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EPPO *Reporting Service*

94/106 EPPO...EPPO information services

The EPPO Secretariat proposes two novelties:

1. Reporting Service on diskette

The EPPO Panel on Plant Quarantine Information supposes that many Reporting Service subscribers may prefer to receive the publication on diskette in Word 5 and the EPPO Secretariat may offer it in this form (see enclosed registration form to be returned to EPPO as soon as possible). Subscribers on diskette are expected to print the text out for themselves, using whatever page formatting is convenient. It may be noted that the EPPO Panel also proposes a shift in emphasis of items in the Reporting Service (more shorter items, from a wider range of sources), which will be more easily handled on diskette.

2. EPPO now on INTERNET

EPPO now has an e-mail address on INTERNET: messages can be sent to the EPPO Secretariat at:

hq@eppe.fr

Very soon, we shall be able to supply:

the Reporting Service on INTERNET

Wait for the announcement !

Source: EPPO Secretariat (1994-05).



EPPO Reporting Service

94/107

THRIPL/NL...New findings of *Thrips palmi* in the EU (The Netherlands)

The EPPO Secretariat has recently been informed by the Dutch Plant Protection Service that *Thrips palmi* (EPPO A1 quarantine pest) has again been found in two firms in the Netherlands. The first focus was discovered on a lot of *Ficus* plants imported from Guatemala. An extensive survey was then carried out in glasshouses importing plants from Guatemala, and a second infestation was found in a firm which has also imported *Ficus* from the same company in Guatemala. No further infestation of *T. palmi* has been found. Therefore, the Dutch Plant Protection Service assumes that these findings are the only two foci in the country and that they result directly from recent imports from Guatemala. This assumption is also supported by the intensive surveys which have been carried out since the previous infestation of *T. palmi* (EPPO RS no. 93/017) which was successfully eradicated (EPPO RS no. 93/079).

The Dutch Plant Protection Service has set up an eradication programme. The two infested sites are now placed under official control and no material is allowed to move from them. Chemical treatments (combination of imidacloprid with other insecticides) are being applied. In addition, the Plant Protection Service is now considering taking additional measures for imports of *Ficus* from Guatemala, as *T. palmi* represents a major risk for the crops of the EPPO region. It may be noted that Guatemala has declared that *T. palmi* does not occur (EPPO RS no. 94/015). With all these measures, the Dutch Plant Protection Service is convinced that it will be possible to eradicate *T. palmi* from the Netherlands.

Source: Dutch Plant Protection Service, (1994-05)

Additional key words: new record.



EPPO *Reporting Service*

94/108 **THRIPL/US...Doubtful records of *Thrips palmi* in North America**

In the EPPO Reporting Service no. 94/057, a reference was made to new occurrences of *Thrips palmi* (EPPO A1 quarantine pest) in Bermuda, California and Texas, mentioned in the journal of the Mexican Plant Protection Service "Boletin Fitosanitario". The EPPO Secretariat has made further enquiries and USDA has answered that *T. palmi* has not been reported and is not present in California and Texas. It stated that, in USA, *T. palmi* occurs only in Florida and Hawaii. Concerning, its occurrence in Bermuda, no further information has been given yet.

Source: EPPO Secretariat, (1994-05)

Additional key words: denied record.



EPPO *Reporting Service*

94/109 INTERCEPTIONS/FR...Interceptions of fruit flies in France

The French Plant Protection Service has informed EPPO that during the period 1993-09 - 1994-01, 11 consignments of fruits from Indonesia, French Polynesia, Kenya and Mexico were intercepted due to the infestations by various *Anastrepha* and *Bactrocera* fruit flies (EPPO A1 quarantine pests).

- Four consignments of mangoes (total 4663 kg) from Indonesia were infested by *Bactrocera* sp.
- Two consignments of guavas (total 75 kg) from Indonesia were infested by *Bactrocera* sp.
- One consignment of mangoes (total 45 kg) from Kenya was infested by *Bactrocera* sp.
- One consignment of mangoes (total 15 kg) from Tahiti was infested by *Bactrocera* sp.
- Two consignments of mangoes (total 525 kg) from Mexico were infested by *Anastrepha obliqua*.
- One consignment of *Citrus paradisi* (total 10784 kg) from Mexico was infested by *Anastrepha* sp.

