

Large scale demonstration of eco-friendly management of coconut eryophid mite, *Aceria guerreronis* (Keifer)

The coconut palm, *Cocos nucifera* L. is also called “Kalpavruksha” as it provides variety of useful products viz., food, fuel, fibre and timber. In recent years coconut in south India is under severe threat due to the invasion of eryophid mite, *Aceria guerreronis* (Keifer). Keifer (1965) first described this mite species at Gurrero state of Mexico. Since 1998 it has attained a major pest status particularly in three peninsular states of India viz., Kerala, Karnataka and Tamil Nadu and has spread northwards (Sathiamma *et al.*, 1998). The mite is very minute in size and its life cycle consists of egg, two larval instars and adult and entire life stage is completed in 10-12 days (Ramarethinam *et al.*, 2000). The mites inhabit the floral bracts and tender portion of the nuts covered by the perianth. Initially damage appears as triangular patch beneath the perianth of one to five months old nuts as the mites desap from tender portion by remaining inside perianth. Further, feeding by large number of mites results in the appearance of brownish patches. As the nut grows, the injury on the nut surface leads to warting and longitudinal fissures. The information on the ecofriendly management of coconut mite involving nutrient management and agronomic practices is very much lacking. Keeping this in view, the present study was carried out with ecofriendly approaches to manage coconut mite.

Large scale demonstration was carried out in farmer’s fields during 2005-06. The IPM strategy advocated for management of coconut mite for southern states of India was demonstrated in farmer’s field in Khanahosahalli village of Kudligi taluk, Bellary district in Karnataka and observations were made on randomly selected plants for mite infestation. A total of 3000 coconut trees were identified and numbered for

imposition of treatments. In order to induce inbuilt resistance to mite all the selected palms were given nutrition for three times (April-May, Sept-Oct. and Jan-Feb.) in a year as per Kannaiyan *et al* (2000) i.e., urea - 1.30 kg, SSP - 2.0 kg, MOP - 3.5 kg, gypsum - 1.0 kg, borax - 50 g, neem cake - 5.0 kg and FYM 50 kg per plant per year. Later on the management of mite was initiated as mentioned in Table 1. The mite damage to nuts was assessed by visual observation by using 1 to 5 scale giving I to V grades. These observations were made before treatments and 10 months after imposition of treatments. A total of 30 plants from each treatment were selected for observation.

The per cent infestation of nuts by coconut mite recorded before treatment and 10 months after imposition of treatments measured in terms of grades is given in the Table 1. The maximum damage to nuts (III to V grade) reduced drastically at 10 months after treatment imposition (14.84, 5.70 and 1.71%) as compared to 24.99, 14.00 and 12.68 per cent recorded before treatment, respectively. Further, per cent infestation recorded in grade I category after imposition of treatment was more than two times after treatment imposition (52.67% as against 23.13%). Similarly, the per cent increase in marketable healthy nuts at 10 months after imposition of treatments ranged from 9.25 to 34.69 (Table 2). These results indicated that the use of macro, micronutrients and biorationals applied through soil, root feeding and foliar sprays has reduced coconut mite infestation. Another important factor responsible for reduction in multiplication rates of mites is receipt of 39 per cent excess rains during summer months (47.06 mm as against 33.8 mm normal) which hindered the multiplication of mites especially during summer months.

Table 1: Mean per cent infestation to nuts before and after treatment imposition

Sl. No.	Treatments	Nut infestation (%) before treatment					Nut infestation (%) 10 months after treatment				
		I-grade	II-grade	III-grade	IV-grade	V-grade	I-grade	II-grade	III-grade	IV-grade	V-grade
1	Root feeding by 1% Azadiractin @ 10 ml/plant	24.32	25.03	22.31	14.52	13.80	55.65	23.41	14.84	5.08	1.27
2	Root feeding by 5% Azadiractin @ 7.50 ml/plant	15.87	26.63	28.62	15.04	13.71	49.69	25.60	17.43	5.84	1.41
3	Spray of fish oil rosin soap @ 100 g/plant	24.06	24.84	26.42	8.72	13.93	55.08	21.00	18.67	4.38	0.84
4	Spray of 1% Azadiractin @ 8.0 ml/plant	31.85	25.00	22.56	12.50	8.07	55.39	27.07	10.45	4.03	3.04
5	Spray of neemoil (40 ml) + garlic (40 g) + soap powder (10 g)/plant	17.76	24.95	26.62	16.84	13.86	49.37	26.94	14.25	7.59	1.83
	Mean	23.13	25.18	24.99	14.00	12.68	52.67	25.06	14.84	5.70	1.71

Table 2. Marketable healthy nuts before and after treatment

Sl.No.	Treatments	Healthy nuts/plant during		% increase over control
		Before treatment	10 months after treatment	
1	Root feeding by 1% Azadiractin @ 10 ml/plant	52	60	15.38
2	Root feeding by 5% Azadiractin @ 7.50 ml/plant	49	66	34.69
3	Spray fish oil rosin soap @ 100 g/plant	55	70	27.27
4	Spray of 1% Azadiractin @ 8.0 ml/plant	60	74	23.33
5	Spray of neem oil (40 ml) + garlic (40 g) + soap powder (10 g)/plant	54	59	9.25

The present findings corroborates with Anon. (1999) who reported that continuous supply of major and micronutrients to coconut palm throughout the year will impart resistance and produce healthy nuts. The importance of potassium in pest management has been well documented in many crops (Panda and Khush, 1995). Mandal (1991) inferred that potassium is a highly essential element which impart resistance to coconut palms from insect and non-insect pests. Among the micronutrients ‘Boron’ is quite essential for higher plants (Hu

Henning and Brown, 1997). Superiority of the neem products compared to other botanicals might be due to its azadiractin content, which exhibited high ovicidal, antifeedant and insecticidal property resulting in suppressing of mite population. NSKE @ 5 per cent was found effective in managing mite (Balaji and Hariprasad, 2003). These reports support the present findings of better nutrient management followed by adoption of eco-friendly methods to manage coconut mite.

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