The Journal of Plant Protection Sciences, **1**(1) : 76-79, 2009

journal homepage: www.aappbckv.org/journal

Infestation of coconut eriophyid mite, *Aceria guerreronis* Keifer in Konkan region of Maharashtra

V. S. Desai, S. D. Desai, A. J. Mayekar and V.G. More

Department of Agril. Entomology, Dr. B.S.Konkan Krishi Vidyapeeth, Dapoli 415712, Ratnagiri (M.S.), India
E-mail: vvpp_s@yahoo.co.in/sddesai_ento@rediffmail.com.

Keywords: Coconut, eriophyid mite, *Aceria-guerreronis*

A B S T R A C T

The coconut eriophyid mite was reported to cause damage in coconut plantations in Konkan region of Maharashtra from January 2002. Three orchards from this area were surveyed to record infestation level of this pest in April and October of 2004 and March 2005. The survey indicated that the infestation was higher in Thane district followed by Sindhudurg district.

Introduction

The coconut eriophyid mite, *Aceria guerreronis* Keifer is a microscopic pest, observed first from Mexico way back in 1965 as a major pest, has become a serious pest in Asia and Pacific region, which was first observed in Shri Lanka in 1997. In India, the eriophyid mite was first observed to cause serious damage in Ambaloor tahasil of Ernakulam district from Kerala in 1998 (Sathiamma *et al*. 1998). It was first noticed in Maharashtra from Vasai tahasil of Thane district in 2002 (Anon. 2003). Now it has spread throughout Maharashtra and is causing serious damage to the coconut plantations.

The Konkan region is a long narrow strip having seashore of 720 Km, particularly known for tourism. The majority of coconut cultivation of Maharashtra is confined to this area only. It has five districts, out of which coconut plantations are found in Thane, Raigadh, Ratnagiri and Sindhudurg districts. As this pest was new to this area, the survey work has been undertaken soon after this pest was noticed. The survey was conducted to record the intensity of infestation of coconut eriophyid mite from this region to provide information to coconut growers as well as government to take the decision for initiation of control measures from different pockets of this region.

Materials and Methods

To know the intensity of infestation of coconut eriophyid mite, a survey was undertaken from coconut growing tahasils of four districts of Konkan region. Out of five districts of Konkan, four districts were selected for recording observations on eriophyid mite infestation because the coconut cultivation is confined to these four districts only. Out of these four districts, the coconut growing tahasils were selected. From each tahasil, two villages were selected and from each village six coconut growers were selected. The total number of palms from each tahasil was taken into consideration for calculating per cent infestation. The percent infestation was calculated by using following formula;

$$\text{Percent infestation} = \frac{\text{Total number of infested palms}}{\text{Total number of palms}} \times 100$$

The intensity index was also recorded from each farmer. The intensity index was recorded by observing the infested nut area from 10 infested nuts. It was then summarized and average intensity index was calculated from each tahasil. The following scale index was used to record intensity index.

I - No infestation
II - 1 to 10 percent nut area infested
III - 11 to 25 percent nut area infested
IV - 26 to 50 percent nut area infested
V - More than 50 percent nut area infested

The same orchards were used for survey in 2004 and 2005 to know the increase or decrease in eriophyid mite infestation. The survey was conducted in April 2004, October 2004 and March 2005.

Results

Data on district wise eriophyid mite infestation is given in Table 1. The level of infestation of eriophyid mite was highest in Thane district followed by Sindhudurg, Ratnagiri and

Raigadh. The infestation level from Thane district was higher in April 2004, and then it increased to its peak level up to 71.84 per cent in October 2004 and then started declining from March 2005. The infestation level from Sindhudurg district also showed steady increase of mite infestation.

The intensity of infestation of coconut eriophyid mite of each selected taluka from four districts of Konkan region of Maharashtra is given in Table 2. Data revealed that the eriophyid mite infestation among the taluka's was highest in Vasai i.e. 78.35, 82.23 and 77.66 percent in April 2004, October 2004 and March 2005, respectively. The level of infestation increased in October 2004 but it showed steady decreasing trend in March 2005. On the contrary the scale of infestation increased from II to IV in Vasai tahasil.

