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Data Article

Dataset on nematode assemblages of different ecosystems in Del Agua National Park, Costa Rica

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ABSTRACT

Nematodes comprise a diverse and ubiquitous group, widely used as bioindicators for environmental monitoring. The characterization of nematode assemblages in soils, both arable and undisturbed, promotes the understanding of their ecology, diversity, and contribution to ecosystem functions. The present contribution is the dataset used in the study described in "Nematode assemblages in four ecosystems of Parque Nacional del Agua, Costa Rica" Applied Soil Ecology, 172, 104360. It contains tables of the estimated abundance of genera and a series of ecological indices (maturity index, plant parasitic index, sigma maturity index, basal index, enrichment index, channel index, structure index, Shannon-Wiener diversity index, and the true diversity) obtained for the nematode assemblages associated with soils of five locations with four different types of ecosystems (primary forest and, derived by conversion of the primary forest, secondary forest, tree plantation and pasture) at the edges of the park in the area of sustainable management of natural resources. Because the provided dataset was obtained following a precise methodological protocol, this contribution will be very use-

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ful for later comparative studies of nematode assemblages in tropical and non-tropical habitats.

Specifications Table

Subject	Ecology
Specific subject area	Ecology of the nematode assemblages in Del Agua National Park, Costa Rica
Type of data	Abundance of nematode genera and ecological indices derived from it, raw and derived data.
Data collection	Nematodes were extracted from soil samples by centrifugation. The total number per soil sample was counted under an inverted microscope. Later, 20 % of the specimens were identified to genus following an integrative taxonomy approach and using a compound microscope with Nomarski differential interference. Indices based on colonizer-persister (cp) groups, soil food web, and metabolic footprints were calculated using the NINJA tool: Nematode indicator joint analysis. Diversity was estimated with the Shannon-Wiener index and the effective number of taxa, with q = 1 in the equation to weight each taxon by its proportional abundance.
Data source location	Institution: Instituto Tecnológico de Costa Rica. City: San Carlos. Country: Costa Rica Sample collection. Del Agua National Park, Alajuela province of Costa Rica (10°12′01″ and 10°21′01″ N, 84°15′32″ and 84°23′06″ W
Data accessibility	Data is provided in this article, and raw data is provided as supplementary material. Repository name: Mendeley Data identification number: doi: 10.17632/gbmv6nbsvt.2 Direct URL to data: https://data.mendeley.com/datasets/gbmv6nbsvt/2 [1]
Related research article	[2]. I, Varela-Benavides, J. Abolafia, M. Guevara-Mora, R. Peña-Santiago, H. Ferris, Nematode assemblages in four ecosystems of Parque Nacional del Agua, Costa Rica, Appl. Soil Ecol. 172 (2022) 104360. https://doi.org/10.1016/j.apsoil.2021.104360

1. Value of the Data

- Data provide a useful foundation for studying function of nematode assemblages in Costa Rican soils in particular and tropical soils in general.
- Data are useful for ecologists and nematologists interested in the study of soil biodiversity and nematodes as indicators of environmental condition and soil health.
- The information allows comparisons among studies, more intensive ecological analyses, and improving the knowledge on indices used in describing nematode assemblages.

2. Background

Nematodes comprise a diverse and ubiquitous group of invertebrates that has been extensively studied for their economic and ecological relevance. Their study provides a basis for designing management strategies aimed at maintaining soil health and fertility. Costa Rica is a tropical country, with a great diversity of climates, soils and biota. The characterization of its nematode fauna will aid understanding of the ecology of tropical soil nematode assemblages and will be useful for comparative studies with other tropical and non-tropical soil assemblages.

Table 1
Indices for the nematode community and soil properties in four different ecosystems in the Del Agua National Park, Costa Rica. Significant differences ($p \leq 0.05$), if any, are indicated with different letters to the right side of the column.

