2021 ranking of insecticides for their performance against spotted-wing Drosophila[1]

Developed by applied entomologists managing this pest in California, Florida, Georgia, Maine, Michigan, New Jersey, New York, North Carolina, Oregon, and Washington.

The invasive spotted-wing Drosophila (SWD) has been a pest of berries and cherries across the United States for the past decade. Since its introduction, insecticides have been an important management tool for this pest, to minimize fruit infestation. Annual field research trials conducted by applied entomologists have identified effective options for chemical control of SWD, but each trial is typically a small subset of the available options. To synthesize the existing research and practical experience on insecticide performance against this pest, rankings for insecticides were provided by applied entomologists and leading industry stakeholders at the end of 2020. Their rankings were based on experiences from replicated research trials and grower management of SWD in their regions, and reflect the combined activity on adults and larvae of SWD. This document summarizes those rankings to provide an overview of effectiveness against this pest.

We received a total of 19 unique state x crop combinations, providing rankings for insecticides against SWD. These were provided from CA, OR, WA, MI, ME, NY, NJ, NC, GA, FL and from cranberries, cherries, and blueberries. Each person was asked to provide rankings based on a scoring system of 0 = ineffective, 1 = weak, 2 = fair, 3 = good, and 4 = excellent. The average ranking for each insecticide is provided in Figure 1, with a dashed line to highlight products that are ranked Good-Excellent.

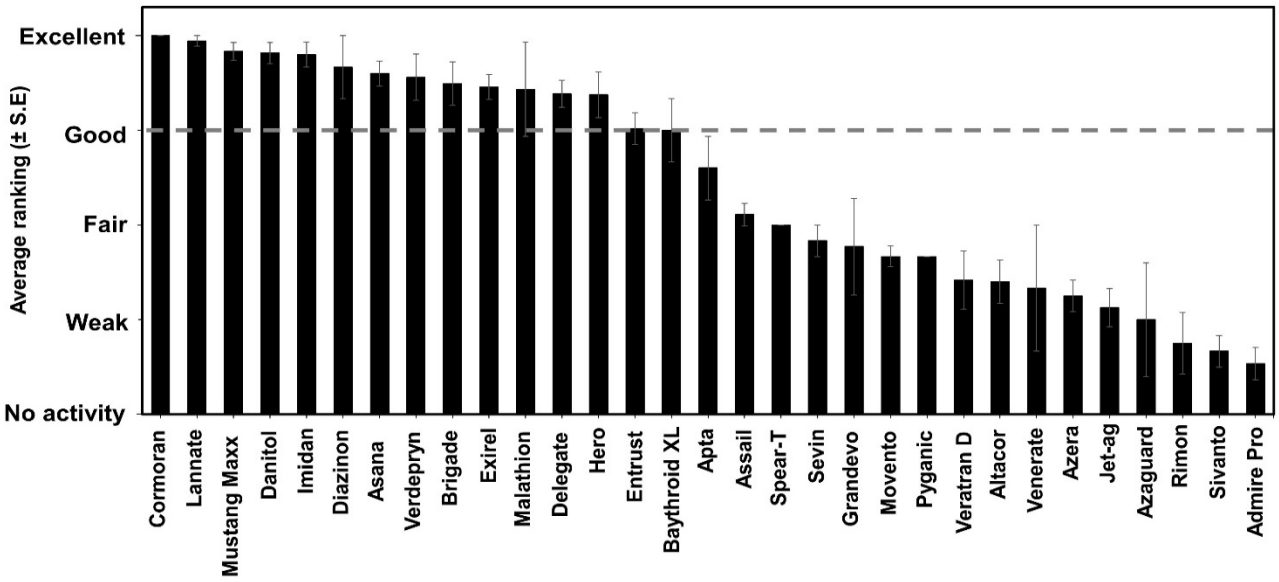

Figure 1. Relative ranking of insecticides for their performance against SWD under field conditions, across multiple crops and different regions of the US in 2020.

This figure can provide guidance in selection of insecticides to control this pest, but final decisions should also be based on whether it is registered for your crop, the pre-harvest interval, the cost, and also its suitability for helping to manage insecticide resistance (see second page).

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[1] Compiled by Philip Fanning, School of Biology and Ecology, University of Maine and Rufus Isaacs, Department of Entomology, Michigan State University. Contact philip.fanning@maine.edu with questions about this article.

