

SWD in grapes: How much of a problem?

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Since its arrival in New England in the summer of 2011, spotted wing drosophila (SWD) has caused extensive losses of small fruit crops. In order of their decreasing susceptibility to damage, these would appear to be ranked: raspberries, day-neutral strawberries, blueberries, cherries, and peaches. Where do wine grapes rank? Despite the claims of extraordinary damage to certain grape varieties in 2011 and 2013, my impression is that answering this question has a "Which came first, the chicken or the egg?" quality. Field observations of damaged, fruit fly-infested fruit appear to usually be associated with other damage or fruit rots occurring in these fruit clusters. However, it is possible that the SWD activity is leading to greater fruit rots (both sour rot and botrytis). Our climate and small farm size in the Northeast are more conducive to problems with SWD than along the Pacific Coast, but information is very limited for quantification of damage to wine grapes along the Atlantic states and Northeast.

Samples of grapes taken from the Valley Laboratory test vineyard, and enclosed to rear out flies, detected no *Drosophila suzukii* among the numerous drosophilids emerging from damaged fruit. Since these other species are unable to lay eggs into intact fruit, this observation suggests that the fruit fly development is secondary to fruit rots. Another possible scenario is that the SWD had already developed and exited from those clusters, leaving the other species to emerge later.

There are reports of SWD being the initial perpetrator in damaging thin-skinned wine grapes. Dark grapes are generally more susceptible to damage than light colored grapes. The susceptibility of grapes also increases dramatically as the brix level increases. During ripening fruit become softer, fruit rots increase, and feeding from other insects, such as yellow jackets, provide openings for SWD access to fruit.

Based on grower observations (<http://swd.freeforums.net/thread/2/swd-forum>), susceptible varieties include:

Cabernet Franc (highly susceptible)
Chancellor (highly susceptible)
Petit Verdot (highly susceptible)
Pinot Noir (highly susceptible)
Chambourcin
Chardonnay
Cabernet Franc
Gewurztraminer
Norton
Seyval Blanc
Maréchal Foch
Vignoles

Lower susceptibility varieties include:

Riesling

Merlot

Pinot Gris

Non-insecticidal management tools

It appears that the most important tools for SWD management in grapes are prevention of conditions that could lead to sour rot. Any aspect of growing grapes that leads to more open fruit clusters, air circulation around grape clusters, and thicker skins on the grapes will assist in preventing both sour rot and SWD outbreaks.

Growers comment that grape training systems can make a difference: using Vertical Shoot Positioning (VSP) rather than the Geneva Double Curtain (GDC) training systems may reduce the impact of SWD.

Prevention and control of sour rot (modified from

<http://www.agf.gov.bc.ca/cropprot/grapeipm/sourrot.htm>)

- Reduce excessive vigour through the use of cover crops and/or the reduction of nitrogen fertilization and irrigation.
- Leaf removal between fruit set and veraison can lead to tougher berry skins.
- Apply gibberellic acid at 1-2 inch flower length to lengthen pedicels and reduce fruit crowding <http://cestanislaus.ucanr.edu/files/111477.pdf>
- Control wasps through trapping and nest removal.
- Control powdery mildew and botrytis to reduce grape berry lesions.
- Prevent bird damage.
- Bunch thinning is best done before or during veraison. Berries removed during late season thinning have higher sugars which can contribute to the fruit fly population increase.
- Discard affected bunches before or during harvest to minimize the negative effects on the wine.
- Some French sources recommend 2-3 applications of Bordeaux mixture (copper sulphate and hydrated lime) at ten to twelve day intervals around the time of veraison. Copper applied to the fruiting zone has the effect of thickening the grape berry skin, hence reducing the risk of lesions.

Insecticides for managing SWD in grapes

Prevention (through early reduction of the adult population) is more effective than playing "catch up" once larvae are protected within fruit. However, insecticides do not need to be applied to vineyards for SWD protection until there are some susceptible fruit, and varieties that are not susceptible do not need to be sprayed. Growers have most successfully maintained low populations of SWD when they rotate among classes of the most effective ingredients, which include zeta-cypermethrin (Mustang Max, 1 day PHI [pre-harvest interval]), spinosyns (Entrust or Delegate, 7 days PHI), and neonicotinoid insecticides, and apply products on a weekly schedule. If eggs are already present in fruit, only the neonicotinoids, which are systemic insecticides: imidacloprid (various names, 0 day PHI), acetamiprid (Assail, 7 day PHI), and

dinotefuran (Venom, 1 day PHI) have the potential to kill the developing larvae. Growers should make sure that there are no flowering plants that will be contacted by these sprays, as they can be toxic to bees.

Both the need and the effectiveness of spray programs should be informed by monitoring SWD populations, starting prior to veraison of the earliest ripening variety. Over the past two years, we have proceeded from having ineffective traps that were not competitive with surrounding ripe fruit, to having traps that are highly competitive with ripe fruit. The best attractant and traps are easily made. The trap is a 16 fl. oz. (470 ml) red cup with a tightly fitting lid, a single stripe of black electrical tape approximately one inch (2.5 cm) from the top rim, punctured with 40 one-eighth inch (3.2 mm) holes (use a punch tool to do this) and placed in the fruit crop or surrounding vegetation with a wire hanger. The attractant bait consists of 50 – 75 ml per trap of the following recipe: water (12 fl. oz. [350 ml]), whole wheat (1 cup [240 ml]), apple cider vinegar (1 Tbsp [15 ml]), active dry yeast (1 Tbsp) and a few drops of an agricultural surfactant. For those not wishing to make traps or baits, products from a company in Spain, Biolberica, are nearly as effective as the homemade trap and bait, are more selective in trapping SWD, the bait does not spoil, and should be available on the market soon.

In summary, SWD should not be (and is not, in most locations) a major pest of wine grapes. When cultural and chemical practices are undertaken to manage the grapes so that they are less susceptible to sour rots, then SWD problems should be greatly reduced. The need for insecticide sprays can be minimized by using effective monitoring tools and only spraying the susceptible varieties when the fruit have become sufficiently ripe to support SWD egg laying activity.

Disclaimer: Use of trade names for pesticides does not constitute an endorsement for that product. Always read and follow pesticide label directions.