

NEMATODES HARMFUL AND USEFUL IN RURAL ECONOMY

I. N. FILIP'EV.

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Partial translation: differentiation and description of the subgenus Bitylenchus.

SIMPLIFIED IDENTIFICATION KEY FOR NEMATODES ENCOUNTERED
ON PLANTS

(Pages 139-140), genera of the family Tylenchidae only.

- 7 (14). Bulb posterior, near the cardia. There is no stylet.
- 14 (7). Muscular bulb in the middle in front of the nerve ring (it is sometimes reduced, and then usually there is a stylet), posterior bulb more weakly developed than average, usually devoid of musculature, and often not expressed at all Family Tylenchidae.
- 15 (16). Mouth capsule wide, usually with teeth, but without a stylet (see the key on page 103 and figure 104). Saprozoic Subfamily Diplogasterinae.
- 16 (15). Mouth capsule narrow with a stylet more frequently thickened at the basal part, but sometimes also without thickening (compare the key on page 108). Parasites of plants, less commonly saprozoic Subfamily Tylenchinae.
- 17 (20). Body of females and of older larvae swollen in a barrel shape. Males and young larvae have a typical vermicular form with a very short tail.
- 18 (19). Female: body large, 1-2 mm, vulva at the end of the body, the tail has disappeared, there are many eggs. Male: tail 1/2-1 1/2 times the anal diameter. Esophageal glands separated. Stylet well expressed. Cervical pore present on neck (figure 207, page 244) Heterodera.
- 19 (18). Female: body small, 0.5 mm, vulva at body, tail present, there are 1-2 eggs in the uterus at the same time. Male: tail 3-5 times longer than anal diameter. Esophageal glands gathered together. Stylet reduced. Cervical pore behind the middle of the body (figure 178, page 206) Tylenchulus.

- 20 (17). Body not swollen.
- 21 (22). Anterior bulb absent (figure 176, page 204) ... Neotylenchus.
- 23 (26). Posterior bulb clearly separated from the intestine. Stylet almost always swollen at the basal part (except some)
..... Paraphelenchus.
- 24 (25). Bursa present. One or two ovaries. Basal part of stylet swollen (see figure 122 et seq., page 144 Tylenchus.
- 25 (24). Bursa absent. One ovary. Basal part of stylet swollen or not swollen (figure 179, page 208) Paraphelenchus.
- 26 (23). Posterior bulb not separated from the intestine.
- 27 (28). Bursa absent. One anterior ovary. Basal part of stylet more often not swollen at the base, but sometimes swollen (figure 183 et seq., page 213) Aphelenchoides.
- 28 (27). Bursa present.
- 29 (30). Bursa with lateral papillae. One ovary. Basal part of stylet not swollen, tail blunt (figure 180, page 208)
..... Aphelenchus.
- 30 (29). Bursa without lateral papillae. One or two ovaries. Basal part of stylet swollen. Tail blunt or sharp (figure 142, page 162) (some species) Tylenchus.

THE GENUS TYLENCHUS BASTIAN 1865

Type T. davainei Bastian 1865
(Pages 140-141)

Small nematodes with finely annulated cuticle without papillae, often with lateral cord. Tail diversely constructed--from short and blunt to long. There are no anterior papillae, teeth very narrow or quite lacking; amphids internal with a very insignificant outer pore which can be observed only with difficulty. In some subgenera there are skeletal structures inside the head. Cervical gland in the form of two vessels; cervical pore near nerve ring. On the tail two glands open laterally, their pores usually well visible, especially in the male where they sometimes are expressed in the form of two ribs of the bursa.

The oral spine consists of three chitinous rods fused together, thickened at the base. In free species it is well developed; in some parasites and inhabitants of fungi it is thin and small. Esophagus thin with a central muscular bulb also clearly separated from the intestine by a posterior swelling, devoid of muscular fibers (in some species the posterior swelling is not separated, and in the absence of the male it

is easy to confuse these species with Aphelenchus). Degeneration of the esophagus occurs in some males so that the bulb loses fibers and becomes poorly visible. Sometimes the stylet also is missing. The intestine consists of two rows of cells.

A single testis, two spicules are present, with a small, adjacent, diversely arranged gubernaculum. There is a bursa devoid of papillae on which the annulation of the cuticle continues.

Female genital organs are frequently single, with a short posterior rudiment of a uterus. In conformity with this, the female genital opening is drawn far back. In some subgenera the genital organs are paired and then the genital opening is in the middle of the body.

The genus has been described a long time ago, and there are numerous species. They have not been subject to recent revisions, so that this work is still in store for future taxonomies.

Biological species can be divided into:

1. Free species, very likely grazing externally from the small roots of plants, or water plants, or hyphae of fungi.
2. Parasites of plants, analyzed in more detail below, with varying degrees of specialization from occasional parasites like T. pratensis, closely similar to free forms, to T. tritici, profoundly specialized and altered.