Source: French Plant protection Service, (1994-03)



EPPO Reporting Service

94/110

RHAGCO/RHAGIN/CH...Update on the occurrence of
Rhagoletis completa and *Rhagoletis indifferens* in Switzerland

At the second EPPO Workshop on Pest Risk Assessment of non-European fruit flies held in Paris on 1994-03-28/29 further information on the occurrence of *Rhagoletis completa* and *R. indifferens* (both EPPO A1 quarantine pests) was given to the participants. According to R. Mani of the Swiss Plant Protection Service, *R. completa* was found for the first time in 1991 in Ticino. Subsequently the distribution of this pest was monitored by the evaluation of trap catches from 20 localities in the Canton of Ticino and at the international airports of the country. It was found that *R. completa* is relatively widely distributed in the Canton and that it can be located in the regions of Locarno, Lugano and Chiasso in relatively high numbers. In 1991, nearly 2 600 individual walnut husk flies were caught on yellow sticky traps up to 1200 m altitude. Swiss authorities believe that the pest has established in Ticino and that eradication is not feasible.

In contrast, *R. indifferens*, found also in 1991, has been trapped only in very low numbers mainly around Lugano, but not in Chiasso and Locarno. It is planned to place traps with a higher density in the region in order to detect the extent of the distribution and the density of the populations. The result of these investigations will be the basis of possible decisions by the Swiss authorities to eradicate *R. indifferens*. Low population densities in the region are partly attributed to the enormous competition of the species with *R. cerasi*, a fruit fly widely distributed in the region.

Source: EPPO Secretariat, Paris (1994-03)

Additional key words: detailed record.

94/111

RHAGCO/IT...Update on the occurrence of *Rhagoletis completa* in the EU (Italy)

Rhagoletis completa (EPPO A1 quarantine pest) is present in Italy as reported in the EPPO Reporting Service 93/210 (1993, No. 11). The walnut husk fly can be found in Northern Italy in the areas of Milano, Varese, Pavia, Novara and Sondrio. According to reports walnut fruits were up to 50% infested by the fruit fly in some orchards. Beside the records from Piemonte and Lombardia the pest can be also found, as reported earlier, in Friuli-Venezia Giulia in the area of Treviso.

Source: Ciampolini, M.; Trematerra, P. (1992) Diffusa presenza di mosca delle noci (*Rhagoletis completa*) nel nord Italia. L'Informatore Agrario 48, 1992, 52-56

Additional key words: detailed record.



EPPO *Reporting Service*

94/112 DACUCU...Age-related response of *Bactrocera cucurbitae* to Cue-lure

Experiments were carried out in Hawaii, US, in order to investigate the influence of fruit fly age on the response of *Bactrocera cucurbitae* (EPPO A1 quarantine organism) to the pheromone trapping substance Cue-lure. It was found that the response to Cue-lure of wild strains and laboratory strains of the fruit fly was strongly influenced by the age of the male flies. The response of males increased with age and corresponded to insects reaching sexual maturity for each strain. Females were relatively non-responsive. The authors concluded that the failure to eradicate *B. cucurbitae* in previous male annihilation programmes may be explained in part by the fact that only older males, which may have already mated, respond to Cue-lure.

Source: Wong, T.T.Y.; McInnis, D.O.; Ramadan, M.M.; Nishimoto, J.I. (1991)
Age-related response of male melon flies *Dacus cucurbitae* to Cue-lure.
Journal of Chemical Ecology 17, 2481-2487.

Additional key words: behaviour.



