

Guidelines for Monitoring Spotted Wing Drosophila in British Columbia in Berries in 2011

Useful information available at:

- Oregon State University: <http://swd.hort.oregonstate.edu/>
- Peerbolt Crop Management: <http://www.berriesnw.com/>
- British Columbia Ministry of Agriculture: <http://www.al.gov.bc.ca/cropprot/swd.htm>

Spotted wing drosophila can be surveyed for using the following methods. As we learn more about this insect, these guidelines may change. The purpose of monitoring is to detect flies early, which could signal time for management intervention (i.e. a spray). Some key factors to consider when deciding if management is needed and what tool to use: presence of ripe fruit, time of year, if SWD was present last year, other pests present, harvest plans, destination and handling of harvested fruit.

Instructions for Monitoring Adult Flies: Wet traps are used for monitoring adult flies. It is best to hire scouts to survey traps in a systematic way. Traps can be made of any 150-750 mL plastic container that has a tight fitting lid. About four holes 0.5 cm in diameter need to be made in the side of the container to allow flies to enter (holes shouldn't be too big or predatory beetles and other large insects and slugs can get in). Holes placed on the container side prevents rain getting in. Containers that already have holes, like commercial vinegar/fruit fly traps, or large spice containers will work.



Traps for monitoring adult flies

Bait is needed to attract the flies to the trap. Apple cider vinegar is easy to use and relatively inexpensive. The bait will, however, catch other vinegar/fruit fly species as well.

Place traps when temperature is consistently over 10°C (50°F), and/or when fruit starts to form. Hang traps in plant canopy, or set firmly in the ground within the plant row, in a shady location. There are no established guidelines on number of traps, per acre (or per field). Start with 2 traps per 5-10 acres or per field (or area of concern).

Check traps once per week. Look for the spotted wing males in the bait solution. In order to see the female egg laying organ, use a hand lens, or other magnifier. Count and record the number of male and female flies on a data sheet. Replace the bait solution each week. Dump the old solution away from crop plants. There are no established thresholds for numbers of SWD flies in the traps, but based on experience in 2010, risk occurs when even 1-2 SWD flies are caught and ripening fruit is present.

Instructions for Monitoring Larvae: Fruit collection could be done by packers to assess fruit quality by looking for larvae in fruit. Floating out larvae is the fastest way to determine infestation. Rearing out flies from larvae can be used to verify *Drosophila* species (with adult flies) but it takes 7-14 days for the flies to complete their development in fruit.

- **Floating out larvae:** Larvae can be 'floated out' of berries in salt water. To do this, collect at least 50-100 ripe fruit and place them into a container or plastic sandwich bag. Prepare the salt solution (1 tablespoon of salt in 1 cup {250 mL} of water) and pour it into the container or bag. Stir or agitate the fruit. As fruit settles, larvae will float to the surface within 10 minutes. Detection of small larvae may require the use of a hand lens and good lighting. Larvae can then be counted. There is no established threshold for number of larvae in harvested fruit.
- **Raising flies:** Near or during harvest, collect about 1 cup (250 mL) of ripe fruit from field or harvest bins from an area of interest. Lay fruit out one layer deep in a flat container, cover with mesh or loosely with a lid. Air circulation is important, as larvae will suffocate if the container is sealed. Keep containers at room temperature (20°C) for up to two weeks, or until all the flies have emerged. Container and flies can then be put in the freezer. Frozen male flies can be viewed for spotted wings and female flies for their saw-like ovipositors. To preserve the flies, store in 70% ethanol. **Note that male flies do not get their spots until several hours after emergence.* There are no established guidelines on number of fruit collections per acre (or per field). Start with at least 4 fruit collections per field (or per area of concern).

For more information on SWD monitoring, contact the British Columbia Ministry of Agriculture at 604-556-3001.