

Observations on *Longidorus africanus* Merny from Portugal with description of *L. vinearum* n. sp. (Nematoda : Longidoridae)

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Summary – Two *Longidorus* species were found during a survey carried out in Portugal. One is described as *Longidorus vinearum* sp. n., a bisexual species, characterized by a broadly rounded lip region almost continuous with the rest of the body, amphidial pouches distinctly bilobed with ventral lobe longer extending almost to guiding ring; the female tail is short, bluntly rounded, and the first juvenile stage has a tail mucro. The other is *L. africanus* Merny, 1966. Morphometric data of a population of the latter species, representing a new record for Portugal, are given, in comparison with the type population and populations from several parts of the world.

Résumé – *Observations sur Longidorus africanus Merny provenant du Portugal et description de L. vinearum sp. n. (Nematoda : Longidoridae)* – Une enquête conduite au Portugal a révélé la présence de deux espèces de *Longidorus*. L'une, décrite ici sous le nom de *L. vinearum* sp. n., est une espèce bisexuée, caractérisée par une région labiale arrondie et presque continue avec le reste du corps, des poches amphidiennes bilobées – le lobe ventral étant allongé et atteignant presque le niveau du guide – une queue courte, arrondie et, chez le juvénile premier stade, une queue pourvue d'un mucron terminal. L'autre espèce est identifiée à *L. africanus* Merny, 1966; les données morphométriques relatives à cette espèce sont fournies, ainsi que des observations sur leurs différences avec celles de la population type et de populations provenant d'autres parties du monde.

Key-words : *Longidorus*, nematodes.

To date, six species of *Longidorus* and one of *Paralongidorus* have been reported in Portugal. Four of the *Longidorus* species were described as new (Macara, 1985; Roca *et al.* 1989; Roca & Bravo, 1993); the occurrence and distribution of two others were reported by Pereira (1989). *Paralongidorus maximus* (Bütschli, 1974) Siddiqi, 1964 was first reported in Portugal by Macara (1982). The present note deals with two *Longidorus* species found in Portugal during a recent sampling carried out by one of the authors (M. A. B.). One of these represents at evidence a new species and it is described here under the name *L. vinearum* n. sp.; the other is *Longidorus africanus* Merny, 1966, a new record for Portugal.

Nematodes were extracted from soil samples by the Cobb wet sieve technique, killed and fixed in 5 % hot formaldehyde solution, processed by the glycerol-ethanol method of Seinhorst and mounted in glycerin on Cobb slides. The specimens were measured with the aid of a camera lucida.

Longidorus africanus Merny, 1966

(Fig. 1)

MEASUREMENTS

See Table 1.

DESCRIPTION

Female : Habitus in specimens killed by gentle heat C shaped, almost straight anteriorly and curved behind the vulva to single spiral. Cuticle apparently smooth along the body, but subcuticle distinctly striated on the tail region. Lateral body pores, six-seven in the range of the odontostyle, arranged in a single row in the neck region and in the rest of the body, distributed irregularly along the lateral cords; three dorsal and two ventral body pores are observed in the anterior region of the body. Lip region broadly rounded frontally, separated from the rest of the body by a very slight depression, with labial sensilla not prominent. Amphidial pouches more or less symmetrical bilobed, occupying about half the distance of guiding ring from anterior end; amphidial aperture indistinct. Odontostyle robust, odontophore long, enlarged at the base. Nerve ring wide, just behind the base of odontophore. Hemizonid well evident. Pharynx dorylaimoid, typical of the genus with pharyngo-intestinal valve heart shaped, surrounded by intestinal tissue. Short genital branches equally developed. Vulva a transverse slit; vagina well cuticularized. Ovejector poorly differentiated; uterus short and stout, without sperm. Ovary relatively long and well developed, usually with a large ovarial sac. Rectum less than the anal body

Table 1. Morphometrics of *Longidorus africanus* population from *Herdade do Carvalho, Constância, Ribatejo, Portugal* (All measurements in μm except L).

