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Phytohelminths Representatives of The Order Tylenchida (Filipjev, 1934) Thorne, 1949 on Fruit Crops of The Southern Regions of Uzbekistan

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Abstract

The article provides data on the distribution of nematodes of representatives of the order Tylenchida (Filipjev, 1934) Thorne, 1949 on fruit crops in the southern (Surkhandarya and Kashkadarya) regions of Uzbekistan. As a result of studies in the root system and root soil of fruit trees (apple trees, common apricot, common peach, cherry, plum, pear, walnut), 37 species of nematodes belonging to 3 suborders, 5 superfamilies, 7 families, 10 subfamilies and 14 genera were registered. In the root system and root soil of fruit trees, phytohelminths of nonspecific pathogenic effect of the species Tylenchus davainei, Filenchus filiformis, Psilenchus hilarulus, Ditylenchus intermedius, D. myceliophagus dominated; Among the phytohelminths with a specific pathogenic effect, the dominant species were Tylenchorhynchus cylindricus, T.brassicae, Bitylenchus dubius, Merlinius brevidens, Rotylenchus robustus, Helicotylenchus dihystera, H. erythrinae, Pratylenchus pratensis, P.crenatus and Ditylenchus dipsaci.

Keywords: *Order Tylenchida, nematode, fruit crops, apple trees, apricot, peach, cherry, plum, pear, walnut, root system, rhizosphere, phytohelminths of nonspecific pathogenic effect, phytohelminths of specific pathogenic effect.*

1. Introduction

Fruit growing is an important branch of agriculture in Uzbekistan. One of the important conditions for the further development of horticulture, which is the main branch of agriculture, and the increase in the quantity and quality of grown fruits, is the protection of fruit trees from various pests. To do this, it is necessary to conduct full-fledged scientific research in order to study the various characteristics of these harmful, that is, parasitic organisms. Seed and stone fruit trees, namely apples, pears, quinces, cherries, apricots, walnuts, are susceptible to dangerous infectious diseases caused by a number of fungi, bacteria, viruses and nematodes, which destroy most of the harvest of these fruit trees and cause great economic damage in economy of the republic.

In the climate of Uzbekistan, especially in its southern regions, winter is relatively warm, spring and early summer are warm and sunny, which creates very favorable conditions for the survival of pathogens in the winter, as well as the spread and development of diseases during the growing season of plants. As a result, some diseases are recorded in every season and in almost all gardens. Some of these diseases lead to complete loss of crops if control measures are not developed in time.

Parasitic nematodes are pests that cause a significant reduction in the productivity of fruit trees.

It is known that parasitic nematodes are capable of causing serious crop losses and are among the most significant pests of various agricultural crops, especially perennial fruit and berry crops. The role and importance of parasitic nematodes for agricultural crops is not limited to parasitism on the roots, vegetative and reproductive organs of host plants. Numerous species of nematodes are carriers of viral, fungal and bacterial infections [18; P.130-136].

In Uzbekistan, the fauna, ecology, distribution and other features of fruit tree nematodes have been little studied. Phytohelminthological studies on fruit trees in the southern regions of Uzbekistan were carried

out by Sh.Kh. Khurramov, A.S. Bekmurodov [13; P. 98-102], A.S. Bekmurodov, M.I. Abdujalilova [1; P.117-120], A.S. Bekmurodov, G.B.Aramova [2; P.47-49]. A.S. Bekmurodov, M.X. Yaxshiboyeva, L.A. Muhammadiyeva [3; P. 741-745], A.S.Bekmurodov, M.Ibrohimova, M.Turopova [4; P. 985-993], A.S. Bekmurodov, M. Yakhshiboeva, S. Topilova, D. Normatova [5; P. 838-845], A.S. Bekmurodov, D. Vohidova, M. Ergasheva [6; C. 25-28].

The order Tylenchida occupies a special place in the system of phytohelminthology, since it includes the central and most important group of nematodes, represented by typical phytohelminths: pathogenic forms that cause plant diseases - phytohelminthoses. Forms of this group of nematodes also participate in the processes of saprobiotic decay and expand the volume of affected areas of plant tissue as a result of an energetic inoculating function [14; P. 338-369, 17; 446 p.].

