The BLUEBERRY BULLETIN
A Weekly Update to Growers
Dr. Gary C. Pavlis, County Agricultural Agent
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AT A GLANCE…

Problem – Solution

Cranberry fruitworm, Blueberry leafminer,
Leafrollers
Azinphos-M 50W OR 1.0 to 1.5 lb
Confirm 2F, OR 8 to 16 fl oz
Diazinon 50W, OR 2 lb
Diazinon AG600, OR 25.5 fl oz
Guthion 50WP, OR 1 to 1.5 lb
Guthion 2L, OR 2 to 3 pt
Imidan 70WSB, OR 1.33 lb
Lannate 90SP, OR 0.5 to 1 lb
Lannate LV, OR 1.5 to 3 pt
SpinTor 2SC 4 to 6 fl oz.

Anthracnose
Abound, OR 6.2 to 15.4 fl oz
Cabrio, OR 14 oz
Captan 50WP, OR 5 lb
Captan 80WP, OR 3.1 lb
Captec 4L, OR 2.5 qt
Ziram 76DF 4.0 lb

Blueberry Aphids
Actara, OR 3.0 to 4.0 oz.
Diazinon 50W, OR 2.0 lb
Diazinon AG600, OR 25.5 fl oz.
Lannate LV, OR 1.5 pt
Provado 1.6F 3.0 to 4.0 oz.

Blueberry Maggot
Imidan 70 WSB, OR 1.33 lb
Lannate LV, OR 0.75 to 1.5 pt
Malathion 8 Aquamul, OR 1.5 to 2.0 pt
Sevin 4F 3.0 to 4.0 pt

Disease and Culture:
Gary C. Pavlis, Ph.D.
Atlantic County Agricultural Agent

Field visits over the past few days have seen the height of the ‘Duke’ harvest. The fruit is large, firm and even more flavorful than I remember in the past, or perhaps I have just been waiting too long for fresh blueberries for my morning cereal. I believe the overall crop of Duke is smaller then last year, not by a large margin, but it is smaller. I have noticed a few problems that growers should watch for.

Stem blight is rearing its ugly head again. Observant growers will notice entire canes drying up and dying in very short order. Once canes go down, they should be cut out as soon as possible before the disease moves down into the crown. I realize that at this time of the year harvest has begun and growers are busy but if these canes are not rogued out, the plants will die.

I have also seen plants out there with blueberry scorch. Again, these plants need to be rogued out. For positive ID, please call my office and we can run samples up to the research lab.

I also visited some packing lines over the weekend and found fruit infected with anthracnose. This disease requires approximately 12 hours of continuous wetness to establish infection. The recent rains have provided this thus this disease will most likely increase. Remember that
we have a new chemical in our arsenal to fight anthracnose, Abound.

These storms have also driven the seagulls from the shore to the blueberry fields. The result is fruit with bird damage. There is not much one can do about seagulls. Even the long lost Mesurol didn’t work on seagulls. The best advice is to keep garbage covered and labor camps tidy.

Lastly, if leaf symptoms look like there is a possible nutrition problem, leaf samples can be taken now and sent to a lab for analysis. The best method is to send two samples, one from plants that look bad, another from plants that look normal. A comparison of the two analyses will often reveal the problem.

Sincerely,

Gary C. Parks, Ph.D.
Atlantic County Agricultural Agent

Editor-Blueberry Bulletin

BLUEBERRY-ORANGE SOUP
- Grated zest and juice of 1 orange
- 2/3 cup water
- 1/2 to 2/3 cup sugar
- 3 cups blueberries
- 1/8 teaspoon grated nutmeg
- 1 tablespoon cornstarch mixed with 2 tablespoons water
- 2 teaspoons lemon juice

Grate 2 teaspoons orange zest; reserve. Squeeze juice from orange. In 3-quart saucepan, combine orange juice, water and sugar. Bring to a boil over high heat, stirring until sugar dissolves. Add blueberries and bring again to a boil; boil for 1 minute. Blend in reserved orange zest and nutmeg; add cornstarch mixture. Bring to a boil again, cook, stirring constantly, until thickened and clear. Remove from heat; stir in lemon juice. Serve hot or chilled. Makes 4 to 6 servings.

INSECT MANAGEMENT STRATEGIES FOR ORGANIC HIGHBUSH BLUEBERRIES
Dr. Sridhar Polavarapu

The following is a brief summary of some considerations in managing insect pests for organic blueberries.

1) Follow a regular pruning program to take out old canes. This will remove potential overwintering sites of Putnam Scale and contain scale infestations. Putnam Scale overwinters as adult female under the bark of old canes. Pruning of old canes reduces overwintering population.

2) Practice clean cultivation and suppress weeds in and around blueberry fields. Lack of ground cover (weeds) will preclude the availability of suitable overwintering habitats for a number of pests such as cranberry weevil and plum curculio. Regular disking and cultivation of the space between blueberry rows will not only help suppress weed populations, but will also expose both overwintering and active stages of the pests to their natural enemies and high temperatures during summer.

