

5. The Hog Raising Inprovement Manual

The notes about hog raising

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2010/5/11

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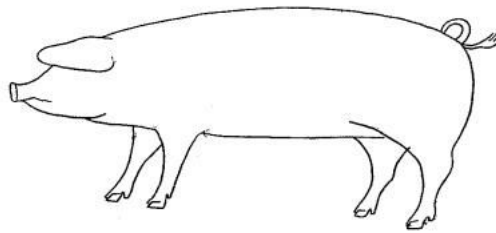
1. The feature of the body of a pig

The body of the pig is ideal as livestock for meat production. The head, the neck and the shoulder are small and back side such as the back, the hips, and ham are well developed. and the length is also long, so it looks like a rocket.

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The shape of pig



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2. The feature of an outward form

The skin of a pig is thick, and sweat gland degenerates and has not achieved the function. Thickly and bristly hair does not holds body temperature.

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3. Cold environment and hot environment

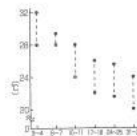
- The small baby pig with little fat has weak to cold environment
- Matured pig is weak to hot environment

→ therefore it is necessary the protection measure against hot temperature for matured pig and it is necessary to prepare cold protection measure for baby pig.

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4. The change of adequate temperature for pig



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5. Danger of cold environment

If the environment temperature around the baby pig is low, since the baby pig rests in contact with mother pig to seek warm environment, death from pressure will happen.

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Death causing mothers pressure is the most serious problem



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6. Nature of grouping and a sense of rivalry

- Eating competition is very strong, therefore, it is important that the group number not to make large. 7 to 15 heads are advisable.
- If the numbers are too many, it is difficult to maintain the uniform growing rate.
- Even if it crowds together, eyes should reach to every animal.

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7. Razing environment and management

- the temperature in a pigpen, keeping at 20 to 24 °C is an ideal.
- The appetite of the pig declines in the summer heat, and average of body weight gain will fall.
- On the other hand, when cold is severe, the amount of feed intake increases. When room temperature is low (5-10 °C), it is good to make feed the increase of 10 to 20%.

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8. The lifetime of a pig

- Although the weight is only 1.2kg-1.4 kg at the time of birth a pig, since it grows up into about 100 kg in about 6 months.
- The meet of color and the taste become good after five months old.

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9. The feature of breeding.

- 2.0 to 2.3 times of breeding and farrowing is possible in one year. Therefore, if the breeding management is high capability and sufficient, the pigs production can be carried out ten times in five years. On an average, it is from six times in three years.

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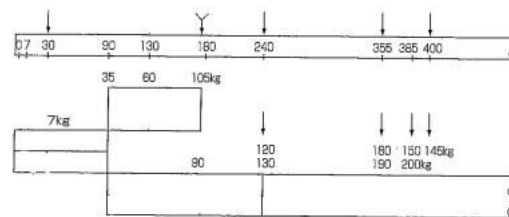
The number of nipples are also important



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10. The life cycle of pig



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11. Physiology and breeding technology of a baby pig

- If the good management did not have after delivery, the pigs became mal-nutrient condition in many cases. Moreover, the death accident of the baby pig has even much three-day age. As for the cause, death from pressure by mother pig, starvation, weakness, diarrhea, cold, etc. are raised.

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- Although it is the almost same 39 °C as mother pig right after birth, if the body of a baby pig is exposed to room temperature, it will begin to fall quickly.
- Before the baby pig arrives at the breast of mother pig by itself, it will take 20 to 30 minutes.

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- If nursing is begun, body temperature will rise quickly. And since subcutaneous fat will also be accumulated if it will carry out after birth for one to two days, it is stabilized by 38 to 39 °C body temperature.

