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**THE SPECIES OF *XIPHINEMA* COBB, 1913 (NEMATODA: LONGIDORIDAE)  
IN THE SUGAR CANE FIELDS OF MAURITIUS**

by

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CONTENTS

Introduction	1
I. The species present	3
II. Distribution of the species	15
III. References	19

Eighty nine soil samples were taken during a survey to determine the species of *Xiphinema* that occur about sugar cane roots in Mauritius. Each sample consisted of about one litre of soil and the nematodes were extracted by sieving or, infrequently, by the Baermann funnel technique.

Five species of *Xiphinema* were found. The first part of this paper gives abbreviated descriptions of the species and the second part discusses their distribution in relation to soil type, elevation and rainfall. Some description of the distribution of the species, based on data presented here in detail, has been given previously by WILLIAMS (1969).

Of the 89 samples taken, 44 yielded *Xiphinema*. The locations of the positive samples, and their characteristics, are given on p. 2 and in Fig. 7. Grid coordinates to the Ordinance Survey Map of Mauritius (Series Y 682, Ed. 2-GSGS, Ministry of Defence, U.K., 1971) follow the place names because these are imprecise.

<i>Point</i>	<i>Locality and Map Ref.</i>	<i>Altitude m (ft.)</i>	<i>Rainfall p.a. m (in.)</i>	<i>Soil type</i>
1	Côte d'Or (55.5/60.8)	427 (1400)	2.79 (110)	Humic Ferruginous Latosol
2	Rose Belle (60.7/46.7)	335 (1100)	4.06 (160)	"
3	Britannia I (57.5/39.0)	259 (850)	3.05 (120)	"
4	Beau Bois (57.4/65.3)	412 (1350)	2.54 (100)	"
5	Union Park (60.5/45.5)	305 (1000)	3.81 (150)	Latosolic Brown Forest
6	Eau Bleue (62.6/61.5)	305 (1000)	4.06 (160)	"
7	La Russie (62.6/61.5)	396 (1300)	3.56 (140)	"
8	Beau Climat (58.4/43.8)	335 (1100)	3.56 (140)	"
9	Providence (64.0/60.3)	366 (1200)	3.56 (140)	"
10	St. Julien (64.7/62.6)	366 (1200)	3.30 (130)	"
11	Bel Etang (69.0/60.0)	229 (750)	3.05 (120)	"
12	Lesur (70.1/56.6)	244 (800)	3.56 (140)	"
13	Ripailles (59.6/66.8)	473 (1550)	2.54 (100)	"
14	Chamarel (38.0/39.5)	244 (800)	2.29 (90)	Humic Ferruginous Latosol
15	Mont Blanc (50.6/35.1)	168 (550)	3.05 (120)	Latosolic Brown Forest
16	Mont Choisy (57.6/88.4)	3 (10)	< 1 (< 40)	Coral sand
17	Pereybere (61.0/89.0)	3 (10)	< 1 (< 40)	"
18	Bel Ombre (44.7/33.0)	30 (100)	1.78 (70)	Low Humic Latosol
19	Britannia II (58.2/42.2)	335 (1100)	3.56 (140)	Latosolic Brown Forest
20	Le Val (64.5/49.2)	152 (500)	3.81 (150)	Humic Ferruginous Latosol
21	La Lucie (76.4/59.5)	76 (250)	2.54 (100)	Latosolic Red Prairie
22	Gros Bois (63.2/38.8)	152 (500)	3.05 (120)	Latosolic Brown Forest
23	Reduit (51.1/62.6)	305 (1000)	1.78 (70)	Low Humic Latosol
24	Chamarel (39.2/39.8)	335 (1100)	2.29 (90)	Humic Ferruginous Latosol
25	Highlands (55.6/60.6)	442 (1450)	2.79 (110)	"
26	Pte. aux Sables (45.5/69.2)	30 (100)	1.02 (40)	Low Humic Latosol
27	Médine (41.7/58.1)	122 (400)	1.27 (50)	Latosolic Red Prairie
28	Pamplemousses (60.3/77.2)	76 (250)	1.52 (60)	Low Humic Latosol
29	Union Vale (67.2/39.5)	76 (250)	2.29 (90)	Latosolic Red Prairie
30	Trois Ilots (76.8/57.8)	91 (300)	2.79 (110)	Low Humic Latosol
31	Palma (45.5/56.4)	274 (900)	1.27 (50)	Latosolic Red Prairie
32	Petite Rivière (44.5/66.4)	61 (200)	1.02 (40)	Low Humic Latosol
33	Bagatelle (49.7/64.5)	244 (800)	1.52 (60)	"
34	Plaisance (71.2/41.7)	30 (100)	1.78 (70)	Latosolic Red Prairie
35	Union Maurel (64.3/84.5)	53 (175)	1.27 (50)	"
36	Argy (77.7/66.3)	30 (100)	1.78 (70)	Lithosol
37	Trianon (51.2/61.5)	305 (1000)	1.78 (70)	Low Humic Latosol
38	St. Aubin (56.9/33.8)	107 (350)	2.29 (90)	"
39	Grande Retraite (70.7/69.6)	122 (400)	1.78 (70)	"
40	Grande Rosalie (63.0/73.6)	198 (650)	2.03 (80)	Humic Latosol
41	Riche en Eau (67.4/45.5)	122 (400)	2.79 (110)	Humic Latosol
42	La Baraque (64.0/37.0)	91 (300)	2.29 (90)	Latosolic Red Prairie
43	Bénarès (60.5/34.5)	91 (300)	2.03 (80)	Low Humic Latosol
44	Rivière Armand (60.2/35.7)	122 (400)	2.29 (90)	"

## I. THE SPECIES PRESENT

The species found were:

- X. brevicolle* Lordello & Da Costa, 1961  
*X. elongatum* Schuurmans-Stekhoven & Teunissen, 1938  
*X. insigne* Loos, 1949  
*X. krugi* Lordello, 1955  
*X. vulgare* Tarjan, 1964

For examination, specimens were killed by heat in water, fixed in FA 4: 10 and mounted in glycerine by the rapid method of Seinhorst (1959).

1. *Xiphinema brevicolle* Lordello & Da Costa, 1961 (Fig. 1)

Dimensions (females): see Table 1

Abridged description:

Body forming an open spiral when killed by heat, tapering noticeable only towards the anterior end.

Lip region truncate, slightly set off from neck.

Genital branches identical, without a Z-organ. Spermatozoa not observed.

Tail short, conoid, extremity rounded, in profile convex dorsally and straight ventrally, terminal cuticular canal present but indistinct, with two pairs of caudal pores.

