

The Blueberry Bulletin

A Weekly Update to Growers

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2018 Commercial Blueberry Pest Control Recommendations for New Jersey
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BLUEBERRY CULTURE

Gary C. Pavlis, Ph. D.
County Agricultural Agent

This week I visited a blueberry field planted this spring. It was in really bad shape. Plants were dying, the pH of the soil was over 6, there was grub damage to the roots and there was extreme water stress because the irrigation system had not yet been installed. While all of things can be remedied, I couldn't help but think about an article I read in the *Press of Atlantic City* entitled "Pinelands growers fight to keep up as blueberry growing goes global." The general story line was that though highbush blueberry growing started here in New Jersey we now have competition from all over the world. The link between this article and my farm visit is that it is going to be harder and harder to make a buck in the blueberry industry. World production has been projected to double in the next 3-5 years yet consumption will not double in that same amount of time. The best way a farmer can survive this competition is to run an operation that is as productive and

efficient as possible. That starts with getting a new planting to full production as soon as possible. Any delay costs the grower money. Not doing the pre-plant soil prep and adjusting the pH costs the grower money. Not having the irrigation in place and running ten minutes after planting costs the grower money. Not monitoring plant nutrition and making the proper adjustments every year costs the grower money. Not applying the proper controls for insects and diseases costs the grower money.

The New Jersey blueberry industry has been riding a wave of prosperity for a decade now and there is no doubt that we produce a fine product, but if there is one thing I have learned since leaving college 35 years ago it is that the objective in farming is to make money. Growers have to continue to dot all the i's and cross all the t's if our industry is to be able to meet the challenges that are coming.

BLUEBERRY INSECTS

Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University

Mr. Dean Polk, IPM Agent – Fruit

Ms. Carrie Denson, IPM Program Associate – Fruit

Plum Curculio (PC): PC is being monitored three different ways -1) In beating trays, which gives number of adults per bush, 2) Number of infested fruit per bush, and 3) Trap counts. This all meant to define adult activity and egg laying. During this past week, numbers increased slightly on the bush/beating trays. Our average count was 0.077 per bush, with a high of 1.3 adults per bush. The average level of infested fruit was 0.261 per bush, with a high of 4.5 infested fruit per bush. Trap counts during the week of May 21 – 25, were slightly higher than bush/beating tray counts. The trap count high in Atlantic was 2 per trap, and Burlington was 4 per trap. The first treatments should have already been applied for PC. However, continued activity will dictate further treatments. Small larvae are now present in untreated fruit.

Cranberry Fruitworm (CBFW): Adult activity in Burlington County is still slightly higher than in Atlantic County, however we did not see a peak in adult activity this past week. According to a recently developed model for CBFW, egg laying occurs from about 85 degree days (base 50) through 400 degree days after biofix or the first sustained moth catch. We found our first adult on May 14 in Hammonton. Therefore, according to the model, eggs started to be laid about May 14 and should continue through about June 5-7. Freshly hatched larvae enter the fruit near the calyx end shortly after egg hatch. Therefore the most effective treatments target newly emerged larvae before they can enter the fruit. The

first post pollination treatments for PC also targeted these newly hatching larvae. However, since the egg laying period is ongoing an additional treatment is needed at the present time. At this time, the best material that works for BOTH CBFW and PC is Imidan. Other materials that can be used to control both pests are: Asana, Avaunt, Brigade/Bifenture, Danitol, Diazinon, and Hero.

Leps- Leafrollers, Worms: Numbers per bush increased slightly over the past week, largely green fruitworm and other assorted caterpillars. Our average count was 0.044 per bush, with a high of 0.5 larvae per bush. This is well below the treatment threshold of 1 larva per bush. Separately, on developing lower shoots, it was 0.148 per infested shoot with a high of 6 percent of LEPS on shoots. The level of injured fruit was very low at 0.102 per bush with a high of 1.1 infested fruit per bush.

Aphids: Aphids started to show up by mid May, averaging 0.038% shoots infested, with a high of 2% shoots infested. Levels increased over the past week averaging 0.831% shoots infested, with a high of 12%. Colonies are small, sometimes consisting of only single aphids. However, since our informal treatment level is 10% infested shoots/bush, we are approaching treatment



Figure 1: Aphid Colonies.
Photo – Carrie Denson

levels on a number of farms. As of this writing, aphids are now reproducing and colony size is increasing. If you carefully examine tender grower tips, both adults and nymphs can be found in growing colonies (Figure 1). Materials that work for both aphids and cranberry fruitworm include: Assail (stronger on aphids), Lannate (stronger on fruitworms), Diazinon (weak on aphids), Brigade/Bifenture, and Hero.