2. Materials And Methods

The material for this work was samples of some fruit trees (apple (*Malus domestica* L.), apricot (*Prunus armeniaca* L.), peach (*Persica vulgaris* Mill.), cherry (*Cerasus avium* L.), plum (*Prunus domestica*) , pear (*Pyrus communis*), walnut (*Juglans regia*)), collected during 2020-2023 from orchards in the southern (Surkhandarya and Kashkadarya) regions of Uzbekistan. In each region, two farms were selected for collecting material.

To identify the phytohelminthological situation in each farm, samples were taken for analysis in triplicate from the root system and root soil of plants. Each soil sample along with plant roots was placed in separate bags and labeled.

To study the nematological complex of fruit crops in the southern regions of Uzbekistan, 350 plant and 350 soil samples were collected and analyzed.

Methods for sample collection and sample analysis. When performing the ecological and faunal part of the work, to identify the species composition of nematodes and patterns of their distribution in the root system and root soil of fruit trees, we used the route method, widely used by phytohelminthologists in the CIS countries [16; 480 p.].

Route method. Faunal studies were carried out using the generally accepted route method [11; 447 p., 12; 521 p., 15; P. 3-11]. This method was used for the purpose of a wide phytohelminthological examination of fruit trees in the southern regions of Uzbekistan (especially the territory of Surkhandarya and Kashkadarya regions).

Research by the route method covered orchards of Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya areas beyond periods from April 25 to September 25, 2020 and 2023.

When examining fruit trees, samples were taken along the diagonal of the gardens, depending on the area of the latter, at 50 and 100 m. At these points, the trees were dug up with a shovel to a depth of 40 cm, depending on the age of the plants (10-18 years) at a distance of 1-1. 5 m from the trunk or samples were taken with a soil drill in triplicate. The volume of the soil sample with dangling roots was about 1 kg. The roots were completely removed, washed, and 20 g of them were placed for nematode isolation. To isolate nematodes from the soil, 3 samples of 20 cm3 each were placed.

In route faunal studies, a total of 700 samples were collected, including 350 soil and 350 plant samples.

Methods for extracting, fixing, preparing preparations and studying nematodes. The collected samples were analyzed in the phytohelminthological laboratory at Termez State University. First, the plants were carefully examined for infestation by root-knot and other parasitic nematodes. Then the root soil and plant roots were examined separately.

The modified Berman funnel method was mainly used to extract nematodes from soil and plant samples. Clearing of nematodes was carried out in a mixture of glycerol and alcohol (1:3) and for office processing of the material, permanent preparations were prepared in glycerin according to the Seinhorst method [19; P. 67-69]. Samples of soil (20 cm3) and cut roots (20 g) (length of root pieces 0.5-1 cm) were placed in glass funnels with a diameter of 15 cm on metal meshes with milk filters, a rubber tube with a clamp was put on the narrow end and filled with tap water. Samples were left for 24 hours in summer, 48 hours in autumn-spring and 72 hours in winter at room temperature (up to 200C). With 24–48-hour exposure, the best results were obtained. During this period, mobile nematodes emerged from the soil or roots into the water and settled in the narrow end of a funnel with a rubber tube and clamp. At the end of the exposure period, the clamp at the narrow end of the funnel was opened and the

nematodes settled there with a certain amount of water were poured into a test tube. Soil samples for the presence of cyst nematodes were analyzed using Decker's method [7; 445 p.].

To fix the nematodes, a 4-5% formalin solution was used.

After two days, the nematode was transferred to a glass slide with a drop of glycerin-gelatin, slightly heated and covered with a coverslip. Each slide was outlined in ink on the back of the slide and labeled.

Anatomical and morphological studies of nematodes were carried out on freshly prepared temporary preparations in a water drop or on permanent preparations in glycerin - gelatin.

