

1 Strengthening the capability of agricultural production and farm management

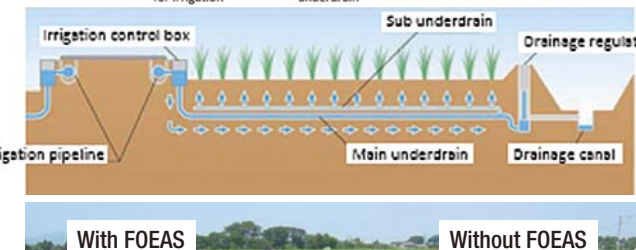
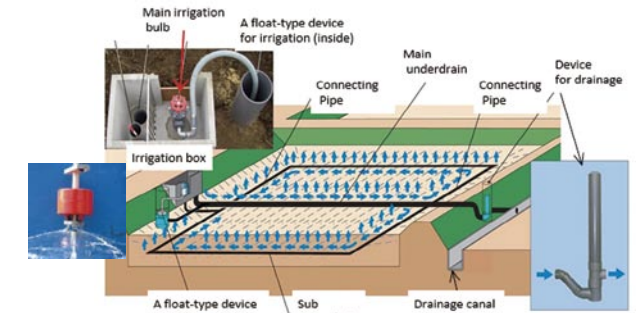
Overview of Research

We are addressing the urgent issues facing the agriculture and food industry, such as the decreasing number and aging of farmers, to contribute to the enhancement of the base of agricultural production, to promote the development of farm management through innovative technologies, and to achieve vigorous productivity in paddy-field farming, upland farming, livestock production etc., by taking advantage of regional conditions.

- Research on establishing highly productive paddy-field farming, upland farming etc., in accordance with the climate and soil conditions of a given region
- Research on applying robotics, Information and Communication Technology (ICT) to develop innovations in agricultural production
- Research on strengthening the production base and enhancing the competitiveness of the livestock industry
- Research on developing and implementing technological beef-production and cattle-breeding systems in accordance with the specific conditions of a given region

Main Achievements

- Development of the Farm Oriented Enhancing Aquatic System (FOEAS), a new water control system with irrigation and drainage facilities for cultivation of upland crops in paddy fields, enhanced the growth and yield of many upland crops.



- Unmanned robots that can perform agricultural works such as tillage, puddling, transplanting and harvesting have been developed using GPS technology.

- Sustainable grazing management enables the grazing of cattle in paddy fields, grasslands and abandoned farmland. It has thus far facilitated the raising of roughly 10,000 cattle, and contributed to livestock production through the effective use of arable land.

- A low-cost production system of ear corn silage and technology for efficient utilization as livestock feed was developed.



2 Development of new varieties and agricultural products towards realization of a strong agriculture and creation of innovative industries

Overview of Research

We are promoting the development of novel crops and new agricultural products through genomic and agrobiological research, innovative research focusing on new elementary biological materials such as high-quality silk products which can factor in the development of new industries, and communicating the merits of such products to producers, users and consumers.

- Research on the development of leading crop varieties with high yield and superior qualities
- Research for the advancement of genomic breeding techniques in various crops
- Research for improvement in agrobiological productivity and the production of useful substances and new functional materials

Main Achievements

- Development of high yielding and disease resistant two-rowed barley cultivar 'Haruka-Nijo' which is suitable for cultivation in western Japan and a potential source for making shochu.



- We have developed the Tartary buckwheat cultivar 'Manten-Kirari' with the flour containing only trace amounts of rutosidase and without bitter taste.

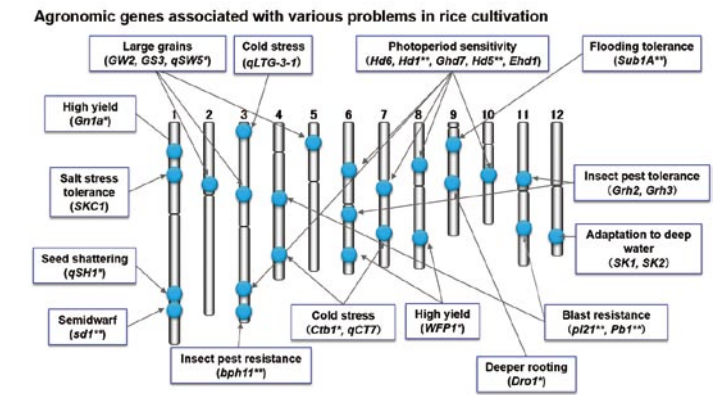


- Recombinant gene technology and the silkworm's high protein production capacity are combined and exploited for production of drugs, cosmetic materials etc.



