

## Palo Verde Valley Update

July 2021

### *Leafhoppers in Summer Alfalfa*

Summer is here and this usually means hot temperatures, some humidity, and uncomfortable outside conditions for most plants and animals. There are some exceptions to this however, with many of these being the insects that like alfalfa as their preferred host plant. These include insects such as armyworms, cutworms, whiteflies, and leafhoppers, in addition to spider mites.

With the recent high temperatures above 115°F, an outbreak of alfalfa butterfly caterpillars is expected as the high temperatures when combined with low humidity are highly detrimental to the wasps that parasitize alfalfa butterfly eggs.

Perhaps this is also happening to the beneficial insects that feed on *Empoasca* spp. leafhoppers, as the past week has been

punctuated by calls from several pest control advisors (PCAs) inquiring about *Empoasca* spp. leafhopper control in alfalfa.

*Empoasca* spp. leafhoppers are the group of small, almost fluorescent green, wedge shaped leafhoppers that include the potato leafhopper (*E. fabae*) as well as many other almost identical species (Fig. 1). The most common species in low desert alfalfa is the Mexican potato leafhopper (*E. mexara*).

*Empoasca* leafhoppers rapidly run sideways and in alfalfa cause damage via their feeding, which results in a yellow diamond shaped area on the leaflet end that is known as ‘hopperburn’ (Figure 2). The feeding damage can also result in reduced yields, with yield reduction being greatest when high numbers of leafhoppers are present early in the regrowth cycle.



(Fig. 1) Adult *Empoasca* spp. leafhopper



Fig. 2. Hopperburn on end of leaflet

Treatment thresholds for the low desert and *E. mexara* have not been quantified, but other states have developed such for the potato leafhopper. Many midwestern states have published treatment threshold charts for potato leafhopper, which are dependent upon average stem height, alfalfa hay price and insecticide application cost.

Unfortunately, these charts do not go high enough for several current insecticide price

options available in the low desert, nor are they able to address the “summer slump” effects associated with low desert summer temperatures or address differences in insecticide efficacies. It should also be noted that these charts are also from states/locations at much more northern latitudes than the low desert, which also affects alfalfa yields per cutting due to differences in day length and the value/acre of the cutting.

**Average Number of Potato Leafhoppers per Sweep**

	alfalfa 0-4 inches				alfalfa 4-8 inches				alfalfa 8-12 inches			
120	0.34	0.37	0.38	0.50	0.50	0.53	0.69	0.85	1.42	1.73	2.10	2.49
140	0.30	0.32	0.35	0.43	0.43	0.45	0.57	0.70	1.21	1.49	1.78	2.08
163	0.27	0.29	0.30	0.38	0.38	0.38	0.49	0.60	1.05	1.31	1.55	1.77
180	0.25	0.26	0.27	0.33	0.33	0.34	0.42	0.52	0.93	1.16	1.37	1.54
200	0.23	0.24	0.25	0.30	0.30	0.30	0.37	0.46	0.84	1.05	1.23	1.36
220	0.21	0.22	0.23	0.27	0.27	0.27	0.33	0.41	0.76	0.96	1.11	1.22
240	0.20	0.20	0.21	0.25	0.25	0.26	0.30	0.37	0.69	0.88	1.01	1.10
260	0.19	0.19	0.20	0.23	0.23	0.24	0.27	0.34	0.63	0.81	0.93	1.00
280	0.18	0.18	0.19	0.21	0.21	0.22	0.25	0.31	0.59	0.76	0.86	0.92
300	0.17	0.17	0.18	0.20	0.20	0.21	0.23	0.29	0.55	0.71	0.80	0.94
320	0.16	0.16	0.17	0.19	0.19	0.20	0.21	0.27	0.51	0.66	0.75	0.78
340	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.25	0.48	0.63	0.70	0.73
360	0.14	0.14	0.15	0.17	0.17	0.17	0.18	0.23	0.45	0.59	0.66	0.68
380	0.14	0.14	0.15	0.16	0.16	0.16	0.17	0.22	0.43	0.56	0.62	0.64
400	0.13	0.13	0.14	0.15	0.15	0.15	0.16	0.20	0.41	0.53	0.59	0.60
	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20