EPPO Reporting Service

94/113 DACUZO...Biology of *Bactrocera zonata* in India

The biology of *Bactrocera zonata* (EPPO A1 quarantine pest) was studied in India with pupae of fruit flies collected from infested guava fruits (*Psidium guajava*). In the laboratory at $28 \pm 2^\circ \text{C}$ and 70% relative humidity, the pre-oviposition, oviposition and post-oviposition periods of *B. zonata* were 15.2, 14.8 and 28.3 days, respectively. The egg, larval and pupal periods were 2.6, 9.4 and 8.4 days, respectively and the longevity of male and female adults was 44.3 and 58.2 days, respectively. Greatest infestations in the orchards were recorded when the temperature and the relative humidity were $26-30^\circ \text{C}$ and 70-75%.

Source: Rana, J.S.; Parkash, O.; Verma, S.K. (1992) Biology of guava fruit fly infesting guava fruits in Haryana and influence of temperature and relative humidity on its incidence.
Crop Research (Hisar) 5, 525-529.

94/114 DACUZO...EPPO Distribution List for *Bactrocera zonata*

As new information concerning the occurrence of *Bactrocera zonata* (EPPO A1 quarantine pest) in Bangladesh, Indonesia, Myanmar and Pakistan has been received for the latest update of the PQR data base, the distribution list of this fruit fly is now the following:

EPPO Distribution List: *Bactrocera zonata*

EPPO region: Absent

Asia: Bangladesh, India, Indonesia, Lao, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam.

Africa: Adventive population in Mauritius.

North America: Trapped in USA (California) (Carey & Dowell, 1989), but eradicated (Spaugy, 1988).

This distribution list replaces all previous published EPPO Distribution Lists on *Bactrocera zonata* !

Source: EPPO Secretariat, Paris (1994-04)



EPPO *Reporting Service*

94/115

DACUTR...Quarantine treatment of avocados against
Bactrocera tryoni

Studies conducted in Australia have shown that a quarantine treatment combining hot fungicide dip followed by cold storage could eliminate *Bactrocera tryoni* (EPPO A1 quarantine pest) on avocados. Avocados (*Persea americana* cv. Hass) artificially infested with immature stages of *B. tryoni* were dipped for 3 min in 500 ppm benomyl at 46 °C, allowed to dry and then stored at 1.0 ± 0.2 °C. During these experiments it was found that the third larval instars were the most tolerant to the treatment. However, none of the > 200.000 third instars infesting avocados survived to pupation after hot fungicide dip and storage at 1 °C for 15.63 days. The author felt that such a treatment which can be used for quarantine purposes and which allows extension of the storage period of avocados could easily be applied during refrigerated sea freight in transit.

Source: Jessup, A.J. (1994) Quarantine disinfestation of 'Hass' avocados against *Bactrocera tryoni* (Diptera: Tephritidae) with a hot fungicide dip followed by cold storage.
Entomological Society of America, 87 (1), 127-130.

Additional key words: phytosanitary procedure, hot water treatment.



EPPO *Reporting Service*

94/116 ANSTSU...Quarantine treatment for grapefruit against
Anastrepha suspensa found phytotoxic

The previously recommended hot water immersion quarantine treatment for grapefruit (*Citrus paradisi*) against *Anastrepha suspensa* (EPPO A1 quarantine pest) was investigated in respect to its phytotoxicity. Studies carried out in Florida, US, showed that hot water immersion of freshly harvested fruit is phytotoxic to the peel and decreasing peel resistance to penicillium infection after treatment and storage. The authors concluded that hot water immersion at 43.5° C for 4 h was too phytotoxic to serve as an effective quarantine treatment.

Source: Miller, W.R.; McDonald, R.E.; Hatton, T.T. (1989) Phytotoxicity to grapefruit exposed to hot water immersion treatment.
Proceedings of the Florida State Horticultural Society, 101, 192-195.

Additional key words: ineffective treatment, hot water treatment, phytosanitary procedure.



