One new and two known species of *Dorylaimoides* Thorne and Swanger, 1936 (Nematoda: Mydonomidae) from West Bengal, India

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Received: 31 August 2012 / Accepted: 6 December 2012 / Published online: 28 December 2012
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Abstract A few specimens of were collected from the soil around the roots of guava (*Psidium guajava* L.) and litchi (*Litchi chinensis* Sonn.) plantations in South 24-Parganas district of West Bengal, India. It yielded a few species of which one is new to science. *Dorylaimoides* (*Dorylaimoides*) *geraldi* sp. n. is characterized in having long odontostyle (9.5–11 µm), amphidelphic genital system in females, and by short rounded tail. The male is characterized by shorter body length, shorter spicules, and three regularly spaced ventromedian supplements with an adanal pair. Although *D. (D.) gerald* sp. n. comes closer to *D. (D.) buccinator* *D. (D.) indicus*, *D. (D.) parateres*, *D. (D.) teres* and *D. (D.) websteri* among the didelphic-amphidelphic species of the genus having short tails, it differs in having shorter body length, longer odontostyle, amphidelphic genital system in females, absence of *pars dialata* in oviduct, short rounded tail and by different morphometric ratios. The male differs from the closely related species in having shorter body, different number and arrangements of ventromedian supplements, shorter spicule and tail. The known species agree well with the earlier reported specimens except some morphometric variations.

Keywords Nematoda · New species · Taxonomy

Introduction

During a survey of soil nematodes in the guava (*Psidium guajava* L.) and litchi (*Litchi chinensis* Sonn.) orchards of South 24-Parganas (geographical position, Latitude 21°26'–22°38' East and Longitude 87°57'–89°09' North), West Bengal, India, a small population of dorylaim nematodes were encountered one of which appeared different from other described taxon along with two known species. A few specimens of *Dorylaimoides* (*Dorylaimoides*) *geraldi* sp. n., *D. (D.) parateres* Siddiqi 1963 were collected from the soil around the roots of litchi and *Dorylaimoides* (*Longidorylaimoides*) *parvus* Thorne and Swanger, 1936 were collected from soil around the roots of guava plantations. Siddiqi (1963) described *Dorylaimoides parateres* from soil around the roots of *Citrus sinensis* L. from Madhya Pradesh, India without any male. Goseco et al. (1976) expressed doubt about the males of *D. (D.) parateres*, reported by Baqri and Jairajpuri (1969) from soil around the roots of Sun hemp (*Crotalaria juncea*) at Banaras, Uttar Pradesh, India which comes more close to *D. indicus* Jairajpuri, 1965. The present specimens confirms the bisexuality of *D. (D.) parateres* by the presence of sperms in the uteri as reported by Jana and Baqri (1981) from unidentified grasses at Cooch Behar district, West Bengal, India. The species has also been reported by Bohra and Baqri (2004) from soil around the roots of guava from Gujarat, India. The present specimens of *D. (L.) parvus* Thorne and Swanger, 1936 agree with those specimens of the same species reported by Jana and Baqri (1981) from soil around the roots of paddy (*Oryza sativa*) at Burdwan district, West Bengal, India.

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Materials and methods

The collected soil samples were processed by Cobb's sieving and decantation technique (Cobb 1918) followed by modified Baermann funnel technique (Christie and Perry 1951) for extraction of nematodes. The nematode specimens were fixed and preserved in their characteristic body posture in warm FA (formalin-acetic acid 4:1) solution and were mounted in anhydrous glycerin being sealed by paraffin wax (De Maeseneer and d'Herde 1963) to make permanent slides. Then they were observed under a compound microscope (Olympus BX 41), measured and photographed. To locate the pharyngeal gland nuclei Andrassy's formula (Andrassy 1998) was followed.

Description

D. (D.) geraldii sp. n. (Figs. 1 and 2)

Measurements

Shown in Table 1.

