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TWO NEW AND A KNOWN SPECIES OF *TYLENCHUS* BASTIAN  
(NEMATODA: TYLENCHINAE) FROM AFGHANISTAN

By

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Soil samples collected in Afghanistan contained two undescribed species belonging to the genus *Tylenchus* Bastian and specimens of *Tylenchus quartus* Szczygiel, 1969. They are described here.

*TYLENCHUS SHERI* N. SP.

(Fig. 1, A-E)

*Holotype female*: L = 0.55 mm; a = 37; b = 6; c = 4.5;  
V = 60%; spear = 7.4  $\mu$ m; MB = 42%.

*Allotype male*: L = 0.56 mm; a = 35; b = 5; c = 4.5;  
T = 30%; spear = 7.4  $\mu$ m; spicules = 16  $\mu$ m;  
gubernaculum = 5  $\mu$ m.

*Paratypes*: 5 ♀ ♀: L = 0.46-0.55 (0.51) mm; a = 31-38 (33); b = 5-6  
(5.2); c = 4.5 (4.5); V = 61-63 (60.2)%; spear =  
7-8 (7.6)  $\mu$ m; MB = 40-45%.

5 ♂ ♂: L = 0.5-0.6 (0.57) mm; a = 35-36 (35); b = 5-5.7  
(5.5); c = 4-4.5 (4.2); spear = 7.4-8  $\mu$ m; spicules =  
15-17  $\mu$ m; gubernaculum = 4-6  $\mu$ m; MB = 41-53%.

*Description*: Female: Body slightly arcuate ventrally, tapering anteriorly from base of oesophagus to lip region and posteriorly from vulva to tail. Transverse striations about 1.4  $\mu$ m apart at midbody.

Lateral field with 4 incisures, occupying 1/3 of the corresponding body-diameter.

Lip region striated, truncate anteriorly, continuous with body contour. Stylet well developed, 7-8  $\mu\text{m}$  long, with anterior tapering