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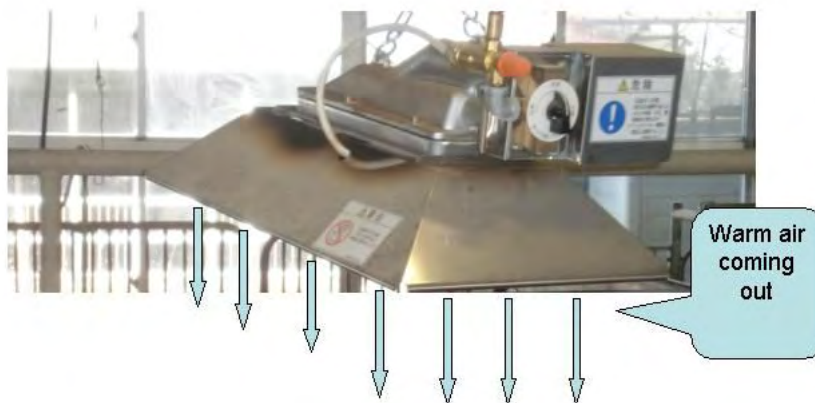
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- However, till after 6day old, as for a baby pig, since the regulation function of body temperature is low, it is desirable to give keeping-warm equipment to a baby pig regardless of a season, and to manage in a warm environment.

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A heater for baby pigs



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12. Give initial milk is important

- In order to obtain an immune antibody certainly give initial mother's milk. In normal mother's milk contains only 5.1% of the protein, but initial milk has 19.8%.

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13. Physiology of a fattening pig, and breeding

- The age of 4 to 5 months, fundamental growth of the body completed mostly. It is able to change the speed of growth depending on how to give nutrition.

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Final stage of fattening



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The growing difference between feed value

- If the first half of a fattening period and the second half give feed with high nutritive value growth can be done early for a short period of time. On the other hand, if kept feeding with low nutrient whole period, compared with high nutrition fattening until it reaches the 90 kg, it will be 100 days or more behind.

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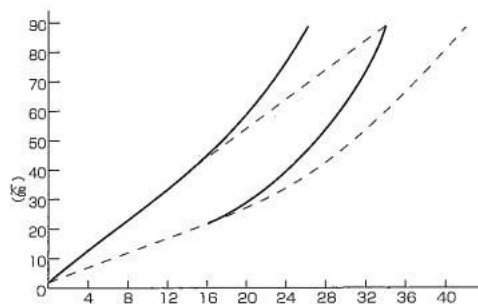
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- When the pigs grow up with high nutrition feed, it is tendency that meat tightness to worsen and too fat. Therefore good quality of meat is able to gain with the feed of low nutrition comparatively.

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Nutrient value and growing



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Self feeding feeder



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Typical pig fattening in Kazakhstan



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Typical pig feed in Kazakhstan



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14. Physiology of the breeding pig.

- The adequate age of first mating is 8 to 9 month old, and is 120-130 kg. If first time mating is too early, there will be few deliver pigs and the baby pig will become small in many cases.

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The detection of farrowing day

- If there is no sexual excitement for 21 days after mating, it can be judged that it became pregnant. If pregnancy is confirmed, the mating day and the farrowing date will be recorded. The gestation period is for 114 days.

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15. The feeding to pregnant pig

- During the middle of pregnancy, it is necessary to care about the way of feeding.
- The pregnant pigs should not become thin too much and should not become overweight for an embryo's growth and in order to recover the last delivery exhausted by nursing.

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- Since an embryo grows quickly the second half of pregnancy, increase the amount of feed.
- Just before a delivery reduces the amount of feed, in order to give birth lightly. The half amount is enough at the delivery date.

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16. Making compost



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**Mt Fuji is waiting for you, then see you in
Japan Thank you!!**

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6. Material of Food Processing Seminar (Dairy Products)



Food processing seminar (Dairy products)

