Stone Fruit Commodity-Based Pest Survey

Summer Fruit Tortrix

Adoxophyes orana

Introduction

The summer fruit tortrix moth is a serious pest of apple and pear in Europe and Asia. This pest is capable of feeding and developing on more than 50 plant species in multiple families, including stone fruit. The moth has become a serious pest in peach and cherry orchards in northern Greece in the last 20 years. It is not known to occur in the United States.

FIGURE 1. Summer fruit totrix *(Adoxophyes orana)* larva. Photo courtesy of Jae-Cheon Sohn, South Korea,

Biology

Females lay yellow egg masses of 30 to 50 eggs (3 to 10 mm in diameter) predominately on the upper surfaces of leaves in early spring. The greenish larvae (Figure 1) hatch and leave behind the transparent shell of the eggs. When disturbed, the larvae spin a silken thread and descend to escape. This thread is also a possible method for movement via wind. Mature larvae are 18 to 22 mm long, and spin a cocoon 8 to 11 mm long before molting into light-brown pupae. They darken as they develop into adults. Adults (Figure 2) range from a dull grayish brown (female) to yellowish brown (male) with a variable dark brown marking pattern and 15 to 19 mm wingspan. Adult males are smaller and more brightly colored than adult females. Two generations occur per year depending on temperature.

FIGURE 2. Adult summer fruit tortrix. Photos courtesy of Jae-Cheon Sohn, South Korea [top] and Pest and Diseases Image Library, Australia [bottom], http://www.invasive.org.

The larvae feed on both foliage and fruit. Damage to foliage is insignificant, but damage to fruit can be serious. On apples, damage from the first generation results in large, deep holes; the second generation produces small holes of less than 5 mm in diameter. Damaged fruit may be secondarily infected by fungal diseases.

Symptoms

External feeding will be visible on leaves and fresh growth of twigs. Feeding will deform leaves and create areas with necrosis (dead tissue) (Figure 3). Leaves may appear wilted, yellow, shredded, or dead. Leaves are likely to be rolled or folded and held together with silk webbing. Feeding on new growth of twigs will leave lesions. If the insect is feeding in flowers, external feeding damage and silk webbing will be evident. In all areas where the insect has fed, frass (excrement) should also be visible.

Summer generation larvae feed extensively and severely damage fruit. Feeding on fruits or pods causes scabs or pitting (Figure 3), and frass may be present. On fruit crops, larvae prefer to feed sheltered under a leaf bound to fruit and silk.

Hosts

Major hosts include: apple *(Malus* spp.*),* apricot *(Prunus armeniaca),* quince (*Cydonia oblonga),* peach *(Prunus persica),* pear *(Pyrus* spp.*),* plum *(Prunus domestica)*, raspberry *(Rubus* spp.*),* and sweet cherry *(Prunus avium)*.

Minor hosts include: alder *(Alnus* spp.*),* alfalfa *(Medicago* spp.*),* almond tree *(Prunus triloba),* ash *(Fraxinus* spp.*),* basswood *(Tilia* spp.*),* beech *(Fagus sylvatica),* beet *(Beta* spp.*),* birch *(Betula* spp.*),* blackberry *(Rubus* spp.*),* blueberry *(Vaccinium* spp.*),* buckbean *(Menyanthes trifoliata),* Catawba rosebay (*Rhododendron catawbiense),* chestnut *(Castanea crenata),* cinquefoil *(Potentilla* spp.), citrus *(Citrus* spp.*),* cotoneaster *(Cotoneaster dielsianus),* cotton *(Gossypium* spp.), crab apple *(Malus* spp.*),* currant *(Ribes* spp.*),* Damson *(Sorindeia juglandifolia),* dock *(Rumex* spp.*),* elm *(Ulmus* spp.*),* European bird cherry *(Prunus padus)*, fava bean *(Vicia faba),* field bindweed *(Convolvulus arvensis),* fig *(Ficus* spp.*),* forsythia *(Forsythia suspensa)*, grapevine *(Vitis vinifera),* hawthorn *(Crataegus* spp.*),* hazelnut *(Corylus* spp.*),* honeysuckle *(Lonicera* spp.*),* hops *(Humulus* spp.*),* ironwood *(Parrotia* spp.*),* Japanese evergreen chinkapin *(Castanopsis fissa),* Japanese oak *(Lithocarpus glaber),* Japanese plum *(Prunus salicina),* laburnum *(Laburnum* spp.), lambsquarters *(Chenopodium album),* lilac *(Syringa* spp.*),* litchi *(Litchi chinensis),* longan *(Dimocarpus longan),* loquat *(Eriobotrya* spp.*),* maple *(Acer* spp.*),* mulberry *(Morus* spp.*),* nettle *(Urtica* spp.*),* nightshade *(Solanum* spp.*),* oak *(Quercus* spp.*),* olive *(Olea* spp.*),* peanut *(Arachis hypogaea),* persimmon *(Diospyros* spp.*),* Peruvian groundcherry *(Physalis peruviana),* pistachio *(Pistacia* spp.*),* pomegranate *(Punica* spp.*),* poplar *(Populus* spp.*),* privet *(Ligustrum* spp.*),* rose *(Rosa* spp.*),* snowberry *(Symphoricarpos* spp.*),* sour cherry *(Prunus cerasus),* soybean *(Glycine max),* strawberry *(Fragaria* spp.*),* and willow *(Salix* spp.*).*

FIGURE 3. Damage from the summer fruit tortrix to fruit and leaves. Photo courtesy of Magnus Gammelgaard, http://www.plante-doktor.dk/frugtskraelvikler.htm.

Distribution

This pest is present in: **Asia:** Armenia, Azerbaijan, China, Republic of Georgia, India, Japan, and Republic of Korea. **Europe:** Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom.

Identification

Confirmation of summer fruit tortrix is by examining form and structure of the pest (morphological identification). Summer fruit tortrix may occur in mixed populations with other morphologically similar species, including other *Adoxophyes* species. Final identification is by dissection of male genitalia.

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 summer fruit tortrix, 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.

Issued September 2011

USDA APHIS

United States Department of Agriculture
Animal and Plant Health Inspection Service