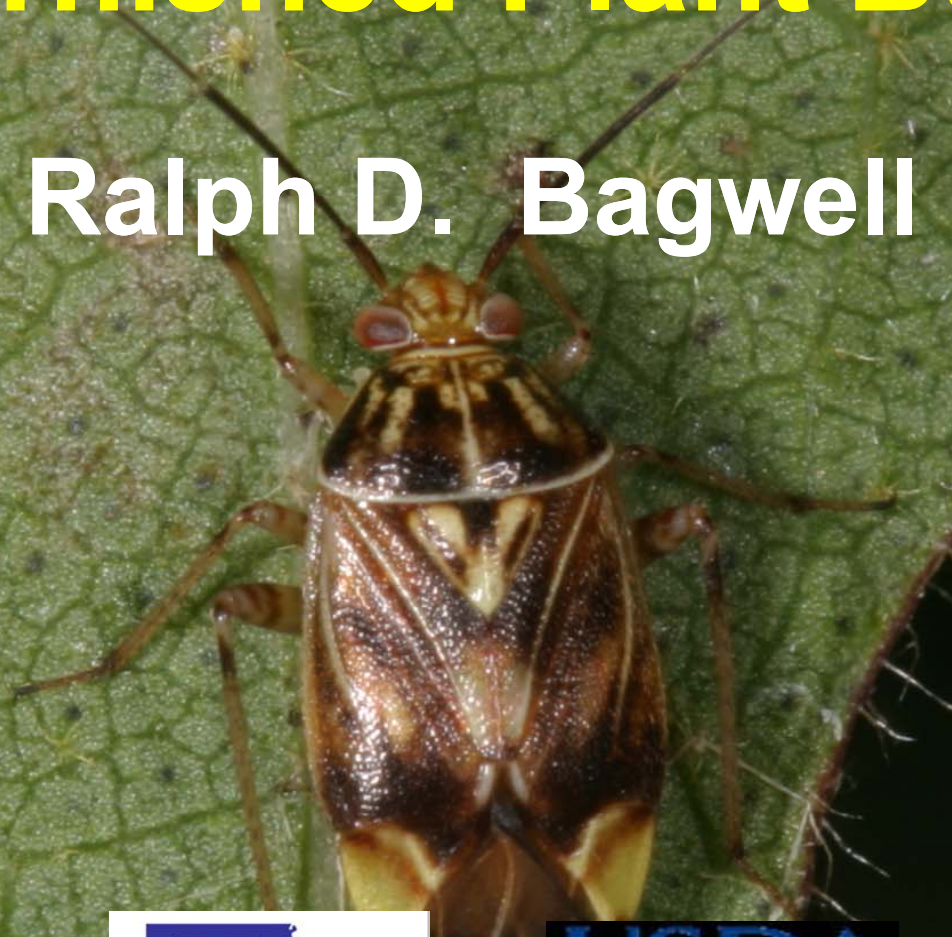


Tarnished Plant Bug

Ralph D. Bagwell



Quantifying Tarnished Plant Bug Resistance to Acephate in Louisiana Cotton

Josh T. Copes,

G. L. Snodgrass, R. D. Bagwell, J. W. Sharp

LSU AgCenter and USDA-ARS, Stoneville, MS



Chemical Control Cost For *L. lineolaris*: Louisiana 1990-2007



History of Insecticide Use

- Acephate and dicrotophos the most important control options (Snodgrass and Gore 2007)
- 1996 recommended acephate use rate: 0.33 -0.5 lb (AI)/A (Bagwell et. al. 1996)
- 2008 recommended acephate use rate: 0.5 – 1.0 lb (AI)/A (Bagwell et al. 2008)

Current Status

- Numerous reports of control difficulties with high rates of acephate
- 2005 *L. lineolaris* populations with significant tolerance to acephate (Snodgrass 2006)
- 2006 increased tolerance to acephate in *L. lineolaris* populations (Snodgrass and Gore 2007)

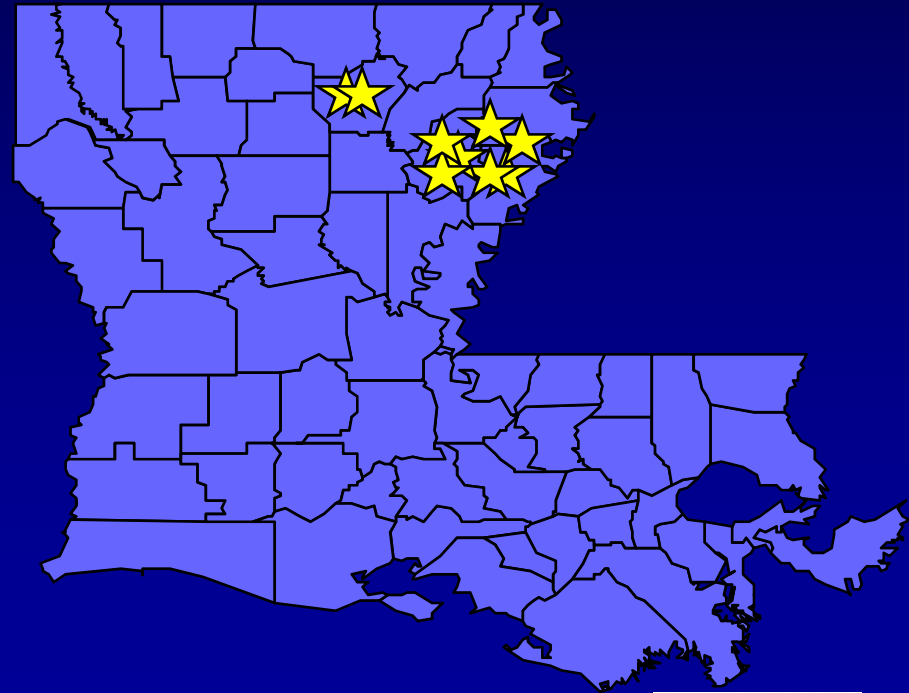
Objectives

- Validate *L. lineolaris* control issues due to resistance
- Evaluate acephate use rates for commercial performance



Materials and Methods

- **Field Efficacy Trials**
 - **Site Selection**



Materials and Methods

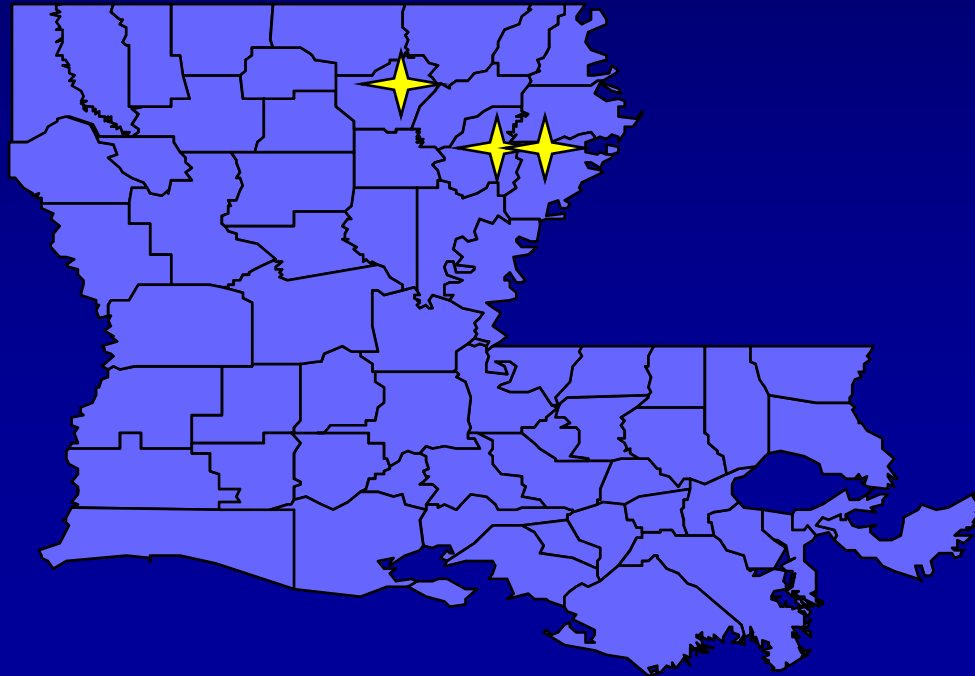
- **Efficacy Studies**

- ▶ **Treatments: acephate at 0, 0.5, 0.75, 1.0, 1.25 lb/A
Acephate 97**
- ▶ **Design: Latin Square (5X5)**
- ▶ **Plot Size: 4 rows X 50 ft**
- ▶ **Treatments applied using a CO₂ backpack sprayer
calibrated to apply 12 GPA at 30 psi**
- ▶ **(A/N) Efficacy evaluated 5-7 DAT1**
- ▶ **10 row ft sampled per plot w black drop cloth**