Index name	Primary Forest	Secondary forest	Tree plantation	Pasture
Maturity Index	2.52 ± 0.23	2.45 ± 0.21	2.63 ± 0.36	2.48 ± 0.24
Sigma Maturity Index	2.8 ± 0.28 a	2.73 ± 0.18 a	2.96 ± 0.2 b	2.97 ± 0.23 b
Plant Parasitic Index	2.96 ± 0.28ab	2.87 ± 0.16 a	3.07 ± 0.24 b	3.25 ± 0.35 c
Channel Index	75.79 ± 22.77ab	62.21 ± 30.94 a	66.69 ± 20.44 ab	80.57 ± 18.46 b
Basal Index	25.45 ± 7.81ab	22.4 ± 8.25 a	23.2 ± 8.37 ab	29.04 ± 7.26 b
Enrichment Index	52.91 ± 8.69 a	59.63 ± 12.4 b	51.68 ± 6.33 a	48.91 ± 7.29 a
Structure Index	63.74 ± 12.46 ab	66.5 ± 11.19 ab	68.53 ± 13.06 b	58.53 ± 12.99 a
Composite footprint	677.15 ± 619.7	850.01 ± 902.53	719.73 ± 617.74	913.68 ± 626.53
Enrichment footprint	287.27 ± 636.12 ab	476.55 ± 883.6 b	66.45 ± 116.81 a	78.01 ± 136.92 a
Structure footprint	81.42 ± 54.21	97.39 ± 61.69	70.22 ± 69.24	69.38 ± 31.93
Herbivore footprint	297.33 ± 149.25 a	265.23 ± 183.49 a	573.37 ± 564.14 ab	751.9 ± 637.33 b
Fungivore footprint	20.43 ± 14.14 a	18.28 ± 8.58 a	12.85 ± 6.27 a	31.08 ± 22.01 b
Bacterivore footprint	287.02 ± 639.9 ab	473.38 ± 894.42 b	71.5 ± 124.92 a	70.23 ± 145.0 a
Predator footprint	15.23 ± 12.56	16.4 ± 12.38	14.18 ± 15.12	18.22 ± 11.8
Omnivore footprint	57.12 ± 48.28	76.71 ± 49.47	47.82 ± 54.29	42.26 ± 28.32
Shannon index	2.62 ± 0.35	2.67 ± 0.39	2.34 ± 0.42	2.56 ± 0.31
True diversity	14.35 ± 4.72	15.56 ± 6.94	11.19 ± 4.46	13.34 ± 3.71

3. Data Description

Dataset comprises a csv table (supplementary material) of abundance (number of specimens) of the 135 genera found in each of a total of 100 soil samples (5 localities × 4 ecosystems × 5 replicates) collected in Del Agua National Park, Costa Rica.

Table 1 includes indices based on the analysis of nematode fauna. All indices were calculated using the NINJA tool: Nematode indicator joint analysis [3]. For each genus the NINJA tool provides its corresponding trophic group according to Yeates et al. [4], cp (colonizer-persister) value according to Bongers [5] and, Bongers and Bongers [6], and biomass data based on the body size of female adults of each nematode taxon, calculated after Andrássy [7] as detailed in Ferris [8]).

Based on cp groups, the maturity index (MI), plant parasitic index (PPI) [5]) and, sigma maturity index (ΣMI) [9], were calculated as indicators of the state of the biological succession of the soil community. MI is the weighted value of the frequency distribution of the cp values in a given sample; excluding herbivore nematodes in its calculation. PPI is calculated with the abundances of herbivores, and ΣMI includes the abundances of all nematodes for its calculation [10].

Soil food web indices were calculated according to Ferris et al. [11], and included the Basal Index (BI), an indicator of environmental degradation; the Enrichment Index (EI), an indicator of conditions supporting fast-growing bacterivores, the Channel Index (CI), an indicator of fungal-mediated dominance of organic matter decomposition, and the Structure Index (SI), an indicator of more highly structured soil food webs with enhanced ecological functions due to a greater number of trophic links.

Metabolic footprints were calculated according to Ferris [8]. These indices take into account, in addition to the functional guilds, the biomass of the nematodes in the soil, which is estimated for each genus according to its body size and abundance, being used to evaluate the average carbon consumed by each nematode throughout its life cycle.

