

Xiphinema costaricense Lamberti & Tarjan, 1974 and *X. insigne* Loos, 1949, from Trinidad

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SUMMARY

Females and juveniles of *Xiphinema costaricense* and females and a solitary male of *X. insigne* are described and illustrated from the rhizosphere of Valencia orange in Trinidad. The population of *X. insigne* is unusual because of the combination of a very long tail with average body length and anterior vulva.

RÉSUMÉ

Xiphinema costaricense Lamberti & Tarjan, 1974 et *X. insigne* Loos, 1949, observés à Trinidad

Des femelles et des juvéniles de *Xiphinema costaricense* Lamberti & Tarjan, 1974, ainsi que des femelles et un unique mâle de *X. insigne* Loos, 1949 provenant de la rhizosphère d'oranger « Valencia », à Trinidad, sont décrits et figurés. La population de *X. insigne* apparaît inhabituelle par la combinaison d'une très longue queue avec un corps de taille moyenne et une vulve assez antérieurement située.

Xiphinema, extracted from soil about the roots of citrus (Valencia orange) at Carapo, Trinidad, were killed by heat and fixed in TAF. They were processed to glycerine via a slow evaporation technique and mounted in anhydrous glycerine. Small populations of *X. costaricense* Lamberti & Tarjan, 1974, a little known species, and a morphometrically unusual population of the very variable *X. insigne* Loos, 1949 were found and are described hereunder.

***Xiphinema costaricense* Lamberti & Tarjan, 1974**
(Fig. 1 A-K)

DIMENSIONS

Female (n = 10) : L = 2.26 mm (1.95-2.44) ; vulval body width = 46 μ m (41-50) ; anal body width = 33 μ m (32-36) ; tail = 24 μ m (23-29) ; odontostyle = 118 μ m (115-122) ; odontophore = 74 μ m (67-78) ; total stylet = 192 μ m (182-198) ; anterior end to basal guide ring = 110 μ m (100-113) ; a = 49.0 (44.3-53.6) ; b = 5.7 (5.0-6.3) ; c = 94 (85-106) ; c' = 0.7 (0.6-0.9) ; V = 36.5 (35.1-37.7) ; h* = 10 μ m (9-10).

Juveniles-1st stage (n = 11) ; L = 0.80 mm (0.75-0.89) ; maximum width = 19 μ m (16-23) ; anal body width = 12 μ m (11-13) ; tail = 50 μ m (46-53) ; odontostyle = 56 μ m (54-57) ; replacement odontostyle = 66 μ m (62-68) ; odontophore = 36 μ m (33-38) ; total

stylet = 92 μ m (88-94) ; anterior end to basal guide ring = 45 μ m (39-48) ; a = 42.2 (38.5-47.6) ; b = 3.7 (3.5-4.2) ; c = 16 (15-18) ; c' = 4.2 (3.8-4.6) ; h = 8.5 μ m (8-10).

Juveniles-2nd stage (n = 5) : L = 1.04 mm (0.97-1.14) ; maximum width = 23 μ m (21-26) ; anal body width = 15 μ m (14-16) ; tail = 52 μ m (49-59) ; odontostyle = 67 μ m (65-68) ; replacement odontostyle = 84 μ m (81-88) ; odontophore = 46 μ m (42-49) ; total stylet = 113 μ m (107-117) ; anterior end to basal guide ring = 59 μ m (55-61) ; a = 45.4 (43.9-48.1) ; b = 3.9 (3.5-4.3) ; c = 20 (19-22) ; c' = 3.5 (3.2-3.7) ; h = 18 μ m (16-19).

Juveniles-3rd stage (n = 1) : L = 1.41 mm ; maximum width = 32 μ m ; anal body width = 22 μ m ; tail = 32 μ m ; odontostyle = 82 μ m ; replacement odontostyle = 99 μ m ; odontophore = 56 μ m ; total stylet = 138 μ m ; anterior end to basal guide ring = 74 μ m ; a = 44 ; b = 4.4 ; c = 44 ; c' = 1.5 ; h = 7 μ m.

