Tokyo Metropolitan Agriculture and Forestry Research Center
As a public research institute that works in a wide range of fields from the agriculture, forestry and fishery industries to the food industry, the Agriculture and Forestry Research Center (AFRC) works closely with administrative office and improvement (extension) center to conduct research and development that satisfies diverse needs with the aim of further developing the agriculture, forestry and fisheries industries and food industry in the rapidly changing metropolis of Tokyo.

**Research Planning and Coordination Office**

This office engages in planning and coordination to fulfill the three missions of the AFRC:

i) Contribute to the further development of the agriculture, forestry and fisheries industries and food industry in Tokyo through research and development based on the fields of production, distribution and consumption

ii) Contribute to the development of healthy and prosperous lives for residents of Tokyo through research and development that addresses their needs as well as those of the many people who visit Tokyo

iii) Forge ahead with pioneering research and development to explore new possibilities in the agriculture, forestry and fisheries industries and food industry in Tokyo

**Effective promotion of research**

In addition to internal experiments, we promote research that is useful for business entities and residents of Tokyo through such efforts as formulating research plans based on external evaluations by experts in various fields and disseminating findings from our research.

**Promotion of Multidisciplinary Research through Industry-Academia-Government Collaboration**

We aim to conduct multi-disciplinary, effective and efficient research and development through cooperation between industry, academia and the government as well as between the agricultural, commercial and industrial sectors by taking advantage of the many industries and amalgamation of universities and other research and educational institutions based in Tokyo.

**Pubilishment of Research Results**

We proactively publish the findings of our research for producers, business entities and residents of Tokyo.

**Training and dietary education using AFRC technology**

We conduct training for succeeding generations of farmers, and education and public awareness of dietary education through hands-on experiences and other events.
Horticultural Crops Research Division

Tokyo’s main crops are vegetables, fruits and flowers. We work to establish management models that produce high profits from limited farmland through such efforts as breeding original Tokyo varieties and developing new technology to improve productivity and quality.

### Development of Original Tokyo Varieties

We breed Original Tokyo varieties by crossing between plants with superior characteristics and using biotechnology and other techniques, and also develop technology for using them.

The original Tokyo varieties bring high profits to producers and are good resources for promoting the presence of Tokyo agriculture.

- **“Tokyo Gold” (Kiwi fruit)**
- **“Haruka Midi” (Fragrant cyclamen)**
- **“Tokyo Komachi” (Wakenegi, tillering type of welsh onion)**
- Breeding of blueberry cultivars with tolerance to heat and drought of big cities as Tokyo
- **“Tokyo Ohisama Berry” strawberries** are extremely sweet and suitable for pick-your-own strawberry events

### Development of Technology to Improve Productivity and Quality

For vegetables, we develop hydroponic systems capable of producing several fruit vegetables, and an integrated environment control production system that controls temperature, humidity, CO₂ and more. We also select and establish cultivation techniques for varieties for direct sales. For fruit trees, we develop highly profitable cultivation technology for saving labor, shortening the time from planting to first harvest, low-cost technology and more. For flowers, we develop technologies in protected horticulture that delivers higher quality and consumes less energy, and in urban greening through expanding the use of flowers in summer aiming for Tokyo 2020 Olympics and Paralympic Games.

- A hydroponic system that can handle high yields and produce several fruit vegetables
- Screening of bedding flower plants to last hot conditions in summer
- Evaluation of cut flower varieties suitable for direct sales
- Japanese pear trees planted on rhizosphere control system
Agro-Environmental Research Division

To ensure the safety and stable production of crops, we work to identify the causes of pests and growth disorders; develop technology for pest control, reduction of pesticide residues, and appropriate soil management; and also develop fertilization control technology for hydroponics and ICT-driven environment control technology.

**Development of Pest Management Technology**

We investigate the causes of both newly and abnormally occurring agricultural pests in Tokyo to create appropriate pest control measures while concurrently studying phenomena such as the resistance of pests to pesticides in an effort to develop Integrated Pest Management (IPM) technology that does not rely solely on chemical pesticides.

**Development of Appropriate Soil Management Technology**

We are developing the management technology for soil fertilization based on soil characteristics and environmental consideration. In addition, we are proceeding with investigations of the causes of growth disorders and the development of reduction and prevention for them.

**Studies on Pesticide Residues and Developing Analytical Techniques**

We analyze and evaluate pesticide residues on crops and the surrounding environments of farmland in order to ensure the safety and security of crops and promote the proper use of pesticides.

**Development of Environment Control Technology**

By using ICT to control the greenhouse environment integratedly, we are developing cost-reduced, high-performance technology that can create optimal growing environments for several fruit vegetables.
Livestock Research Division (Ome Branch Station)

We promote the development, maintenance and improvement of safe and high-quality Tokyo brand animal products. In addition, we conduct research to develop technologies to improve productivity in animal husbandry, by establishing highly profitable livestock management and addressing environmental issues to solve problems unique to Tokyo.

Development of Tokyo Brand Animal Products

We maintain and improve the high quality of “Tokyo X” (original pigs variety in Tokyo) meat and conduct research to investigate the performance of “Tokyo Ukokkei” (original fowls variety in Tokyo) meat and the like in efforts to further strengthen the brand power of animal products in Tokyo.