The diversity of nematodes was estimated with the Shannon-Wiener diversity index [12] and the true diversity or the effective number of species or taxa [13], was calculated as in Ferris and Tuomisto [14] with $q = 1$ in the equation to weight each species by its proportional abundance.

Table 2 shows the abundance and biomass of each functional guild, meanwhile, Table 3 provides the number of genera and true diversity. More detailed than indices, these datasets could be used to study the trophic webs in soil.

Table 2
Abundance and biomass (mean ± sd.) of functional guilds (FG: trophic group cp value) in the studied ecosystems. Abundance: number of nematodes (individuals per 100 g of soil). Significant differences ($p \leq 0.05$) for a measure between ecosystems, if any, are indicated with different letters to the right side of the cell

FG	Abundance				Biomass			
	Primary forests	Secondary forests	Tree plantations	Pastures	Primary forests	Secondary forests	Tree plantations	Pastures
Bacterivores_1	26.3 ± 38.7	46.9 ± 59.8	16.5 ± 15.5	17.7 ± 14.5	1442 ± 3450 ab	2 414 ± 4799 a	289.7 ± 632.7 ab	254.2 ± 751.1 b
Bacterivores_2	57.9 ± 35.6	52.7 ± 27.3	50.4 ± 20.2	74.6 ± 39.6	31.3 ± 22.5	31.2 ± 20.8	27.4 ± 22.0	40.6 ± 30.6
Bacterivores_3	57.0 ± 42.7	56.6 ± 44.3	43.9 ± 65.8	40.1 ± 22.0	17.5 ± 13.6	17.9 ± 17.9	13.2 ± 17.8	15.2 ± 8.9
Bacterivores_4	8.2 ± 6.4 a	3.0 ± 2.4 ab	5.7 ± 4.7 ab	3.2 ± 4.1 b	3.6 ± 3.4 a	1.3 ± 1.8 b	1.9 ± 2.9 ab	0.9 ± 1.6 b
Fungivores_2	213.3 ± 95.7 ac	165.2 ± 52.7 a	126.9 ± 76.6 b	259.1 ± 90.7 c	40.8 ± 31.7 a	38.0 ± 20.1 a	21.7 ± 13.1 b	68.5 ± 59.9 a
Fungivores_3	2.8 ± 2.4	2.9 ± 2.2	3.3 ± 3.7	4.9 ± 7.5	1.4 ± 2.6	1.5 ± 2.4	1.7 ± 2.9	2.5 ± 4.6
Fungivores_4	9.3 ± 6.5	7.8 ± 2.3	11.8 ± 11.8	10.0 ± 5.1	6.5 ± 7.7	5.8 ± 6.4	8.0 ± 10.2	7.4 ± 6.1
Epidermal, root hair algal, lichen and moss feeders_2	108.6 ± 50.9 ab	123.3 ± 49.8 ab	167.6 ± 208.8 a	224.2 ± 147.4 b	24.4 ± 17.3	31.6 ± 28.6	65.5 ± 92.1	82.6 ± 97.5
Herbivores_2	29.5 ± 23.8 ab	42.2 ± 22.5 a	15.8 ± 23.9 b	19.6 ± 19.5 ab	1.3 ± 1.5	8.4 ± 32.8	0.7 ± 1.4	7.3 ± 32.0
Herbivores_3	437.4 ± 98.9	554.7 ± 253.3	574.2 ± 325.5	533.4 ± 265.9	1364 ± 1 097	1173 ± 1 163	2527 ± 3768	2880 ± 3877
Herbivores_4 (*Monotrichodorus*)	30.0 ± 39.9 a	15.9 ± 20.9 a	0.2 ± 0.3 b	0.2 ± 0.4 b	29.7 ± 79.0	15.7 ± 33.4	0.2 ± 0.8	0.2 ± 1.0
Herbivores_5	53.0 ± 36.8 ab	35.6 ± 18.4 a	119.8 ± 108.6 a	258.4 ± 128.2 b	245.0 ± 239.9 a	160.6 ± 144.6 a	885 ± 1 092 b	1574 ± 2118 b
Omnivores _1	0.7 ± 0.8 a	3.8 ± 2.5 b	0.5 ± 0.8 a	0.2 ± 0.4 a	3.4 ± 7.9 a	17.0 ± 19.9 b	2.5 ± 6.8 a	0.9 ± 4.4 a
Omnivores _3	2.6 ± 2.1 ab	46.9 ± 59.8 a	0.9 ± 1.6 b	2.2 ± 4.0 ab	0.8 ± 1.2	1.2 ± 1.2	0.3 ± 1.0	0.7 ± 1.5
Omnivores _4	18.8 ± 7.4	18.3 ± 11.3	16.9 ± 15.4	21.8 ± 5.4	39.6 ± 39.3	36.9 ± 34.5	35.3 ± 58.3	42.1 ± 37.2
Omnivores _5	15.6 ± 11.4	21.3 ± 9.0	29.5 ± 33.2	18.3 ± 9.5	350.9 ± 375.4	458.5 ± 364.1	247.0 ± 341.5	197.1 ± 161.0
Predators _1	1.3 ± 2.8	1.0 ± 2.3			1.5 ± 5.7	1.3 ± 5.6		
Predators _2	0.4 ± 0.5	0.4 ± 1.0	0.6 ± 1.2		0.1 ± 0.3	0.1 ± 0.3	0.2 ± 0.6	
Predators _3	3.3 ± 2.4	3.8 ± 1.7	1.8 ± 0.9	2.5 ± 1.3	5.7 ± 12.0	7.2 ± 12.7	3.7 ± 10.2	4.2 ± 12.6
Predators _4	11.1 ± 6.4	11.1 ± 5.8	9.3 ± 6.3	9.9 ± 4.3	53.3 ± 53.1	54.4 ± 44.4	48.6 ± 59.0	48.2 ± 34.2
Predators _5	1.5 ± 0.6	3.8 ± 1.4	2.4 ± 1.3	2.1 ± 2.1	2.4 ± 7.1	7.9 ± 19.4	9.3 ± 15.7	6.6 ± 19.6