Localities

Point 14 (Chamarel) and 15 (Mont Blanc). This species has also been found in forest soil at Trois Mamelles (Grid co-ordinates 46.9/53.9).

Table I. Dimensions of *X. brevicolle*  
Specimens from Point 14 (Chamarel)

	Mean & Range	n
L (Total body length, mm)	1.74 (1.52-1.92)	33
a (Total body length divided by max. body width)	40.5 (33.0-45.2)	24
b (Total body length divided by oesophageal length)	5.4 (4.7-6.4)	33
Lt (Tail length, $\mu$ m)	26.1 (25-29)	33
c (Total body length divided by tail length)	67.1 (57.0-80.0)	33
c' (Tail length divided by anal body width)	0.93 (0.9-1.0)	6
V (Position of vulva from ant. end as % body length)	52.0 (50.0-54.2)	33
Odontostyle, $\mu$ m	88 (81-91)	33
Odontophore, $\mu$ m	54 (47-61)	33
Stylet, $\mu$ m	141 (131-149)	33
Guide ring, distance from head, $\mu$ m*	73 (65-88)	27
Lh (Length of hyaline extremity of tail, $\mu$ m)	13 (11-14)	6
Lh % Lt	47 (39-56)	6

\*When odontostyle, not odontophore, is in the guide ring (cf. WILLIAMS, 1966).

2. *Xiphinema elongatum* Schuurmans-Stekhoven & Teunissen, 1938. (fig. 2)

Dimensions (females): see Table 2

Abridged description:

Body curved ventrally, bracket-shaped, with the curvature more pronounced posteriorly, when killed by heat. Tapering only slightly at the anterior end, tapering over about one-third of body length to the tail.

Lip region rounding to a rather truncate extremity, moderately set off from neck.

Genital branches identical, without a Z-organ. Spermatozoa not observed.

Tail regularly conoid to a bluntly pointed terminus, in profile dorsally more convex than ventrally concave, axis of tail continuous with that of body, with two pairs of caudal and one pair of adanal pores.

Remarks

Among the large number of specimens examined (about 360) were two types that differed by their dimensions (Table 2). In one («Type A»), the body, the stylet, and the hyaline terminal part of the tail are shorter and the vulva is more anterior than in the other («Type B»). In the only two samples where both types occurred, their separation under the relatively low power magnification of a stereoscopic microscope presented little difficulty.

It is doubtful if the taxonomic separation of these types is warranted because, apart from their similar morphology, the ranges of the dimensions that differentiate them either overlap or nearly do so. Furthermore, data on *X. elongatum* from other geographic areas show that both fit well into the present concept of the species and in no way represent extremes.

Localities

Type A, the most frequent, was found at the following sampling points: 18 (Bel Ombre), accompanied by *X. insigne*, 23 (Réduit), 24 (Chamarel), 26 (Pointe aux Sables), 27 (Médine), 28 (Pamplemousses), 29 (Union Vale), 30 (Trois Ilots), 31 (Palma), 32 (Petite Rivière), 33 (Bagatelle), 34 (Plaisance), 35 (Union Maurel), 36 (Argy), 37 (Trianon), 38 (St. Aubin), 39 (Grande Retraite), 40 (Grande Rosalie), 41 (Riche en Eau), 42 (La Baraque), 43 (Bénarès), and 44 (Rivière Armand)

Type B was found, with Type A, at points 23 (Réduit) and 24 (Chamarel), and alone at point 25 (Highlands).

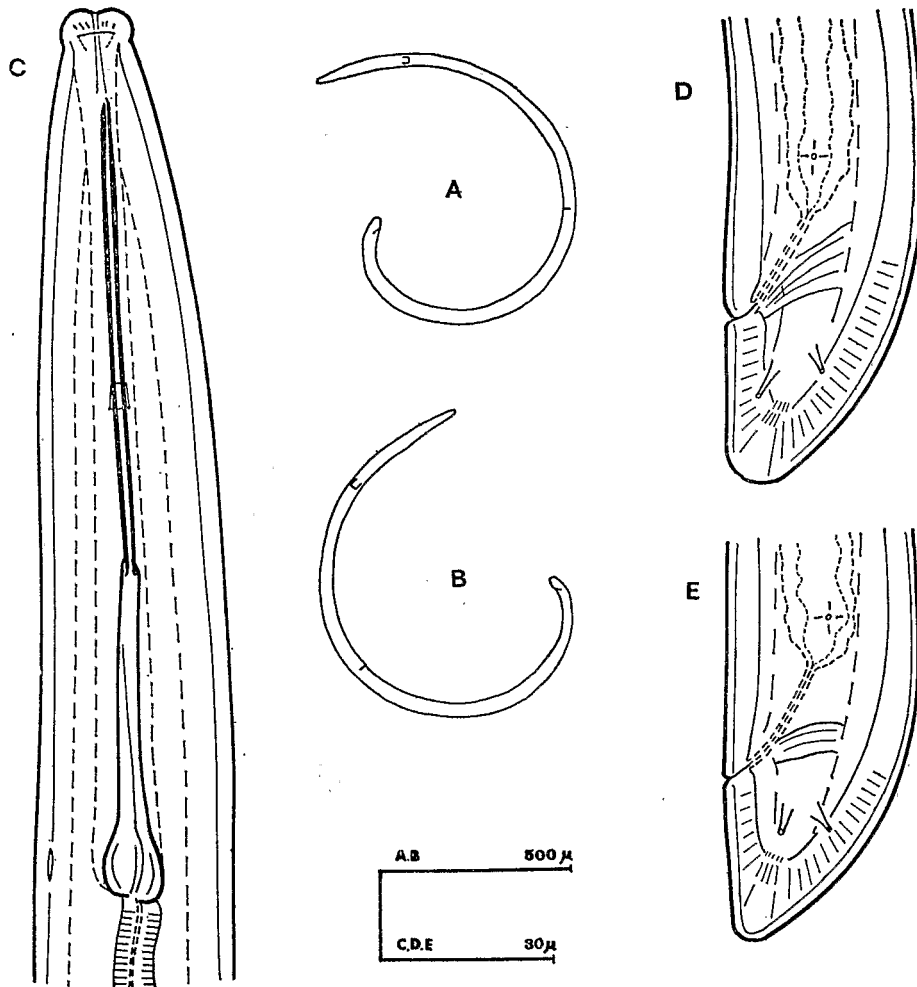


Fig. 1. *Xiphinema brevicolle* Lordello & Da Costa, 1961  
A,B, attitude of heat-relaxed females; C, fore-part; D,E, tails

