Prepared by CABI and EPPO for the EU
under Contract 90/399003

Data Sheets on Quarantine Pests

Rhagoletis ribicola

IDENTITY

Name: *Rhagoletis ribicola* Doane
Taxonomic position: Insecta: Diptera: Tephritidae
Common names: Dark currant fly (English)
Bayer computer code: RHAGRI
EU Annex designation: I/A1

HOSTS

R. ribicola attacks *Ribes* spp., especially gooseberries (*R. uva-crispa*) and red currants (*R. rubrum*) (Bush, 1966), which would be the significant hosts in the EPPO region.

GEOGRAPHICAL DISTRIBUTION

EPPO region: Absent.
North America: Canada (British Columbia), USA (California, Colorado, Idaho, Montana, New Mexico, Oregon, Washington, Wyoming).
Distribution map: See Foote *et al.* (1993).
EU: Absent.

BIOLOGY

Eggs are laid below the skin of the host fruit and hatch after 3-7 days. The larvae usually feed for 2-5 weeks. Pupariation is in the soil under the host plant and this is the normal overwintering stage. Adults may live for up to 40 days under field conditions (Christenson & Foote, 1960).

DETECTION AND IDENTIFICATION

Symptoms

Attacked fruit will be pitted by oviposition punctures, around which some discoloration usually occurs.

Morphology

Larva

See Phillips (1946).

Adult

Colour: Scutum not marked with yellow and black patches; scutellum entirely cream to yellow; if scutellum marked with black, the black areas are confined to the base and lateral areas; wing with a pattern of yellow or brown crossbands.

Head: Three pairs of frontal setae; genae usually less than one-quarter eye height; ocellar setae long, usually similar in length and strength to orbital setae; two pairs of orbital setae; 1st flagellomere usually with a small antero-apical point.
Thorax: Scutum predominantly black, with two or four longitudinal bars of tomentum that form grey stripes; scutum with dorsocentral setae based close to a line between the anterior supra-alar setae; scutum with dorsocentral setae and presutural supra-alar setae; anatergite without long pale hairs, at most with a fine pubescence; scutellum flat and with four marginal setae (one basal and an apical pair), marked black at sides and in base half, with basal and lateral black areas broadly joined.
Wing: Vein Sc abruptly bent forward at nearly 90°, weakened beyond this bend and ending at subcostal break; vein R1 with dorsal setulae; vein R4+5 usually without dorsal setulae, except sometimes at the base of the vein (except in some aberrant individuals); apex of vein M meeting C with a distinct angle; cup extension short, never more than one-fifth as long as vein A1+Cu2, and vein CuA2 straight along anterior edge of cup extension; cell cup always considerably broader than half depth of cell bm, and usually about as deep as cell bm. Cells r1 and r2+3 without any markings between the discal and preapical crossbands; preapical crossband crossing the wing transversely; apical crossband separated from vein C leaving a hyaline margin at least across the apices of veins R2+3 and R4+5. Length 2-3 mm.
Abdomen: Predominantly black, female with an ovipositor that is shorter than the wing length, and straight.

Detection and inspection methods

Traps already in use within the EPPO region for *R. cerasi* should be suitable for monitoring any invasion of North American *Rhagoletis* spp. They capture both sexes and are based on visual, or visual plus odour, attraction. They are coated in sticky material. Traps are usually either flat-surfaced and coloured fluorescent yellow to elicit a supernormal foliage response, or spherical and dark-coloured to represent a fruit; traps which combine both foliage and fruit attraction can also be used. The odour comes from protein hydrolysate or other substances emitting ammonia, such as ammonium acetate. See Boller & Prokopy (1976) and Economopoulos (1989) for a discussion of these traps.

MEANS OF MOVEMENT AND DISPERSAL

Adult flight and the transport of infected fruits are the major means of movement and dispersal to previously uninfected areas. In general, *Rhagoletis* spp. are not known to fly more than a short distance. In international trade, the major means of dispersal to previously uninfested areas is the transport of fruits containing live larvae. There is also a risk from the transport of puparia in soil or packaging with plants which have already fruited.

