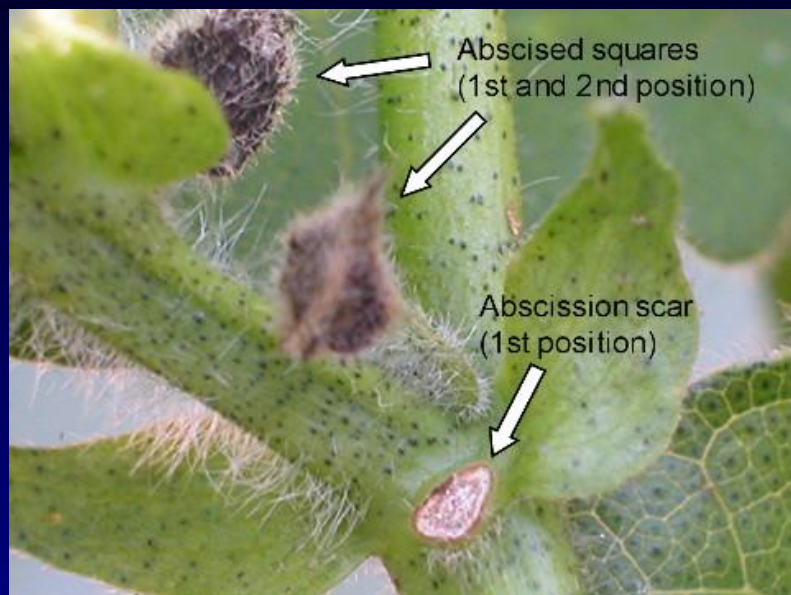


Tarnished Plant Bug Threshold Developments in Cotton



Musser, F., S. Stewart, G. Lorenz, R. Bagwell, A.
Catchot, K. Tindall, G. Studebaker, R. Leonard,
D. Cook, C. Daves and S. Akin

