

SPARGANTHIS FRUITWORM

Common Names: Sparganthis fruitworm, False yellowheaded fireworm

Scientific Name: *Sparganthis sulphureana*

Order: Lepidoptera (butterflies and moths)

Family: Tortricidae (the leafroller family)

Sparganthis fruitworm is a serious pest of cranberry. On some farms it is more serious than blackheaded fireworm, which it resembles both in life cycle and the damage to foliage and fruit.

Biology and Damage

Host Plants:

Cranberry, *Vaccinium macrocarpon*

Southern highbush blueberry, *Vaccinium australe*

Highbush blueberry, *Vaccinium corymbosum*

Yellow loosestrife, *Lysimachia terrestris*

Goldenrod, *Solidago* spp.

Aster, *Aster* spp.

Description and Diagnosis:

Eggs are laid in masses that measure about 6.0 x 2.5 mm and contain 30-50 eggs. These egg masses are greenish yellow and are well camouflaged on the upper side of the green cranberry leaves. The hatching larvae are caterpillar-like, 1-2 mm long, light green, with a black head and prothoracic shield. The mature larvae grow to 10-12 mm. They have a yellow head and prothoracic shield. The body color is pale olive green-brown with small but noticeable lighter dots. The very few scattered hairs are fine in texture. The pupae are 8.0 mm long, initially light brown but darkening towards adult emergence. The adults are brownish yellow with a wingspan of 20 mm, and a V-shaped pattern on the forewings. At rest, the wing markings create an X-shaped pattern.



Larva. Note small whitish spots.

Adult moth. Note orange color and distinct brown X.

Economic Importance:

Due to the direct damage to the cranberry fruit by the second generation larvae, the sparganothis fruitworm can be one of the most economically severe pests found on cranberry beds. In addition to fruit damage, foliar damage similar to that of blackheaded fireworm may occur in infested areas.

Life Cycle:

Sparganothis fruitworm overwinters in the early larval stage on the flooded beds. They come out of hibernation when new growth begins in the spring, around mid-May. The larvae mature in June and July while feeding on the foliage and blossoms. They pupate for 7-12 days and the adults emerge throughout July. Oviposition takes place within two days after emergence and the second generation emerges from the egg mass in 9-12 days. They begin feeding on the foliage and directly on the fruit. This is the time when the most damage occurs. The second generation larvae pupate after 50-60 days (in August) within the fruit or on a webbed upright. The adults emerge in late August through September, and the eggs are laid within two days. The larvae emerge and the caterpillars go into hibernation by mid to late September.

Environmental Factors:

The larvae can withstand prolonged flooding longer than the cranberry plant can endure. However, they are susceptible to naturally-occurring predators and parasites, especially egg parasites (*Trichogramma* spp.) and the parasitic tachinid fly, *Erynnia tortricis*.

Damage/Symptoms:

In May, upon emergence from hibernation, the larvae web the underside of a leaf or stem. During larval development, they continue to expand the webbing to include more leaves. They feed on the developing blossoms and skeletonize the leaves, causing them to turn brown. The second generation causes the most damage because they feed directly on the fruit. Each larva mines 3-5 berries and scars the surface of several others. As they feed on the fruit, the cranberry remains free from frass because unlike the cranberry fruitworm, they discard their waste material outside the berry. Damage on the East Coast has been severe in some cases, and it has become a significant problem in Wisconsin.



Larva (l) and pupa (r) in damaged fruit.

Monitoring and Controls

Scouting Procedure/Economic Threshold:

No research has been conducted on the development of sampling methods or economic thresholds for sparganothis. Sweep net sampling will confirm the presence of larvae or adults, but no thresholds have been established based on sweep net counts. A commercial pheromone lure is available for trapping adults. The first trap catches are usually in the last week of May or the first week in June; place traps in the field no later than May 21. A model that forecasts flight activity based on accumulated trap catches is incorporated into CCM software.

Natural Control:

Sparganothis is a native insect and is attacked by naturally-occurring predators and parasitic insects.

Cultural Control:

Known weed hosts, such as yellow loosestrife, goldenrod, and aster, should be eliminated.

Biological Control:

No studies have been conducted on the impact of native natural enemies of sparganothis in Wisconsin. However, it is likely that better biological control occurs in those beds where the use of broad spectrum pesticides has been reduced.

We have no data that would indicate that *Bacillus thuringiensis* is effective against sparganothis, but it may provide some control against young larvae.

Mating Disruption:

Pheromone-mediated mating disruption has been developed for sparganothis fruitworm and blackheaded fireworm. Sprayable pheromone has been commercially developed and registered with EPA, but at the time of writing production has been stopped due to a lack of a viable market. Pheromone-impregnated “baggies” are also registered and, at writing, still commercially available. This method is acceptable for certified organic production.

Chemical Control:

Sparganothis has developed resistance to certain organophosphate insecticides on the East Coast. Although resistance has not been documented in Wisconsin, growers should follow good resistance-management practices. This means spraying only when necessary, and spot spraying only those beds that are experiencing economically-damaging populations. Also, rotate insecticides. Effective insecticides include the organophosphates, carbaryl, insect growth regulators, and spinosad.

References:

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This information was prepared by Daniel L. Mahr, Professor and Extension Fruit Crops Entomologist, University of Wisconsin – Madison. It is revised and modified from the Pest Profiles section of University of Wisconsin Cranberry Crop Management software (CCM). November, 2005.

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