Table 3
Diversity (mean ± sd.) of functional guilds (FG: trophic group_cp value) in the studied ecosystems. Significant differences ($p \leq 0.05$) for a measure between ecosystems, if any, are indicated with different letters to the right side of the cell

FG	Number of genera	Number of genera per ecosystem				True diversity			
		Primary forests	Secondary forests	Tree plantations	Pastures	Primary forests	Secondary forests	Tree plantations	Pastures
Bacterivores_1	13	11	9	7	7	4.8 ± 1.8	3.1 ± 0.8	4.2 ± 1.1	3.5 ± 1.2
Bacterivores_2	15	9	12	8	10	3.4 ± 1.1	3.4 ± 1.7	2.8 ± 1.4	3.0 ± 1.0
Bacterivores_3	11	9	8	8	6	4.1 ± 0.8	3.8 ± 0.5	3.0 ± 1.0	3.4 ± 1.0
Bacterivores_4	2	2	2	2	2	1.4 ± 0.8	0.7 ± 1.0	0.4 ± 0.8	0.4 ± 0.8
Fungivores_2	4	4	4	4	4	2.3 ± 0.4	2.5 ± 0.1	2.4 ± 0.4	2.4 ± 0.3
Fungivores_3	1	1	1	1	1				
Fungivores_4	7	5	5	3	4	2.1 ± 1.4	2.5 ± 0.7	1.8 ± 1.1	3.1 ± 0.4
Epidermal, root hair algal, lichen and moss feeders_2	3	3	3	3	3	2.3 ± 0.4 a	2.2 ± 0.1 a	1.9 ± 0.5 b	1.7 ± 0.4 b
Herbivores_2	3	2	3	2	3	1.5 ± 0.8	1.8 ± 0.4	0.8 ± 1.0	1.4 ± 0.9
Herbivores_3	12	11	9	6	7	3.5 ± 1.3	3.7 ± 0.8	3.3 ± 1.0	3.2 ± 0.5
Herbivores_4	1	1	1	1	1				
Herbivores_5	10	8	9	7	8	3.2 ± 1.2 a	3.4 ± 0.7 ab	3.4 ± 1.1 ab	3.6 ± 1.0 b
Omnivores _1	1	1	1	1	1				
Omnivores _3	1	1	1	1	1				
Omnivores _4	16	8	8	7	8	5.2 ± 1.1	4.0 ± 1.4	3.9 ± 1.3	4.2 ± 1.2
Omnivores _5	9	5	6	5	6	4.0 ± 0.6	4.0 ± 1.1	2.3 ± 1.7	3.1 ± 1.0
Predators _1	1	1	1	0	0				
Predators _2	1	1	1	1	0				
Predators _3	3	2	3	2	2	0.4 ± 0.8	0.9 ± 1.3	0.4 ± 0.9	0.4 ± 0.9
Predators _4	10	7	7	8	6	4.4 ± 1.6	4.8 ± 0.8	3.0 ± 2.3	3.6 ± 1.2
Predators _5	7	2	5	3	3	0.4 ± 0.9	1.3 ± 2.1	1.3 ± 1.3	0.5 ± 1.1

