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INTENSIVE GARDEN PLANT PHYTONEMATODES

Sharipova Farida Salimjonovna
Teacher, Termez branch of Tashkent Medical Academy

Abstract:

Ecological characteristics of wheat phytonematodes and wild-growing cereals in Uzbekistan are given in the article. During the study, 237 species of phytonematodes belonging to 2 subclasses, 8 orders, 37 families and 83 genera were found. The observed species by ecological groups were distributed as follows: pararisbionts-51 species, eusaprobes-18, devisaprobionts-63, potential parasites-84, present parasites-21 species.

Keywords: *Phytohelminthological studies, phytonematodes, wheat, wild plants, ecological groups.*

Introduction

In the Republic of Uzbekistan, wheat is one of the main agricultural crops, which, like other crops, are affected by phytopathogenic microorganisms among which phytonematodes take a special place. And also, the study of phytonematodes of wild flora is of great interest for the establishment of host plants and biotypes. This issue is even more interesting by the fact that many polyphagous parasitic nematodes can easily pass from cultivated plants to wild plants and vice versa. In this sense, plants of wild flora can ensure the conservation of the parasite in nature. Despite the presence of a significant number of works on nematodes of wheat and wild grasses abroad, on the territory of Uzbekistan, information on the study of the phytonematode fauna of wheat and wild cereals is very scarce. This is explained by the fact that until this time complex phytohelminthological studies in this direction have not been carried out. Proceeding from this, the purpose of our study was to study the phytonematode fauna of wheat and wild cereals in various soil-climatic zones of grain-growing farms in Uzbekistan. Material and methods Phytohelminthiological studies were conducted in 2010– 2017. The studies were carried out by the conventional route method [1, 76–84]. The material of phytohelminthological studies was collected in 37 districts, 12 regions of the republic, also including the Karakalpak Autonomous Republic. A total of 420 soil samples, 345 samples from the root system and 374 samples of the above-ground organs of wheat and wildgrowing

cereals, such as the oats of Louis (hairy), bulbous bulbous grass, wild-growing barley (bulbous), wild rye and intoxicating weed were collected and analyzed. The phytonematodes were removed by Berman's funnel method and fixed with a 4% formalin solution. Enlightenment of nematodes was carried out in a mixture of glycerin and alcohol (1:3) and for permanent processing of the material constant preparations were prepared on glycerine according to the method of Sainhorst [4, 57–59]. Soil samples for the presence of a cyst-forming nematode were usually analyzed by the standard Dekker technique [3, 201–237]. In determining the species belonging to phytonematodes, the works of domestic and foreign authors were used, as well as the atone of phytonematodes compiled in the Institute of Parasitology of the Russian Academy of Sciences. And also, we used morphometric indicators obtained according to the generally accepted de Mann formula in the modification according to Micoletzky [5, 224–228]. Results and discussion of the study For the systematic analysis of registered phytonematodes, we used the AA system. Paramonova [1, 128–265]. During the study period, 237 species of phytonematodes belonging to 2 subclasses, 8 orders, 12 suborders, 17 superfamilies, 37 families, 42 subfamilies and 83 genera were found in the examined and analyzed cultures. Phytonematodes unite very different ecological groups. A.A. Paramonov proposed an ecological classification based on trophic connections of nematodes with plants or other soil organisms and identified 5 ecological groups: pararisbiontsfreeliving soil forms; eusaprobes-real inhabitants of the putrefactive environment; devisaprobionts-semiprobrobiotic inhabitants; phytohelminths of a specific pathogenic effect-real parasites of plants; phytohelminths of nonspecific pathogenic effect or nonspecific parasites [2, 338–369]. The species of phytonematodes registered by us on wheat and wild-growing cereals in Uzbekistan in terms of ecological groups are distributed as follows: parasubionts-51 (21.5%), eusaprobes-18 (7.6%), devisaprobionts-63 (26.6%), phytohelminths of the nonspecific pathogenic effect (potential parasites)– 84 (35.4%), phytohelminths of a specific pathogenic effect (real parasites) – 21 (8.9%). Basal soil and plant organs differ in their ecological composition. In the basal soil of wheat and wild plants, the species feeding on the microbial complex (pararisbionts) are represented by 51 species. Among the polytrophs, mass species do not exist. Comparatively more often than others in the soil, there are species like Plectus