Left: Testing drugs for human osteoporosis (In collaboration with Nittobo Medical Co., Ltd.)
Right: Cosmetic products with collagen (In collaboration with IBL Co., Ltd.)

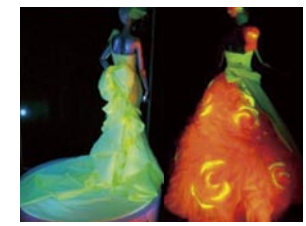
- By decoding the genome sequence of rice, and analyzing the gene functions, we have developed DNA markers associated with important agronomic traits, which is expected to facilitate efficient improvement of rice cultivars.



- Backcrossing of 'Sachiyutaka', the major soybean cultivar of western Japan, using DNA markers, produced a non-shattering cultivar, 'Sachiyutaka No. A1', resulting in significant reduction in yield loss during harvest.



- Development of silk fibers containing fluorescent proteins of different colors and new functionality silk materials with spider dragline protein.



(Design by Ms. Yumi Katsura)

3 Production of high-quality and healthy foods and ensuring the safety and reliability of agricultural products

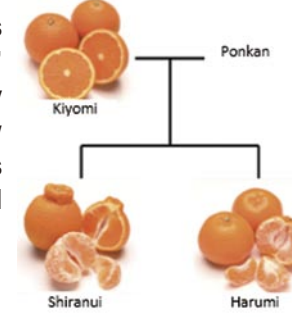
Overview of Research

We are pursuing extensive research to provide delicious, healthy, safe and reliable food and agricultural products to consumers, and contribute to the maintenance and improvement of health.

- Research targeting high value-added fruit trees, tea, vegetables and flowers
- Research seeking public health-oriented, high-quality, easy-to-eat food products
- Research aimed at ensuring the safety and reliability of food, livestock products, and agricultural crops
- Research on animal diseases and crop pests which constitute a threat to domestic industry and public health

Main Achievements

- We developed a delicious citrus cultivar 'Kiyomi' which was eventually used to breed many new high-quality citrus fruits such as 'Dekopon' and 'Harumi' cultivars.



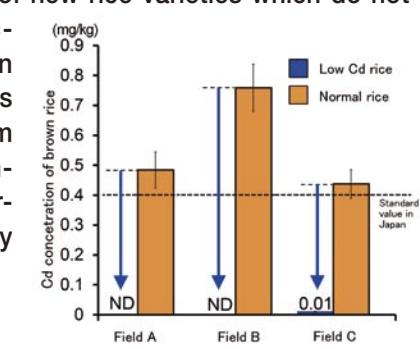
- Breeding of delicious strawberry cultivars such as 'Toyonoka' and 'Sachinoka' cultivars, and a cultivation technology that enables the fruits to be harvested throughout the year.



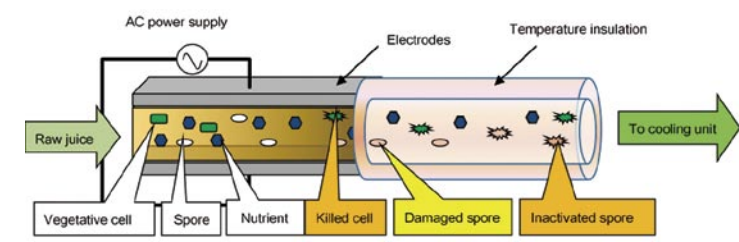
- Discovery of a gene that modulates the flowering of morning glory. The shelf-life of the flowers can be prolonged by suppressing the movement of this gene.



- Development of new rice varieties which do not absorb or accumulate even small quantities of cadmium (Cd) and comply with international safety standards.



