

Nematodes of high altitudes in India

IX. Descriptions of two new species of *Rotylenchus* (Nematoda : Tylenchida)

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SUMMARY

Two new species of *Rotylenchus* Filipjev, 1936 from the area of Himachal Pradesh, India, are described and figured. *R. dalhousiensis* n. sp., is characterized in having a body 0.55-0.68 mm long, head marked with 5-6 annules, basal annule of lip region without longitudinal lines, spear 24-28 μ m and phasmids preanal. This new species is close to *R. quartus* (Andrássy, 1958) Sher, 1961, *R. fallorobustus* Sher, 1965, *R. citri* Rashid & Khan, 1973 and *R. helicus* Husain & Khan, 1967. *R. neorobustus* n. sp. is characterized in having a body 0.77-0.98 mm long, head marked with 5-6 annules, basal annule of lip region with 24 longitudinal lines, spear 36-40 μ m and phasmids preanal. This new species is close to *R. indorobustus* Jairajpuri & Baqri, 1973, *R. fallorobustus* Sher, 1965, *R. agnetis* Szczygiel, 1968 and *R. pruni* Rashid & Husain, 1972. In both cases only females have been found.

RÉSUMÉ

Nématodes des hautes altitudes en Inde

IX. Description de deux nouvelles espèces de *Rotylenchus* (Nematoda : Tylenchida)

Deux nouvelles espèces de *Rotylenchus* Filipjev, 1936 provenant d'Himachal Pradesh, Inde, sont décrites et figurées. *R. dalhousiensis* n. sp. est caractérisé par la longueur du corps (0,55-0,68 mm), la tête marquée de 5-6 anneaux, l'anneau basal de la région labiale sans lignes longitudinales, le stylet long de 24-28 μ m et les phasmides préanales. Cette nouvelle espèce est voisine de *R. quartus* (Andrássy, 1958) Sher, 1961, *R. fallorobustus* Sher, 1965, *R. citri* Rashid & Khan, 1973 et *R. helicus* Husain & Khan, 1961. *R. neorobustus* n. sp. est caractérisé par le corps long de 0,77-0,98 mm, la tête marquée de 5-6 anneaux, l'anneau basal de la région labiale portant 24 lignes longitudinales, le stylet long de 36-40 μ m et les phasmides préanales. Cette nouvelle espèce est voisine de *R. indorobustus* Jairajpuri & Baqri, 1973, *R. fallorobustus* Sher, 1965, *R. agnetis* Szczygiel, 1968 et *R. pruni* Rashid & Khan, 1973. Dans les deux cas, seules les femelles ont été trouvées.

Extensive survey of the high altitudes in India was carried out during 1970-1977. Several species of plant parasitic nematodes were recovered from the soil samples that were collected. Among these are two new species belonging to the genus *Roty-*

lenchus Filipjev, 1936 which are described below.

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

Rotylenchus dalhousiensis n. sp.
(Fig. 1)

DIMENSIONS

Paratype females (8) : L = 0.61 mm (0.55-0.68 mm); a = 28 (26-32); b = 5.0 (4.9-5.4); b' = 4.3 (4.0-4.6); c = 45 (37-48); c' = 0.9 (0.9-1.0); V = $^{22}65^{18}$ ($^{19-20}64-66^{17-21}$); m = 53 (52-55); O = 33 (20-40).

Holotype female : L = 0.60 mm; a = 27; b = 4.9; b' = 4.3; c = 45; c' = 0.9; V = $^{22}64^{21}$; m = 52; O = 40.