**Cost of Insecticide and Application per Acre**

(Source: <https://crops.extension.iastate.edu/encyclopedia/potato-leafhopper>)

**INSECTICIDE EFFICACY:**

A number of years ago several insecticide products such as Baythroid® and Warrior II with Zeon Technology® provided greater than 90% control of *Empoasca* spp. leafhoppers in Palo Verde Valley alfalfa. These products are not thought to provide the same level of leafhopper control in 2021 however, and many more selective

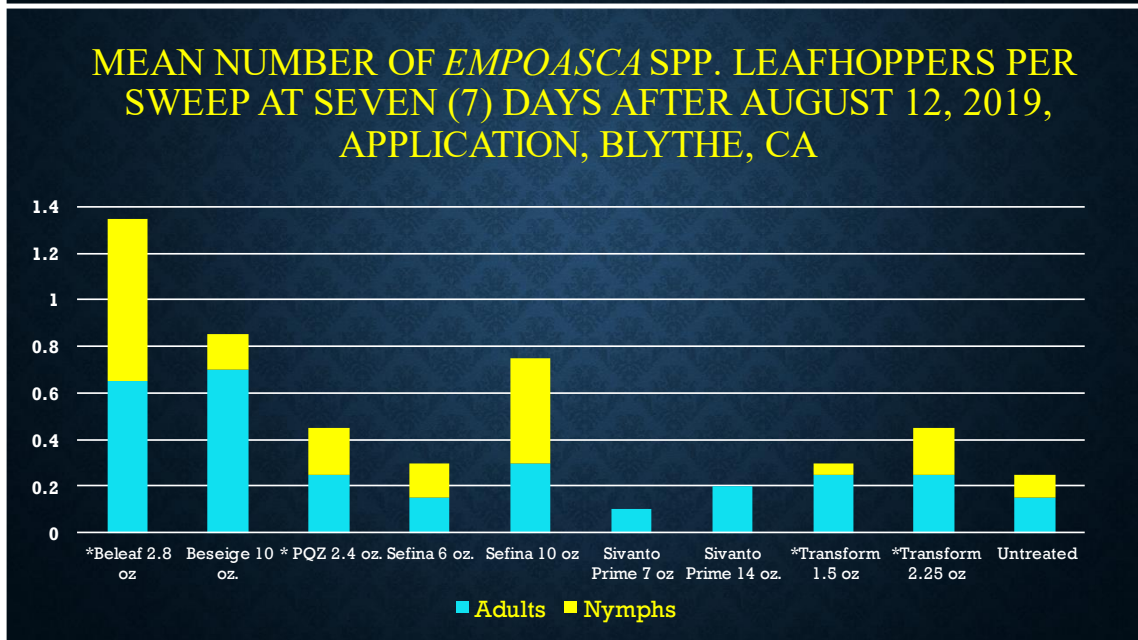
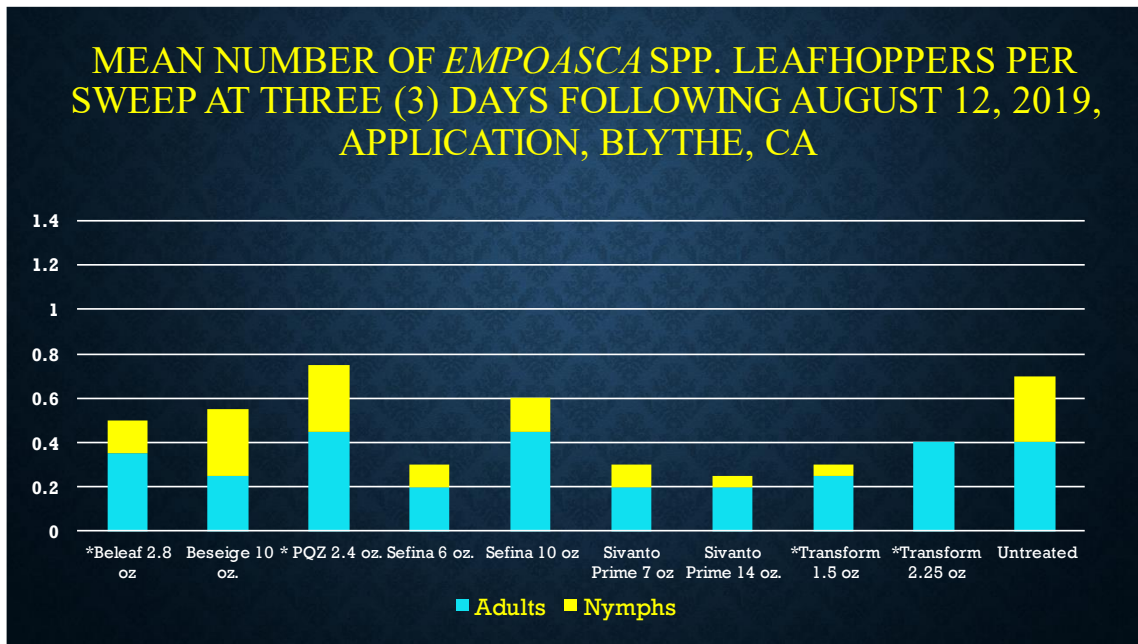
insecticides are now available for usage in alfalfa.

