Note brève

EFFECT OF ETHOPROP ON THE PARASITISM OF *CATENARIA ANGUILLULAE* ON *MELOIDOGYNE INCOGNITA* [1]

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Catenaria anguillulae Sorokin, a widespread nematophagous endoparasite (Barron, 1977), is weakly parasitic ; Boosalis and Mankau (1965) stated that it mainly colonized dead and injured nematodes. Sayre and Keeley (1969) who tested parasitim of this fungus on *Panagrellus redivivus* (L.) Goodey and *Ditylenchus dipsaci* Kühn observed that the former was more susceptible than the latter. This difference they argued was due to the greater physiological stress placed on *P. redivivus* by the test conditions than on *D. dipsaci*. If stress predisposes nematodes to attack by weakly parasitic fungi, then combinations of a fungus and a chemical stress agent may be instrumental in achieving a modified biological control method for nematodes. Specifically, this paper considers the parasitism of *C. anguillulae* to determine if it is enhanced by subjecting the root-knot nematode, *Meloidogyne incognita* (Kofoid & White) Chitwood, to a stress condition from sublethal doses of ethoprop, a contact nematicide.

Materials and methods

Soil of pH 6.6 was mixed with the nematicide, ethoprop (O-ethyl s,s-dipropyl phosphorodithiorate), to give final concentrations of 2.5, 5 and 10 ppm respectively and kept in plastic bags where soil moisture was maintained at 15%. Soil for the control treatment was kept in a similar manner. Five hundred grams of soil were placed in each of 36 10-cm diameter earthen pots, which were planted with a 32-day old seedling of tomato, cv. C-28.

The various stages of *C. anguillulae* used for soil infestation were cultured on *P. redivivus*. These nematodes were grown on oatmeal-yeast medium,

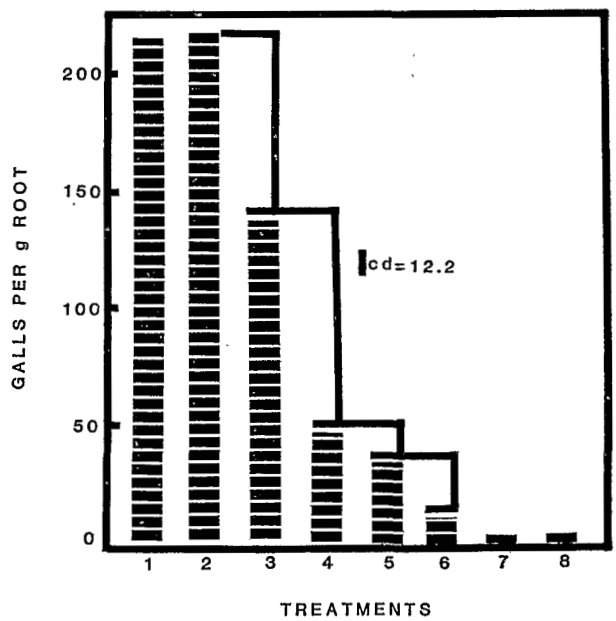

Fig. 1. Production of galls of *M. incognita* on tomato roots in different treatments of *C. anguillulae* and ethoprop. 1 = *M. incognita (M.i.)* ; 2 = *M.i.* and *C. anguillulae (C.a.)* ; 3 = *M.i.* and ethoprop (e.) 2.5 ppm ; 4 = *M.i.*, *C.a.* and e. 2.5 ppm ; 5 = *M.i.* and e. 5 ppm ; 6 = *M.i.*, *C.a.* and e. 5 ppm ; 7 = *M.i.* and e. 10 ppm ; 8 = *M.i.*, *C.a.* and e. 10 ppm.

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extracted from the medium, then exposed to zoospores of the fungus for 48 hr, and finally added at the rate of 1 100 infected nematodes along with 9 000 zoospores per pot. The fungus was grown on peptone glucose yeast agar medium (Catino, 1949) and zoospores were obtained from old cultures by flooding the dish with a mixture of deionized and pond water (Sayre, 1971). *M. incognita* juveniles collected from galled plant roots were counted, and added at the rate of 2 000 per pot. The treatments of the fungus alone and in combination with the nematicide were replicated four times. Seven weeks after infesting soil with nematodes, plants were uprooted to determine the combined effects of the fungus and nematicide on the nematode. The number of galls per gram of root were counted.

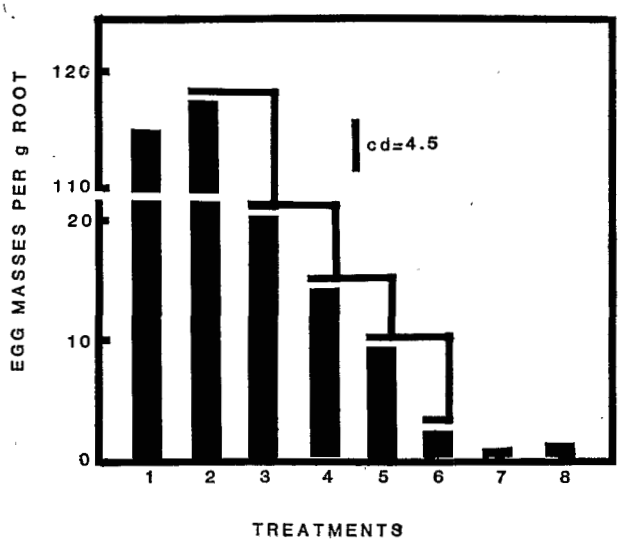

Fig. 2. Production of egg masses of *M. incognita* on tomato roots. Same treatments as in Fig. 1.

Results and discussion

The addition of *Catenaria anguillulae* alone had no effect either on the number of galls (Fig. 1) or the number of egg masses (Fig. 2) per gram of root. This agrees with the observation of Sayre and Keeley (1969) on the incidence of *Ditylenchus dipsaci* in onion seedlings that were exposed only to *C. anguillulae*. When *Meloidogyne incognita* was treated with low concentrations of ethoprop (2.5 and 5 p.p.m.) the fungus greatly reduced both galling and egg mass production. The existence of a synergistic effect between the nematicide and the fungus is demonstrated. At a higher concentration of nematicide (10 p.p.m.) galling and egg mass production are almost suppressed and nothing could be added by the presence of the fungus and no difference is observed.

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