	Females	♂1	♂2	♂3	♂4
n	26	38	8	8	16
L (mm)	4.4 ± 0.407 (3.3-5.3)	1.2 ± 0.04 (1.1-1.3)	1.8 ± 0.15 (1.5-1.9)	2.2 ± 0.36 (1.9-2.8)	3.0 ± 0.13 (2.9-3.4)
a	99.4 ± 6.23 (80.5-112.6)	62.7 ± 2.18 (56.4-66.3)	70.0 ± 2.86 (66.0-74.0)	74.5 ± 8.83 (61.5-88.0)	86.0 ± 4.97 (77.0-94.5)
b	11.3 ± 0.92 (9.4-13.6)	5.1 ± 0.43 (4.5-6.5)	6.6 ± 0.38 (6.0-7.0)	7.6 ± 0.79 (7.0-9.0)	9.5 ± 0.65 (8.5-11.0)
c	130.2 ± 14.68 (89.2-170.6)	31.5 ± 2.69 (28.0-40.4)	45.0 ± 3.27 (40.5-49.0)	53.5 ± 14.94 (41.5-83.5)	74.5 ± 5.93 (64.0-84.5)
c'	1.2 ± 0.09 (1.0-1.4)	2.9 ± 0.22 (2.2-3.2)	2.2 ± 0.27 (1.8-2.6)	2.0 ± 0.34 (1.4-2.5)	1.7 ± 0.12 (1.5-1.9)
V	48.1 ± 2.44 (41.8-54.7)	-	-	-	-
Lip reg. width	11.0 ± 2.06 (10.0-12.5)	6.8 ± 0.38 (6.0-6.5)	7.7-0.54 (7.0-8.0)	8.0 ± 0.97 (7.0-9.5)	9.5 ± 0.69 (9.0-11.0)
Lip reg. height	4.0 ± 0.35 (3.5-4.5)	2.0 ± 0.29 (1.5-2.5)	2.5 ± 0.31 (1.8-2.9)	2.5 ± 0.27 (2.0-3.0)	3.0 ± 0.34 (2.5-3.5)
Odontostyle	88.0 ± 3.9 (80.0-95.0)	57.5 ± 1.71 (54.0-61.5)	66.5 ± 1.53 (63.5-68.5)	70.5 ± 4.78 (65.5-76.0)	77.0 ± 2.52 (73.0-81.5)
Odontophore	56.0 ± 3.1 (51.0-61.0)	31.5 ± 3.57 (23.5-39.0)	37.0 ± 3.97 (31.0-41.5)	42.0 ± 5.36 (36.0-51.0)	47.0 ± 4.04 (40.5-53.0)
Tot. stylet	144.0 ± 4.6 (136.0-152.0)	89.0 ± 3.61 (80.5-96.5)	103.5 ± 5.18 (94.5-110.5)	112.5-9.32 (102.5-127.5)	124.0 ± 5.11 (117.5-134.0)
Repl. odontostyle	-	67.0 ± 2.05 (63.0-71.5)	75.0 ± 2.08 (71.0-76.5)	82.0 ± 5.47 (77.0-89.5)	90.0 ± 1.81 (87.0-93.5)
Guide ring	30.0 ± 1.1 (28.0-32.0)	19.0 ± 0.62 (17.0-20.5)	22.5 ± 0.77 (21.5-24.0)	24.5 ± 1.50 (22.5-27.0)	27.0 ± 0.88 (25.5-28.0)
Phar. bulb length	93.0 ± 6.3 (83.0-107.0)	54.0 ± 3.29 (46.5-63.0)	63.0 ± 6.12 (53.0-71.5)	70.0 ± 7.17 (61.5-82.5)	77.5 ± 5.25 (70.5-86.0)
Phar. bulb width	19.0 ± 1.5 (17.0-23.0)	10.5 ± 0.94 (7.5-12.5)	13.0 ± 1.26 (11.5-16.0)	14.5 ± 1.09 (13.0-16.0)	16.0 ± 1.05 (14.5-18.0)
Ant. gen. branch	213.0 ± 22.6 (170.0-254.0)	-	-	-	-
Post. gen. branch	204.0 ± 19.5 (168.0-250.0)	-	-	-	-
Ant. gen. branch %	4.4 ± 0.26 (3.5-5.3)	-	-	-	-
Post. gen. branch %	4.2 ± 0.23 (3.5-5.2)	-	-	-	-
Body diam. mid-body	44.0 ± 2.5 (39.0-47.0)	19.0 ± 0.67 (17.5-21.5)	26.0 ± 2.60 (22.5-29.5)	30.0 ± 2.41 (26.5-34.0)	36.5 ± 2.70 (32.5-41.0)
Body diam. anus level	29.0 ± 1.8 (25.0-32.0)	13.5 ± 0.57 (12.5-15.5)	19.0-2.34 (15.5-22.5)	21.5-1.89 (18.0-24.0)	25.5-1.26 (23.0-27.0)
Rectum	22.0 ± 1.7 (20.0-27.0)	12.0 ± 1.48 (9.5-16.0)	15.5 ± 1.88 (11.5-17.5)	16.5 ± 3.40 (11.5-20.5)	20.5 ± 2.04 (16.5-24.0)
Tail	34.0 ± 2.4 (28.0-38.0)	38.0 ± 2.64 (28.0-43.0)	40.0 ± 1.75 (37.5-43.5)	43.0 ± 4.41 (34.0-47.5)	42.5 ± 2.75 (37.5-47.0)
Hyaline tail tip	10.5 ± 1.09 (9.0-13.0)	4.5 ± 0.75 (2.5-6.0)	7.0 ± 0.98 (6.0-8.0)	7.5 ± 1.41 (6.0-10.0)	9.0 ± 1.35 (6.0-10.5)
Prerectum	295.0 ± 80.15 (185.0-450.0)	146.5 ± 29.36 (106.0-247.0)	172.0 ± 53.71 (117.5-259.0)	234.5 ± 60.76 (153.0-341.0)	284.0 ± 79.20 (170.5-441.0)

