

Istituto di Nematologia Agraria, C.N.R. - 70126 Bari, Italy

*XIPHINEMA FORTUITUM*,  
A NEW LONGIDORID NEMATODE FROM ITALY

by

F. ROCA, F. LAMBERTI and A. AGOSTINELLI<sup>1</sup>

During the survey of Longidoridae carried out in the Italian regions in the period 1971-73, many new species collected at that time were not described because of the scarce material. Consequently, those species were not reported in the «Atlas of Plant Parasitic Nematodes of Italy» (Roca *et* Lamberti, 1985).

The review of Longidoridae from Liguria showed the presence of an undescribed species of *Xiphinema*. Additional material collected recently at the original locality allows the opportunity to describe this species in detail, considered here as new and named *Xiphinema fortuitum* sp. n.

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

*XIPHINEMA FORTUITUM* sp. n. (Fig. 1 - Table I)

Holotype female: L=2.6 mm; a=74; b=7.1; c=70; c'=1.9; V=54; odontostyle=103  $\mu$ m; odontophore=52  $\mu$ m; oral aperture to guiding ring=89  $\mu$ m; tail=38  $\mu$ m; J=8  $\mu$ m; body diam. at lip region=9  $\mu$ m; body diam. at guiding ring=22  $\mu$ m; body diam. at base of oesophagus=29  $\mu$ m; body diam. at vulva=36  $\mu$ m; body diam. at anus=20  $\mu$ m; body diam. at beginning of J=9  $\mu$ m.

<sup>1</sup> The assistance of Mr. V. Radicci in preparing the illustration is acknowledged.

