

## Exploring the host range of the red palm mite (*Raoiella indica*) in Kerala, India\*

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\* In: Moraes, G.J. de & Proctor, H. (eds) Acarology XIII: Proceedings of the International Congress. Zoosymposia, 6, 1–304.

### Abstract

Current published records indicate that the red palm mite (RPM), *Raoiella indica* Hirst, has a much broader host range in the New World than in the Old World. Therefore, a series of studies were carried out in Kerala, India in 2009 and 2010 to elucidate the presence or absence of *R. indica* colonies on hosts in addition to coconut *Cocos nucifera* L., and betel-nut palm, *Areca catechu* L., the only previously reported host plants in India. We evaluated the following: RPM numbers on coconut and *Musa* spp. grown in Kerala; the presence of RPM on coconut and bananas grown as a mixed crop; and the possible presence of RPM on palms and other selected plant species mostly grown as ornamentals or reported to be hosts of the RPM in the New World. Results showed that RPM was found in extremely low numbers on *Musa* spp., never clearly colonizing those plants. The pygmy date palm, *Phoenix roebelenii* O'Brien, was found to be an additional breeding host in Kerala, as multi-generational colonies were found on a plant of this species. Possible reasons for observed differences in RPM host ranges between the Old World and the New World are discussed.

**Key words:** Ecology, host range, Tenuipalpidae.

### Introduction

Red palm mite (RPM), *Raoiella indica* Hirst, 1924 (Prostigmata: Tenuipalpidae), was originally described from Coimbatore, India, on coconut (*Cocos nucifera* L.) and later reported in several places in the Old World including India, the Middle East, Mauritius and Reunion (CABI/EPPO, 2007). It was first reported in the New World in 2004, in Martinique (Flechtmann & Etienne, 2004). Since then, RPM has been reported on many islands throughout the Caribbean (CABI/EPPO, 2007) and has subsequently spread to southern Florida (Smith & Dixon, 2008), northern Venezuela (Vásquez *et al.*, 2008), and Brazil (Navia *et al.*, 2011). The mite causes damage by feeding on the underside of leaves in colonies of up to 330 individuals in the Old World (Mauritius) (Moutia, 1958) but in the New World, colonies of up to 4,000 individuals per leaflet on coconut have been reported (Peña *et al.*, 2009). The specific feeding site is thought to be through or around the stomata, as observed by Kane *et al.* (2005), who in addition did not find feeding damage to epidermal cells.

In the Old World, the reported host range of RPM included coconut (Hirst, 1924), the betel-nut palm *Areca catechu* L. (Kapur, 1961), the date palm *Phoenix dactylifera* L. (Sayed, 1942) and the hurricane palm *Dictyosperma album* Wendland & Drude ex Scheffer (Moutia, 1958). Since its introduction into the Caribbean, many different host plants have been reported bringing the total number of host species to 63: Arecaceae (46 species), Heliconiaceae (five), Musaceae (six), Strelitziaceae (two) and Zingiberaceae (four). A review of reported potential host plants can be found in Cocco & Hoy (2009). Understanding the reported host range expansion is vital, as the range now encompasses economically important banana, *Musa* spp., and many ornamental plants, including heliconias, and coconut, the latter suffering the highest losses. Kane *et al.* (2005) first reported the spread of *R.*