

Longidorus reisi sp. n. (Nematoda : Longidoridae) from Portugal

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Summary – *Longidorus reisi* sp. n. is described and figured. It was found at Quinta do Anjo, Palmela, Portugal, in the rhizosphere of peach. The new species is characterized by the female having a long (9.2 mm) rather thin body, an expanded lip region, asymmetrically bilobed amphidial pouches and a conical tail two to three anal body widths long. Male were not found. *L. reisi* sp. n. is similar to *L. alveus* Roca, Pereira & Lamberti, 1989, *L. arenosus* Kankina & Ivanova, 1986, *L. euonymus* Mali & Hooper, 1973, *L. pini* Andres & Arias, 1987 and *L. unedoi* Arias, Andres & Navas, 1986. The most significant differences from all these species are in the body, odontostyle, and tail all being longest in *L. reisi* sp. n.

Résumé – *Longidorus reisi* sp. n. (Nematoda : Longidoridae) provenant du Portugal – Les auteurs décrivent et illustrent *Longidorus reisi* sp. n., provenant de Quinta do Anjo, Palmela, Portugal, et récolté dans la rhizosphère de pêcher. Cette nouvelle espèce est caractérisée par une région labiale très en relief, les poches amphidiennes à lobes inégaux et une queue conique. *L. reisi* sp. n. est proche de *L. alveus* Roca, Pereira & Lamberti, 1989, *L. arenosus* Kankina & Ivanova, 1986, *L. euonymus* Mali & Hooper, 1973, *L. pini* Andres & Arias, 1987 et *L. unedoi* Arias, Andres & Navas, 1986. Les différences majeures entre *L. reisi* sp. n. et les espèces citées concernent les longueurs du corps, de l'odontostyle, de l'odontophore et de la queue, ainsi que la position de la vulve et du guide du stylet, le profil de la région labiale et la forme des poches amphidiennes.

Key-words : *Longidorus*, nematodes.

Specimens of *Longidorus*, collected by Dr Gerson Reis at Quinta do Anjo, Palmela, Portugal, around the roots of peach, were sent to the Istituto di Nematologia Agraria di Bari by Dr Bravo as a suspected new species. The examination of material confirmed Dr Bravo's opinion and the species is described here as *Longidorus reisi* sp. n.

Nematodes were extracted from soil samples by the Cobb wet sieve technique, killed and fixed in 5 % hot formalin solution and processed by the slow method and mounted in glycerin on nematology slides. Specimens were measured with the aid of a camera lucida.

Longidorus reisi sp. n. (Fig. 1)

MEASUREMENTS

Holotype, females and juveniles : see Table 1.

DESCRIPTION

Female : Habitus in specimens killed by gentle heat C shaped, almost straight anteriorly and curved ventrad behind the vulva. Body cylindrical, tapering very gradually anteriorly, more abruptly posteriorly. Cuticle with very fine transverse striae, 2.5 μm thick along the body, more thickened in the neck region, where it measures 3.5 μm at the base of the lip region, and in the caudal region where it is 4.0 μm ventrally and 3.0 μm dorsally in the post anal region. Lateral hypodermal cords obvious throughout the length of the body, 13-14.5 μm wide

at mid-body or 30.5-33 % of the corresponding body diameter. Lateral body pores, three in the range of the odontostyle, arranged in a single row in the neck region but distributed irregularly along the lateral cords in the rest of the body; three ventral and two dorsal body pores are visible in the range of odontostyle. Lip region expanded, flattened frontally and rounded laterally, separated from the rest of the body by a wide and deep depression. Amphidial pouches bilobed, with the ventral lobe slightly longer, occupying almost half the distance of guiding ring from anterior end, with sinus wide and amphidial pore indistinct. Guiding ring 4 μm wide. Odontostyle long and slender. Odontophore enlarged at the base. Nerve ring wide, at a distance of 35-38 μm from the base of the odontophore. Oesophagus dorylaimoid with pharyngeal bulb cylindrical, containing three gland nuclei about equal in size : the two subventral nuclei situated not at the same level in the middle of the bulb, the dorsal nucleus situated about half way from the beginning of the bulb to the subventral ones. Pharyngo-intestinal valve inconspicuous, pear-shaped, surrounded by intestinal tissue. Vulva a transverse slit. Vagina heavily cuticularized, extending more than half the body width. Ovejector indistinct, not separated at each extremity from the uterus; uterus long and stout, not differentiated, with a wide lumen, separated from the oviduct by a robust sphincter; pouch of the oviduct long and wide, tubular portion slender and ovary without any special features. Tail conical, about two and a half anal

