CULTURE

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No leaves – Part Two

Last week I wrote a column in which I pointed out that if a blueberry cane has no leaves at this time of the year it is usually due to one of two factors, grub damage or root rot. For the past thirty years this has been my experience. No leaves is a below ground problem. Usually on wet soils the root damage is due to root rot, on higher ground it is due to grubs. That is until this year, I have visited many farms in the Hammonton area over the past week and I have never seen so many plants without leaves. It is obvious that the cane’s fruit buds opened and bloomed, the leaf buds opened and then everything stopped and is now drying up. This is not a disease, which was confirmed by Peter Oudemans. The first field I saw these symptoms I dug the plant up and found large numbers of mealy bugs with the associated ant hills throughout the field. My first conclusion was that a large infestation of mealy bugs had compromised the root system and resulted in no leaves on the plant. Seemed like a plausible conclusion. Problem was that the second farm I went to had no leaves and when I dug up the plant, there were no mealy bugs. Since then I have dug up many plants and there is no common problem other than no leaves.

I don’t have a solid conclusion as of yet. In some fields there is mealy bug damage, some have grub damage, some have a very low pH, some have termite damage, and some have root rot problems. It should be realized that all of these situations decrease the blueberry plant’s ability to withstand cold winter temperatures. I think that is what we have here, winter cold damage and it is worse if the field has any other complicating problems. What can be done? Identify the complicating factor and fix it. Kill the ants, use Admire, improve drainage, or fix the ph. Also, it has been very dry. I would be watering these plants on a very regular basis. More importantly, I believe it would be better to water less and more often than say once a week. We may be able to save a lot of these canes and some of the fruit on those canes. At one farm I advised the grower to water more often last Friday and today, Tuesday, the plants
look quite a bit better. Will all the canes make it, no I don’t think so and neither will all the fruit. Some has already dried out. But I believe we can save some of it. I am sure there will be more comments on this subject in the future newsletters.

INSECTS
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Plum Curculio (PC): We continued to find PC adults over the past week in both Burlington and Atlantic counties. Overall 9% of the sites sampled were positive for PC adults. The maximum count per site was 5 PC adults. This is traditionally the number one insect target requiring treatments as soon as the bees are removed. Once the bees are removed from the fields, consider PC effective materials like Avaunt, or Imidan.

Leps. and other larva: Various leps including leaf roller larvae, humped green fruitworm, and eastern tent caterpillars are now present in the fields (Figures 1-3, see page 4). A total of 14% of the sites sampled were positive for leps. Leaf roller larvae are sampled for by observing the shoots and looking for leaves curled up (Figure 1). The maximum leaf roller larvae over the past week per field has increased to 3. In addition, we continue to find eastern tent caterpillars in fields in Atlantic county. These caterpillars have made their way into the blueberry fields from surrounding infested trees, possibly carried by the wind. The caterpillars are present on the canes and in the foliage (Figure 2). In high numbers, there can be foliage damage. With bees in remaining in the fields treatment options are limited.

Thrips: We began finding thrips in the field in Atlantic and Burlington counties on May 6th. Most farms do not have thrips activity. The maximum number of thrips was 89 thrips per 100 blossom clusters or 0.89 thrips per cluster. The threshold for thrips activity is 1 thrips per flower cluster. All sites with thrips activity are under the threshold level.

Aphids: Shoots are being sampled for aphid presence. The first aphids were observed in the field on May 6th in Atlantic county. Aphids were found at 3 sites over the past week, but only a single aphid was observed per site.

Life Cycle. Aphids are soft bodied, slow moving insects (see photo). The adults are on average about 2 mm long, light to dark green. They have piercing-sucking mouthparts, and two siphunci (cornicles) that protrude to the rear from the 6th abdominal segment. Nymphs resemble the adults, but are smaller and wingless.

Aphids on blueberries

There are four principal species of aphids that attack blueberries. These include: the blueberry aphid, *Illinoia pepperi* (present in Michigan), *I. azaleae* (present in New Jersey), the (western) blueberry aphid, *Ericaphis fimбриata*, and the green peach aphid, *Myzus persicae*. Aphids overwinter as eggs, which are deposited on stems and small shoots. Eggs hatch in the spring. At this time of the year, immatures feed on tender new growth, usually on the undersides of leaves at the top or bottom of blueberry bushes. Males and egg-laying females are produced in the fall. There are several generations per growing season.
Aphids suck sap from tender growth and new shoots, especially from developing terminal foliage. Under heavy populations, a sooty mold can develop on the honey dew secreted by the aphids. This is usually of minor importance in blueberries, since growers seldom allow aphid populations to build up to high densities. Of more importance is the fact that many aphids function as disease vectors. In blueberries aphids can transmit blueberry scorch virus (BlScV) and its several strains.