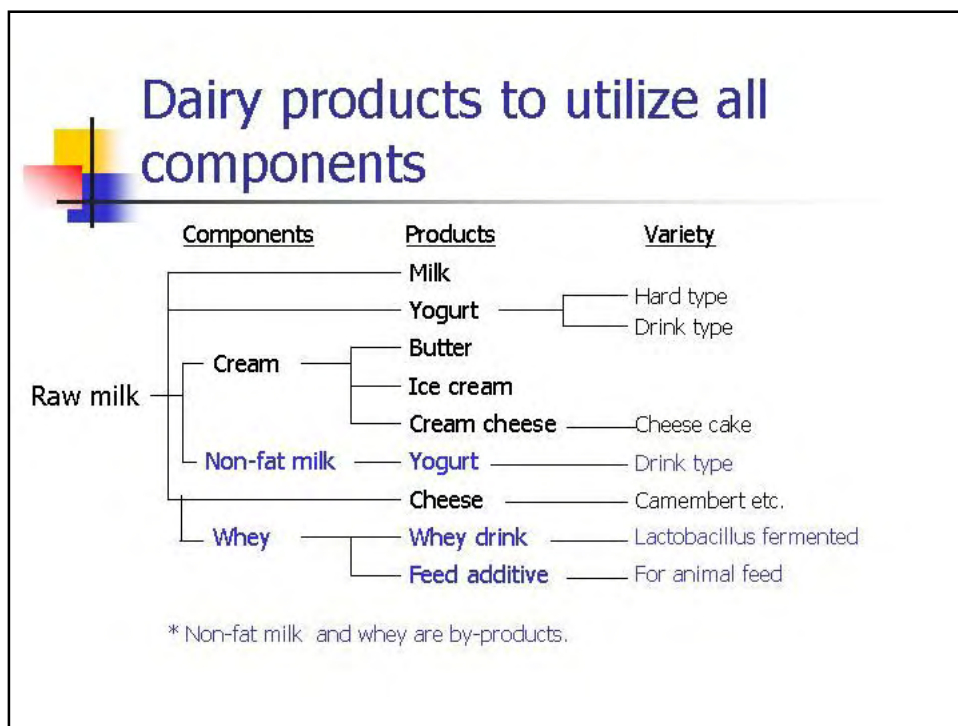
JICA study team
K. Ueno
March 11, 2010






Added value of dairy products in Japan

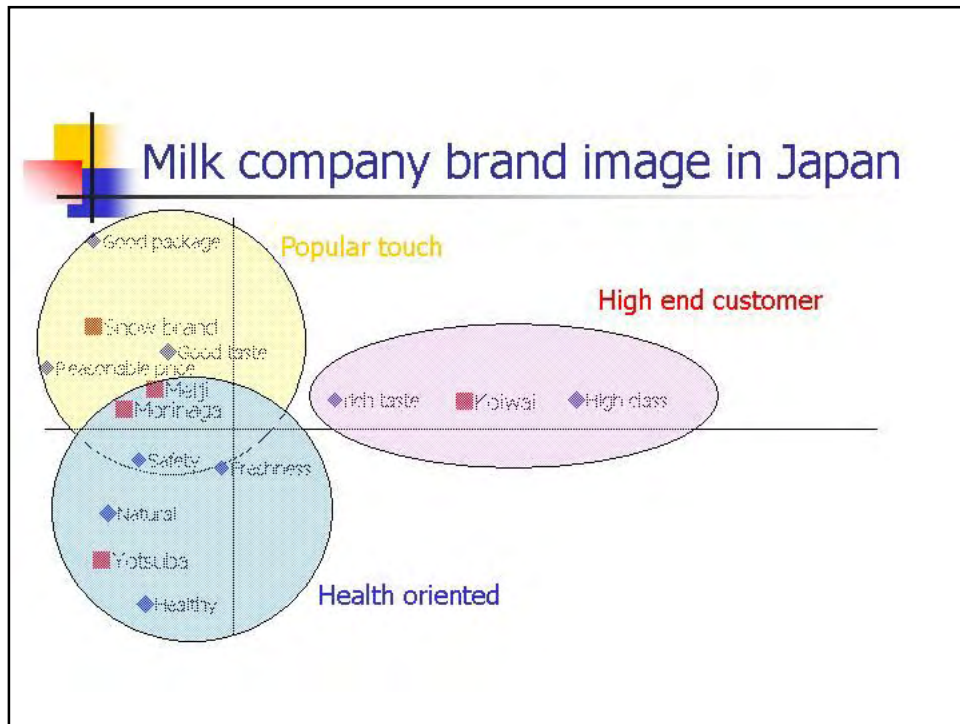
Product	Price (US\$)	Unit price (US\$/1kg) A	Used raw milk (kg/1kg)B	Added value A/Bx0.9
Milk	1.9-2.6/L	1.7-2.6	1kg	1.9-2.9
Yogurt (Hard-type)	2.8-3.3/500g	5.6-6.7	1.8kg(SNF: 15%)	3.4-4.2
Yogurt (Drink-type)	2.8-3.9/L	2.8-3.9	1.8kg(SNF: 15%)	2.2-3.1
Cream(40%fat)	4.2/200g	21.1	10kg	2.4
Butter (85%fat)	3.9/200g	19.4	21kg	1.0
Cheddar cheese	1.9-2.8/100g	18.9-27.8	10kg	2.1-3.1
Cream cheese(40%fat)	4.0/200g	20.0	10kg	2.3
Camembert cheese	3.9/200g	19.4	9kg	2.4
Emmental cheese	8.9/100g	88.9	10kg	10
Rock fall cheese	8.9/100g	88.9	10kg	10

