

**EFFICACY OF SELECTED INSECTICIDES FOR PLANT BUG CONTROL IN ARKANSAS, 2005**

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**Research Problem**

The Tarnished Plant Bug (*Lygus lineolaris* (Pialisot de Benuvois)) is a major pest of cotton. The insect causes damage by feeding on plant tissue and can reduce yields if left uncontrolled. The purpose of this experiment one was to test the effectiveness of selected compounds in two locations for control of the tarnished plant bug. Significant data was obtained concerning the effectiveness of the various treatments. Significant differences were observed in the performance of the various treatments

**Background Information**

Tarnished plant bugs are troublesome pests in cotton (Hollingsworth et. al, 1995; Kharboutli et. al, 1998; Robbins et. al 1998). Plant bugs feed on a variety of plant fruiting structures including squares, blooms and bolls. Typically they damage young squares by puncturing and feeding on the tissue. In white flowers the damage will cause a “dirty” appearance by feeding on the anther of the bloom. When plant bugs feed on young bolls they puncture the boll wall which can result in damaged lint and seed. Boll feeding usually results in the formation of wart-like scars and causes off color lint. Recent changes in production such as Boll Weevil Eradication and B.t. cotton have resulted in decreased applications of insecticides resulting in increased pest status of the tarnished plant bug. Tarnished plant bugs can be difficult to control. Besides spraying with an approved insecticide, a grower can control them with cultural practices including the removal of weeds around the production area to help eliminate breeding habitat (G.R. Nielsen., 2003). As a result, it has become important to identify effective insecticides for their control. The purpose of the experiments was to evaluate selected insecticides for efficacy on tarnished plant bug control.

**Research Description**

Test one was conducted on Brantley Farms, Lonoke County, Arkansas. The variety of cotton was DPL 444. Plot size was 4 rows by 50 ft. arranged in a randomized complete block design with four replications. The Cotton was mowed on July 10, 2005 and then watered and fertilized. Insecticide treatments were applied on September 4, 2005 with a hand boom. The boom was fitted with TX6 hollow cone nozzles at 19 in nozzle spacing. Spray volume was 9.69 gal/a, at 45 psi. Data was collected on 30 September (3DAT) and, 2 September (6DAT). Treatments are listed in the results section. Tarnished plant bug density was determined by counting adults and nymphs from 2 randomly selected locations in each plot using a beat sheet (10 row ft). Data was compared against each treatment and the check. Data was processed using Agriculture Research Manager Version 7. Analysis of variance was conducted and Duncan’s New Multiple Range Test (P=0.10).

Test two was located on a grower field in Crittenden Co., AR. The variety of cotton was DPL 444. Plot size was 6 rows by 50 ft. arranged in a randomized complete block design with four replications.

Insecticide treatments were applied on August 4, 2005 with a Multi-Task spray tractor. The boom was fitted with TX6 hollow cone nozzles at 19in nozzle spacing. Spray volume was 9.69 gal/a, at 45 psi. Data was collected on 9 August (5 DAT) and, 11 August (7 DAT). Treatments are listed in the results section. Tarnished plant bug density was determined by counting adults and nymphs from 2 randomly selected locations in each plot using a beat sheet (10 row ft). Data was compared against each treatment and the check. Data was processed using Agriculture Research Manager Version 7. Analysis of variance was conducted and Duncan's New Multiple Range Test ( $P=0.10$ ).

### **Results and Discussion**

**Test 1.** In Test 1 (Fig. 2) at 4 DAT the untreated check had significantly more plant bugs than all treatments. EXP 2, BAS 320, and Karate had significantly more plant bugs than many of the other compounds. At 7 DAT, Bidrin, Orthene, Carbine, and Centric had significantly fewer tarnished plant bugs than EXP 1 and 2, BAS 320, and Karate Z. Seasonal totals indicated a similar trend for the study.

