Alfalfa insect pest IPM update: Aphids, weevils, and worms

Handout for Kearney REC Virtual Alfalfa and Forage Field Day

Ian Grettenberger – UC Davis Entomology & Nematology; Madi Hendrick– UC Davis Entomology & Nematology; Rachael Long – UCCE, Sacramento, Solano, Yolo

Insecticide Resistance and alfalfa weevils

A growing problem in alfalfa insect pest management is insecticide resistance. Insecticide resistance is a serious concern, particularly in cases where there are few pest management options. Resistance occurs when pests can survive toxic doses of insecticides, leading to control failures in the field.

Recently, growers in a few regions of California have reported field control failures with pyrethroids, the primary chemical class used to manage alfalfa weevil. Weevils in the Palo Verde Valley, the Los Banos area, and Scott Valley have shown resistance to lambda-cyhalothrin (see starts on map).

RAW

RESISTANT ALFALFA WEEVIL

As part of an ongoing project to monitor resistance funded by USDA-NIFA and in collaboration with Dr. Kevin Wanner at Montana State University, I (Madi Hendrick) am collecting weevils and using dose-response assays to assess resistance. I will be testing weevils for susceptibility to lambda-cyhalothrin, commonly used for weevil control, and to indoxacarb, a newer and more selective chemical. If you would like to help with this project and to learn what is going on in your fields by providing larvae via access to fields, please contact either myself or Ian Grettenberger!

Contact Info:

Madison Hendrick
mlhendrick@ucdavis.edu
336-309-4949

Ian Grettenberger
imgrettenberger@ucdavis.edu
360-790-0035

Factoring natural enemies into management decisions - aphids

Incorporating natural enemies into management decisions can help us take advantage of their biocontrol services. In this presentation, we discuss a case study using data from a blue alfalfa aphid trial conducted in 2015 at the Intermountain Research and Extension Center in Tulelake, CA. More information can be found in a more in-depth blog article, "Natural Enemies Are Important For Control Of The Aphid Complex In Alfalfa – A Case Study."

.**Original 2015 study basics:**

- Materials tested included broad-spectrum materials/mixtures and more selective materials
- Blue alfalfa aphid counted 3, 7, and 14 days after treatment
- Lady beetle larvae counted 3, 7, and 14 days after treatment
- SOME MATERIALS ARE NOT REGISTERED – this is for demonstration/discussion only

Aphid key points (see Fig. 1)

- After 3 days, we see a range of percent control
- After 7 days, one of the broad-spectrum materials has started to fall off
- At 14 days, the selective materials are still getting very good control
- Meanwhile, broad-spectrum materials performed extremely poorly, actually off the scale shown

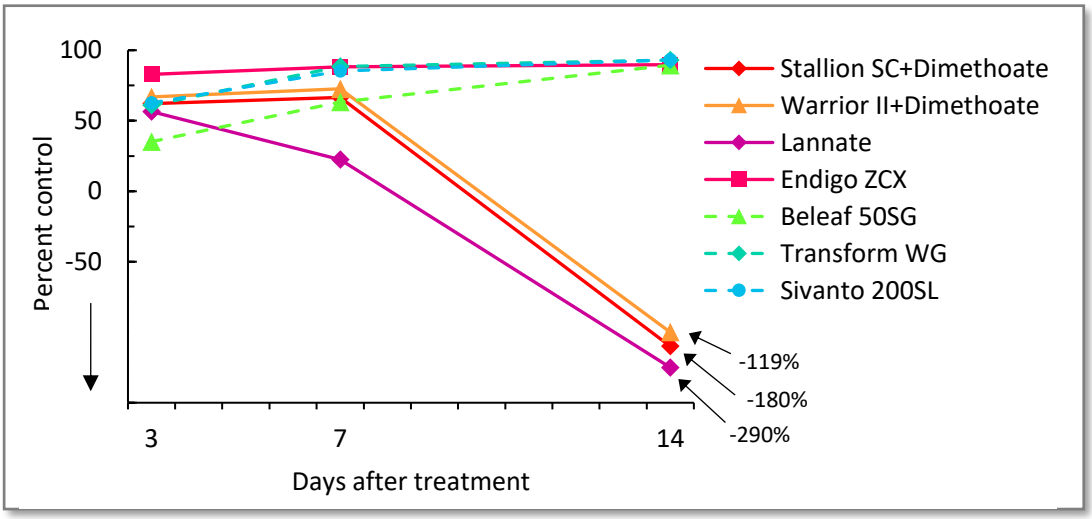

Figure 1. Aphid percent control (relative to untreated) 3, 7, and 14 days after treatment

What is the story? The story with aphid control through 14 days is with natural enemies like lady beetle larvae.

Natural enemy key points (see Fig. 2)

- The broad spectrum materials nearly zeroed out the lady beetles through 7 days
- In contrast, the selective materials maintained natural enemies through 14 days
- Numbers started to increase in some of the broad-spectrum treatments and the untreated, very likely because aphid populations were taking off and those plots were attractive.

- Choosing a selective insecticide targeting aphids with minimal effect on natural enemies helps extend control and reduce additional sprays. After the insecticide loses efficacy, preserved natural enemies are there to suppress any remaining aphids, a **bio-residual** effect.

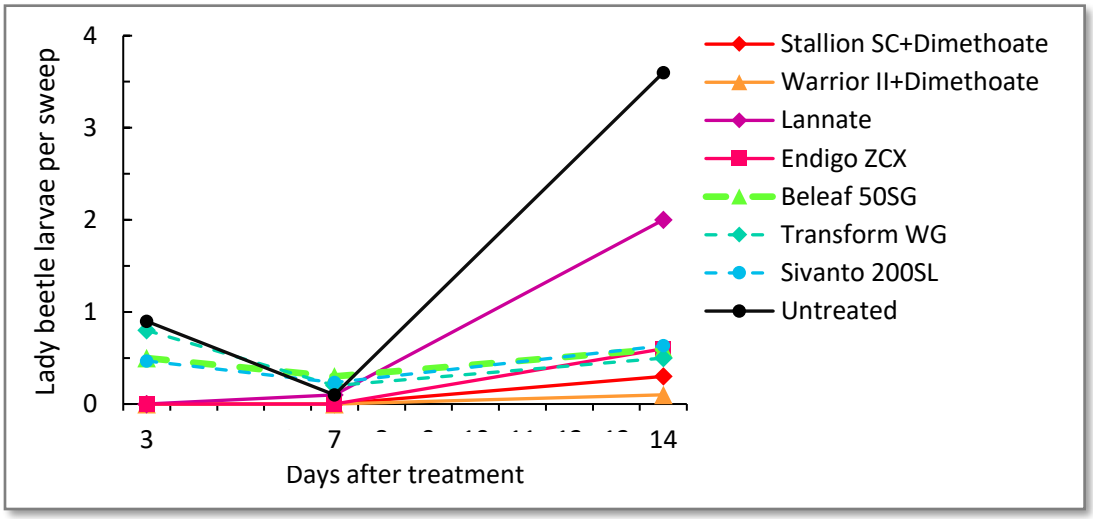

Figure 2. Lady beetle larvae populations 3, 7, and 14 days after treatment