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Data Sheets on Quarantine Pests

Opogona sacchari

IDENTITY

Name: *Opogona sacchari* (Bojer)
Synonyms: *Alucita sacchari* Bojer
Tinea subcervinella Walker
Opogona subcervinella (Walker)
Taxonomic position: Insecta: Lepidoptera: Tineidae
Common names: Banana moth (English)
Teigne du bananier (French)
Traça da banana (Portuguese)
Bayer computer code: OPOGSC
EPPO A2 list: No. 154
EU Annex designation: I/A2

HOSTS

O. sacchari has a wide host range, and is found mainly in the tropics on bananas, pineapples, bamboo, maize and sugarcane, in the field and on various stored tubers. In glasshouses in European countries, it has been found infesting various tropical or subtropical ornamentals, including mainly Cactaceae, *Dracaena*, *Strelitzia* and *Yucca*, but also occasionally *Alpinia*, *Begonia*, *Bougainvillea*, Bromeliaceae, *Chamaedorea* and other palms, *Cordyline*, *Dieffenbachia*, *Euphorbia pulcherrima*, *Ficus*, *Gloxinia*, *Heliconia*, *Hippeastrum*, *Maranta*, *Philodendron*, *Sansevieria* and *Saintpaulia*, and also *Capsicum* and aubergines. In import inspections, it is mainly *Dracaena* and *Yucca* which have been found to be infested.

GEOGRAPHICAL DISTRIBUTION

O. sacchari originates in the humid tropical and subtropical regions of Africa, where it is not a significant pest. It first attracted attention as a serious pest on bananas in the Canary Islands in the 1920s. In the 1970s, it was introduced into Brazil and Central America, and also started to appear in the EPPO region (see below).
EPPO region: Denmark (under glass), Italy (since the 1970s, fairly widely established in glasshouses in the south; Carrai & Loi, 1987; EPPO Reporting Service No. 487), Netherlands (under glass), Poland (under glass), Portugal (Azores, Madeira), Spain (Canary Islands), Switzerland. Outbreaks in other European countries (France, Germany, Greece (Mourikis & Vassilaina-Alexopoulou, 1981), UK) have been eradicated. Intercepted in Belgium, Finland and Sweden.
Asia: Perez-Padron & Carnero-Hernandez (1984) refer to introduction of *O. sacchari* into the Canary Islands from southern China, early in the 19th century. No other recent publication suggests that the pest is present in Asia, so this record should probably be considered unconfirmed.

Africa: Widespread in sub-Saharan Africa; also Madagascar, Mauritius, Réunion, Rodrigues Island, Seychelles and St. Helena.
North America: Bermuda, USA (Florida, since 1986; Heppner *et al.*, 1987).
Central America and Caribbean: Barbados. Generally widespread in Central America and the Caribbean. Introduced in the 1970s.
South America: Brazil (São Paulo).
EU: Present.

BIOLOGY

At 15°C, the life cycle of *O. sacchari* lasts approximately 3 months: eggs hatch in 12 days; larval development requires 50 days; the pupal stage lasts 20 days; the adult lives 6 days (Veenenbos, 1981). This period may be considerably reduced under warmer conditions, allowing up to eight generations per year (Giannotti *et al*., 1977; Heppner *et al*., 1987). The female lays eggs in crevices in plant tissue, in groups of about five eggs, 50-200 in total, by means of a long ovipositor. The larvae, which burrow in the plant tissue, are extremely mobile and avoid light. They are very voracious.

In banana, the fruiting head is normally infested (Suplicy & Sampaio, 1982), but in ornamental plants the larvae mostly burrow in the stem (woody or fleshy plants like cacti, *Dracaena*) or sometimes leaves and petioles (*Begonia, Saintpaulia*). Seedlings may be severely attacked (Aguilar & Martinez, 1982).

As a tropical pest, *O. sacchari* cannot apparently survive outdoor conditions in winter over most of the EPPO region. Its presence in the Atlantic Islands of Portugal and Spain suggests that it might survive in parts of the Iberian peninsula and North Africa. Billen (1987) has reviewed the taxonomy, biology, distribution and control of *O. sacchari* and refers to the existence of several species with similar biology in Africa, possibly to be regarded as members of the same complex.

