

## FEATURES OF <sup>137</sup>Cs ACCUMULATION BY PLANTS IN FOREST ECOSYSTEMS OF ZHYTOMYR POLISSIA

The Chernobyl accident caused significant radioactive contamination of the territories of Ukraine and neighboring countries. It had a great impact on the radiation situation in many countries.

The problems of contamination of wood and non-wood forest products are studied thoroughly enough. Important investigations were conducted by such scientists as V.P. Krasnov (1998, 2004), F.A. Tikhomirov (1990), A.I. Shcheglova (1994), I.M. Bulavik (1998), A.A. Orlov (2011), A.N. Perevolotskyi (2006) and others. But, because of the influence of forest vegetation, soil and climatic conditions on <sup>137</sup>Cs accumulation by some plant species, these issues have not lost their urgency. Two study plots were selected for determining the characteristics of <sup>137</sup>Cs accumulation in the undergrowth phytomass in forests of Zhytomyr region. The most typical Polissia forest vegetable conditions were taken into consideration when choosing a location for research. Subory and inherent for them communities with the average value of soil contamination density of 29±8 kBq/m<sup>2</sup> dominated on the first plot. Sugrudy and inherent for them communities with the average value of soil contamination density of 55±17 kBq/m<sup>2</sup> dominated on the second plot.

The results of studies of <sup>137</sup>Cs specific activity in raspberry and blackberry phytomass during the year are shown in table 1; the calculated accumulation factors are given in table 2.

Table 1

*The dynamics of <sup>137</sup>Cs specific activity in the phytomass of shrub layer plants*

Month	<sup>137</sup> Cs specific activity, Bq/kg			
	fresh and humid subory		fresh and humid sugrudy	
	blackberry	raspberry	blackberry	raspberry
February	228±17	1204±254	591±10	348±88
March			303±53	256±50
April	247±19	333±65		
May			205±32	534±135
June	388±35	402±42		
July			253±26	535±49
August			423±36	450±49
September	349±63	483±83	487±50	384±51
October	532±62	231±10	246±7	350±14
November				
December			59±4	152±5
<b>Average</b>	<b>357±22</b>	<b>518±54</b>	<b>286±13</b>	<b>370±23</b>

The comparison of the average values of <sup>137</sup>Cs specific activity and accumulation coefficients indicate that migration of radionuclides from soil to plant phytomass decreases in rich conditions of sugrudy. <sup>137</sup>Cs specific activity in blackberry phytomass on the first study plot exceeded that of the plants on the second study plot by 20 % and in raspberry phytomass by 29 %. With the increase of soil trophic index the accumulation factor in blackberry decreases by 28 %.

Table 2

*<sup>137</sup>Cs accumulation factor in the phytomass of shrub layer plants (Bq/kg in phytomass / Bq/kg in soil)*

Month	Fresh and humid subor		Fresh and humid sugrud	
	blackberry	raspberry	blackberry	raspberry
February	0,65±0,25	3,48±0,59	0,71±0,01	0,63±0,23
March			0,57±0,12	0,57±0,15
April	0,84±0,07	0,79±0,15		
May			1,03±0,23	1,11±0,28
June	1,01±0,13	1,13±0,33		
July			2,90±0,59	0,83±0,17
August			0,86±0,18	0,82±0,17
September	1,50±0,29	2,50±0,59	0,50±0,07	0,46±0,09
October	2,22±0,19	0,71±0,08	0,60±0,08	0,81±0,18
November				
December			0,15±0,02	0,51±0,06
<b>Average</b>	<b>1,30±0,10</b>	<b>1,63±0,16</b>	<b>0,93±0,09</b>	<b>0,70±0,06</b>

The average monthly values of <sup>137</sup>Cs accumulation coefficient in raspberry phytomass obtained from the first plot are lower in April and in October than in the period from May to September. The values of accumulation coefficients obtained in May–August were higher compared to the other months.

Thus, the analysis of the average values of indicators which characterize <sup>137</sup>Cs accumulation by studied species of rose family shows that the radionuclides transfer from soil into plant phytomass depends on growing conditions and it has species-specific character.