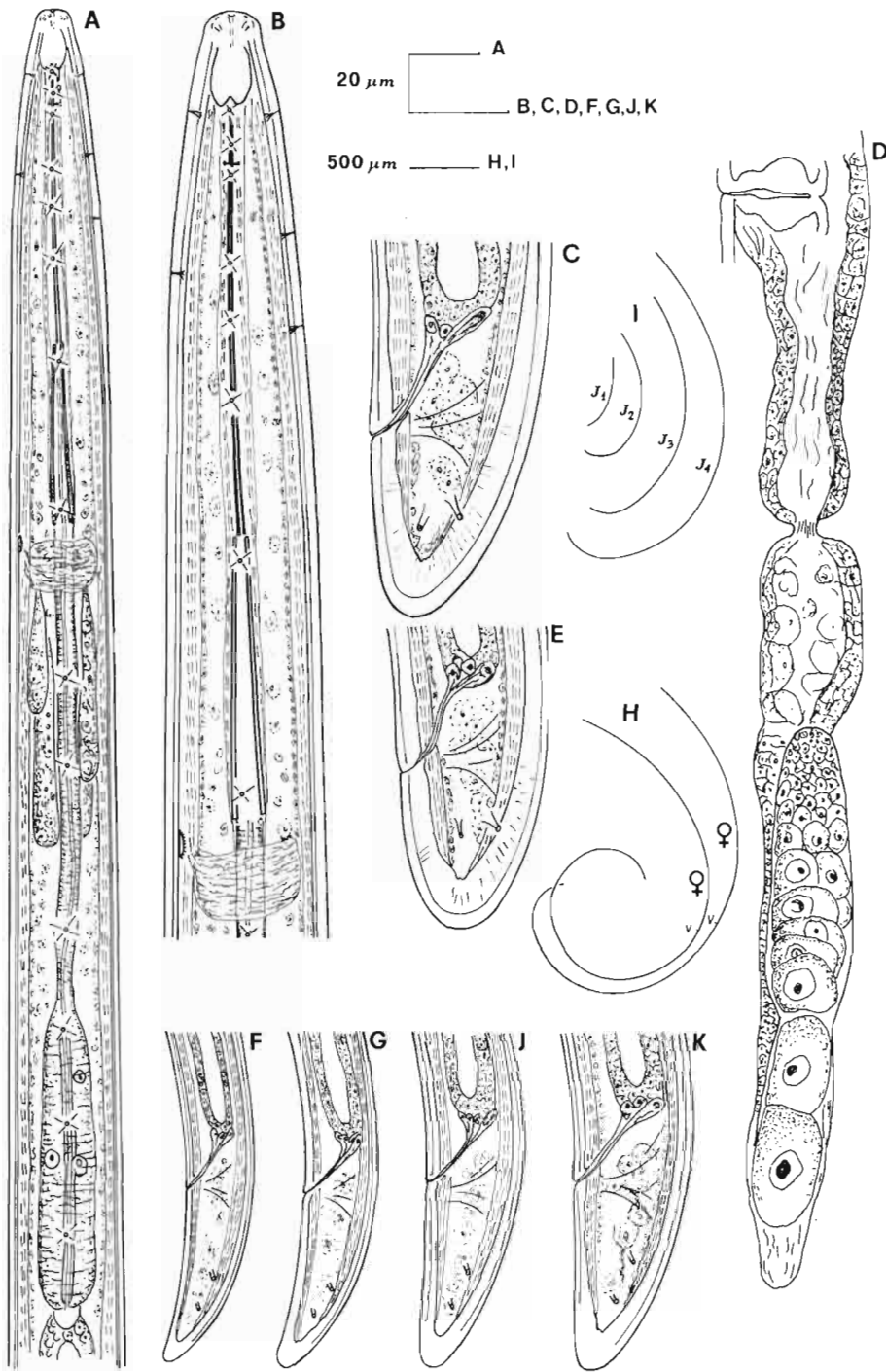


Fig. 1. *Longidorus africanus* Merny, 1966. *A, B*: Female, anterior region; *C, E*: Female, posterior region; *D*: Posterior branch of the genital tract; *F, G, J, K*: Posterior region of juveniles, J1-J4 respectively; *H, I*: Posture of adult and juveniles stages.

width. Tail short conical, with broadly rounded terminus, convex dorsally and almost straight ventrally in line with the body contour, bearing two caudal pores on each side.

Male : not found.

LOCALITY

Females and juveniles, population collected at Herdade do Carvalhal, Constância, Ribatejo, Portugal, around root of peach-trees.

REMARKS

The Portuguese population generally agrees with the type one (Merny, 1966) and populations collected from several parts of the world (Lamberti, 1969; Aboul-Eid, 1970; Jacobs & Heyns, 1987; Vadilevu & Muthukrishnan, 1987; Nasira & Maqbool, 1992; Zeidan & Coomans, 1992).

Biometrically, some remarkable differences were observed : the Portuguese population of *L. africanus* differs from the original one in having longer body (3.3-5.3 vs 2.7-3.8 mm), shorter tail (28-38 vs 33-49 μ m), higher "c" (89-171 vs 68-106) and lower "c'" values (1.0-1.4 vs 1.3-1.8).

However, morphological and biometrical variations were reported by Lamberti (1969) who divided the species into three geographical groups and considered the populations with larger dimensions from Egypt and Sudan as belonging to the "North-Africa type". Therefore, the Portuguese population of *L. africanus* appears particularly similar to the "North-Africa type" and also to the Sudanese populations reported by Zeidan and Coomans (1992), differing from both in having longer odontophore (51-61 vs 34-49 in "North-Africa type" and 33-48 μ m in Sudanese populations), shorter tail (28-38 vs 37-50 μ m in "North-Africa type" and 38-53 μ m in Sudanese populations), higher value of "c" (89-171 vs 83-114 in "North-Africa type" and 81-111 in Sudanese populations) and lower "c'" value (1.0-1.4 vs 1.3-1.8 and 1.3-1.9, respectively).

***Longidorus vinearum* sp. n.**

(Fig. 2)

MEASUREMENTS

Holotype, females, males and juveniles : see Table 2.

DESCRIPTION

Female : Habitus in specimens killed by gentle heat as C shaped, almost straight anteriorly and more curved behind the vulva to single spirals. Cuticle apparently smooth along the body, but inner cuticular layers with very fine transverse striations, distinctly crisscrossing on the tail region. Cuticle 6-7 μ m thick along the body, more thickened in the neck region, where it measures 10-10.5 μ m at the base of the lip region and more thickened in the caudal region where it is 13-13.5 μ m ventrally and 14-14.5 μ m dorsally in the post anal re-