Female

Body ventrally curved on fixation, gradually tapering towards anterior extremity from the neck base. Cuticle with fine transverse striations, 2.5 μm (1–2.5 μm) thick at the level of odontostyle and at mid body, 4.5 μm (4.5–7 μm) on tail. Body pores indistinct. Lip region set off by slight depression or almost confluent with the body contour, narrower than adjoining body, 5 μm high, 8 μm (8–9.5 μm) wide or about one-fourth of the body width at neck base. Amphids stirrup-shaped, 7 μm (6–7 μm) from anterior end 5 μm (4.5–6 μm) wide or about one-third of the corresponding body width. Odontostyle narrow, straight, asymmetrical, dorsal arm longer than ventral arm, dorsally 1.3 (1.1–1.3) and ventrally 1 (0.8–1) lip region-widths long. Odontophore weak, 1.6 (1.2–1.5) lip region-widths long. Guiding ring prominent, 6.5 μm (6–6.5 μm) from anterior end. Nerve ring at 105 μm (91–105 μm) from anterior end encircling the slender part of pharynx. Pharyngeal bulb cylindrical, 1.5 (1.3–1.6) times the neck base-width long or 25.4 % (24.9–26.5 %) of the total pharyngeal length. Glandularium 84.9 % (76.4–82.8 %) of cylindrus. Cardia small, round to conoid. Locations of pharyngeal gland nuclei are: D = 83.8 % (76.1–83.8 %); AS1 = 52.8 % (40.1–52.8 %); AS2 = 62.2 % (44.5–62.8 %). Vulva transverse, pre-equatorial. Vagina 42.6 % (40.2–43.5 %) of corresponding body width. Length of *pars proximalis* 4.5 μm (4–4.5 μm), *pars refringens* absent and *pars distalis* 13 μm (12–13 μm). Reproductive system amphidelphic. Both the uteri filled with spindle-

shaped sperms. Distinct sphincter present at uterus-oviduct junction. Both ovaries reflexed, anterior ovary 66 μm (66–103 μm) and posterior ovary 83.5 μm (83.5–117.5 μm) long. Oocytes arranged in a single row except at tip. Pre-rectum 5.5 (3.8–6.5), rectum 0.7 (0.7–0.9) anal body-width long. Tail short, 1 (1–1.1) anal body-widths long, bluntly rounded with thick cuticle on terminus (Figs. 1 and 2).

Male

Similar to females in general morphology but small and more delicate in appearance with the following exceptions. Posterior half of body more ventrally curved. Testes outstretched. Spicules wide, 1.26 anal body-widths long. Supplements inconspicuous, almost confluent with the outer cuticular body wall, consist of three regularly spaced ventromedians and an adanal pair. Prerectum 9.17, rectum 1.08 anal body-widths long Tail shape same as in female, short, anal body-width long.

Type specimen

Holotype registration No. WN 1040 along with four female paratypes on same slide. Paratype registration No. WN 1041 (1♂). Deposited in National Zoological Collection, Zoological Survey of India, Kolkata, India.

Type habitat & locality

Collected from soil around the roots of litchi at Padmajala, Dhapdhapi (East) of Baruipur block, West Bengal on 27 July 2005.

Etymology

The present new species has been named after Professor Gerald Thorne as a tribute to the legendary nematologist.

Diagnosis and relationship

Dorylaimoides (Dorylaimoides) geraldii sp. n. is characterized in having shorter body, long odontostyle (9.5–11 μm), amphidelphic genital system in females, and by short rounded tail. The male is characterized by shorter body length and spicules, three regularly spaced Ventromedian supplements and an adanal pair.

It comes closer to *D. (D.) buccinator* Sauer 1967, *D. (D.) indicus* Jairajpuri, 1965, *D. (D.) parateres* Siddiqi 1963, *D. (D.) teres* Thorne and Swanger, 1936 and *D. (D.) websteri* Sauer, 1967 among the didelphic-amphidelphic species of the genus having short tails. The females of the new species differ from *D. (D.) buccinator* in having lesser *a* value, narrow and straight odontostyle, more anteriorly placed

Fig. 1 *Dorylaimoides (Dorylaimoides) geraldii* sp. n. Female: **A** entire body, **C** anterior end showing odontostyle, **D** anterior portion of body showing pharynx, pharyngo-intestinal junction &

vulva and in having different tail shape (in females of *D. (D.) buccinator*, $a = 37\text{--}40$, odontostyle broad and curved, vulva equatorial ($V = 47\text{--}50$), tail conoid with blunt terminus). The male differs in having shorter body and spicules and in

cardia, **E** amphid, **F** reproductive system, **G** tail. Male: **B** entire body, **H** posterior end showing ventromedian supplements, spicule & tail

less number of ventromedian supplements (in *D. (D.) buccinator* male, $L = 1.02$ mm, spicule length = $25\text{ }\mu\text{m}$, number of supplements = 09). It differs from *D. (D.) indicus* in having shorter body length, longer odontostyle, by

Fig. 2 Photomicrographs of *Dorylaimoides (Dorylaimoides) geraldii* sp. n. Female: **A** entire body, **C** anterior end, **D** reproductive system & anterior branch of gonad, **E** posterior branch of gonad, **F** vulva,

G pharyngo-intestinal junction & cardia, **H** posterior end. Male: **B** entire body, **I** spicules, **J** posterior end with ventromedian supplements

Table 1 Morphometric data on *Dorylaimoides (Dorylaimoides) geraldii* sp. n.

