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FLUCTUATIONS IN THE POPULATION OF *HOPLOLAIMUS DUBIUS* IN VEGETABLE FIELDS

by

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Hoplolaimus dubius Chaturvedi, Singh *et* Khera, 1979 was found to be one of the predominant species of plant parasitic nematodes in vegetable crops in West Bengal. Therefore observations were made on the seasonal fluctuations of *H. dubius* and of other tylenchid nematodes, *Aphelenchus avenae* Bastian, *Tylenchus filiformis* Butschli, *Rotylenchulus reniformis* Linford *et* Oliveira, as well as free-living rhabditides, dorylaimids and mononchids.

Soil samples were taken from two plots 2 x 2 metres, in a field at the Ram Krishna Mission Asharam, Narandrapur, District 24 - Parganes, West Bengal. The soil was a clay loam, pH 7.8. Tomato (*Lycopersicon esculentum* Mill. var. Pusa Ruby) seedlings were transplanted into the plots in early January, 1974 and uprooted at the end of April. The plots were then ploughed twice, and by May there was an abundant growth of weeds, consisting namely of *Cynodon dactylon* ('Doob') and *Cyperus rotundus* ('Motha') which flourished until November. In the first week of December, the plots were ploughed again and tomato var. Best-in-All seedlings were transplanted at the end of December and the crop was harvested in April, 1975. The plots were then ploughed again and left fallow.

Soil sampling was started in February, 1974 and continued at weekly intervals until April, 1975. Soil samples were taken at 10 cm and 20 cm depths with a soil auger, five cores at each depth from each plot. The samples of each plot were mixed thoroughly and 500 ml processed by Cobb's modified sieving and funnel technique. Nematodes were counted in five 1 ml samples of the extracted nematodes,

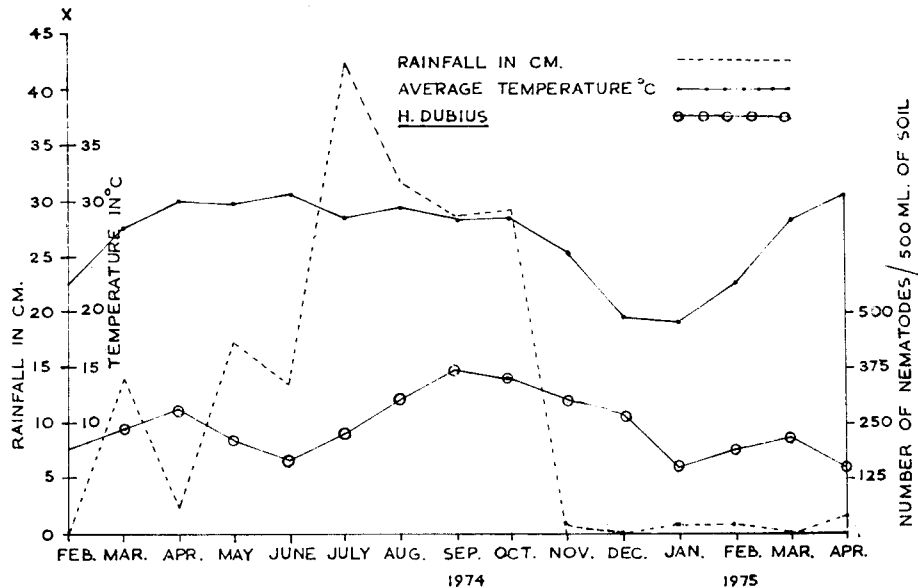


Fig. 1. - Temperature, rainfall and population fluctuation of *Hoplolaimus dubius*.

the number in the total suspension being calculated from five counts multiplied by a volume factor. Average of *H. dubius* population at 10 and 20 cm depths, temperature and total monthly rainfall are depicted in fig. 1.

The population density of *H. dubius* at the start of the observations in February, 1974, was 185 nematodes/500 ml soil, and increased to 279 by the following April. The population then decreased until June, although temperatures and rainfall were considered to be favourable, and increased to a peak of 365 in September followed by a decline to 150 in January, 1975, a further increase to 258 in March and then a decline to 161 in April. The presence of large number of larvae in April and September 1974 suggests that reproduction is favoured by the high soil temperatures (28-30°C) at that time, which agrees with the observations of Gupta and Atwal (1971). Populations of *H. dubius* however, had not begun to increase in April 1975 when soil temperatures were again about 30°C but rainfall had remained low since the previous September. The increase in populations of *H. dubius* following substantial rainfall is consistent with the find-

ings of Norton (1959) on *Paratylenchus projectus*, *Tylenchorhynchus brevidens* and *Aphelenchus avenae*.

Populations of the other tylenchids fluctuated similarly to those of *H. dubius* as did those of the free-living nematodes.

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