**Test 2.** The results of Test 2 (Fig. 6) indicated all treatments with the exception of BAS 320, had significantly fewer plant bugs than the untreated check at five days after application. At 11DAT, the untreated check, Mustang Max, and BAS 320 had higher plant bug numbers than all other treatments in the trial. Seasonal totals indicated the untreated check to have significantly more plant bugs than all treatments with the exception of BAS 320. Centric, Bidrin, Carbine, and Trimax had significantly fewer plant bugs than BAS 320.

### **Practical Application**

In Boll Weevil eradication areas Tarnished Plant Bugs have become a major pest of cotton. This study shows the effectiveness of various insecticides of in control tarnished plant bugs.

### **Acknowledgements**

We would like to thank Chuck Farr, and Brantley Farms for their cooperation in these studies. We also would like to acknowledge Bayer Crop Science, DuPont Ag, Syngenta Crop Protection, Crompton, and AmVac for their support of these studies.

### **References**

Hollingsworth, R.G., D.C. Steinkraus, and N.P. Tugwell. 1995. Insecticide resistance in Arkansas populations of Tarnished Plant Bugs (Heteroptera: Miridae) and tolerance differences between nymphs and adults. J. Econ. Entomol

Nielsen, G.R. 2003, University of Vermont Extension Leaflet 85

Kharboutli, M.S., C.T. Allen, C. Capps, and L. Earnest. 1998. Insecticides for Tarnished Plant Bug control in Southeast Arkansas. *IN* Proceedings Beltwide Cotton Conferences

Robbins, J.T., F.A. Harris, R.E. Furr. 1998. Tarnished Plant Bug control in the Mississippi Delta. *IN* Proceedings Beltwide Cotton Conferences. pp. 1197-1998

**Test 1****Table 1 Efficacy of Various Insecticides for Control of Tarnished Plant Bugs**

Application Date: September 2, 2005

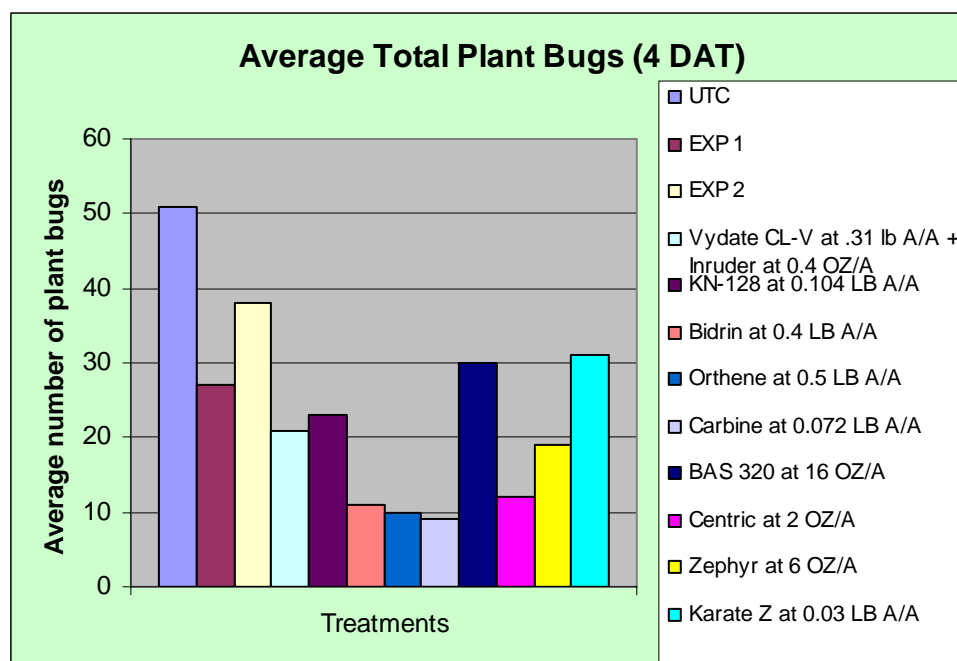
Evaluation Date: September 6 (4DAT) and September 9, 2005 (7DAT)

