

INFLUENCE OF AGROTECHNOLOGIES OF DIFFERENT INTENSITY ON THE CHANGE OF AGROPHYSICAL PROPERTIES AND WEEDINESS OF SOIL

A. A. Borin, A. E. Loshchinina

Ivanovo State Agricultural Academy named after D.K. Belyaev

45, Sovetskaya St., Ivanovo, 153012, Russia

E-mail: alinalowinina@gmail.com

Agricultural technologies of different intensity were studied on sod-podzolic light loamy soils in a stationary field crop rotation: bare fallow – winter wheat – oats + clover – clover – winter rye – potato – barley. The technologies imply the use of various tillage systems, fertilizer and herbicide treatments. Four tillage systems were compared: moldboard plowing (commonly used), flat plowing, combined plowing (moldboard and flat plowing) and shallow plowing. The purpose of the research was to determine the influence of agricultural technologies of different intensity on the agrophysical soil properties, plant development and crop productivity. The highest soil bulk density was observed in the shallow plowing treatment. The most uniform (compared to other treatments) arable layer with maximum content of agronomically valuable (65.9%) and water-resistant (42.2%) aggregates was formed after moldboard plowing. The number of weeds at flat and shallow plowing was 1.5 times higher than at moldboard plowing. Among agricultural technologies of different intensity, fertilizer application had the most significant impact on crop rotation productivity (28.8%), the use of herbicides and soil tillage treatments had less significant impact (8.6% and 4.6%, respectively). The combined application of fertilizers and herbicides against the background of various tillage treatments contributed to the maximum increase in productivity – 1.36–1.56 t ha⁻¹. The study of various agricultural techniques in the crop rotation has revealed the necessity of their complex application, despite the fact that their influence on the productivity increase varied significantly.

Keywords: soil treatment, agrophysical properties, weediness, productivity.