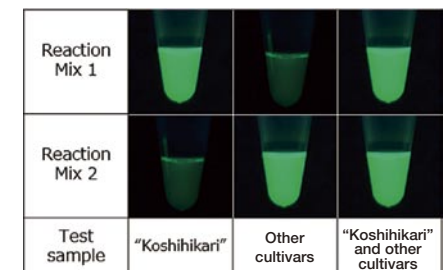
- Development of food sterilization technology using high electric field alternating current (HEF-AC) that maintains the quality of fruit juices.



- Elucidation of the effect of the β-cryptoxanthin in 'Unshumikan' facilitated the labeling of food products derived from this citrus fruit as "Foods with Function Claims".



- DNA analysis technology has been developed, which enables accurate, rapid and easy identification of rice cultivars without the use of specialized equipment.



- With the development of a rapid and accurate diagnostic method, we are pursuing the elucidation of pathogenic mechanisms, which will aid in the prevention of important infectious livestock diseases such as highly pathogenic avian influenza.



4 Resolution of environmental issues and sustainable use of local resources

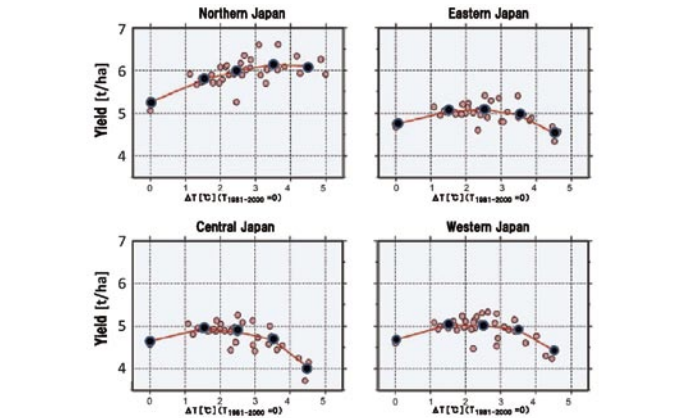
Overview of Research

With a moderate climate, abundant water resources, fertile land, beautiful rural landscape, Japan's natural environment is well-suited to agricultural activities. We pursue various research initiatives aimed at developing a sustainable and resilient agriculture for adaptation to climate change and other environmental problems.

- Research to address global issues such as climate change as an initiative for agriculture of the future
- Research to increase the fundamental strength of agricultural production, and to establish a strong agricultural foundation
- Research to mainstream sustainable agriculture in harmony with nature

Main Achievements

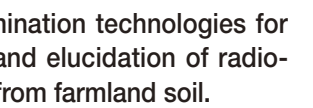
- Projection of the impact of climate change showed that except in northern Japan, the overall rice production will decrease significantly if the current temperature increased by 3°C due to global warming.



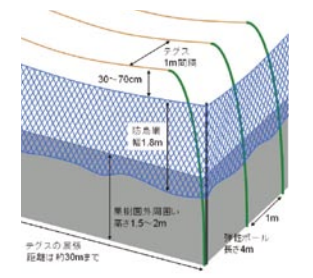
- Publication of area compatible manual on alternatives to replace banned agricultural chemicals such as methyl bromide for soil-borne pest control.



- Development of decontamination technologies for highly contaminated soil and elucidation of radioactive substance leakage from farmland soil.



- Managing bird damage to fruits and horticultural crops with the development of an easy-to-install facility known as 'Kuguren Tegusu-kun' in collaboration with Tokushima Prefecture.

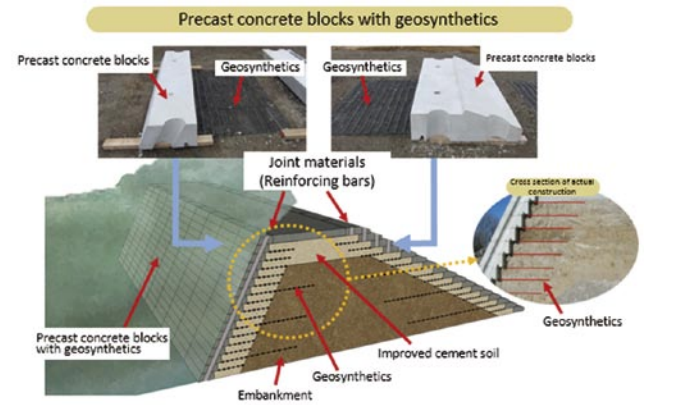


- Traditional green tea farming practices (chagusaba) on tea plantations was revealed to contribute to the conservation of biodiversity in tea producing areas.