How do these products compare, and do any of the current insecticides provide highly efficacious for controlling *Empoasca* spp. leafhoppers in low desert alfalfa?

**EFFICACY COMPARISONS:**

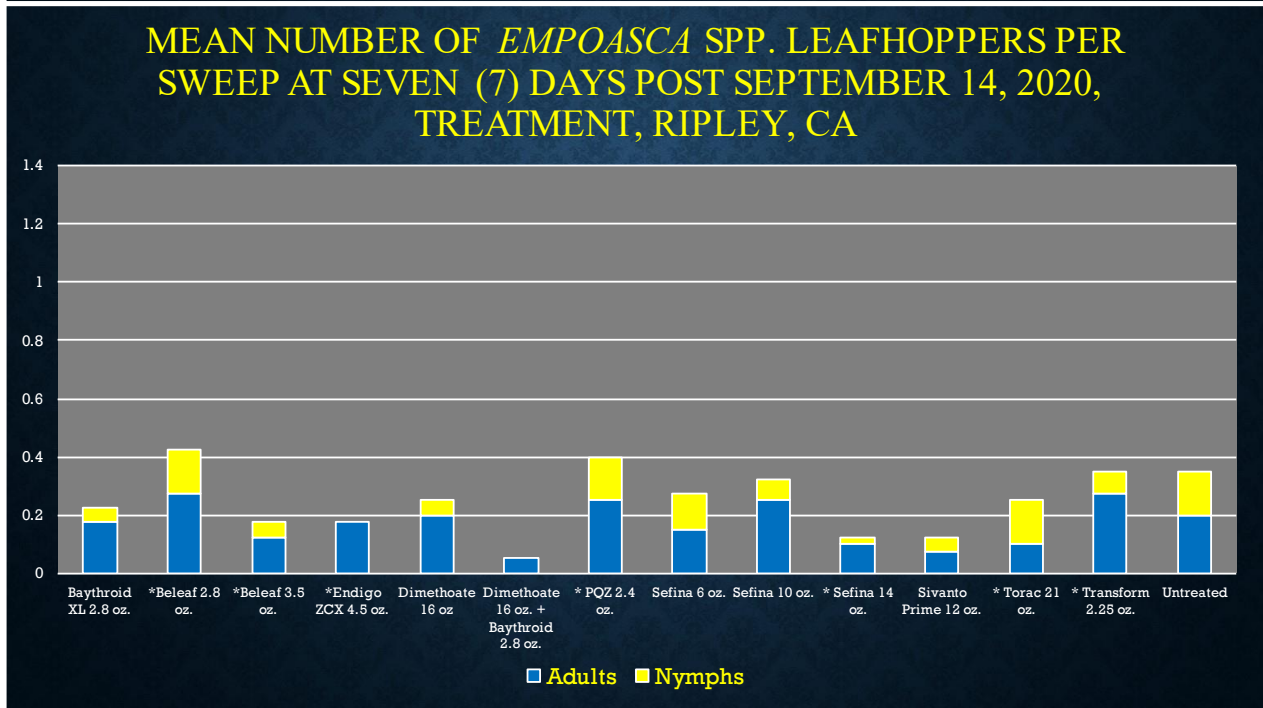
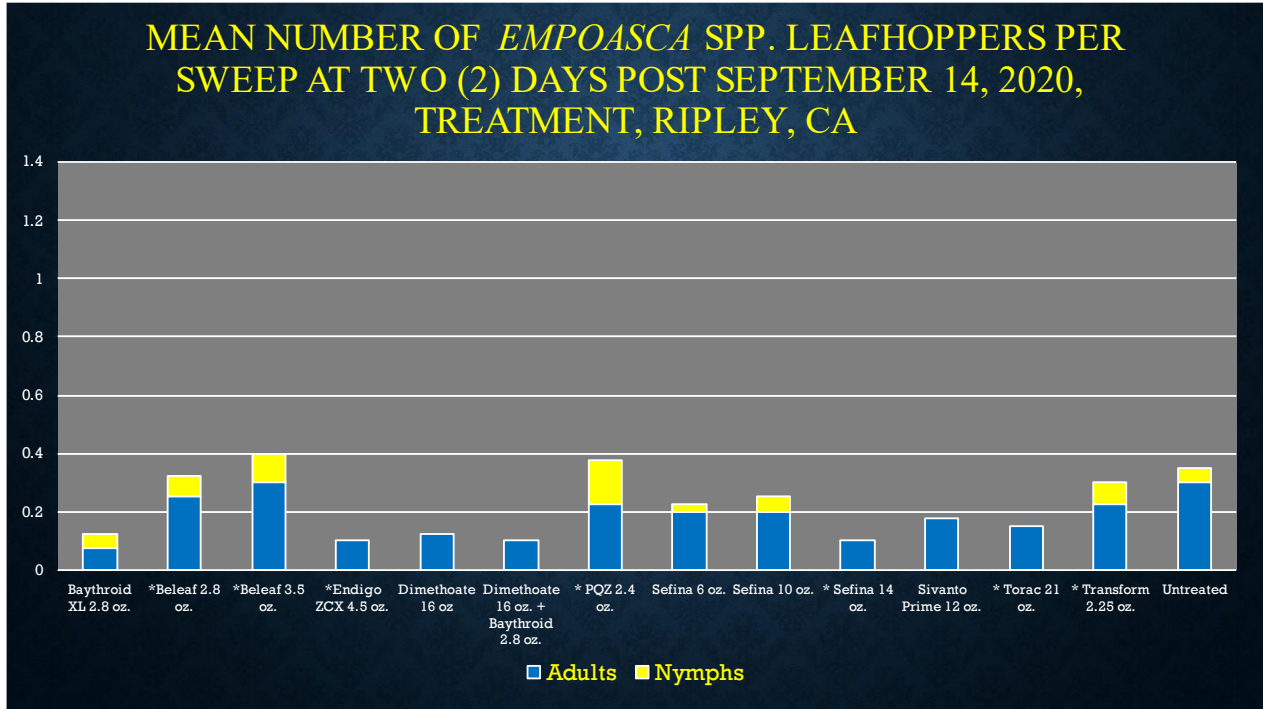
Several insecticide efficacy trials have been conducted in the Palo Verde Valley focusing on other pests but also collected data for *Empoasca* leafhopper control. Populations of *Empoasca* leafhoppers were not very high in the 2019 and 2020 trials, which lowers confidence that comparative results will be the same when these insecticides are used when leafhopper

