Side-dress Temik® Effects on Lint Yields

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Abstract

Temik 15G was side-dressed at a rate of 7 lb./acre and 14 lb./acre and compared to an untreated check in two experiments in Buckeye, Az.. Treatments were made prior to the second in-season irrigation (June 3 and June 5) which was just prior to early bloom. Lygus counts were taken using a sweep net on weekly intervals for six weeks post application. The first experiment resulted in a significant increase of 123 lb. and 124 lb. lint in both the 7 and 14 lb. rate treatment respectively over the untreated check. The second experiment resulted in a significant 102 lb. lint increase for the 7 lb. treatment with no significant difference for the 14 lb. treatment to the check.

Introduction

Temik 15G has been widely used for both in furrow at plant and side-dressed in season serving as a systemic insecticide for plant bug control. However, general sentiment amongst producers is one of uncertainty relative to consistency of return on input investment. Temik 15G is a material used from a preventive perspective based on potential future plant bug pressure. With today's current economic conditions, cotton producers must maximize on production efficiency and accurately project return on investment potential if a positive return is to be realized and survival goals met.

Temik 15G is water soluble, mobile with soil water and is generally expected to provide control for a period of 4-6 weeks post application. Essentially, the inconsistency of return is directly related to the in field plant bug pressures for that 4-6 week post application period. The results of these described experiments are the first year of a 5 year experimental plan. These experiments will be repeated for 4 additional years with an objective of evaluating Temik 15G over the long term evolving into a long term return on investment analysis. In essence, the long term objective is to develop research based information the producer can use to manage probability.

Materials and Methods

Two replicated experiments were conducted on a commercial farm in Buckeye, Az. Temik 15G was side-dressed prior to the second post plant in-season irrigation at both a 7 lb./acre and a 14 lb./acre rate compared against an untreated check. Timing of treatment applications were made just prior to early bloom (Table 1). The experiments consisted of 3 treatments replicated 4 times arranged in a randomized complete block design with each plot consisting of 12 rows running the entire field length of 1250 ft.

In season lygus counts were made weekly for a 6 week post application interval using a 100 sweep net count for both nymphs and adults. Plant mapping measurements were made to evaluate plant bug effects on fruit retention and height:node ratios. Yields were measured by harvesting the center 4 rows of each 12 row plot with data statistically analyzed.

Results and Discussion

The results of both experiments (Baseline, Broadway) were consistent in that the 7 lb. rate produced significantly higher lint yields of 100 - 120 lb./acre contrasted against the untreated check. At the Baseline experimental site, both the 7 and 14 lb. rate resulted in a 120 lb. lint increase when compared to the untreated check. At the Broadway test site, the 7 lb. rate had a significant lint yield increase of 102 lbs. compared to the untreated check. However, the 14 lb. rate was not significantly different than the untreated check. Explanation for this is unknown (Table 2).

Lygus counts/100 sweeps at the Baseline site revealed a steady increase of the combination counts of both adults and nymphs in the untreated check from a 4 count 16 days after treatment (DAT) to a 12 count/100 sweeps 30 DAT. The 7 and 14 lb. rate had a final lygus count of 8 and 13/100 sweeps respectively 30 DAT (Figure 1). These differences were not statistically analyzed and could be arguably minimal. However, the fact remains that the final lint yields were increased in the Temik treatments when compared to the untreated check.

The Broadway test site lygus counts are more difficult to interpret. All treatments including the untreated check indicated showed a decline in lygus populations from treatment application to 30 DAT. However, the lygus counts were higher in the untreated check than both Temik treatments with an 8/100 sweeps in the untreated check vs. 2/100 sweeps in the 7 lb. treatment 23 DAT (Figure 2). Again, this data was not statistically analyzed and would be under University of Arizona thresholds of 15/100 sweeps at all times.

