

Section of Nematology, Department of Zoology,  
Aligarh Muslim University, Aligarh - 202001, India

FOUR NEW SPECIES OF *ALAIMUS* DE MAN, 1880  
(NEMATODA: ALAIMIDAE) FROM INDIA

by

MAHLAQA CHOUDHARY and M. S. JAIRAJPURI

Several specimens of the genus *Alaimus* de Man, 1880 were found in the soil samples collected from Assam, Manipur and West Bengal. They represent four new species which have been named as *Alaimus indicus*, *Alaimus lambertii*, *Alaimus manipuriensis* and *Alaimus saccatus* and are described below.

Measurements were taken and observations made on specimens mounted in glycerine after being killed in hot 4% formalin and dehydrated by the slow method.

Type material is deposited in the collection of the Department of Zoology of the Aligarh Muslim University.

*ALAIMUS INDICUS* sp. n.

(Fig. 1)

*Paratype females* (6): L = 1.4-1.6 mm; a = 46-56; b = 5.1-6.5; c = 11-13; c' = 6-7; V = 39-45.

*Holotype female*: L = 1.5 mm; a = 45; b = 6.5; c = 13; c' = 6; V = 41.

*Paratype males* (3): L = 1.4-1.6 mm; a = 49-67; b = 4.9-5.8; c = 12-17; c' = 3-4; T = 50-57.

*Description*

*Female*: Body ventrally arcuate when heat killed. Cuticle finely striated. Lip region rounded, continuous with body, 4-5  $\mu$ m or 1/6-1/5

of midbody-width. Excretory pore at 21-23  $\mu\text{m}$  from anterior extremity. Amphidial apertures at 68-75  $\mu\text{m}$ , sensillar pouches at 73-81  $\mu\text{m}$  or 2-3 times maximum body-width from anterior extremity. Oesophagus 247-297  $\mu\text{m}$  long, basal expanded part occupying 22-27% of its length. A dorsal and two pairs of ventrosublateral oesophageal gland nuclei present. Nerve ring at 147-158  $\mu\text{m}$  from anterior extremity. Cardia small, flattened, 2-3  $\mu\text{m}$  long. Reproductive system mono-opisthodelphic, occupying 210-297  $\mu\text{m}$  of body length. Vulva transverse, vagina heavily cuticularized, 3-4  $\mu\text{m}$  long. Uterine eggs 93-110  $\mu\text{m}$  long, 21-32  $\mu\text{m}$  wide. Spermatheca 27-30  $\mu\text{m}$  long, sperms elongate and closely packed. Ovary reflexed with 10-12 oocytes arranged irregularly. Rectum less than one anal body-width long. Tail elongate-conoid, 112-126  $\mu\text{m}$  or 6-7 anal body-widths long.

*Male:* Spicules 17-20  $\mu\text{m}$  long, straight. Ventromedian supplements six, extending to a distance of 62-68  $\mu\text{m}$  from anus. Tail 82-98  $\mu\text{m}$  or 3-4 anal body-widths long.

