

## STUDIES OF PLANT AND SOIL NEMATODES

### 5. FOUR NEW SPECIES OF TYLENCHOIDEA FROM QUEENSLAND PINEAPPLE FIELDS

By R. C. COLBRAN, M.Agr.Sc.\*

#### SUMMARY

Four new species of nematodes found in Queensland pineapple fields are described. These are *Hemicriconemoides obtusus*, *Criconema pectinatum*, *Hemicyclophora ovata* and *Rotylenchus brevicaudatus*.

In 1959 a survey was commenced to determine the species of nematodes in Queensland pineapple fields. Four new species which probably feed on pineapple roots were found.

Family **CRICONEMATIDAE** Thorne

***Hemicriconemoides obtusus*** n.sp.

(Figure 1)

*Females* (n = 10).—L = 380–472 $\mu$ ; a = 9.8–12.2; b = 4.0–5.0; c = 17.1–20.8; V = 88.1–90.5%; stylet = 50–60 $\mu$ ; annules = 108–115.

*Holotype* (female).—L = 434 $\mu$ ; a = 11.0; b = 5.0; c = 19.4; V = 89%.

Body straight when relaxed; with two closely adpressed cuticles; number of annules 111. Transverse striae 3.8 $\mu$  apart in mid-body region. Lateral fields without incisures or interruptions in transverse striae. Lip region with anterior annule much smaller than posterior annule. Stylet 55 $\mu$  long, extending through 14 annules; prorhabdion 40 $\mu$  long; knobbed base 8 $\mu$  wide; knobs directed anteriorly. Dorsal oesophageal gland orifice 5 $\mu$  behind stylet. Excretory pore near base of oesophagus. Vulva 14 annules from terminus. Vagina directed obliquely forwards. Post-vulval uterine sac absent. Ovary with oocytes in single file except near cap cell. Anus 8 annules from terminus. Tail conoid; terminus broadly rounded. Inner cuticle with four projections across terminus.

*Males*.—Unknown.

*Types*.—Holotype (female) slide Reg. No. G2544 in the Queensland Museum; paratypes in the Queensland Department of Agriculture and Stock Nematology Collection.

*Type habitat*.—Soil around the roots of *Ananas comosus* (L.) Merr. (pineapple).

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\* Research Entomologist, Queensland Department of Agriculture and Stock.

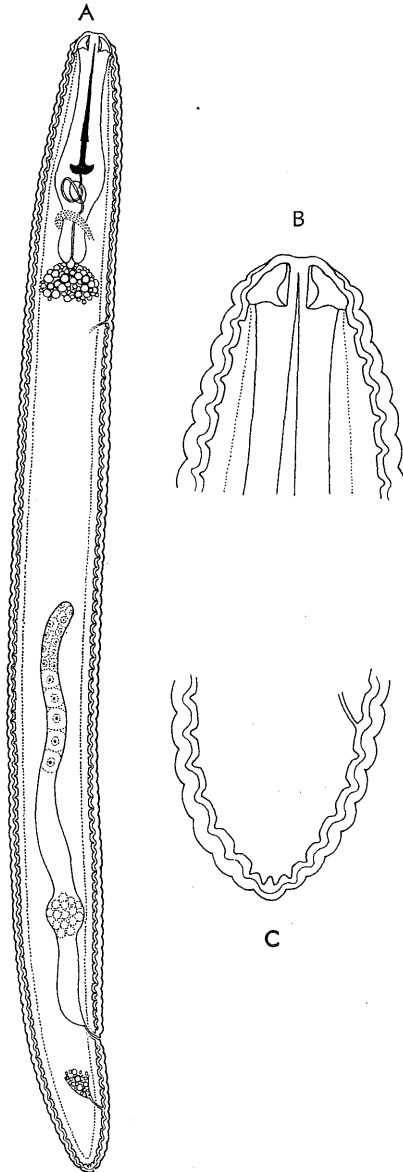


Fig. 1.—*Hemicriconemoides obtusus* n.sp. A. female (x 350); B, female head (x 1050); C, female tail (x 1050).

