ISSN 0370-2731/2002 Proceedings of the New Zealand Society of Animal Production 62: 128-132

# Organic beef in Japan – is there any room for New Zealand?

T. OZAWA[1], N. LOPEZ-VILLALOBOS[2] AND H.T. BLAIR[2]

[1]Department of Animal Science, Nippon Veterinary and Animal Science University, Tokyo, 180-8602 Japan

## ABSTRACT

In September 2001, an incident of mad cow disease (bovine spongiform encephalopathy) occurred in Japan. Japanese people now seek improved safety of beef meat and organic beef might fulfil part of this requirement. In this study, interviews were held with owners of a pasture-based beef production farm on the island of Hokkaido in Japan, which is widely recognized among the Japanese consumers as a 'healthy and ecological'. The farming system is pasture-based, raising Hereford, Angus and crossbreeds, rather than the traditional Japanese Black breed. It is necessary to use grain-based concentrate feed when the animals are being finished. These feeds are fully imported, non-genetically modified, and 'post harvest free feed (PHF)'. Feeding imported organic grains to cattle for fattening is contrary to the Codex organic regulations settled in 2001. Therefore, it would appear difficult to achieve domestic organic beef meat production in Japan. There are opportunities for New Zealand beef exporters to expand their market in Japan. To achieve this expansion, there are two major issues to address. Firstly, intensive market promotion to the Japanese consumer will be necessary using New Zealand's "clean and green" image and pasture-based finishing systems. Secondly, research work is necessary to develop special beef commodities which fit the Japanese consumer's taste.

**Keywords:** organic beef production; Japan; New Zealand; beef market.

## INTRODUCTION

In September 2001, the first mad cow disease incident occurred in Japan (Annonymous, 2001). Mad cow disease formally know as bovine spongiform encephalopathy (BSE), has been linked to the fatal variant Creutzfeldt-Jakob disease in humans, which has killed around 100 people in Britain since it broke out in the mid 1980s (Anonymous, 2001). Following this single incident, beef meat consumption among households rapidly declined for fear of infection. Total fresh meat consumption per person per month in October 2000 was 1,090 g. After the incident of BSE in 2001, the corresponding figure for October 2001 was reduced to 1,013 g (93% of previous year). Per capita total beef intake was 256 g in October 2000, but decreased to 108 g in October 2001. On the other hand, pork and chicken intake was increased from 429 g to 490 g and from 307 g to 355 g, respectively, from October 2000 to October 2001 (Statistics Bureau & Statistics Centre 2001).

To recover these decreases in beef meat consumption in Japan, it is now necessary to establish a beef meat supply system that guarantees healthy and safe meat to Japanese consumers. From the viewpoint of meat safety, organic beef production is becoming an important topic in the mass media and for consumers in Japan. These issues also have to be addressed for imported beef, given its important role in the domestic Japanese beef market.

The size of Japanese organic food market (including imported organic commodities) is thought to be 70 to 80 billion yen (1.3 to 1.5 billion NZ$, 55 yen =1NZ$). There are no official statistics for the organic food market because of lack of organic food standards settled by MAF. USA has the biggest organic food market in the world and its size is nearly seven times larger than Japan. However, the organic food market in Japan is one of the expanding sectors within the overall food market (Fujii, 2002).

This paper will describe the production system of a pasture-based claimed 'healthy and ecological' beef production cattle farm in Hokkaido Japan, which looks forward to producing 'organic' beef in the future. We also discuss what the New Zealand beef industry should consider and act on to expand its market in Japan.

## MATERIALS AND METHODS

Interviews were held in November 2001 with the supervisor of a pasture-based beef production enterprise (in Wakkanai city, Hokkaido, Japan) to research its beef production system and to obtain statistical data. We also used data published by the Ministry of Finance Japan (2000) for statistics regarding beef consumption in Japan. Data from the Japan Meat Information Centre (1999) were used to analyse consumer preferences when purchasing beef. Information from United States Meat Export Federation (2001), Meat & Livestock Australia (2001) and New Zealand Beef Japan (2001) were used to describe some management practises that beef producers from the United States, Australia and New Zealand, respectively, are implementing for beef production targeted to Japan.