Rare species of plants in 'chagusaba'

- Development of a robust three-sided integrated embankment to protect farmlands and agricultural facilities in coastal areas, minimizing damage due to tsunami.

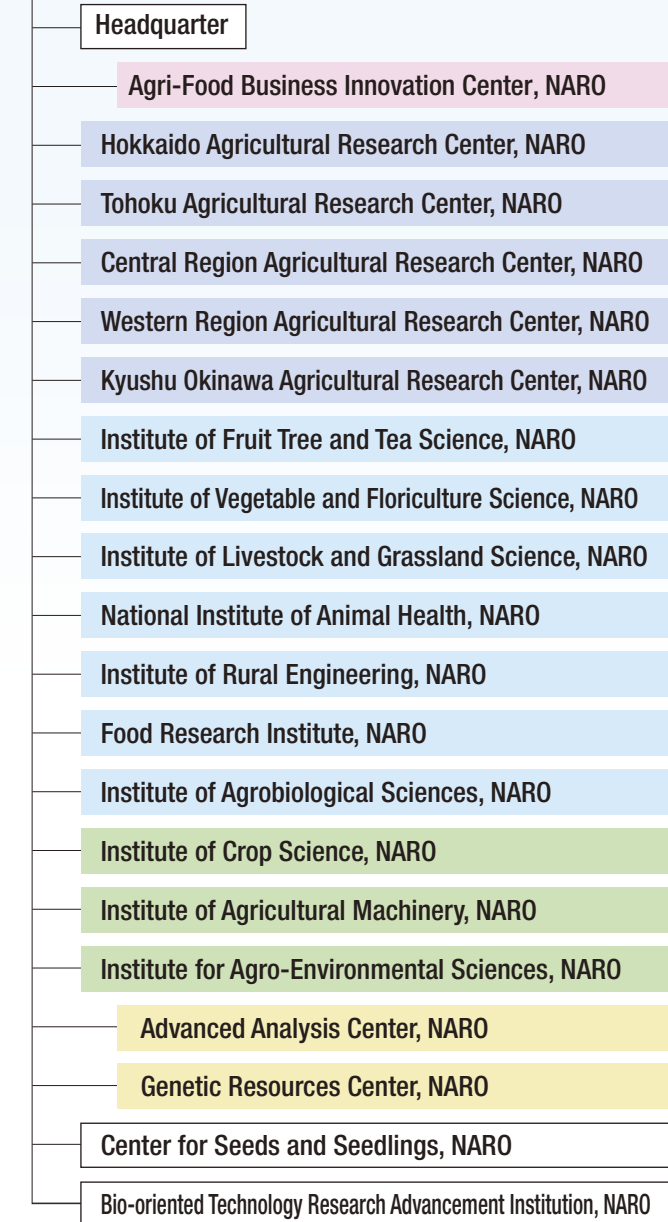


- Development of biological agrochemicals such as 'Flightless ladybug' to control aphid infestation in horticultural facilities.



NARO Organizational Chart

President, Senior Vice-president, Vice-presidents Auditors



Employees and Budget

Number of employees (as of April 1, 2016)
3,371 (includes 1,835 researchers)
Budget for FY2016
61.3 billion yen (includes operating cost subsidy of 53.2 billion yen)

Agri-Food Business Innovation Center

Conducts market-oriented and demand-driven R&D, dissemination of NARO achievements to producers, and development of advanced technologies for agri-food business innovation.

Advanced Analysis Center

Provides essential analytical technologies and data management system to support research on agriculture, food and the environment.

