Potato production on private plots contaminated by radionuclides

I. Bogdevitch, S. Tarasiuk
Belarusian Research Institute for Soil Science and Agrochemistry (BRISSA)
Kasintsa str., 62 220108 Minsk Belarus

Potatoes is one of the basis food products of man diet, especially in country area. Recent research has shown that ^{137}Cs content in potato tubers does not exceed the permissible level at the potato growing on radioactive contaminated land in Belarus. However up to 240-300 kg of potatoes is consumed per man during year and potato yield determines significant share of the internal dose of radiation. Moreover, extra potato yield sold on market is forming the essential part of the rural family budget. Therefore the reducing of ^{137}Cs content in potatoes and increasing of potato yield could be allowed to improve of quality life of rural inhabitants on contaminated areas. The application of protection measures on private plots are restricted by lack of the knowledge and financial deficit. The involvement of rural inhabitants in processes of self-rehabilitation and self-development could be a way to improve the quality life on radioactive contaminated territory

There is strong motivation for inhabitants to increase the yield and to reduce the radionuclide concentration in potatoes. How to develop the conditions for the sustainable potato production by private producers on affected land? There are several factors to consider. Firstly, the rural inhabitants should be actively involved as initiators to improve their quality life. Secondly, the potato technology should be adopted to the local territory and tested by producers on radiological and economic efficiency. Thirdly, the common village initiatives should be developed for supplying by new varieties of seeds and fertilizers, selling of yield, consulting, crediting etc. The step-by-step solution of described strategy could allow improving and stabilizing the potato production by rural community.

The training of rural people as an initial step was realized to transfer to the inhabitants the practical skills that can be used in their day-to-day life within framework of “ETHOS-II” project. The experimental potato technology was developed and tested by stakeholders on 130 plots of Stolyn and Slavgorod districts during 2001-2003. The results have shown that potato yield in experiment was increased up to 35 t ha^{-1} or in 1.6 times to the control with usual technology. The 1 € invested to the potato experiment provided 1.5-2.0 € of net return on the average. The careful testing of technology by some participants allowed to reduce the ^{137}Cs and ^{90}Sr accumulation in potatoes up to 50-70% and the nitrate concentration in 1.5-2.6 times to the control. Presumably the ^{90}Sr concentration on plots contaminated by radionuclide and nitrate concentration in tuber should be permanently controlled.