THREE NEW SPECIES OF THE GENUS APHELENCHOIDES FISCHER, 1894 (NEMATODA, APHELENCHOIDIDAE)

A. S. EROSHENKO

Institute of Biology and Soil Science, Far Eastern Branch,
Siberian Division of the USSR Academy of Sciences (Vladivostok)

Zool. Zh. 46(4): 617-620 (1967)

At the time of the 1964 investigation in the Primorje region of the nematode-fauna of cereal cultures in the root soil, root system, stalks and leaves of spring wheat (Triticum vulgare), three new species of nematodes belonging to the genus Aphelenchoides Fischer, 1894 were observed.

The material was fixed in a 6% solution of formalin. A description of the nematodes was made from permanent slides which had been prepared in glycerine-gelatin. The preparations with the species of nematodes described below are kept in the Institute of Biology and Soil Science, Far Eastern Branch, Siberian Division of the USSR Academy of Sciences.

Below we give a description of the three new species of the genus Aphelenchoides.

APHELENCHOIDES ASTEROMUCRONATUS SP. N. (Fig. 1).

Holotype: L = 0.390 mm; a = 39; b = 7.8; c = 14.5; V = 70%. Paratypes: L = 0.390 - 0.539 mm; a = 32 - 39; b = 5.5 - 9.5; c = 10.9 - 14.5 mm [sic]; V = 67.6 - 70%.

Description: Female. Diameters of the body: at the metacorpal bulb 0.0096 mm, at the nerve ring 0.0096, at the beginning of the ovary 0.0096, at the vulva 0.0108, and at the anus 0.0084 mm.

Small, quite slender nematodes with a thin, cylindrical body, gradually tapering toward both ends. Tail conical with a complex mucro in the form of separated little stars (three dense processes in the mucro). The cephalic capsule with a moderately developed skeleton does not extend beyond the outline of the body.

Stylet about 9 μm in length with distinct basal knobs. The knobs are more than 2 times greater than the diameter of the corpus (meso- and metastoms) of the stylet. Cuticle with fine annulations. Lateral field with 4 lines. Nerve ring at a distance of 0.5 diameters of the bulb behind the metacorpal bulb. Excretory pore at level of lower edge of nerve ring. Procorpus of the esophagus cylindrical. Metacorpal bulb oval. Esophageal glands extend backwards at a distance equal to 7 diameters of the body. The mid intestine is granulated with a well marked lumen. Rectum almost 2 anal body diameters long. Ovary short (120 μm), with few oocytes, and with oogonia arranged in a single row. Spermatheca oval. Preuterine gland not noticeable. Vulva postequatorial (70%). Posterior uterus short, equal to or less than one body diameter at vulva.

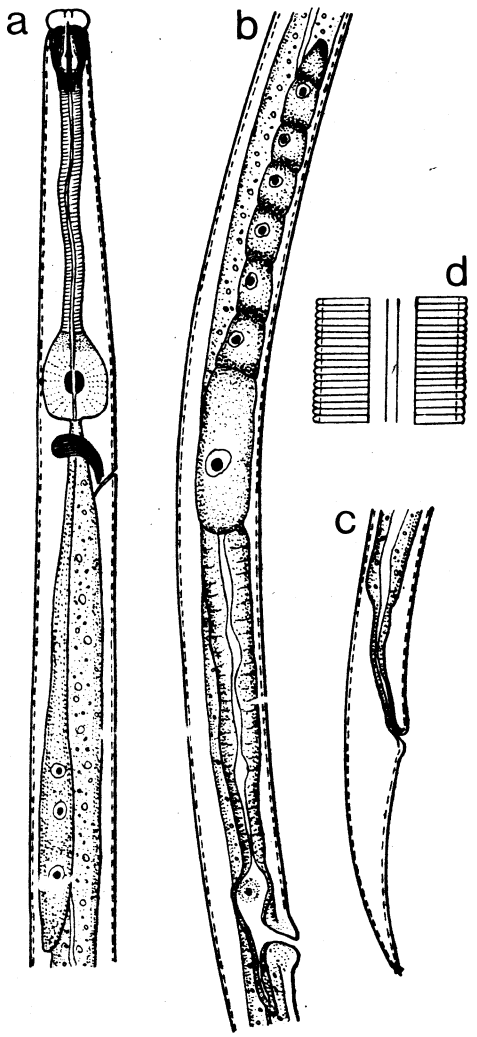

Figure 1. Aphelenchoides asteromucronatus sp. n.