Selection of insecticides for management of SWD is rarely based on efficacy alone. Due to increasing concerns regarding insecticide resistance in populations of SWD, growers, researchers, and extension personnel need to consider rotation of chemical classes when developing their SWD management programs, in addition to their efficacy. To help in this, we have color coded each insecticide for its chemical class (Figure 2). There are 11 chemical classes listed, plus one insecticide that contains two different classes in a pre-mix formulation.

To use this graph for decision-making, consider which insecticides you plan to use and then check whether they have the same color (chemical class) in this figure. Pyrethroids and organophosphates are the two most common classes in the insecticides with high efficacy. This color-coded figure can be used to plan a SWD control program using different chemical classes. Rotating among multiple chemical classes (different colors) is expected to minimize resistance.

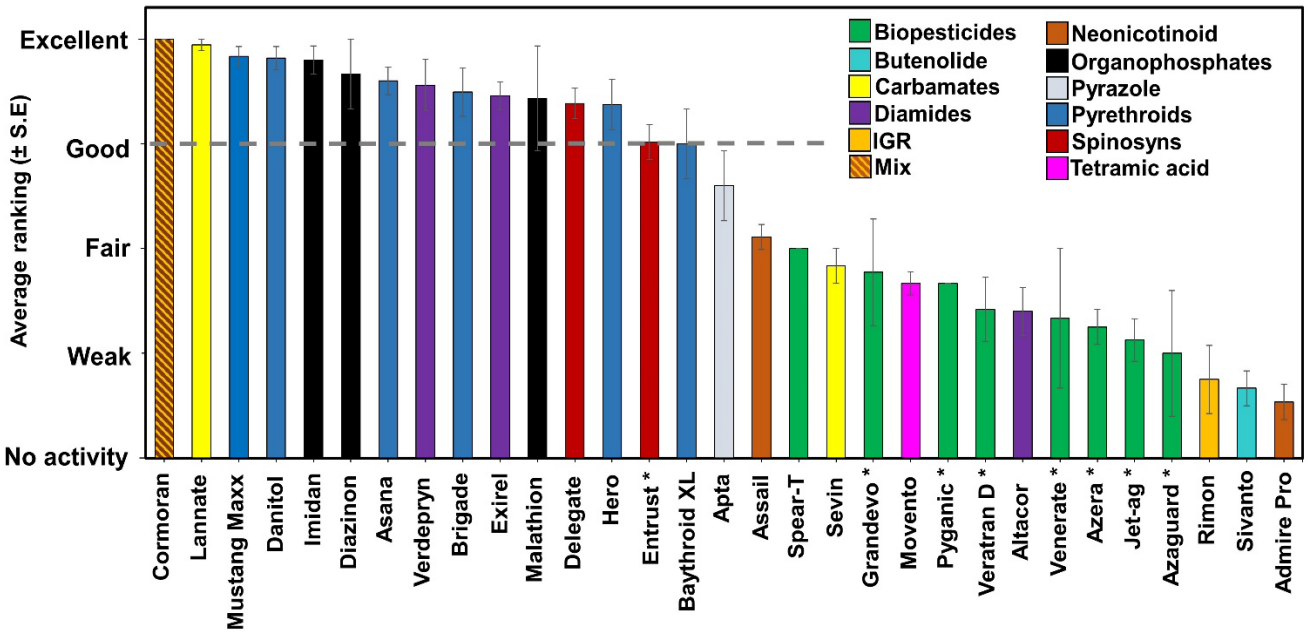

Figure 2. Relative ranking of different chemical classes of insecticide for their performance against SWD under field conditions, across all crops and regions in the US in 2020. Different colored bars represent different classes of insecticide. *OMRI approved for use in organic production.

There are many other considerations when developing effective SWD control, but the information in Figure 2 can help avoid development of resistance through rotating chemical classes in consecutive spray applications. There are also many non-chemical approaches to SWD control including selecting earlier-ripening crops, early harvest, pruning to reduce humidity, physical exclusion with netting, and encouraging biological control. Combining these approaches can help reduce SWD infestation within a comprehensive IPM program.

Always check the label to ensure federal and state registration of insecticides on your crop(s) prior to their use. Follow the restrictions including seasonal limits, re-entry restrictions, and pre-harvest intervals.

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