Life Cycle. Aphids are soft bodied, slow moving insects (see Figure 1). The adults are on average about 2 mm long, light to dark green. They have piercing-sucking mouthparts, and two siphunculi (cornicles) that protrude to the rear from the 6th abdominal segment. Nymphs resemble the adults, but are smaller and wingless.

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 fimbriata*, 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 (BIScV) 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 BIScV 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. Also, for resistance management, you may want to consider using Sivanto, a newly registered insecticide in blueberries with a novel mode of action. 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.

Table 1: Summary of insect counts seen during the week of May 21st – 25th

	Leafroller/Bush	Gypsy Moth/Bush	Plum Curculio/Bush	Leafroller % on shoots	Aphids % on shoots
Average	0.0444	0.007	0.077	0.139	0.831

High	0.5	0.2	1.3	6	12
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Table 2: Summary of percent injury to fruit seen during the week of May 21st – 25th

	Leafroller % injured fruit	Cranberry Fruitworm % injured fruit	Plum Curculio % injured fruit
Average	0.102	0	0.261
High	1.1	0	4.5

Table 3: Atlantic County Trap Averages

	PC	CBFW
Average	0.429	0

Table 4: Burlington County Trap Averages

	PC	CBFW
Average	1.667	0.176

BLUEBERRY DISEASES

*By Peter V. Oudemans, Ph.D.
Professor and Extension Specialist, Plant Pathology*

Blueberry pollination is completed and the rain is falling. Weather forecasts suggest variable temperatures and the date of harvest is somewhat elusive. At this point Duke will not require additional fungicide sprays for anthracnose as long as an effective in-bloom program was followed. Susceptible cultivars such as Bluecrop will benefit from continued fungicide applications although the interval can be increased to 10-14 days.

Remember Ziram has a 30 day PHI which was changed last year. Also, Pristine, Abound, Quadris Top are all very similar and the anthracnose fungus will develop resistance to them if they are over-used. Use fungicides such as Switch, Proline, Quash or Captan for resistance management.

Blueberry scorch symptoms have been obvious this season. Symptoms may be confused with Phomopsis. The major difference between the two is that for scorch the majority of the bush is impacted whereas with Phomopsis the only a few branches are affected per bush.

Remember scouting for **Mummy Berry and Phomopsis** should precede any decision to spray and you should scout now for these diseases so that you can identify disease prone blocks in 2019. Mummyberry is much more common this season but look for it on susceptible varieties not Duke or Bluecrop. Weymouth, Sierra, Elliott, Earliblue, Coville, and Berkeley often have severe infections. Scouting for the disease now will help identify areas prone to the disease in the following season. There are no fungicide controls for these diseases at this stage of growth.



A. Immediate pre-bloom (approx. 5-7 days until bloom). Primary mummy strike on an inflorescence bud (B) and a leaf shoot (C).



An example of Phomopsis Twig Blight taken during the pre-bloom period.



An example of botrytis on blueberry fruit. Note how the fungus spreads from a blossom on to the fruit.

Diagnosing mummy berry in clusters and after slicing berries.

Root rot was severe in some fields last season and those fields should be treated with a Phytophthora fungicide soon. Since the blueberry plant is starting to produce new roots and the disease could be severe in areas with poor drainage. If *Phytophthora* was present last season, improve drainage

in the field as a first step. There are two types of fungicides labeled for phytophthora management. Phosphite fungicides labeled for blueberry include: Aliette, K-Phite, Phostrol, Prophyte and Rampart. Phosphites are not fertilizer and DO NOT provide a significant source of

phosphorous. Other compounds marketed as fertilizer do not have sufficient active ingredient to provide disease control and may cause phytotoxicity if concentrations are increased. Phosphites may have phytotoxic effects when not sufficiently diluted (50 gallons/acre) and if the spray water is below pH5.5. Ridomil is labeled for

soil applications only. Phosphites (same active ingredient as Aliette) are systemic fungicides with both downward and upward mobility. In other words these products may be applied as a foliar spray and the active ingredient will move into the root zone when leaves are present. At this time of year both types may be applied to the soil since there is insufficient leaf material present to absorb the fungicide.

Dr. Gary C. Pavlis, County Agricultural Agent
6260 Old Harding Highway, NJ 08330
Phone: 609-625-0056 | Fax: 609-625-3646 | Email: pavlis@njaes.rutgers.edu

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