Materials and Methods

(Three Locations)

- **Glass Vial Bioassays**
 - Adult *L. lineolaris* collected from areas near field evaluation site
 - Dosage mortality line - Snodgrass 1996

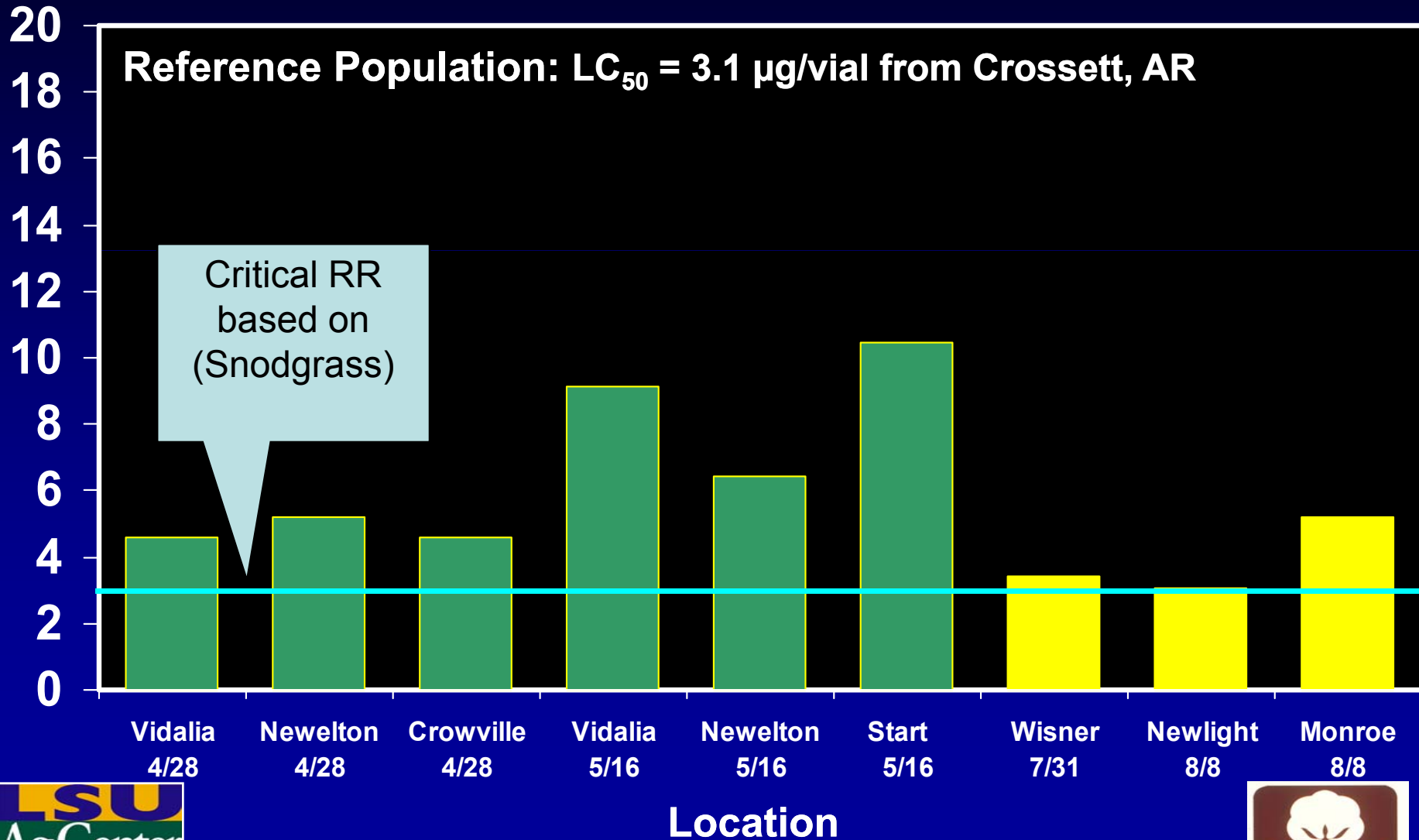


Acephate 97 Resistance Surveys

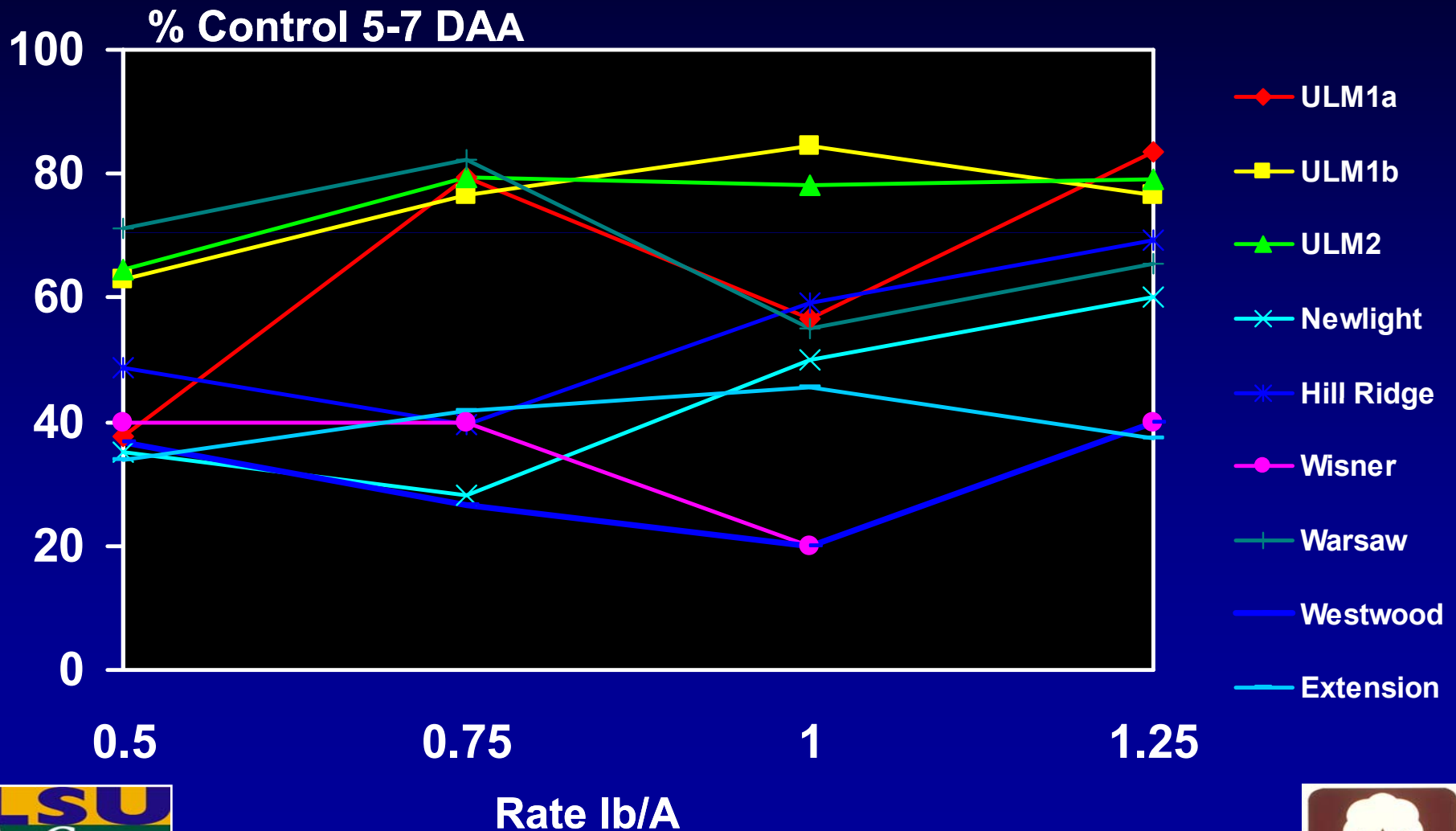
Local	Date	n	LC ₅₀	95% CL	Slope	RR ^a	X ²
Vidalia	April 28	210	14.22	(11.56-16.96)	1.074	4.6	0.4041
Newellton	April 28	210	18.97	(16.03-22.43)	1.1174	5.2	0.1904
Crowville	April 28	210	16.58	(14.24-19.11)	1.410	5.34	0.4443
Vidalia	May 16	270	28.247	(24.04-33.81)	1.028	9.11	0.1696
Newellton	May 16	210	19.96	(16.74-23.84)	1.106	6.44	0.9997
Start	May 16	210	32.360	(26.85-41.95)	1.093	10.44	0.673
Wisner	July 31	180	10.54	(8.74-12.26)	1.484	3.40	0.5665
Newlight	Aug 8	150	9.54	(7.77-11.20)	1.445	3.08	--
Monroe	Aug 8	180	16.13	(13.23-19.67)	1.054	5.20	0.1463

