Notes brèves

EFFECT OF GRANULAR NEMATICIDES ON NEMATODE POPULATION AND SUGARCANE YIELD

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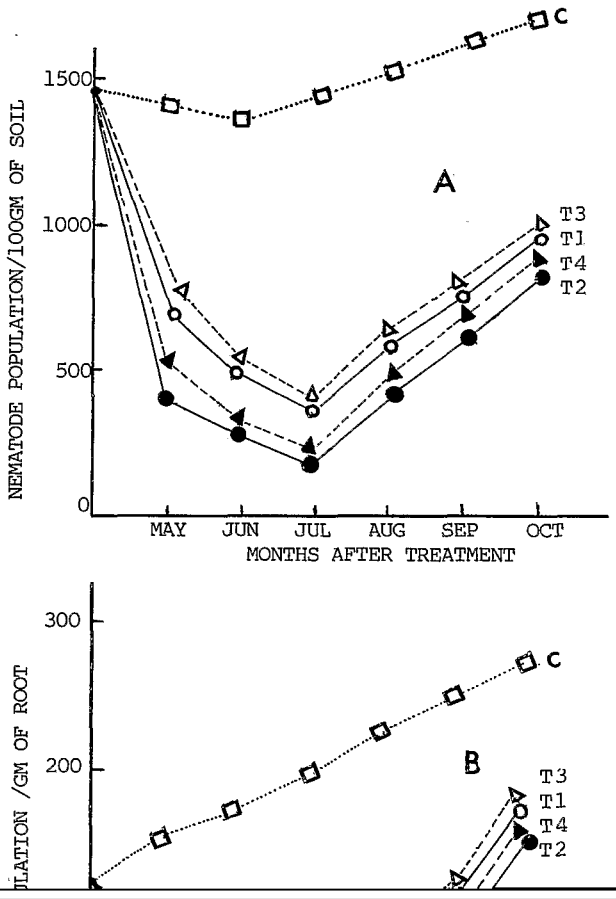
Nematodes cause a major problem in sugarcane cultivation in Pakistan, where up to twenty genera and 40 species have been recorded from different varieties of sugarcane (Maqbool, Zain & Shama, 1975; Maqbool 1984). Reports on the control of nematode

loam, 60 % sand, 22 % silt and 18 % clay. The field was divided into 9 × 6 m plots with 12 rows in each plot, containing 15 sugarcane setts 45 cm apart in each row.

Two nematicides Temik 10G (aldicarb; 2-methyl-2 (methylthio) Propionaldehyde O (methylcarbamoyl)

Results and discussion

Population density of ectoparasitic nematodes averaged 1 400/100 g of soil were represented by *Helicotylenchus digonicus* 35 %; *H. indicus* 12 %; *Hoplolaimus indicus* 10 %; *Paratrichodorus mirzae* 10 %; *Tylenchorhynchus annulatus* 20 %; *Xiphinema* sp. 8 % and others 5 %, and *Pratylenchus zeae,* the only endoparasite recovered from sett roots averaged 120/g of roots.



In untreated plots *Pratylenchus zeae* showed a gradual increase in numbers and remained relatively at a high level till harvesting. As suggested previously by Cadet and Spaull (1985) whereas the component genera of ectoparasites after initial decrease also increased. Both the nematicides showed a gradual decline in nematode densities of the ectoparasites in soil and the endoparasite in roots. Nematicides used 2 kg a.i./ha were more effective than when applied at 1 kg a.i./ha (Fig. 1). Reduction in nematode number from 77 to 90 % of ectoparasites and 80 to 90 % in *Pratylenchus zeae* was observed during the first three months of nematicide treatment followed by a gradual increase in nematode numbers reaching maximum average of 935/100 g of soil and an average of 180/g of roots in *Pratylenchus zeae.* The high percentage of ectoparasites in soil and invasion of sett roots in untreated plots by *Pratylenchus zeae* showed adverse effect on root development. Yield data in multiple range test (Tab. 1) revealed that best response of aldicarb and carbofuran was reported in the plots treated with 2 kg a.i./ha of these nematicides. Effect of granular nematicides on nematode control and increase in yield has been reported earlier (Birchfield, 1969 : aldicarb) and (Cadet & Merny, 1978 : carbofuran). Our results give an indication of the over all benefits to be gained by the use of nematicides.

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CELLULAR RESPONSES OF THREE SUSCEPTIBLE CULTIVARS OF POTATO TO INVASION BY THE JUVENILES OF *GLOBODERA PALLIDA*

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A general distinction between the cellular responses of the roots of resistant and susceptible cultivars of potato to invasion by potato cyst nematodes is reported as hypersensitivity. This condition is expressed by localised lignification and necrosis around the nematode and the developing syncytium, in resistant cultivars. Eventually the lignification walls off the syncytium, thereby preventing its continued expansion (Hoopes, Anderson & Mai, 1978; Rice, 1983, Rice, Leadbeater & Stone, 1985).

Susceptible cultivars allow the incorporation of cells into the syncytium and their further proliferation to proceed unchecked; simple mechanical damage without lignification is the only evidence of the passage of the nematode through the root tissues.

Evans, Greet and Inge (1983) reported that potato

6.5 cm or 8.5 cm from the root tip. The plants were then returned to the incubator and 1.0 cm segments around the inoculation points harvested eight days later. The segments were fixed immediately in F.A.A. and processed through a tertiary butyl alcohol series to wax (Southey, 1970); 10 µm sections were stained in either Sudan Black B or Safranin O and Fast Green.

Fig. 1 A-C shows the structure of the root of each cultivar at 2.5 cm from the tip. Pentland Javelin (Fig. 1A) has large diameter roots, a well developed cortex of up to eleven layers of thick walled cells, a thickened epidermis, no distinct hypodermis and a well developed pentarch xylem. Maris Peer (Fig. 1B) has thinner roots, a less developed pentarch xylem, up to eight layers of thinner walled cortical cells and possesses a well developed hypodermis thickened on its radial and