

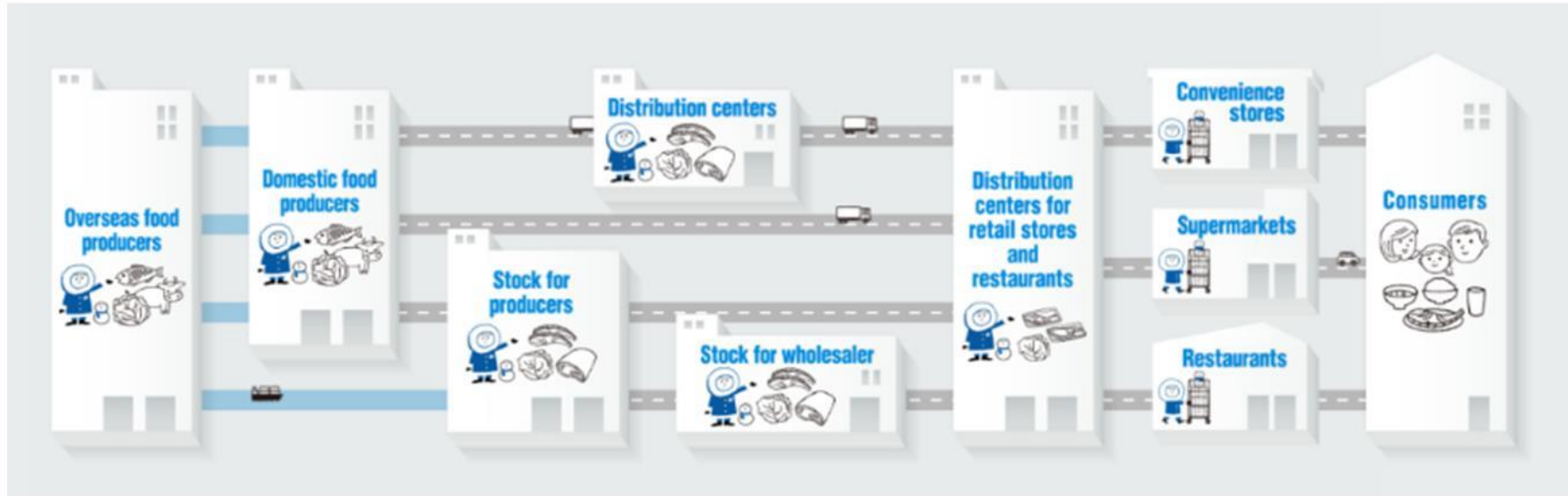
Cold Chain Logistics Management in Japan

**PPFS Seminar (Japan): Enhancing market entry
for MSMEs including smallholders in Asia-Pacific
region (6 Aug. 2018)**



Motoyuki Hazu
Nichirei Logistics Group Inc.
Executive Officer

Cold Chain Management



Cold Chain :

“a temperature-controlled supply chain, which is an uninterrupted series of storage and distribution activities to maintain a given temperature range.”

- Maintaining the controlled temperature and not breaking the “Chain”
- From “Farm to Fork”



Effect of Temperature on the Deterioration of a Non-Chilling Sensitive Commodity

Temperature (°C)	Relative Velocity of Deterioration	Relative Postharvest-Life	Loss per Day (%)
0	1	100	1
10	3	33	3
20	7.5	13	8
30	15	7	14
40	22.5	4	25

Cold Chain provides ;

- Extended Shelf-Life
- Improved Appearance
- Maintained Freshness and Flavor
- Reduced Deterioration

Source: The role of post-harvest management in assuring the quality and safety of horticultural produce, University of California and FAO (2003)

PRECOOLING (1st stage of Cold Chain)

- Product temperature is the main cause for Postharvest Deterioration.

“It is important to cool the products as quickly as possible after harvest.”

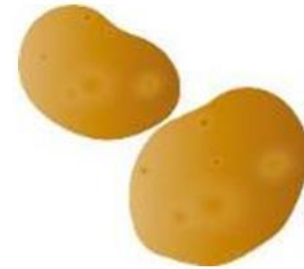
- Precooling Method rapidly lowers the temperature of freshly harvested produce and is most effective when done immediately after harvest to minimize spoilage. (ex. Room cooling, forced-air cooling, hydro-cooling, ice cooling and vacuum cooling)





