

Testing the feasibility of using red sticky card traps to monitor spotted-wing drosophila (SWD)

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Spotted-wing drosophila (SWD, *Drosophila suzukii*) continues to drive berry and cherry growers' spray schedules. Monitoring helps to determine when populations begin to build up, and therefore can help save growers spray applications in a late infestation year. This year we successfully tested red sticky card traps, baited with SWD lures, to detect first arrival of SWD in berry plantings and cherry orchards. The baited, red sticky traps provided good results for the SWD monitoring network. We found that the red sticky traps have potential for use by growers and consultants to monitor SWD pressure in at-risk fruit plantings. Grant funding was obtained, PI Laura McDermott, ENYCHP, to further test the red sticky traps and to educate growers and consultants on their use.

SWD monitoring recap:

The 2021 statewide monitoring effort included 126 trap locations monitored by 16 Cornell extension scientists in 23 counties. During the season, first trap catch across the SWD monitoring network occurred over a 14-week-long period, from May 11 (Niagara County) to August 17 (Steuben County). The occurrence of first catch over several weeks is typical for SWD occurrence in New York State. However, most trapping sites were not catching SWD during the late May and early to mid-June period, and only one reached sustained catch in early June. Normally, by mid-June, most traps will have caught SWD.

Scentry jar traps with lure have been used in the SWD monitoring network since 2016. Lured jar traps from which SWD are filtered, sorted from related species, then identified with magnification are currently the best at attracting the first insects, but growers cannot implement this level of monitoring and the statewide trap network isn't robust enough to deliver farm-specific information. Using an easier monitoring method, if it works as well as the jar traps, will help growers monitor SWD on their own farms. Growers in New Jersey and Ontario, Canada have successfully used red sticky card traps with lures to monitor SWD on their farms.

Sticky card trap results:

Cornell extension scientists in the SWD monitoring network conducted a preliminary test in 2021 of the use of red sticky card traps. A total of 20 locations where both the Scentry-lure-baited jar traps and the Trécé-lure-baited red sticky card traps were being used yielded data to compare the first trap catch date for the jar traps and the red sticky card traps. First catch on the red sticky cards was obtained earlier at 40% of the trap locations (8 out of 20), later at 45% of the locations (9 out of 20) and was same as the date obtained in the jar traps at 15% of the locations (3 out of 20) (Figure 1). These results suggest that the red sticky cards will work comparably to the jar traps and that using sticky traps won't lead to trap catch results being obtained too late, which would place crops at possible risk of infestation from populations of SWD that have gone undetected.

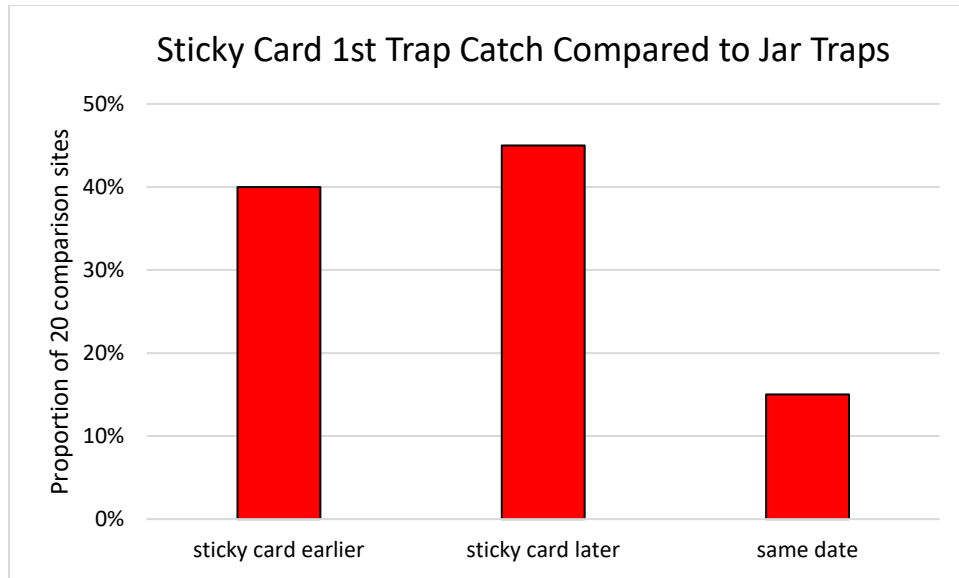


Figure 1. Comparison of first SWD catch in Trécé-lure-baited red sticky card traps versus Scentry-lure-baited jar traps.

