

NEW SPECIES OF SOIL NEMATODES IN THE FAUNA OF KIRGHIZIA

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During the investigation of nematode fauna in the soils of the Issyk-Kul basin of Kirghizia, four new species of nematodes were discovered which belong to the genera Deladenus Thorne, 1941 (Neotylenchidae); Helicotylenchus Steiner, 1945 (Hoplolaimidae); Morulaimus Sauer, 1965 (Belonolaimidae); and Iotonchus (Cobb, 1916) Pennak, 1953 (Iotonchidae - see Khan & Jairajpuri, 1980).

The material was fixed with four percent formalin. The description and illustrations were made from permanent glycerin preparations, kept in the collection of the Institute of Biology, Kirghiz SSR Academy of Sciences (Frunze).

Deladenus ulani Sultanalieva sp. n.
(Fig. 1)

Material. 4 ♀♀, 2 ♂♂, 6 larvae, in gray-brown rocky desert-steppe soils with very meager vegetation of the saltwort-shrub type. Holotype ♀, L = 0.796 mm, a = 21.5, b = 6.3, c = 18, v = 83%, stylet - 10 μm. Paratypes: 3 ♀♀, L = 0.676-0.787 mm, a = 22.5-28.0, b = 4.8-5.6, c = 20.21, v = 82-83%, stylet - 10 μm; 2 ♂♂, L = 0.710-0.795 mm, a = 21.2-25.0, b = 5.1-5.7, c = 17.6, stylet - 10 μm.

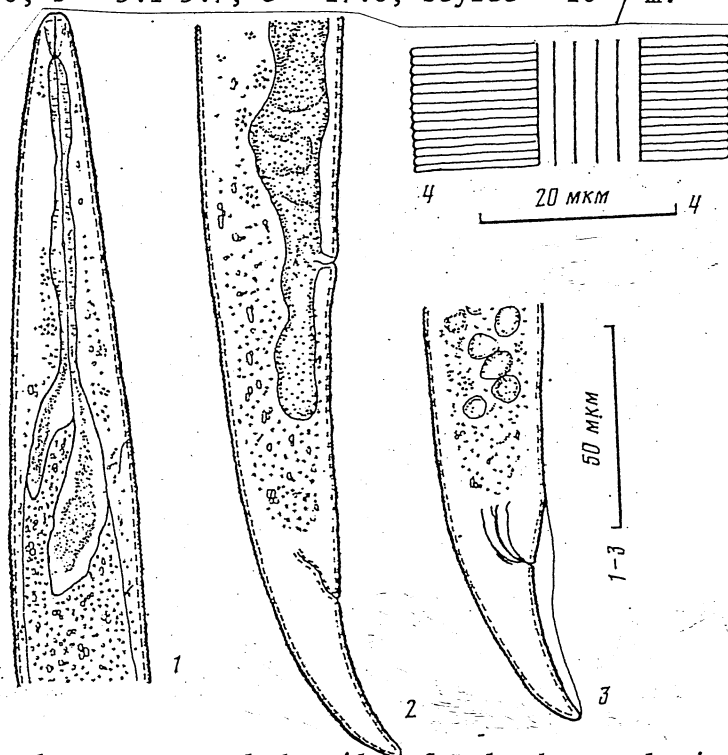


Fig. 1. Structural details of Deladenus ulani sp.n. :

1 - Front; 2 - Rear end of body of female; 3 - Tail end of male; 4 - Lateral field.

Description. Female. Body cylindrical, tapering toward the head and tail ends. Cuticle annulated; annules 1.7 μ m wide. Six lines in the lateral field. Head broad, rounded and not separated from the body contours. Stylet knobs round. Esophagus narrow, and metacarpus weakly developed. Excretory pore at a distance of 115 μ m from anterior end of the body. Intestine granular. Posterior uterus present and moderately developed. Tail short and conical; its length exceeds by 2.5 times the anal diameter of the body.

