

Studies on the Control of Termites with Chemical Pesticides

R. Kundu, M.A. Alam, M.M. Biswas, M. Abdullah and M.A.H. Miah¹
Sugarcane Research & Training Institute,
Ishurdi, Pabna, Bangladesh.

ABSTRACT

An experiment was conducted at Akandabaria farm of Carew and Company, Darsana with different doses of Dieldrin 40WP, Dieldrin 20EC and Furadan 3G during 1985-86. Dieldrin 40WP@1.35 kg ai/ha and 2.0 kg ai/ha and Dieldrin 20EC@2.0kg ai/ha significantly controlled termite population at harvest. However, Dieldrin 40WP @ 2.0 kg ai/ha and Dieldrin 20EC @ 2.0 kg and 2.5 kg ai/ha showed above 80% effectiveness in reducing termite population over control at harvest. Dieldrin 40WP @ 2.0 kg ai/ha and Dieldrin 20EC @ 2.0 kg ai/ha gave satisfactory control against termites in sugarcane field.

INTRODUCTION

Termite is one of the major soil pests of sugarcane in Bangladesh. Five species of termite viz. *Odontotermes parvidens* Holm and Holm, *Odontotermes lokanardi* chaterjee et Thakur, *Odontotermes* sp., *Microtermes obesi* Holm and *Microtermes* sp have been identified in Bangladesh (SRTI Annual Report, 1979). *Odontotermes obesus* and *Microtermes* sp. are listed as serious pests of sugarcane in Bangladesh (Dean, 1979). Termites damage eye buds of planted setts, young shoot on germination and lower internodes of growing canes (Khanna *et. al.*, 1956; Rajani, 1964). These damages cause death of young plants and produce gaps in cane field with resultant poor yield (Karim *et. al.* 1979).

Karim *et. al.* (1979) conducted trials in controlling termites with different chemicals like Heptachlor 40WP, Agritox 50EC, Chlordane 40WP and Basudin 10G and found Heptachlor 40WP the most effective. Miah *et. al.* (1983, 1986) conducted different trials against sugarcane termites with chemicals like Heptachlor 30EC, Heptachlor 20G, Heptachlor 40WP and Dieldrin 50WP and found Heptachlor 30EC @1.5 kg ai/ha and all other chemicals @ 2.0 kg ai/ha effective against termites.

In the past no work on Dieldrin 40WP and Dieldrin 20EC for termite control in sugarcane field was done. The experiment was conducted to find out the effective

1. Member Director (Planning & Evaluation), BARC, New Airport Road, Farm Gate, Dhaka-5.

dose of Dieldrin 40WP and Dieldrin 20EC and also to assess the efficacy of organocarbamate insecticide *i.e.* Furadan 3G against sugarcane termite.

MATERIALS AND METHODS

The experiment was set up in last week of October 1985 at Akandarbaria farm of Carew and Company, Darsana, Chuadanga. Plantation was done with variety ISD-16. Three insecticides *viz.* Dieldrin 40WP, Dieldrin 20EC and Furadan 3G were considered. Twelve treatments including one control were replicated four times in a randomized complete block design. The treatments were as follows :

- A. Dieldrin 40WP @ 1.0 kg ai/ha at planting.
- B. Dieldrin 40WP @ 1.35 kg ai/ha at planting.
- C. Dieldrin 40WP @ 1.50 kg ai/ha at planting.
- D. Dieldrin 40WP @ 2.0 kg ai/ha at planting.
- E. Dieldrin 20EC @ 1.0 kg ai/ha at planting.
- F. Dieldrin 20EC @ 1.5 kg ai/ha at planting.
- G. Dieldrin 20EC @ 2.0 kg ai/ha at planting.
- H. Dieldrin 20EC @ 2.5 kg ai/ha at planting.
- I. Furadan 3G @ 1.5 kg ai/ha once at planting and second time in April.
- J. Furadan 3G @ 1.5 kg ai/ha at planting.
- K. Furadan 3G @ 2.0 kg ai/ha at planting.
- L. Control.

Individual plot size was 12m x 8m with one meter inter-row spacing. Plots were separated by a buffer row of each while a four meter distance was maintained between blocks.

Dieldrin 40WP and Dieldrin 20EC were sprinkled in the trenches with water before sett placement. First dose of Furadan 3G was applied by broadcasting in the trenches at planting and second dose of Furadan 3G was applied in mid of April, 1986, by broadcasting in furrows made on both sides of the cane rows and covered with soil followed by irrigation. Care was taken to prevent drifting of insecticides along with irrigation water by surrounding every plot with ridges.

Data on termite population were considered to compare the treatments. Termite population was recorded once during second week of May, 1986 and again at harvest (mid January, 1987). For each time termite population was counted from ten randomly selected stools per plot. Firstly selected clumps were uprooted by digging

a pit (0.5m x 0.5m). The under ground part of the stools and soil dug were kept on a ploythene sheet and thoroughly checked for termites.

RESULTS AND DISCUSSION

Table 1 shows that there was no significant differences among the treatments based on termite population counted from ten stools per plot in May, 1986; however,

Table 1. Effect of different cheimicals on termite population from ten stool per plot recorded in May, Carew & Co., Chuadanga, 1986.

