

STUDIES ON *XIPHINEMA INGENS* LUC & DALMASSO, 1964 AND THE
MALE OF *LONGIDORUS BREVICAUDATUS* (SCHUURMANS STEK-
HOVEN 1951) THORNE, 1961 (NEMATODA: DORYLAIMIDAE)

BY

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Additional data on females of *Xiphinema ingens* Luc & Dalmasso, 1964, found around roots of *Prunus* spp. in Israel and Italy, are given. Males and larval stages of this species are described and figured. A male of *Longidorus brevicaudatus* (Schuurmans Stekhoven, 1951) Thorne, 1961 is described and figured.

In spring 1963, specimens of *Xiphinema* collected around roots of *Prunus divaricata* Ledeb., in Acre, Israel were received by the senior author, at the time on study leave at Rothamsted Experimental Station, England, from G. Minz. One vial contained a few adults and some larvae of an apparently undescribed species of this genus. About the same time a second and larger population of similar animals, from soil around roots of almond (*P. amygdalus* Batsch.), in an orchard near Bari, Italy, was found and studied by the junior author. The two populations were considered to be identical taxonomically, representing a new species, but after a description was completed, our attention was drawn to a proof copy of the paper by Luc & Dalmasso (1964) with a description of three new species of *Xiphinema*. Our specimens corresponded to the description of *Xiphinema ingens* Luc & Dalmasso, although there were a few slight differences, mainly in some dimensions. These we consider due to geographic variation, or to different host plants. Luc & Dalmasso have given data only on three females, so we give additional data from our populations, which also include males and larval stages.

XIPHINEMA INGENS LUC & DALMASSO, 1964

Females: (n = 20): Length = 5.0 mm (4.6-5.4); a = 72 (67-80); b = 10.1 (7.8-10.8); c = 130 (122-146); spear length = 156 μ (146-168); spear extension = 91 μ (84-96); tail length/anal body diameter = 0.72 (0.68-0.85); V = 49.3 (47-52).

The body of the females from both populations studied fits generally the description by Luc & Dalmasso. In *en face* view six amalgamated lips are visible (Fig. 1 B) with an inner row of six papillae, one on each lip, and an outer row of eight papillae, two on each of the sub-ventral and sub-dorsal lips. The number

of body pores were counted on five specimens. The ventral pores, averaging 73 in number, are distinct and fairly evenly spaced along the entire length of the body; the lateral pores average 166, while the row of dorsal pores fades away after the seventh pore at about the level of the base of the spear extension.

