Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel

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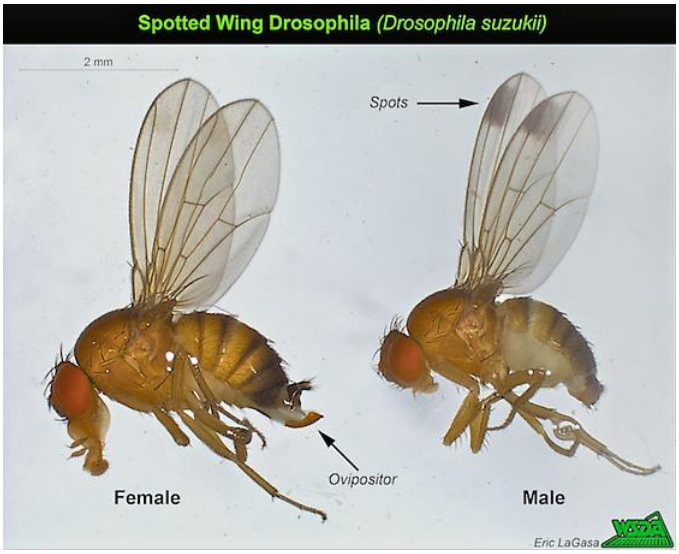
Spotted Wing Drosophila: Another New Insect Pest!

Well, Kansas is the proud recipient of another new insect pest…spotted wing drosophila. Spotted wing drosophila (*Drosophila suzukii*) was detected in south-central Kansas in August by the Kansas Department of Agriculture. Spotted wing drosophila, which is a vinegar fruit fly native to Japan and Southeast Asia was first found in Michigan in 2008, and has since spread throughout North America. This insect pest attacks a wide-range of berry crops including raspberries, blackberries, strawberries, blueberries, boysenberries, and grapes. In general, raspberries appear to be more susceptible than blackberries, strawberries, and blueberries. Spotted wing drosophila will also attack a number of tree fruit crops such as apples, cherries, figs, nectarines, peaches, persimmons, and plums. Although spotted wing drosophila has been found to attack tomatoes in high tunnels, tomatoes don't appear to be a preferred host crop. It is important to note that this insect is not a regulated pest, and the rapid spread of the spotted wing drosophila is likely due to human-assisted product transportation.



Identification is essential to avoid confusing spotted wing drosophila with other native fruit flies. For example, spotted wing drosophila males possess two distinct spots near the tip (on the outer edge) of the wings and they have two darkened bands on the forelegs. Females do not have spots on their wings. However, they do have a characteristic serrated (saw-like) ovipositor with two rows of serrations, which are larger than the native fruit flies.

Spotted wing drosophila flies during the day and prefers cool temperatures (68ºF) and moist conditions. Females use their saw-like or serrated ovipositor to cut into ripe fruit, just under the skin, and deposit eggs. More than one egg may be laid in one berry or fruit. Females prefer to lay eggs in thin-skinned berries and/or fruit. In order to observe the "stings" from females a 10X or higher magnifying lens is required. The wounds created after egg-laying may serve as entry sites for soft rots and fungal diseases. Adult females can live for approximately 2 weeks;

laying between 7 to 16 eggs per day from spring through fall with the potential to deposit over 300 eggs. Eggs hatch into white larvae, which feed within berries or fruit for 5 to 7 days. Eventually, larvae leave the fruit to pupate although it has been reported that pupation occurs within the fruit. Spotted wing drosophila females are capable of laying eggs almost immediately after emerging from pupae. Most native fruit flies lay eggs into already-damaged or rotting fruit. However, females of the spotted wing drosophila attack healthy, ripening berries and/or fruit, but they will also attack damaged or split fruit. Larvae and pupae may be present during harvesting, which is usually not the case for other fruit flies. Furthermore, sap or picnic beetle larvae may be found in fruit but their larvae possess distinctive head capsules whereas spotted wing drosophila larvae have no head capsule. Spotted wing drosophila may attack berries and/or fruit throughout the growing season, and can complete development in fallen or rotting berries or fruit. This fruit fly insect pest reproduces rapidly with up to 12 generations per year depending on geographic location. Spotted wing drosophila overwinters as an adult, and the severity of winter may influence the survival of overwintering adults.

