

The Blueberry Bulletin

A Weekly Update to Growers

June 14, 2019

Vol. 35, No. 8

Visit the Blueberry Bulletin webpage at
www.njaes.rutgers.edu/blueberry-bulletin

CULTURE

Dr. Gary Pavlis, Ph.D.

Atlantic County Agricultural Agent

Yellow Leaves: Numerous fields in the Hammonton area showed yellow leaves on the new growth. This has occurred almost entirely on 'Duke'. Yellow leaves at this time of year are normal because the plant is growing so fast that it causes Nitrogen deficiency in the new growth. When the growth slows during fruit maturation, the problem will fix itself. This is not the problem I am seeing this week. These leaves are light green/yellow but the veins are green. They are found only on the new growth. This is definitely iron deficiency. Years ago I would always say that this means the pH has climbed up past 5.5. For most varieties this is true, but for 'Duke', it may not be true.

It appears that the iron requirement for 'Duke' is higher than 'Bluecrop' and 'Elliott'. As a result it is possible to get iron deficiency when the pH is in the optimum range of 4.5 to 4.8. If you see this problem it is critical to fix it now. A simple foliar application of an iron chelate will green these plants up in a few days. If left unchecked, growth will be decreased and next year's flower bud development will also be decreased. This will have an effect on next year's yield.

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

Recent Rain Patterns and Insecticide Use

Given our recent periods of rainy weather, many growers are questioning the need for repeated applications, and the weatherability of the materials already applied. Dr. John Wise at MSU has been studying the [residual properties of insecticides](#) for a number of years. In 2018 Dr. Wise published an update on his work on the MSU blog. As noted in the article "rainfastness" of insecticides is influenced by the crop type and time between application and rainfall, in addition to other factors. Below we have reproduced the charts for various fruit crops. We encourage the reader to visit the site and read the full article.

Rainfastness rating chart: General characteristics for insecticide chemical classes						
Insecticide class	Rainfastness ≤ 0.5 inch		Rainfastness ≤ 1.0 inch		Rainfastness ≤ 2.0 inches	
	Fruit	Leaves	Fruit	Leaves	Fruit	Leaves
Organophosphates	Low	Moderate	Low	Moderate	Low	Low
Pyrethroids	Moderate/High	Moderate/High	Moderate	Moderate	Low	Low
Carbamates	Moderate	Moderate/High	Moderate	Moderate	Low	Low
IGRs	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Oxadiazines	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Neonicotinoids	Moderate, Systemic	High, Systemic	Low, Systemic	Low, Systemic	Low, Systemic	Low, Systemic
Spinosyns	High	High	High	Moderate	Moderate	Low
Diamides	High	High	High	Moderate	Moderate	Low
Avermectins	Moderate, Systemic	High, Systemic	Low, Systemic	Moderate, Systemic	Low	Low

Highly rainfast = ≤ 30% residue wash-off

Moderately rainfast = ≤ 50% residue wash-off

Low rainfast = ≤ 70% residue wash-off

Systemic = Systemic residues remain within plant tissue

Blueberry insecticide precipitation wash-off re-application decision chart. Expected cranberry fruitworm control in blueberries, based on each compound's inherent toxicity to cranberry fruitworm larvae, maximum residual and wash-off potential from rainfall.						
Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Asana	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Intrepid	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Assail	Sufficient insecticide residue	Insufficient insecticide residue	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Delegate	Sufficient insecticide residue	Insufficient insecticide residue	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue

* Number of days after insecticide application that the precipitation event occurred.

Insufficient insecticide residue = Insufficient insecticide residue remains to provide significant activity on the target pest, and thus re-application is recommended.



Cooperating Agencies: Rutgers, The State University of New Jersey; U.S. Department of Agriculture; and County Boards of Chosen Freeholders. The U.S. Department of Agriculture (USDA) prohibits discrimination in all programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Rutgers Cooperative Research & Extension is an Equal Opportunity Program Provider and Employer.

Sufficient insecticide residue = Sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.

Blueberry insecticide precipitation wash-off re-application decision chart. Expected Japanese beetle control in blueberries, based on each compound's inherent toxicity to Japanese beetle adults, maximum residual and wash-off potential from rainfall.						
Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Imidan	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Mustang Max	Sufficient insecticide residue	Insufficient insecticide residue	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Sevin	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Provado Admire	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue

* Number of days after insecticide application that the precipitation event occurred.

Insufficient insecticide residue = Insufficient insecticide residue remains to provide significant activity on the target pest, and thus re-application is recommended.

Sufficient insecticide residue = Sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.