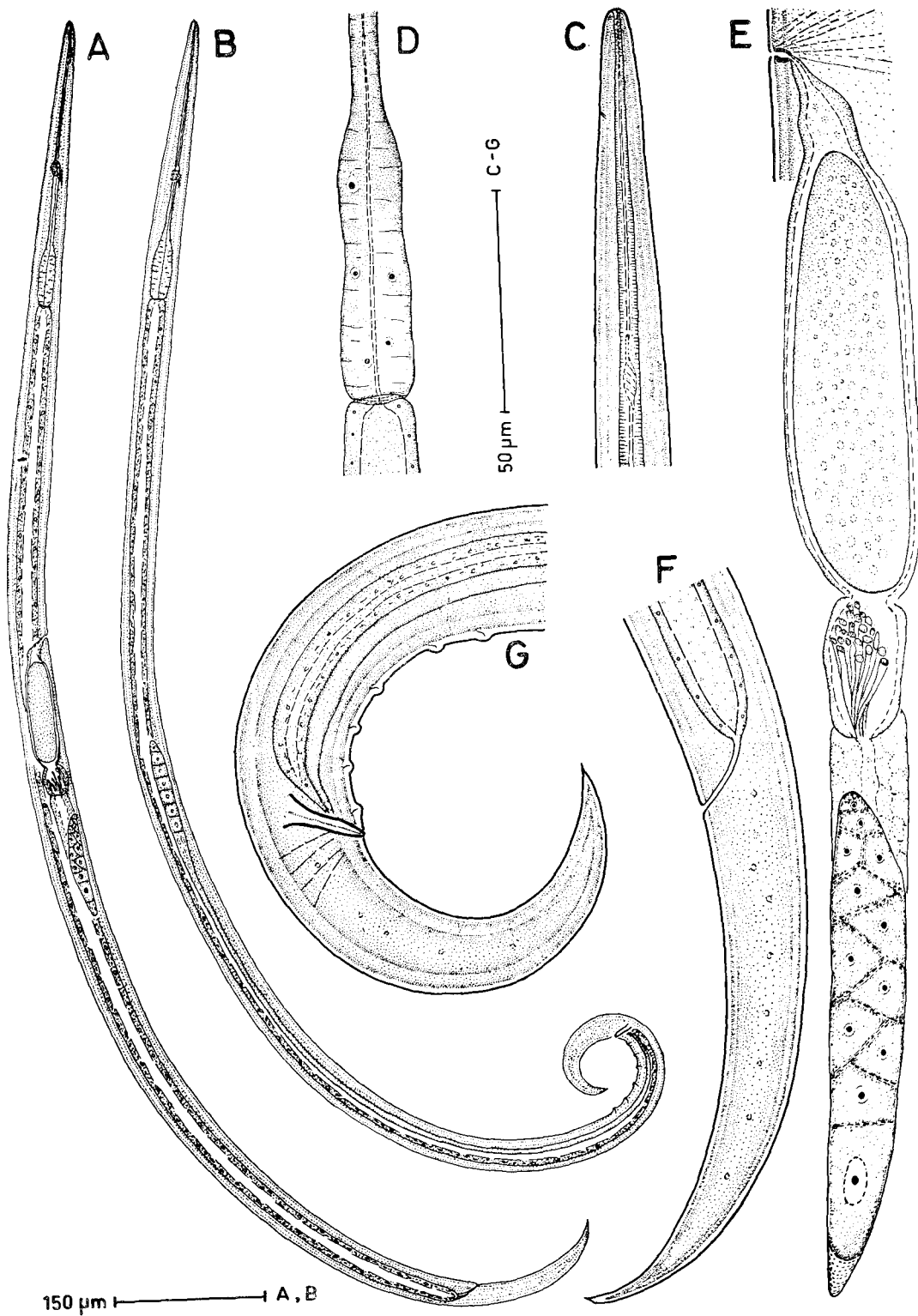
*Type habitat and locality:* Soil around roots of paddy, *Oryza sativa* L. from near Botany Department, Gauhati University, Assam.

*Type specimens:* Collected in January 1978. Holotype on slide *Alaimus indicus* sp. n./1; paratypes on slides *Alaimus indicus* sp. n./2-7.

*Differential diagnosis:* *Alaimus indicus* sp. n. resembles *A. similis* Thorne, 1939, *A. glissus* Thorne, 1939, *A. hamulus* Siddiqi et Husain, 1967 and *A. postamphidius* Mulk et Coomans, 1979. It differs from *A. similis* in having a longer body, shorter oesophagus, longer tail, posterior vulva and in the presence of males (L = 1.33 mm; b = 5.0; c = 13.9; V = 36; males are absent in *A. similis*). It differs from *A. glissus* in the longer body, anterior position of sensillar pouches, shorter oesophagus, shape of tail terminus and presence of males (L = 1 mm; sensillar pouches 53-56  $\mu\text{m}$ , midway between anterior extremity and nerve ring; b = 4.5; tail terminus subdigitate; males absent in *A. glissus*). It differs from *A. hamulus* in the longer body, anterior position of sensillar pouches, shorter oesophagus and size and shape of spicules (L = 0.95-1.20 mm; sensillar pouches 55  $\mu\text{m}$  or about 5 times maximum body-width from anterior extremity; b = 4.2-4.8; spicules 10  $\mu\text{m}$  long and cephalated in *A. hamulus*). It differs from

---

Fig. 1 - *Alaimus indicus* sp. n.: Entire female (A); Entire male (B); Anterior region (C); Basal portion of oesophagus (D); Female gonad (E); Female tail (F); Male posterior region (G).



