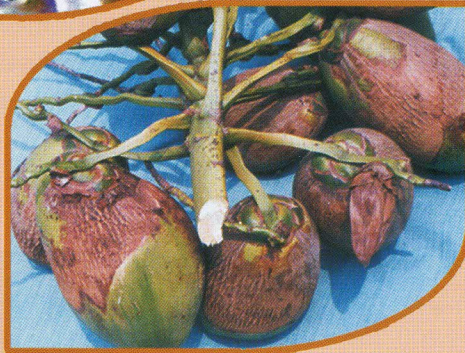
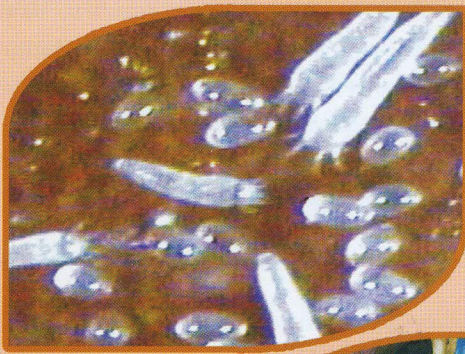


# Coconut mite

(*Aceria guerreronis* Keifer)



- Common Fund for Commodities, The Netherlands
- Department For International Development, UK
- Asian and Pacific Coconut Community, Indonesia
- Food and Agriculture Organization, Italy
- Indian Council of Agricultural Research, India
- Central Plantation Crops Research Institute, India

## Introduction

Coconut mite (*Aceria guerreronis* Keifer) is the most destructive pest among various species of eriophyid mites affecting coconut palm in 30 countries of Tropical America, Africa and Asia. In Asia, the coconut mite was first reported from Sri Lanka in late 1997 from Kalpitiya Peninsula of Puttalam district and from India during 1998 from Amballur Panchayat in Ernakulam district of Kerala. Within a short period of the first report, the coconut mite has spread rapidly to major coconut growing regions in both these countries. In India, the pest is reported currently from all the traditional coconut growing states in the west and east coast of the country.

## Distribution of coconut mite

First report of *A. guerreronis* was from the Guerrero State in Mexico in 1965. The same year it was found near Rio de Janeiro, Brazil. Its occurrence was widely noticed in several countries in South America and neighbouring Caribbean Islands during 1968. During the seventies and early eighties, severe damage of the pest was reported from Central America and West African countries. Tanzania witnessed an outbreak of the pest during 1980 and USA (Florida) during 1984.

## Host Plants

Coconut palm (*Cocos nucifera* Linnaeus) is the primary host of *A. guerreronis*. It has also been recorded from cocosoid palm (*Lytocaryum weddellianum*) in Brazil, palmyra palm (*Borassus flabellifer*) in India and queen palm (*Syagrus romanzoffiana* [*Arecastrum romanzoffianum*]) in USA.

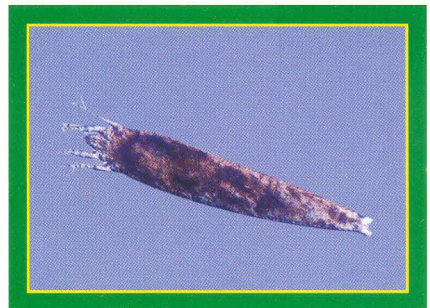
## Biology

The coconut mite is a microscopic creamy white vermiform organism measuring 200-250 microns in length and 36-52 microns in breadth (Fig. 1).

The body is elongated, cylindrical, finely ringed and bears two pairs of legs at the anterior end. Mites attain sexual maturity within a week's time and start laying eggs. An adult mite lays about 50-100 eggs. The eggs hatch into protonymphs, deutonymphs and finally to adults. The total life cycle is completed in seven to ten days.

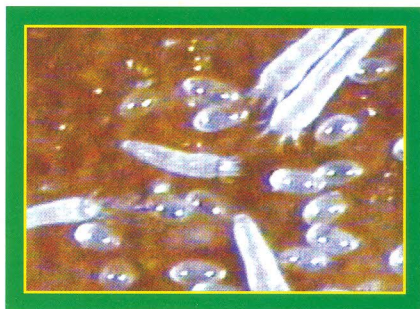
## Nature of damage

In coconut, mites infest the developing young buttons and are seen in the floral bracts and the soft meristematic portion beneath the perianth. Mite infestation could be seen in developing buttons of 1-5 month old bunches and maximum mite population is observed in buttons of 3rd and



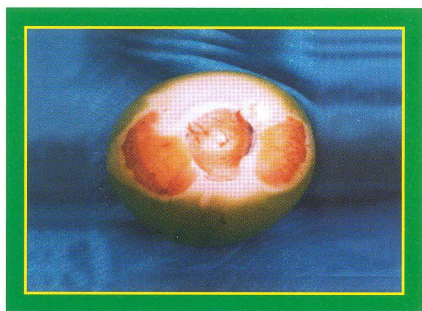
**Fig. 1. *Aceria guerreronis***

4th month old bunches. Unfertilized female flowers do not harbour any mite. Entry of the mite into the developing nuts takes place during the early phase of development immediately after the fertilization. The mites thus gaining entry into the nuts multiply and form active colonies containing various stages of development viz., eggs, nymphs and adults (Fig. 2).