DETECTION AND IDENTIFICATION

Symptoms

The early stages of larval tunnelling in woody or fleshy stems are practically undetectable. At a later stage, fleshy plants (cacti) may be completely hollowed out. In woody plants such as *Dracaena* and *Yucca* the larvae live on dead and living portions of the cortex and pith, and infested tissues may feel soft. Leaves wilt because the caterpillars destroy the xylem, and, in an advanced stage, leaves may fall and the plant may collapse. In *Chamaedorea* palms, the larvae typically feed at the base of the plant where the aerial roots enter the soil (Heppner *et al*., 1987).

Morphology

Larva

The larvae, dirty-white and somewhat transparent (so that the intestines can be seen), have a bright reddish-brown head with one lateral ocellus at each side and clearly visible brownish thoracic and abdominal plates. They typically measure 21-26 mm in length with a diameter of 3 mm. The presence of older larvae can be detected by characteristic masses of bore-meal and frass at the openings of bore-holes.

Pupa

The pupae are brown and less than 10 mm long and are formed in a cocoon, spun at the end of a mine, measuring 15 mm. As maturation approaches, the pupae work themselves partially out of the tissue to allow emergence of the adult. Two bent hooks, characteristic of the species, show at the end of the abdomen on the abandoned protruding pupal skin.

Adult

The adult is nocturnal, 11 mm long with a wingspan of 18-25 mm, bright yellowish-brown. The forewings may show longitudinal darker brown banding, and in the male a dark-brown spot towards the apex. The hindwings are paler and brighter (Süss, 1974; Aguilar & Martinez, 1982). At rest, the long antennae point forwards.

MEANS OF MOVEMENT AND DISPERSAL

O. sacchari can disperse itself by flight within glasshouses or over short distances in the field. In international trade it is liable to be carried in propagation material of host plants, for example cuttings of *Dracaena*. Although there is some risk of the pest being present in imported banana fruits, there is very little chance that this pathway could lead to establishment in glasshouses.

PEST SIGNIFICANCE

Economic impact

O. sacchari is a serious pest of bananas in the Canary Islands and Brazil (Sampaio *et al*., 1983). Though widespread in Africa, its impact is relatively minor there since bananas are not a major export crop. It has not been recorded in North Africa, and could be a threat to the increasing production of bananas under polythene in Morocco and Spain. Elsewhere in the EPPO region, it presents a risk principally for woody or perennial ornamentals grown in glasshouses, and could not survive outdoors.

Control

Eradication by chemical treatment and sanitation has proved possible in several northern European countries, but not in Italy, where the pest is established in greenhouses. The adult moths can be controlled by fogging with permethrin (two or three times per week, for 4 weeks) or by placing dichlorvos strips (one strip per 30 m^3, for 3 months). The aim is to kill all adults before they can lay eggs. When an affected greenhouse is cleared and replanted, the soil should be steamed (or removed) to eliminate any residual pupae. Billen (1987) has reviewed the chemical control methods tried out in greenhouses in various European countries. Sex pheromones are under study in Italy (Rotundo & Tremblay, 1982).

Phytosanitary risk

O. sacchari, originally on the EPPO A1 list (OEPP/EPPO, 1988), has been on the A2 list since its establishment in Italy. CPPC and NAPPO also regard it as a quarantine pest. It is a troublesome greenhouse pest which should not be allowed to establish in new areas; fortunately, it can be controlled and has not yet established outdoors.

PHYTOSANITARY MEASURES

O. sacchari is difficult to intercept at import inspection. The EPPO specific quarantine requirement is still under study. Fumigation is liable to cause problems with phytotoxicity, but has been used for unrooted *Dracaena* canes (48 g/m^3 methyl bromide for 2 h; OEPP/EPPO, 1984). Imported planting material should preferably come from glasshouses where the pest is absent, or treated against, and should be kept under supervision after import. Eradication (by a 3-month insecticide treatment programme - see Pest significance above) has proved possible in some situations but is costly and troublesome. Banana fruit constitutes a very minor risk.

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