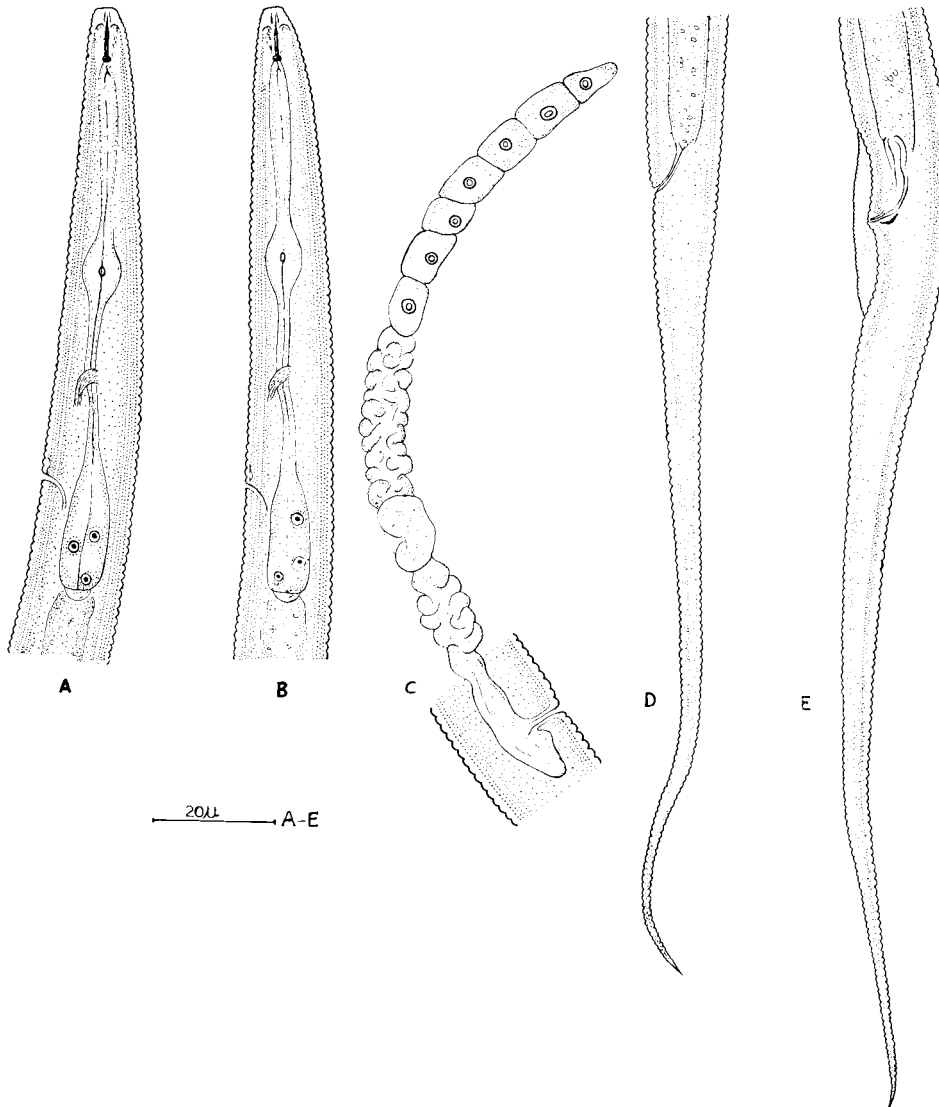


Fig. 1 - *Tylenchus sheri* n. sp.: A, female anterior end; B, male anterior end; C, female gonad; D, female tail; E, male tail.

part about 1/3 of its total length. Basal spear knobs rounded, measuring about 2  $\mu\text{m}$  across. Orifice of dorsal oesophageal gland duct 3  $\mu\text{m}$  from spear base. Median oesophageal bulb ovate, pre-equatorial in location (40-45%). Basal oesophageal bulb sac like, set off from the intestine. Cardia small about 2  $\mu\text{m}$  in size. Excretory pore located in the region of anterior end of basal oesophageal bulb. Hemizonid at the level of excretory pore. Vulva a depressed transverse slit, located at 60-63% of the body. Vagina thick-walled, at right angles to body axis. Ovary monoprodelphic, post-vulval uterine sac half of the vulval-body-width long. Vulva-anus distance shorter than tail length. Tail ventrally arcuate, about 13 anal body-widths long, regularly tapering to a finely pointed terminus.

*Male:* Body slightly ventrally arcuate, 0.5-0.6 mm long. Body striae about 1.4  $\mu\text{m}$  wide near midbody. Lateral field with 4 incisures; 1/3 as wide as corresponding body diameter. Spear 7-8  $\mu\text{m}$  long. Orifice of dorsal oesophageal gland duct 3  $\mu\text{m}$  behind spear base. Spicules ventrally curved 16  $\mu\text{m}$  long. Gubernaculum simple, trough shaped, 4-5  $\mu\text{m}$  in length. Bursa adanal. Tail ventrally arcuate, 11 anal body-widths long, gradually tapering to a pointed terminus.

The type material is deposited in the Zoology Museum, Aligarh Muslim University, Aligarh (U.P.), India.

*Type habitat and locality:* Collected from soil around roots of orange in District Jalalabad, Afghanistan, by Mr. Sher Khan Prau, Lecturer, Nigrahar University, Jalalabad.

*Diagnosis and Relationship:* *Tylenchus sheri* n. sp. comes close to *T. discrepans* Andrassy, 1954, *Tylenchus butteus* Thorne and Malek, 1968 and *T. cylindricollis* Thorne and Malek, 1968. It differs from *T. discrepans* in having longer body with relatively narrow head with basal ring of cephalic framework, narrower body and shorter post-uterine sac ( $L = 0.39-0.43$  mm; head relatively broad and without basal ring of cephalic framework;  $a = 27-33$ ; post-uterine sac as long as vulval body-width in *T. discrepans*). Males differ from those of *T. discrepans* in having longer spicules and gubernaculum (Spicules and gubernaculum 13-14  $\mu\text{m}$  and 3  $\mu\text{m}$  long respectively in *T. discrepans*). It differs from *T. butteus* in having differently shaped head, smaller spear, shorter neck, wider lateral field, longer post-uterine sac and longer tail with differently shaped terminus

