

NEW MITICIDES VARY IN EFFICACY IN CONTROLLING TWOSPOTTED SPIDER MITES (*Tetranychus urticae*) IN ALFALFA HAY BASED ON GROWTH RESPONSE

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INTRODUCTION

Twospotted spider mites (*Tetranychus urticae*) have become a major pest of low desert alfalfa in some valleys, with damage being noted in 2024 in area fields from February into December..

Spider mite feeding damage results in yellowed individual plant cells from having contents removed (Figs. 1-2), with large infestations causing yellowing of lplants noted in fields (Fig. 3), defoliation of lower parts of stems (Fig..4) and yield and quality losses.. Infestatons carry over from cutting to cutting as mites move from newly cut hay and colonize foliage of the next cutting.



Figures 1-2. Mite feeding on individual cells initially results in yellow stippling appearance of leaflets (left); yellowed areas of leaflets from more extensive feeding.



Figures 3-4. Areas of alfalfa fields can turn yellow from mite feeding (left); extensive feeding causes defoliation of lower stems.

Alfalfa producers have only one effective active ingredient (hexythiazox, contained in Hexamite® and Onager Optek®) that can be used, but are limited to one application/year. This miticide active ingredient is also rapidly losing efficacy.

This replicated field trial was initiated to compare potential some new and existing miticides for efficacy in alfalfa hay..

METHODS AND MATERIALS

Miticide treatments representing 12 active ingredients/products (Table 1), including both an untreated check and the current effective active ingredient (hexythiazox at top of label rate of Hexamite®) were applied to alfalfa on October 21, 2024.

Table 1. Products evaluated as miticides and their source

Product and rate/acre	Source
DANITOL 21.33 oz.	VALENT USA
ECO-DEFENSE 32 oz..	ECO-STADT
HEXAMITE 24 oz.	ALLBAUGH LLC
KODAMA 8 oz...	GOWAN CO.
MAGISTER SC 32 oz.	GOWAN CO.
MITEUS 32 oz.	NICHINO AMERICA
NEALTA 13.7 OZ.	BASF
NEEMIX 4.5 16 oz.	CERTIS BIO.
PLINAZOLIN 0.7 & 1.03 oz.	SYNGENTA
SEFINA 10 oz.	BASF
SILMATRIX 32 oz.	CERTIS BIO
TRILOGY 32 oz.	CERTIS BIO

Treatments were applied with a battery powered backpack sprayer with a boom equipped with 4 T-Jet 8002VS nozzles and applying 20.2 gallons/acre of solution. The non-ionic surfactant DyneAmic (Helena AgriEnterprises) was applied with most treatments at the rate of 0.53% v/v. Exception to this was Miteus® which used SilWet L77 at 0.023%

Plots were 14 x 25 foot, with four replications of treatments using a randomized complete block design. Alfalfa was heavily infested with spider mites and nearing typical cutting height (Fig. 5) when treatments were applied, but were not cut during this trial.



Figure 5. Alfalfa plots and mite infestation when treated

Data were obtained on Dec. 2, 2024. Plant heights were collected by measuring and recording 5 green stems/plot. Green cover (alfalfa overage) of each plot was observed and recorded. The two factors (percent cover and stem heights were then multiplied to obtain plant vigor index for each plot.

Plant vigor index means for each treatment were statistically separated and analyzed using Tukey's Honestly Significant Difference (HSD) test (JMP Pro 17.0.0)

RESULTS

Four treatments (both rates of Plinazolin, Danitol and Kodama) resulted in marked visual increased growth compared with most plots, with these marked differences also easily noted in drone imagery (Fig. 6)

