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PLANT PARASITIC NEMATODES FROM THE RHIZOSPHERE OF VEGETABLE CROPS AROUND CALCUTTA. 2. FAMILY TYLENCHORHYNCHIDAE

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ABSTRACT

Tylenchorhynchus swarupi sp. n. is described. It can be distinguished by its smaller body size, 0.42-0.54 mm long, set off head with 5-6 indistinct annules, long post-anal sac and smaller rectum. Incisures four, inner two incisures fuse at phasmid and continue as one incisure thereafter. Tail annules very fine. Tail terminus conoid and striated.

T mashhoodi is reported from rhizosphere of tomato, egg-plant and okra from various localities around Calcutta.

INTRODUCTION

During the course of intensive survey of vegetable crop fields near Calcutta and environs, a few populations of nematodes belonging to two species of the genus *Tylenchorhynchus* Cobb, 1913 were collected by the first author. One of the species has been identified as *Tylenchorhynchus mashhoodi* Siddiqi & Basir, 1959 and the other is new to science.

The nematodes were killed and fixed in hot F. A. (Formaline 10 ml, glacial acetic acid 10 ml & distilled water 80 ml). The fixed specimens were processed by slow glycerine method and were mounted in dehydrated glycerine. The dimensions given in parentheses in the description of the new species are of paratypes.

Tylenchorhynchus swarupi sp. n.
(Fig. 1, A-J)

Dimensions : Holotype (♀) : L=0.48 mm ; a=31 ; b=4.8 ; c=14 ; V=$^{29}55^{24}$; stylet=13 μm.

Paratypes : 10 ♀ ♀ : L=0.42—0.54 mm ; a=28—31 ; b=4.9—5.6 ; c=14—15 ; V=$^{24-36}52-56^{19-29}$; stylet=13—15 μm.

10 ♂ ♂ : L=0.46—0.60 mm ; a=28—34 ; b=4.6—5.8 ; c=14—16 ; T=56—66 ; stylet=13—14 μm ; spicula=20—23 μm ; gubernaculum=7—11 μm.

Description : Female : Body cylindrical tapering gradually at both the extremities and curved ventrally on thermal killing. Cuticle very finely striated, Lateral field 1/4th-1/3rd the width at mid-body, consists of four smooth incisures. Two incisures originate a little below the stylet ; the inner two incisures fuse at the phasmid and continue as one middle incisure. Head clearly set off, comprises 5—6 indistinct annules, 3—4 μm high and 6—7 μm in diameter. Cephalic framework weakly sclerotized. Stylet moderately developed, knobs 2—3 μm across, sloping posteriorly. Dorsal oesophageal gland orifice 2—3 μm posterior to stylet knobs. Oesophagus comprises a tubular corpus 31 (26—35) μm, a median bulb 11×8 (10-13×7-10) μm in diameter with well developed crescentic valve plates and a