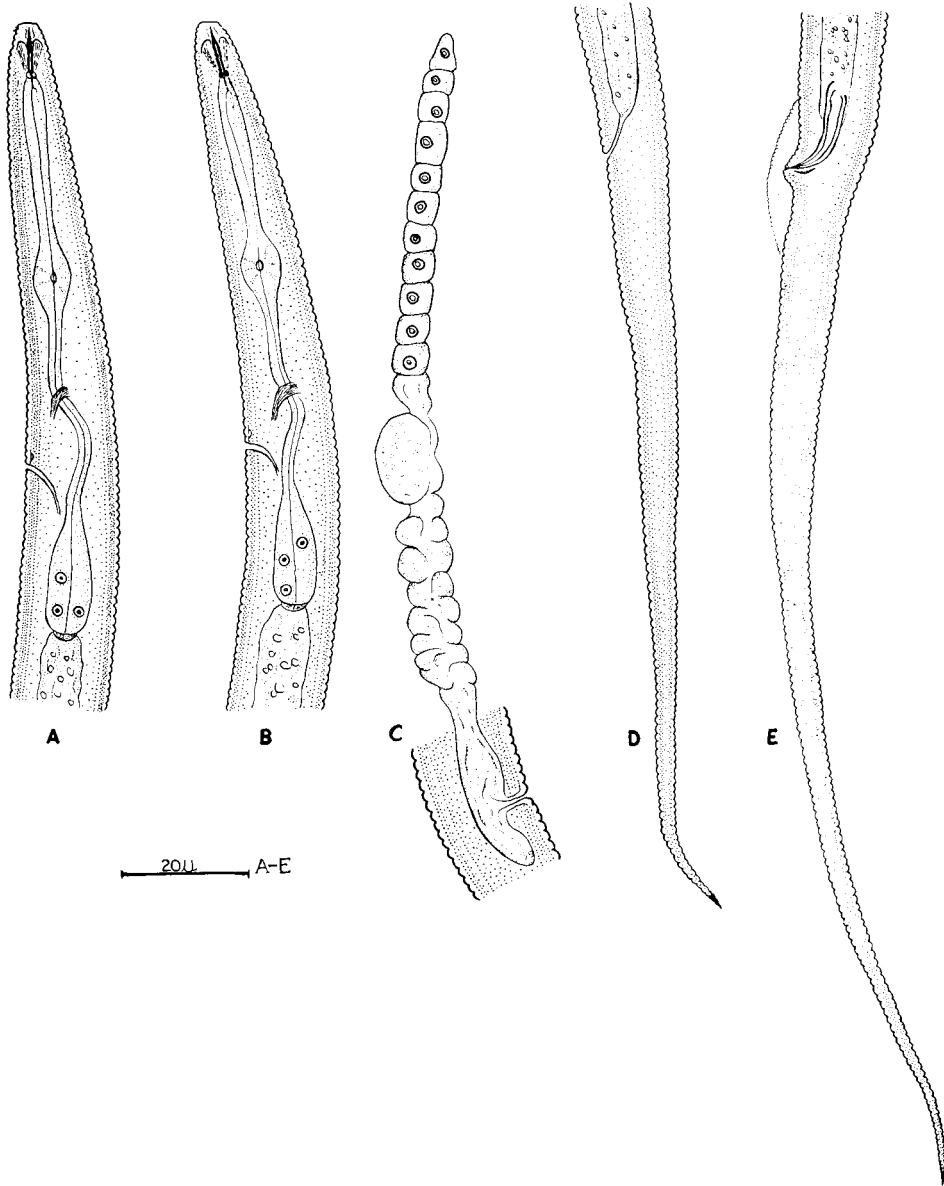


Fig. 2 - *T. afghanicus* n. sp.: A, female anterior end; B, male anterior end; C, female gonad; D, female tail; E, male tail.

