

## A new species of the genus *Lagenonema* Andrassy, 1987 (Nematoda: Dorylaimidae) from West Bengal, India

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**Abstract.** During a taxonomic survey in Paschim Medinipur district of West Bengal, India, a new nematode species belonging to the genus *Lagenonema* Andrassy, 1987 was collected from the rhizosphere of banana roots. *Lagenonema thornei* n. sp. is characterized by having medium-sized body (female: 1.48–1.55 mm); abruptly narrowed, bottle-shaped cephalic region; amalgamated lips; tongue-shaped cardia; mono-opisthodelphic reproductive system with short pre-vulval uterine sac and long filiform tail. It closely resembles *L. longicaudatum* (Jairajpuri, Ahmad and Dhanachand, 1979) Andrassy, 1987 in V value, long filiform tail and tongue-shaped cardia. But differs in having longer body, odontostyle, odontophore and pre-vulval uterine sac; values of a, b, c and c' are also different.

### INTRODUCTION

A new dorylaimoid nematode, *Lagenonema thornei* of the family Thornenematidae is being described and illustrated herein. The genus *Lagenonema* was erected by Andrassy (1987) by differentiating it from *Thornenema* Andrassy, 1959 in having abruptly narrowed, bottle-shaped anterior region, well sclerotized spatulate cephalic framework, smaller amphids and opisthodelphic female gonad. Jairajpuri and Ahmad (1992) did not agree with him and noted that *Lagenonema* was close to *Thornenema*. We however agree with Andrassy's opinion that *Lagenonema* is a well defined, distinct genus. Andrassy (1987) shifted four species under the genus *Lagenonema* from *Thornenema*, namely *L. caudatum* (Jairajpuri, Ahmad & Dhanachand, 1979), *L. longicaudatum* (Jairajpuri, Ahmad & Dhanachand, 1979), *L. loofi* (Jairajpuri, Ahmad & Dhanachand, 1980) and *L. wickeni* (Yeates, 1970). At the same time, he described *L. tropicum* Andrassy, 1987. Subsequently, another species, *L. clavicaudatum* Gambhir & Dhanachand, 1990 was added to the genus.

### MATERIAL AND METHODS

Nematodes were collected from a rhizospheric soil sample (250 gm) around banana plantation (*Musa paradisiaca* L. cv. Kanthali). Soil sample was taken from a small area of 10 cm × 10 cm up to the depth of 20 cm, at a distance of 25 cm from the main bole of the orchard. The specimens were extracted from soil by Cobb's sieving technique (Cobb, 1918) and decanting method followed by Modified Baermann's funnel technique (Christie and Perry, 1951); processed by Seinhorst's slow dehydration method (Seinhorst, 1959). They were mounted on slides in anhydrous glycerin and sealed. Measurements were taken with the help of an ocular micrometer using Olympus research microscope with drawing-tube attachment; model no. BX 41. Dimensions were presented in accordance with de Man's formula (de Man, 1884). Positions of the oesophageal gland nuclei with Andrassy's formula (Andrassy, 1998). Diagrams were drawn with the help of a camera lucida.

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## DESCRIPTION OF SPECIES

### *Lagenonema thornei* n. sp.

(Fig. 1 A–E)

Measurements in Table I.

*Female.* Body slightly curved ventrally upon fixation, mainly at posterior region; tapering towards both the extremities. Cuticle with fine transverse striations; 2–3  $\mu\text{m}$  thick at the base of lip region, 1.5–2.0  $\mu\text{m}$  at midbody and 3–4  $\mu\text{m}$  on tail. Lateral hypodermal chords occupying about 1/3 of body width at midbody. Body pores indistinct.

Lip region amalgamated, narrow and cylindrical-truncated in shape; 1/6–1/5 as wide as body width at neck base. Labial framework strongly sclerotized, post-labial sclerotization also well developed. Amphid cup-shaped with slit-like aperture, occupying about 1/3 of corresponding body width. Odontostyle cylindroid, 2.5–2.7 times the lip region width long; aperture about 1/4–1/3 of its length. Guiding ring single, at 1.3–1.5 times the lip region width from anterior end. Odontophore simple, rod-like, 1.3–1.4 times the odontostyle length. Nerve ring at 40–42% of neck length from anterior extremity. Basal expanded part of oesophagus (cylindrus) occupying 46–48% of the total oesophageal length. Glandularium 118–121  $\mu\text{m}$  long. Cardia tongue-shaped. Positions of oesophageal gland nuclei are as follows: D = 60–61%; AS<sub>1</sub> = 19–20%; AS<sub>2</sub> = 33%; PS<sub>1</sub> = 58–59%; PS<sub>2</sub> = 58–59%.

