



# Integrated Pest Management and Pollinator Protection on Alfalfa Produced for Seed

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## OBJECTIVES

To quantify the resistance status of two-spotted spider mite populations infesting field of alfalfa produced for seed in Washington State to acaricides registered for spider mite control.

## STUDY DESCRIPTION

- In early August 2018, six populations of two-spotted spider mites were collected from fields of alfalfa grown for seed in Walla Walla County, WA and the toxicity of 4 registered acaricides was tested on these 6 populations. The tested doses for each acaricide ranged from 0 (control) to the maximum labelled field rate for TSSM on alfalfa.

## METHODS

- The tested doses for each acaricide ranged from 0 (control) to the maximum labeled field rate for TSSM on alfalfa or on alfalfa grown for seed. The registered acaricides tested were abamectin, bifenthrin, bifenazate, and propargite. The responses of these populations were compared to the response of our acaricide naïve susceptible lab colony of TSSM. Resistance ratios were calculated for each population by dividing the doses of each acaricide required to kill 10, 50, and 90% of each population by the calculated doses that killed 10, 50, and 90% of our acaricide naïve susceptible lab colony. Based on prior work we have concluded that populations with resistance ratios below 10 are considered susceptible. Populations with resistance ratios between 10 and 100 are low to moderately resistant and populations with resistance ratios that exceed 100 are resistant.

## RESULTS

- All populations tested were susceptible to abamectin. One population out of the 6 tested was moderately tolerant to bifenthrin. Two population were susceptible to bifenazate and 4 populations were moderately tolerant to bifenazate. Five populations were moderately resistant to propargite and one population was highly resistant to propargite.

## CONCLUSIONS/SUGGESTIONS

- Growers of alfalfa produced for seed should consider rotating the modes of action they are using for TSSM control in their production fields.
- Propargite has been a primary tool used by growers for over 20 years for mite control. This is reflected in the degree to which mites are responding to exposure to propargite. Field rates are still killing TSSM in most populations but the level of resistance exhibited in one of the 6 populations was extremely high with a  $LC_{90}$  of 1507.
- Alfalfa seed growers in the Walla Walla Valley should consider a 1 to 2 year voluntary ban on using propargite to regain its effectiveness.

Resistance Status of TSSM in Washington Alfalfa Seed Fields  
2018 (6 populations)