Juveniles-4th stage (n = 6) : L = 1.63 mm (1.38-1.76) ; maximum width = 33 μ m (29-37) ; anal body width = 26 μ m (23-28) ; tail = 28 μ m (26-30) ; odontostyle (n = 5) = 97 (94-102) ; replacement odontostyle = 118 μ m (111-137) ; odontophore (n = 5) = 61 μ m (59-65) ; total stylet (n = 5) = 158 μ m (153-165) ; anterior end to basal guide ring (n = 5) = 83 μ m (71-92) ; a = 49.5 (47.6-51.3) ; b = 4.5 (4.0-4.9) ; c = 58 (53-65) ; c' = 1.1 (1.0-1.2) ; h = 6 μ m (5-7).

* h = length of hyaline terminal part of the tail.

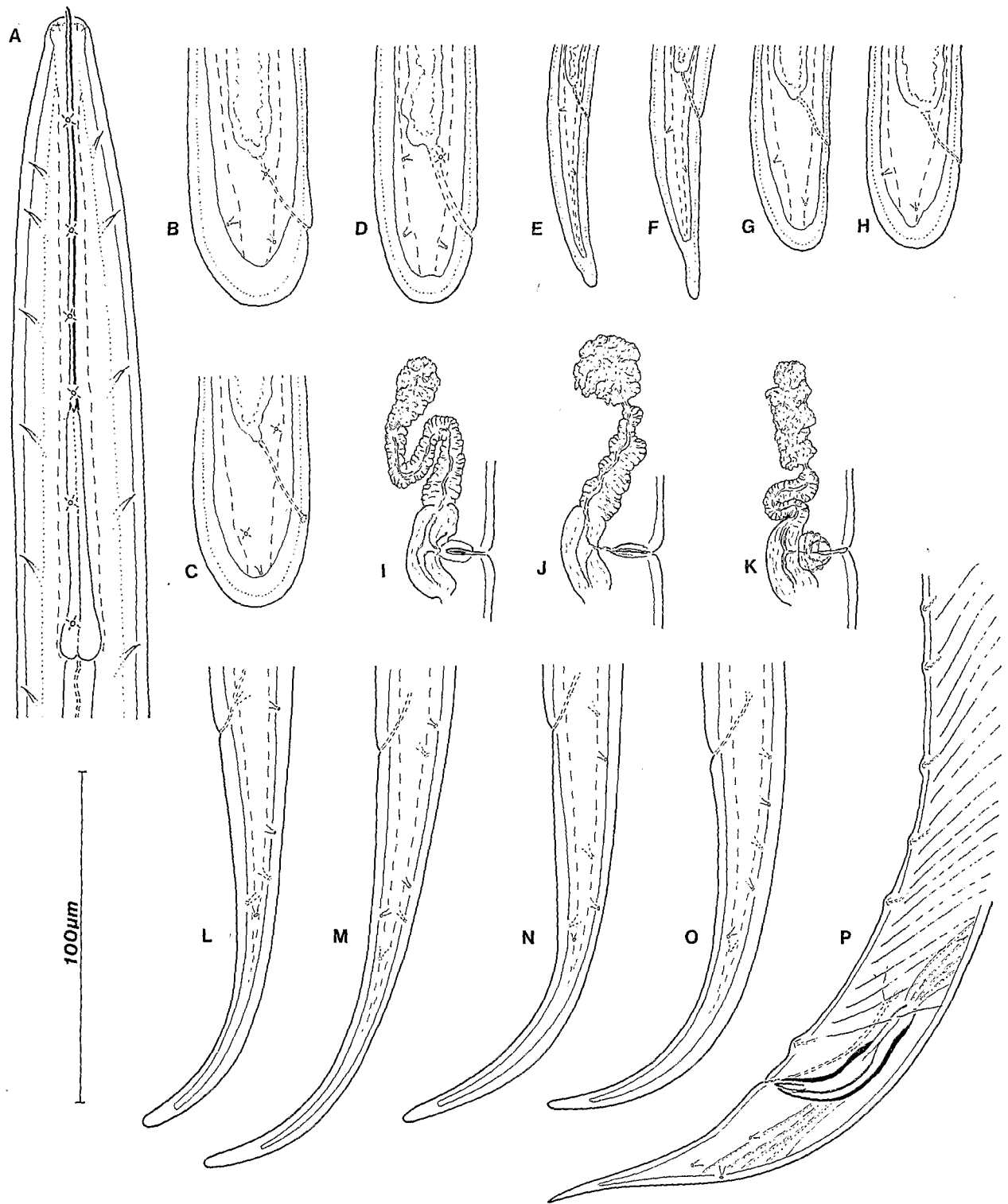


Fig. 1. A-K : *Xiphinema costaricense*. A : neck region ; B-D : female tails ; E-H : J1-J4 tails ; I-K : anterior genital tract. L-P : *Xiphinema insigne*. L-O : female tails ; P : male tail region.

