

The male of *Xiphinema index* Thorne & Allen, 1950 (Nematoda : Longidoridae)

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SUMMARY

The authors give a detailed description of the male of *Xiphinema index* Thorne & Allen, 1950 based on 29 specimens from the vicinity of roots of fig-trees in Israel. The "innervated organ anterior to the supplement series" recorded in the original description is actually an atrophied anterior supplement. Some spermatozoa were observed in the uterus of one female.

RÉSUMÉ

Le mâle de Xiphinema index Thorne & Allen, 1950 (Nematoda : Longidoridae)

Les auteurs donnent une description détaillée du mâle de *Xiphinema index* Thorne & Allen, 1950 fondée sur l'étude de 29 spécimens provenant de la rhizosphère de figuier, en Israël. « L'organe innervé antérieur à la série de suppléments ventraux » signalé dans la description originale n'est en fait qu'un supplément ventral antérieur atrophié. Quelques spermatozoïdes ont été observés dans l'utérus d'une femelle.

Xiphinema index Thorne & Allen, 1950 is probably the best known species of the genus. This is due to its worldwide distribution and to its economic importance as the vector of the fan-leaf virus, which causes a serious disease of the grapevine. It was with this species that transmission of a plant virus by a nematode was demonstrated for the first time (Hewitt, Raski & Goheen, 1958). Thus, there is considerable information concerning its anatomy,

ally considered as extremely rare, and it has been proven that reproduction is of the meiotic parthenogenetic type (Dalmasso, 1970). The males studied until now are the two recorded, « among hundreds of females », and described by Thorne and Allen (1950); nine males, from Sardinia, of which Prota *et al.* (1971) gave a brief description, main dimensions, and drawing of the tail and spicules; a male «slightly pressed », from California, of which the tail and spi-