*Type locality*.—Queensland: Didillibah.

*Relationships*.—*H. obtusus* resembles *H. brachyurus* (Loos) but can be distinguished by the greater number of post-vulval annules.

*Other records*.—*H. obtusus* has been found in soil around the roots of pineapples at Beerwah and *Saccharum officinarum* L. (sugar cane) at Bundaberg.

***Criconema pectinatum* n.sp.**

(Figure 2)

*Females* (n = 6).—L = 300–389 $\mu$ ; a = 6.4–8.0; b = 3.4–3.7; V = 89.0%; stylet = 64–70 $\mu$ ; annules = 55–60.

*Holotype* (female).—L = 361 $\mu$ ; a = 6.5; b = 3.6; V = 89.0%.

Body short, stout, straight when relaxed, with 57 retrorse annules. Cuticle ornamented with 8 rows of comb-like scales. Scales about 10–11 $\mu$  wide and 15 $\mu$  long in mid-body region; 7–10 finger-like 'setae' on each scale in mid-body region. Lip region with conspicuous, large annule fringed with long flexible 'setae'. Stylet stout, 67 $\mu$  long, extending through 13 annules; prohabdion 48 $\mu$  long; knobbed base 10 $\mu$  wide with anteriorly-projecting points. Oesophagus with large, club-shaped corpus, very short isthmus and small terminal bulb. Excretory pore about one body annule behind oesophagus, 18 annules from anterior end. Vulva 7 annules from terminus. Ovary single, prodelphic, outstretched, extending almost to oesophagus. One scale with four 'setae' in ventral line on annule anterior to vulva; one spine in same line on second annule anterior to vulva. Spermatheca spherical. Tail short, tapering to broadly rounded terminus.

*Males* (n = 2).—L = 444–464 $\mu$ ; a = 21.8–24.5; c = 9.2–9.6; spicules = 33–35 $\mu$ ; gubernaculum = 6.5–7.0 $\mu$ .

*Allotype* (male).—L = 444 $\mu$ ; a = 21.8; c = 9.2.

Longer and slenderer than female. Cuticle without spines or scales. Annules rounded. Transverse striae 3.7–4.0 $\mu$  apart in mid-body region. Lateral fields one-fourth as wide as body, with four incisures. Phasmids immediately post-anal. Lip region rounded in front, not set off. Stylet and oesophagus degenerate. Testis outstretched. Spicules 34 $\mu$  long, slightly curved. Gubernaculum 7 $\mu$  long. Caudal alae enveloping greater part of tail. Area around anus elevated. Tail 2.5–3.0 anal body diameters long, conoid; terminus acute.

*Types*.—Holotype (female) and allotype (male) slide Reg. No. G2545 in the Queensland Museum; paratypes in the Queensland Department of Agriculture and Stock Nematology Collection.

*Type habitat*.—Soil around the roots of *Ananas comosus* (L.) Merr. (pineapple).

*Type locality*.—Queensland: Elimbah.

*Relationships*.—*C. pectinatum* resembles *C. civellae* Steiner but can be distinguished from this species by the number of sections into which each scale in the mid-body region is divided.

