

HAPTOGLOSSA HETEROSPORA DRECHSLER, A FUNGUS PARASITE
OF FLORIDA NEMATODES

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HISTORY: Drechsler, 1940, described Haptoglossa heterospora from bacteriophagous nematodes feeding in decaying vegetation. He noted that enormous numbers of nematodes were destroyed by the fungus.

GEOGRAPHIC DISTRIBUTION: The fungus has been reported from Florida, Maryland, Virginia, Wisconsin, Denmark, England, Ontario, and Quebec.

NEMATODE HOSTS: Acrobeloides buetschlii, Steiner and Buhner, 1933, and Rhabditis sp., have been previously reported; new Florida hosts include Diploscapter sp., Helicotylenchus multicinctus, (Cobb, 1893) Golden, 1956, Meloidogyne sp., and Pratylenchus sp. Bacteriophagous nematodes are most susceptible to infection by the fungus. Phytoparasitic nematodes are less commonly noted to be infected.

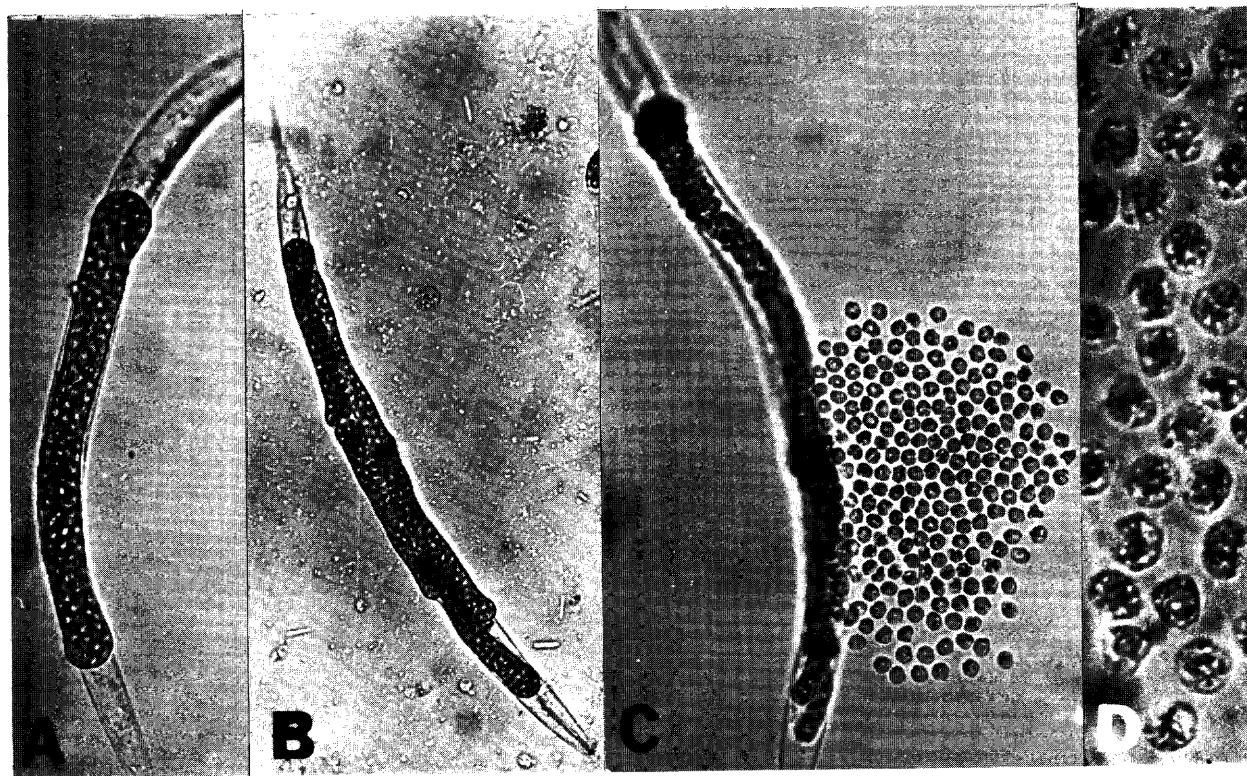


Fig. 1 - A) Rhabditis sp. with a single vegetative thallus. B) Rhabditis sp. with several thalli. C) Primary spore discharge from sporangium. D) Closeup of primary spores.

LIFE CYCLE: The fungus produces a spherical primary spore (fig. 1-D, 2-A) that develops (fig. 2-B) to a 3-cornered secondary glossoid (tongue-like) spore (fig. 2-C) that is non-motile in the substrate. Migrating host nematodes brush up against the spore tilting it so that the tip of one glossoid lobe presses against the nematode cuticle. Pressure of the nematode body on the fluid-filled bladder-like part of the spore causes instantaneous injection of the infectious spore (fig. 2-E) into the host body. As the nematode moves, several to many spores may be injected into the body, usually around the head area. The entire process occupies but a few seconds.

The tertiary infectious spore in the host germinates to produce a broad vegetative thallus (fig. 1-A). A host may be occupied by 1-100 thalli, but usually one to several are present (fig. 1-A,B). After the digestible contents of the nematode body have been absorbed, the thallus transforms to a sporangium. A bulge in the wall of the fully developed sporangium protrudes through the cuticle of the nematode forming a protuberant tip that eventually discharges the spores (fig. 1-C). The spore cluster eventually scatters in the substrate producing a rather extensive infection court. In a 64 hour period, 73 nematodes (*Rhabditis* sp.) became infected and developed thalli from a culture containing 24 infected nematodes.

BIOLOGICAL CONTROL POTENTIAL: Very few publications deal with this fungus, and its potential as a biological control agent is untested. In prolonged observations (10 days) it has not infected phytoparasites in the substrate or eliminated populations of bacteriophagous nematodes. The fungus commonly occurs in root samples from various parts of Florida.

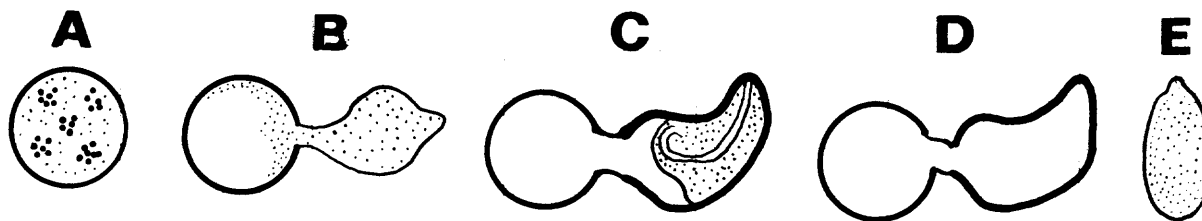


Fig. 2 *Haptoglossa heterospora* spore types. A) Primary spore. B) Secondary spore formation. C) Secondary glossoid spore. D) Secondary spore after discharge. E) Tertiary infective spore.

REFERENCES:

- Davidson, J. G. N., and G. L. Barron. 1973. Nematophagous fungi: *Haptoglossa*. Can. J. Bot. 51:1317-1323.
- Drechsler, C. 1940. Three fungi destructive to free-living terricolous nematodes. J. Wash. Acad. Sci. 30:240-254.