SNF: Solid Non Fat, raw milk price: 0.9US\$/kg, 1US\$=90Yen



Main milk products in Japanese companies

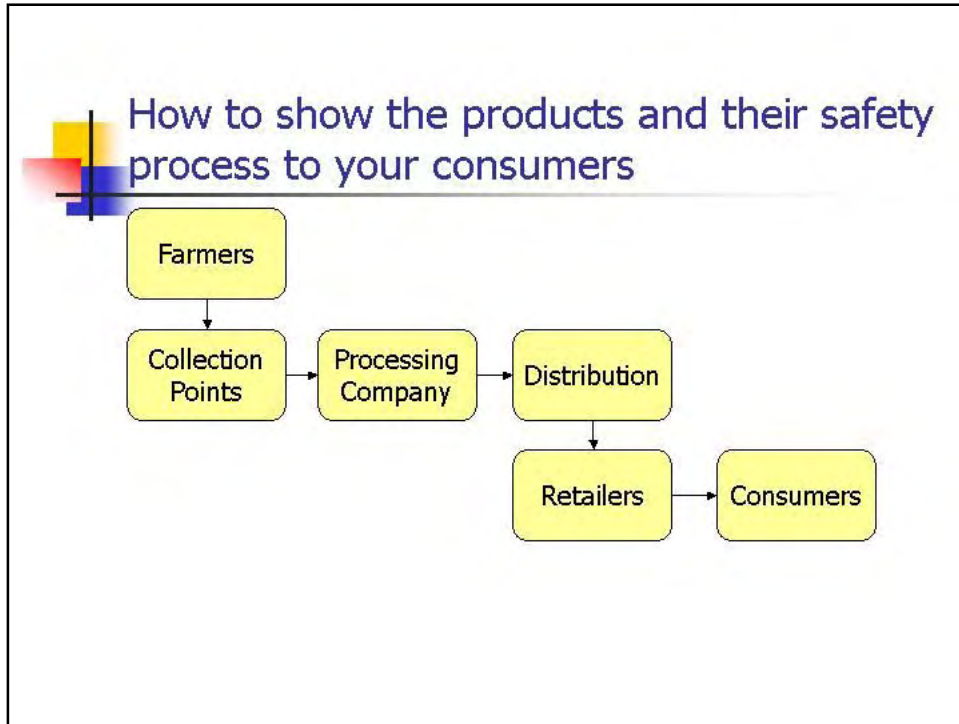
Company name	Milk product	Product name and its price	Main markets	Remarks
Meiji Dairies Corporation (One of the big companies in Japan)		Natural taste (Good taste milk) 2.0-2.8US\$/L	Supermarkets CVS Outlet store Home delivery system	Capital: 3.7 M US\$ Sales amount: 53.5M US\$
Yotsuba Co., Ltd. (Hokkaido origin company)		Tokachi Morning milk Yotsuba milk 2.7US\$/L	Supermarkets Group buying direct from Hokkaido	Capital: 0.3 M US\$ Sales amount: 10.6 M US\$
Koiwai Dairy Product		Koiwai milk 2.8US\$/L	Limited supermarket Home delivery system	Capital: 0.2 M US\$ Sales amount: 4.0 M US\$