To prepare permanent preparations, the nematodes were first transferred using an entomological needle under a binocular into a clearing liquid (a mixture of water, 96% alcohol and glycerin in a ratio of 20:1:1) and left in the mixture for 2-3 days until the water completely evaporated from the mixture. During this period, the internal organs become clear and become contrasting and clearly visible under a microscope.

The species composition of nematodes was studied under an MBR-3 microscope with a light filter. To determine the types of nematodes, we used morphometric indicators obtained according to the generally accepted De Man formula [9; 104 p.] in its modification according to Micoletzky [10; 650 p.]. In the formula, L is the total length of the body; a is the ratio of the length of the body to its greatest width; c - the ratio of the body length to the length of the esophagus; c is the ratio of body length to tail length; V – position of the vulva as a percentage of the total length, starting from the anterior end of the body.

In parasitic nematode species, stylet length, spicule length, number of lateral fields and rudders were also measured.

Quantitative analysis of the species composition and abundance of phytohelminths is based on the sum of species and individuals recorded in all samples. The degree of dominance of nematodes in plant and soil samples was determined from the percentage of individuals of certain species to the number of all detected by Witkowsky [9; 53 p.]. In this case, species that constitute more than 10% of all discovered species are dominant and or eudominants, dominants are 5.1-10%, subdominants are 2.1-5%, precedents are 1.1-2%, subprecedents or rare species are less than 1 % of individuals.

3. Results and Discussion

Over the entire period of phytohelminthological studies of fruit crops (apple trees, common apricot, common peach, cherry, plum, pear, walnut) in the southern regions of Uzbekistan, representatives of the order Tylenchida, we identified 37 species of nematodes. Discovered species belonging to 3 suborders (Tylenchina, Criconematina, Hexatylina), 5 superfamilies (Tylenchoidea, Dolichodoroidea, Hoplolaimoidea, Criconematoidea, Anguinoidea), 7 families (Tylenchidae, Dolichodoridae, Psilenchidae, Hoplolaimidae, Pratylenchidae, Paratylenchidae, Anguinidae), 10 subfamilies (Tylenchinae , Dolichodoridae, Tylenchorhynchinae, Psilenchinae, Rotylenchinae, Rotylenchoidinae, Pratylenchinae, Paratylenchinae, Anguininae, Nothotylenchinae) and 14 genera (*Tylenchus, Filenchus, Aglenchus, Tylenchorhynchus, Bitylenchus, Quinisulcius, Merlnius, Psilenchus, Rotylenchus , Helicotylenchus, Pratylenchus, Paratylenchus, Ditylenchus, Nothotylenchus*).

Phytohelminths of nonspecific pathogenic effect. In our material they are presented in 12 species:

Order Tylenchida (Filipjev, 1934) Thorne, 1949

Suborder Tylenchina Chitwood, 1933

Superfamily Tylenchoidea Oerley, 1880

Family Tylenchidae Oerley, 1880

Subfamily Tylenchinae Oerley, 1880

Genus *Tylenchus* Bastian, 1865

***Tylenchus davainei* Bastian, 1865** was recorded in the roots and rhizosphere of apple, apricot, peach, plum, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau and Uzun regions of Surkhandarya and Dekhkanabad, Guzar, Kitab districts of Kashkadarya region.

Genus *Filenchus* (Andrassy, 1954) Meyl, 1961

***Filenchus filiformis* (Butschli, 1873) Meyl, 1961** was found in the roots and rhizosphere of apple, apricot, and cherry plants in Termez, Angor, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan,

Denau, Altynsay and Sariassiya regions of Surkhandarya and Guzar, Kamashi, Karshi districts of Kashkadarya region.

***F. thornei* (Andrassy, 1954) Andrassy, 1980** registered in the roots and rhizosphere of plants of the apple tree, apricot, peach, plum, pear in Angora, Sherabad, Baysun, Kumkurgan, Denau, Sariassiya, Uzun districts of Surkhandaryinskaya and Dekhkanabad, Kitab districts of Kashkadarya region.