gion. Lateral hypodermal cords obvious throughout the length of the body about a fourth of the corresponding body diameter wide. Lateral body pores, six or seven in the range of the odontostyle, two or three located anteriorly to guiding ring, arranged in a single row in the neck region and in a double row in the rest of the body, from the level of the vulva region distributed irregularly along the lateral cords; six dorsal and six or seven ventral body pores are visible in the odontostyle region three of them located anteriorly the level of guiding ring. Lip region broadly rounded frontally and more so laterally, almost continuous with or separated from the rest of the body by a very slight depression, with prominent labial sensilla. Amphidial pouches distinctly asymmetrically bilobed, with ventral lobe extending twice or more as much as the dorsal one, up to the level of guiding ring; amphidial aperture indistinct. Guiding ring 6.5-7 μ m wide; odontostyle long and slender, odontophore enlarged at the base. Nerve ring wide, just behind base of odontophore; pharynx dorylaimoid with pharyngeal bulb cylindrical, containing three gland nuclei : the two subventral ones situated almost the same level near the middle of the bulb, the dorsal nucleus situated just posterior to the middle of the distance : beginning of the bulb to the subventral nuclei. Pharyngo-intestinal valve inconspicuous, heart shaped, usually surrounded by intestinal tissue. Genital branches equally developed and reflexed. Ovary long and well developed, usually with a large ovarian sac, sometimes filled with growing oocytes. *Pars dilatata oviductus* long and separated from the uterus by a very strong and muscularized sphincter, on the external wall of which very large cell body protrusions are present. Little sperm is observed in the long and wide uterus, but a lot in the *pars dilatata oviductus*. Vulva slit-like, vagina cuticularized, extending over half or more the corresponding body diameter, ovejector poorly differentiated. Pre-rectum variable in length; rectum less than the anal body width. Tail short, bluntly rounded to almost hemispherical, convex dorsally and less so ventrally with rounded terminus, bearing two caudal pores on each side.

