

# *Thrips palmi*

## Introduction

*Thrips palmi* was first described by Karny in 1925 from specimens collected on tobacco in Sumatra. It was named after the director of the Medan quarantine station, Dr. B.T. Palm, and although it has been referred to as ‘palm thrips’ (CIE, 1986) it is not known to be associated with any palm species. *T. palmi* (Karny) was recorded in the Caribbean region about 1985. The insect caused significant damage to a wide range of crops. Internationally, it has been recorded on more than fifty (50) plant species. If this pest is not properly managed, it can result in severe losses to local farming as occurred in Trinidad from 1985 – 1995.

## Identity

Authority	: Karny 1925
Classification	
Kingdom	: Animalia
Phylum	: Arthropoda
Class	: Insecta
Order	: Thysanoptera
Family	: Thripidae
Genus	: <i>Thrips</i>
Species	: <i>palmi</i>
Synonyms	: <i>T. clarus</i> , <i>T. gossypicola</i> , <i>T. gracilis</i> , <i>T. leucadophilus</i> , <i>T. nilgiriensis</i> and <i>Chloethrips aureus</i>
Common names	: Oriental thrips, Palm thrips, Southern yellow thrips, Melon Thrips
Role	: Pest

## Signs & Symptoms

The adults and nymphs of *T. palmi* suck out the contents of plant cells. The early symptoms show a discontinuous discoloration alongside the leaf veins. Severe attacks result in the leaves drying out completely. Corky scars on fruits are also evidenced.

## Morphology

Ryckewaert 1998

*Thysanoptera* adults can usually be distinguished from other insects by their slender wings, which are fringed with long hairs.

**Adults** (*T. palmi*) (Fig. 1) are small, oblong insects usually less than 1 mm in length and difficult to detect. The **nymphs** are yellow and smaller than the adults. Both nymphs and adults are found on the underside of leaves and on fruits. They are commonly found on unopened young leaves and flower buds.



Fig. 1: Adult *Thrips palmi*

## Biology & Ecology

The spread of *T. palmi* to many tropical countries and the number of crops attacked are of great economic importance. It has been suggested that the aggressiveness of the species is caused by mutation of a new biological strain.

The duration of the life cycle varies with climatic conditions e.g. in the South Pacific it lasts from 13 to 25 days during the warm and cool seasons respectively. Adult females lay their eggs in the green tissue in an incision made by the ovipositor. There are two active larval stages. The second larval instar drops to the ground where the relatively inactive pre-pupa and pupa lasts for 3 - 4 days before the emergence of adult thrips. Adults emerge from the pupa in the soil and move to the leaves and flowers of the host plant. *T. palmi* can also reproduce parthenogenetically.

## Dispersal / Vectors

The pest is dispersed via infested plant material and wind currents.

## Management

### Cultural Control

Most pesticides registered for control of thrips were not effective in suppressing populations of *T. palmi* (Hamasaki, 1987). The escalation of this pest in the 1980s in the Caribbean may have led to the misuse of pesticides causing death of natural enemies and phytotoxic reactions, devastating most crops initially. Through proper management of pesticides and cultural inputs, the native natural enemy complex was effective in reducing pest population levels. This was evidenced by the findings of Jones (1998). Jones reported 1,000 insects per watermelon leaf in 1993 in Poodai district and by 1998, only 48 insects per leaf were recovered. Control has also been achieved by using UV absorbent plastic mulches, sticky traps and field sanitation. Rain showers significantly reduce population levels.

### Biocontrol

Natural enemies, particularly predators, are important in the ecology of *T. palmi*. In fact, there is strong indication that melon thrips, abundance and damage are increased by application of some insecticides (Etienne *et al.* 1990). Among the most important predators observed in Hawaii were the predatory thrips *Franklinothrips vespiformis* (Crawford) (Thysanoptera: Aeolothripidae) and especially the minute pirate bug *Orius insidiosus* (Say) (Hemiptera: Anthocoridae). Other predators in Hawaii were the ladybird beetle *Curinus coeruleus* (Mulsant) (Coleoptera: Coccinellidae), *Rhinacoa forticornis* Reuter (Hemiptera: Miridae), and *Paratriphleps laevisculus* (Champion) (Hemiptera: Anthocoridae). Other predators and parasitoids are known in Asia (Hirose 1991, Hirose *et al.* 1993, Kajita 1986). The parasitoid *Ceranisus menes* Walker (Hymenoptera: Eulophidae), shows particular benefit in many Asian studies, and this wasp has been introduced to Florida (Castineiras *et al.* 1996a). Fungi known to affect melon thrips include *Beauveria bassiana*, *Neozygites parvispora*, *Verticillium lecanii*, and *Hirsutella* sp. (Castineiras *et al.* 1996b).

## Host Notes

*Thrips palmi* is relatively polyphagous and over 50 plant species are affected by it. Leaves, growing points and fruits/ pods are affected.

**The list of host plants include:** *Solanum melongena* (Aubergine); *Capsicum annuum* (Bell Pepper); *Cucurbitaceae* (Cucurbits); *Gossypium* (Cotton); *Nicotiana tabacum* (Tobacco); *Oryza sativa* (Rice); *Solanum tuberosum* (Potato); *Capsicum* (Peppers); *Phaseolus* (Beans); *Lactuca sativa* (Lettuce); *Allium cepa* (Onion); *Persea americana* (Avocado); *Mangifera indica* (Mango); *Vigna unguiculata* (Cowpea); *Chrysanthemum* (Chrysanthemum); Fabaceae (Legumes); *Cucumis melo* (Melon); *Cucumis sativus* (Cucumber); *Phaseolus vulgaris* (Kidney Bean); *Sesamum indicum* (Sesame); *Helianthus annuus* (Sunflower); *Glycine max* (Soyabean); *Cucurbita pepo* (Ornamental Gourd); *Lycopersicon esculentum* (Tomato); Orchidaceae (Orchids).

## Distribution

In many tropical regions of the world *T. palmi* has swiftly become a major pest of cucurbits and solanaceous plants. The pest has its origins in South East Asia where Karny first described it in Indonesia. Early recordings of the pest as status were recorded in India in 1950, Thailand 1947, Pakistan 1951, Malaysia 1971 and the Philippines in 1977. Over the years, the pest has spread to Japan, some of the Pacific Islands and Australia. In the Western Hemisphere it was reported in 1985 in the Caribbean where the pest was very aggressive and caused severe losses (Jones, 1998).

## Pest Significance and Phytosanitary Risk

The species is considered to be a pest of substantial economic importance in South East Asia, and is of concern especially to vegetable farmers.

In the Philippines, an outbreak destroyed 80% of the watermelon crop and melongene plantings for seed production had to be abandoned due to injury by *T. palmi*. In Trinidad infestation levels of 300 – 700, adults per leaf in melongene and cucumber caused crop losses of 50% - 90% (Jones, 1998). It has been suggested that this pest reached the Caribbean through winds in a tropical depression or through transfer of plant material from one country to another. It therefore poses a risk when live infested plant material is shipped from one country to the other.

Live plants and / or fruits and vegetables should be examined for any stage of *T. palmi* or damage caused by this insect. Quarantine procedures can be difficult since these insects are very small and not easily detected. Sticky traps can be used to monitor populations of *T. palmi*.

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### **Web Resources -**

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[http://ecoport.org/EP.exe\\$EntFull?ID=20206](http://ecoport.org/EP.exe$EntFull?ID=20206)

[www.extento.hawaii.edu/kbase/crop/Type/t\\_palmi.htm](http://www.extento.hawaii.edu/kbase/crop/Type/t_palmi.htm)