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CHANGING OF TOTAL PHYSICAL PROPERTIES OF LIGHT GRAY FOREST SURFACE GLEYED SOIL UNDER THE IMPACT OF ITS LONG-TERM USE

The research of general physical properties of light gray forest surface gleyed soil on the fallow and in the variants of 50-year long-term agricultural use have shown that the average density of solid phase is up to 2,65–2,67 g/cm³ on the fallow, in the horizon Pigl rate decreases to 2,58, in the rock it increases to 2,70 g/cm³. In the control variant the oscillations of density meanings are higher and are 2,67 in the plow layer and 2,74 g/cm³ in the subsoil one. The high rate (2,82 g/cm³) of horizon Ehgl version of long mineral fertilization is determined by washing in the conditions of periodically flushing type of water regime a large number of mineral compound of fertilizers and their accumulation in the given horizon.

Density structure of the fallow soil in horizon HEgl is 1,24 g/cm³. On the control without fertilization in the topsoil the density of the structure is 1,29 g/cm³ and is mainly caused by the ways and term of soil cultivation. The version of fertilization is characterized by optimal size of the structure density of the plow layer – 1,18 g/cm³, but due to the accumulation of silt particles and oxides in depth the value of this index increases to 1,79 – 1,77 g/cm³.

The total porosity of upper horizons of the investigated soil ranges between 50–56 %, it decreases with depth. The number of apertures saturated by air in the horizon HEgl fallow was 29,30 %. By high rates (respectively 34,37 and 48,53 %) are characterized arable horizons of the control and the version of mineral fertilization.

Thus, the long-term use of light gray forest surface gleyed soil without and with fertilization promotes the growth of the density of the solid phase compared to the fallow on the profile and the structure density of the subsoil horizons because of their consolidation, growth of powdering and reducing of apertures. Increasing of apertures amount saturated by air in the version of the long-term mineral fertilization indicates the preference of the impact of fertilizers in the systematic cultivation on the air regime in comparing with the absolute control and the fallow.