Male is similar in body shape to the female. Testis elongated. Spicules tylenchoid and 18 μ m long. The bursa envelops the entire tail. The tail is like the female. Gubernaculum present.

Differential diagnosis. It belongs to a group of species with a dimorphism of the females not well marked and a moderately developed uterus. The species being described is closest to D. saccatus Andrassy, 1954 and D. megacondylus Mulvey, 1969 n. comb. (Sumenkova, 1975). It differs from the first by the shape and length of the tail (in D. saccatus $c = 11.6-12.9$; tail conical and pointed), by the lateral field with 6 lines, by the less well marked metacarpal swelling of the esophagus, and by the distinct annulation of the cuticle. It differs from the second by the less developed stylet knobs, by the lower position of the vulva, and by the shape and length of the tail (in D. megacondylus $c = 10$, and tail cone-shaped with thinly rounded tip). Males are unknown among the related species.

Helicotylenchus issykkulensis Sultanalieva, sp. n.
(Fig. 2)

Material. 5 ♀♀, 2 ♂♂, numerous larvae, in the soil, "Dry Range" cape, settlement of Michailovka. Holotype ♀: $L = 0.675$ mm, $a = 24.5$, $b = 5.4$, $c = 27$, $V = 53.7\%$, stylet = 25 μ m. Paratypes: 4 ♀♀, $L = 0.722-0.817$ mm, $a = 21.0-26.8$, $b = 5.0-6.0$, $c = 24.0-32.3$, $V = 53-56\%$; 2 ♂♂, $L = 0.685-0.750$, $a = 26.5-30.0$, $b = 5.5-6.0$, $c = 28-30$, stylet = 23 μ m, spicules = 23 μ m, gubernaculum = 7 μ m.

Description. Female. The shape of the body forms an open spiral. Cuticle annulated, annule width is 1.5 μ m. Lateral field occupies 1/4 of the body width and consists of 4 lines, which reach the end of the tail without merging. Head not offset from the overall contours of the body. Labial area conical, blunted in front, and with 5 clearly visible cuticle annules. Internal framework of the labial area well developed. Stylet knobs anteriorly flattened. Excretory pore at a distance of 90 μ m from front end of body. Hemizonid (its length is equal to the width of two cuticular annules) immediately above the excretory pore. Ovaries paired. Spermatheca slightly offset and contains spermatozooids. Tail conical. Tail tip smooth. Phasmids located at level of the fifth cuticular annule behind the anus.

The male resembles the female in general structure of the body. Spicules slightly bent, wide in the anterior part, then taper and come to a sharp end. Gubernaculum present. Tail pointed and the bursa extends on its entire length.

Differential diagnosis. The species being described is close to H. martini Sher, 1966 from which it is distinguished by the clear annulation in the labial area, by the shape and length of the tail (in H. martini $c = 23-27$ and the tip of the tail is rounded) and by the large measurements of the body.