Characters	Holotype female	Paratype females (4)					Male (1)
		Min	Max	Mean	±SD	SE	
L	1.15	1.13	1.26	1.18	0.07	0.04	0.8
<i>a</i>	28.2	28.4	32.3	30.5	1.96	1.13	36.3
<i>b</i>	5.5	5.6	5.9	5.8	0.19	0.11	5.4
<i>c</i>	41.3	40.6	45	42.4	2.34	1.35	47
<i>c'</i>	1	1	1.1	1	0.06	0.03	1
V % ♀/ T % ♂	42.8	43.3	44	43.6	0.37	0.21	67.6
G ₁ %	18.4	20.3	24.5	22.2	2.09	1.21	–
G ₂ %	21.6	18.1	23.6	21.3	2.9	1.67	–
Dorsal arm of odontostyle	11	9.5	11.5	10.6	1.04	0.6	10.5
Ventral arm of odontostyle	8	7.5	9	8.1	0.76	0.44	8
Odontophore length	13.5	10.5	14	12.5	1.8	1.04	11.5
Maximum body width	41	37	41	39	2	1.15	22.0
Body width below head	15	15	15	15	0	0	12
Body width at neck base	34	32	37	34	2.65	1.52	21
Body width at vulva	41	37	41	39	2	1.15	–
Pharyngeal length	208	198.5	211	204.1	6.33	3.65	147
Expanded part of pharynx	53	49.5	56	52.1	3.4	1.96	37
Length of glandularium	45	39	45	41.6	3.05	1.76	29.5
Length of anterior gonad	213	250	286	264.3	19.08	11.02	–
Length of posterior gonad	250	206	299	255	46.7	26.96	–
Anterior end to vulva	495	492.5	556	519.3	32.87	18.97	–
Vaginal length	17.5	16	17	16.6	0.57	0.33	–
Tail length	28	28	28	28	0	0	17
Anal body width	27	24.5	27	26.1	1.44	0.83	17
Length of prerectum	149	103	176	133.8	37.8	21.82	156
Length of rectum	20	22	24.5	22.8	1.44	0.83	18.5
Testis length	–	–	–	–	–	–	514.5
Length of Spicules	–	–	–	–	–	–	21.5
No. of V. M. supplements	–	–	–	–	–	–	3

All measurements are in μm except L and body ratios, L in mm. Number of paratypes examined given in the parenthesis

different values of '*a*' and '*c*' in females as well as shorter tail, shorter spicules and lesser number of ventromedian supplements in male (in *D. indicus* L = 1.3–1.5 μm ; odontostyle = 7 μm ; *a* = 40–42; *c* = 62–64; male tail = 24.0 μm , spicules 38.0 μm , number of supplements = 05). From *D. parateres*, the present new species differs in having almost continuous cephalic region, long odontostyle, longer pharyngeal bulb, different '*b*' value, more posterior vulva in females and shorter spicule, different number and arrangement of ventromedian supplements and much shorter tail in male (In *D. parateres*, cephalic region distinctly set off; odontostyle = 8–9.5 μm ; pharyngeal bulb = 48 μm ; *b* = 6.4–6.6; V = 39–41 %; tail length of male = 28.0–30.0 μm ; seven irregularly spaced ventromedian supplements; spicules 35.0–36.0 μm). *D. (D.) geraldii* sp. n. differs from *D. teres* in having rounded and almost

continuous lip region, longer odontostyle, without having *pars dialata* in oviduct, longer rounded tail in female, different number of ventromedian supplements and shorter tail in male (in *D. teres* lip region slightly angular and off set; odontostyle = 6 μm ; *pars dialata* in oviduct present; female tail = 21–24 μm with rounded-conoid terminus; male tail = 20.0 μm ; ventromedian supplements = 5–7). Finally, the females of the new species differ from *D. (D.) websteri* in having shorter body length, different *a* and *b* values, more anterior vulva and in different tail shape (in *D. (D.) websteri* females, L = 1.42–1.73 mm, *a* = 32–56, *b* = 6.5–8.7, vulva equatorial to post-equatorial (V = 50–57), tail conoid with bluntly rounded terminus). The male differs in having much shorter body length, shorter spicules and in having less number of ventro median supplements