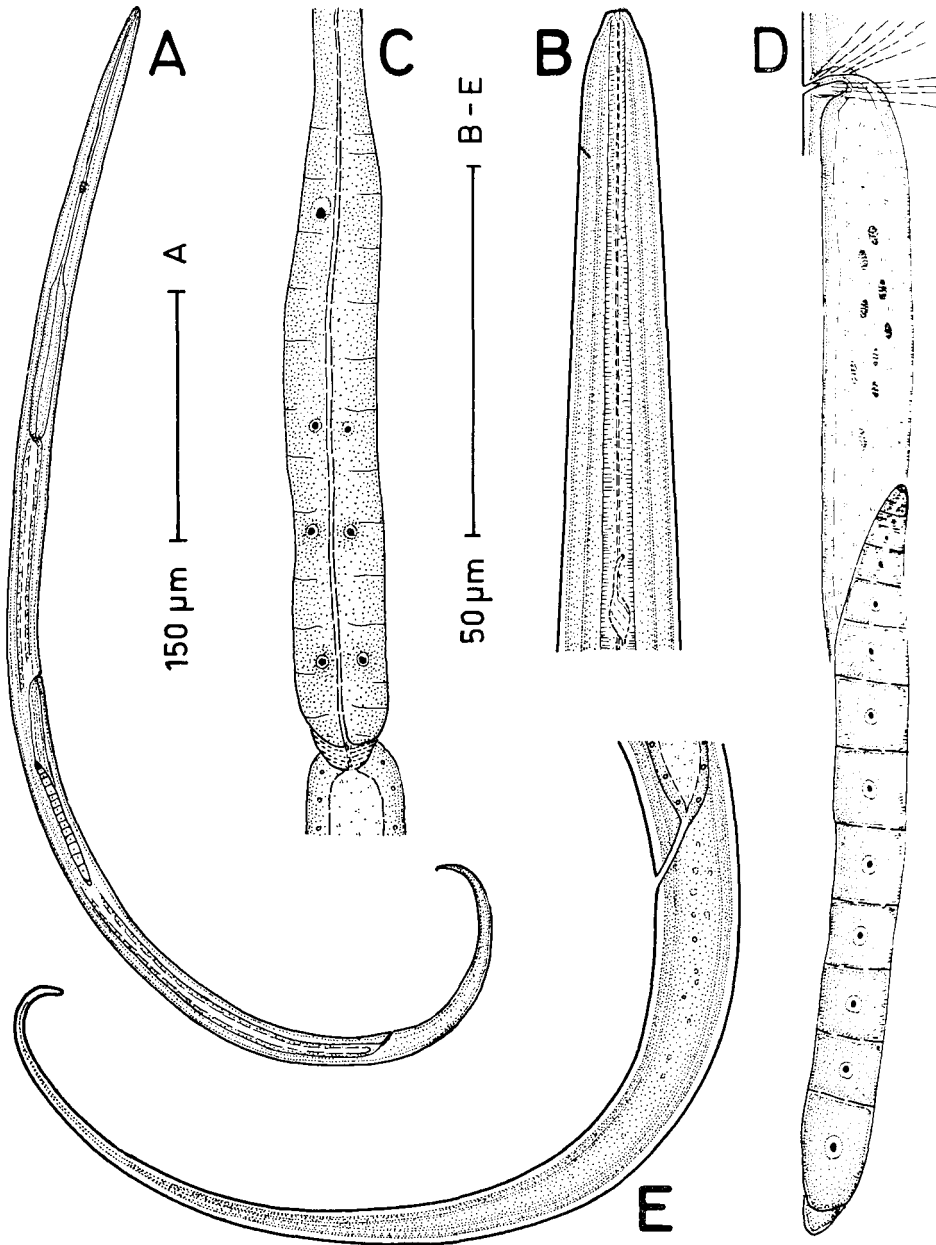


Fig. 2 - *Alaimus lambertii* sp. n.: Entire female (A); Anterior region (B); Basal portion of oesophagus (C); Female gonad (D); Female tail (E).

