

Integrated Insect Management I (Brambles), 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

Late this summer, **spotted wing drosophila** (SWD) invaded New England, and drastically changed the insect pest picture for bramble growers. I'll cover SWD, tarnished plant bug (TPB), clipper and mites. I believe Doug Pfeiffer will be covering crown borer, cane borers, and thrips in his session this afternoon.

Brambles seem to be the fruit most heavily attacked by SWD, but strawberries, blueberries, grapes and cherries are also significantly threatened. This insect will survive our New England winters. We hope that the threat will be lower early in the season, and expect it to be a major pest of late season brambles. Monitoring will be important: growers will have to put traps in the fields they wish to protect. The traps are not to control the flies! Trapping should begin before the first fruit ripen, and continue through harvest. Unlike all our other drosophilids, this insect is equipped with a saw-edged egg layer. It 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. Insecticides should knock down the adults, but effects will be short-lasting, thus will need repeating, as trapping results suggest. The insect develops from egg to adult in less than 2 weeks, so there are **many** generations each year. New England fruit entomologists are collaborating to help answer more of our SWD questions before the next harvest. We have many questions about thresholds and insecticide use. Spraying for SWD involves a challenge: we have to do it when fruit are ripe. That limits our choices, and limits efficacy. The perfect insecticide would be long lasting, effective, and safe for people to eat the sprayed fruit! Some treatments have long days-to-harvest intervals, so picking can be interrupted. I'm not going to list pesticides here, because we will have a much better picture in a few months.

Adult males 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. The saw-toothed ovipositor (egg-layer) is unique. None of our 39 other species of drosophilids have these characters.

Destroying/preventing over-ripe fruit should really help, but this is impractical in brambles and strawberries. Lightly infested fruit probably can be eaten with no ill effects, but shelf life is shortened. Heavily infested fruit (Sept 6, 2011) turned to "soup" in less than 2 days at room temperature, and was filled with hundreds of tiny maggots. What would your customers say?

If you grow raspberries in New England, you will need to monitor for this insect. If you grow fall raspberries, give up now if you will not be equipped to monitor and spray. Monitoring will probably have to be fairly frequent, more than once per week. When conditions are ideal, the insect can go from egg to adult stage in eight days. Females can lay up to 200 eggs. Do the math.

Tarnished plant bug attacks a huge number of plants, and prefers flower buds, flowers, and young fruit. It overwinters as an adult, and we have two generations of them in New England. The severity of attack varies greatly with location. If there are many weeds in and around the planting, or lots of early succession vegetation nearby (especially alfalfa or fallow fields with weeds), expect heavy pressure. If your plants are surrounded by woods, you can get very little

TPB pressure. If you have alfalfa nearby, avoid mowing it when brambles are in bloom, or have young green fruit present. That drives them into your crop, just when it is most vulnerable. Check for TPB nymphs by shaking flower trusses (clusters of flower buds) onto a flat white surface, and counting the yellow-green nymphs that are dislodged. Sample 30 clusters across the field. If four or more clusters are infested, we recommend an insecticide treatment. Scout shortly before bloom, when there are flower buds present. If possible, avoid spraying insecticide during bloom. If you must spray during bloom, treat in the evening, to reduce the bee mortality. Pesticide choices keep changing, so see the current New England Small Fruit Pest Management Guide for details. In areas of high pressure, you may need to scout again, after bloom begins.

“Clipper” or Strawberry bud weevil also attacks brambles. It has just one generation per year, and adults appear in May or June. The females attack the flower buds, just before the flowers open. After laying an egg in the bud, the female chews at the pedicel, causing the bud to dangle or drop. The tiny grub grows inside that clipped bud, and emerges during the summer. There’s only one generation per year, so late summer or fall fruit escapes attack, because they are so late. In new plantings, damage is always worst at the edges, since the insects are invading from the outside. In older beds, the edge effect is less pronounced. Sometimes damage can be severe.

Monitor for clipper when the flower buds appear. We have no established threshold for clipper on brambles. In my state, few plantings show moderate damage. Most show either very little, or lots of clipper damage. Blackberries are sometimes very heavily hit; the weevil has a very short walk from one bud to the next. The New England Small Fruit Management Guide lists insecticide choices. Destroying nearby unmanaged brambles and strawberries may reduce the clipper pressure on your fruit.

I don’t see **two-spotted spider mite** (TSSM) problems that often in New Hampshire raspberries. We did have a very serious problem on one farm where the rate of nitrogen fertilizer use was sky-high. Nothing helped until the fertilizer rate was cut down. At two other raspberry plantings with TSSM problems, pesticides had been used which were very rough on predator mites. These included Benlate and Brigade, but there may be others that can do this. I tell growers to concentrate on handling the causes of TSSM problems, rather than just spray for them. TSSM is most common on the undersides of foliage, and most of us need a hand lens to see them. Where populations are high, foliage may be stippled, brownish, or covered with fine webbing. Damage often appears first in drier parts of the field. I expect that the warmer, drier parts of New England are at greater risk from TSSM than the cooler areas.

References:

I think every commercial small fruit grower in New England should have a copy of the latest version of the New England Small Fruit Pest Management Guide. It is full of useful information.

As I write this, we are relying a lot on other regions (with SWD experience) for information on SWD. Here are three sources I found helpful: Mich State U: <http://www.ipm.msu.edu/SWD.htm> Oregon State Univ: <http://swd.hort.oregonstate.edu/> Washington State University : http://ipm.wsu.edu/small/pdf/SWD_Bulletin_Eastern_WA_v1_04.pdf More New England information will be developed soon.