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PHYTONEMATODES OF PEACH TREE ROOT AND ROOT CIRCUMFERENCE SOIL IN CERTAIN REGIONS OF NAMANGAN REGION STUDY METHODS AND SPECIES COMPOSITION ANALYSIS

T.S. Ikramov
Namangan State Pedagogical institute
temurikramov497@gmail.com

Annotation: This study focuses on the identification and classification of phytonematodes affecting the root system and rhizosphere soil of peach trees in certain regions of Namangan, Uzbekistan. The research was conducted between 2022 and 2024 in the Namangan and Pop districts, where soil and root samples were collected during the summer months for nematode analysis. Various biotic and abiotic factors influencing nematode populations were considered, and nematodes were extracted using the Baermann funnel method. The study identified 189 nematodes belonging to 22 species, with their distribution varying across different soil horizons (0–30 sm and 30–60 sm). The results indicate that certain species, such as Cephalobus persegnis and Ditylenchus dipsaci, are dominant in specific layers of the soil. The ecological classification of nematodes was also analyzed, revealing a high presence of devisaprobionts in deeper soil layers. These findings contribute to a better understanding of the phytonematode biodiversity in Uzbekistan and highlight the importance of implementing effective plant protection strategies.

Keywords: Peach tree, phytonematodes, root system, rhizosphere soil, soil horizons, ecological classification, Baermann method, Uzbekistan, nematode biodiversity, plant protection.

Introduction. The world of plants in our country is an invaluable asset, so it is necessary that we take care of, care for plants, protect them from pests and the harm they cause, diseases. All attempts of plant protection specialists to combat diseases and pests of cultural crops do not give the expected result. Therefore, in solving urgent problems in protecting plants, it is necessary to look for fundamentally updated methods and directions.

Literature Analysis : Plant-parasitic nematodes are a diverse group of soil-dwelling organisms that significantly impact agricultural productivity worldwide. Studies in regions like Kashmir Valley, India, have identified phytonematodes such as Pratylenchus penetrans, Meloidogyne hapla, and Helicotylenchus indicus as common associates of stone fruits, including peaches. These nematodes damage root systems, leading to stunted growth and reduced fruit quality. Research in other contexts, such as West Virginia peach orchards, highlights the prevalence of root-knot nematodes (Meloidogyne spp.) and lesion nematodes (Pratylenchus spp.), emphasizing their economic importance. In Central Asia, including Uzbekistan, nematode studies are less documented, though the region's soil and climatic conditions suggest a potential for diverse nematode populations. Methods like the Baermann funnel and centrifugal flotation have been widely used to extract nematodes from soil and roots, providing reliable data on species composition. This study builds on these foundations, adapting established techniques to explore phytonematodes in Namangan's peach orchards.

Previous studies on phytonematodes have highlighted their significant impact on fruit trees, with root-knot nematodes (Meloidogyne spp.) being the most damaging. According to

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global research, Meloidogyne species induce gall formation on roots, disrupting normal plant functions. Additionally, lesion nematodes (Pratylenchus spp.) and spiral nematodes (Helicotylenchus spp.) are known to cause root necrosis and weakening of the plant structure

Research material, styles. Materials for this study of the work were collected in the summer months (August) in the rural areas of Namangan and Pop districts of the Namangan region, adapted to horticulture, from the root of peach trees, root circumference soil, samples necessary to check the content of phytonematodes during the period 2022-2024.

Soil and root samples were taken before harvesting in the summer. When identifying phytonematodes, great attention was paid to sampling plants that were apparently infected or nymphs. At the same time, great importance was also attached to the fact that peach roots were damaged and not damaged by embossed-forming phytonematodes. Eat the root system of the plant.S.Kiryanova, E.L.Krall (1969) was examined in style.

The root of peach trees, root circumference soil was sampled from various horizons (0-30 sm, 30-60 sm) 30 plant roots, 30 roots circumference soil. In total, 60 specimens were examined. More than 100 permanent and temporary preparations were prepared.

When obtaining samples, biotic (appearance of the plant, physiological condition) and abiotic (soil and air temperature, humidity, irrigation methods, adjacent plants, soil clay) factors were also taken into account. The samples were put in separate plastic bags and labeled.

Into phytogelmintology, one of the most convenient ways to extract phytonematodes from the Peach Tree and soil, The Berman style was used. For this purpose, soil samples are thoroughly mixed, 10 g are taken and placed on a wire mesh. The wire mesh is placed on a water bottle funnel. A rubber hose is installed at the end of the glass funnel, the end of which is compressed with a Mor clamp (zajim). The funnel is fixed in an upright form on a wooden tripod with a rubber flute. After that, a small lattice wire mesh is placed over the water of the funnels. The soil being examined over the water in the funnel is laid in a marl knot. The settled soil should be submerged in water.

Samples are left for one day. When more time is spent, then the tissues of phytonematodes begin to break down. Phytonematodes that have fallen into the sediment are transferred to a 4-5% li formalin (fixator) to store the original. A 40% formalyn was placed in 1/9 of the test tube and transferred to a formalin test tube with water from phytonematodes collected in front of the clamp. The test tube is placed with a label paper with information about the samples and the cork is closed with a lid.

