

A NEW GENUS AND SPECIES *HOPLONEMA GRAMINICOLA* N.GEN., N. SP.
(NEMATODA: ROTYLENCHULIDAE) FROM TAJIKISTAN.

Ivanova T.S. & Teben'kova, T.M., 1992.

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The article describes a new genus and a new species of nematode, *Hoplonema graminicola* n. gen, n. sp, parasitizing roots of *Anisantha* sp. from the family Gramineae. The comparative morphological data between the new genus and the two most related genera - *Rotylenchulus* and *Senegalonema* - from the family Rotylenchulidae are given.

The subfamily Rotylenchulidae includes two genera: *Rotylenchulus* Lindford & Oliveira, 1940 and *Senegalonema* Germani, Luc & Baldwin 1984. A new nematode species, belonging to a new genus of the family Rotylenchulidae, subfamily Rotylenchulinae, was found in the Gissar (or Hissar) valley, near Dushanbe (Tajikistan) on roots of *Anisantha* sp. from the family Gramineae. This taxon is described below as *Hoplonema graminicola* n.gen., n.sp. The nematodes were fixed in 5% hot formalin; permanent slides were made in glycerin.

Hoplonema n.gen.

Diagnosis. Rotylenchulidae. Lip region with 4 cuticular annuli, with small round apical disk and six lips of equal size. Amphids oval, joining to lip disk. Head skeleton moderately sclerotized. Opening of dorsal esophageal gland duct more than half of stylet length behind stylet base. Esophageal glands overlapping the intestine more on ventral side. Lateral field with 4 incisures. Phasmids pore-like, arranged on tail. **Young female** vermiform, inhabits in soil. Stylet strong with well-developed knobs. Gonads with two opposite branches curved spirally. Tail conoid, its length less than two body diameter at anus level. **Mature female** - on roots. The anterior part of body is vermiform, its middle part is much swollen, and it narrows to the tail end. Cuticle is evenly thick along all the body, distinct annulation on anterior and posterior parts of body. Vulva post-equatorial with projected lips. Tail short. **Male** vermiform, inhabits in soil. Stylet and esophagus less developed than in young female. Tail short. Bursa wide, enveloping tail terminus.

Type species. *Hoplonema graminicola* n.gen., n.sp.

Differential diagnosis. *Hoplonema* n.gen. is morphological related to the genera *Rotylenchulus* and *Senegalonema* [1, 2]. Juveniles, young females and males vermiform, inhabiting in soil. Body of mature females penetrating into the roots of plant-host, much swollen, eggs arranged into a gelatinous sac. However, *Hoplonema* n.gen. is distinguished by important morphological characters from the above-mentioned genera. So, the new genus differs from *Rotylenchulus* by the tail size of young females and males, its length being less than two body diameters at anus level, while *Rotylenchulus* has a tail length of two and more body diameters at anus level. Bursa wide, enveloping tail terminus, gubernaculum with titillae, vs. bursa narrow, not enveloping tail terminus, gubernaculum. without titillae in *Rotylenchulus*.

Hoplonema gen. n. differs from genus *Senegalonema* by the following characters. Lip region of juveniles, males, young and mature females with 4 cuticular annuli, round small disk and 6 lips of the equal size. In *Senegalonema* the lip region has no cuticular annuli, a lip disk merged

with sub-medial lips and elongated dorso-laterally, and lateral lips trapeze-like [2]. Opening of dorsal esophageal gland duct is more than the haft of stylet length behind stylet base vs. less than the haft of stylet length in *Senegalonema*. Gonads of young females twice flexed, vs. straight in *Senegalonema*. Phasmids of mature females are pore-like vs. widening.

Hoplonema n.gen. also differs from both genera by the shape of mature females and ventral arrangement of esophageal glands.