Genus *Aglenchus* Andrassy, 1954

***Aglenchus agricola* (De Man, 1884) Meyl, 1961** was found in the rhizosphere of apple, apricot, plum, pear, and walnut plants in the Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Kumkurgan, Shurchi, Denau, Altynsay and Sariassiya districts of Surkhandarya and Guzar, Kamashi, Kitab districts of Kashkadarya region.

Superfamily Dolichodoroidea (Chitwood et Chitwood, 1950) Siddiqi, 1986

Family Psilenchidae Paramonov,1967

Subfamily Psilenchinae Paramonov,1967

Genus *Psilenchus* De Man, 1921

***Psilenchus hilarulus* De Man, 1921** was found in the roots and rhizosphere of apple, apricot, peach, plum, and walnut plants in Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Uzun districts of Surkhandarya and Dekhkanabad, Kamashi, Kitab district of Kashkadarya region.

***P.minor* Siddiqi, 1963** was recorded in the roots and rhizosphere of apple, apricot, peach, plum, pear, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

Suborder Hexatylina Siddiqi, 1980

Superfamily Anguinoidea Nikoll, 1935

Family Anguinidae Nikoll, 1935

Subfamily Anguininae Nikoll, 1935

Genus *Ditylenchus* Filipjev, 1936

***D. intermedius* (De Man, 1880) Filipjev, 1936** was found in the roots and rhizosphere of apple, peach, cherry, plum, and walnut plants in Termez, Sherabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Uzun regions Surkhandarya and Dekhkanabad, Kitab, Karshi districts of Kashkadarya region.

***D. myceliophagus* Goodey, 1958** was found in the roots and rhizosphere of apple, apricot, peach, and pear plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Dzharkurgan, Kumkurgan, Denau, Altynsay and Sariassiya districts Surkhandarya and Guzar, Kamashi, Kitab district of Kashkadarya region.

***D. triformis* Hirshmann et Sasser, 1955** was recorded in the roots and rhizosphere of apple, apricot, plum, and walnut plants in Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Denau, Sariassiya and Uzun districts of Surkhandarya and Kamashi districts of Kashkadarya region .

Subfamily Nothotylenchinae Thorne, 1941

Genus *Nothotylenchus* Thorne, 1941

***Nothotylenchus acris* Thorne, 1941** was detected in the roots and rhizosphere of apple, apricot, plum, and pear plants in Termez, Angor, Sherabad, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi districts of Kashkadarya region .

***N. exiguus* Andrassy, 1958** was found in the rhizosphere of apple, apricot, common peach, and cherry plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Sariassiya districts of Surkhandarya and Kamashi, Kitab, Karshi districts of Kashkadarya region.

***N. allii* Khan et Siddiqi, 1968** was found in the rhizosphere of apple, apricot, plum, and pear plants in Muzrabad, Kizirik, Jarkurgan, Kumkurgan, Shurchi, Denau districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

Phytohelminths of specific pathogenic effect. In our studies they are represented by 25 species:

Superfamily Dolichodoroidea (Chitwood et Chitwood, 1950) Siddiqi, 1986

Family Tylenchorhynchidae (Eliava 1964) Golden, 1971

Subfamily Tylenchorhynchinae Eliava, 1964

Genus *Tylenchorhynchus* Cobb, 1913

***Tylenchorhynchus cylindricus* Cobb, 1913** was recorded in the roots and rhizosphere of apple, apricot, peach, plum, pear, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Shurchi, Altynsay and Sariassiya districts of Surkhandarya and Guzar, Kamashi, Kitab districts of Kashkadarya region.

***T.brassicae* Siddiqi, 1961** was found in the roots and rhizosphere of apple, apricot, peach, cherry, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Sariassiya and Uzun regions of Surkhandarya and Dekhkanabad, Guzar, Karshi districts of Kashkadarya region.

***T.claytoni* Steiner,1937** was found in the roots and rhizosphere of apple, apricot, plum, pear, and walnut plants in Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Shurchi, Denau, Altynsay and Uzun districts of Surkhandarya and Kamashi, Kitab, Karshi districts Kashkadarya region.