DESCRIPTION

Body upon fixation forming a loose spiral. Body striations 1-2 μ m apart near midbody. Lateral fields 1/5-1/4 of body-width, marked with four straight incisures and areolated only anteriorly in region of oesophagus. Lip region high, hemispherical, marked with 5-6 annules. Longitudinal lines on basal annule of lip region not seen. Cephalic framework strongly sclerotized. Cephalids not seen. Spear 24-28 μ m long, metenchium slightly longer than telenchium; basal knobs with indented anterior surfaces. Orifice of dorsal oesophageal gland 6-11 μ m, almost 1/3 of spear length, from spear base. Oesophagus fairly long, procorpus measuring 50-55 μ m, isthmus 28-34 μ m and basal gland lobe 30-35 μ m. Oesophageal glands overlap extending nearly ten annules dorsolaterally on intestine. Oesophago-intestinal junction conspicuous, at about 1/3 of the length of basal lobe from anterior end of the lobe. Excretory pore 98-118 μ m from anterior extremity and almost at level of nerve ring, and 10-14 annules anterior to level of oesophago-intestinal junction. Hemizonid 1-3 annules anterior to excretory pore and 94-118 μ m from anterior extremity. Hemizonion 14-18 annules posterior to hemizonid and 109-128 μ m from anterior extremity, a little posterior to level of oesophago-intestinal junction. Nerve ring encircling isthmus a little anterior to middle. Vulva a depressed, transverse slit. Epiptygma absent. Vagina about 1/2 body-width long. Female reproductive system amphidelphic, symmetrical; uterus with a proximal muscular and a

distal part ending into an empty spermatheca; ovary with a single row of oocytes. Phasmids 2-7 annules anterior to level of anus. Tail almost one anal body-width long, marked with 9-13 annules, terminus hemispherical.

Type habitat and locality : Soil around roots of forest trees (unidentified) from Gandhi Chowk, Dalhousie, Chamba, Himachal Pradesh, India.

Type specimens : Holotype on slide H.A. 92 / *Rotylenchus dalhousiensis* n. sp. /1, paratypes on slides H.A. 92 /*Rotylenchus dalhousiensis* n. sp. / 2 & 3 deposited in the Department of Zoology, Aligarh Muslim University and one paratype on slide H.A. 92 /*Rotylenchus dalhousiensis* n. sp. /4, deposited in Muséum National d'Histoire naturelle, Laboratoire des Vers, Paris, France.

DIAGNOSIS

R. dalhousiensis n. sp. can be distinguished from all the other species of *Rotylenchus* in having a long oesophageal basal glandular portion. However, it is related to *R. quartus* (Andrássy, 1958) Sher, 1961, *R. fallorobustus* Sher, 1965, *R. citri* Rashid & Khan, 1973 and *R. helicus* Husain & Khan, 1967. From *R. quartus* it differs in having a smaller spear with differently shaped basal knobs, higher value of 'O', spermatheca without sperms, phasmids preanal and in the absence of males (spear 29-33 μ m long, basal knobs rounded with slightly flattened anterior surfaces, O = 11-23, spermatheca with sperms, phasmids on tail and males present in *R. quartus*). From *R. fallorobustus* the new species differs in having smaller spear, higher value of 'O', and in the absence of epiptygma (spear 33-37 μ m long, O = 13-20, and epiptygma single or double in *R. fallorobustus*). From *R. citri* the new species differs in the anterior positions of excretory pore, hemizonid and vulva and conspicuous spermatheca (excretory pore and hemizonid almost at level of oesophago-intestinal junction, V = 68-72 and spermatheca obscure in *R. citri*). From *R. helicus* the new species can be differentiated in having continuous lip region, smaller spear, orifice close to spear base, longer oesophagus, conspicuous spermatheca, no epiptygma, preanal phasmids and longer tail (lip region slightly offset, spear = 28-32 μ m, orifice

