

СЕКЦІЯ 3 – ПРОБЛЕМИ ЗБЕРЕЖЕННЯ БІОТИЧНОГО І ЛАНДШАФТНОГО РІЗНОМАНІТТЯ. ЗАПОВІДНА СПРАВА. ФОРМУВАННЯ ТА РЕАЛІЗАЦІЯ ЕКОЛОГІЧНОЇ І СМАРАГДОВОЇ МЕРЕЖ. ЗБАЛАНСОВАНЕ ПРИРОДОКОРИСТАННЯ

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PATHOGENIC MYCOBIOME OF THE RHIZOSPHERE OF SOYBEAN PLANTS BECAUSE OF THE INFLUENCE OF THE BIOPREPARATION PHILAZONIT

Abstract. The interaction of the rhizosphere of Suzir'ja soybean plants with phytopathogenic micromycetes was investigated. Biodiversity and spatial-functional structure of the microbial complex of the rhizosphere of soybean plants were analyzed. Ways of regulating the number of phytopathogenic micromycetes in the rhizosphere of soybean plants under organic production conditions have been developed.

Key words: mycobiome, biodiversity, pathogen, biological preparation.

Introduction. The dominant direction in modern agroecology is the use of ecologically safe ways of increasing the productivity of plants, including soybeans, and protecting them from the effects of adverse environmental factors [4]. Therefore, in the world, more and more attention is paid to the organic production of soybeans, which is aimed at regulating the number of phytopathogenic microorganisms in agroecosystems [3]. Biological preparations can increase the immunological status of plants, participate in their protection against diseases caused by phytopathogens and improve the growth and development of plants by supplying them with nutrients [1, 2]. Soil microbial coenoses have a complex genetic and spatial organization and high biodiversity, the structure of which depends on agrotechnical measures and physiological and biochemical properties of cultivated plants [5]. Therefore, the study of biodiversity and the spatial-functional structure of the microbial complex in the soil rhizosphere is important for regulating the number of phytopathogenic micromycetes in the rhizosphere of soybean plants under organic production conditions. Therefore, the aim of the research was to regulate the number of colony-forming units of phytopathogenic micromycetes in the rhizosphere of soybean plants under organic cultivation.

Results. Experimental research was carried out in the Central Forest-Steppe of Ukraine (Research farm «Skvyrsk» of Institute of Agroecology and Nature Management of the National Academy of Agrarian Sciences of Ukraine).

The object of the study was soybean plants of the Suzirya variety – selection of the National Research Center «Institute of Agriculture of the National Academy of Sciences». The specified variety of soybeans was grown using the biological preparation Filazonite, which was developed by the company Filazonite Ukraine.

The interaction of Suzir'ja soybean plants with phytopathogenic micromycetes under organic production conditions was studied. It was established that Filazonite biological preparation suppresses the formation of phytopathogenic micromycetes in the rhizosphere of Suzir'ja soybean plants during the growing season (Table 1).

On soybean plants of the Suzir'ja variety, the number of micromycetes in the seedling phase was lower by 1,9 thousand CFU/g of soil and in the ripening phase by 0,6 thousand CFU/g of soil compared to the control. It was also established that during the flowering phase of soybean plants of the Suzir'ja

cultivar, the number of CFU of micromycetes was at the control level and amounted to 7,4 thousand CFU/g of soil. This indicates the low efficiency of the biological preparation Filazonite, which may be associated with exceeding temperature norms (by +11.1°C) and a large amount of precipitation, which exceeds the norm by more than 2 times in the period from June to July (flowering phase).

Table 1

The number (CFU / g of soil) of micromycetes in the rhizosphere soil of soybean plants of the varieties Suzir'ja under the action of the biological product Philazonit

The number (CFU/g of soil) of micromycetes in the rhizosphere soil			
Year	Soybean variety	Phase	CFU/g of soil
I	Control	shoots	7,6
		flowering	7,4
		ripening	5,9
	Filazonite	shoots	5,7
		flowering	5,4
		ripening	5,3
II	Control	shoots	4
		flowering	6,5
		ripening	7,2
	Filazonite	shoots	3,6
		flowering	5
		ripening	4,8
III	Control	shoots	4
		flowering	6,7
		ripening	5,1
	Filazonite	shoots	3,8
		flowering	4,8
		ripening	4,6

This caused the formation and development of phytopathogenic micromycetes and significantly reduced the effectiveness of the biological preparation Filazonite on soybean plants of the Suzir'ja variety in the flowering phase. According to the results of the 2nd year of research, it was established that during the action of the biological preparation Filazonite on soybean plants of the Suzir'ja variety, the lowest number of phytopathogenic micromycetes was observed in the seedling phase (3,6 thousand CFU/g of soil). It should be noted that a similar result was obtained in the 3rd year of research, where the biological preparation showed the greatest effect also in the seedling phase (3,8 thousand CFU/g of soil).

A significant number of phytopathogenic micromycetes were isolated and identified from the rhizosphere of Suzir'ja soybean plants. Representatives of the genera *Alternaria* and *Fusarium* dominated (35,6% and 34,1%, respectively). Representatives of the genus *Penicillium* accounted for 15% and *Aspergillus* 15,3%. (Fig. 1).

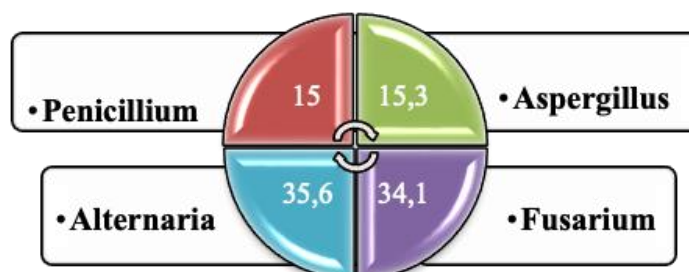


Fig. 1. Frequency of occurrence of isolates isolated from the rhizosphere of Suzirya soybean plants, (%)

Also, fungi of the genera *Mucor*, *Rhizopus*, *Cladosporium*, *Botrytis*, *Sclerotinia* and *Trichoderma* were noted in small quantities in the mycobiome of the rhizosphere. Despite their small number, they can

lead to the development of harmful diseases of soybean plants, which will cause the quality of the crop to deteriorate due to a decrease in protein and fat content.

Conclusions. It was established that the number of phytopathogenic micromycetes in the rhizosphere of soybean plants depends on the variety and technology of its cultivation. It has been experimentally proven that the Filazonite biological preparation of the Filazonite-Ukraine company suppresses the formation of the number of phytopathogenic micromycetes in the rhizosphere of Suzir'ja soybean plants during the growing season, compared to the control. Therefore, the use of Physalonite makes it possible to increase biosecurity in soybean agrocenoses and improve the quality of the harvest.

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FEATURES OF ASSESSMENT THE ECOLOGICAL RISKS OF THE DETERIORATION OF THE PHYTOSANITARY STATE OF AGROPHYTOCENOSES

Abstract. There are considered the influence of abiotic factors on agrophytocenoses, in particular, moisture supply, rising air temperature, increasing carbon dioxide concentration, and the probability of environmental risks. It has been established that the degree of ecological threat (expansive, successional,