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Patterns of changes of soil nematode communities in relation to biocenosis type and vegetation features

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Materials and methods. Nematode extraction from the soil, fixation and identification were performed according to standard methods (van Bezooijen, 2006). Each nematode taxon was referred to one of six eco–trophic groups: bacterial feeders, ***B***; fungal feeders, ***F***; omnivores, ***Om***; predators, ***Pr***; plant parasites, ***Pp*** (obligate plant feeders); nematodes associated with plants, ***Asp*** (facultative plant feeders) (Yeates et al., 1993). Nematode diversity, population density and eco-trophic community structure were studied.

Soil organisms are closely related to the composition and structure of plant communities. To reveal the patterns of formation of pedobiont communities in undisturbed biocenoses, soil nematode fauna was studied and the features of their communities were analysed at the dependence on biocenosis type and vegetation peculiarities.

There were investigated:

Surveys were carried out in the North-West of Russia (61°-68°N).

Tundra biocenoses, *n*=10

Coniferous forests

Pine forest, *n*=25

Spruce forest, *n*=15

Deciduous forest

Small leaf forest, *n*=9

Broadleaf forest, *n*=5

Meadows, *n*=72

Results. The lowest values of nematode numbers were found in tundra biocenoses and highest ones – in spruce forests. The nematode taxonomic diversity were also lowest in tundra, and increased in the series «pine forest – spruce forest – small leaf forest – broad leaf deciduous forest».

Table 1. *Abundance and taxonomic diversity of soil nematodes in natural biocenoses (North-West of Russia as an example)*

Note. Values in the line with different letter designations are statistically different (P<0.05).

Parameter	Tundra	Coniferous forests		Deciduous forest		Meadows
		Pine forest	Spruce forest	Small leaf ~	Broad leaf ~	
Nematode density, ind./100 g soil	1329±295^{a}	2961±394^{bd}	6881±1058^{c}	6390±1707^{cd}	3590±1630^{abcd}	2411±177^{d}
Number of genera	16±1,4^{a}	23±1,4^{b}	25±1,4^{bc}	29±2,9^{cd}	42±1,7^{e}	30±1,0^{d}
Shannon' index *H*'	2,89±0,2^{a}	3,12±0,1^{a}	3,34±0,1^{a}	3,50±0,2^{ab}	4,32±0,2^{b}	3,79±0,1^{b}

Table 2. *Eco-trophic structure of soil nematode communities in natural biocenoses (North-West of Russia as an example)*

%	Tundra	Coniferous forests		Deciduous forest		Meadows
		Pine forest	Spruce forest	Small leaf ~	Broad leaf ~	
B	50,3	54,7	41,8	42,1	34,1	48,9
F	9,9	20,1	24,6	19,2	19,8	12,4
Om	13,7	7,6	9,5	8,8	14,2	11,1
Pr	2,4	2,7	4,9	3,2	4,8	5,4
Asp	23,3	13,4	18,5	20,9	18,3	10,5
Pp	0,4	1,5	1,7	5,8	8,7	11,7

Analysis of nematode community structure showed that bacterial feeders dominated in soil of all types of biocenoses. *Asp* nematodes were subdominant in the tundra, fungal feeders – in the coniferous forests. And both groups were subdominant in deciduous forests and meadows with similar values of relative abundance. *Pp* nematodes were presented in lowest numbers in the community of tundra and coniferous forests. In deciduous forests the proportion of plant parasites increased and reached a maximum in the meadows.

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