

Vegetable Insect Update – Russell L. Groves, Associate Professor and Applied Insect Ecologist, UW-Madison, Department of Entomology, 608-262-3229 (office), (608) 698-2434 (cell), or e-mail: groves@entomology.wisc.edu.

Vegetable Entomology Webpage: <http://www.entomology.wisc.edu/vegento/index.html>

Spotted Wing Drosophila (SWD) – Spotted Wing Drosophila (SWD) fruit fly has recently been detected in Wisconsin in 2012. Specifically, the DATCP documented the infestation in SW Wisconsin near Readstown in blackberry. This year marks the second report of SWD in Wisconsin and infested counties to date reportedly include Crawford, Dane, Racine, and Vernon Counties, although the SWD is probably much more widespread in the state. During field visits earlier this week in Monroe County, additional finds were recorded and crops infested included raspberry, blackberry, and strawberry (**Fig. 1**). The Minnesota Department of Agriculture has also recently confirmed several infestations on blackberries and raspberries in their state in August. To date, Minnesota detections originated from Hennepin County (a back yard raspberry patch) and from Ramsey County (a patch of wild blackberry in the middle of a woods area). Both infestations were reported by the public, and in each case, an abundance of maggots were found in the fruits collected by the people who had picked them.

The insect was first detected in Michigan in 2010 and active pest management programs have been in place for the insect. In addition to Minnesota, Michigan researchers (e.g. Dr. Rufus Isaac's) have compiled an excellent list of resources for monitoring and management of SWD.

These resources can be obtained from the Michigan site at: <http://www.ipm.msu.edu/swd.htm> , and also from the Minnesota site at <http://www.vegedge.umn.edu/SWD/SWD.html> .

The SWD is a vinegar fly of East Asian origin that can cause damage to many fruit crops. This small insect has been in Hawaii since the 1980s, was detected in California in 2008, spread through the West Coast in 2009, and was detected in Florida, Utah, the Carolinas, Wisconsin and Michigan for the first time in 2010. Because the flies are only a few millimeters long and cannot fly very far, natural dispersion between states is unlikely. Human-assisted transportation is a more likely cause of the recent rapid spread. It appears that this insect has become widely established through North America. SWD has been detected in traps located near berry crops, grapes, cherries and other tree fruits and the flies have a preference for softer-fleshed fruit.

As outlined by the MI site, summer and fall ripening berries must be protected from first color until harvest if SWD is active in the area and on your farm. The most effective SWD materials are the organophosphates Imidan and malathion, the synthetic pyrethroids including Asana, Brigade, Bifenture, Danitol and Mustang Max, the carbamate Lannate, and the spinosyn insecticides Entrust and Delegate. The neonicotinoid insecticides such as Actara, Assail or Provado are not effective against SWD and should not be used for this pest.

Due to the zero tolerance for fruit infestation in the food industry and the increasing captures of SWD being detected in monitoring traps, if ripe fruit are present and SWD is active in your immediate area, we recommend fruit protection at this time. Maintaining fruit protection will require reapplication based on the product used previously and its expected longevity, the weather conditions and the harvest schedule.

While these recommendations provide guidance for management in-season, they provide little information on what to do once harvest ends. There have been increasing questions about the effectiveness of post-harvest sprays to reduce the population of SWD for next year, but there is no research-based information yet that has measured whether post-harvest spraying reduces pest pressure next year. Because of this, we do not make any recommendations about the effectiveness of this approach. As noted by the Isaac's lab in MI, it seems that the short-term emphasis needs to be on protecting fruit from first fly activity until they are harvested, and not trying to control every SWD

until they stop flying. While the desire to control SWD after harvest is understandable given the threat, there are some issues with post-harvest spraying for SWD that should be considered.

1. Repeated applications of insecticides against pest populations increase the chance for resistance development. This is even more likely in a pest that has a short generation time like a vinegar fly, and this group of insects has been shown previously to have the capacity for developing resistance. If resistance develops, having a period without sprays would allow time for recovery of susceptibility so that insecticides will still work.
2. Biological control of SWD is less likely to become established in fields if they are being sprayed.
3. SWD is active through fall until the first severe frost. In Michigan in 2011, adult flies were trapped until late December and early January, which would be a very long time to try and achieve control.
4. The money spent on this spraying might be better saved until 2013 for doing an excellent job of protecting next year's crop against this pest.
5. SWD will experience very high winter mortality in our climate.
6. This pest is increasingly becoming well-established in our natural areas with many widespread host plants such as autumn olive, blackberry, pokeweed, honeysuckle, etc., and eradicating that background population seems like a very challenging task.

There are many unanswered questions related to SWD management that need to be resolved, and research entomologists in neighboring states and Europe are actively pursuing some of the highest priority questions to aid growers in their management of SWD.

Figure 1. A. Adult SWD flies ovipositing upon blackberry (indicated with arrows). B. Larval flies (maggots) infesting strawberry fruit.

