

Noncrop host plants used by spotted-wing drosophila

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Key points

- Spotted-wing drosophila infests a wide range of wild and cultivated host plants.
- The SWD host plant list is expanding as new knowledge emerges.
- Vegetation near production fields can improve environmental conditions for SWD, providing shelter and alternative food sources for SWD.
- Alternate host plants near production fields can significantly increase the risk of SWD infestation in the crop.
- Monitor for SWD in noncrop environments to determine the risk of crop infestation.
- In the off season, SWD is also found in habitats that are not known to produce fruit.

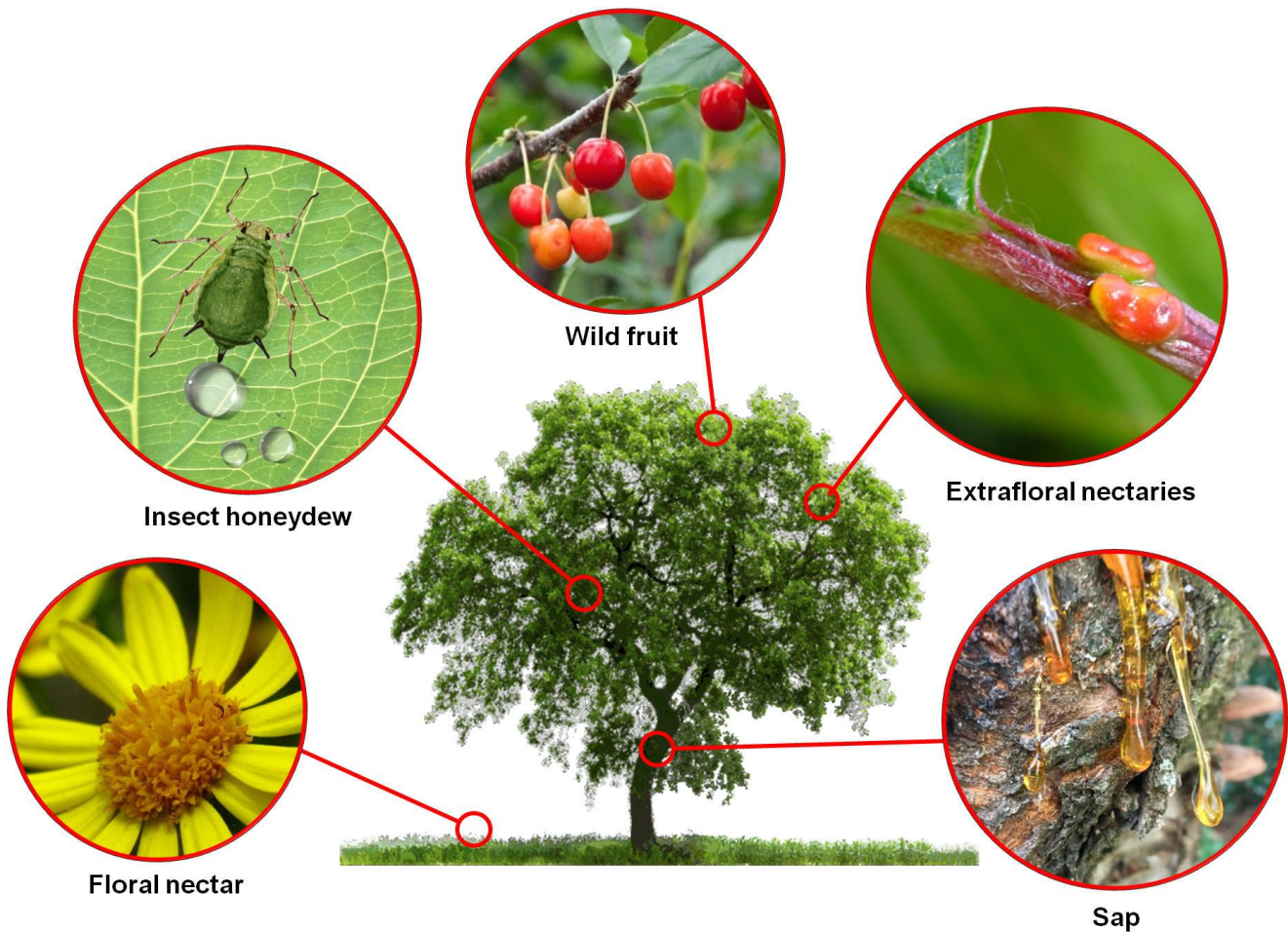


Figure 1. SWD can benefit from sugars and other environmental resources provided by many plants.