populations are much higher and damaging. The results from the past 3 summers indicate additional testing is needed but provide a starting point for PCAs and growers for discussions and potential decisions, especially when considering new 2021 insecticide registrations for California alfalfa (Sefina® Inscalis®).



The next two graphs show the mean number of *Empoasca* spp. leafhoppers per sweep following insecticide application on September 14, 2020, Ripley, California.

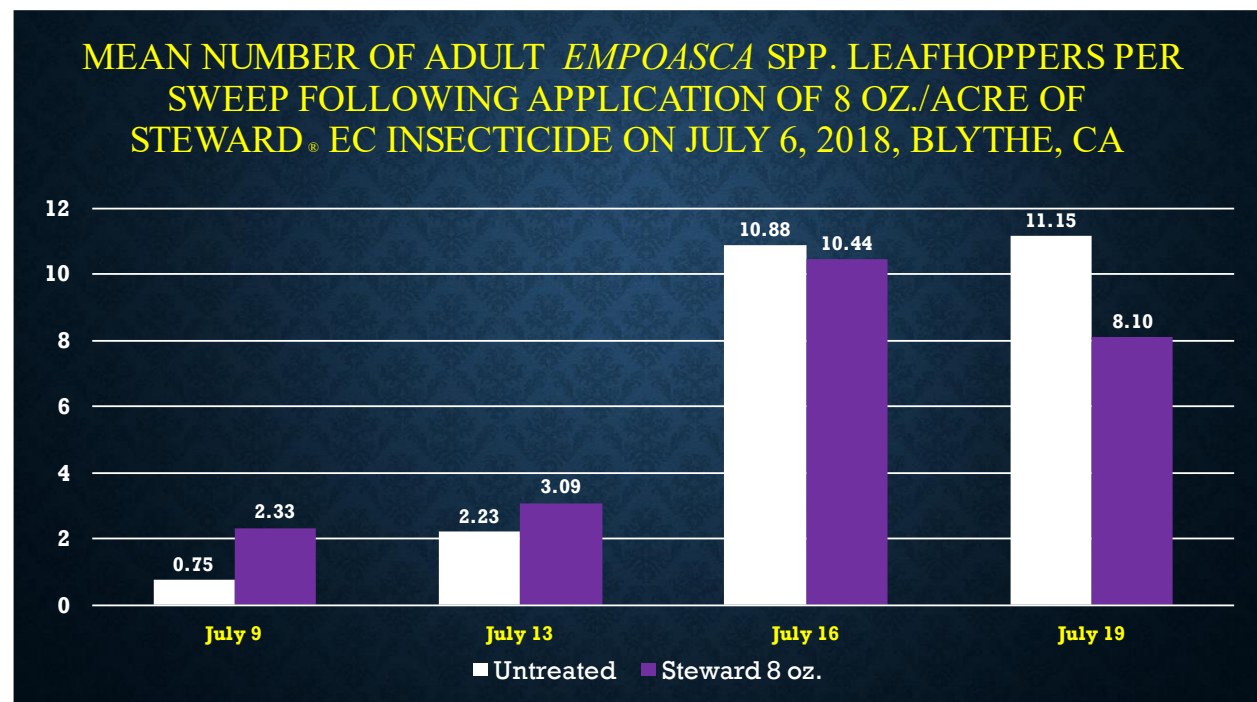
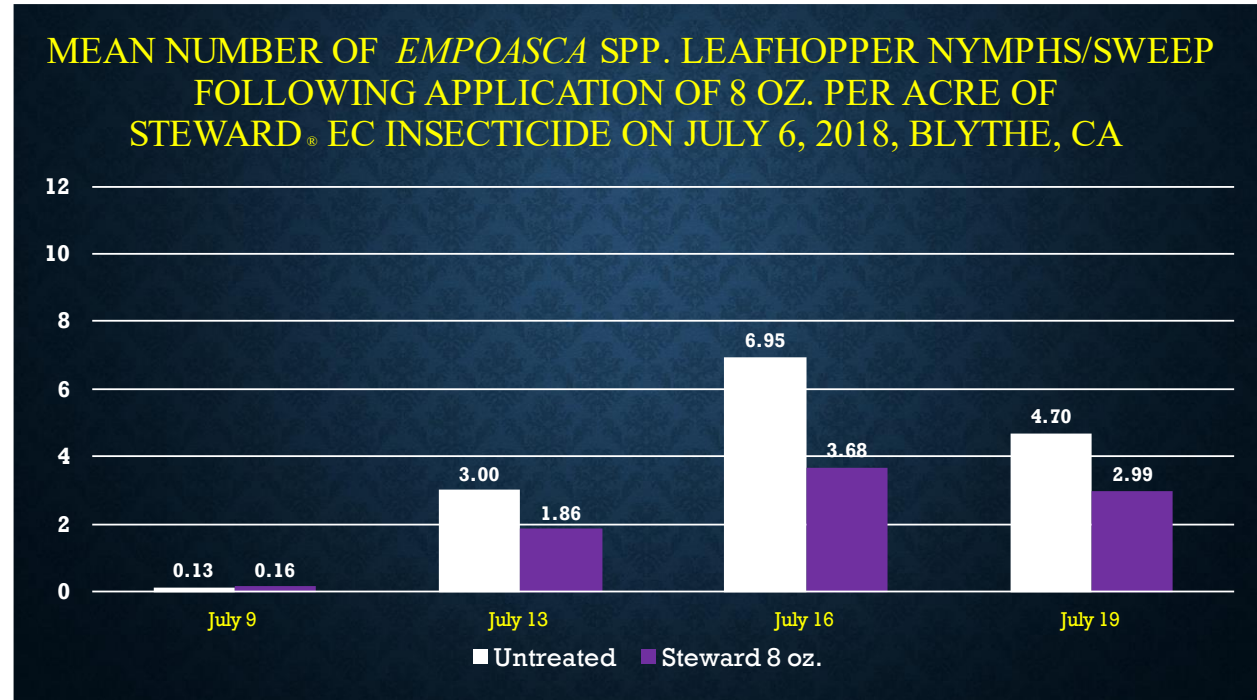
Alfalfa averaged just over 11 inches in height when treated and was heavily infested with whiteflies.



*NOTE: Treatments with asterisks (\*) in all the above graphs are not for usage at this time in California for summer low desert alfalfa hay, with some being due to exceptionally long pre-harvest intervals, lack of registration, and/or rate listed is above the current labeled usage rate.*

Experimentation conducted during July 2018 (which was focused on controlling various caterpillar pests of alfalfa) did have high numbers of *Empoasca* spp. leafhoppers, thought to have migrated into the field as area alfalfa was cut. While most of

the products in this experiment had no activity against these leafhoppers, Steward® EC was noted to have reduced number of *Empoasca* leafhopper nymphs. This was not noted for adult leafhoppers.



The reduction of adult leafhoppers noted from Steward® EC treated alfalfa on the last two sample dates relative to untreated alfalfa is thought due to the previously noted fewer nymphs from this treatment, with fewer nymphs becoming adults.

Management of leafhoppers during the summer will help keep area alfalfa fields being heavily damaged by their feeding in the fall as shown below. A brownish or yellowed field is not what any local alfalfa producer wants to see.



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This edition of the Palo Verde Valley Update is brought to you by:

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