



The BLUEBERRY BULLETIN

A Weekly Update to Growers

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INSECTS

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Spotted Wing Drosophila is the key pest to control, so growers should choose materials primarily based on SWD control.

Spotted Wing Drosophila (SWD): SWD adult males are being captured in numerous locations. Numbers are low, but average about 3 times the level in Burlington County as being seen in Atlantic County. Maximum levels were 11 per trap in Burlington County. In most years 'Duke' have largely escaped infestation, since they harvest early compared to the population build-up of SWD. DO NOT assume this is true for this year. Duke is very susceptible now, and 'trapped' populations appear to be on track for what they were last year by the 7-10 of July. In other words, the population pressure on Duke appears to be higher than in previous years. A 7 day program is needed now and through the remainder of the season. Choose a rotation of the following insecticides listed in Table 1. A blank under the Canada MRL column means there is no established MRL, so don't use it if exporting to Canada.

Table 1. Insecticides effective for Spotted Wing Drosophila with Comparative MRLs for the US and Canada.

Active Ingredient	Trade name	MRL (ppm) US	MRL (ppm) Canada
Acetamiprid	Assail	1.6	1.6
Bifenthrin	Brigade/Bifenture	1.8	
Carbaryl	Sevin	3	7
Cyantranilprole	Exirel	4	4
Diazinon	Diazinon	0.5	
Esfenvalerate	Asana	1	
Fenpropathrin	Danitol	3	3
Imidacloprid	Admire	3.5	3.5
Indoxacarb	Avaunt	1.5	
Malathion	Malathion	8	8
Methomyl	Lannate	6	6
Novaluron	Rimon	7	7

Phosmet	Imidan	10	5
Pyrethrins	Pyganic	1	1
Pyriproxyfen	Esteem	1	1.5
Spinetoram	Delegate	0.5	0.5
Spinosad	Entrust	0.4	0.5
Spirotetramat	Movento	3	3
Thiamethoxam	Actara	0.2	0.2
Zeta-Cypermethrin	Mustang Maxx	0.8	
Zeta-Cypermethrin + Bifenthrin	Hero	0.8 + 1.8	

Aphids: Aphid populations average about 2.5% infested shoots, with a maximum of 32% infested shoots. This average is slightly more than the previous week. Any time we see more than 10% of growing shoots infested with healthy colonies, we get concerned. Treatments are suggested when numbers exceed the 10% level.

Cranberry Fruitworm (CBFW): Our trap counts have decreased, and targeted treatments are over. Some pockets are still present in Burlington County. Just about all insecticides that are effective for SWD, are also effective for CBFW.

Captan and Canada: A number of growers have asked about the use of Captan and the various export markets, especially Canada. Please be aware that although the product is labeled in both the U.S. and Canada, there are different labels in Canada vs. the U.S. as well as different MRLs. Please see Table 2 for a summary of Captan MRLs for various export markets.

Table 2. MRLs in ppm for Captan in US, Canadian and European markets.

Market	MRL (ppm)
Austria	30
Belgium	30
Canada	5
Codex	20
Denmark	30
European Union	30
France	30
Germany	30
Italy	30
Netherlands	30
Spain	30
Sweden	30
Switzerland	15
United Kingdom	30
United States	20

Atlantic County

Week Ending	Cranberry Fruitworm	Plum Curculio	Oriental Beetle	Spotted Wing Drosophila ♂
5/6				
5/13	.083			
5/20	.28	2.4		
5/27	.56	2.8		
6/3	0.24	0.33		0.744

Burlington County

Week Ending	Cranberry Fruitworm	Plum Curculio	Oriental Beetle	Spotted Wing Drosophila ♂
5/6				
5/13	.33			
5/20	.14	7		
5/27	.43	12		
6/3	0.857	2		2.462

Spotted Wing Drosophila - A Key Pest of Blueberries in New Jersey

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Spotted wing drosophila (SWD), *Drosophila suzukii*, is a small (2.5-3 mm) invasive vinegar fly, which can damage many fruit crops. Native to Southeast Asia, SWD was first detected in the continental U.S. in 2008, since then it has become established in many states across the country and was first found in New Jersey on July 7th of 2011. Unlike the majority of its relatives, SWD has the potential to be a major pest of many fruit crops including blueberry, grape, cherry, raspberry, and strawberry. The female of the species is equipped with a large serrated ovipositor which can saw through the soft skin of many ripening fruits in order to lay her eggs. The larvae rapidly develop within the fruit. SWD infestation causes puncture wounds, softening, wrinkling, and collapse of the fruit.