Treatments	Termite Population (Number)		
	Observed (Mean)	% effective-ness over control (+ /-)	Transformed (mean of $\log_e (x + 1)$)
A. Dieldrin 40WP @ 1.0 kg ai/ha	127.25	62.35	3.77 a*
B. Dieldrin 40WP @ 1.35 kg ai/ha	103.25	69.45	2.47 a
C. Dieldrin 40WP @ 1.50 kg ai/ha	66.25	80.40	2.45 a
D. Dieldrin 40WP @ 2.0 kg ai/ha	40.00	88.17	2.16 a
E. Dieldrin 20EC @ 1.0 kg ai/ha	101.75	69.90	3.20 a
F. Dieldrin 20EC @ 1.5 kg ai/ha	122.75	63.39	3.82 a
G. Dieldrin 20EC @ 2.0 kg ai/ha	57.75	82.91	2.38 a
H. Dieldrin 20EC @ 2.5 kg ai/ha	44.50	86.83	2.20 a
I. Furadan 3G @ 1.5 kg ai/ha at planting + Furadan 3G @ 1.5 kg ai/ha at April.	135.50	60.50	3.41 a
J. Furadan 3G @ 1.5 kg ai/ha at planting only.	147.00	56.51	3.96 a
K. Furada 3G @ 2.0 kg ai/ha at planting	151.00	55.33	3.94 a
L. Control	338.00	—	5.75 a

* Figures accompanied by the same letters are not significantly different at 0.05 level as per DNMR test. (+) increase over control (-) decrease over control.

Dieldrin 40WP@1.5 and 2.0 kg ai/ha, Dieldrin 20EC@2.0 and 2.5 kg ai/ha showed above 80% effectiveness in reducing termite population over control. All the treatments of Furadan 3G showed below 80% effectiveness in reducing termite population over control. Significant difference was, however, observed in some treatments in respect of termite population at harvest in January, 1987 (Table 2). The treatments Dieldrin 40WP @ 1.35 kg ai/ha, Dieldrin 40WP@2.0 kg ai/ha and Dieldrin 20EC@2.0 kg ai/ha significantly controlled termites. From the data taken at harvest it

Table 2. Effect of different chemicals on termite population from ten stools recorded at harvest, Carew & Co., Chuadanga, 1986.

Treatments	Termite	Population	(Number)
	Observed (Mean)	% effective-ness over control (+/-)	Transformed (mean of loge (x + 1))
A. Dieldrin 40WP @ 1.0 kg ai/ha	69.75	76.24	3.90 ab*
B. Dieldrin 40WP @ 1.35 kg ai/ha	74.00	74.79	3.13 b
C. Dieldrin 40WP @ 1.50 kg ai/ha	61.75	78.96	4.13 ab
D. Dieldrin 40WP @ 2.0 kg ai/ha	54.00	81.60	3.05 b
E. Dieldrin 20EC @ 1.0 kg ai/ha	113.00	61.50	4.34 ab
F. Dieldrin 20EC @ 1.5 kg ai/ha	69.00	76.49	4.13 ab
G. Dieldrin 20EC @ 2.0 kg ai/ha	54.75	81.35	3.22 b
H. Dieldrin 20EC @ 2.5 kg ai/ha	58.00	80.24	3.27 ab
I. Furadan 3G @ 1.5 kg ai/ha at planting + Furadan 3G @ 1.5 kg ai/ha at April.	105.00	64.22	4.59 ab
J. Furadan 3G @ 1.5 kg ai/ha at planting only.	114.00	61.16	4.65 ab
K. Furada 3G @ 2.0 kg ai/ha at planting	82.75	71.81	4.18 ab
L. Control	293.50	—	5.66 a

* Figures accompanied by the same letters are not significantly different at 0.05 level as per DNMR test. (+) increase over control. (-) decrease over control.

was also found that the treatments Dieldrin 40WP @ 2.0 kg ai/ha, Dieldrin 20EC @ 2.0 kg ai/ha and Dieldrin 20EC @ 2.5 kg ai/ha showed above 80% effectiveness in reducing termite population over control. It was also found that though Dieldrin 40WP@1.35 kg ai/ha significantly controlled termite but it did not reach 80% effectiveness over control. Table 2 shows that only the treatments Dieldrin 40WP@2.0 kg ai/ha and Dieldrin 20EC@2.0kg ai/ha significantly controlled termite and showed above 80% effectiveness over control. It was also found from Table 2 that no treatments of Furadan 3G significantly controlled termite, and showed below 80% effectiveness in reducing termite population over control. Miah *et. al.* (1986) found that Dieldrin 50WP and Heptachlor 40WP@2.0 kg ai/ha showed above 80% effectiveness in reducing termite population over control and both the insecticides are suitable for termite control in sugarcane field@2.0 kg ai/ha. Miah *et. al.* (1983) conducted experiment against control of sugarcane termite and found Heptachlor 30EC@1.50 kg ai/ha and Heptachlor 20G @2.0 kg ai/ha effective.

From the experiment it is evident that Dieldrin 40WP@2.0 kg ai/ha and Dieldrin 20EC@2.0 kg ai/ha gave satisfactory control and Furadan 3G was found ineffective in controlling termite population in sugarcane field.

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