

Expansion of Resource Utilization by Converting Sewage Sludge to Fuel/Fertilizer

(Research of FY 2017-2021)

1. Purpose

The Sewage Law, amended in 2015, obligates wastewater administrators to make efforts to recycle sewage sludge as fuel or fertilizer.

This study aims to discover problems and solutions for promoting sewage sludge utilization as fertilizer and to establish a more straightforward production and testing scheme of sewage sludge fertilizer to contribute to further sewage sludge utilization as fertilizer.

2. Outcomes of This Year

(1) Analyzing hearing survey results for promoting sewage sludge utilization as fertilizer

JS conducted a hearing survey targeting fertilizer manufacturers, logistic companies, and end users last year. Table 1, describing the survey results, shows that while their facility management costs, sewage sludge fertilizers are sold at low prices. It also indicates a need for more values such as pelletization, bagging, etc. So, promoting sewage sludge utilization as fertilizer requires solutions for these issues.

Table 1. Results of a hearing survey for promoting sewage sludge utilization as fertilizer (extraction)

Target of hearing	Comments(extraction)
15 municipalities or unions producing fertilizer	Securing stable demands required 2-3 years (5/15)
	Facility management needs to transfer a lot from the general account (2/15)
19 Private fertilizer manufacturers	Suffering from odor control from facilities (4/19)

3 logistic companies for fertilizer	Cannot cost recovery because of the low selling price (2/3)
	Pelletizing and bagging are favorable
10 end users, including farmers, golf clubs, etc.	Pelletizing and bagging, easy for spraying, are desired for many aging farmers.

(2) A large fertilizer-producing test facility

Since general compost production needs tons of materials, compost-producing tests using sewage sludge or dewatered cake are difficult. So, commercialized raw garbage compost equipment was remodeled into a large fertilizer machine installed in the JS R&D experimental center in Mohka city, Tochigi prefecture (Photo 1). This machine aims to enable fertilizer production tests with a small amount of dewatered cake of 10-100kg.



Photo1. Large fertilizer-producing machine

3. Conclusion/Future Issues

Based on the hearing survey results, value-added manufacturing such as pelletization or bagging and its feasibility will be studied. Also, a compost-producing test scheme will be established using a large fertilizer test machine with a small amount of sewage sludge.

Keywords: **Fertilization test, Fertilizer property, Small composting unit, Continuous fermentation test, Thermophilic bacteria**