



## **FAUNA AND DISTRIBUTION OF PHYTONEMATODES OF SOME MEDICINAL PLANTS IN THE SURKHANDARYA REGION OF UZBEKISTAN**

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### **Annotation**

The article provides data on the fauna, taxonomic composition and distribution of phytonematodes of some medicinal plants in the conditions of the Surkhandarya region of Uzbekistan. As a result of the study in the root system and rhizosphere of medicinal plants (rose hip, blood red hawthorn and sea buckthorn), 39 species of plant nematodes belonging to 25 genera, 16 families, 5 orders and 2 subclasses were identified.

**Keywords:** fauna, distribution, phytonematodes, Surkhandarya region, medicinal plants, wild rose, blood red hawthorn, sea buckthorn.

### **Introduction**

Nematodes-parasites of medicinal plants, so far poorly studied in Uzbekistan. The greatest harm to medicinal plants is caused by gall, stem and short-bodied nematodes, as well as representatives of many other groups, including both narrowly and broadly specialized parasites.





Medicinal plants affected by nematodes may partially or completely lose their commercial qualities, which leads to significant losses in farms specializing in the cultivation of medicinal plants.

The accumulation of nematode invasion in the soil and their wide spread can be avoided if they are detected in a timely manner and measures are developed to combat the most dangerous species.

The study of the species composition of parasitic nematodes of medicinal plants is of particular interest in order to analyze the possibility of their transition from natural habitats to other cultivated plants. In connection with the development of farms specializing in the cultivation of medicinal plants, the scientific and practical significance of nematodological research is increasing.

The paper presents the preliminary results of our research. Comprehensive scientific work on the study of the fauna of phytonematodes of medicinal plants in the southern part of the Republic of Uzbekistan continues.

### **Material and Research Methods**

The material for this work was samples of some medicinal plants (rosehip (*Rosa canina* L.), blood-red hawthorn (*Crataegus sanguinea* Pall.), sea buckthorn (*Hippophae rhamnoides* L.)), collected in the territories of different soil and climatic conditions of the Surkhandarya region. The preparation of samples for analysis was carried out on the territory of the Surkhandarya region in the summer period of 2021-2022. The studies were carried out by the generally accepted route method [2]. To study the nematodological complex of medicinal plants, 300 plant and 300 soil samples were collected and analyzed. Of these, 1132 plant nematodes were extracted by various methods.

Phytonematodes were extracted by the Berman funnel method and fixed with 4% formalin solution. Nematodes were clarified in a mixture of glycerol and alcohol (1:3), and permanent preparations on glycerol were prepared for laboratory processing of the material according to the Seinhorst method [6]. Soil samples for the presence of the cyst nematode were usually analyzed according to the standard Dekker method [1]. The species composition of nematodes was studied under an MBR-3 microscope. Species were identified using morphometric parameters obtained according to the generally accepted De Man formula [3] in its modification according to Micoletzky [5]. The degree of dominance of plant nematodes in plant and soil samples was determined from the percentage of individuals of individual species to the number of all detected by Witkowsky [4].





## Results

This paper presents the results of a preliminary analysis of the selected material. As a result of nematological studies of medicinal plants in the territory of the Surkhandarya region of Uzbekistan, we have found a total of 39 species of plant nematodes belonging to 25 genera, 16 families, 5 orders and 2 subclasses.

### Rosehip Nematodes

During the period of phytohelminthological research on the territory of the Surkhandarya region of wild rose plants and its root soil, we have identified 22 species of plant nematodes belonging to 18 genera, 13 families, 5 orders and 2 subclasses. In the composition of the fauna of phytonematodes in wild rose plants, numerous species were *Cephalobus persegnis*, *Chiloplacus sclerovaginatus*, *Ch. quintastratus*, *Panagrolaimus rigidus*, *Aphelenchus avenae*, *Aphelenchoides parietinus*, *A.composticola*, *A.blastophthorus*, *A.graminis*, *Helicotylenchus erythrinae*, *Pratylenchus pratensis* and *Ditylenchus dipsaci*. A few species were *Nygolaimus brachyurus*, *Enchodorella penetrans*, *Leptonchus obtusus*.

### Hawthorn Nematodes

In the root system and root soil of the hawthorn, 19 species of phytonematodes belonging to 14 genera, 11 families, 4 orders and 2 subclasses have been registered. Of the found phytonematodes, the species dominated *Eudorulaimus pratensis*, *Cephalobus persegnis*, *Acrobeloides buetschlii*, *Chiloplacus quintastratus*, *Panagrolaimus rigidus*, *Aphelenchus avenae*, *Aphelenchoides parietinus*, *A.composticola*, *Quinisulcius capitatus*, *Helicotylenchus dihystra*, *H.erythrinae*, *Pratylenchus pratensis* и *Ditylenchus dipsaci*. And the species *Rhabditis brevispina*, *Xiphinema basiri*, *X.elongatum* were not numerous in terms of the number of individuals.

### Sea Buckthorn Nematodes

In our material, in the roots and rhizosphere of sea buckthorn plants, we identified 20 species of phytonematodes belonging to 14 genera, 11 families, 4 orders, and 2 subclasses. Species *Eudorulaimus parvus*, *Tylencholaimus minimus*, *Diphtherophora communis*, *Eucephalobus oxyuroides*, *Panagrolaimus rigidus*, *Aphelenchus avenae*, *Aphelenchoides parietinus*, *Bitylenchus dubius*, *Quinisulcius capitatus*, *Helicotylenchus dihystra*, *H.erythrinae* were found in large numbers in the root system and root soil of sea buckthorn. Species *Rhabditis brevispina*, *Filenchus leptosoma*, *Aglenchus agricola* were found in insignificant amounts.





## Conclusion

An analysis of the studies carried out showed that the fauna, ecology, systematics, and features of the distribution of plant nematodes of medicinal plants in the conditions of the Surkhandarya region of Uzbekistan are insufficient. In this regard, conducting large-scale phytohelminthological studies of this territory, determining the faunistic complex of phytonematodes of medicinal plants and substantiating measures to combat parasitic species are of great scientific and practical importance in the national economy of Uzbekistan.

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