

Insecticidal control of termites attacking sugarcane.

by

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Introduction: Termites are one of the major pests of sugarcane in India considered probably next in importance to moth borers. Two species of termites have so far been recorded on sugarcane in South India, viz. *Odontotermes obesus*, R. and *Eutermes heimi*, W. The former attacks the setts below the ground while the latter is more a leaf eater, but the great bulk of damage to the crop is done by *Odontotermes obesus*, R. which entirely eats away the setts underground and makes them hollow with the result that the germinating buds are completely destroyed in many cases. This occurs especially in garden land areas (semi-dry areas) where irrigation facilities are not adequate. Serious and wholesale loss of germinating seedlings are often reported from newly planted areas. Being subterranean and invisible inhabitants, the control of termites is a serious problem and several experiments have been and are being conducted in India and elsewhere to tackle this pest. During the past two years some work has been done towards the control of this pest and the present paper gives a review of the work on the subject together with an account of the experiments conducted by the Sugarcane Insect Pests Scheme, Coimbatore, under the auspices of the Indian Central Sugarcane Committee.

Review of work done: Earlier attempts to control this pest were by destroying termite mounds in the vicinity of the crop and mixing crude oil or tar emulsion in the irrigation water as a palliative. More intensive work was done only after the new synthetic pesticides were available for use in the control of crop pests. Gupta (1950), Rao (1951 and 1953), Narayanan and Lal (1952) Singh *et al* (1954) found that soaking the seed cane pieces in suspensions of BHC and DDT or application of BHC dust at 20 lbs. to 40 lbs. per acre in furrows at the time of planting gave good control of termites and good germination of eye buds. In later years more elaborate trials have been conducted with some of the new insecticides like Aldrin and Dieldrin. Agarwal and others (1954) have reported that the damage by termites to the setts at Pusa was least and the germination to be highest in plots treated with Aldrin and Dieldrin prior to planting either as dusts, emulsions or dips. They have further reported that post planting application of Aldrin and Dieldrin in standing crop of sugarcane kept in check the termite activity and increased the yield. Thakur and others (1956 & 1957) conducted similar trials with Aldrin and Dieldrin

as dusts and emulsions in the soil and found that Aldrin @ 1 lb. of the actual ingredient per acre as dust appeared to be superior to other treatments.

Based on the findings of the above experiments investigations were taken up in Madras State during 1957 and 1958 and the nature of results are given below.

Material and methods: Experiments were taken up in the Sugarcane Zonal Farm, Rajadanikkottai, Madura district here termites usually occur, during 1957 and 1958 in the main season crop planted in May. A number of new insecticides viz. Aldrin, Dieldrin, Heptachlor, Chlordane and BHC were tested under replicated conditions. The insecticides were first dusted in the furrows at rate of 1 lb. of the actual chemical per acre prior to planting. The dusts were well mixed in the soil by stirring and the setts were planted immediately. No further treatments were given to the crop.

To assess the results, the incidence of termites was recorded by counting the tillers in the entire plot and recording and removing the termite infested tillers. The setts affected by termites were also recorded at the time of the final observation.

Experiments and results: The trial was first started in the Sugarcane Zonal Farm, Rajadanikkottai during 1957 in the main season crop planted during May, 1957. The insecticides Aldrin, Dieldrin, Heptachlor, Chlordane and BHC and one control were replicated four times taking 2 cents per treatment per replication. The chemicals were applied in the soil as dusts prior to planting. Incidence of the termites in the tillers was recorded 6 weeks and 14 weeks after planting. The incidence of termites in the setts was recorded during the last count. The results are furnished in Table No. I.

The trial indicated that Heptachlor, Chlordane, Aldrin and Dieldrin treatments recorded the maximum control of termites in the tillers, and the incidence of termites to the setts was minimum in the case of Aldrin Heptachlor treatments.

Based on the above observations, the trial was repeated during 1958 with the same chemicals and under similar conditions. The incidence of termites in the tillers was recorded 4 weeks, 1 weeks and 12 weeks after planting and in setts 15 weeks after. The results are furnished in Table No. II.

In this experiment also Aldrin, Dieldrin and Heptachlor recorded the maximum control in the tillers and in the setts.

Discussion: Aldrin and Dieldrin have been successfully tried against termites in the sugarcane crop as dusts and emulsions. Aldrin at the rate of 1 lb. of the actual chemical per acre has been found superior. While conforming to the results of previous workers, that the application of Aldrin and Dieldrin @ 1 lb. of the actual chemical per acre minimises the incidence of termites, Heptachlor dust in the same concentration was also found to be effective.

The cost of the chemicals used in the experiments are given below:—

Aldrin (Aldrex)	... Rs. 20/- per acre.
Dieldrin (Dieldrex)	... Rs. 43—6—0 per acre.
Heptachlor	... Rs. 13—10—0 per acre.
Chlordane	... Rs. 11—11—0 per acre.
BHC	... Rs. 4—9—0 per acre.

Taking the cost of chemicals for the treatments, it may be said that Heptachlor can be used in the place of Aldrin and Dieldrin as the chemical is cheaper and at the same time as effective as the other two.

Summary and Conclusions: Two species of termites have been recorded to attack sugarcane in South India. The bulk of damage to the setts is caused by *Odontotermes obesus*, R.

A brief account of the review of the work done on the control of termites is given.

Field experiments were conducted at the Sugarcane Zonal Farm, Rajadanikkottai (Madura District) during the years 1957 and 1958. Five chemicals were dusted in the furrows prior to planting the setts at the rate of 1 lb. of the actual chemical per acre.

Aldrin, Dieldrin and Heptachlor recorded maximum control of termites. Of the three chemicals, Heptachlor is recommended in view of the cheapness.

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TABLE NO. I.

Trails conducted at the Sugarcane Zonal Farm, Rajadanikkottai during 1957.

Year	...	1957			
Locality	...	Sugarcane Zonal Farm, Rajadanikkottai (Madura district)			
Date of Planting	...	9-5-1957			
Date of Treatment	...	8-5-1957			
No. of Treatments	...	6			
Replications	...	4			
Area of each Plot	...	2 cents			
Variety	...	Co. 419			
		Incidence of termites			
S. No.	Treatments	Percentage of infested tillers		Percentage of infested setts	
		6th week	14th week	14th week	
1	2	3	4	5	
1.	Aldrin	...	0.13	0.7	7.3
2.	Dieldrin	...	2.8	0.2	10.8
3.	Heptachlor	...	0.15	0.3	7.6
4.	Chlordane	...	0.6	0.5	14.2
5.	BHC	...	4.6	0.7	11.4
6.	Control	...	5.7	0.7	18.5

Note:— The data gathered were statistically analysed and found to give significant results in Heptachlor, Chlordane, Aldrin and Dieldrin treatments. The statistical analysis was carried out after affecting the inverse sine transformation.

- The percentage of infested setts given in Col. (5) denotes the setts killed outright by termites.

Bar diagram:

