Do adjacent wild hosts increase pest pressure from spotted wing Drosophila?

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What wild hosts are SWD using?

Spotted wing Drosophila (SWD) is an invasive frugivore that is highly polyphagous, infesting hosts including small fruits as well as many other non-crop hosts. The presence of these wild hosts may increase the onset and severity of SWD into the adjacent crop.

6 blueberry farms in west Michigan were selected for their presence of honeysuckle (*Lonicera spp.),* an invasive and abundant plant that is a known host to SWD (Figure 1A). At each farm, 10 locations were selected either in the interior of the crop, adjacent to a honeysuckle, or adjacent to a non-host (Figure 1B). At each location, a SWD trap was placed from early May through mid-September and fruit collections from both blueberry and wild hosts were taken.

Figure 1. (A) A blueberry farm with honeysuckle fruits adjacent the crop. **(B)** The experimental design at each farm where each star indicates a SWD trap and fruit sampling locations.

Out of 10 types of wild fruit collected, we found that SWD commonly infest wild raspberries, blackberries, and honeysuckle. We also found SWD in bittersweet nightshade and American pokeweed. We expect that they will utilize additional wild hosts that were not present at our study sites.

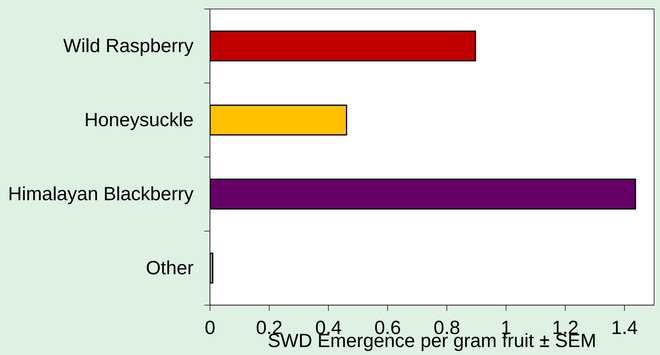

Figure 2. The average number of SWD adults that emerged per gram of wild fruit (± S.E.) sampled from 6 blueberry farms in western Michigan from early May through blueberry harvest.

Do wild hosts increase the onset and severity of SWD into the adjacent crop?

The season-long abundance of SWD trapped within honeysuckle is significantly higher than SWD trapped within the interior part of the field. However, it is not significantly different from other SWD trap catches at the edge of the crop. First detection of SWD was the same across all crop edge locations, but SWD populations within or near honeysuckle build faster compared to the other locations (Figure 3). These early expanding populations could result in spillover to the rest of the crop.

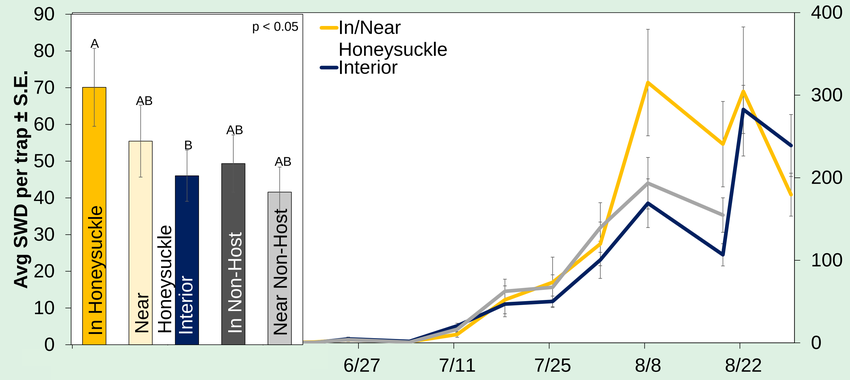

Figure 3. The average number of SWD adults caught per yeast-sugar trap (± S.E.) when sampled in/near honeysuckle, in/near non-hosts, or from the interior of the planting across 6 blueberry farms in western Michigan.

The season-long infestation of SWD in blueberry directly adjacent to a honeysuckle plant is higher than infestation adjacent to non-hosts or the crop interior, but not significantly so (Figure 4). Regardless of adjacent plant type, infestation is first detected and grows at the edge of the crop. However, infestation increases faster near honeysuckle plants compared to non-host plants. Late-season infestation is highest in the crop interior likely resulting from high SWD pressure and ample fruit.

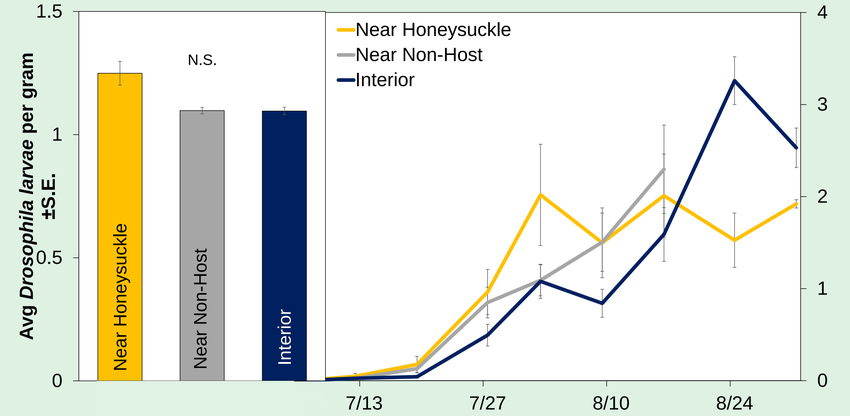

Figure 4. The average number of *Drosophila* larvae found per gram of blueberry (± S.E.) when sampled adjacent to a honeysuckle plant, adjacent to a non-host plant, or from the interior of the planting across 6 blueberry farms in western Michigan.

Should you remove wild hosts that surround your crop?

We recommend mowing or removing large dense stands of wild hosts that are directly adjacent to your crop (i.e. a bramble patch). However, removing scattered or patchy plants throughout your woodlot is probably not necessary. Removal of wild hosts is not guaranteed to reduce SWD populations, may be very labor intensive, and may reduce resources for beneficial insects including natural enemies and pollinators. However, we recommended scouting your planting for wild hosts to better predict SWD problem-areas within your farm and target control efforts.

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Questions or Comments? Feel free to contact me!
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