Treatment Name	Rate	Unit	4 DAT			7 DAT			Seasonal Total
			Nymph	Adult	Total	Nymph	Adult	Total	
UTC			46 a	5 a	51 a	54 a	6 a	60 a	111 a
EXP 1			22 bc	5 a	27 bcd	36 ab	4 a	40 abc	67 bc
EXP 2			31 b	6 a	38 b	40 a	5 a	45 ab	82 b
VYDATE C-LV	0.31	LB A/A	17 bcd	5 a	21 cde	15 bc	7 a	22 bcd	43 cd
INTRUDER	0.4	OZ/A							
KN-128	0.104	LB A/A	19 bcd	4 a	23 b-e	12 c	4 a	16 cd	39 cd
BIDRIN	0.4	LB A/A	7 cd	3 a	11 de	6 c	3 a	9 d	20 d
ORTHENE	0.5	LB A/A	6 d	5 a	10 de	4 c	3 a	7 d	17 d
Carbine	0.072	LB A/A	5 d	4 a	9 e	7 c	2 a	9 d	18 d
BAS 320	16	OZ/A	26 b	4 a	30 bc	36 ab	3 a	38 abc	69 bc
CENTRIC	2	OZ/A	10 cd	2 a	12 de	6 c	5 a	11 d	23 d
Zephyr	6	OZ/A	16 bcd	3 a	19 cde	16 bc	3 a	19 cd	38 cd
KARATE Z	0.03	LB A/A	28 b	3 a	31 bc	33 ab	6 a	39 abc	70 bc

**Chart 1. Efficacy of Various Insecticides for Control of Tarnished Plant Bugs (4 DAT)**

Application Date: September 2, 2005

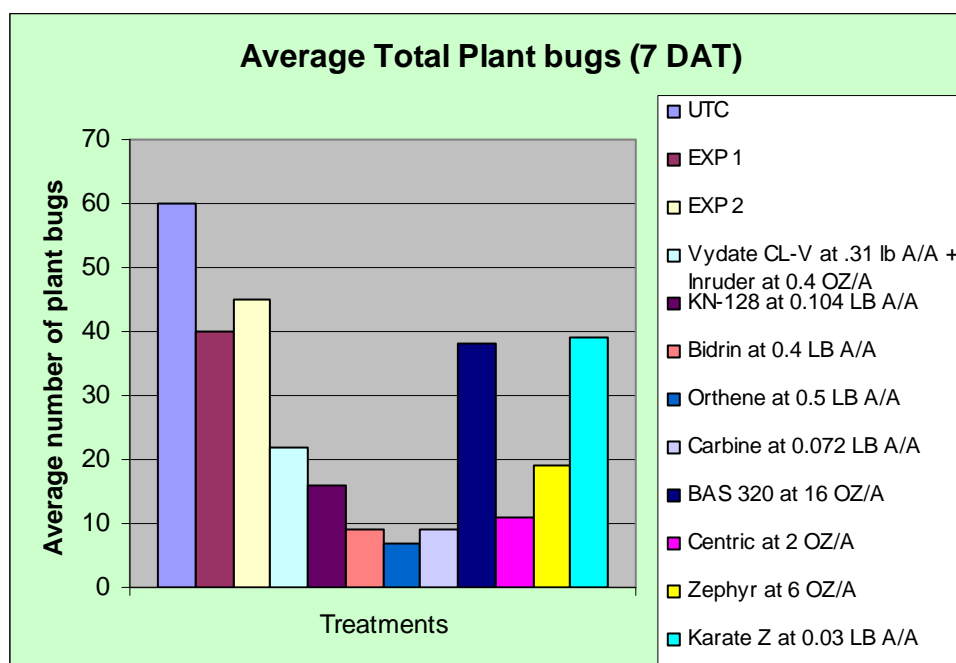
Evaluation Date: September 6 (4DAT) and September 9, 2005 (7DAT)



