

APEC Seminar on Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain of Fruits and Vegetables

Food Loss Prevention and Comparison in a Chinese Taipei Supply Chain



Presented by Wen-Ben Yang, CEO

Chinese Taipei

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Chinese Taipei, waste prevention is our habit



- Mountainous island with a population of 23.34 million
- From 1997 to 2012:
 - daily waste dropped from 1.14 kg/person to 0.40 kg/person
 - Recycling rate increased from 6% to 60%

Source: Environmental Protection Agency, Ministry of Economic Affairs

SINON[®]

Where We Are in the Food Chain





Sinon activities in Chinese Taipei

276 rural stores	5 production farms & greenhouses	1 ag-residue testing lab	1 food processing factory	41 supermarkets	3,000+ employees
333 agricultural technicians	36 contracted farms	22 refrigerated trucks 70 regular trucks	4 food distribution hubs	3 industrial kitchens, making 50,000+ hot meals/day	

Sinon activities overseas

Manufacturing or distribution organizations in Australia, Brazil, China, Indonesia, and Thailand

Preparation and Protection





 Our technicians work with farmers to plan their crop protection and nutrition program before each planting.

overuse of fertilizer = uneven maturity \rightarrow low quality, crop rejection up to 20%

correct use of fertilizer = even maturity → better quality & yield

Production





- Use of Micro-Nets to protect sensitive crops against birds, insects and diseases (insect vectors).
- Monitor pesticide application of contract farms, because excess pesticide residue is the top cause for crop rejection.



Handling and Storage

• Post-harvest produce is quickly chilled in cold storage facilities before transfer in refrigerated trucks to our processing center.

Farm	Ideal Supply Chain Temp	Avg. Shelf Life
Sinon (high-value produce)	4-8°C	14 days
Sinon (medium-value produce)	20-22°C	7 days
Others	25-30°C	3 days





- The number **one** reason for fresh produce rejection is excess pesticide residue.
- Rapid Bioassay of Pesticide Residues (RBPR) was developed in Chinese Taipei in 1985. We use RBPR to test fruits & vegetables in our Good Agriculture Practice (GAP) Laboratory.



Processing and Packaging





- We upgraded our fruits & vegetable sorting center. In Chinese
 Taipei, sorting is normally done after transport.
 Other Sinon
 - ConterSinonFacilitiesFacilityLoss %15%8%
- Cosmetically rejected produce are either pickled, canned ...

Pickled kimchi made from cabbage





Canned sweet corn made from Grade B corn

... or cooked into hot meals for local schools and businesses.







Distribution and Market





- We developed our own supply chain management system that forecasts demand based on weather, holiday, local festival, and historical data.
- Average loss rate in our 41 supermarket is 2% (measured in kg)



Over-ripe fruits from our supermarket are processed into juices.



What We Save/Lose in the Food Chain \mathbf{SINON}°

Preparation and Protection	Production	Handling and Storage	Processing and Packaging	Distribution and Market	Consumption				
Fruits & Vegetables									
Sinon Supply Chain (kg)*									
	13%	4%	8%	2%	unknown				
South and Southeast Asia (kg)**									
	15%	9%	25%	10%	7%				
Industrialized Asia (kg)**									
	10%	8%	2%	8%	15%				

Factors: Chinese Taipei occupies a small geographic area and is served by good road infrastructure. Sinon is a vertically integrated company with direct contacts with >50% of all farmers, multiple distribution channels and 60 years of experience in this market.

Source: *Sinon Corporation. ** "Global Food Losses & Food Waste – Extent, Causes and Prevention" FAO at Interpack 2011

Call to Action for Governments





- 1. Develop technology that can quickly measure pesticide residue on crops in the field.
- 2. Food traceability across borders by Good Agricultural Practice (GAP)
- 3. Unify Maximum Residue Limit (MRL) among member economies





Thank you