Vermont Apple IPM Alert
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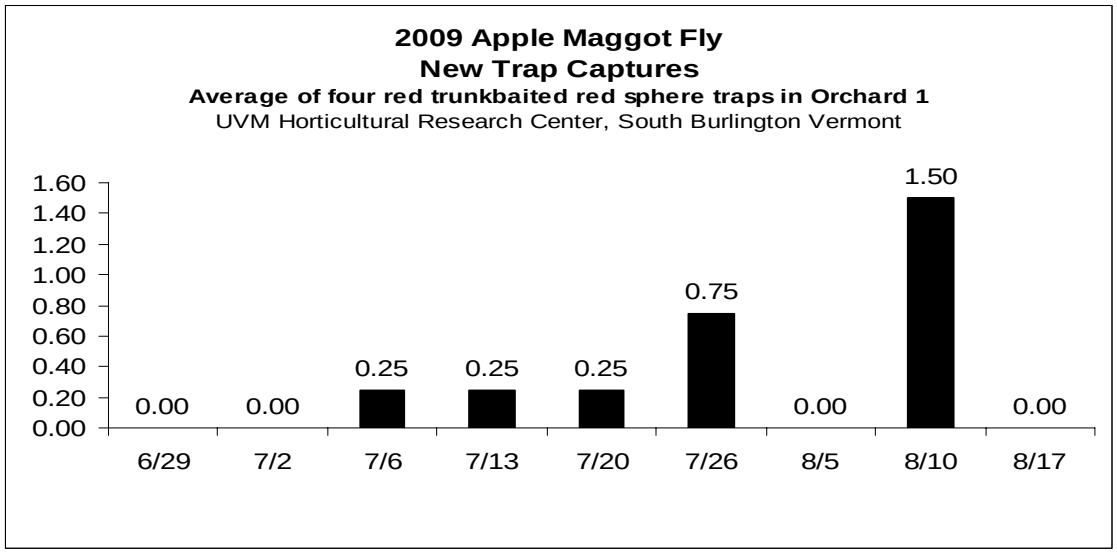
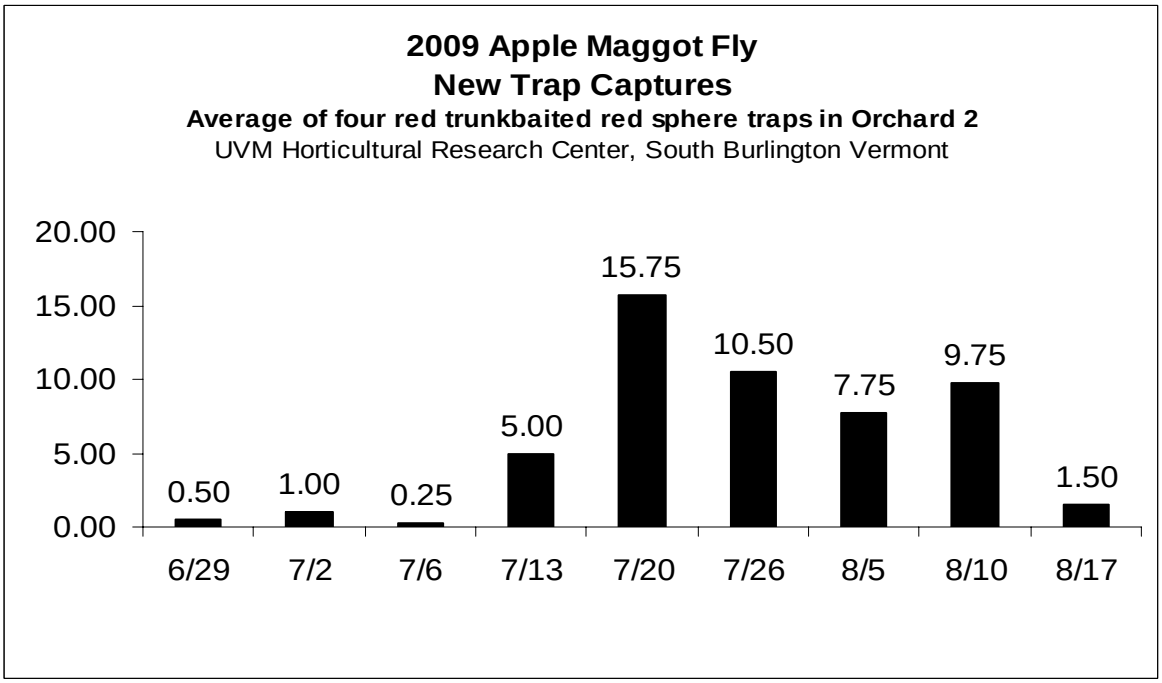
Since the 2009 Harvest has already started and everyone is focused on that … the following are just some quick updates:

Codling Moth DD - As of August 16, we had accumulated 1459 DD (base 50F) from May 11 which was the biofix at the UVM Hort. Res. Center (HRC). Please see page 118 of the 2009 New England Tree Fruit Management Guide for information on optimal timing of Codling Moth insecticide options. For larvicides, the period between 1260 - 1370 DD is an optimal time for management -- we have past that time at least at the HRC.