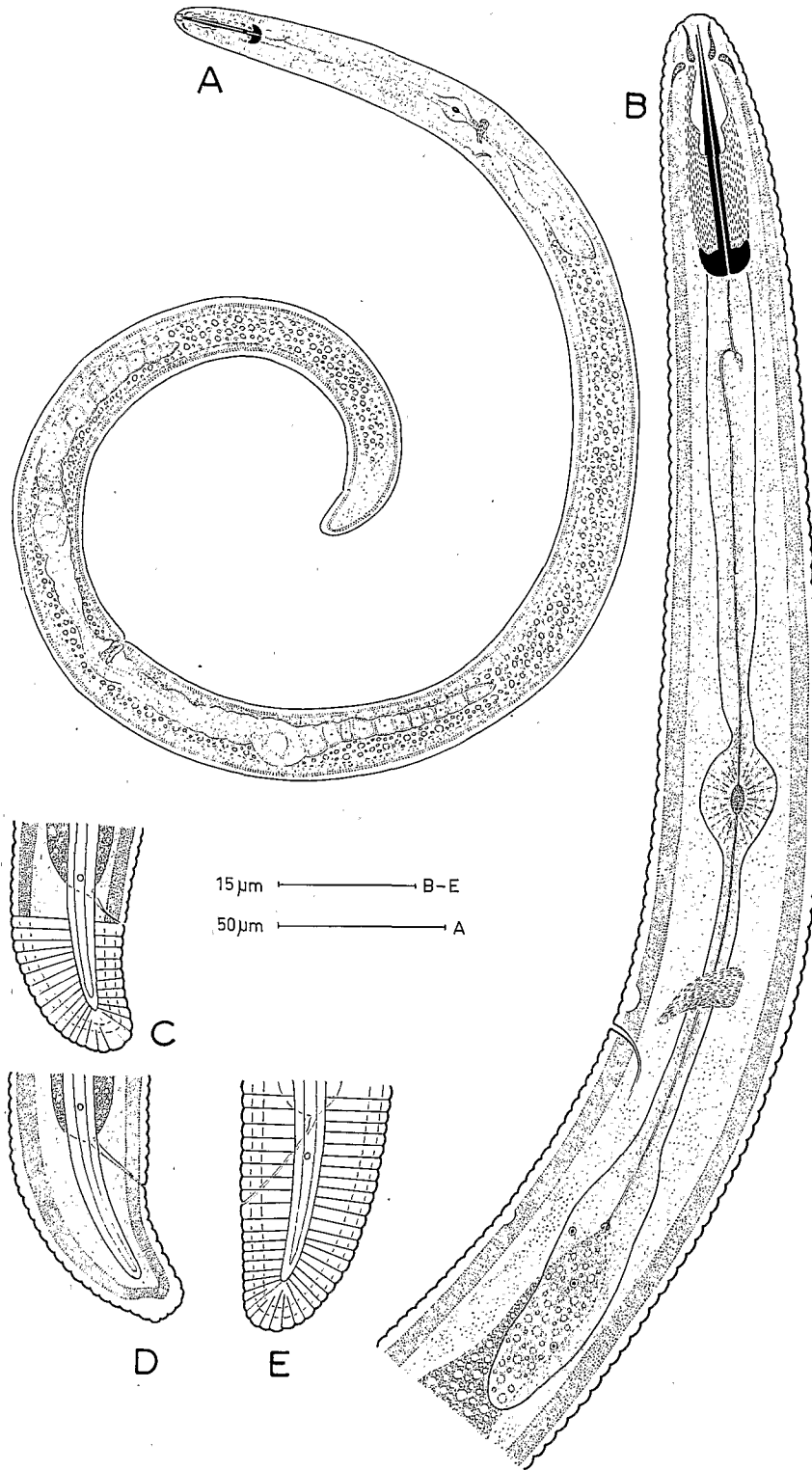


Fig. 1. *Rotylenchus dalhousiensis* n. sp. A : Entire body ; B : oesophageal region ; C-E : Tails.

of dorsal oesophageal gland 15-18 μm or more than 1/2 of spear length from spear base, $b' = 4.9-6.7$, spermatheca not seen, epiptygma distinct, phasmids 3-5 annules posterior to level of anus, $c = 56-93$ and $c' = 0.5-0.75$ in *R. helicus*).

***Rotylenchus neorobustus* n. sp.**
(Fig. 2)

DIMENSIONS

Paratype females (9) : L = 0.87 mm (0.77-0.98 mm); a = 30 (29-31); b = 6.7 (6.1-7.6); $b' = 6.4$ (5.8-7.3); c = 40 (32-42); $c' = 1.1$ (1.0-1.3); V = $^{20}56^{19}$ ($^{16-23}54-60^{17-22}$); m = 53 (51-54); O = 19 (11-33).

