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FIELD EVALUATION OF PLANT PRODUCTS AGAINST CHILLI THRIPS *SCIRTOTHRIPS DORSALIS*

M. CHANDRASEKARAN and R. VEERAVEL

Department of Entomology
 Faculty of Agriculture
 Annamalai University
 Annamalai Nagar 608 002

ABSTRACT

Field experiments were conducted to evaluate the efficacy of plant products, viz., Achook (0.5%, 1%, 1.5%), neem oil (1%, 3%, 5%), neem cake extract (1%, 3%, 5%) along with an insecticide monocrotophos (0.05%) against the chilli thrips, *Scirtothrips dorsalis* during January '96 - April '96 and August '96 - November '96 at the Annamalai University Farm. Results revealed that all treatments were found significantly superior to untreated check. However, monocrotophos (0.05%) was the most effective treatment. Among the plant products tested Achook (1.5%) was the most effective treatment. Among the plant products tested Achook (1.5%) significantly reduced the thrips population, it was followed by neem oil (5%, 3%) and neem cake extract was the least effective one in reducing thrips population.

KEY WORDS : Chilli thrips, *Scirtothrips dorsalis*, plant products, efficacy

Scirtothrips dorsalis Hood (Thysanoptera : Thripidae) is a serious pest of *Capsicum annum* Linn. in India, responsible for leaf curling (Ananthakrishnan, 1971). It multiplies appreciably at a faster rate during dry weather periods and causes 30-50 per cent yield loss in South India (Varadharajan, 1994). Being a polyphagous pest, it is not always amenable for chemical control measures and attempts with plant products for its management are not many. Hence, the present study was undertaken to evaluate the effectiveness of plant products against the chilli thrips under field conditions.

MATERIALS AND METHODS

Field trials were conducted during January '96 - April '96 and August '96 - November '96 at the Annamalai University Farm, Annamalai Nagar, in a randomized block design in three replications with a plot size of 3m x 2m for each treatment that accommodated 45 plant. The first spray of the treatments (Table 1) was given 40 days after transplanting when the infestation was noticed. The remaining three sprays were given at fortnightly intervals. Monocrotophos 36 WSC served as

standard check. The population of the insect was assessed on five random plants in a plot following routine methods (Kandasamy *et al.*, 1990). Efficacy of treatments was assessed on the basis of reduction in population in treated plots over that of untreated plots (Handerson and Tilton, 1955), and the data were analysed and compared by Duncan's Multiple Range Test (DMRT) (Gomez and Gomez, 1984).

RESULTS AND DISCUSSION

Two field trials were conducted to study the effect of four sprays of plant products in the management of chilli thrips. It was observed (Table 1) that the monocrotophos (0.05%) was the most effective insecticide in checking the population of thrips. Among the plant products, Achook 1.5% (72.94%) and 1% (65.49%) significantly reduced the thrips population. It was followed by neem oil 5% and tobacco waste extract 5%. Population reduction was moderate (54.52%) in the Achook 0.5% treated plots and the lowest reduction was recorded in the tobacco waste extract 1% (28.21%) and neem cake extract 1% (28.17%) treated plots.

The products found effective in the first trial were retested in the second trial (Table 2). It was

Table 1. Efficacy of plant products against the chilli thrips (I trial : January - April 1996)

Treatments Conc.(%)	Per cent reduction of thrips population				Mean
	After				
	First spraying	Second spraying	Third spraying	Fourth spraying	
Neem oil					
1	37.68 (37.87)	40.78 (39.69)	33.37 (35.29)	36.13 (36.95)	36.99 (37.45) ^{ij}
3	44.37 (41.76)	51.54 (46.46)	48.32 (44.04)	47.03 (43.30)	48.07 (43.89) ^f
5	61.50 (51.65)	61.45 (51.62)	58.25 (49.75)	59.33 (50.38)	60.13 (50.85) ^d
Neem cake extract					
1	28.88 (32.51)	30.84 (32.74)	24.83 (29.89)	28.11 (32.02)	28.17 (31.79) ^{lm}
3	34.49 (35.97)	36.77 (37.33)	29.04 (32.61)	33.75 (35.52)	33.53 (35.35) ^k
5	39.80 (39.11)	42.10 (40.46)	34.59 (36.03)	39.31 (38.83)	38.95 (38.60) ⁱ
Achook					
0.5	55.57 (48.20)	57.02 (49.04)	51.93 (46.11)	53.54 (47.03)	54.52 (47.59) ^c
1.0	66.14 (54.42)	66.90 (54.88)	63.32 (52.73)	65.61 (54.10)	65.49 (54.03) ^c
1.5	76.95 (61.31)	73.48 (59.01)	68.32 (55.75)	73.04 (58.72)	72.94 (58.69) ^h
Tobacco waste extract					
1	30.94 (33.80)	31.51 (34.15)	21.37 (30.25)	29.01 (32.59)	28.21 (32.69) ^j
3	40.99 (39.81)	45.52 (42.43)	40.99 (39.81)	43.95 (41.53)	42.86 (40.89) ^h
5	51.13 (45.65)	54.52 (47.44)	49.45 (44.69)	48.11 (43.92)	50.74 (45.42) ⁱ
Monocrotophos					
0.05	85.57 (67.68)	84.95 (67.18)	81.50 (64.53)	79.83 (63.32)	82.96 (65.67) ²
SE					0.52
CD (P=0.05)					1.48

