

Conditions at farmland damaged by tsunami and countermeasures

The Ministry of Agriculture, Forestry, and Fisheries estimated that the area of farmland that sustained damage, such as wash-out and flooding, from the tsunami created by the Great East Japan Earthquake, was 23,000ha for the entire stricken area. In particular, Miyagi Prefecture had the largest damaged area: 15,002ha. Most of the damage was concentrated in the Sendai plain.

Prof. Masami Nanzyo began inspecting and investigating the farmland damaged by the tsunami in southeastern Sendai on March 25, two weeks after the earthquake. He sampled the soil and analyzed it. In the said region, the tsunami went about 4km inland from the seashore. At the beginning, it was feared that topsoil had been eroded by the tsunami, that it would take much time and labor to restore the farmland. However at the point investigated,

near Arahama, the surface soil was apparently affected to a depth of about 2-3 cm from the top. The sediment was in the same range. Even at the deepest point, it was only 20cm. Regarding salt residue, although electrical conductivity of water in the sediment is almost comparable to sea water, at 4-9cm from the surface soil it decreased to 1/10th, and it turned out that the tsunami initially affected only the upper part of the surface soil.

Although tsunami damage to farmland from the Great East Japan Earthquake was serious and covered a wide area, as he looked at the investigation points he concluded that the surface soil can be restored.

"In order to explore a quick and suitable soil restoration technique, we will analyze the sampled soil and clarify the effects of the tsunami on surface soil," says Prof. Nanzyo.



Prof. Nanzyo has recently been focusing on the rice rhizosphere, and noted that rice stubble washed by tidal waves stood as it was on paddy fields before plowing, which means that "there are few washouts of surface soil," and "little ground cover was carried away by the tsunami."



This cross-sectional specimen of soil symbolizes the laboratory. "We can read various phenomena about the land from this specimen," says Prof. Nanzyo.



Prof. Yutaka Nakai, Graduate School of Agricultural Science, is now proceeding with the "Rape Blossom Project for Reviving Farmland Damaged by Salt due to Tsunami." In this project, rape blossoms, which are resilient to salt damage, are cultivated with the aim of restoring farmland through farming. The Nanzyo Laboratory is involved in soil analysis for the project.

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<http://www.agri.tohoku.ac.jp/soil/jpn/>

The Ministry of the Environment estimates that waste, such as disaster wastes, from the Great East Japan Earthquake totals 24,900,000t in all for Miyagi, Iwate, and Fukushima prefectures. Miyagi Prefecture had 16,000,000t, which is equivalent to the amount of waste the prefecture processes in 23 years. How should this vast quantity of debris be handled?

Prof. Toshiaki Yoshioka, who is mainly studying recycling chemistry for waste plastics, collected information on the stricken area as a member of the Taskforce on Disaster Waste Management and Reconstruction of the Japan Society of Material Cycles and Waste Management. He participated in creating a manual, titled "Waste Separation/Disposal Strategy" using

Sendai City as a model.

Japan has suffered from disasters many times, and a disposal method for the waste generated by disasters has always been an issue, but there was no systematized manual until now.

"If waste is not processed properly, future generations will have to take up the slack. Moreover, it is necessary to process waste quickly so stricken areas can be restored. The manual provides a disposal method and procedure for processing waste properly in the case of a disaster or emergency. It will be useful for disasters that occur anywhere in the world," says Prof. Yoshioka.

This manual has been revised, and now Ver. 2, Rev. 3 is on the Japan Society of Material Cycles and Waste Management website.



It is essential for waste treatment organizations to construct systems, facilities, and equipment for appropriate disposal, and establish technologies for disposal of all waste safely and efficiently. A system has already been described in this manual. Next, research on processing technologies, which is Prof. Yoshioka's original research subject, should be given priority.



About 70% of the waste generated this time was wood. It is already being utilized as a material for plywood, and as an energy source at paper mills and cement plants. Prof. Yoshioka says, "Waste treatment for this earthquake provides an opportunity to promote the spread and expansion of natural power sources, such as effective use of woody biomass."



"On-site Seminar on Disaster Waste from the Great East Japan Earthquake" sponsored by the Japan Society of Material Cycles and Waste Management

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Creating the global standard for strategic disaster waste management/disposal