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METHODICAL ASPECTS OF FOREST MANAGEMENT IN THE SE «NARODYCHI SF»

According to the «Forest rehabilitation program», which was adopted by the State Forestry Committee of Ukraine, the survey of forests on their radioactive contamination was carried out in the state forest enterprises of Ukrainian Polissya. Normative documents regulating this survey were the following: «Methodical recommendations for rehabilitation radiation-contaminated forests after accident on Chernobyl NPP» [1], and «Technique for examination radiation-contaminated forests for their further rehabilitation (through the years 2010 – 2015)» [2].

Our investigations were conducted in the SE «Narodychi SF», located in the north-eastern part of Zhytomyr region. Forest massifs of the SE «Narodychi SF» were badlycontaminated after Chernobyl NPP accident. Primary data on forests survey in this state forest enterprise was conducted through the years 1991 – 1992. The survey data obtained by Polissia branch of Ukrainian Research Institute of Forestry and Forest Meliorationin 2011 – 2014 were used during the investigations.

The technique used for the survey of forests through the years 1991 – 1992 was developed considering the allocated money. According to this technique it was necessary to select one separate sample for calculating the value of ^{137}Cs soil contamination density per 100 ha of afforestation (one forest block with the territory of 1 km x 1km).

There are many forest blocks in the SE «Narodychi SF» with the territory less than 100 ha and which weren't investigated after Chernobyl NPP accident. On existing schematic maps such blocks were rated to the same zone of the neighboring block with the maximal density of soil radioactive contamination. The total number of forest blocks in SE «Narodychi SF» is 753.The analysis of survey data through the years 1991 – 1992 (Table 1) shows that only 461 of them were examined; and it makes 61,2 % of their total number in state forest enterprise. A significant number of them – 292 blocks were not examined.

Table 1

The number of forest blocks in the SE «Narodychi SF» which were examined on ^{137}Cs soil radioactive contamination density (years 1991-1992)

Forestry	Number of forest blocks, units		Share of investigated blocks, %
	Total	Investigated	
Narodychi	101	68	67,3
Zalissia	48	47	97,9
Bazar	162	97	59,9
Davydky	64	47	73,4
Zakusyly	135	64	47,4
Klihschi	137	67	67,1
Radcha	106	71	67,0
Total	753	461	61,2

14 – 21 examined samples of soil within one forest block were selected and analyzed (without taking into account their sizes). Thus, the received materials should be considered as more objective

than previous ones. Performed examination showed considerable lower values of soil radioactive contamination density compared to the assumed values considering the radionuclide disintegration (Table 2). It is known that the activity of the radionuclide per unit area should reduce approximately by 50% due to the disintegration of ^{137}Cs and ^{134}Cs (from the moment of accident on the Chernobyl NPP). Thus, the average value of soil radiation contamination density in blocks of Bazar forestry in 2014 year is the following: № 26 – 27,0 % compared to 1991 – 1992 years.; № 28 – 38,8 %; № 34 – 51,3 %; № 41 – 21 %; № 52 – 16,5 %;№ 83 – 8,8 %. Similar results were received while comparing the survey data in different forest enterprises. Similar results in the survey of the assumed values and factual data are observed only in some cases (forest block № 34 of Bazar forestry and № 73 of Klischi forestry). At the same time, the reduction of the levels of soil radiation contamination in the forest block № 56, Bazar forestry, is not observed. As far as approximately 20 soil samples in 20 forest stratumof this forest block were analyzed during the examination in 2014, the data of the previous examination in 1991 – 1992 years should be considered as quite subjective.

Table 2

The comparison of the density of soil radiation contamination by ^{137}Cs in forest blocks of Bazar forestry, the SE «Narodychi SF» (based on materials of investigation in 1991 and 2014)

Forestry	Number of forest blocks, units	Number of measurements in 2014, units	Density of soil radiation contamination, (Ci/km^2)	
			Data, 1991 year	Data,2014year
Bazar	26	19	23,0	6,2 ± 0,34
	27	20	-	6,23 ± 0,33
	28	21	16,3	6,33 ± 0,30
	32	16	-	5,79 ± 0,49
	34	17	14,2	7,29 ± 0,35
	41	14	11,5	2,49 ± 0,19
	48	20	-	1,99± 0,17
	52	18	10,5	1,73± 0,08
	56	20	2,7	2,72± 0,16
	83	14	22,9	2,02± 0,19

In general, analyzing the data of the conducted researches on radioactive contamination of forests (the SE «Narodychi SF», Bazar forestry) it can be proved that the value of density of soil radiation contamination reduced much more than 50% on these territories in 2014 year compared to 1991 (Fig. 1).

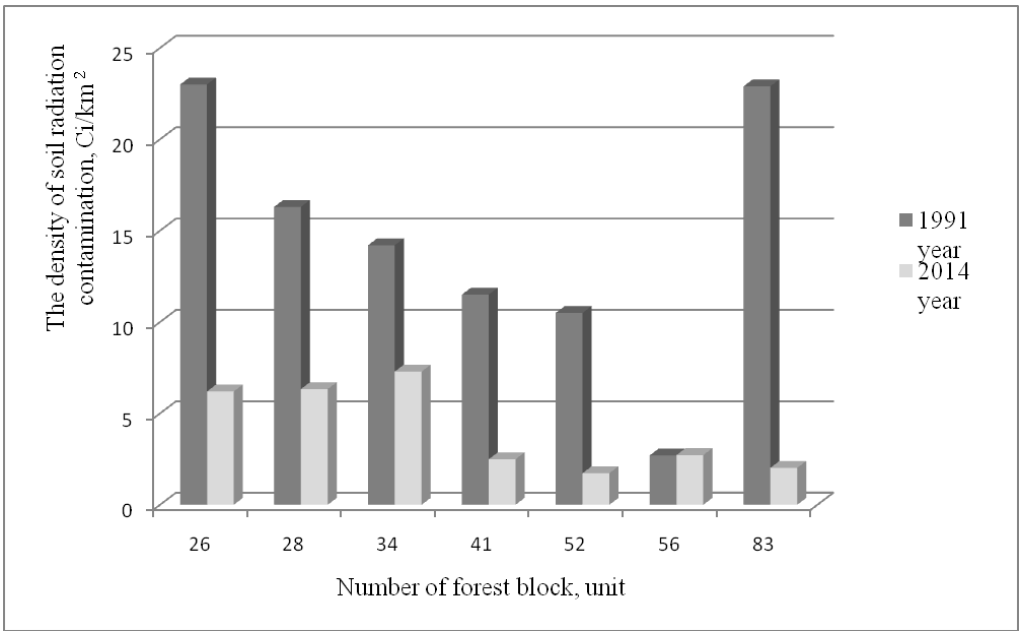

Fig. 1. The dynamics of the density of ^{137}Cs soil radiation contamination in forest blocks of Bazar forestry, the SE «Narodychi SF»

Conclusions:

1. The researches conducted in forest plantings of the SE «Narodychi SF» indicate considerable mosaic character of radioactive contamination at the level of forestry and forest blocks (the excess of the maximum values of the density of soil radiation contamination compared to the minimal values can be by 71 times).

2. It is necessary to examine those forest blocks which were not examined on the density of soil radiation contamination in 1991 – 1992 years for their further rehabilitation and for the restoration of forest management.

REFERENCES

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