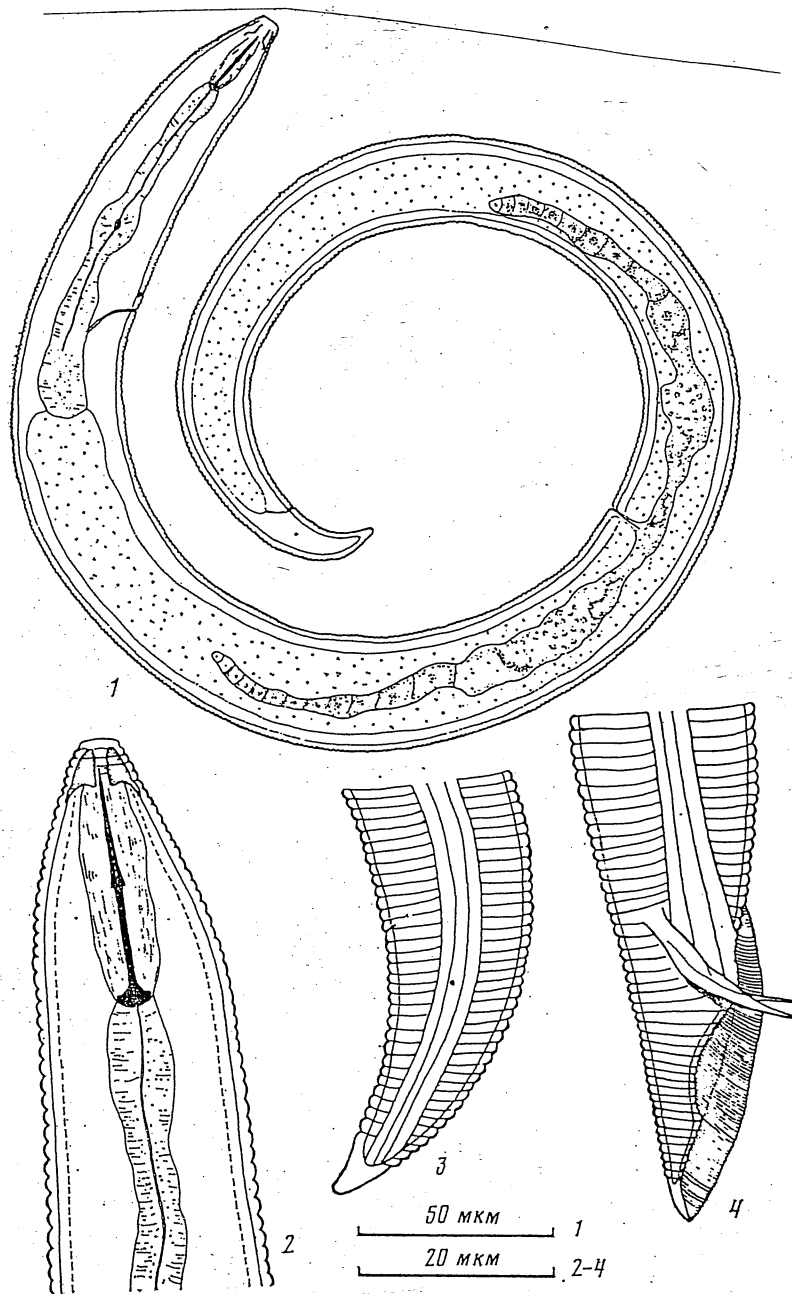


Fig. 2. Structural details of Helicotylenchus issykkulensis sp. n. :

1 - Overall view of female; 2 - Head end of female; 3 - Tail of female;
4 - Tail of male.

Iotonchus kirghistanicus Sultanalieva, sp. n.
(Fig. 3)

Material. 4 ♀♀, 2 ♂♂, 5 larvae in the soil of a subalpine meadow at a height of 3,000 meters above sea level. Holotype ♀, L = 1.76 mm, a = 22, b = 3.6, c = 28, V - 75%, stoma 42 x 30 μm. Paratypes: 3 ♀♀, L = 1.433-1.798, a = 20-23, b = 3.2-3.7, c = 23-27, V = 72-75%, stoma 42 x 30 μm; 2 ♂♂, L = 1.576-1.650, a = 19-22, b = 3.3-3.8, c = 20-25, stoma 42 x 30 μm.

