Berry Fact Sheet
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BERRY CROPS

CORNELL Cooperative Extension

Integrated Pest Management

Meadow Spittlebug

Philaenus spumarius (L.)

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Introduction

The meadow spittlebug is a serious pest of strawberries throughout North America and Europe. It is present in most of the U.S. east of the Mississippi River and along the Pacific coast, but is a serious problem in areas of high relative humidity, such as the northeastern U.S. and Oregon. Spittlebugs feed on over 400 species of agricultural plants. They get their name from the frothy spittle they produce as nymphs to protect themselves (Fig. 1). Meadow spittlebugs should not be confused with rhubarb spittlebugs, which are about 2X the length of meadow spittlebugs, and are not a pest of strawberry.

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Fig. 1. Spittle masses on plant.

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Fig. 2. Bright green newly emerged adult.

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Fig. 3. Brown to gray mature adult.

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Fig. 4. Nymph uncovered from its protective spittle.

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Fig. 5. Distorted leaves and damaged fruit.

The Adults

Adult spittlebugs resemble leafhoppers (Figs. 2, 3); they are about 6 mm (0.25") long. Newly emerged adults are bright green (Fig. 2), but later turn dull brown or mottled gray (Fig. 3). Adults are present on vegetation from late May or June until freezing occurs in the fall. There is only one generation per year.

The Eggs

The egg is about 1 mm (0.04") long, yellowish, rounded at one end and somewhat pointed at the other end. Eggs are laid as early as July, but the peak egg-laying period is during September and October. Spittlebugs overwinter as eggs inside the lower parts of the strawberry plant in masses of 2 to 30, which are held together in rows by a cement-like substance.

The Nymphs

Newly hatched nymphs appear from April to May, and are whitish to bright yellow or orange; they later turn green (Fig. 4). At 10% bloom of strawberries, they are quite small, about the size of a pinhead, and later may reach a length of 6 mm (0.25"). They produce a protective frothy spittle about 1-2 cm (0.4-0.8") or more in diameter (Figs. 1, 4). Nymphs remain inside the spittle until they transform into adults, 5 to 8 weeks after the eggs hatch.

Plant Injury

The nymphs pierce the plant stems and suck plant juices. Initially, they feed at the bases of the plants, but later move up into the developing tender foliage. This feeding can cause distortion of leaves and stunted growth of berries (Fig. 5). The crinkled and dark green appearance of the leaves can resemble leaves affected by crinkle virus, but spittlebug injury is not viral; plants recover after the spittlebug departs.

Spittlebugs have always been considered a problem in pick-your-own operations, because their spittle annoys the strawberry pickers. However, in commercial plantings, growers rarely allow populations to become large enough to cause significant yield loss, and some cultivars may be less susceptible to damage than others. In an Ohio study, "Allstar" appeared to exhibit a tolerance to spittlebug feeding.

Monitoring and Control

Begin to estimate spittle mass density at 10% bloom. Randomly inspect 5 to 10, 1-square-foot areas per acre of strawberries at two-week intervals. On hot, dry days, the nymphs and their spittle may be at the base of the plant, so it will be necessary to spread the plants and inspect the crowns and soil surface. On warm and humid or rainy days, the spittle masses can usually be seen on the surfaces of leaves and stems (figs. 1, 4). Young nymphs will be small and orange; nymphs at later stages will be as long as 6 mm (0.25"), and orange to green. Populations are usually largest in weedy fields.

Most growers elect to treat during the pre-bloom stages when spittle masses reach an "aesthetic threshold" of one per square foot; however, recent research suggests that populations generally need to be 4 or 5 times that size to cause economic damage.

Consult local Cooperative Extension recommendations for the proper pest management procedures for your area.

Actual Size

Egg Nymphs Adult

Guide to Stages

Stage	Timing	Where to Look
Nymphs	April to June	In spittle masses or near the ground
Adults	Late May to September	On leaves and stems
Eggs	September to April	Near crown

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