Setting up sticky cards:

The red sticky cards are relatively easy to use, though the sticky coating on the traps can pose a challenge for the user. Wearing nitrile, latex, or plastic disposable gloves to protect hands from the sticky goo on the trap is essential. Tying back long hair can be helpful. An SWD lure is positioned above the red sticky card, which is hung from a branch, trellis wire or wooden stake, preferably 1.5 m (5 ft.) off the ground, and within the fruit zone in a shaded area (Figure 2). In berries, this will depend on how the plants are trained and traps may need to be placed lower. Traps must be secured tightly to the trellis wire, branch, or wooden stake to minimize sliding or blowing around with the wind or the airblast sprayer. Canes or branches should be tied up or removed so the sticky traps are easily seen and won't contact any foliage or berries. Mark the location of the trap with flagging tape. Label the trap with a code number for your records. Record the date the trap and lure were set out in the field and the trap GPS coordinates, if needed.



Figure 2. The steps for hanging the lure and red sticky cards in blueberry, top row. Traps hanging in blueberry and cherry, bottom row. It is easier to remove and replace the trap when it is on its own set of wire hangers, separate from the lure.

Reading the sticky cards:

It is easy to identify the male flies, because they have the distinctive spots on their wings (Figure 3). To service the trap and identify the male SWD, again, it is best to wear gloves and tie back long hair to protect yourself from the sticky goo. Each week, remove the trap and check for stuck male SWD (Figure 4). Alternatively, the sticky card trap can be wrapped in plastic wrap and then taken out of the field to scan and enumerate SWD flies indoors. Examine both sides of the sticky trap with a hand lens, magnifying glass or OptiVisor DA 7 (2.7x magnification) or DA 10 (3.5x) (Figure 5) **Laura's Note: If we are really tight on space we can delete Figure 5 completely.** Enumerate the male SWD caught (Figure 6) on both sides of the sticky card and record the total number per red sticky card trap. Discard the examined trap and install a new one. It is very important to change the trap weekly when you check for SWD. This will make it much easier to identify insects. Change the lure every 4 weeks and make note of the date the lure was changed.

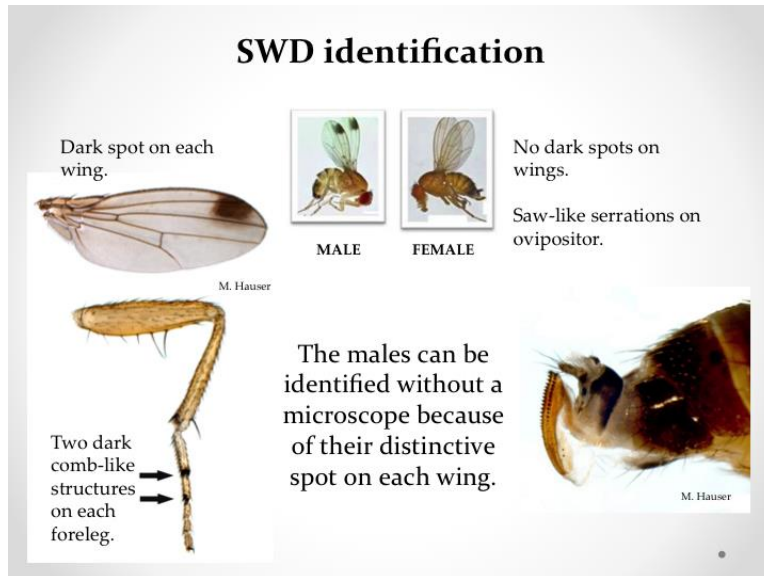


Figure 3. Identification guide to the distinctive characteristics of the male and female SWD flies.

