

# Environmentally Responsible Production

## Management information

### Relevance to our business

Some Fuji Oil Group manufacturing processes impact the environment by emitting high levels of CO<sub>2</sub>. We have the responsibility to reduce such environmental impacts as much as possible. It is also important that we assess environmental impacts at every stage in the lifecycle of our products and reduce such impacts efficiently. These stages include the cultivation of raw materials and processing of our products by customers, in addition to our own manufacturing processes.

### Basic approach

We will work to develop processing technologies that have a low environmental impact and help us achieve our reduction targets for CO<sub>2</sub> emissions, water usage, and waste outlined in our Environmental Vision 2030.\* Aside from reducing the environmental impact of our own manufacturing process, we will also conduct comprehensive assessments and pursue technological innovation to reduce environmental impacts across all our business activities, including environmental conservation during the production process of raw materials.

\* Follow the link below to learn more about Environmental Vision 2030.

> [https://www.fujioilholdings.com/en/sustainability/environmental\\_management/](https://www.fujioilholdings.com/en/sustainability/environmental_management/)

### Management system

Based on an ESG materiality assessment conducted in FY2022, we changed the name of this material ESG issue\*<sup>1</sup> from “reduction of the environmental impact of products and raw materials,” which was used until FY2021, to “environmentally responsible production.” This theme forms part of the “climate change” category of our material ESG issues. The Chief Technology Officer (CTO) oversees initiatives in this area, while the Sustainability Committee,\*<sup>2</sup> an advisory body to the board of directors, monitors progress and results.

\*1 Follow the link below to learn more about material ESG issues.

> <https://www.fujioilholdings.com/en/sustainability/materiality/>

\*2 Follow the link below to learn more about the Sustainability Committee.

> [https://www.fujioilholdings.com/en/sustainability/sustainability\\_management/](https://www.fujioilholdings.com/en/sustainability/sustainability_management/)

### Goals / Results

○ At least 90% complete △ At least 60% complete ✕ Less than 60% complete

FY2021 Goals	FY2021 Results	Self-assessment
Develop manufacturing methods that achieve higher efficiency and reduced environmental impact through the application of a new enzyme-based oil and fat processing technology in commercial production.	Preliminary estimates of our study on the manufacturing methods showed that it would be possible to reduce CO <sub>2</sub> emissions by 20%. However, the actual impact reduction could not be calculated as enzyme reaction rates at the production plant did not reach the target.	△
Conduct a survey on the environmental impact of our granulated soy protein products. Draft a strategy to reduce lifecycle impact.	An LCA* of soy protein products showed that the highest impact across the life cycle comes from the drying process.	○

\* LCA: life cycle assessment. A methodology for assessing quantitatively the environmental impact of a product or service throughout its life cycle (resource extraction, raw material production, product manufacturing, distribution and consumption, disposal and recycling) or at a specific stage of its life cycle.

## Analysis

Amid the COVID-19 pandemic, the personnel in charge could not be physically present on site during a trial of a new enzyme-based oil and fat processing technology. As a result, we could not conduct a detailed feasibility assessment, and we were unable to complete the technology development. We will identify the possible reasons as to why the enzyme reaction did not reach the target rates and aim to complete the technology development in FY2022 by enhancing coordination with the plant and analyzing the trial data. Regarding the production of granulated soy protein materials, since we have confirmed that the drying process generates the most CO<sub>2</sub> emissions, we will share the assessment result with relevant parties and propose improvements.

## Next step

With regard to environmentally responsible production, we aim at reducing our environmental impact by cutting and utilizing CO<sub>2</sub> emissions. Our challenge is to implement initiatives not only in our own production process but also across the entire life cycle of our products, including the raw material stage, as we aim to reduce our environmental impact through cutting or effectively utilizing CO<sub>2</sub> emissions. To address this issue, we set the following goals for FY2022.

- Solve issues in the production plant trial of the new enzyme-based oil and fat processing technology and develop manufacturing methods for commercial production
- Effectively utilize the CO<sub>2</sub> emissions in our soy protein business by launching initiatives to achieve carbon neutrality in raw soybean production and selecting suitable soybean varieties
- Use breeding technology to create new plant breeds for raw material that can lead to more efficient production of oils and fats, study the commercialization of oil and fat materials, and estimate their effect on reducing environmental impact

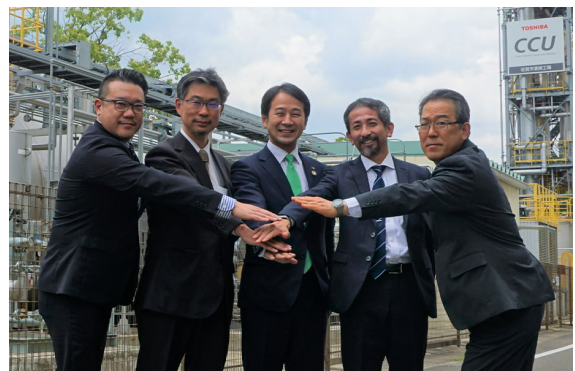
## Specific initiatives

### Research project on soybean cultivation in Japan utilizing carbon emissions from a waste incineration facility

Developing technology that helps address shortages in food resources caused by the climate crisis and population growth is an important issue for the Fuji Oil Group. To counter the recent price increases in food and energy resources, and from the standpoint of food security, we believe that providing delicious, healthy and sustainable foods that use domestic crops is indispensable. While we have been studying the potential of soybeans over many years, we have renewed our interest on domestic production. In May 2022, we launched a joint research project with Saga City, Saga University, and ITOCHU ENEX Co., Ltd. to capture and utilize CO<sub>2</sub> in the production of soybeans in Japan. We will carry out research and development on efficient cultivation methods that make the most of the properties of soybeans, which grow faster by absorbing CO<sub>2</sub>. We will initially conduct a demonstration test at an experimental facility at Saga University. Eventually, we aim to supply our plant factory with CO<sub>2</sub> from a carbon dioxide capture and utilization (CCU) facility at a waste incineration facility in Saga City. In the future, we will use our Group's technology to commercialize the domestic soybeans grown through this cultivation system as sustainable soy products for our customers.



CCU facility at the waste incineration facility in Saga City



From left: Fumiya Tanaka, Chief Operating Officer (Power & Utility Division), ITOCHU ENEX Co., Ltd.; Satoshi Watanabe, Associate Professor at the Faculty of Agriculture (Plant Breeding and Genetics), Saga University; Hidetaka Sakai, Mayor of Saga City; Fumiyuki Goto, Professor at the Faculty of Agriculture (Controlled Environment Horticulture), Saga University; Takashi Kadota, Director and Senior Executive Officer (Chief Technology Officer (CTO) and ESG Representative), Fuji Oil Holdings Inc.