(head broad; spear 12  $\mu\text{m}$  long;  $b = 4.5$ ; lateral field about 1/5 body-width at midbody; post-uterine sac less than half as long as vulval body-width; and, tail slightly less than 9 anal body-widths long, ending in a finely rounded terminus in *T. butteus*). It differs from *T. cylindricollis* in the shape of head, presence of basal ring of cephalic framework, more anteriorly located vulva and longer and differently shaped tail (head broad; cephalic framework and basal ring absent; vulva located at 68%; post-uterine sac less than half the vulval body-width in length;  $c = 6$ ; tail about 8 anal body-widths long and ending in abruptly conoid or rounded terminus in *T. cylindricollis*). *T. sheri* also is similar to *T. mirus* Husain *et* Khan, 1967 and *T. cydontus* Husain *et* Khan, 1967, but differs from the first in having truncate head, longer body, shorter spear and anteriorly located median oesophageal bulb, and from the second because of its longer body, truncate head, longer tail and posteriorly located excretory pore.

*TYLENCHUS AFGHANICUS* N. SP.

(Fig. 2, A-E)

*Holotype female*: L = 0.52 mm; a = 35; b = 5; c = 4.6; V = 60%;  
spear = 9  $\mu\text{m}$ ; MB = 45.4%.

*Allotype male*: L = 0.55 mm; a = 39; b = 5; c = 4; spicules =  
18  $\mu\text{m}$ ; gubernaculum = 4.5  $\mu\text{m}$ ; spear = 9  $\mu\text{m}$ ;  
MB = 40%.

*Paratypes*: 5 ♀ ♀: L = 0.46-0.6 (5.2) mm; a = 28-35 (32); b = 4.5-5.8  
(5.3); c = 4-5 (4.3); V = 56-63 (61)%; spear =  
8-10 (9)  $\mu\text{m}$ ; MB = 39-45%.

3 ♂ ♂: L = 0.5-0.55 mm; a = 29-39; b = 5-5.6; c = 4-5;  
spicules = 15-18  $\mu\text{m}$ ; gubernaculum = 4-6  $\mu\text{m}$ ;  
spear = 8-10  $\mu\text{m}$ ; MB = 40-44%.

*Description*: Female: Body slightly ventrally arcuate, tapering anteriorly and considerably posteriorly. Body striae about 1.5  $\mu\text{m}$  apart at midbody. Lateral field with 4 incisures, occupying 1/3 of the corresponding body. Lip region slightly elevated, continuous with body contour; truncate anteriorly. Stylet 9  $\mu\text{m}$  long, delicate appar-

ently thin, with anterior tapering part 1/3 of its total length. Basal knobs rounded. Opening of dorsal oesophageal gland duct about 3  $\mu\text{m}$  behind spear base. Median oesophageal bulb ovate. Isthmus long and tubular, enveloped by nerve ring near its middle. Basal bulb pyriform, setoff from the intestine. Cardia small. Excretory pore located opposite anterior end of basal oesophageal bulb. Hemizonid at level of excretory pore. Deirids visible. Vulva a depressed transverse slit, located beyond 60% of the body. Vagina straight and thin-walled, at right angles to body axis. Ovary prodelphic. Post-uterine sac 2/3 of the vulval body-width long. Vulva-anus distance shorter than tail. Tail ventrally arcuate to straight about 12 anal body-widths long, filiform, regularly tapering to a finely pointed terminus.

*Male:* Body with clear transverse striations about 1.5  $\mu\text{m}$  near mid-body. Lateral fields with 4 incisures. Stylet 8-9  $\mu\text{m}$  long. Orifice of dorsal oesophageal gland duct about 2  $\mu\text{m}$  behind spear base. Spicules ventrally curved, 15-18  $\mu\text{m}$  long. Gubernaculum small, bent, 4-6  $\mu\text{m}$  long. Bursa adanal. Tail slightly ventrally arcuate, more than 12 anal body-widths long, gradually tapering to a pointed terminus.