Table 1
Infestation of eriophyid mite in different districts of Konkan

Sr. No.	Name of district	Percent infestation		
		April 2004	October 2004	March 2005
1.	Thane	65.86	71.84	63.82
2.	Raigadh	2.49	1.60	2.81
3.	Ratnagiri	3.33	4.36	7.49
4.	Sindhudurg	12.13	33.13	38.63

Table 2
Taluka-wise infestation of eriophyid mite in different districts of Konkan region of Maharashtra

Sr. No.	District/Taluka	Intensity of mite infestation					
		% infestation	Scale observed	% infestation	Scale observed	% infestation	Scale observed rating
		April 04		October 04		March 05	
1.	**Thane**						
	a) Vasai	78.35	II	82.23	III	77.66	IV
	b) Palghar	53.36	II	61.45	III	49.97	III
	Average	**65.86**		**71.84**		**63.82**	
2.	**Raigad**						
	a) Shrivardhan	3.85	II	2.25	II	1.93	II
	b) Alibag	0.45	II	1.20	II	2.26	II
	c) Murud	1.39	II	0.59	II	3.78	II
	d) Panvel	4.25	II	NS		NS	
	e) Karjat	NS		2.37	II	3.25	II
	Average	**2.49**		**1.60**		**2.81**	
3.	**Ratnagiri**						
	a) Ratnagiri	9.06	II	11.12	II	14.68	II
	b) Rajapur	0.00		0.00		0.30	II
	Average	**4.53**		**5.56**		**7.49**	
4.	**Sindhudurg**						
	a) Kudal	18.37	II	20.35	II	25.63	II
	b) Vengurle	39.60	II	41.25	II	42.65	II
	c) Sawantwadi	0.00		33.61	II	35.52	II
	d) Dodamarg	0.00		44.77	III	47.22	III
	e) Malvan	2.67	II	25.68	II	42.12	II
	Average	**12.13**		**33.13**		**38.63**	

The level of infestation and scale index of Palghar taluka of Thane district also showed similar trend.

In Sindhudurg district, the intensity as well as scale index was highest in Dodamarg taluka. In the same taluka in April 2004, there was no incidence of eriophyid mite. But in October 2004 the incidence suddenly increased up to 44.77 percent and further increased to 47.22 percent in March, 2005. The Kudal, Vengule, Sawantwadi and Malvan talukas of Sidhudurgn district showed increasing trend of the eriophyid mite infestation.

The intensity of infestation and scale index was low in Ratnagiri and Raigadh districts. Both Ratnagiri and Rajapur talukas showed infestaion of coconut eriophyid mite, but it was more in Ratnagiri taluka. Among the talukas under study Raigadh district showed negligible level of coconut eriophyid mite infestation with II scale index.

Discussion

The eriophyid mite infestation from India was first noticed in Kerala state and it spread in coastal belt like Karnataka and Goa. As per the area of transmission of mite, it was assumed that the eriophyid mite infestation started from Sindhudurg distict because this district is close to Goa followed by Ratnagiri, Raigadh and then in Thane district. But mite was first noticed in Thane district of Maharashtra. In Thane district, tourism is well developed because it is adjoining to Mumbai city. The tender nuts are coming from Kerala and Karnataka state to this area because of the huge demand for tender coconut. As eriophyid mite first spread in Kerala and Karnataka, the mite infestation spread along with tender nuts in this area.

Similarly though the eriophyid mite infestation was low in Ratnagiri and Raigadh districts, it may suddenly increase if the conditions favour this pest as found in Sindhudurg district. Therefore, it is necessary to start control measures to eradicate this pest from these districts also.

Acknowledgement

The authors are thankful to Regional Coconut Research Station, Bhatye, Ratnagiri for providing funds for conducting survey work.