Male : General appearance similar to female with posterior part of the body more curved. Morpho-anatomy similar to female except in the genital apparatus and the somatic structures associated with it; testes well developed; spicules curved, not cephalated; lateral guiding pieces of the gubernaculum well sclerotized, slightly curved, rounded proximally and bifid at distal end. Pre-cloacal pair of papillae at 14-15 μ m from the cloacal aperture, preceded by 18-19 medioventral supplements. Tail similar to that of female, with the ventral profile almost straight or slightly convex, bearing four, exceptionally five, caudal body pores on each side.

Juveniles : Morphologically similar to female but smaller; tail of first stage elongate conoid, subdigitate and bearing two caudal pores on each side.

Table 2. Morphometrics of *Longidorus vinearum* sp. n. (All measurements in μm except L).

Stages	Holotype	females	males	J1	J2	J3	J4
n	1	13	10	18	7	10	8
L (mm)	9.2	9.3 \pm 1.10 (7.4-11.6)	8.7 \pm 0.61 (7.8-9.7)	1.6 \pm 0.9 (1.5-1.8)	2.9 \pm 0.32 (2.5-3.5)	4.5 \pm 0.20 (4.2-4.9)	6.5 \pm 0.77 (5.4-7.3)
a	85.8	92.7 \pm 9.61 (70.7-101.3)	93.8 \pm 8.04 (85.2-109.2)	53.3 \pm 5.67 (44.7 \pm 61.5)	64.2 \pm 3.13 (59.7-67.0)	69.8 \pm 3.65 (64.5-75.5)	79.5 \pm 8.93 (66.4-91.4)
b	16.4	18.0 \pm 2.34 (13.5-22.0)	16.7 \pm 1.69 (15.0-20.3)	5.5 \pm 0.49 (4.4-6.4)	8.3 \pm 0.76 (7.0-9.2)	10.5 \pm 1.01 (9.0-12.0)	13.2 \pm 1.55 (11.5-15.5)
c	165.3	195.5 \pm 29.13 (157.5-263.0)	166.6 \pm 17.65 (140.8-194.0)	33.0 \pm 3.02 (29.2-39.5)	67.0 \pm 14.07 (56.0-96.5)	99.5 \pm 10.10 (82.0-112.5)	142.0 \pm 17.19 (124.0-169.5)
c'	0.7	0.7 \pm 0.07 (0.5-0.8)	0.8 \pm 0.09 (0.7-1.0)	2.3 \pm 0.27 (1.9-2.8)	1.3 \pm 0.21 (0.8-1.4)	0.9 \pm 0.05 (0.8-1.0)	0.7 \pm 0.08 (0.6-0.9)
V	46.6	46.2 \pm 2.19 (43.0-50.6)	-	-	-	-	-
Lip region width	19.0	21.0 \pm 2.48 (18.0-27.5)	20.5 \pm 0.74 (19.5-21.5)	8.5 \pm 0.98 (5.5-10.0)	12.0 \pm 1.16 (10.5-13.5)	15.0 \pm 0.96 (13.5-17.0)	17.5 \pm 0.70 (16.5-19.0)
Lip region height	5.5	6.5-1.19 (4.5-9.0)	6.5 \pm 0.70 (5.5-7.5)	2.7 \pm 0.30 (2.5-3.0)	3.0 \pm 0.41 (2.5-3.5)	4.5 \pm 0.63 (3.5-6.0)	5.5 \pm 0.77 (4.5-7.0)
Odontostyle	110.5	118.5 \pm 8.63 (105.5-132.5)	111.5 \pm 7.76 (94.0-122.5)	67.0 \pm 4.83 (56.5-74.5)	78.0 \pm 3.83 (71.5-82.5)	91.0 \pm 5.04 (83.5-98.5)	106.0 \pm 8.01 (98.5-116.0)
Odontophore	61.5	67.5 \pm 8.0 (58.0-85.5)	65.0 \pm 4.26 (57.5-73.0)	32.0 \pm 4.85 (23.5-38.0)	47.0 \pm 3.29 (43.0-51.5)	57.0 \pm 5.15 (47.0-65.5)	65.5 \pm 8.73 (52.5-78.0)