^a LC₅₀ = 3.1 µg/vial from Crossett, AR

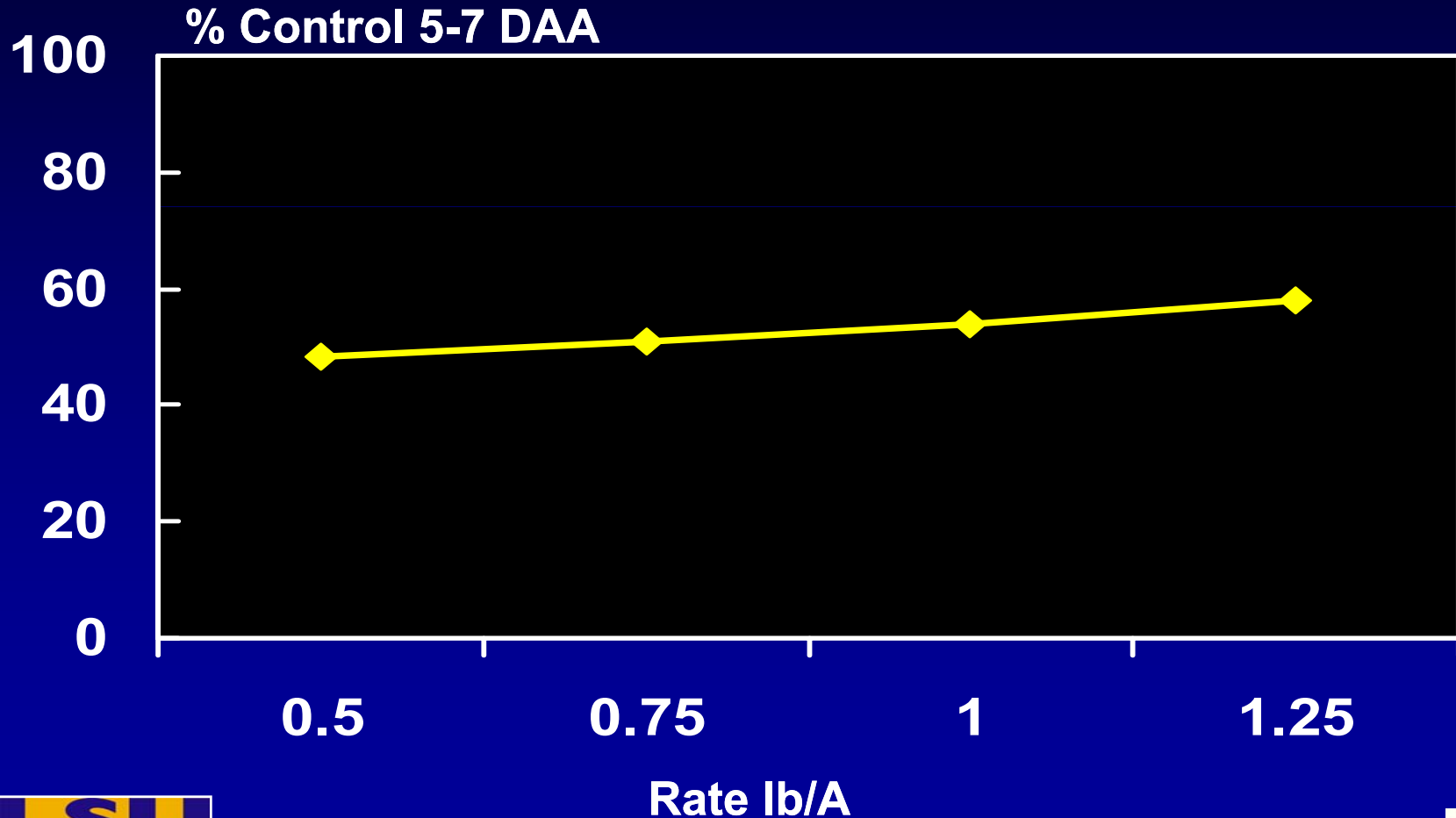
Resistance Ratios for Acephate 97 2008 Surveys



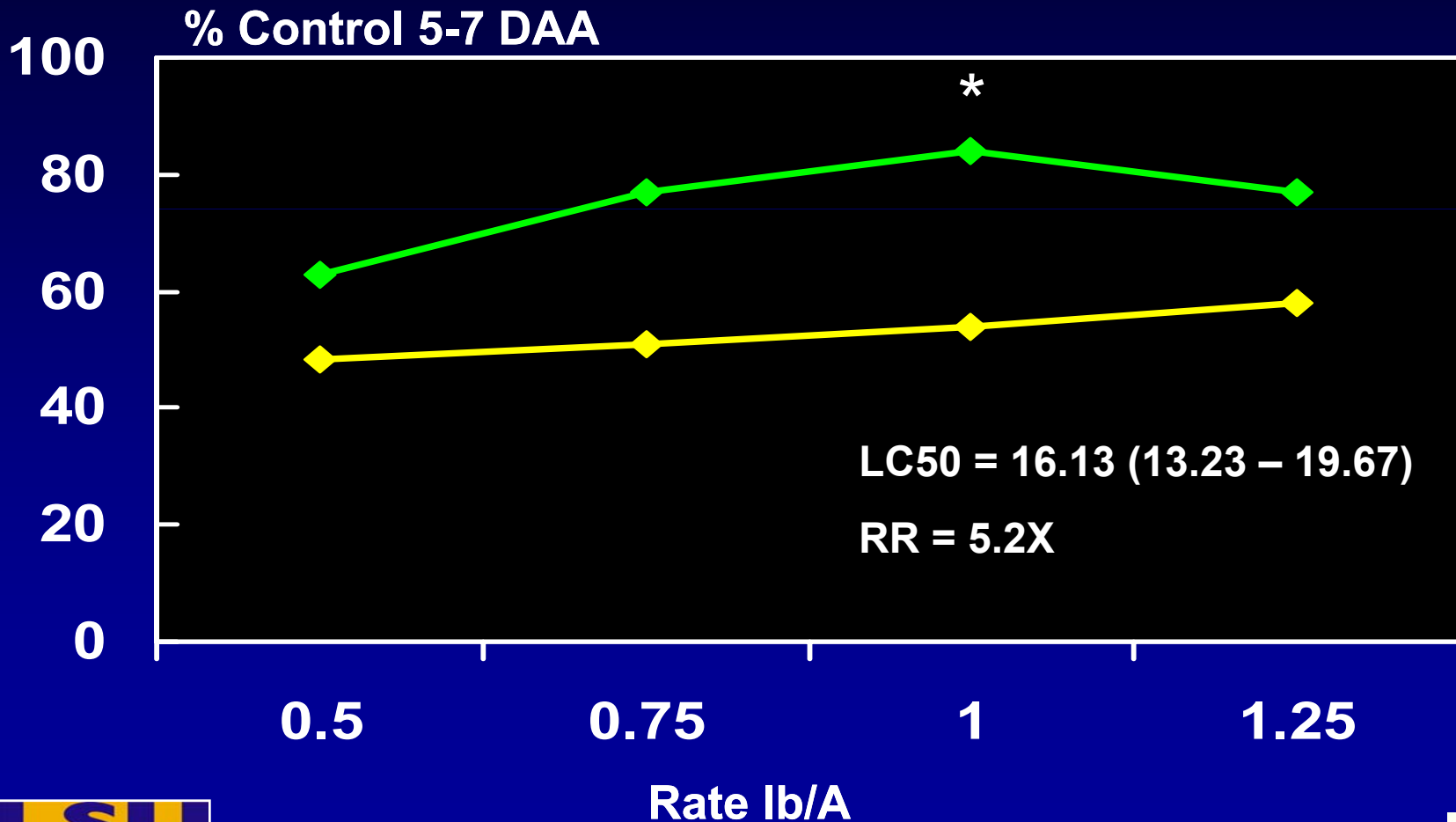
Field Efficacy of Acephate 97 for *L. lineolaris* Control – Louisiana 2008