Table 2. Dimensions of *X. elongatum*

	FORM A						FORM B					
	<i>Various Points</i>		<i>Point 28 (Pamplemousses)</i>		<i>Point 23 (Réduit)</i>		<i>Point 24 (Chamarel)</i>		<i>Point 23 (Réduit)</i>			
	<i>Mean/Range</i>	<i>n</i>	<i>Mean/Range</i>	<i>n</i>	<i>Mean/Range</i>	<i>n</i>	<i>Mean/Range</i>	<i>n</i>	<i>Mean/Range</i>	<i>n</i>		
L (mm)	2.16	281	2.14	20	2.11	7	2.40	31	2.42	25		
	1.80-2.56		1.94-2.41		1.94-2.29		2.04-2.58		2.21-2.58			
a	54	38	56.0	20	55.5	7	54	20	58.4	25		
	38-62		50.5-60.3		48.8-58.7		44-64		52.2-65.7			
b	6.3	251	6.1	20	6.2	7	6.5	30	6.8	25		
	4.5-7.9		5.0-6.9		5.1-6.9		5.5-7.2		6.0-8.9			
Lt (μm)	61	260	65.5	20	66	7	60	30	66	25		
	50-72		57-72		56-77		53-77		57-75			
c	35	250	32.6	20	33.1	7	39	30	36.7	25		
	36-43		28.5-35.0		26.6-34.5		33-46		32.1-43.0			
c'	—	—	2.8	20	2.8	7	—	—	2.6	25		
			2.5-3.1		2.5-3.1				2.3-3.0			
V	39	281	39.7	20	39.4	7	46	31	44.7	25		
	36-43		38.4-41.8		37.1-41.5		42-48		43.3-47.8			
Odontostyle (μm)	94	303	96.5	20	94	7	106	31	108	25		
	82-100		94-102		92-97		98-111		106-111			
Odontophore (μm)	56	298	57	20	56.5	7	63	31	64	25		
	47-63		52-61		55-60		56-66		60-67			
Stylet (μm)	148	297	154	20	150.5		168	31	172	25		
	136-158		146-158		148-155		161-176		165-177			
Guide ring (μm)	81	133	—	—	—	—	87	18	—	—		
	74-89						75-94					
Lh (μm)	—	—	18	20	19.5	7	—	—	26	25		
			14-25		17-36				21-30			
Lh % Lt	—	—	28	20	30	7	—	—	40	25		
			22-35		27-36				33-45			

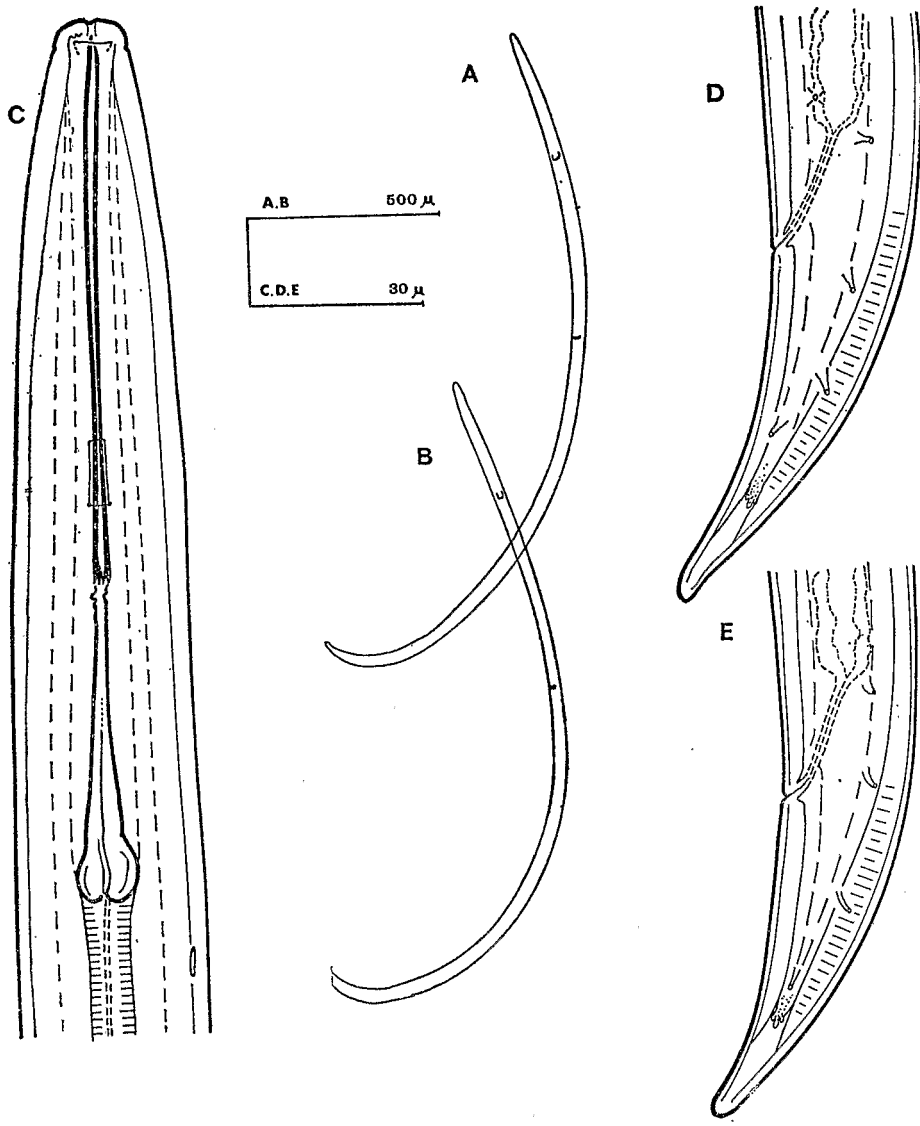


Fig. 2. *Xiphinema elongatum* Schuurmans-Stekhoven & Teunissen, 1938 (Type A)  
A,B, attitude of heat-relaxed females; C, fore-part; D,E, tails.



3. *Xiphinema insigne* Loos, 1949 (Fig. 3)

Dimensions (females): see Table 3

Abridged description:

Body slightly ventrally arcuate, except towards the hind end, which is strongly arcuate, almost hook-like, when killed by heat.

Lip region rounded, well set off from body.

Genital branches identical but the anterior generally less developed than the posterior, without Z-organ. Eggs seen only in the posterior genital branch.