Figures in parantheses arc sin transformed values

Values in column followed by same letter are not significantly different at 5% level by DMRT.

found that monocrotophos (0.05%) again reduced the population appreciably. The efficacy of monocrotophos against chilli thrips was already reported by Kandasamy *et al.*, (1990) and Bagle (1993). Among the plant products, Achook at both the concentration (1.5% and 1%) was superior to neem cake extract and tobacco waste extract. Toxicity of Achook to chilli thrips may be due to the presence of a large number of bitter compounds like azadirachtin, azadiradion, nimboicinol, epinimboicinol, gedunin and salanin which were reported to exert both antifeedent and deterrent action on several pest species [Raman *et al.*, (1993), Keisa and Varatharajan (1995) and Latif (1996)]. Neem oil 5% (58.12%) was the next followed by

tobacco waste extract 5% (50.27%). Efficacy of neem oil 5% was reported earlier on rice thrips by Madhusudhan and Gopalan (1988). The least per cent reduction (29.86%) was observed in neem cake extract 1% treated plots. The probable reason for the low efficacy of neem cake extract with these least effect was may be due to the presence of less amount of toxic metabolites in it when compare to Achook and neem oil. The low efficacy of neem cake extract was already reported by Pillai and Ponniah (1988), Raghuraman and Saxena (1994).

Since neem products are basically antifeedents, there is no possibility of development of resistance in insects to them. Moreover they do not pose environmental pollution. Hence, there is good

Table 2. Efficacy of plant products against the chilli thrips (II trial : August - November 1996)

Treatments Conc. (%)	Per cent reduction of thrips population				Mean
	After				
	First spraying	Second spraying	Third spraying	Fourth spraying	
Neem oil					
3	51.83 (46.05)	53.78 (47.17)	49.52 (44.73)	52.49 (46.43)	51.90 (46.09) ^c
5	58.76 (50.05)	58.28 (49.77)	53.57 (47.05)	61.90 (51.89)	58.12 (49.69) ^d
Neem cake extract					
3	27.81 (31.83)	30.07 (33.26)	33.04 (35.09)	28.50 (32.27)	29.86 (33.11) ^d
5	36.68 (37.28)	38.02 (38.07)	38.85 (38.56)	41.47 (40.09)	38.75 (38.50) ^{gh}
Achook					
1.0	65.81 (54.22)	67.39 (55.18)	63.36 (52.75)	67.29 (55.12)	65.96 (54.31) ^f
1.5	73.22 (58.84)	73.45 (58.99)	70.12 (56.87)	75.69 (60.46)	73.12 (58.79) ^h
Tobacco waste extract					
3	39.77 (39.10)	39.84 (39.14)	38.58 (38.40)	40.81 (39.71)	39.75 (39.38) ^f
5	48.18 (43.96)	53.15 (46.81)	48.44 (44.11)	51.32 (45.76)	50.27 (45.16) ^{ef}
Monocrotophos					
0.05	84.21 (66.59)	84.85 (67.10)	85.62 (67.72)	89.14 (70.76)	85.95 (68.04) ^g
SE					0.58
CD (P=0.05)					1.66

Figures in parantheses are sin transformed values

Values in column followed by same letter are not significantly different at 5% level by DMRT.

scope for the use of neem products in any pest management programmes. Studies are to be made to find out the efficacy on the basic as well as tank-mix formulations of neem products.

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