

## Spotted Wing Drosophila Monitoring and Management Recommendations for Commercial Tree Fruit and Grapes in the Interior of British Columbia

Surveillance of spotted wing drosophila in the Okanagan, Kootenay and Similkameen valleys will be undertaken from May-September 2010 by the Okanagan Tree Fruit Cooperative in collaboration with BCMAL, Agriculture and Agri-Food Canada, private consultants and cooperating growers. The purpose of the survey is to measure the presence and distribution of spotted wing drosophila, determine overwintering potential, host and non host crops, and identify pathways of pest entry and distribution in the interior, following discovery of the fly in B.C. in 2009.

### Hosts:

Spotted wing drosophila attacks thin-skinned fruit including cherry, raspberry, blueberry, strawberry, blackberry, peach, plum, nectarine and grapes.

### Identification:

Spotted wing drosophila adults are light yellow or brown flies with red eyes. Males have a black spot on the leading edge of each wing near the tip. Females lack black spots on the wings and have large ovipositors (egg laying device) with saw-like teeth which are much darker than the rest of the ovipositor.

### Damage:

Female egg laying leads to scarring of fruit. Fruit infested with larvae become soft and the fruit wall collapses. There may be secondary infection of mold and bacteria at the egg laying site.

### Monitoring:

Begin monitoring for spotted wing drosophila adults with baited traps after temperatures have been above 10°C for several days. For cherries, place traps in the earliest maturing blocks first before straw colour and expand trapping to later maturing blocks. It is crucial to know if spotted wing drosophila is present before cherries turn pink when the pest is anticipated to begin to infest fruit. Continue monitoring harvested blocks to determine if a clean-up spray is needed.

### Trap design

Traps can be made of any 250-750 ml plastic container or cup with a tight fitting lid. Drill 4-5 holes (use a 3/16 inch drill) on one side of the container to allow flies to enter (holes shouldn't be too big or other large insects can get in). Containers that already have holes, like commercial vinegar/fruit fly traps will work.



Spotted wing drosophila adult male has one dark spot on each wing.

*Photo Credit: Sheila Fitzpatrick, Agriculture & Agri-Food Canada*



Spotted wing adult female does not have spots on wings and is similar to many other species of vinegar flies. *Photo*

*Credit: Naomi DeLury & Howard Thistlewood, Agriculture & Agri-Food Canada*



Adult female has a saw-like ovipositor that distinguishes it from other vinegar

flies. *Photo Credit: Naomi DeLury & Howard Thistlewood Agriculture & Agri-Food Canada*

- Bait traps with 1½ inch (4 cm) pure apple cider vinegar. Apple cider vinegar is clear, so it is easier to see spots on adult male wings
- A small yellow sticky card can also be hung or wedged in the trap container to catch flies.
- Hang trap near fruit level in a shaded area.
- Replace yellow sticky traps and bait solution once per week.
- Do not dump old bait solution in the orchard.
- Count male flies on sticky traps and in bait solution. Use a magnifying glass or hand lens to help identify male flies.
- Female flies are more difficult to identify. Send suspect flies to an entomologist for confirmation.
- Keep a weekly record of spotted wing drosophila male fly counts, location, host crop, and date of collection.



Apple cider vinegar trap

## Management:

Being a new pest, these recommendations may change as new information becomes available. Use a combination of control tactics.

### Cultural

All vinegar flies are weak fliers but are spread easily on infested fruit or by wind. Field sanitation is important in control of all life stages because the presence of dropped, overripe and rotten fruit promotes rapid population increase.

When the insect is detected, all nearby sources of fruit (e.g. commercial fruits, wild hosts including berries, seedling cherry or grape, backyards or fruit stands) should be managed to slow the spread of the pest.

### Biological

Parasitic wasps have been reared from infested fruit in Western Oregon and research is underway to identify potential predators and parasitoids.

### Chemical

Monitor susceptible tree fruit or grape crops and surrounding areas in order to detect and control adult flies before they lay eggs.

**Recommended products should be applied only when flies are present and fruit is at the susceptible stage.** Cherry fruit is susceptible from pink onwards.

