Xiphinema conurum Siddiqi, 1964, a valid species (Nematoda : Longidoridae)

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SUMMARY

The study of mixed populations of *Xiphinema italiae* Meyl, 1954 and *X. conurum* Siddiqi, 1964 from a vineyard at Soukra, Tunisia has enabled the differences between these two species to be clarified : in particular, body an stylet lengths are notably greater in *X. conurum.* A complementary description is given of the female of *X. conurum* and the male of this species is described from a single specimen.

RÉSUMÉ

Xiphinema conurum *Siddiqi, 1964 : une espèce valide (Nematoda : Longidoridae).*

L'étude de populations mélangées de *X. italiae* Meyl, 1953 et de *X. conurum* Siddiqi, 1964 prélevées dans un vignoble à Soukra, Tunisie, a permis de préciser les différences entre ces deux espèces : elles concernent essentiellement les longueurs du corps et du stylet, nettement plus grandes chez *X. conurum.* Des compléments à la description de la femelle sont donnés pour *X. conurum,* et le mâle est décrit sur un unique specimen.

Xiphinema conurum Siddiqi, 1964 was described from a single female from soil around almond trees (*Prunus amygdalus* Batsch) near The Tunis-Sousse road, about 70 km from Tunis, Tunisia. Siddiqi (1964) in a footnote admitted that *X. conurum* is " very similar " to *X. arenarium* Luc & Dalmasso, 1964, now a junior synonym of *X. italiae* Meyl, 1953. Martelli, Cohn and Dalmasso (1966) agreed with this opinion but prefered to consider *X. conurum* a *species inquirenda* (*species incertae sedis* might have been better). Cohn and Sher (1972), notwithstanding the " unusually long " body of *X. conurum,* considered it as a junior synonym of *X. italiae,* an opinion which generally prevails until now.

M. M. Ritter during a visit to Tunisia tried to sample at the type locality of *X. conurum.* Unfortunately the almond orchards have been replaced by buildings in this area, but he sent to the senior author a collection of nematodes from vineyard soil, near Soukra, a small town about 80 km from the type locality; this collection had been sampled earlier by A. Vuittenez.

In this sample two similar but distinct populations of *Xiphinema* were present. The differences between them were sufficient for each specimen to be attributed easily to one or other population. One of these populations fits very conveniently with *X. italiae;* the other is considered as representing *X. conurum,* reestablished as a valid species.

Measurements and a short description of the population of *X. conurum,* including a male, are given below. However juveniles present in the sample were impossible to attribute with certainity to *X. conurum* or *X. italiae.* Morphometric data of the population of *X. italiae* are also given, for comparison.

Nematodes were extracted from the soil by the sugar centrifugation-flotation method and mounted in glycerine by Seinhorst's (1959) rapid method.

Xiphinema conurum Siddiqi, 1964

MEASUREMENTS

Female (n = 45) : L = 3.50-4.42 mm (3.97 ± 0.27); a = 74.5-104.5 (88.1 ± 6.70); b = 7.1-10.0 (8.8 ± 0.60); tail = 50-85 µm (64 ± 7.98); c = 49.2-77.7 (62.8 ± 7.40); c′ = 1.7-3.2 (2.6 ± 0.42); V = 44.4-52.6 (48.5 ± 1.45); odontostyle = 110-120 µm (114 ± 4.18); odontophore = 62-72 µm (67 ± 2.30); stylet = 171-192 µm (181 ± 5.31).

