

# The Blueberry Bulletin

A Weekly Update to Growers  
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May 18, 1999

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## AT A GLANCE...

• Twilight Meeting, May 18, 1999.  
Starting at 6:30 PM at Atlantic Blueberry  
7201 Weymouth Rd., Hammonton, NJ  
Need directions? Call 609/561-8600.

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### Problem - Solution

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#### Mummy Berry -

200 Lbs of Urea 50%  
Funginex, 24.0 fl oz/A  
Orbit, 6fl oz/A  
Agree WG, 1-1.5 lb/A  
Crymax, 1-1.5 lb/A  
DiPel DF, 1.0 lb/A  
Javelin DWG, 1 lb/A

#### Anthracnose

Bravo 720, 3.0-4.0 pt/A  
Bravo Ultrex, 2.7-3.8 lb/A  
Captan 50WP, 5.0 lb/A  
Captan 80WP, 3.1 lb/A  
Captec 4L, 2.5 qt/A

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<http://www.rce.rutgers.edu/ag/blueberrybulletin/index.htm>

## BLUEBERRIES

### Insect Management:

By Dr. Sridhar Polavarapu

*Extension Specialist in Blueberry Entomology*

*Rutgers University &*

*Mr. Dean Polk, IPM Agent - Fruit*

**Leafrollers and other caterpillars:** Small numbers of caterpillars are present in many areas. These are mainly larvae of Green fruitworm, Red-banded leafroller, and Obliquebanded leafroller. Insecticide treatments are recommended only when leafroller, spanworm and gypsymoth larval numbers are more than 1 larvae per 100 flower and leaf clusters. **Confirm 2F** (tebufenozide) is a new option available if you need to manage caterpillar pests. This insecticide is safe to honeybees and other pollinators, and therefore, can be used during bloom. We do not recommend tankmixing Confirm 2F with other fungicides, especially if you are including a spreader-sticker such as Latron B-1956 in the tank-mix because of phytotoxicity concerns.

**Plum curculio on early varieties:** In the last couple of years we have seen a significant infestation of Plum curculio in some areas around Hammonton. This season we have already seen egg scars at low levels in some of these areas. Plum curculio is especially a problem in early varieties because the infested fruit is still on the bushes at the time of harvest of early season varieties. Consequently, the grubs from these infested fruit can show up in fresh packs as well as in processed fruit. On mid-season and late varieties, most of the grubs will either exit the infested fruit and enter the soil for pupation or infested fruit may fall to the ground before the beginning of harvest. Fields surrounded by woodlands and orchards are more likely to have curculio infestations.

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If you have experienced Plum curculio infestations in the past, please be on the lookout for egg scars and use Guthion in petal-fall sprays. Repeat applications may be essential at 7-10 day intervals to completely control Plum curculio egg laying and feeding.

**Aphids:** Small populations of aphids are present in several areas. Aphids are the vectors of the Blueberry scorch virus, the causal agent of Blueberry scorch disease or Sheep Pen Hill disease (see below). While we can do very little to control aphids during bloom, this is a good time to rogue diseased bushes to minimize the further spread of the Blueberry scorch disease. Areas with a history of aphid infestations may soon require petal-fall application of insecticides. If aphids are major concern in your fields, include Lannate SP or Diazinon 50W in your petal-fall sprays. If you are using Diazinon, do not tank-mix any Captan and Diazinon formulations.

**Blueberry Scorch Disease (Sheep Pen Hill disease):** Plants showing symptoms of blueberry scorch disease (also known as Sheep Pen Hill disease) are appearing in several fields in both Burlington and Atlantic Counties. This disease is caused by blueberry scorch virus (BBScV), belonging to carlavirus group of viruses. Primary symptoms of this disease are blighting of both flowers and new vegetative growth at peak bloom. Blighted blossoms fail to produce fruit and infected plants in general are less vigorous than healthy plants. Bushes once infected, may show symptoms each year. Symptom expression may vary from year to year. Initially, only one or few branches may have blighted flowers and leaves, but after a few years the entire bush may show symptoms.

