

# NPAG DATA: *CENOPALPUS PULCHER* FLAT SCARLET MITE

Draft - November 28, 2000

## TAXONOMY:

**Phylum:** Arthropoda  
**Class:** Arachnida  
**Order:** Acari  
**Family:** Tenuipalpidae

**Full Name:** *Cenopalpus pulcher* Canestrini and Fanzago (CABI, 2000)  
**Common Name:** Flat scarlet mite (CABI, 2000)  
**Bayer Code:** BRVPOU; BRVPPY (CABI, 2000)

**Synonyms:** *Brevipalpus pulcher*  
*Brevipalpus pyri*  
*Caligonus pulcher*  
*Cenopalpus oudemansi*  
*Cenopalpus pyri*  
*Tenuipalpus oudemansi*  
*Brevipalpus oudemansi* Geijskes  
Note: Synonyms are from CABI (2000).

## US DETECTION DATA AND/OR DISTRIBUTION MAP:

### Initial Detection in US:

Location: Corvallis, OR (OSU research farm)  
Date: 1990  
Host: *Malus domestica* (apple)  
Collector: Waheed Ibrahim Bajwa, Integrated Plant Protection Center (IPPC)  
Oregon State University, Corvallis, OR 97331  
Identifier: 1990 - Waheed Ibrahim Bajwa, Integrated Plant Protection Center (IPPC)  
Oregon State University, Corvallis, OR 97331  
Identifier: 2000 - Dr. G. W. Krantz  
Oregon State University, Corvallis, OR 97331  
Iden. Date: 2000 (Info. from Nov e-mail from W. Bajwa; Dr. Krantz by telephone)



## **LIFE HISTORY:**

**Life Cycle:** A typical life cycle for this tenuipalpid mite (Zaher *et al.*, 1974) is the following:

Egg → Larva → Protonymph → Deutonymph → Adult

In Europe, there is only one generation per year (Dosse, 1953; Jeppson, Keifer, & Baker, 1975).

In Iran, there are three generations per year (Sepasgorarian, 1970; Jeppson, Keifer, & Baker, 1975).

In Iraq, the flat scarlet mite began to infest the apple trees in early March, and its number reached peaks in early June and in mid-October. There were three peaks of oviposition: the first in early April; the second in mid-June; the third in mid-August. Therefore, there are probably three generations a year in Iraq (Elmosa, 1971).

In Egypt, populations reach their peak in August and remain high until the end of December (Jeppson, Keifer, & Baker, 1975).

**Eggs:** The eggs are bright red, oval and measure 0.11 by 0.07 mm. The first eggs are laid on wood late in April; subsequently, eggs are laid along the leaf midrib, buried beneath the leaf hairs. In England and Europe, egg-laying continues until mid-July (Jeppson, Keifer, & Baker, 1975).

**Adults:** Mating occurs in August and September after which the males die and the females go into hibernation (Jeppson, Keifer, & Baker, 1975). Besides adults, the “nymphal stage” may overwinter ((Elmosa, 1971).

**Description:** The flat scarlet mite is small and noticeable only because of its intense scarlet color. Females are about 0.32 mm long and 0.16 mm wide. The male is shorter and paler than the female; its abdomen is almost transparent and curves upward (Jeppson, Keifer, & Baker, 1975).

**Ecology- Habits:** Flat scarlet mites prefer the lower leaf surface and move to buds for the winter (Jeppson, Keifer, & Baker, 1975).

**Ecology- Freezing Temperatures:** The overwintering mites could survive temperatures as low as -30°C (-22°F) (Jeppson, Keifer, & Baker, 1975).

## HOSTS:

<i>Cydonia oblonga</i>	Quince	CABI, 2000; Jeppson, Keifer, & Baker, 1975
<i>Eriobotrya</i> sp.	Loquat	Pritchard & Baker, 1958
<i>Juglans regia</i>	Walnut	Jeppson, Keifer, & Baker, 1975
<i>Juglans</i> sp.	Walnut	Pritchard & Baker, 1958
<i>Malus domestica</i>	Apple	CABI, 2000; Jeppson, Keifer, & Baker, 1975
<i>Malus</i> sp.	Apple (?)	Pritchard & Baker, 1958
<i>Platanus orientalis</i>	Oriental sycamore	Pritchard & Baker, 1958
<i>Prunus armeniaca</i>	Apricot	CABI, 2000
<i>Prunus domestica</i>	Prune	Jeppson, Keifer, & Baker, 1975
<i>Prunus</i> sp.	Apricot (?)	Pritchard & Baker, 1958
<i>Punica granatum</i>	Pomegranate	Menon, Ghai, & Kaiiyar, 1971
<i>Pyrus communis</i>	Pear	Jeppson, Keifer, & Baker, 1975
<i>Pyrus</i> sp.	Pear (?)	Pritchard & Baker, 1958
<i>Salix</i> sp.	Willow	Pritchard & Baker, 1958

Hatzinkolis and Emmanouel (1987) report many fruit trees and ornamental shrubs as hosts.

## DISTRIBUTION:

- Europe:** Austria, Bulgaria, Denmark, England, Holland, Germany, Italy (incl. Sicily), Portugal, USSR (Crimea, Georgia, Transcaucasia) (Jeppson, Keifer, & Baker, 1975).
- Africa:** Algeria, Egypt, Libya (Jeppson, Keifer, & Baker, 1975)
- Asia:** Afghanistan, Cyprus, Iran, Israel, Lebanon, Syria, Soviet Central Asia, Turkey (Jeppson, Keifer, & Baker, 1975); India (Menon, Ghai, & Katiyar, 1971); Iraq (Elmosa, 1971)
- N. America:** USA (established in OR)

Interceptions on plant material from Hong Kong and Argentina *may* indicate a more extensive distribution than shown in the list above (*See Quarantine*).

