



Pest e-alerts



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New Invasive Species in Oklahoma Could Mean Trouble for Fruit Growers

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Photo: Martin Hauser

On June 27, traps placed by a fruit grower in Tulsa County captured a rather suspicious-looking fly, which was subsequently packed up by the County Educators and shipped to the Department of Entomology and Plant Pathology at Oklahoma State University. This capture has been confirmed as the spotted wing drosophila (SWD). This rather small

vinegar fly or fruit fly attacks ripening or ripe soft fruits including; blackberry, blueberry, boysenberry, grapes, raspberry, strawberry, and tree fruits (peach, apricot, cherry, mulberry, nectarine, persimmon, and plum). It has also been recorded attacking other fruits such as melons and tomatoes.

Spotted wing drosophila was first detected in the United States in California in 2008, where it eventually spread north to British Columbia and south all the way to Florida. As recently as 2012, SWD was confirmed in Arkansas, Colorado, Idaho, Illinois, Indiana, Iowa, Kentucky and Minnesota. Based on its rapid movement across the country and the fact that the flies cannot fly very far, it is apparently being spread by humans transporting infested fruits.



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What makes SWD potentially more economically important than other fruit flies is its ability to cut into intact fruit, using their serrated ovipositor to inject eggs under the skin. This allows the

subsequent larval stage to be present during ripening and can lead to detection in ripe fruit after harvest. They are also capable of introducing sour rot or fungal diseases, further affecting the quality of the fruit. In addition, while most *Drosophila* flies will take advantage of damaged and/or rotting fruit, SWD can contaminate uncompromised (harvested) product and cause fruit flesh to break down and collapse.

Three important components in effective management of SWD include monitoring, identification, and control. Trapping can be conducted easily using a trap consisting of a plastic 32-ounce cup with several small (3/16" 3/8") holes around the sides of the cup, leaving a larger section (3"-4") unpunctured. Holes can be drilled in or burned in the thinner plastic cup. The bait consists of 1 to 2 inches of pure apple cider vinegar poured into the cup as bait. Suspend a yellow sticky card down into the cup from the inside of the lid. Using a wire, hang the trap in shady areas near the fruiting zone of the host plants. Immobilize the trap from too much lateral movement by securing it to adjacent plant material. Traps should be checked weekly for SWD flies and the vinegar should be changed at that time. Do NOT dump the liquid bait near any cup traps or inside the fruit planting. Fruit can also be checked for the presence of larvae using the fruit flotation method. Fruit are floated in a solution of sugar water or salt water (1 quart water + 1 cup sugar OR 1 gallon water + 1 cup salt). Larvae will float to the surface after about 30 minutes and can then be counted. Continue to monitor through harvest and beyond.



Identification is difficult to the untrained eye. These tiny flies are only 2-3 millimeters in length and the sexes differ in appearance. Male SWD possess a shadowy spot near the apex of each forewing. Females lack these spots, but have a very distinctive ovipositor that can be examined with a hand lens. The ovipositor has two rows of serrations that are longer and darker than other vinegar flies. Flies captured on sticky traps may be a bigger challenge to properly identify, so if you are uncertain, seek the help of a qualified

entomologist or submit samples to the OSU Plant Disease and Insect Diagnostics Laboratory.

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Spotted Wing Drosophila

Once SWD have been detected, management activities should begin immediately. From a cultural standpoint, growers can minimize the population buildup by harvesting on time and removing overripe fruit and wild hosts such as wild grape, raspberry, blackberry, etc. from nearby locations. If an insecticide is applied for control, selection should be based on several factors including harvest date, re-entry restrictions, impact on existing IPM programs, beneficial insects, and environmental conditions. Spinosyns (Delegate[®], Success[®] Entrust[®]) and organic pyrethrum (Pyganic[®]) insecticides have shown activity on this pest, but so have some of the carbamates (Sevin[®] or Lannate[®]), organophosphates (Imidan[®] or Malathion[®]), and pyrethroids (Asana[®], Brigade[®], Danitol[®], Mustang-Max[®]). Azadirachtin (Aza-Direct[®]) has also proven to be effective. Products in this list that are underlined are considered organic options. Irrespective of the choice of insecticide, it is imperative that growers strictly follow restrictions regarding harvest and re-entry. In addition, it is also important to rotate between the various chemical classes to avoid development of insecticide resistance.

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