![Tokyo X](image1)
![Tokyo Ukokkei](image2)
![Tokyo Ukokkei meat](image3)
![Tokyo Milk](image4)

Development of Advanced Technology for Improving Productivity

We conduct researches on the technology development for the usage of frozen boar semen and transfer technology for in vitro fertilized embryos in order to ensure superior genetic resources and efficient breeding, and proceed with the development of technology to control summer heat and the other technology for improving productivity. We develop livestock disease control techniques that do not depend on only pharmaceuticals in efforts to ensure safer animal products.

![Spraying water on cows](image5)
![Assessing effects of countermeasure for summer heat by measuring cow milk components](image6)
![Raising healthy piglets](image7)

Countermeasure for animal husbandry harmonized with urban environment

We conduct researches on the technology development for animal husbandry harmonized with urban environment, on animal faces composing for organic resources. We develop the technology to reduce odors from composting facility effectively and efficiently, and suggest the appropriate management method of waste-gas treatment facility.

![Developing technology to improve reducing capacity of odor from waste-gas treatment facility](image8)

Front: Waste-gas treatment facility
Behind: Composting facility
Urban-Green and Forestry Research Division

To make Tokyo metropolis safe and filled with greenery, we work to develop technology to green various urban spaces and select tree species that add color to greenery areas. We also develop technology that activate the forest industry and regenerate and preserve our valuable forests in Tokyo for future.

**Development of Urban Greening Technology**

We promote the development of greening technology and the selection of new tree species to green various areas such as streets, rooftops and walls of buildings, seaside, riverbeds and event venues. We also work to clarify the characteristics of roadside trees which prevent spread of fires, and develop greening technology that contributes to disaster prevention in an effort to create a highly disaster-resistant metropolis.

Trees planted in transportable containers to create cool spots around central Tokyo

Greening by planting trees suitable for tight spaces around town

Urban greening trees (picture: *Arbutus unedo* ‘Compacta’)

**Development of Forest Regeneration and Preservation Technology**

We develop forest maintenance technology for both broad-leaved forests and coniferous forests with low pollen suited to the forest environment in Tama area, western Tokyo. We also work to comprehend the state of damage to forests by sika deer (*Cervus nippon*) and other wild animals, to develop technology for low-cost forest management.

Comprehending of the state of damaged forests caused by wild animals

Low-cost forestation technology with container tree nursery

Research forest of Pollen-free Japanese cedar (*Cryptomeria japonica*) (Hinode Research Site)

A broad-leaved forest in Okutama Town
Edogawa Regional Branch Center

At this AFRC base in eastern Tokyo, we work on developing technology for stable production, new products and more with a focus on komatsuna (Japanese mustard spinach), potted flowers, nursery flowers and other regional specialty vegetables and flowers with history and tradition.

Enhancement of Product Appeal of Traditional Tokyo Vegetables

We aim to improve the productivity of komatsuna (Japanese mustard spinach), a main vegetable product in eastern Tokyo, and identify characteristics of varieties in terms of suitability for fresh and processed products, and a wide array of other uses. We also promote the preservation of superior genes and establish cultivation techniques for traditional Edo-Tokyo vegetables such as Goseki bansei komatsuna and Kameido daikon.

Quality evaluation of komatsuna
Identification of relationship between taste (umami, sweetness, bitterness) and chemical components, especially amino acid

Improving management methods for komatsuna year-round production
Evaluation of farmwork efficiency

Kameido daikon (a traditional Edo-Tokyo vegetable)
Developing technology for stable production

Contest for comparing komatsuna varieties
Evaluations by extension officers, researchers, etc.

Development of New Flower Products

We are proceeding with the development of cultivation management technology for new varieties of flowers—namely for the cut flower production of new varieties of tulips which bloom in March—and other new high-value-added products. We also work on product development that produces new value, such as “Asagaoichi” Japanese morning glories and “Nanakusakago” which are connected to traditional new-year events. We will also deploy the technology to the producer of flowers for informal.

Developing stable production technology for March-blooming tulips

Developing technology for producing and using pansies for cut flowers
Food Technology Research Center

To promote the food product industry in Tokyo and improve food safety and diets for people in Tokyo, we develop attractive products with a focus on traits such as safety and functionality, and conduct research to develop processed food products that use local resources. We also implement a wide range of technical support projects in order to resolve the technical issues faced by food product companies in Tokyo.

Development of Products with Tradition and Fresh Appeal

We aim to develop food products that provide health functionality, ensure and improve safety, utilize local resources, adapt to changes in the diets of residents of Tokyo, and exhibit appeal and competitiveness befitting the cosmopolitan metropolis of Tokyo, and also to develop technology to produce those food products based on the history- and tradition-rich food product production technology of Tokyo.

Technical Support for Food Product Companies and Promoting the Sixth Industrializations

To resolve the technical issues faced by food product manufacturers, we provide technical consultations, accept requests from private companies to conduct testing and perform other work, and implement a wide range of support programs, which include providing open laboratories where companies can develop products and evaluate product quality on their own, hosting workshops for engineers to acquire various inspection technologies, and dispatching food product technology advisors. We also support the sixth industrialization (integration of primary, secondary and tertiary industries), through the development of processed products by farmers, foresters, fishermen, or their groups in Tokyo.