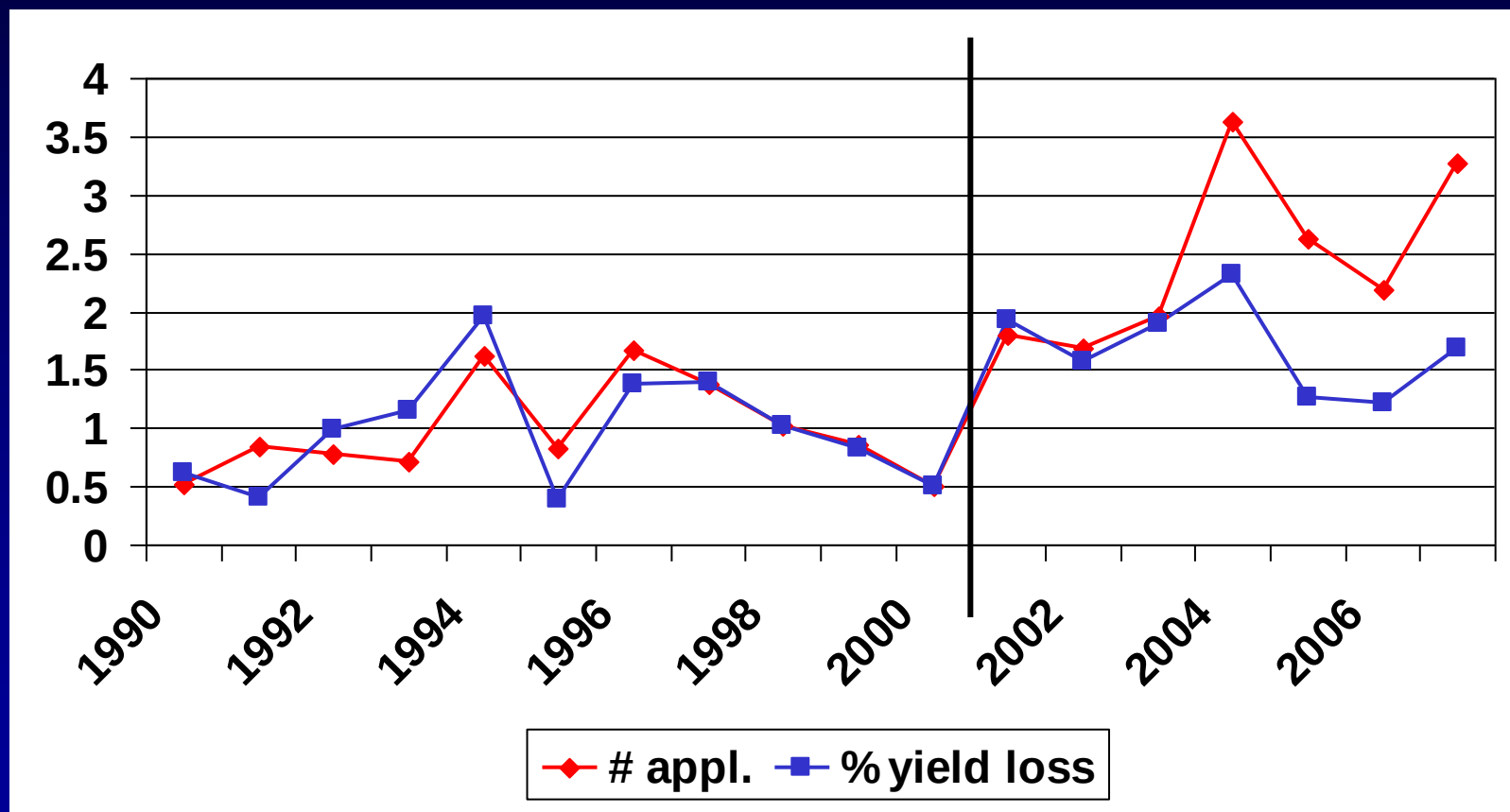
TPB Injury



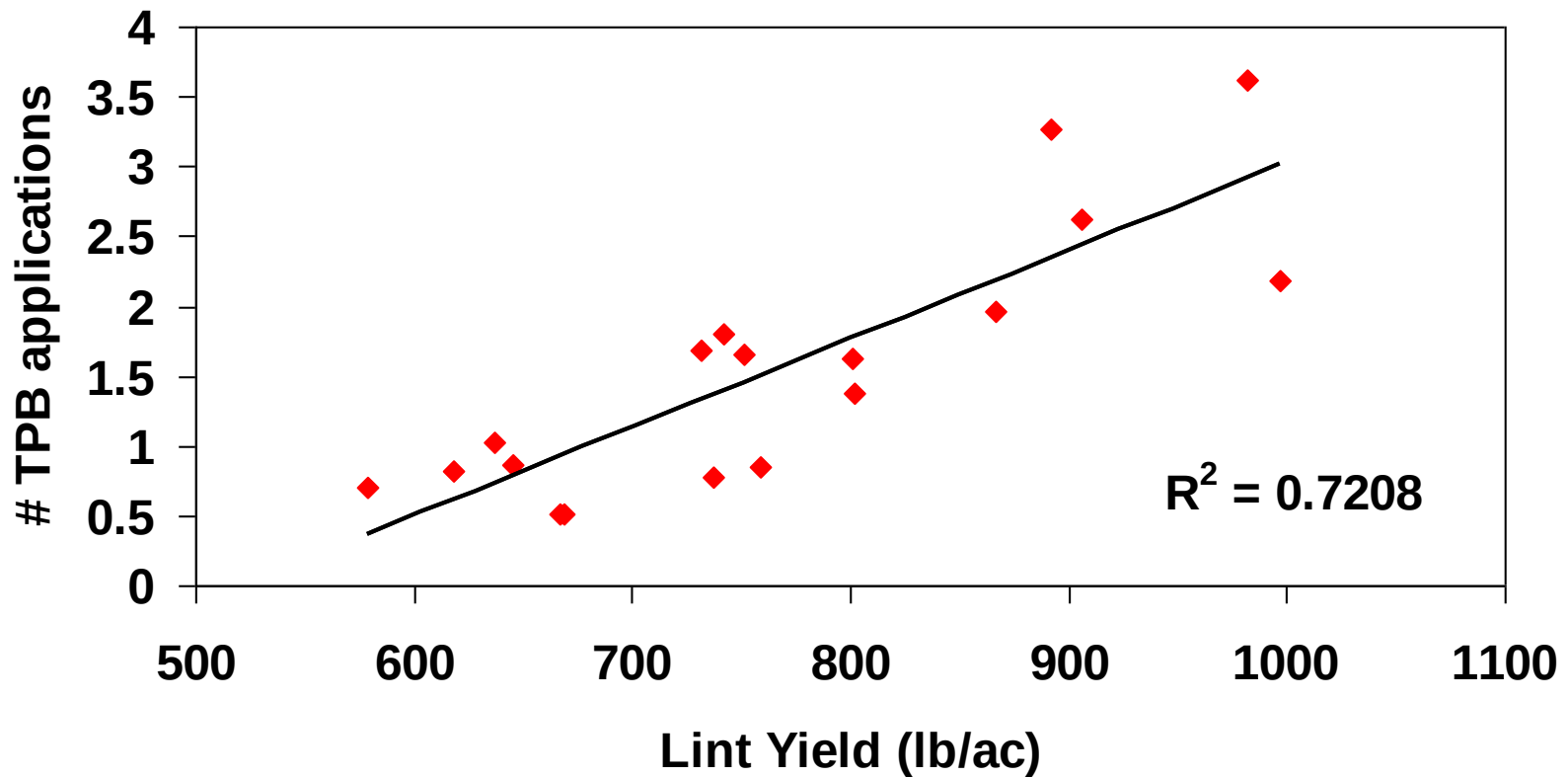


Midsouth TPB Sprays & Losses

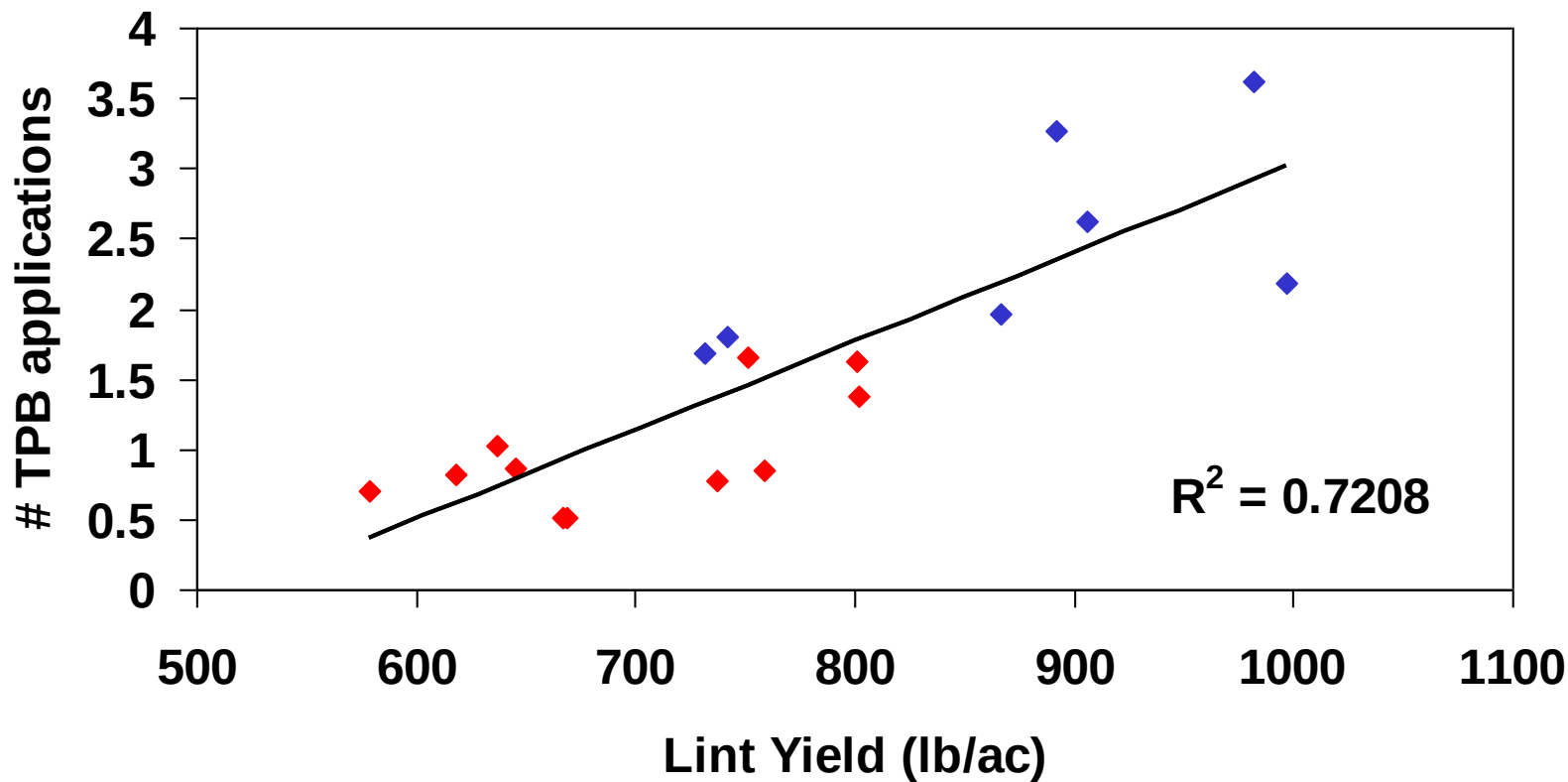
AR, LA, MS, MO, TN



Relationship between # TPB sprays and yield in Midsouth (1990-2007)



Relationship between # TPB sprays and yield in Midsouth 1990-2000 (red), 2001-2007 (blue)



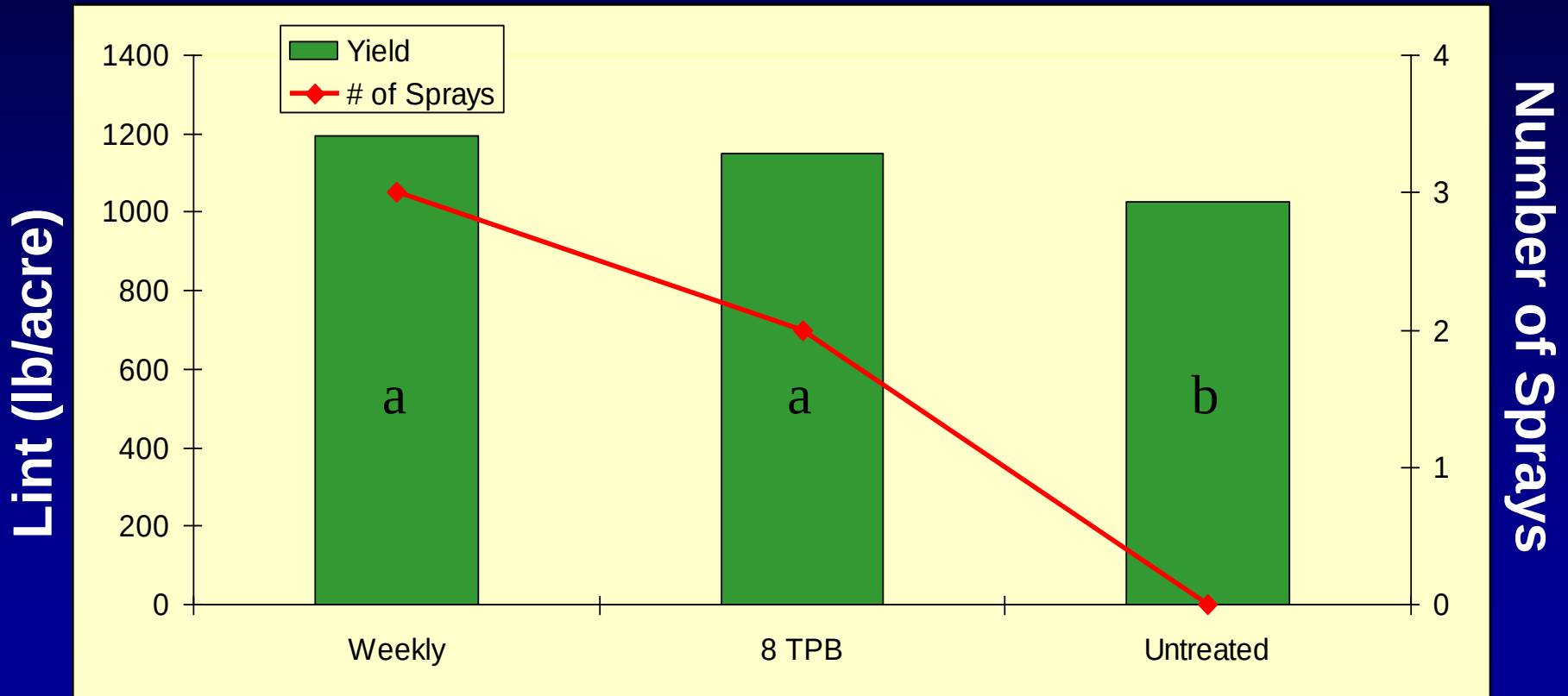
Pre-Bloom TPB Thresholds

Trial Treatments

- Auto: Automatic insecticide application at pinhead square and 7 and 14 days later
- Low: Threshold of 8 PB / 100 sweeps or square retention below 80%
- High: Threshold of 16 PB / 100 sweeps or square retention below 60%
- UTC: No insecticide prior to first bloom