**Fig. 2. Coconut mite colony with eggs and adults**

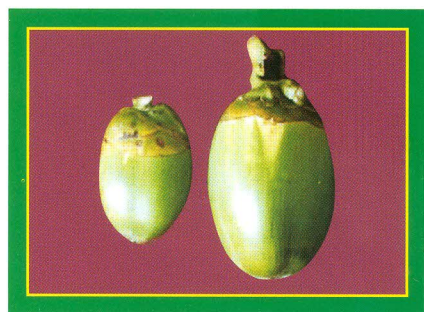
Usually in a developing nut, the coconut mite colonies are seen as two or three congregations on the meristematic region of the button below the perianth (Fig. 3).



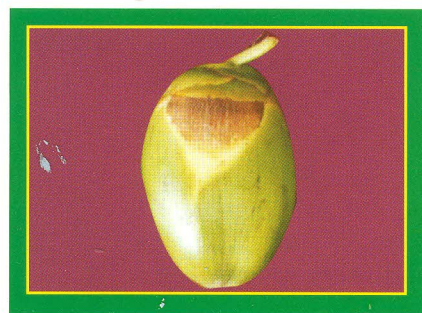
**Fig. 3. Coconut mite colony on perianth**

The mite infestation symptoms are observed approximately one month after initial colonization of the nuts inside the fertilized button. Appearance of elongated white streaks below perianth is the first external manifestation of mite infestation on young buttons. In many cases, a small yellow halo develops around the perianth. Within a few days, this halo

develops into yellow triangular patch pointing towards the distal end of the button. This can be clearly visible in 2-3 month old buttons (Fig. 4). In a short time, the yellow patch turns into brown and show necrotic patches on the periphery of the perianth (Fig. 5). As the affected nut grows, the injuries form warting and longitudinal fissures on the nut surface (Fig. 6).



**Fig. 4. Early symptoms of coconut mite attack showing yellow halo**



**Fig. 5. Development of brown patch**

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The husk develops cracks, cuts and gummosis. Severe infestation causes shedding of buttons and young nuts or malformation of nuts as a result of retarded growth.

### **Crop loss**

Feeding by few mites causes cosmetic damage to the husk without affecting the quality of copra or coconut water. Yield losses depend on cultivar, health and general maintenance of the crop, climate etc. Copra loss was 10 % in Benin, 16 % in Ivory Coast, 30 % in Mexico, 11-28 % in St. Lucia, 20-30% in Tanzania and about 16% in Sri Lanka.



**Fig. 6. Affected bunch with wartings**

In India invasion of coconut mite over large areas of coconut plantation in the initial years of occurrence has affected up to 70 % damage resulting in the production of undersized or malformed nuts. It has been observed that as the time advances, there is considerable reduction in the level of incidence resulting in reduction in economic loss. In Kerala, though pest damage has been reported initially ranging from 50-70 %, later surveys carried out in Alappuzha district have shown significant reduction in crop loss indicating an average loss of 30.94 % in terms of copra and 41.74 % in total husk production. Recent surveys by CPCRI in Kerala register still lower levels of pest incidence with comparatively less intensity of infestation. The loss in terms of copra in the present situation in southern districts of Kerala ranges from 8-12 percent compared to an average loss of 25 percent in the initial years.

### **Population dynamics**

The coconut palm puts forth on an average one inflorescence a month. Thus, throughout the year the mite is able to find nuts of suitable age for initiating infestation and population build-up. However, the pest population reaches maximum during hot/dry months. In India, the population is very high during summer months from March-May. High temperature and relative humidity were found to favour mite build up. Rapid spread of mite occurs during humid warm weather during pre-monsoon season. Coconut palms with heavy nut setting and thickly arranged bunches are showing more incidence of the pest.

### **Varietal susceptibility**

Coconut cultivars and Hybrids differ in their field tolerance to the mite. Malayan Yellow Dwarf in Costa Rica, Port-Bouet 121, Malayan Tall, Tahiti Tall, Cameroon Red Dwarf, and hybrid MYDXWAT in Benin performed better. Polynesian Tall, Malayan Red Dwarf, Rennel Tall, Cameroon Red Dwarf and Equatorial Green Dwarf showed more tolerance to mite attack in Tanzania. Coconut cultivars from Cambodia showed resistance to coconut mite in Africa. In India varieties like Kenthali, Cochin China, Andaman ordinary, Gangabondam, Chowghat Orange Dwarf, Malayan Green Dwarf, Laccadive Micro and Spicata recorded lower incidence of the pest. Chowghat Orange Dwarf showed maximum

