

Section VI:  
Pests of Wine Grapes & Small Fruits

CONTROLLING SPOTTED WING DROSOPHILA IN ORGANIC BERRIES

Alan Schreiber and Andy Nagy

Agriculture Development Group, Inc.

2621 Ringold Road

Eltopia, WA 99330

(509) 266 4348

[aschreib@centurytel.net](mailto:aschreib@centurytel.net)

Eleven years ago, there was an estimated 600 acres of organic blueberries in the United States. By the end of 2017, Washington will have in excess of 3,000 acres of organic blueberries and has established itself as the leading producer of this crop in the world. Acreage of this crop is expanding due to the favorable prices received and the relative lack of insect and disease pressure the industry has enjoyed. Approximately 90% of organic blueberries are located in eastern Washington. Prior to 2012, virtually no insecticides or fungicides had been applied to blueberries grown in eastern Washington. [Blueberries produced in western Washington have significant disease and insect pressure.] Spotted wing drosophila (SWD) was detected in eastern Washington in 2010 but was not sufficiently widespread, present in sufficient numbers or was not noticed prior to 2012. The year 2012 was a turning point for blueberry production. Several growers deployed significant SWD programs, other growers less aware of the pest or less sophisticated in the SWD control programs suffered significant losses due to the insect.

For fresh blueberries, detection of a single larvae per pallet results in rejection. Processed blueberries have lower standards, but production of blueberries for the processed markets require a competent SWD control program. Several shipments of blueberries from eastern and western Washington have been rejected due to the presence of SWD. The Washington Blueberry Commission is under significant pressure to respond to this situation. For conventional growers, there are a number of insecticidal options available and WSU's Lynell Tanigoshi has evaluated these products. Unfortunately, only one organically approved insecticide (Entrust, spinosad, Dow AgroSciences) has been demonstrated to have sufficient efficacy against SWD, prior to the beginning of this research program. Organic blueberry growers rely heavily on Entrust and the Washington (and California and Oregon) organic blueberry industry is very dependent on this product. One of the challenges growers have is that there is a limit on the amount of the product that can be made during the course of the season, resulting in growers using lower rates in order to extend coverage throughout the season. The registrant of Entrust, Dow AgroSciences, now requires use of an alternative, effective insecticides after every two applications. Growers currently question whether there is anything effective enough to rotate with Entrust.

SWD has been documented as having developed resistance to Entrust in blueberries in the Watsonville area of California. While strong scientific data may be lacking demonstrating resistance in SWD to Entrust, two things are known: 1) Entrust is not working as well as it once did against SWD in the areas where it has been used the longest and 2) such heavy reliance on a single mode of action, year after year in a pest with a propensity to develop resistance is a risky situation. The Washington blueberry industry is desperate to develop new organic products for SWD control. In a late season SWD blackberry trial, Schreiber's group has developed successful data for organic products demonstrating that 1) he can complete a SWD trial, 2) addition of sugar improves efficacy of products not previously known to control SWD and 3) there are other

products potentially available. We believe we have developed an organic control program that has similar efficacy as a conventional SWD management program.