Apple Maggot Fly (AMF) Trap Captures Finally Decreasing ! The graphs below show how trap captures can differ significantly between two orchard blocks that are right next to each other -- and the importance of monitoring populations. Both orchards are at the UVM Hort. Res. Center and are part of the OrganicA Project; each has the same apple cultivars: Ginger Gold, Honeycrisp, Macoun, Liberty, and Zestar! Orchard 2 had neglected crabapple trees that were infested with AMF last year along two of its borders. Since the crabapple trees were such a significant source of insect pests (and disease inoculum) they were removed before the growing season started. However, last year's AMF overwintering population was in the ground and when they emerged -- they migrated to the nearest apple trees -- which were Orchard 2 trees. Populations in Orchard 1, which is farther removed from where the crabapple trees were located, never reached threshold levels this season so it did not receive any insecticide for AMF management. Orchard 2 received a total of three applications of spinosad because trap captures were repeatedly above threshold levels. This situation underscores the importance of monitoring AMF to determine the need for sprays in specific orchard blocks.



Highest average trap capture in Orchard 1 was 1.5 AMF; in Orchard 2, it was 15.75 AMF per trap



FALL BORER CONTROL CONSIDERATIONS - article by Dave Kain and Art Agnello, Entomology, Cornell, Geneva, which appeared in Scaffolds, August 17, 2009 (an update to a 2004 article):

"There is increasing concern throughout the Northeast about damage done to apple trees by borers. The species of primary concern is dogwood borer, but American plum borer can be prevalent in western New York apple orchards that are close to tart cherry

and peach orchards. While we do not yet fully understand the effects these borers have on dwarf trees, we do know that they reduce vigor and can, in time, completely girdle and kill trees.

We tested a number of insecticides against these borers over a number of growing seasons. Lorsban is very effective for this use and we would strongly urge growers to take advantage of it where needed. In 2001-2003 we compared some other materials, including white latex paint, endosulfan, Avaunt, Surround, Intrepid, Danitol, Imidan, spinosad and Esteem with Lorsban, with varying results. To make a long story short, only Avaunt, Danitol and, possibly Esteem, applied two or three times in midsummer, provided control comparable to one application of Lorsban. Assail and Altacor were effective when applied only once in midsummer but, obviously, will control only the summer generation.

Our tests so far have shown that borers can be controlled season-long by applying Lorsban at various times in the spring and summer. While postbloom trunk applications of Lorsban are still allowed, enabling growers to spray at the peak of the dogwood borer flight, applying this material prebloom as early as half-inch green works well, too, and may be more convenient. Fall also may be a good time to control dogwood borer. Results from 2002 indicated that Lorsban applied postharvest the previous year (sprays went on in October 2001) controlled both the overwintering and the summer generations of dogwood borer. An October 2002 application of Lorsban similarly provided season-long control of dogwood borer in 2003. Lorsban works when applied in the spring and fall because it infiltrates burrknot tissue and kills larvae concealed within. It is also very persistent in wood so it continues to work for a considerably long time after it is applied (apparently 9-12 months in our trials). Fall application may offer growers a more convenient alternative for applying borer control sprays.

In a survey we conducted recently, we observed some relationships between borer infestation and various orchard parameters such as the proportion of trees with burrknots, proximity to stone fruit orchards and presence of mouseguards. Conventional wisdom has held that borer problems are worse where mouseguards are in place. Mouseguards can contribute to increased expression of the burrknots that borers invade, and may shield borers from predators and insecticide sprays. This has led some growers to contemplate removing mouseguards under the premise that mice are easier to control than the borers. However, results of our survey indicate that dogwood borer larvae may be found as readily in trees without mouseguards as in those with them. (American plum borer may be a different story in orchards near tart cherry or peach trees.) The orchard in which we have conducted borer control trials has never had mouseguards and there is no shortage of dogwood borers. If mouseguards are deteriorated and no longer protect the tree, there may be some small advantage, in terms of borers, to removing them. But, in orchards where mouseguards still provide protection against rodents, removing them for the sake of borer control is probably not worth the risk. Instead, we would recommend the use of trunk sprays to control borers. Even with mouseguards on, insecticides will give adequate control if they are applied carefully (i.e., a coarse, low-pressure, soaking spray with a handgun).

Bottom line: as we go into fall, consider using Lorsban after harvest to control borers, and reconsider removing mouseguards on trees where they still afford protection."

CONTROLLING LATE-SEASON APPLE SCAB -- by Dave Rosenberger, Plant Pathology, Cornell, Hudson Valley Lab, which appeared in Scaffolds, August 10, 2009:

"**Scab problems in 2009:** Where primary scab was not well controlled last spring, apple scab has remained active throughout the summer, thanks to our cool wet weather and thanks, at least to some degree, to DMI-resistant apple scab. When the DMI-fungicides (Rubigan, Rally, Procure) were working properly, applications at pink, petal fall and first cover almost guaranteed that scab would not be a problem during summer. The DMI fungicides offered a combination of localized systemic movement (movement into and within leaf tissue) and post-infection and anti-sporulant activities that allowed them to work as "backstop" fungicides. As backstops, they ensured that any scab infections that might be missed in one spray would be arrested with the next spray. Dodine and the benzimidazole fungicides did the same thing in earlier eras.