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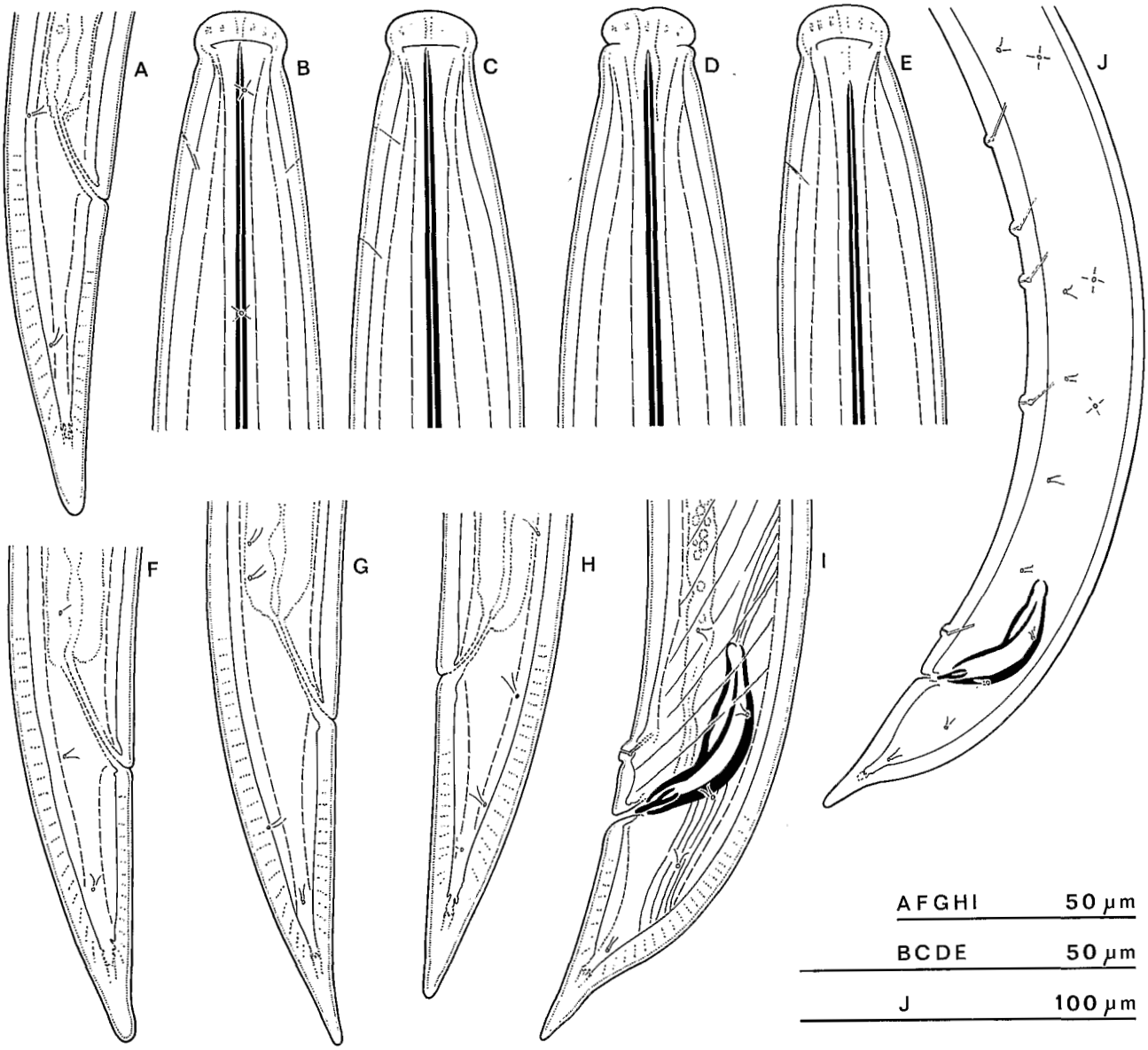

Fig. 1. *Xiphinema conurum* Siddiqi, 1964. — Female B, C : Anterior end (lateral), D : Anterior end (dorso-ventral), A, F, G, H : Tails. — Male E : Anterior end (lateral), I : Tail and spicular apparatus, J : Posterior part showing the ventral supplements.