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Surrounding noncrop environment aids SWD

Noncrop habitat may contribute to spotted-wing drosophila pest pressure and affect sustainable integrated pest management strategies. High-density plantings of suitable host crops provide ideal conditions for rapid increase of SWD populations.

Noncrop habitat can provide a refuge from pesticide applications and extreme climate conditions, as when the fruit crop is not present or ripe enough. The dense vegetation sometimes found surrounding commercial fields can create suitable habitat due to the shade, coolness and humidity it provides during the summer.

Dense vegetation also provides shelter during winter freezes. When dense field margins include a variety of noncrop host plants, SWD can find sources of essential nutrients and suitable sites for egg laying (Figure 1).

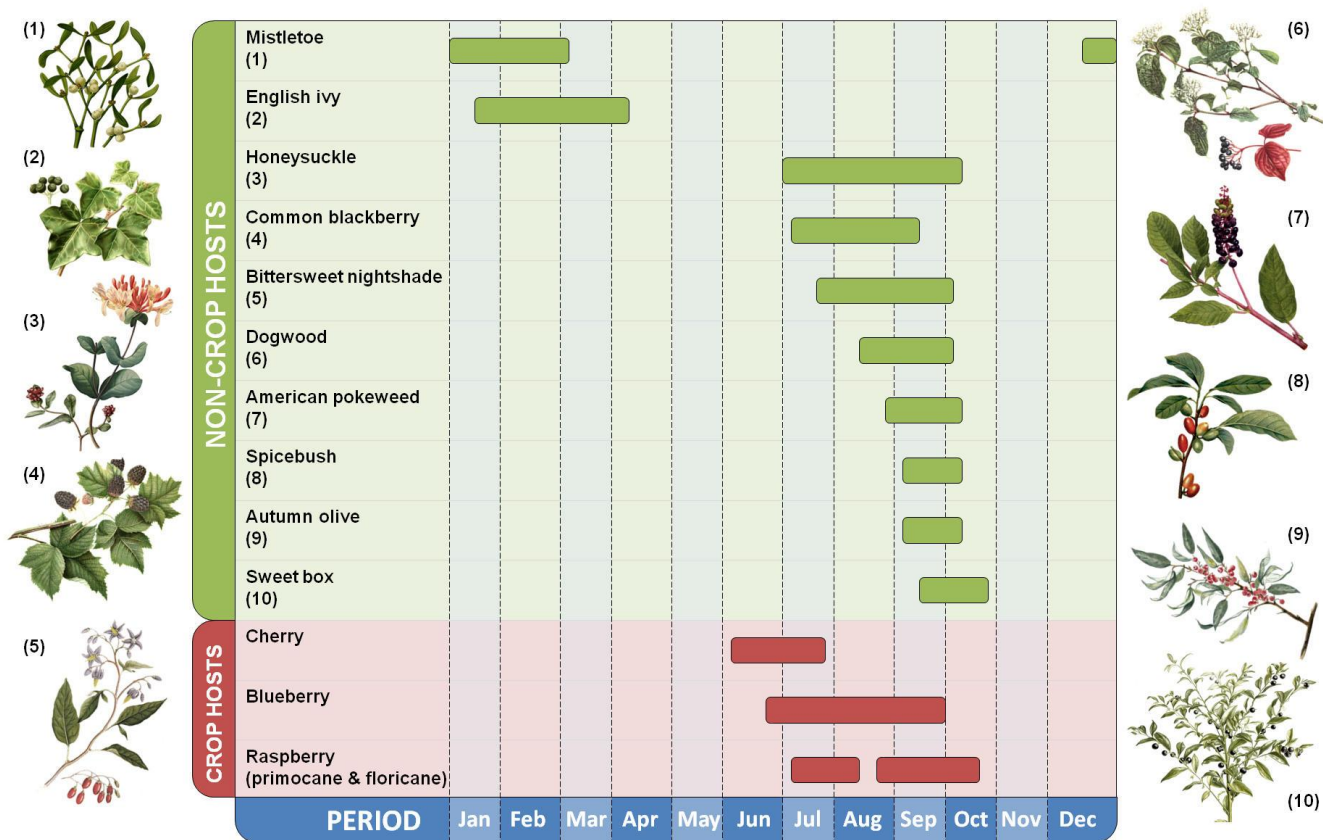


Figure 2. Berry ripening calendar of noncrop (green) and crop hosts species (red) used by SWD for egg laying in Oregon.