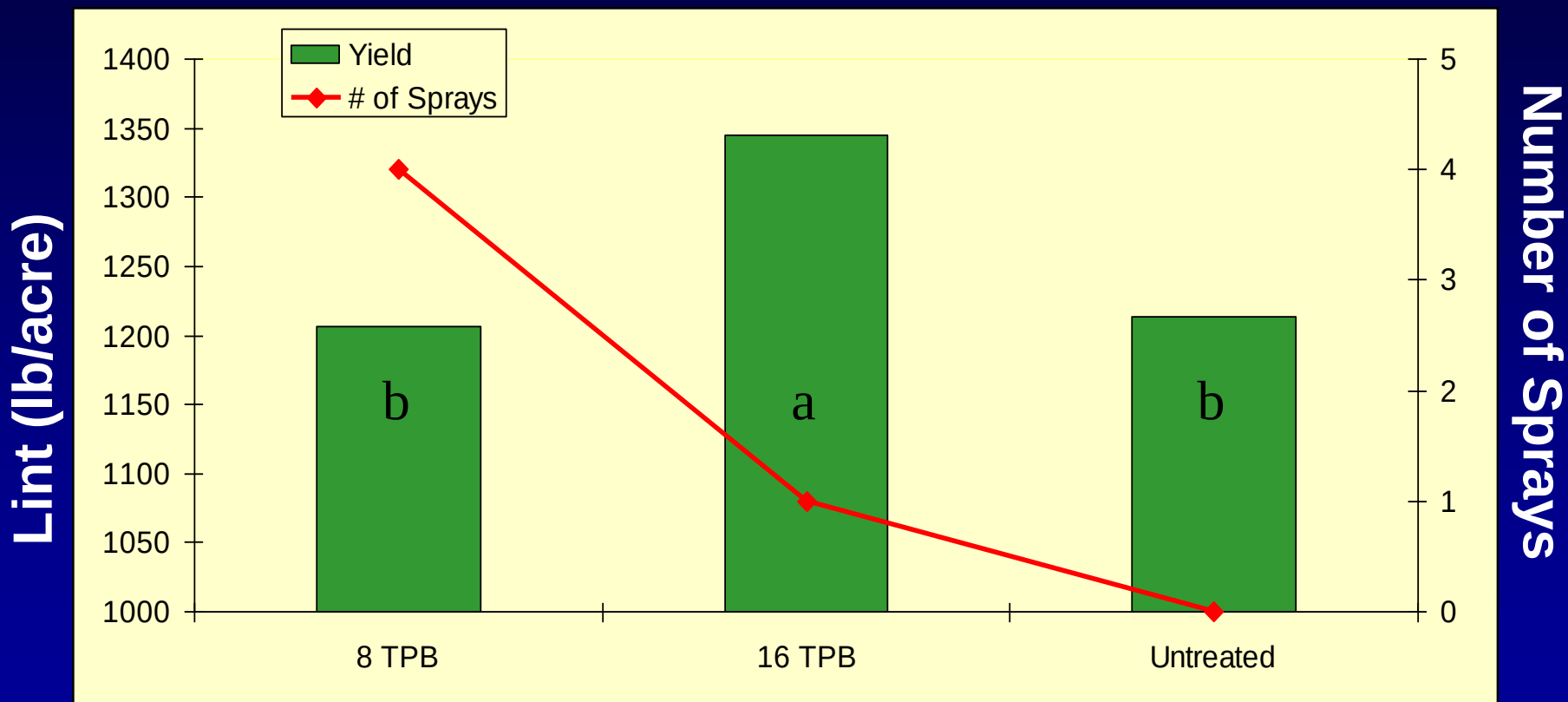
Plots at least 24 rows wide and 100 ft long
Conducted in 29 locations throughout the
Midsouth from 2006-2008