For convenience the genus can be subdivided under several subgenera:

- 1 (4). With chitinous skeleton inside head.
- 2 (3). Two ovaries Subgenus Tylenchorhynchus Cobb.¹
- 3 (2). One ovary Subgenus Chitinotylenchus Mic.²
- 4 (1). Without chitinous skeleton inside head.
- 5 (6). Two ovaries Subgenus Bitylenchus nov.³
- 6 (5). One ovary.
- 7 (8). Stylet large, 1/6--1/8--1/12 of the length of the esophagus
..... Subgenus Tylenchus s. str.⁴
- 8 (7). Stylet small, 1/13 and less of the esophagus, sometimes reduced
in adults, especially in males⁵
..... Subgenus Anguillulina v. Beneden-Julin 1859.

1. Type: Tylenchorhynchus cylindricus Cobb, 1913.
2. Type: T. paragracilis Micoletzky, 1922.
3. Type: T. dubius Bütschli, 1813.
4. Type: T. davainei Bastian, 1865.
5. Type: Vibrio tritici Bauer, 1823 (= Tylenchus tritici auct.).

SUBGENUS BITYLENCHUS NOV.
(Page 152)

Genital organs of the female symmetrical, genital pore near the center. There are no chitinous supporting structures in the head.

- 1 (2). Stylet about 1/20 part of esophagus, the latter very long, almost a fourth of body length. Cuticular annules, about 1.5 μ m in width at mid-body 0.7 μ m in anterior part.
- 2 (1). Stylet no less than 1/11 part of esophagus, which is always shorter than one-fourth of body.
- 3 (10). Tail end blunt.
- 4 (9). Tail rounded.
- 5 (8). Head separated by a constriction.
- 6 (7). Tail of female three times longer than anal diameter, male 2 1/2 times, bursa continues anteriorly to one anal diameter: a = 24-26 (figure 131) T. dubius Bütschli 1878.
- 7 (6). Tail of female three times, male 4 1/2 times, longer than anal diameter, bursa very wide, continues anteriorly to 2 1/2 anal diameters; a = 35-53 (figure 132) T. browni Kreis 1929.
- 8 (5). Head not separated, stylet 1/6 of esophagus, a = 30, c = 10, L = 680 μ m T. granulosus Cobb 1893.
- 9 (4). Tail conical with speckled end. L = 1200 μ m, a = 37, c = 9 T. clavicaudatus Micoletzky 1922.
- 10 (3). Tail end sharp.
- 11 (12). Cuticle coarsely annulated, 2 μ m. Tail short (c = 40). L = 850 μ m T. dihystra Cobb 1893.
- 12 (11). Cuticle finely annulated. Tail long (c = 8-10), L = 630 μ m T. uniformis Cobb 1893.

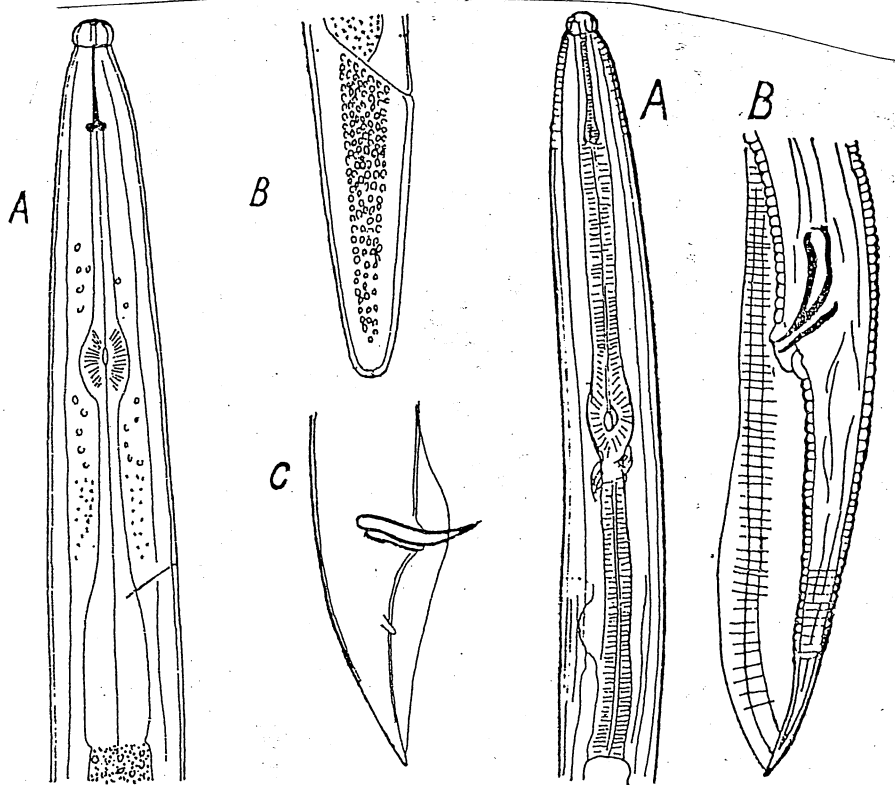


Рис. 131. *Tylenchus dubius* Bütschli no de Man 1884.

Рис. 132. *Tylenchus browni* Kreis 1929

Figure 131. *Tylenchus dubius* Bütschli according to de Man 1884. A - anterior part of female, B - female tail, C - male tail.

Figure 132. *Tylenchus browni* Kreis 1929. Anterior end of female and male tail.