Table 4
Ecosystems and localities sampled in the PNA, Costa Rica, their location, altitude and soil properties. Localities: (TA) Toro Amarillo, Valverde Vega, (AZ) Aguas Zarcas, San Carlos, (VE) Venecia, San Carlos (BT) Bajos del Toro, Valverde Vega, (SV) San Vicente, San Carlos.

Locality	Ecosystem	Altitude m a.s.l.	Coordinates	pH	%OM	Ca (cmol(+)/l)	Mg	K	P (mg/l)	Zn	Mn	Cu	Fe	Soil texture
AZ	Primary Forest	742	10°20′58,5″N; 84°21′51,8″W	5.0	1.8	1.5	0.4	0.2	9	1.8	52	4	40	sand
	Secondary forest	803	10°20′48,4″N; 84°21′28.9″W	4.8	1.8	0.4	0.4	0.16	8	2.2	22	6	100	loamy sand
	Tree plantation	717	10°24′04,7″N; 84°21′07,2″W	4.7	1.5	0.5	0.3	0.14	8	2.2	31	7	93	loamy sand
	Pasture	799	10°24′49,9″N; 84°21′35,2″W	5.0	1.8	0.4	0.3	0.21	9	2.1	32	7	154	sand-loamy sand
VE	Primary Forest	810	10°20′13,9″N; 84°18′47,3″W	4.4	2.39	0.8	0.4	0.19	14	5.5	52	9	286	sandy loam
	Secondary forest	794	10°20′05,6″N; 84°18′49,1″W	4.4	1.8	2.0	0.9	0.18	15	4.1	38	7	193	loamy sand
	Tree plantation	469	10°21′42,1″N; 84°18′10,7″W	4.6	2.39	1.2	0.7	0.09	11	2.6	36	9	199	loamy sand
	Pasture	834	10°20′21,6″N; 84°18′38,3″W	4.9	2.39	0.6	0.4	0.08	9	1.1	12	5	88	loamy sand
TA	Primary Forest	1193	10°15′18,4″N; 84°16′20,9″W	4.8	3.3	2.7	1.2	0.12	11	2	28	5	118	sandy loam
	Secondary forest	1187	10°15′22,7″N; 84°16′24,6″W	4.8	3.3	1.0	0.5	0.11	10	2	19	3	88	loamy sand
	Tree plantation	1256	10°14′54,2″N; 84°16′32,3″W	4.9	3.0	0.8	0.3	0.11	10	2.5	12	7	114	sand-loamy sand
	Pasture	1188	10°15′25,5″N; 84°16′22,8″W	4.8	3.0	0.8	0.4	0.13	10	2.2	27	5	91	sandy loam

(*continued on next page*)

Table 4 (*continued*)