Pre-bloom TPB Thresholds LA, 2006



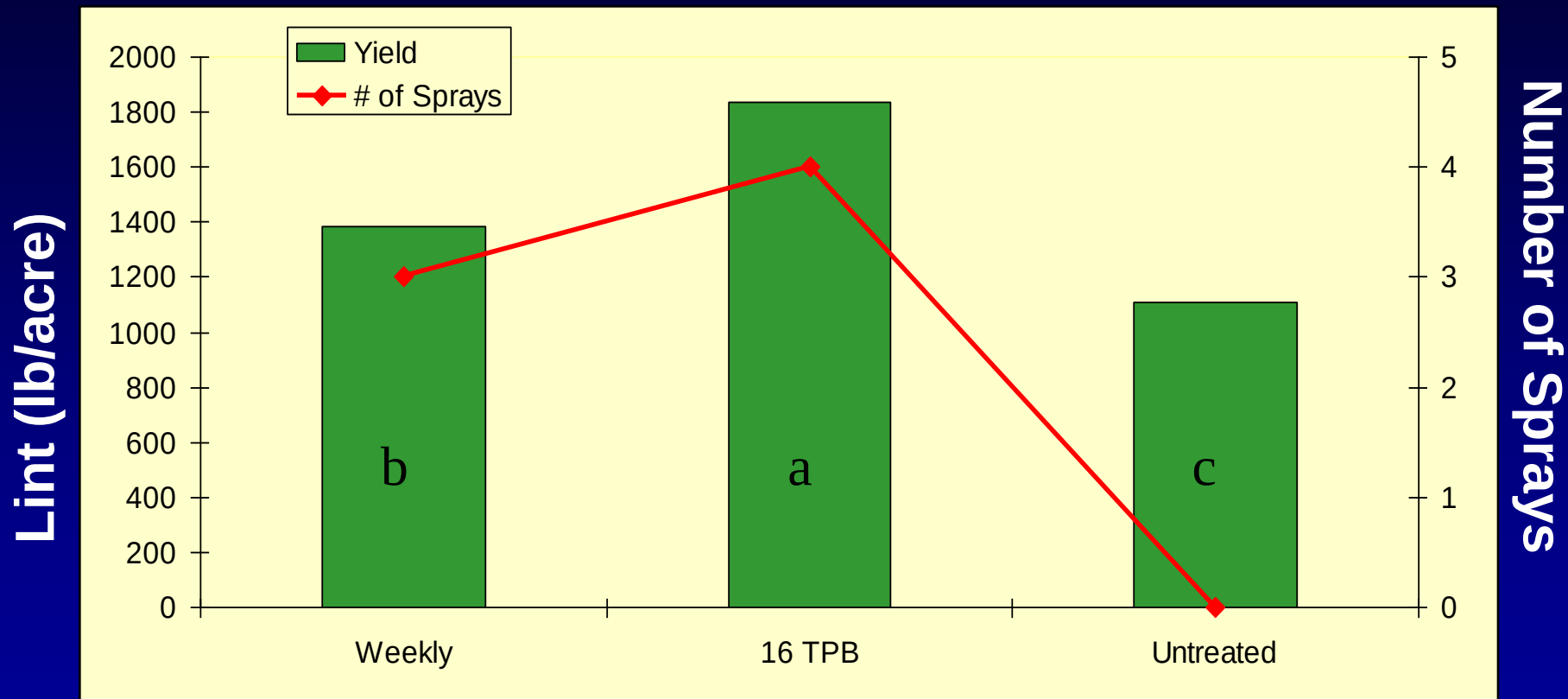
Early Season TPB Thresholds

Pre-bloom TPB Thresholds AR, 2007



Early Season TPB Thresholds

Pre-bloom TPB Thresholds MS, 2007



Wk 1 = 36/100 sweeps

Wk 2 = 37/100 sweeps

Wk 3 = 50/100 sweeps

Wk 3.5 = 17/100 sweeps

Wk 1 = 30/100 sweeps

Wk 2 = 33/100 sweeps

Wk 3 = 46/100 sweeps

Wk 3.5 = 20/100 sweeps

Wk 1 = 29/100 sweeps

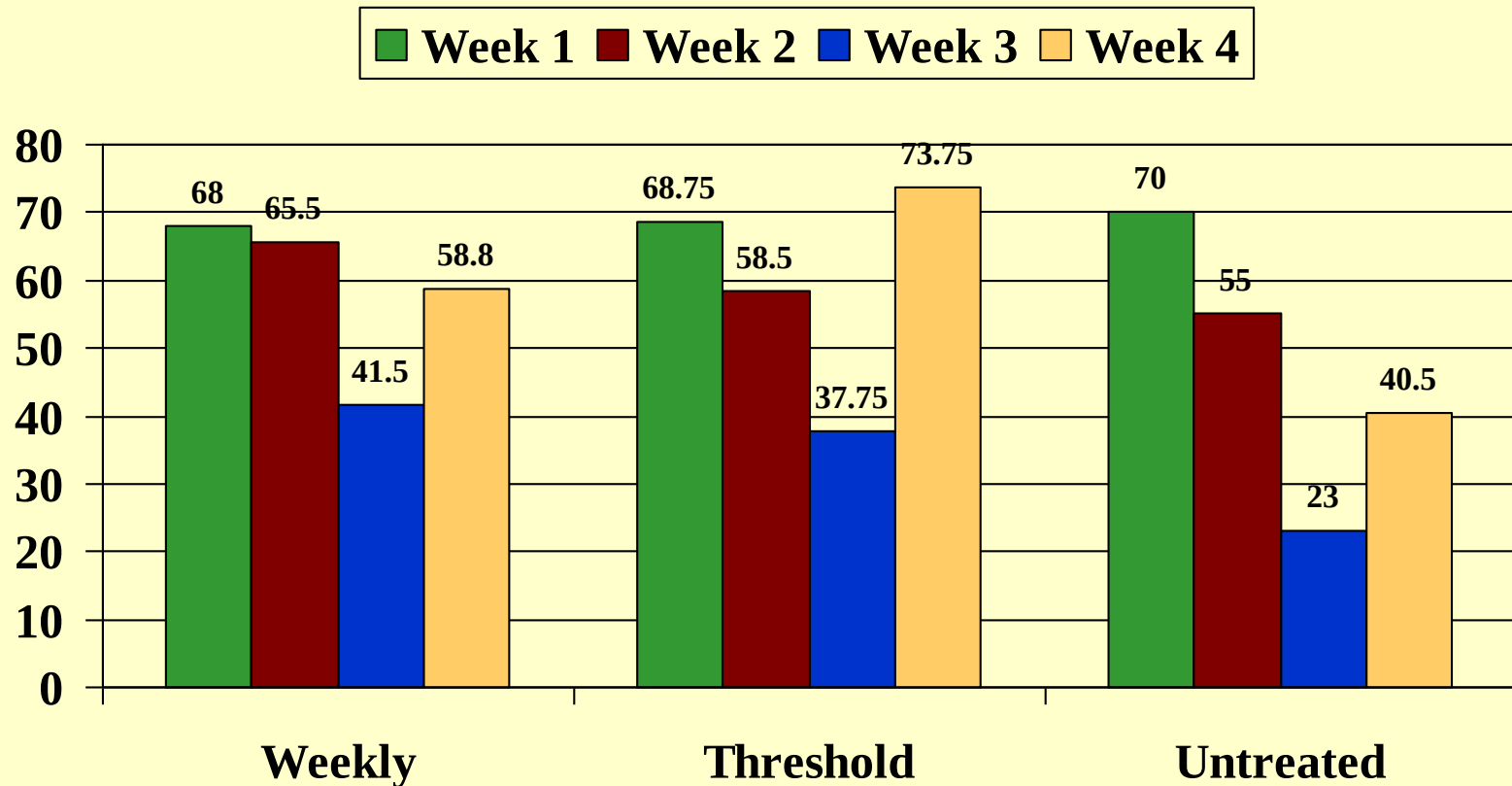
Wk 2 = 33/100 sweeps

Wk 3 = 53/100 sweeps

Wk 3.5 = 48/100 sweeps

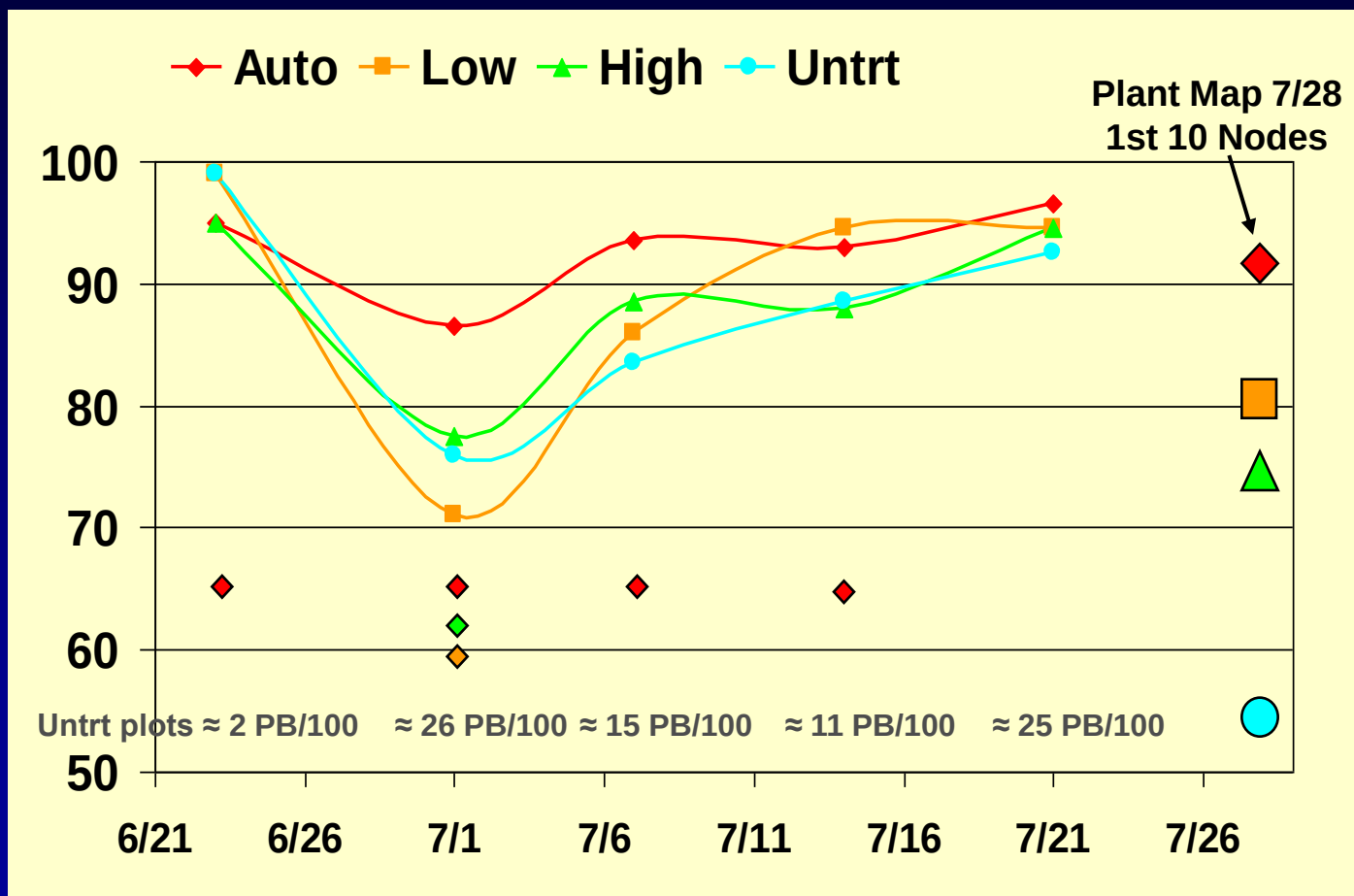
Pre-bloom TPB Thresholds MS, 2007

% square retention



Percent Square Retention

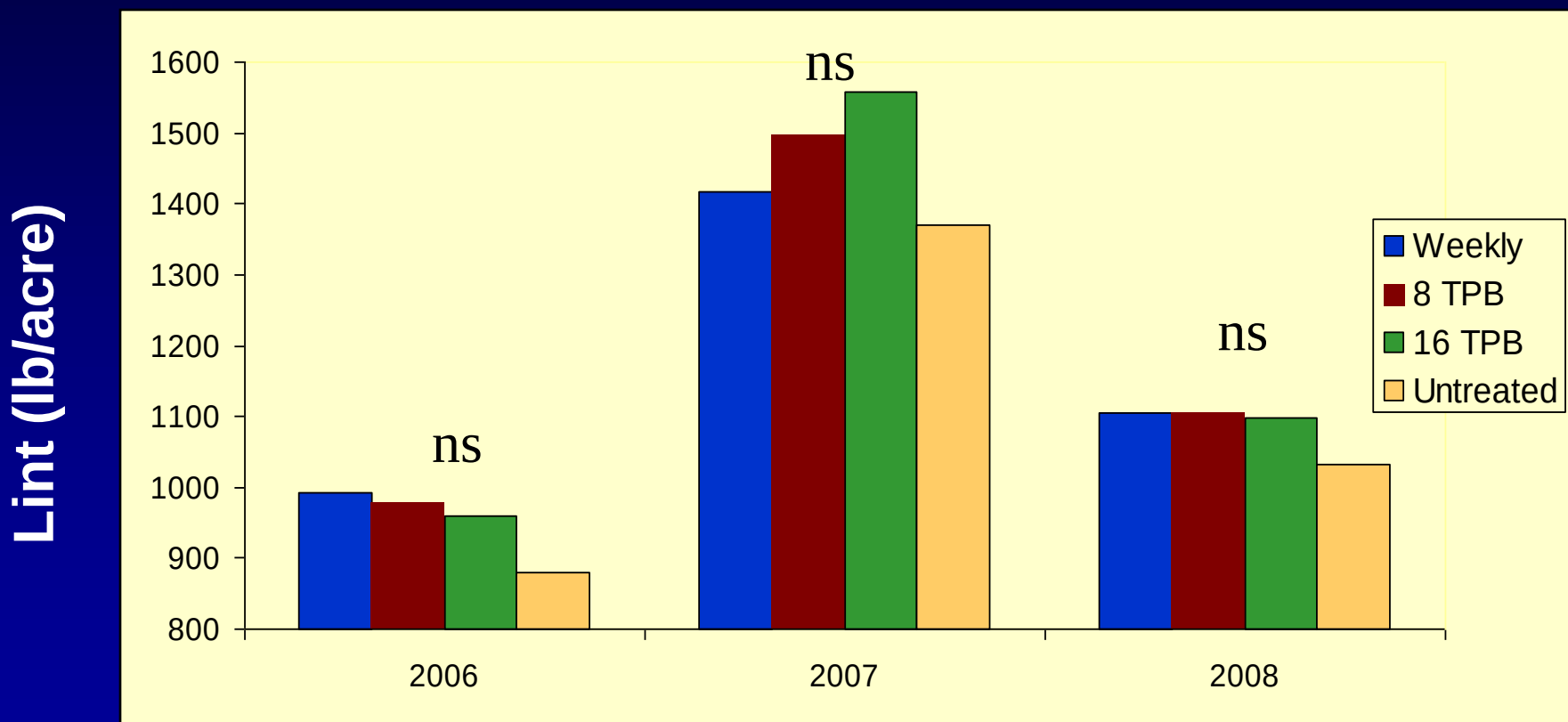