## DAMAGE WHERE ESTABLISHED:

**General References:** In *Agricultural Entomology*, Hill (1994) lists *Cenopalpus* spp. stating that “several species are pests of deciduous fruit trees and nuts in southern Europe and western Asia.”

In *Agricultural Insect Pests of Temperate Regions and Their Control*, Hill (1987) lists *Cenopalpus* spp. in a list of important mite pests of agricultural crops.

**Europe:** In England and the European countries, the flat scarlet mite is an occasional pest of neglected apple, pear, prune, and walnut trees (Jeppson, Keifer, & Baker, 1975)

In *The Pests of Fruits and Hops*, Masee (1954) does *not* mention this mite.

**Asia Minor:** In Egypt and Turkey, the flat scarlet mite is primarily a pest of quince (Jeppson, Keifer, & Baker, 1975).

**Asia:** In the Azerbaïdzhān Province of Iran, a survey found 23 mites associated with economic plants; the flat scarlet mite was included among the six most injurious mites (Daneshvar, 1978).

**North America:** In Oregon in about ten years, the flat scarlet mite has gone from being present among the mites to being the dominant species (Nov e-mail).

## **METHODS OF CONTROL:**

**Chemical Control:** Sulfur, one of the earliest compounds used for mite control, is still widely used. The mites in the Family Tenuipalidae are generally susceptible (Hill, 1987).

The dormant sprays of tar oils successfully control the overwintering eggs of temperate mites (Hill, 1987); presumably, dormant sprays would be effective against overwintering females.

Numerous miticides are effective against phytophagous mites (Eesa & Moursy, 1990; El-Kady, Heykal, & Nassar, 1977; El-Kady, Nassar, & Heykal, 1977; Hassan *et al.*, 1970; Hill, 1987; Soliman, Zaher, & El-Safi, 1974).

Continual exposure to miticides may produce miticide-resistant races which are difficult to control.

**Physical Control:** The USDA-APHIS *Treatment Manual* mentions a hot-water method for the eradication of mites on chrysanthemum (T201-g-3; USDA-APHIS, 1994).

**Resistance:** There is a possibility that the development and planting of resistant varieties may be helpful.

**Natural Enemies:** Although the flat scarlet mite is *not* the most favored prey, the larvae of *Aelothrips intermedius* were well able to use the stages of the flat scarlet mite (Bournier, Lacasa, & Pivot, 1979).

*Agistemus exsertus* preys on the eggs of the flat scarlet mite (Abou-Awad & El-Sawi, 1993).

In Egypt, *Amblyseius enab* was very active attacking *Cenopalpus pulcher* in apricot orchards (El-Halawany *et al.*, 1990). The predaceous mites *Amblyseius swirskii* and *Pronematus ubiquitous*

appear to play an important part in controlling the numbers of tenuipalps (Zaher, Rasmy, & Abou-Awad, 1971).

In Jammu and Kashmir, *Euseius vignus* feeds on the flat scarlet mite (Rishi & Rather, 1983).

The flat scarlet mite was unsuitable prey for *Phytoseiulus persimilis*, a predatory mite (Rasmy *et al.*, 1991).

The most suitable and preferred prey for *Cheletogenes ornatus* is the eggs and immature stages of the flat scarlet mite (Zaher, Yousef, & Kandil, 1982).

The CABI (2000) Data Sheet lists the following as predators attacking nymphs and adults:

*Aelothrips intermedius*  
*Agistemus exsertus*  
*Amblyseius enab*  
*Amblyseius vignus*  
*Cheletogenes ornatus*  
*Deracoris lutescens*  
*Deracoris pallens*  
*Euseius gossipi*  
*Orius horvathi*  
*Orius laticollis*  
*Orius minutus*  
*Phytoseiulus persimilis*  
*Phytoseiulus finitimus*  
*Stethorus gilvifrons*

#### **PERTINENT POINTS/PREDICTED CONSEQUENCES:**

**Potential Problem in the United States:** The flat scarlet mite appears to be a minor problem in northern Europe. This may be due to one or more of the following reasons:

- A single generation occurs in northern Europe.
- Orchard sprays, such as dormant oil sprays, control any damaging populations.
- Natural enemies effectively control populations.

Presumably, the flat scarlet mite will *not* be a major problem in the northern United States, if biocontrol agents are effective.

Because several generations occur in a year, the flat scarlet mite *may* be a problem in the southern United States, particularly in arid areas. However, standard control measures may be sufficient to control this mite.

**Dispersal by Nursery Stock:** Dispersal by the movement of nursery stock is a distinct possibility (*See Life History*). The means of entry to the United States may have been the movement of infested nursery stock.

**Alternate hosts:** Apparently, a number of species in different families are alternate hosts (*See Hosts*). The numerous alternate hosts would make eradication difficult, if not impossible.

**Disease Transmission:** Some eriophyid mites can transmit viruses that cause plant diseases (Hill, 1994; Oldfield, 1970); some carry fungal spores on their bodies (Hill, 1994). No specific data was found for the flat scarlet mite.

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