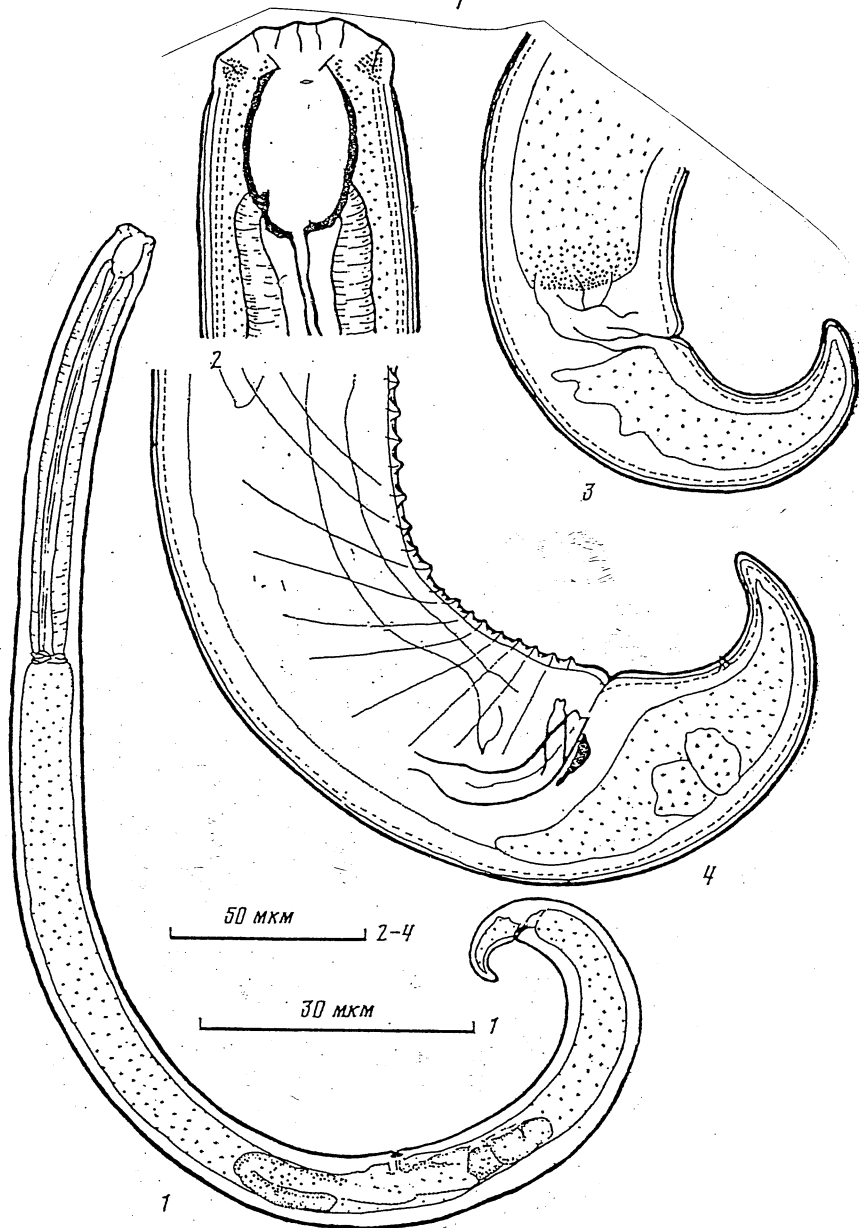


Fig. 3. Structural details of Iotonchus kirghistanicus sp. n.

1 - Overall view of female; 2 - Head end of female; 3 - Tail end of female; 4 - Tail of male.

Description. Female. The nematodes have a cylindrical body, tapering slightly to the head and tail ends. Cuticle smooth, and 3 μm thick. Hypodermal glands lacking. Stoma barrel-shaped and with a flat base. Amphid pores oval, and placed in the top part of the stoma. Dorsal onchium small and situated in the rear quarter of the stoma. In the base of the stoma there are 2 rudimentary subventral onchia. Esophagus powerful, monochooid in type, and with a diverticulum in the cardial area; its length is 472 μm . Ovaries paired and reflexed. Vulval lips not prominent. Vagina straight and muscular. On the ventral side of the body, there are formations resembling papillae along both sides of the vulva. Rectum straight. Tail short, conical and ventrally bent. Tail length more than 60 μm . Caudal glands lacking.