Reproductive system opisthodelphic; prevulval uterine sac short, 3.5  $\mu\text{m}$  long. Vulva a transverse slit; vagina thick-walled, extending inwards about half of corresponding body width. Oviduct separated by a sphincter from uterus. Ovary reflexed, 67–71  $\mu\text{m}$  long; genital cells arranged in a single row except at the tip.

Prerectum 2.0–2.5 times anal body width long. Rectum as long as anal body diameter. Tail long, filiform, not constricted, with subacute terminus, about 9 times anal body width long. Two caudal pores present on each side of tail.

*Male.* Not found.

*Differential diagnosis and relationships.* *Lagenonema thornei* n. sp. is characterized by having abruptly narrowed, bottle-shaped anterior region, amalgamated lips, tongue-shaped cardia, monopisthodelphic reproductive system with short prevulval uterine sac and long filiform tail.

In the characteristic shape of lip region and the long filiform tail the new species closely resembles *Lagenonema longicaudatum* (Jairajpuri, Ahmad and Dhanachand, 1979) Andrassy, 1987. Besides, the V value and tail length also show similarities between them (V = 33–41%; tail 175–225  $\mu\text{m}$  long in *L. longicaudatum*). Cardia tongue-shaped and male unknown in both species.

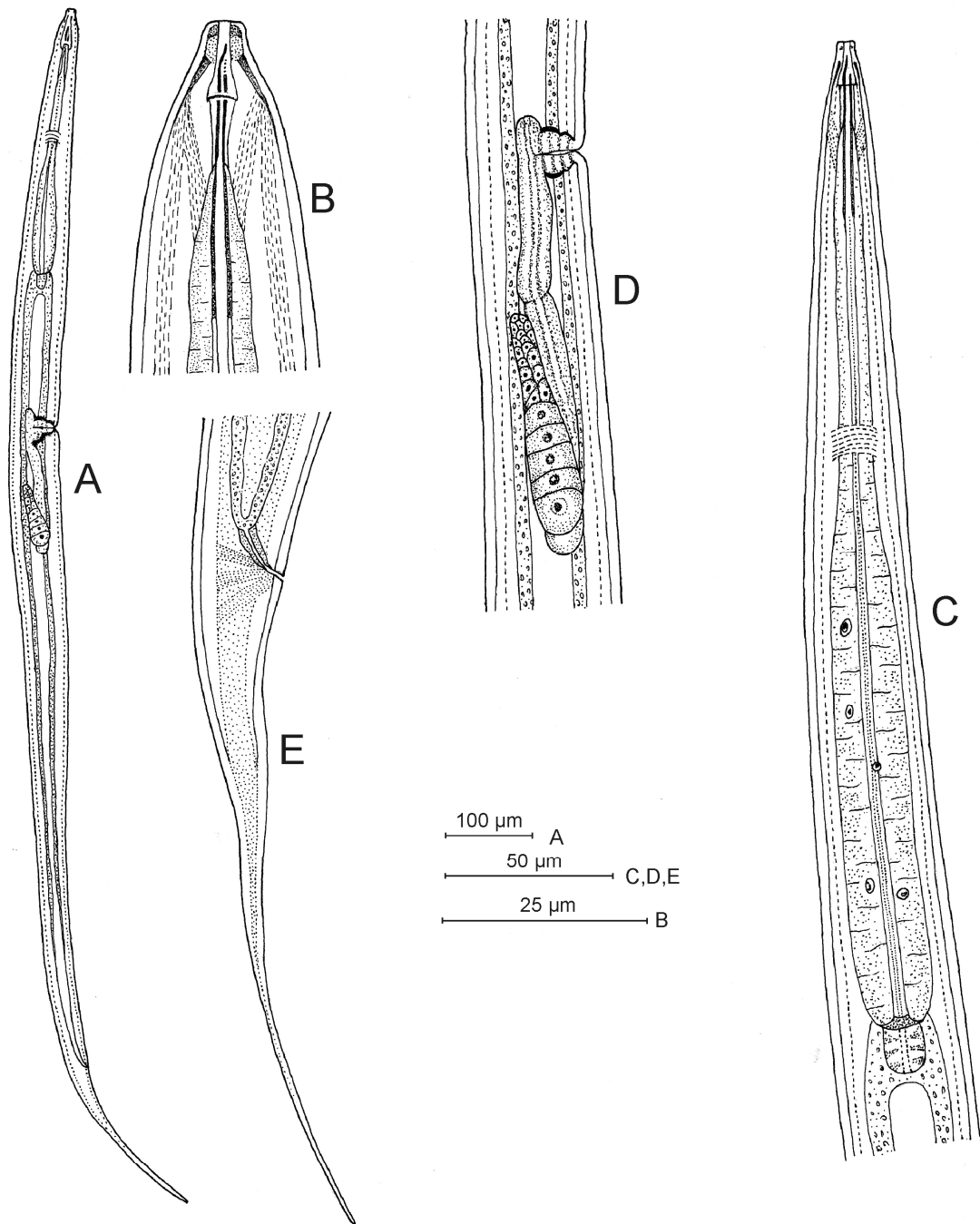
The new species differs from its relative in having longer body, odontostyle and odontophore (vs. L = 0.67–0.75 mm; odontostyle 10–11  $\mu\text{m}$ ; odontophore 12–13  $\mu\text{m}$  long). The values a, b, c and c' are also different in both species (a = 26–31; b = 4.3–4.7; c = 3–4; c' = 13–15 in *L. longicaudatum*). Prevulval uterine sac almost absent in *L. longicaudatum*, but a short sac is present in the new species.