Fig. 3 *Dorylaimoides (Dorylaimoides) parateres*. Female: **A** entire body, **C** & **D** anterior end showing pharynx and amphid, **E** pharyngo-intestinal junction & cardia, **F** & **G** reproductive system &

intra-uterine eggs, **H** tail. Male: **B** entire body, **I** posterior end showing ventromedian supplements, spicule & tail

(in males of *D. (D.) websteri*, L = 1.36–1.64 mm, spicules = 31–37 μ m, number of supplements = 8–12).

D. (D.) parateres Siddiqi 1963 (Fig. 3)

Measurements

Shown in Table 2.

Female

Body ventrally curved on fixation. Cuticle with fine transverse striations, 1–5 μ m thick at the level of odontostyle and at mid body, 3.5–5 μ m on tail. Body pores indistinct. Lip region set off by constriction, narrower than adjoining body, 4–5 μ m high, 8.5–10 μ m wide or about one-third

(1/3.2–1/3.5) of the body width at neck base. Amphids stirrup-shaped, 5 μ m from anterior end, 5 μ m wide or occupying slightly less than half of the corresponding body width. Odontostyle asymmetrical, dorsal arm longer than ventral arm, dorsally 1.2–1.4 and ventrally 0.8–1.1 lip region-width long. Guiding ring very prominent, 6–7 μ m from anterior end. Odontophore not straight, 1.1–1.3 lip region-widths long. Nerve ring at 73.5–86 μ m from anterior end. Basal expanded part of pharynx 23.3–25 % of the total neck length. Cardia small, 5–7 μ m long, conoid or rounded. Vulva transverse, pre-equatorial. Vagina unsclerotized, extending inward the body slightly less than half of the corresponding body width. Reproductive system amphidelphic. Both uteri filled with spindle-shaped sperms. Sphincter present at uterus-oviduct junction. Ovaries reflexed, anterior ovary 71–108 μ m and posterior ovary

Table 2 Morphometric data on *Dorylaimoides (Dorylaimoides) parateres* Siddiqi, 1963