**Chart 2. Efficacy of Various Insecticides for Control of Tarnished Plant Bugs (7 DAT)**

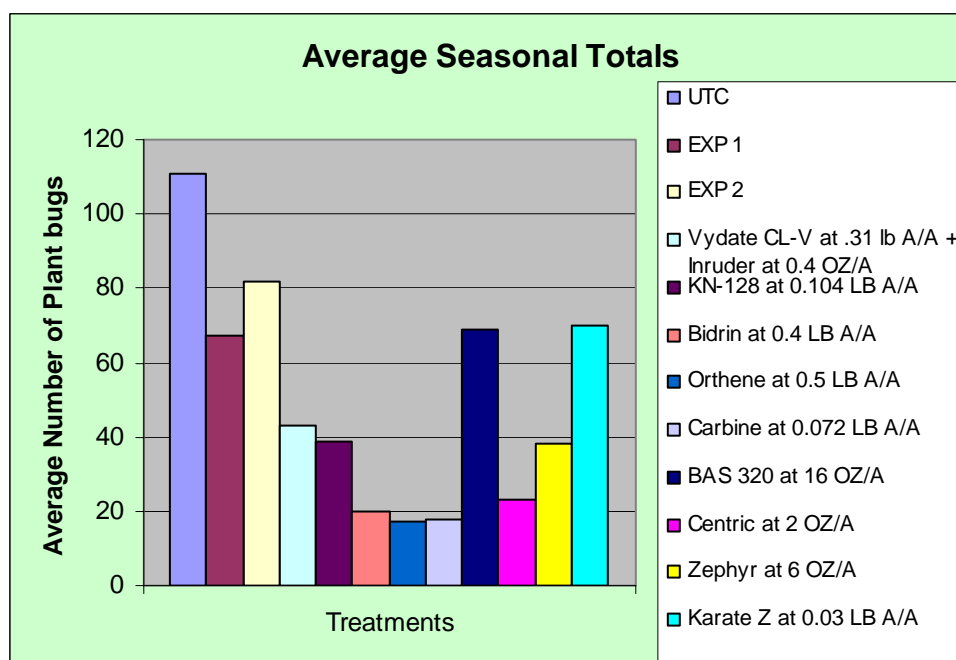
Application Date: September 2, 2005

Evaluation Date: September 6 (4DAT) and September 9, 2005 (7DAT)

**Chart 3. Efficacy of Various Insecticides for Control of Tarnished Plant Bugs Seasonal Totals**

Application Date: September 2, 2005

Evaluation Date: September 6 (4DAT) and September 9, 2005 (7DAT)



**Test 2****Table 1 Efficacy of Various Insecticides for Control of Tarnished Plant Bugs**

Application Date: August 4, 2005

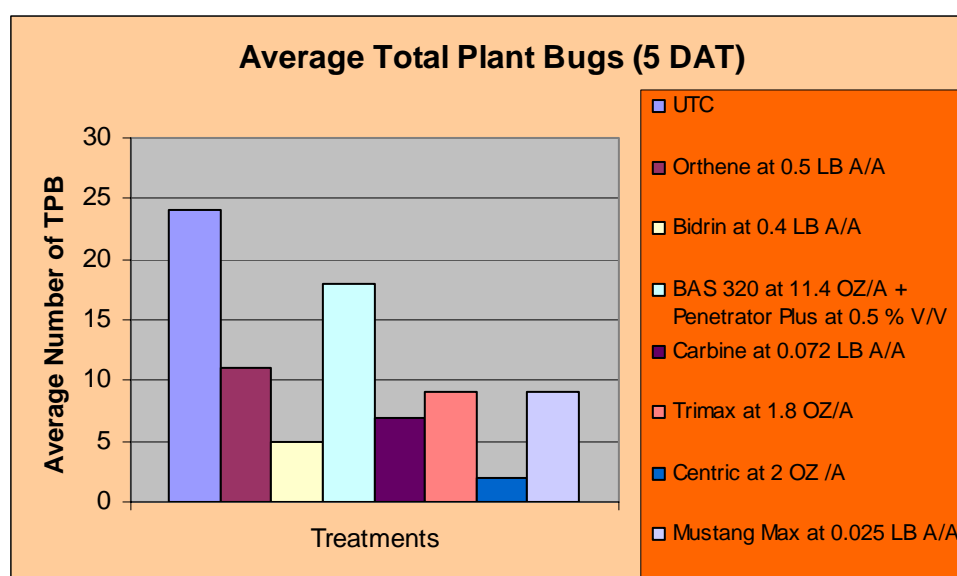
Evaluation Date: August 9 (5DAT) and, August 11, 2005 (7DAT)

