

Considering the Production of Safe and High-Quality Animal Protein from a World's Genetic Resource: Wagyu Cattle

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Japanese native beef cattle (Wagyu) have been bred in Japan over many years as a domestic animal. Wagyu is a ruminant that is well adapted to the natural environment of Japan, and as an animal whose original feed does not encroach on human crops, it provides us with an indispensable source of high-quality animal protein. In the 21st century, the importance of Wagyu as a natural resource continues to grow. At the Kyoto Univ. ranch, a herd of over 100 Wagyu helps developing a sustainable, environmentally-friendly breeding practice. The research at Kyoto Univ. ranch is based on fundamentals and practical application. Areas of study include beef production technologies and systems focusing on safe and efficient use of "eco-feed" made from previously unexploited local resources.

Improvement of feeding management for beef cattle

For improvement of reproductive performance of cows, prevention of diarrhea occurrence in suckling calves and improvement of performance in rearing calves, several studies are examined from respects of reproductive physiology, hygienic management and feeding management respectively.



Japanese Black (Mother and calf)

Development of unused resources and reduction of environmental loads



Cows raised in the cattle barn (left) Silage making (roll bale) (right)

Woody resources, food byproducts and agricultural byproducts are utilizable for feed by micro-organism processing and chemical flows in the farm are surveyed for environment-conservative beef cattle feeding

Fundamental studies on the functional development in beef cattle

In cooperation with related laboratories in the graduate school of agriculture, informatics and pharmaceutical sciences, we are investigating the adipocyte differentiation in muscle, bioavailability of vitamin C drugs and β -cryptoxanthine, relationship between mineral metabolism and renal function, ratio of stable isotope in element on hair. establishment of stem cell line derived from testis, behavior analysis of grazing cattle and search for neuroprotective substances in cow placenta.



Cross section between the 6th and 7th ribs in the carcass of cattle raised in the livestock farm (left) behavior analysis in cow with GPS receiver (right)

Key words

Beef cattle, Japanese Black, Performance of meat production, Artificial insemination, Beef production system, Feed characteristics, Environmentally-friendly type of beef cattle feeding, Science of animal feeding and management, Animal nutrition and physiology

Recent publications

Stable carbon and nitrogen isotope analysis as a tool for inferring beef cattle feeding systems in Japan Yanagi, Y., Hirooka, H., Oishi, K., Choumei, Y., Hata, H., Arai, M., Kitagawa, M., Gotoh, T., Inada, S. and Kumagai, H. (2012) *Food Chemistry* 134:502-506

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