

Reaction of Spiders (Arthropoda : Araneae) to the Entomogenous Nematode, *Steinernema carpocapsae* (Weiser) (Steinernematidae : Nematoda)

C.V.SIVAKUMAR and S.BALASARASWATHY

Department of Entomology

Agricultural College & Research Institute

Madurai - 625 104, India

Spiders are recognised as important predators of insect pests of crops (Yasumatsu and Torii, 1968; Samal and Misra, 1975; Hokyo *et al.*, 1976) and are commonly met with in the agro- ecosystems of the tropics. The effect of entomogenous nematodes on these beneficial organisms is not known. An experiment was conducted in the laboratory to study the reaction of two species of spiders viz., *Stegodyphus pacificus* Pocock (Eresidae : Araneae) and *Lycosa pseudoannulata* (Bosenberg and Strand) (Lycosidae : Araneae), occurring in the orchards and rice fields, respectively, to the entomogenous nematode, *Steinernema carpocapsae* (DD - 136 strain).

The spiders were exposed to moist filter papers treated with the infective juveniles of the nematode in 10 cm Petri dishes (Woodring and Kaya, 1988) and kept at 25°C. Five spiders were confined to a Petri dish containing an inoculum of 200 infective juveniles of the nematode, and four such replicates were maintained for each species of spider tested. Mortality counts were taken at 12 h intervals upto 120 h. The dead spiders were transferred to another Petri dish lined with a moist filter paper and kept at 25°C for one week and examined for nematodes.

All the 20 individuals of *S.pacificus* were killed within 24 h of contact with the nematodes, while none of *L.annulata* was affected. Examination of cadavers of *S.pacificus* showed the presence of dead in-

fective juveniles of the nematode, entrapped in the host tissues indicating that the nematodes had caused the death of the spiders obviously by the release of the bacterial inoculum. *L.pseudoannulata* individuals which survived exposure to the nematode, were free of nematode infection.

S. carpocapsae and *Heterorhabditis bacteriophora* Poinar, 1976 (= *H.heliothidis* Khan, Brooks and Hirschmann, 1976) are known to enter into the body of the millipede, *Oxidus gracilis* and kill it, without developing further due to inhibition by host defense reactions (Poinar and Thomas, 1985). But in an earlier study by Dutky *et al.*, *S.carpocapsae* had no adverse effect on the garden millipede (Poinar, 1979). Poinar and Thomas (1985) attributed this variation to the difference in the strain of the nematodes tested. In the case of spiders, the reaction to *S.carpocapsae* (DD-136 strain) varies with the target species involved.

KEY WORDS : Entomogenous nematode, *Steinernema carpocapsae*, spiders

REFERENCES

- HOKYO, N., LEE, M.H. and PARK, J.S. 1976. Some aspects of population dynamics of rice leafhoppers in Korea. *Kor. J. Pl. Prot.*, 15, 111-126.
- POINAR, G.O. Jr. 1979. Nematodes for biological control of insects. CRC Press, Boca Raton, Florida, USA.

- POINAR, G.O. Jr. and THOMAS, G.M. 1985. Effect of neoaplectanid and heterorhabditid nematodes (Nematoda : Rhabditoidea) on the millipede, *Oxidus gracilis*, *J. Invertebr. Pathol.*, 43, 232-235.
- SAMAL, P. and MISRA, B.C. 1975. Spiders : The most effective natural enemies of the brown planthopper in rice. *Rice Ent. Newsl.*, 3, 31.
- WOODRING, J.L. and KAYA, H.K. 1988. Steinernematid and heterorhabditid nematodes : A handbook of techniques. Southern cooperative series Bull. 331, Arkansas Agricultural Experiment Station, Fayetteville, Arkansas, U.S.A., p.15.
- YASUMATSU, K. and TORII, T. 1968. Impact of parasites, predators and diseases on rice pests. *Ann. Rev. Entomol.*, 13, 195-324.