a - trophico-sensory region of the body; b - ovary; c - tail of the female; d - lateral field; original.

Differential diagnosis. Aphelenchoides asteromucronatus belongs to the species with a complex mucro. It is closest of all to A. asterocaudatus with which it is united by the location of the nerve cell and of the excretory pore, and the structure of the mucro (in the form of separated little stars). A. asteromucronatus differs from A. asterocaudatus by the larger number of lines in the lateral field (4:2) and by the length of the stylet (9:12).

We observed only females in the soil, the root system, the stalks and the leaves of wheat in the Pogranichnoje, Khanka, and Lesozavodsk districts of the Primorje region.

APHELENCHOIDES SEXLINEATUS SP. N. (Fig. 2)

Holotype: L = 0.605 mm; a = 48.4; b = 11; c = 15.7 mm; V = 66%. Paratypes: L = 0.605 - 0.6435 mm; a = 42.9 - 48.4; b = 11 - 12; c = 15.7 - 18.4 mm; V = 66.0 - 66.6%.

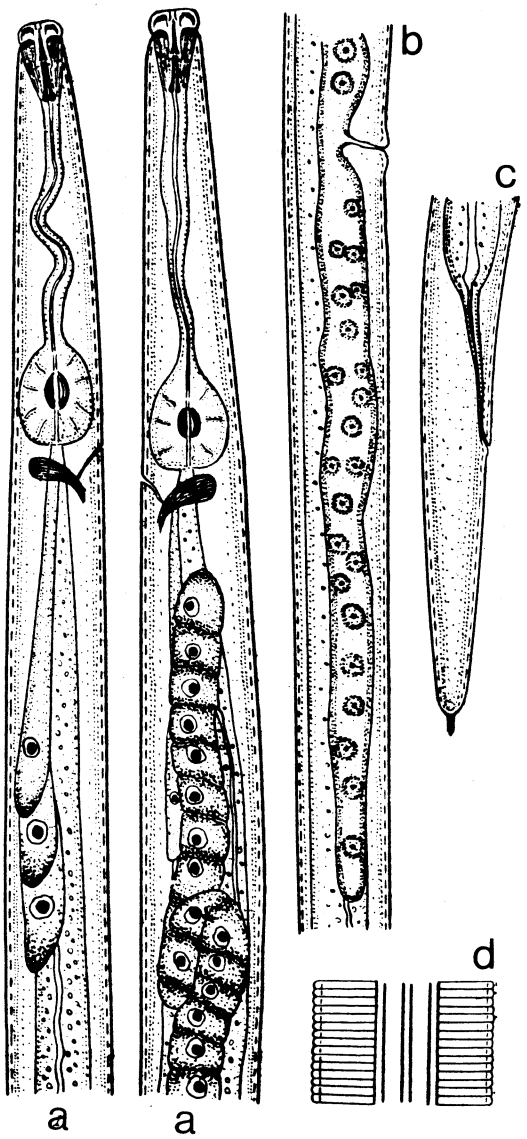

Figure 2. Aphelenchoides sexlineatus sp. n.

a - trophico-sensory regions of the body, b - posterior uterus, c - tail of the female, d - lateral field; original.