Lauderdale, TN 2008



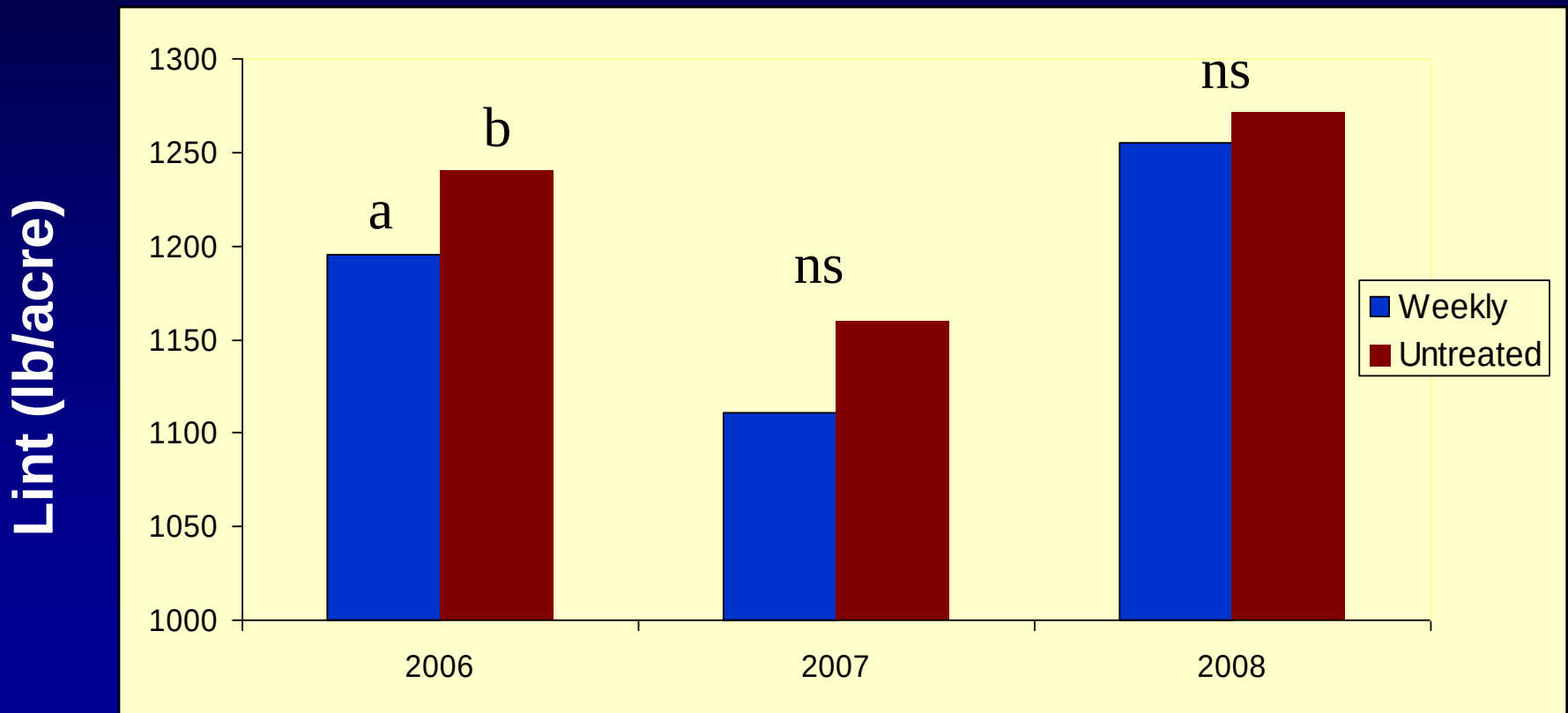
All plots oversprayed 7/21/08 with 6 oz. Bidrin

Pre-bloom TPB Thresholds

Sites exceeding low threshold
(2 in 2006, 7 in 2007, 5 in 2008)



Pre-bloom Sites with few TPB (7 in 2006, 6 in 2007, 2 in 2008)



Early Season TPB Thresholds

Pre-Bloom TPB Threshold Summary

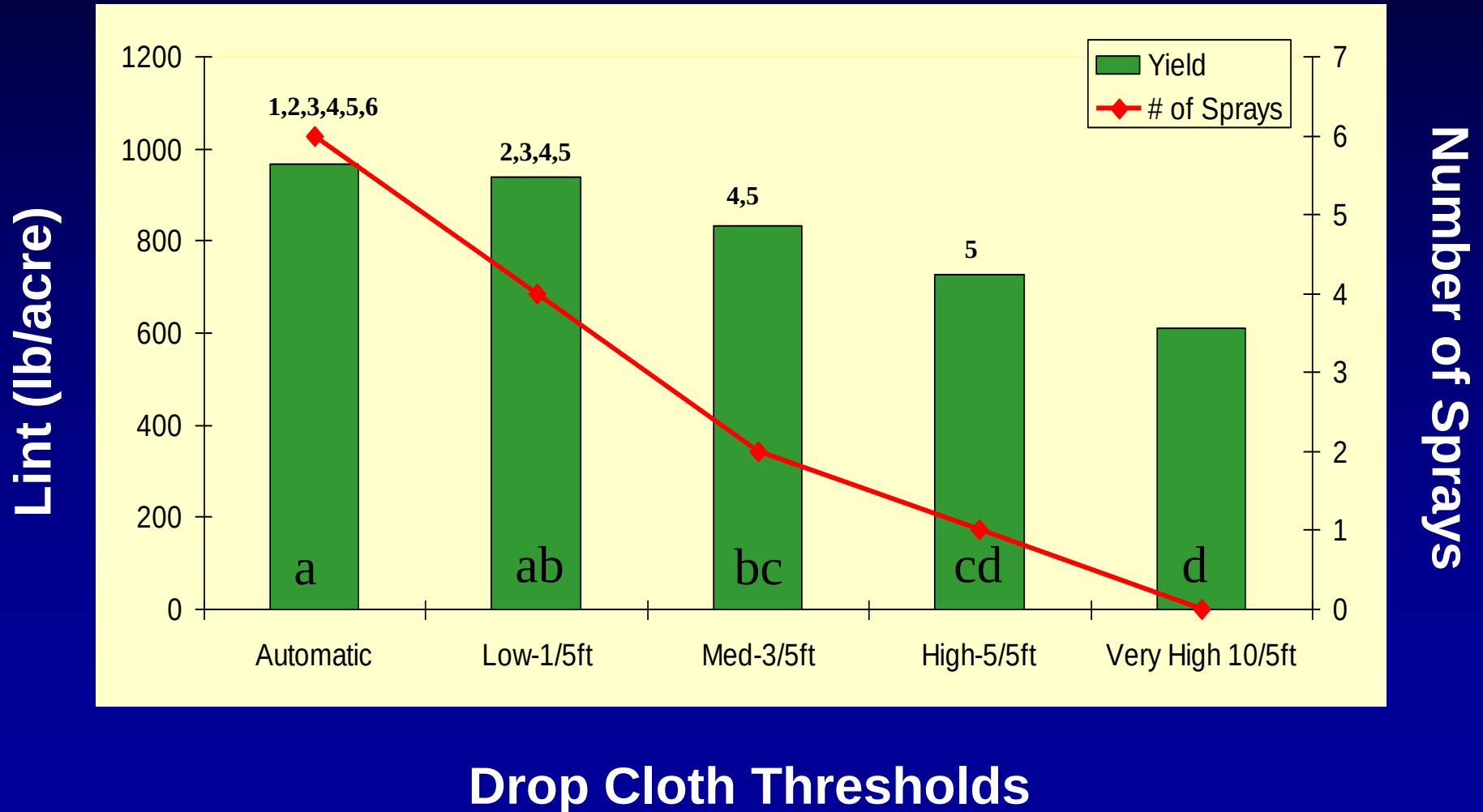
- When $TPB > \text{threshold}$ (8 TPB/100 sweeps OR square retention $< 80\%$)
 - Insecticide applications needed to preserve yield
 - Weekly applications not adequate under severe pressure
- When $TPB < \text{threshold}$
 - Weekly insecticide applications tend to reduce yield slightly