Characters	Females (<i>n</i> = 6) mean $\pm$ SD (range)	Males (<i>n</i> = 4) mean $\pm$ SD (range)
L	1.25 $\pm$ 0.03 (1.21–1.31)	1.15 $\pm$ 0.06 (1.09–1.21)
<i>a</i>	35 $\pm$ 1.58 (32.8–36.7)	35.4 $\pm$ 1.36 (34–36.7)
<i>b</i>	6.2 $\pm$ 0.31 (5.8–6.6)	5.9 $\pm$ 0.17 (5.8–6.1)
<i>c</i>	52.2 $\pm$ 2.46 (50–56.4)	50.2 $\pm$ 5.05 (44.4–53.4)
<i>c'</i>	0.9 $\pm$ 0.05 (0.9–1)	0.9 $\pm$ 0.05 (0.9–1)
V % ♀/ T % ♂	44.1 $\pm$ 1.26 (42–45.3)	60.5 $\pm$ 6.74 (52.8–64.9)
G ₁ %	20.7 $\pm$ 3.38 (17.2–24.4)	–
G ₂ %	23.9 $\pm$ 7.81 (16–34)	–
Dorsal arm of odontostyle	11.2 $\pm$ 0.9 (10–12)	11 $\pm$ 0.86 (10.5–12)
Ventral arm of odontostyle	8.8 $\pm$ 0.97 (7.5–10)	8.6 $\pm$ 0.76 (8–9.5)
Odontostyle aperture	2.5 $\pm$ 0.57 (2–3)	2.6 $\pm$ 0.57 (2–3)
guiding ring from anterior end	6.2 $\pm$ 0.44 (6–7)	6.2 $\pm$ 0.35 (6–6.5)
Odontophore length	13.2 $\pm$ 1.3 (12–15)	12.8 $\pm$ 1.52 (11.5–14.5)
Maximum body width	35.8 $\pm$ 1.64 (34–37)	32.6 $\pm$ 1.15 (32–34)
Body width at neck base	31.2 $\pm$ 1.3 (29–32)	28.6 $\pm$ 0.57 (28–29)
Body width at vulva	35.8 $\pm$ 1.64 (34–37)	–
Pharyngeal length	201 $\pm$ 4.63 (196–208)	195.1 $\pm$ 8.03 (186–201)
Expanded part of pharynx	45.2 $\pm$ 1.3 (44–46)	44.1 $\pm$ 0.76 (43.5–45)
Length of glandularium	38.4 $\pm$ 1.67 (36–40)	35.1 $\pm$ 1.04 (34–36)
Length of anterior gonad	260.8 $\pm$ 44.14 (216–301)	–
Length of posterior gonad	302 $\pm$ 107.87 (201–448)	–
Length of anterior ovary	88.8 $\pm$ 19.33 (71–108)	–
Length of posterior ovary	112 $\pm$ 52.44 (69–183)	–
Anterior end to vulva	554.4 $\pm$ 25.96 (515–586)	–
Vaginal length	17.5 $\pm$ 1.11 (17–19.5)	–
Tail length	24.1 $\pm$ 0.54 (23.5–24.5)	23.1 $\pm$ 1.25 (22–24.5)
Anal body width	25 $\pm$ 1.11 (24.5–27)	23.6 $\pm$ 1.44 (22–24.5)
Length of prerectum	54.3 $\pm$ 12.18 (39–71)	143 $\pm$ 11.53 (130–152)
Length of rectum	24 $\pm$ 2.09 (22–27)	25.7 $\pm$ 1.76 (24.5–27)
Testis length	–	703.6 $\pm$ 84.64 (622–791)
Length of Spicules	–	31.8 $\pm$ 2.25 (29.5–34)
Lateral guiding piece	–	9.2 $\pm$ 1.06 (8.5–10)
No. of V. M. supplements	–	7.6 $\pm$ 0.57 (7–8)

All measurements are in μ m except L and body ratios, L in mm; mean $\pm$ SD (minimum–maximum range)

69–183 μm long. One specimen with egg in the posterior branch of gonad measuring 24.5–93 μm . Prerectum 1.5–2.6 and rectum 0.8–1.1 anal body-widths long. Tail similar in both sexes, short, with rounded terminus, 0.9–1 anal body-width long.

Male

Similar to female in general morphology except the following. Posterior half of the body more ventrally curved. Testes outstretched. Spicules 1.3–1.4 anal body-width

Fig. 4 *Dorylaimoides* (*Longidorylaimoides*) *parvus*. Female: **A** entire body, **D** anterior end showing odontostyle & amphid, **E** anterior portion of body showing pharynx, pharyngo-intestinal

junction & cardia, **F** reproductive system, **G** tail. Male: **B** entire body, **C** anterior end, **H** posterior end showing Ventromedian supplements, spicule & tail, **I** spicule

long. Lateral guiding piece one-third to 1/3.8 of spicular length. Supplements consist of 6–7 irregularly spaced ventromedians with an adanal pair. Prerectum 5.9–6 and rectum 1–1.1 anal body-widths long. Tail same as in female.

Habitat and locality

Collected from soil around the roots of litchi at Sikharbali, Baruipur block and Mograhat, Mograhat block on 23 September 2005 and 09 June 2007, respectively.

Remark

The present female specimens agree well with those of type specimens of *D. (D.) parateres* Siddiqi 1963 except in having more posteriorly placed vulva and shorter prerectum ($V = 39\text{--}41\%$; prerectum = 150.0 μm long in the

type specimens). The present specimens are also in well consonance with those specimens of *D. (D.) parateres* reported by Baqri and Khera (1979) from Cooch Behar district, West Bengal, India from rhizosphere of paddy (*Oryza sativa* L.).

D. (L.) parvus Thorne and Swanger, 1936 (Fig. 4)

Measurements

Shown in Table 3.