Treatment Name	Rate	Unit	5 DAT			11 DAT			Seasonal Total
			NYMPH	ADULT	Total	NYMPH	ADULT	Total	
Untreated Check			23 a	1 a	24 a	14 a	3 a	16 a	40 a
ORTHENE	0.5	LB A/A	11 bc	1 a	11 bc	4 bc	1 bc	5 b	16 bc
BIDRIN	0.4	LB A/A	4 bc	1 a	5 bc	4 bc	0 c	4 b	9 c
BAS 320	11.4	OZ/A %	18 ab	0 a	18 ab	12 ab	2 ab	14 a	32 ab
Penetrator Plus	0.5	V/V							
Carbine	0.072	LB A/A	7 bc	0 a	7 bc	4 bc	1 bc	4 b	12 c
TRIMAX	1.8	OZ/A	8 bc	2 a	9 bc	4 bc	1 bc	4 b	14 c
CENTRIC	2	OZ/A	2 c	0 a	2 c	2 c	1 bc	2 b	4 c
MUSTANG MAX	0.025	LB A/A	8 bc	1 a	9 bc	10 abc	1 bc	10 ab	19 bc

**Chart 1. Efficacy of Various Insecticides for Control of Tarnished Plant Bugs (3 DAT)**

Application Date: August 4, 2005

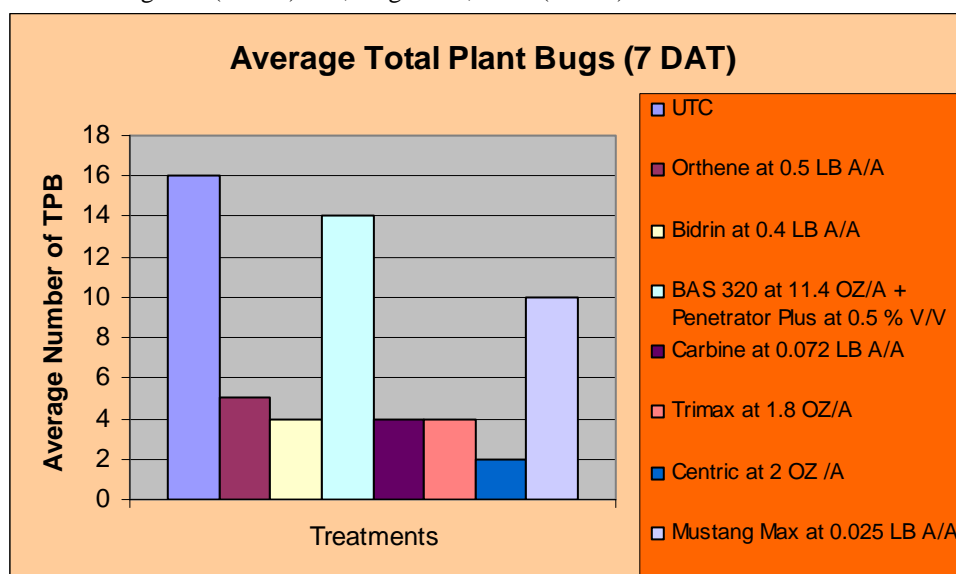
Evaluation Date: August 9 (5DAT) and, August 11, 2005 (7DAT)



**Chart 2. Efficacy of Various Insecticides for Control of Tarnished Plant Bugs (7 DAT)**

Application Date: August 4, 2005

Evaluation Date: August 9 (5DAT) and, August 11, 2005 (7DAT)

**Chart 3. Efficacy of Various Insecticides for Control of Tarnished Plant Bugs Seasonal Totals**

Application Date: August 4, 2005

Evaluation Date: August 9 (5DAT) and, August 11, 2005 (7DAT)

