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MANAGEMENT OF THE ERIOPHYID MITE, *Aceria jasmini* Chan. (ERIOPHYIDAE : ACARI) ON JASMINE

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ABSTRACT

Three granular insecticides at two levels (carbofuran, phorate and endosulfan at 1 and 2 Kg. a.i/ha) were evaluated against the eriophyid, *Aceria jasmini* Channabasavanna on jasmine, *Jasminum auriculatum* Vahl. in comparison with the soil application of neem cake (at 250 and 500 kg/ha), soil application of neem cake 250 kg combined with foliar spray of neem seed kernal extract (NSKE) at 10%, and neem cake 250 kg plus neem oil 3% foliar spray. All the treatments were found to record significant reduction of leaf infestation over control. The lowest leaf infestation (18.1%) was recorded in carbofuran treated plots at its higher dosage (2. kg a.i/ha) giving 76.1 per cent reduction over control. The mean number of mites present per erineum was 4.2 recorded after third round of application in neem cake (500 kg/ha). Higher dosages (2.0 kg a.i/ha) of all the selected treatments were effective against the mite. Soil application of neem cake at 250 kg/ha combined with foliar application of NSKE 10% was also effective as that of granular insecticides applied at their higher dose (2.0 kg a.i./ha).

KEY WORDS : *Aceria*, Erineum, Eriophyid, Insecticides

Eriophyid, *Aceria jasmini* Channabasavanna on jasmine, *Jasmium auriculatum* Vahl. was first reported by Channabasavanna (1966). The symptom of damage includes the formation of erineum on leaves, stem and inflorescence leading to considerable yield loss. As the eriophyids are microscopic, their occurrence and early symptoms of damage to not become evident. Any control measure, other than pruning, may not reduce the erineal symptoms. The present experiment was aimed at testing soil application of certain granular insecticides and neem cake in combination with foliar spray of neem formulations to manage this pest.

MATERIALS AND METHODS

The field experiment was conducted during 1996-97 in a private farm near Regional Research Station, Tamil Nadu Agricultural University, Dharmapuri district. Two to three year old bushes of *J. auriculatum* were selected for the study and each bush constituted a replicate. The experiment included soil application of granular insecticides viz., carbofuran, phorate and endosulfan at two different doses (1.0 and 2.0 kg a.i./ha). Soil application of neem cake alone at two dosages (250 and 500 kg/ha), neem cake at 250 kg in combination with foliar spray of neem seed kernal extract (NSKE) at 10% and neem oil at 3% were also tested. In all, there were 11 treatments (inclusive of untreated check) with three replications. After a thorough pruning of the selected bushes, granular insecticides and neem cake were applied in the shallow circular trenches around the base of each bush, covered with soil and then irrigated. The treatments involving foliar sprays were imposed on the same day of soil application. All the treatments were given three times at an interval of 30 days. To assess the efficacy of selected treatments, observations were made once in 10 days regularly from randomly collected leaf samples. Counts were made on mite infestation and total leaves in the labelled shoots, based on erineum or crinckling symptoms after 30 days of pruning. The per cent infestation of leaves was taken as a preliminary step of assessing the treatmental efficacy. Number of mites present per erineum was also observed by counting the mites directly under a stereo zoom microscope. The data on per cent infestation was first transformed to angular values and then subjected to statistical scrutiny.

RESULTS AND DISCUSSION

The data on the extent of control of *A. jasmini* in terms of per cent infestation (Table 1) and mortality counts expressed as number of mites per erineal lesion (Table 2) brought about by the

Table 1. Effect of selected treatments on the infestation by *Aceria jasmini* (Mean of three replications)