Tail elongate-conoid to a bluntly-pointed terminus, its end curved more sharply than the rest so that the tip seems bent, terminal cuticular canal present, with two pairs of caudal and one pair of adanal pores.

Localities:

Point 18 (Bel Ombre), with *X. elongatum*, 19 (Britannia II), 20 (Le Val), 21 (La Lucie), and 22 (Gros Bois).

Table 3. Dimensions of *X. insigne*

	Point 19 (Britannia II)		n	Point 18 (Bel Ombre)		n
	Mean	Range		Mean	Range	
L (mm)	2.63	(2.41-2.97)	22	2.52	(2.30-2.65)	7
a	64	(56-74)	21	60.2	(55.7-64.6)	7
b	7.5	(6.7-8.6)	21	7.9	(6.6-9.7)	7
Lt ( $\mu$ m)	127	(108-149)	17	123	(108-131)	7
c	20	(12-24)	19	20.6	(18.0-24.0)	7
c'	—	—	—	5.3	(4.5-6.1)	7
V	32	(29-34)	22	33.6	(31.7-34.8)	7
Odontostyle ( $\mu$ m)	93	(89-96)	22	94	(92-95)	7
Odontophore ( $\mu$ m)	60	(59-62)	22	59.5	(55-62)	7
Stylet	152	(149-157)	22	153.5	(152-157)	7
Guide ring	78	(73-86)	22	—	—	—
Lh ( $\mu$ m)	—	—	—	14	(12-17)	6
Lh% Lt	—	—	—	11	(9-13)	6

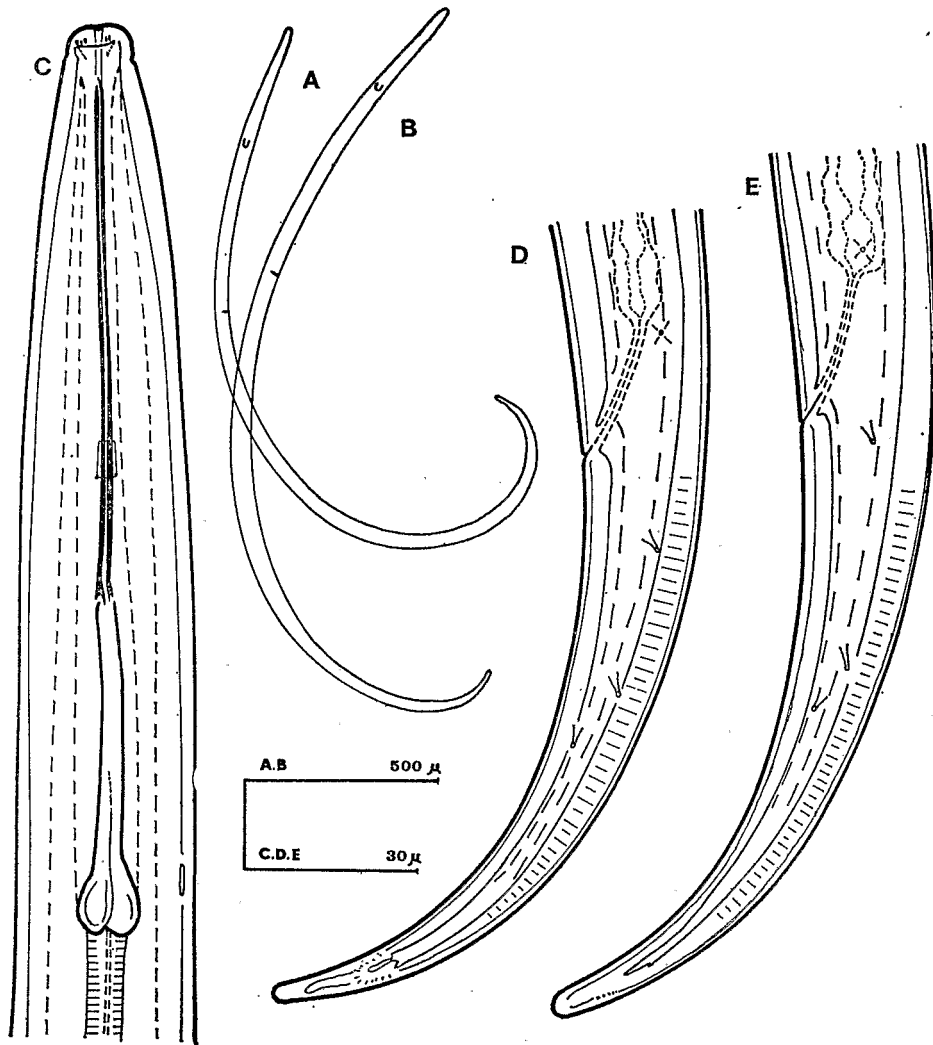


Fig. 3. *Xiphinema insigne* Loos, 1949  
 A,B, attitude of heat-relaxed females; C, fore-part; D,E, tails

4. *Xiphinema krugi* Lordello, 1955\*. (fig. 4)

Dimensions (females): see Table 4

## Abridged description:

Body slightly ventrally arcuate (bracket-shaped), with the curvature rather more pronounced posteriorly, when killed by heat.

Lip region smoothly rounded, dome-like, only slightly set off from neck.

Posterior genital branch normal, without Z-organ. Anterior genital branch degenerate and very short.

Tail bluntly rounded, its curvature mostly dorsal, and with a slight bulge at the terminus, terminal cuticular canal present, two pairs of caudal pores.

## Localities

Points 1 (Côte d'Or), 2 (Rose Belle), 3 (Britannia I), 4 (Beau Bois), 5 (Union Park), 6 (Eau Bleue), 7 (La Russie), 8 (Beau Climat), 9 (Providence), 10 (St. Julien), 11 (Bel Etang), 12 (Lesur), 13 (Ripailles).