Now that apple scab with resistance to the DMI fungicides is becoming prevalent, many apple growers are being forced to control apple scab without a "backstop" fungicide for the first time since the mid-1960s. As a result, minor scab control failures during April and May are increasingly turning into expensive, season-long battles to keep scab off of fruit.

The strobilurin fungicides Flint and Sovran have received increased use for scab control where DMIs are no longer effective and/or where scab problems persist into summer. Flint and Sovran, when used in combination with Captan, are very effective against scab because they arrest sporulation and, being absorbed into leaves, they are also more rainfast than Captan used alone. However, they lack the post-infection and pre-symptom activity of the DMI fungicides, and they therefore cannot stop developing scab epidemics the way that the DMIs did. Furthermore, label restrictions allow for only four applications per year of any combination of Flint, Sovran, and Pristine.

The future of the strobilurin fungicides for scab control has become questionable because stroby-resistant strains of apple scab have now been detected in numerous Michigan orchards and in several western NY orchards as well. These resistant strains contain a single-site mutation that makes them totally resistant to the stroby fungicides, just as Benlate-resistant strains of scab were totally uncontrollable with benzimidazoles after resistance occurred. The stability of resistance to the stroby fungicides from year to year requires more research, but it seems quite likely that orchards with stroby-resistant scab will no longer get any scab control from applications of Flint, Sovran or Pristine.

Impending problems with stroby-resistant apple scab would be bad enough, but the gravity of the situation is compounded by the fact that several new apple scab fungicides in the registration queue seem to work especially well when used in combinations with Flint. If stroby-resistant scab becomes widespread before these new products are registered (probably 2011–2012), then we may be unable to maximize the usefulness of these new compounds. Thus, growers have a great incentive to minimize selection pressure for stroby-resistant apple scab. Using appropriate resistance management strategies will be especially important through the remainder of this year in orchards where scab is still active.

Dangers from late-season scab include the potential for developing pinpoint scab or storage scab on fruit and the likelihood that numerous scab infections will develop on the undersides of leaves during September as fungicide residues are depleted. The lesions on the undersides of leaves develop because older leaves lose their natural age-related resistance to scab during late summer. Under-leaf scab can provide inoculum for infecting fruit just prior to harvest and also vastly increases the ascospore potential for next spring. Under-leaf scab can be prevented or minimized by continuing fungicide coverage into early September.

Pinpoint scab on fruit is likely to develop only in orchards where there is abundant scab inoculum and where a wetting period of more than 24 to 48 hours occurs after the fungicide residues on fruit are fully depleted during the preharvest interval. Scab infections that occur in the field cannot be eliminated with postharvest fungicide drenches, even if the lesions are not yet visible at the time of harvest.

To control late-season scab, consider the following:

1. Using Flint, Sovran, or Pristine in summer/fall sprays can be a good strategy for controlling late-season scab, but these products should always be used with a contact fungicide such as Captan or Ziram. In the past, we have suggested that Pristine could be used alone because it is a premix of a strobilurin fungicide with another product called boscalid. However, boscalid is not active against apple scab, so using Pristine alone to control late-season scab will create selection pressure for stroby-resistant scab.

2. In scabby orchards, use increased rates of Captan or Ziram, even if the products are being mixed with Flint, Sovran or Pristine. For many years, the standard recommendation for summer sprays has been Topsin M at 8–16 oz/A (for summer diseases) plus either Captan-50 at 3 lb/A or Captan-80 at 2 lb/A or an equivalent rate of Captec. Those low rates of Captan worked well in northeastern orchards when scab was absent or at low levels during summer. That was usually the case when we had backstop fungicides to shut down scab in late May. Where scab is still active in August, higher rates of Captan (e.g., Captan-50 at 5–6 lb/A or Captan-80 at 3–4 lb/A) may be needed both to provide longer residual protection between sprays and to ensure that, where they are used, the strobilurin fungicides are not subjected to high selection pressure for

fungicide-resistant scab. The full label rates of Captan may be needed on large trees with active scab.

3. Growers using high rates of Captan throughout the summer may find that they will approach the maximum rate/A/year that is allowed on the Captan labels before the end of the spray season (64 lb/A/year for Captan-50; 40 lb/A/year for Captan-80). This is a common problem in the southeastern US, where growers have traditionally needed high rates of Captan throughout summer to control bitter rot, flyspeck, and sooty blotch. Their solution has been to use Ziram/Captan mixtures with both products at half of full label rates.

4. Consider using a good spreader-sticker in late-season sprays. We lack data on the effectiveness of spray adjuvants and therefore cannot make any recommendations for specific products. We know that "sticker" type adjuvants can actually REDUCE fungicide effectiveness when used early in the season, because the adjuvants prevent fungicides from redistributing to newly developed leaves. However, adjuvants that slow fungicide wash-off during August and September should enhance late-season disease control, so long as sprays are applied under conditions that allow for good spray coverage."