***T.contractus* Loof, 1964** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, and walnut plants in Termez, Sherabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Denau, Altynsay and Sariassiya districts of Surkhandarya and Dekhkanabad, Guzar, Karshi districts of Kashkadarya region.

***T.zeae* Sethi et Swarup, 1968** was found in the roots and rhizosphere of apple, apricot, pear, and walnut plants in Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Uzun districts of Surkhandarya and Kamashi, Kitab districts Kashkadarya region.

Genus *Bitylenchus* (Filipjev, 1934) Siddiqi, 1986

***Bitylenchus dubius* (Butschli, 1873) Siddiqi, 1986** was recorded in the roots and rhizosphere of apple, apricot, peach, cherry, plum, and walnut plants in Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab districts of Kashkadarya region.

Genus *Quinisulcius* Siddiqi, 1971

***Quinisulcius capitatus* (Allen, 1955) Siddiqi, 1971** was found in the roots and rhizosphere of apple, apricot, peach, cherry, pear, walnut plants in Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Dzharkurgan, Kumkurgan, Shurchi, Denau, Altynsay and Sariassiya districts of Surkhandarya and Dekhkanabad, Guzar, Kitab, Karshi districts of Kashkadarya region.

Superfamily Tylenchoidea Oerley, 1880

Family Belonolaimidae Whitehead, 1959

Subfamily Telotylenchinae Siddiqi, 1960

Genus *Merlinius* Siddiqi, 1970

***Merlnius brevidens* (Allen,1955) Siddiqi, 1975** was recorded in the roots and rhizosphere of apple, apricot, peach, cherry, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Denau, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi districts of Kashkadarya region.

Superfamily Hoplolaimoidea (Filipjev, 1934) Paramonov, 1967

Family Hoplolaimidae (Filipjev, 1934) Wieser, 1953

Subfamily Rotylenchinae Golden, 1971

Genus *Rotylenchus* Filipjev, 1936

***Rotylenchus robustus* (De Man, 1876) Filipjev, 1934** was identified in the roots and rhizosphere of apple, apricot, peach, plum, pear, and walnut plants in the Kizirik, Baysun, Jarkurgan, Kumkurgan,

Shurchi, Denau, Altynsay, Sariassiya and Uzun regions Surkhandarya and Guzar, Kamashi, Kitab districts of Kashkadarya region.

Подсемейство Rotylenchoidinae Whitchead, 1958

Genus *Helicotylenchus* Steiner, 1945

***Helicotylenchus dihystera* (Cobb, 1893) Sher, 1961** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

***H. digitiformis* Ivanova, 1967** was found in the roots and rhizosphere of apple, apricot, peach, cherry, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Denau, Altynsay and Uzun regions of Surkhandarya and Kamashi, Kitab, Karshi districts of Kashkadarya region.

***H. digonicus* Perry, 1959** was recorded in the roots and rhizosphere of apple, apricot, plum, pear, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Kumkurgan, Shurchi, Denau, Sariassiya and Uzun regions of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab districts of Kashkadarya region.

***H. erythrinae* (Zimmermann, 1904) Golden, 1956** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

***H. multicinctus* (Cobb, 1893) Golden, 1956** was found in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Kizirik, Bandykhan, Baysun, Dzharkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Kamashi, Kitab, Karshi districts of Kashkadarya region.

***H. pseudorobustus* (Steiner, 1914) Golden, 1956** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitabsky, Karshi districts of Kashkadarya region.

***H.varicaudatus* Yuen, 1964** found in the roots and rhizosphere of apple tree plants, Apricot, Plum, Pear in Termez, Sherabad, Muzrabad, Kizirik, Kumkurgan, Shurchi, Denau, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Kitab, Karshi districts of Kashkadarya region.

***H.crassatus* Anderson, 1973** was detected in the roots and rhizosphere of apple, plum, pear, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Denau, Altynsay and Sariassiya districts of Surkhandarya and Dekhkanabad, Kamashi, Karshi districts of Kashkadarya region.

