



### Entopathogenic Fungi

The use of the entomopathogenic fungi *Beauveria bassiana* and *Metarhizium anisopliae* for the biological control of several pests, including mites, seems to be a promising strategy. Lab tests performed at Embrapa Roraima, with both fungi, showed that *B. bassiana*, at a concentration of  $10^7$  conidia/ml, kills 100% of adults, while *M. anisopliae*, at the same concentration, kills 82%. Further studies are required to test the efficiency of these fungi under field conditions.

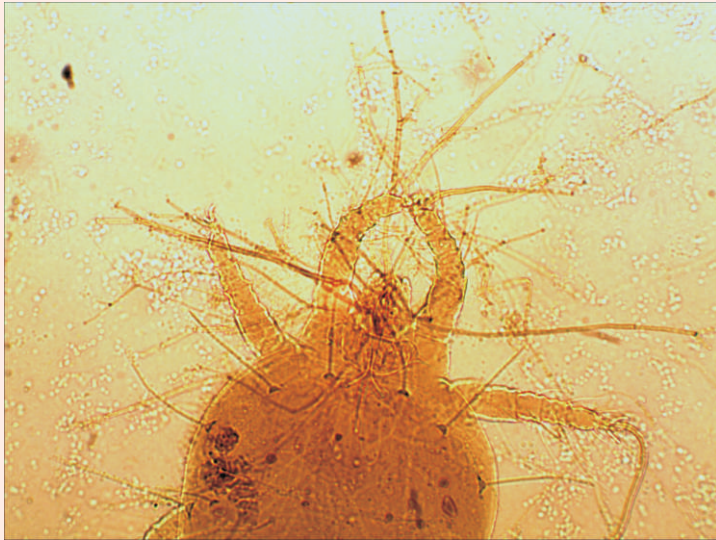


Figure 4. Red Palm Mite infected by the fungus *B. bassiana*



# PESTS OF QUARANTINE EXPRESSION IN BRAZILIAN AMAZON

## Red Palm Mite



#### AUTHORS

Elisangela Gomes Fidelis de Morais - Embrapa Roraima

Rinaldo Joaquim da Silva Júnior - Embrapa Roraima

Gilberto José de Moraes - ESALQ/USP.

Yelitza Colmenarez - CABI South America

Natalia Corniani - CABI South America

#### INFORMATIONS

##### Embrapa Roraima

Rodovia Br-174, km 8 - Distrito Industrial

Telefax: (95) 4009-7100

Cx. Postal 133 - CEP. 69.301-970

Boa Vista - Roraima- Brasil



Visit:

<http://www.embrapa.br/roraima>





## 1. What is the Red Palm Mite

The Red Palm Mite is a small red arthropod. The adults are about 0.3 mm long and can be seen with the help of a common pocket magnifier, or even by the naked eye. These mites form colonies where one can find adults, young stages (larvae, protonymph, deutonymph) and eggs. They live primarily on the lower surface of the leaves. Their life cycle is between 22 – 44 days, with oviposition period of 2 to 17 days, and fertility rate of 22 eggs/female.

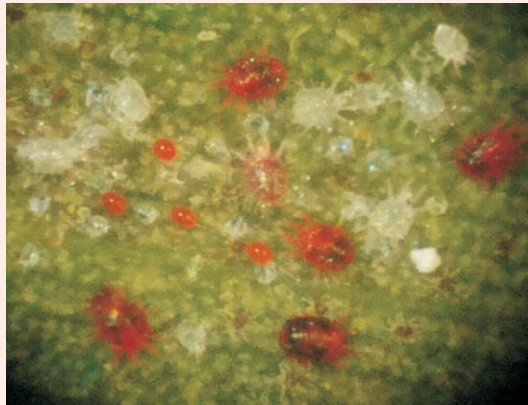


Figure 1: Colony of Red Palm Mite

## 2. Geographic distribution

Originally from Asia, the Red Palm Mite reached the Americas in 2004, in the Caribbean island of Martinique. It has subsequently spread to virtually all of the Caribbean islands, also reaching the USA (Florida), and Latin American countries, in Venezuela, Brazil and Colombia. In Brazil, the Red Palm Mite was reported at first time in Roraima State in 2009 and in 2011, in Amazonas. In 2015, it was found in São Paulo, Mato Grosso do Sul, Ceará and Sergipe and in 2016 in Alagoas.

## 3. Host Plants

Red Palm Mites attack coconut plants, apparently their preferred host, as well as other palms, such as açai, buriti, peach palm, areca palm, and also bananas, heliconiaceae and strelitziaceae. The list of reported host plants for the Red Palm Mite has 91 plant species.

## 4. Damages and impacts

Red Palm Mite causes yellowing and leaf necrosis, and even death of young plants. In the Caribbean Islands, Venezuela and Florida (EUA), Red Palm Mite has been causing severe damage to coconut plants, banana and many other palms, including buriti. The coconut production in these countries fell sharply after the introduction of the mite, affecting oil production.

In some areas of the Caribbean, coconut production losses has been estimated at over 50%.

In the Caribbean, Mexico coast and also in Florida, the main impact of Red Palm Mite is the yellowing of coconut leaves and ornamental palms, affecting the beauty of these sites, and therefore the tourism.



Figure 2. Symptoms caused by Red Palm Mite infestation in coconut seedling and adult plant.

## 5. Control methods

### Chemical Control

Studies on synthetic acaricide efficiency were performed at Embrapa Roraima and showed that milbemectin, abamectin, spiropdiclofen and propargite were the most toxic products to *R. indica* adults, whereas fenpyroximate and spiropdiclofen were the most selective for the predatory mite *Amblyseius largoensis*.

However, there is no chemical control of the Red Palm Mite completely recommended in Brazil.

### Biological Control

#### Predators

The predatory mite *A. largoensis*, widely distributed in tropical and subtropical areas around the world, is often associated with diverse populations of Red Palm Mite. Studies conducted in many countries indicate that this predatory mite uses the *R. indica* as a food source, and can be considered as a potential control agent of this pest.



Figure 3. The predatory mite *A. largoensis*