Type	Temp (°C)	Humidity (%)	Storage Period
Lettuce	0~1°C	90~95	1~4 weeks
Sweet Corn	0°C	85~90	4~8 days
Cucumber	7~12°C	90~95	2 weeks
Eggplant	7~10°C	85~90	10 days
Tomato (Ripe)	0~7°C	85~90	1~4 weeks
Garlic	-1.5~0°C	70~75	6~8 months
Ginger	1.5~3.5°C	85~90	15 weeks
Onion	-3~1.5	70~90	6~9 months

Potatoes



Type	Temp (°C)	Humidity (%)	Storage Period
Potato (First Early)	3~4°C	85~90	2~3 weeks
Potato (Old, Consumption Purpose)	4.5~10°C	88~93	2~8 months
Potato (Old, Seeding Purpose)	2~7°C	85~90	5~8 months

- To minimize weight loss of the potatoes, the temperature has to be gradually dropped by no more than 0.5 °C daily.
- Based on the purpose, the storage temperature will also be different.





- Some vegetables harvested in the mornings have benefits in terms of both taste and life of the produce.
- Since some vegetables replenishes the moisture lost during the day, they are sweeter, crisper and juicier when picked during the early morning hours.
- By harvesting the produce when their internal temperatures are relatively low, the produce will have a longer shelf life and will also contributing to reducing the energy needed for pre-cooling.



Traceability of Food Products in Japan ① Meat

- The spread of the Global Mad Cow Disease, which also discovered in Japan in 2001, led the government to enforce regulations on the traceability of cattle meat.
- Every cattle was required to wear ear tags with Individual ID No.
- Producers had to submit data on the animal's:
 1. Date of birth
 2. Sex
 3. Breed
 4. Name/Address of owner
 5. Location of fattening
 6. Date of fattening commenced
 7. Date of slaughter



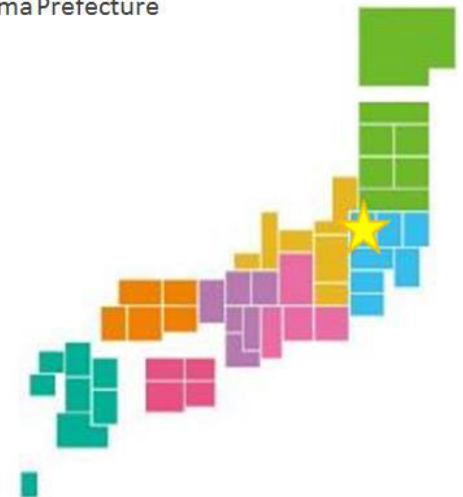
Japanese Supermarkets: Individual Identification Number for Meat Products



		1388 本体価格 (円) (税込価格 1500円)	
0 201606013887			
上州牛ステーキ用 (もも)			
個体識別番号			
①	0864396844		
②	加工日	⑥	保存温度 4℃以下
	18. 7. 18		1606 部門 22
③	消費期限	100g 当り	780
	18. 7. 20	(円)	
④	加工者	内容量	178
		(g)	
⑤	(群馬県産) (交雑種)		

1. Individual ID Number
2. Processed Date (Y.M.D)
3. Expiry Date (Y.M.D)
4. Producer's Name
5. Production Place *
6. Required Storage Temperature

* Gunma Prefecture



Japanese Supermarkets: Individual Identification Number for Meat Products

- Consumers can self-search the details of the meat they purchased through search using home computers through the “Search service of Individual Identification Information of Cattle” Website.
- Service is available both in Japanese and English.

<https://www.id.nlbc.go.jp/top.html?pc>



Search service of Individual Identification Information of Cattle

National Livestock Breeding Center NLBC

HOME >> Agreement confirmation >> Cattle Individual Identification Number Information

Cattle Individual Identification Number Information

The individual identification number needs to be ten figures

Search

[Invidious Identification] Jul 25, 2018

Individual Identification Number	Date of birth	Gender	The Individual Identification Number of maternal parent (※1)	Breed
0864396841	Jun. 14, 2016	Female	1412508153	Crossbreeds (Beef Cattle × Dairy Cattle)

[Transfer information]

Contents of transfer	Date of transfer	The prefecture where the cattle were raised		The name or title
		The prefecture	The location of the raising facilities	
1 Birth	Jun. 14, 2016	SAITAMA JAPAN	Honjyoshi	
2 Move-out	Aug. 11, 2016	SAITAMA JAPAN	Honjyoshi	
3 Carrying-in	Aug. 11, 2016	GLMMA JAPAN	Maebashi-shi	Maebashi livestock market
4 Sale	Aug. 11, 2016	GLMMA JAPAN	Maebashi-shi	Maebashi livestock market
5 Move-in	Aug. 11, 2016	GLMMA JAPAN	Maebashi-shi	
6 Move-out	Jun. 18, 2018	GLMMA JAPAN	Maebashi-shi	
7 Carrying-in	Jun. 18, 2018	GLMMA JAPAN	Tanayamuro-machi	Gunma-ken Shokuriku Oreshiuri Ship Co., Ltd.
8 Slaughter	Jun. 19, 2018	GLMMA JAPAN	Tanayamuro-machi	Gunma-ken Shokuriku Oreshiuri Ship Co., Ltd.