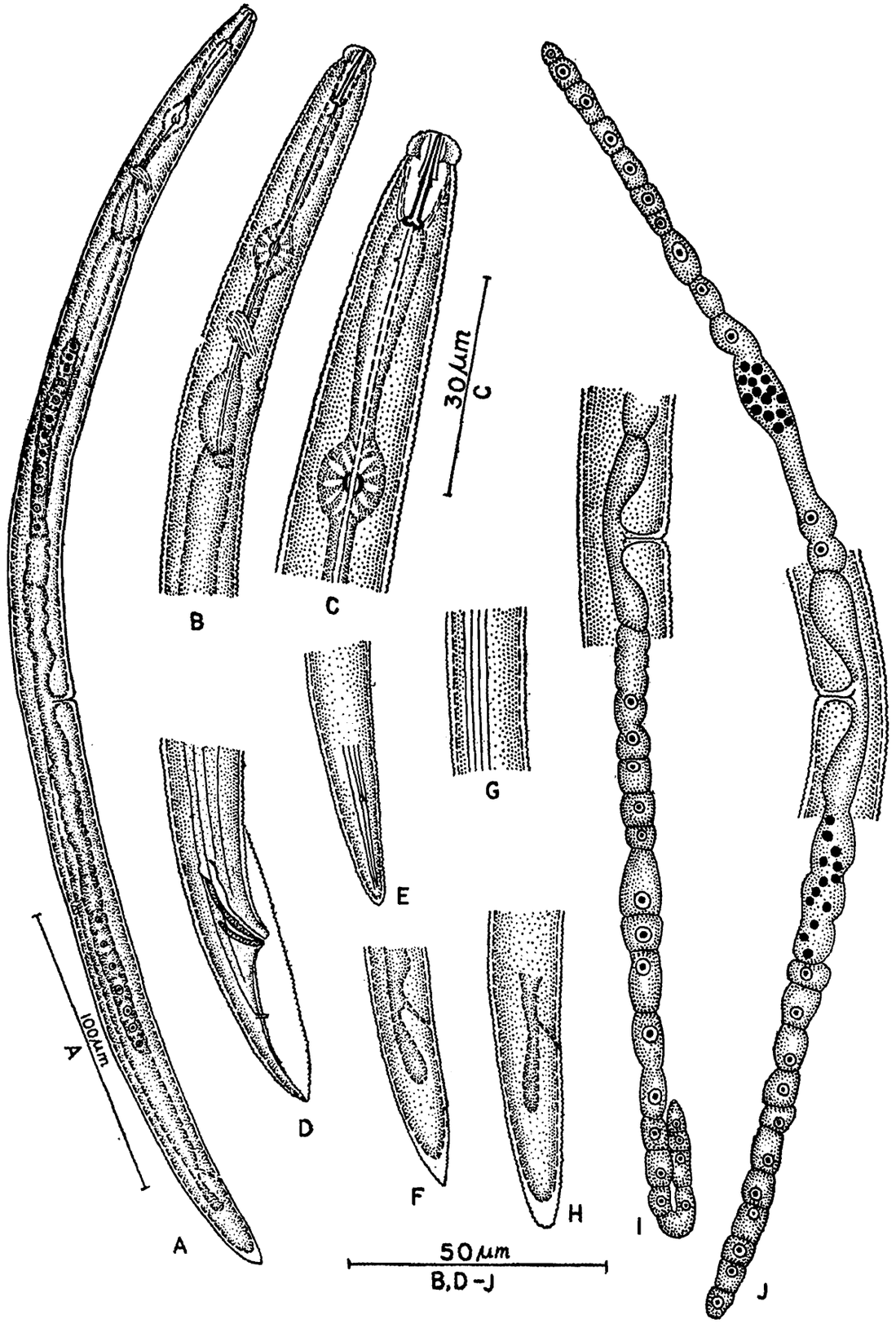

Fig. 1. *Tylenchorhynchus swarupi* sp. n. A. Entire female ; B. Female anterior region ; C. Female head region ; D. Male tail ; E. Female tail showing lateral field ; F & H. Variations in tail shape of females ; G. Lateral field—mid body ; I. Vulva region and reflexed posterior ovary ; J. Vulva region and female gonads.

pyriform terminal bulb with small rounded cardia. Nerve ring 69(56—81) µm from anterior end, encircling short narrow isthmus. Hemizonid 2—3 annules wide.

Excretory pore 73—86 µm (not visible in holotype) from anterior end. Position of excretory pore varies from 1-5 annules posterior to hemizonid.

Vulva flush with body surface. Gonads didelphic, amphidelphic and outstretched. Vagina 7 (7—10) µm long and about half the body width at the same level. Spermatheca continuous, filled with rounded sperm. Oöcytes arranged in one row. Tip of posterior ovary in one specimen reflexed. Rectum 7 (6—7) µm and about half the anal body width long. Post-intestinal sac extending into more than half of tail. Tail cylindrical with conoid, striated terminus. One female with acute terminus. Tail annules very fine.

Male : General morphology similar to that of female. Spicula tylenchoid, gubernaculum trough shaped. Bursa crenate, 40—60 µ m long, extending up to tail end. Tail elongate, conoid with acute terminus, 2.5—3 times the anal body diameter long. Phasmid in the anterior half of tail.

