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Fauna of Vegetable Crops Parasitic Phytonematodes (In the Example of Greenhouse Conditions)

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Annotation: In this article, the faunistic complex of phytonematodes identified during research in the greenhouses of Surkhandarya region is analyzed. According to the results of the research, 3984 individuals belonging to 51 species were recorded from the roots and pre-root soil of vegetable crops grown in the greenhouse, they are 5 genera, 9 subgenera, 13 large families, 20 families, 25 subfamilies. , belongs to 30 generations.

Keywords: greenhouse vegetable crops, phytonematoda, individual, eudominant, dominant, subdominant, resident, subresident.

INTRODUCTION: Currently, it is of great scientific and practical importance to identify parasitic phytonematodes that cause early plant growth, a sharp decrease in productivity, or the fact that the harvested crop cannot meet the consumption requirements, and to develop effective measures against them.

Based on global production figures and prices for 2010-2013, annual yield loss rates of 37 high-nutrient agricultural crops due to parasitic nematodes were 358.24 It was determined that it was a billion US dollars [6].

Uzbekistan, including the Surkhandarya region, is based on an agrarian system and occupies a leading place among regions in the production of agricultural and vegetable products.

MATERIALS AND WORKING METHODS

In our research, Berman's "Funnel" method, which is widely used by phytohelminthologists all over the world, was used to isolate nematodes from plant organs and soil [5]. For this purpose, the young and tender milk roots and root hairs of vegetable crops were first washed and cleaned from the soil with wastewater, and then cut into 0.5-1.0 cm pieces with sharp scissors, and the resulting 20 g of the mass was measured using an analytical scale and spread evenly on a special milk filter with a thickness of 0.5 cm. The soil samples inside polyethylene bags were also poured onto plywood to form a flat surface and thoroughly mixed by hand. 20 g of this sample was measured and poured into a milk filter to form an even surface.

After that, a 10 cm rubber plug was fixed to the end of a 15 cm glass funnel using special clamps, an entomological test tube was installed on the other end of the rubber plug, and the inside of the funnel was filled with water, and a metal mesh and plant samples were placed on it. The strained milk filter was placed on the funnel. After making sure that there is no air gap between the rubber plug and the funnel (if there is air, the rubber plug is squeezed several times with the fingers), placed samples, taking into account the air temperature, 12 (35ºC), 24 (25ºC), 48 (18ºC) and 72 (10ºC) hours were kept. During this period, migratory nematodes leave the roots and soil and move towards the rubber stopper and the test tube. At the end of the sampling time, the rubber clamp was removed, the water

in the funnel was drained, and the entomological test tubes were placed on the tripods and allowed to rest for 10-15 minutes.

A part of the samples in the test tube was fixed with 4% formalin solution to prepare a permanent preparation. Accordingly, the Tichler (Tichler 1949, Trojan 1980) scale was used to estimate the frequency of stability of species in the nematode population [4].

THE OBTAINED RESULTS AND THEIR ANALYSIS

In the course of research, it was found that nematodes found in vegetable plants in greenhouses and in their root and pre-root soil differ not only in the number of species, but also in the composition of species. 71 species of nematodes were found in the roots and soil of tomato, cucumber and bell pepper plants. It was noted that 12 species of the mentioned nematodes are subdominant, 14 species are resident, and 44 species of nematodes are subresident and 2 species are dominant species. Eudodominant species were not identified [2].

Eudominant species were not found among the nematodes recorded from the root soil of vegetable plants in greenhouses. Nematodes belonging to 12 species: Ditylenchus dipsaci Aphelenchus avenae, Filenchus filiformis, Panagrolaimus rigidus, P. subelongatus, Bitylenchus dubius, Helicotylenchus dihystera, Pratylenchus pratensis, P. rigidus A. obliguus Chiloplacus propinquus are subdominant species. 14 species of nematodes: Rhabdita brevispina, Panagrolaimus multidentatus, Heterocephalobus elongatus, Acrobeloides buetschlii, A. nanus, Aphelenchoides parietinus, Tylenchus davainei, Tylenchorhynchus brassicae, Helicotylenchus erythrinae, H. Multicinctus, Pratylenchus neglectus, Neotylenchus abulbosus, A. obliguus Ditylenchus myceliophagus as resident species. was recorded in the plant rhizosphere.

Eudominant and dominant species were not recorded among nematodes found in greenhouse vegetable plants and their roots. Of the identified species, 12 are subdominant, 14 are resident, and 44 are typical for subresidents.

Meloydogeny among the species recorded on the root of the plant. incognita (296 species), Meloydogeny. javanica (199 species), E. oxyuroides (179), Ypsylonellus insubricus (178 species), A. arachidis (172 species), Ch. Symmetricus (166 species), E. striatus (130 species), nematodes were included in the fauna list as the most common species.

The number of individuals of phytonematodes detected in vegetable plants grown in greenhouses according to the research carried out in the districts is distributed by families as follows: 94 individuals belonging to the Enoplida family, 102 individuals belonging to the Dorylaimida family, 1246 individuals belonging to the Rhabditi family, 489 individuals belonging to the Aphelenchida family, 2053 individuals of the genus Tylenchi were found.

