

# Institute of Livestock and Grassland Science, NARO



## About us

Institute of Livestock and Grassland Science, NARO (NILGS) is the Japanese research institution for livestock and grassland. We promote the technical developments that integrate studies on grassland, animal feed production, livestock production and animal waste treatment and reuse.

## Mission

NILGS's mission is to contribute to increasing the production of safe and high-quality animal products and improving the self-sufficiency rate of feed by utilizing land resources effectively.

— Throughout our research, we develop technologies that benefit both present and future livestock production, support our plentiful diet, and finally, contribute to the conservation and sustainable use of national land through development of the livestock industry.

In realizing this mission, we provide leadership and direction to the following programs, whose goals are listed below.

## Division of Animal Breeding and Reproduction Research

- To establish animal breeding methods aimed at improving the health and reproductive capacity of animals.
- To establish and upgrade animal reproductive technologies.



Individual culture for the selection of *in vitro* produced bovine embryos with high developmental competence.



Genetic improvement of reproductive capacity.

## Division of Animal Metabolism and Nutrition

- To establish high quality meat and egg production system by domestic feed resources.
- To promote dairy cattle nutrition management system by energy metabolism analysis.
- To improve cattle production system by ruminant physiology and microbiology.
- To publish “Japanese feeding standards” for effective and efficient animal feeding.



Japanese feeding standards.



Feed the fermented liquid to piglets.

## Division of Animal Environment and Waste Management Research

- To develop technologies for pollution control and resource recovery in animal production.
- To increase animal comfort and farming productivity by improving animal environment and by using self-supporting natural energy.
- To develop measurement systems and mitigation options for dealing with greenhouse gases from the livestock sector.



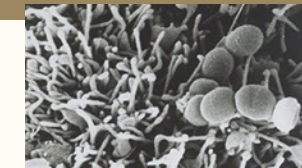
Pre-Cooling system for raw-milk using a CO<sub>2</sub> heat pump.



Mitigation of greenhouse gas emission from swine wastewater treatment in an aerobic bioreactor packed with carbon fibers.

## Division of Animal Products Research

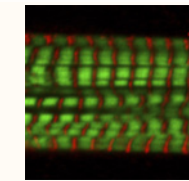
- To develop the evaluation technologies and to characterize the qualities of animal products, and to elucidate regulatory mechanisms of muscle development related to meat quality.
- To develop novel dairy products by exploiting the functionality of lactic acid bacteria and milk components, and to improve the sensory traits and processing characteristics.



Lactococcus lactis 527 adhering to the microvilli of human enterocyte cell line Caco-2.



High GABA-content cheese.



Stained myofibrils; myosin (green) and actin (red).



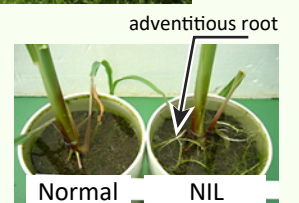
Scene of preparing consumer preference test for beef.

## Division of Forage Crop Research

- To develop high-yield cultivation method for corn grain production as well as high-yield cropping system for high-quality roughage production.
- To breed maize and forage grass varieties with high yield and environmental stress tolerance.
- To develop new breeding materials of forage crops using DNA marker-assisted selection and genetic transformation technology.



Selection of high-yielding corn cultivars.



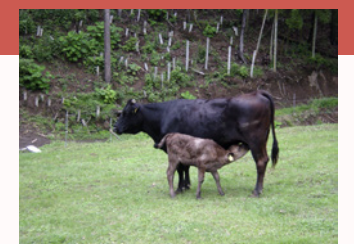
Maize near-isogenic line with flooding tolerance.

## Division of Grassland Farming

- To develop year-round grazing cow-calf production system for the effective use of abandoned farmland.
- To evaluate the impact on the biodiversity of grasslands due to environmental change, and develop a global warming mitigation techniques.
- To develop the countermeasures for radioactive cesium contaminated grasslands.



Decontamination on steep slope grassland by a radio-controlled tractor.

