



Spotted Wing Drosophila

January 2018

Management Timeline, Details and Resources

Spotted wing drosophila (SWD), *Drosophila suzukii*, is a major insect pest of small fruit and tree fruit crops, as they lay eggs in ripe fruit. *Infestation risk factors include high canopy humidity, and ripe and over-ripe fruit* (hanging, dropped or rejected). Following the guidelines below will help to achieve the best possible SWD management.

Early Season

- Before new plantings, **select varieties** carefully. Advantages for SWD management include:
 - Earlier ripening berries
 - Even berry development for uniform harvesting
- Manage **Himalayan blackberries**, which provide habitat for SWD
 - Try to remove prunings to avoid regrowth
 - Be aware of bylaw and label restrictions regarding herbicide use
- **Record hot-spots** based on previous high trap catches and infested fruit
- Learn to use a **degree day model** to predict when SWD will become active in spring
- **Prune bushes** to open the canopy, decrease humidity, improve harvest efficiency, and improve spray coverage and penetration

Growing Season to Harvest

Cultural Management

- Cut back and/or prune flowers or green fruit from any **Himalayan blackberries** near fields
- See BCBC IPM Newsletter for spring and summer **SWD trap catches**, which will help determine level of SWD risk in the area, and when insecticide treatments could optimally begin
- **Harvest berries early and often** leaving as little ripe fruit as possible
- **Cool or freeze fruit as soon as possible after harvest** to slow growth or kill eggs and larvae
- Sample for larvae in fruit by using the 'float out' method to determine infestation level

Chemical Management

- Use spray equipment that provides **excellent coverage**, as SWD shelter in the cool and shaded leaf canopy
- **Calibrate equipment** to achieve best efficacy, by using optimal pressure, water volume and product concentration
- **Rotate between products** in different chemical groups to reduce risk of SWD developing resistance
 - Refer to Berry Production Guide for product/emergency registrations, follow chemical labels
- Begin pesticide applications when berries first ripen until the end of harvest, spraying weekly
 - For most effective penetration, travel slowly when spraying
 - Reapply sprays after rain, as rain reduces product efficacy and increases humidity and risk of infestation
- Where early and late season berries are nearby, consider **applying a post-harvest spray** to prevent SWD build-up on residual fruit

SEE NEXT PAGE FOR POST HARVEST TO DORMANCY



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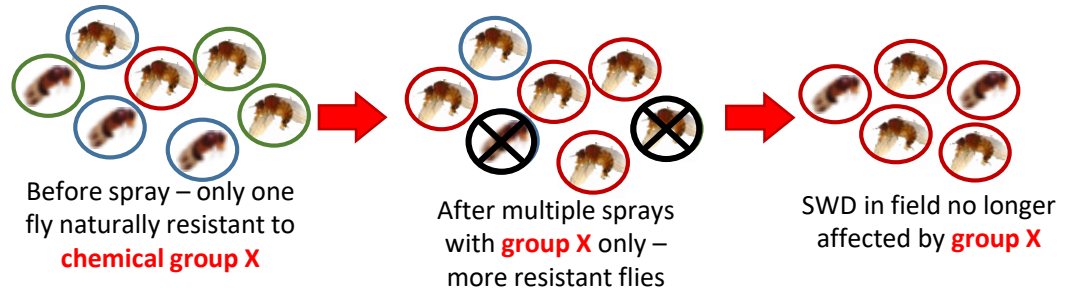
Post-harvest to Dormancy

- Destroy all culled fruit
- Clean equipment and fruit processing areas
- Repair leaking irrigation lines, and/or modify to **drip irrigation**, rather than over-head, to reduce humidity
- Apply or repair **weed mats**
 - In summer, they may kill SWD that drop onto the hot surface
- Install or repair **trellis wires**
 - Crop training allows better spray coverage and fewer berries are knocked off bushes during spraying
- Place **SWD traps** in hedgerows and field edges
 - Monitor for over-wintering hot-spots to predict SWD movement into fields for next season

Rotating Between Pesticides

What is a chemical group? Each chemical group has a specific way, or mode of action, of killing the pest

Why do we care? If pesticides in the same group are continually applied, pests will evolve to become resistant to that mode of action, and that chemical group will become ineffective

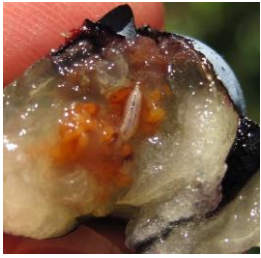


What should we do?

- **Rotate between multiple chemical groups with each application**
- **Always read the label and calibrate your sprayer** to ensure the correct concentration of product is applied, as low doses can also allow resistance to develop
- Stay updated about, and adhere to, the number of applications allowed per product per season. Be aware of MRL restrictions for export markets.

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Degree Day Model

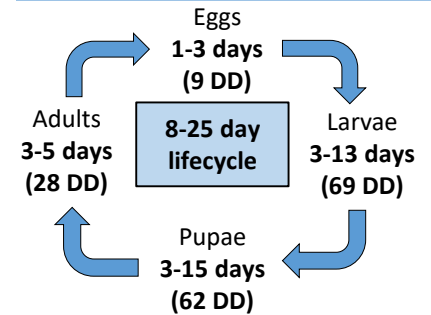
This can tell you when over-wintering SWD first become active, when egg-laying starts or when populations begin to rise.

How to Use

1. Follow this link: uspest.org/cgi-bin/ddmodel.us
2. Select a blue weather station on the map that is close to your area
3. In the 'Degree-Day Calculator' drop-down, choose the **first** 'spotted wing Drosophila' option near the bottom of the list
4. The page will refresh. Switch temperature to °C
5. Select 'Click here to CALC/RUN...'
6. Scroll down to see the association of the date, degree days and SWD life events – example below

Month	Day	Cumulative Degree Days				Event	
5	21	26.11	8.33	0.00	7.44	144.9	
5	22	29.44	10.00	0.00	9.72	154.6	1st EGG LAYING BY OW FEMALES

SWD life cycle at 15-25°C with degree days shown



Links and Resources

BC Berry Production guide: productionguide.agrifoodbc.ca/guides/14

PMRA pesticide label search: pr-rp.hc-sc.gc.ca/lr-re/index-eng.php

Testing fruit for larvae: ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/52502/em9096.pdf Prune caneberries for SWD management: blogs.cornell.edu/swd1/2017/06/27/pruning-caneberries-to-minimize-swd-habitat-within-the-planting/

Sprayer calibration: entomology.ces.ncsu.edu/2015/04/preparing-for-swd/ and pesticidestewardship.org/calibration/

General IPM information: pesticide.org/spotted_wing_drosophila_webinar and pnwhandbooks.org/insect/emerging-pest-spotted-wing-drosophila-berry-stone-fruit-pest and uspest.org/swd/

SWD risk factors: uspest.org/swd/pubs/SWD_Risky_Situations_10-14-2014.pdf



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