

Descriptions of two new record species of *Scutellonema* (Nematoda: Tylenchida) from China

Hong-Yu TIAN, Xiao-Feng ZHU, Yu-Xi DUAN, Li-Jie CHEN¹

Nematology Institute of Northern China, College of Plant Protection, Shenyang Agricultural University, Shenyang 110866, China

Abstract: From 2011 to 2012, we collected *Scutellonema commune* from the rhizosphere soil of coconut (*cocos nucifera* L.) and *Scutellonema magniphasma* from the rhizosphere soil of *Rosa chinensis* in Shenyang, China. *S. commune* was characterized by rounded scutella, which was varied from two annules anterior to the anus and five annules posterior. The lateral field was not areolated at the level of scutella. *S. magniphasma* was characterized by varying scutellum, about 7.0 μm in diameter, in position from four annules posterior to four annules anterior to the anus, and areolated at the level of the scutellum.

Keywords: Hoplolaimidae; new record species; *Scutellonema commune*; *Scutellonema magniphasma*

The genus *Scutellonema* (Sivakumar, 1981) was established by Andrassy in 1958, and is characterized by scutella (enlarged phasmids) both opposing and being near to the anus. Presently, the number of species in this genus has reached 31, and all were either ectoparasites or partially endoparasites of plants.

Scutellonema commune (Germani, 1985) was first described by van den Berg and Heyns in 1973, belonging to Nemata, Tylenchida, Hoplolaiminae. Its body curves notably toward the ventral side, forming complete circle under heat. The scutellum is rounded, but not areolated at level of the scutella.

S. magniphasma (Germani, 1985) was described by Sher in 1963 but earlier collected in 1962 by Martin from the University of California. Its body is spirally curved or C-shaped, with a large scutellum (7.0 μm in diameter).

In this study, we report two new species records, *S. commune* and *S. magniphasma*. These two new recorded species were collected in a survey of the ornamental plant-parasitic nematodes in Shengyang, located in the northeast of China, 2011.

MATERIALS AND METHODS

Specimens of *S. commune* were obtained from the rhizosphere soil of coconut (*Cocos nucifera* L.) in a flower greenhouse located in Shenyang, Liaoning Province, China. Specimens of *S. magniphasma* were

meanwhile obtained from the rhizosphere soil of *Rosa chinensis* on the campus of Shenyang Agricultural University. After sieving-centrifugal flotation, nematodes were euthanized by gentle heat. Specimens were then fixed and preserved in FA 4:1 and were mounted in anhydrous glycerol on permanent slides (Seinhorst, 1959) to allow for measuring and photography. Specimens were observed under light microscope equipped with Motic BA400 and measured by Motic Images Advanced 3.2.

RESULTS

S. commune van den Berg and Heyns, 1973 (Figure 1, 2).

Measurements

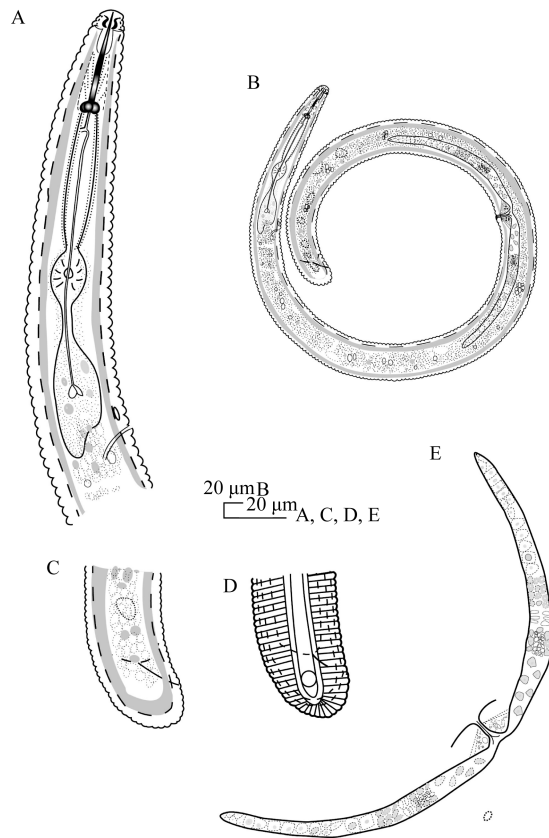
Female ($n=10$): $L=766$ (700–860) μm ; $a=24$ (22–30); $b=6.8$ (6.0–7.5); $b'=5.6$ (4.7–5.8); $c=46$ (41–62); $c'=0.7$ (0.6–0.9); $V=56$ (53–65); $st=30.3$ (27–32) μm ; $o=22$ (18–23); scutellum diameter=3.9 (2–6) μm .