Total stylet	172.0	186.5 \pm 13.33 (166.5-215.5)	176.5 \pm 9.36 (161.5-195.5)	99.0 \pm 6.85 (86.0-110.0)	125.0 \pm 5.42 (116.5-131.0)	148.0 \pm 5.10 (139.5-153.5)	171.5 \pm 12.41 (154.0-187.0)
Replacement odontostyle	-	-	-	74.5 \pm 4.23 (66.0-81.0)	93.0 \pm 3.91 (86.5-98.0)	105.0 \pm 5.45 (96.5-114.5)	119.5 \pm 7.93 (111.5-132.5)
Guide ring	41.0	40.0 \pm 3.09 (36.0-47.0)	39.5 \pm 2.79 (34.0-43.5)	21.5 \pm 1.65 (17.5-24.0)	25.5 \pm 2.67 (21.5-29.0)	31.0 \pm 1.94 (28.0-34.0)	33.5 \pm 3.42 (29.5-39.0)
Phar. bulb length	162.5	136.0 \pm 14.41 (116.5-159.0)	132.5 \pm 11.47 (120.0-156.0)	69.5 \pm 6.44 (60.5-83.5)	87.0 \pm 11.02 (74.0-106.5)	107.0 \pm 9.36 (88.0-117.5)	119.0 \pm 19.68 (87.0-153.5)
Phar. bulb width	40.5	37.5 \pm 3.80 (31.0-44.0)	35.5 \pm 1.88 (33.0-39.5)	16.5 \pm 1.98 (12.5-20.5)	21.5 \pm 2.15 (19.5-26.0)	27.5 \pm 2.10 (24.5-31.5)	30.5 \pm 2.52 (26.5-33.5)
Ant. genital branch	694.0	873.5 \pm 84.90 (782.5-1023.5)	-	-	-	-	-
Post. genital branch	894.0	867.5 \pm 90.86 (741.0-1047.0)	-	-	-	-	-
Ant. genital branch %	7.5	9.5 \pm 1.02 (8.4-11.0)	-	-	-	-	-
Post. genital branch %	9.7	9.4 \pm 0.93 (8.0-11.5)	-	-	-	-	-
Body diam. mid-body	107.5	101.5 \pm 21.42 (80.5-156.0)	92.5 \pm 3.81 (86.5-97.5)	30.0 \pm 2.30 (26.5-34.5)	46.0 \pm 3.71 (42.5-53.5)	64.0 \pm 4.50 (55.5-71.5)	82.0 \pm 9.24 (64.0-93.0)
Body diam. anus level	75.5	69.0 \pm 6.41 (60.0-82.5)	63.5 \pm 2.70 (60.0-67.0)	21.0 \pm 1.86 (19.0-25.5)	35.5 \pm 4.22 (31.0-44.0)	50.0 \pm 4.16 (44.5-56.0)	62.5 \pm 3.83 (53.5-64.5)
Rectum	57.5	45.5 \pm 5.69 (38.5-56.0)	69.0 \pm 6.84 (59.0-76.5)	15.0 \pm 1.80 (11.5-18.0)	21.5 \pm 3.33 (19.0-28.5)	32.0 \pm 3.81 (24.0-36.5)	40.5 \pm 2.22 (37.0-43.5)
Tail	56.0	47.5 \pm 4.96 (38.0-57.0)	52.5 \pm 6.09 (44.0-60.5)	48.0 \pm 3.07 (41.5-54.5)	44.5 \pm 4.43 (37.0-49.5)	45.5 \pm 4.86 (39.5-52.5)	46.0 \pm 6.16 (38.0-56.5)
Hyaline tail tip	21.0	17.5 \pm 1.69 (14.0-20.5)	19.0 \pm 3.16 (12.5-22.5)	16.0 \pm 1.84 (13.0-19.5)	13.0 \pm 2.46 (9.0-16.0)	14.0 \pm 1.51 (10.5-16.0)	15.0 \pm 2.30 (12.5-18.0)
Perectum	529.5	464.5 \pm 116.8 (294.0-694.0)	723.0 \pm 184.64 (400.0-1041.0)	196.5 \pm 48.93 (117.5-288.0)	271.5 \pm 54.28 (206.0-341.0)	332.5 \pm 76.5 (206.0-441.0)	417.5 \pm 86.05 (329.5-541.0)
Spicules	-	-	122.0 \pm 6.67 (111.5-136.5)	-	-	-	-
Lat. guid. piece	-	-	29.5 \pm 3.42 (23.5-35.5)	-	-	-	-

