



The Influence of Resource-Saving Soybean Cultivation Technology on the Phytopathological State of the Soil

Antonina Panfilova ^{1*}, Alena-Mariia Tarabrina ¹

¹ Department of Crop Science and Landscape Gardening, Faculty of Agricultural Technologies, Mykolaiv National Agrarian University, 9, Georgiy Gongadze Street, Mykolaiv, Ukraine, 54008; panfilovaantonina@ukr.net; alenadrobitko@ukr.net

* **Correspondence:** panfilovaantonina@ukr.net

Abstract: In modern conditions of agriculture in Ukraine, there is a growing need to control the phytosanitary condition of soybean crops, the profitability of which can be significantly reduced due to the development of diseases. In recent years, agricultural producers are increasingly using measures to preserve soil cover, biologize agriculture, which contributes to obtaining the potential productivity of crops and optimizing the phytosanitary state of crops without the use of pesticides. One of these measures is the introduction of minimum tillage. Field research was conducted during 2022-2024 in the conditions of southern Ukraine. The cultivation of soybeans using no-till technology contributed to the change in the ecological conditions for the formation and development of microorganisms in the soil in all years of research. According to the results of phytopathological analysis of soil samples, on average over the years of research, the total number of fungi was from 79.5 to 94.4 thousand CFU/g soil. Of the potential toxin-forming species in the investigated soil samples *Penicillium funiculosum*, *Penicillium solitum*, *Gliocladium roseum*, *Aspergillus niger*, *Aspergillus fumigates*, *Trichoderma harzianum*, *Fusarium oxysporum*, *Fusarium sporotrichioides*, *Alternaria alternata* were found. The share of potential toxin-producing species of fungi was 45.8-59.1% of the total number of selected species, depending on the soybean cultivation technology. The share of pathogenic fungi in soil samples using no-till technology was 7.8 thousand CFU/g soil or 8.3% of the total number of selected species. A slightly higher number of pathogenic microorganisms was noted under the classical technology of soybean cultivation - 23.2 thousand CFU/g soil or 29.2% of the total number of selected species, which exceeded the indicators of the no-till option by 66.4%. They were represented by the following species *Fusarium oxysporum* (Schlecht.) Snyd. et Hans., *Fusarium sporotrichioides* nom. nov. Bilai, *Peronospora manshurica* Sydow, *Alternaria alternata* (Fr.) Keissl.

Keywords: soybean, resource-saving technology, phytosanitary state of crops.