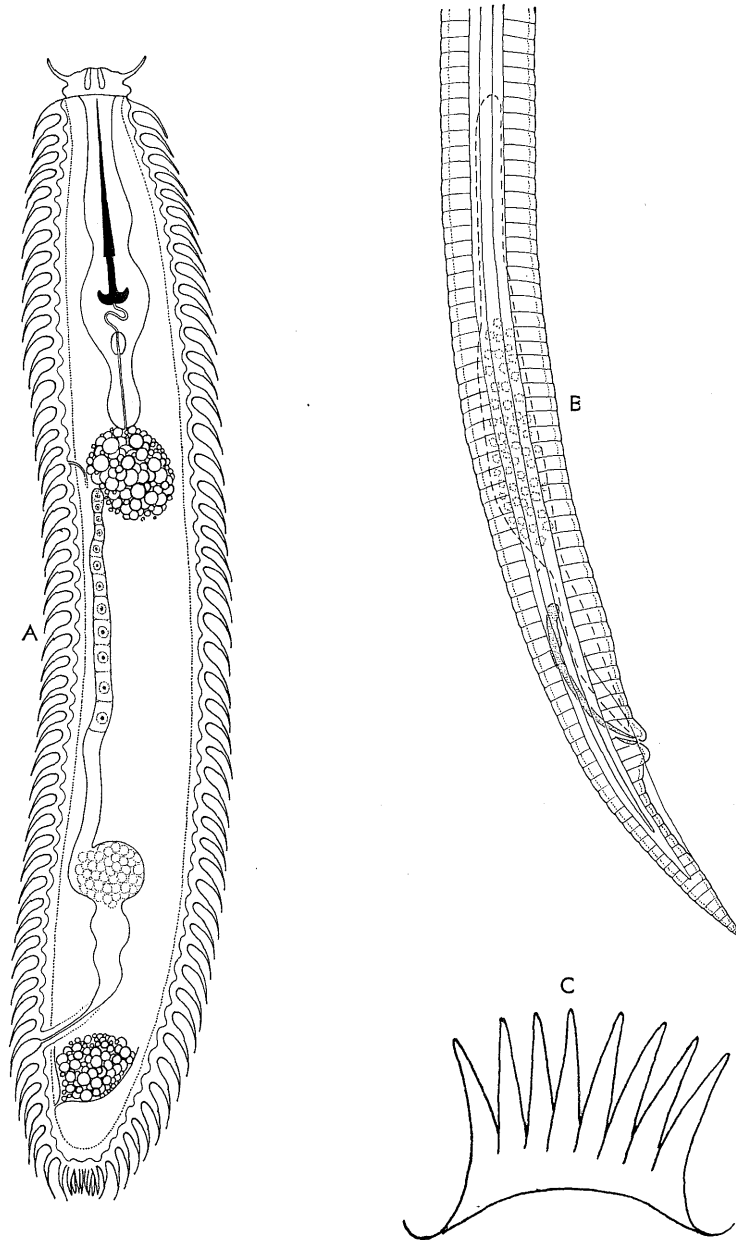


Fig. 2.—*Criconema pectinatum* n.sp. A, female (x 410); B, male posterior portion (x 650); C, distal portion of scale in mid-body region.