The results of the research show that in terms of the number of species of sabavot plants and the soil around their roots in the greenhouse conditions of the Surkhandarya region, the genus Tylenchida takes the first place. There are 27 species of representatives of this category, which make up 53% of the total identified phytonematode species. The next place with 12 species is occupied by the Rhabditi family, which makes up 24% of the total identified species. The representatives of the Aphelenchida family are 7 species and represent 13% of the total identified phytonematode species, the representatives of the Dorylaimida family are 3 species and 6% of the total identified phytonematode species, and the representatives of the Enoplida family are 2 species and the total identified phytonematoda species are 4% of species. (1 table)

In terms of the number of individuals, the Tylenchida group takes the leading place (2,053 individuals), making up 51% of all found individuals. In the next places, 1246 individuals belonging to the Rhabditi family, 31% of the individuals found, and 489 individuals belonging to the Aphelenchida family made up 13% of all the individuals found. The groups with the smallest number of individuals are Enopli (94 individuals, 2.4%) and Dorylaimi (102 individuals, 2.6%). (table 1)

Qualitative and quantitative index of identified phytonematode species by categories.

Table 1

№	Categories	Number of species	%	Number of individuals	%
1.	*Enoplida*	2	4	94	2,4
2.	*Dorylaimida*	3	6	102	2,6
3.	*Rhabditida*	12	24	1246	31
4.	*Aphelenchida*	13	7	489	13
5.	*Tylenchida*	27	53	2053	51
Total:		**51**	**100**	**3984**	**100**

Also, among the individuals recorded in the fauna of phytonematodes on vegetable plants grown in the greenhouse, there are species that are widespread as species, but the population density is not very high, and vice versa, there are species whose distribution area is narrow, short, but dense high. With this in mind, it helps to monitor the adaptation of each nematode species to environmental conditions, host range, and their population relative to parasitic species to determine population density.

Also, these recorded species were grouped into 2 subclasses, 5 genera, 9 suborders, 13 superfamilies, 20 families, 25 subfamilies, and 30 genera.

REFERENCES

1. Bobokeldieva L.A., Khurramov A.Sh. // Phytonematodes of Grape Agrocenoses in the South of Uzbekistan // - Annals of the Romanian Society for Cell Biology - Vol. 25, Issue 4, - 2021, Pag. 10077 - 10081. http://annalsofrscb.ro/index.php/journal/article/view/3760/3070.
2. Xurramov A., Raimov Sh. // Turkish journal of Physiotherapy and Rehabilitation // - Туркия, 2021, № 32/3, pp. 37859-37868;
3. Kasprzak K., Niedbała W. Wskaźniki biocenotyczne stosowane przy porządkowaniu i analizie danych w badaniahc ilościowych // W: Górny M., Grum L. (red.) Metody stosowane w zoologii gleby. Wyd. Naukowe PWN // - - Warszawa, - 1981, - str.: 397-416.
4. Paramonov A.A. Osnovы fitogelьmintologii. – M.: Nauka, 1970. T. III. – 255 s.
5. Trojan P. Ekologia ogólna // - Warszawa, - 1980. - 419 str.
6. Xurramov A.Sh., Bobokeldiyeva L.A. Fauna i ekologiya fitonematod pshenitsы i dikorastuщix zlakovыx rasteniy Uzbekistana // - Yevraziyskiy nauchnыy jurnal, - 2020, 79-con, - S. 30-36. https://doi.org/10.31618/ESU.2413-9335.2020.3.78.1010.
7. Эшназаров К., Рахматуллаев Б. А. АНАЛИЗ ФАУНЫ ПАРАЗИТИЧЕСКИХ НЕМАТОД ТОМАТА И ОГУРЦА В РАЗЛИЧНЫХ УСЛОВИЯХ АГРОЦЕНОЗА //ХОРАЗМ МАЪМУН АКАДЕМИЯСИ АХБОРОТНОМАСИ. – 2018. – С. 31.
8. Рахматуллаев Б. А., Эшназаров К. ИСПЫТАНИЕ РАСТИТЕЛЬНЫХ ОТХОДОВ, КАК СРЕДСТВО БОРЬБЫ С ГАЛЛОВЫМИ НЕМАТОДАМИ //ХОРАЗМ МАЪМУН АКАДЕМИЯСИ АХБОРОТНОМАСИ. – 2018. – С. 20.
9. Рахматуллаев Б. А. ФАУНА НЕМАТОДЫ БЕРЕГОВОЙ РАСТИТЕЛЬНОСТИ ЮЖНО-СУРХОНСКОГО ВОДОХРАНИЛИЩА //Актуальные научные исследования в современном мире. – 2017. – №. 4-6. – С. 24-27.
10. Рахматуллаев Б. А. и др. Биологияни ўқитишда фанлараро синхрон (вертикал) боғланиш //Современное образование (Узбекистан). – 2015. – №. 11. – С. 31-36.
11. Bobokeldieva L. A., Sh K. A. Phytonematodes of Grape Agrocenoses in the South of Uzbekistan //Восточно-европейский научный журнал. – 2021. – №. 7-1 (71). – С. 4-7.