

Monitoring for Spotted Wing Drosophila

Introduction

Spotted Wing Drosophila (SWD) is a small (2-3 mm) invasive vinegar fly, established in several Provinces across Canada (BC, Ontario, Quebec, NB, PEI and NS). It can cause significant damage on a wide range of soft fruit, including: wild blueberry, highbush blueberry, strawberry (Day neutral and June bearing), raspberry, blackberry, cherries, peaches, plums, gooseberries, currants, grapes and a wide variety of wild and native fruits.

Damage

SWD does its damage by laying eggs in ripening fruit. The larvae quickly develop and feed on the inside of the fruit. Once this happens, it decreases harvestable yield and destroys the marketability of the fruit. During mid-summer, when temperatures are warmer, the fly's life cycle can shorten to less than 10 days. This leads to exponential population growth in the late summer and fall, which can have big impacts on marketable yields if they are not managed.

The key to managing SWD involves trapping, to determine when the adults first appear in a field. The flies are not in commercial fields until the fruit starts to ripen. It is believed that they spend most of their time, early in the year, building up their population on wild and native fruits. Based on experience from across the country and throughout North America, **it is prudent to start a control program when the first male fly is captured in a commercial field.**

Check the various Perennia fruit pest management guides for the control products registered for each crop.

Identifying SWD

For monitoring purposes, farmers should be looking for the male. The male (Figure 1) has red eyes and a single spot on the tip of each wing. Figure 2 shows a trap that has many SWD males, caught on the edge of a strawberry field in the middle of September 2012. Figure 3 shows a female fly; you can clearly see the serrated ovipositor. This ovipositor can be hard to see in the field and to the naked eye other types of drosophila may look similar.

Fig. 1 SWD male



“Once a fly is captured, treatment should begin for all susceptible crops in that area.”

Fig. 2 SWD in a trap



Fig. 3 SWD female



Monitoring SWD: How many traps?

Thresholds and monitoring protocols are still being developed, so there are no exact recommendations for numbers of traps. However, the more traps you have the better the chance you have to catch a fly. It comes down to what is practical for your operation. A three acre strawberry field could have many traps that could be checked in an hour, once a week. A wild blueberry operation that has many fields spread over a large area, might go for fewer traps per field or trap in representative fields in each area.

What kind of traps?

There are many types of traps that could be used and most are effective. What is outlined below is a conservative trap but it is simple and inexpensive to use. It will allow growers to easily and effectively monitor for this pest and to approximate when the fly begins to enter a field. This will allow the grower to determine when to begin applying control measures on their fields.

Materials

- 16-24 oz red plastic cups
- Lids can be plastic but they will break down quickly (red duct tape can be used as an alternative lid)
- A roll of red tuck tape or red duct tape (you don't need this if you can find red plastic cups) **SWD are attracted to red**
- A roll of electrical tape (this helps with contrast for the fly, so they can find the holes)
- A single hole punch (1/4 inch holes)
- Apple cider vinegar (ACV) research shows a yeast/sugar mixture is slightly better, particularly earlier in the season, but the yeast solution is difficult to work with.

Step 1: Wrap the cup in red tape, or use a red cup

Step 2: Wrap the top inch or so of the cup with black electrical tape

Step 3: Punch 7 or 8 holes through the black tape and cup with a single hole punch

Step 4: Attach a cup holder to a wooden stake (This could be a 4 inch pot or an improvised devise to hold the cup in place)

Step 5: Place trap in pairs, one shaded and in the tree line or hedgerow and one up to 50 metres into a field (shorter distance for smaller fields). Place them about 1 metre off the ground in sheltered areas. In low growing crops (ie. strawberry and wild blueberry) placing the traps closer to the crop canopy may be beneficial.

Step 6: Fill cups 1/3 full with ACV



Fig 4. Homemade SWD trap

Check traps on a weekly basis starting just after berries begin to ripen. For blueberry growers it is a good idea to place them near blueberry maggot traps for efficiency reasons. **The apple cider vinegar should be dumped and replaced in each trap every week.**

Note – Pouring the ACV and flies into a white, flat plastic container (ie. Tupperware) will make looking for SWD much easier. There will be many other insects present in the trap.

Controls

Once a fly is captured, unless that crop will be completely harvested within 3-4 days, a treatment should begin for all susceptible crops in that area. It should be done on a weekly basis, with particular caution given to rotating between different products and with concern for pre harvest intervals. Check the Perennia website for the Pest Management Guides in each crop, for allowable products and applicable PHI's.

Resources

For detailed information on this pest, check out this website from Ontario. It also has links to other websites from across North America.

<http://www.omafra.gov.on.ca/english/crops/insects/drosophila.html>

For more information, contact:

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