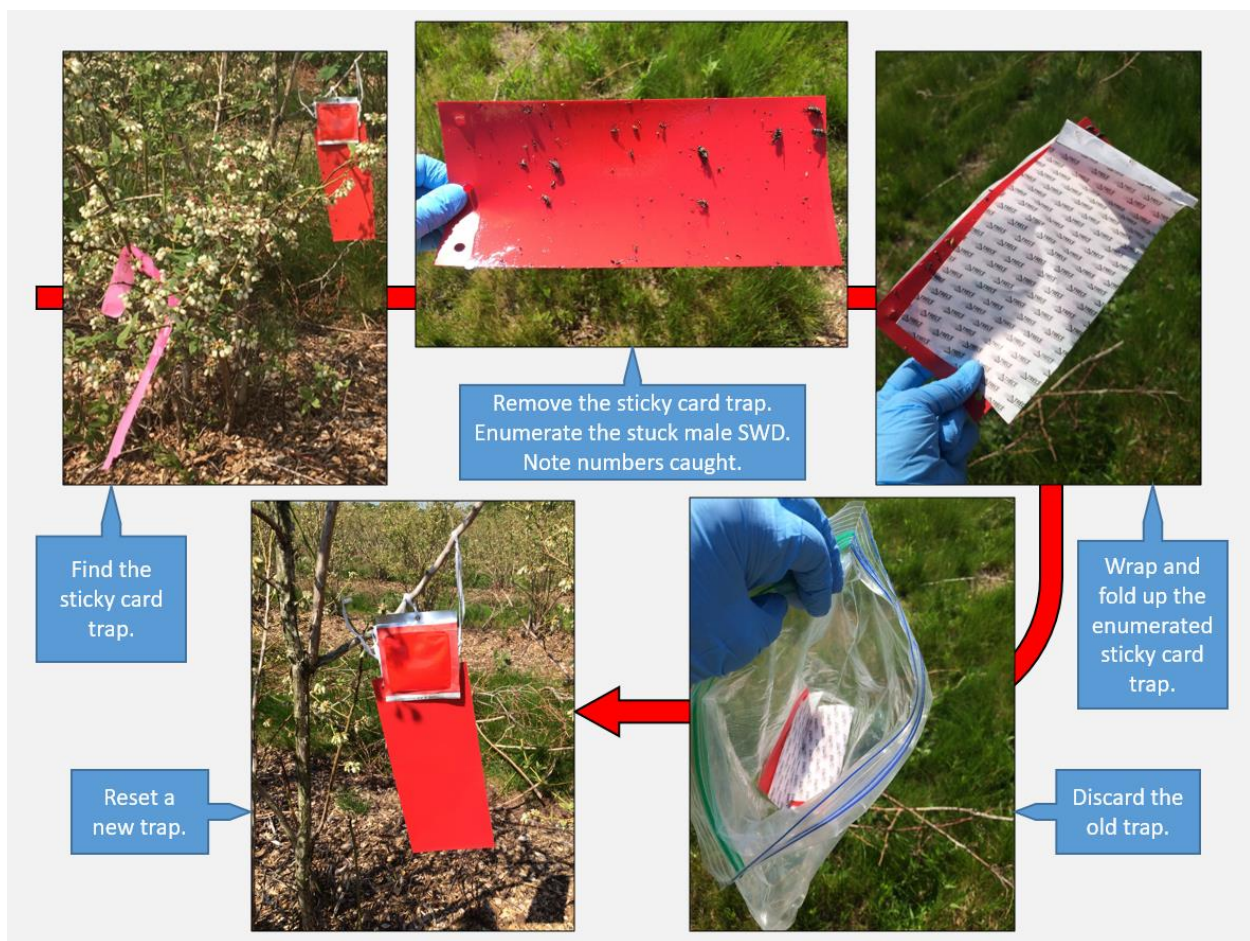


Figure 4. The steps for servicing the red sticky card traps in the field. It is easier to discard the sticky trap if it is wrapped in paper before crumpling it up and placing it in a trash bag.



Figure 5. D. Breth, Lake Ontario Fruit Team, retired, examining fruit using an OptiVisor. A hand lens is shown hanging from a lanyard around her neck.



Figure 6. Male SWD circled in yellow that are stuck on the Trece-lure-baited red sticky cards.

Future plans:

Suggestions and questions from the 2021 extension collaborators to improve the utility of the red sticky card traps included:

- The cards should have a grid on them to make scanning the sticky card easier.
- Because they are relatively large, perhaps only one side could be sticky or the entire edge could be left free of the sticky goo to make handling the traps easier.
- Cages around the traps might be needed to protect non-target, small animals from being caught inadvertently and to prevent the crop plants from tangling in the trap.
- Would yellow sticky cards be easier to read, and would they capture SWD flies with the same efficiency?

We have obtained grant funding to further test the red sticky card traps and educate growers and consultants on their use. This two-year project is getting started in spring 2022. It will entail grower and consultant demonstrations, extension materials, and education efforts on the use of red sticky cards baited with SWD lures, to monitor for SWD in berry plantings and cherry orchards. This project will also provide the opportunity to further test these traps.

For more information consult:

Cornell Fruit Resources, Spotted Wing Drosophila, <https://fruit.cornell.edu/spottedwing/>
Spotted Wing Drosophila blog, <https://blogs.cornell.edu/swd1/>
Spotted Wing Drosophila Management, <https://fruit.cornell.edu/spottedwing/management/>
Spotted Wing Drosophila Monitoring, <https://fruit.cornell.edu/spottedwing/monitoring/>

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