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Redescription of the plant nematode *Helicotylenchus vulgaris* Yuen, 1964, (Nematoda: Hoplolaimidae)

Deepak Gaikwad

Dept. of Zoology, Rajashri Shahu Art's, Commerce and Science College Pathri, Tq. Phulambri, Dist. Aurangabad, India
Email ID: dr.dmgaikwad@gmamil.com

Abstract:

In the present investigation a taxonomy study is done in plant parasitic nematode of genus *Helicotylenchus.* The soil and root samples were collected from rhizosphere of different plants and different localities of Fulambri Dist. Aurangabad, (M.S) India. Female body shape spiral, annules distinct excretory pore located just anterior to level of oesophageal intestinal junction, distinct, widening somewhat immediately below cuticle. Vulva with epiptygmas folded in, as is typical for the genus; sides somewhat raised, resembling vulval flaps. A known species of *Helicotylenchus vulgaris* (Yuen, 1964) were identified from the collected material.

Keyword: *Helicotylenchus*, Phulambri,

Introduction

A high population level of many species of plant parasitic nematodes can cause severe damage to plants (Dunn and Nolling 1997). The species of stunt nematode have been reported to be associated with roots of turfgrasses in different parts of the world (Fushtey and McElroy, 1977; Sikora *et al.*, 2001; Kang et al., 2003; Vargas, 2005). T. claytoni first identified by Steiner

(1937) has been recorded from several crops. The genus *Helicotylenchus* was established by Steiner in 1945. It feeds on plant roots, as ectoparasites or semi-endoparasites, and has been associated with plant suppression (Wouts and Knight, 1993). It is difficult to identify species of *Helicotylenchus* due to the large number of species and to the intraspecific variation of some characters (Fortuner *et al.*, 1981; Fortuner, 1984a, 1984b; Marais, 2001). The present work is the result of an ongoing investigation on this genus in India.

Material and Methods:

Soil Sampling: Soil samples are collected from Phulambri, Dist Aurangabad, with the help of shovel from the depth of 5-15 cm. in moist soil fields. If the field is arid or semiarid, the depth is increased. For making a bulk soil sample, 4-5 sub-samples are collected from the fields. The soil is collected in a polythene bag and brought to laboratory. A label bearing information regarding host, locality, district, date, etc. is tied at the neck of polythene bag with the help of rubber band. In order to avoid evaporation of moisture from soil sample they are stored in a refrigerator and processed as soon as possible.

Processing: Extraction of soil nematodes from soil samples was made by modified Bearmann funnel technique.

Killing and Fixation: The suspension containing the nematodes is

placed in a test tube for 20-30 minutes so that nematodes may settle down at the bottom. Most of water is discarded carefully from the test tube with the help of dropper. The nematodes are fixed in hot 4% formalin.

Permanent Slides: The nematodes are transferred from fixative to a solution of 5 parts of glycerin and 95 parts of alcohol in a cavity block. The cavity block having the nematodes is placed in a desiccator for dehydration of nematodes at room temperature for 2-3 weeks. The nematodes are finally mounted in a glass/metal slide in pure anhydrous glycerine. Ordinary nail polish is used as a sealing material (Baqri and Bohra, 2005). All measurements were made on specimens mounted in anhydrous glycerine with the help of ocular micrometer. De Man's (1884) formula for denoting body dimensions of nematodes was used.

Nematode identification: Individual nematodes were picked, killed by heating (70ºC), and then fixed in FG solution (1 ml glycerol, 10 ml formalin, and 89 ml distilled water). Specimens were processed slowly into glycerol and mounted on microscope slides (Southey 1970).

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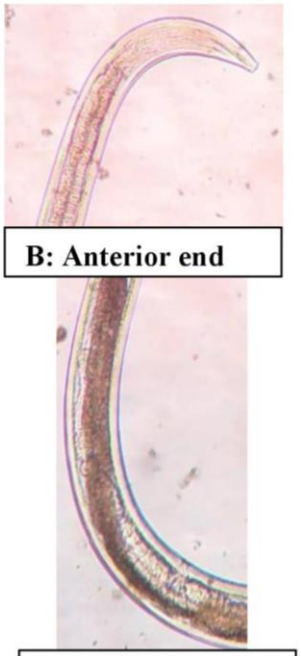
A: Entire worm Nematode



B: Anterior end

C: Vulval region.

D: Female posterior end.

Result and Discussion:

Description

The present worm is female, its body shape is spiral, annules distinct. Lip region truncate (88%) or rounded (12%), not offset from body, with five to seven annuli. Labial framework well developed, extending 2-3 annules along body. Lateral field with 4 distinct lines, aerolated for a distance anterior to median bulb, covering about one-quarter of body width. Cephalids and hemozonion not distinct. Stylet well developed anterior face of stylet knobs indented (52%), flattened (40%), or rounded (8%). Median bulb oval, with well-

developed valve plates. Excretory pore located just anterior to level of oesophageal/intestinal junction, distinct, widening somewhat immediately below cuticle. . Hemizonion not seen. Lateral field with four lines, areolared opposite oesophageal region only, lateral field end on tail variable, inner lines joined together in a u-, v- or m-shaped pattern. Epiptygmata apparently folded into vagina in aU the specimens. Phasmid located one to five annuli anterior to anus. Caudalid not seen. Tail rounded, more curved dorsally, with five to thirteen annuli. Annuli on tail fine and subdivided, not arranged in an orderly fashion and irregular around the tip. Vulva with epiptygmas folded in, as is typical for the genus; sides somewhat raised, resembling vulval flaps. Spermatheca generally set off, rarely continuous with ovaries; both ovaries well developed. Tail almost as long as width of body at level of anus, dorsally convex, ventrally almost flat, terminally subconical with rounded terminus, rarely hemispherical, usually with a thick cuticle with fine annulation, which is generally visible only in perfect lateral orientation.

This species closely resembles to *Helicotylenchus vulgaris* Yuen, 1964 (Fig. 1, 2) because of the presence of fine, subdivided annuli on the tail tip. The specimens were compared with female paratypes of *H. vulgaris* from which they differ slightly in the following characters: where the dorsal gland opening further from stylet knobs, position of vulva stylet lengrh and position of phasmids (one to five vs six to eighteen annuli anterior to anus). According to Sher (1966), it also have stylets shorter and phasmids more posteriorly.

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