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AGROPHYSICAL PROPERTIES OF SOIL UNDER BINARY SUNFLOWER CROPS

M. A. Nesmeyanova, A. V. Dedov

Voronezh State Agrarian University named after Emperor Peter I, Department of Agriculture
1, Michurina St., Voronezh, 394087

The paper shows the change in the basic agrophysical properties of the soil at the cultivation of sunflower using the methods of biologization and various methods of primary tillage. The study has been carried out in 2011–2015 in a multifactorial inpatient experiment in the southeastern part of the Central Black Earth Region on the typical clay chernozem. The object of the study was the soil layer 0–30 cm. Binary sunflower crops with perennial legume grasses (yellow clover and blue alfalfa) cultivated with the use of barley straw (predecessor of sunflower) and green manure crop (oil radish and white mustard) as fertilizers are considered in the study. The sunflower has been cultivated in the following crop rotation: fallow – winter wheat – barley – ½ sunflower and ½ corn seeds. Mineral fertilizers in the rotation were not applied. Among the treatments of the main tillage, the moldboard ploughing to a depth of 20–22 cm, subsurface tillage with the cultivator to a depth of 20–22 cm and disk tillage to a depth of 10–12 cm have been studied. The soil moisture was determined gravimetrically, the soil bulk density – by the drilling method (N. Katchynsky), the structural-aggregate composition – by the dry screening of N. I. Savvinov, water stability of soil aggregates – by the method of wet screening (N. I. Savvinov). It was found that the cultivation of sunflower with the use of biologization methods and moldboard plowing (to the depth of 20–22 cm) contributes to the formation of sufficient reserves of available moisture and its rational consumption during the growing season of the crops, maintaining the soil bulk density within optimum values for sunflower, the preservation of the soil structure and the increase of the soil water resistance.

***Key words**:* sunflower, density, moisture, structure, water resistance.