Monitoring and Control. Since disease transmission is a main concern in commercial blueberry farms, only very low aphid populations is tolerated, especially if BlScV is a known problem. Aphids may be present while bushes are in bloom, but populations don’t start to build up until after bloom. Monitoring should begin as soon as bees are removed and continue through at least the first picking. Sampling should be biased in new terminal growth, and data recorded as the percent of terminals infested with aphid colonies. Where disease transmission is an issue, a colony should be defined as a minimum of 1-2 aphids, either nymphs or adults. Treatment is justified if greater than 10% of terminals are infested with live aphids. The neonicotinoids Assail, Actara, and Imidacloprid (e.g. Admire Pro) provide good aphid control. Lady beetles, lacewings, syrphid flies, and other biological controls are often abundant in blueberry farms at this time of the year and may help maintain aphid populations at low levels.

Cranberry Fruitworm (CBFW): Traps have been placed at multiple locations for CBFW adult activity. The first CBFW adult was found in a trap in Atlantic county on Monday May 11th. In the past, CBFW activity peaks at the end of May or beginning of June.

Blueberry Gall Midge: Blueberry gall midge was found in the field Monday, May 18th. Adult blueberry gall midge are small flies that lay their eggs in the terminal growth of young shoots. Once hatched, the white larvae feed on the shoot tip (Figure 4), but this has never developed into an economic pest. Since the life cycle is fairly short, growers will see multiple generations of feeding evidence, but insecticides are not recommended.

Figure 4. The blueberry gall midge larvae and feeding damage.

Photo by: A. Raudenbush
First Post-Pollination Insecticide Options:
Growers who wish to use selective insecticides, especially for the control of Lepidopteran pests, are encouraged to do so. These compounds are safer to humans and the environment. Intrepid is an insect growth regulators (IGR) with activity only against caterpillars and have no effect on any other insects. Esteem is also an IGR that is also effective on cranberry fruitworm and scale (at a different timing). IGRs are safe to bees and thus can be used during bloom. Delegate is an insecticide with activity against caterpillars and toxicity to thrips. Assail is a neonicotinoid insecticide active against cranberry fruitworm, aphids, and thrips. Altacor is very effective against caterpillars. Delegate, Assail, and Altacor should be used only after bees are removed (if needed Delegate can be used to control thrips during bloom but applications need to be done at dusk to prevent bee exposure as Delegate is highly toxic to bees).

Here are few guidelines you may consider for choosing appropriate insecticides for the first post-bloom application:

1) If cranberry fruitworm is your only concern, growers can use Intrepid, Esteem, Delegate, or Assail. IGRs (Intrepid or Esteem) would be a good choice for a first application during or just after bloom, if the population is...
The reason that IGRs should be used for the 1st or “early” spray is that they are ovicidal and larvicidal, so to get maximum benefit they should contact the egg before hatch. If a 2nd application is needed (after bees are removed), Altacor, Delegate or Assail are good choices.

2) If cranberry fruitworm and thrips are your primary targets, you may apply Assail, Delegate, or Lannate. Assail and Lannate will also control aphids.

3) If aphids are your primary concern, and you do not have major caterpillar pressure or plum curculio at this time, then use Assail, Admire Pro, or Actara in your first post-pollination application (late May until early June). Assail will also control cranberry fruitworm and thrips. These compounds are very effective against sucking insects. Alternatively you may use a broad-spectrum insecticide such as Diazinon or Lannate. These broad-spectrum insecticides will also control caterpillars and other pests.

4) If you want to use a broad-spectrum material in late May and early June (for caterpillars, aphids, leafhoppers, thrips, plum curculio, etc.), you should choose one of Imidan, Avaunt, Lannate, or a pyrethroid (e.g. Danitol). Imidan will control all pests normally targeted at that time, but will not control aphids. Pyrethroids can also be used but are generally weak on aphids, but control most other pests (see labels). While the pyrethroids will control plum curculio, high rates need to be used to achieve control. Pyrethroid insecticides are very toxic to natural enemies, and thus will disrupt biological control, especially aphid predators and parasitoids.

5) Lannate is not labeled in Canada, and while it has the same tolerance on fruit as in the U.S., use should be minimized or avoided if exporting berries.