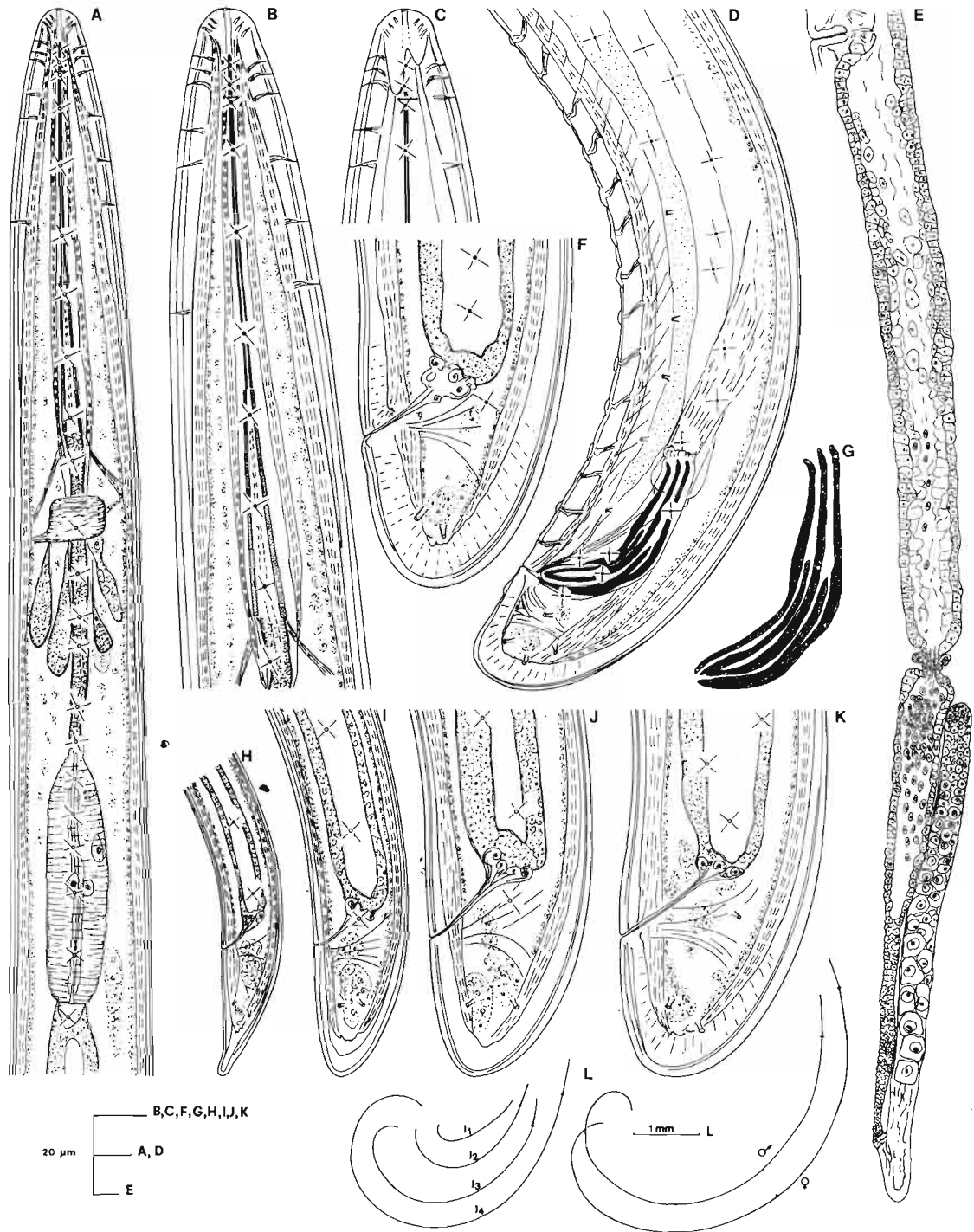


Fig. 2. *Longidorus vinearum* sp. n. A, B : Female, anterior region; C : Head (surface view); D : Male, posterior region; E : Posterior branch of the genital tract; F : Female, posterior region; G : Male, spicules; H-K : Posterior region of juveniles, J1-J4, respectively; L : Posture of juveniles and adult stages.