Identification

SWD males have a distinctive black spot on each wing near the tip and two black ‘bands’ on the front legs (Figure 1). Females possess a large serrated ovipositor (Figure 1).



Figure 1. Male and female spotted wing drosophila (Photo courtesy of John Obermeyer, Purdue University).

Life cycle

SWD overwinters as an adult and becomes active in the spring to mate (Figure 2). SWD flies lay their eggs in susceptible, ripening fruit during spring, summer, and fall. The female SWD can deposit up to 350 eggs in her lifetime (Figure 2). Depending on the weather the life cycle can be 8 to 14 days, with a mid-season life span lasting 3 to 9 weeks (Figure 2). SWD flies are most active at temperatures above 68°F but decrease their activity at temperatures above 86°F. Eggs are deposited in the fruit and hatch in 12 to 72 hours; larvae develop inside the fruit and take 5-7 days to pupate; pupation can take place both inside and outside the fruit and lasts 4 to 15 days.

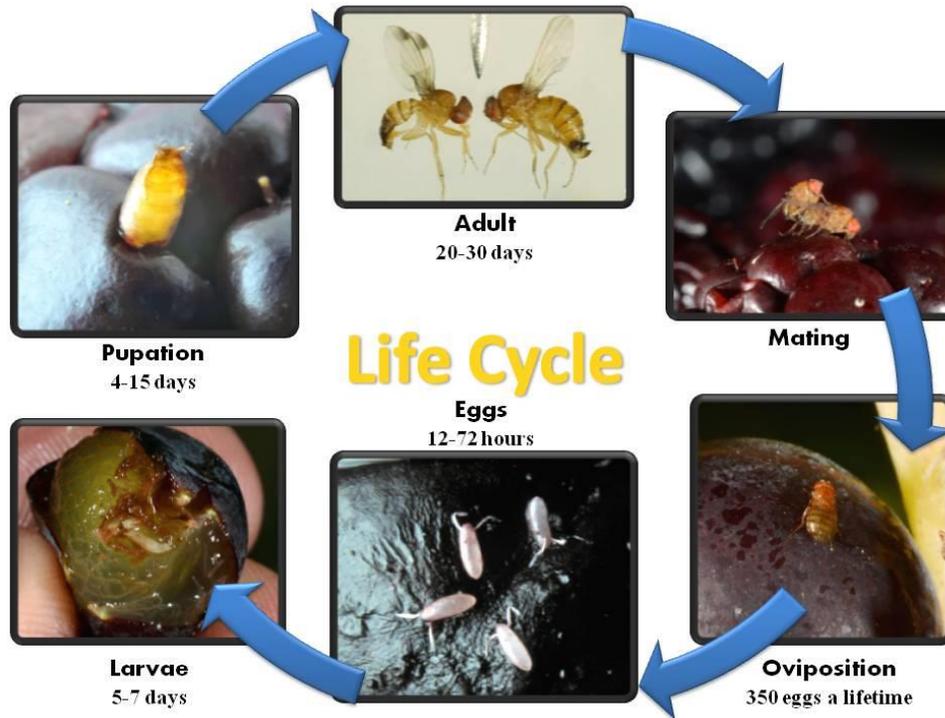


Figure 2. Spotted wing drosophila life cycle (Photo courtesy of John Obermeyer, Purdue University).

