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CONTROL OF BARK FEEDING CATERPILLAR, *AETHERASTIS CIRCULATA* MEYER INFESTING RUBBER WITH INSECTICIDAL DUSTS

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The bark feeding caterpillar, *Aetherastis circulata* Meyer. inflicted severe injury to rubber trees at Velimalai estate in Kanyakumari district of Tamil Nadu. Dust formulations of three insecticides viz., endosulfan 4D, fenvalarate 0.4D and methyl parathion 2D were evaluated. Pretreatment population during 1995-96 was 15 to 18 caterpillars and in 1996-97 it was five to six per tree up to a height of 1.5 m. Severity of infestation was brought down by three rounds of dusting to a level of one to four in 1995-96 and one to three after one round of dusting in 1996-97. Methyl parathion 2D at 10 kg per ha achieved 92.6 per cent control after three rounds of dusting during 1995-96. Application of fenvalarate 0.4D at 10 kg per ha had resulted in 86.55 and 74.71 per cent control during the two years. Dusting with methyl parathion 2D at 10 kg was the most cost effective treatment.

INTRODUCTION

Dry spell after monsoon favoured the easy multiplication of bark feeding caterpillars (*Aetherastis circulata* Meyer. Yponomutidae: Lepidoptera) which infest rubber plantations. The incidence of bark feeding caterpillar on rubber was sporadic up to 1968 (Pillai, 1968); but in 1980's, the damaged was extensive (Jayarathnam, 1980). Caterpillar infestation is severe in the rubber plantations located at Trichur, Mundakayam, Punalur and Nagercoil. Control of this pest is difficult because their presence from top to bottom of the trees. Spraying of insecticides is not feasible. Dusting was tried earlier and found the only possible way to control the bark feeding caterpillar. Dust formulations of methyl parathion 2D and fenvalarate 0.4D at 15 kg per ha were found effective (Jayarathnam *et al.*, 1991). After the banning of hexachloro cyclo hexane (HCH) which was very effective against caterpillars, endosulfan is the only insecticide left untested in the chlorinated hydrocarbon group. The present experiment was conducted in a situation where there was a high infestation of bark feeding caterpillars.

MATERIALS AND METHODS

The experiment was conducted during January to April in 1996 and 1997 at Velimalai estate in Kanyakumari district of Tamil Nadu where there had been a severe infestation of the bark feeding caterpillar in October 1995. But the intensity of infestation was much less during 1997 than in the previous year. The experiment was laid out in a randomised block design with seven treatments and three replications. The treatments

were fenvalarate 0.4 D, methyl parathion 2 D and endosulfan 4D at two different dosages of seven and 10 kg per ha besides the untreated control. One ha block was taken for each treatment which was further divided in to three plots. Each block consisted of around 120 trees. In between the blocks and plots, a gap of 13.4 and 10.2 m was maintained as guard rows. Since the severity of infestation was higher during 1996, three rounds of dusting were done at an interval of 15 days.

In 1997, since the population as well as severity of infestation was less than the previous year, only one round of dusting was done. Power micron duster was used and dusting was carried out at every fourth row. Sampling was done from 20 randomly selected trees per plot a day before and 14 days after each round of the insecticidal dusting. The number of caterpillars was assessed all around the trunk up to a height of 1.5 m from the base. The percentage reduction was worked out and the efficacy of treatments was evaluated for the subsequent year as well. Data obtained were statistically analysed.

RESULTS AND DISCUSSION

Bark feeding caterpillars are in the habit of weaving webs with silken threads and the chewed bark around the tree trunks. They live inside the galleries on the tree trunk which provide protection from predators and parasites. Caterpillars often escape from insecticidal toxicity by this habit. The peak period of incidence of these caterpillars was observed in November to January during 1995-96 at the Velimalai estate where the rainfall had ceased by the end of August. But the peak period of incidence was during February to March in 1996 at the Mundakayam area.

Pre treatment population of *A. circulata* was 15 to 17.8 caterpillars in a unit area of 1.5 m height around the tree trunk in the year 1995-96. The population was reduced to 8.4 -12.9 numbers within 14 days after first dusting, 3.4 -8.1after second round and 1.3-4.1 after the third round. Because of the huge population of caterpillars, the severity of damage was also high which necessitated three rounds of power dusting at an interval of 15 days. Pretreatment population in the subsequent year was 5.2 to 6.1 caterpillars. And it was reduced to 1.1-3.3 numbers with a single round of treatment. Since the population was below the threshold level, further dusting was abandoned.

Results showed that methyl parathion at 10 kg per ha was the most effective treatment which registered 92.6 per cent mortality over the caterpillar population in 1996 (Table 1). Methyl parathion at seven kg per ha and fenvalarate at 10 kg per ha were on par with each other; they recorded 88.21 and 86.55 per cent control, respectively. Successive trials during 1997 also

Table 1. Effect of insecticidal dusts on the control of bark feeding caterpillars

	Per cent control of bark feeding caterpillar				
	1995-96			1996-97	
Insecticidal dust, kg/ha	First round	Second round	Third round	First round	Cost (Rs.)
Endosulfan 4 D.7kg	13.69	49.32	72.83	37.01	164
Endosulfan 4 D 10 kg	32.24	64.59	80.84	70.92	224
Fenvalarate 0.4D 10 kg	22.50	54.41	81.74	74.17	150
Fenvalarate 0.4D 10 kg	35.06	65.36	86.55	74.17	204
Methyl parathion 2D 7 kg	37.28	67.21	88.21	54.07	108
Methyl parathion 2 D 10 kg	50.62	80.28	92.60	81.36	144
Control (untreated)	8.70	14.97	20.98	2.86	-
C.D. at P = 0.05:	2.92	6.48	4.22	7.18	-

confirmed the effectiveness of methyl parathion at 10 kg per ha which reduced the caterpillar population to 81.36 per cent. Efficacy of fenvalarate at 10 kg and endosulfan at 10 kg per ha was on par with each other and they recorded 74.1 and 70.92 per cent control, respectively. Results indicated that methyl parathion 2D, fenvalarate 0.4D and endosulfan 4D at 10 kg per ha were effective in controlling the bark feeding caterpillar feeding on the rubber trees. Among the insecticidal dusts, Methyl parathion was the cost effective treatment followed by fenvalarate and endosulfan.

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