Table 4. Dimensions of *X. krugi*

	Point 9 (Providence)		Point 7 (La Russie)		Point 8 (Beau Climat)	
	Mean & Range	n	Mean & Range	n	Mean & Range	n
L (mm)	1.91 (1.76-2.12)	18	1.83 (1.71-1.95)	12	1.94 (1.81-2.06)	20
a	42 (37-48)	10	42.7 (40.6-45.4)	12	41.3 (35.8-45.9)	20
b	5.3 (4.9-6.5)	18	4.7 (4.3-5.1)	12	4.7 (3.8-5.2)	20
Lt ( $\mu$ m)	31 (27-36)	17	30 (27-32)	12	29 (25-33)	20
c	63 (54-70)	17	61.2 (55.2-64.0)	12	67.6 (61.5-75.6)	20
c'	—	—	0.93 (0.84-1.0)	12	0.89 (0.76-1.03)	20
V	33 (32-35)	18	32.9 (31.2-35.1)	12	33.0 (32.0-34.6)	20
Odontostyle ( $\mu$ m)	114 (106-119)	18	117 (114-122)	12	119.5 (115-129)	20
Odontophore ( $\mu$ m)	70 (68-73)	18	73 (71-76)	12	72.5 (67-75)	20
Stylet ( $\mu$ m)	184 (175-188)	18	190 (186-194)	12	188 (180-195)	20
Guide ring	101 (96-106)	6	—	—	—	—
Lh ( $\mu$ m)	—	—	12.5 (12-14)	12	12.5 (11-14)	20
Lh% Lt	—	—	42 (38-52)	12	43 (36-48)	20

\*There has been confusion concerning the identity of this species in Mauritius. It was assigned to *X. ensiculiferum* (Cobb) by WILLIAMS (1959, 1969), to *X. krugi* by COHN and SHER (1972), and to *X. loosi* by SOUTHEY and LUC (1973).

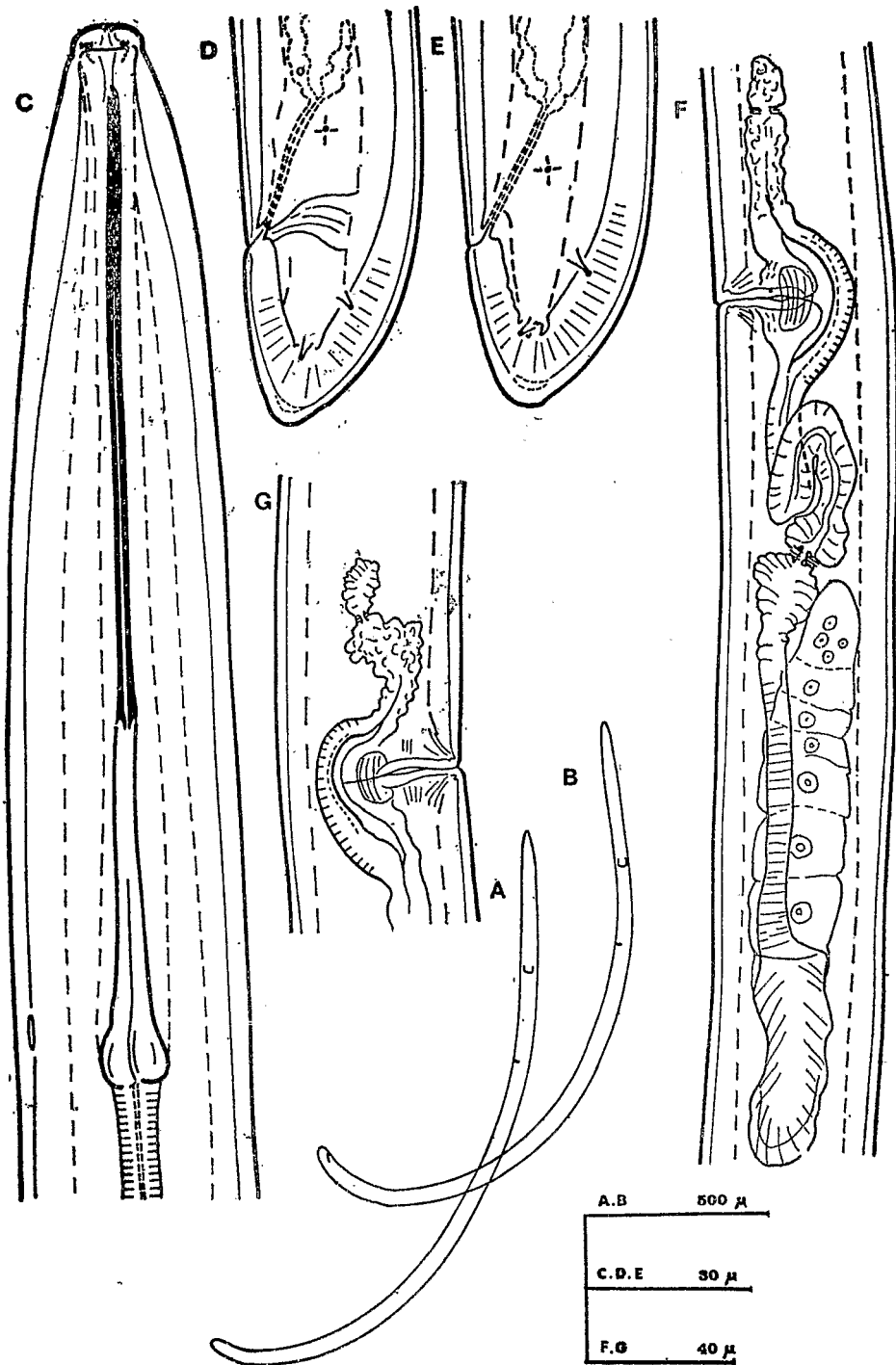


Fig. 4. *Xiphinema krugi* Lordello, 1955

A, B, attitudes of heat-relaxed females; C, fore-part; D, E, tails; F, genital tract; G, vaginal region

5. *Xiphinema vulgare* Tarjan, 1964. (fig. 5)

Dimensions (females): see Table 5

## Abridged description:

Body slightly ventrally arcuate, the curvature more pronounced posteriorly, when killed by heat. Slender, tapering mostly at the hind end.

Lip region truncate, well set off from neck.

Both genital branches functional, without Z-organ.

Tail conoid, in profile dorsally more convex than ventrally concave, axis of tail continuous with that of body, terminus bluntly pointed and slightly digitate, terminal cuticular canal present, two pairs of caudal and one pair of adanal pores.

## Remarks

The Mauritian specimens differ from the types by their shorter body (1.82-2.32 mm against 2.36-2.84 mm) and shorter odontophore (55-65  $\mu\text{m}$  against 67-78  $\mu\text{m}$ ). The total length of the stylet is also shorter (156-177  $\mu\text{m}$  against 175-193  $\mu\text{m}$ ).

The characteristics of the Mauritian specimens endorse the opinion of TARJAN (1973) and of LUC and DALMASSO (1975) that *X. vulgare* is a valid species distinct from *X. setariae* Luc, 1958. COHN and SHER (1972) had considered them synonymous.

## Localities

Points 16 (Mont Choisy) and 17 (Pereybère).