Male (n = 1) : L = 3.8 mm; a = 89.6; b = 8.5; tail = 49 µm; c = 76.8; c′ = 1.9, odontostyle = 109 µm; odontophore = 68 µm; stylet = 177 µm; spicules = 45 µm; accessory piece = 11 µm.

DESCRIPTION

Female : When heat-relaxed, body habitus slightly ventrally curved; curvature more pronounced in the posterior part. Body slender, slightly tapered at anterior end, more progressively at posterior end. Cuticle thin (1.5-2.5 µm at mid-body), apparently composed of two layers, slightly reinforced in the sublabial area (2.5-3 µm), more on the dorsal side of the tail (5-7.5 µm). Lateral chord 9-14 µm or 25-41 % of the corresponding diameter. Cervical pores slightly marked, few in number : one or two in each of the four rows (lateral, dorsal and ventral). No ventral pores on the rest of the body; laterosubdorsal pores few in number, scattered, mainly present on the posterior part; some laterosubventral pores on the posterior part of body. Lip region rounded, 12-14 µm wide, button-shaped, separated from the rest of the body by a smooth but conspicuous depression. Amphidial slit 66-75 % of the corresponding diameter. Hemizonid flat, 5-9 µm wide, situated at 188 µm (168-207) from anterior end; hemizonion lenticular, 2-3 µm wide, at 245 µm (214-262) from anterior end. Nerve ring 10-14 µm wide, at 13-34 µm from the base of the stylet. Stylet conforms to genus; flanges of odontophore 11-14 µm, reinforced at their margins. Œsophageal " mucro " at 8-63 µm from the base of the stylet. Œsophageal bulb measuring 119 × 21 µm (95-137 × 18-24). Vagina reaching less than one half of the corresponding diameter; perivaginal muscles cup-shaped. Two genital branches, equally developed or nearly so, without Z diffentiation nor uterine spines; no spermatozoa in the genital tracts. Tail conical, ventral profile nearly straight, continuing the profile of the rest of the body; dorsal profile simply and regularly curved; extremity rounded; on some females a very slightly marked dorsal set-back is present close to the extremity. One or two pairs of caudals pores; one pair of adanal pores.

Male : Curvature of the body in the posterior part more pronounced than in female. Morphology and anatomy similar to those of the female, except genital apparatus and somatic structures linked to it. Lateral chord narrower : 13 µm or 31 % of the corresponding diameter. Hemizonid 6 µm wide at 199 µm from anterior end; hemizonion lenticular, 2 µm wide, at 256 µm from anterior end. Spicules massive, curved. Accessory piece triangular, devoid of dorsal projection. Double papilla 16 µm in front of the cloaca. Four ventral single supplements at 73, 108, 125 and 152 µm from double papilla (measured along the ventral profile). Irregular disposed ventro-median pores and some dorso-median pores extending from cloaca to level of the most anterior supplements. Tail shorter than in female, conical, ventral profile in line with that of anterior part of body; dorsal profile with double curvature, resulting in a smoothly digitated shape; two pairs of caudal pores. Appearance of testis, and presence of well-developed spermatozoa in the *vas deferens* suggest that this male could be functional.

VOUCHER SPECIMENS : Deposited in the collection of the Laboratoire des Vers, Muséum national d'Histoire naturelle, Paris.

LOCALITY : Vineyard, Soukra, Tunisia (*coll.* A. Vuittenez).

RELATIONSHIPS : *X. conurum* is very close to *X. italiae*, from which it can be nevertheless easily differentiated by greater body and stylet lengths (Fig. 2 and 3). The tail of *X. conurum* is more regularly conical than that of *X. italiae;* its extremity is not so variable and does not show, as frequently in the latter species, a broad rounded and/or a conspicuously subdigitate terminus.