Table 1. *Morphometrics of Longidorus reisi sp. n.* (all measurements in μm except L). Means \pm Standard deviation/(Range).

	<i>Holotype</i>	<i>Paratype females</i>	J 1	J 2	J 3	J 4
n	1	22	10	7	6	17
L (mm)	9.3	9.2 \pm 0.98 (6.9-10.5)	1.7 \pm 0.17 (1.5-2.0)	2.9 \pm 0.42 (2.5-3.6)	4.0 \pm 0.69 (3.7-5.5)	6.1 \pm 0.45 (5.5-6.8)
a	217.0	212.5 \pm 16.92 (157.5-246.5)	75.5 \pm 3.75 (70.5-81.5)	96.0 \pm 10.58 (85.0-115.0)	126.0 \pm 15.11 (112.5-153.5)	164.0 \pm 10.19 (151.0-184.0)
b	19.0	20.5 \pm 2.35 (16.0-25.5)	6.6 \pm 1.16 (5.0-8.5)	9.0 \pm 2.3 (7.0-12.5)	11.0 \pm 1.57 (8.5-13.0)	15.0 \pm 2.24 (11.5-20.0)
c	112.5	109.0 \pm 10.28 (87.0-126.5)	26.5 \pm 2.37 (24.0-31.5)	40.0 \pm 7.65 (33.0-55.5)	51.0 \pm 5.78 (41.5-57.0)	76.5 \pm 6.09 (61.0-86.5)
c'	2.8	2.6 \pm 0.18 (2.1-2.9)	4.0 \pm 0.34 (3.5-4.5)	3.5 \pm 0.37 (2.5-3.8)	3.5 \pm 0.36 (2.8-3.7)	2.8 \pm 0.19 (2.3-3.1)
V	50.0	49.7 \pm 2.22 (47.6-58.3)	–	–	–	–
Lip region width	17.0	17.0 \pm 0.6 (16.0-18.0)	10.5 \pm 0.99 (9.0-11.5)	13.0 \pm 1.38 (11.0-14.5)	14.5 \pm 0.78 (13.5-16.0)	15.5 \pm 0.42 (14.5-16.5)
Lip region height	6.5	7.5 \pm 0.96 (6.0-10.0)	4.5 \pm 0.55 (4.0-5.5)	5.5 \pm 0.53 (4.5-6.0)	6.5 \pm 0.78 (6.0-7.5)	6.5 \pm 0.79 (5.5-7.5)
Odontostyle	109.5	107.0 \pm 2.43 (103.5-112.5)	68.0 \pm 3.12 (64.5-73.5)	77.0 \pm 2.53 (74.0-80.0)	85.5 \pm 1.81 (83.5-89.0)	95.5 \pm 1.95 (91.0-99.0)
Odontophore	42.0	44.0 \pm 4.16 (38.5-53.0)	33.0 \pm 4.53 (25.5-40.0)	40.5 \pm 5.02 (36.0-50.0)	46.0 \pm 3.29 (43.0-51.0)	46.5 \pm 3.78 (40.0-50.5)
Total stylet	151.5	151.0 \pm 4.86 (143.0-161.0)	101.0 \pm 6.1 (93.5-112.5)	117.5 \pm 5.75 (111.0-124.5)	131.5 \pm 3.73 (127.0-136.0)	142.0 \pm 3.71 (134.5-147.5)
Replacement odontostyle	–	–	75.5 \pm 2.05 (73.5-80.0)	84.5 \pm 2.78 (81.0-89.0)	94.0 \pm 1.62 (92.5-96.0)	104.0 \pm 2.82 (100.0-111.0)
Flanges width	4.0	4.5 \pm 1.48 (3.0-8.0)	4.0 \pm 0.79 (3.0-6.0)	4.0 \pm 0.53 (3.5-4.5)	5.0 \pm 1.16 (3.5-7.0)	5.5 \pm 0.73 (4.0-7.0)
Guide ring	31.5	30.5 \pm 0.81 (29.5-32.5)	21.0 \pm 1.01 (20.0-23.5)	24.0 \pm 2.36 (21.0-27.5)	27.5 \pm 2.62 (26.0-32.5)	29.5 \pm 1.58 (28.0-31.5)
Phar. bulb length	129.5	122.5 \pm 6.53 (113.0-132.5)	73.0 \pm 9.55 (60.0-93.0)	90.0 \pm 9.91 (79.0-104.5)	98.0 \pm 12.68 (79.0 \pm 114.5)	113.0 \pm 7.71 (100.5-128.0)
Phar. bulb width	20.0	18.5 \pm 1.49 (16.5-21.5)	12.0 \pm 1.42 (10.0-14.5)	15.5 \pm 1.99 (12.5-18.0)	14.5 \pm 1.74 (11.5-16.5)	17.5 \pm 0.99 (15.5-20.0)
Ant. genital branch	429.5	417.0 \pm 53.02 (282.5-535.5)	–	–	–	–
Post. genital branch	341.0	426.0 \pm 70.72 (306.0-647.0)	–	–	–	–
Ant. gen. branch %	4.6	4.6 \pm 0.71 (3.3-6.0)	–	–	–	–
Post. gen. branch %	3.6	4.7 \pm 0.94 (3.1-6.8)	–	–	–	–

