

Mini data sheet on *Thaumatotibia leucotreta*

Thaumatotibia leucotreta was added to the EPPO A2 List in 2013. A full datasheet will be prepared, in the meantime you can view here the data which was previously available from the EPPO Alert List (added to the EPPO Alert List in 2011-deleted in 2013).

Thaumatotibia leucotreta (Lepidoptera: Tortricidae) - False codling moth

Why: *Thaumatotibia* (= *Cryptophlebia*) *leucotreta* has been regularly intercepted by several EPPO member countries. *T. leucotreta* is a significant pest of fruit trees (particularly citrus) and field crops in African countries south of the Sahara. The EPPO Panel on Phytosanitary Measures decided that this pest should be added to the EPPO Alert List.

Where: *T. leucotreta* is thought to originate from the Ethiopian region.

EPPO region: Israel (locally present).

In Israel, it was first found in 1984 on macadamia nuts (a crop which is no longer grown for commercial purposes). In 2003, it was still present but with a limited distribution on cotton and castor bean which are minor crops for Israel (EPPO RS 2003/015). In 2009, an incursion of *T. leucotreta* was detected in the Netherlands on glasshouse *Capsicum chinense*, and subsequently eradicated. Finally, the insect has been occasionally noticed by lepidopterists in several Northern European countries (e.g. the Netherlands, Sweden and the UK) but it is very unlikely that these moths came from established populations.

Africa: Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo (Democratic Republic of), Côte d'Ivoire, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritius, Mozambique, Niger, Nigeria, Reunion, Rwanda, Saint Helena, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

On which plants: *T. leucotreta* is a polyphagous pest which can feed on more than 70 host plants within 40 plant families. It can attack many cultivated and wild fruit species, such as: avocado (*Persea americana*), cacao (*Theobroma cacao*), carambola (*Averrhoa carambola*), citrus species (particularly *C. sinensis* and *C. paradisi* but *C. limon* is considered to be an unsuitable host), coffee (*Coffea* spp.), guava (*Psidium guajava*), litchi (*Litchi sinensis*), macadamia (*Macadamia ternifolia*), peach (*Prunus persica*), pepper (*Capsicum* spp.), persimmon (*Diospyros kaki*), pomegranate (*Punica granatum*). It is also a pest of field crops such as: beans (*Phaseolus* spp.), cotton (*Gossypium hirsutum*), castor bean (*Ricinus communis*), and maize (*Zea mays*).

Damage: Damage is caused by larvae feeding inside fruits, nuts, maize ears or cotton bolls. Feeding damage can also lead to the development of secondary infections by fungi or bacteria. Eggs (whitish, about 0.9 mm long) are laid on the fruit surface, singly or in small numbers. Shortly after hatching, young larvae enter the fruit and feed internally. Young larvae are whitish with a dark brown head, and usually develop through 5 instars. Mature larvae are about 15 mm long, pinkish-red with a brown head. Fully grown larvae emerge from the fruit and pupate in the soil, in a cocoon of silk and soil fragments. Adult moths (7-8 mm long; 15-20 mm wingspan) have variegated brown and grey forewings with a white spot in the centre, while hindwings are light brown to grey. *T. leucotreta* does not undergo diapause or a quiescent period. In most areas of its distribution, the pest is present all year-round with overlapping generations feeding on the available fruits of its wild or cultivated host plants.

On citrus: larvae bore into the albedo and usually feed just below the fruit surface. The rind around the point of infestation turns yellowish-brown as the tissue decays and collapses. Infestations lead to premature fruit drop. The degree of damage is highly variable from orchard to orchard and from season to season, but can reach up to 90%.

On cotton: damage caused by *T. leucotreta* is similar to *Pectinophora gossypiella*. Larvae penetrate cotton bolls, they first mine in the walls of the bolls and then feed on the seeds. Infested bolls are then often invaded by secondary rots. Larval presence is often characterized by the occurrence of a filamentous waxy secretion protruding from the entry hole.

On stone fruits: larvae bore into the fruit at the stem end and begin to feed around the stone. Infestation may be detected by the presence of brown spots and dark brown frass.

Dissemination: Detailed information about the potential for natural spread is lacking but adult moths of *T. leucotreta* are not considered to be strong flyers. It has been observed that populations in the field were generally highly localized. Over long distances, *T. leucotreta* is probably spread by trade of agricultural products. From 2001 to 2010, more than 50 interceptions were reported by several EPPO member countries, mainly on citrus fruits (*Citrus sinensis* and *C. paradisi*) from South Africa. The Dutch NPPO also mentions in its PRA that *T. leucotreta* has been intercepted 4 times on cut flowers of roses (although roses are not considered as host plants) imported from Ethiopia, Tanzania and Uganda. In the USA, *T. leucotreta* has also been repeatedly intercepted at ports of entry in both cargo and passenger luggage. This clearly shows that the pest has the potential to enter the EPPO region however, its potential for establishment remains to be studied.

Pathway: Fruits and vegetables from countries where *T. leucotreta* occurs, soil? As plants for planting are not usually traded with fruits, this pathway seems rather unlikely.

Possible risks: *T. leucotreta* is a polyphagous pest and many of its host plants are economically important crops in the EPPO region (e.g. citrus, fruit trees, maize, capsicum, avocado). In its native area, it has been reported to cause economic damage, in particular on citrus and IPM strategies have been developed to control it. IPM may include: orchard sanitation (removal of infested fruits), mating disruption, chemical control, use of pheromone traps in attract and kill strategies, sterile insect techniques, biological control (e.g. with the egg parasitoid *Trichogrammatoidea cryptophlebiae*). It is noted that chemical control is usually difficult because of the overlapping generations, the fact that larvae live inside fruits, and the risk of resistance development. *T. leucotreta* is a quarantine pest in several countries (e.g. Israel, Jordan, South American countries, USA). For example, cold treatments are required by USA (e.g. -0.5°C or below for 22 days) to eliminate the pest from citrus fruits. The establishment of *T. leucotreta* into new areas would probably trigger restrictions on trade and market losses for the areas concerned. *T. leucotreta* is a tropical/sub-tropical species whose development is limited by cold temperatures. Eggs have been reported to be killed by temperatures below 1°C, and the exposure to temperatures below 10°C reduces survival or development of several life stages, therefore it is unlikely to establish outdoors in Northern Europe. However, further studies are needed to evaluate its potential for establishment in the southern parts of the EPPO region, as this pest may present a risk in particular to citrus-growing countries.

Sources

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