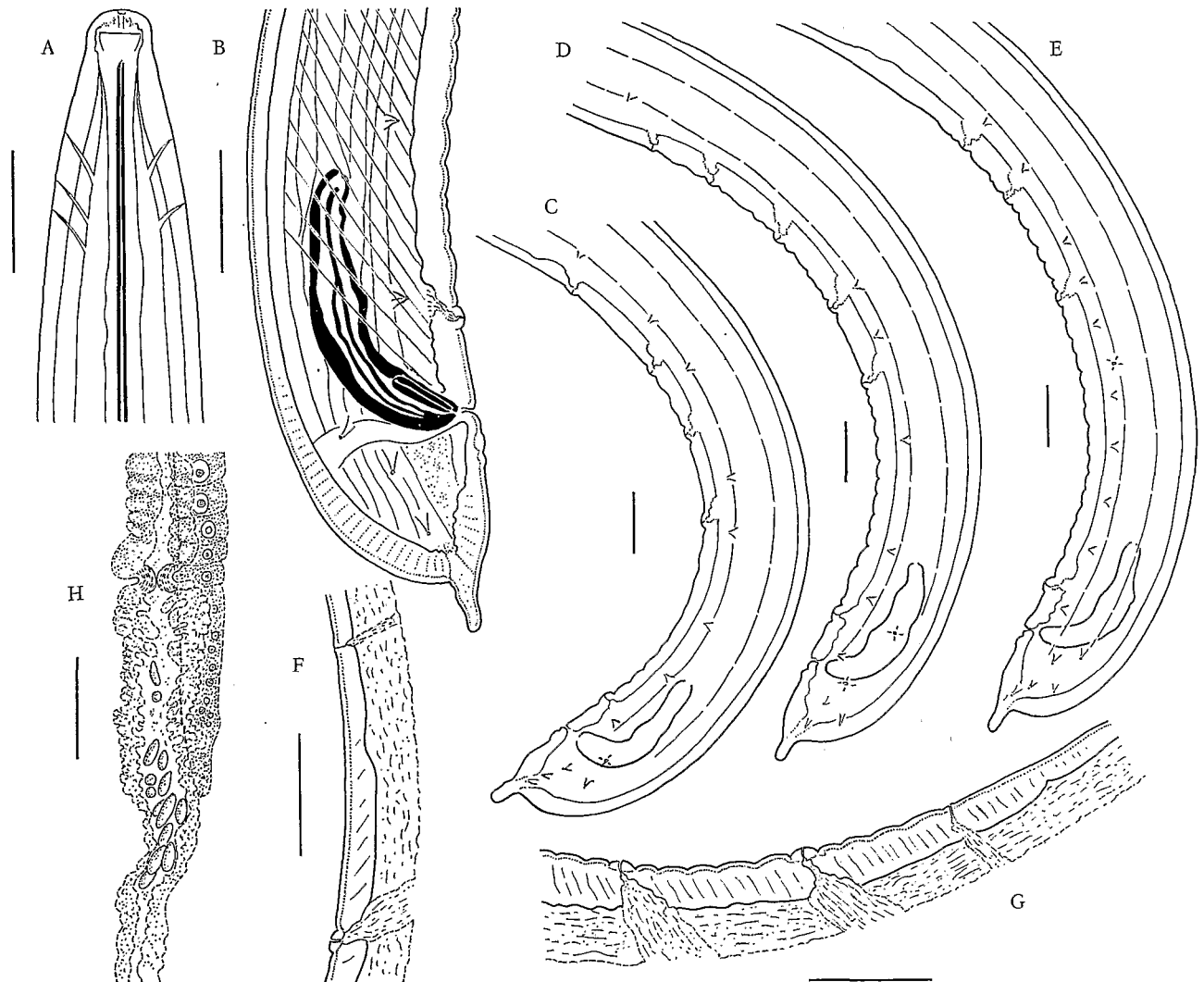


Fig. 1. *Xiphinema index* Thorne & Allen, 1950. Male. A : anterior end. B : tail and spicules. C, D, E : posterior part of body showing position of ventral supplements and of ventromedian papillae. F : ventral pore (above) and most anterior ventral supplement (below). G : two normal ventral supplements and an anterior atrophied supplement (above). Female. H : portion of the genital tract showing spermatozoa in the uterus. (Bars are equivalent to 25 μ m).

other than : « measurements of males and females ... were similar to those given for the species » ; and a photomicrograph of the posterior part of a male with protruding spicula. These Australian males are rare : 1-2% in one population, one in 76 000 specimens in another.

In Israel, *X. index* is widely distributed on grapevine and citrus on both of which it has been shown

to be pathogenic (Cohn & Orion, 1970). Twenty-nine males were collected from a population reared on fig-trees in a glasshouse at Bet-Dagan. The proportion of males in the adult population was 2.65% (mean of five samples). Study of these males has enabled us to collect more precise morphometric data, and to clarify the question of the enigmatic « innervated organ anterior to the supplement

series » and the « ventro-submedian series of seven papillae » reported in the original description (Thorne & Allen, 1950).

Xiphinema index Thorne & Allen, 1950

FEMALES

Biometrics of fifteen females are given in Table 1. No supplementary data need be added to the original or other descriptions published. The only point to be recorded is that in one of the 28 females observed, spermatozoa were present in the uterus, more precisely in the proximal part of the cylindrical portion and in the distal part of the uterine pouch (Fig. 1, H). These spermatozoa were few in number, and not clustered in the uterine pouch as is frequently observed in various amphimictic species of the genus. This observation proves at least that males are functional and that copulation can occur. Nothing

TABLE I
Xiphinema index (Population fig-tree, Bet-Dagan, Israel) Biometrics of males and females

	Females	Males
n	15	29
L (mm)	2.84-3.50 3.08	2.39-3.35 2.95
a	52.6-65.9 58.5	43.4-71.4 57.9
b	6.5-7.3 6.8	5.4-8.1 6.7
Tail (μm)	37-45 * 38.5	38-47 * 42
c	72.8-85.7 * 79.1	53.1-79.8 * 69.8
c'	0.9-1.1 * 1.0	0.9-1.2 * 1.0
V	38.7-42.7	—

TABLE 2
Xiphinema index (Population fig-tree, Bet-Dagan,
 Israel), Position of the ventral supplements in
 29 males (in μm) (Numbers between brackets
 indicate an atrophied supplement)

N ^o	Cloaca- double pap.	Double pap.- S ₁	S ₁ -S ₂	S ₂ -S ₃	S ₃ -S ₄	S ₄ -S ₅	S ₅ -S ₆
1	20	122	46	27			
2	21	103	42	40			
3	23	101	30	32	(48)		
4	22	98	38	37	28		
5	21	89	29	41	25		
6	20	88	28	21	25		

description, the presence of an « innervated organ anterior to the supplement series » (given as four) is noted ; this « organ » is almost certainly a fifth, atrophied, ventral supplement, as suggested by Sturhan (1963) ; more doubtfully, it could be the most posterior ventral pore. Thorne and Allen (1950) recorded too « a ventro-median series of seven pairs or innervated papillae » ; these papillae (pores?) were observed in each of the males examined ; their number varies from six to ten ; the most posterior is situated slightly posterior or anterior to the double papilla and the most anterior at the approximate level of the most anterior single supplement ; these ventro-median papillae appear distinct from the normal latero-subventral pores, because in some rare cases (Fig. I. E) one of these pores can be

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