

F-REI Commissioned Research Project

Undertake R&D and demonstrate large-scale seaweed aquaculture production technology and its effect on blue carbon towards practical application of negative emissions technology

Riken Food Co., Ltd., RIKEN, and Nagasaki University were selected for the "FY2023 Research and Development of Core Technologies for Negative Emissions" project commissioned by F-REI (Fukushima International Research and Education Institute) on blue carbon and signed a contract on January 26.

Seaweeds do not require fresh water or soil resources and is attracting worldwide attention for its potential as a food and biomass resource and carbon offset potential.

Surrounded by the sea, Japan has long used wide variety of seaweed for food, and seaweed cultivation is practiced throughout the country. However, seaweed cultivation in Japan has been supported by small-scale operators, and therefore there are no seaweed cultivars, seedling production technology, or aquaculture technology for the large-scale production that can support production needed for non-food applications, such as biomass resources.

In this research project, we will develop large-scale aquaculture production technologies for one-year kelp (kelp), which is expected to produce high biomass yields, and for *Monostruma nitidum*, for which Fukushima Prefecture is one of the leading aquaculture production areas in Japan. In addition, we will conduct case-study experiments along the coast of Fukushima Prefecture to evaluate issues that are expected to occur with future industrialization.

We will also quantitatively evaluate the amount of CO₂ sequestered by seaweed aquaculture and estimate the potential effect on blue carbon due to large-scale aquaculture. Finally, we aim to establish internationally recognized quantitative methods that can be used both domestically and internationally.

Breeding superior kelp strains with high biomass productivity



Development of mass-producible seedling and aquaculture production technology



Development of Evaluation Technology for Seaweed CO2 Fixation



Demonstration and Evaluation in Fukushima



Basic information on contracted research projects

Project Name:

Commissioned Project for "Research and Development of Core Technologies for Negative Emissions" in FY2023

Theme (2) Development and verification of the use of algae for carbon fixation and negative emissions

Issue Title:

Research and development of core technology for the mass cultivation of seaweed applicable towards the bioeconomy and formation of a production base along the coast of Fukushima Prefecture

Consortium for R&D of Core Technology for Mass Seaweed Aquaculture		
Institution Name	Principal Investigator's Name	Position
Riken Food Co., Ltd. (Representative Organization)	Yoichi Sato	General Manager, Raw Materials Division
RIKEN, the Institute of Physical and Chemical Research	Tomoko Abe	Group Director/Principal Investigator, Ion Beam Breeding Group
Nagasaki University	Gregory N. Nishihara	Professor, Organization for Marine Science and Technology

Duration:

Up to 5 years (subject to change based on various evaluations during the implementation period)

Related Links

F-REI (Fukushima International Research and Education Institute) website:

<https://www.f-rei.go.jp/>

About Riken Food

Riken Food Co., Ltd. is a subsidiary of Japanese food manufacturer Riken Vitamin Co., Ltd. that manufactures seaweed products and conducts research on seaweed cultivation.