The type material is deposited in the Zoology Museum, Aligarh Muslim University, Aligarh, (U.P.), India.

*Type habitat and locality:* Collected from soil around roots of pistachio nut in District Herat, Afghanistan, by Mr. Murtazvi of Botany Department, Aligarh Muslim University, Aligarh.

*Diagnosis and Relationship:* *Tylenchus afghanicus* n. sp., comes close to *T. andrassyi* Szczygiel, 1969 and *T. discrepans* Andrassy, 1954. It differs from the former species in having shorter body, relatively longer neck, longer tail, and anteriorly located vulva ( $L = 0.80-0.93$  mm;  $b = 6.1-7.0$ ;  $c = 6.3-7.2$ ; and  $V = 66-68\%$  in *T. andrassyi*). From the latter species it differs in having differently shaped head with basal ring of cephalic framework, smaller spear and more anteriorly located vulva (head broad, without basal ring of cephalic framework; spear 7-7.1  $\mu\text{m}$  long;  $V = 64-69\%$  in *T. discrepans*). *T. afghanicus* differs, finally, from *T. sheri* because of its anteriorly located excretory pore and larger post-uterine sac.

*TYLENCHUS QUARTUS* SZCZYGIEL, 1969.

(Fig. 3, A-E)

*Females* (16): Length = 0.5-0.7 (0.6) mm; a = 35-46 (44); b = 5-7 (5.4); c = 4-6 (4.6); V = 56-61 (59)%; spear = 8-10  $\mu$ m.

*Male*: Length = 0.6 mm; a = 36; b = 6; c = 4; T = 30%; spear 9  $\mu$ m; spicules = 22  $\mu$ m; gubernaculum = 5  $\mu$ m.

*Description*: Female: Body tapering towards both the extremities. Body annules 1.5  $\mu$ m apart at midbody. Lateral field 1/4 as wide as the corresponding body-width, with 4 incisures. Lip region striated, truncate, continuous with the body contour. Stylet 8-10  $\mu$ m long with rounded basal knobs. Orifice of dorsal oesophageal gland duct 4  $\mu$ m behind spear base. Basal oesophageal bulb sac like, setoff from intestine. Cardia small. Excretory pore located opposite anterior end of basal oesophageal bulb. Hemizonid just above the excretory pore. Vulva located at 56.5% of the body. Ovary prodelphic. Post-uterine sac half of the vulval body-width long. Vulva-anus distance shorter than tail length. Tail 15 anal-body-widths long, filiform, regularly tapering to a finely pointed terminus.

*Male*: Male similar to female. Lateral field with 4 incisures. Stylet 9  $\mu$ m long. Tail 14 anal-body-widths long, gradually tapering to a pointed terminus.

*Host and locality*: Collected from around roots of pistachio nut in Herat, Afghanistan.

