



EVALUATION OF ACARICIDE MIXTURES AGAINST CHILLI YELLOW MITE *POLYPHAGOTARSONEMUS LATUS*

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ABSTRACT

The mixture of acaricides propargite+ hexythiazox resulted in more mortality of the chilli yellow mite *Polyphagotarsonemus latus* than their individual sprays. It also gave a higher % kill as compared to fenazaquin, fenpyroximate, and neem oil. With the first spray, propargite+ hexythiazox @ 567+27 a.i, there was maximum reduction in the life stages of *P. latus* (81.15%) compared to its other doses, other acaricides and also neem oil. Similarly, with second spray too its dose @ 567+27 a.i gave maximum mortality (82.73%), followed by its dose @ 525+25 a.i (76.18%).

Key words: *Polyphagotarsonemus latus*, acaricide mixture, propargite+ hexythiazox, efficacy, fenazaquin, fenpyroximate, neem oil, fruit yield

Chilli crop in Indian field condition is attacked by more than 20 insects and non-insect pests (Butani, 1976). Amongst these, the yellow mite or broad mite *Polyphagotarsonemus latus* (Banks) is destructive causing a loss of about 60%, and under greenhouse condition causes total loss (Liu et al., 1991). The chemicals (organophosphates, carbamates and synthetic pyrethroids) are the only remedy but these are hazardous and leave residues. Newer acaricide molecules with less residue problem and with least chance of resistance are required to be evaluated. The present study evaluates the efficacy of newer acaricides/ their mixtures against the chilli yellow mite *P. latus*.

MATERIALS AND METHODS

A field experiment was carried out at the the Vegetable Research Farm, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, during *kharif*, 2017-18. The experiment was laid out in Randomized Complete Block Design (RCBD) with eight treatments and three replications including untreated control. Bhagyalaxmi (G1) variety was transplanted in the 2nd fortnight of September, with the spacing of 60 x 45 cm. All agronomic practices were followed. The spraying was done twice during 19th December and on 6th January, when the mite population was at its peak i.e. at economic threshold level (ETL) and the crop was about the 2.5 months old having maximum fruits. To record the mite population, three leaves (upper + middle + lower) were taken from five

randomly selected plants, and examined with binocular microscope. These observations were made 1 day before spraying and after 1, 3, 7, 10 and 15 days after spraying, and % reduction computed after necessary Abbott's correction (Abbott, 1987).

RESULTS AND DISCUSSION

The details presented in Table 1 reveal that with the first spray, after one day after spray (DAS), fenpyroximate 5% EC @ 30 g a.i/ha (86.90%), propargite 42% EC+ hexythiazox 2% EC @ 567+27 g a.i/ha (86.14%) gave maximum reduction. Fenazaquin and neem oil were the least effective. Sangle et al. (2017) observed that hexythiazox 5.4 EC was inferior compared to other acaricides. On the 3rd, 7th and 15th DAS, results were similar as regards propargite-hexythiazox. Similar results had been obtained with propargite and fenpyroximate earlier by other workers (Dibyantoro, 1988; Rangel et al., 1990; Smitha, 2006; Nayak et al., 2010; Singh and Singh, 2010; Chakrabarti and Sarkar, 2014; Pathipati et al., 2012).

Efficacy of acaricides after the second spray as given in Table 2 reveal that after first day of application of acaricide, propargite 42% EC+ hexythiazox 2% EC @ 567+27 g a.i/ha (88.42%) was the best followed by its lower dose (88.02%). Neem oil (57.82%) was the least effective. Halder et al. (2015) with Fenazaquin obtained 44.48% reduction as against 59.36% obtained now. On the 3rd DAS, the propargite 42% EC+ hexythiazox 2% EC @ 567+27 g a.i/ha (85.96%) was again observed to