Two major species of aphids, *Illinoia pepperi* and *Fimbriaphis fimbriata* occur on blueberries in New Jersey. In laboratory experiments using both these aphid species, we were able to transmit BBScV from infected Chenopodium plants to healthy Chenopodium plants. Virus transmission under field conditions can occur from early May to mid-August when aphid populations are present. Removal of infected bushes will decrease the amount of virus inoculum in the field and thereby reduce the spread of the virus to healthy plants. Under greenhouse conditions, this virus can be transmitted by rub inoculation and by grafting. Therefore, it is possible that BBScV may be transmitted under field conditions by mechanical injury. Control of aphids combined with removing and burning of infected bushes over a 2-3 year period should reduce further spread of this virus.

**Aphids:** Aphid populations are getting started and are present on about 10% of IPM sampled fields. Colonies are small and consist mostly of single insects. One farm in Hammonton was seen with small established colonies of adults and nymphs.

**Mummy Berry:** Very few infections are present. One monitored field in Hammonton showed 0.1 strikes per bush, indicating overall low disease pressure. Weymouth and Bluetta are among the most susceptible and common varieties present in New Jersey. Fungicide applications made following petal fall will not provide additional mummy berry control.

**Botrytis:** While this is not common in NJ, some blossom infections are present. One sample seen near Pemberton had about 50% of the bushes showing some degree of infection.

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### Insect Trap Captures

Blueberries - WEEK END:	Atlantic County					Burlington County				
	RBLR	OBLR	CBFW	SNLH	BBM	RBLR	OBLR	CBFW	SNLH	BBM
26-Mar	6.5					-				
2-Apr	19.6					2				
9-Apr	88.5					55				
16-Apr	55					53.5				
23-Apr	30.6					13.3				
30-Apr	20.8					29.2				
7-May	11.8					20.8				

Insect Key: RBLR-redbanded leafroller, OBLR-obliquebanded leafroller, CBFW-cranberry fruitworm, SNLH-sharpnosed leafhopper, BBM-blueberry maggot.

## **Disease and Culture:**

*Dr. Gary C. Pavlis*

*Atlantic County Agricultural Agent*

**Fertilizer Timing:** Growers who receive this newsletter are aware that we no longer are recommending first applications of fertilizer before bud break. This is inefficient use of fertilizer. In New Jersey, a May application is 10X as efficient as in April. Therefore, the first application should be applied at early petalfall. The growers who are now fertilizing through their trickle irrigation systems, fertigating, should also start fertilizing at this same time.

As predicted, flowering of all varieties progressed rapidly this week. In Mays Landing, even Elliott flower advanced from less than 8% open on April 28 to 62% open on May 8. As usual, the Pemberton area appears to be 5-7 days behind the southern fields.

**Anthracnose:** Anthracnose disease is a likely threat. When conditions are warm and humid in the spring around blossom time, sporulation may occur on twigs. The ripening fruit is the most susceptible tissue. Later in the season when fruit are ripening and turning blue, the blossom end of the fruit will soften, pucker and show some salmon-colored sporulation. Bravo, Captan or Captec are the best controls.

**No Leaves:** One grower pointed out that his plants had berries but no leaves. This is usually due to a root problem. Either grubs are eating away at them or phytophthora root rot is rotting them away. The plant will readily pull out of the ground in advanced stages. At this time of year and into June the large grubs should be visible, that's the good news. If its root rot, there are many things that can be done, ridging the plants, trickle irrigation, Ridomil applications etc. If its grubs, watch this newsletter for information on a recently labeled insecticide.

Sincerely,

DR. GARY C. PAVLIS

Atlantic County Agricultural Agent

Editor - Blueberry Bulletin ma

## **Diseases:**

*By Dr. Peter V. Oudemans*

*Associate Professor and Extension Specialist  
Plant Pathology*

**Anthracnose:** The fungus, *Colletotrichum acutatum*, causes the fruit disease anthracnose. This fungus is widely distributed across North America and causes disease on many types of fruit crop such as apple, strawberry, citrus, mango and occasionally peaches. Microscopic spores called conidia which, in mass, appear as an orange paste are responsible for spread of the fungus. The conidia are produced on dead branches or twigs early in the season and are spread in water droplets formed by splashing. Later in the season spores are produced on the surface of infected berries and can be spread mechanically by pickers, on conveyor belts as well as in the field by splash dispersal. During the growing season spread is most profuse during periods of rain although overhead irrigation may also assist spread of the conidia. For the conidia to infect a plant the appropriate environmental conditions must exist. For anthracnose these conditions are air temperatures between 59 - 81 and a period of approximately 12 hours of continuous moisture on the plant surface. Following infection of the fruit the fungus will remain dormant until the fruit begin to ripen. Infection can take place from early in the season (late flowering through petal fall) until harvest as long as spores are present.

