DAFM Plant Pest Factsheet

Rhagoletis pomonella
apple maggot fly

EU Priority Pest!

Fig 1: Adult female *Rhagoletis pomonella,* sizes range from 2-4 mm long

Pest Characteristics

- **Pest:** *Rhagoletis pomonella*
- **Common name:** apple maggot fly
- **Hosts:** The principal hosts of the *R. pomonella* are *Malus domestica* (apple) and *Crataegus* spp. (hawthorn). The pest can also develop in the fruits of many other plants of the Rosaceae family.
- **Invasive Risk:** *Rhagoletis pomonella* has demonstrated its capacity to spread to new areas in North America. The climate of Ireland is similar to some of the invaded region in Pacific Northwest of the USA. In addition, the abundance of hosts present in Ireland will likely help to facilitate colonization and spread of the pest.
- **Entry Pathways:** The most likely pathway of introduction is through the transport of infested fruit containing larvae or eggs (by commercial trade or by individual travellers). EU phytosanitary requirements reduce the risk.
- **Impact:** *Rhagoletis pomonella* is a serious pest of apples in North America. Significant damage can be caused by larvae as they burrow through the flesh of apples. The pest is likely to cause yield losses and increase production costs for commercial orchards if introduced into Ireland.
- **Symptoms & signs:** Diagnostic features such as distinct wing patterns Fig 2(a) can narrow pest ID down to at least a complex of closely related species. Unlike codling moth larvae, these pest larvae have no head capsule or legs (b). Symptoms can include dimples and depressions from when eggs are inserted (c) Fruit cut open can reveal internal damage from larval tunnelling (d). A similar species *R. alternata* is native to Ireland.

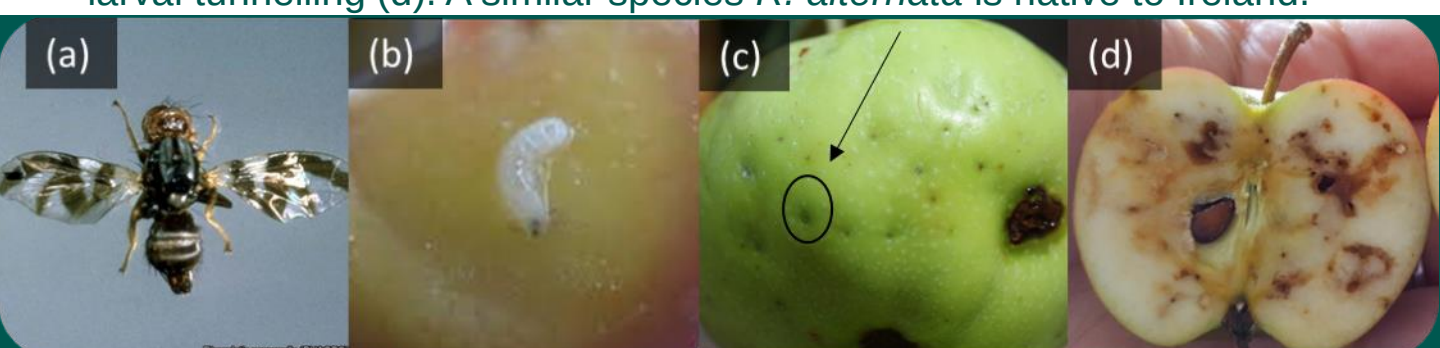
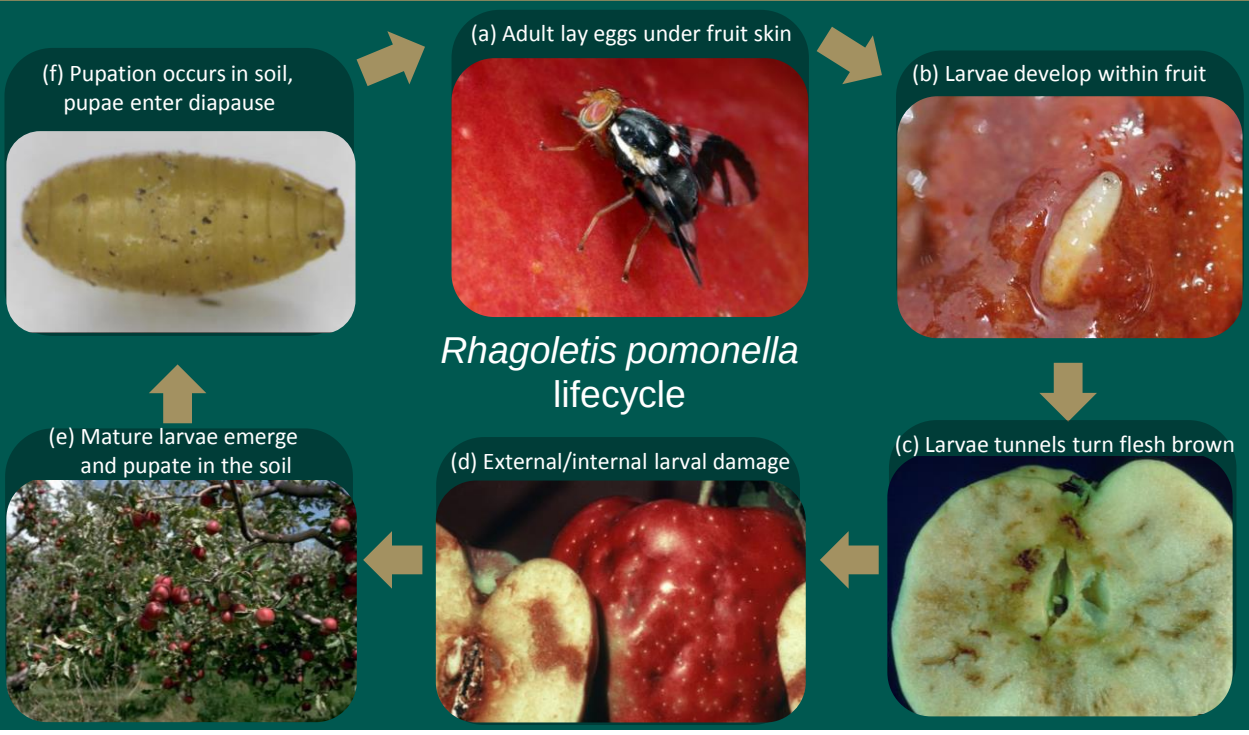