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Tab. 1 (cont.)

	Holotype	Paratype females	J 1	J 2	J 3	J 4
Body diam. mid body	43.0	43.0 ± 2.6 (37.0-48.0)	22.5 ± 1.86 (20.0-25.5)	29.5 ± 1.35 (27.5-31.5)	32.0 ± 1.65 (30.5-35.5)	37.5 ± 2.23 (34.0-42.5)
Body diam. anus level	30.0	32.5 ± 1.56 (28.5-34.5)	16.0 ± 1.3 (14.0-18.5)	22.0 ± 2.01 (19.5-24.5)	24.5 ± 1.2 (23.0-26.5)	29.5 ± 1.58 (27.0-33.5)
Rectum	33.5	30.0 ± 3.36 (23.5-35.5)	16.0 ± 2.58 (13.0-22.5)	21.0 ± 1.79 (17.5-23.0)	22.0 ± 3.11 (19.0-27.5)	27.5 ± 2.26 (23.5-31.5)
Tail	83.0	84.0 ± 5.75 (70.5-93.5)	65.0 ± 4.19 (59.5-71.5)	72.0 ± 3.58 (66.0-76.5)	80.0 ± 11.69 (64.5-96.0)	81.0 ± 5.65 (68.5-90.0)
Hyaline tail tip	14.5	14.5 ± 3.37 (6.5-20.5)	15.0 ± 3.67 (10.0-22.5)	11.5 ± 2.88 (7.0-16.5)	11.5 ± 3.43 (7.0-15.5)	14.0 ± 2.66 (10.5-22.5)
Prerectum	612.0	518.0 ± 135.84 (282.5-753.0)	182.5 ± 41.22 (135.5-241.0)	269.0 ± 45.15 (200.0-311.5)	296.0 ± 28.74 (247.0-335.5)	390.0 ± 69.13 (270.5-500.0)

body widths long, rounded at the tip, slightly curved ventrally with main curvature dorsally and tip ventrally situated respect to the body axis and bearing one or seldom two caudal pores on each side.