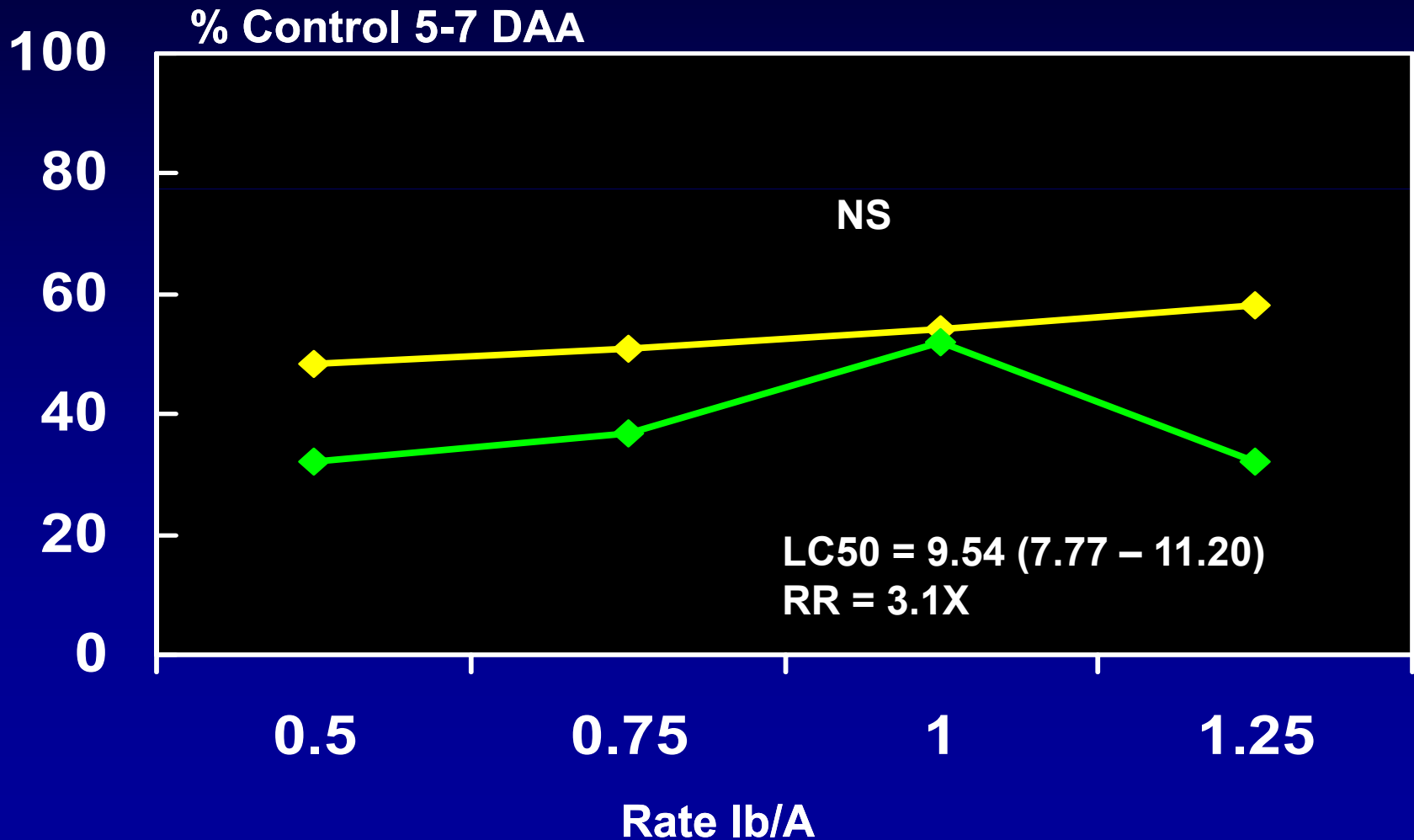
Mean Performance of Acephate 97 for *L. lineolaris* Control – Louisiana 2008



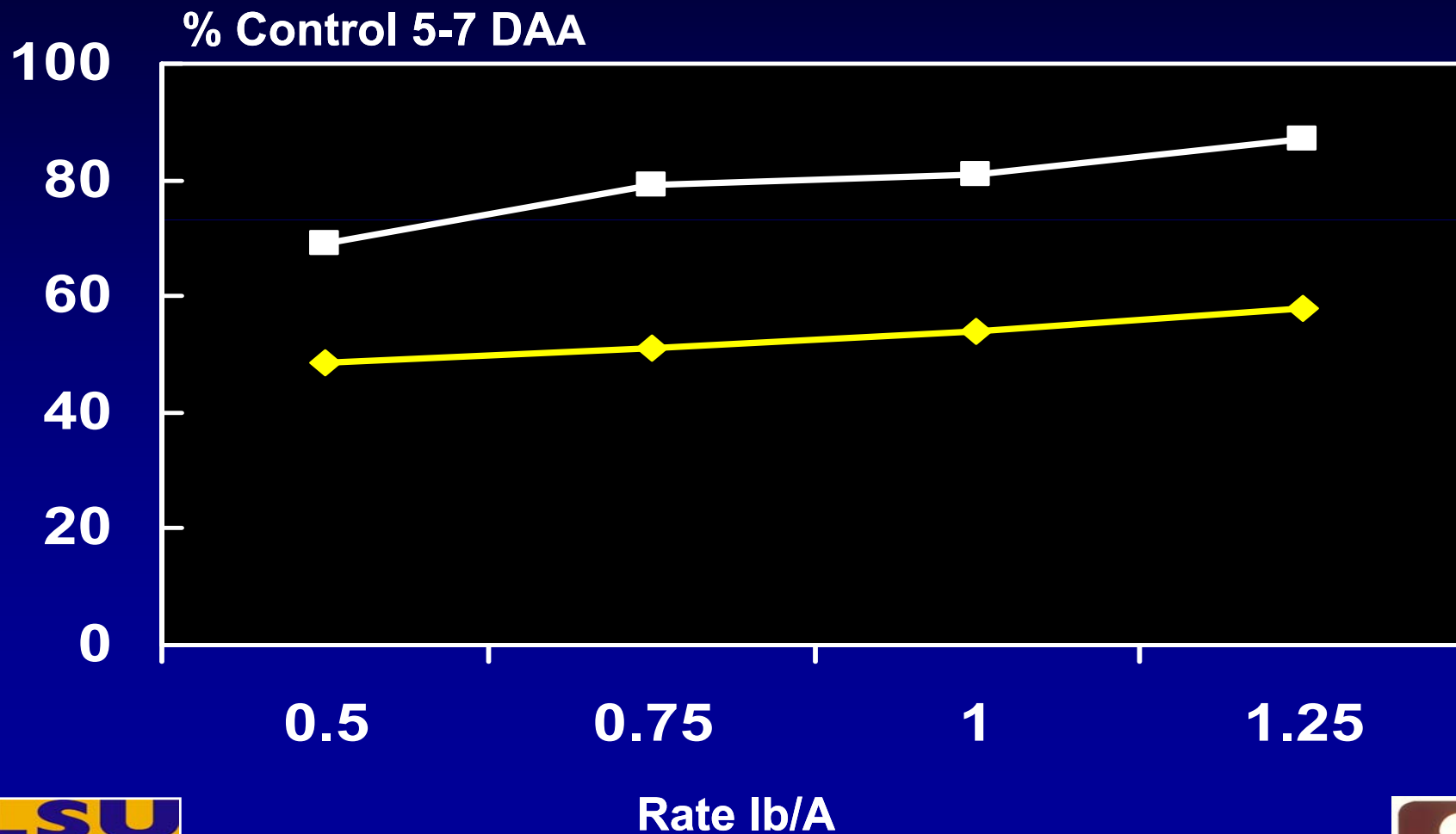
Field Efficacy of Acephate 97 for *L. lineolaris* Control – Monroe B



Field Efficacy of Acephate 97 for *L. lineolaris* Control – Newlight 2



Field Efficacy of Acephate 97 for *L. lineolaris* Control – LA 2007 and 2008



Summary

- **General trend of resistance indicated that control failures would occur**
- **Acephate field efficacy similar between rates**
- **0.75 to 1.0 lb/A providing ~50% control across all locations**

Impact of Plant Height on Insecticide Efficacy to control Tarnished Plant Bug, *Lygus lineolaris* “Palisot de Beauvois” in Cotton