Family Pratylenchidae Thorne, 1949

Subfamily Pratylenchinae Thorne, 1949

Genus *Pratylenchus* Filipjev, 1936

***Pratylenchus pratensis* (De Man, 1880) Filipjev, 1936** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

***P.crenatus* Loof, 1960** was found in the roots and rhizosphere of apple, apricot, peach, cherry, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Kumkurgan, Denau, Altynsay, Sariasiya and Uzun regions of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab districts of Kashkadarya region.

***P.neglectus* (Rensch, 1924) Filipjev et Sch. Stekchoven, 1941** was found in the roots and rhizosphere of apple, apricot, plum, and walnut plants in Termez, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Jarkurgan, Kumkurgan, Shurchi, Denau, Sariassiya and Uzun regions of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab district of Kashkadarya region.

***P. penetrans* (Cobb, 1917) Filipjev et Sch. Stekchoven, 1941** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, pear, and walnut plants in Termez, Kizirik, Bandykhan, Baysun,

Jarkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun regions of Surkhandarya and Dekhkanabad, Kitab, Karshi districts of Kashkadarya region.

***P. tumidiceps* Merzheevskaya, 1951** was recorded in the roots and rhizosphere of apple, apricot, plum, pear, and walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Baysun, Jarkurgan, Kumkurgan, Altynsay, Sariassiya and Uzun regions of Surkhandarya and Kamashi, Kitab, Karshi districts of Kashkadarya region.

Suborder Criconematina Siddiqi, 1980

Superfamily Criconematoidea (Taylor,1936) Geraert, 1966

Family Paratylenchidae (Thorne, 1949) Raski, 1962

Subfamily Paratylenchinae Thorne, 1949

Genus *Paratylenchus* Micoletzky, 1922

***Paratylenchus hamatus* Thorne et Allen, 1950** was detected in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Dzharkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

***P.nanus* Cobb, 1923** revealed in the roots and rhizosphere plants of the apple tree, ordinary apricot, ordinary peach, cherry in Termez, Angor, Sherabad, Muzrabadsky, Baysun, Kumkurgan, Shurchi, Denau, Sariassiya and Uzun districts of Surhandarya and Kamashi, Kitab, Karshi districts of Kashkadarya region.

Suborder Hexatylina Siddiqi, 1980

Superfamily Anguinoidea Nikoll, 1935

Family Anguinidae Nikoll, 1935

Subfamily Anguininae Nikoll, 1935

Genus *Ditylenchus* Filipjev, 1936

***Ditylenchus dipsaci* (Kuhn, 1857) Filipjev, 1936** was recorded in the roots and rhizosphere of apple, apricot, peach, cherry, plum, pear, walnut plants in Termez, Angor, Sherabad, Muzrabad, Kizirik, Bandykhan, Baysun, Dzharkurgan, Kumkurgan, Shurchi, Denau, Altynsay, Sariassiya and Uzun districts of Surkhandarya and Dekhkanabad, Guzar, Kamashi, Kitab, Karshi districts of Kashkadarya region.

4. Conclusion

As a result of phytohelminthological studies of fruit crops in the southern regions of Uzbekistan, representatives of the order Tylenchida, we discovered 37 species of nematodes. The discovered species belong to 3 suborders, 5 superfamilies, 7 families, 10 subfamilies and 14 genera. In the root system and root soil of fruit trees, phytohelminths of nonspecific pathogenic effect of the species *Tylenchus davainei, Filenchus filiformis, Psilenchus hilarulus, D. myceliophagus* predominated; Among the phytohelminths with a specific pathogenic effect, the dominant species were *Tylenchorhynchus cylindricus, T.brassicae, Bitylenchus dubius, Merlinius brevidens, Rotylenchus robustus, Helicotylenchus dihystera, H. erythrinae, Pratylenchus pratensis, P.crenatus* and *Ditylenchus dipsaci.*

The results of a phytohelminthological study showed that nematodes representatives of the Tylenchida order cause serious diseases in fruit crops in the conditions of southern Uzbekistan and cause great economic damage to the fruit growing of the Republic. Therefore, studying the distribution and species composition, bioecological characteristics and justification of measures to combat these pests is of great scientific and practical importance.

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