*A. postamphidius* in the longer body, anterior position of sensillar pouches and the number of ventromedian supplements (L = 0.86-1.22 mm; sensillar pouches at 102-115  $\mu\text{m}$  from anterior extremity, very close to nerve ring; only 3-4 ventromedian supplements present in *A. postamphidius*).

*ALAIMUS LAMBERTII* sp. n.

(Fig. 2)

*Paratype females* (5): L = 0.8-0.93 mm; a = 56-62; b = 3.3-3.9; c = 6-7; c' = 12-13; V = 43-46.

*Holotype female*: L = 0.90 mm; a = 59; b = 3.3; c = 6; c' = 13; V = 45.

*Description*

*Female*: Body arcuate when heat killed. Cuticle finely striated. Lip region abruptly narrow, 3-4  $\mu\text{m}$  or 1/5-1/4 of midbody-width. Excretory pore at 19-21  $\mu\text{m}$  from anterior extremity. Amphidial apertures at 72-77  $\mu\text{m}$ , sensillar pouches at 78-83  $\mu\text{m}$  or 2-3 times maximum body-width from anterior extremity. Oesophagus 240-257  $\mu\text{m}$  long, basal expanded part dorylaimoid, occupying 31-33% of length of oesophagus. A dorsal and three pairs of ventrosublateral oesophageal gland nuclei present. Nerve ring at 98-120  $\mu\text{m}$  from anterior extremity. Cardia conoid, 3-4  $\mu\text{m}$  long. Reproductive system mono-opisthodelphic, occupying 120-160  $\mu\text{m}$  of body length. Vulva transverse, vagina 4-5  $\mu\text{m}$  long. Ovary reflexed with 10-15 cocytes arranged in a single row except at the tip. Rectum less than one anal body-width long. Tail elongate conoid, 135-140  $\mu\text{m}$  or 12-13 anal body-widths long.

*Male*: Not found.

*Type habitat and locality*: Soil around roots of pineapple *Ananas comosus* L., Regional Medical College, Imphal, Manipur.

*Type specimens*: Collected in March 1977. Holotype on slide *Alaimus lambertii* sp. n./1; paratypes on slides *Alaimus lambertii* sp. n./2-4.

*Differential diagnosis*: *Alaimus lambertii* sp. n. differs from all the described species of the genus in having a longer basal expanded

part of oesophagus. It is similar to *A. parvus* Thorne, 1939, *A. leptus* Siddiqi et Husain, 1967 and *A. thrixus* Siddiqi et Husain, 1967. It differs from *A. parvus* in having a longer and more slender body, longer oesophagus and the posterior position of vulva (L = 0.7 mm; a = 40; b = 4.1; V = 41 in *A. parvus*). It differs from *A. leptus* in the longer and more slender body, shape of lip region, and position of sensillar pouches (L. = 0.55-0.63 mm; a = 46-54; lip region marked off from body by a depression; sensillar pouches 80  $\mu$ m from anterior extremity in *A. leptus*). It differs from *A. thrixus* in the longer body, longer oesophagus, posteriorly located vulva and shape of tail (L = 0.71-0.72 mm; b = 4.0-4.2; V = 40-41; tail filiform in *A. thrixus*).

The new species is named after Professor Franco Lamberti.

*ALAIMUS MANIPURIENSIS* sp. n.

(Fig. 3)

*Paratype females* (3): L = 0.9-1 mm; a = 60-64; b = 4.3-5; c = 7-8; c' = 11-12; V = 46-49.