S.No	Treatments		* Per cent infestation				
			I round	II round	III round	Overall mean	Percent reduction
1	Carbofuran 3G	1kg ai/ha	3.5 (33.52)	52.3 (46.32)	25.0 (29.99)	35.9 (36.61)	52.6
2	Carbofuran 3G	2kg ai/ha	28.7 32.39)	20.1 (26.64)	5.5 (13.56)	18.1 (24.17)	76.1
3	Phorute 10 G	1 kg ai/ha	32.5 (34.75)	56.5 (48.73)	28.4 (32.30)	39.1 (38.56)	48.4
4	Phorute 10 G	2 kg ai/ha	30.4 (33.46)	28.4 (32.20)	7.5 (15.89)	22.1 (27.18)	70.8
5	Endosulfan 4 G	1 kg ai/ha	31.8 (34.37)	54.3 (47.47)	26.5 (30.98)	37.5 (37.59)	50.5
6	Endosulfan 4 G	2 kg ai/ha	30.5 (33.52)	37.5 (31.63)	7.2 (15.56)	21.7 (26.90)	71.5
7	Neem cake	250 kg/ha	32.7 (34.88)	52.6 (46.49)	32.0 (34.45)	39.1 (38.61)	48.4
8	Neem cake	500 kg/ha	27.5 (31.63)	21.4 (27.56)	6.4 (14.65)	18.4 (24.61)	75.7
9	Neem cake	250 Kg + NSKE 10%	26.0 (30.66)	22.5 (28.32)	7.5 (15.89)	18.7 (24.96)	75.3
10	Neem cake oil 3%	250 Kg + Neem	32.2	48.7 (34.57)	40.7 (44.25)	40.5 (39.62)	46.6 (39.49)
11	Check		48.5 (44.14)	79.5 (63.08)	99.5 (85.95)	75.8 (64.39)	
	SEd		3.239	0.274	2.782	7.610	
	CD (P = 0.05)		6.757	0.571	5.800	15.800	

Figures in parenthesis are angular transformed values

* Mean of three observations

selected treatments are presented separately. Carbofuran at 2.0 kg a.i/ha was significantly superior to other treatments by registering 76.1 per cent reduction of erineum. The soil application of neem cake at 500 kg/ha at 250 kg in combination with the foliar spray of NSKE 10% were noted to be equally effective by recording 75.7 and 75.3 per cent reduction in the infestation. Higher doses of the three granular insecticides were found to be superior to their lower dosages in minimising the infestation by *A. jasmini*. Soil application of neem cake at 250 kg and foliar spray of neem oil 3 per cent (46.6 per cent reduction) were not much effective.

There was significant reduction of mite population in all the treatments as compared to untreated control (Table 2). The results on the bioefficacy of different treatments expressed as mean number of mites per erineum followed a similar trend as in the case of "infestation per cent". The mean number of mites present per erineum after three rounds of application was observed to be lowest with 23.9 (72.4 % reduction) in carbofuran treatment at 2.0 kg a.i./ka. The efficacy of other treatments in the decreasing order was neem cake at 500 kg/ha, neem cake 250 kg plus foliar spray of NSKE at 10 per cent endosulfan (2.0 kg a.i./ka) and phorate (2.0 kg a.i./ha) with a mean of 24.1, 24.5, 26.6 and 28.9 mites per erineum respectively. The superiority of neem formations *viz.*, NSKE 10% and neem oil 3% causing 90.0 and 87.7 per cent mortality of the erophyid, *A. cajani* on pigeon pea was reported earlier (Chinniah and Mohanasundaram, 1995). The acaricidal value of the pests *viz.* yellow mite of chilli, *Polyphagotarsonemus latus* (Thangaraju *et al.*

Table 2. Effect of selected treatments on the incidence by by *Aceria jasmini* (Mean of three replications)

S.No	Treatments	* Number of mites per leaf erineum					
		Pre Tr.count	I round	II round	III round	Overall mean	Percent reduction
1	Carbofuran 3G 1kg ai/ha	120.5	80.5	40.2	10.5	43.7	49.5
2	Carbofuran 3G 2kg ai/ha	118.7	54.4	12.4	4.8	23.9	72.4
3	Phorute 10 G 1 kg ai/ha	122.5	87.4	45.1	13.5	48.7	43.7
4	Phorate 10 G 2 kg ai/ha	125.7	60.2	20.5	6.2	28.9	66.9
5	Endosulfan 4 G 1 kg ai/ha	121.3	84.5	48.2	20.4	51.0	41.0
6	Endosulfan 4 G 2 kg ai/ha	122.5	59.0	15.2	5.7	26.6	69.2
7	Neem cake 250 kg/ha	120.0	78.6	40.4	18.2	45.7	47.2
8	Neem cake 500 kg/ha	125.0	54.2	13.8	4.2	24.1	72.1
9	Neem cake 250 Kg + NSKE 10%	127.5	52.5	13.5	7.5	24.5	71.1
10	Neem cake 250 Kg + Neem oil 3%	131.0	75.7	38.6	18.5	44.3	48.8
11	Check	120.5	100.5	98.5	60.4	86.5	-
	SEd	0.363	0.060	0.070	2.782	-	-
	CD (P = 0.05)	0.339	0.125	0.145	6.362	-	-

