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MORPHOLOGY OF *HOPLOLAIMUS SEINHORSTI* AS SEEN BY
SCANNING ELECTRON MICROSCOPE

by
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The plant parasitic nematode *Hoplolaimus seinhorsti* Luc, 1958 was described from roots and soil of cotton (*Gossypium hirsutum* L.) in Madagascar (Luc, 1958). Later, it was found in association with various crops in Nigeria, Southern India, Guatemala, Philippines, Thailand, Indonesia and Sri Lanka (Van den Berg, 1976; Lamberti and Ekana-yake, 1983a and b). The morphology of *Hoplolaimus* species is based on observations made with a light microscope (LM), with the exception of *H. magnistylus* which was also studied with the aid of a scanning electron microscope (SEM) (Robbins, 1982). This article describes the morphology of *H. seinhorsti* as seen by SEM and gives some information on its distribution in Sri Lanka.

Materials and Methods

The specimens used in this study were obtained from soybean (*Glycine max* L.) roots and soil at Mannar, Sri Lanka. Specimens were killed and fixed in 5% hot aqueous formaldehyde. Several females were then transferred to 1% osmium tetroxide for 12 hours and infiltrated with Spurr's resin by the method of De Grisse (1973), but ethanol was used for dehydration instead of acetone. Glycerine mounted specimens were also used in this study. Nematodes were placed in an ethanol solution of glycerine for 12 hours, rinsed several times with ethanol and then infiltrated with ethanol-miscible Spurr's

resin. All specimens, after vacuum gold coating, were observed by SEM operating at 5 kv accelerating voltage.

Morphology

Body cylindrical, slightly tapering anteriorly (Fig. 1 A), cuticle distinctly striated with annules 2-2.3 μm wide at mid-body. Head region hemispherical (7.1-8.4 μm long), set off from the body by a distinct constriction with a terminal disc and 4 post-labial annules (Fig. 2 B).

Head region divided into two halves by a deep dorsal and ventral groove; each half subdivided by shallower grooves that delimit the lateral sectors (Fig. 2 A). Irregular longitudinal indentations present on the lip annules (Fig. 2 B). Centrally located on the ovoidal oral disc is the oval opening of the prostom. The oral disc is slightly raised and clearly separated from the six sectors of the first head annule, the lateral sectors being smaller than the subdorsal and subventral sectors. Two conspicuous ovoid amphid apertures present between the lateral edges of cephalic plate and the lateral sectors of the first annule (Fig. 2 A).

Small excretory pore, about half an annule width in diameter, located 124 (121-138) μm from anterior (Figs. 1 A, 1 B). Lateral fields reduced and variable, represented by interruptions of body annules as a single incisure (Fig. 1 C) towards the extremities but 2-3 incomplete incisures are sometimes seen (Figs. 1 E, 2 C). Prominent scutellum-like phasmids, 4.8-5.2 μm in diameter and very refractive, (Figs. 1 D, E; 2 F, G) at 24-43%, and at 68-80%, of body length. Oval vulvar opening surrounded by unsculptured lips. Ellipsoidal posterior epiptygma also present at the vulva aperture overlapping a less conspicuous anterior epiptygma (Fig. 1 F, G). Anal opening (arrowed in Fig. 2 E) present on 12th-17th annule from tail terminus, near the posterior margin of the annule and appearing in ventral view as a circular pore half an annule wide (Fig. 2 E).

Tail rounded, shorter than anal body diameter ($c' = 0.7-0.9$). Ventral annulations on the distal tail portion irregular and centrally interlaced (Fig. 2 E).

Field observations by Lamberti (pers. comm.) show that this nematode is polyphagous and is widely distributed in Sri Lanka. It was present in 27% of the 500 samples examined and was associated