No.	異動内容	異動年月日	飼養施設所在地		氏名または名称
			都道府県	市区町村	
1	出生	2015.06.14	埼玉県	本任市	新井 明夫
2	移出	2016.08.11	埼玉県	本任市	新井 明夫
3	移入	2016.08.11	群馬県	前橋市	前橋畜産市場



Meat Stall at an Open Air Market



Traceability of Food Products in Japan

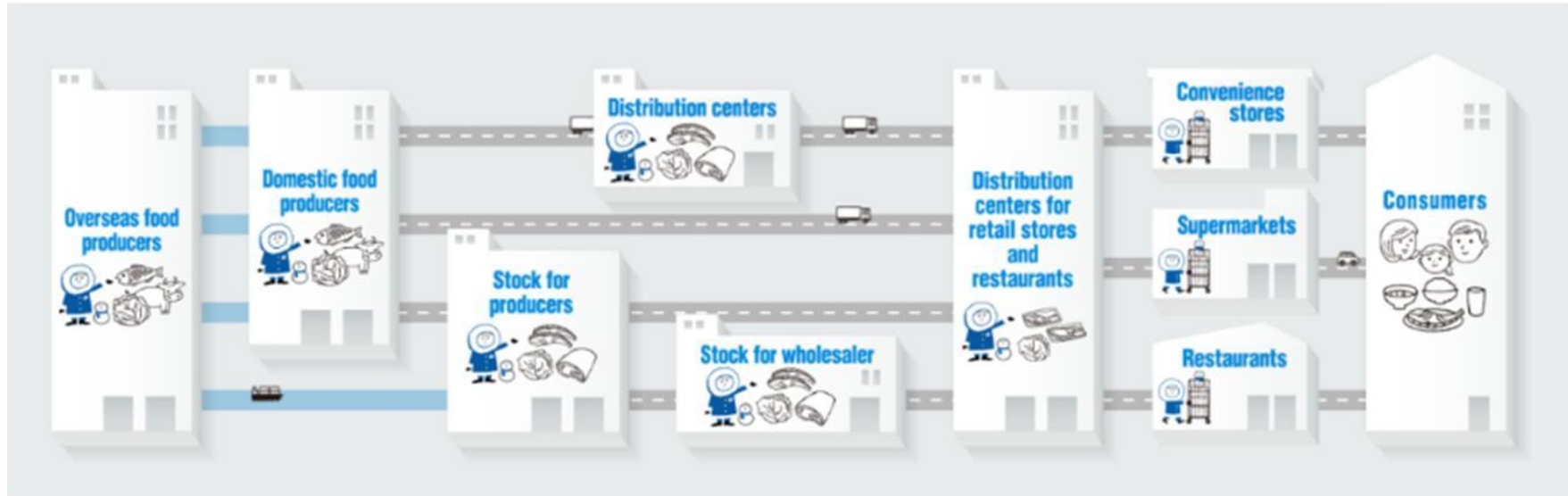
② Cut Vegetables



- **Raw Material Intake: Intake Log** has to be recorded for each lot received (date, supplier name, product name, place of production, quantity, rank and price).
- **Processing Center to Cutting Room: Traceability Log** which includes processing date, product name, intake date, place of production, quantity and name of worker.
- **Packing Room: Labelling** will be placed on the packaging (product name, raw material names, place of production, volume, expiry date, manufacturing date, storage method, producer name and address).
- **Shipment: Shipment Log** recorded for each location (date, destination, product name and quantity).



Flow of Information



- Flow of Information is another key factor in logistics management.
- Knowing the exact location and quantity of the products within the Supply Chain, in combination with the ability to narrow down to the source of each raw ingredients will ensure timely response to any emergency situations.
- **“Top-Quality Food from Producer to Consumer”**



- Traceability is currently being applied to various food products in Japan.

Egg Product with the Faces of Producers



- It says that Mr. & Mrs. Nakamura proudly produced these eggs in Iwate Prefecture



THANK YOU