Xiphinema italiae Meyl, 1953

The measurements of eleven females of the population of *X. italiae* mixed with *X. conurum* are : L = 2.61-3.25 mm (2.87 ± 0.22); a = 59.9-81.5 (74.7 ± 8.50); b = 6.9-8.5 (7.7 ± 0.46); tail = 49-72 µm (65 ± 6.47); c = 38.7-7.45 (44.3 ± 4.25); c′ = 2.2-3.3 (2.8 ± 0.40); V = 46.3-49.4 (48.3 ± 1.49); odontostyle = 92-99 µm (95 ± 2.60); odontophore = 54-62 µm (58 ± 2.36); stylet = 147-160 µm (153 ± 4.63).

No supplementary description appears to be necessary, this population conforming perfectly to the numerous morpho-biometric data already published on the species.

Discussion

One may question the justification for distinguishing two species of which the females differ exclusively in characters related to body and stylet lengths. One may note that the dots representing specimens of the Tunisian populations of *X. italiae* and *X. conurum* (Fig. 2) or the means of various populations of *X. italiae* and of the population of *X. conurum* (Fig. 3) are apparently on the same regression line. Populations to be discovered and studied might fill the gap between *X. italiae* and *X. conurum* and the latter species could revert to a junior synonym of the former one.

But, at the present time, *X. conurum* is clearly recognizable as a separate species; its synonymization with *X. italiae* was based mainly on the fact that the original

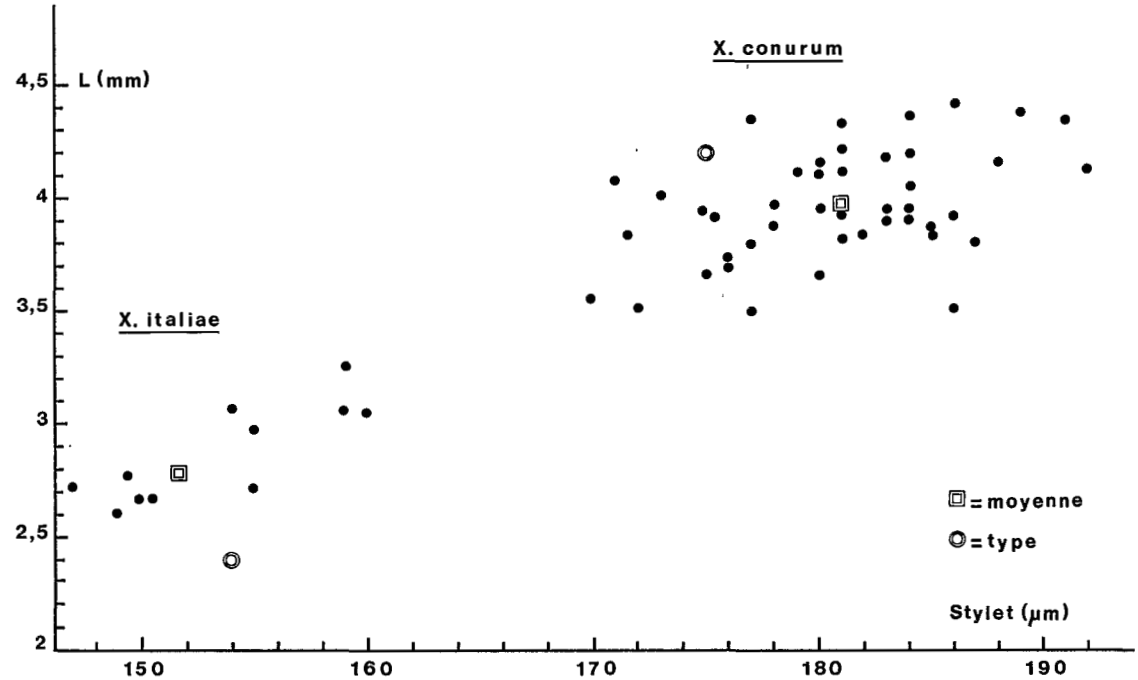

Fig. 2. Plot of body and stylet lengths of the females of the Tunisian populations of *X. conurum* Siddiqi, 1964 (n = 45) and *X. italiae* Meyl, 1953 (n = 11). Mean values and values of type specimens are also plotted.

