A REDESCRIPTION OF *HETERODERA MEDICAGINIS* KIRJANOVA

BY

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*Heterodera medicaginis*, a bisexual species attacking lucerne, is described and figured. It belongs to the *H. schachtii*-group and is most similar to *H. daverti*, *H. glycines* and *H. sonchophila*. *Medicago sativa* is the only known host plant.

In 1971 a new cyst nematode on lucerne, *Heterodera medicaginis* Kirjanova, was described in the U.S.S.R. by Kirjanova & Krall (1971) on the basis of cyst material collected by Steinberg in 1932. The description, however, is rather brief and lacks information about the characters of the juveniles and males. Krall (1978) also presents these data. Therefore, the identity of *H. medicaginis* Kirjanova was uncertain (Wouts & Sturhan, 1978). The present work was carried out to give more details about this cyst nematode.

MATERIAL AND METHODS

Live material of the cyst nematode was obtained from lucerne from the Rostovskaja region in the U.S.S.R. This population was propagated on lucerne in a greenhouse and was used for a host range test and morphological studies. The following plants were tested for their host suitability by inoculation in duplicate with 25 cysts constrained in nylon screen per pot:

Leguminosae: *Glycine max*; *Medicago lupulina*; *M. sativa*; *Phaseolus vulgaris* ('Pitor'); *Pisum sativum* ('Perfection'); *Trifolium pratense* ('Violetta'); *T. repens* ('Retor'); *T. subterraneum*; *Vicia faba* ('Trio'); *V. sativa* ('Hanka'); *Vigna sinensis*. Labiatae: *Galeopsis tetrahit*.

Caryophyllaceae: *Dianthus plumarius*; *Spergula arvensis*; *Stellaria media*.

Chenopodiaceae: *Beta vulgaris* ('Kleinwanzleben'); *Spinacia oleracea* ('Breedblad Scherp zomer').

Cruciferae: *Brassica oleracea* ('Topscore'); *B. rapa* ('Barive').

Polygonaceae: *Rumex crispus*.

Scrophulariaceae: *Hebe anderssönii*.

For the morphological studies males and freshly hatched juveniles were fixed by F:P 4:1 (Netscher & Seinhorst, 1969) and processed to dehydrated glycerine (Seinhorst, 1959; 1962). Vulval cones were cut from fresh cysts, preserved in lactophenol, and mounted in glycerine.
OBSERVATIONS

**Host range**

Ten weeks after sowing, the soil and roots, as well as the content of the cysts in the nylon bags were examined. The examination of the soil and roots showed that the nematode reproduced only on *Medicago sativa*. In the inoculated cysts of the lucerne pots only a few eggs and juveniles had remained, while the cysts of all other test pots still contained a high number of eggs and juveniles. This suggests that the emergence of the juveniles was stimulated by a specific hatching factor from *M. sativa*.

**Morphological observations**

**Females (Fig. 1, D)**

Observations on three fresh specimens: lemon-shaped with well developed subcrystalline layer covering the whole body including the neck. Sometimes a reddish-brown cement at the neck region. Head consisting of a labial plate and two annules. Spear well developed, 27-28 µm long. Spear knobs slightly concave anteriorly. Dorsal oesophageal gland orifice 5-6 µm behind the spear base. Median bulb well developed, rounded with distinct valve in the middle. Excretory pore about level of the median bulb. Cuticle with zig-zag pattern and distinct punctation.

**Cysts (Fig. 2, A-D)**

Measurements (n = 10). Length (excluding neck and vulval cone): 635 µm (568-728 µm); width: 466 µm (364-570 µm); vulval cone: 79.6 µm (70-84 µm); depth of underbridge: 71.6 µm (64-80 µm). Lemon-shaped with distinct neck and vulval cone. Neck usually twisted. Colour changes from creamy to tan into brown during maturation. Thick subcrystalline layer which sticks firmly to the cyst. Cuticle with zig-zag pattern and scattered punctation. Sometimes small egg sac present without any content.

Cyst cone ambifenestrate. Fenestra measurements (n = 15). Length: 46.6 µm (39-55 µm); width: 34.1 µm (30-40 µm); vulval slit: 44.7 µm (39-55 µm). Vulval bridge 5-10 µm wide; underbridge (n = 9): 40-60 µm long and 6-10 µm wide. Bullae present, well developed.

**Second-stage juveniles (Fig. 1, B, C, E-G)**

Measurements (n = 100). L: 462 µm (417-512 µm); a: 24.4 (22.0-27.6); c: 8.8 (7.5-11.4); spear: 25 µm (24-26 µm); head-end to median bulb valve: 72 µm (62-82 µm); head-end to excretory pore: 104.7 µm (93-120 µm); width at excretory pore: 19 µm (18-20 µm); anal body width: 13 µm (11-15 µm).

Body cylindrical, gently curved with a conical tail. Lateral field with four incisures, not aerolated. Lip region rounded, offset with two head annules. Spear knobs well developed, rounded posteriorly, concave anteriorly. Dorsal