PEST SIGNIFICANCE

Economic impact

R. ribicola has not been reported as a pest for over 50 years; the last reference mentioning damage is Jones (1937).

Control

Control procedures already established in the EPPO region for *R. cerasi* are similar to those used against the North American pest species and could therefore be implemented against any outbreak of those species within the EPPO region. Upon detection, fallen and infected fruit must be removed and destroyed. If possible, wild and abandoned host trees should

also be destroyed. Boller & Prokopy (1976) note that systemic organophosphates, such as dimethoate, are highly effective against most species, killing eggs, larvae and adults. Recently, Belanger *et al.* (1985) discussed the use of pyrethroids, but these were only of use when pest activity was low. More environmentally acceptable techniques have been tried; namely bait sprays (insecticide plus ammonia source) which can be applied as a spot treatment; soil application of insecticide to destroy pupae; and juvenile hormone analogues which can be applied to the soil (Boller & Prokopy, 1976).

Phytosanitary risk

The EPPO A1 quarantine list category "non-European Trypetidae" (OEPP/EPPO, 1983) used to include *R. ribicola*, but in a recent revision this species was not considered to deserve individual mention. *R. ribicola* has not recently been rated as a pest in *Ribes.* It seems of very minor importance (see also *Euphranta canadensis*; EPPO/CABI, 1996a).

PHYTOSANITARY MEASURES

If this species is considered to merit specific phytosanitary measures, an approach equivalent to that for *R. mendax* (EPPO/CABI, 1996b) would certainly be sufficient.

BIBLIOGRAPHY

Belanger, A.; Bostanian, N.J.; Rivard, I. (1985) Apple maggot (Diptera: Trypetidae) control with insecticides and their residues in and on apples. *Journal of Economic Entomology* **78**, 463-466.

Boller, E.F.; Prokopy, R.J. (1976) Bionomics and management of *Rhagoletis*. *Annual Review of Entomology* **21**, 223-246.

Bush, G.L. (1966) The taxonomy, cytology and evolution of the genus *Rhagoletis* in North America (Diptera: Tephritidae). *Bulletin of the Museum of Comparative Zoology* **134**, 431-526.

Christenson, L.D.; Foote, R.H. (1960) Biology of fruit flies. *Annual Review of Entomology* **5**, 171-192.

Economopoulos, A.P. (1989) Control; use of traps based on color and/or shape. In: *World Crop Pests 3(B). Fruit flies; their biology, natural enemies and control* (Ed. by Robinson, A.S.; Hooper, G.), pp. 315-327. Elsevier, Amsterdam, Netherlands.

EPPO/CABI (1996a) *Euphranta canadensis*. In: *Quarantine pests for Europe*. 2nd edition (Ed. by Smith, I.M.; McNamara, D.G.; Scott, P.R.; Holderness, M.). CAB INTERNATIONAL, Wallingford, UK.

EPPO/CABI (1996b) *Rhagoletis mendax*. In: *Quarantine pests for Europe*. 2nd edition (Ed. by Smith, I.M.; McNamara, D.G.; Scott, P.R.; Holderness, M.). CAB INTERNATIONAL, Wallingford, UK.

Foote, R.H.; Blanc, F.H; Norrbom, A.L. (1993) *Handbook of the fruit flies of America north of Mexico*. Comstock, Ithaca, USA.

Jones, S.C. (1937) The currant and gooseberry maggot or yellow currant fly (*Epochra canadensis*) Loew. *Circular of the Oregon Agricultural Experimental Station* No. 121, 11 pp.

OEPP/EPPO (1983) Data sheets on quarantine organisms No. 41, Trypetidae (non-European). Bulletin OEPP/EPPO Bulletin **13** (1).

Phillips, V. T. (1946) The biology and identification of trypetid larvae. *Memoirs of the American Entomological Society* **12**, 1-161.

White, I.M.; Elson-Harris, M.M. (1992) *Fruit flies of economic significance; their identification and bionomics*. CAB International, Wallingford, UK.