STUDIES OF PLANT AND SOIL NEMATODES. 6. TWO NEW SPECIES FROM CITRUS ORCHARDS

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SUMMARY

Two new species of plant parasitic nematodes from Queensland citrus orchards are described. These are *Hemicycliophora nudata* and *Criconema australe*.

The former produces small galls on the roots of *Citrus limonia* Osbeck (rough lemon), a widely used citrus rootstock.

In 1957 Van Gundy reported that a species of *Hemicycliophora* (sheath nematode) produced galls on the roots of rough lemon seedlings (*Citrus limonia* Osbeck) in southern California. The species was described by Raski (1958) as *Hemicycliophora arenaria*. Similar galls (Figure 1) were noted on the roots of stunted citrus trees at Burrum, Queensland, by an orchardist, who forwarded them to the Queensland Department of Primary Industries for examination. Large numbers of females and larvae of an undescribed species of *Hemicycliophora* were found with heads embedded in young galls. Examinations of soil samples from the virgin land adjacent to the orchard indicated that the species was endemic in the area.

Criconema australe n.sp. was found in soil around the roots of unthrifty citrus trees at Mundubbera and has been established on the roots of potted sweet orange seedlings (*Citrus sinensis* Osbeck) under glass-house conditions.

Family **CRICONEMATIDAE** Thorne

Hemicycliophora nudata n.sp.

(Figure 2)

Females (n = 20).—L = 840–1097μ; a = 22–25; b = 5·3–6·0; c = 6·5–8·6; V = 81·0–84·0%; stylet = 94–109μ; prorhabdion = 74–88μ; PE = 17–19%.

Holotype (female).—L = 1057μ; a = 24·4; b = 5·5; c = 7·7; V = 83·1%; stylet = 104μ; prorhabdion = 85μ; PE = 18%.

Body slightly curved when relaxed, enclosed in a single cuticle except in post-anal region, where remnants of a second cuticle are present†. Number of annules exceeding 200. Transverse striae about 4·0μ apart in mid-body region. Lateral fields marked by occasional interruptions in transverse striae, without continuous incisures. Annules of lip region distinctly separate. Labial cap rounded anteriorly. Amphid apertures slit-like. Stylet dorsally arcuate, extending through 22–25 annules; knobs 7–8μ across, directed posteriorly. Orifice of dorsal oesophageal gland 11–12μ behind stylet. Oesophagus with club-shaped corpus, isthmus one-half body width in length and small, pyriform terminal bulb. Excretory pore 40–44 annules from anterior end. Hemizonid immediately

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†Development by juveniles possessing a sheath.