Fig 2: (a) adult wing features (b) larva are cream coloured (c) oviposition punctures (d) internal symptoms from larval tunnelling on apple More photos are available on the EPPO Database

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

DAFM Plant Pest Factsheet



- **Lifecycle:** In most cases, *R. pomonella* is an univoltine species. Adults emerge from June to September. Female lay eggs beneath the skin of ripe fruit (a), larvae tunnel and feed within the fruit, taking anywhere from 2 weeks to several months to mature (b), (c) & (d). Mature larvae emerge and pupate in the soil usually to a depth of 2-5 cm (e) & (f). Pupae enter diapause and can remain dormant from 8-32 months.
- **Adaptability:** The pest is currently present across a range of ecoclimatic conditions and shifted from hawthorn to its apple host in the mid-1800s.
- **Dispersal:** *Rhagoletis pomonella* is not considered to be a long-distance flier, particularly when fruit and breeding sites are abundant.
- **Distribution:** The species is native to eastern states of the USA. *Rhagoletis pomonella* has now spread across most of the USA, much of Canada and is present locally in Mexico (Fig 3). Several key apple growing regions in USA and Canada remain free of the pest due to internal pest quarantine measures and movement restrictions on host material in place.
- ***If suspected:*** *DAFM* perform annual surveys to substantiate Irelands pest free status for *R. pomonella.* If you find suspected symptoms/specimens, please submit images to DAFM at: plantpestreport@agriculture.gov.ie

Photo credits: Fig 1 © Joseph Berger, Bugwood.org; Fig 2 (a), Lifecycle (f) © EPPO; Fig 2 (b) © Utah State University Extension ; Fig 2 (c), Lifecycle (b) (d) © Whitney Cranshaw, Colorado State University, Bugwood.org; Fig 2 (d) © WSDA; Lifecycle (e) © Howard F. Schwartz, Colorado State University, Bugwood.org; Lifecycle (c) © E.H. Glass, New York State Agricultural Experiment Station, Bugwood.org; Lifecycle (a) © Andrew A. Forbes/CABI

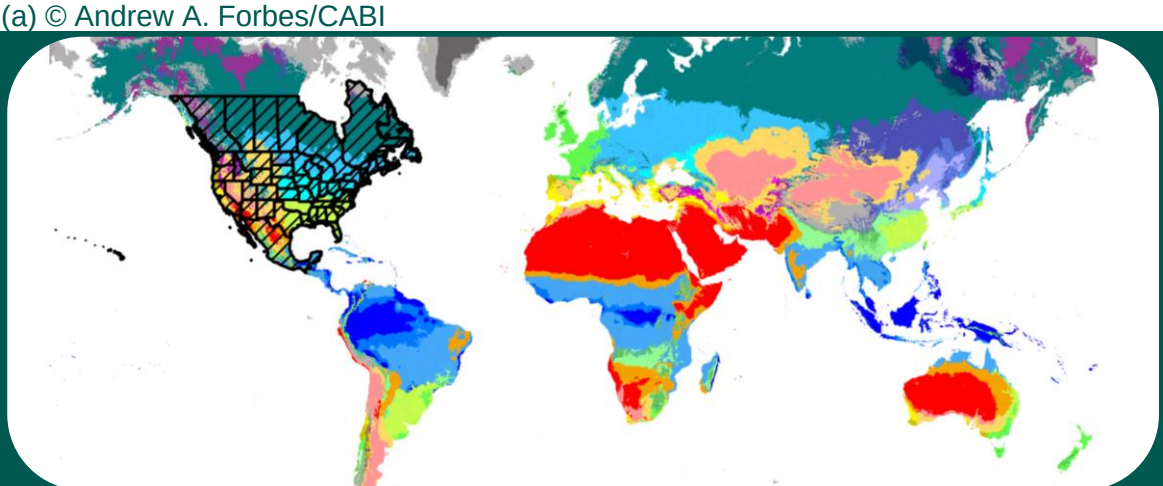


Fig 3: Known world distribution of *R. pomonella* (cross hatched areas) overlaid on regional climate classifications

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine