

## Effects of inorganic amendments on radiocesium behavior in grassland soil

\*Homma Yusuke<sup>1</sup>, Shoichiro Hamamoto<sup>1</sup>, Toshihiro Kogure<sup>1</sup>, Taku Nishimura<sup>1</sup>

1. The University of Tokyo

The accident at the Fukushima Daiichi nuclear power plant occurred in 2011, resulting in contamination of agricultural fields by radioactive substances such as <sup>137</sup>Cs (RCs). Potassium (K) fertilization is typically considered as an effective countermeasure for reducing RCs uptake by plants. However, in case of a pasture, K fertilizer application results in increase in pasture K concentration, causing a metabolic disease for cattle known as grass tetany. Therefore, in the grassland polluted by RCs, alternative countermeasures for reducing RCs uptake are required. In this study, we investigated the effect of adsorbent applications on the RCs behavior in grassland soil.

Soil samples were taken from a grassland polluted by RCs at the surface layer (from 0 to 5cm) in Fukushima prefecture. Zeolite and weathered biotite were selected as adsorbents. The soil was adjusted to different water contents (0.86, 1.2) and the adsorbents were added at 0.5, 2.5, 5g per 50g dried soil. Incubation was conducted in constant temperature (20°C) room. Incubation duration was 7, 28 and 112 days. After that, 1M ammonium acetate with soil: solution ratio of 1:4 (dried soil: solution) was added and shaken for 6 hours. Suspension was filtered by 0.45 μm membrane filter. Cs concentration (exchangeable Cs, Ex-Cs) in the filtrates were measured by a Ge semiconductor detector.

With increasing adsorbents added to the samples, the concentration of Ex-Cs decreased where more decrease in Ex-Cs was observed for the sample at higher water content. Zeolite decreased concentration of Ex-Cs more than weathered biotite in same soil: solution ratio.

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