

Scientific Notes

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Effect of some nematicides on nematodes affecting roots of sugarcane

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Nematodes have been known to attack crops but have been studied less than insects because they are minute, difficult to identify and tedious to extract from plants or soils. Although many species have been described in Europe and the United States of America, the nematode fauna of agricultural soils is imperfectly known and many harmful species await discovery (Jones & Jones 1974). Different species of plant parasitic nematodes are distributed in different countries, the population density varying with the regions (William, 1969). The incidence of sugarcane nematodes in Bangladesh was not reported earlier except that McGeachie and Chowdhury (1981) found 1000 plant parasitic nematodes per litre of soil in Darshana, Kushtia. Damage symptoms also were found in cane plants. This new problem called for necessary control measures. Therefore, an experiment was set up in pots to study response of some chemicals known to have nematocidal action elsewhere (Anon, 1980) because all species of nematodes are not controlled by the same chemical (Johnson *et. al.*, 1979).

Soil was collected by digging from a cane field of Carew & Co. having symptoms of serious nematode damage. Soil was taken from one area along a cane row in a trench of 400x400x200 mm screened to remove most old root and stool trash. Then the soil packed in six big drums and transported to Sugarcane Research Institute. Sieved soil was potted in to 25 big earthen pots so that cane could grow up to its maturity. They were kept under a shade to prevent from drying out or over-heating by sun which might kill soil organisms. Three one-eyed treated setts of I-112/67 (now ISD-16) were planted in a triangular form in the selected pots on 25-7-80. The experiment was arranged under randomized complete block design with five replications followed by five treatments including the control one. Area of the surface of each individual pot was 1032.48 sq. cm. When the potted canes were at 5-6 leaf stage, nematicides like Temik 10G, Nemacure 19G and Mocap 10G were once applied on 19.8.80 @ 1g/pot and that of Furadan 3G @ 3.3g/pot.

Four weeks after application of test chemical, the soil of one pot of each treatment was carefully removed on 24.9.80 and a soil sample of 200 gm was taken from the middle of the zone and 50 gm of root from one pot of each treatment was collected and bagged in a sealed plastic bag for determining the nematode population.

The following day, the 25th September, 1980 nematodes were extracted from soil and root following Baerman funnel techniques (Baermann, 1917) after a overnight constant soaking with tap water.

The genera of nematodes, detected from Carew & Co. Darsana are : 1. *Helicotylenchus* sp. 2. *Hoplolaimus* sp. 3. *Tylenchorhynchus* sp. 4. *Pratylenchus* sp. 5. *Aphelenchoides* sp. in soil and 1. *Helicotylenchus* sp 2. *Pratylenchus* sp in root (McGeachie and Chawdhury, 1981.)

Since the soil of the same area were used for the present work the level of population of all those genera were suspected to be the same in the pots. Population of nematode counted one month after nematicide application, appeared to have been affected by the chemicals. Root extracts (50ml) contained 37 individuals in control compared to none in Furadan and 2-7 in Termik, Mocap and Nematicure treated pots. Similarly, soil extracts (50ml.) of untreated pots had 62 individuals. Furadan, Temik Mocap and Nematicure had 12, 29, 58 and 25 individuals respectively. These results agree with those obtained in Australia where Temik and Mocap were reported to have reduced nematode population (Anon, 1979). Nematode population in all these treated and untreated pots were erratic as evident from the counts, recorded one year after plantation presumably because of re-infestation or natural mortality due to unknown reason. Nematicidal treatment significantly increased seed-piece germination, plant-height and yield but not tillering (Gargantiel, 1976). Height of plants was also recorded in the month of June, 1981. There was no significant difference between plants of treated and untreated pots. Overall height of plants was not very appreciable, probably because the soil in the pots was very hard due to continual watering from the top and mulching. This finding differs from that of Gargantiel (1976) where good foliage was apparent. However, the plant height did not indicate the effect of chemicals and nematode population, but the result suggests that the population of available nematode species in Bangladesh may be reduced by the application of chemicals reported here. Temik and Furadan produced almost similar results in respect of plant height and nematode control.

Further work in field with the same chemicals is necessary to confirm the results and arrive at a precise interpretation for nematode control with nematicides.

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