Holotype female : L = 0.85 mm; a = 30; b = 6.6; $b' = 6.3$; c = 43; $c' = 1.0$; V = $^{17}56^{18}$; m = 54; O = 33.

DESCRIPTION

Body spiral upon fixation. Body striations 1-2 μm apart at midbody. Lateral fields 1/5-1/4 of body-width, marked with four straight incisures in middle and areolated only anteriorly in oesophageal region. Lip region hemispherical, slightly offset, marked with 5-6 annules. Basal annule of lip region marked with 24 longitudinal lines. Cephalic framework heavily sclerotized. Cephalids not seen. Spear 36-40 μm , metenchium slightly longer than telenchium, basal knobs with flat to slightly sloping anterior surfaces. Orifice of dorsal oesophageal gland 6-13 μm , 1/3 or less of spear length from spear base. Oesophagus typical with procorpus measuring 36-40 μm , isthmus 18-20 μm and basal gland lobe 18-30 μm . Oesophageal glands overlap extending only 2-3 annules latero-dorsally on intestine; oesophago-intestinal junction conspicuous, at hinder end of oesophageal lobe. Excretory pore 130-144 μm from anterior extremity, 5-10 annules posterior to level of oesophago-intestinal junction. Hemizonid 2-3 annules wide, 133-138 μm from anterior extremity. Hemizo-

nion not seen. Nerve ring encircling isthmus in middle. Vulva a depressed, transverse slit. Epiptygma single, anterior. Vagina about 1/2 body-width long. Female reproductive system amphidelphic, symmetrical, uterus with a proximal muscular and a distal region ending into an inconspicuous spermatheca, ovary with a single row of oocytes. Phasmids 4-10 annules anterior to anal level. Tail conoid, marked with 4-12 annules and about one anal body-width long.

Type habitat and locality : Soil around roots of chestnut (*Castanea dentata* L.), Murray Field Estate, Simla, Himachal Pradesh, India.

Type specimens : Holotype on slide H.P. 9 / *Rotylenchus neorobustus* n. sp. /1, paratypes on slides H.P. 9 / *Rotylenchus neorobustus* n. sp. /3-5 deposited in the Department of Zoology, Aligarh Muslim University and two paratypes on slide H.P. 9 / *Rotylenchus neorobustus* n. sp. /2 deposited in Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France.

DIAGNOSIS

Rotylenchus neorobustus n. sp. comes close to *R. indorobustus* Jairajpuri & Baqri, 1973, *R. fallorobustus* Sher, 1965, *R. agnelis* Szczygiel, 1968 and *R. pruni* Rashid & Husain, 1972. From *R. indorobustus* it differs in having a longer spear with differently shaped basal knobs, excretory pore and hemizonid below level of oesophagus, tail equal or slightly longer than one anal body-width and tail terminus conical (spear 32-35 μm long, spear knobs with anteriorly indented surfaces, excretory pore and hemizonid above level of oesophago-intestinal junction, tail 1/2 or 3/4 of anal body-width and terminus hemispherical in *R. indorobustus*). From *R. fallorobustus* the new species differs in having lesser number of lip annules, excretory pore and hemizonid below level of oesophagus and no epiptygma (lip region with 6-8 annules, excretory pore and hemizonid at level of oesophageal glands and a single or double epiptygma in *R. fallorobustus*). From *R. agnelis* the new species can be differentiated in having a longer spear, a single anterior epiptygma and a longer and conical tail (spear = 32-35 μm , epiptygma absent, $c = 46-64$ and tail terminus hemispherical with unstriated tip in

