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BIOEFFICACY OF CERTAIN ACARICIDES AGAINST CHILLI MITE, *POLYPHAGOTARSONEMUS LATUS* (BANKS)

S. Jeyarani and M. Chandrasekaran

Department of Agriculture Entomology,
Tamil Nadu Agricultural University Coimbatore - 641 003, India

ABSTRACT

A field experiment was conducted during *kharif* - 2001 to evaluate the bio-efficacy of certain newer acaricide molecules against the chilli mite Polyphagotarsonemus *latus* (Banks). The study revealed that the acaricide, Fenpropathrin @ 2 ml/lit exhibited 82.16 and 81.32 per cent reduction of mite population over control at three days after first and second application, respectively with the maximum yield of 2074 kg/ha as against 1537 kg/ha in untreated check.

Chilli, *Capsicum annuum* L. is attacked by many sucking pests throughout its growth period. Among them, the yellow mite, *Polyphagotarsonemus* latus (Banks) is a serious non-insect pest. The nymphs and adults actively feed on the tender leaves causing elongation of leaf lamina. Reproductive buds are also damaged resulting in heavy yield loss (Mukherjee *et al.*, 1991). The annual yield loss inflicted by this mite has been estimated to be around Rs. 60.69 lakhs on chili alone (Rao *et al.*, 1983). Management of this mite is solely depended on various chemicals and many new chemicals are being introduced every year for the management of phytophagous mites. Hence, the present investigation was made to evaluate some of the recently introduced acaricide molecules against the yellow mite on chili.

The experiment was conducted in a farmer's field at Pappampatti village of Coimbatore district, Tamil Nadu during *kharif*, 2001 with a variety K1 in a randomized block design with six treatments and four replications. Fertilizer application, irrigation and other cultural operations were done as per recommendation. The treatments were given when the mite incidence was noticed. Two rounds of foliar sprays were given at 15 days intervals. Fenpropathrin @ 2ml/lit was compared with Dicofol 18.5 E @ 2 ml/lit, Ethion 50 EC @ 2ml/lit, applaud 25 SC @ 2 doses *viz.*, 0.5 and 1.0 ml/lit along with an untreated check. Pre-treatment and post-treatment counts (on 3, 7 and 14 days after treatment) of the yellow mites were recorded from 3 leaves (top, middle and bottom) in five randomly selected plants per plot. From the data collected, percent reduction of mites after treatment was calculated and subjected to statistical scrutiny. Yield of chili fruits were recorded at each picking and total yield was calculated.

The results of the field trial indicated the superiority of fenpropathrin @ 2ml/lit, Dicofol 18.5 E @ 2 ml/lit and Ethion 50 EC @ 2 ml/lit than other treatment. Treatments fenpropathrin @ 2 ml/lit and Dicofol 18.5 E @ 2 ml/lit were observed to be equally effective in reducing the mite population. On the 3rd, 7th and 14th day after the first round of application, the population of mites in plots treated with fenpropathrin @ 2 ml/lit and Dicofol 18.5 E @ 2 ml/lit were at par by recording 82.16, 63.11 and 54.28 and 81.68, 62.54 and 54.30 per cent reduction over control, respectively followed by Ethion 50 EC @ 2 ml/lit, Applaud 25 SC @ 1.0 and 0.5 ml/lit. In the second round of treatment, the plots treated with fenpropathrin @ 2ml/lit, Dicofol 18.5 E @ 2ml/lit and Ethion 50 EC @ 2 ml/lit recorded 81.32, 64.66 and 57.37, 81.81, 63.97 and 57.76 and 72.61, 60.96 and 55.16 per cent reduction over control,

Table 1. Bioefficacy of certain acaricides against chilli mite, *Polyphagotarsonemus latus* (*kharif*, 2001)

Treatment	Dose (ml/ha)	Pre-treatment count (population of mite/leaf)	Per cent reduction over control					
			Days after first spray**			Days after second spray**		
			3	7	14	3	7	14
Applaud 25 SC	250	1.50	37.84[c] (37.96)	47.98[b] (43.84)	49.80[b] (44.88)	53.12[b] (46.70)	57.73[b] (49.44)	55.13[b] (49.93)
Applaud 25 SC	500	2.22	39.79[c] (39.10)	49.70[c] (44.82)	51.69[c] (45.97)	54.26[c] (47.45)	60.04[c] (50.79)	57.84[c] (49.51)
Fenpropathrin	1000	1.73	82.16[a] (65.02)	63.11[a] (52.60)	54.28[a] (47.45)	81.32[a] (64.39)	64.66[a] (53.53)	57.37[a] (49.24)
Ethion 50 EC	1000	1.67	72.42[b] (58.32)	60.16[b] (50.86)	53.29[b] (46.88)	72.61[b] (58.44)	60.96[b] (51.33)	55.16[b] (47.96)
Dicofol 18.5 E	1000	2.17	81.68[a] (64.66)	62.54[a] (52.27)	54.30[a] (47.47)	81.81[a] (64.76)	63.97[a] (53.12)	57.76[a] (49.47)
Untreated check	-	1.29	-	-	-	-	-	-

* In a column means followed by similar letters are not statistically different by DMRT (P = 0.05);
** Figures in parentheses are arc sine transformed values.

Table 2. Effect of various acaricides on yield of chilli fruits (*kharif*, 2001)

Treatment	Dose (ml/ha)	Yield of chilli fruits (kg/ha)*	Yield increase over control (%)
Applaud 25 SC	250	1777.50[d]	15.61
Applaud 25 SC	500	1946.75[c]	26.62
Fenpropathrin	1000	2073.75[a]	34.88
Ethion 50 EC	1000	2004.50[b]	30.37
Dicofol 18.5 E	1000	2060.00[a]	33.98
Untreated check	-	1537.50[e]	-

* In a column means followed by similar letters are not statistically different by DMRT (P = 0.05).

respectively on 3rd, 7th and 14th day after application followed by Applaud 25 EC @ 1.0 and 0.5 ml/lit (Table 1). The present investigations bout efficacy of fenpropathrin (Danitol 10 E) is in full agreement with the earlier reports of Anoymous (1998-2000) on chili mite and Srinivasan *et al.* 2003) on okra mite. The findings of Ahmed *et al.* (2000) that dicofol was effective in suppressing the yellow mite, which corroborates the present findings.

The yield of chilli fruits was maximum in plots treated with fenpropathrin @ 2 ml/lit (2073.75 kg/ha), Dicofol 18.5 E @ 2 ml/lit (2060 kg/ha) and Ehion 50 EC @ 2 ml/lit (2004.50 kg/ha) followed by Applaud 25 SC @ 1.0 and 0.5 ml/lit (1946.75 and 1777.50 kg/ha, respectively) as against the untreated check, which recorded only 1537.50 kg/ha (Table 2). The percentage of yield increased over control was maximum in fenpropathrin @ 2 ml/lit (34.88 %) and Dicofol 18.5 E @ 2 ml/lit (33.98 %) treated plots followed by Ethion 50 EC @ 2 ml/lit (30.37 %). Similar results were reported for Dicofol 18.5 E and Ethion 50 EC against chilli mite at West Bengal (Somchoudhury *et al.*, 2000).

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