



# CLIMATE CHANGE ADAPTATION PROGRAM

## Spotted Wing Drosophila

### Fact Sheet

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# 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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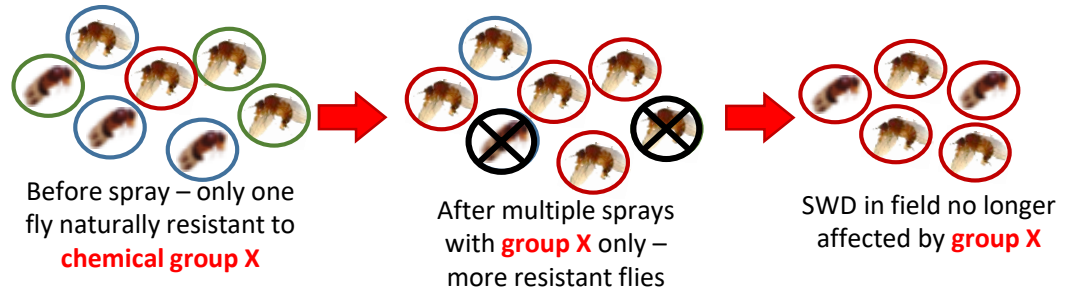
### Post-harvest to Dormancy

- 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

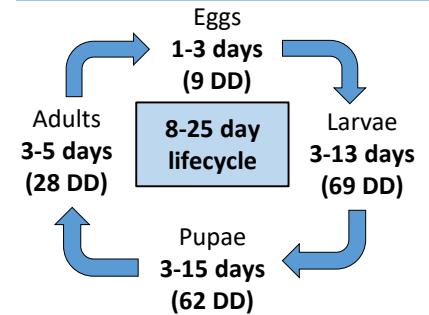
This can tell you when over-wintering SWD first become active, when egg-laying starts or when populations begin to rise.

### How to Use

1. Follow this link: [uspest.org/cgi-bin/ddmodel.us](https://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](https://productionguide.agrifoodbc.ca/guides/14)

PMRA pesticide label search: [pr-rp.hc-sc.gc.ca/lr-re/index-eng.php](https://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](https://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/](https://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/](https://entomology.ces.ncsu.edu/2015/04/preparing-for-swd/) and [pesticidestewardship.org/calibration/](https://pesticidestewardship.org/calibration/)

General IPM information: [pesticide.org/spotted\\_wing\\_drosophila\\_webinar](https://pesticide.org/spotted_wing_drosophila_webinar) and [pnwhandbooks.org/insect/emerging-pest-spotted-wing-drosophila-berry-stone-fruit-pest](https://pnwhandbooks.org/insect/emerging-pest-spotted-wing-drosophila-berry-stone-fruit-pest) and [uspest.org/swd/](https://uspest.org/swd/)

SWD risk factors: [uspest.org/swd/pubs/SWD\\_Risky\\_Situations\\_10-14-2014.pdf](https://uspest.org/swd/pubs/SWD_Risky_Situations_10-14-2014.pdf)



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