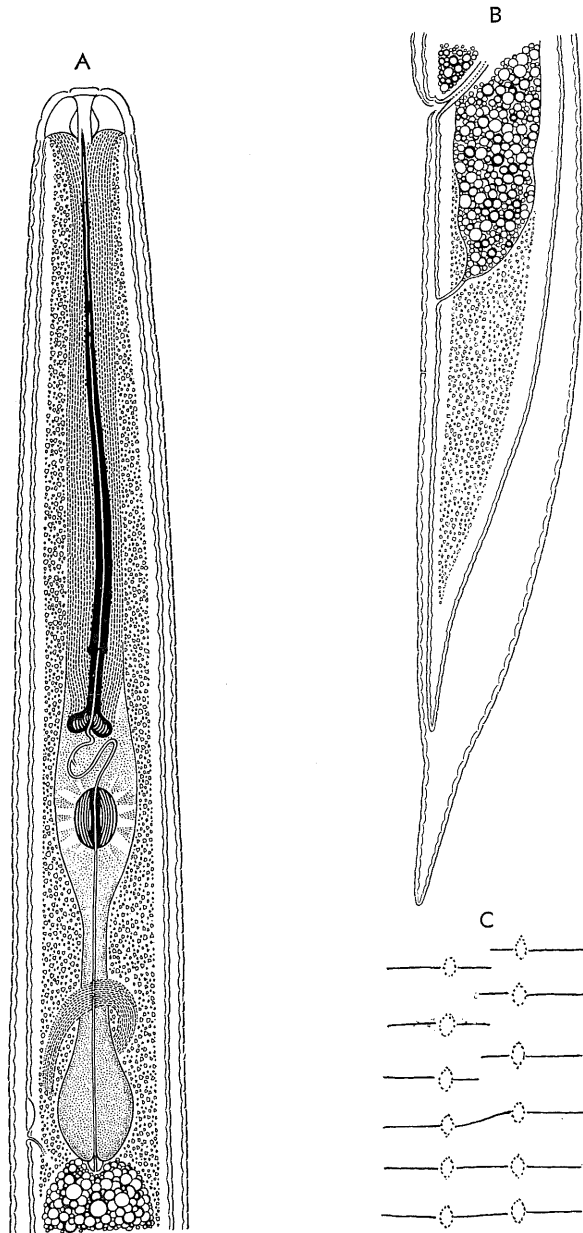


Fig. 3.—*Hemicycliophora ovata* n.sp. A, female oesophageal region (x 860); B, female post-vulval region (x 860); C, section of lateral field (x 2360).

***Hemicycliophora ovata* n.sp.**

(Figure 3)

*Females* (n = 15).—L = 770–1030 $\mu$ ; a = 23.5–34.0; b = 4.7–6.0; c = 10.7–12.7; V = 87.3–89.3%; stylet = 86.7–109 $\mu$ .

*Holotype* (female).—L = 772 $\mu$ ; a = 26; b = 5.1; c = 10.7; V = 87.7%.

Body straight when relaxed. Cuticles distinctly separated except at head and vulva. Number of annules about 315. Transverse striae  $2.8\mu$  apart in mid-body region. Lateral fields without incisures but with two rows of ovate markings extending to first body annule. Lip region not set off, made up of two annules. Stylet  $93.2\mu$  long, dorsally arcuate; prorhabdion  $76.9\mu$  long; knobbed base  $7.5\mu$  wide. Oesophagus with club-shaped corpus, relatively long isthmus and small pyriform terminal bulb. Dorsal oesophageal gland orifice  $6\mu$  behind stylet. Excretory pore opposite terminal oesophageal bulb. Hemizonid immediately anterior to excretory pore. Body not constricted behind vulva. Distance from vulva to terminus (inner cuticle) 1.05 times as long as stylet. Tail at first convex-conoid then conoid-elongate; terminus subacute.

*Males*.—Unknown.

*Types*.—Holotype (female) slide Reg. No. G2546 in the Queensland Museum; paratypes in the Queensland Department of Agriculture and Stock Nematology Collection.

*Type habitat*.—Soil around the roots of *Ananas comosus* (L.) Merr. (pineapple).

*Type locality*.—Queensland: Beerwah.

*Relationships*.—*H. ovata* is distinguished from other species of *Hemicyclophora* by the structure of the lateral fields.

*Other records*.—*H. ovata* was found in soil around the roots of pineapples at Cooroy and Glasshouse Mountains and *Musa cavendishii* Lamb. (banana) at Tully.

#### Family HOPLOLAIMIDAE Wieser

##### *Rotylenchus brevicaudatus* n.sp.

(Figures 4 and 5)

*Females* ( $n = 50$ ).—L. = 658–750 $\mu$ ; a = 21.7–23.4; b = 6.3–9.6; c = 42.5–56.3; V = 56.0–58.2%; stylet = 22–27 $\mu$ .

*Holotype* (female).—L = 677 $\mu$ ; a = 23.3; b = 6.6; c = 55.6; V = 56.0%.

Body a loose spiral shape when relaxed. Cuticle with transverse striae  $1.4\mu$  apart in mid-body region. Lateral fields with four incisures; outer bands areolated in oesophageal region. Phasmids slightly less than one anal body width anterior to anus. Lip region broad, rounded anteriorly, with four annules; longitudinal striae on basal annule. Stylet  $24\mu$  long, knobbed base  $4\mu$  wide, knobs rounded. Dorsal oesophageal gland orifice  $5\mu$  behind stylet. Oesophagus with rounded metacarpus; terminal glandular lobe twice as long as broad, overlapping intestine more on dorsal than ventral side. Excretory pore near base of isthmus. Hemizonid one annule anterior to excretory pore. Ovaries paired, opposed, outstretched; spermatheca present in each gonad. Tail with 8 annules, shorter than body width at anus; terminus hemispherical, coarsely striated.