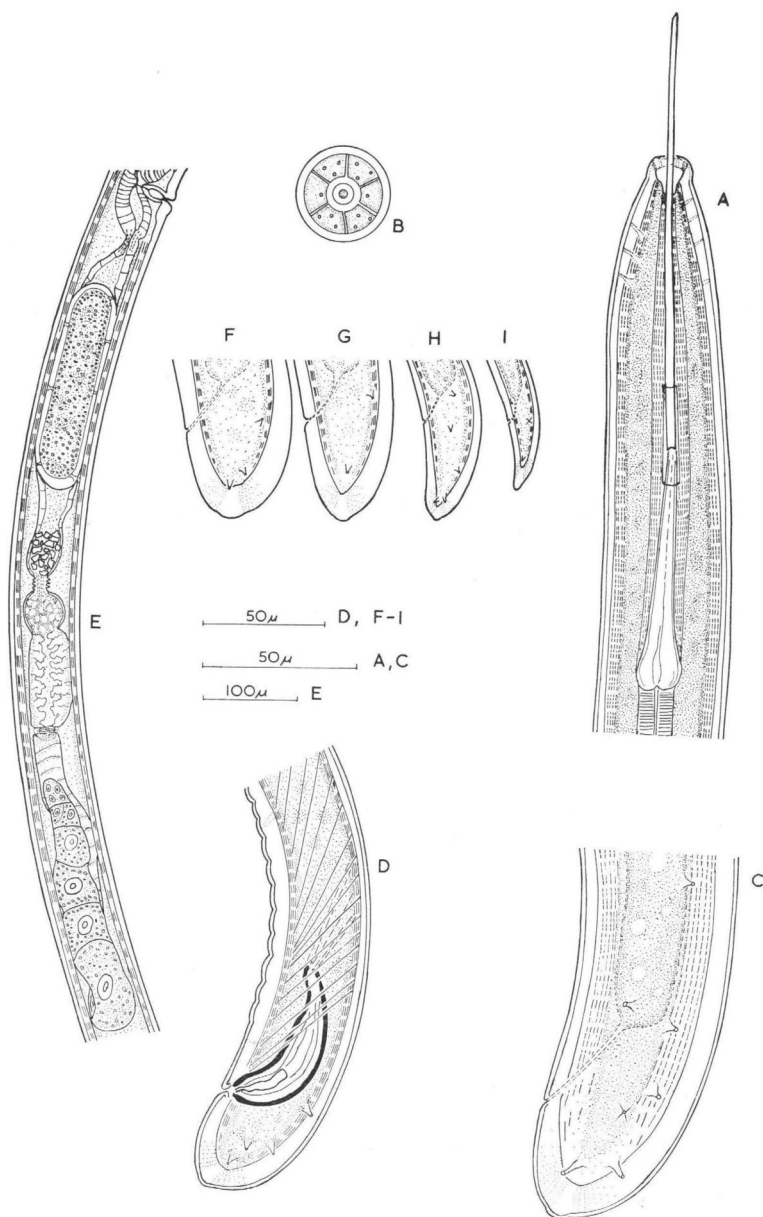


Fig. 1. *X. ingens*. A, anterior end of male; B, lip region *en face*; C, tail end of female; D, tail end of male; E, female reproductive system, anterior branch; F-I, larval tails, F, L4; G, L3; H, L2; I, L1.

The distance of the fixed ring of the guiding tube from the anterior end of the body measures $135\ \mu$ (121-145) in the Italian specimens and $102\ \mu$ (98-112) in the Israeli ones. This is the only characteristic of some importance in which the two populations differ, although this measurement is fairly constant within each population.

The gonads vary greatly in length (560-1200 μ) but are similar to those figured by Luc & Dalmasso. However we could not see any clear sphincter between the spermatheca and the chamber lined with sinuous cells which immediately follows it. The spermatheca itself is a well-defined pouch when sperms are present, but in their absence it appears to contract and is sometimes hardly discernable. Some sperms were also occasionally seen in other parts of the oviduct. On the other hand we could observe a sphincter, which in some specimens shows up very clearly, in a position separating the chamber lined with sinuous cells from the duct which connects with the ovary (fig. 1E). Eggs, up to four, were observed in mature females, averaging $227 \times 54\ \mu$ ($n = 6$) in size.

The number of caudal pores varied between 2-4. One female was found lacking the characteristic low mammillate projection at the tail terminus, and showed a completely rounded tail.

Males: ($n = 20$): Length = 5.0 mm (4.7-5.4); $a = 73$ (66-80); $b = 9.9$ (8.9-10.9); $c = 122$ (110-132); spear length = $156\ \mu$ (141-165); spear extension = $91\ \mu$ (84-96); length of spicules (along their axis) = $93\ \mu$ (90-100); $T = 61$ (57-63).

Males were common in both populations, comprising 35-40% of the specimens found. The body of the male is similar to that of the female. Supplements consist of an adanal pair and a row of 4-5 single ones, the first pair about $115\ \mu$ from the cloaca, and the remainder fairly evenly spaced, about $40\ \mu$ apart. Spicules large and arcuate, lateral guiding pieces about $25\ \mu$ long and bifid. Prominent copulatory muscles present. Tail similar to that of female, short, rounded with a slight mammillate projection. One male was observed with a completely rounded tail.

TABLE I
Xiphinema ingens — measurements of larval stages

Stage	n	length of body (mm)	spear length (μ)	length of developing spear (μ)
L1	5	1.35 (1.23-1.40)	60 (55-66)	76 (73-81)
L2	4	1.97 (1.90-2.13)	82 (80-87)	103 (96-115)
L3	10	2.70 (2.3-3.1)	103 (99-110)	125 (117-132)
L4	7	3.80 (3.05-4.3)	125 (120-137)	150.5 (141-155)

Larvae. Measurements of the four larval stages are presented in Table I, and the corresponding changes in tail shape are shown in Fig. 1 F-I. The typical tail shape of the adult occurs as early as the second larval stage.

LONGIDORUS BREVICAUDATUS (SCHUURMANS STEKHOVEN, 1951) THORNE 1961

Xiphinema brevicaudatum was described by Schuurmans Stekhoven (1951) on the basis of a larval specimen. In his redescription Siddiqi (1959) gave data on the females and additional data on larvae. The species was placed in *Longidorus* by Thorne (1961) on account of the more anterior guide ring and broad amphids.