TPB Thresholds- Mid Season

Trial Treatments

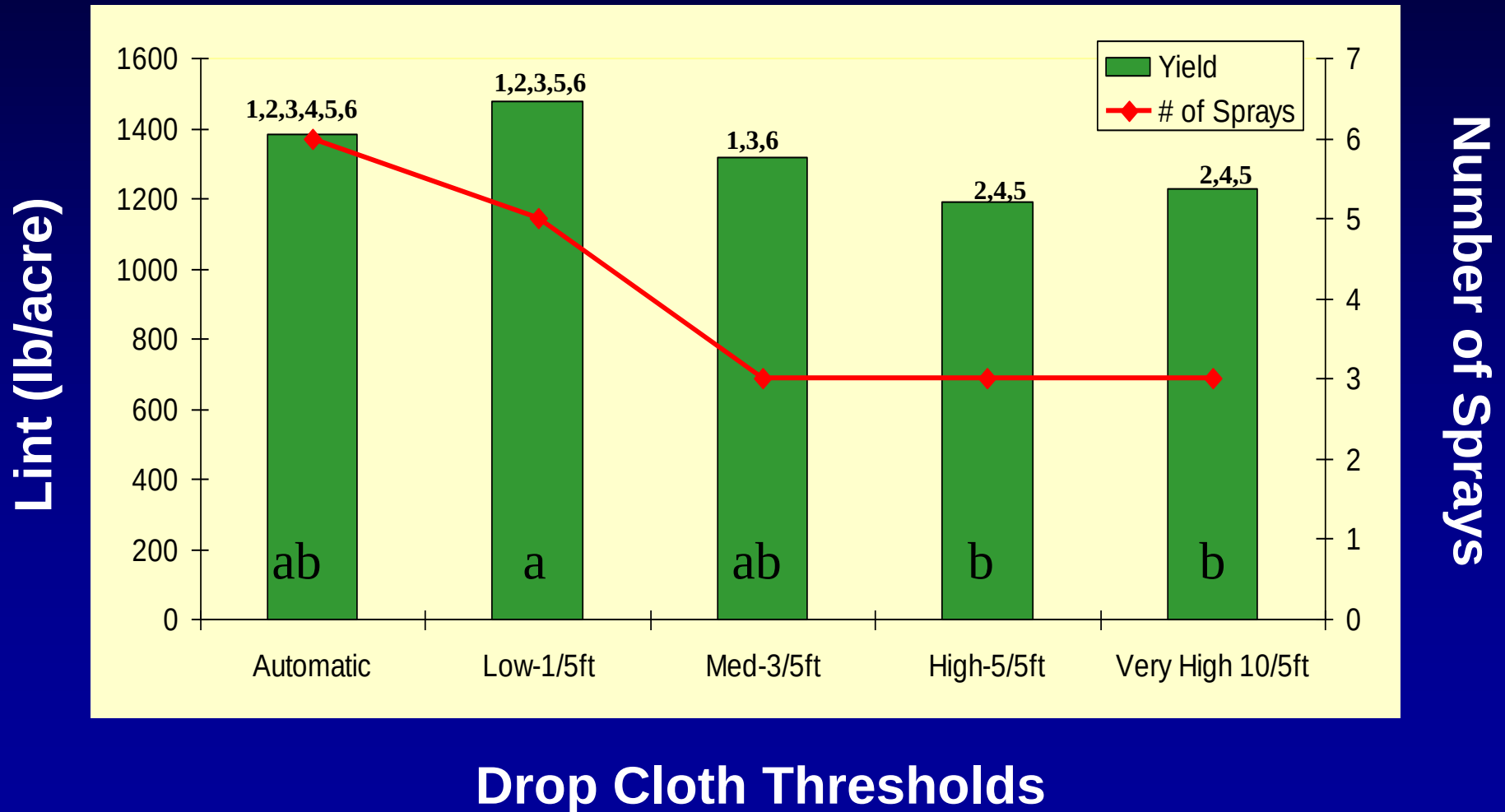
- Weekly: Insecticide application every 7 days from first bloom to cutout
 - Low: Threshold of 1 PB / 5 row ft.
 - Med: Threshold of 3 PB / 5 row ft.
 - High: Threshold of 5 PB / 5 row ft.
 - VHigh: Threshold of 10 PB / 5 row ft.
-
- All applications made using acephate or Bidrin
 - 8 locations in 2006, 13 locations in 2007