Plant mapping measurements of height:node ratios and fruit retention measurements were unable to numerically discern differences across all treatments at both test sites (Figure 3). A couple explanations may include variability of plants sampled within differing sampling periods as well as counting lygus damaged fruit forms which had not yet aborted.

Summary

As indicated previously, these experiments will be repeated for the next four years to develop long term return on investment data. In general, lygus pressures were high in the Buckeye area in 1996 as verified with the yield data from these test sites. The results from these studies undoubtedly suggest that accurate lygus pressure forecast abilities would take any guesswork out of economic viability of Temik 15G applications. However, forecasting insect pressures will likely continue to remain an inexact science. As a result, development of long term return on investment data relevant to Temik 15G application should be of value.

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Table 1. Experiment planting date, application date, and harvest date.

Treatments:	Location	Planting Date	Application Date	Harvest Date
			(Early Bloom)	
1 = Check (No Temik) 2 = 7 lbs Temik/Acre 3 = 14 lbs Temik/Acre	Baseline	March 30, 1996	June 3, 1996 (HUAP 1158)	Dec. 2, 1996
	Broadway	April 4, 1996	June 5, 1996 (HUAP 1151)	Dec. 12, 1996

Table 2. Seed cotton and lint yields for each Temik 15G treatment 1996.

Location	Treatment	Lint/Acre	Seed/Acre
Baseline	1 - check	1259 b	4061 b
	2 - 7lbs/A	1381 a	4454 a
	3 - 14lbs/A	1382 a	4458 a
		CV. = 4.79, OSL. = 0.0558	CV. = 4.80, OSL. = 0.0564
Broadway	1 - check	1392 b	4769 b
	2 - 7lbs/A	1494 a	5119 a
	3 - 14lbs/A	1438 ab	4925 ab
		CV. = 2.78, OSL. = 0.0312	CV. = 2.78, OSL. = 0.0312

C.V. = Coefficient of Variation
OSL = Observed Significance Level

* Means followed by the same letter are not significantly different at ($P < 0.05$) using SAS ANOVA Test following a significant Analysis of Variance.

Figure 1. Lygus counts/100 sweeps based on Days After Planting Baseline Rd. test site.