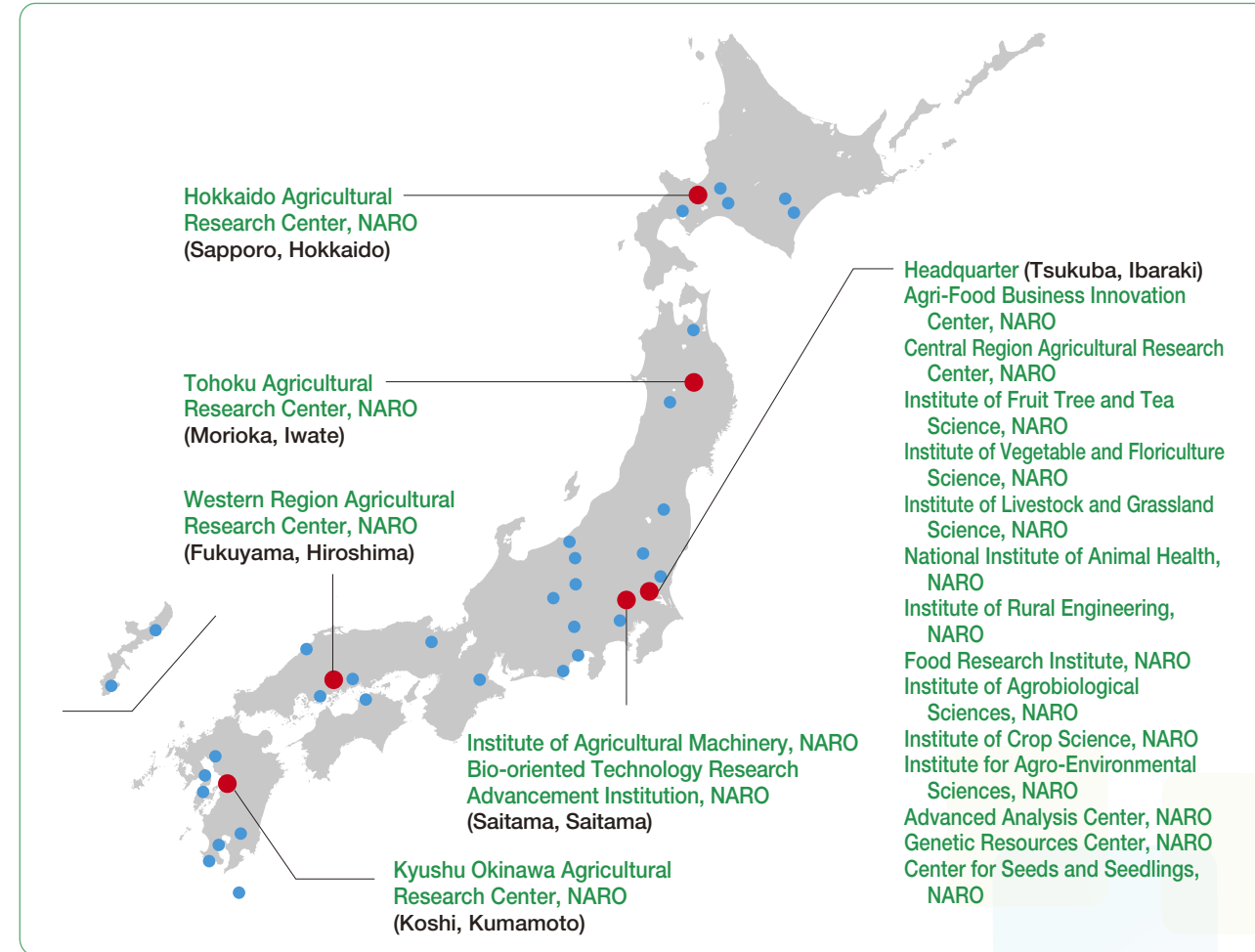
Genetic Resources Center

Implements extensive research on conservation, management and utilization of agrobiological resources, and coordinating Genebank activities.

Distribution of capital

Commissioning other organizations such as universities, independent administrative agencies, or private enterprises to pursue basic research on bio-oriented technological innovations.

Locations and Access Information



Train & Bus

● JR Joban Line, Ushiku Station
Kanto Tetsudo bus from Ushiku station West Exit
Take the bus bound for Tsukuba Daigaku Byoin, Yatabe Shako (approx. 20 minutes) → Get off at Norin Danchi Chuo → 5 minute walk

● Tsukuba Express, Midorino Station
Kanto Tetsudo bus from Midorino station
Take the Norin Danchi Junkan bus (approx. 15 minutes) → Get off at Norin Danchi Chuo → 5 minutes walk
*Note: Buses do not run on weekends & holidays.

