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## Analysis of the Taxonomic Structure of Nematodes in the Soil of Restored Ecosystems

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**ABSTRACT.** Diversity of the nematode fauna, asymmetric origin of big nematode taxons and the character of dominance and constation is established.

**Key words:** nematoda. fauna. structure.

In 1995-1996 on the basis of investigation of soil nematodes of restored ecosystems in the environs of Tbilisi (r. Vere canyon) 231 forms of nematodes were identified of which 175 were defined up to species.

Taxonomic structure of soil nematodes is one of the characteristics of the ecosystems [1], on the basis of which we can speak on the character and state of the ecosystem and define the degree of recultivation and plant cover restoration [2] as well as the maturity of natural ecosystems [1]. Hence, investigation of nematodes in the soil of restored ecosystem permits to define on which stage of development the association is studied.

One of the areas investigated is planted with *Pinus eldarica*, the second one with almond (*Amygdalus*) and the third one is under restoration of natural vegetative cover for years. The structure of nematode populations in the soil of these ecosystems is characterized by heterogeneous representatives of taxonomic groups (Table 1).

The order of *Dorylaimida* is the richest in versatility of the species. The new species to science described in the canyon of the river Vere belongs to this order [3] as well as the majority of the forms firstly observed in Georgia. Domination of *Dorylaimida* in the soil nematode taxonomic structure is characteristic of natural ecosystems, especially of the forests unlike the agroecosystems, where the leading group is the order *Tilenchida*. Such an asymmetry of representatives of main orders is conditioned by large spectrum of

Table 1

Quantitative distribution of nematode genera and species in orders

Orders	Number of genera	Number of species	New one for Georgian fauna
Enoplida	8	18	1 species
Mononchida	7	13	1 species
Dorylaimida	40	120	1 genus, 36 species, 1 new species for science
Chromadorida	1	1	
Monhysterida	2	3	1 species
Areolamida	6	15	1 species
Rhabditida	11	24	1 species
Tylenchida	13	30	3 species
Apherida	3	7	
	91	231	1 genus, 44 species

adaptation of *Dorylaimida* species and by the fact that investigation was carried out in those areas where the original ecosystem was the leaf-bearing forests of Eastern Georgia.

It should be noted that taxonomic structure of soil nematodes is poor with the order of *Aphelenchida*, which is not characteristic of forest soils and indicates to the lack of nutritious basis for them, i.e. of the fungi hyphae.

The orders of nematodes the representatives of which mainly belong to phytobionts and plant ectoparasites (except phytoparasite *Dorylaimidae*) are less in total than those of the order *Dorylaimida*.

Comparison of the areas according to the Jakar formula of faunistic similarity does not show great difference and the indices are rather high (Fig.) [4].

Differences revealed in the result of investigation of the three areas are mainly conditioned by the difference of the vegetative cover.

In the faunistic complex the dominant taxons making the "nucleus" of fauna could be identified on the level of family and genus. These taxons belong to several orders: *Dorylaimida* (*Quidsianematidae*, *Aporcelaimidae*, *Dorylaimidae*), *Enophida* (*Tripylidae*), *Areolaimida* (*Plectidae*), *Mononchida* (*Mononchidae*). It should be noted that the *Tylenchida* and *Aphelenchida* are not among these orders.

Faunistic complex is widely represented by geographic ubiquitous (25 species - 10.8%) which is characteristic of the soils of natural ecosystems. High frequent occurrence (index of constancy) is mainly characteristic of widely spread varieties. Euconstants are of small

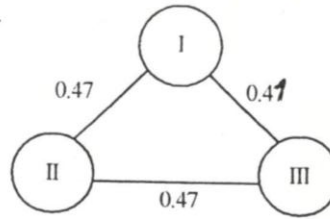


Fig. The faunistic similarity coefficient of different areas

Table 2  
Nematode grouping according to the occurrence constancy

Group	Area I	Area II	Area III
Euconstants	<i>Aporcelaimellus obtusicaudatus</i> <i>Tripylina arenicola</i>	<i>Aporcelaimellus obtusicaudatus</i>	<i>Aporcelaimellus obtusicaudatus</i> <i>Anaplectus granulosus</i>
Constants 50-75%	<i>Eudorylaimus acuticauda</i> <i>Eudorylaimus carteri</i> <i>Clarcus papillatus</i>	<i>Tripylina arenicola</i> <i>Anaplectus granulosus</i> <i>Eudorylaimus acuticauda</i>	<i>Mesodorylaimus bastiani</i> <i>Clarcus papillatus</i> <i>Plectus parietinus</i> <i>Eudorylaimus carteri</i>
Accessorii 25-30%	<i>Geomonphystera villosa</i> <i>Aphelenchus avenae</i> <i>Nesodorylaimus bastiani</i> <i>Plectus parietinus</i> <i>Tylencholaimus mirabilis</i>	<i>Mesodorylaimus bastiani</i> <i>Cephalobus persegnis</i> <i>Eudorylaimus carteri</i> <i>Clarcus papillatus</i> <i>Diphtherophora perplexans</i>	<i>Eudorylaimus acuticauda</i> <i>Eudorylaimus centracerus</i> <i>Cephalobus persegnis</i> <i>Clarcus papillatus</i> <i>Tylencholaimus mirabilis</i>
Accidents below 25%	the rest 125 species	the rest 125 species	the rest 139 species

number and they are mainly the representatives of *Dorylaimidae* - *Aporcelaimellus obtusicaudatus*. The frequency of nematode occurrence is given in Table 2. The picture of dominance of single species is not clearly outlined. It changes according to the seasons. We could not establish the eudominant species, and in the role of dominants and subdominants mainly the euconstants and constants were observed.

The soil nematode taxonomic structure of the investigated areas testifies the asymmetric origination of big taxons, significant diversity of fauna, low level of dominance and small number of constants. Such a structure is characteristic of already formed, "ripe" ecosystems.

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