Recognized butter of Petropavlovsk in Astana market

1. Why butter of Petropavlovsk ?
2. How to improve the technology ?
3. How to show and sell to the markets as Brand?

The photograph shows a refrigerator shelf with several butter products. There are two large blocks of butter, one labeled '750' and another labeled '450'. There are also several smaller packages of butter, some in yellow and green packaging. The products are arranged on a white shelf.



Products specification for strengthening competitiveness (1)

1. Butter

North Kazakhstan Brand butter

- Canned or tube packaging to protect butter from mold
- Need hygiene consideration of packaging area



2. Cheese

Cheese paste: to collect protein by Ultra filtration from whey, by-product of cheese production, to make ice cream and cheese paste

Fresh-type cheese production with high water contents

Low cost cheese production with new lactobacillus species

Products specification for strengthening competitiveness (2)

3. Fermented milk

Mixture drink of milk, cereal
and lactobacillus



4. Ice cream

Soft cream mix



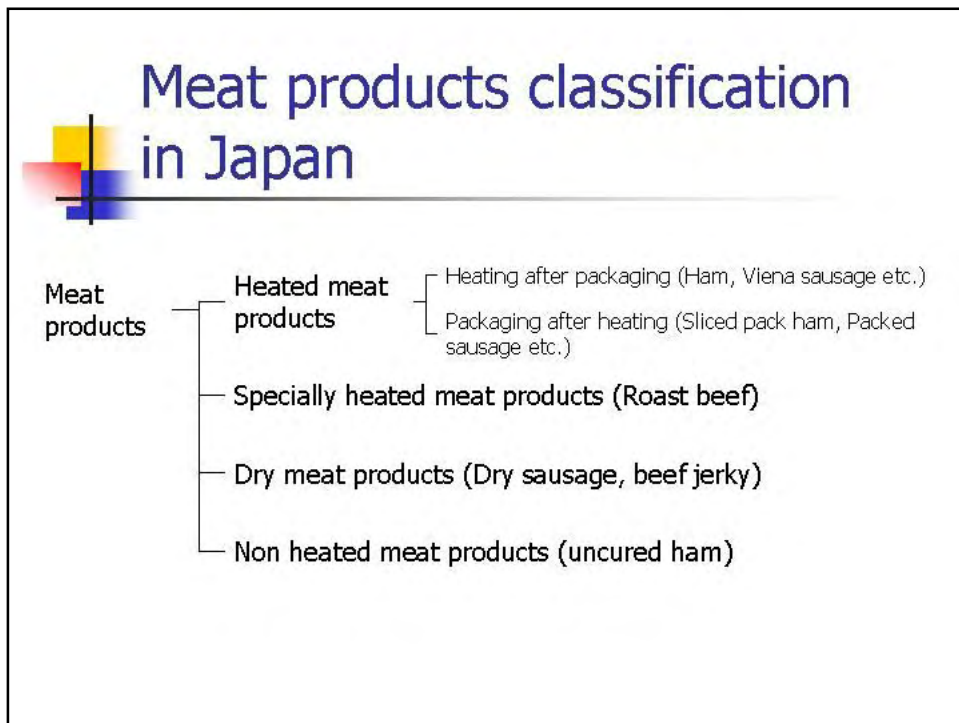
Dairy machinery of Japan

For Milk production who has English website

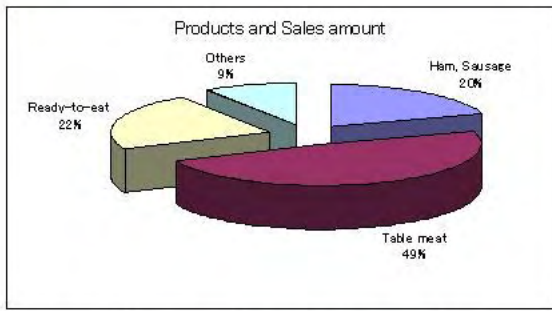
- Hisaka Works, Ltd.: Sterilizer, Concentrators
- Iwai Kikai Kogyo Co., Ltd.: Heat Exchanger, Pasteurizer, Sterilizing system
- Izumi Food Machinery Co., Ltd.: Ice Cream machine, Aseptic System
- Mayekawa Mfg. Co., Ltd.: Cooling & Freezing Equipment
- Mitsuboshi Belting Ltd.

