Behavior and phytoavailability of radiocaesium in surface soil

lines and oil production in these fields. We are testing salinity tolerance of more than 50 lines *in vitro* and in pots. After selection of ten salinity-tolerant lines, we plant them in the high salinity fields. Assessing salinity tolerance, seed yield, adaptability, plant biomass, and uptake of salts, we will select a line usable as a rapeseed line for oil production in these fields and as a material for breeding of a more promising salinity-tolerant high-yielding rapeseed line. In our preliminary investigation, we identified salinity tolerant lines in *Brassica napus*, *Brassica juncea*, and *Raphanus sativus*.

Behavior and phytoavailability of radiocaesium in surface soil

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Large-scale Tsunami on 11 March 2011 triggered the accident of Fukushima Daiichi Nuclear Power Plant. Large amount of several radionuclides was released into the atmosphere and deposited onto the surface soil and vegetation in the wide area in eastern Japan. Among the released radionuclides, ^{137}Cs is one of the most important nuclides for estimating long-term public exposure to radiation, because of its long half-life (30.1 y). Therefore countermeasures are required for its reduction in agricultural products in contaminated regions.

The distribution of fallout ^{137}Cs, derived from atmospheric nuclear weapon testings carried out mainly in 1950s - 60s, in agricultural soil and crops has been investigated. After the Chernobyl Nuclear Power Plant accident in 1986, fate of ^{137}Cs in terrestrial environment and mechanism of its retention to clay minerals have been extensively studied. In this presentation, the behavior of Cs in soil and its transfer from soil to plant will be reviewed briefly.

It is well known that Cs is specifically sorbed on frayed-edge sites (FES) of illitic minerals. A major form of nitrogen in soil solution under anoxic condition is NH_4^+, which acts as a competitive ion for Cs^+ on sorption into FES. Therefore, mobility of radiocaesium can be influenced by nitrogen cycle in paddy soil. Potentially effective soil management to reduce Cs transfer to crop will be also discussed.