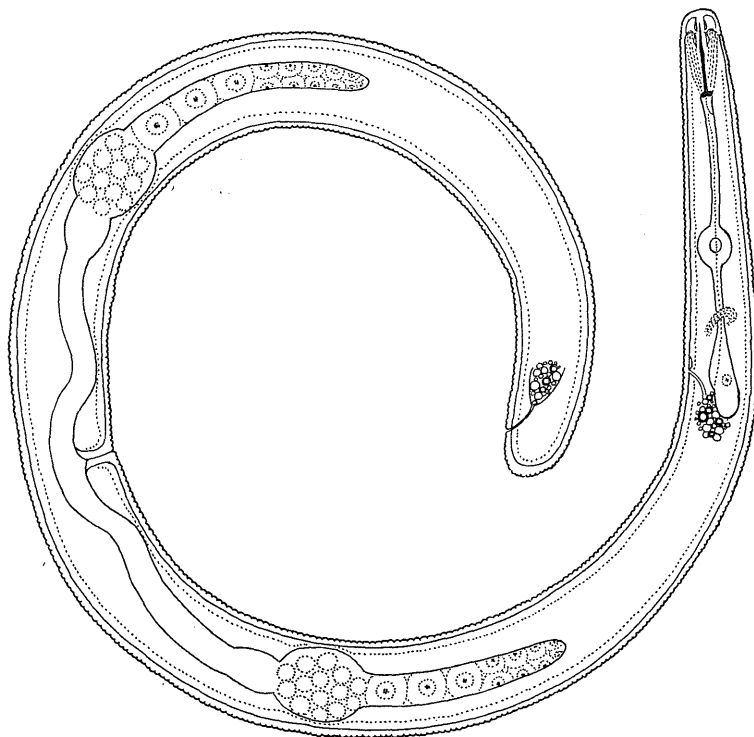


Fig. 4.—*Rotylenchus brevicaudatus* n.sp. Female (x 450).

*Males* (n = 50).—L = 555–666 $\mu$ ; a = 22.9–30.0; b = 5.5–8.0; c = 30.0–33.0; stylet = 20–27 $\mu$ ; spicules = 25–28 $\mu$ .

*Allotype* (male).—L = 653 $\mu$ ; a = 29.2; b = 6.6; c = 32.6.

Stylet 26 $\mu$  long; knobs 3 $\mu$  across, smaller than in female. Dorsal oesophageal gland orifice 7 $\mu$  behind stylet. Caudal alae extending to terminus. Spicules 27 $\mu$  long. Gubernaculum 9 $\mu$  long, with telamon.

*Types*.—Holotype (female) and allotype (male) slide Reg. No. G2547 in the Queensland Museum; paratypes in the Queensland Department of Agriculture and Stock Nematology Collection.

*Type habitat*.—Soil around the roots of *Citrus aurantium* L. (sweet orange).

*Type locality*.—Queensland: Lawnton.

*Relationships*.—*R. brevicaudatus* n.sp. can be distinguished from *R. gracilidens* (Sauer) and *R. quartus* (Andrassy) in the position of the phasmids in relation to the anus, from *R. buxophilus* Golden, *R. pumilus* (Perry), *R. robustus* de Man and *R. quartus* (Andrassy) in the shape of the tail, from *R. goodeyi* Loof and Oostenbrink in the number of annules in the lip region, and from *R. uniformis* (Thorne) in the body length and markings on the lip region.