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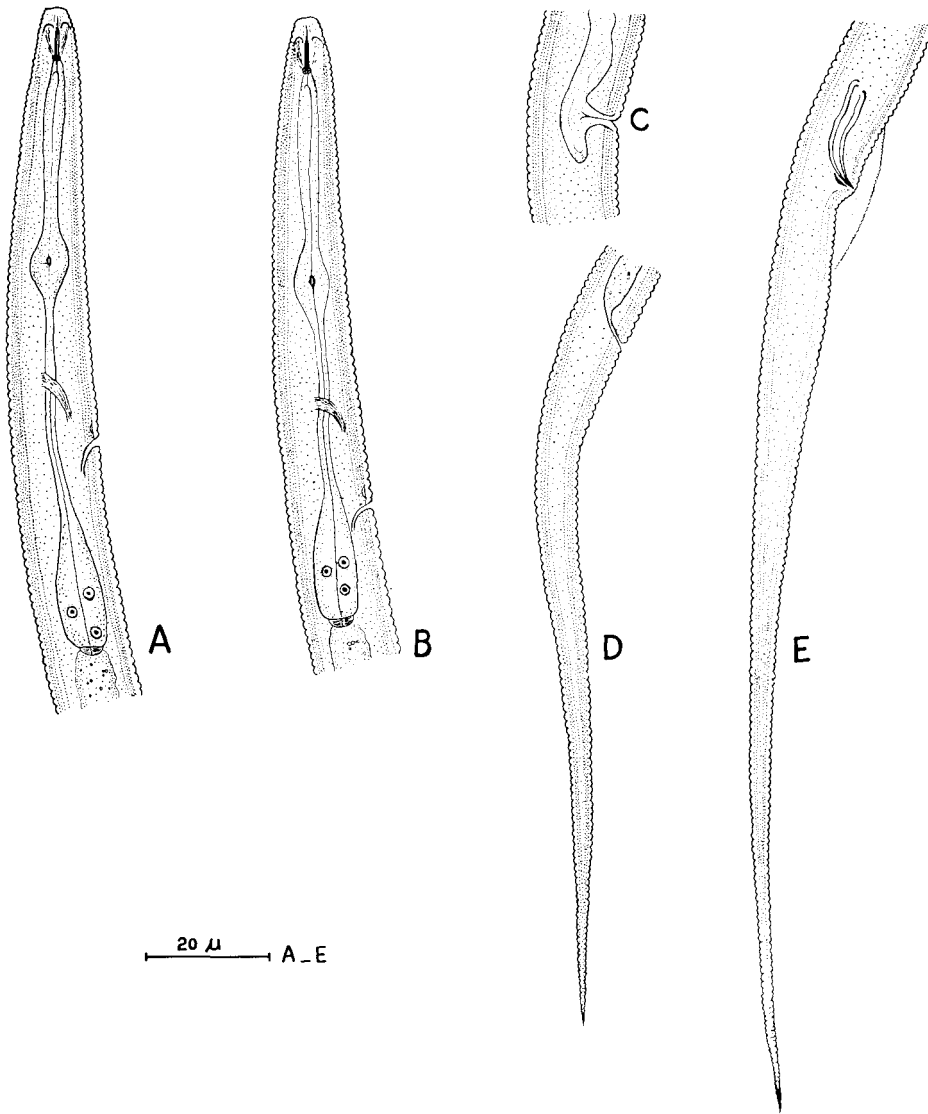


Fig. 3 - *T. quartus*: A, female anterior end; B, male anterior end; C, female vulval region; D, female tail; E, male tail.



## S U M M A R Y

Two new species of *Tylenchus* Bastian (Nematoda: Tylenchinae), *T. sheri* and *T. afghanicus* are described. Measurements and a short description of a population from Afghanistan of *T. quartus* Szczygiel, 1969 are also given.

## R I A S S U N T O

Segnalazione di due nuove specie e di una specie conosciuta di *Tylenchus* Bastian (Nematoda: Tylenchinae) in Afghanistan.

Vengono descritte due specie di *Tylenchus* Bastian (Nematoda: Tylenchinae): *T. sheri* e *T. afghanicus*. Vengono date inoltre misure ed una breve descrizione di una popolazione afgana di *T. quartus* Szczygiel, 1969.

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

- ANDRÁSSY I., 1954 - Revision der Gattung *Tylenchus* Bastian, 1865 (Tylenchidae, Nematoda). *Acta Zool. Hung.*, 1: 5-42.
- HUSAIN S.I. and KHAN A.M., 1967 - A new subfamily, a new subgenus and eight new species of nematodes from India belonging to superfamily Tylenchoidea. *Proc. helm Soc. Wash.*, 34: 175-186.
- SZCZYGIEL A., 1969 - A new genus and four n. sp. of the subfamily Tylenchinae de Man, 1876 (Nematoda: Tylenchidae) from Poland. *Opusc. Zool. Bpest.*, 9: 159-170.
- THORNE E. and MALEK R.B., 1968 - Nematodes of the Northern Great Plains Part I. Tylenchida (Nematoda: Secernentea). *Tech. Bull. S. Dak. Agric. Exp. Stn.*, 31: 1-111.

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