(The Japan Food Machinery Manufacturer's Association)

7. Material of Food Processing Seminar (Meat Processing Products)



Meat processing industry in Japan



Gross profit margin rate in one company

Products	Gross profit margin rate
Table meat	4.4%
Ham and sausage	28.3%
Ready-to-eat	20.2%

Products and Sales amount in big four companies of Japan (2006):
 Nippon ham, Ito ham, Prima ham and Marudai ham

Meat processing products sample in Japan (1)



Bone-less ham



Thin slice ham (47g, ¥198)



Uncured ham



Vienna sausage (150g, ¥416)



Boronia sausage

Meat processing products sample in Japan (2)



Gyoza dumpling (¥3,000)



Bacon pizza with cheese
(230g, ¥298)



Lunch box, Sukiyaki
Using slice beef (¥295)

Meat processing products sample in Japan (3)



Ishikari-river bacon
(400g, ¥1,470)



Process meat gift set
(¥ 6,250)



Viena sausage
containing garlic
(250g, ¥945)

By-products utilization in Japan

1. Lard

Edible Fat and Oil after trimming fat off pork

For catering industry and restaurants

2. Feed material

To reduce meat residues after meat processing

3. Natural condiments from livestock products

Raw material for soup, sauce, seasoning oil etc.

4. Dietary supplement (Collagen)

< Example of Nippon Ham >

Sausage production factory in Japan (1-1)



Washing hands
before entering
working area



Disinfectant of hands
(Sodium hypochloride)



Silent cutter
Made in Germany

Sausage production factory in Japan (1-2)



Vacuum stuffer



Stuffing



Hanging sausages

Sausage production factory in Japan (1-3)



Smoking



Cooling with shower



Vacuum packaging

Sausage production factory in Japan (2-1)



Roller to remove dust

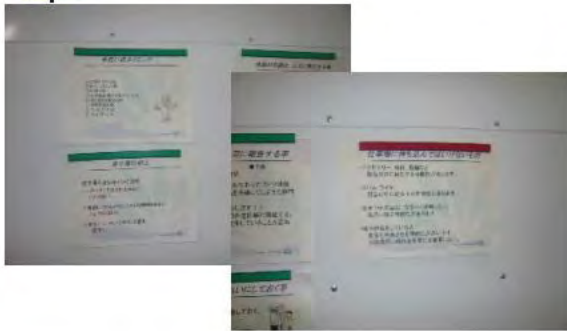


Packaging machine for uncured ham



Uncured ham

Sausage production factory in Japan (2-2)



Caution for workers



Air shower



5S Process in food factory

- Seiri: Throw away all rubbish and unrelated materials in the workplace
- Seiton: Set everything in proper place for quick retrieval and storage
- Seiso: Clean the workplace
- Seiketsu: Standardize the way of maintaining cleanliness
- Sitsuke: Practice Five S daily – make it a way of life
- And one more S !



Products specification for strengthening competitiveness (1)

Ham, Sausage

Slice packaged sausage: 250g, 500g, 750g: heating after packaging

Several kinds of sausage:

- Viena sausage, Frankfurt sausage, Boronia sausage, Cooked sausage



Products specification for strengthening competitiveness (2)

2. Ready-to-eat food

Packed perimeni with special meat

Pizza with cheese : collaboration with dairy company



Meat processing machinery information

Meat processing company list

Gyoza Dumpling machine: Toa Industry Co., Ltd.

(Fully Automatic Gyoza Manufacturing Machine, Small Type Gyoza Manufacturing Machine, Bud Shape Encrusting Machine)