Male : not found.

Juveniles : Morphologically similar to adult but smaller; tail of first stage elongate-conoid, bearing one caudal pore on each side.

TYPE HOST AND LOCALITY

Soil, around the roots of peach (*Prunus persica* L.) at Quinta do Anjo, Palmela, Portugal.

TYPE SPECIMENS

Holotype, ten paratype females and juveniles in the Istituto di Nematologia Agraria del Consiglio Nazionale delle Ricerche, Bari, Italy; six paratype females in the Estação Agronómica Nacional, I.N.I.A., Oeiras, Portugal; two paratype females in each of the following collections : Muséum National d'Histoire Naturelle, Laboratoire de Biologie Parasitaire, Protistologie, Helminthologie, Paris, France; Entomology and Nematology Department, Rothamsted Experimental Station, Harpenden, Herts, England; Plant Nematology Laboratory Collection, United States department of Agriculture, Beltsville, Maryland, USA.

DIAGNOSIS AND RELATIONSHIPS

Longidorus reisi sp. n. is characterized by a long body with a well expanded lip region, asymmetrically bilobed amphidial pouches, and a conical tail about two and a half anal body widths long.

The new species resembles *L. alvegus* Roca, Pereira & Lamberti, 1989, *L. euonymus* Mali & Hooper, 1973,

L. pini Andres & Arias, 1987 and *L. unedoi* Arias, Andres & Navas, 1986, differing from all these species mainly in longer body and odontostyle (6.9-10.5 mm and 103.5-112.5 µm vs 6.3-7.8 mm and 82.5-92.5 µm in *L. alvegus*, 6.03-7.63 mm and 81-90 µm in *L. euonymus*, 4-5.2 mm and 65-70 µm in *L. pini* and 5-6 mm and 52-64 µm in *L. unedoi*, respectively). Moreover *L. reisi* sp. n. differs from *L. alvegus* in having longer tail (70.5-93.5 vs 62.5-81.3 µm), higher "c" value (87-126.5 vs 81.5-115.9) and more expanded lip region (16-18 vs 13.1-16.3 µm); from *L. euonymus* in having shorter odontophore (38.5-53 vs 45-76 µm), longer tail (70.5-93.5 vs 37-54 µm), lower "c" value (87-126.5 vs 125-198) and different shaped amphidial pouches (not asymmetrically bilobed in *L. euonymus*); from *L. pini* in having slightly longer odontophore (38.5-53 vs 38-49 µm), longer tail (70.5-93.5 vs 57-75 µm) and posteriorly situated guide ring from anterior end (29.5-32.5 vs 26-27 µm) and from *L. unedoi* in having longer tail (70.5-93.5 vs 52-58 µm), posteriorly situated guide ring from anterior end (29.5-32.5 vs 24-26 µm) and slightly anteriorly situated vulva (V = 47.6-58.3 vs 52-58 in *L. unedoi*).

L. reisi sp. n. also resembles *L. arenosus* Kankina & Ivanova, 1986, from which it differs mainly in having longer tail (70.5-93.5 vs 31.2-40.8 µm), higher "c'" value (2.1-2.9 vs 1.0-1.2) and absence of the male. Moreover the new species differs in having longer odontophore (38.5-53.0 vs 31.2-36.4 µm in *L. arenosus*), longer distance from oral opening to guiding ring (29.5-32.5 vs 22.1-27.3 µm), lower "c" value (87.0-126.5 vs 215-260 in *L. arenosus*) and finally differently shaped amphidial pouches, symmetrical, bilobed in *L. arenosus*.

