CHAPTER X

Tylenchorhynchus indicus n.sp.
TYLENCHORHYNCHUS Cobb, 1913

The genus *Tylenchorhynchus* was established by Cobb in 1913 when he described the species *T. Cylindricus*. In 1945 the common name "stylet" nematodes was proposed by Steiner for the members of the genus *Tylenchorhynchus*. But the recent years the name "stunt" has become more popular. Allen (1955) assembled many scattered references in a generic monograph and added twenty-two new species to the twelve species already described. Filipjev (1936) made *Tylenchorhynchus cylindricus* a synonyms of *T. dubius*. Thorne (1949) accepted Filipjev proposal and emended the generic and specific descriptions, which was published under the correct name *T. cylindricus*. Allen in his excellent review of the genus *Tylenchorhynchus* concluded that *T. dubius* and *T. cylindricus* were two different species hence *T. cylindricus* Cobb, 1913 was re-established as a valid and type species. Allen's publication is important because it provide the criteria upon which the taxa within this group are recognized. Baker (1962) and deGuinan (1967) included fifty-five and seventy-one valid species in this genus respectively.

In the genus *Tylenchorhynchus* many new species has been included which showed wide
morphological differences. They have now been allocated to new genera viz. **Merlinius** Siddiqi 1970; **Uliginotylenchus** Siddiqi 1971; **Scutylenchus** Jairajpuri 1971; **Dolichorrhynchus** Mulk and Jairajpuri, 1974 and **Amplimerlinius** Siddiqi, 1976. The proposal of subfamily Merlinae for the genus **Merlinius** by Siddiqi 1970 has not been accepted by Tarjan (1973) and Andrasay (1976) although well defined and supported by Sher (1974).

**Andrassy 1973** included **T.clavicaudatus** Seinhorst, 1963; **T.crassicaudatus** Williams, 1960 and **Telotylenchoides housei** (Raski, Prasad and Swarup, 1964), Siddiqi 1971 into **Paratrophurus**. However the first two species do not conside with the diagnosis of **Paratrophurus** as emended by Siddiqi 1971 but they are closely resemble with **Tylencorhynchus**. Although, **T.crassicaudatus** was synonymised with **T.mashoodi** by Bagri and Jairajpuri 1970.

**Targan (1973)** presented a very useful contribution regarding synopsis of the species and genera within the family Tylenchorhynchidae which helped to clarify the status of some genera within this group. The latest emended key of the genus has been given by Hooper (1978) which includes fifty five valid
species. Since then Eighteen new species of 
*Tylenchorhynchus* have been described.

In first record of *Tylenchorhynchus* sp. in 
India was published by Siddiqi and Basir (1959). Since 
then several species of this genus have been reported 
by Das (1960); Siddiqi (1961, 1963); Seshadri et al. 
(1967); Sethi and Swarup (1968); Bagri and Jairajpuri 
(1970); Fotedar and Mahajan (1971); Singh (1971); Khan 
and Nanjappa (1972a 1972b), Upadhyay et al. (1972); 
Mahajan (1974); Singh S.P. (1974); Singh R.V. and Khera 
(1978); Khan, E. and Darekar (1979); Mathur et al. 
1981c); Kumar (1982); Rashid and Singh (1972); Siddiqi 
et al. (1982); Singh and Jain (1982); Siva Kumar and 
Muthukrishnan (1983) from various provinces of India. 
The frequency with which new species have been 
described is indicative of their wide distribution 
throughout the country.

According to Krusberg, 1959, Klinkenberg 
1963; Sharma 1971; Wyss 1973; Bridge 1974; the members 
of the genus *Tylenchorhynchus* are ectoparasitic, 
feeding on epidermal cells and root hairs of growing 
roots. Juveniles were reported to be endoparasitic
Tylenchorhynchus indicus n.sp.
(Plate 16 Fig.33,34; Plate 17 Fig.35,36,37; Plate 18 Fig.38,39)

Fifteen Females (Paratype)

L = 0.560 (0.384 - 0.767) mm; a = 20.84 (16.00 - 28.50)
b_1 = 9.08 (6.00 - 11.80); b = 5.15 (4.10 - 7.00)
b_1 = 5.48 (4.41 - 8.68); B = 0.68 (0.50 - 0.94)
G_1 = 26.97 (14.40 - 33.55); G_2 = 26.16 (16.40 - 35.10)
C = 14.61 (8.30 - 34.31); C' = 2.42 (0.79 - 3.00)
V = 52.61 (44.40 - 66.61); V' = 58.16 (46.40 - 66.80)
VL/VB = 10.95 (7.84 - 25.25); m = 48.43 (31.50 - 61.50)
O = 27.06 (22.23 - 33.32); MB = 54.81 (45.4 - 63.10)
Spear = 15.76 (12.00 - 20.00) \mu m

Female (Hototype)

L = 0.615 mm; a = 26.98
b_1 = 10.97; b = 6.05
b' = 5.79; B = 0.66
G_1 = 30.08; G_2 = 30.88
C = 16.61; C' = 2.30
V = 50.40; V' = 53.62
VL/VB = 18.42; m = 46.65
O = 23.33; MB = 52.82
Spear = 15.00 \mu m.
Eleven Male (Paratype)

\[ L = 0.54 (0.40 - 0.60) \text{mm} \; ; \; a = 26.84 (18.14 - 39.00) \]
\[ b = 10.27 (6.49 - 14.60) \; ; \; b = 5.94 (4.70 - 9.00) \]
\[ B = 0.72 (0.60 - 0.83) \; ; \; C = 14.03 (8.79 - 17.50) \]
\[ C' = 5.83 (2.11 - 7.71) \; ; \; m = 49.03 (41.10 - 62.60) \]
\[ O = 37.20 (22.58 - 56.00) \; ; \; MB = 56.26 (49.50 - 71.40) \]
\[ PO = 44.93 (39.20 - 50.50) \; ; \; T = 60.81 (46.70 - 76.89) \]
\[ SP/L = 0.033 (0.025 - 0.38) \; ; \; Spear = 15.20 (10.01 - 22.00) \text{µm}. \]

Spicule = 17.90(13.00-20.00) µm ; Gubernoculum=9.00(6.00-11.00) µm.

