November 11, 2015

News Release

In Partnership with NEC, Kagome Starts Development of Advanced Technology for Tomato Cultivation

Kagome is applying Big Data to the cultivation of processing tomatoes overseas, to optimize resource inputs and maximize harvests.

In March 2015, Kagome Co., Ltd. (President: Naoyuki Terada; headquarters: Nagoya-shi, Aichi Prefecture, Japan) began a partnership with NEC Corporation (President: Nobuhiro Endo; headquarters: Minato Ward, Tokyo, Japan) to develop leading-edge technologies for the cultivation of processing tomatoes using Big Data.

Tomatoes are the most heavily consumed culinary vegetable in the world, with some 140 million t consumed worldwide every year. Of these, 100 million t are grown for direct consumption ("fresh-market tomatoes") and 40 million t are grown for use in processed foods ("processing tomatoes"). As world population grows, tomato consumption is expected to rise still further. In 2021 a further 10 million t of processing tomatoes is expected to be required.

However, current global supply systems will be challenged to respond to this future increase in tomato demand. Kagome is working to address this problem by developing new agricultural technologies, including technologies to increase yield (crop volume per unit of area) in existing producing regions and technologies to develop new producing areas in countries that had not been major producing countries previously.

In developing new agricultural technologies, Kagome focuses on the deployment of information and communication technology in the agricultural field, aiming for higher efficiency in the production of processing tomatoes. Our aim is to spread the use of efficient agricultural technologies that large numbers of people can practice based on scientific verification, rather than relying on experience as is frequently the case in agriculture.

Also, by achieving the maximum yield and quality for the minimum resource input (water, fertilizer, etc.), Kagome seeks to enhance agricultural value-added while practicing environmentally friendly agriculture.

In March 2015, Kagome began proving tests using Big Data analytical technology, in cooperation with NEC. The tests took place in an experimental field in Portugal, where Kagome operates a local subsidiary. Data were collected from sensors that measured weather, soil and other conditions, as well as from satellites and drones. Data gleaned from farm management on factors such as irrigation and fertilization were also compiled. Using these data, Kagome tested ways to optimize the volumes of water, fertilizer and agricultural chemicals used and maximize yield, according to the status of tomato growth, weather conditions and other factors.

Kagome tested these technologies throughout the summer of 2015. The following results were confirmed:

1) Moisture and nitrogen stress in fields was rendered spatially visible, and the factors giving rise to differences in crop volume among fields were analyzed.
2) It was possible to deduce the optimum cultivation methods for each field.
3) It was possible to forecast accurately both the crop volume and the best time to harvest, a month before harvest time.

In the summer of 2015, the yield per hectare for the test field described above was 146t—50% higher than the average for Portugal. The yield is estimated to be 20% higher than that of neighboring farmland. Using analysis drawing on NEC's Big Data analytical technology, Kagome was able to determine the factors that make such a high crop volume possible.

In October 2015, Kagome began further tests of this technology in Australia, another country where the Company operates a local subsidiary.

Since the Company's foundation in 1899, the greatest value Kagome imparts to its customers consists of product safety and peace of mind. Throughout the value chain from seed development to final sale, "from the farm to the dinner table," we work tirelessly to strengthen this value. The basic domain of these efforts is the tomato field. Through the current partnership with NEC, Kagome is enabling rapid progress for the possibilities in this domain.

At Kagome, we are passionate about contributing to international society through food.

Kagome forecasts changes in society and builds the needs of each era into its business strategy, to contribute solutions to social issues as only Kagome can. These contributions enhance the innovation that generates economic value.

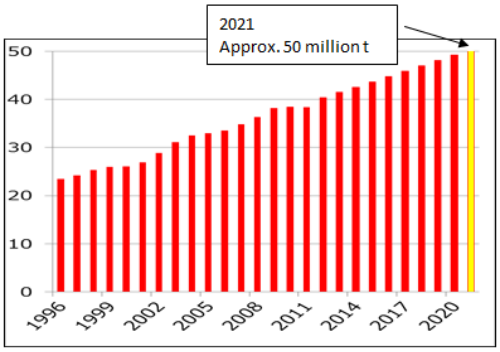
Through these efforts, Kagome is working hard to achieve its goal of becoming the world's No. 1 supplier of tomatoes.

Conducting tests in a test field in Portugal

Sources:

1. Consumption Volumes for Principal Vegetables (2010, FAOSTAT)
2. Current Trends and Forecasts for World Tomato Consumption Volumes (WPTC, Kagome)

Tomatoes	140	million t
Potatoes	101	million t
Onions	78	million t
Yams	53	million t
Olives	20	million t



- Tomatoes are the most consumed vegetable in the world. They are eaten raw and are used in a wide variety of cuisines in countries and regions worldwide.
- Consumption of processing tomatoes is forecast to rise at a rate of 1 million t per year. In 2021, consumption is forecast to reach approximately 50 million t.