International Journal of
Biological Engineering and Agriculture

ISSN: 2833-5376
Volume 2 | No 12 | Dec -2023

Analysis of the Fauna of Parasitic Nematodes of Tomato and Cucumber in Different Conditions of Agrocenosis

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Annotation: the article in various conditions of agrocenosis, the fauna of parasitic nematodes of tomato plants and cucumber plants, their study and parasite analysis for them, analysis of phytonematodes are important occupations.

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

INTRODUCTION. He accumulated information on the fauna of parasitic nematodes of tomato and cucumber in the Surkhandarya region was the basis for a more in-depth study of the complex biocenolic relationships between nematodes and components of the agrobiocenosis.

The ecological approach and the study of plant nematodes requires, first of all, taking into account the varietal characteristics of vegetable crops, which clearly respond to all changes in the prevailing conditions of the agrocenosis (external environment).

Our research program included a comparative study of the species composition of root parasitic nematodes of vegetable crops - tomato and cucumber, differentiated by varieties that differ in their susceptibility to damage by root-knot nematodes. Analysis of the fauna of parasitic nematodes in healthy and sick with meloidogynosis of tomato and cucumber plants.

Phytoparasitic nematodes play an important role in the spread of fungal, viral and bacterial plant diseases. The different integrity of the tissue of the root system, phytohelminths, opens the way for infection to penetrate into it, reduces the resistance of plants to parasitic diseases and contributes to the development of necrotic processes in the affected areas of the root, thereby accelerating the development of emerging pathogenic processes on the affected plants.

MATERIAL AND METHODS. The materials for this work were samples plants and soil samples collected in 2021-2023. in farms and household plots belonging to 14 districts (Altynsay, Angora, Baysun, Bandikhan, Denau, Dzharkurgan, Kizirik, Kumkurgan, Muzrabad, Sariassi, Termez, Uzun, Sherabad and Shurchin) of Surkhandarya region. The following vegetable crops were subject to examination: tomato - Lycopersicum esculentum Miel. and cucumber - Cucumis sativus L.Sample collection was carried out using the route method generally accepted in modern faunistic studies. In each region, vegetable crops were surveyed twice. The first survey was carried out in the middle of the growing season (May. June); the second is during harvest (August, September). Extraction of

nematodes from soil and plant samples was carried out mainly using the Berman funnel method. To fix the nematodes, 4% formalin and TAF solution were used. Permanent and temporary preparations for the determination of nematodes were prepared according to the method Seinhorst (1959). Nematodes were measured using the generally accepted de Man formula modified by Mikoletsky. Nematodes were identified under a GDP-12AV microscope and Biolam-NSZ-405 under immersion objectives. To identify the commonality of the species composition of nematodes in different crops and study areas, we used the Jaccard coefficient, calculated using the QOL formula: (C/a-c-c) x100. where a, b is the number of species in two areas, c is the number of species common to two areas.

Results and its discussion. The study involved the fauna of parasitic nematodes of plants affected by meloidogynosis in comparison with the fauna of apparently healthy studied crops. Research to study the nematode fauna was carried out during the entire growing season of tomato and cucumber plants in stationary conditions on surveyed farms in the region.

While selecting tomato and cucumber plants to study the fauna of parasitic nematodes, we noticed that both on the plantations and in the experimental plots there were large numbers of diseased and depressed tomato and cucumber plants. The general list of parasitic nematodes found on apparently healthy plants affected by root-knot nematodes of tomato and cucumber includes 29 species (Table 1).

As a result of phytohelminthological studies, it was established that the fauna of parasitic nematodes of apparently healthy and meloidogynous plants differed, not only qualitatively, but also, mainly, quantitatively. The number of individuals of nematodes in cucumber and tomato plants affected by meloidogynosis was 3-4 times higher than that in a comparative assessment with the number of nematodes extracted from apparently healthy plants. The nematode fauna in apparently healthy tomato plants is represented by 24 species; The following species of parasitic nematodes predominated among them: T. cylindricus (190 copies), N. brassicae (802 copies), B dubius (107 copies), R. robustus (182 copies), H. dihystera (2038 copies), H.digonicus (76 specimens), H.erythrinae (1343 specimens), P.pratensis (294 specimens), P.crenatus (169 specimens), P. scribneri (108 specimens).

The fauna of nematodes in apparently healthy cucumber plants is represented by 19 species, the predominant ones being: T.cylindricus (169 specimens), T.brassicae (578 specimens), H.dihystera (1413 specimens), H.digitiformis (166 specimens) , H. digonicus (55 copies), H. scribneri (89 copies).

On tomato plants affected by meloidogynanosis, 19 species of parasitic nematodes were found, of which the predominant ones were: T. cylindricus (107 copies), T. brassicae (326 copies), R. robustus (85 copies), H. dihystera (782 specimens), P.pratensis (74 specimens), M.incognita (1900-3600 larvae/100 cm^3 of soil), M.arenaria (1600-2900 larvae/100 cm^3 of soil), M.javanica (1800-3500 litchi 3 nok/100 cm^3 of soil), P.nanis (46 copies).