DISCUSSION

The Trinidad population agrees well with the type both morphologically and morphometrically although the odontostyle and odontophore of the type population are slightly longer (136 vs. 118 μm and 80 vs. 74 μm respectively).

The structure of the much reduced anterior genital branch was not described in detail by Lamberti and Tarjan (1974) although Luc (1981), on the basis of two paratypes and a third female from the type locality, described it as consisting of a short convoluted uterus separated by a weak sphincter from a disorganised oviduct. This is in agreement with the Trinidad population.

Lamberti and Tarjan (1974) gave some measurements of juveniles but had only one specimen each of the J1, J3 and J4 and two of the J2. The more numerous juveniles from the Trinidad population are considerably shorter than those of the type and have shorter odontostyle and odontophore. In the single J1 of the type population the tail is given as 64 μm long whereas in the Trinidad population ($n = 11$) it is 50 μm (46-53). However, the shape is very similar in both populations and the ratios c and c' are almost identical.

The reporting of this second population firmly establishes *X. costaricense* as a valid species and provides some useful data on geographic variability within the species.

Xiphinema insigne Loos, 1949

(Fig. 1 L-P)

DIMENSIONS

Female ($n = 10$): $L = 2.36$ mm (2.19-2.57); vulva body width = 41 μm (37-45); anal body width = 22 μm (21-24); tail = 149 μm (136-171); odontostyle = 99 μm (96-103); odontophore = 60 μm (54-63); total stylet = 159 μm (151-166); anterior end to basal guide ring = 85 μm (81-93); $a = 57.6$ (55.6-62.9); $b = 6.6$ (6.3-7.0); $c = 16$ (14-18); $c' = 6.8$ (5.9-7.4); $V = 32.8$ (31.0-34.5); $h = 13$ μm (10-17).

Male: $L = 2.27$ mm; odontostyle = 100 μm ; odontophore = 61 μm ; total stylet = 161 μm ; spicule (curved median line) = 50 μm ; $a = 63.1$; $b = 7.0$; $c = 29.1$; $c' = 3.0$.

DESCRIPTION AND DISCUSSION

The Trinidad population is not sufficiently different from the other populations attributed to *X. insigne* to warrant a full description, but the following characteristics are of importance.

Body of average length for *X. insigne*, head offset

by a shallow depression with the lip region high and more or less rounded. Vulva situated at about 33% of the body length, genital tracts amphididelic, reflexed. The anterior genital tract has a well-developed, but smaller, ovary than the posterior genital tract and all four uterine eggs observed were in the posterior tract. Tail very long, conoid, ventrally arcuate with the tip often more sharply curved. There are two or three pairs of caudal pores.

As presently understood, *X. insigne* is a highly variable species embracing a number of more, or less, distinct forms of which the short-tailed '*indicum*' form (= *X. indicum* Siddiqi, 1959) is perhaps the most distinct (Southey, 1973; Bajaj & Jairajpuri, 1977; Luc & Southey, 1980). Luc and Southey (1980) gave details of twelve populations of *X. insigne* and regarded the differences between various forms as being primarily an expression of geographical variance.

The Trinidad population is of interest because of its unique combination of average body length with an exceptionally long tail. The only other population with a comparable tail length is the Malawi population recorded by Luc and Southey (1980). This was distinguished by the very long tail ($\bar{x} = 148$ μm , $c' = 6.4$), the very posterior vulva ($V = 38$ (36-41)), relatively long body length ($\bar{x} = 2.68$ mm) and the low and flattish lip region practically continuous with the body contour. The Trinidad population has an almost identical tail length ($\bar{x} = 149$ μm ; $c' = 6.8$) combined with a mean body length of only 2.36 mm and an anterior vulva ($V = 33$ (31-35)). The head region is also higher and rounded and more offset.

Males of *X. insigne* are rare but have been recorded on a number of occasions (Cohn, 1969; Saigusa & Yamamoto, 1971; Bajaj & Jairajpuri, 1977). The solitary male from Trinidad has a tail length of 78 μm , three pairs of caudal pores and supplements arranged as an adanal pair with a row of five ventromedians. It agrees well with the other descriptions but has a relatively long tail — although not as long as the ca 125 μm tail recorded by Saigusa and Yamamoto (1971).

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