Vegetable & Fruit News

The University of Maryland Extension Agriculture and Food Systems and Environment and Natural Resources Focus Teams proudly present this publication for commercial vegetable and fruit industries.

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Mid-July Vegetable IPM Scouting Tips

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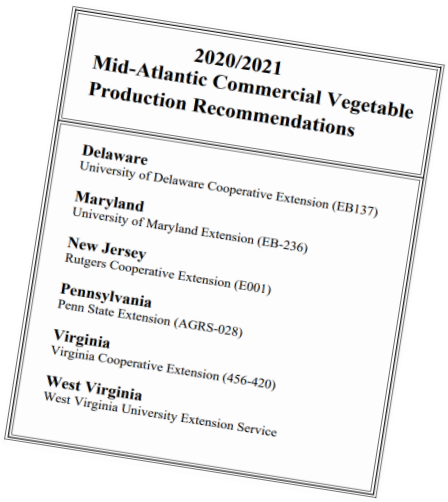
General Tips: Check > 50 plants throughout the whole field when making treatment decisions. Localized infestations can be spot treated to save time and money. For up-to-date chemical recommendations, check the Mid-Atlantic Commercial Vegetable Production Guide. Read all labels carefully for rates and restrictions.

Cucurbits: Continue to scout for aphids, cucumber beetles and spider mites. Early detection is critical since these pest populations can quickly explode during hot, dry weather. Watch for rind feeding pests such as beet armyworm, yellow-striped armyworm, cabbage loppers, and cucumber beetle adults in melon fields.

Sweet Corn: Sample pre-tassel stage for whorl feeders (corn borer, corn earworm, and fall armyworm). Treatment should be applied when 15% of plants are infested with larvae and should be directed into the whorls.

Lima Beans and Snap Beans: Scout fields for aphids, leafhoppers, and spider mites. The leafhopper threshold is an average of 5 per sweep. As soon as pin pods are present, check for plant bugs and stink bug adults and nymphs. As a general guideline, treatment should be considered if you find 15 adults and/or nymphs leafhopper per 50 sweeps. Continue to scout for bean leaf beetles and Mexican bean beetles—Control when there is an average of 20% defoliation or 1 beetle per plant.

Potatoes: Scout fields for Colorado potato beetle, leafhoppers, and aphids. Controls will be needed for green peach aphids if you find 2 aphids per leaf during bloom and 4 aphids per leaf post-bloom. This threshold increases to 10 per leaf at 2 weeks from vine death/kill. If melon aphids are found, the threshold should be reduced by half.



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Reminders for Monitoring and Managing Spotted-Wing Drosophila

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Spotted-wing drosophila (SWD, *Drosophila suzukii*) is a small fly that lays its eggs into ripening and ripe soft-skinned fruit, causing direct damage and wounds that other pests and pathogens can use. Although they prefer fully colored ripe fruit, they are capable of infesting fruit that is just starting to turn color and will do so when populations are high. SWD can make use of a wide range of resources throughout the year, including ripe fruit in crop and non-crop habitats as well as damaged/overripe fruit, compost, manure, nectar, and fungi. Populations in non-crop habitats can move into fruit crops, causing near continual pressure during the season in addition to pressure building on farm, especially when multiple susceptible fruit crops are grown.

In the mid-Atlantic, caneberries (raspberries and blackberries) experience heavy pressure because they are preferred hosts and fruit during the mid-summer when SWD populations rapidly grow. Cold winters reduce overwintering populations, helping earlier season fruit such as strawberries, cherries, and earlier blueberry varieties escape damage. However, when we have warm winters with fewer days below freezing and warmer low temperatures, such as 2020 and 2021 (**Table 1**), populations build faster and more damage will occur, especially in cherries and blueberries[1].

Table 1. Calendar year minimum temperatures and days <32˚F. Weather data recorded by station USC00182336 in Damascus, MD.

Calendar Year	Minimum Temperature ˚F	Total Days <32 ˚F
2018	-1	100
2019	-1	96
2020	15	63
2021	16	61

Monitoring. Monitoring can be used to determine if SWD is active on farm, and management decisions that combine SWD activity and fruit susceptibility (the riper the more susceptible) can help avoid unnecessary applications. There is no treatment threshold for SWD and acceptable damage varies by market and operation.
To determine when adults are active in cherries and blueberries, commercial adult traps and lures can be purchased and/or home-made traps and baits can be used (for more details and images see Michigan State Extension 2020[2]). Traps have to be checked weekly and will capture non-target insects that must be sorted through to find the adult flies.

Checking fruit for SWD damage, eggs, and larvae can be used to determine SWD pressure and the effectiveness of management programs. Visual inspection of fruit by looking for soft and leaky fruit can work to find infestation, and sampling fruit from the interior part of the plant where the habitat is more favorable and insecticide deposition is often poorer can help with early detection.

A sensitive and easy approach for monitoring infestation is to use salt or sugar water solutions to float eggs and larvae out of fruit[3]. Depending on whether you want to know if your management program is working (market ripe) or if you want to evaluate SWD pressure (interior, soft, ripe and overripe fruit), collect fruit and lightly crush (break the blueberry skin or separate the caneberry druplets) them in a plastic bag or container. Add salt (1 cup salt to 1 gallon water) or sugar (1/4 cup granulated white sugar to 4 ¼ cup water) water and let the fruit soak below the surface for at least 15 minutes and up to one hour (the longer the more likely the larvae will leave the fruit). Pour the fruit and water solution through a coarse filter (to remove fruit pieces) stacked over a reusable basket style coffee filter (for more details and images see Van Timmeren et al. 2017[3]). Rinse the soaking bag/container and pour the rinse liquid through the coffee filter too. The coffee filter will collect the eggs and larvae as well as smaller plant parts and fruit flesh if the fruit were crushed a bit too much. Carefully inspect the filter for SWD eggs and larvae, they are very small so using a magnifier can help (**Figure 1**, Van Timmeren et al. 2017[3]).