Male. There are two testes. Spicules coarse, 60 μm in length, and ventrally bent. There are 22 supplementary organs. Gubernaculum massive, 16.5 μm in length. Tail shaped like the female, and its length is 63 μm .

Differential diagnosis. The species being described is close to I. zschokkei (Menzel, 1913) Andrassy, 1958 and to I. monticola Eroshenko, 1975 (see Eroshenko, 1975). The new species differs from the first by the measurements of the stoma (in I. zschokkei the stoma is 60 x 30 μm), by its flat base, and by the lower placement of the dorsal onchium and vulva (in I. zschokkei V = 66%). The species being described differs from the second by the measurements of the stoma (in I. monticola the stoma is 70 x 39 μm), by the low placement of the dorsal onchium and vulva (in I. monticola V = 65%), and by the structure of the spicules (in I. monticola the spicules have crenulated distal ends).

Morulaimus tokobaevi Sultanalieva, sp. n.
(Fig. 4)

Material. 5 σ σ , numerous larvae, in mountain chernozem soils in the rhizosphere of a tall-grass meadow, height of 2,200 meters above sea level. Holotype σ , L = 2.2 mm, a = 31.4, b = 7.3, c = 27.5, V = 54.4%, stylet = 100 μm . Paratypes - 4 σ σ , L = 1.80-2.15, a = 24.5-29.0, b = 6.5-7.8, c = 18.6-26.4, V = 52.0-55.5%.

Description. Female. Nematodes of large dimensions with a thick cylindrical body, tapering toward the head and tail ends. Cuticle coarsely annulated. The width of the cuticular annules is 2 μm . Lateral fields 1/4 body diameter in width and with 6 lines. The lateral fields begin at the base of the head and consists of one, and subsequently of 2, transversely striated cords, and then, at a distance of 280 μm from the front end of the body, of 5 longitudinal cords without transverse striation. In the tail end the number of longitudinal cords is reduced as well, and behind the phasmid the lateral fields become a single line. Head distinctly offset from the body contours, hemispherical, and with seven cuticular annules. Developed labial disc present in the front part of the labial area. Internal head skeleton powerful and strongly sclerotized. The basal septa continues for three annules below the head.

Stylet coarse, powerful and with well-developed knobs. The powerful protractors lie parallel to the axis of the stylet and are made fast to the basal septa of the head. Procorpus of esophagus in the form of a tube and is slightly bent. Metacorporeal bulb oval and with a sclerotized cavity internally. Isthmus short and thick and it widens into the cardiac bulb. Excretory pore at a distance 240 μm from the front end of the body. Hemizonid coarse and elipsoid, located a little above the excretory pore. Ovaries paired, long and extended, with oocytes arranged in a single row. Vulva transverse. Tail short and bluntly ended. Its length is equal to 80 μm . Tail tip smooth.

