

Strawberry Insect Update and Review, December 2011

Alan T. Eaton Extension Specialist, Entomology
252 Spaulding Hall, 38 Academic Way, University of New Hampshire Durham, NH 03824
alan.eaton@unh.edu

The late summer 2011 New England invasion of **spotted wing drosophila** (SWD) introduced a new insect threat to our strawberry growers. It is unclear now how serious that will be next year, but growers should consider monitoring for this insect in their strawberry beds. Over the winter we will be developing a response plan in more detail. For now, monitoring with traps is the mainstay of our defense. It should begin just before the first fruit ripen, and continue through harvest. This insect lays eggs in ripe and ripening fruit, hastening their decomposition. Once the eggs are inside, we can't stop them with insecticides. I suggest checking traps twice a week, and applying an insecticide if low numbers are detected. Spraying may disrupt picking plans, and multiple treatments may be required. Early season fruit are less likely to be seriously affected than late fruit. Ever-bearers in late summer and fall are likely to receive the heaviest attacks. The insect can develop from egg to adult in less than 2 weeks, so there are **many** generations each year. The flies are tan colored, 2mm (1/12 inch) long. Adult male SWD's are easy to identify. The black spot on each wing is unique, and can be seen with a hand lens. Females require a microscope to identify. They have a saw-edged ovipositor (egg-layer), which is unique. None of our 39 other species of drosophilids have these characters. Destroying/preventing over-ripe fruit should really help, but has logistics problems!

SWD aside, I think **tarnished plant bug** is the most important arthropod pest of New England strawberries. Why don't more of you scout for it? It causes major losses, and is highly variable in numbers. Scouting can really pay off. TPB overwinters as an adult, and feeds on a huge range of plant species. It attacks flower buds, flowers, and young fruit, up to about 1/3 grown. The severity of attack varies greatly with location. If there is a lot of early succession vegetation nearby (especially alfalfa or fallow fields with weeds), expect very heavy pressure. If your bed is surrounded by woods, you can get very little TPB pressure. Nymphs do most of the injury. If you have alfalfa nearby, avoid mowing it when strawberries are in bloom, or have young green fruit present. That drives them into your strawberries, just when they are most vulnerable. Scouting details are in the New England Small Fruit Pest Management Guide. We now emphasize scouting shortly before bloom, when there are flower buds present. Pesticide choices keep changing; go to the guide for that. I still steer people away from Brigade; I've seen serious two spotted spider mite problems triggered by Brigade spraying.

To me, **clipper** (strawberry clipper, strawberry weevil, strawberry bud weevil) is much less serious than TPB. It has one gen./year, and overwinters as an adult. June bearing varieties are regularly attacked, but in day-neutral varieties, the fruit in late July and later are not hit (too late). Clipper only attacks the unopened flower buds. The female lays an egg in the bud, then clips it off. Inside, the tiny grub feeds and grows, emerging in mid-summer. Some varieties can compensate for some clipper injury, by making the remaining fruit larger. Jewell and Seneca compensate well, so clipper attack is less serious in those varieties. Moderately compensating varieties include Lateglow and Primetime. Some varieties show little or no compensation, including Earliglow, Cavendish, Northeaster, and Honeyoe. The edges of fields are usually hardest hit, especially when beds are new. They move into the bed about 30 feet (10 rows) each

year, so older beds can have injury throughout. Scouting pays off for this pest, too. Details are in the guide. If scouting shows numbers are over the threshold, you might not need to treat the whole bed. I wouldn't bother to scout Jewell or Senecca for clipper.

I don't see much **two-spotted spider mite** (TSSM) injury, but some New England small fruit workers regularly see it. It can be serious in hot, dry years, where a bed is regularly coated with dust from a dirt road, or where predators have been killed. Scouting (especially leaf undersides) requires a hand lens or magnifying glass. Threshold: 15 or more infested leaves, out of 60. Be sure you check a number of spots across the field. The guide lists pesticide options.

White grubs: There are several species here. Unlike the weevil larvae, these have legs. In NH, we had serious problems in 2010 with Asiatic garden beetle (AGB) larvae in strawberries. That species strongly prefers to lay eggs in moist soil. That summer was so dry, the few attractive spots to lay eggs included irrigated strawberry beds, so many eggs were laid there. AGB larvae are very distinctive from other white grubs: they have bulbous maxillae right behind the mandibles. For all white grubs, avoid planting strawberries where grass grew last year, and control grassy weeds. That should be your first line of defense, not insecticides. If you use pesticides, identify the species of grubs first. They vary in susceptibility to our insecticides.

Black vine weevil (BVW) and its two smaller relatives can be very serious pests. The biology of these three species is virtually identical. Adults hide in soil or under leaf litter during the day, and come out to feed at night. In southern NH, they appear about July 1st. They chew notches in the edges of the leaves. They begin laying eggs about August 1, and continue into Fall if temperatures are mild. The eggs hatch into white, legless C-shaped grubs. They feed on the roots and crowns, and overwinter as larvae. In spring, the larvae are at their largest size, and feeding gets most intense. Controlling BVW can be very difficult. Chemicals (Brigade, Platinum) don't work too well. Insect-attacking nematodes can be effective (expensive!) but 1) You must use the correct species of nematodes, and apply at very high rate, 2) Timing is critical: May 15th to 25th, **or** Aug 28-Sept 10. 3) Avoid applying them on a hot, sunny day and irrigate just before & immediately after applying, or many will die. There are other problems, too. I often recommend the "scorched earth" control option: destroy the infested bed, and make sure no plants that can support BVW larvae grow there for the next 2 years. Larval hosts: *Achilea*, *Adiantum*, *Asters*, *Astilbe*, *Azaleas*, *Begonia*, *Bergenia*, Blackberry, Calla lily, Christmas fern, *Cinquefoil*, *Cyclamen*, Dandelion, Dock, *Epimedium alpine*, *Epimedium grandiflora*, Hemlock, *Heuchera*, *Hosta*, *Hydrangea*, *Impatiens*, *Isoloma*, Lily of the valley, *Lythrum*, Mountain laurel, *Phlox*, Plantain, *Physostegia*, Primrose, Raspberry, *Rhododendron*, Rhubarb, *Sedum*, Strawberry, Sheep sorrel, Wood sorrel, *Taxus*. Move your new bed 100 yds away (farther is better).

A barrier fence of plastic sheeting stapled to (outside of) wood stakes can prevent adults from entering your new bed (they can't fly), especially if it is sticky or dusty. It works, but has logistical problems (you can't drive equipment over it, for example).

Sap beetles: I'm still frustrated by them... no really good answers. Do your best to keep the field free of over-ripe fruit. That odor strongly attracts them. Sanitation will help with spotted wing drosophila, too.