Description. Female. Diameters of the body: at the metacorpal bulb 0.012 mm, at the nerve ring 0.0132, at the beginning of the ovary 0.014, at the vulva 0.0132 and at the anus 0.0096 mm. Body shape fusiform, more sharply atttenuated toward the tail end. The tail tapers gradually from the anus,

and at the end it becomes rounded and ends into a mucro. Mucro dense, cylindrical shaped, and pointed at the end. Cephalic capsule with average sclerotization, does not project beyond the body outline. Labiotubercules weakly expressed. Stylet 9 /um in length with small, well marked knobs. Cuticle with fine annulations. There are 6 lines in the lateral field. Nerve ring located immediately behind the metacorpal bulb. Excretory pore situated at level of lower edge of the bulb or somewhat lower. Procorpus of esophagus thin, gradually tapering toward the metacorpal bulb. Metacorpal bulb oval, with a lumen in the central part. Length of esophageal glands equals 5 body diameters. Mid intestine polycytic, with a well-marked lumen. Rectum almost 2 anal body diameters long. Anal opening lies on a small tubercle. Ovary long, sometimes almost reaches the bulb, straight or reflexed (in form of a loop) in the germinal zone, with few oocytes. In the germinal zone the oogonia are located in one row. There is a spermatheca, oval in form. Preuterine gland not noticeable. Vulva postequatorial (66%). Ovojector present. Posterior uterus very long (85 /um), equals to 8 body diameters at the vulva, filled with sperm. Eggs long; the ratio of the length of the egg to its width is equal to 3.5:1.

Differential diagnosis. A. sexlineatus sp. n. belongs to the species with a single mucro which have a long uterus and a lateral field with four lines. It is closest to A. parietinus. The position of the nerve ring and of the excretory pore, the structure of the esophagus and the structure of the egg unite [these two species].

A. sexlineatus differs from A. parietinus by the structure of the cephalic capsule; by the length of the body (0.643:0.450); by the ratio of the length of the body to its width (42-48:26); by the length of the ovary; by the length of the posterior uterus (in the new species more than half the distance vulva to anus); by the structure of the mucro; and by the number of lines in the lateral field (6:4).

We observed only females in the soil, in the root system and in the leaves of wheat in the Khanka and Anuchino districts of the Primorje region.

APHELENCHOIDES OBTUSICAUDATUS SP. N. (Fig. 3)

Holotype: L = 0.5775 m; a = 38.5; b = 8.1; c = 19.3 mm; V = 73.3%. Paratypes: L = 0.575 - 0.5775 mm; a = 33 - 38.5; b = 8.1 - 10; c = 17.3 - 19.3 mm; V = 71.8 - 73.3%.

Description. Female. Diameters of the body: at the metacorpal bulb 0.0144 mm, at the nerve ring 0.0144, at the beginning of the ovary 0.0160, at the vulva 0.0156, and at the anus 0.0108 mm. Body almost cylindrical, tapering toward the tail. Tail blunt and conical. Cephalic capsule rounded and flat and does not project beyond the body outline. Labiotubercles weakly expressed. Stylet 10 /um in length, with well expressed knobs. Cuticle with fine annulations; the annulations on the tail are more sharply expressed. Lateral field with four lines. Nerve ring behind the metacorpal bulb at a distance equal to one diameter of [the bulb]. Excretory pore situated at level of upper edge of the nerve ring. Procorpus of esophagus tapers gradually toward the metacorpal bulb. Metacorpal

bulb oval and rounded in form, with a lumen in the central part. Esophageal glands length is almost 4 body diameters at the level of the nerve ring. Mid intestine polycytic with a well marked lumen; length of rectum equals to 1.4 anal body diameters. Anal opening covered by a flap. Length of genital tract 0.155 mm. The ovary has few oocytes, oogonia arranged in a single row. Spermatheca oval in form. The posterior uterus measures 1.5 body diameters at the corresponding level.