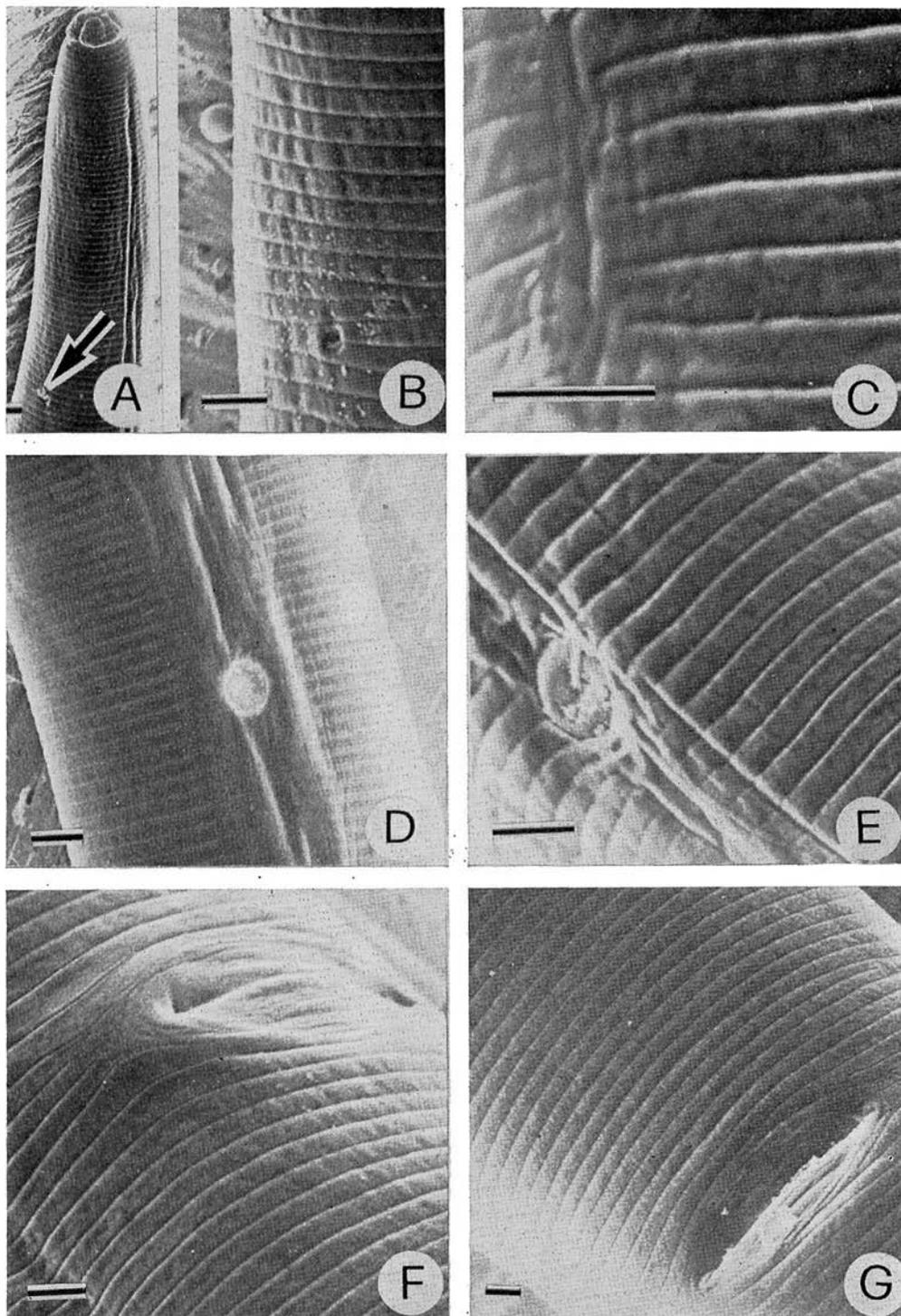


Fig. 1 (A-G) - SEM micrographs of *Hoplolaimus seinhorsti*. A) Ventro-lateral view of anterior region (excretory pore arrowed. B) Excretory pore region. C) Lateral field at mid-body. D, E) Anterior scutellum. F, G) Latero-ventral and ventral view respectively of vulva region (Scale bar = 5 μ m).