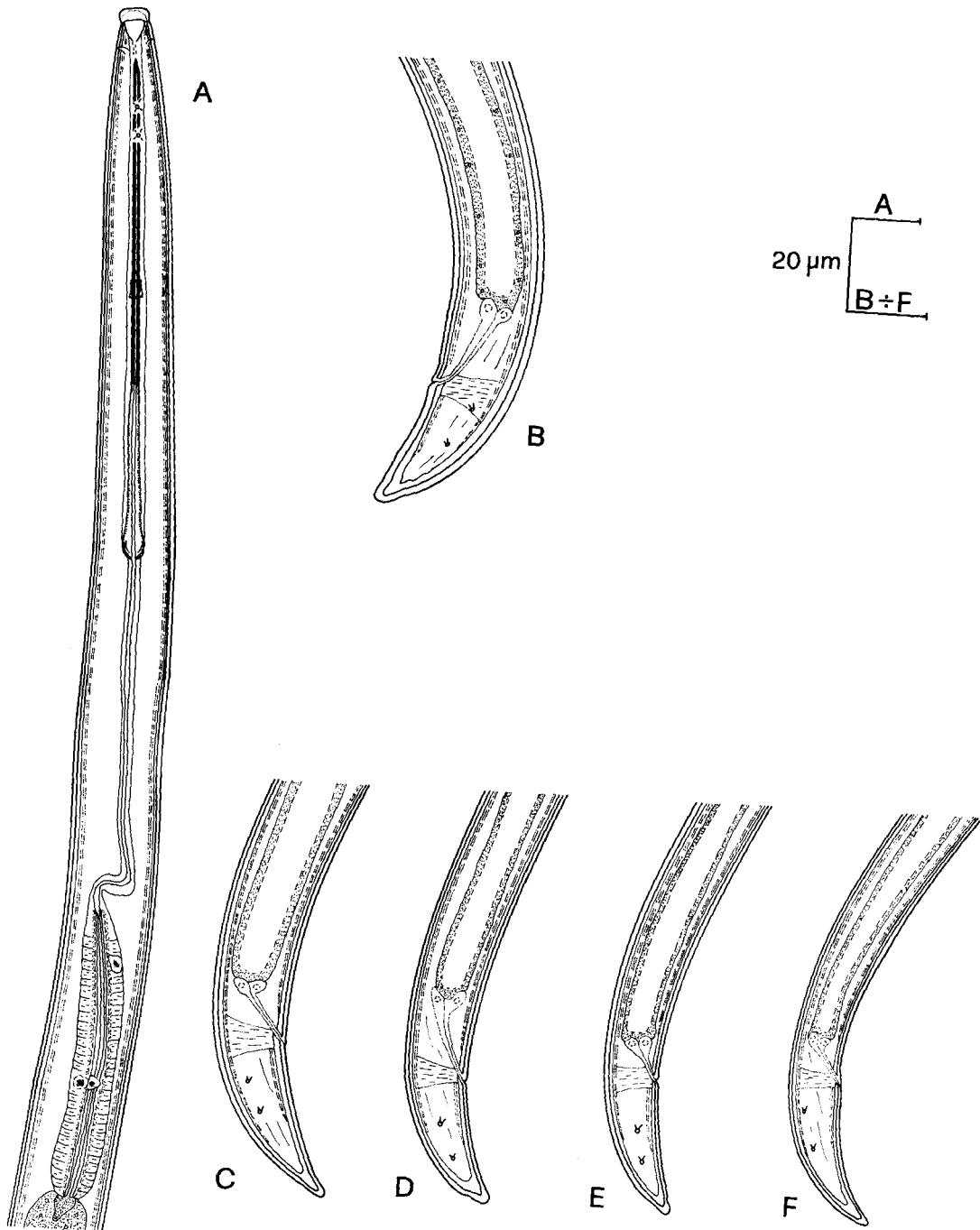


Fig. 1 - *Xiphinema fortuitum* sp. n.: female anterior region (A), posterior region (B); tail of juvenile 4th stage (C), 3rd stage (D), 2nd stage (E), 1st stage (F).