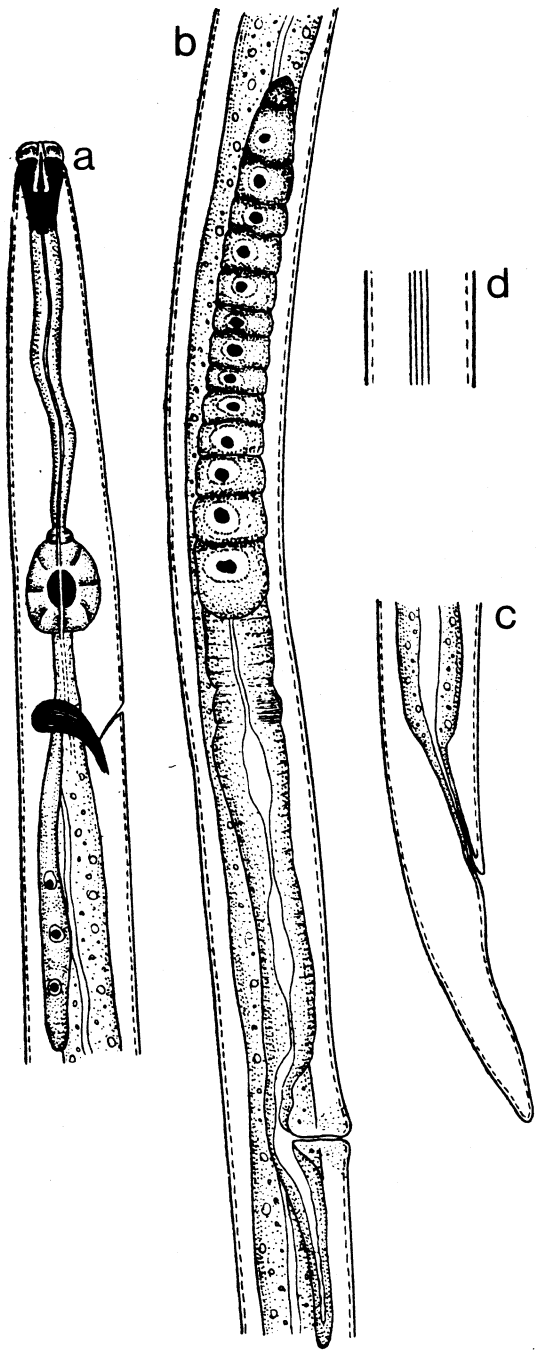

Figure 3. Aphelenchoides obtusicaudatus sp. n.

a - trophico-sensory region of the body; b - ovary; c - tail of the female; d - lateral field; original.

Differential diagnosis. A. obtusicaudatus sp. n. belongs to the species without a mucro which have a conical tail. It is closest to A. kuehnii. A. obtusicaudatus differs from A. kuehnii by the structure of the cephalic capsule; by the length of the stylet (10 µm: 14 µm); and by the location of the nerve ring and the excretory pore.

A common feature is the structure of the tail--the tail is conical without a separated tip.

We observed only females in the roots of oats and in the stalks of wheat in the Ol'ga and Nakhodka districts of the Primorje region.

THREE NEW SPECIES OF THE GENUS APHELENCHOIDES FISCHER, 1894 (NEMATODA, APHELENCHOIDIDAE)

A. S. YEROSHENKO

Institute of Biology and Soil Science, the Siberian Branch of the USSR Academy of Sciences (Vladivostok)

Summary

The paper presents a description and pictures of three new nematode species belonging to the genus Aphelenchoides Fischer, 1894 found in the soil, roots, leaves and stems of wheat in the Primorje region. Aphelenchoides asteromucronatus sp. n. is close to A. asterocaudatus, differing in the stylet length (9 : 12) and a large number of lines in the side field (4 : 2). A. sexlineatus sp. n. is close to A. parietinus, differing in the structure of the head capsule, body proportions, ovary length, length of the back uterus, structure of the mucro and number of lines in the side field (6 : 4). A. obtusicaudatus sp. n. close to A. kuehnii, differing in the structure of the head capsule, stylet length (10µ : 14µ), location of the nerve ring and excretory pore.