3) Use pheromone traps to monitor cranberry fruitworm, redbanded leafroller, and obliquebanded leafroller populations. Pheromone traps are useful in timing the approved insecticide applications.

4) Insecticides based on Bacillus thuringiensis (Bts) and azadirachtin (neem plant extract) are effective against caterpillar pests. Azadirachtin-based products (e.g., Aza-Direct) are more broadspectrum and are expected to have efficacy against aphids, leafhoppers, thrips, and caterpillar pests. Rotenone is another botanical product that can also be used for managing caterpillar pests and sucking insects.
5) Products containing natural pyrethrum are effective against blueberry maggot, the most important pest of highbush blueberries. However, not all products containing natural pyrethrum are approved for organic growing because of the presence of synergist piperonyl butoxide. Only products that contain natural pyrethrum alone are approved for use.

6) In addition to the use of insecticides such as natural pyrethrum, green or red plastic or wooden spheres (9 cm diameter), coated with bird Tanglefoot, and baited with ammonium carbonate dispensers can be used in trapping blueberry maggot flies. Adult blueberry maggot females require a 10-day pre-oviposition period to reach ovarian maturity before any eggs can be laid. If these red or green spheres are deployed just around the beginning of the female emergence, adult populations can be significantly reduced prior to the onset of egg laying. Alternatively, baited yellow sticky boards (baited Pherocon AM traps) can also be used for the same purpose; however, research as shown that green or red spheres trap nearly 30% more blueberry maggot flies than yellow sticky boards.

7) Early maturing varieties such as Weymouth, Bluetta, and Earlyblue can nearly escape blueberry maggot infestations. The blueberry maggot flies in New Jersey typically begin laying eggs around 20-22 June. By this date, these early varieties would have been harvested two or more times, significantly escaping infestation.

8) Blueberry scorch and blueberry stunt diseases are caused by blueberry scorch virus and blueberry stunt phytoplasma, respectively. Blueberry scorch is vectored by several species of aphids and blueberry stunt is transmitted by sharpnosed leafhoppers. Effective vector management and aggressive rouging of symptomatic plants are the only viable strategies available to manage these diseases at this time.

Insects

Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University
Mr. Dean Polk, IPM Agent – Fruit

Blueberry Maggot (BBM): Adults continue to be captured in yellow sticky traps, but at low levels. The following is a reminder for those growers who are participating in the Canadian Export Program and are trapping for maggot flies (or others who are interested): Traps should be hung in a “V” orientation within the top 6-8” of the bush canopy, not above it. Sometimes this means cutting away a little foliage so it doesn’t stick to the trap. If the trap is hung above the foliage then fewer to no maggot flies will be caught. The traps should ideally remain open at a 90° angle. As the trap gets wet, it loses form and gets heavier. Use of a #14 or 12 wire in place of the plastic coated wires that come with the traps will help maintain proper orientation and shape. Traps should also be changed every 2 weeks, since the ammonium acetate will volatilize off the traps. Proper identification of flies is also important. There are several flies that resemble blueberry maggot adults, and may be confused for BBM. These include the walnut husk fly and the cherry fruit fly. The blueberry maggot adult will have a solid “W” or “M” on the wing pattern. In most cases this looks identical to apple maggot but assume that: if it is in commercial blueberries, then its blueberry maggot. Please see illustration from Carroll et al. (2002).

Leafrollers and Larvae: Shoot terminal inspections show that 8% of samples show live worms of various species. Included in this group is the blueberry leafminer, which forms a teepee from the leaf when older, of 5% shoot infestation, of which there was only one sample which exceeded this value.
in our surveys. Searches of fruit samples for fresh worm injury showed no activity this past week. Old leafroller and other fruit injury were seen on 46% of samples of which 18% of samples exceeded the 1% injury level.

**Cranberry Fruitworm:** About 16% of total samples were positive for damage. Almost all of the evaluations were on Bluecrop, since harvests on that variety had not yet reduced the amount of damaged fruit. The highest level seen was 2% of clusters with injury.

**Aphids:** Both individuals and colonies are present in about 55% of our samples. Samples exceed the 10% infestation level in 36% of samples. Some predators are present.

**Plum Curculio (PC):** No adults have been seen for the past 2 weeks, nor has there been any fresh injury. Old injury was present on about 34% of samples taken. This should decrease rapidly as injured fruit starts to drop.

**Anthracnose:** With the recent wet weather, this disease is a concern. Abound or Cabrio applied between Bluecrop and Duke pickings will be helpful. Do not apply Abound with Anything else, since it may result in plant injury.

### Insect Trap Counts

#### Blueberry Trap Counts – Atlantic County

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Blueberry Maggot ID

Blueberry Maggot

Cherry Fruit Fly

Walnut Husk Fly

Black Cherry Fruit Fly

Apple Maggot

Dark Currant Fly