*Type habitat and locality.* Rhizospheric soil of banana plantation (*Musa paradisiaca* L. cv. Kanthali) at Baroi village under Mohanpur block of Paschim Medinipur district, West Bengal, India. Collected by the first author on 24. July, 2005.

*Type specimens.* Specimens are deposited with the National Zoological Collections of Zoological Survey of India, Kolkata, West Bengal, India, under the Registration No. WN 1255 (Holotype) and WN 1256 (Paratypes).

*Etymology.* This new species is named after the late Professor Gerald Thorne, the outstanding authority on the order Dorylaimida.

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**Figure 1.** Camera lucida drawings of female *Lagenonema thornei* n. sp. A: entire body; B: anterior portion; C: neck region; D: vulva with posterior gonad; E: posterior portion

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**Table I.** Measurements of *Lagenonema thornei* n. sp. (All measurements in  $\mu\text{m}$ , except L, in mm).

| Morphometric characters    | Holotype female | Paratype females (n = 10) | Mean $\pm$ SD   |
|----------------------------|-----------------|---------------------------|-----------------|
| L                          | 1.54            | 1.48-1.55                 | 1.51 $\pm$ 0.02 |
| a                          | 39.8            | 39.5-39.8                 | 39.6 $\pm$ 0.1  |
| b                          | 5.2             | 5.0-5.2                   | 5.1 $\pm$ 0.1   |
| c                          | 7.9             | 7.7-7.9                   | 7.8 $\pm$ 0.1   |
| c'                         | 9.2             | 9.1-9.2                   | 9.2 $\pm$ 0     |
| V                          | 33.2            | 33.1-34.4                 | 33.7 $\pm$ 0.4  |
| V'                         | 38.0            | 38.0-38.2                 | 38.1 $\pm$ 0.1  |
| G <sub>2</sub>             | 11.9            | 10.8-12.0                 | 11.5 $\pm$ 0.4  |
| Height of lip region       | 3.6             | 3.6-3.6                   | 3.6 $\pm$ 0     |
| Width of lip region        | 6.4             | 6.3-6.4                   | 6.3 $\pm$ 0     |
| Amphid from anterior end   | 4.3             | 4.2-4.3                   | 4.2 $\pm$ 0     |
| Odontostyle length         | 17.7            | 16.9-17.9                 | 17.4 $\pm$ 0.3  |
| Length of stylet aperture  | 5.2             | 4.8-5.2                   | 5.0 $\pm$ 0.1   |
| Odontophore length         | 24.3            | 23.4-24.4                 | 23.9 $\pm$ 0.3  |
| Guiding ring from ant. end | 9.6             | 9.1-9.6                   | 9.3 $\pm$ 0.2   |
| Nerve ring from ant. end   | 121.6           | 119.7-121.4               | 120.7 $\pm$ 0.7 |
| Oesophageal length         | 294.5           | 291.8-296.1               | 294.1 $\pm$ 1.4 |
| Basal part of oesophagus   | 141.3           | 137.1-142.1               | 139.8 $\pm$ 1.6 |
| Length of cardia           | 13.2            | 12.9-13.2                 | 13.0 $\pm$ 0.1  |
| Body width at neck base    | 37.1            | 36.8-37.1                 | 37.0 $\pm$ 0.1  |
| Body width at vulva        | 38.8            | 37.4-38.9                 | 37.7 $\pm$ 0.4  |
| Body width at anus         | 21.1            | 20.8-21.2                 | 21.0 $\pm$ 0.2  |
| Vulva from anterior end    | 514.5           | 491.3-520.7               | 507.9 $\pm$ 8.4 |
| Length of posterior gonad  | 185.7           | 160.5-187.2               | 178.4 $\pm$ 9.9 |
| Prerectum                  | 46.7            | 44.7-47.7                 | 46.0 $\pm$ 0.9  |
| Rectum                     | 21.4            | 20.8-21.4                 | 21.1 $\pm$ 0.2  |
| Tail length                | 195.1           | 191.7-196.4               | 193.9 $\pm$ 1.5 |