Monitoring populations of spotted wing drosophila with traps will help time insecticide applications. Initially, traps containing apple cider vinegar or yeast/sugar solutions were used to monitor adult spotted wing drosophila populations; however, these traps are based on fermentation and spotted wing drosophila is attracted to ripe berries or fruit—not over-ripe berries or fruit. So, once berries or fruit starts to ripen these traps become less attractive. In addition, native fruit flies may be captured in these traps. Recent research has shown that traps with red and black banding are more attractive to spotted wing drosophila adults. One trap called CAPtiva is commercially available from Marginal Design, Oakland, CA (marginaldesign.com) for use in orchards. Spotted wing drosophila prefers to reside in the shady, humid interior of plants, which means that traps need to be positioned in these locations.

Management of spotted wing drosophila involves implementing cultural controls such harvesting crops early and sanitation, which includes removing and destroying over-ripe or infested fruit throughout the growing season. In addition, it is essential to remove wild host plants such as wild grape, blackberry, raspberry, American pokeweed, crabapple, dogwood, and Japanese yew from nearby locations as these wild hosts may serve as reservoirs during the growing season. Netting may be placed over crops such as blueberries or strawberries to protect them from attack by spotted wing drosophila; however, the netting must be installed before fruit ripens so flies will not be trapped inside. Furthermore, the netting must be in place after pollinators (bumble bees and honey bees) have finished their task of pollination.

Insecticides may be used to regulate spotted wing drosophila populations during the growing season. Insecticides that may be effective or have been shown to be effective against spotted wing drosophila include malathion, carbaryl (Sevin®), spinosad (Spintor® and Success™), spinetoram (Delegate®), and a number of pyrethroids (e.g., bifenthrin, esfenvalerate, fenpropathrin, and zeta-cypermethrin). The neonicotinoid insecticides (acetamiprid, imidacloprid, and thiamethoxam) tend to be less effective against the spotted wing drosophila than other insecticides. Be sure to check the label or contact manufacturers to determine those insecticides that are registered for use against the spotted wing drosophila or have received label expansions such as a 2(ee). Insecticides need to be applied to protect fruit from first color to harvest. The preference of spotted wing drosophila to reside in the plant interior makes it difficult to obtain thorough coverage with

insecticide spray applications. Timing of application and coverage are critical in dealing with spotted wing drosophila. For example, insecticides must be timed (applied) to kill adults prior to egg-laying because sprays will not kill larvae already inside the berry or fruit. In addition, rain can impact the longevity of spray residues, which means repeat applications may be required. In fact, due to the number of generations per year, spray intervals of once or twice per week may be warranted. Spray interval and frequency of insecticide application impacts the effectiveness of programs designed to regulate spotted wing drosophila populations. Frequency of insecticide applications may vary depending on the environment (e.g., rainfall and temperature) and growing conditions. However, more frequent applications may result in intense selection pressure leading to resistance. Therefore, it is critical to rotate insecticides with different modes of action in order to reduce the development of resistance. Furthermore, the application of insecticides may impact beneficial insects and mites that naturally regulate populations of pest mites, leafminers, and scales. Organic producers have only two insecticide options: spinosad (Entrust®) and pyrethrins (Pyganic®). However, it has been reported that spotted wing drosophila females exposed to Pyganic® recovered and were able to lay fertile eggs. In addition, spotted wing drosophila populations in California have developed resistance to Pyganic®.

In conclusion, it is important not to panic, but instead understand the biology and life cycle of the spotted wing drosophila in order to effectively manage this insect pest, which requires a holistic approach including monitoring, cultural controls, sanitation, and appropriate application of insecticides.

Raymond Cloyd

Corn Rootworms

It has been quite some time since we have heard about, and actually visited, a corn field in KS with significant goosenecking/lodging due to corn rootworm feeding. However, we visited a field near Bern, KS that had significant goosenecking (see picture) and still, as of Sept. 5, has 5-8 adult western corn rootworms per plant. This was the 5th consecutive year of corn for this field and was planted to Midland 670. An adjacent field with the same, or maybe a little more, rootworm damage and also a 5th year corn field was planted to Agra-Gold 6632. So, corn rootworms are still capable of causing considerable yield reduction in fields planted to corn for consecutive years without rotation.

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Insect Diagnostic Laboratory Report

http://entomology.k-state.edu/extension/diagnostician/recent-samples.html

Eva Zurek

Sincerely,

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