Vol. 12 (1): *291-298 (2022)*

INTENSITY OF ^{137}CS TRANSITION INTO NECTAR-POLLINATING PLANTS AND BEEKEEPING PRODUCTS DURING RECLAMATION OF RADIOACTIVELY CONTAMINATED SOILS

Razanov Serhii[1*], Landin Volodymyr[2], Nedashkivskyi Volodymyr[3], Ohorodnichuk Halina[4], Gucol Galina[5], Symochko Lyudmyla[6], Komynar Mykola[7]

[1,4,5]Vinnytsia National Agrarian University, 3, Soniachna Str., Vinnytsia, Ukraine;*
[2]Institute for Safety Problems of Nuclear Power Plants of the National Academy of Sciences of Ukraine, 12, Lisogorskaya Str., Kiev, Ukraine;
[3]Bila Tserkva National Agrarian University, 8/1, Soborna pl., Bila Tserkva, Ukraine;
[6]Uzhhorod National University, Voloshyna Str.3., Uzhhorod, Ukraine;
[7]Institute of Agroecology and Environmental Management NAAS, 12, Metrologicheskaya Str., Kiev, Ukraine;

[*]Corresponding Author Razanov Serhii, email: razanovsergej65@gmail.com;

Received November 2021; Accepted December 2021; Published January 2022;

DOI: https://doi.org/10.31407/ijees12.134

ABSTRACT

The article presents investigations of transition ^{137}Cs to agricultural crops (sunflower) and beekeeping products (honey, bee pollen) for reclamation of radioactively contaminated soils. It is proved that the quality of beekeeping products depends from the ecological condition of nectar-pollinating lands. As a result of the 1986 accident at the Chernobyl nuclear power plant, nectar-pollinating lands were subjected to high man-caused impact, in particular, some areas of Polissya. It caused a certain accumulation of ^{137}Cs and ^{90}Sr in beekeeping products. The authors studied the effect of reclamation of contaminated soils, in particular, in the Narodytskyi district of Zhytomyr region of Ukraine with ^{137}Cs up to 5 Ci/m^2 with different acidity on the intensity of accumulation of this radionuclide in honey and bee pollen produced by bees from nectar and sunflower pollen. It was found that the specific activity of ^{137}Cs in honey and bee pollen produced by bees from nectar and pollen of sunflower grown on agricultural land with a content of this radionuclide in soils from 2824 Bq/kg to 2665 Bq/kg, not exceeding DR-2006 200 Bq/kg. Reclamation of radioactively contaminated soils with hydrolytic acidity from 1.6 mg to 2.4 mg-eq/100 g of soil, in particular, the application of defication mud in them at a rate of 4 t/ha to 6 t/ha reduced the specific activity and accumulation coefficient of ^{137}Cs in vegetative mass of sunflower, honey and bee pollen, made by bees from nectar and pollen of this plant.

Keywords: sunflower, soil, honey, bee pollination, vegetative mass, nectar, pollen, specific activity of ^{137}Cs.