Table 5. Dimensions of *X. vulgare*

	Point 16 (Mont Choisy)		n
	Mean	Range	
L (mm)	2.10	(1.82-2.32)	80
a	52.3	(46-61)	35
b	5.9	(4.9-7.3)	80
Lt ( $\mu\text{m}$ )	48	(41-55)	78
c	44.0	(38.5-52.0)	80
c'	1.8	(1.5-2.0)	30
V	42.1	(39.0-45.0)	80
Odontostyle ( $\mu\text{m}$ )	106	(98-113)	80
Odontophore ( $\mu\text{m}$ )	60	(55-65)	75
Stylet ( $\mu\text{m}$ )	167	(156-177)	75
Guide ring	84	(82-93)	18
Lh ( $\mu\text{m}$ )	14	(11-19)	30
Lh % Lt	29	(24-40)	30

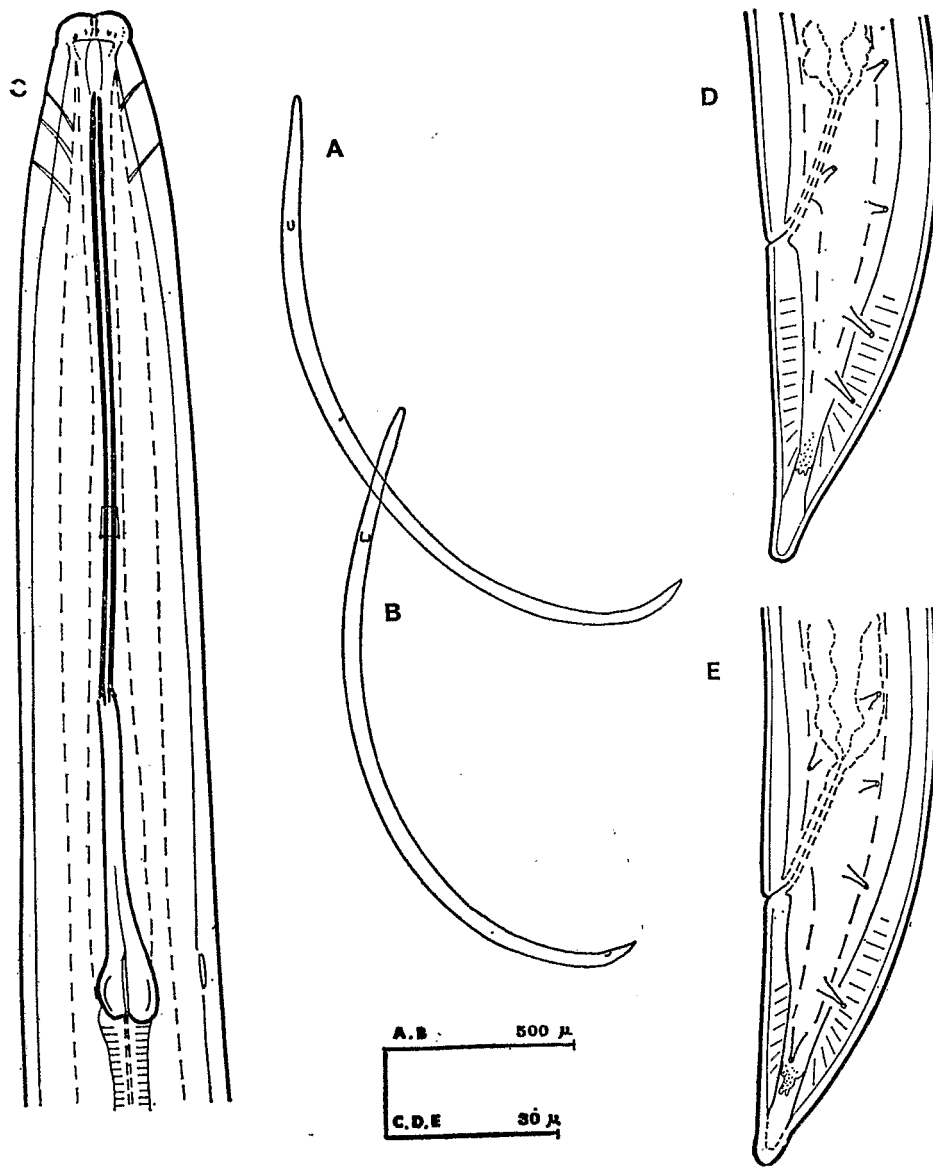


Fig. 5. *Xiphinema vulgare* Tarjan, 1964.  
A,B. attitude of heat-relaxed females; C, fore-part; D,E, tails