Comparative morphological data between *Hoplonema* n.gen., *Rotylenchulus* and *Senegalonema* (females)

	<i>Hoplonema</i> n.gen.		<i>Rotylenchulus</i>		<i>Senegalonema</i>	
	Mature female	Young female	Mature female	Young female	Mature female	Young female
Body shape	swollen only at mid-body	vermiform	bud-like	vermiform	bud-like	vermiform
Esophageal glands overlap	ventral	ventral	lateral	lateral	lateral	lateral
DGO (μm)	10-12	9.6-12.0	13-33	13-33	5-7	5-7
Gonads	spiral curved	spiral curved	spiral curved	reflexed	spiral curved	straight
Tail	short	c'=1.3-1.7	short	c'=2-3	short	c'=2-2.5
Phasmids	pore-like	pore-like	pore-like	pore-like	wide	pore-like

Hoplonema graminicola n.gen., n.sp. (Figs 1-4)

Young female (n = 6): L = 0.42 (0.37-0.48) mm; a = 23.8 (22.2-25.5); b = 3.4 (2.9-4.0); c = 24.3 (21.7-26.8); c' = 1.5 (1.3-1.7); V = 67.4 (66.5-68.5) %; stylet 18.6(18.0-19.2) μm ; m = 41.5-43.7%; o = 61.2 (56.5-68) %

Mature female (n = 7): L = 0.43 (0.41-0.46) mm; a = 3.0 (2.8-3.5); V = 65.5 (57.0-70.0) %; c = 24.4 (23.0-26.8); c' = 1.0 (0.9-1.1); stylet 19-21 μm .

Male (n = 12): L = 0.48 (0.44-0.59) mm; a = 24.5 (22.0-27.8); b = 4.8 (3.7-5.2); c = 35.4 (30.0-41.5); c' = 1.1 (0.9-1.3); stylet 13.8 (13.2-14.4) μm ; o = 67.3 (63.0-70.0) %; spicules 19.5 (18.0-22.5) μm ; gubernaculum 6 μm .

Holotype (young female): L = 0.48 mm; a = 25.2; b = 4.0; c = 26.8; c' = 1.6; V = 68.5%; m = 41.5%; o = 62.0%; stylet 18.5 μm .

Allotype (male): L = 0.49 mm; a = 27.2; b = 4.2; c = 41.2; c' = 1.0; stylet 14.4 μm ; o = 68.7%; spicules 19.5 μm ; gubernaculum 6 μm .

Young female. Body C-like or open spirally curved after fixation. Cuticle fine, with annulation, annuli in midbody 1.7 μm wide. Lateral field occupies 1/3 part of body width with 4 incisures. Lip region round (3.6- 4.8 x 8.4-9.6 μm), not offset, with 4 slightly marked cuticular annuli. Lip skeleton moderately sclerotized, its edges stretch posteriorly in distance of width of two cuticular annuli. Stylet well developed with knobs which flattened at end, its width 3.6-4.0 μm . Metenchium shorter than telenchium. Opening of dorsal esophageal gland duct 9.6-12.0 behind stylet base. Procorpus cylindrical, median bulb oval (9.6-12.0 μm wide, 12.0-14.5 μm long). Esophageal glands overlap the intestine more ventrally, esophageal-intestinal cardia indistinct. Excretory pore at the level of the base of the isthmus, 85-97 μm from the anterior end of the body. Hemizonid at 5 annuli posteriorly of excretory. pore. Gonads double, spirally curved, its

length 54 and 58 μm (holotype). Tail conoid, 15.5-19.2 μm long, with 10-12 cuticular annuli on ventral side. Tail terminus round, with irregular annulation; hyaline part of the tail 4.8-6.0 wide, or 28-38% of tail length. Phasmids pore-like, -arrange on tail.

