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Data Sheets on Quarantine Pests

Trioza erytreae

IDENTITY

Name: *Trioza erytreae* (Del Guercio)
Synonyms: *Spanioza erytreae* Del Guercio
Trioza merwei Pettey
Taxonomic position: Insecta: Hemiptera: Homoptera: Psyllidae
Common names: Citrus psylla (English)
Citrusblattfloh (German)
Bayer computer code: TRIZER
EPPO A1 list: No. 46
EU Annex designation: II/A1

HOSTS

T. erytreae is confined to Rutaceae, occurring on wild hosts (*Clausena anisata*, *Vespris undulata*) as well as on *Citrus*, especially lemons (*C. limon*) and limes (*C. aurantiifolia*). Within the EPPO region the host species are generally confined to countries surrounding the Mediterranean.

GEOGRAPHICAL DISTRIBUTION

The distribution of *T. erytreae* is wider than that of citrus greening bacterium, the major pathogen which it transmits (EPPO/CABI, 1996a), since it occurs in Cameroon, Congo, Malawi, Rwanda, St. Helena, Sudan, Tanzania, Uganda and Zambia where the bacterium has not been recorded.
EPPO region: Portugal (Madeira only; isolated outbreaks first found in 1994).
Asia: Saudi Arabia, Yemen.
Africa: Cameroon, Comoros, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Réunion, Rwanda, South Africa, St. Helena, Sudan, Swaziland, Tanzania, Uganda, Zaire, Zambia, Zimbabwe. The record in Congo which appeared in the previous version of this data sheet (EPPO/CABI, 1992) is a mistake; it correctly refers to Zaire.
EU: Present.
Distribution map: See CIE (1967, No. 234).

BIOLOGY

A bibliography of *T. erytreae* up to 1987 has been compiled by Van den Berg & Fletcher (1988) and a general review has been presented by Van den Berg (1990). *T. erytreae* has a temperature sensitivity similar to that of the African form of citrus greening bacterium (Schwarz & Green, 1970; Catling, 1973). It is very sensitive to extremes of hot, dry weather (the eggs and first instar nymphs being particularly vulnerable). It is favoured in cool, moist areas over500-600 m, where citrus growth flushes tend to be prolonged. Green

& Catling (1971) have used maximum saturation deficit as an accurate predictor of the geographical distribution of *T. erytreae*.

Sex ratios fluctuate in the field, but females always predominate. There is a pre-oviposition period of 3-7 days, but this is considerably extended in the absence of young foliage; longevity is also prolonged under such conditions. Mating occurs 2 to 4 times a day and eggs may be laid immediately. Eggs are supplied with a sharp point which is driven through the leaf epidermis and is thought to be responsible for maintaining a favourable internal water relationship. Females remain fertile for 11-16 days in the absence of males, and maximum egg production occurs towards the middle of their life span, which normally lasts 17-50 days; up to 2000 eggs may be laid per female. There is an incubation period of 6-15 days and nymphal development (five instars) takes 17-43 days, both periods being inversely related to mean temperature and directly related to nutritional value ot the leaves. The temperature threshold for nymphal development is, apparently, around 10-12°C. There is no diapause. Van den Berg *et al*. (1990) have recently studied the daily activities and habits of adults, and egg hatching and moulting, in *T. erytreae*, while Van den Berg *et al*. (1991a) have studied mating, fertility and oviposition.

T. erytreae transmits the African form of citrus greening bacterium under natural conditions in Africa and Yemen (McClean & Oberholzer, 1965). It has been shown experimentally that *T. erytreae* is also able to transmit the Asian form (Massonie *et al*., 1976). In Mauritius and Réunion, where both forms occur, *T. erytreae* probably transmits both.

DETECTION AND IDENTIFICATION

Symptoms

T. erytreae severely distorts leaves, which are stunted and galled, and appear dusted with fecal pellets.

Morphology

Eggs

Orange, cylindrical, with a sharp point anteriorly; laid on leaf margins of young, actively growing foliage.

Nymph

Dorso-ventrally compressed and varying in colour from yellow, olive-green to dark-grey; has a marginal fringe of white, waxy filaments; largely sedentary; forms distinct colonies and settles on the underside of young leaves, where, after a few days' feeding, it produces distinctive cup-shaped, open galls.

Adult

Winged, pale and delicate initially, later becoming light-brown. Males are smaller than females and have a blunt tip to the abdomen, the latter ending in a sharp point in females. When feeding, adults take up a distinctive stance, with the abdomen raised at an angle of about 35° to the feeding surface.

MEANS OF MOVEMENT AND DISPERSAL

T. erytreae is only liable to be locally spread by natural dispersal, up to distances of 1.5 km (Van den Berg & Deacon, 1988). Citrus material (budwood, grafted trees, rootstock seedlings) from infected areas can carry eggs and/or nymphs over longer distances. Such 5th or 6th-instar nymphs, as well as the adults born from nymphs, are capable of transmitting the greening agent to citrus. Entry on citrus fruit is extremely unlikely.

PEST SIGNIFICANCE

Economic impact

The main economic importance of *T. erytreae* is as the vector of the very serious citrus disease caused by citrus greening bacterium (EPPO/CABI, 1996a). Heavy infestations with *T. erytreae* also cause severe leaf distortion and development of conspicuous pits on the leaf surface.

Control

Insecticides such as dimethoate can be used against *T. erytreae*, for which there is an active monitoring programme in orchards in South Africa. *T. erytreae* enters orchards from indigenous hosts in surrounding vegetation (Van den Berg *et al*., 1991b), so it is recommended to remove them. In Réunion, *T. erytreae* has been successfully controlled by the introduction of a parasite, *Tamarixia dryi*, from South Africa (Aubert *et al*., 1980). In South Africa, numerous predators occur but have not been found to reduce populations to economically acceptable levels (Van den Berg *et al*., 1987).

Phytosanitary risk

Like the other vector of citrus greening (*Diaphorina citri*; EPPO/CABI, 1996b), *T. erytreae* is listed as an A1 quarantine pest by EPPO (OEPP/EPPO, 1988) and is also a quarantine pest for CPPC and OIRSA. It could probably establish and spread in Mediterranean countries without difficulty. Besides its role in citrus greening, this psyllid has significant damage potential in itself. Though biological control may be possible, there is no guarantee that it could keep populations to a sufficiently low level to prevent transmission of greening.

PHYTOSANITARY MEASURES

EPPO recommends (OEPP/EPPO, 1990) that importation of plants for planting and cut branches of citrus from countries where citrus greening bacterium or either of its vectors occur should be prohibited. It is possible to fumigate citrus budwood material against *T. erytreae* (FAO, l983).

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