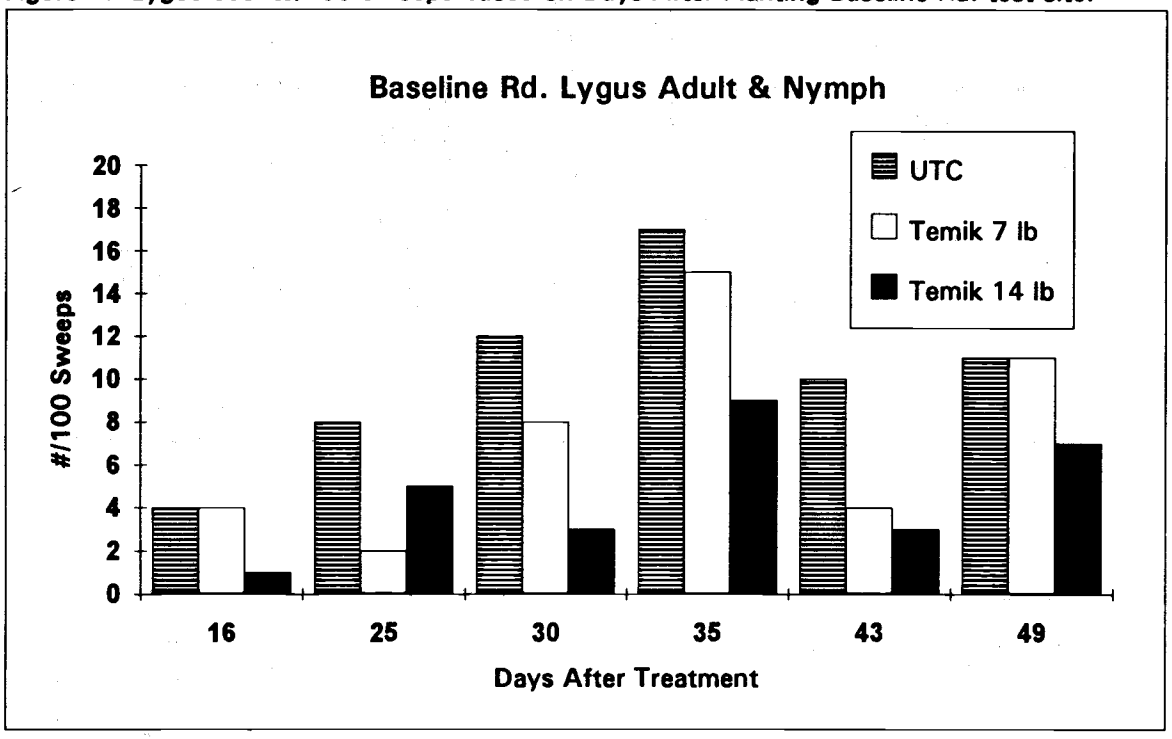

Figure 2. Lygus counts/100 sweeps based on Days After Planting BroadwayRd. test site.

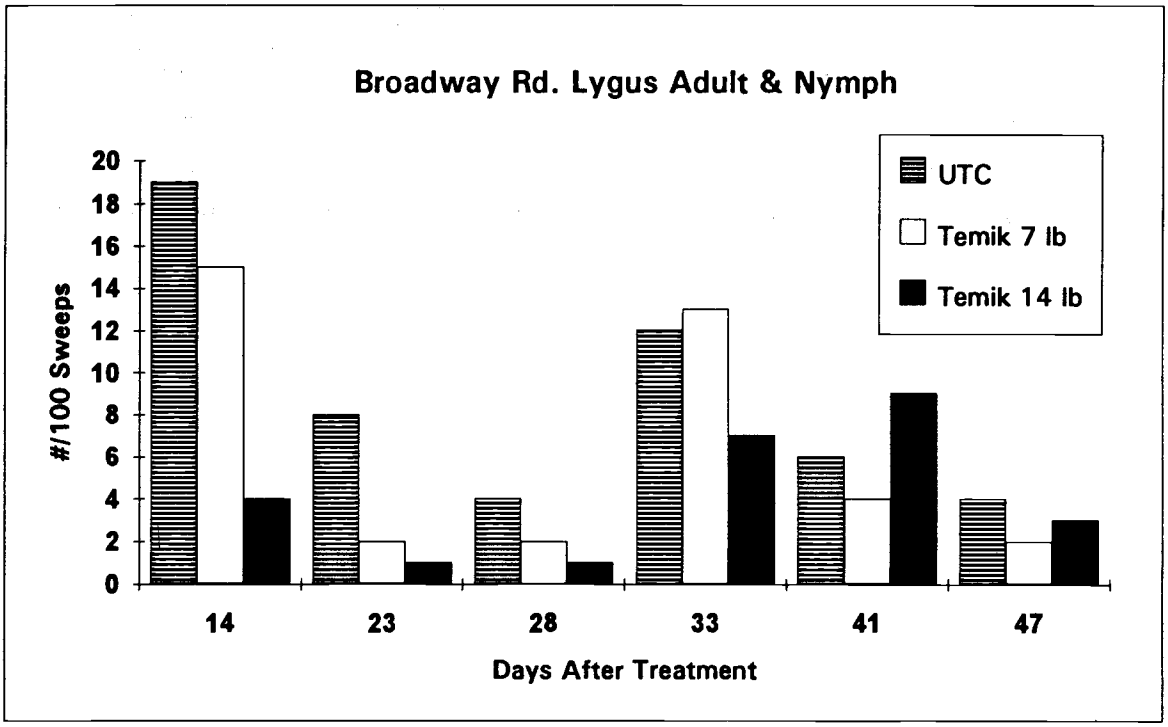

Figure 3. Plant Mapping Data for Both Test Sites