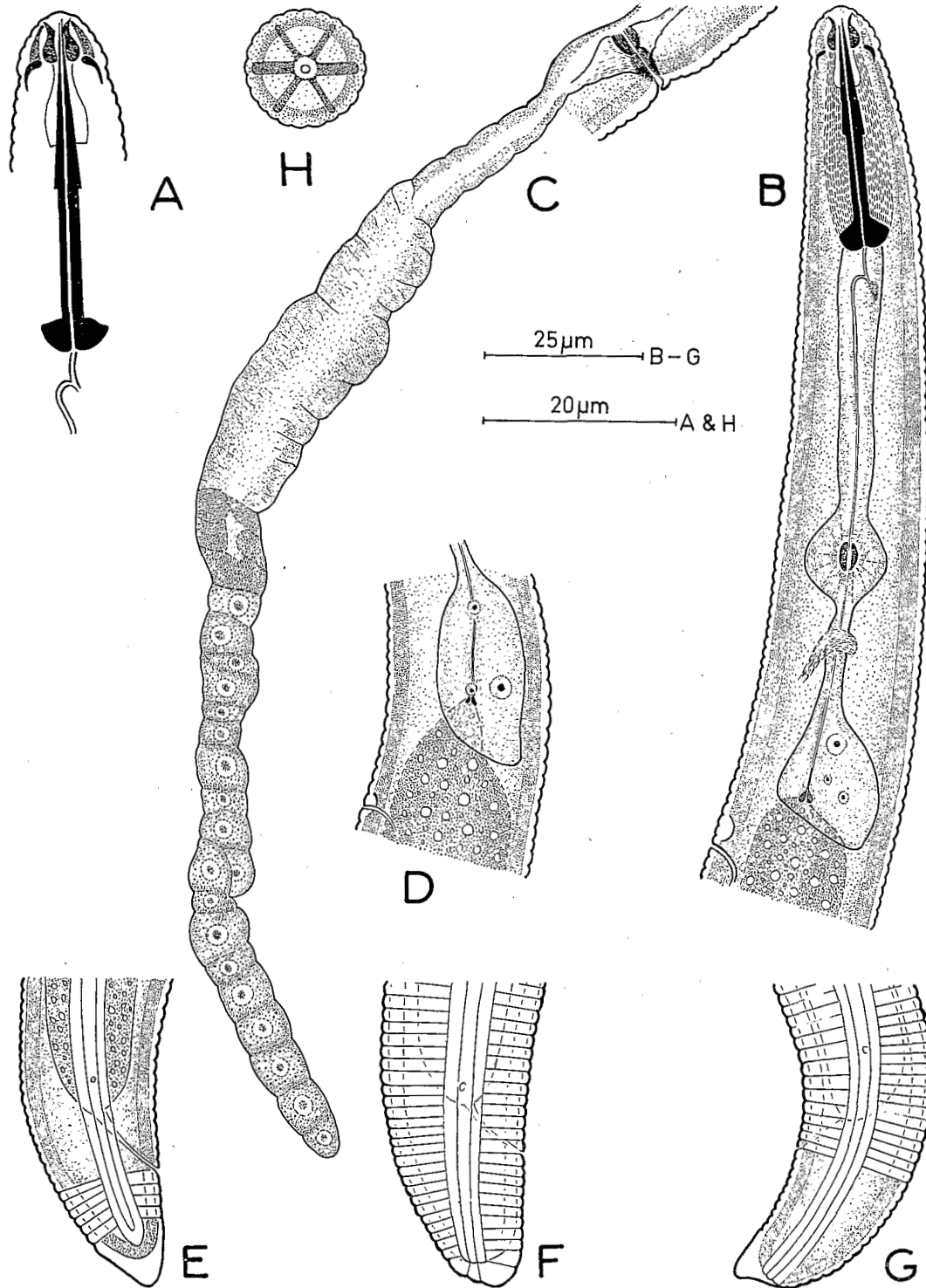


Fig. 2. *Rotylenchus neorobustus* n. sp. A : Anterior end ; B : Oesophageal region ; C : Vulva region and posterior gonad ; D : Oesophageal gland lobe ; E-G : Tails ; H : *En face* view.

R. agnelis). From *R. pruni* the new species differs in having a slightly smaller body, smaller spear, single anterior epiptygma and a longer and conoid tail (L = 1.00-1.09 mm, spear = 40-44 μ m, no epiptygma, c = 47-64 and tail hemispherical in *R. pruni*).

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