Table 1. Efficacy of acaricides and mixtures against *P. latius* on chilli

Treatment No.	Treatment	Dose (g.a.i./ha)	Pretreatment population	Percent reduction in mite population days after spraying						Yield of ripe fruit (kg/ha)	Yield of ripe fruit (tonne/ha)					
				1 DAS	1 DAS	3 DAS	7 DAS	10 DAS	15 DAS							
T ₁	Propargite 42% + Hexithiazox 2% EC	441 + 21	5.35	75.02* (59.98)**	3.11	72.02* (58.04)	73.52 (59.00)	60.40 (50.98)	60.23 (46.02)	51.82 (46.02)	65.73 (54.14)	61.80 (51.80)	58.50 (48.87)	41.62 (40.16)	7359.562	7.359
T ₂	Propargite 42% + Hexithiazox 2% EC	483 + 23	9.71	84.20 (66.55)	3.45	88.02 (69.72)	85.79 (67.82)	73.14 (58.76)	67.53 (55.24)	60.00 (50.74)	83.60 (66.08)	76.27 (60.82)	68.76 (55.99)	64.50 (53.40)	9255.164	9.255
T ₃	Propargite 42% + Hexithiazox 2% EC	525 + 25	4.12	85.50 (67.59)	1.85	84.14 (66.50)**	83.42 (65.95)	77.29 (61.51)	70.27 (56.93)	65.76 (54.16)	79.88 (63.32)	72.72 (58.48)	64.06 (53.14)	63.80 (52.98)	8808.177	8.808
T ₄	Propargite 42% + Hexithiazox 2% EC	567 + 27	2.95	86.14 (68.12)	0.76	88.42 (70.07)	85.96 (67.96)	83.59 (66.07)	81.40 (64.43)	74.30 (59.52)	86.52 (68.43)	77.81 (61.87)	80.88 (64.04)	74.40 (59.58)	9686.059	9.686
T ₅	Fenazaquin 10% EC	125	2.86	66.07 (54.35)	1.28	70.05 (56.79)	68.75 (55.98)	65.39 (53.94)	62.83 (52.41)	60.99 (51.33)	60.14 (50.83)	58.62 (49.94)	56.75 (48.85)	55.24 (47.98)	9140.458	8.806
T ₆	Fenpyroximate 5% EC	30	3.46	86.90 (68.75)	1.41	79.66 (63.16)	69.03 (56.16)	66.23 (54.45)	64.65 (53.49)	63.86 (53.03)	80.63 (63.85)	70.32 (56.96)	63.19 (56.62)	58.76 (50.03)	9828.871	9.828
T ₇	Neem oil 0.03%	96	2.9	52.98 (46.69)	1.54	57.82 (49.48)	56.38 (48.65)	50.32 (45.17)	49.29 (44.58)	46.82 (43.16)	50.45 (45.25)	49.88 (44.91)	49.62 (44.76)	46.60 (43.03)	6066.297	6.066
T ₈	Untreated check		2.01	3.64 (10.99)	1.16	44.33 (41.73)	47.50 (43.55)	47.23 (43.39)	51.47 (45.82)	62.80 (52.59)	8.78 (17.23)	35.65 (36.64)	49.80 (44.87)	45.70	5197.2	5.197
	SEM ±		0.48	0.48	0.21	0.21	0.21	0.51	0.52	0.55	0.45	0.49	0.60	0.67	0.235	
	CD		1.42	1.42	0.63	0.63	-	1.51	1.55	1.63	1.33	1.47	1.78	1.99	0.719	

DAS = Days After Spray * Mean of three replications. ** Figures in the parenthesis are Arc-sin √percentage

be superior but on apr with its lower doses, and neem oil was the least effective. These results agree with those of Rajasri et al. (1991). Similar trend of efficacy was observed after 7, 10 and 15 DAS.

Maximum fruit yield (6.06 and 9.82 t/ha) was obtained with the mixture of propargite+ hexythiazox @ 567 + 27 g a.i./ ha which is significantly more than untreated or control (5.19 t/ha) (Table 3). Other acaricides gave satisfactory increase in yield over control that was ranging from 40 to 43%.

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