Cultural practices useful for disease control include any method for promoting rapid drying of leaf and berry surfaces. These include pruning in winter to improve canopy aeration as well as reducing carry over from the previous season. Overhead irrigation during the evening hours may promote longer leaf and berry wetness periods because of dew formation and slow drying time. For this reason, irrigation during conditions of faster drying time can assist in reducing infection periods. Replacement of overhead irrigation with drip systems is another method that should be considered. Also, poor soil drainage can increase humidity and promote longer wetness periods.

The fungicides, Captan and Ziram are currently the most effective for protection from anthracnose infections. These fungicides when sprayed on the canopy will provide protection from infection. Generally, they work by slowing the spore germination process so that a longer wetness period is required for infection. Thus, use of cultural methods

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for rapid drying will greatly improve fungicide performance. These fungicides have no kickback activity and should therefore be used in a preventative manner and as part of a management program.

Fungicides useful for blueberry disease control May -July, 1999. Several fungicides are not included because the appropriate timing for application has past.

Fungicide	Max. amt/season	Max. # of apps	Rate/acre	Interval	REI	PHI
Captan 80/50	43.75 / 70 lb	14	3.1 / 5 lb	7-10 days	4 days	0 days
Benlate 50WP	3.0 lb pre 2.0 lb post	3 pre 2 post	1.0 lb	7-10 days	24 hr	21days
Ziram 76DF	20 lb		3 - 4 lb	7-10 days		14 days
Aliette WDG	20 lb	4	5.0 lb	14-21 days	12 hr	12 hr

**Blueberry scorch:** Blueberry scorch is a virus disease that is increasing greatly in frequency in New Jersey. The pathogen causes flowers to die without being fertilized and can result in major crop losses. In Burlington and Atlantic counties fields with 70-90% of the plants infected have been observed. Thus this disease represents a serious threat to the blueberry industry. This article is aimed at describing what is known about the disease, what can be done about it, and finally what research is needed.

**What is known**

A virus belonging to the carlavirus group causes blueberry scorch. It is a flexuous rod shaped structure that is sub-microscopic in size. The virus particles are made up of a protein coat and a single stranded RNA molecule that codes for replication and disease expression. The virus enters living plant cells through wounds and begins to replicate inside of the cell. In order to survive, the virus must remain in a living cell and can survive only short periods of time outside of a host cell.

Transmission of the virus is by aphids. Plant virologists have not been able to transmit the virus using infected plant sap. However, the virus is graft transmissible.

Symptoms of the disease vary depending on the cultivar. In "Weymouth" the classic symptoms of scorched blossoms and a Phomopsis-like dieback are commonly seen. In other cultivars such as "Duke" and "Bluecrop" the blossom scorch is less common and fruit may appear to set but will not develop. The plants may also appear chlorotic (yellowing similar to nitrogen deficiency) and partially defoliate. The disease may be easier to see by standing back from the bushes rather than close inspection. Shortly after the bloom period is over plants will begin to recover.

Unlike many other virus diseases, symptom expression may not occur every year. In addition, symptoms disappear after harvest.

Current recommendations are to tag suspect plants and to remove them from the field. Since transmission is via aphids an aggressive aphid control program should be considered in high-risk areas. Consult an entomologist or IPM agent on the best approach for aphid control.

We are working with Dr. Brad Hillman at Cook College to develop and test a kit for identification of scorch bushes. The kit is based on the ELISA method and can be used to process moderately large numbers of samples at a reasonable cost. Since cultivar reactions are so variable diagnosis can be a problem and this method should provide much needed verification.