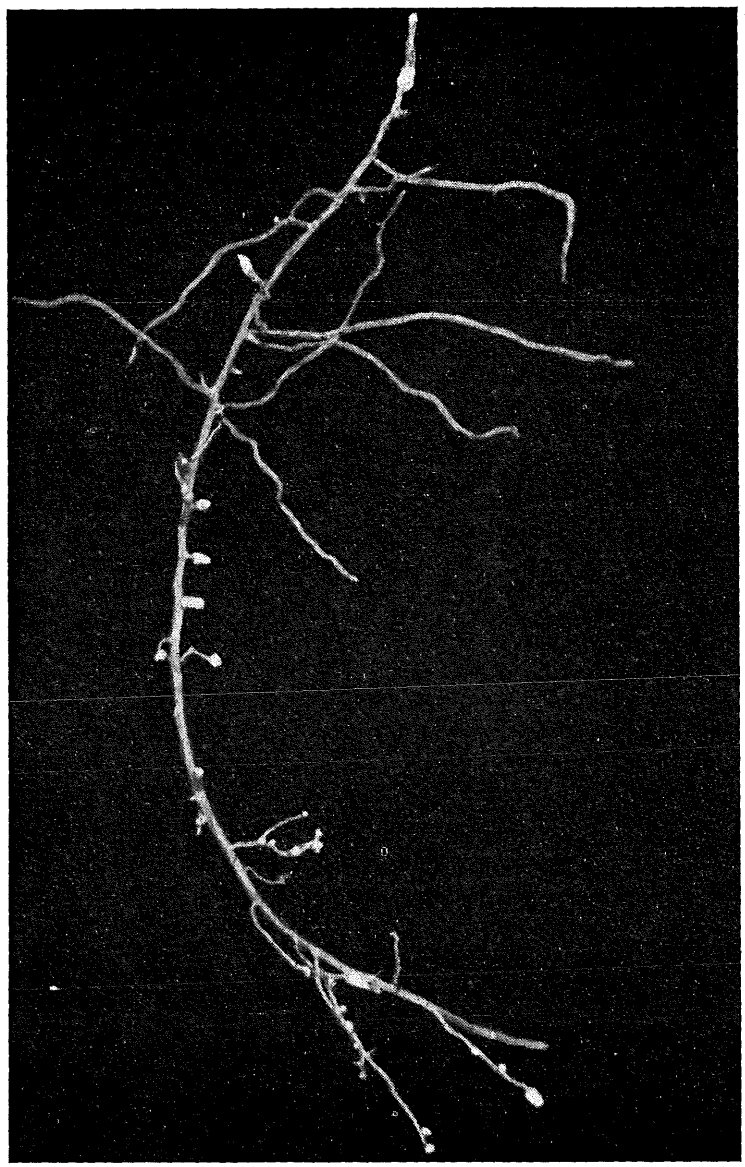

Fig. 1.—Galls on the roots of *Citrus limonia* (rough lemon) induced by the feeding of *Hemicycliophora nudata*.

anterior to excretory pore. Vagina directed obliquely forwards. Post-vulval uterine sac absent. Ovary extending more than half distance to oesophagus; oocytes at anterior end in double row; spermatheca spherical. Body not constricted at vulva. Anus on ninth or tenth annule behind vulva. Tail at first convex-conoid, then elongate-conoid; terminus subacute.

Males (n = 20).—L = 827–910μ; a = 30–38; c = 8·5–9·6; spicules = 37–45·1μ; gubernaculum = 8·0–8·4μ; PE = 17–19%; T = 19–26%.