Locality	Ecosystem	Altitude m a.s.l.	Coordinates	pH	%OM	Ca (cmol(+)/l)	Mg	K	P (mg/l)	Zn	Mn	Cu	Fe	Soil texture
BT	Primary Forest	1653	10°12′56,8″N; 84°12′52,1″W	5.0	3.0	4.0	0.9	0.28	10	3.9	54	2	71	sand-loamy sand
	Secondary forest	1505	10°12′52,1″N; 84°18′44,6″W	5.5	3.3	7.8	1.5	0.31	7	7.3	20	1	17	sandy loam
	Tree plantation	1469	10°12′46,0″N; 84°18′35,6″W	4.9	3.0	2.9	1.0	0.34	13	3.7	35	7	237	sandy loam
	Pasture	1473	10°12′40,1″N; 84°18′35,6″W	5.1	2.7	2.1	1.0	0.47	12	3	29	7	179	sandy loam
SV	Primary Forest	1781	10°17′14,6″N; 84°22′18,1″W	4.2	3.3	0.5	0.2	0.07	24	1.7	8	1	333	loamy sand
	Secondary forest	1754	10°17′07,1″N; 84°22′24,9″W	4.7	3.6	0.3	0.3	0.12	15	2.3	13	3	187	sand
	Tree plantation	1687	10°16′45,6″N; 84°22′47,6″W	4.7	3.3	0.2	0.2	0.14	12	1.9	18	4	94	sand
	Pasture	1746	10°17′10,5″N; 84°22′35,2″W	4.8	3.0	0.2	0.3	0.11	14	2.1	13	4	239	sandy loam

4. Experimental Design, Materials and Methods

Soil samples were taken in Del Agua National Park, Costa Rica, as described in Varela-Benavides et al [2]. This Park is located at 10°12′01″ and 10°21′01″ N, 84°15′32″ and 84°23′06″ W, at an altitude of between 490 and 2330 m.a.s.l. Samples were taken in five localities in the area of sustainable management of natural resources (Table 4). In each locality, four different types of ecosystems, representing different levels of anthropogenic disturbance were sampled.

Five samples were taken from each land-use system in each location in an area of 50 m^2. Each sample was composed of ten cores, separated by 1 m, taken to a depth of 15 cm with a Dutch auger 5 cm wide. Soil samples were transported to the laboratory in labelled plastic bags, where they were processed immediately or stored at 4°C until processed.

Nematodes were extracted from 100 g of each sample. For extracting most of the nematodes present in the soil, active as well as slow-moving and inactive nematodes, small and big specimens, a combination of techniques was used. Nematodes were extracted-washed into a suspension using the gravity-sieving technique described by the California Department of Food and Agriculture [15]), and then the centrifugal flotation method was used to clean the suspension [16]. After cleaning, nematodes in the suspension were counted under an inverted microscope. Mass fixation of nematode suspensions was conducted heat-killing the nematodes, fixing them in formaldehyde 4 %, and processed to pure glycerine using Seinhorst's method for nematode suspensions [17].

Fixed suspensions were decanted into a counting chamber, let settle, and at least 20 % of the nematodes, selected at random from the sample, were mounted on permanent glass slides and were identified to genus under a compound microscope. The generic abundance distribution was calculated for each ecosystem and locality.

4.1. Indices and functional structure of the nematode assemblages

All indices were calculated using the NINJA tool: Nematode indicator joint analysis [3]. The NINJA tool (https://shiny.wur.nl/ninja/) available at Nempalex (http://nemaplex.ucdavis.edu/), provides the biomass data based on the body size of female adults of each nematode species, calculated per Andrássy [7] and detailed in Ferris [8].

The diversity of nematodes was estimated with the Shannon-Wiener diversity index [12] and, the true diversity or the effective number of species or taxa [13], was calculated as in Ferris and Tuomisto [14] with q = 1 in the equation to weight each species by its proportional abundance.

Limitations

Genus assignments were made according to taxonomic profiles generally accepted in 2020

Ethics Statement

The authors have read and followed the ethical requirements for publication in Data in Brief and confirm that the current work does not involve human subjects, animal experiments, or any data collected from social media platforms.

Credit Author Statement

Ingrid Varela-Benavides: sampling, data curation, draft preparation. **Howard Ferris:** data curation reviewing and editing. **Reyes Peña-Santiago:** identification of dorylaims, reviewing and editing, **Joaquín Abolafia:** identification of rhabidtids, reviewing and editing.