*Holotype female*: L = 0.9 mm; a = 62; b = 4.7; c = 7; c' = 11; V = 49.

*Paratype male*: L = 1 mm; a = 60; b = 4.4; c = 14; c' = 5; T = 66.

*Description*

*Female*: Body arcuate when heat killed. Cuticle finely striated. Lip region rounded, continuous with body, 3-4  $\mu$ m or 1/6-1/5 of midbody-width. Excretory pore 16-19  $\mu$ m from anterior extremity. Amphidial apertures at 78-82  $\mu$ m, sensillar pouches at 86-90  $\mu$ m or more than 4 times maximum body-width from anterior extremity. Oesophagus 210-248  $\mu$ m long, basal expanded part occupying 12-17% of its length. A dorsal and two pairs of ventrosublateral oesophageal gland nuclei present. Nerve ring at 105-120  $\mu$ m from anterior extremity. Cardia flattened, 1-2  $\mu$ m long. Reproductive system mono-opisthodelphic, occupying 133-150  $\mu$ m of body length. Vulva transverse, vagina 3-4  $\mu$ m long. Ovary reflexed with 11-14 oocytes arranged in a single row except at the tip. Anterior uterine sac 25-35  $\mu$ m or about 2 vulval body-widths long. Rectum less than one anal body-width long. Tail elongate-conoid, 128-150  $\mu$ m or 11-12 anal body-widths long.