Blueberry insecticide precipitation wash-off re-application decision chart. Expected spotted wing Drosophila control in blueberries, based on each compound's inherent toxicity to SWD, maximum residual and wash-off potential from rainfall.						
Insecticides	Rainfall = 0.5 inch		Rainfall = 1.0 inch		Rainfall = 2.0 inches	
	*1 day	*7 days	*1 day	*7 days	*1 day	*7 days
Imidan	Sufficient insecticide residue	Insufficient insecticide residue	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Mustang Max	Sufficient insecticide residue	Insufficient insecticide residue	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Lannate	Sufficient insecticide residue	Insufficient insecticide residue	Sufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Malathion	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue

Delegate	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue
Assail	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue	Insufficient insecticide residue

* Number of days after insecticide application that the precipitation event occurred.
 Insufficient insecticide residue = Insufficient insecticide residue remains to provide significant activity on the target pest, and thus an immediate re-application is recommended.
 Sufficient insecticide residue = Sufficient insecticide residue remaining to provide significant activity on the target pest, although residual activity may be reduced.

Insecticide persistence, plant penetration and rainfastness rating			
Compound class	Persistence (residual on plant)	Plant penetration characteristics	Rainfast rating
Organophosphates	Medium - Long	Surface	Low
Carbamates	Short	Cuticle Penetration	Moderate
Pyrethroids	Short	Cuticle Penetration	Moderate - High
Neonicotinoids	Medium	Translaminar & Acropetal	Moderate
Oxadiazines	Medium	Cuticle Penetration	Moderate
Avermectins	Medium	Translaminar	Moderate
IGRs	Medium - Long	Translaminar	Moderate
Spinosyns	Short - Medium	Translaminar	Moderate - High
Diamides	Medium - Long	Translaminar	Moderate - High

Plum Curculio (PC): Fruit injury over the past week averaged 0.03% with a maximum of 0.7% fruit injury. Most injured fruit is dropping to the ground, and any infested fruit still on the bushes is prematurely soft. If you have ANY PC injured fruit in your harvest, make sure to set your firmness sorters so they kick any of this out in the cull tray.

Scale: Scale crawlers are still present, and causing a low level of fruit injury where present. One field has up to 1.3% of fruit marked with scale, but the average injury is closer to 0.04%. These fields should be scheduled for a scale treatment during the second crawler generation during late July to early August.



Cooperating Agencies: Rutgers, The State University of New Jersey; U.S. Department of Agriculture; and County Boards of Chosen Freeholders. The U.S. Department of Agriculture (USDA) prohibits discrimination in all programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Rutgers Cooperative Research & Extension is an Equal Opportunity Program Provider and Employer.

Leafroller larval presence and injury: Presence of larvae was very low this past week, with 0.04% of shoots infested, and a maximum of 2%. Fruit injury was also very low but still present.

Cranberry and Cherry Fruitworm (CBFW, CFW): Some slight amount of injury and pest injury is present, but overall is not a concern. Some non- to poorly-sprayed fields showed a higher presence of cherry fruitworm this year than cranberry fruitworm. Cherry fruitworm larvae are pink to orange (See photo), and do not produce the massive amounts of frass associated with cranberry fruitworm, which is light green.



Cherry fruitworm in berry.
Photo – C. Denson.

Aphids: During the past week the average level of infested terminals was just over 2% with a maximum present of 24%. Colony sizes have increased to 2-5 aphids per colony. Aphids should be well controlled at this point, since SWD is now part of the pest picture.

Spotted Wing Drosophila (SWD): This is now the main pest of concern. The majority of our trap network consists of red sticky traps with a SWD attractant hung below the trap. We count only males in this trap, since this is far more economical than using a network of cup traps that have to be strained each week to ID the flies. The numbers on traps are reported in the table below. However, we do have several cup traps placed at four locations to look at early female presence. Our first SWD capture was just prior to Memorial Day. With temperatures in the low 80's, SWD can go through a generation in about 10 days. Considering the number of eggs a female can produce, with ideal temperatures, a 2nd generation could produce 100x that of the 1st generation first seen in late May. As the population density increases during the growing season, SWD pressure becomes greater. Protection of the fruit is more difficult, and the likelihood of infested berries increases. This is why it is important to start early, and stay on top of SWD management. Watch the weather and try not to apply certain materials if significant rain is predicted for the next day. See John Wise's tables MSU.



Female SWD showing comb-like ovipositor. Photo: C. Denson

Cup Traps Including Female SWD 6/2-6/8

	Atlantic Location 1	Atlantic Location 2	Burlington
Females	4	4	1
Males	9	16	6

Insect Traps

Atlantic County

	SWD	OB	BBM
Average	1.05	8.2	0
High	12	50	0

Burlington County

	SWD	OB	BBM
Average	0.07	2.91	0
High	1	14	0