Mid-Season TPB Thresholds Macon Ridge, LA, 2007



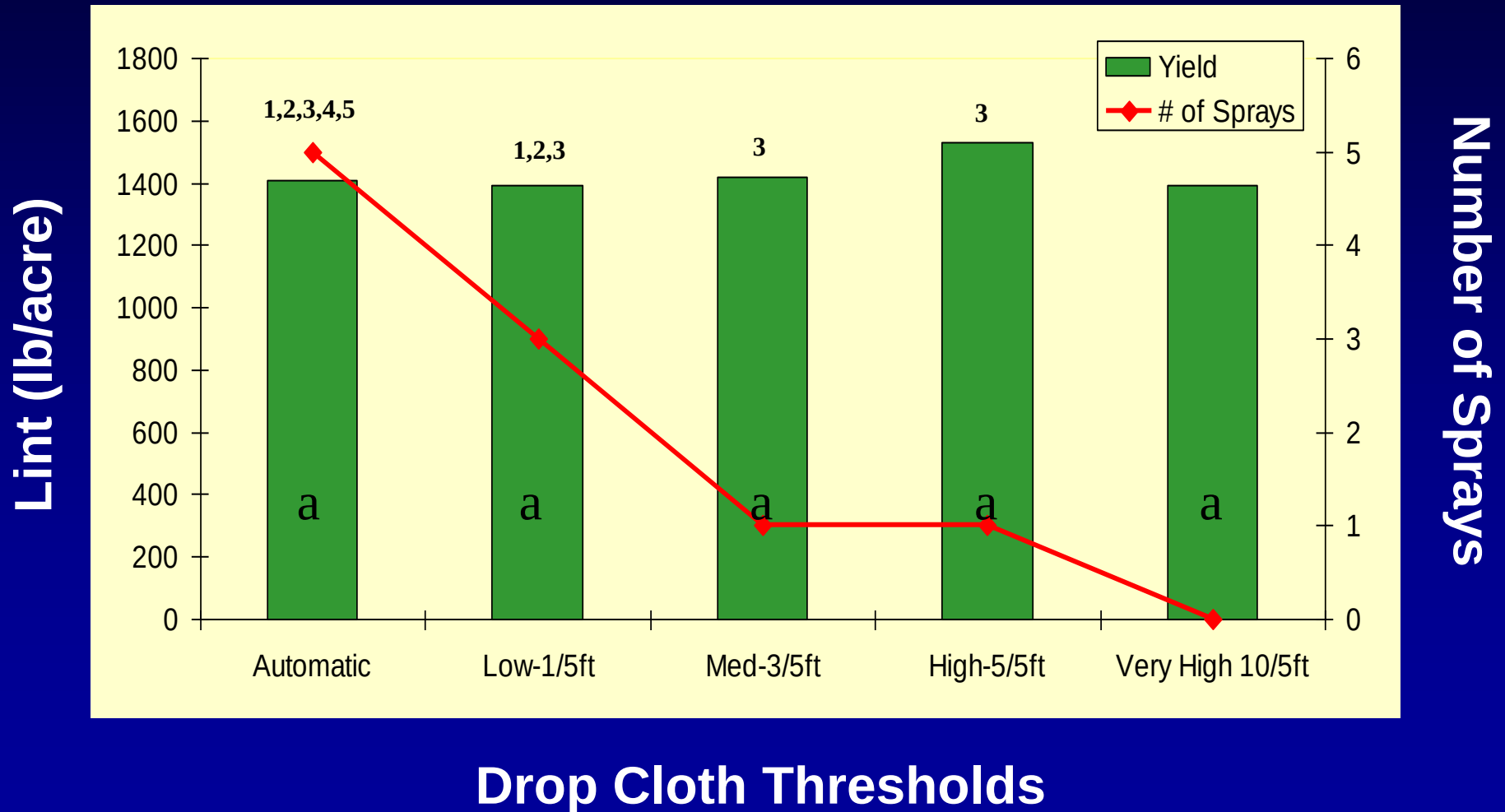
Mid-Season TPB Thresholds

MS, 2006

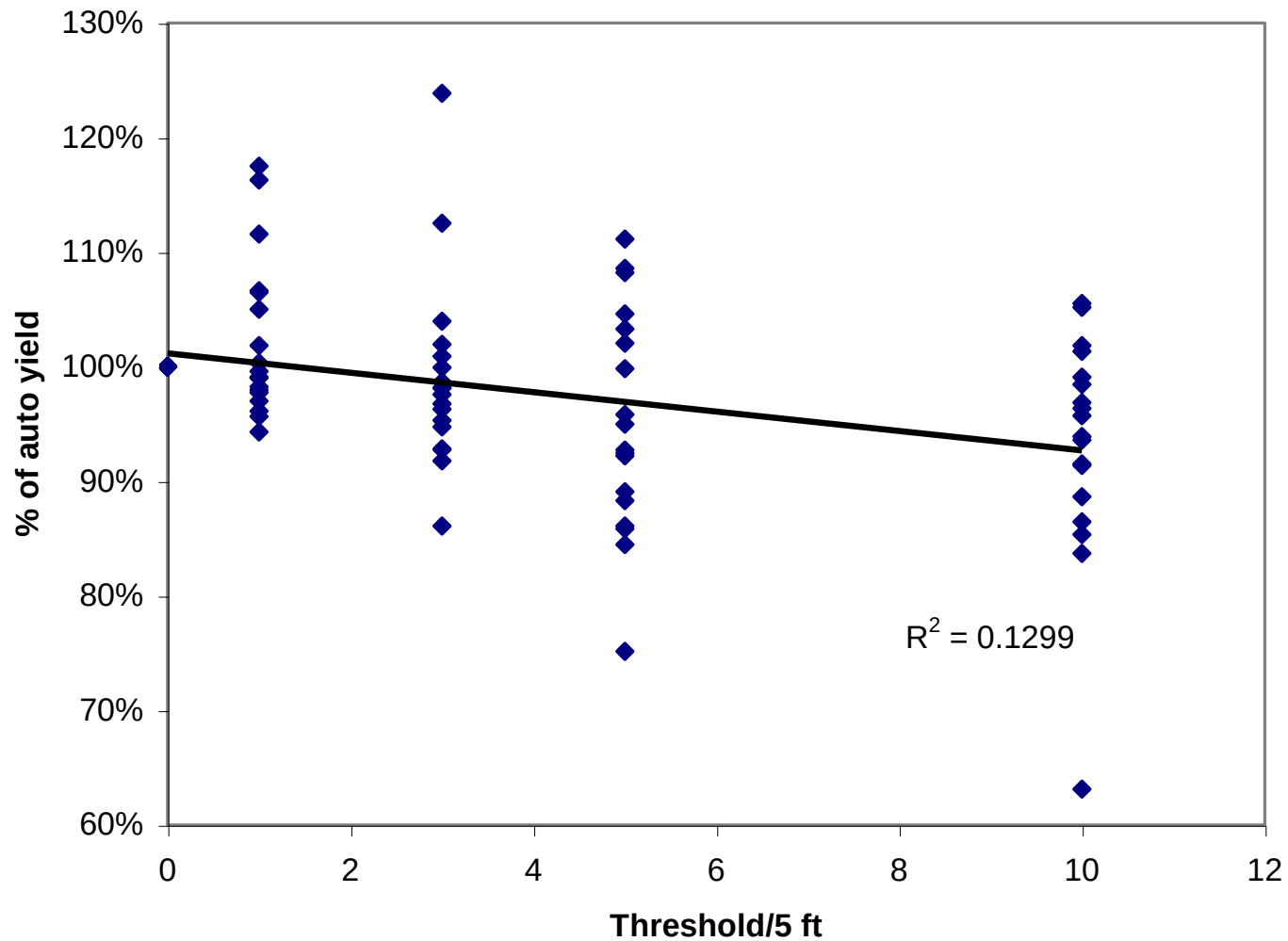


Mid-Season TPB Thresholds

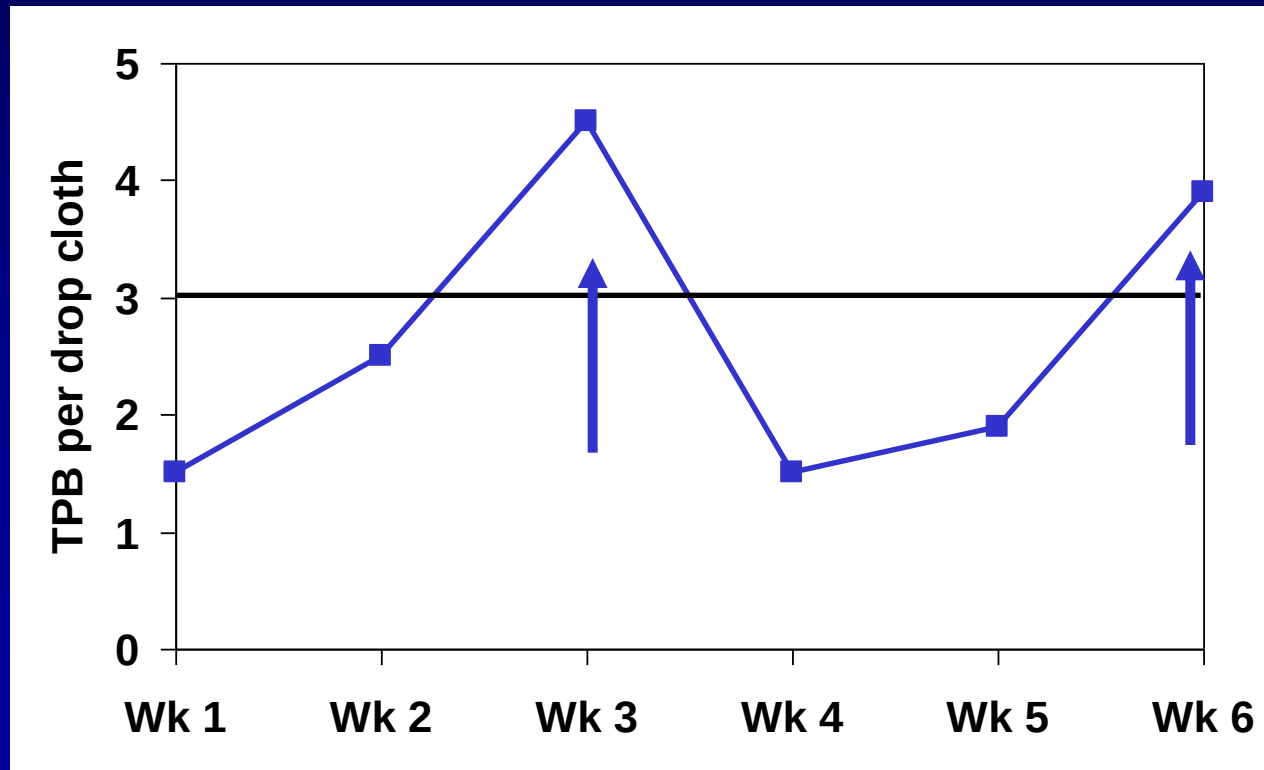
Lee Co. AR, 2006



Mid-Season TPB Actual Threshold