Results obtained. From the soil of the Peach Root and root circumference, representatives of phytonematodes of 189 species of 22 species were found (Table 1). 10 phytonematodes from the top layer (0-30 sm) of the peach plant root, belonging to 7 species, 51 of 14 species from the deeper layer of the root (30-60 sm) were identified.

Soil samples from the soil of the root circumference were taken from the top, ostki soil (0-30, 30-60 sm), according to two horizons as described above. In the upper layer (0-30 sm), phytonematodes of 58 out of 11 species were identified, in the lower layer (30-60 sm), 71 out of 15 species. More devisaprobionts have been encountered from ecological groups.

In the soil layers, nematodes are not arranged like one. phytonematodes of 10 8 species at 0-30 sm on the roots, 30-60 sm – 53, belonging to 16 species, peach root in the soil around the periphery were found in 0-30 sm – 15 species, 64 individs, 30-60 sm -16 species, 76 phytonematodes.

In the upper horizons of the soil layer, mainly the following species were more common Cephalobus persegnis, Ditylenchus dipsaci and these were considered to be eudominant species.

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Cephalobus persegnis has also been considered an eudominant species in deep layers of Root circumference soil. The species Aphelenchus avenae was considered a dominant species in this layer. In the upper layer of the root, eudominate and dominant species were not identified.

Table 1.

List of phytonematodes from Peach Root and root circumference soil

№	Types of phytonematodes	Number of phytonematodes found				Total
		Root, sm.		Soil,sm.		
		0-30	30-60	0-30	30-60	
1	2	3	4	5	6	7
1	Plectus parietinus			3		3
2	Proteroplect.longicaudatus	2		3		5
3	Mylonchulus solus			2	4	6
4	Eudorylaimus monohystera		2		2	4
5	Enchodellus macrodorus				3	3
6	Aporcelaimell.obtusicaudat.		3		5	8
7	Rhabditis filiformis		2	1		3
8	Rhabditis intermedius				3	3
9	Rhabditis brevispina				5	5
10	Panagrolaimus armatus		3		4	7
11	Panagrolaimus rigidus		5	1	5	11
12	Cephalobus persegnis	1	7	12	18	38
13	Heterocephalobus elongate.		2			2
14	Acrobeloedes tricornis	1	2			3
15	Chiloplacus lentus		5	1	4	10
16	Chil. Symmetricus		6	2		8
17	Aphelenchus avenae	1	4		7	12
18	Aph. Cylindricaudatus		2	1	3	6

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19	Filenchus filiformis	1	3		2	6
20	Ditylenchus dipsaci	1		28		29
21	Helicotylenchus multicinctus	3		3	4	10
22	Paratylenchus hamatus		5		2	7
	Number of species:	**7**	**14**	**11**	**15**	
Total nematodes:		**10**	**51**	**57**	**71**	**189**

Of the 8 species found mainly on this horizon, one or two representatives were encountered, and these were all counted as receding and subreceding species. In the deep layer of the stem (30-60 sm) Cephalobus persegnis eudominant, Chilloplacus symmetricus the dominant remaining species were counted as subdominant, recessive, subrecedent species.

Phytonematodes species composition in the Peach root periphery soil at the upper horizon (0-30 sm) and in the oysters layer (30-60 sm), their number was found to be close to each other.

Of the ecological groups (Table 2), devisaprobionts: Plectus parietinus, Proteroplectus longicaudatus, Panagrolaimus armatus, Panagrolaimus rigidus, Cephalobus persegnis, Heterocephalobus elongates, Acrobeloedes tricornis, Chilloplacus symmetricus, Chilloplacus lentus were observed to be mainly diverse in the deep layer of plant root roots, deep layers of Root circumference soil.

Table 2

Distribution of peach Root and root circumference soil phytonematodes by ecological groups

№	Environmental groups	Root, sm		Soil, sm	
		0-30	30-60	0-30	30-60
1	Pararysobionts	1/1	3/8	2/3	5/16
2	Eusaprobionts	-	2/3	1/1	2/8
3	Devisaproobionts	4/4	7/30	7/25	5/36
4	Phytogelmintes: a)spets. b)nospets.	3/5 2/4 1/1	4/12 2/6 2/6	5/35 3/32 2/3	4/16 2/6 2/10

Of the pararisobionts, Mylonchulus solus, Eudorylaimus monohystera, Aporcelaimellus obtusicaudatus were encountered at a depth of 30-60 sm of the root, root circumference soil at a

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depth of 30-60 sm, Enchodellus macrodorus in the bottom layer of the root circumference, and Fylenchus filiformis in the Peach Root and root circumference soil.
Of the eusaprobionts, three species of Representatives of the Rhabditis generation were encountered. Rhabditis filiformis suffered two in the bottom layer of the Peach Root, one in the top layer of the soil around the root. Rhabditis intermedius was encountered only in the bottom layer of the soil of the root circumference, Rhabditis brevispina root lining, the bottom layer of the root circumference.
True parasites of phytogelmints were dithylenchus dipsaci, Helicotylenchus multicinctus, Paratylenchus hamatus, Aphelenchus avenae, Aphelenchus cylindricaudatus from those that do not cause special disease.

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