Integrated Management of Insect Pests in New England (Highbush) Blueberries

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An integrated approach really pays off when dealing with highbush blueberry pests: 1) monitor for pests, signs, or symptoms 2) use preventative measures when available 3) apply controls only if there is a need. Blueberry growers who "manage" insects by spraying alone will often spray more than necessary, and sometimes get injury they didn't expect. Using all three components above is much more effective, and reduces spraying, too. Using traps also gives a public relations boost to PYO growers; customers see the traps, and get a favorable impression.

Cranberry fruitworm is the earliest of the common highbush blueberry insects in New England. The tiny moths fly during the bloom period, and lay eggs at the calyx end of the tiny fruit. The small green caterpillar bores into the green fruit and fills them with tiny brown droppings. Each caterpillar can damage several fruit. Damaged fruit blue up prematurely, and get webbed together with a bit of silk. Wild or minimally managed plants seem to be more heavily hit. That may be because they offer lots of places to safely overwinter. Insecticides applied right after bloom (often twice) are effective to control this pest. The same statement applies to cherry fruitworm. Some growers have few enough problems that they don't need to spray for either species of fruitworm. The New England Small Fruit Pest Management Guide lists the insecticide options, which keep changing. **Cherry fruitworm** is very similar in its biology to cranberry fruitworm. We manage it the same way. The caterpillar is pinkish-red with a brown head. Timing and materials are nearly identical to those for cranberry fruitworm. **Preventive/suppressive methods** for both species: destroy nearby unmanaged blueberries, prune properly each year, and keep weeds under control.

Blueberry maggot is our most serious insect pest. It has one generation per year, and overwinters as a pupa in the soil. The flies are present from very late June through August, sometimes longer. Female flies lay eggs just under the skin of ripe blueberries. The eggs hatch into maggots that consume the flesh, turning the fruit mushy.

BM numbers vary greatly from site to site. Occasionally, they build up to very high levels. I recommend all blueberry growers should use traps to monitor this pest. They are easy to use, and help you learn if and when you should spray. The best traps are red sticky spheres, and there are also green spheres and yellow sticky rectangles. Some growers try to make their own. I advise against that, unless you know precisely what pigments are used in the commercial traps. Matching the color so that it looks right to us isn't good enough --- insects have different color perception from us. It is important that the traps look correct <u>to them</u>! Stick with commercially available ones. If you buy the yellow rectangle traps, look for "baited Trece yellow rectangles". If you go for the red spheres, use unbaited ones --- baited ones are designed for apple maggot. Be sure you purchase some tangletrap or bird tanglefoot to spread onto the sphere traps --- they are shipped in non-sticky condition. Yellow rectangles come pre-stickied.

Traps go up just before the first of your fruit start to turn blue. I look for a "gap" in a bush, so the trap is in a spot where wind is reduced, within the canopy, well visible, and with fruit fairly close by. Spheres can be heavy (especially the wooden ones), so sometimes I use overhead wires or tall stakes to hold them. If you do that, don't suspend them high over the bush. They should hang within a bush, but visible. Yellow cardboard rectangles are lighter, and tend to

blow in the wind (onto your fruit). It is easy to see the flies against the yellow surface. They last only a couple of weeks before needing replacement. The spheres last all season, and can be used many seasons, if properly stored & handled. This year we worked with USDA entomologists Tracey Leskey and Starker Wright to test the apple maggot "curve ball" traps as a control for blueberry maggot. The first data are a bit disappointing, but we may do more.

You can buy traps from Great Lakes IPM www.greatlakesipm.com 800-235-0285 (Vestaburg, Michigan) or Gempler's www.gemplers.com 800-382-8473 (Madison, Wisc.)

Check traps weekly for the adults, and write down the data. Keeping records helps for decision-making in future years. I squash the flies as I count. You recognize blueberry maggot flies by the small white dot on their backs, almost between the wings, plus the particular pattern of black bands on the wings. They are small flies, about 4mm long (1/6 inch). A magnifying glass is helpful. When the flies are present, you know they can be attacking your fruit. There isn't a particular number of flies that triggers action. You be the judge of that.

There are several chemical insecticides registered, and the current New England Small Fruit Pest Management Guide lists them. The only "new" pesticide I could find for this pest was Assail. For organic growers, Aza-direct and GR-120 Naturalyte Fruit Fly Bait are registered. Surround is listed for "suppression" of BM, so to me this implies that it isn't too effective.

Yellow-necked caterpillar sometimes is a problem. It has one generation per year, and is usually found in August or September. The species is gregarious, so you rarely find just one. In addition to chemicals, *Bacillus thuringiensis* sprays (caterpillar strains) work well. Some growers ignore them, and if customers ask, point it out as "proof " that they don't spray much!

Fall webworm seems to be increasing in blueberry plantings. The insect has just one generation per year, but egg-laying isn't very synchronous. Some webs appear in early August, and new ones appear as late as mid-September. Plantings bordered by woods have more of them than others. In NH, southern Maine and Massachusetts, I find very few webs near the coast. Some growers ignore them, as with yellow-necked caterpillars. If you'd rather control them, there are chemical pesticides plus caterpillar strains of *Bacillus thuringiensis.* The trick to controlling them is to do so when the webs (and caterpillars inside) are fairly small, use a wetting agent, and a coarse spray. That helps penetrate the web.

Adults of **blueberry stem borer** appear in mid to late June, and lay eggs just under the bark of a branch. Then the beetles chew a messy girdle, so that the branch tip browns and dies. The girdle isn't as neat as that of its close relative, raspberry cane borer. The egg hatches and the grub then bores down the inside of the branch. The insect takes two or three years to complete its development. Plantings that are infrequently (or never) pruned suffer the greatest injury, and pruning shears are the best control device, not insecticides. One clue to infestation is light, fibrous pellets of frass at the base of the bush.

Preventative and Suppressive Measures:

Eliminate nearby unmanaged blueberries, keep up with pruning, and eliminate weeds from your plantings. All will help with insect problems!