

Light Brown Apple Moth, *Epiphyas postvittana* (Tortricidae)



Light brown apple moth pupa.



Light brown apple moth pupa encased in its cocoon.



Adult male light brown apple moth.

The light brown apple moth is a harmful, invasive pest that is native to Australia. It is now widely distributed throughout New Zealand, the United Kingdom, Ireland, and New Caledonia. Although it was reported in Hawaii in the late 1800s, the first light brown apple moth detection on the United States mainland was not confirmed until March 2007 in Alameda County, California. Since then, these moths have been identified in 14 additional California counties.

In an effort to protect American agriculture and preserve the country's natural landscape, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) and the California Department of Food and Agriculture (CDFA) are working together to eradicate this non-native pest from California and stop its potential spread to other parts of the country.

Description

In the adult stage, light brown apple moths are approximately 8 to 10 mm long, just over half the size of a dime. While adult

coloring is variable, the moths are generally a pale yellowish-brown with darker brown markings on their forewings. Light brown apple moth eggs are pale white and slightly overlap one another. Typically, the eggs are deposited in groups of 20 to 50, but may also be found in groups of 2 to 170. Larvae are green; pupae are brown.

Hosts

Light brown apple moths can harm more than 1,000 types of plants and trees found throughout the United States—including 250 fruits and vegetables. In the larval stage, these pests feed on plant leaves, new growth area, and directly on the fruit of some crops.

Vulnerable crops include apples, grapes, peaches, strawberries, and corn. At-risk trees include pines, oaks, and willows. Ornamental plants, such as roses and magnolias, are also susceptible to damage from these moths.

Damage

Light brown apple moth larvae are present for most of the year,

either in the trees or on weed hosts. You can find them by inspecting the leaves of their host plants. The larvae are leaf rollers, meaning they roll leaves around themselves and then spin a very fine web within the leaf for increased protection.

The light brown apple moth feeds from within the sheltering nest it constructs. While damage to leaves is not of commercial importance in mature trees, the moth also feeds on fruit, which often form part of the shelter. Damage is usually confined to the surface of the fruit, where tracks are eaten away. However, sometimes the larvae will burrow into the fruit, particularly around the stem. Feeding damage to stone fruit normally occurs in the 2 weeks leading up to harvest and can reach economically important levels.

At flowering, check amongst the blossom clusters for webbing and presence of the larvae. From then on until harvest, leaves should be inspected for the webbed nests constructed by the larvae. Damage is most common in the lower half and central parts of the tree.



Adult female light brown apple moth.



Light brown apple moth larva.



Light brown apple moth larva.

Potential Impact

Light brown apple moths pose a serious threat to our environment's ecology, beauty, and agricultural productivity—not just in California, but across the country. These moths have few natural enemies in the United States and reproduce at extremely rapid rates. In fact, a mature female can deposit 300 to 1,500 eggs during its lifespan.

In a 2003 study, the University of Minnesota concluded that light brown apple moths are "considered highly likely of becoming established in the United States" and that this would lead to negative consequences for agriculture and natural ecosystems. In a 2007 economic analysis, APHIS found that States in the Southwest, Southeast, and along the West Coast would be most at risk if these pests spread outside of California.

Crop losses of 5 to 20 percent are common in New Zealand. Using these numbers, California alone could experience up to \$2.4 billion in annual crop losses if light brown apple moths become fully established in the State.

Eradication Efforts

Given the significant risks to agriculture production and our

natural landscape, it is critical to stop the spread of light brown apple moth now, while its population level in the United States is still relatively low. With this goal in mind, APHIS and CDFA are cooperating to control and eradicate the pest in California.

The proposed eradication plan may employ a number of strategies simultaneously to effectively combat the pest, including continued surveillance, mating disruption, use of parasitic wasps for biological control, limited organic pesticide application, sterile insect technology, stringent State and Federal quarantine requirements, and ongoing evaluation of the program's effectiveness. In addition, APHIS continues to enforce import restrictions on certain agricultural commodities to prevent the further introduction of light brown apple moth through international trade.

How You Can Help

Invasive species such as light brown apple moths can enter the United States in a number of ways. One such pathway is routine foreign commerce; another is when travelers bring in fruits, vegetables, plants, seeds, soil, or other agricultural items from foreign countries. Please leave these items in their native lands.

If you suspect the presence of light brown apple moths, please notify your State department of agriculture or APHIS. You can find a listing of these offices at http://www.aphis.usda.gov/services/report_pest_disease/report_pest_disease.shtml.

Additional Information

For more information on these pests, please visit <http://www.aphis.usda.gov> and click on Light Brown Apple Moth under the Hot Issues heading, located toward the bottom of the Web page.

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