



The BLUEBERRY BULLETIN

A Weekly Update to Growers

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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At a glance. Insect and disease problems that should be considered this week.

PEST/DISEASE	WEEK OF APRIL 21	WEEK OF APRIL 27
Botrytis Captevate, Elevate, Pristine, Switch	ALERT – Botrytis population is high. Scouting for this disease will begin. See Results next week.	Possibly begin applications for control. Wait for results of scouting.
Cranberry Weevil Asana, Guthion, Imidan	Scout for adults and evidence of damage. Treat if 20% of clusters with damage or if ≥ 5 weevils/bush	Continue scouting for weevils
Leafrollers, spanworms, gypsy moth B.t., Intrepid	Use pheromone traps to monitor adult flight. Scout for larvae. Treat if over 1 larva/100 clusters.	Continue scouting for larvae. Use same threshold.
Mummy berry Indar, Orbit (Primary Stage) Abound or Pristine or Switch (Secondary Stage)	Treat in areas prone to infection.	Secondary phase likely active
Anthracnose Abound, Captevate, Omega, Pristine, Switch,	Begin applications in early locations	Begin applications in most areas

'Blueberry Twilight Meeting'
Thursday, April 30th @ 5:30 PM
Variety Farms
548 Pleasant Mills Rd.
Hammonton, NJ 08037
For directions call 609/561-0612



Culture:

Dr. Gary C. Pavlis
 County Agricultural Agent

Pollination: Pollination is an important factor in production of the highbush blueberry. Lack of adequate pollination causes reduced yield, small berry size, and a delay in berry maturity. It is chiefly the honeybee which performs this task. While bumblebees are efficient and diligent pollinators (even under more adverse weather condition), their numbers are steadily decreasing.

(continued on next page)

According to MSU Entomologist, Dr. Roger Hoopingarner, "Historically, feral (wild) honey bee colonies have provided more than half of the pollination in Michigan." Wild bee populations are declining. This is due to changes in our own blueberry production practices which remove bee forage and suitable habitat, and there is the problem with mites.

Varroa and tracheal mites are killing wild and managed colonies in the U.S. The varroa mite has completely wiped out all of the wild colonies in Europe. It is certain that our dependence upon this population of bees will be reduced in the next few years in Michigan as well.

What does this mean for blueberry producers? What happens when we lose the free pollination service provided by wild bees? You probably already know - more honey bees.

Blueberries have a tremendous number of blossoms per acre. A single bush may have 2,000 to 3,000 blossoms. At a planting density of 870 bushes per acre, that's 1.75 to 2.6 million flowers! Large-block single-variety plantings make it essential that high numbers of pollinators be available at one time.

The number of colonies needed per acre is determined by weather during the bloom period, colony size, variety, and blossom density per acre.

Weather during blossom time affects the honeybee's foraging efficiency. Honeybee activity increases as the temperature increases from 50 to 95°F. Sunshine also increases foraging, especially at lower temperatures. Cold, wet, windy weather decreases foraging activity. Temperatures above 95°F will also reduce foraging as the bees spend their time cooling the hive.

As a general rule, over-wintered colonies are stronger than package bees. A three-pound package may have 12,000 bees, while an over-wintered colony may contain two to three times as many. Honeybee colonies will be smaller in an early bloom year. In essence, the crop has developed faster than the development rate of the forager bees. Are honeybees the answer? Many of you have seen your bees fly out of the hive, past your 'Jersey' bushes, and over to your neighbor's 'Rubel' field. This preference for one variety over another is not fully understood. It may be related to the quantity of nectar, pollen, sugar concentration, or flower color. At this time, honeybees are the best bet. For the long term, we need to learn to cultivate the wild pollinators.

The recommended concentration of hives per acre to use are tabulated below: Remember that the number of hives needed per acre depends on the variety you have.

VERY ATTRACTIVE TO BEES:

1 Hive/2 Acres:

Rancocas
June
Rubel
GN-87

MODERATELY ATTRACTIVE:

1 Hive/Acre:

Weymouth
Bluetta
Blueray
Pemberton
Darrow
Bluecrop*
Duke

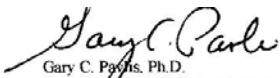
POOR ATTRACTIVE:

2 Hives/Acre:

Stanley
Concord
Berkeley
Coville
1316-A
Elliott*
Jersey*
Earliblue*

* Efficiency of pollination poor, add 1/2 hive more per acre.

Sincerely,



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

*Editor – Blueberry Bulletin
Blueberry Bulletin – Editor
GP/slp*

INSECTS

Dr. Cesar Rodriguez-Saona,

Extension Specialist in Blueberry Entomology, Rutgers University

Mr. Dean Polk, IPM Agent – Fruit

Cranberry Weevil (CBW): About 43% of beating tray samples have been positive for CBW, and about 16% of samples have been at or above threshold. This represents an increase in activity since last week. Given our additional sampling with the USDA SARE project, it has been very apparent that weevil populations are highest near wooded borders. We have also had very few warm days to ‘encourage’ weevil movement. Growers should

be particularly aware of any populations on field edges, especially since the window for any sprays will close as flowers begin to open.