Female

Body strongly ventrally curved on fixation. Cuticle with very fine transverse striations, 2.5 μm thick at mid body and 3.5–5 μm on tail. Lip region almost continuous or

Table 3 Morphometric data on *Dorylaimoides* (*Longidorylaimoides*) *parvus* Thorne and Swanger, 1936

Characters	Females ($n = 11$) mean $\pm$ SD (range)	Males ($n = 04$) mean $\pm$ SD (range)
L	1.16 $\pm$ 0.07 (1.05–1.28)	1.06 $\pm$ 0.04 (1–1.1)
<i>a</i>	40.6 $\pm$ 2.23 (37.8–44)	36.9 $\pm$ 3.66 (33.2–40.9)
<i>b</i>	5.7 $\pm$ 0.29 (5.2–6)	5.5 $\pm$ 0.28 (5.2–5.9)
<i>c</i>	9.7 $\pm$ 0.46 (9.3–10.3)	10.7 $\pm$ 0.33 (10.3–11)
<i>c'</i>	6 $\pm$ 0.35 (5.6–6.5)	5.1 $\pm$ 0.52 (4.6–5.8)
V % ♀/ T % ♂	36.8 $\pm$ 1.32 (35.2–39)	55.5 $\pm$ 5.7 (48.8–61.3)
G ₁ %	14.6 $\pm$ 2.25 (13.1–19.1)	–
G ₂ %	22.1 $\pm$ 4.54 (17.6–29.3)	–
Dorsal arm of odontostyle	14 $\pm$ 2.25 (10.5–17.5)	12.7 $\pm$ 2.87 (9–14.5)
Ventral arm of odontostyle	10.8 $\pm$ 2.16 (8.5–14.5)	10.7 $\pm$ 0.5 (10.5–11.5)
Odontostyle aperture	3.5 $\pm$ 0.54 (3–4)	3.3 $\pm$ 0.57 (3–4)
Odontophore length	17.1 $\pm$ 2.88 (13.5–19.5)	13.8 $\pm$ 0.57 (13.5–14.5)
Maximum body width	29.3 $\pm$ 1.86 (27–32)	29.1 $\pm$ 4.04 (24.5–33)
Body width at neck base	26.4 $\pm$ 0.82 (25.5–27)	25.7 $\pm$ 3.22 (22–29.5)
Body width at vulva	29 $\pm$ 2.09 (27–32)	–
Pharyngeal length	201.1 $\pm$ 9.51 (194–220)	191 $\pm$ 4.08 (186–196)
Expanded part of pharynx	55.6 $\pm$ 3.5 (51–61)	53.1 $\pm$ 4.62 (48–59)
Length of glandularium	37 $\pm$ 4.38 (30–42)	38.5 $\pm$ 7.41 (29.5–47)
Length of anterior gonad	114.3 $\pm$ 15.12 (103–135)	–
Length of posterior gonad	166 $\pm$ 20.87 (145–198)	–
Length of anterior ovary	58.3 $\pm$ 18.98 (37–90)	–
Length of posterior ovary	93.6 $\pm$ 34.4 (64–147)	–
Anterior end to vulva	431.6 $\pm$ 38.93 (392–502)	–
Vaginal length	14.8 $\pm$ 1.29 (13.5–17)	–
Tail length	119 $\pm$ 6.06 (113–127)	98.8 $\pm$ 6.86 (91–106)
Anal body width	19.6 $\pm$ 1.29 (18–22)	19.1 $\pm$ 0.75 (18–19.5)
Length of prerectum	125.5 $\pm$ 13.91 (115–147)	156.6 $\pm$ 13.26 (144–171.5)
Length of rectum	25.5 $\pm$ 3.23 (22–29)	27.8 $\pm$ 2.78 (24.5–31)
Testis length	–	591.5 $\pm$ 44.46 (541–649)
Length of Spicules	–	30.5 $\pm$ 1.41 (28.5–31.5)
No. of V. M. supplements	–	5.2 $\pm$ 0.5 (5–6)

All measurements are in μm except L and body ratios, L in mm; mean $\pm$ SD (minimum–maximum range)

