

Efficacy of different Insecticides against Termites for raising Sugarcane Seedlings in Soil bed

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Received on 11.2.95

The experiment was conducted in Sreepur area under Gazipur district, Bangladesh to study the efficacy of insecticide against termites in soil bed. Chemicals included for the study were Dursban 20 EC, Sumicidin 20 EC, Pounce 1.5 G, NTN 70 WS and Heptachlor 40 WP (standard). All the chemicals had similar response in germination of buds. Results obtained from the experiment showed that NTN 70 WS and Sumicidin 20 EC at different doses were positive in controlling termites in soil bed for raising seedlings.

Termite is a serious pest almost in all the cane growing regions particularly in non-flooded sandy and red soil areas of the country. Among the five identified species of termites, two species namely *Odontotermes obesus* and *Microtermes* sp. are most destructive causing severe damage to cane sets in Bangladesh (Dean, 1979). Termite damages buds of planted sets, young shoots on germination and lower internodes of growing canes (Khanna *et al.* 1956; Rajani, 1964). Germination in patches occurs due to termite attack in sets and young canes making the field gappy (Karim *et al.* 1979). Ratoon as well as standing canes are also attacked by termites. Earlier, experiments were conducted for control of termites with Heptachlor 40WP, Dieldrin 40WP and 20EC, Agritox 50EC, Chlordane 40WP, Basudin 10G, and Heptachlor and Dieldrin were found effective against termites (Karim *et al.* 1979; Miah *et al.* 1983. Kundu *et al.* 1987). In those experiments chemicals were recommended to apply in the trenches.

Sreepur under Gazipur district (red soil, non-flooded areas) is seriously a termite prone area. In these areas cane tops are kept in heaps or in semi-heaps in soil beds nearby the dwelling houses for pre-germination of buds before transplanting to the main fields. Farmers of this region are accustomed with this practice. Now-a-days, this practice of raising seedlings in soil beds is becoming popular in different cane growing areas of Bangladesh. Observation is such that termite infestation in soil bed greatly hampers germination. Hence, a trial with various chemicals was set in soil bed to study their effects against termites.

The experiment was conducted in 1991-92 cropping season in grower's plot at Sreepur. The experiment was laid out in a randomized complete block design (RCB) with four replications. The plot size was 1 sq.m having 50 cm gap between two plots and distance between block was maintained 1m. The most popular variety in that region 'Misrimala' was selected as test material and planting was done in February 29, 1992.

Various chemicals such as Dursban 20 EC, Sumicidin 20 EC, Pounce 1.5G, NTN 70 WS and Heptachlor 40 WP were used in the experiment. The formulation of above chemicals used were EC (Emulsifiable Concentrate), G (Granule), WS (Water Soluble) and WP (Wettable Powder). In some of the treatments the soils were treated with EC and WP formulations mixed with water. The granular formulation was applied by broadcasting

chemicals over soils. WS formulation was used for sett treatment where the chemical was mixed with water and setts were soaked for 30 minutes. As per schedule of the experiment, two budded setts (100 setts/plot) were placed over the soil beds and then covered with light layer of soils to protect setts from direct sunlight as well as to preserve moisture. Irrigation was done through 'Watering Can' at 15 d interval. Data on germination, termite population and number of affected setts were recorded after 60 d of planting. Ten setts/plot were dug out and placed on polythene sheets. The dug out soils were examined carefully to count the number of termites in soils. The affected setts were also splitted for counting of termites if any remain within the sett. Here, termite affected setts - meant for the planting material (setts) which were completely destroyed or hollowed up by termites after or during germination of buds.

It is revealed from the data (Table 1) that all the insecticides at different rates gave higher germination than control plots, though the differences were statistically insignificant. The highest germination (62.0%) was observed in the treatment NTN 70 WS @ 1.5 kg ai^{-ha} followed by Pounce 1.5 G @ 1.0 kg ai^{-ha} (56.8%). Dursban 20 EC @ 2.0 kg ai^{-ha} and NTN 70 WS @ 1.0 kg ai^{-ha} produced almost similar results which were 55.9 and 55.3% respectively. Germination percentage in other insecticide treated plots varied from 51.9 to 54.9% and the lowest germination was recorded in control plot (50.3%).

