

# Creation of Plant-based Protein Resources

 **Material Issue**  
 **Creation of Sustainable Food Resources**

## Management information

### Relevance to our business

Since its early days, around 1950, the Fuji Oil Group has been considering the future problem of food resources caused by the growing global population. We have explored the possibilities of soy protein and developed plant-based protein ingredients that can complement animal protein sources. We started our research on soybeans in 1957 and began selling textured soy protein in 1969. Through the years, we have developed over 70 kinds of soy meat ingredients and provided them to food manufacturers and other customers. With the world population expected to reach 9.7 billion by 2050, we need to provide solutions to the problem of food scarcity by developing healthy plant-based protein ingredients with lower impact on the global environment. We also believe that providing wider choices of plant-based food products and creating a world where everyone can truly enjoy their meal is an important mission for the Group.

### Basic approach

In recent years, there has been growing global interest in physical and mental disorders, global environmental problems, uneven distribution of food resources, and other social issues. Instead of merely replacing animal-based food with plant-based ones, our aim is to establish new markets for plant-based food products by creating delicious plant-based food ingredients that consider the health of people and the planet, thereby contributing to solving these social issues. We develop flavor technologies using only plant-based ingredients through a combination of fats, oils and proteins, with emulsified and fermented ingredients. We also create a wide range of textures and tastes through a combination of various isolated soy protein ingredients with fat and oil products. Our aim is to continue providing a variety of plant-based food ingredients in a way that supports food cultures around the world as well as all kinds of people with special dietary needs.

### Management system

In line with our identification of material ESG issues\*<sup>1</sup> in FY2022, we changed the name of this material issue from “solutions to food insecurity,” which was used until FY2021, to “creation of plant-based protein resources.” This theme forms part of the “creation of sustainable food resources” 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 delicious soy meat ingredients and products that look and taste like real meat* <sup>1</sup>	Marketed 10 soy meat food products and ingredients that can replace animal meat ingredients or meat products	○
Develop plant-based milk and cream* <sup>2</sup>	Marketed 5 plant-based milk and cream products	○

\*1 Products that use plant-based food ingredients and have comparable texture (chewiness) and taste (juiciness resembling meat) to regular meat ingredients and products

\*2 See the section “R&D for the next-generation of plant-based protein ingredients” below.

### Analysis

With the expanding market for meat alternatives, the Fuji Oil Group leveraged the technologies for combining flavors and textures that we have developed over many years to develop new products with the flavors and textures that are as close to real livestock meat products as never before. These have been well received and used by our customers in various products.

## Next step

Creating an enjoyable experience with food, rather than simply offering plant-based protein as a meat alternative, is a key aspect of creating plant-based protein resources. To address this issue, we set the following goals for FY2022.

- Develop next-generation soy meat ingredients that provide new value
- Develop plant-based processed foods (for side dishes, etc.)

## Specific initiatives

### R&D for the next-generation of plant-based protein ingredients

The Fuji Oil Group strives to develop products that bring out the flavor of plant-based food ingredients to help solve food insecurity and global environmental challenges. These products harness the development technologies of oils and fats and soy protein ingredients we have cultivated over many years.

In FY2021, we developed Almond Whip, a dessert ingredient that brings out the best of almonds, which have been gaining a lot of interest for their health benefits. As the need for plant-based sweets ingredients grows with the rising health awareness and environmental concerns, this dairy-free product is versatile, easy to work with, and has a long shelf life; it can be used for decorating cakes, mousse, and other preparations.



Almond Whip



Used in Mont Blanc tart (whipped cream only)

In addition, through joint research by Fuji Oil Co., Ltd., Tokyo Institute of Technology and Gurunavi, Inc., we developed Soy Delice KOJI, a soy cheese made using our Double Fermentation method — a technology to ferment low-fat soy milk using lactic acid bacteria and traditional Japanese koji mold. Soy Delice Koji has a deep, rich and full flavor that is satisfying, and can be used as an alternative to butter, cream or egg yolk in a wide range of dishes in Japanese, Chinese or Western cuisines.