L : body length; a : body length/greatest body width; b : body length/distance from anterior end to junction of oesophagus and intestine; b' : body length/distance from anterior end to oesophagus end; c : body length/tail length;

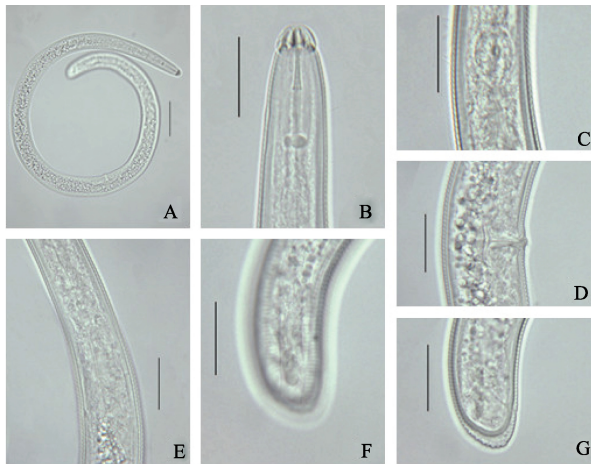
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^{*} Corresponding author, E-mail: chenlijie0210@163.com


 Figure 1 Illustrations of *S. commune*

A: Anterior region; B: Female entire; C, D: Tail. E: Senital system;


 Figure 2 *S. commune* under light microscope

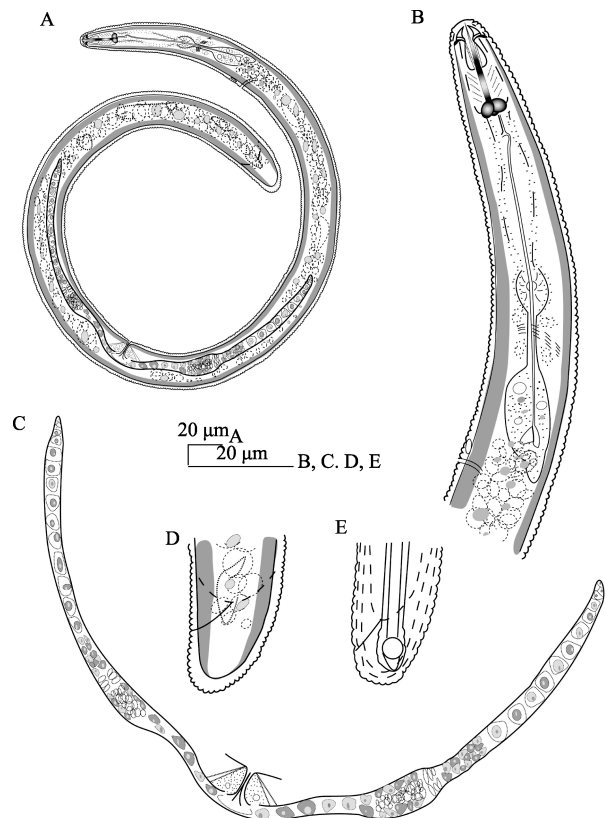
 A: Female individual; B: Head; C: Metacarpus; D: Vulva region; E: Esophageal gland; F, G: tail; Scale bars=20 μm .

c': tail length/anus body width; V: distance from vulva to anterior end $\times 100$ /body length; st: stylet length; o: dorsal gland orifice to stylet/ stylet length

Description

Female: Body curved notably toward ventral side, forming complete circle upon heating. Annules were 1.3 μm wide at midbody. Lip region was hemispherical with 3–4 annules and was separated from body by a slight constriction, without longitudinal striation. Spear was well-developed, oval basal knobs with irregular anterior surface (Figure 1C, Figure 2B). Opening of dorsal oesophageal gland was 4–10 μm from basal knobs. Excretory pore was leveled with oesophageal gland lobe and was 127 μm (108–149) from anterior extremity. Hemizonid was 1–3 annules anterior to excretory pore. Vulva glands were large and elongated. Lateral field was 6–8 μm wide, with four incisures, and was not areolated at the level of scutella. Scutellum was rounded (Figure 1E, F; Figure 2F), varying from two annules anterior to and five annules posterior to anus. Tail was rounded and was 13.7 μm (11–22) in length.