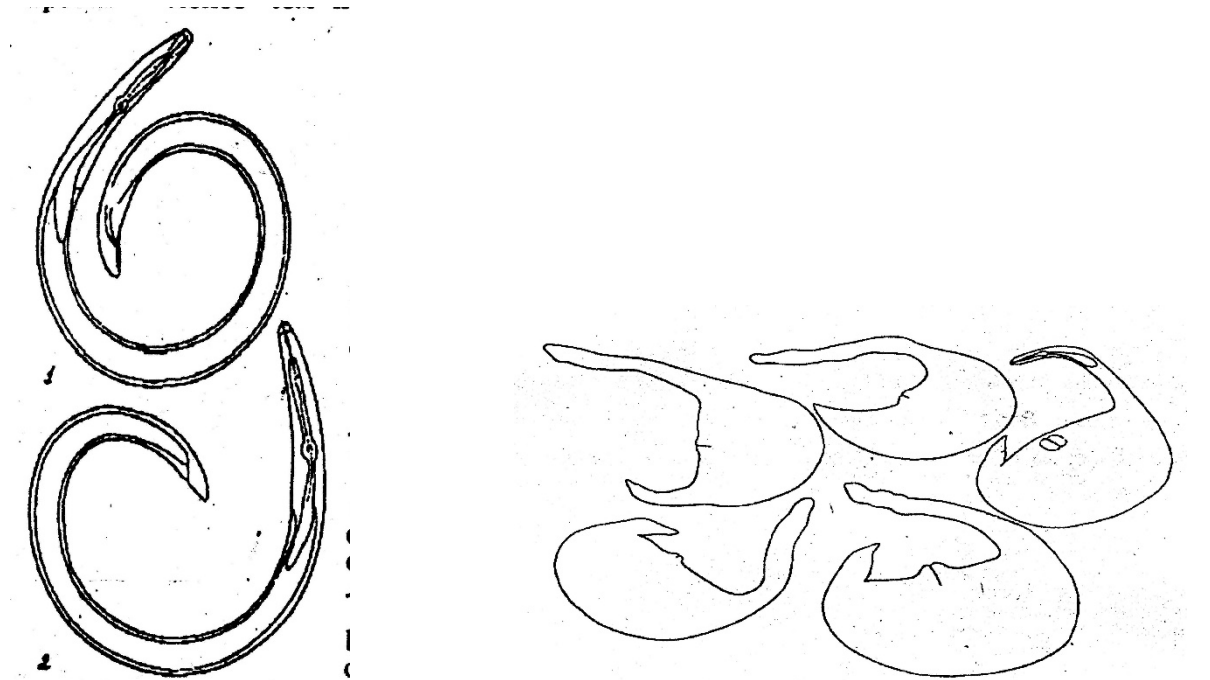


Fig.1. *Hoplonema graminicola* n.gen., n.sp.: 1.- general view; 2. - general view of young female.

Fig.2. *Hoplonema graminicola* n.gen., n.sp.: Variability and body shape in mature females.

Mature female. The anterior part of the body vermiform, near 40% of general body length. The middle part strongly swollen, near 50% of body length, then the body narrows to tail end. Cuticle with annulation on the anterior and posterior parts of the body, annulus width 11.7-2.0 μm , in the middle body part the annuli indistinct or absent. Cuticle thick along the all body- 3.6 μm ; in the tail region its thickness -1.8 μm . Lateral field indistinct, sometimes visible at tail. Lip region round, 1 with 4 distinct cuticular annuli. Lip skeleton moderately sclerotized. Stylet with knobs which flattened at the end. Opening of dorsal esophageal gland duct 10-12 μm behind stylet base. Procorpus long, cylindrical. Medial bulb well developed (10.8-13.2 μm x 15.0-18.0 μm) with valve. Oesophageal glands overlap intestine more ventrally. Excretory pore at the level of esophageal glands, 78-84 μm from the anterior end of the body. Hemizonid and hemizonion invisible. Vulva post-equatorial, vulvar lips round, much projected. The body cavity is filled by numerous eggs with developed juveniles, therefore sexual gonads poorly visible. The tail conical, 15.5-20.0 μm long, with isolated annular projection at the end. 14-18 cuticular annuli on the ventral side of the tail. Phasmids pore-like, projected, arranged at tail.

Male. The general body structure looks like as the body of young female. Body with annulation, C-like or spirally curved after fixation. The lateral field with 4 incisures. The lip region round, not offset, with 1 4 poorly visible cuticular annuli. Lip region 7.2L8.4 μm wide, 3.6-4.6 μm high. The stylet shorter than in young female and less developed with round small knobs, its width about 2 μm . Opening of dorsal esophageal gland duct 9.6-10.4 μm behind stylet base. Esophagus less developed than in young female, medial bulb spindle-like (6.0 x 12.0 μm), with poor developed valve. Excretory pore 83-95 μm from the anterior end of the body. Spicules slightly curved, pointed at distal end. Gubernaculum small, straight, without moving titillae.

Bursa wide, enveloping to tail terminus. The tail short, conoid, 12.0-17.0 μm long. Phasmids arrange. behind cloaca.