## RESULTS

### Organic beef production in Japan

The Soya Cape Beef Ranch (SBR) is located at the northern end of Japan in the Wakkanai city district, Hokkaido. Its latitude is 45 degrees 31 minutes north and it has a very severe climate. Heavy snow accumulates in winter and even in summer, the average temperature between May and October is 17°C. Under these circumstances, production of rice or other agricultural commodities cannot be achieved. More than 90% of farms in the Wakkanai city district are dairy farms, because pasture can be produced in this area. Pasture-based dairy farming is rarely seen in Japan except in the northern part of Hokkaido including the Wakkanai city district.

SBR was established in 1983 with public-service cooperation. There are 15 members (equity participants)

[2]IVABS, Massey University, Palmerston North

**TABLE 1:** Outline of the Soya Cape Beef Ranch business enterprise[1].

| Land use (ha) | | | Cattle herd size | | |
|---|---|---|---|---|---|
| | | | **Breeding** | **Fattening** | **Total** |
| Meadow | 420 | | | | |
| Pasture | 550 | Aberdeen Angus (AA) | 257 | 0 | 257 |
| Meadow & pasture | 200 | Japanese Black (JB) | 8 | 0 | 8 |
| **Sub total** | **1,170** | Male JB • Female AA | 174 | 183 | 357 |
| Housing and sheds | 30 | Male JB • Female Holstein | 649 | 1,603 | 2,252 |
| Uncultivated wasteland | 380 | **Total** | **1,088** | **2,044** | **3,132** |
| **Total** | **1,580** | | | | |

[1]Interview with the supervisor of Soya Cape Beef Ranch in 2001.

Note: 'Meadow' is not used for grazing, but is used for hay or silage making.
'Pasture' is used for grazing. 'Meadow & pasture' is used for both purposes.

in this cooperative (seven local governments in Soya District and eight agricultural cooperatives). An outline of the SBR ranch enterprise is given in Table 1.

Most of the land used in SBR is meadow and pasture (1,170ha) and the total herd size was 3,132 cattle at the time of the interview. SBR is one of the biggest cattle ranches in the nation. The herd size is 123 times larger than the Japanese average (25 cattle/farm), even much more than the Hokkaido or Soya District averages (129 cattle/farm in Hokkaido, 157 cattle/farm in Soya district). Pasture area per cattle beast is 0.4 ha, which is also larger than the Japanese average (0.03-0.09 ha per cow). It is common in Japan to use concentrate feed instead of pasture for beef fattening to ensure carcass marbling. However, SBR is using a pasture-based system for the raising cattle, which is very rare in the Japanese cattle raising system and also it takes advantage of the ranch's geographical location. The production standards of 'Healthy and Ecological Beef Scheme' in SBR are outlined in Figure 1.

**FIGURE 1:** General principles of 'healthy and ecological' beef production at the Soya Cape Beef Ranch.

| Principles | Achieved by |
|---|---|
| Healthy Pasture | - Maintaining bountiful soil and its microorganisms.<br>- Minimize environmental loading (ecological).<br>- Taking the initiative in promoting wind power generation (ecological). |
| ↓ | |
| Wholesome and Tasty beef | - Naturally grazed calf, animal health and water.<br>- Use of non-GMO and PHF feed for finishing. |
| ↓ | |
| Healthy Animals | - Mainly sold to a consumer cooperative.<br>- Interaction with a member of the cooperative by having them visit the farm and staying at a cottage at SBR.<br>- Mutual understanding of beef supply and demand. |

Source: Interview with the supervisor in Soya Cape Beef Ranch in 2001.

SBR is convinced that the pursuit of healthy and ambrosial beef and pasture production will benefit both the producer and consumer. Therefore, they settled on the standards for beef production set out below.

**The standards of beef production at SBR**

1) Management and environment for raising cattle.