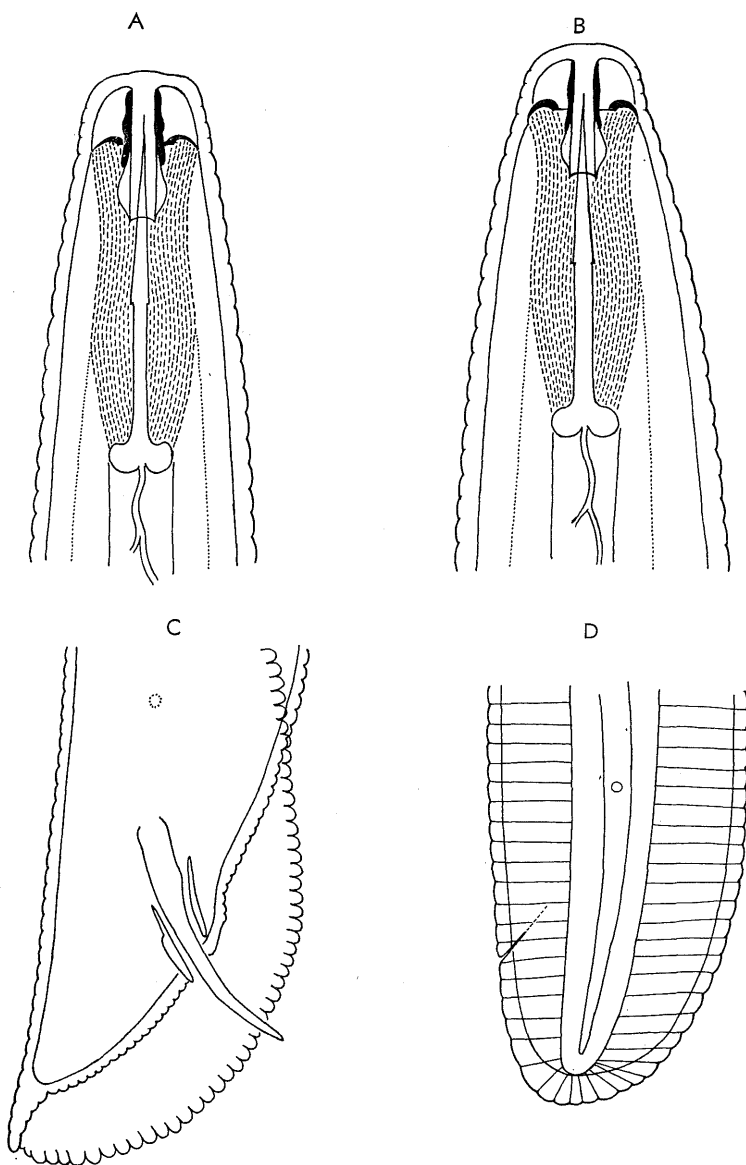


Fig. 5.—*Rotylenchus brevicaudatus* n.sp. A, male head (x 1800); B, female head (x 1800); C, male tail (x 1300); D, female tail (x 1800).



*Rotylenchus brevicaudatus* n.sp. was found in soil around roots of the following plants:

*Ananas comosus* (L.) Merr. (pineapple), Beerwah, Innisfail.

*Citrus* sp., Brisbane (Mt. Gravatt, Pullenvale, Rochedale), Gaydah.

*Cucurbita pepo* L. var. *medullosa* Alef. (marrow), Rockhampton.

*Digitaria didactyla* Willd. (blue couch grass), Wynnum.

*Fragaria x ananassa* Duch. (strawberry), Ormiston.

*Lycopersicon esculentum* Mill. (tomato), Yeppoon.

*Medicago sativa* L. (lucerne), Maclean's Bridge (near Beaudesert).

*Panicum maximum* Jacq. (guinea grass), Brisbane.

*Saccharum officinarum* L. (sugar cane), Imbil.

*Vitis vinifera* L. (grape), Inglewood, Severnlea, Roma.

Also in soil at Dalby, Stanthorpe and Ipswich and from the hills overlooking Harwood on the Clarence River, New South Wales.

#### ACKNOWLEDGEMENT

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