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EFFECT OF FIVE OIL CAKES ON CONTROL OF *PRATYLENCHUS ZEA* IN SUGARCANE

by

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Summary. Application of five oil cakes *viz.*, ground nut, sesame, neem, cotton seed and coconut significantly increased yield and quality of sugarcane. Population of *Pratylenchus zae* in soil and roots was significantly suppressed by all the treatments.

Oil cakes of different types when incorporated in the soil have been successful in the control of plant parasitic nematodes in agricultural crops (Trivedi *et al.*, 1978; Singh *et al.*, 1985; Akhtar and Mahmood, 1993) with a significant increase in yield. Incorporation of oil cakes in sugarcane fields had increased the yield and quality by reducing the population of *Pratylenchus zae* (Recuenco, 1980; Mehta, 1992). A pot culture experiment was conducted to screen the efficacy of five oil cakes available in the southern part of India, *viz.* groundnut, sesame, neem, cotton seed and coconut oil cakes against *P. zae* Graham and to evaluate the effects on sugarcane (*Saccharum officinarum* L.) yield.

Materials and methods

The experiment was carried out in lath house in 40 litre capacity clay pots filled with sterilized sand and silt (1:2). Treatments applied are listed in Table I. Eight hun-

dred g of each oil cake was mixed well with the soil before filling each pot. A control pot with no oil cake mix was maintained for comparison. The experiment consisted of a completely randomized block design with five replications for each treatment. Single budded setts of sugarcane (Co 8021) was planted in each pot. Pure aqueous culture of *P. zae* maintained on maize plants (*Zea mays* L.) were inoculated in each pot, 1000 nematodes per pot. Nematodes were added in control pot also. Ten months after planting, canes were cut at base level, detashed and weighed individually. Brix, sucrose, purity, per cent commercial cane sugar (CCS %) and CCS/pot were estimated through small mill test (Chen, 1985).

Roots from each pot were removed carefully, washed in running tap water and their fresh weight recorded. Soil from each pot was thoroughly mixed and from 250 cc taken from each pot the nematode population estimated. Nematode population in 10 g of roots was recovered by mistifier technique.

TABLE Influence of five oil cakes on control of *Pratylenchus zae* and yield of Sugarcane.

Treatments	Shoot weight (g)	Brix	Sucrose	CCS%	Nematodes	
					250 cc soil	10 g of roots
Control	570 b	18.26 b	15.36 b	10.37 b	200 a	28 a
Sesame, <i>Sesamum indicum</i> L.	637 a	19.68 a	17.09 a	11.72 a	152 b	17 b
Neem, <i>Azadirachta indica</i> A. Juss.	700 a	19.49 a	17.44 a	12.13 a	98 c	11 c
Cotton Seed, <i>Gossypium hirsutum</i> L.	695 a	19.58 a	17.56 a	12.23 a	86 c	20 b
Ground nut, <i>Arachis hypogaea</i> L.	672 a	20.41 a	18.22 a	12.65 a	126 b	19 b
Coconut, <i>Cocos nucifera</i> L.	685 a	19.68 a	17.55 a	12.17 a	115 bc	20 b
SE	22.67	0.33	0.47	0.41	13.56	1.72
CD	67.35 **	1.00 *	1.40 *	1.22 *	40.85 **	5.18 **

Numbers followed by same letters are not significant.

Results and discussion

Treatments had no effect on root fresh weights. However, nematode population declined significantly, both in soil and roots, where oil cakes were applied (Table I) (except purity and CCS/pot). Significant increase in yield and quality characters of sugarcane also occurred in all treated pots.

Comparative activity of different oil cakes varied perhaps depending on presence/absence of specific compounds. Neem cake indicated a maximum control of nematode population in root. The triterpenoid azadiractin is known to inhibit the penetration and development of nematodes (Siddiqi *et al.*, 1976).

Literature cited

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