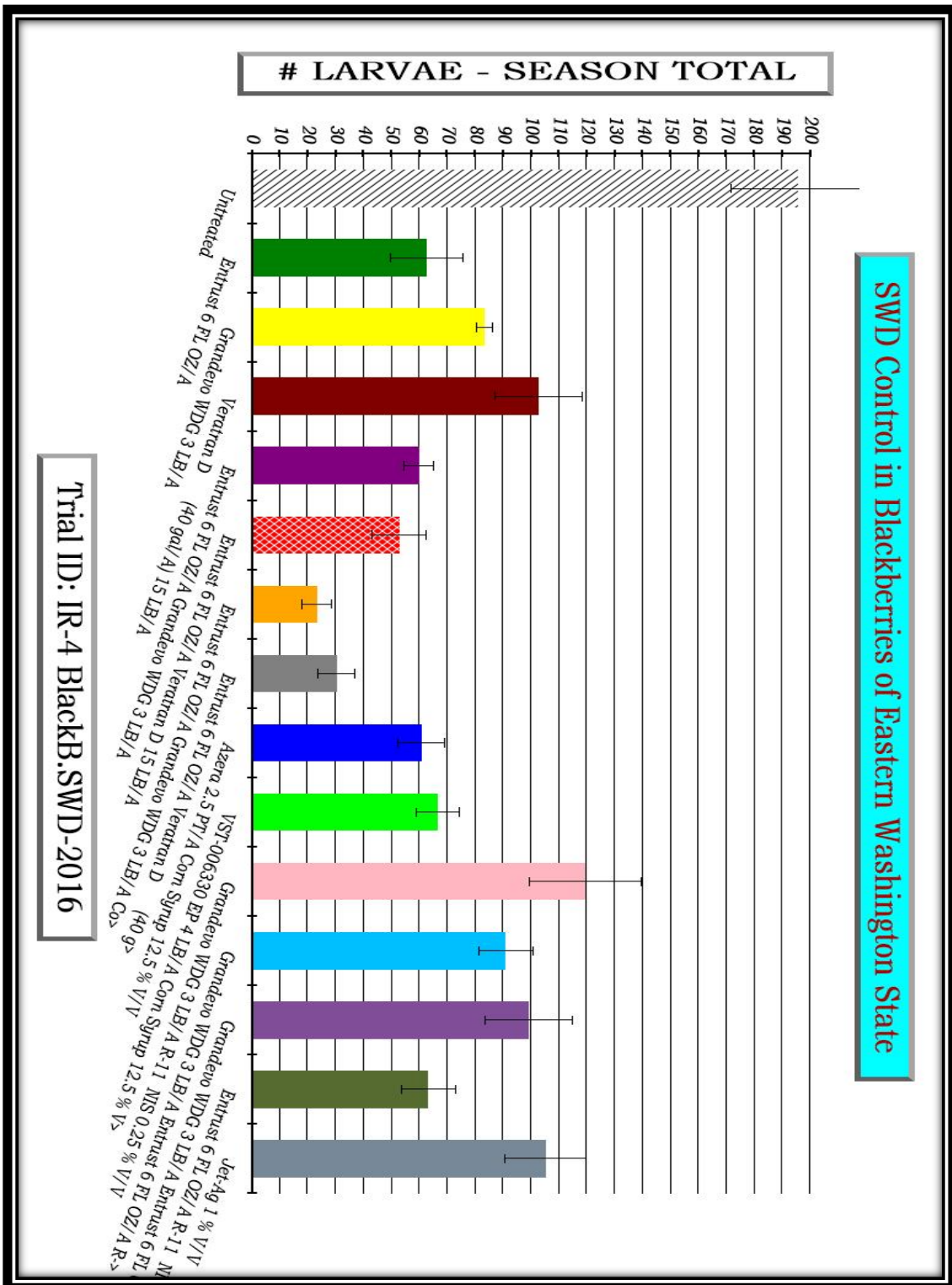
The 2016 research project was conducted in concert with a national effort looking at organic controls for SWD.

During the summer of 2016, the staff at the Agriculture Development Group, Inc. conducted a research trial investigating the efficacy of organic insecticide products for spotted wing drosophila control in European blackberries within the Columbia Basin of Washington state. The trial area was established within the blackberry rows of the ADG research farm in Eltopia WA, and the experimental design for this trial was a RCB with 4 replications and plot sizes of 10ft x 25ft. Applications for this trial were made with an Over the Row sprayer calibrated to apply treatment sprays at 100 gallons per acre. Both sides of each plot's blackberry row were simultaneously sprayed to ensure complete coverage with the experimental products used. The treatment applications for this trial began on July 7th, and continued at 7 day intervals for most of the treatments (i.e. every Thursday). Several treatments which incorporated a 3-5 day interval into the rotation/program was accommodated by spraying those treatments on Monday as well, as needed. The specific spray volume of 40 gallons per acre requested for treatments of Veratran D was accommodated by spraying these treatments with a CO2 backpack sprayer using a 4 nozzle boom and a 3 liter mix size. The light corn syrup brand used for this trial was "Bob White" and each mix had to be thoroughly stirred before spraying or else nozzle and hose clogging issues would result. It should be noted that Treatment #10, VST-006330 EP, would not mix completely into solution no matter how much mixing or shaking was done, and the addition of 12.5% corn syrup exacerbated this problem. Preceding each application, 20 ripe blackberries were collected from each plot and subjected to salt dunking to determine the numbers of SWD larvae present in each sample. These larvae counts provided a basis for rating the efficacy of these insecticide products. Results for this trial are summarized in the graph below.

#### **Discussion of Results:**

2016 was characterized by a mild winter and a warm summer. It is believe that SWD were more successful overwintering due to the mild temperatures, and because of the warmer summer they were present earlier and in higher numbers than has ever been seen in the region. As a result, the first sampling of newly ripe fruit for SWD was already infested. Treatments ranged from an average of 1 to 5 larvae per fruit and this was before we started spraying.

# SWD Control in Blackberries of Eastern Washington State



Trial ID: IR-4 BlackB.SWD-2016