- Cattle are not to be tethered, except temporarily for hygiene checks or disease treatment.
- Cattle sheds need to fulfil the required conditions to have enough room for the cattle to lie down. During the nursing stage from 1 to 6 months of age, – more than 4 $m^2$/head, rearing stage from 7 to 12 months of age – more than 6$m^2$/head, finishing stage (older than 13 months of age) – more than 6$m^2$/head.
- All cattle sheds need to have enough natural litter for cattle comfort. The quantity of the litter depends on cattle body size.
- Sufficient pasture for calf cattle to graze for as long as possible. Up to 12 months of age (calf stage) - Repletion by free grazing plus 1 kg/day silage feeding from 8 months of age. Grazing is held spring to autumn. From 13 to 17 months of age (heifer stage), -

hay feeding 2 kg/day and grass silage 2 kg/day, no grazing. From 18 to 26 months of age (finishing stage) – hay feeding 1 kg/day, no grazing.

- All water fed to the cattle should be from the municipal fresh water supply.
- No chemicals except burnt lime ($CaCO_3$) are to be used for sterilizing.
- No agricultural chemicals or pesticides should be used anywhere on the farm. There are no practical examples of using organic pesticides or weedicides on stockbreeding farms in Japan.

2) Cattle breeds and reproduction.

- Japanese Black (JB), Aberdeen Angus (AA), male JB x female AA and male JB x female Holstein breeds are permitted to be raised on this farm.
- The methods of reproduction are artificial insemination and natural crossing. Genetic modification or cloning is not allowed. Embryo transfer is allowed, but never adopted because of financial reason.

3) Nutrition for the cattle.

- Most of the pasture is produced in the SBR. The proportion of the pasture should be more than 30% of total DM feed intake. Purchase of hay is allowed when the harvest is decreased by any unpredictable weather. On such occasions, imported hay, rice straw and barley straw are not allowed to be used.
- Pasture is fed to the cattle in the form of fresh grass by grazing, hay or silage.
- Any concentrate feed fed to the cattle should be as follows:
  Corn or maize used in the concentrate feed should be from non-genetically modified organisms (non-GMO) and post harvest free (PHF*) products.
- Post Harvest Free (PHF) – It is common to use– agrochemicals after harvesting to make them more insect proof when shipping them long distances. From the aspect of 'free' from consuming these agrochemical contained products, Japanese consumer tend to purchase PHF based meat products. However, PHF feed based products are generally more expensive than non-PHF products because they need to be maintained certain temperature to prevent decomposition when to transport.
- Concentrate feed is used for fattening after 13 months of age until finishing (26 months of age, 740 kg live weight). 10 kg/day of concentrate feed is fed to each cattle. Nutrition information of the concentrate feed are 1) crude protein – more than 12%, 2) crude fat— more than 2%, 3) crude fibre – less than 12%, 4) crude ash— less than 8%, 5) calcium – more than 0.3%, 6) phosphorus – more than 0.3%, 7) digestible crude protein (DCP) – more than 10%, 8) total digestible nutrients (TDN) – more than 72%. 62% of the feed is consisted by grain (maize, barley and wheat), 36% of the ingredients are from brans (rice and wheat) and the rest of 2% are from molasses, salt and calcium carbonate. No feed additives such as vitamin A, D and E pellets or sodium hydrogen carbonate (to stabilise PH in rumen) are allowed to feed fatting cattle.
- The name, ingredient, purchaser, producer and country of origin of the feed must be known.
- Nutrition for calves should be provided by natural cows milk either suckling or bucket fed.

*The production data of SBR in comparison with Japanese standard*

1) Japanese standard of beef life cycle

- Castrate at the age of 3 months. Weaning at the age of 5 months. Regarded as 'calf' by the age of 6 month.
- Castrated Black (Wagyu) cattle are usually raised up to nearly 680 kg of live weight, about 30 months of age. Castrated Holstein cattle are usually raised up to nearly 760 kg of live weight, about 22 months of age.
- Daily live weight gain of castrated Japanese Black and castrated Holstein is 0.65 kg/day and 1.05 kg respectively. Average dressed carcass percentage of castrated Japanese Black is around 65% (average carcass weight is 440 kg).