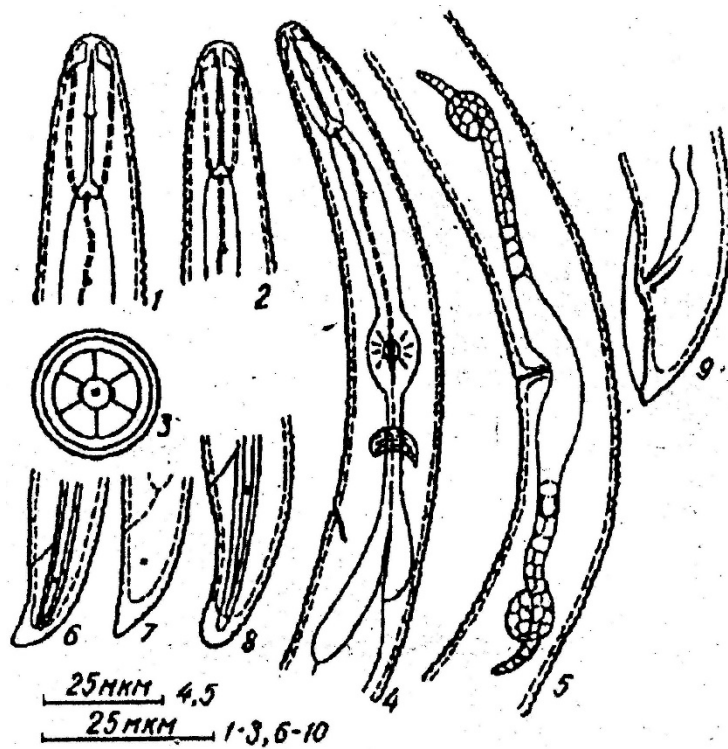
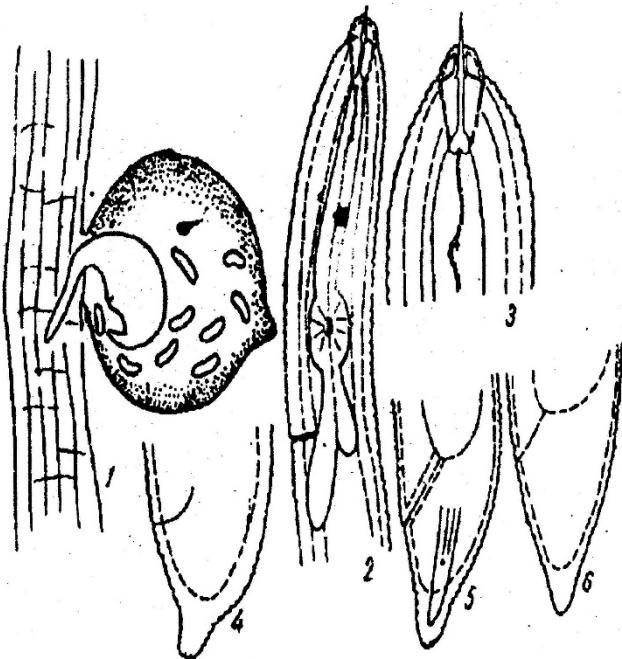


Fig.3. *Hoplonema graminicola* n.gen., n.sp.: 1, 3-8 - young female: 1.- anterior part of body; 3. - head region, apical view; 4. - anterior part of body (esophageal region); 5. - structure of sexual system; 6, 7, 8 - tail. 2, 9 - male: 2. - anterior part of body; 9. - tail.

Fig.3. *Hoplonema graminicola* n.gen., n.sp.: 1 - female on root of *Anisantha* sp.; 2: anterior part of body; 3: anterior part of body; 4-6: tail



Plant-host. Nematodes were collected from roots and soil around roots of *Anisantha* sp. from the family Gramineae.

Type locality. Hissar valley, near Dushanbe. Hilly area, at 800-900 m above sea level. The soil is typical sierozem.

Holotype- Young female (slide N° 856), allotype - male (slide N° 837) and paratypes - 6 young females., 10 mature females, 20 males, 31 juveniles (slides N° 858-893), collected in August-November, 1989, were deposited in the collection of the Institute of Zoology and Parasitology of AS Tajikistan.

References

1. Linford, M.B. & Oliveira, J.M., 1940. *Rotylenchulus reniformis*, nov. gen, n. sp., a nematode parasite of roots. Proc. helminth. Soc. Wash., 7(1): 35-42.
2. Germani, G., Luc, M. & Baldwin, J.G., 1984. A new Rotylenchulinae: *Senegalonema sorghi* n.gen., n.sp. (Nematoda: Tylenchida). Revue Nématol., 7(1): 49-56.