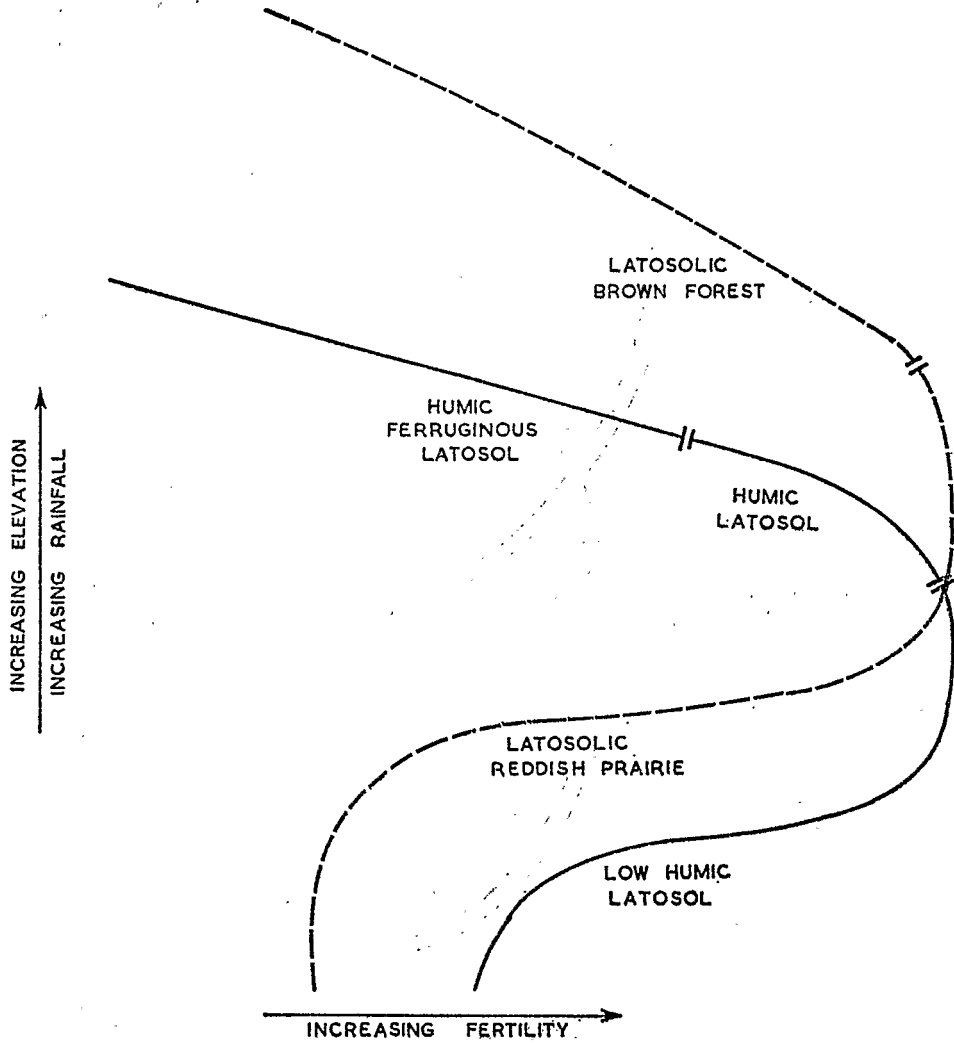


Fig. 6. Relationship between soil type, rainfall, elevation and soil fertility (from PARISH & FEILLAFE, 1965).

## II. DISTRIBUTION OF THE SPECIES

The primary objective of the work here described was the collection and identification of the *Xiphinema* species occurring in sugar cane fields but the extensive sampling made in different soil environments permitted certain conclusions on the distribution of the species found.

Samples that failed to yield *Xiphinema* were not repeated to verify the apparent absence of these nematodes in the fields concerned. Their presence in 44 of the 89 samples is therefore better construed as evidence of their ubiquity rather than of their absence in many fields. Very probably the genus is represented by one species or another in the great majority of sugar cane fields.

The frequency of the different species in the samples differed and the distribution of some could be correlated with environmental factors, which vary greatly over the Mauritian sugar cane areas.

Sugar cane in Mauritius is grown continuously on about 86 000 ha (200 000 arpents), this being about 45% of the total land area. The cane lands comprise various soil types, lie between sea level and 600 m (2000 ft) and have average annual rainfalls of from <1000 to 5000 mm (<40 to 200 in.). Information on Mauritian soils and on the relationships between soil type, elevation and rainfall is given by PARISH and FEILLAFE (1965) and Fig. 6 is reproduced from their paper. The diversity of soil environments in the cane-growing areas is considerable and highly relevant to any study of soil-inhabiting organisms.

The frequency of the five species in the samples is shown in Table 6, the samples

**Table 6.** The frequency of *Xiphinema* spp. in soil samples of different soil type

	Total samples	Samples with				
		<i>X. krugi</i>	<i>X. elongatum</i>	<i>X. insigne</i>	<i>X. brevicolle</i>	<i>X. vulgare</i>
<b>Main sugar cane soils</b>						
Latosolic Brown Forest soils	23	9	—	2	1	—
Humic Ferruginous Latosols	13	4	2	1	1	—
Humic Latosols ...	8	—	2	—	—	—
Latosolic Reddish Prairie soils	16	—	6	1	—	—
Low Humic Latosols	24	—	12	1	—	—
<b>Minor sugar cane soils</b>						
Grey Hydromorphic soils	1	—	—	—	—	—
Lithosols ...	1	—	1	—	—	—
Regosols (Coral sand)	3	—	—	—	—	2
	89	13	23	5	2	2
				44		

(N.B. only one sample contained two species)