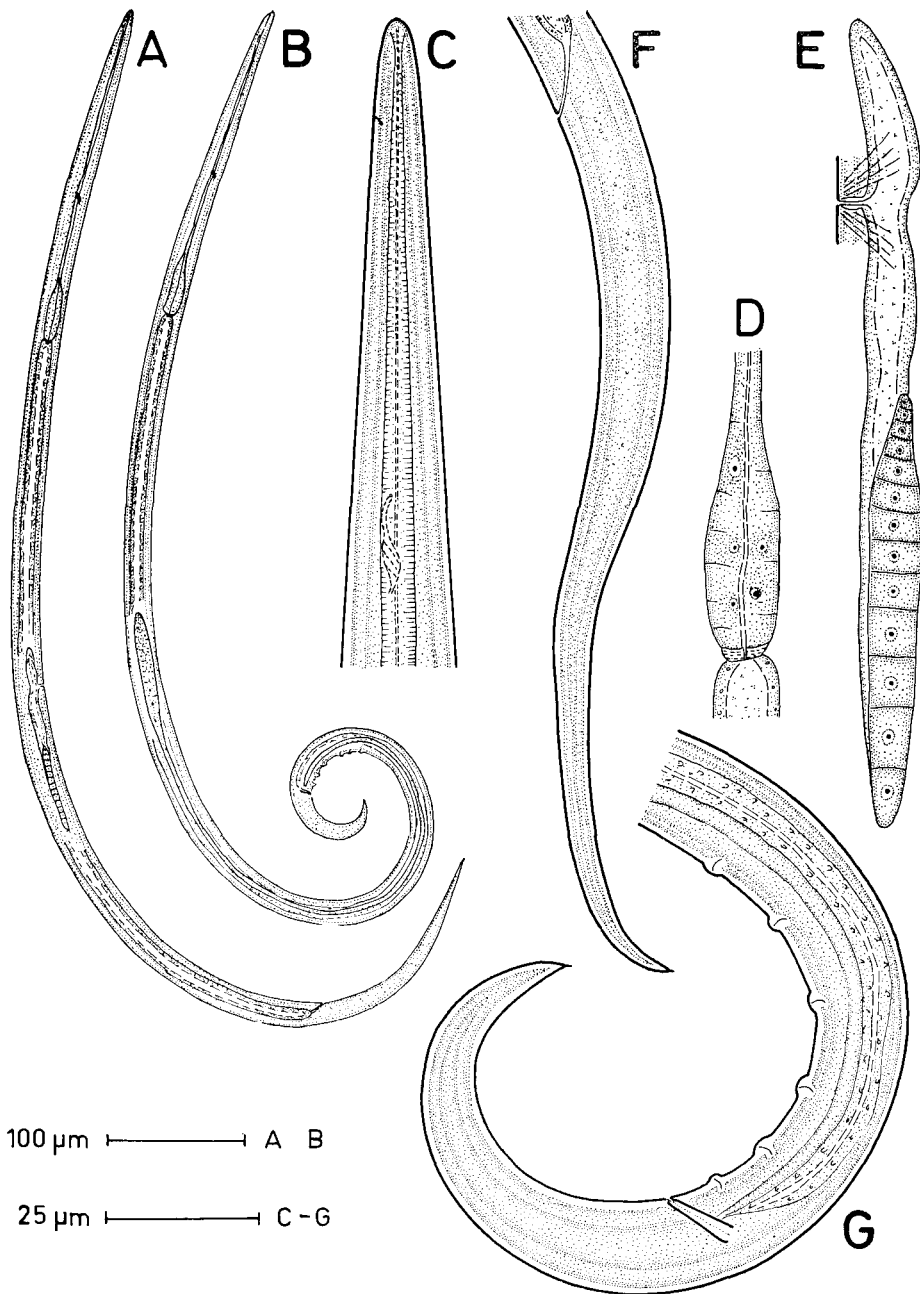


Fig. 3 - *Alaimus manipuriensis* sp. n.: Entire female (A); Entire male (B); Anterior region (C); Basal portion of oesophagus (D); Female gonad (E); Female tail (F); Male posterior region (G).

*Male*: Spicules 11  $\mu\text{m}$  long, straight. Ventromedian supplements six extending to a distance of 75  $\mu\text{m}$  from anus. Tail 68  $\mu\text{m}$  or about 5 anal body-widths long.

*Type habitat and locality*: Soil around roots of sweet potato *Ipomea batatas* L., Uchiya, Imphal, Manipur.

*Type specimens*: Collected in December 1980. Holotype on slide *Alaimus manipuriensis* sp. n./1; paratypes on slides *Alaimus manipuriensis* sp. n./2-6.

*Differential diagnosis*: *Alaimus manipuriensis* sp. n. is similar to *A. aculeatus* Andr ssy, 1968, *A. jaulasali* Siddiqi et Husain, 1967 and *A. asifkhalili* Mulk et Coomans, 1979. It differs from *A. aculeatus* in having an anterior uterine sac, posteriorly located vulva, shorter tail and presence of males (anterior uterine sac absent;  $V = 42$ ;  $c = 8.3$ ; males not known in *A. aculeatus*). It differs from *A. jaulasali* in the shorter body, presence of anterior uterine sac, posteriorly located vulva and size of spicules ( $L = 1.1\text{-}1.2$  mm; anterior uterine sac absent;  $V = 41\text{-}44$ ; spicules 9  $\mu\text{m}$  long in *A. jaulasali*). It differs from *A. asifkhalili* in the slender body, posterior position of sensillar pouches, presence of anterior uterine sac, longer tail, size of spicules and number of ventromedian supplements ( $a = 40.8\text{-}47.2$ ; sensillar pouches at 70-75  $\mu\text{m}$  from anterior extremity; anterior uterine sac absent;  $c = 10.6\text{-}13.2$ ; spicules 13-14  $\mu\text{m}$  long only 3-5 ventromedian supplements present in *A. asifkhalili*).

#### *ALAIMUS SACCATUS* sp. n.

(Fig. 4)

*Paratype females* (3):  $L = 0.9\text{-}1.1$  mm;  $a = 72\text{-}83$ ;  $b = 4.6\text{-}5.3$ ;  $c = 5\text{-}6$ ;  $c' = 18\text{-}23$ ;  $V = 44\text{-}47$ .

*Holotype female*:  $L = 1$  mm;  $a = 75$ ;  $b = 4.8$ ;  $c = 5$ ;  $c' = 19$ ;  $V = 46$ .