EPPO *Reporting Service*

94/117 ANSTSU...Quarantine treatment against *Anastrepha suspensa* on grapefruit

Experiments carried out in Florida (US) have allowed the development of a forced hot-air quarantine treatment to kill eggs and larvae of *Anastrepha suspensa* (EPPO A1 quarantine pest) on grapefruit (*Citrus paradisi* cv. Marsh White). A forced hot air treatment, applied over the surface of grapefruits, at 48 ± 0.3 °C during at least 150 min is necessary to heat the centre tissues at a temperature ≥ 44 °C, in order to eliminate eggs and larvae of *A. suspensa* and ensure quarantine security (probit 9). In addition, the effect of hydrocooling which is a procedure used by the industry in order to reduce the temperature of the fruits after a hot treatment (by water spray or immersion), was studied. The aim of hydrocooling is to delay fruit decay, to reduce surface scald, bronzing and pitting ; however, this treatment may also increase the number of fruit fly survivors. Further studies were then carried out, and the authors have found that if grapefruits were heated to 44.45 °C at the centre and then immersed in 10 °C water, the treatment was still effective for quarantine purposes.

Sources: Sharp, J.L.; Gould, W.P. (1994) Control of Caribbean fruit fly (Diptera: Tephritidae) in grapefruit by forced hot air and hydrocooling.
Entomological Society of America, 87 (1), 131-133.

Sharp, J.L. (1993) Hot-air quarantine treatment for 'Marsh' with grapefruit infested with Caribbean fruit fly (Diptera: Tephritidae).
Entomological Society of America, 86 (2), 462-464.

Additional key words: phytosanitary procedure.



EPPO *Reporting Service*

94/118 ANSTSU...Quarantine treatment of carambolas against
Anastrepha suspensa

In Florida, US, gamma irradiation was studied in relation to its potential to be used as a quarantine treatment for carambolas (*Averrhoa carambola*) against *Anastrepha suspensa* (EPPO A1 quarantine pest). Over 100000 immature fruit flies infesting carambolas were subjected to a 50 Gy ionizing gamma radiation which resulted in no survivors and fulfilled the probit 9 security level. The dose did not cause any observable damage to the fruits.

Source: Gould, W.P.; von Windeguth, D.L. (1991) Gamma irradiation as a quarantine treatment for carambolas infested with Caribbean fruit flies. **Florida Entomologist 74, 297-305.**

Additional key words: phytosanitary procedure.



EPPO *Reporting Service*

94/119 **ANSTSP...Baiting *Anastrepha* fruit flies in Mexico**

Experiments were carried out in Mexico to investigate the effect of decomposition time of fruit fly baits on the number of *Anastrepha* spp. (EPPO A1 quarantine pests) caught in McPhail traps. During the experiments a total of 1939 fruit flies were caught with a relative abundance of *A. ludens* (66.5%), *A. obliqua* (31.6%), *A. serpentina* (1.5%), *A. distincta* (0.02%) and *A. fraterculus* (0.05%). The highest number of fruit flies was caught using baits with 10 days decomposition time while the author concluded that baits with 7 days decomposition time are rather unattractive.

Source: Malo, E.A. (1992) Effect of bait decomposition time on capture of *Anastrepha* fruit flies.
Florida Entomologist 75, 272-274.

Additional key words: *Anastrepha distincta*, *Anastrepha fraterculus*, *Anastrepha ludens*, *Anastrepha obliqua*, *Anastrepha serpentina*.



EPPO *Reporting Service*

94/120

ANSTST...Behaviour of *Anastrepha striata*

In Costa Rica investigations on the behaviour of *Anastrepha striata* (EPPO A1 quarantine pest) collected from guava plantations were carried out. Oviposition occurred on five fruit species. Guava (*Psidium guajava*) and *Psidium friedrichsthalianum* were the most attractive to oviposition by the fruit fly (100%) while on mango and avocado no oviposition occurred. Adult activity was highest between 9:00 and 14:00 h when light intensity was high and decreased under cloudy and cold (18° C) or too warm (28° C) temperatures.

Source: Nielsen, R.M. (1989) Preliminary notes on the behaviour of adult fruit flies *Anastrepha striata* under laboratory conditions.
Brenesia No.032, 27-31.

Additional key words: biology.



