No. 126 December 2025

AAINews

Connecting people, agriculture and the environment through appropriate technologies

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Field visit of the Biomass-Fuel Crop in Vietnam

In early 2024, the author had the opportunity to visit the demonstration fields and the seed processing facility for the biomass-fuel crop in Vietnam, where the Japan Agricultural Design Institute (JADI) was conducting field adoptation trials and seed multiplicatiom.

Based on the philosophy of contributing to the creation of sustainable and prosperous communities, JADI is engaged in developing technologies for biomass-fuel crops, primarily *Erianthus arundinaceu*s, as prospective crops for regional revitalization through the effective use of uncultivated land. They also develop crop varieties suited for the purpose of use and its cultivation environment, propagate and distribute seeds and seedlings, and provide technical guidance on their cultivation methods.

Demationof *Erianthus*

Erianthus is a perennial, high-yielding graminaceous crop native to the Middle East and India. It was developed as a promising cellulosic biomass-crop by the National Agriculture and Food Research Organization (NARO) in Japan, based on genetic resources collected in the 1980s by sugarcane breeders for crossbreeding purposes. Erianthus exhibited the ability to be cultivated efficiently in harsh environments where food production is difficult.

Its characteristics include: ① high dry matter production, ② high CO2 fixation capacity, ③ tolerance to adverse environments, ④ low labor requirements, and ⑤ low production costs. It was estimated that the annual dry matter production of Erianthus, and therefore its net carbon dioxide sequestration, significantly surpasses that of woody plants.

Many biomass-fuel crops are tropical plants, and most of them cannot survive the Japanese winter. However, this species, which is suitable for warmer climates, and Miscanthus (Miscanthus spp.), which includes Japanese silvergrass and reed grass suitable for colder climates, has been selected as domestically produced biomass-fuel crops. Compared to woody plants, they have a shorter growth period until harvest, can be fully utilized from the third year onwards, have an economic lifespan of nearly 20 years, are suitable for mechanical harvesting, allow for low-moisture harvesting through field drying, and have excellent storage and transportation properties.

In Japan, JADI has conducted demonstration and feasibility trials, such as utilizing Erianthus as a fiber source for animal feed at the request of a livestock farmer in Shimabara, Nagasaki Prefecture. Other potential uses include raw materials for biogas production, bedding material for livestock, mushroom cultivation media, and substitution of raw materials of plastic.

The demonstration and exhibition fields we visited in the central part of Vietnam was a 1.0 hectare plot where 4,000 plants were transplanted. The plants showed stable establishment, healthy growth, and vigorous development, with no signs of damages caused by pesst and diseases.

At the same time, we observed the preparation of seeds for the next planting season, which is part of the plan to expand the production fields. The seeds, which had been collected from field dried ears between November 2023 and January 2024, were being extracted by workers, and technical guidance was being provided on this seed preparation process.

Instructing seed extraction and processing

This field visit provided us with many insights into the potential for applying the knowledge accumulated in Japan regarding these biomass-fuel plants. It implied the effective utilization of land unsuitable for food crop cultivation in this region, as well as their potential use as energy resources.

(July 2024, Niide)