Leafrollers and Other Leps: No activity has been seen so far; however, young redbanded leafroller larvae should start to show up soon. As plants begin to bloom, leafrollers and other ‘worms’ will be the key insect complex to watch out for.

Trap Captures

Atlantic County

Week Ending	CBFW	RBLR	OBLR	SNLH	Or. Beetle	BBM
4/5		19.9				
4/12		55.1				
4/19		72.0				

Burlington County

Week Ending	CBFW	RBLR	OBLR	SNLH	Or. Beetle	BBM
4/5		9.3				
4/12		22.6				
4/19		19.2				

DISEASE

By Peter V. Oudemans, Ph.D.

Associate Professor and Extension Specialist Plant Pathology

Botrytis Blossom Blight is a relatively rare disease that was devastating on Dukes in the 2003 season. The cause was due to the cool wet conditions that prevailed during bloom. This coupled with slow, poor pollination resulted in an extended bloom period and as the flowers aged they became more susceptible to infection. Duke was the hardest hit while Bluecrop and Elliott were not. There was considerable variability in severity across Burlington and Atlantic Counties and it appears that plantings that were not fungicide treated



were the hardest hit. Growers who followed an anthracnose management plan (protectant applications made at early bloom and 7-14 day intervals depending on the type of fungicide used) saw considerable benefit for controlling both diseases.

A fact sheet on botrytis is available for download (free) at the following address:

<http://njaes.rutgers.edu/pubs/publication.asp?pid=FS512> or just Google “Botrytis Blight in Highbush Blueberry”

The major question now is what to do for 2009? At this stage we have had unusually cool conditions with significant moisture. **This means that there is a serious Botrytis threat but there is still time for conditions to change and the threat to be lifted.** At this stage bloom is just beginning and if the cool wet conditions continue blossom blight will begin to develop in the next two weeks.

There are some important points to understand with this disease. First of all, the pathogen attacks weakened tissues such as older blossoms and everyone should be scouting for this phase now. Fruit that is set is more resistant to infection by spores. However, infected blossoms (corollas) will spread the disease to the leaves and fruit. In other words, blighted blossoms will drop and stick on developing fruit. Fruit infections begin as purple blotches under and will rapidly destroy immature fruit. Before considering a fungicide application the following points can be used in the decision making process.

Question	Spray	No Spray
Is pollination proceeding normally?	No	Yes
Are blossoms dieing without pollination?	Yes	No
Are blossoms “hanging on” and beginning to show signs of blight?	Yes	No
Is there evidence of fruit/leaf infection?	Yes	No

In the Table below I have summarized the products available for disease control in blueberry and which diseases can be effectively controlled with each.

Product	Active Ingredients	Mummyberry		Botrytis	Anthracnose
		Primary	Secondary		
Abound	Azoxystrobin	-	++	+	+++
Bravo1	Chlorothalonil	+	-	Not recommended	Not recommended
Cabrio	Pyraclostrobin	-	+	+	+++
Captan	Captan	-	-	+	++
Captevate	Fenhexamid Captan	-	-	+++ +	- +
Elevate	Fenhexamid	-	-	+++	-
Indar	Fenbuconazole	+++	+++	+	-
Omega	Fluazinim	?	?	?	+++
Pristine	Pyraclostrobin Boscalid	+++	+++	+ +++	+++ -
Switch	Cyprodinil Fludioxinil	++	++	+++	++
Ziram	Zinc dimethyldithiocarbamate	-	+	+	+++
1 Bravo can have phytotoxic effects on bloom and has a 42 day PHI. For a June 15 harvest, applications cannot be made after May 3 but you should always build in a margin of safety. Based on historical phenology records bloom in Atlantic Co. begins from mid- April - beginning of May.					
- indicates no effect; + suppression only, ++ moderate control, +++ excellent control, ? currently untested					

Remember that ANTHRACNOSE sprays should be started during early to mid-bloom and that BOTRYTIS sprays (if needed) should be made if blossoms are damaged by frost or left unpollinated and begin to show signs of aging as occurred in 2003 where cool, wet weather conditions prevailed.

Mummyberry. Mummy berry strikes will begin to appear in the next two weeks. Primary infections can still be controlled with applications of an approved fungicide such as Orbit, Pristine or Indar. After strikes appear the secondary phase of the disease begins.

Anthracnose. Bloom is just beginning and anthracnose spores will start forming in the bud tissues. Controls should be initiated during early bloom for susceptible cultivars such as Bluecrop.

Fungicide programs to consider.

Option 1. To control anthracnose begin applications of Abound or Cabrio or Captan or Ziram at the beginning of bloom. Of these choices I prefer Abound for the early applications followed by Ziram for the later

bloom and out of bloom applications. Do not exceed 3 applications of Abound per season.

Option 2. To control anthracnose begin applications of Omega at immediate pre-bloom to early bloom. This is a new chemistry and should be used with caution until we have more experience.

Option 3. To control anthracnose and mummy berry. Begin applications of Abound, or Pristine or Switch at early bloom. Note that applications of Indar or Orbit may also be used to control mummy berry but these do not control anthracnose and therefore should be used in conjunction with anthracnose materials.

Option 4. To control anthracnose and botrytis utilize Captevate, or Pristine, or Switch during bloom. These applications should not begin until full bloom and should be used in conjunction with option 1.