TYPE HOST AND LOCALITY

Rhizosphere of grapevine at Dois Portos, Torres Vedras, Lisboa, Portugal.

OTHER HABITATS AND LOCALITIES

Rhizosphere of grapevine at Quinta da Condessa, Alenquer, Lisboa, Portugal.

TYPE SPECIMENS

Holotype, seven paratype females, seven paratype males and juveniles in the Collection of the Istituto di Nematologia Agraria del Consiglio Nazionale delle Ricerche, Bari, Italy; two paratype females and one paratype male in 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

L. vinearum sp. n. is characterized by a broadly rounded lip region almost continuous with or separated from the rest of the body by a very slight depression, amphidial pouches distinctly bilobed with ventral lobe longest and extending almost to guiding ring, female tail short, bluntly rounded, and first larval stage with subdigitate tail.

Among the species with lip region almost continuous with the rest of the body, amphidial pouches distinctly bilobed and tail short, bluntly rounded, *L. vinearum* sp. n. more close resembles *L. magnus* Lamberti, Blev-Zacheo & Arias, 1982 for the biometric characters. The new species yet differs morphologically from *L. magnus* in having differently shaped lip region (broadly rounded

frontally and more so laterally, almost continuous with or separated from the rest of the body by a very slight depression in *L. vinearum* sp. n., subacute and slightly flattened frontally in *L. magnus*), differently shaped tail of first juvenile stage (clearly subdigitate in *L. vinearum* sp. n.), the caudal pores are two (three in *L. magnus*) and presence of the male (not found in *L. magnus*) (Lamberti *et al.*, 1982).

L. vinearum sp. n. is also similar to *L. goodeyi* Hooper, 1961, *L. nevesi* Macara, 1985, *L. profundorum* Hooper, 1966 and *L. raskii* Lamberti & Agostinelli, 1993, from which it differs in some biometric characters reported in Table 3. Particularly, it differs from *L. goodeyi* in having longer body, higher "c" and lower "c'" values, more anteriorly situated vulva, longer odontostyle and odontophore and longer distance of oral opening to guiding ring (Hooper, 1961); from *L. nevesi* in having shorter odontostyle and odontophore, anterior situated vulva, differently shaped lip region (subacute in *L. nevesi*) and amphidial pouches with ventral lobe less deeply extending up almost two third the distance of guiding ring from anterior end in *L. nevesi*) (Macara, 1985); from *L. profundorum* in having longer body, higher "c" and lower "c'" values, longer odontostyle and odontophore, longer distance of oral opening to guiding ring, anterior situated vulva, differently shaped amphidial pouches (extending two thirds of the distance from oral opening to guiding ring) and lip region (truncate in *L. profundorum*) (Hooper, 1966) and from *L. raskii* in having longer body, longer odontostyle, longer distance of guiding ring from anterior end, anterior situated vulva and differently shaped amphidial pouches, asymmetrically bilobed with ventral lobe much longer extending almost up to guiding ring in *L. vinearum* sp. n., to about half way to the guiding ring in *L. raskii* (Lamberti & Agostinelli, 1993).

Table 3. Range biometric values of *Longidorus* species females close to *L. vinearum* sp. n., cited in differential diagnosis.

	<i>L. vinearum</i> sp. n.	<i>L. goodeyi</i> (Hooper, 1961)	<i>L. nevesi</i> (Macara, 1985)	<i>L. profundorum</i> (Hooper, 1966)	<i>L. raskii</i> (Lamberti & Agostinelli, 1993)
L (mm)	7.4-11.6	5.6-7.7	6.0-10.1	6.0-8.3	6.5-8.1
a	70.7-101.3	67.0-117.0	72.0-102.0	81.0-119.0	71.9-96.0
c	157.7-263.2	99.0-154.0	100.0-230.0	132.0-187.0	147.4-211.7
c'	0.5-0.8	0.6-1.0	0.6-0.9	0.7-1.0	0.7-0.8
V	43.0-50.6	50.0-55.0	48.0-55.0	50.0-58.0	47.0-56.0
Odontostyle (µm)	105.5-132.5	96.0-109.0	133.0-152.0	91.0-104.0	90.0-103.0
Odontophore (µm)	58.0-85.5	42.0-79.0	76.0-94.0	49.0-69.0	61.2-72.9
Ant. end-guiding ring (µm)	36.0-47.0	30.0-40.0	38.0-46.0	35.0-41.0	32.9-38.2

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