



Extension

Pest e-alerts



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Update on Alfalfa Weevil and Insecticide Resistance

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For educators that may not have gotten to attend the Entomology and Plant Pathology Zoom in-service last Friday (4-24-2020) addressing potential alfalfa weevil insecticide resistance, I wanted to share some of the material covered in the presentation.

The alfalfa weevil (*hypera postica*) is the most damaging pest of alfalfa in Oklahoma and most alfalfa producing states. Alfalfa weevil larvae are ravenous feeders damaging terminals and foliage resulting in significant yield and forage quality losses. This damage can reduce plant vigor resulting in reduced stand density and low yields in subsequent harvests.

Management of alfalfa weevils has become a challenge in the western United States where multiple reports of insecticide failures or reduction in control have been reported (Fig. 1.).



Fig. 1. Reporting of Alfalfa Weevil Resistance by State.

Efficacy of pyrethroid products in Oklahoma have also been in decline. With limited alternative options for managing this pest, most growers rely on insecticides for control. There are several insecticides labeled for use in alfalfa production in Oklahoma, but the number of different modes of action are limited.

As resistance has developed in many western alfalfa producing states to pyrethroid products, (Table 1.), there are concerns other products may become ineffective as well.

% Weevil Mortality from Pyrethroids		
Field Site	Recommended Rate	Double Recommended Rate
Organic field	92	82
Conventional Field 1	5	10
Conventional Field 2	10	13
Conventional Field 3	3	10
Conventional Field 4	15	8

Table 1. Percent Mortality from Pyrethroid Insecticides (Warrior and Baythroid), Intermountain Region, California.

Results from OSU alfalfa insecticide efficacy trials have shown a steady decline in percent control, especially lambda-cyhalothrin based products.

Our research is currently focusing on the efficacy of pyrethroid insecticides for weevil control however; as we are able to replenish lab supplies, acquire equipment, and develop our own testing system, we will eventually look at additional products and MOA's to identify other potential areas of concern. In combination with our yearly efficacy trials we continue to evaluate new products as they become available.

Spring 2020:

This spring, with the assistance from researchers from Colorado State University, we were able to obtain pre-treated vials and conduct vial bioassay testing for AW resistance to lambda-cyhalothrin. Alfalfa weevil collections were made using 12 treated and 12 untreated vials with 5 larvae (2nd instar) per vial per location. Collections were made in five locations around the state. Larvae were brought back to campus lab and placed in vials and kept for 48 hours. Average percent control for all sites was 18.87 %.



Field trials at South Central Research Station and Cimarron Valley Research Station (7-28 DAT) produced an average of 31.0% and 24.5% control respectively for lambda-cyhalothrin.

Implications of alfalfa weevil insecticide resistance involve many factors, and undoubtedly higher input cost. Currently, there are few new products on the horizon and ones that are developed will likely be selective and not broad spectrum in nature. It may a good time to re-evaluate IPM strategies and identify areas that will help slow the development of resistance.

In the coming months I hope to get feedback from educators on development of a questionnaire or other means of gathering grower information to identify risk factors and develop a strategy for lessening economic impact for Oklahoma alfalfa growers.

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