RECOMMENDATIONS ON TECHNIQUES FOR HIGH QUALITY BEEF PRODUCTION FROM 40 YEARS OF BEEF CATTLE FARM MANAGEMENT

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ABSTRACT

I opened a beef cattle farm at the current place 47 years ago, however, I had no specific idea as to what kind of farm to establish. But I decided to open an integrated management farm complete with nursing, nurturing and fattening services, because 3,000 Holstein male calves per year were born in the dairy farm of this dairyland. However, the breeding and management technology of this integrated system was not yet established, so we invited a university professor from the US through the help of Hokuren of JA union in order to establish feeding technology and expand sales channels. At that time, beef was completely banned from imports and there was a growing demand for beef. However, the liberalization of imports of American beef was decided in 1989, and the dairy bull beef was competing with low price imported beef. I decided to aim for high value-added processing of food and restaurant at that time. At first, I handled outsourcing manufacture and sale of hamburger without any technology and know-how, and I invested 17 million JPY from my own funds to construct a processing plant and restaurant three years later. Although sales grew steadily, it gradually ceased and I shifted to F1 (Wagyu x Holstein) beef and 10 years passed. However, F1 calves 10 months old with about 250 kg body weight had to be purchased in the market, and the profit margin was small because of the instability of the market price and a long period of fattening for 15 months. I finally decided to aim for integrated Wagyu beef production from breeding to fattening. The breeding cattle targeted 300 heads firstly, but the price of calf thereafter had soared more than doubled, now it is about 200 heads. Breeding cattle are feeding with forage (some are grazing), and we are using out of standard radishes (from August to November) and potato starch residue (from December to March) which are free of charge from the local JA in order to reduce the cost of feeds. We use the milk and complete feeds from Hokuren for the nursing, breeding, and feeding of the born calves. In recent years, fattening feeds have often controlled vitamin A supply to improve meat quality, and this led to bad effects (loss of vision, arthritis, and carcass blister). I think it is more important to improve the breed of bulls genetically rather than controlling vitamin A concentrations in the feeds in order to improve high fat marbling with the high price in the market. There are livestock experimental stations in each prefecture which contribute to create their own breeding bulls for the improvement of beef quality for the region in Japan. In addition to each station, universities, Wagyu Registry Association, Livestock Improvement Association of Japan (LIAJ) are also working together to improve the quality of beef breeds. Also, some members of the private sector are working on the development of breeds and sales of semen. In any case, cooperation and collaboration with a wide range of organizations should be indispensable for high quality beef production. There was a “master” of the fattening beef production in various places in the past, and it became an era when everyone could become “master” now. In addition, I believe that the important point in meat processing is on the aging process, and we provide meat and processed products with 40 days “Wet aging” since the establishment of the processing plant. The amino acid composition in the meat is increased by aging and the taste is also increased. Therefore, it is not necessary to use artificial supplements. I have continued meat processing for 30 years with determination and putting to practice the principles of “safety”, “security”, and providing “delicious” taste in the final product. I am proud to appreciate being able to carry out my own farm from “insemination” right to the “stomachs of consumers”.

Keywords: high quality beef, meat processing, wet aging
1. **Breeding Japanese Black Wagyu cattle in the farm.**

   The breeding cattle targeted 300 heads firstly, but the price of calf thereafter had soared more than doubled, now it is about 200 heads. Breeding cattle are feeding with mainly hey and forage silage (some are grazing), and we are using out of standard radishes (from August to November) and potato starch residue (from December to March) which are free of charge from the local JA in order to reduce the cost of feeds (photo 1 to 3). The pregnant cows are preparing calving in the individual delivery house about 1 month before the calving (photo 4). The calves are isolated in a calf house and fed by artificial nursing from one week after birth (photo 5). After 30 days of birth, the calves are moved to the breeding house as a group together used to their group life (photo 6). And then, the group of calves is moved to a larger one.

![photo 1. Japanese Black Breeding Herd 1](image1)

![photo 2. Japanese Black Breeding Herd 2](image2)

![photo 3. Grazing Field](image3)

![photo 4. Delivery House](image4)

![photo 5. Calves in Nursing](image5)

![photo 6. Breeding House](image6)
2. Feeding system for Japanese Black Wagyu cattle in the farm

We use the Mix Feeder (photo 7) for making the mixed feed (photo 8). The feed is delivered from the Mix Feeder directly (photo 9) to the fattening cattle (photo 10). Careful operation is required because the Mix Feeder is not self-propelled.

3. Food processing and marketing of the beef products in the farm

The food processing factory was constructed in 1992 (photo 11), and one large size freezer, two large refrigerators, meat slicer, and vacuum packaging machine are installed in this factory. I believe that the important point in meat processing is on the aging process, and we provide meat and processed products with 40 days “Wet aging” since the establishment of the processing plant. The amino acid composition in the meat is increased by aging and the taste is also increased. The photo 12 shows the amino acid composition in the drip of thigh meat at 4, 40, and 100 days after wet aging. The amount of glutamic acid which is regarded as “umami” component increased markedly with the aging days. Also we provided the Bouillon (photo 13) which used for hamburger steak and sauce. The products are seasoned using only this Bouillon and without general additives in order to stick to the food safety. The hamburger steak (photo 14) is a strongly popular product that triggered the creation of processing factory. We are keen to make products using of each part of beef. We have to handle whole beef in order to produce every kind of beef products such as grilled beef soup, beef bowl, and minced cutlets (photo 15). We have also products composed of entrails besides these. The no. 1 popular product of our farm named “Beef-toro don” (photo 16). Hikomaro, a gourmet talent praises this product, and this product is often introduced on TV programs.
photo 11. Food Processing Factory

photo 12. A Chart of Amino Acid Analysis

photo 13. Bouillon

photo 14. Premium Hamburger of Taiki Beef

photo 15. Products of the Farm

photo 16. Beef-toro and Beef-toro Don
4. Conclusion

I considered that the high quality beef which has much intra-muscular fat “marbling” should be tackled from improving the breed of Japanese Black based on the my experiences described above. The stock experimental stations in each prefecture, universities, Wagyu Registry Association, Livestock Improvement Association of Japan (LIAJ), and farmers have to work together to improve the quality of breeding bulls and standardize the high ability cow. And next, we have to proceed to the investigation and application of the feed stuff. If we depend only on feed to improve meat quality decided by marbling, there was a case of the meat production where marbling is enough but taste is very bad; this happened in Saga prefecture. The reason of this problem is that they did not feed vitamin A in order to increase marbling. The feeding technique has been developed as vitamin A controlled on each fattening stages now. There was a “master” of the fattening beef production in various places in the past. They knew from their experience that it would be impossible to produce high quality beef feeding with vitamin A rich roughage, or it would be possible to produce high marbling beef feeding with rice straw or feeds boiled in water which are deficient in vitamin A. There were once the feeding techniques which the growth rate was improved by addition of antibiotics or growth hormone, but these techniques have been disappeared. It became an era when everyone could become “master” now by the improvement of feeding techniques.

I believe that the production of beef is exhausted for safety, security, and tasty. The safety of feed has been improved due to legal regulation and healthy beef has been produced. I think that the aging of meat is important for making it delicious. The amount of amino acid in beef is increased by aging as described in this paper. I would like to continue producing safe, secure and delicious beef, based on the motto “from insemination on the farm right to the stomachs of consumers at the table”.