Differential diagnosis and relationships : Tylenchorhynchus swarupi sp. n. closely resembles *T. vulgaris* Upadhyay *et al.*, 1974 mainly in having set off head and post-intestinal sac. However, it differs from *T. vulgaris* in having smaller rectum and gubernaculum, and a striated tail terminus (female : tail with unstriated terminus ; rectum one body width long ; male : gubernaculum= 13-16 µm in *T. vulgaris*). *T. swarupi* sp. n. comes close to *T. brevilineatus* Williams, 1960, and *T. brassicae* Siddiqi, 1961 in possessing set off head and some of the body dimensions. From *T. brevilineatus* the new species differs by the absence of longitudinal lines in the anterior region of the body, in possessing a striated tail terminus and in the shape of the gubernaculum (female : eight longitudinal striations at neck ; tail terminus bluntly rounded and smooth and proximal end of gubernaculum curved in *T. brevilineatus*). From *T. brassicae* it can be distinguished by its smaller body size, number of lip striations, fine body striations, and in the presence of postintestinal sac (female : L= 0.56-0.76 mm ; lip region striae 3-4 in *T. brassicae*).

The species is named after Dr. Gopal Swarup.

Type Habitat : Collected from the rhizosphere of cauliflower (*Brassica oleracea* L. Var. *botrytis*).

Other habitats : Egg-plant (*Solanum melongena* L.), potato (*Solanum tuberosum* L.), pea (*Pisum sativum* L.), fenugreek (*Trigonella foenum graecum* L.), radish (*Raphanus sativus* L.), chillies (*Capsicum annum* L.) and okra (*Abelmoschus esculentus* (L) Moench).

Type locality : West Bengal : Dist. 24-Parganas : Narendrapur ; collected on 3. iii. 1975.

Other localities : West Bengal : Dist. 24-Parganas ; Nilganj, and Kamalgazi ; Dist. Hooghly : Bhanzipur and Tarakeshwar.

Type material : Holotype—female on slide collected on 3rd March, 1975, deposited with the National Zoological Collections, Zoological Survey of India, Calcutta.

Paratypes : Ten females and ten males ; other particulars as for holotype.

Tylenchorhynchus mashhoodi Siddiqi & Basir, 1959

Tylenchorhynchus mashhoodi Siddiqi & Basir, 1959, *Proc. 46th Indian Sci. Congr.* : 35 ; Siddiqi, 1961,

Z. Parasitkde. **21** : 46-64 ; Baqri & Jairajpuri ; 1970, *Rev. Brasil. Biol.*, **30** (1) : 61-68.

T. dactylurue Das, 1960, *Z. Parasitkde*, **19** : 553-605.

T. digitatus Das, 1960, *Z. Parasitkde.* **19** : 553-605.

T. crasicaudatus Williams, 1960. *Occ. Pap. Maurit. Sug. Ind. Res. Inst.* **4** : 1-30.

T elegans Siddiqi, 1961. *Z. Parasitkde*, **21** : 46-64.

T. zeae Sethi & Swarup, 1968, *Nematologica*, **14** : 77-88.

Dimensions : 10 ♀♀ : L 0.54–0.76 mm ; a=25–35, b=4.7–5.7, c=13–19 ; V= $^{19-35}55-58^{30-36}$; stylet=17–21 μm.

4 ♂♂ : L=0.49–0.52 mm ; a=29–32 ; b=4.7–4.8, c=16–18 ; T=50–54 ; stylet= 15–16 μm, spicula=15–21 μm ; gubernaculum=6–10 μm.

Remarks : Synonymy followed here is after Baqri & Jairajpuri (1970). These specimens closely agree with the description of the species by Baqri and Jairajpuri (*loc. cit*). They described several populations from Uttar Pradesh and from sugarcane field in Andhra Pradesh. Outer incisures are crenate and more prominent in the present populations.

Habitat : Rhizosphere of tomato (*Lycopersicon esculentum* Mill)., egg plant (*Solanum melongena* L.), potato (*Solanum tuberosum* L.), and okra (*Abelmoschus esculentus* (L) Moench).

Locality : West Bengal, Dist. 24-Parganas, Nilganj ; Mahamayatolla, Narendrapur ; Baruipur ; Dist. Howrah, Belur.

Reference

BAQRI, Q. H. and JAIRAJPURI, M. S. 1970. On the intraspecific variations of *Tylenchorhynchus mashhoodi* Siddiqi & Basir, 1959 and an emended key to *Tylenchorhynchus* Cobb, 1913 (Nematoda), *Rev.. Brasil. Biol.*, **30** (1) : 61-68.