parietinus and Monhystera simplex. Common for wheat and wild cereals are 19 species. Representatives of polytrophs in stems and leaves are absent, but in the roots are very rare. Eusaprobes (typical saprobionts) are represented by 18 species. Their main mass is confined to the basal soil. Common for wheat and wild cereals are 7 species. Of the typical saprobionts, the most numerous were Rhabditis brevispina, which accounted for almost the entire mass of nematodes in the basal soil and in the roots of plants. Devisaprobes are represented by 63 species. Among them, Panagrolaimus rigidus, P. subelongatus, Chiloplacus propinquus, Ch.sclerovaginatus, prevailed in all soil samples. Somewhat less than the previous species are Cephalobus persegnis, Acrobeloides nanus, A. buetschlii, A. labiatus, Panagrolaimus fuchsi. The remaining species are extremely rare. The group of nonspecific (potential) parasites is the most diverse eco-group (84 species) in the nematodafauna of the plants under study and make up about two of all the species detected and more than half of the phytonematodes. There were often species of genera Aphelenchus, Aphelenchoides, Tylenchus and Ditylenchus. Less common were species of the genera Paraphelenchus, Pratylenchoides, Neotylenchus, Psilenchus, Representatives of the genera Lelenchus, Aglenchus, Malenchus, Hexatylus, Stictylusa, Scutaleum, Deladenus and Halenchus presented in small amounts. Mass species include Aphelenchus avenae and Aphelenchoides parietinus. Above mentioned species are recorded not only in the basal soil, but also in all organs of the investigated plants. In the faunistic complex, another 11 species can be included: Aphelenchus cylindricaudata, A.composticola, A.limberi, A.parasaprophilus, A.trivialis, A.orientalis, Psilenchus hilarulus, P.clavicaudatus, Ditylenchus myceliophagus. Typical parasites in the basal soil are represented by 20 species. This includes species of genera Xiphinema, Tylenchorhynchus, Bitylenchus, Merlinius, Rotylenchus, Helicotylenchus, Pratylenchus, Pratylenchoides, Ditylenchus (D. dipsaci). Mass parasitic species in the soil are absent. Common species include Pratylenchus pratensis, Ditylenchus dipsaci, Bitylenchus dubius, Tylenchorhynchus brassicae. For earthen crops, ectoparasites may have a definite value, but they are not numerous in the basal soil. In the root system of the studied plants, 53 species of devisaprobes were found, of which Panagrolaimus rigidus, Psubelongatus, Chiloplacus propinquus, Ch. sclerovaginatus and Acrobeloides nanus. Comparatively often there are species of Cephalobus

persegnis, Acrobeloides buetschlii, Panagrolaimus multidentatus, P. mycophilus. Potential parasites in the roots of wheat and wild cereals are represented by 73 species, Aphelenchus avenae, Aphelenchoides parietinus can be referred to mass species. Also in the faunistic complex can include Filenchus filiformis, F. valkanovi, Lelenchus discrepans, Ditylenchus triformis, D.myceliophagus, Hexatylus viviparus, Psilenchus clavicaudatus. Relatively common are Aphelenchoides composticola, Aphelenchoides parasoprophilus, A. trivialis, A. capsuloplanus, A. delhiensis, A. submersus, Aphelenchus cylindricaudata. Phytoparasites in the roots are represented by 19 species; predominate individuals Ditylenchus dipsaci. This group also includes species: Bitylenchus dubius, Pratylenchus pratensis, P. neglectus, Helicotylenchus dihystera, H. pseudorobustus, Tylenchorhynchus tener, T. brassicae. 14 species of devisaprobes were found in the stems and leaves of the studied cultures, including Panagrolaimus rigidus, P. mycophilus, P. multidentatus, P. subelongatus, Eucephalobus oxyuroides, Chiloplacus propinquus, Ch. sclerovaginatus. The first two species occupy a dominant position and make up the bulk of phytonematodes. In the stems and leaves, potential parasites are represented by 14 species, among which Aphelenchus avenae, Aphelenchoides parietinus and A. composticola are common. Parasitic nematodes in stems and leaves are very rare and are represented only by the species Ditylenchus dipsaci. Wheat spikes are very sparsely populated by nematodes. Here there are only 2 species: the wheat nematode Anguina tritici and Cephalobus peregnis. Wheat nematodes are noted during the ripening of wheat and are mainly represented by second-stage larvae. During the study period in the root soil of wheat the most numerous group are potential parasites. In plant tissues along with potential parasites prevail devisaprobionts. Conclusion Wheat nematode – Anguina tritici in our materials were small, but the expansion of wheat fields and the assumption of sowing contaminated seeds results in a rather high density of their populations. It should be noted that the aforementioned parasitic nematodes were few and serious threat to wheat not present. However, the detection on the wheat fields of a complex of highly pathogenic parasitic species of nematodes – Pratylenchus, Helicotilenchus, Tylenchhorchus, Anguina and Ditylenchus with a sufficiently high density of their populations, causes particular concern as a widespread dangerous disease.

References:

1) Paramonov A. "Foundations of phytohelminthology." Izd-vo. AN SSSR.– M.: – 1962.–T. 1.– 480 p.
2) Paramonov A. "Experience in the ecological classification of phytonematodes." Tr. GELAN.–M.:–1952.–T. 6.–FROM.– P. 338–369.
3) Decker H. Schädliche Nematodenarten des Getreides und der Gräser. "Phytopathol. undPflanzenschutz". Bd 2.–Berlin.– 1974.– P. 221–237. 4. Seinchorst J.W. "A rapid method for the transfer of nematodes from fixative to anhydrous glycerin". Nematologica.– 1959.– V.
4) P. 57–69. 5. Micoletzky G. "Die freilebendenErd-Nematoden, mitbesondererBerucksichtigung der Steiermarkun derBukowina, Zugleichmiteiner Revision Samtlichernicht mariner, freilebenderNematoden in Farm von esenus". Beschreibungen und Bestimmungs – Schlusseln, Arch. Naturgesch,–V. 87.– 1922.– 364 p.