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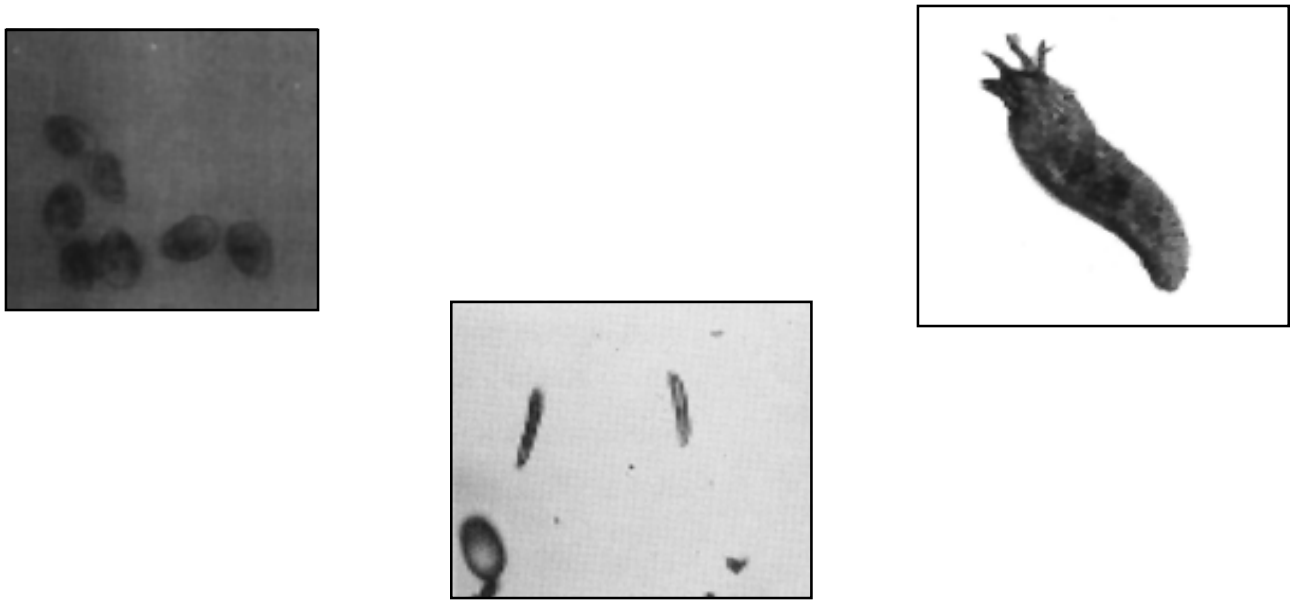

Fig. 1 : Eggs, microscopic and electron microscopic view of coconut eriophyid mite

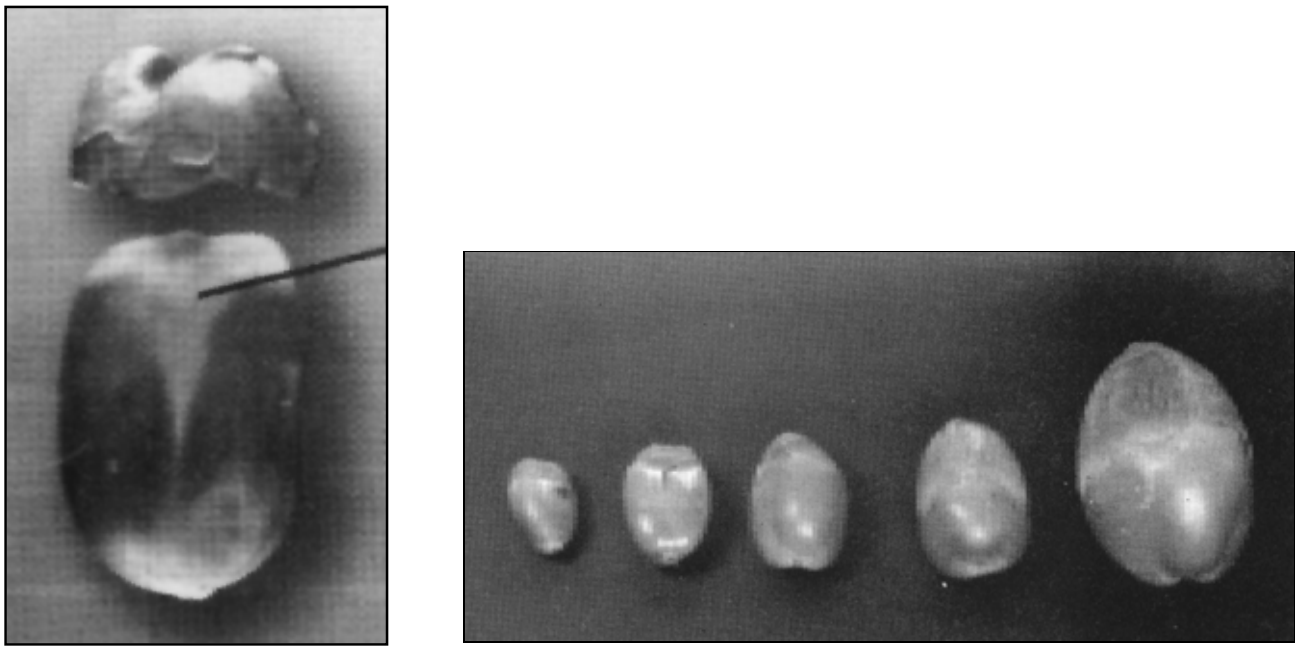

Fig. 2 : Point of colony, different stages of the infestation

Fig. 3 : Ultimate damage done in severe cases