J. W. Sharp,

R. D. Bagwell and J. T. Copes

Louisiana State University



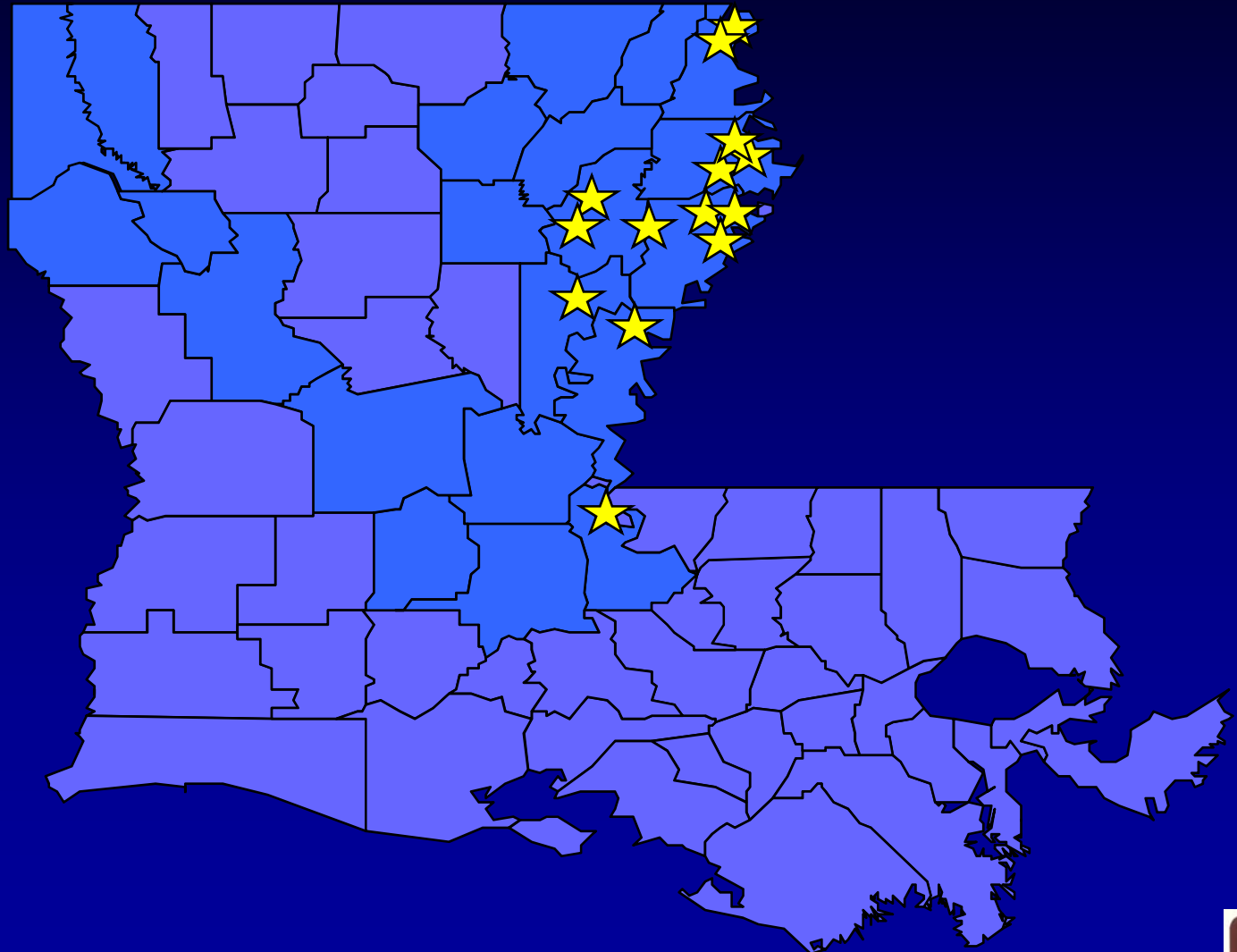
Objective

Determine if insecticide efficacy for *L. lineolaris* control is influenced by plant height.

Materials Methods

- **Treatments:**
 - 12oz mepiquate chloride at node 10
 - Untreated
- **RCB - 8 rows by 50ft with 4 Reps.**
- **14 locations**
- **Assessments**
 - Pre and Post Treatment Counts.
 - Boll Damage at Harvest.
- **Analysis: ANOVA**

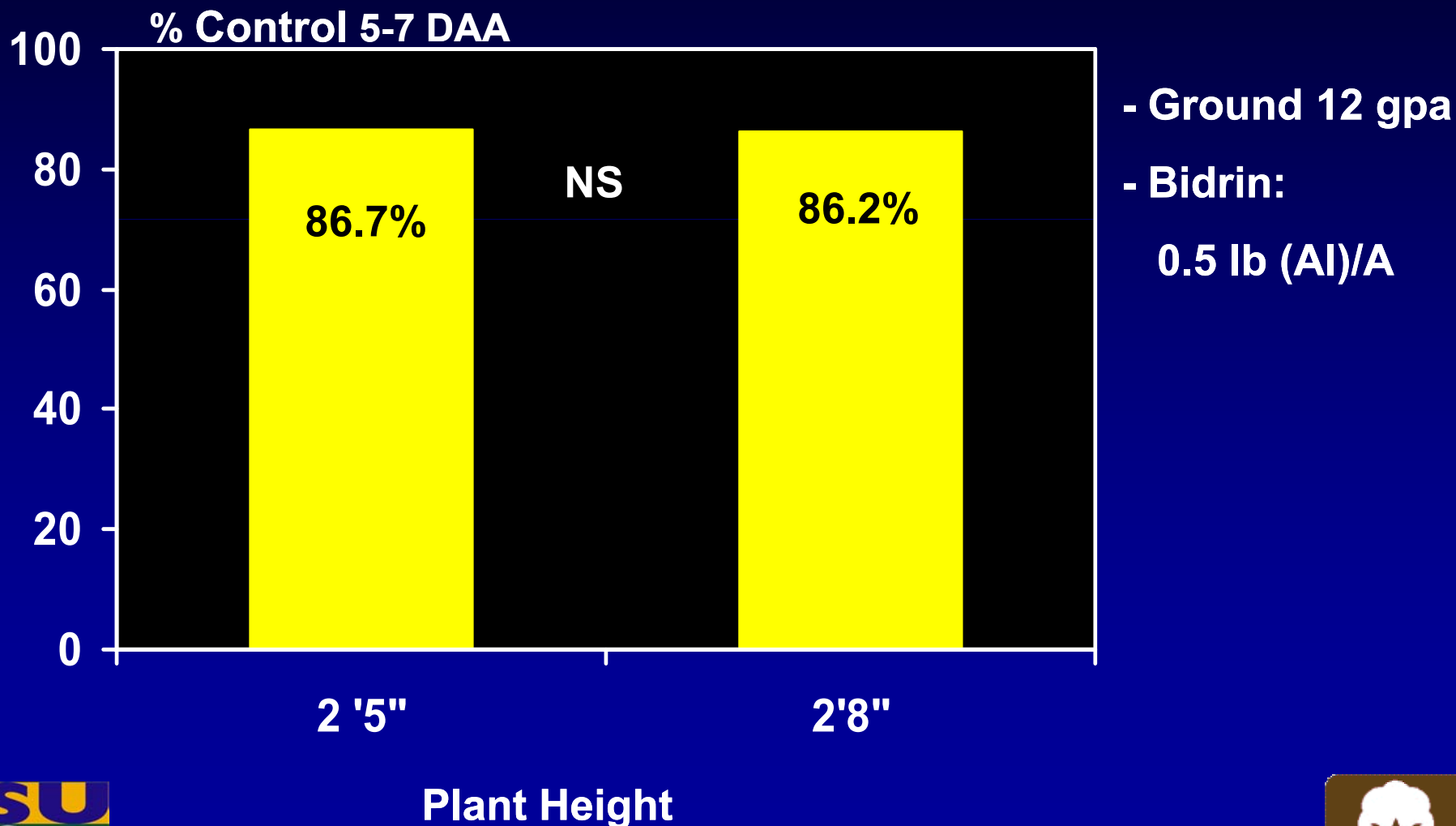
Study Locations (14)