Two populations of *L. brevicaudatus* from Israel were studied, one from around roots of *Prunus amygdalus* Batsch. in Acre, and a second from soil around *Citrus aurantium* L. in Ramat Hasharon. Measurements of the females corresponded to those given by Siddiqi (1959). In the population from Acre, a single male specimen was found, which is described below and illustrated in Fig. 2.

Measurements: Length = 3.3 mm; $a = 118$; $b = 16$; $c = 93$; spear length = $79\ \mu$; spear extension = $48\ \mu$; distance of guiding ring from anterior end of body = $41\ \mu$.

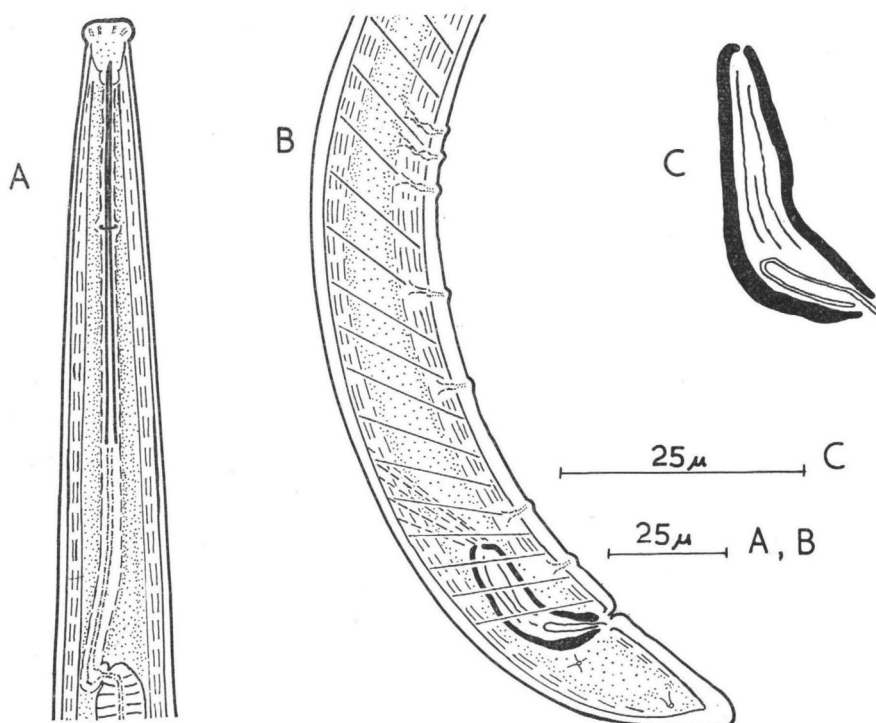


Fig. 2. *Longidorus brevicaudatus*, male. A, anterior end; B, posterior end; C, spicules and lateral guiding pieces.

Body similar to that of female (Siddiqi, 1959). Supplements consist of an adanal pair and row of 6 ventral papillae, spaced as shown in Fig. 2. Prominent copulatory muscles present. Spicules arcuate, measuring $35\ \mu$ along their axis. Lateral guiding pieces bifid and $12\ \mu$ long. Tail similar to that of female, elongate-conoid, with a broadly rounded terminus and bearing two caudal pores.

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RÉSUMÉ

Recherches concernant Xiphinema ingens Luc & Dalmasso, 1964 et le mâle de Longidorus brevicaudatus (Schuurmans Stekhoven, 1951) Thorne, 1961 (Nematoda: Dorylaimidae)

Des dimensions et des données morphologiques supplémentaires sont fournies concernant les femelles de *Xiphinema ingens* Luc & Dalmasso, 1964, de deux populations trouvées autour de *Prunus* spp. en Israël et en Italie. Le mâle de cette espèce est décrit et illustré et les dimensions de vingt spécimens mâles sont données. Les dimensions des quatre stades larvaires de *X. ingens* sont fournies et les modifications correspondantes de la forme de la queue sont illustrées. L'étude de deux populations de *Longidorus brevicaudatus* (Schuurmans Stekhoven 1951) Thorne, 1961 en Israël a révélé la présence d'un seul mâle, qui était inconnu jusqu'à présent. Ce spécimen est décrit et illustré.

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