slightly set off, narrower than adjoining body, 5 µm high, 7.5–10 µm wide or slightly less than one-third of the body width at neck base. Amphids stirrup-shaped, 6–7 µm wide. Odontostyle 1.4–1.8 lip region-widths long dorsally and 1–1.3 lip region-widths long ventrally, its aperture 3–4 µm. Odontophore not straight, 1.4–2.5 lip region-widths long. Guiding ring 6–8 µm from anterior end. Basal expanded portion of pharynx occupying 27.2–29.8 % of total neck length. Cardia round or tongue-shaped. Glandularium 55.5–73.2 % of cylindrus. Locations of pharyngeal gland nuclei are: $D = 78.5\text{--}86.5\%$; $AS_1 = 51.5\text{--}79\%$; $AS_2 = 56.2\text{--}88.4\%$. Vulva transverse, distinctly pre-equatorial. Vagina unsclerotized, about half of the corresponding body-width long. Reproductive system amphidelphic. Sperms present in the uteri. Distinct sphincter present at the uterus-oviduct junction. Both ovaries reflexed, anterior ovary 37–90 µm and posterior ovary 64–147 µm long. Prerectum 5.3–7.5 and rectum 1.1–1.4 anal body-widths long. Tail elongate, attenuated ending in a finely rounded terminus, 5.6–6.5 anal body-widths long. Terminal portion of tail dorsally bent.

Male

Similar to females in general morphology except the following. Body more ventrally curved in the posterior half of the body. Testes outstretched. Spicules 1.4–1.7 anal body-widths long. Lateral guiding piece 7–9 µm long. Supplements consist of 4–5 regularly spaced ventromedians and an adanal pair. Prerectum 7.3–9.1 and rectum 1.3–1.5 anal body-width long. Tail same as in female, 4.6–5.8 anal body-widths long.

Habitat and locality

Collected from soil around the roots of guava at Chongo and Bosepukur of Baruipur block on 27. 07. 2005 and from Mathurapur of Mathurapur block on 10 August 2007.

Remark

The present specimens are in well conformity to the type specimens of *D. (L.) parvus*. The specimens also agree with the specimens of *D. (L.) parvus* reported by Jana and Baqri

(1981) from soil around the roots of paddy (*Oryza sativa*) at Burdwan district, West Bengal except in having shorter body and slightly different 'c' value ($L = 1.29\text{--}1.56$ mm in females and $1.25\text{--}1.43$ mm in males, $c = 12\text{--}14$ in females in the specimens reported by Jana and Baqri 1981).

Specimens

All the specimens are deposited in National Zoological Collections, Zoological Survey of India, Kolkata, India.

Acknowledgments The authors are grateful to the Director, Zoological Survey of India, Kolkata, India.

References

- Andrassy I (1998) Once more: the oesophageal gland nuclei in the dorylaimoid nematodes. *Opuscula Zoologica Budapest* XXXI: 165–170
- Baqri QH, Jairajpuri MS (1969) *Morasia* n. gen. and three new species of *Dorylaimoides* Thorne and Swanger, 1936 (Nematoda: Dorylaimida) from India. *Nematologica* 15:408–424
- Baqri QH, Khera S (1979) Nematodes from West Bengal (India) IV. Three known and two new species of the genus *Dorylaimoides* Thorne and Swanger, 1936 (Leptonchidae : Dorylaimida). *Rec Zool Surv India* 75:247–254
- Bohra P, Baqri QH (2004) Nematoda. In: Director, zoological survey of India (ed) State Fauna Series No. 8, Gujarat (Part-2), Kolkata, pp 355–400
- Christie JR, Perry VG (1951) Removing nematodes from soil. *Proc Helminthol Soc Washington* 18:106–108
- Cobb NA (1918) Estimating the nema population of the soil. *Agricultural Technology Circular I*. Bureau of Plant Industry, United States Department of Agriculture, Washington, DC, 48 pp
- De Maeseneer J, D'Herde CJ (1963) Méthodes utilisées pour l'étude des anguillules libres du sol. *Revue Agric Bruxelles* 16:441–447
- Goseco CG, Ferris VR, Ferris JM (1976) Revision in Leptonchoidea (Nematoda: Dorylaimoidea). *Dorylaimoides* in Dorylaimoididae, Dorylaimoidinae, *Calolaimus* and *Timmus* n. gen. in Dorylaimoididae, Calolaiminae; and *Miranema* in Muranematidae. *Purdue Univ Agric Exp Station Res Bull* 941: 46 pp
- Jana A, Baqri QH (1981) Nematodes from West Bengal (India) XI. Studies on the species of the super family Leptonchoidea (Dorylaimida). *J Zool Soc India* 33(1–2):1–24
- Sauer MR (1967) Four new species of *Dorylaimoides*. *Nematologica* 12(1966):523–529
- Siddiqi MR (1963) Three new species of *Dorylaimoides* Thorne and Swanger, 1936 with a description of *Xiphinema orbum* n. sp. (Nematoda: Dorylaimoidea). *Nematologica* 9:626–634