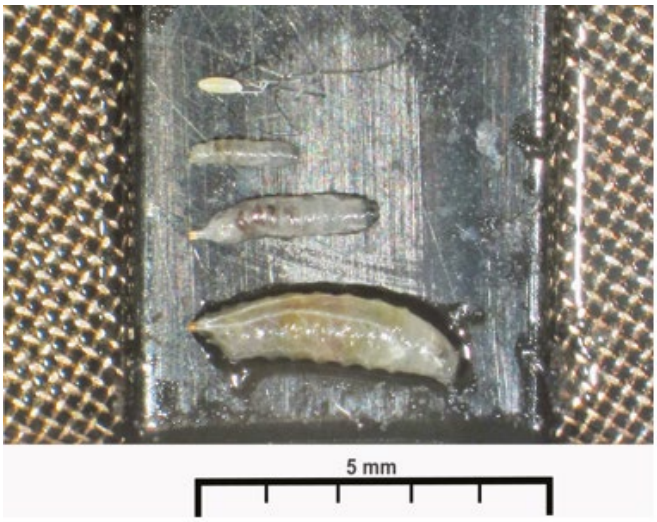

Figure 1. From the top: SWD egg, small, medium, and large larvae. Scale shows 5mm. Image from Van Timmeren et al. 2017[3].

Management. Due to their broad host range and quick reproduction, SWD are difficult to manage. In most cases, especially in preferred hosts such as caneberries and later season varieties, a 7-day spray interval is required to maintain near 0 infestation levels, with tighter intervals when rain events occur[2]. In laboratory bioassays, poorer spray coverage results in more SWD adults surviving, though it can still be sufficient to protect fruit from infestation[4]. Accurate calibration of sprayers, appropriate spray volumes and tractor speeds, and other best practices to ensure good spray coverage are important.

There are multiple effective insecticide modes of action for SWD, with group 1A carbamates (e.g., Lannate®) and group 1B organophosphates (e.g., diazinon, malathion), group 3A pyrethroids (e.g., Mustang-Maxx®, Danitol®),

group 5 spinosyns (e.g., Delegate®, Entrust®), group 28 diamides (e.g., Exirel®, Verdepryn®) and the premix Cormoran® (group 4A neonicotinoid + group 15 benzoylurea) all ranking good to excellent[5].

For organic production[5,6], there are a few OMRI approved materials, with Entrust® being the most effective option. Rotating modes of action (at a minimum alternate) helps avoid insecticide resistance. *The label is the law, make sure the product is registered in your state and crop(s) and follow all restrictions.*

Within crop fruit can serve as a reservoir for SWD, so removing and destroying cull fruit and shortening harvest intervals to every 2-days can help reduce on farm populations[6,7]. For some operations, mesh netting (1.0 x 0.6 mm or smaller) has proven very effective for delaying or reducing SWD, though sprays may be needed later in the season if populations build under the netting and supplemental pollination should be considered for some crops. Netting must be installed before SWD are active and cannot have any holes or be left open (e.g., worker or picker entry), so structures with entryways work best. Fruit yields and quality tend to be better when using netting which also protects from bird and other damage. Many natural enemies feed on and parasitize SWD; however, these currently do not provide sufficient control and are sensitive to pesticide sprays. Efforts are ongoing for permits to import and release wasps that parasitize SWD in non-crop areas. Cooling fruit (32-36˚F) and holding it cold throughout the supply chain increases shelf life and reduces the likelihood that infestation will result in damaged or unmarketable fruit[6,7].

References and Further Resources

[1]Brust, J. 2020. SWD found in blueberries and cherries in Maryland.
https://sites.udel.edu/weeklycropupdate/?p=15340

[2]Michigan State Extension. 2020. Managing spotted wing drosophila in Michigan cherry.
https://www.canr.msu.edu/ipm/uploads/files/MI%20SWD%20Guide%20Cherry%20June_2020.pdf

[3]Van Timmeren et al. 2017. A filter method for improved monitoring of *Drosophila suzukii* (Diptera:Drosophilidae) larvae in fruit. Journal of Integrated Pest Management 8(1): 23
https://academic.oup.com/jipm/article/8/1/23/4157137

[4]Lewis, M.T., and Hamby, K.A. 2020. Optimizing caneberry spray coverage for *Drosophila suzukii* (Diptera: Drosophilidae) management on diversified fruit farms. Journal of Economic Entomology 113(6): 2820-281
https://academic.oup.com/jee/article-abstract/113/6/2820/5945791

[5]SCRI SWD Management. 2021. 2021 ranking of insecticides for their performance against spotted-wing drosophila.
https://swdmanagement.org/wp-content/uploads/2021/05/SWD-rankings-document-2021.pdf

[6]University of Georgia Extension. 2018. Management recommendations for spotted-wing drosophila in organic berry crops.
https://secure.caes.uga.edu/extension/publications/files/pdf/B%201497_3.PDF

[7]Schöneberg et al. 2021. Cultural control of *Drosophila suzukii* in small fruit—Current and pending tactics in the U.S.
https://www.mdpi.com/2075-4450/12/2/172

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