## **ATTENTION:**

### **EPA approves Section 18 registration for Provado 1.6F for managing blueberry aphids in New Jersey**

*By Dr. Sridhar Polavarapu*

*Extension Specialist in Blueberry Entomology  
Rutgers University*

The US EPA has approved, under the provisions of Section 18 of Federal Insecticide, Fungicide, and Rodenticide Act, the use of **Provado 1.6F** for managing blueberry aphids **in New Jersey**. This product can be applied by ground application in a minimum of 20 gallons per acre or aerial application in a minimum of 5 gallons per acre. The product can be used at 3-4 fl.oz per acre, for a maximum of 16 fl.oz per acre per season (0.2 lb ai/acre/season). At the high rate, a maximum of 4 applications per acre per season are allowed. The pre-harvest interval is 3 days and the restricted entry interval (REI) is 12 hours. We will discuss all aspects of the use of this product in the forthcoming twilight meeting on May 18 at Atlantic Blueberries, Hammonton. Growers must have the Section 18 Supplemental label in their possession at the time of using of this product. A total of 6,000 acres in Burlington, Atlantic, Camden, Gloucester, and Ocean Counties in New Jersey can be treated with this product. Supplemental labels are available with your local County Agriculture Agent and with Dr. Gary Pavlis, Atlantic County Agricultural Agent (609-625-0056). You should call Dr. Gary Pavlis's office and register if you intend to use this product.

### **EPA grants a Section 18 registration for Admire 2F for managing oriental beetle in New Jersey blueberries**

The US EPA has granted, under the provisions of Section 18 of Federal Insecticide, Fungicide, and Rodenticide Act, the use of **Admire 2F** for managing oriental beetle **in New Jersey**. A single application of Admire 2F can be made by ground application in a minimum of 20 gallons as an 18-inch band on each side of the row or through a trickle irrigation system at a rate of 16-19 fl.oz per acre per season (maximum 0.3 lb ai/acre/season). The PHI and REI are 14 days and 12 hours, respectively. Growers must have the Section 18 Supplemental label in their possession at the time of using of this product. A maximum of 3,000 acres of blueberries may be treated for control of oriental beetle in Burlington, Atlantic, Camden, and Ocean Counties in New Jersey.

Supplemental labels are available with your local County Agriculture Agent and with Dr. Gary Pavlis, Atlantic County Agricultural Agent (609-625-0056). You should call Dr. Gary Pavlis's office and register if you intend to use this product. More information on most effective timing for oriental beetle management with Admire 2F will be provided in the coming issues of this newsletter.

**Post-pollination insecticide applications:** With a number of new insecticides becoming available for the first time during the 1999 growing season, growers need to pay close attention to their pest problems and the insecticide choices they have. This is especially important because some of the new insecticides are very selective (not broad-spectrum), unlike the organophosphates and carbamates we have been using so far in blueberries. For instance, Confirm 2F is effective only against caterpillars and has no effect on any other insects. Similarly, Provado 1.6F is active against sucking insects such as aphids, leafhoppers, crawlers of scales, and some grub species. Here are a few guidelines you may consider for choosing appropriate insecticides during the post-bloom period:

- 1) If aphids are your primary concern, and you do not have any caterpillar pressure at this time, then use Provado 1.6F in your first post-pollination applications during May until mid-June. If caterpillars and other pests are also a significant concern, you may have to use Diazinon, Guthion, or Lannate (see #4 below).
- 2) If caterpillars are the major concern, and you are going to keep bees for another week or so you may want to use Confirm 2F for managing caterpillar pests.
- 3) As you get closer to harvest, and if you want to stay on a calendar program for blueberry maggot management, your insecticide options are limited to Malathion, Imidan, or Lannate. Provado 1.6 has not been shown to be effective against blueberry maggot and is certainly not registered for this use. Malathion and Lannate will also effective against blueberry aphids.
- 4) If you want to use a broad-spectrum material in late May and early June (for caterpillars, aphids, leafhoppers, plum curculio etc.), you should choose one of Diazinon, Guthion, or Lannate. The pre-harvest interval (PHI) on Diazinon and Guthion (7 days) makes it difficult to use these products close to harvest.

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5) Rotate insecticides as much as possible. This will minimize the risk of finding higher residue levels of any one product and reduce the chances of resistance development. Products such as Lannate and Provado are not registered in Canada; the tolerance levels for these compounds are therefore lower in Canada than in US.

6) Many of these new products have not been tested for compatibility or phytotoxicity on blueberries at this time. Therefore exercise caution in tank-mixing any of these products. A sensible approach would be to conduct a jar test for compatibility and evaluate on a few bushes for possible phytotoxic effects of potential tank mixtures before applying on large scale.

In any case, pay close attention to all restrictions on the labels and follow the PHI as stated on the label. If you do not adhere to PHI and other use restrictions on the label, you may have illegal residues on the fruit at harvest.

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