

Raoiella indica

Introduction

Raoiella indica Hirst, the red palm mite is an important pest of coconut (*Cocos nucifera* L.) and areca palm (*Areca catechu* L.) in India, Pakistan and Mauritius. This mite also infests date palm (*Phoenix dactylifera* L.) in Iran, Egypt, Israel, Sudan and Russia. It has been reported from Martinique in the Caribbean in 2004 (Etienne) where it was collected on coconut leaves and the leaves of an ornamental palm (*Veitchia merrillii*) (Becc.). The incidence of this pest in the Caribbean could have serious consequences for the coconut industry in the region.

Identity

Authority	Hirst 1924
Classification	
Kingdom	Animalia
Phylum	Arthropoda
Class	Arachnida
Order	Acari
Family	Tenuipalpidae
Genus	<i>Raoiella</i>
Species	<i>indica</i>
Common names	Red palm mite, coconut palm leaf mite, date palm scarlet Mite, crimson mite
Synonyms	
Role	Pest

Signs and Symptoms

Flechtmann and Etienne 2004

R. indica is usually found on the under side of the leaves of the host plant in very large numbers. All active stages of the mite are dark red in colour with black markings. The immature stages of the mite feed on the leaf tissue. Attacked leaves display severe yellowing.

Morphology

Moutia 1958

Egg - reddish pink in colour, oblong smooth and shiny measuring 0.117 µm in length and 0.88 µm in width with a stipe 0.148µm long.

Larva – Bright orange-red in colour about 135µm long & 100-120µm wide.

Protonymph- This differs essentially from the larva in being larger & in possessing four pairs of legs. The body length is 180-200µm & the width is 130 to 140µm.

Deutoronymph. The body is 240-250µm long & 160-170µm wide almost oval in shape.



Raoiella indica Hirst, Adult female

Adult – Typical of this species is the smooth dorsal integument, long first pair of dorsocentral setae and very short third pair of dorsocentral setae. Females are smooth and attain up to 0.32 µm in length and 0.22 µm in width.

Biology and Ecology

Moutia 1958

Males & females are sexually mature at the time of emergence. According to Nageshachandra *et al* (1984) both sexual & parthenogenetic reproduction were observed in *R. indica*.

Eggs are scattered on the underside of the leaves of the host plant in colonies ranging from 108 – 330 eggs. The average length of the egg stage is 6.5 days. 28 to 38 eggs are laid in 27 days, which is the average adult life of a female mite. The adult male lives 3 – 5 days shorter than the female. One female may mate with several males during her lifetime. In each case the duration of the act lasts one to twelve hours. The pre-oviposition period is three to seven days depending on the time of year. The sex ratio varies considerably – 1 : 11.4 males to females in April – May and 1: 2.3 I October – November in Mauritius. Studies on the seasonal fluctuation in the population of *R. indica* indicated that rainfall & relative humidity showed a negative correlation with the population of the mite, while temperature and hours of sunshine showed a positive correlation.

Dispersal/ Vectors

Wind currents and infested leaves transported in commerce act in the dispersion of the mite.

Management

Biological control – According to the CABI Crop Protection Compendium *Amblyseius channabasavanni* prey on nymphs and adults. *Stethorus keralicus* attack nymphs and adults of *Raoiella indica*

Neem oil spray mixed with sulphur gives effective control. This extract should be sprayed 5 to 6 times per year.

Chemical control – Diaphos has been used to control the mite.

Host notes

Flechtmann and Etienne 2004

R. indica is an important pest of coconut (*Cocos nucifera*), date palm (*Phoenix dactylifera*), *Areca* sp, *Dictyosperma album*, *Veitchia merrillii*.

Pest significance and Phytosanitary risk

The red palm mite is a recent introduction to the Caribbean – Martinique (Flechtmann and Etienne). Young coconut palms are more severely affected; plants > 5 years seem to resist the attack of this mite. This pest is of major phytosanitary importance to the

Caribbean and if it is allowed to spread it could severely affect the coconut industry in the region. Its presence in Martinique would require that strict quarantine measures be enforced to prevent its spread in the region.

Distribution

R. indica was first described by Hirst in 1924 from coconut leaves in Coimbatore, India. It has been reported from Pakistan, Sudan, Mauritius, Israel, Egypt, Iran, Oman, Russia, and more recently Martinique in the Caribbean.

Bibliography

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Raoiella indica Hirst, Adult female