Soy Delice KOJI



Used in tomato cream pasta

## Proposing new values to consumers

To bring popular plant-based dishes to consumers, Fuji Oil Holdings Inc. has been offering plant-based food (PBF) delicatessen through pop-up restaurants and food trucks called UPGRADE Plant Based Kitchen. Continuing from 2020, we substantially increased the number of items in the menu from 2020 and offered 17 items at the pop-up event held in Yurakucho, Tokyo in November 2021. The rice gratin using Plant-based Paste S (sea urchin flavor), our alternative seafood product, attracted a lot of attention due to poor sea urchin catches since September 2021 caused by rising sea temperatures. Media companies came over to cover the event and helped make PBF more widely known in Japan. Moreover, in a survey performed during this event, the percentage of those who answered that they had actually eaten PBF rose significantly from 32% in 2020 to 68% in 2021. Although gradually, PBF is steadily gaining ground. With our ongoing mobile sales through the UPGRADE food truck, we offer PBF menus at various locations.



Menu at the UPGRADE pop-up event



Rice gratin using Plant-Based Paste S (sea urchin flavor)



Pop-up restaurant event

## Value co-creation with our customers

Fuji Oil Co., Ltd. engages in co-creation activities together with our customers to expand the range of PBF.

### Chikaranomoto Holdings Co., Ltd. (Ippudo): Plant-based Akamaru ramen

In February and December 2021, the ramen restaurant brand Ippudo, operated by Chikaranomoto Holdings Co., Ltd., commercialized the product called Plant-based Akamaru ramen. It uses our product based on Fuji Oil Co., Ltd.'s MIRACORE® technology, which produces the feeling of satisfaction that animal-based products deliver without using any animal-based ingredients, providing a groundbreaking ramen soup base with the full flavor of pork bone. Ippudo's press release highlighted the food crisis caused by the rising global population and the need for creating a decarbonized society, as well as the development of proteins as meat alternatives and the increasing diversity of diet. The ramen was well received by many customers for its high quality and helped raise awareness of PBF.



Ippudo's Plant-based Akamaru ramen (Image: Chikaranomoto Holdings Co., Ltd.)

### FamilyMart Co., Ltd.: Bento and delicatessen using soy meat

In January and June 2021, FamilyMart Co., Ltd. released a line of soy meat products at approximately 16,600 FamilyMart stores across Japan. Soy meat was used in a wide variety of products ranging from burgers, Chinese noodles, pasta salads to tortillas, as well as soy meat buns sold in the fall.

We received much positive feedback for the high-quality products that do not have the look and feel of soy while providing an environment-conscious sustainable diet. We also receive messages that show that soybeans have become a more familiar food.



Soy meat products (Image: FamilyMart Co., Ltd. website)

### Lotteria Co., Ltd.: Soy BBQ cheeseburger

Soy BBQ cheeseburger went on sale in February 2021. Since 2019, the company had constantly used and widely promoted soy meat, which has attracted attention as a low environmental impact food.



Soy BBQ cheeseburger (Image: Lotteria Co., Ltd.)



## MIRACORE® technology brand

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MIRACORE® is a core technology for food that leverages the potential of plants, creating food that is both healthy for everyone and always delicious. The feeling of satisfaction that animal-based products deliver is critical for people to continue eating PBF and create a sustainable future. We have established MIRACORE® as a new technology brand that reproduces this satisfaction. MIRACORE® fully recreates the aroma, flavor and texture of animal-based products, and delivers delicious, satisfying food. This collaborative technology was made possible by the Fuji Oil Group's bedrock of research on plant-based oils and fats and proteins for over 60 years.