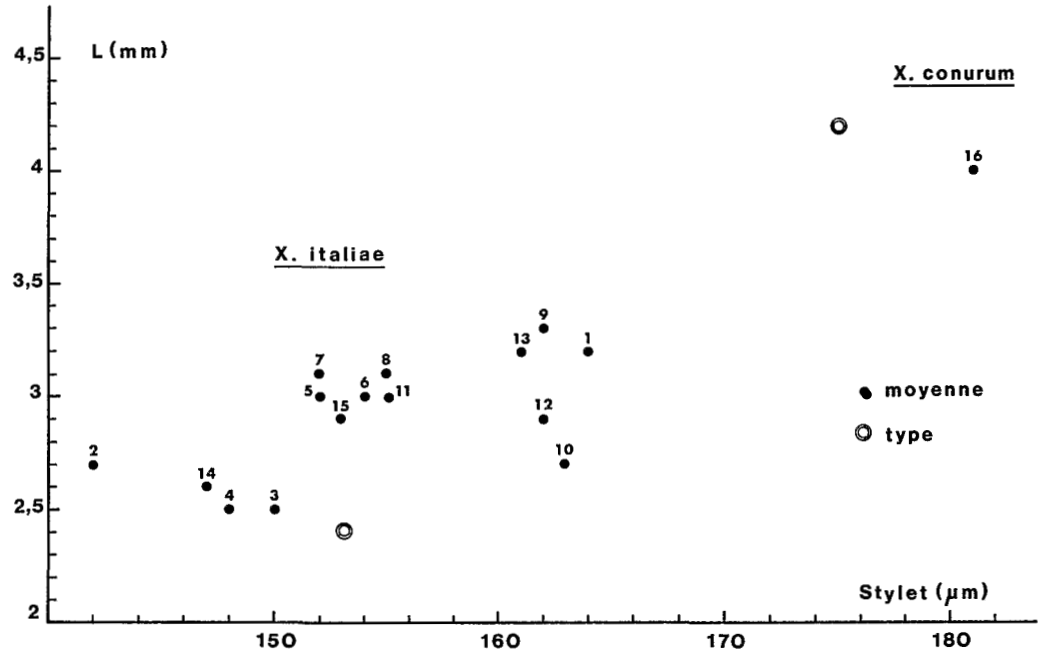

Fig. 3. Plot of mean values of body and stylet lengths of fifteen populations of *Xiphinema italiae* Meyl, 1953 and of one population of *X. conurum* Siddiqi, 1964. *X. italiae.* — 1 : France, Aigues-Mortes (= *X. arenarium* Luc & Dalmasso, 1963); 2 : Bulgaria (= *X. bulgariense* Stoyanov, 1964); 3 : Italy (neotype population; Martelli, Cohn & Dalmasso, 1966); 4 : France, Carpentras *(ibid.);* 5 : Italy, Palagiaro; 6 : Bari; 7 : Castelvetrano; 8 : Terracina; 9 : Metaponte *(ibid.);* 10, 11 : Italy, Sardinia (Prota *et al.,* 1971); 12 : Israel, Acre; 13 : Israel, Nir Eliahu (Martelli, Cohn & Dalmasso, 1966); 14 : South Africa, fourteen populations mixed (Heyns, 1974); 15 : Tunisia, Soukra (original). *X. conurum* Siddiqi, 1964; 16 : Tunisia, Soukra (original).

description applied to a single female; thus this unique specimen could be considered as an exceptionally long *X. italiae* provided with an exceptionnally long stylet. However the present study of a large population of *X. conurum* confirms that the differences from *X. italiae* are consistent notwithstanding the fact that numerous populations of the latter species have been since studied. Furthermore, as the Tunisian populations of *X. conurum* and *X. italiae* were mixed, differences observed cannot be attributed to any « geographic », soil or host factor.

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