

Insecticide Efficacy Studies on Aphids on Alfalfa Grown for Seed in 2007

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We applied insecticides to alfalfa seed fields in 2007 with the primary objective of screening the compounds for their ability to control *Lygus* nymphs. However, we monitored aphid populations in these plots as well and we developed some fairly substantial aphid infestations. We are reporting on the aphid data in this newsletter simply because the data are pretty good and because we did not include it in the annual report we submitted to the Commission and Seed School this past winter.

In early spring, field plots were established at WSU Prosser and Othello Field Stations. At each location, plots were 18 ft. wide and 20 ft. in length and treatments were replicated 4 times in a complete random block design. Insecticides were applied to mimic grower timing at pre-bloom and bloom periods of the alfalfa. Treatments were applied using a CO₂-powered backpack sprayer equipped with a four-nozzle boom using 25 gallons of water per acre as carrier. Five 180° sweeps per plot were used as a means to sample aphid abundance and post-application insecticide efficacy. The pre-bloom insecticide treatments were applied on 25 May, 2007 at the Prosser site and on 1 June, 2007 at the Othello site.

Table 1. Pre-bloom Sprays

<i>Pre-bloom at the Prosser site</i>		Aphids per sweep±SE
Treatment	Rate per Acre	13 June 2007
Assail 70 WP	0.05 lb	29.50±5.30 ^a
Beleaf	3 oz	3.75±2.59 ^a
Capture 4EC	6 oz	2.25±0.85 ^a
Dimethoate 4 EC	1 pint	2.25±1.19 ^a
Lorsban 4E	2 pint	2.00±1.41 ^a
Lorsban + Capture	2 pt + 6 oz	0.50±0.50 ^a
Rimon 0.83 EC	12 oz	62.50±9.07 ^{ns}
<u>Untreated</u>		<u>79.00± 8.67</u>

^{a/} population is significantly lower ($p<0.01$) than in untreated plots in pairwise *t*-tests

A fairly substantial aphid population developed in mid June at the Prosser Research Station (Table 1). Beleaf is a compound we registered in 2007 for *Lygus* bug control but as is shown in the data above in Table 1 it provided suppression of aphids equivalent to the conventional organophosphate and pyrethroid chemistries. Assail was somewhat of a disappointment. A systemic material that is readily absorbed by succulent green growing plant material, Assail has provided superior aphid control in other cropping systems in which we have tested it. It is possible that alfalfa plants do not readily absorb the material once a state of water stress is initiated. It is basically not fair to be reporting on Rimon's performance in this newsletter. Rimon is not an aphicide and the registrant Chemtura Corp. has made no claim that it provides any control of aphids. The data bear this out.

Bloom Sprays

For the bloom sprays we repeated the application of Rimon, Assail, and Beleaf over the same plots that had been treated previously with the same chemistry. We oversprayed the Dimethoate, Lorsban, Capture, and Lorsban plus Capture plots with Beleaf. We then applied Rimon, Assail, Beleaf, Dibrom, and Rimon plus Beleaf to 4 replicate plots that had not been previously treated with an insecticide. The treatment list for 2007 is detailed below in Table 2.

Table 2. Treatment list of candidate insecticides applied in 2007.

<i>pre-Bloom</i>		<i>Bloom</i>	
Treatment	Rate	Treatment	Rate
Rimon 0.83 EC	12 oz	Rimon 0.83 EC	12 oz
Dimethoate 4 EC	1 pint	Beleaf	3 oz
Assail 70 WP	0.05 lb	Assail 70 WP	0.05 lb
Lorsban 4E	2 pint	Beleaf	3 oz
Capture 4EC	6 oz	Beleaf	3 oz
Lorsban + Capture	2 pt + 6 oz	Beleaf	3 oz
Beleaf	3 oz	Beleaf	3 oz
Untreated		Untreated	
Untreated		Rimon 0.83 EC	12 oz
Untreated		Beleaf	3 oz
Untreated		Assail 70WP	0.05 lb
Untreated		Dibrom	1 pint
Untreated		Rimon + Beleaf	3 oz + 1 pint

<i>Bloom Applications at Othello</i> Treatment (Pre-bloom Treatment)	Aphids per sweep ± SE on	
	3 July 2007	10 July 2007
Assail (Untreated)	24.00 ± 7.90 ^{ns}	94.00 ± 22.34 ^b
Assail (Assail)	58.70 ± 39.12 ^{ns}	209.75 ± 69.58 ^{ns}
Beleaf (Untreated)	3.50 ± 1.32 ^a	29.75 ± 10.17 ^a
Beleaf (Beleaf)	3.50 ± 2.06 ^a	47.50 ± 27.99 ^a
Dibrom (Untreated)	105.20 ± 57.04 ^a	113.75 ± 46.71 ^{ns}
Dibrom + Rimon (Untreated)	55.00 ± 14.52 ^{ns}	118.25 ± 38.51 ^{ns}
Rimon (Untreated)	90.50 ± 49.77 ^{ns}	108.75 ± 34.34 ^{ns}
Rimon (Rimon)	128.25 ± 45.76 ^z	126.50 ± 27.69 ^{ns}
Untreated (Untreated)	46.00 ± 17.87	142.75 ± 52.57
Beleaf (Capture)	6.25 ± 17.87 ^a	65.75 ± 31.28 ^a
Beleaf (Dimethoate)	18.00 ± 10.41 ^b	142.50 ± 17.50 ^{ns}
Beleaf (Lorsban)	6.50 ± 10.14 ^a	44.50 ± 6.80 ^a
Beleaf (Lorsban Capture)	8.00 ± 5.43 ^a	58.75 ± 27.78 ^a

^{a/} population is significantly lower ($p < 0.01$) than in untreated plots in pairwise t -tests

^{b/} population is significantly lower ($p < 0.05$) than in untreated plots in pairwise t -tests

^{z/} population is significantly greater ($p < 0.01$) than in untreated plots in pairwise t -tests

^{ns/} population is statistically equivalent to the untreated plots in pairwise t -tests

When we made our bloom applications in Othello on June 1 we observed that aphids appeared to be at outbreak population levels in several of the plots. For the most part, Beleaf provided superior control of aphids. As mentioned before, we were somewhat disappointed with the results from Assail applications. The Rimon and Rimon plus Dibrom applications, not surprisingly, provided no control of aphids.