## Investing in a major Dutch fund dedicated to food technologies

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In FY2021, Fuji Oil Holdings Inc. invested in Unovis NCAP Fund II through its subsidiary. This is a major fund dedicated to food technologies based in the Netherlands. Unovis Asset Management B.V., which manages the fund, is a pioneer in this field, particularly in the alternative protein sector, finding food tech businesses seeking to build new food systems at an early stage and helping them grow. The company also has specialists with extensive experience in the field of ESG who constantly analyze the impact of the companies they invest in.

Aiming to create a sustainable world through plant-based ingredients, the Fuji Oil Group positioned this investment as an initiative linking the Group's wide range of unique technologies with solutions to the world's food issues, in order to accelerate development of our PBF business globally. Through this, we will move forward to enter a wider range of alternative protein business sectors and build our business based on consumer needs, using the market-in approach.

## Partnering with other companies on sustainable food

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Unlike in other countries, PBF is not well known in Japan, where ethical consumption has yet to gain ground and choices are limited. The Plant Based Lifestyle Lab (P-LAB)\*<sup>1</sup> was founded in March 2021 by 15 companies from a range of business domains. It became a general incorporated association in November of the same year and launched full-scale activities with a total of 40 companies (Directors: Fuji Oil Holdings Inc., Kagome Co., Ltd., and Pasona Group Inc.; Auditor: Pasco Shikishima Corporation). In FY2021, P-LAB engaged in discussions on consumer awareness surveys and on the Q&A on Plant-based Food Labeling\*<sup>2</sup> prepared and published by the Consumer Affairs Agency of Japan in August of the same year, as well as held a dialogue with the PBF Promotion Working Team of the Council for Public-Private Partnership in Food Technology of Japan's Ministry of Agriculture, Forestry and Fisheries. We have laid the foundation for spreading fun, healthy and delicious culinary lifestyles that naturally include PBF. Going forward, we will organize educational events for both members and the public to maintain our communication base, develop new foods and products through collaboration between members, and continue to promote value creation by merging PBF with health, beauty, tourism, agriculture, education and other sectors. Through the industry-government-academia-private partnership in P-LAB, the Fuji Oil Group will work for healthy diets and lifestyles filled with joy and in harmony with the planet, and develop sustainable food systems.

\*1 Follow the link below to learn more about P-LAB.

> <https://pbl-lab.net/> (In Japanese)

\*2 Follow the link below to learn more about the Q&A on Plant-based Food Labeling by the Consumer Affairs Agency of Japan.

> [https://www.caa.go.jp/notice/other/plant\\_based/](https://www.caa.go.jp/notice/other/plant_based/) (In Japanese)

## Developing a soy business to improve nutrition and increase women farmers' income in Burkina Faso

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Fuji Oil Ghana Ltd., a Fuji Oil Group company, imports most of the shea kernels it uses from the neighboring Burkina Faso. Many of the women who harvest shea kernels in the region are also engaged in soybean cultivation.

Since 2019, the Fuji Oil Group has been conducting a business feasibility study on the procurement of soybeans and the development, manufacture and sale of soy meat in Burkina Faso. The aim is to improve the nutrition of local consumers and increase local farmers' income. This study was selected as a 2018 Survey on Businesses to Address Developing Country Issues (SDG Business)\* by the Japan International Cooperation Agency (JICA). Within the JICA framework, the contribution of this project to achieving specific SDG targets was also examined.

In FY2021, we studied production lines and factory investments with equipment manufacturers for soy meat production, as well as considered forms of collaboration and business structure with local companies. With the aim of helping improve nutrition, we carried out a survey of local nutritional health and further designed a survey to assess the impact that will be created by the business. Moving forward, we will continue to study the project to determine its potential for future commercialization so that we can make good use of the Group's protein technology and contribute to enriching the diets and lifestyles of local communities.

\* JICA provides financial assistance of up to 50 million yen per proposal for a maximum of three years for Japanese companies planning to start a business that will contribute to the attainment of the SDGs in developing countries.