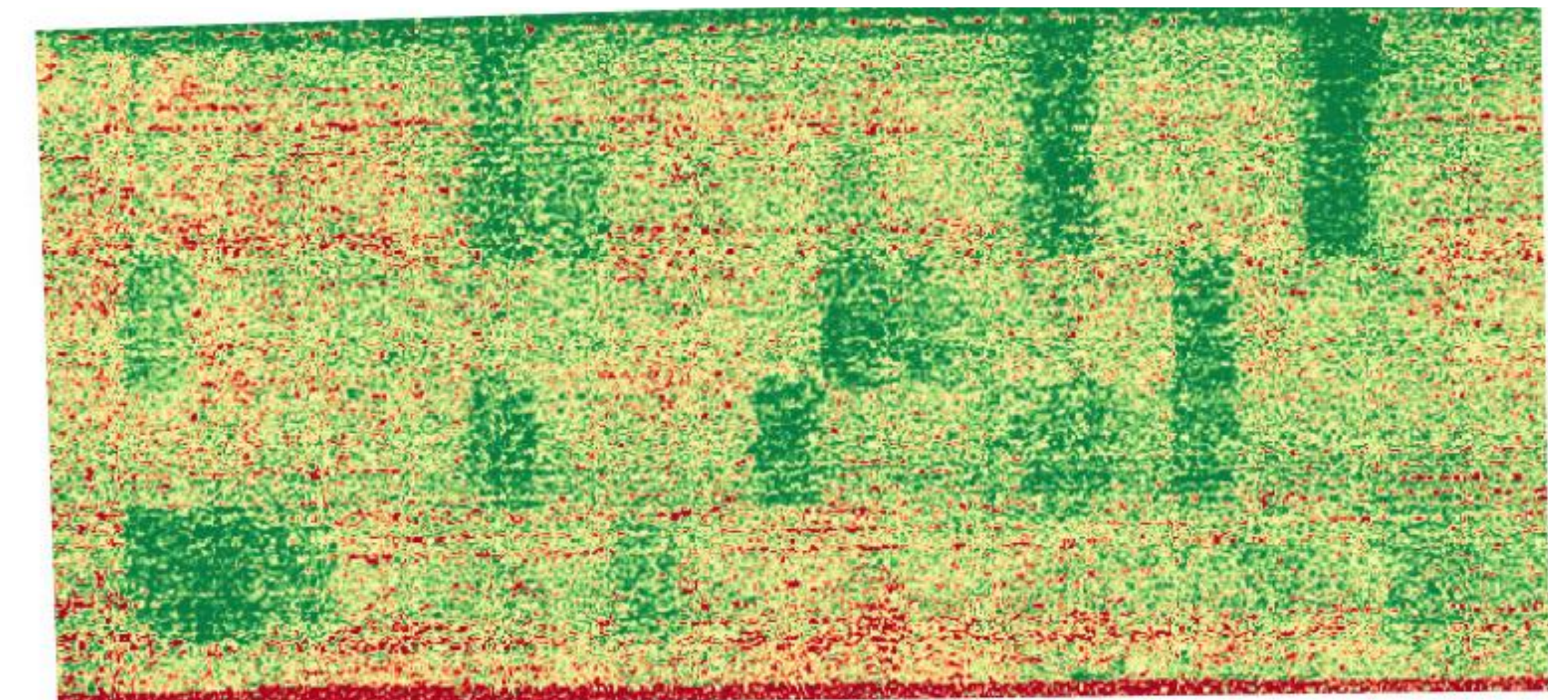


Figure 6. Drone image of plots in late November, 2024. .

These treatments were very highly statistically different than untreated alfalfa (p<0.0001) along with Magister® (0.0004) and Hexamite® (0.0001) being also very highly statistically different than untreated alfalfa (Fig. 7).

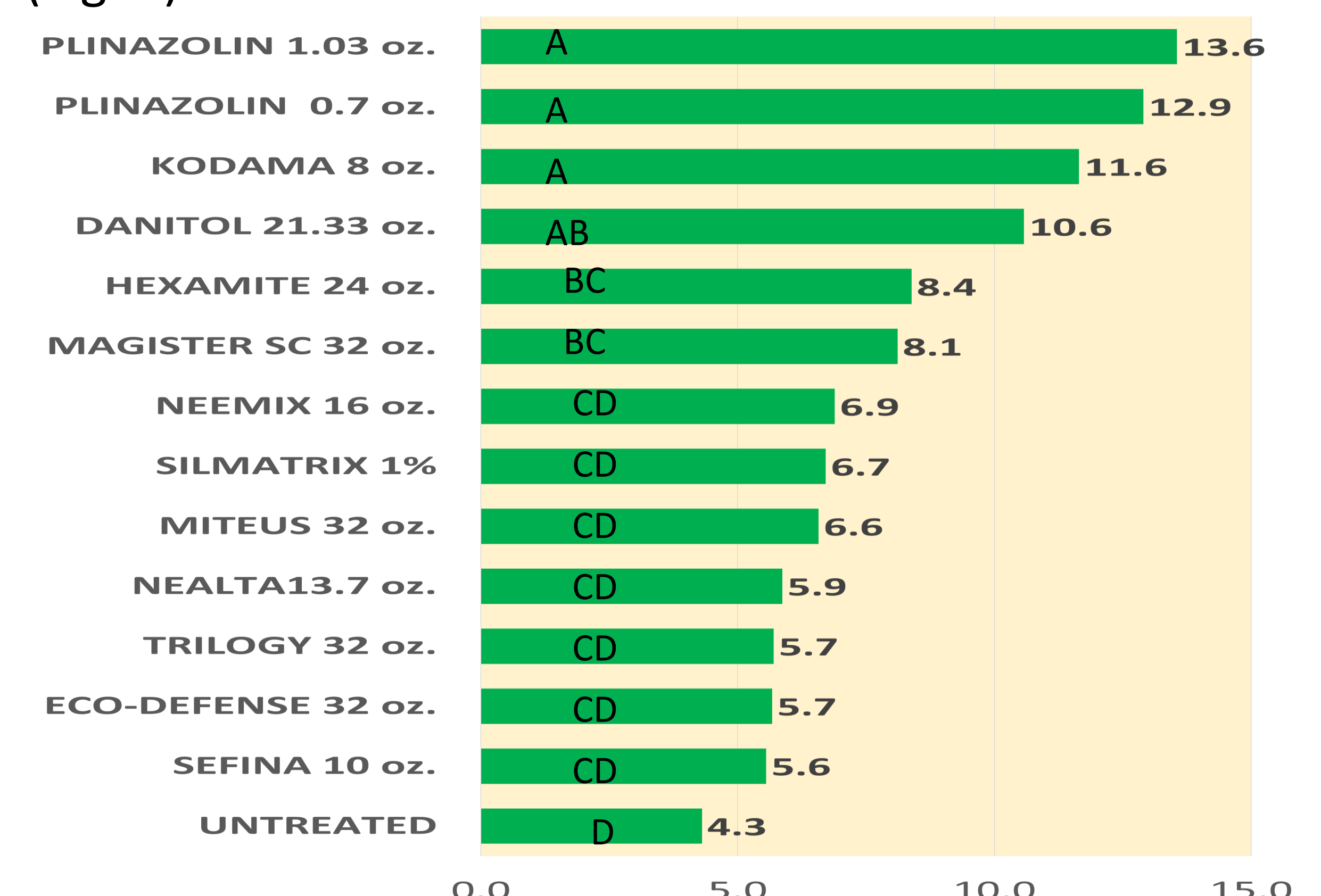


Figure 7. Mean Vigor index of alfalfa hay on Dec. 2, 2024. Bars with same letter are not statistically different at the P<0.05 level

Several products showed highly encouraging results as additions to hexyzthizox usage in alfalfa hay and may also be valuable in the alfalfa seed industry, assuming that they are able to be registered for such usages.