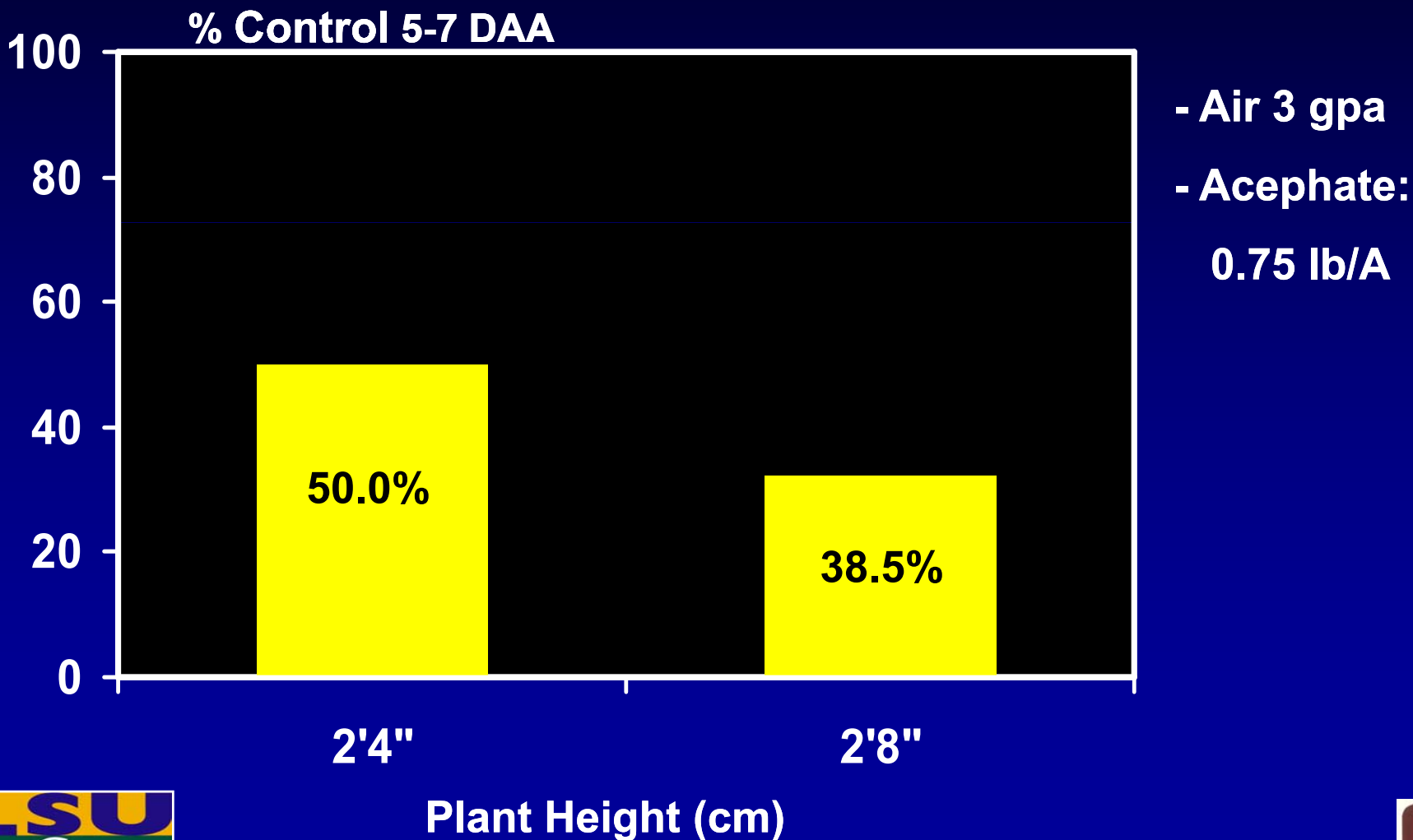
Results



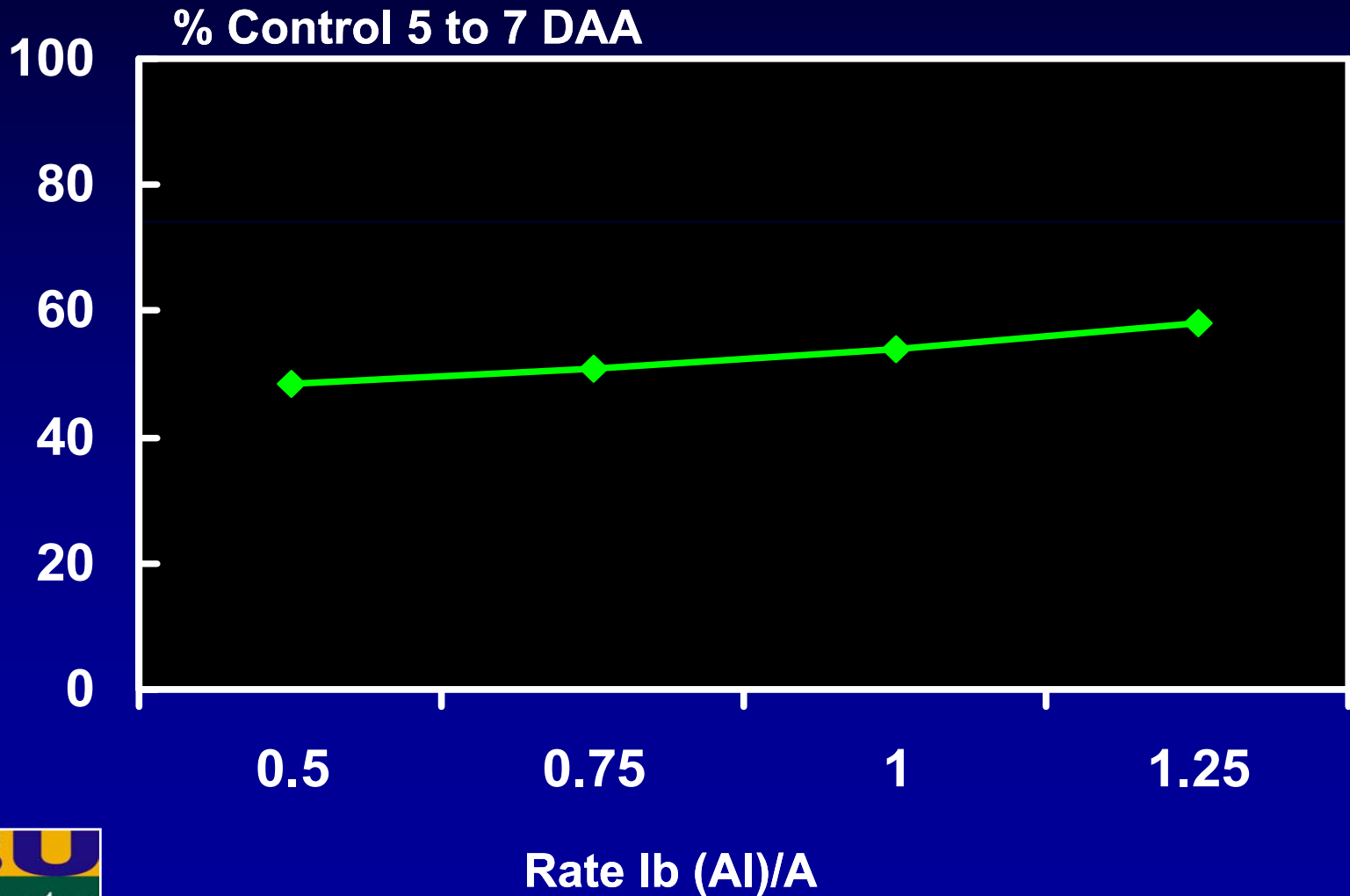
Percent *L. lineolaris* Control by Plant Height – Angola Prison



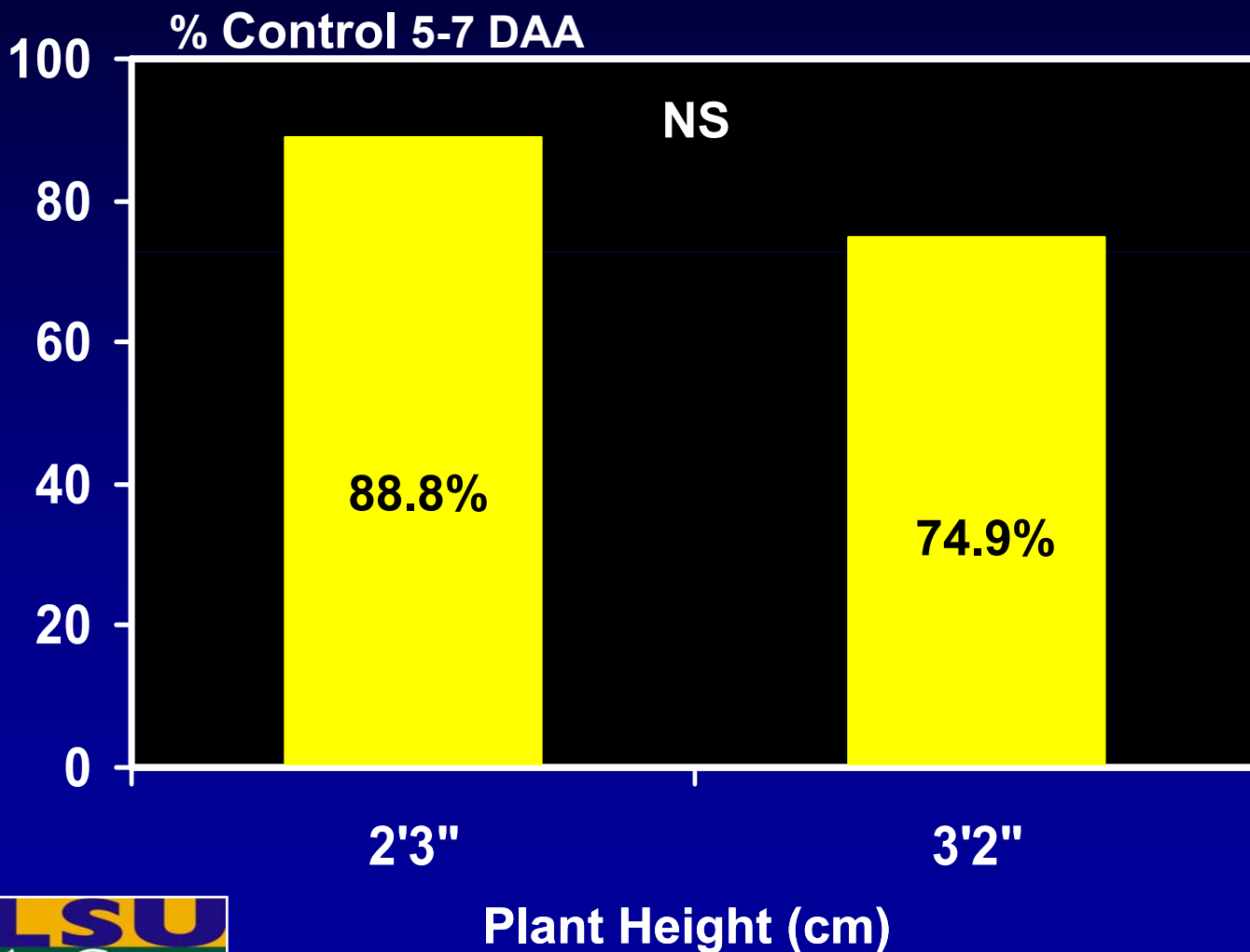
Percent *L. lineolaris* Control by Plant Height - Winnsboro