Monitoring

Early detection is important for SWD management. Traps used for monitoring should be placed in the field at least 2 weeks before fruit ripening and monitored every week. Traps should be placed at bush level close to the developing fruit, preferably along the edges of the field that have wooded borders. Traps may be purchased or simply hand made. The newest trap designs involve cutting two round holes on both sides of the upper portion of a clear 32 oz. deli cup, a piece of mesh material is then glued in place over those holes (Figure 3), and a lure can be hung from the lid over a solution of apple cider vinegar and a drop of scentless soap.



Figure 3. Example of trap for monitoring SWD

There are two commercial SWD lures available for purchase, *Pherocon SWD* lures and traps are available through Trécé and Scentry SWD lures and traps available through Great Lakes IPM. A yellow sticky card can also be employed inside the trap. Inspect the trap solution and the yellow sticky card for SWD males and females (Figure 4). Male SWD are more easily recognizable on yellow sticky cards because of their prominent spots. The female however is less visible because the serrated ovipositor may be retracted into the abdomen. Pressing lightly on the abdomen may help pop the ovipositor out for inspection. Once SWD has been detected you may wish to simplify your inspection by only counting males, which are representative of the total population.



Figure 4. Spotted wing drosophila on yellow sticky card (Photo by John Obermeyer, Purdue University).

Salt Flotation Test

To inspect fruit for SWD larvae a simple salt flotation test can be performed (Figure 5). This is a good method of evaluating the effectiveness of your SWD management program and insuring the quality of your product. Salt water will irritate any larvae present into emerging from the fruit and they will float to the surface of the salt water. Cover all berries, screen, and weights with the saturated salt solution so any larvae are free to float to the top and be seen. After 10 minutes it is safe to assume no more larvae will surface.

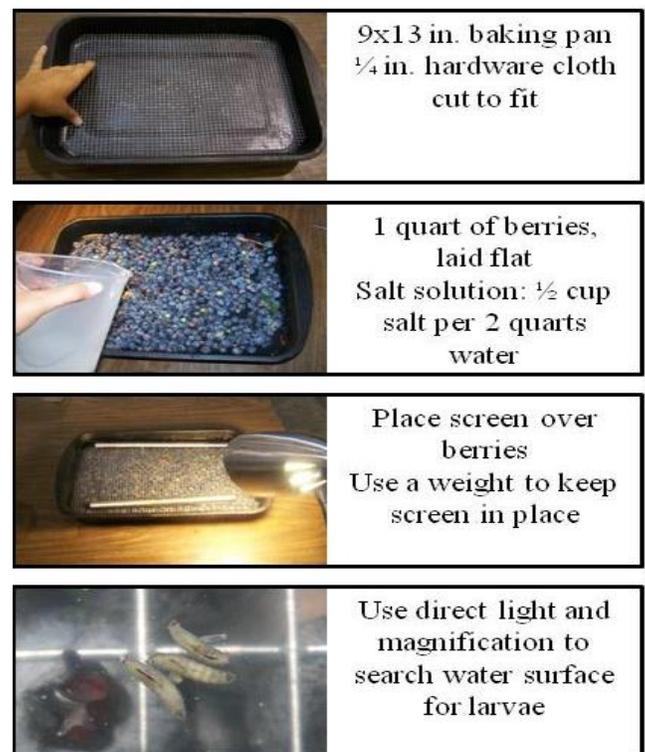


Figure 5. Steps in the salt flotation test.

Control

Sanitation is important to SWD management. Like its relatives, SWD enjoy rotting fruit. SWD populations increase dramatically following harvest due to the presence of fallen and overripe fruit which represent a significant food source and a site for reproduction. Fruit should be harvested completely, rows kept clean, fallen berries covered and culled fruit disposed of or buried. Currently, SWD management relies heavily on the use of insecticides. There are several insecticides which have been labeled for the control of SWD. Insecticides with different modes of action should be rotated in order to decrease the risk of SWD developing insecticide resistance. SWD are prone to desiccation so they are likely to seek out shaded areas with high humidity such as the undergrowth and canopy, indicating that applications at dusk with full foliar coverage will be the most effective.