

TWO NEW SPECIES OF CYST NEMATODE, *HETERODERA MANI* N. SP.
AND *H. IRI* N. SP., FROM NORTHERN IRELAND

BY

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Two new species of cyst nematode occurring on grasses in Northern Ireland are described and illustrated. Both, having bifenestrate bullate cysts, belong to the *avenae* species-group.

H. mani n. sp. infests *Lolium*, *Dactylis* and *Festuca* species. It differs from *H. avenae* Woll., 1924 in that the larvae have deeply concave stylet-knobs and four lines in the lateral field; the more rounded females have shorter stylet-knobs; the males have smaller heads and longer spicules and the cysts are more rounded and possess a distinct underbridge.

H. iri n. sp. parasitizes *Agrostis* sp. and differs from both *H. avenae* and *H. mani* in that the larvae possess exceptionally long tails (true-tail and clear-tail averaging 94 μ and 62 μ respectively); the cysts are more spheroidal, much lighter in colour, have a thin matt-white subcrystalline layer and a strong underbridge.

Unlike *H. avenae* neither new species attacks cereals.

During routine examinations of soil samples, two undescribed *Heterodera* species were found infesting grasses in Northern Ireland. These closely resemble the cereal cyst nematode, *H. avenae* Woll., 1924, but are morphologically and biologically distinct.

Field populations of both nematodes being generally low and frequently mixed, the following descriptions are based on material cultured originally by a modification of the Oostenbrink (1952) method. Males, females and larvae were killed by gentle heat, fixed in either T.A.F. or a mixture of 4 parts T.A.F. to 1 part F.A. 4 : 10, and processed to glycerine either by the Baker (1953) or Tarjan (1967) method. Cyst cones were treated in butanol and clove oil before mounting in canada balsam.

Preliminary host-range tests show that *H. mani* reproduces readily on *Lolium perenne* L., *Dactylis glomerata* L. and *Festuca pratensis* Huds., but not on *Agrostis tenuis* (Sibth.) or wheat (cultivar Opal), oats (Sun II) or barley (Proctor). Similar tests with *H. iri* indicate that it multiplies well on *Agrostis tenuis* but not on *L. perenne*, *D. glomerata*, wheat (Opal), oats (Sun II) or barley (Proctor). The reaction between *H. iri* and *Festuca* species is the subject of further studies.

HETERODERA MANI N. SP.

Gravid females (white) (Fig. 1)

Measurements (n = 100, mean values in brackets). L' (body length excluding neck): 485-721 (617) μ ; neck: 146-164 (157) μ ; B: 418-679 (539) μ ; stylet length: 24-34 (30) μ ; L'/B ratio: 1.0-1.3 (1.1).

Body spheroidal with a small terminal vulval cone and well-developed neck. The neck is frequently obscured by a brown substance, probably that referred to by Jones (1950) as "cement". This substance is not visible while the neck is embedded in the root, nor is it invariably present. It was not produced on females stored in water or root-leachings for up to three weeks. The female head consists of two distinct annules, the first about half as broad as the second. Cephalic framework indistinct. Anterior cephalids inconspicuous, usually located two or three annules posterior to the head; posterior cephalids not seen. Well-defined stylet with rounded basal knobs; the latter average $3\ \mu$ long by $4\ \mu$ broad. Dorsal oesophageal gland orifice 5-9 (8) μ posterior to the base of the stylet knobs. Muscular metacorporal bulb occurs near the base of the neck and measures 28-38 (33) μ long by 30-35 (33) μ broad. Valve plates very strong, located 85-135 (112) μ behind the head and measuring 9-11 (10) μ long by 7-9 (8) μ wide. Excretory pore on the "shoulder" where the neck joins the body. Subcrystalline layer thick, persistent and pearly white. Egg-sac small and usually empty. Cuticular pattern consists of irregular short zig-zag lines and irregular punctations.

Cysts (Fig. 1a, c)

Measurements (n = 50): L': 480-725 (590) μ ; neck length: 124-155 (139) μ ; B: 390-650 (494) μ ; L'/B ratio: 1.1-1.4 (1.2); fenestral length: 43-59 (52) μ ; fenestral breadth: 17-33 (27) μ ; fenestral l/b: 1.5-2.5 (2.0).

Mature cysts spheroidal with a small vulval cone and distinct neck. Colour varies from pale to dark brown. Wall pattern consists of irregular zig-zag lines which tend to form concentric rings in the regions of the neck and cone. Punctations irregular. Anus frequently obscured by the conspicuous bullae which occur close to the cone-top. Subcrystalline layer thick and persistent, exhibiting a polyhedral columnar structure. Egg-sac small and empty. Vulval cone bifenestrate with distinct fenestral outline. Vulval bridge strong. Vulval slit 4-10 (7) μ long. Distance between semifenestrae 5-9 (7) μ . Underbridge very weak, bifurcate and usually lost during slide preparation.

Egg

Measurements (n = 60): L: 108-166 (125) μ ; B: 41-57 (49) μ ; L/B ratio: 2.1-3.1 (2.6).

Cylindrical with rounded ends. Egg-shell hyaline. Enclosed larva usually folded four times.

Larvae (Fig. 2)

Measurements (n = 60): L: 530-627 (578) μ ; B: 19-24 (22) μ ; stylet length: 22-28 (24) μ ; true-tail length: 58-77 (67) μ ; clear-tail length: 28-48 (40) μ ; anal body width: 14-20 (17) μ . Ratios: a = 22-30 (27); c = 7-10 (9); clear-tail/stylet length = 1.2-1.9 (1.6).

Body usually slightly curved when killed by gentle heat. Head 3-5 (4) μ long