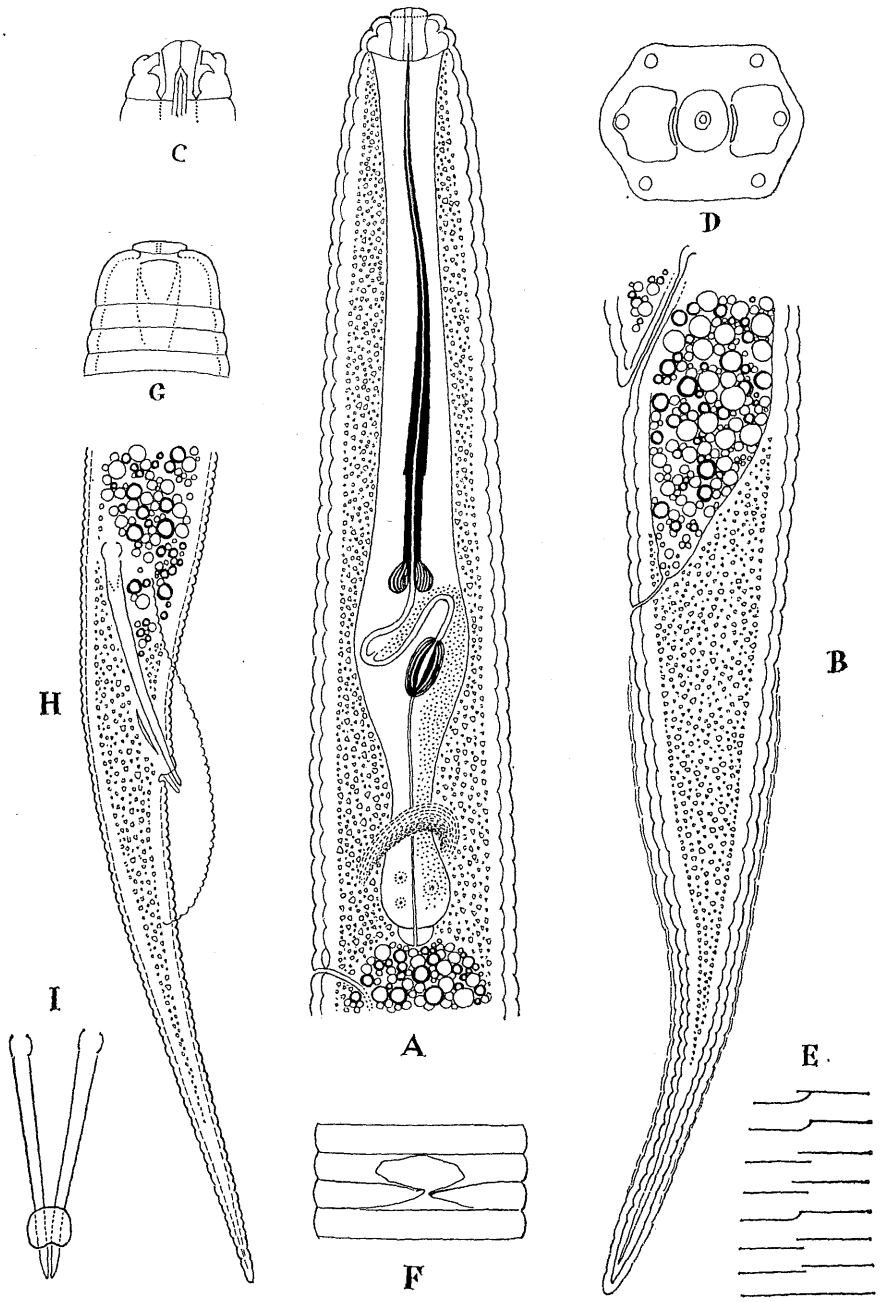

Fig. 2.—*Hemicycliophora nudata* n.sp. A, female oesophageal region (x 700); B, female post-vulval region (x 700); C, dorsoventral view of female lip region; D, en face view of female; E, section of female lateral field; F, pattern of transverse striae near vulva; G, lateral view of male head; H, posterior portion of male (x 700); I, dorsal view of spicules and gubernaculum.

Males (n = 20).—L = 325–447μ; a = 14·6–24·0; c = 8·2–12·5; spicules = 31·0–32·5μ; gubernaculum = 6μ; PE = 25–29%; T = 28–43%.

Allotype (male).—L = 360μ; a = 17·5; c = 10·2; spicules = 32·4μ; gubernaculum = 6μ; PE = 27·5%; T = 33%.

Longer and slenderer than females. Transverse striae about 3·5μ apart in mid-body region. Lateral fields in mid-body region with three ridges (four incisures). Incisures reduced to two in oesophageal region. Areolation of lateral fields confined to anterior end. Lip region rounded, not set off, with transverse striae. Stylet and oesophagus degenerate. Nerve ring 16-18 annules anterior to excretory pore. Hemizonid about 6 annules anterior to excretory pore. Anus surrounded by collar-like extension of body. Spicules slender, arcuate. Caudal alae sub-terminal, without transverse striae; margins smooth. Tail conoid; terminus subacute to bluntly rounded.

Males were as abundant as females in a population established under glass-house conditions.

In fourth-stage larvae the posterior margin of each scale is rounded and bears small projections.

Types.—Holotype (female) and allotype (male) slide Reg. No. G 2595 in the Queensland Museum; paratypes in the Queensland Department of Primary Industries Nematology Collection.

Type habitat.—Soil around the roots of *Citrus sinensis* Osbeck (sweet orange).

Type locality.—Queensland: Mundubbera (Portion 144, Parish of Mundowran).

Criconema australe is distinguished from other described species of *Criconema* by the presence of 8 rows of broad, laterally contiguous scales each slightly concave on the posterior margin.

ACKNOWLEDGEMENT

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