Field Efficacy of Acephate 97 – 2008



Percent *L. lineolaris* Control by Plant Height – Frogmore

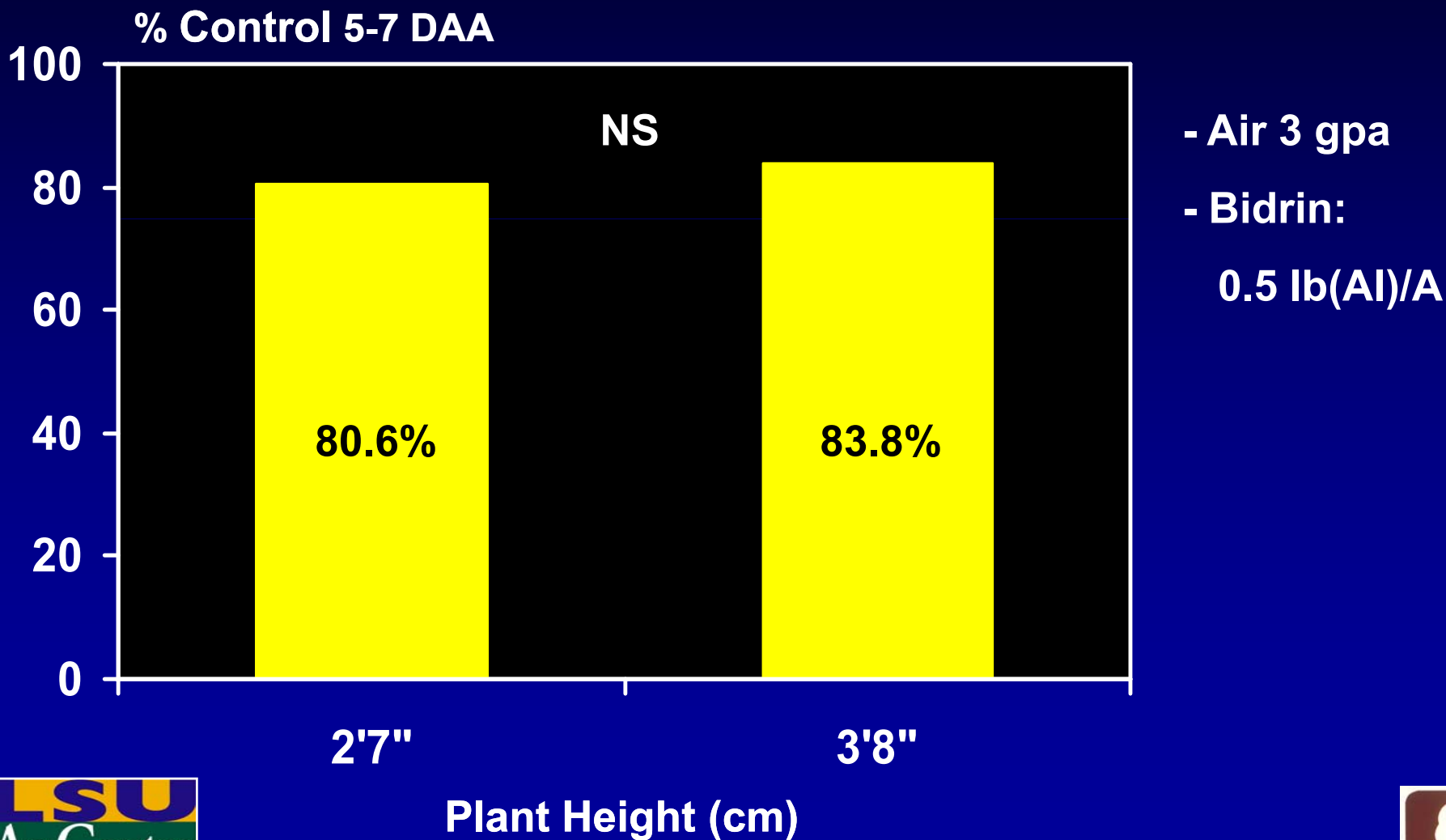


- Ground 9 gpa

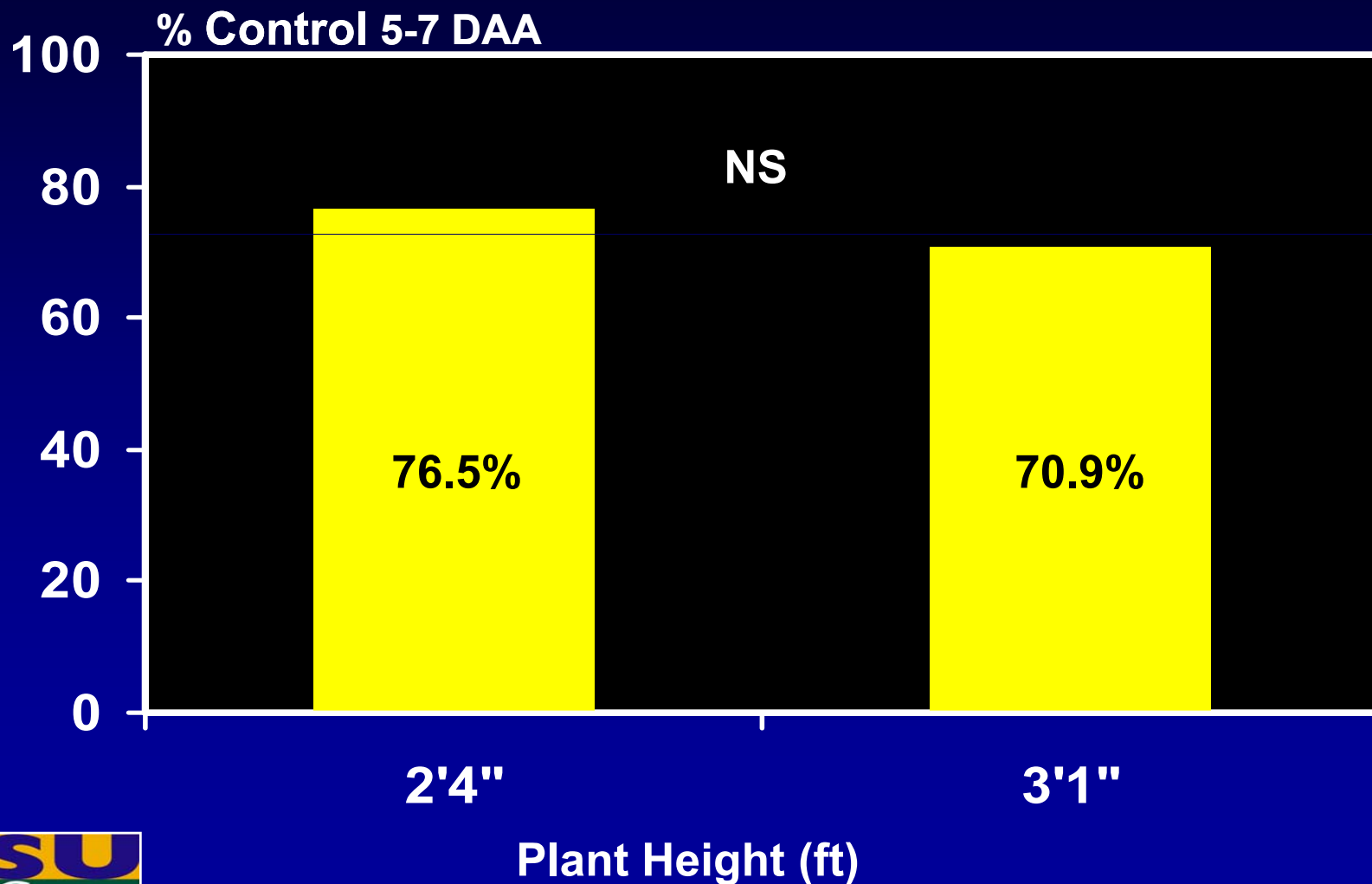
- Bidrin:

