



Stone Fruit Commodity-Based Pest Survey

Plum Fruit Moth

Grapholita funebrana

Introduction

This pest is considered to be a significant threat, in part, because it can develop on many wild and cultivated stone fruits as well as other plants in the same family (Rosaceae). Additionally, it has the potential to spread widely; in fact, if the plum fruit moth is introduced into the United States, it is highly likely to become established across 79 percent of the continental United States. This pest currently thrives in Europe, the Middle East, and northern Asia with reported crop and plant losses ranging from 25 to 100 percent. In areas where multiple generations develop each year, early-season varieties are less susceptible to economic damage than later-maturing fruit. This pest is also known as the red plum maggot and the plum fruit maggot.

Biology

In general, moths (Figure 1) begin to appear in April or May. Depending on the climate, they can produce one to three generations per year. Plum fruit moth thrives in climates that have warm January and February temperatures (42 °F and above), high precipitation (60 inches/year), and high relative humidity (70 to 78 percent). Adult moths are most active at night (resting during the day in the tree canopy) and when temperatures reach 64 to 72 °F. Mating occurs about two hours before dawn. Beginning in May, eggs are laid singly or in small groups on the surface of fruit, most often in the afternoon and evening. Eggs hatch in 5 to 9 days, and the larvae chew into fruit, usually near the stem. Before feeding, larvae seal the entrance hole with deposits of chewed fruit skin bound with silk. After 15 to 17 days, larvae complete their development and leave a large exit hole in the fruit. Larvae pupate under bark or inside other crevices, including those in the ground or soil. In places where two or three generations per year develop, these moths overwinter as larvae; where only one generation completes development, this moth overwinters as pupae.

Symptoms

Larval feeding causes fluid to exude from the entrance hole (gummosis) (Figure 2), a premature color change, and/or fruit drop. Larvae feed throughout the fruit, traveling from the outer part to the pit region (Figure 3), and have been seen to feed on multiple fruit.

Hosts

This pest feeds primarily on stone fruits and has many potential wild hosts existing in the United States. Primary hosts include: apricot (*Prunus armeniaca*), blackthorn (*P. spinosa*), cherry plum (*P. cerasifera*), Damson plum (*P. insititia*), Japanese plum (*P. japonica*), peach (*P. persica*), plum (*P. domestica*), sour cherry (*P. cerasus*), and sweet cherry (*P. avium*). Minor hosts include: almond (*P. dulcis*), apple (*Malus domestica*, *M. sylvestris*), chestnut (*Castanea sativa*), English walnut (*Juglans regia*), and pear (*Pyrus communis*).



FIGURE 1. An adult plum fruit moth (*Grapholita funebrana*). Photo courtesy of R. Coutin, Office Pour les Insectes et Leur Environnement (OPIE).



FIGURE 2. Larva of the plum fruit moth feeding within a plum.

Distribution

Asia: Armenia, Azerbaijan, China, Iran, Japan, Kazakhstan, Kyrgyzstan, Republic of Georgia, Syria, Tajikistan, Turkey, Turkmenistan, and Uzbekistan.

Africa: Algeria. **South America:** Argentina. **Europe:** Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom.

Identification

This species can be identified by examining the form and structure of the pest (morphological characteristics), mainly its genitalia. This pest may be easily confused with a moth common to North America, Oriental peach moth (*Cydia molesta*). These two moth species not only share similar form and structure, but also share host plants.

Survey

A trap and lure combination is the common method used to survey for this pest.

Details on trap type and lure compounds can be found at

<http://pest.ceris.purdue.edu/services/napisquery/query.php?code=cam2012>

What Can We Do?

If you find an insect that you suspect is the plum fruit moth, please contact your local extension office or State plant regulatory official to have the specimen properly identified. For contact information, visit www.aphis.usda.gov/StateOffices, www.nationalplantboard.org/member/index.html, or www.nifa.usda.gov/Extension/index.html.

References for the above information can be found on the Cooperative Agricultural Pest Survey (CAPS) Web site at <http://caps.ceris.purdue.edu/stonefruit/references>.

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FIGURE 3. Larva of the plum fruit moth feeding within an unripened plum. Notice most of the damage occurring near the pit. Photo courtesy of R. Coutin, Office Pour les Insectes et Leur Environnement (OPIE).