In cucumber plants affected by root-knot nematodes, T. cylindricus (140 copies), R. robustus (145 copies), R. pratensis (75 copies), P. penetrans (85 copies), M. incognita (1800- 3500 larvae/100 cm^3 of soil), Macrita (1600-2500 larvae/100 cm^3 of soil). M.arenaria-(1700-3000 larvae/100 cm^3 of soil), M.javanica (1800-3600 larvae/100 cm^3 of soil).

Thus, the species B.dudius, S.clatricaudatum, H.digitiformis, H.digonicus, H.pseudorobustus, R. intermedius, p.scribendisein.) nainianus have been recorded in apparently healthy plants. On the species were not detected in tomato and cucumber plants affected by melodogynosis (Table 1).

The number of nematodes in the root soil and in the roots of healthy tomato and cucumber plants was small compared to their number extracted from plants affected by meloidogynosis.

List of species of parasitic nematodes found in apparently healthy and meloidogynosis-affected plants tomato and cucumber 19 species of parasitic nematodes were found in the root system of healthy tomato plants, and 24 species in the root soil; in the roots and rhizosphere of 1800 cucumber there are 15 and 19 species, respectively. On tomato plants affected by meloidogynosis, 15 species

were found in the roots and 20 in the rhizosphere; There are 12 species of parasitic nematodes in the cucumber root system and 14 species of parasitic nematodes in the root soil.

Most of the species of detected parasitic nematodes turned out to be common to apparently healthy and meloidogynous plants. These species are: T.cylindricus, T.brassicae, T.claytoni, M.brevidens, R.robustus, R.buxophilus, H.dihystera, H.digitatus, Herithrinae, H.pteracercus, P.pratensis, P.crenatus, P. penetrans, P. (p.) nanus, P (P.) goodeyi.

In the studied crops, parasitic nematodes S.clathricaudatum, H.labiodiscinus, R.intermedius, P. (p) nainianus were found in single specimens it is known that in nature there is interspecific competition among living organisms, in particular, among plant nematodes that live both in the plant and in the root layer of the soil. In the process of conducting phytohelminthological studies, we observed interspecific competition not only between root-knot species, but also with other parasitic nematodes, where root-knot nematodes dominated qualitatively and quantitatively (M.incognita, M.acrita, M .arenaria, M.javanica). At the same time, a tendency was noted for a significant decrease in the number of species of other parasitic nematodes with a sharp decrease in the density of their populations on the studied vegetable crops. It is very difficult to establish the share of harm of each of the identified pathogens, since the reproduction, and therefore the harmfulness of the studied nematode species, was apparently limited by mutual influence on each other to varying degrees.

Materials concerning the issues of interspecific competition of plant-parasitic nematodes in the published information of domestic and foreign authors are reflected extremely poorly, and therefore it is necessary to begin scientific development in this extremely interesting area of research, aimed at theoretical significance, as well as practical significance in the fight against with a complex of parasitic nematodes. The competitiveness of parasitic nematodes is most likely determined by the level of their organization, biological, physiological and ecological characteristics and the degree of adaptability to parasitizing plants of certain species and varieties of agricultural crops and plants of wild flora.

Fauna of parasitic nematodes resistant and susceptible tomato varieties to root-knot nematodes For a comparative analysis of the fauna of parasitic nematodes of tomato varieties resistant and susceptible to root-knot nematodes, the resistant variety Surkhan-142 and the tomato variety Volgogradsky 5/95, which is highly susceptible to root-knot nematodes, were studied from the zoned tomato varieties.

The results of microscopic analyzes of root samples and soil samples showed that in the resistant variety Surkhan-142, 12 species were found in the root soil, and 10 species of parasitic nematodes were found in the roots, of which T. cylindricus, T. brassicae, R. robustus, predominated. H.digonicus, H.erythrinae, H.pteracercus, P.penetrans, M.incognita, M.javanica, P.(P.) nanus.

It should be noted that H. dihystera, P. (P.) nanus were found only in the root soil, the remaining 10 species of parasitic nematodes were found in the roots and recorded in the rhizosphere of plants.

In the root soil of the susceptible variety Volgogradsky 5/95, 18 species were found; in the roots there are 12 species of parasitic nematodes, including T.cylindricus, T.brassicae, T.claytoni, H.erythrinae, P.pratensis. P. crenatus.

P.penetrans, M.incognita, Macrita, Marenaria, M.javanica dominated in the roots and again. The species M.brevidens, R.robustus, R.buxophilus, H.dihystera, H.digitatus, P (P.) nanus, P (P.) goodeyi were found only in root soil. Common to both tomato varieties, susceptible and resistant to root-knot nematodes, were the following: H.dihystera, Herythrinae, P.penetrans, M.incognita, M.javanica, P. (p.) nanus.

CONCLUSION. Thus, a comparative assessment of the fauna of parasitic nematodes found on resistant tomato varieties and on those susceptible to meloidogynosis using the example of two varieties Surkhan-142 (resistant) and Volgogradsky 5/95 (highly susceptible), showed that on the tomato variety, possessing resistance to two types of root-knot nematodes, the number of parasitic species was 12, and on the susceptible one it was much higher - 19 species (Table 2).

The tomato variety Surkhan-142, which was tested and is resistant to meloidogynosis, of the four widespread species of meloidogynosis in the Surkhandarya region, was affected only by M. incognita and M. javanica.

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