Male: Unknown.


 Figure 3 Illustrations of *S. magniphasma*

A: Female individual; B: Anterior region; C: Senital system; D, E: Tail.

Scutellonema magniphasma Sher, 1963 (Figure 3, 4).

Measurements

Female ($n=10$): $L=891(820-980)$ μm ; $a=27(24-30)$; $b=7.3(7-8)$; $b'=5.2(4.7-5.8)$; $c=53(48-75)$; $c'=0.57(0.5-0.8)$; $V=56(55-61)$; $st=31(29-35)$ μm ; $o=13(12-17)$; scutellum diameter= $6.5(5-7)$ μm

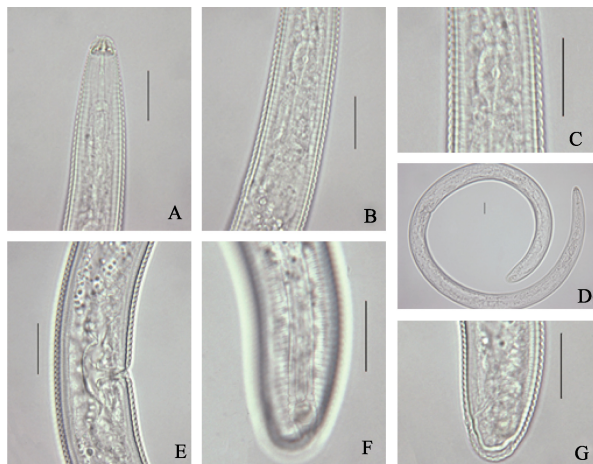


Figure 4 *S. magniphasma* under light microscope

A: Head; B: Esophageal gland; C: Metacarpus; D: Female entire; E: Vulva region; F, G: Tail; Scale bars=20 μm .

Description

Female: Body spirally curved or C-shaped when killed by heat. Annules were 2.3 μm wide at midbody. Lip region was hemispherical and slightly offset, with 3–5 annules, but some variants were conoid and deeply offset. Basal lip annule was with 20–26 longitudinal striations. Spear was well-developed, oval basal knobs

with flattened surface (Figure 3C; Figure 4A). Opening of the dorsal oesophageal gland was 6–10 μm from the basal knobs. Excretory pore was 133 (118–152) μm from the anterior extremity and was at the level of oesophageal gland lobe. Hemizonid was 0–4 annules anterior to excretory pore. Vulva glands were large and elongated. Lateral field was with four incisures and areolated at scutellum. Scutellum was varying from four annules posterior to four annules anterior to anus (Figure 3E; Figure 4F). Tail was tapering and rounded.

Male: Unknown.

DISCUSSION

The morphological data and characteristics of *S. commune* were consistent with previous records except a shorter spear (30 μm vs. 32 μm) on average (van den Berg & Heyns, 1973). *S. commune* is similar to *S. africanum* Smit, 1971 in the absence of areolation at the level of the scutellum. However, *S. commune* is distinguished by its slightly set-off head region, larger body sizes (0.7–0.9 mm vs. 0.51–0.81 mm) and spear (27–36 μm vs. 20–28 μm).

The morphological data and characteristics of *S. magniphasma* were consistent with previous records, save for the observed longer body (900 μm vs. 820 μm) on average (Sher, 1963). *S. magniphasma* is similar to *S. unum* Sher, 1964 in areolation at the level of scutellum and ten or more longitudinal striae on the basal lip annule. That said, it could be differentiated from *S. unum* by the comparatively larger scutella (5–7 μm vs. 4 μm).

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