**FEMALE CHARACTERS**

(Plate 16 Fig.34; Plate 17 Fig.35,36,37)

The body generally straight in appearance, sometimes seems to be slightly curved ventrally when relaxed. Cuticle coarsly striated which are divided into segments by longitudinal striae. The lateral fields are marked by four incisures and occupy one third of the body width. The inner two incisures do not meet at tail terminus. The lip region is hemispherical distinctly set off from the body bearing 4-5 annules and a moderately sclerotized cephalic framework. It measures 4.76 (2.50 - 5.00) µm long and 7.60 (5.00 - 14.00) µm.
wide. The cephalic papillae are so minute that their number and size could not be determined exactly. The spear measures 15.20 (10.00 - 20.00) μ in length with strongly developed rounded basal knobs. In most of the cases telenchium is larger than melenchium. The orifice of dorsal oesophageal gland is 5.00 (4.00 - 6.00) μm. posterior to the spear base.

The procorpus is long tub like, about 33.04 (19.00 - 40.00) μ in length. It joins posteriorly with slightly ovoid median oesophageal bulb which measures 9 - 16 in length and 5 - 14 μm. in breadth. The crescentic larger esophago - intestinal valve is well developed and centrally located. The basal bulb is well developed pyriform with one nucleus measuring 51.56 (32.00 - 60.00) μm. It is situated 115.63 (75.00 - 144.00) μm. from anterior end. Rectum is short and tubular in shape.

The nerve is present at a distance of 70.90 (48-97-85.00) μm from the anterior end. The position of excretory pore is slightly posterior to the nerve ring about 90-55 (60.00 - 119.00) μm from the anterior end. The hemizonid is 2-3 annules long, adjacent to excretory pore.
The genital tract is didelphic. There are two ovaries generally outstretched with oocytes arranged in single row. The vulva slit lies 0.321 (0.215 - 0.463) mm from anterior end. The vagina measures 7 - 17 mm long. The spermatheca is oval in shape and filled with sperms.

The tail is short cylindrical with hemispherical smooth rounded terminus. It measures 40.57 (29.00 - 60.00) μm. Twenty two to eight annules are present in tail. The tail bears prominent phasmids which are present at about 13 - 17 annules anterior to the tail tip.

MALE CHARACTERS

(Plate 16 Fig.33; Plate 18 Fig.38,39)

The male is generally similar to the female in appearance of body shape except for minor differences in measurements. The testis is single, invariably, outstretched. The spicules of the male are short and typical tylenchoid form, measuring about 17.90 (13.00 - 20.00) μm. The gubernaculum is slightly curved and short measures about 9 (6 - 11) μm in length, which is more or less half the length of
spicules. Bursa envelope the tail. The tail measures 25.00 - 46.00 μm in length.

Habitat

The specimen recovered from the soil around the roots and inside the roots of garden croton (Codiaeum variegatum).

Locality

Bajrang Nagar, Rewa.

DISCUSSION


The present species can be distinguished from the Tylenchorhynchus aduncus by possessing slightly smaller spicule and gubernaculum in male and having smaller value of 'a' and larger value of 'c' in the case of female species. The T. aduncus spicule measures 22.25 mm; gubernaculum 13.0 μm; a = 18 - 13 and c = 14 - 17.
The present form resembles with *T. contractus* but differs in having larger body size, higher value of *b*, *c* and *v* and larger spicules. It also differs in having subcylindrical tail and lesser number of lip annules. In *T. contractus* the body length (*L*) is 0.42 - 0.63 mm; *b* = 3.8 - 5.00; *c* = 13 - 15; *v* = 56 - 60; 5-6 lip annules and spicule = 16-18 um.

The new species comes closer to *T. ewingi* but differs in having larger number of tail annules, larger number of lip annules, lower value of 'a' and higher value of 'c', whereas in *T. ewingi* *a* = 30 - 35, *c* = 13 - 16, Lip annule = 3 and Tail annule = 15 - 19.

The present new species closely resembles with *T. vulgaris* but can be differentiated in having longer body length, higher value of 'c', higher value of 'v', lesser number of tail annules, shorter length of spicules and slightly larger gubernaculum. In *T. vulgaris* the length of body (*L*) = 0.56 - 0.67 mm; *c* = 14 - 20, *v* = 52 - 77; spicule = 22 - 25 μm, Gubernaculum = 13 - 16 μm and Tail annule = 35 - 42.

The Writer considers that these differences necessitate to the creation of new species for the worm
under discussion. It is proposed to name it *Tylenchorhynchus indicus* n.sp. after the name of our country India.
PLATE 16

Explanation of figures

Tylenchorhynchus indicus n.sp.

**Fig. 33** Entire body of male.

**Fig. 34** Entire body of female.
PLATE 17

Explanation of figures

Tylenchorhynchus indicus n.sp.

Fig. 35  Anterior region of female.

Fig. 36  Tail region of female.

Fig. 37  Lateral line incisures in tail region.
PLATE 18

Explanation of figures

_Tylenchorhynchus indicus_ n.sp.

Fig. 38 Tail region of male.

Fig. 39 Anterior region of male.