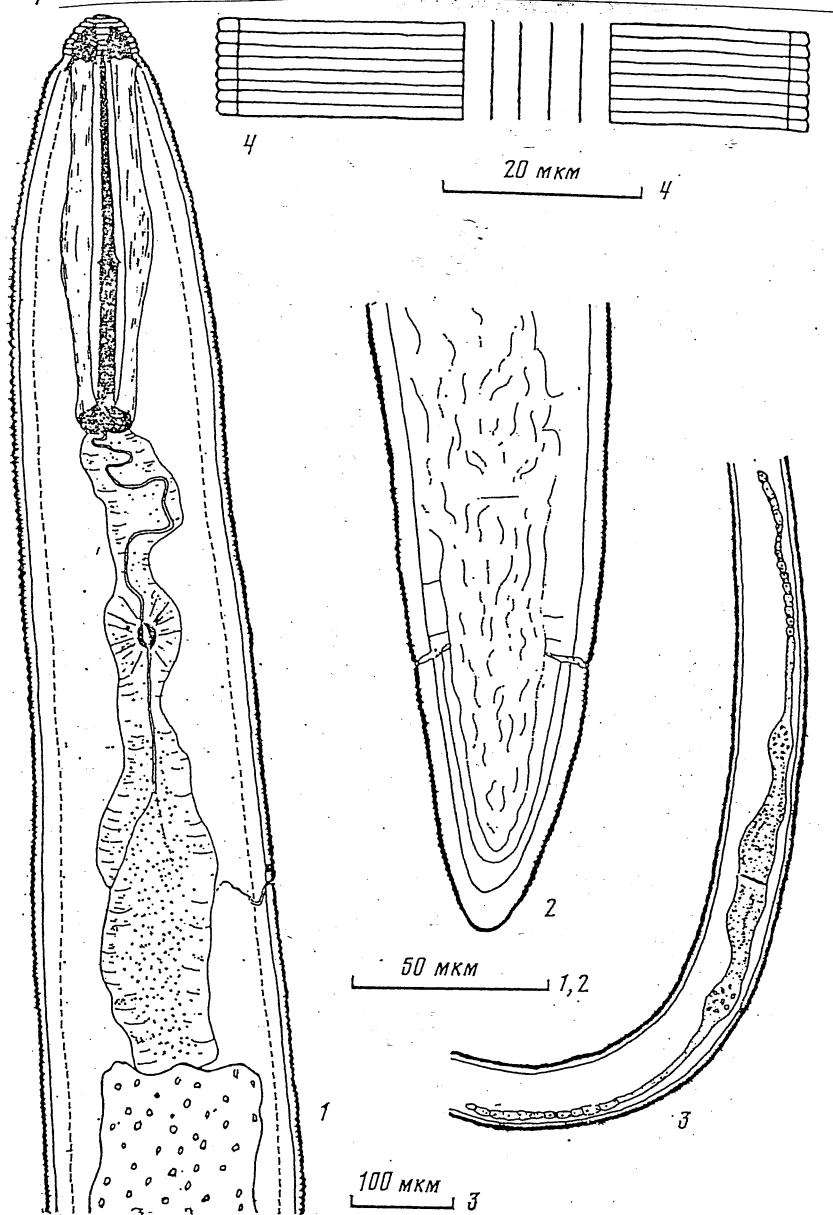


Fig. 4. Structure details of *Morulaimus tokobaevi* sp. n., ♀:

1 - Front end of body; 2 - Tail; 3 - Structure of genital system; 4 - Lateral field.

Differential diagnosis. The new species is closest to the species *M. arealoferus* Razzhivin, 1971. The species being described differs from it by the shape of the tail (in *M. arealoferus* the tail is cylindrical and bluntly rounded and the tip of the tail has coarse annulation), by the length of the stylet (in *M. arealoferus* the stylet is 128 μ m), by the width of the annules of cuticle (in the species being compared the width of the annules of cuticle is equal to 2.9-3.0 μ m) and also by the structure of the lateral field of the cuticle. In the species being described the cords of the lateral field in the center of the body are without transverse striation. The species being described differs from other known species of this genus (*M. geniculatus*, *M. sclerus*, and *M. whitei*) by the length of the stylet, by the number of lines in the lateral field, and by the shape of the tail.

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Summary

Four new species of nematodes were found in soils of the Issyk-Kul Hollow of Kirghizia. *Deladenus ulani* sp. n. differs from the known species of the genus by the tail form and length and a lower position of vulva. *Helicotylenchus issykkulensis* sp. n. is closely related to *H. martini* Sher., 1966 and differs from it by the distinct annulate pattern in the labial region and the tail form and length. *Iotonchus kirghistanicus* sp. n. differs from the known species of the genus by the stoma size and lower positions of dorsal onch and vulva. *Morylaimus tokobaevi* sp. n. is closely related to *M. arealoferus* Razzhivin, 1971 and differs from it by the stylet length, width of cuticle rings, structure of lateral field, form of tail.