Delegate, Entrust, Malathion and Ripcord have received emergency registration until October 31, 2010 for control of spotted wing drosophila on stone fruit, grapes and berries. These products will not control larvae once inside the fruit. All are toxic to bees, DO NOT apply when bees are present. Read and follow label directions.

Refer to the table below for information on recommended products. It is important to rotate products with different group numbers to avoid development of pesticide resistance.

**Notes:** Some materials may be banned in certain markets; check with your buyer. Entrust is organic-approved (OMRI) for use in orchards and vineyards. Malathion may be phytotoxic to some cherry varieties. GF-120 does not provide effective control. Other organophosphates and neonicotinoids used for cherry fruit fly may provide control of spotted wing drosophila. Contact your field advisor for further information.

### Funding:

Funding and support for this project is provided by the Okanagan Cherry Growers' Association, BC Wine Grape Council, BC Fresh Market Grape Growers' Association, BC Ministry of Agriculture and Lands Biosecurity Funding, Agriculture Environment Wildlife Fund and Tree Fruit Industry Development Fund.

### Further Information:

- BC Ministry of Agriculture and Lands: <http://www.al.gov.bc.ca/cropprot/swd.htm>
- Oregon State University: <http://swd.hort.oregonstate.edu/>

*Susanna Acheampong PhD  
BC Ministry of Agriculture and Lands  
200-1690 Powick Road, Kelowna, BC V1X 7G5  
Phone: (250) 861-7211*

*June, 2010*

**Insecticides with emergency registration for use on stone fruit and grapes for the control of spotted wing drosophila in British Columbia (Registrations are valid until October 31, 2010).**

Trade Name & (active ingredient)	Group	Crop	Rate	Maximum Number Applications	Application Interval (days)	Pre-harvest Interval (days)	Re-entry Interval (Label)	Comments
Delegate WG (spinetoram)	5	Stone fruit <sup>1</sup>	420 g/ha (170 g/acre)	3	7	7 (cherry, plum, prune) 14 (peach, nectarine, apricot)	12h	Application should be based on the presence of adult flies as determined by local monitoring. Currently No MRLs for Delegate in Japan.
		Grape	280 g/ha (113 g/acre)	3	5	7	12 h	
Entrust 80 W (spinosad)	5	Stone fruit <sup>1</sup>	109 g/ha (44 g/acre)	3	7	7 (cherry, plum, prunes) 14 (peach, nectarine, apricot)	12 h	Use a minimum of 1000 L water/ha
		Grape	109 g (44 g/acre)	3	7	7	7 - 15 days	Re-entry: Training, tying, hand pruning and thinning:7 days; Girdling or cane turning: 15 days
Malathion 85 E (malathion)	1B	Apricot	610-855 mL/1000 L water	2	10 - 12	7	12 h - 3 days	Re-entry: Thinning: 3 days; Hand harvest, irrigation: 2 days; All other activities: 12 h Harmful to beneficial insects.
		Stone fruit <sup>1</sup>	610-855 mL/1000 L water	1	10 - 12	7	24 h - 3 days	Some cherry varieties may be sensitive to Malathion Re-entry: Thinning: 3 days; All other activities: 1 day
		Grape	880 mL/1000 L water	1	10-12	3	24 h - 5 days	Re-entry: Girdling, cane turning: 5 days; Hand harvest, training, tying, leaf pulling, hand pruning, thinning: 4 days All other activities: 24 h
Ripcord 400 EC (cypermethrin)	3	Stone fruit <sup>1</sup>	150-175 mL/ha (61-71 mL/acre)		7	2	24 h (other stone fruit)	Treat a small area first to evaluate crop tolerance. Re-entry: 4 days for thinning activities on cherry
		Grape	150 mL/ha (61 mL/acre)	2	7	7	24 h	Harmful to predatory mites.

<sup>1</sup> Stone fruit includes apricot, cherry, nectarine, peach, plum, and prune  
Sprays should be based on presence of adult flies as determined by local monitoring