* Mean of three observations

1995), sorghum mite, *Oligonychus indicus* (Manjunatha *et al.*, 1995), red spider mite, *Tetranychus telarius* in brinjal (Veeravel *et al.* 1995) were reported earlier. Carbofuran was found to be effective against *A. jasmini* recording a lowest infestation of 34.5 per cent (Letchoumanane and Subramanian, 1981). The reduction of mite infestation and the mortality of *A. jasmini* (Table 1 and 2) were observed to be dose dependent for all the treatments. Dose dependant nature of such pesticidal efficacy against several mite pests has already been demonstrated for soil applied granular insecticides (Letchoumanane and Subramanian, 1981). The significant reduction in the per cent infesation and increased kill of the mite pest in each round of application could be attributed to the accumulation of toxic principles in the plant sap, which got enriched by successive applications. This might, otherwise, be on account of the relatively longer persistence of the insecticides. To contain the mite number and to avert the erineum formation, the first round of treatment should coincide with an initial pruning of bushes so that the quantum of toxic principles that are absorbed and translocated in sufficient quantities in the new flush.

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GENETIC VARIABILITY FOR FODDER ATTRIBUTES IN GUINEA GRASS *Panicum maximum. Jacq.*

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ABSTRACT

Genotypic and phenotypic variance, co-efficient of variation, heritability and genetic advance were estimated in 51 genotypes of guinea grass on 10 different fodder attributes. The analysis of variance indicated significant variation among the genotypes for all characters except crude fibre content and leaf-stem ratio. The GCV and PCV were the maximum for leaf weight, number of tillers per plant, green fodder yield per plant, stem weight, number of leaves per plant and dry matter content. Heritability values were very high for eight of the characters. High heritability combined with high genetic advance as percentage of mean was observed for number of leaves per plant, stem weight, leaf weight, green fodder yield per plant and dry matter content.

KEY WORDS : Guinea grass, Genetic analysis, Heritability

Guinea grass is an important perennial fodder crop of the vast arid and semi arid regions of India and many of the African Countries. In India it is largely cultivated under irrigation in fairly rich soils and is popular with dairy farmers. It is also suitable for cultivation under shade in coconut gardens. Though it is extensively cultivated, only a very few varieties like Hamil, Makueni, Green panic, Riversdale etc have been recognised. However very little genetic information is available since awareness on the importance of green fodder in increasing milk production is only slowly catching up. Studies were taken up to analyse the extent of genetic variability present in the species and to estimate the heritability and genetic advance for different fodder attributes.

MATERIALS AND METHODS

Fifty one genotypes of guinea grass collected from different sources and maintained at the Department of Forage Crops, Tamil Nadu Agrl. University, Coimbatore were planted adopting a spacing of 50 cm x 30 cm in a randomised block design with three replications during kharif'96. Each genotype was planted with 15 plants in each row. Uniform cultural practices were followed. The first cut was taken on 80th day after planting and subsequent cuts at 45 days interval. Observations on 10 metric traits were recorded from five random plants in each genotype per replication at each harvest and the mean data were utilized for analysis of variance (Panse and Sukhatme 1961), and to estimate the genotypic and phenotypic variance (Johnson *et al.*, 1955), genotypic and phenotypic co-efficients of variation (Burton 1952), heritability in the broad sence (Robinson 1966) and Genetic Advance (Johnson *et al.*, 1955).

RESULTS AND DISCUSSION

The mean per se performance of the best 10 genotypes is given in Table 1. The analysis of variance indicated significant differences among the genotypes for all the characters except leaf-stem ratio and crude fibre content. The genotypic