*Paratype males* (3):  $L = 0.9\text{-}1$  mm;  $a = 73\text{-}76$ ;  $b = 4.3\text{-}4.5$ ;  $c = 10\text{-}11$ ;  $c' = 7\text{-}8$ ;  $T = 46\text{-}50$ .

#### *Description*

*Female*: Body arcuate when heat killed. Cuticle finely striated. Lip region rounded, continuous with body, 3-4  $\mu\text{m}$  or 1/4-1/3 of



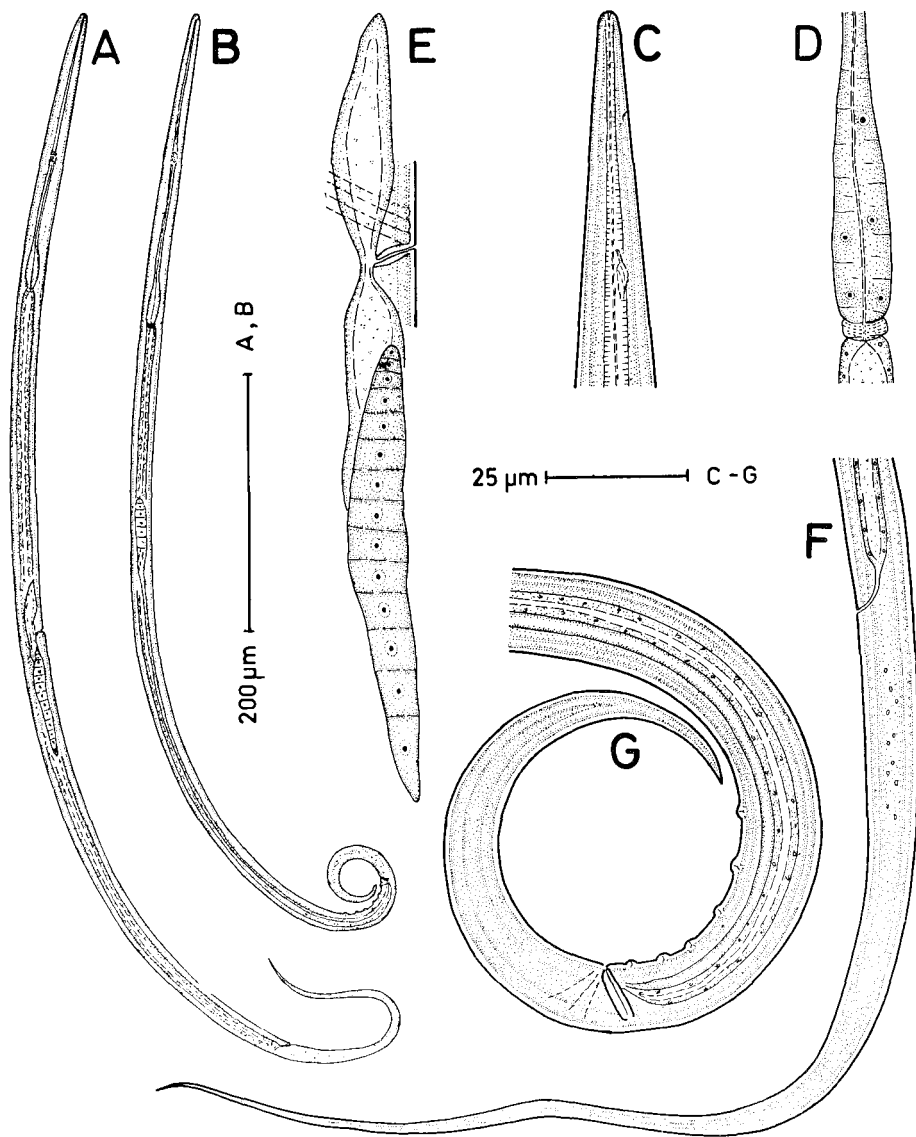


Fig. 4 - *Alaimus saccatus* sp. n.: Entire female (A); Entire male (B); Anterior region (C); Basal portion of oesophagus (D); Female gonad (E); Female tail (F); Male posterior region (G).