Illustration: Marco Rossi-Stacconi, © Oregon State University

SWD infest a broad range of wild and cultivated plants and can reproduce on more than 80 plant species belonging to 19 plant families. Because the fruit of these many host plants have differing ripening times, SWD can find suitable fruits for egg laying throughout the year in many environments. In the U.S., known alternate hosts include English ivy, mistletoe, honeysuckle, blackberry, bittersweet nightshade, stiff dogwood, American pokeweed, silky dogwood, spicebush and autumn olive (Figure 2). This list is not exhaustive. It varies by region and is expanding.

Growers can predict the risk of crop damage from SWD by learning to recognize noncrop host plant species, their abundance, bloom and fruiting times. Placing monitoring traps close to areas of wild vegetation—especially forests, where alternate hosts are present—may allow growers to detect SWD early and take informed action.

Alternate host plants growing close to the crop can significantly increase the risk of SWD infestation. In high-pressure areas, clearing field margins of those plants may decrease the risk of crop damage. Any reduction in the size of the population sheltering in crop margins will improve the outcomes of other control strategies, such as insecticide applications. The ability of SWD to exploit such a large number of wild host plants suggests producers should work together and use areawide approaches to biological control. Ideally, such an approach would have district-level support involving coordinated, joint efforts of the producers based in an area.

Resources

Lee, J.C., A.J. Dreves, A.M. Cave, S. Kawai, R. Isaacs, J.C. Miller, S. Van Timmeren, D.J. Bruck. 2015. Infestation of wild and ornamental noncrop fruits by *Drosophila suzukii* (Diptera: Drosophilidae). *Annals of the Entomological Society of America* 108:117–129.

Briem, F., A. Eben, J. Gross, H. Vogt. 2016. An invader supported by a parasite: Mistletoe berries as a host for food and reproduction of spotted wing drosophila in early spring. *Journal of Pest Science* 1–11.

Grassi, A., A. Gotterdello, D.T. Dalton, G. Tait, D. Rendon, C. Ioriatti, D. Gibeaut, M.V. Rossi-Stacconi, V.M. Walton. 2018. Seasonal reproductive biology of *Drosophila suzukii* (Diptera: Drosophilidae) in temperate climates. *Environmental Entomology*. 47(1):166-174.

Lee, J.C., A.J. Dreves, R. Isaacs, G. Loeb, H. Thistlewood., L.J. Brewer. 2015. *Noncrop host plants of spotted wing drosophila in North America* (EM 9113). Oregon State University Extension Service, Corvallis OR.

Kenis, M., L. Tonina, R. Eschen, B. van der Sluis, M. Sancassani, N. Mori, T. Haye, H. Helsen. 2016. Non-crop plants used as hosts by *Drosophila suzukii* in Europe. *Journal of Pest Science* 89:735–748.

Klick, J., W.Q. Yang, V.M. Walton, D.T. Dalton, J.R. Hagler, A.J. Dreves, J.C. Lee, D.J. Bruck. 2016. Distribution and activity of *Drosophila suzukii* in cultivated raspberry and surrounding vegetation. *Journal of Applied Entomology* 140:37–46

Pelton, E., C. Gratton, R. Isaacs, S. Van Timmeren, A. Blanton, C. Guedot. 2016. Earlier activity of *Drosophila suzukii* in high woodland landscapes but relative abundance is unaffected. *Journal of Pest Science* 89(3): 725–733.

About this series

This publication is one of a series focused on strategies for controlling spotted-wing drosophila in Oregon. The publications in this series include:

- EM 9261: [How seasons affect population structure, behavior and risk on spotted-wing drosophila](https://catalog.extension.oregonstate.edu/em9261) (<https://catalog.extension.oregonstate.edu/em9261>)
- EM 9262: [Cultural control strategies to manage spotted-wing drosophila](https://catalog.extension.oregonstate.edu/em9262) (<https://catalog.extension.oregonstate.edu/em9262>)
- EM 9263: [Host range and characteristics affecting fruit susceptibility to spotted-wing drosophila](https://catalog.extension.oregonstate.edu/em9263) (<https://catalog.extension.oregonstate.edu/em9263>)
- EM 9264 [Noncrop host plants used by spotted-wing drosophila](https://catalog.extension.oregonstate.edu/em9264) (<https://catalog.extension.oregonstate.edu/em9264>)
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