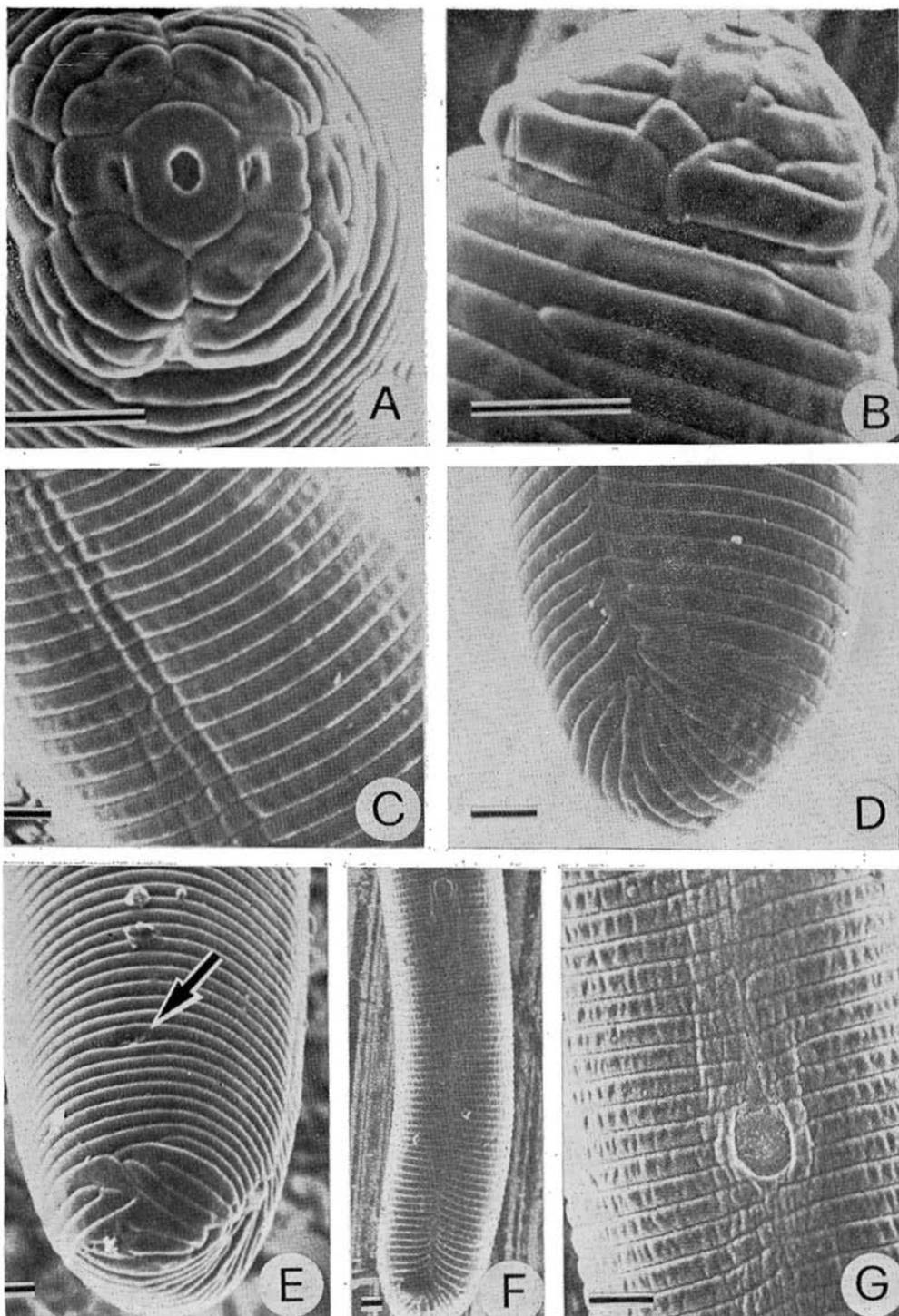


Fig. 2 (A - G). SEM micrographs of *H. seinhorsti*. A, B) En face view and profile of head region. C) Lateral field. D, F) Tail on lateral and ventral view (anus arrowed). F) Posterior region. G) Posterior scutellum (Scale bar = 5 μ m).

with a wide variety of crops. Greatest numbers of specimens, however, were collected from soil around the roots of cotton, sugar cane (*Saccharum officinarum* L.); okra (*Hibiscus esculentus* L.); *Citrus* sp.; *Musa* sp.; soybean (*Glycine max* L.); coconut (*Cocos nucifera* L.), mango (*Mangifera indica* L.) and black pepper (*Piper nigrum* L.).

Sivapalan (1972) listed an unidentified *Hoplolaimus* species from Sri Lanka in the world distribution of nematode species associated with tea (*Camellia sinensis* L.).

The wide distribution of *H. seinhorsti* (Lamberti, 1983a) supports the hypothesis that Sivapalan had most probably collected and studied *H. seinhorsti*.

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S U M M A R Y

Scanning electron micrographs showing the morphology of *Hoplolaimus seinhorsti* Luc, 1958 are presented. The main characters for this species, added to those already reported, are the slightly four-lobed shape of the head, the tiled-like surface appearance of lip region, longitudinally indented, and the irregular ventral annulation on the distal tail portion. In Sri Lanka this species is endoparasitic in habit on soybean feeder roots and has been found in association with a wide variety of tropical crops.

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