Table I - *Morphometrics of Xiphinema fortuitum sp. n. (paratypes).*

S t a g e s	Range				
	(Means $\pm$ Standard Deviation)				
	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	♀♀
n	3	2	5	4	5
L mm	1.2 - 1.29 (1.25 $\pm$ 0.05)	1.29 - 1.35 (1.32 $\pm$ 0.04)	1.59 - 1.76 (1.66 $\pm$ 0.07)	2.0 - 2.12 (2.05 $\pm$ 0.05)	2.5 - 2.9 (2.6 $\pm$ 0.22)
a	56.2 - 61.8 (59.2 $\pm$ 2.81)	59.3 - 63.7 (61.5 $\pm$ 3.11)	65.2 - 73.1 (69.8 $\pm$ 2.88)	77.8 - 80.1 (78.8 $\pm$ 0.99)	68.5 - 93 (83.4 $\pm$ 9.11)
b	4.53 - 5.35 (4.95 $\pm$ 0.41)	5.09 - 5.74 (5.42 $\pm$ 0.46)	5.0 - 6.6 (5.7 $\pm$ 0.63)	5.22 - 6.87 (5.9 $\pm$ 0.70)	5.8 - 7.9 (7.1 $\pm$ 0.77)
c	32.4 - 34.5 (33.5 $\pm$ 1.06)	33.2 - 35.3 (34.2 $\pm$ 1.48)	39.5 - 46 (42.6 $\pm$ 2.32)	53.1 - 59.1 (55.2 $\pm$ 2.68)	68.5 - 89 (75.7 $\pm$ 8.04)
c'	2.69 - 2.86 (2.75 $\pm$ 0.10)	2.71 - 2.75 (2.73 $\pm$ 0.03)	2.32 - 2.63 (2.52 $\pm$ 0.13)	2.1 - 2.5 (2.3 $\pm$ 0.16)	1.76 - 2.03 (1.9 $\pm$ 0.12)
V	-	-	-	-	53 - 55 (54 $\pm$ 0.84)
Odontostyle $\mu$ m	63 - 65.3 (64.3 $\pm$ 1.22)	68.2 - 68.8 (68.5 $\pm$ 0.41)	71.7 - 82.9 (77.4 $\pm$ 4.05)	91.7 - 94.1 (93.2 $\pm$ 1.02)	94.7 - 107 (102 $\pm$ 4.64)
Odontophore $\mu$ m	36.5 - 37.06 (36.8 $\pm$ 0.32)	38.2 - 38.2 (38.2 $\pm$ 0.00)	38.2 - 45.3 (41.6 $\pm$ 2.51)	43.5 - 46.5 (45.4 $\pm$ 1.30)	47.6 - 53 (50.6 $\pm$ 1.99)
Replacement odontostyle $\mu$ m	73 - 75.3 (74 $\pm$ 1.22)	79.4 - 80.0 (79.7 $\pm$ 0.42)	85.3 - 91.2 (88.9 $\pm$ 2.22)	97 - 103.5 (100.8 $\pm$ 3.20)	-
Oral aperture to guiding ring $\mu$ m	53 - 55.8 (54 $\pm$ 1.70)	53 - 56.4 (54.7 $\pm$ 2.50)	65.3 - 70.6 (67 $\pm$ 2.14)	74.7 - 76.5 (75.3 $\pm$ 0.83)	75.3 - 89.4 (83.2 $\pm$ 5.34)
Tail $\mu$ m	36.5 - 38.2 (37.3 $\pm$ 0.90)	38.2 - 38.8 (38.5 $\pm$ 0.41)	37.6 - 41.7 (39 $\pm$ 1.64)	35.8 - 38.8 (37.2 $\pm$ 1.30)	32.3 - 38.8 (35.3 $\pm$ 2.46)
J $\mu$ m	4.7 - 5.3 (4.9 $\pm$ 0.34)	5.8 - 5.8 (5.8 $\pm$ 0.00)	5.8 - 6.5 (6.3 $\pm$ 0.26)	7.06 - 8.2 (7.5 $\pm$ 0.56)	8.2 - 9.4 (8.9 $\pm$ 0.64)
Body diam. at lip region $\mu$ m	7.06 - 7.65 (7.2 $\pm$ 0.34)	7.06 - 7.06 (7.06 $\pm$ 0.00)	7.6 - 7.6 (7.6 $\pm$ 0.00)	7.6 - 8.8 (8.2 $\pm$ 0.48)	8.2 - 9.4 (8.7 $\pm$ 0.49)
Body diam. at guiding ring $\mu$ m	14.1 - 15.8 (15.3 $\pm$ 1.02)	14.1 - 14.7 (14.4 $\pm$ 0.42)	15.8 - 18.8 (17.2 $\pm$ 1.13)	17 - 18.8 (18.2 $\pm$ 0.83)	21.2 - 23 (21.8 $\pm$ 0.76)
Body diam. at base of oesophagus $\mu$ m	18.2 - 21.2 (19.6 $\pm$ 1.48)	19.4 - 20.6 (20.0 $\pm$ 0.83)	20 - 23 (21.7 $\pm$ 1.38)	23 - 24.1 (23.5 $\pm$ 0.68)	25.3 - 29.4 (27.5 $\pm$ 1.68)
Body diam. at vulva $\mu$ m	19.4 - 22.9 (21.2 $\pm$ 1.77)	21.2 - 21.7 (21.4 $\pm$ 0.41)	21.7 - 25.3 (23.8 $\pm$ 1.53)	25.3 - 26.5 (26 $\pm$ 0.56)	28.2 - 36.4 (32.1 $\pm$ 3.21)
Body diam. at anus $\mu$ m	13 - 14.1 (13.5 $\pm$ 0.59)	14.1 - 14.1 (14.1 $\pm$ 0.00)	14.7 - 16.5 (15.5 $\pm$ 0.67)	14.7 - 17.6 (16.5 $\pm$ 1.27)	17 - 19.4 (18.6 $\pm$ 1.14)
Body diam. at beginning of J $\mu$ m	4.7 - 5.3 (4.9 $\pm$ 0.33)	5.3 - 5.3 (5.3 $\pm$ 0.00)	5.3 - 6.5 (6.0 $\pm$ 0.49)	5.8 - 6.5 (6.3 $\pm$ 0.29)	7.6 - 8.8 (8.3 $\pm$ 0.49)