EPPO *Reporting Service*

94/121 ALECWO...Eggs of *Aleurocanthus woglumi* parasitic to citrus leaves

The egg biology of *Aleurocanthus woglumi* (EPPO A1 quarantine pest) was investigated in India. The citrus blackfly laid eggs on the underside of young leaves of citrus and the eggs were attached to the leaves by stalks which were inserted into the stomata and blocked them permanently. Older leaves which are less turgid and succulent have a negative effect on egg hatchability. The author concluded that the eggs require water and nutrition from the leaves and that stomatal activity, moisture content, turgidity and succulence are ideal in young leaves that are selected for oviposition. The eggs are, according to the author, parasitic on citrus leaves and their stalks carry water and nutrients from the leaves to the eggs.

Source: Katole, S.R. (1992) Scanning egg biology of Citrus blackfly. *Bioved* 3, 199-204.

94/122 ALECWO...*Aleurocanthus woglumi* found in Puerto Rico

Aleurocanthus woglumi (EPPO A1 quarantine pest) has been found in Puerto Rico. The citrus blackfly attacks limes (*Citrus aurantifolia*) and mangoes (*Mangifera indica*) in the country. Several natural enemies of *A. woglumi* have also been recorded in Puerto Rico.

Source: Medina-Gaud, S.; Segarra-Carmona, A.E.; Franqui, R.A. (1991) The citrus blackfly, *Aleurocanthus woglumi* Ashby, in Puerto Rico. *Journal of Agriculture of the University of Puerto Rico* 75, 301-305.

Additional key words: new record.



EPPO *Reporting Service*

94/123 ALECWO...EPPO Distribution List for *Aleurocanthus woglumi*

Due to the new record of *Aleurocanthus woglumi* (EPPO A1 quarantine pest) in Puerto Rico the distribution of this pest has to be extended.

EPPO Distribution List: *Aleurocanthus woglumi*

A. woglumi originates in south-east Asia and has spread widely in tropical and subtropical regions.

EPPO region: Absent. Previously erroneously thought to occur in Tunisia (OEPP/EPPO, 1979); a record from Portugal has never been confirmed.

Asia: Bangladesh, Bhutan, China, Hong Kong, India, Indonesia, Iran, Kampuchea, Korea Democratic People's Republic, Korea Republic, Lao, Malaysia, Myanmar, Nepal, Oman, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, United Arab Emirates, Vietnam, Yemen.

Africa: Kenya, Seychelles, South Africa, Swaziland, Tanzania, Uganda, Zimbabwe.

North America: Bermuda, Mexico, USA (Florida, Hawaii, Texas).

Central America and Caribbean: Bahamas, Barbados, Belize, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Guatemala, Haiti, Jamaica, Netherlands Antilles, Nicaragua, Panama, Puerto Rico.

South America: Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela.

Oceania: Papua New Guinea, Solomon Islands.

It must be noted that the statement of the presence of *A. woglumi* in the EC, to be found in the book "Quarantine Pests for Europe" page 23, is an error!

This distribution list replaces all previous published EPPO Distribution Lists on *Aleurocanthus woglumi* !

Source: EPPO Secretariat, Paris (1994-04)



EPPO *Reporting Service*

94/124

PRABMY...Biology and biological control of *Parabemisia myricae* in Cyprus

Studies on the biology and biological control of *Parabemisia myricae* (EPPO A2 quarantine pest) have been carried out in Cyprus. Observations during 1987-1988 showed that the pest had a maximum of 9 generations per year and overwintered at an early larval stage. Pest populations were greater in spring and autumn than in summer and winter. The parasitoid *Eretmocerus* sp. had the highest impact on the pest reducing the pest population by nearly 90% in 1988.

Source:

Orphanides G.M. (1991) Biology and biological control of *Parabemisia myricae* in Cyprus.
Technical Bulletin of the Cyprus Agricultural Research Institute No.: 135, 6 pp.



EPPO *Reporting Service*

94/125 IPXCA/IPXSP...Taxonomy of *Ips calligraphus*

In Canada a review of the taxonomy of the *Ips calligraphus* (EPPO A1 quarantine pest) group was carried out. According to the authors 4 taxa can be separated within the Calligraphus species group of the genus Ips according to karyological, morphological and ecological characteristics as well as breeding experiments and their distributions:

Ips calligraphus calligraphus occurs in the eastern USA and adjacent parts of Canada.