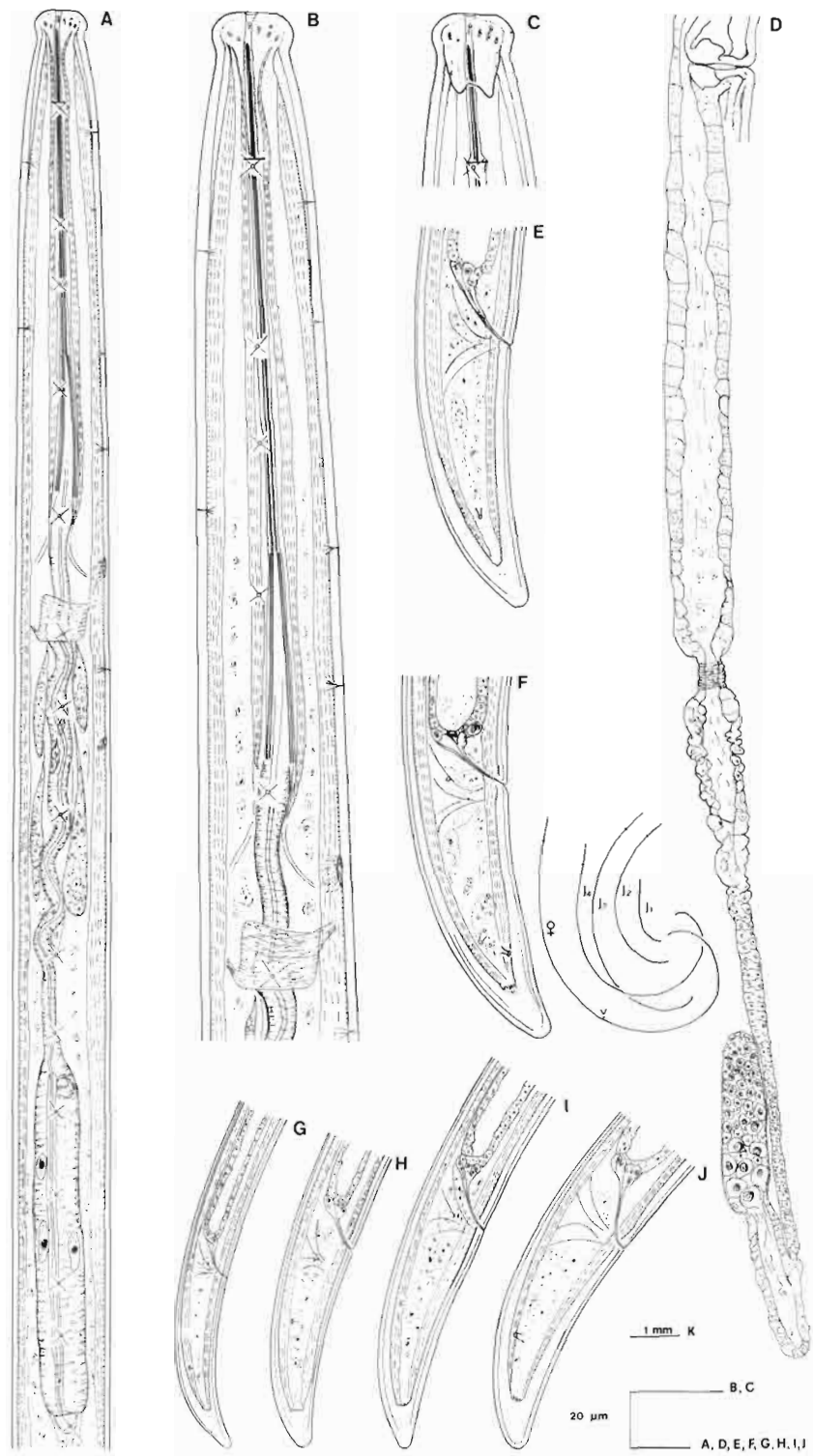


Fig. 1. *Longidorus reisi* sp. n. A, B : Female, anterior region; C : Head end (surface view); D : Posterior branch of the genital tract; E, F : Female posterior region; G-J : Posterior region of juveniles, J 1-J 4 respectively; K : Posture of juveniles and adult stages.

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