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Eco-friendly management of yellow mite, *Polyphagotarsonemus latus* on chilli crop

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Abstract

A field experiment was carried out in kharif season 2006 to study the efficacy of synthetic and botanical pesticides against Polyphagotarsonemus latus on chilli crop. The crop was treated with sulphur 80% WP (0.25%), phosalone 35% EC (0.07%), propargite 57% EC (0.18%), ethion 50% EC (0.05%), abamectin 1.9% EC (0.014%), nitrogen + sulphur (Mitex-S), azadirachtin 0.03% EC (0.00015%), neem oil pure (2 ml), NSKE (5 ml) and water. The overall performance of propargite activities maximum 78.11 per cent reduction of test mite followed by abamectin 74.36 per cent, phosalone 67.65 per cent, sulphur 66.46 per cent and ethion 64.33 per cent whereas azadirachtin activities moderate reduction 52.58 per cent followed by Mitex-S 50.34 per cent and NSKE 47.93 per cent. Least reduction was observed by neem oil 33.72 per cent.

Key words- neem oil, mite, pesticides

Introduction

There are about 21 species of pests have been reported by Butani (1976) inflicting damage to chilli crop. In India, chilli suffers usually from a worst typical malady called **'murda'** disease, with characteristic leaf curl symptoms. This **'murda'** syndrome has been attributed to the attack of a tiny tarsonemid mite, *Polyphagotarsonemus latus* (Kulkarni, 1922) and thrips (*Scirtothrips dorsalis* Hood (Ayyar, 1932; Peiris, 1953). The yellow mite, *Polyphagotarsonemus latus* is a serious pest on chillies. The symptom of damage caused by this mite has been designated as **'Murda'** disease in North India (Kar, 1926) and '**Muranai'** in Tamil Nadu (Karuppuchamy and Mohansunderam, 1987). With the introduction of new cropping pattern in recent years *Polyphagotarsonemus latus* has been found to be very destructive to chilli crop in different parts of the country. Chilli was found to be worst suffered by the attack of this mite in eastern parts of India. Therefore, an experiment was conducted to judge the activities of eco-friendly management of yellow mite, *Polyphagotarsonemus latus* on chilli crop.

Materials and methods

A field experiment was conducted during *kharif* season of 2006 at the farmer's field village Bhupatipatti near the Tilak Dhari Post Graduate College, Jaunpur (U.P.) with 10 treatments in Randomized Block Design with 3 replications. Thirty days old seedling of chilli (*Capcicum annum* L.) variety Faizabadi local were transplanted during IInd fortnight of August 2006 with plant spacing of 0.60x0.45 m. The crop was treated with sulphur 80% WP (0.25%), phosalone 35% EC (0.07%), propargite 57% EC (0.18%), ethion 50% EC (0.05%), abamectin 1.9% EC (0.014%), nitrogen + sulphur (Mitex-S), azadirachtin 0.03% EC

(0.00015%), neem oil pure (2 ml), NSKE (5 ml) and water. The required amount of synthetic and botanical pesticides were calculated and sprayed with the help of foot sprayer. The spraying was done when the mite population was at its peak and crop was about 2 month old having maximum fruits. During the time of spraying cloth screens was used to avoid drifting from plot to plot. Observation was taken in field conduction; five leaves per plant were plucked from randomly selected-tagged plants in each experimental plot. The plucked leaves were collected in separate polythene bags per plot and brought to the laboratory. The mite population was observed per leaves area basis with the help of stereoscopic binocular microscope at pretreatment 1, 3, 7 and 14 days after spraying. All the data were statistically analyzed and presented.

Results and discussion

The final observations are given in table which indicates that the number of mite decreases significantly in all treatments when compared to control.

Table 1 Acaricidal activities of synthetic, botanical and microbial pesticides against yellow mite, *P. latus* on chilli crop

Treatment	Concent-ration (% or ml)	*Mean per cent reduction in mite population days after spraying				Mean
		1	3	7	14	
Sulphur 80% W P	0.25	69.46(56.42)**	78.06(62.03)	69.82(56.66)	48.50(44.14)	66.46(54.57)
Phosalone 35% E C	0.07	68.90(56.11)	82.35(65.12)	70.52(57.10)	48.75(44.25)	67.65(55.30)
Propargite 57% E C	0.18	83.15(65.73)	97.00(80.02)	90.00(71.58)	42.30(40.51)	78.11(62.10)
Ethion 50% E C	0.05	60.00(50.77)	72.16(58.12)	68.00(55.55)	57.30(49.20)	64.37(53.31)
Abamectin 1.9% E C	0.014	73.62(59.08)	86.76(68.61)	79.10(62.80)	57.97(49.54)	74.36(59.54)
Nitrogen + sulphur (Mitex-S)	-	45.96(42.65)	62.18(52.00)	54.67(47.64)	38.75(38.47)	50.39(45.17)
Azadirachtin 0.03% EC	0.00015	50.72(54.40)	67.27(55.06)	62.30(52.12)	30.04(33.21)	52.58(46.43)
Neem Oil	2 ml	28.23 (32.08)	48.23 (43.97)	38.23(38.17)	20.18(26.64)	33.72(35.49)
N S K E	5 ml	64.50 (53.43)	74.51(59.67)	37.45(37.70)	15.24 (22.95)	47.93 (43.80)
Water		7.78(16.11)	8.00(16.43)	5.98(14.06)	5.15(13.05)	6.73(15.00)
SEM ±		1.85	1.62	1.40	1.95	
CD (0.05)		5.32	4.66	4.02	5.60	

*Mean of three replication; each replication consists of 25 leaves drawn randomly from five plants

** Figures in pareenthesis are Arc Sin $\sqrt{\text{parentage}}$ transformation. Significant at 5% level of significance

Among the synthetic pesticide applied propargite registered their greater efficacy in reducing the *Polyphagotarsonemus latus* population followed by phosalone, sulphur, ethion, mitex-S. Among bio-pesticides abamectin show maximum effectiveness followed by NSKE, Neemoil. The reports available on the eco-friendly management of *Polyphagotarsonemus latus* in alignment with present finding Chuo and Ng (1982) reported the different acaricides against *Polyphagotarsonemus latus* on chilli plant. Propargite was showed significant reduction in mite population. Dhandapani and Kumarswami (1985) found high significant mortality of *Polyphagotarsonemus latus* in different treatments. Similarly, Karruppuchamy & Mohansunderam (1987) Chakrabarti (2000); Walunj and Pawar (2000); Mallapur *et.al.*

(2001) Rai and Solanki (2002) and Kumar *et.al.* (2005) also conducted the trial to counted of *Polyphagotarsonemus latus* on chilli and result was significant effect. All the above reports almost conformity with present finding.

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