



Spotted Wing Drosophila

May 2011

Background

Spotted Winged Drosophila (SWD), *Drosophila suzukii*, is an exotic insect pest closely related to vinegar flies. SWD has recently been discovered in Wisconsin, it was first determined to be established in Hawaii in the 1980's, and was thereafter discovered in California in 2008. It quickly spread throughout the Pacific Northwest and Canada, and it was soon discovered in Florida in 2009. Midwestern detections include Michigan in September 2010 and two reports in Racine County, Wisconsin in October 2010. To keep current with ongoing developments, the University of Wisconsin Extension will provide *regular updates as necessary*.

Vinegar flies are part of a large group of insects which typically attack rotting or fermenting fruit, but will not damage healthy fruit. However, SWD is different! The female has a serrated ovipositor which allows it to cut a slit into healthy fruit to lay eggs. Larvae will feed within healthy fruit tissue causing adjacent tissue to collapse within a few days; consequently crop loss may be severe.

Identification

SWD are very similar in size, shape and appearance to other vinegar flies. The adults are small, 1/16 to 1/8 in long (2-3 mm) with red eyes and a light brown thorax and abdomen. Larvae are small, legless, up to 1/8 inch long, *cream colored and round in shape*.

To distinguish adult SWD from other common vinegar flies, remember that male SWD have a single dark colored spot at the tip of each wing. Females do not have this spot on their wings. Males also have two dark bands on each foreleg. The only way to identify female SWD from other vinegar flies is by their serrated ovipositor. However this characteristic is only visible with magnification.

Life History

It is unknown how, or if, SWD can overwinter in Wisconsin. Because of its recent introduction into Wisconsin and our lack of experience, it is unclear how this insect will react under our environmental conditions. Thus, we must rely on information from other states.

SWD adults prefer moderate temperatures and can complete a generation in as little as 8-9 days. Adult females use their serrated ovipositor (egg laying device) to cut a slit into healthy fruit to deposit from one to three eggs. Several females may lay eggs on a single fruit. Eggs hatch in as little as 1-3 days and the larvae can complete feeding within several days depending on temperature. Adults may live for several weeks and females can lay several hundred eggs in her lifetime. Because of this short generation time, buildup of large number of adults may be possible.

Host Crops

Initial signs of infestation are small scars or slits left by the female's ovipositor. Soon after larval feeding begins the fruit begins to collapse. Secondary pathogens may also be introduced at the larval feeding sites which cause additional deterioration of the fruit.

Damage Symptoms

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Scouting and trapping

Trapping will be a valuable IPM technique that should be used for early detection and to monitoring adult population trends. Several traps are available commercially and are simple and inexpensive to make. Traps are baited with 1-2 inches of either apple cider vinegar or a mixture of yeast and apple juice.

Construction of the trap is quick and easy. Simply use a large (approximately 16 oz) , clear, plastic cup with lid and drill/melt ¼ inch holes around the top of the cup to allow adults to enter. Michigan State Entomologist suggested leaving approximately 1/3 of the diameter of the cup without holes to facilitate replacing the liquid bait. Yellow sticky cards are hung from the inside of the lid and are used to help attract SWD and to prevent them from escaping. They are hung with a paperclip from the lid on the inside of the cup. More comprehensive directions can be found at Michigan State University's website; <http://www.ipm.msu.edu/SWD/SWD-monitor.htm>

Hang traps in the plant canopy where fruit are present. Check traps and replace liquid bait on a weekly schedule. Do not pour bait out at the base of the trap as it will confuse the adults and reduce the effectiveness of the trap. A hand-lens will be useful for identifying male SWD and required for identifying female SWD.

Management

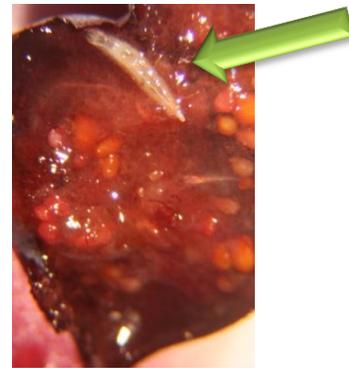
Minimize the buildup of SWD by removing native, wild hosts such as blackberries, plums, apples and grapes if practical and promote timely harvest. Removing fruit that has ripened prematurely or is infested with SWD can be helpful.

Use traps to determine when adults are present and treat using insecticides if the crop is at a susceptible stage. Specific insecticide recommendations have not been developed for Wisconsin. Choose an insecticide that is labeled for the fruit you want to protect. Products that are effective for other fruit flies are likely to be effective for SWD. Be careful to choose a product which meets your Preharvest Interval (PHI). Always read and follow label instructions carefully.



Adult Male Spotted Wing Drosophila.

Photo Credit: Clarissa Hammond, Wisconsin Department of Agriculture, Trade and Consumer Protection



SWD larvae.

Photo Credit: Tracy Hueppelsheuser, British Columbia Ministry of Agriculture



Female, serrated ovipositor.

Photo Credit : Martin Hauser, CDFA



Egg laying scars on Cherry.

Photo Credit: Martin Hauser, CDFA



Insect trap.

Photo Credit: Roger Schmidt, UW-Madison Integrated Pest Management Program



Close-up of trap, showing entry holes.

Photo Credit: Roger Schmidt, UW-Madison Integrated Pest Management Program