



Stone Fruit IPM for Beginners

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Chapter 22

Fruitworms and Leafrollers

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Fruitworms and leafrollers

Green fruitworm, *Orthosia hibisci* (Guenée)

Obliquebanded leafroller, *Choristoneura rosaceana* (Harris)

Hosts



Green fruitworm larvae feed on a variety of deciduous shade, forest and fruit trees and shrubs. **Obliquebanded leafroller** larvae feed on a wide range of plants; members of the rose family are their preferred hosts. **Obliquebanded leafroller** outbreaks have resulted in severe damage to apple, peach and pear fruit.

Time of concern

Green fruitworm adults (Fig. 1) are night fliers. Their flight closely parallels apple bud development. It begins at about green tip, peaks at tight cluster and is completed by the pink stage.

The spring flight of obliquebanded leafroller adults (Fig. 2) begins about three to four weeks after petal fall on apples, and continues for three to four weeks. In areas where obliquebanded leafroller has two generations, a second flight occurs from early August through early September.

Damage, symptoms and pest cycle

Green fruitworm have only one generation annually. Female green fruitworm moths begin egg laying on twigs and developing leaves when apples and peaches are in the half-inch green stage; green fruitworm larvae pass through six instars. Young larvae feed on new leaves and flower buds and can often be found inside a rolled leaf or bud cluster (Fig. 3).



Fig. 3. Young green fruitworm larva feeding on an apple bud cluster.



Fig. 4. Older green fruitworm larva feeding on developing apple.

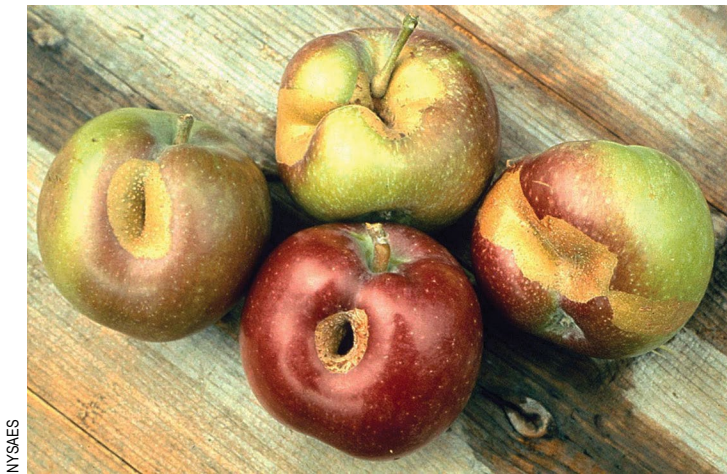
Older larvae damage flower clusters during bloom and continue to feed on developing fruit and leaves for one to two weeks after petal fall (Fig. 4). They then drop to the ground, burrow 2 to 4 inches beneath the soil surface and pupate.



Fig. 1. Green fruitworm adult.



Fig. 2. Obliquebanded leafroller adult.



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Fig. 5. Severe fruit damage to apple caused by green fruitworm feeding in the spring.

Most flower buds and blossoms damaged by green fruitworm larvae abort. Most fruit damaged just prior to and shortly after petal fall also drop prematurely. Some, however, remain at harvest and exhibit deep corky scars and indentations (Fig. 5). This injury is indistinguishable at harvest from that caused by overwintering obliquebanded leafroller larvae.



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Fig. 6. Mature overwintered (spring) brood obliquebanded leafroller larva.

Obliquebanded leafroller may have one to two generations a year, depending on the locality. Overwintered (spring brood) obliquebanded larvae (Fig. 6) first feed on water sprouts and then move throughout the tree. Those feeding on developing flower buds do so

before bloom and continue to consume floral parts throughout the blossom period. After petal fall, these larvae continue feeding on the developing fruit. Newly hatched larvae of the first summer brood move to and feed on tender growing terminals, water sprouts or developing fruit. As these larvae reach the third instar, they display an increasing propensity to damage fruit.

The first summer brood of larvae emerge in early July and complete development in late July or early August. Second brood larvae begin to emerge in mid-August and feed until they reach the third instar in fall, when they construct hibernation sites on twigs or bark and enter winter diapause. These overwintering larvae resume activity the following spring when the tree breaks dormancy and complete their development about three weeks after the apple blossom period.

The second brood larvae, which develop in late summer and fall, feed primarily on leaves until they enter diapause, although they may occasionally damage fruit. The most serious injury from overwintering obliquebanded leafroller larvae occurs just prior to and shortly after petal fall when the developing fruit is damaged. Many of these damaged fruits drop prematurely, but a small percentage remain on the tree, exhibiting deep corky scars and indentations at harvest (Fig. 7).



Fig. 7. Fruit damage to apples caused by obliquebanded leafroller larval feeding in the spring.

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Fig. 8. Terminal damage to apple foliage caused by obliquebanded leafroller feeding.

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Leaf injury by all broods is characterized by the larvae rolling leaves and feeding on surrounding foliage (Fig. 8).

The first summer brood larvae feed on the surface of developing fruit in late July and early August (Fig. 9). This injury is similar to that caused by several other species of leafrollers. Fruit damage caused by first summer brood obliquebanded leafroller larvae is usually more serious than spring feeding by overwintered larvae because more of the fruit injured later in the season remains on the tree at harvest.

IPM steps for beginners

Insecticides may be applied at petal fall, against the overwintering larvae of both of these classes of pests present at this time. This spray should adequately control green fruitworm. Obliquebanded leafroller adult flight can be monitored with pheromone traps; the first spray against the newly hatching summer brood larvae should be applied about three weeks after the first male moth is captured, and a subsequent spray should be applied 10 to 14 days later. Consult your local recommendations on using pheromone traps for this insect and the relative effectiveness of insecticides against newly hatched and large obliquebanded leafroller larvae.

Ready for more precision?

Apply protective sprays in orchards that have had a past history of severe obliquebanded leafroller fruit damage or if populations of overwintering larvae were high; the first spray should be timed to coincide with the first hatch of larvae at approximately 350 degree-day base 43 degrees Fahrenheit after biofix, followed by a second spray 10 to 14 days later. Refer to the NEWA Apple Insect Models website (newa.cornell.edu/index.php?page=apple-insects) for current information on the occurrence, development and management of this pest in your specific location.



Fig. 9. Fruit damage to apple caused by late season obliquebanded leafroller feeding.

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