

Minimize *spotted wing drosophila* (SWD) by practicing proper Sanitation!



Drosophila suzukii, a vinegar fly

Removal of overripe hanging fruit from plants or fruit fallen to the ground is a key component in the management of SWD, as it removes a source necessary for the fly to complete its life cycle. Proper disposal of fruit that has been removed is equally important in order to prevent infestations to future harvests.

To determine efficacious sanitation methods for disposal of potentially infested fruit in the backyard, researchers at OSU studied the survival of SWD larvae in lab-infested fruit of varying skin thicknesses subjected to 5 treatments, detailed below. Field studies were conducted from 2010—2012.

Sanitation Methods:

Fruit samples including blueberry, blackberry, cherry, grape, raspberry, and strawberry ranging from 1 –2 lbs per sample were lab-infested, then subjected to one of the following five sanitation treatments in addition to a control.



Clear and Black Bagging: fruit was placed in a black or clear trash bag and tightly sealed.

Solarizing: fruit was placed on the ground and covered with 2mil clear plastic, which



was then sealed tightly at edges using bark chips/ gravel/soil.

Crushing: fruit was crushed on the ground with a rolling pin.



Burying: fruit was placed in a 1 foot deep hole, and covered with soil (Clay-flooded silt loam). Sandy soil may increase mortality of SWD.



Control: SWD-infested fruit was placed on the ground and left untreated.

Fruit was left outside for ≈1 week, whereupon the presence and survival of larvae and pupae were recorded.

Results:

Survival of larvae and pupae was lowest in clear bagging and solarizing treatments, with 1.6 and 16.3% survival, respectively across all years and fruit types (Fig. 1). Both methods expose developing SWD larvae to extreme heat, gases (released as fruit ferments), pathogens, and high levels of juice, which is conducive to drowning. We would expect increased death with larger samples. Burying

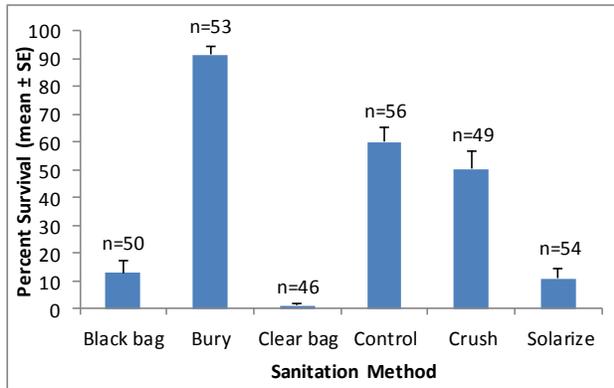


Fig. 1. Total mean percent survival of SWD in blueberries, blackberries, raspberries, cherries, grapes, and strawberries exposed to 5 treatments in 2010-2012.

fruit resulted in increased larval survival compared to controls, and is therefore NOT a recommended management strategy.

Importance of Weather:

For sanitation methods tested, such as solarization and crushing, larval mortality is dependent on environmental factors such as temperature and precipitation. Solarization treatments, for instance, showed greatest success when temperatures of >100°F were sustained over several hrs/week. Crushing treatments work by desiccating fruits and the larvae within them, which requires both high temperatures and little or no precipitation. Both of these methods showed promise during the warm, dry months of Jun—Aug, but were much less successful during the cooler, wetter months



of Sept—Nov. Weather conditions should therefore be carefully considered when selecting a sanitation method and location for treatment.

Sanitation is important for minimizing SWD.

A Note on Composting SWD-Fruit:

While it may be tempting to compost fruit suspected of containing SWD, most compost piles do not reach and sustain the temperatures necessary to kill fly larvae and pupae. In fact, SWD development may be accelerated in warm areas of a compost pile that are below a critical temperature range (Penn State Ext.). To kill fly larvae, compost pile core temperatures must reach 113-160F, which generally requires piles at least 3' wide, 3' tall, and 3' deep, as well as strategic compost management ([Environmental Protection Agency: "Backyard Composting - It's Only Natural"; October 2009](#)). Thermophilic (heat-loving) bacteria, which are at work in this temperature range, degrade organic material extremely quickly, making their populations unsustainable for more than 3-5 days at a time (<http://web.extension.illinois.edu/homecompost/science.cfm>). Due to the short period of necessary heat and difficulty of ensuring 100% larval mortality, composting fruit that may contain SWD is NOT recommended.



Fallen fruit of various species (e.g., apple, fig, persimmon), even those that are not SWD ovipositioning hosts, can provide SWD with a food resource as the fruit begins to decompose in the Fall. Clean up is key to managing pests and diseases.