

NEMATODE FAUNA AND ECOLOGY OF APPLE ORCHARDS OF ANGOR DISTRICT

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Abstract. This article presents information about the fauna, systematic and ecological analysis of nematodes found in the root of apple plants and the soil around their roots in the conditions of Angor district of Surkhondarya region. As a result of the research, 28 species of nematodes belonging to 5 genera, 12 families, and 17 genera were identified in apple orchards.

Key words and phrases: Angor district, apple orchards, ecological groups, nematodes, root system, soil around roots.

Introduction. Meeting the population's need for food, including various fruits, is defined as one of the priority tasks of our government, and this issue is reflected in a number of decrees and decisions. Therefore, breeding orchards, creating fruitful, tasty, disease and pest-resistant varieties are among the urgent tasks facing researchers.

Decree of the President of the Republic of Uzbekistan dated March 29, 2018 No. PF-5388 "On additional measures for the rapid development of fruit and vegetable production in the Republic of Uzbekistan" [1] and Ministers of the Republic of Uzbekistan In the Decision No. 731 of December 3, 2021 "On additional measures to regulate the activities of horticulture and viticulture companies" [2], the development of fruit growing in our Republic, advanced scientific achievements in this field and through the rational use of experiences, a lot of attention was paid to the issues of providing the population of our country with quality food, including quality and healing fruits. In this regard, it is important to determine, among other things, the species composition, biological and ecological characteristics of nematodes found in mulberry plantations, and to develop measures to combat parasitic species.

The analysis of researches shows that nematodes of apple plant in the conditions of the southern regions of Uzbekistan have not been sufficiently

studied. We conducted phytohelminthological studies in order to study the nematode fauna of apple plant and to identify the species of nematodes parasitizing this plant in the conditions of Angor district of Surkhondarya region.

The purpose of our research is to study the fauna and distribution of apple plant nematodes in the conditions of Angor district, to identify the types of nematodes parasitizing this plant.

Research material and methodology. In order to carry out the research work, the root and soil around the root of the apple plant in the apple orchards belonging to the farms named “Shokira-Angor”, “G’ulomov Bahridin”, “Gulmira-Angor”, “Dadabek-Angor” of Angor district were collected. 100 soil samples and 100 root samples served as material.

The scientific researches were carried out on the basis of the route, Berman and Seinhorst methods widely used in phytohelminthology [2, 3, 5]. 4-5% formalin solution was used for fixation of phytonematodes.

Research results. As a result of our research, 28 species of nematodes belonging to 5 genera, 12 families, and 17 genera according to A.A. Paramonov’s taxonomic classification [8] were found in the roots of apple plants in the apple orchards in the Angor district and in the soil around the roots. It was noted that the identified nematodes were distributed among the families as follows: Araeolaimida family - 2; Enoplida family - 2 species; Rhabditida family - 8 species; Aphelenchida family - 6 species; Tylenchida genus - 10 species (Table 1).

Distribution of identified nematode species by categories

Table 1

№	Orders	Number of species	%	Number of individuals	%
1	Araeolaimida	2	7,1	29	1,6
2	Enoplida	2	7,1	26	1,4
3	Rhabditida	8	28,6	573	31,3
4	Aphelenchida	6	21,5	648	35,5
5	Tylenchida	10	35,7	554	30,2
	Total:	28	100	1830	100

The research results show that representatives of the Tylenchida family occupy the first place in terms of the number of species in the root of the apple plant and the soil around the root in the conditions of Angor district (10 species; 35.7% of the total identified species). Rhabditis (8 species; 28.6 %), Aphelenchi (6 species; 21.5 %) took the next places, and representatives of Enoplida and Araeolaimida were the least common (2 species; 7.1 %) done.

In terms of the number of individuals, the genus Aphelenchida takes the leading place (648 individuals; 35.5%). Rhabditi (573; 31.3 %), Tylenchi (554; 30.2 %), Araeolaimi (29; 1.6 %) took the next places, and representatives of the Enoplida family were the least numerous (26; 1.4 %)) was determined to meet.

According to A.A. Paramonov's ecological classification [7], the nematodes detected in apple plants in apple orchards in Angor region are distributed as follows: Pararhizobionts - 7 species (25%); devisaprobionts – 8 species (28.6%); eusaprobionts – 1 type (3.6%); non-disease-causing phytohelminths - 8 species (28.5%), disease-causing phytohelminths - 4 species (14.3%).

The number of individuals of nematodes found as a result of research is distributed by ecological groups as follows: pararhizobionts - 134 individuals (7.3%); devisaprobionts – 456 individuals (24.9%); eusaprobionts – 49 individuals (2.7%); non-pathogenic phytohelminths - 827 individuals (45.2%); disease-causing phytohelminths - 364 individuals (19.9%) (Table 2).

Distribution of identified nematode species by ecological groups

Table 2

№	Ecological groups	Number of species	%	Number of individuals	%
1	Pararhizobionts	7	25	134	7,3
2	Devisaprobionts	8	28,6	456	24,9
3	Eusaprobiontlar	1	3,6	49	2,7
4	Non-pathogenic phytohelminths	8	28,5	827	45,2

5	Disease-causing phytohelminths	4	14,3	364	19,9
	Total:	28	100	1830	100

As a result of the conducted research, it was found that 20 species of nematodes are found in the root of the apple plant and 28 species in the soil around the root. In the soil around the root of the apple, compared to the root, it was noted that nematodes are found more in terms of species and number.

It was found that 3 types of true parasitic nematodes (*Pratylenchus penetrans*, *Longidorus elongatus*, *Xiphinema index*) were distributed in the root of apple plant and the soil around the root in the conditions of Angor district of Surkhondarya region.

Conclusion. The results of the research show that phytonematodes of apple plants in apple orchards have been partially studied in the southern districts of Surkhondarya region of our Republic. Therefore, it is of great scientific and practical importance to carry out large-scale phytohelminthological research in these regions, to determine the fauna complex of phytonematodes of certain apple orchards, and to develop reasonable measures to combat parasitic species.

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