for Loss

- Avoid cross-contamination
- Maintain proper temperature during storage, transportation and marketing
- Consider latest trends in marketplace, proper products for right people
- ...

Strategies on Food Loss (Egg Products) of Animal Products during the Food Supply Chain

Stage in product source or just left

Stage in transportation

Stage in processing and packaging

Stage in wholesale and retail

Stage in consumption at home or restaurant

Solutions for Loss

- Educate employees for proper SOP
- Aware storage temperature
- Produce liquid eggs from damaged eggs
- ...

Strategies on livestock products

Cold chain system

Shorten transport process

Diversified marketing channels

Reduce Food Losses



Suggestions for APEC Cooperation



Identifying Key Issues and challenges and deliberating on the strategies and action plans of cooperation among APEC economies

Convene annual seminar in each year with different themes of post-harvest losses and food wastes issues occurred on the food consumption to share experience among APEC economies



Thank You
for Your Attention!