● Tsukuba Express, Tsukuba Station
Tsuku-bus Nanbu Shuttle from Tsukuba station
Take the bus for Kukizaki Madoguchi Center or Kukizaki Rojin Fukushi Center (approx. 16 minutes) → Get off at Norin Danchi Chuo → 5 minutes walk

Car

Approx. 5 km from Yatabe Interchange of the Joban Expressway.
Approx. 4 km from Tsukuba-Ushiku Interchange of the Ken-O Expressway.



National Agriculture and Food Research Organization

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URL: www.naro.affrc.go.jp E-mail: www@naro.affrc.go.jp



NARO, aspiring to make invaluable contributions to the society

President Tokio Imbe



The National Agriculture and Food Research Organization (NARO) has been revitalized as the core institution in Japan for conducting research and development on agriculture and food, with the integration of the National Institute of Agrobiological Sciences (NIAS), National Institute for Agro-Environmental Sciences (NIEAS), and the National Center for Seeds and Seedlings (NCCS) from April 1, 2016. This also coincided with the commencement of a new five-year research and development period, its fourth mid-term plan. The new NARO will promote R&D on agriculture, food and the environment, extend its achievements into the society in an integrated manner, with a global vision, and contribute to the sustainable development of Japanese society and the rural communities through research innovations aimed at a stable supply of safe food, as well as the enhancement of the competitiveness of agriculture and food industries, protection of the environment, and creation of new values for agricultural products. As a National Research and Development Agency which can conduct integrated research over a wide range of fields, including basic, applied, developmental and extension studies, we have defined our research themes, and developed our structure and system, in order to maximize our research achievements. Our fourth mid-term plan has four major programs: (1) Strengthening the capability of agricultural production and farm management; (2) Development of new varieties and agricultural products towards the realization of a strong agriculture and creation of innovative industries; (3) Producing high-quality and healthy food and ensuring the safety and reliability of agricultural products; and (4) Resolution of environmental issues and sustainable use of local resources.

As Japan's largest agriculture and food R&D organization, we will advance cutting-edge, basic and innovative research through cooperation between our internal and external networks, as well as international institutes such as JIRCAS and overseas research organizations. We aim to develop an organization with our active and creative personnel, which promotes gender equality, and works in strict compliance with relevant laws and regulations.

History

- 1893 Research centers established as national experimental research stations.
- 2001 National Agriculture Research Organization, Independent Administrative Agency.
- 2003 National Agriculture and Food Research Organization, Independent Administrative Agency.
* Integrated with the Bio-oriented Technology Research Advancement Institution.
- 2006 National Agriculture and Food Research Organization, Independent Administrative Agency.
* Integrated with the National Institute for Rural Engineering, National Food Research Institute, National Farmers Academy (closed at the end of 2011).
- 2016 National Agriculture and Food Research Organization
* Integrated with the National Institute of Agrobiological Sciences, National Institute for Agro-Environmental Sciences and National Center for Seeds and Seedlings.

[1983]
National Institute of Agrobiological Sciences
National Institute for Agro-Environmental Sciences

[1986]
National Center for Seeds and Seedlings

[2016]
INTEGRATION

[Original cultivars developed by NARO]



'Fuji' apple 'Shine muscat' grape 'Yumehikara' wheat 'Nikomaru' rice 'Benifuki' tea

Duties of the Center for Seeds and Seedlings

1. Growing test of agricultural crops for cultivar registration

Conducts DUS (distinctness, uniformity and stability) growing test to provide data to clarify whether candidate varieties are new ones or not to facilitate the examination by the Intellectual Property Division of the Ministry of Agriculture, Forestry and Fisheries (MAFF).



2. Seed inspection of agricultural crops

Implements label examinations and seed quality testing, provides guidance to seed producers and traders for ensuring appropriate distribution of seeds and seedlings, and issues seed quality certificates.

3. Production and distribution of potato and sugarcane foundation seeds

Produces and distributes disease-free and high-quality foundation seeds of potato and sugarcane.

National Agriculture and Food Research Organization