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WATER PROPERTIES OF PODZOL SOILS IN RESTORED AREAS

The present paper deals with water properties of podzol soils in restored areas. The intensive use of mineral deposits in Ukraine negatively affected the soil. One of the methods to reproduce the natural condition of the soil cover is the restoration of disturbed areas.

Disturbed land restoration is the process of restoring lands where the natural conditions and processes have been impacted by development of mining. The restoration is related with disturbances of the soil physical structure, water parameters, water balance, porosity, water retention forces and water flow in soils.

Special attention is given to soil moisture content. Soil moisture content is the water in the large and intermediate size pores, which can move about in the soil and can be easily used by plants.

Soil moisture content is divided into 4 types: saturated water content, field capacity, permanent wilting point, residual water content. Saturated water content (SWC) is open space in soil occupied by water. Field capacity (FC) is the amount of soil moisture or water content held in the soil after the excess water has drained away and the rate of downward movement has decreased. Permanent wilting point (PWP) is defined as the minimal point of soil moisture the plant requires not to wilt. Residual water content (RWC) is the lowest bound of existing water-retention functions of soils.

The sampling was carried out in the areas of Irshansk Mine-Concentrating Works in Zhytomyr region. The industrial area was restored in 1985 and hasn't been in agricultural use since then.

A comparative analyses was made of soil samples from restored and control areas. Different types of soil moisture content were investigated by methods of Mackiewicz and Dolgov.

The results of the experimental study are presented in table 1.

Table 1

Water capacity, % in the dry soil

Depth, sm	Restored area				Control area			
	SWC	FC	PWP	PWC	SWC	FC	PWP	PWC
0-10	46,5	29,5	18,4	11,4	42,9	31,8	22,6	11,7
10-20	44,6	29,1	17,9	10,8	37,6	32,1	23,3	11,1
0-20	45,6	29,3	18,2	11,1	40,3	32,0	23,0	11,4

The data shows that the field capacity and residual water content in the restored area became lower and amounted to 29,3% and 18,2%, while in the control area these indicators were 32% and 23%.

We can conclude that the soil restoration changes water properties in podzolic soil, but the 30-year period is not enough for full restoration of soil water constants.