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Ecology of Nematodes and their Distribution in the Organs of Plants Detected Wheat in the Surkhandarya Region

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Abstract

The article presents information on the distribution of nematodes found on a wheat plant and its root soil, according to 5 ecological groups, according to which pararhizobionts - 17 species, disaprobionts - 23, eusaprobionts - 5, phytohelminths of a nonspecific pathogenic effect - 34 and phytohelminths of a specific pathogenic effect - 14 types. Information is also given on the distribution of phytonematode species, according to plant organs and root soil, belonging to different ecological groups.

Key words: wheat agrocenoses, phytonematodes, ecological groups, pararhizobionts, devisaprobionts, eusaprobionts, phytohelminths, distribution.

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Enter. Currently, the intensive development of agriculture and the provision of high-quality and nutritious food products to the population of our planet, whose number is increasing day by day, is the most urgent issue in the world. Globally, 20-40% of the yield of agricultural plants is lost due to various pests and diseases.

It is known from scientific sources that under the influence of parasitic phytonematodes, the productivity

of wheat plants is lost by 23-31% in the USA, 25-38% in China, 41-66% in India, 25-50% in France, 34-55% in Russia, and 24-35% in Uzbekistan. So far, more than 4100 parasitic phytonematodes have been studied worldwide, and agriculture has been affected by them in the amount of 80-85 billion dollars per year.

In order to increase the productivity of wheat plants, in addition to studying the effects of various diseases and pests that negatively affect their growth, development and productivity, it is also of scientific and practical importance to identify phytonematodes that parasitize them. is enough.

Research material and methods. During 2021-2022, the route method accepted by most researchers in phytohelminthology was used to collect samples from the soil around the wheat plant and its roots [1].

In our work, we used Berman's funnel method to isolate phytonematodes from soil around plant organs and roots [2].

In determining the species and genus of phytonematodes, N-300M trinocular microscope, "K. Institute of Systematics, Ecology and Evolution of Nematodes named after I. Scriabin" and "A. The atlases of phytonematodes prepared at scientific research institutes named after N. Seversov, problems of ecology and evolution were used. The formula of De Man (1880), accepted by most scientists, was used to determine the size of phytonematodes [5].

Analysis and results. As a result of the research, phytonematodes found in the soil around the wheat plant and its roots belong to 3 subclasses, 8 genera, 9 subgenera, 13 large families, 23 families, 44 genera, and 93 species.

According to A. A. Paramonov [3;4] phytonematodes identified in the soil around the wheat plant and its roots in the conditions of the districts of Surkhandarya region, taking into account the diversity of phytonematodes feeding on plants, habitats and lifestyles, he created their ecological classification (classification). . Accordingly, each phytonematode is divided into 5 ecological groups (pararhizobionts, eusaprobionts, devisaprobionts, non-disease-causing phytohelminths, disease-causing phytohelminths) according to their type, nutrition, relationship to plants, and lifestyle.

The number of species of phytonematodes found as a result of the research conducted in wheat agrocenoses is distributed according to ecological groups as follows: pararhizobionts - 17 species (18.3 of the total identified species of phytonematodes), 422 individuals (1.7%), devisaprobionts - 23 species (24 .8%), 13638 individuals (56%), eusaprobionts - 5 species (5.3%), 1088 individuals (5%), non-pathogenic phytohelminths - 34 species (36.6%), 6078 individuals (26%) , disease-causing phytohelminths – 14 species (15%), 2743 individuals (11.3%) (Table 1).

In the soil around the wheat plant and its root, it was distributed as follows: in the soil around the root, pararhizobionts - 17 species, devisaprobionts - 23 species, eusaprobionts - 5 species, non-disease-causing phytohelminths - 34 species, disease-causing phytohelminths - 14 species.

Table -1. Distribution of phytonematode species identified in wheat plants by ecological groups

№	Ecological groups	Types Number	%	individual the number of	%
1.	*Pararhizobionts*	17	18,2	422	1,7%
2.	*Devisaprobionts*	23	25	13638	56%
3.	*Eusaprobionts*	5	5,3	1088	5%
4.	*Non-disease-causing phytohelminths*	34	36,5	6078	26%
5.	*Disease-causing phytohelminths*	14	15	2743	11,3%
	Total	93	100	23969	100

It was found that the plant root consists of 5 types of pararhizobionts, 22 types of devisaprobionts, 5 types of eusaprobionts, 31 types of non-pathogenic phytohelminths, and 12 types of disease-causing phytohelminths.

No pararhizobionts were found in the plant stem, 13 species of devisaprobionts, 1 species of eusaprobionts, 9 species of non-pathogenic phytohelminths, and 1 species of disease-causing phytohelminths.

Pararhizobionts were not found in plant leaves either, devisaprobionts - 11 species, eusaprobionts - 1 species, non-pathogenic phytohelminths - 6 species, phytohelminths causing disease - 1 species (Table 2).

Table -2. Distribution of phytonematode species identified in wheat plant by plant organs and soil ecological groups

№	Ecological groups	Number of species			
		Soil	Root	Stem	Leaf
1.	*Pararhizobionts*	17	5	-	-
2.	*Devisaprobionts*	23	22	13	11
3.	*Eusaprobionts*	5	5	1	1
4.	*Non-disease-causing phytohelminths*	34	31	9	6
5.	*Disease-causing phytohelminths*	14	12	1	1
	Total	93	75	24	19

Summary. 93 species of wheat plant and the soil around its roots, 75 species of roots, 24 species of stems, and 19 species of leaves were recorded.

In the distribution of identified phytonematode species by ecological groups, the most common phytohelminths (34 species) in terms of the number of species, which do not cause disease, were found to be the least common group of eusaprobionts (5 species).

According to the number of individuals, the most recorded situation was observed in devisaprobionts (13,638 individuals), and the least frequent group was found to be pararhizobionts (422 individuals).

Based on the above information, based on the classification of nematodes and their trophic relationship with plants, not only the host organism, but also the abiotic environment is important in increasing or decreasing the population density.

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