I. c. ponderosae occurs in the range of *Pinus ponderosa* in the Black Hills (South Dakota, US), eastern Rocky Mountains and in the northern Sierra Madre Oriental in Mexico.

I. c. interstitialis occurs in the Caribbean Archipelago but the homogeneity of populations on the islands of Hispaniola (Haiti and Dominican Republic) and Jamaica and the true type locality are uncertain.

Ips apache sp. nov. infests various pines at lower altitudes from southeastern Arizona (US) through Mexico. Populations south of the Isthmus of Tehuantepec in Caribbean pines (*Pinus caribaea*) on the east coast of Central America are provisionally considered by the authors to be *I. apache*.

Source: Lanier, G.N.; Teale, S.A.; Pajares, J.A. (1991) Biosystematics of the genus Ips in North America: review of the *Ips calligraphus* group. **Canadian Entomologist** 123, 1103-1124.

Additional key words: *Ips calligraphus* group, *Ips calligraphus calligraphus*, *Ips calligraphus ponderosae*, *Ips calligraphus interstitialis*, *Ips apache*, new record.



EPPO *Reporting Service*

94/126 EPPO/IPSXCA...EPPO Distribution List for *Ips calligraphus*

Due to the new records of *Ips calligraphus* in Dominican Republic, Haiti, Jamaica and Mexico, its distribution list has to be modified as follows.

EPPO Distribution List: *Ips calligraphus*

EPPO region: Absent

Asia: Philippines (Browne, 1979), probably imported with plants or seeds from Central America.

North America: Canada (eastern parts of Canada adjacent to USA), Mexico (northern Sierra Madre Oriental), USA (eastern Rocky Mountains, Southeastern Arizona, Black Hills in South Dakota).

Central America and Caribbean: Central America generally, Cuba, Dominican Republic, Jamaica, Haiti, West Indies.

This distribution list replaces all previous published EPPO Distribution Lists on *Ips calligraphus* !

Source: EPPO Secretariat (1994-06).



EPPO *Reporting Service*

94/127 CERAUL...Cost-Benefit analysis for Dutch elm disease
(*Ophiostoma ulmi*) in Manitoba, Canada.

A cost-benefit analysis of Manitoba's integrated Dutch elm disease management programme, between 1975-90, has been carried out in Canada. Since 1981 Manitoban authorities spent an average of 1.5 million CAD per year to keep the disease incidence under 2.5%. An increase of the annual loss rate by a few percentage points would translate directly into costs of 22.3 million CAD for elm removal, 21 million CAD for replacement trees, a decline in real estate value and a near complete loss of the urban forests in many towns and cities. The province of Manitoba has realized a minimum of savings of 5.01 million CAD since 1981 by managing Dutch elm disease. Implementation of buffer zones around selected communities has significantly reduced urban elm losses.

Source: Westwood, A.R. (1991) A cost-benefit analysis of Manitoba's integrated Dutch elm disease management program 1975-1990.
 Proceedings of the Entomological Society of Manitoba No. 47, 44-59.



EPPO *Reporting Service*

94/128

QUADPE...Post-harvest control of *Quadraspidiotus perniciosus* on stored apples

In Canada investigations were carried out to study the post-harvest control of *Quadraspidiotus perniciosus* (EPPO A2 quarantine pest) in stored apples by subjecting the infested apples to controlled atmospheres. Infested fruits were stored in a regular controlled atmosphere (2.6-3.0% O₂ & 2.4-2.5% CO₂) and in a low-oxygen controlled atmosphere (1.5-1.7% O₂ & 1.0-1.1% CO₂) at 1° or 3° C for 31-34 weeks, plus an additional week at 20° C and 50-60% relative humidity. In both treatments, San Jose scale was completely eliminated from infested fruits.

Source: Chu, C.L. (1992) Postharvest control of San Jose scale on apples by controlled atmosphere storage.
Postharvest Biology and Technology 1, 361-369.