IMPROVEMENT OF SOYBEAN CULTIVATION TECHNOLOGY ELEMENTS IN THE FOREST-STEPPE OF THE MIDDLE VOLGA REGION

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The study was carried out in order to improve some elements of soybean cultivation technology on a typical medium-thick heavy loamy chernozem in the conditions of the forest-steppe of the Middle Volga region. In the experiment, the topsoil layer contained 6.0% humus, 90 and 129 mg kg^{-1} of mobile forms of phosphorus and potassium, respectively. The studies were carried out in 2007–2020 in «Ugorye» at the field station of the Samara State Agrarian University in a five-field crop rotation with black and green manure fallows, where winter wheat was the predecessor of soybeans. The reserves of available moisture in the 1-meter soil layer, the bulk density of the plought layer, the weed infestation of soybean crops did not depend on the aftereffect of the fallow type in the link of crop rotation and the mineral nutrition of plants. The use of a complex fertilizer led to an increase in soybean yield by 0.14 t ha^{-1} (13.7%) compared to the unfertilized background. Plowing contributed to the optimization of soil bulk density, rational use of moisture, reduction of weed infestation in the initial period of soybean development and thereby an increase in the crop yield by 0.25–0.43 t ha^{-1} compared to the shallow tillage and its exclusion in the autumn period. The highest total yield of soybean with winter wheat was noted when the crops were placed in the crop rotation link with black fallow. The economic assessment has shown that it was most reasonable to cultivate soybeans in the crop rotation link with black fallow after plowing with the application of a complex mineral fertilizer at a rate of N_{16} $P_{16}K_{16}$.

Key words: elements of technology, bulk density, humidity, weed infestation, soybean yield.