2) SBR results of fattening (6 January 2002 shipment)

- 24 cross breed cattle (♂Japanese Black×♀Holstein) were shipped (12 female, 12 castrated). Average slaughter age was 28.5 months and 695 kg/cattle (female; 28.1 months and 671 kg. Castrated; 28.8 months and 719 kg).
- Average carcass weight was 399 kg. Average carcass weight of female cattle was 384 kg and castrated cattle was 412 kg. The overall mean dressing percentage was 57%.
- Average daily live weight gain was 0.80 kg/day for 28.5 months in female and 0.83 kg/day for 28.8 in castrated males.

**The current situation of imported beef to Japan**

Table 2 shows the current Japanese beef consumption and main sources of beef. Total beef consumption in 2000 was 1.1 million tonnes including imported beef. The proportion of domestically produced beef was only 33%, with the remaining demand being satisfied by imported beef, especially from USA and Australia. The market share of those two countries was 95% of the total imported beef. About 60% of beef from USA was frozen, but in contrast about 60% of the beef from Australia was fresh or chilled beef. Compared with those two major beef exporters, New Zealand remains a minor player in the Japanese beef market. More than 70% of beef imported from New Zealand was frozen, which is not suitable for direct consumption as table meat. The quantity of beef imported between 1996 and 2000 increased by 121%. But New Zealand's 2000 exports decreased in quantity to 52% of its 1996 exports.

According to a consumer survey held in 1999, the Japanese consumer expected that imported beef should be 'low priced' and 'easy to buy' (Table 3). Neither 'safety' nor 'taste' were considered important for imported beef, which was in contrast to the expectation for Japanese domestic beef. However, it must be remembered that the survey was held before the BSE incident in 2001.

Meat & Livestock Australia, the promoter of '*Aussie*' beef, has been promoting grain-fed beef for the Japanese market to overcome the disadvantage of poor taste compared with Japanese domestic beef since 1998. Their

**TABLE 2:** Japanese beef consumption and importation in 2000[1].

| | Total consumption | Domestic Japan | Total imported | USA | Australia | New Zealand | Others |
|---|---|---|---|---|---|---|---|
| Quantity (tonne) | 1,102,000 | 364,000 | 738,000 | 358,556 | 338,046 | 14,364 | 6,617 |
| Fresh or chilled (tonne, %) | 726,368 | 100% | 49% | 41% | 61% | 27% | 2% |
| Frozen (tonne, %) | 375,632 | 0% | 51% | 59% | 39% | 73% | 98% |
| Import share (%) | - | - | 100% | 49% | 46% | 2% | 1% |
| Imported quantity relative to 1996 (%) | - | - | 121% | 121% | 122% | 52% | 188% |

[1] Ministry of Finance Japan (2000)

**TABLE 3:** Reasons given by respondents indicating they would prefer to buy either Japanese domestic (1,641 people interviewed) or imported (51 people interviewed) beef in 1999.

| | Japanese preference | | Imported preference | |
|---|---|---|---|---|
| | n | % | n | % |
| Higher safety | 1,227 | 75 | 4 | 8 |
| Taste good | 750 | 46 | 8 | 16 |
| Good quality | 624 | 38 | 6 | 12 |
| Family like it | 195 | 12 | 1 | 2 |
| Easy to buy | 72 | 4 | 22 | 43 |
| Low price | 18 | 1 | 45 | 88 |
| Other | 13 | 1 | 0 | 0 |

Note: the respondents could give more than one reason.

advertisement says:

- Flavour for adult, Grain-fed beef-
  Grain-fed beef is especially produced for the Japanese market. We feed grain feeds to the healthy grass-fed heifers for finishing. The grain-fattening period lasts at least 100 days. This makes the carcass marbling tasty. Our product is not only tasty, but also has safe quality.'