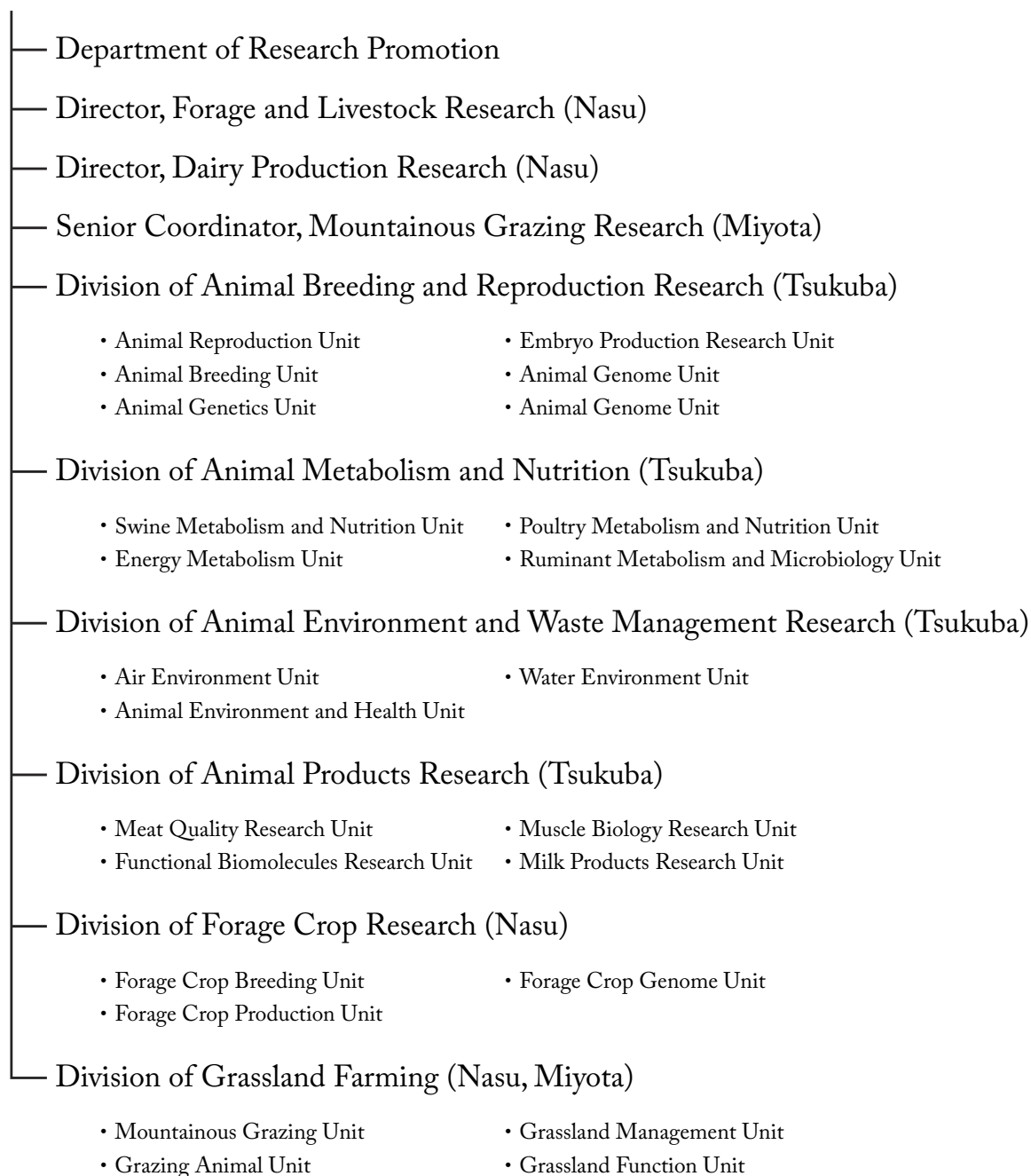


Grazing cow-calf.



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