*Description:* female *habitus* as a closed C or a single spiral, more coiled in the posterior half, when heat-relaxed; body cylindrical, tapering very gradually toward the anterior extremity, more abruptly posteriorly; cuticle very fine transversely striated, 2.5  $\mu\text{m}$  thick along the body, less thickened in the neck region where it measures 1.5  $\mu\text{m}$  at the base of the lip region and more thickened in the caudal region where it is 3  $\mu\text{m}$  ventrally and about 3.5  $\mu\text{m}$  dorsally in the post-anal portion; lateral hypodermal cords 13-13.5  $\mu\text{m}$  wide at mid body or 37-38% of the corresponding body diameter; lateral pores 1-2 in the region of the odontostyle; one dorsal and one ventral body pores visible in the neck region; labial region 3.5  $\mu\text{m}$  high, widely expanded, rounded laterally and slightly flattened frontally, separated from the rest of the body by a clear incisure; amphids large, stirrup shaped, with large aperture as a straight transverse slit; odontostyle robust, 2  $\mu\text{m}$  in diameter; guiding sheath typical of the genus, and basal ring 4  $\mu\text{m}$  wide; odontophore typical of the genus; oesophagus dorylaimoid with anterior part tubular and basal bulb 90-95  $\mu\text{m}$  long and 13-13.5  $\mu\text{m}$  wide, containing three nuclei: the dorsal oesophageal gland nucleus lies in the first quarter of the basal bulb, the nuclei of the subventral gland just behind mid way; oesophageal-intestinal valve pear-shaped; female reproductive system amphidelphic with equally developed branches; vagina occupying 1/2 of the corresponding body diameter; gonads with ovary reflexed, without spermatheca; no «Z» differentiation or any special features in the uterus: prerectum 225-230  $\mu\text{m}$  long; rectum not much longer than the body diameter at anus; tail conical, rather elongated, with subdigitate terminus, bearing two pairs of caudal pores.

*Male:* not found.

*Juveniles:* morphologically similar to adult female but smaller; tail of the first stage elongated.

*Type habitat and locality:* rhizosphere of peach (*Prunus persica* L.) at Calizzano (Savona), Italy.

*Type material:* holotype and three paratype females in the collection of the Istituto di Nematologia Agraria del Consiglio Nazionale delle Ricerche, Bari, Italy; two paratype females, Nematology Department of Rothamsted Experimental Station, Harpenden, Herts, England.

*Differential diagnosis:* *Xiphinema fortuitum* sp. n. in its general appearance and gross morphology (lip region and tail shapes; vulva position)

could be included in the *Xiphinema americanum sensu lato* group. However, it differs from all the species included in this group by its longer body. It resembles *X. pachtaicum* (Tulaganov, 1938) Kirjanova, 1951, *X. californicum* Lamberti et Bleve Zacheo, 1979 and *X. utahense* Lamberti et Bleve-Zacheo, 1979. From *X. pachtaicum* it differs in the longer odontostyle (80-90  $\mu\text{m}$  in *X. pachtaicum*), more expanded lip region and slightly rounded tail tip (subdigitate in *X. pachtaicum*); it differs from *X. californicum* in the anterior vulva ( $V=50-51$  in *X. californicum*) and more rounded tail tip and finally from *X. utahense* in having a less expanded lip region and a higher value of "c" (1.9 vs 1.4 in *X. utahense*).

## S U M M A R Y

*Xiphinema fortuitum* sp. n. found in the rhizosphere of peach in Italy is described. The species can be included in the *X. americanum sensu lato* group, differing from all described species in its longer body. *X. fortuitum* is similar to *X. pachtaicum* (Tulaganov, 1938) Kirjanova, 1951, *X. californicum* Lamberti et Bleve-Zacheo, 1979 and *X. utahense* Lamberti et Bleve-Zacheo, 1979.

## LITERATURE CITED

- ROCA F. and LAMBERTI F., 1985. Atlas of Plant Parasitic Nematodes of Italy. (T.J.W. Alpey, ed.) E.P.P.N.S., E.S.F., Scottish Crop Research Institute, Invergowrie, Dundee, U.K., pp. 44.