Data Availability

Dataset on nematode assemblages within different ecosystems in the Del Agua National Park in Costa Rica (Original data) (Mendeley Data).

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dib.2025.111443.

References

[1] I. Varela-Benavides, J. Abolafia, R. Peña-Santiago, Dataset on nematode assemblages within different ecosystems in the Del Agua National Park in Costa Rica, Mendeley Data V2 (2024), doi:10.17632/gbmv6nbsvt.2.
[2] I. Varela-Benavides, J. Abolafia, M. Guevara-Mora, R. Peña-Santiago, H. Ferris, Nematode assemblages in four ecosystems of Parque Nacional del Agua, Costa Rica, Appl. Soil Ecol. 172 (2022) 104360, doi:10.1016/j.apsoil.2021.104360.
[3] B. Sieriebriennikov, H. Ferris, R.G.M. de Goede, NINJA: an automated calculation system for nematode-based biological monitoring, Eur. J. Soil Biol. 61 (2014) 90–93, doi:10.1016/j.ejsobi.2014.02.004.
[4] G.W. Yeates, T. Bongers, R.G.M. de Goede, D.W. Freckman, S.S. Georgieva, Feeding habits in soil nematode families and genera: an outline for soil ecologists, J. Nematol. 25 (1993) 315–331.
[5] T. Bongers, The maturity index: an ecological measure of environmental disturbance based on nematode species composition, Oecologia 83 (1990) 14–19, doi:10.1007/BF00324627.
[6] T. Bongers, M. Bongers, Functional diversity of nematodes, Appl. Soil Ecol. 10 (1998) 239–251, doi:10.1016/S0929-1393(98)00123-1.
[7] I. Andrassy, Die Rauminhalts- und Gewichtsbestimmung der Fadenwuermer (Nematoden), Acta Zool. Hung. 2 (1956) 1–15.
[8] H. Ferris, Form and function: Metabolic footprints of nematodes in the soil food web, Eur. J. Soil Biol. 46 (2010) 97–104, doi:10.1016/j.ejsobi.2010.01.003.
[9] G.W. Yeates, Modification and qualification of the nematode maturity index, Pedobiologia (Jena) 38 (1994) 97–101.
[10] H. Ferris, T. Bongers, Indices developed specifically for analysis of nematode assemblages, in: M.J. Wilson, T. Kakouli-Duarte (Eds.), Nematodes as Environmental Indicators, CABI Publishing, Wallingford, UK, 2009, pp. 124–145, doi:10.1079/9781845933852.0124.
[11] H. Ferris, T. Bongers, R.G.M. De Goede, A framework for soil food web diagnostics: Extension of the nematode faunal analysis concept, Appl. Soil Ecol. 18 (2001) 13–29, doi:10.1016/S0929-1393(01)00152-4.
[12] C.E. Shannon, A mathematical theory of communication, Bell Syst. Tech. J. 27 (1948) 379–423, doi:10.1002/j.1538-7305.1948.tb01338.x.
[13] M.O. Hill, Diversity and evenness: a unifying notation and its consequences, Ecology 54 (1973) 427–432, doi:10.2307/1934352.
[14] H. Ferris, H. Tuomisto, Unearthing the role of biological diversity in soil health, Soil Biol. Biochem. 85 (2015) 101–109, doi:10.1016/j.soilbio.2015.02.037.
[15] CDFA (California Department of food and Agriculture), Protocol for extraction of plant parasitic nematodes from samples, (2007). https://www.cdfa.ca.gov/plant/PPD/nematode_extraction.html (accessed September 13, 2020).
[16] W.A. Coolen, Methods for extraction of *Meloidogyne* spp, in: F. Lamberti, C.E. Taylor (Eds.), Root-Knot Nematodes (*Meloidogyne* Species); Systematics, Biology and Control, Academic Press Inc., New York, 1979, pp. 317–329.
[17] J.W. Seinhorst, Killing nematodes for taxonomic study with hot f.a. 4 : 1, Nematologica 12 (1966) 178–178a, doi:10.1163/187529266X00239.