Significant differences among the treatments were found when observations were made on termite affected setts. None of the setts were found to be affected by the termites in the plots which received NTN, Heptachlor and Sumicidin (Table 1). Other insecticide treatments also showed significantly less number of infested setts which ranged from 2.5-3.8 compared to the control (6.0).

Data on termite population (Table 1) recorded in different treatments showed that all insecticides at various doses significantly reduced termite population compared to control plot. The highest reduction of termite population was recorded in the plots receiving NTN 70 WS at both the doses and Heptachlor 40 WP @ 1.8 kg ai^{-ha} where termite population was found nil. Sumicidin 20 EC at both the doses of 2.0 and 1.0 kg ai^{-ha} also produced remarkable reduction of the pest which reached the efficacy upto satisfactory level (80% and above).

Table 1. Effects of different insecticides on germination, termite affected setts and termite population in soil bed, Sreepur, 1991-92. (Mean of 4 replications).

Treatments		Germination (%)	Termite affected setts (Nos.)	Termite population (Nos.)
Chemicals	Dose kg ai ^{-ha}			
Dursban 20 EC	2.0	55.9	2.8	205.8 (3.78)
Dursban 20 EC	1.0	54.9	3.8	250.0 (2.97)
Sumicidin 20 EC	2.0	51.9	00	13.3 (1.91)
Sumicidin 20 EC	1.0	52.4	00	83.0 (2.49)
Pounce 1.5 G	2.0	52.5	2.5	168.8 (3.85)
Pounce 1.5 G	1.0	56.8	2.5	233.3 (3.02)
NTN 70 WS	1.5	62.0	00	00 (00)
NTN 70 WS	1.0	55.3	00	00 (00)
Heptachlor 40 WP	1.8	54.8	00	00 (00)
Untreated (Check)	-	50.3	6.0	563.0 (6.18)
LSD 5% (with X=0)		NS	2.00	2.79
1% (with X=0)		NS	2.74	3.78

- Transformed Ln (X + 1) in parenthesis.

Results obtained from the experiment showed that NTN 70 WS and Sumicidin 20 EC at different doses were positive in controlling termites in soil bed for raising seedlings. However, further investigation is needed in this regard.

ACKNOWLEDGEMENTS

The authors wish to express sincere thanks to Mr. Abdul Gafur, Associate Statistician (Gr-1), Sugarcane Research & Training Institute for help in statistical analysis of the data. Grateful thanks to the personnel and technical staff of Quarantine Station, Joydebpur for extending all possible cooperation to carry out the experiment.

REFERENCES

- Dean, G.J. 1979. The major insect pest of rice, sugarcane and jute in Bangladesh. *PANS*, 25: 378-385.
- Karim, M.A.; Islam, M.N. and Alam, M.Z. 1979. Studies on the effectiveness of soil insecticides for the control of termites infestation in sugarcane. *Bangladesh J. Sugarcane*, 1: 29-35.
- Khanna, K.L.; Nigam, L.N.; Agarwala, S.B.D. and Butani, D.K. 1956. Termite infesting sugarcane and their control. *Proc. ISSCT*, 1: 908-935.
- Kundu, R.; Alam, M.A.; Biswas, M.M.; Abdullah, M. and Miah, M.A.H. 1987. Studies on the control of termites with chemical pesticides. *Bangladesh J. Sugarcane*, 9: 20-25.
- Miah, M.A.H.; Alam, M.A.; Kundu, R. and Shahjahan, M. 1983. Studies on the control of termites with Heptachlor. *Bangladesh J. Sugarcane*, 5: 8-15.
- Miah, M.A.H.; Alam, M.A. and Kundu, R. 1986. Efficacy of dieldrin and heptachlor on termites in the sugarcane field. *Science and Culture*, 52(4): 133-134.
- Rajani, V.G. 1964. Comparative efficacy of modern soil insecticides in the control of termites and shoot borer in Uttar Pradesh. *Proc. All India Conf. Sug. Res. and Dev. Workers*, 5: 579-588.