Cornell University

IPM Integrated Pest Management

Strawberry Sap Beetle

Stelidota geminata (Say) (Coleoptera: Nitidulidae)

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Introduction

The strawberry sap beetle is found throughout the Eastern and upper Mid-western United States. Although primarily a pest on strawberry, the beetle damages raspberry and will feed on a wide range of other crops, including blueberry, cherry, apple, melon, and sweet corn. Multiple generations of strawberry sap beetle are possible per year depending on availability of these other crops.

Adults

Beetles are about 1.5 mm (1/16 in.) in length and are brown with a lighter colored X-shaped marking across the wings (fig. 1). Most adults overwinter outside strawberry fields in the leaf litter of wooded areas, but strawberry sap beetle can also survive the winter in mulch underneath blueberry bushes and raspberry canes. As strawberries ripen in late spring, the overwintered adults move into fields and feed on the berries until mid-July. Subsequent generations of adults continue to feed on other nearby fruit crops until early September in New York. Adults are capable of living for several weeks and females can lay 350 or more eggs over their lifetime.

Eggs

Eggs are about 0.75 mm (1/32 in.) long, cream colored, and oblong. Few, if any, eggs are laid on the fruit, but are placed in soil near fruit. Oviposition begins in the spring shortly after overwintered adults begin feeding on fruit and continues until late summer. Eggs hatch after 2 – 3 days.

Larvae

Larvae are off-white with a dark-colored head capsule (fig. 2). After hatching, larvae search for food, favoring fruit that is touching the ground. Within three days of hatching the third larval stage has developed and feeding continues for another three days. Over the next three days, larvae move out of feeding sites, and burrow into the soil where they construct a pupal cell 1 – 2 cm (3/8 to 3/4 in.) below the soil surface and the larvae soon molt.

Pupae

Initially a pale cream color, the eyes darken and the wings turn a gray color within 3 – 4 days (fig. 3). The beetles emerge from the soil in about a week. Thus, the total time required for maturation from egg to adult is only about three weeks.

Damage

Both adult beetles and larvae can feed on ripe fruit, including saleable strawberries, but prefer over-ripe fruit in contact with the ground. Feeding damage can range from small, difficult to notice holes to large cavities in the fruit. Multiple individuals are frequently found feeding on the same berry. The beetles often scatter when disturbed, but the larvae remain. This can lead to customer complaints of larvae contaminating fruit and has prompted early termination of picking in some fields.

Adult beetles may contribute to the spread of fruit rot diseases. Although strawberry sap beetle is widely present across farms in New York, the beetle typically does not cause noticeable damage. Concern regarding the beetle centers around the lack of effective control measures when and if an outbreak develops.

PHOTO BY JOE OGRODNICK

Figure 1. Strawberry sap beetle adult on strawberry fruit.

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Figure 2. Strawberry sap beetle larva on strawberry fruit.

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Figure 3. Strawberry sap beetle pupa in soil.

Management

Control of strawberry sap beetle has proven difficult. Insecticide applications in the field vary widely in effectiveness, partly due to inadequate contact with beetles feeding underneath strawberry fruit and inside raspberries. Applications should be timed to control adults before oviposition begins, as control becomes even more challenging once larvae are inside the berries. Adult beetles appear in fields as fruit ripens and harvest begins, so carefully check pre-harvest intervals for the insecticide used. It is essential that spray coverage reach the fruit and not just the plant canopy. The wasp *Microctonus nitidulidis* Loan does parasitize strawberry sap beetle adults, but it does not appear to provide adequate control during outbreaks in the field.

Sanitation practices may help reduce customer complaints of damaged or contaminated berries. Picking ripe strawberries in a timely manner and removing all over-ripe fruit residue from the strawberry fields. Planting strawberry cultivars that tend to hold fruit off the ground may also reduce damage to fruit, particularly from contamination with larvae. Wooded areas and other fruit crops provide beetles with needed resources during much of the year. Cull piles of other fruit residue are also a food source and should be avoided when possible. Planting strawberries away from these habitats could help reduce the number of beetles damaging strawberries in the spring.

None of these options provides adequate control alone. Refer to the Cornell Pest Management Guidelines for current information.

Guide to Stages		
Stage	**Timing**	**Where to Look**
Adults : Overwintering generation	Autumn to late April	In leaf litter in wooded areas, in mulch in raspberry and blueberry, in strawberry as early fruit ripens
Adults : Spring / summer generations	May to autumn	Strawberry fruit, raspberry fruit, other fruit crop residue on ground
Eggs	May to autumn	Soil near fruit (impractical to look)
Larvae	May to autumn	Ripe and over-ripe strawberry, other fruit in contact with soil
Pupae	May to autumn	Soil near fruit (impractical to look)

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