midbody-width. Excretory pore 19-21  $\mu\text{m}$  from anterior extremity. Amphidial apertures at 45-47  $\mu\text{m}$ , sensillar pouches at 50-52  $\mu\text{m}$  or about 3 times maximum body-width from anterior extremity. Oesophagus 203-255  $\mu\text{m}$  long, basal expanded part 21-25% of its length. A dorsal and two pairs of ventrosublateral oesophageal gland nuclei present. Nerve ring at 105-120  $\mu\text{m}$  from anterior extremity. Cardia 3-4  $\mu\text{m}$  long. Reproductive system mono-opisthodelphic, occupying 100-125  $\mu\text{m}$  of body length. Vulva transverse, vagina inclined, 7-8  $\mu\text{m}$  long. Ovary reflexed with 13-16 oocytes arranged in a single row except at the tip. Anterior uterine sac 32-40  $\mu\text{m}$  or more than 2 vulval body-widths long. Rectum about one anal body-width long. Tail filiform, 188-210  $\mu\text{m}$  or 18-23 anal body-widths long.

*Male:* Spicules 10-11  $\mu\text{m}$  long. Ventromedian supplements six extending to a distance of 60-72  $\mu\text{m}$  from anus. Tail 75-90  $\mu\text{m}$  or 7-8 anal body-widths long.

*Type habitat and locality:* Soil around roots of grasses from an unknown locality in West Bengal.

*Type specimens:* Collected in August 1969. Holotype on slide *Alaimus saccatus* sp. n./1; paratypes on slides *Alaimus saccatus* sp. n./2-6.

*Differential diagnosis:* *Alaimus saccatus* sp. n. is similar to *A. leptus* Siddiqi et Husain, 1967 and *A. jaulasali* Siddiqi et Husain, 1967. It differs from *A. leptus* in having a longer and more slender body, in anterior position of sensillar pouches, shorter oesophagus, and presence of anterior uterine sac ( $L = 0.55-0.63$  mm;  $a = 46-54$ ; sensillar pouches at 8  $\mu\text{m}$  from anterior extremity;  $b = 3.7-4.2$ ; anterior uterine sac absent in *A. leptus*). It differs from *A. jaulasali* in having a slender body, anterior position of sensillar pouches, presence of anterior uterine sac, size of spicules, and longer tail ( $a = 55-60$ ; sensillar pouches at 85  $\mu\text{m}$  from anterior extremity; anterior uterine sac absent; spicules 9  $\mu\text{m}$  long;  $c = 7.0-8.6$  in *A. jaulasali*).

The authors thank the Chairman, Department of Zoology for facilities to undertake the study. The first author thanks the C.S.I.R., New Delhi for financial assistance.

## S U M M A R Y

Four new species of *Alaimus* de Man, 1880 were found in the soil samples from Assam, Manipur and West Bengal. The new species are *A. indicus*, *A. lambertii*, *A. manipuriensis* and *A. saccatus*. *A. indicus* is characterized by a heavily cuticularized vagina, *A. lambertii* by a longer basal expanded portion of oesophagus, *A. manipuriensis* by a short basal expanded portion of oesophagus and an anterior uterine sac and *A. saccatus* has a large anterior uterine sac and long filiform tail.

## L I T E R A T U R E C I T E D

- ANDRÁSSY I., 1968 - Fauna Paraguayensis 2. Nematoden aus den Galeriewaldern des Acaray Flusses. *Opusc. Zool. Bpest.*, 8: 167-315.
- MULK M. M. and COOMANS A., 1979 - Three new *Alaimus* species (Nematoda: Alaimidae) from Mount Kenya. *Nematologica*, 25: 445-457.
- SIDDIQI M. R. and HUSAIN Z., 1967 - Studies on the Genus *Alaimus* de Man, 1880, with description of six new species from India. *Proc. helminth. Soc. Wash.*, 34: 158-167.
- THORNE G., 1939 - A monograph of the nematodes of the superfamily Dorylaimoidea. *Capita Zool.*, 8: 1-261.

---

Accepted for publication on 30 April 1983.