United States Meat Export Federation (USMEF) introduce their commodity as:

- In US, there are traditional American beef, organic or natural beef for fattening. We also use the Wagyu (Japanese Black) breed to produce American Wagyu (Japanese Black born and raised in USA) to satisfy the need of the Japanese consumer.

These advertisements show that several activities have already been instigated by the two major beef-exporting countries to explain and exploit the taste of imported beef for the Japanese market.

## DISCUSSION

The guidelines for organically produced foods published by the Codex Alimentarius Commission (2001) requires that herbivores must have access to pasture and that all livestock systems must provide 100% of the diet from organic feedstuffs. During an implementation period for ruminants, livestock products will maintain their organic status providing feed consists of at least 85% organic feedstuffs, calculated on a dry matter basis. According to this guideline, the SBR production system cannot to be defined as 'organic' even though they utilize their pasture as much as they can. Even if they aim to achieve their self-sufficiency ratio of pasture (this is considered as 'organic feedstuff') to be more than 30%, this sufficiency ratio is far below the level required in the guidelines. Moreover, SBR uses concentrate feeds which are not organic feedstuffs, even though they are non-GMO and PHF. If they try to be recognized as 'organic', they will need to use organic and PHF feed, which will be more expensive than their current feed. SBR is located in one of the best places for livestock farming in Japan from the viewpoint of pasture supply. However, even with these conditions it will be very challenging for organic beef production systems in Japan to satisfy the guidelines of the Codex Alimentarius Commission (2001).

Imported beef demand and consumption has increased since the BSE incident in 2001. The Japanese consumer used to expect foreign imported beef meat to be low priced and to be easy to access, although they were suspicious of its quality including safety (Table 3). The situation has now changed dramatically and people seek quality in imported beef because of their natural pasture-based systems. Meat & Livestock Australia and USMEF have been working to improve meat quality. But, where is New Zealand? New Zealand Beef Japan (NZBJ), a joint venture enterprise by AFFCO NZ LTD and ANZCO was established in 1991. The major product of NZBJ is AFFCO premier grass-fed chilled beef, but it is only seen occasionally in local supermarkets. In order to expand in the Japanese beef market, New Zealand should learn what the US and Australia have done. That is, to make special products for the Japanese market (such as marbled chilled beef) by using grass-fed systems.

## CONCLUSIONS

As indicated by the decline in beef consumption following the BSE incident in September 2001, the Japanese beef-eating public are very concerned about food safety. In response to this concern, at least one large beef cattle ranch is trying to respond by producing "organic" beef. However they are severely constrained by the need to purchase imported feed that may have been either genetically modified or chemically treated. There would be a great advantage for New Zealand if it were to use its 'clean and green' image when marketing beef in Japan. New Zealand is a leader in grass-fed finishing systems and this is the best key to use in promoting its beef in Japan.

## REFERENCES

Anonymous, 2001: Japan reports first case of mad cow. CCN.com at http://www.cnn.com/2001/WORLD/asiapcf/east/09/10/japan.madcow. Accessed 4 April 2002.

Codex Alimentarius Commission. 2001: Guidelines for the production, processing, labelling and marketing of organically produced foods (Rev 1-2001). Rome, Italy

Fujii, A. 2002: How large is overseas organic market? (in Japanese). Organic Cyber Store at http://www.organic.co.jp/contents/kiso16.htm. Accessed 4 April 2002.

Japan Meat Information Centre. 1999: Meat consumption survey 1999. Tokyo, Japan

Meat & Livestock Australia. 2001: The taste of adult, grain-fed beef. *Project Material (in Japanese): 1*

Ministry of Finance Japan. 2000: Import & export survey 2000. Tokyo, Japan.

New Zealand Beef Japan. 2001: AFFCO grass-fed New Zealand beef. *Natural feedlot beef (in Japanese): 1*

Statistics Bureau & Statistics Centre. 2001: Family income and expenditure survey. Tokyo, Japan.

United States Meat Export Federation 2001: The breeds of American beef. *American meat book (in Japanese): 2*