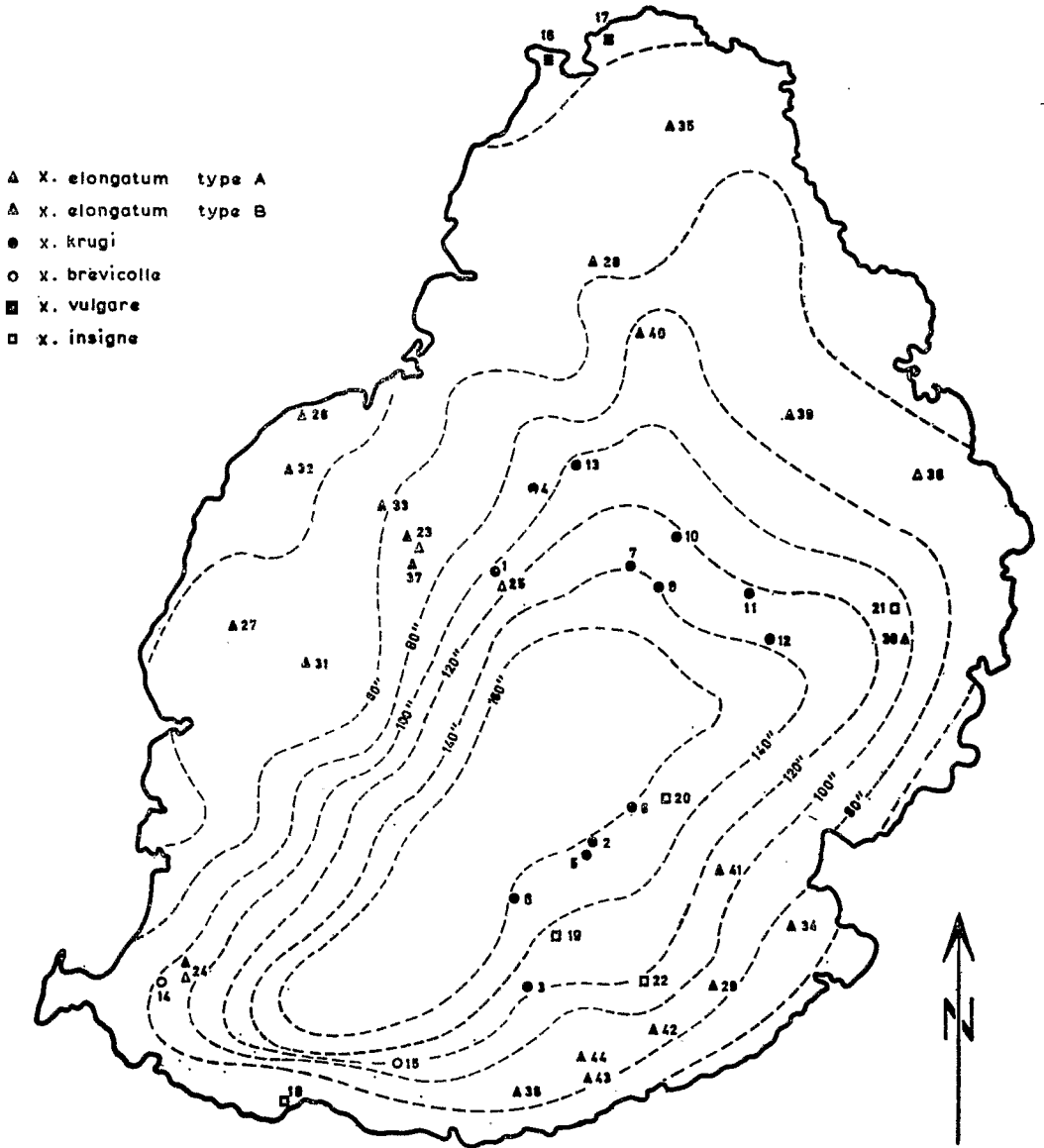


Fig. 7. Map of Mauritius showing isohyets and locations of positive sampling points

being grouped according to soil type. Only one sample, 18 (Bel Ombre) contained a mixture of species (*X. elongatum* and *X. insigne*). The location of the 44 positive sampling points and the species found at those points is shown on the map (Fig. 7).

The soils on which sugar cane is cultivated most extensively in Mauritius are Latosolic Brown Forest soils and Humic Ferruginous Latosols in the central, more elevated region, and Latosolic Reddish Prairie soils and Low Humic Latosols in the peripheral, lower regions. The two frequent species in these soils were *X. krugi* and *X. elongatum* and they are consequently the species most commonly present in sugar cane fields. The distribution of the two species, however, differs, as evident in Table 6 and Fig. 8.

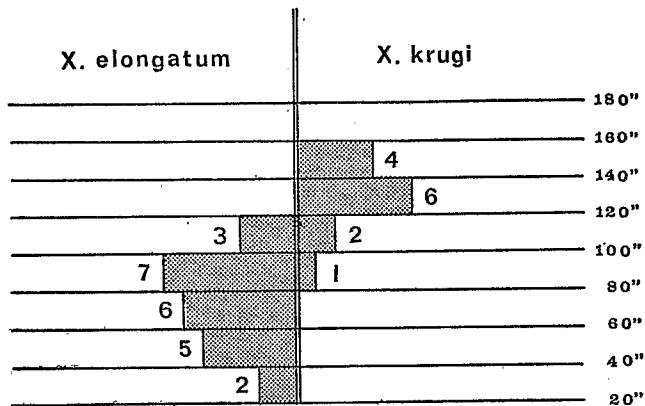


Fig. 8. Distribution of *Xiphinema elongatum* and *X. krugi* according to mean annual rainfall. Numbers indicate positive samples.

The following conclusions were made on the distribution of each species found:

*X. elongatum* is prevalent in the peripheral, lower elevations where average annual rainfall is less than about 2500 mm (100 in.) and where the cultivated soils under sugar cane are mainly Latosolic Reddish Prairie soils and Low Humic Latosols. It is apparently absent in the higher elevations where *X. krugi* prevails. The species was also recovered from Humic Latosols — 40 (Grande Rosalie), 41 (Riche en Eau), from Lithosol — 36 (Argy), but not from Coral Sand (16 and 17).

*X. krugi*, by contrast, is confined to the central, higher parts of the island where annual rainfall exceeds about 2500 mm and where the cane soils are Latosolic Brown Forest soils and Humic Ferruginous Latosols. In these regions it appears to be widespread and common. Its distribution can be considered complementary to that of *X. elongatum*.

*X. vulgare* was found only in calcareous sandy soil at the northern extremity of the island — 16 (Mont Choisy), 17 (Pereybère) — to which it appears to be confined. It has been repeatedly recovered from these points over several years, often in large numbers, and is the only species present. The acreage of sugar cane on sandy soil in Mauritius is insignificant, being limited to a few fields near the coast. A few supplementary samplings from sandy cane soil in the south of the island did not reveal the species.

*X. insigne* appears to be infrequent in cane fields although tolerant of widely differing soil conditions.

*X. brevicolle* was found at only two points — 14 (Chamarel), 15 (Mont Blanc).

To sum up, two species, *X. elongatum* and *X. krugi*, are common in cane soils, the former occurring in lower elevations and the latter in the central uplands. *X. insigne* is infrequent but apparently relatively indifferent to environmental factors that limit the two preceding species. *X. brevicolle* is also infrequent in cane soils and *X. vulgare* confined to sandy soil.

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## REFERENCES

- COHN, E. and SHER, S.A. (1972). A contribution to the taxonomy of the genus *Xiphinema* Cobb, 1913. *J. Nematol.* 4: 36-65.
- LUC, M. and DALMASSO, A. (1975). Considerations of the genus *Xiphinema* Cobb, 1913 (Nematoda: Longidoridae) and a «lattice» for the identification of the species. *Cah. ORSTOM Ser. Biol.* 10: 303-327.
- PARISH, D.H. and FEILLAFÉ, S. (1965). Notes on the 1 : 100 000 soil map of Mauritius. *Occ. Paper Maurit. Sug. Ind. Res. Inst.* 22, 43 pp.
- SEINHORST, J.W. (1959). A rapid method for the transfer of nematodes from fixative to anhydrous glycerin. *Nematologica* 4: 67-69.
- SOUTHEY, J.F. and LUC, M. (1973). Redefinition of *Xiphinema ensiculiferum* (Cobb, 1893) Thorne, 1937, and description of *X. loosi* n. sp. and *Xiphinema hygrophilum* n. sp. (Nematoda: Dorylaimoidea). *Nematologica* 19: 293-307.
- TARJAN, A.C. (1973). The dagger nematodes (*Xiphinema* Cobb) of Florida. *Proc. Soil Crop Sci. Soc. Fla* 33: 65-76.
- WILLIAMS, J.R. (1959). Studies on the nematode soil fauna of sugar cane fields in Mauritius. 3. Dorylaimidae (Dorylaimoidea, Enoplida). *Occ. Paper Maurit. Sug. Ind. Res. Inst.* 3, 28 pp.
- WILLIAMS, J.R. (1966). The position of the spear guiding ring in *Xiphinema* species. *Nematologica* 12: 467-469.
- WILLIAMS, J.R. (1969). Nematodes attacking sugar cane. In PEACHEY, J.E. (ed.). Nematodes of tropical crops. *Tech. Commun. Commonw. Bur. Helminth.* 40, 335 pp. (184-203).