0.5 lb(AI)/A

Percent *L. lineolaris* Control by Plant Height – Somerset

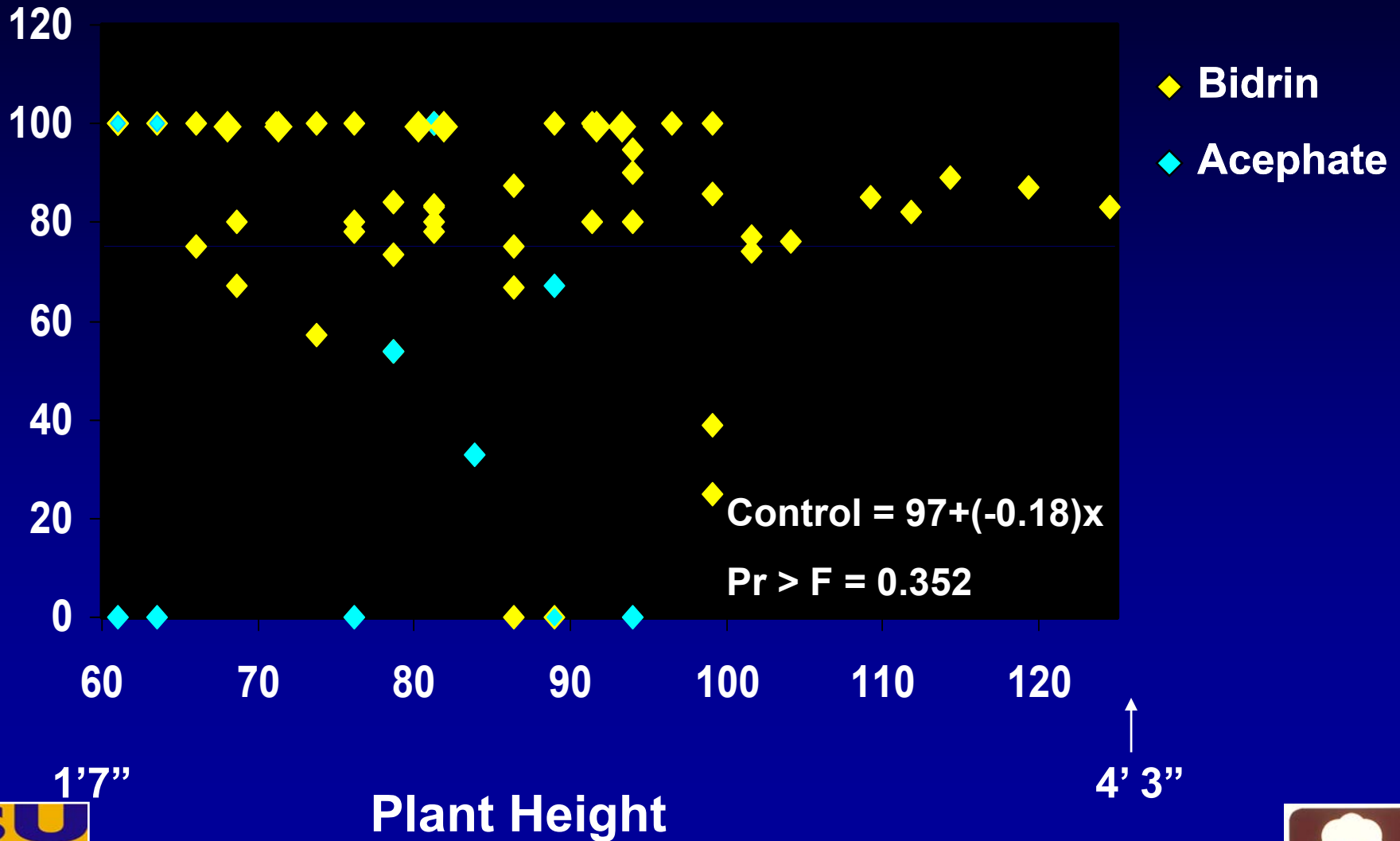


Percent *L. lineolaris* Control by Plant Height – Average of all Locations



Impact of Plant Height on Percent *L. lineolaris* Control

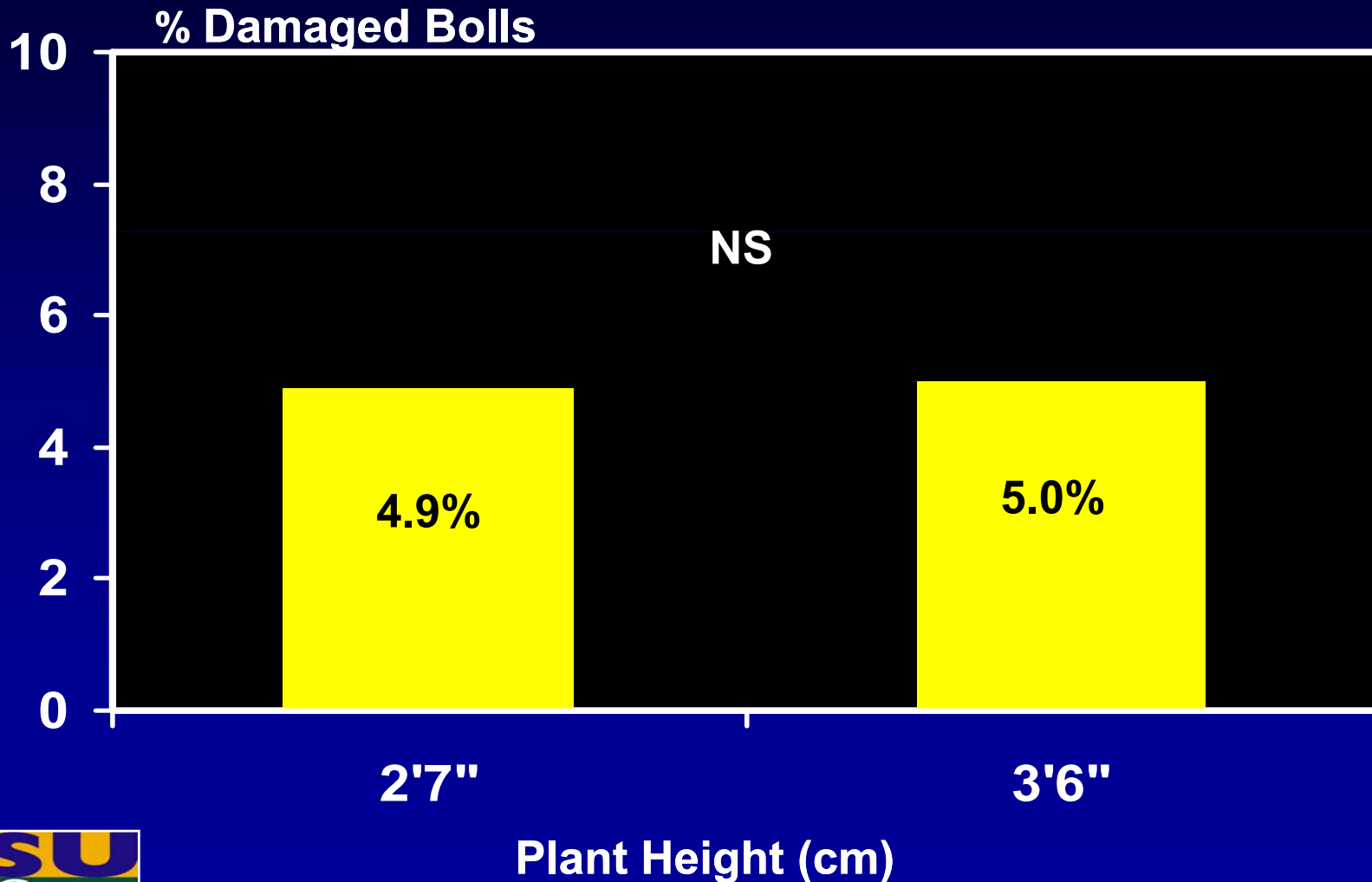
% Control *L. lineolaris* Control



Plant Height Difference



Comparison of Plant Height and Bug Damage at Harvest - Average



Conclusion

Data does not indicate that plant height, up to 1.27m, has an impact on insecticide efficacy.

Acknowledgments

- **Producer Cooperators and ULM**
- **Funding provided by the following**



Thank You