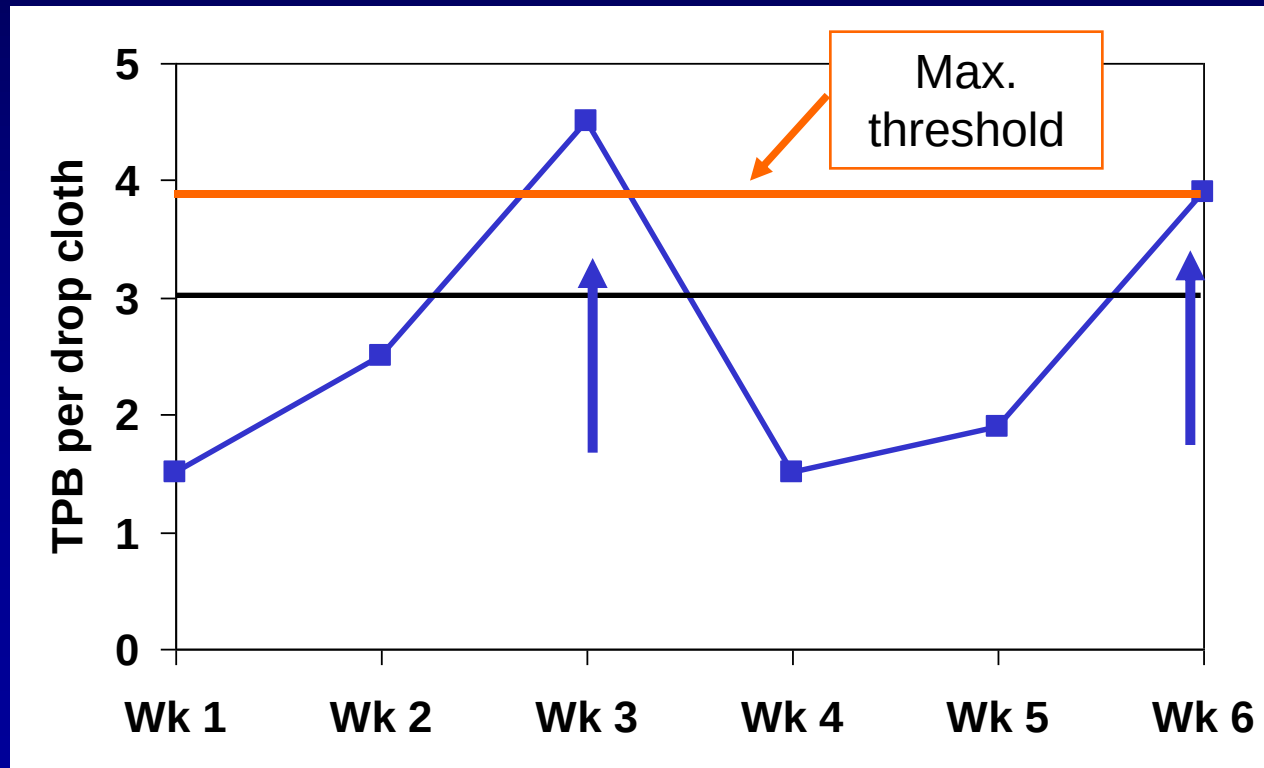


Alternate Threshold Measurements



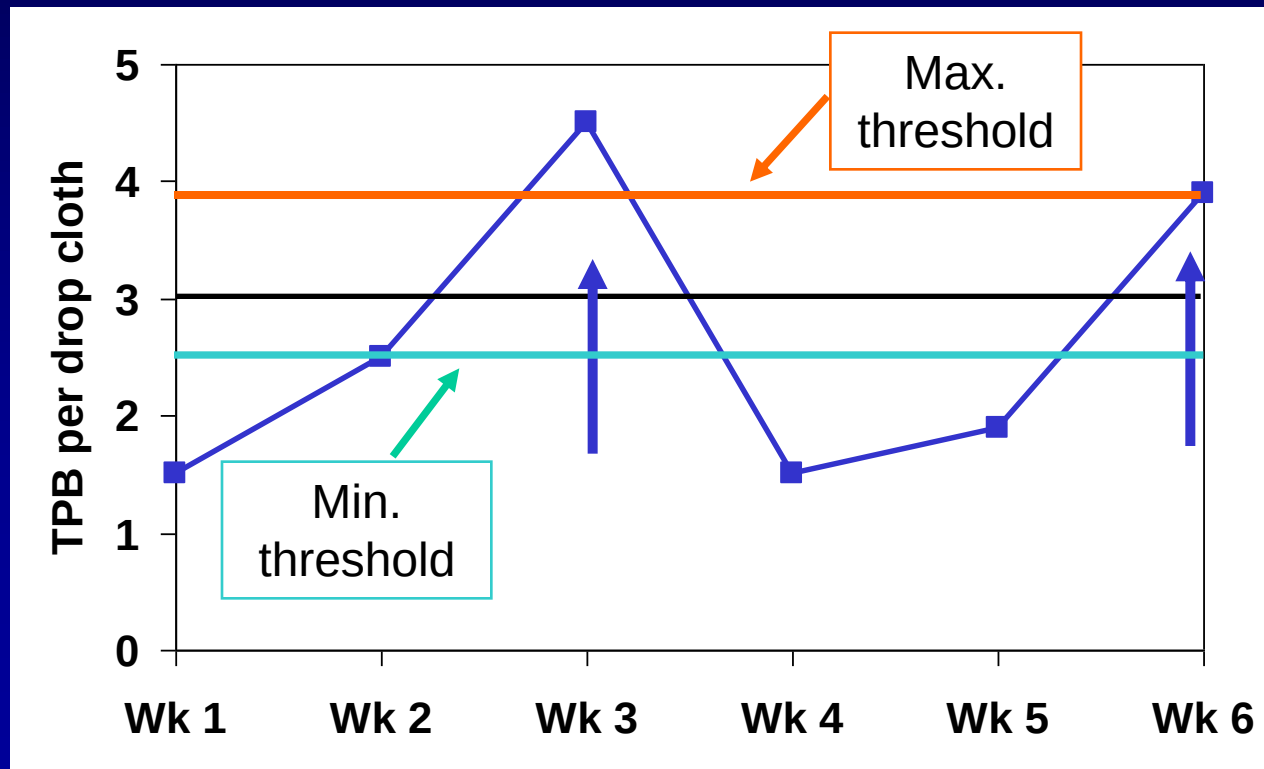
Alternate Threshold Measurements

- Highest threshold still sprayed the same
 - Set to pre-determined threshold if never sprayed

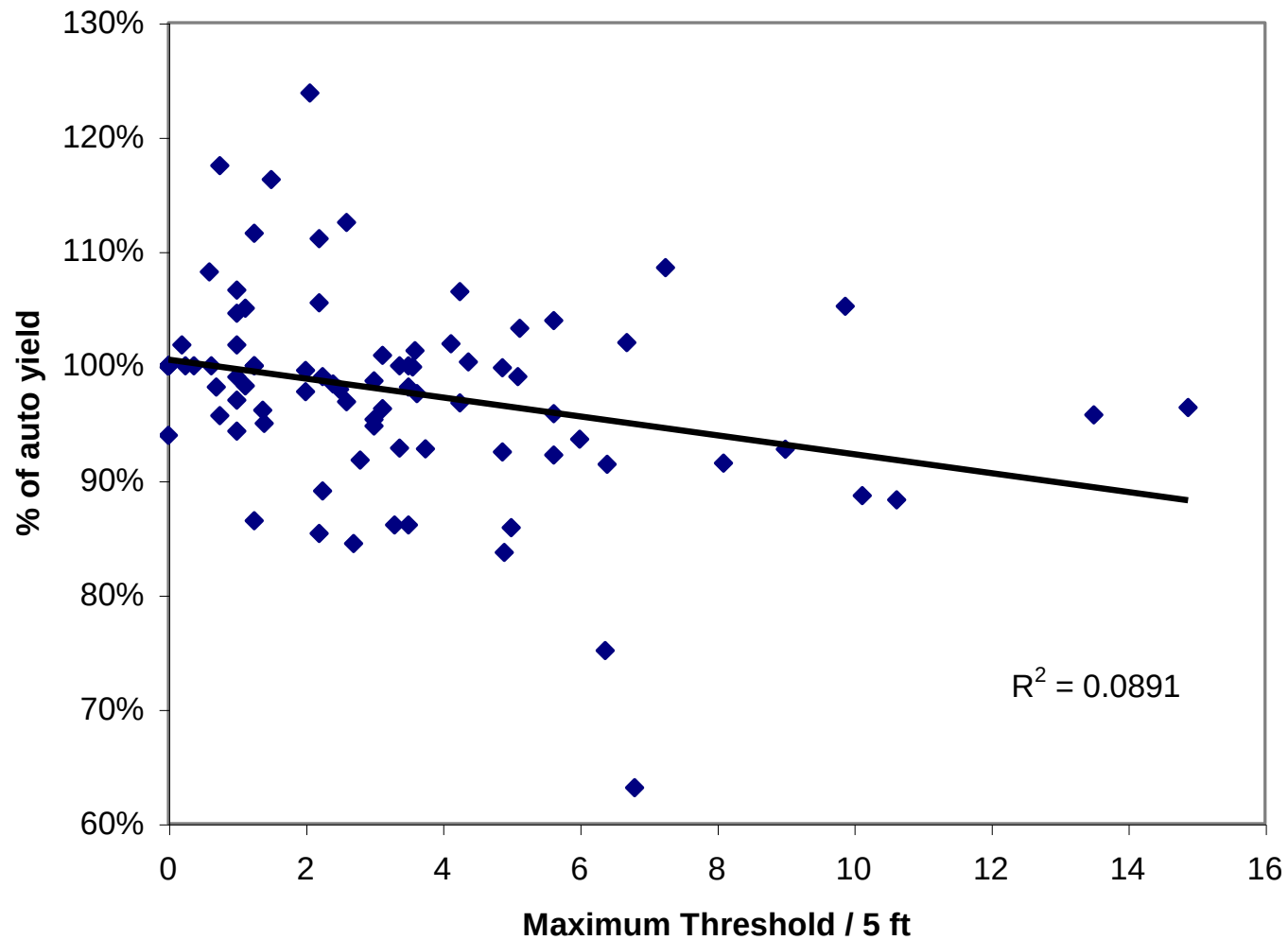


Alternate Threshold Measurements

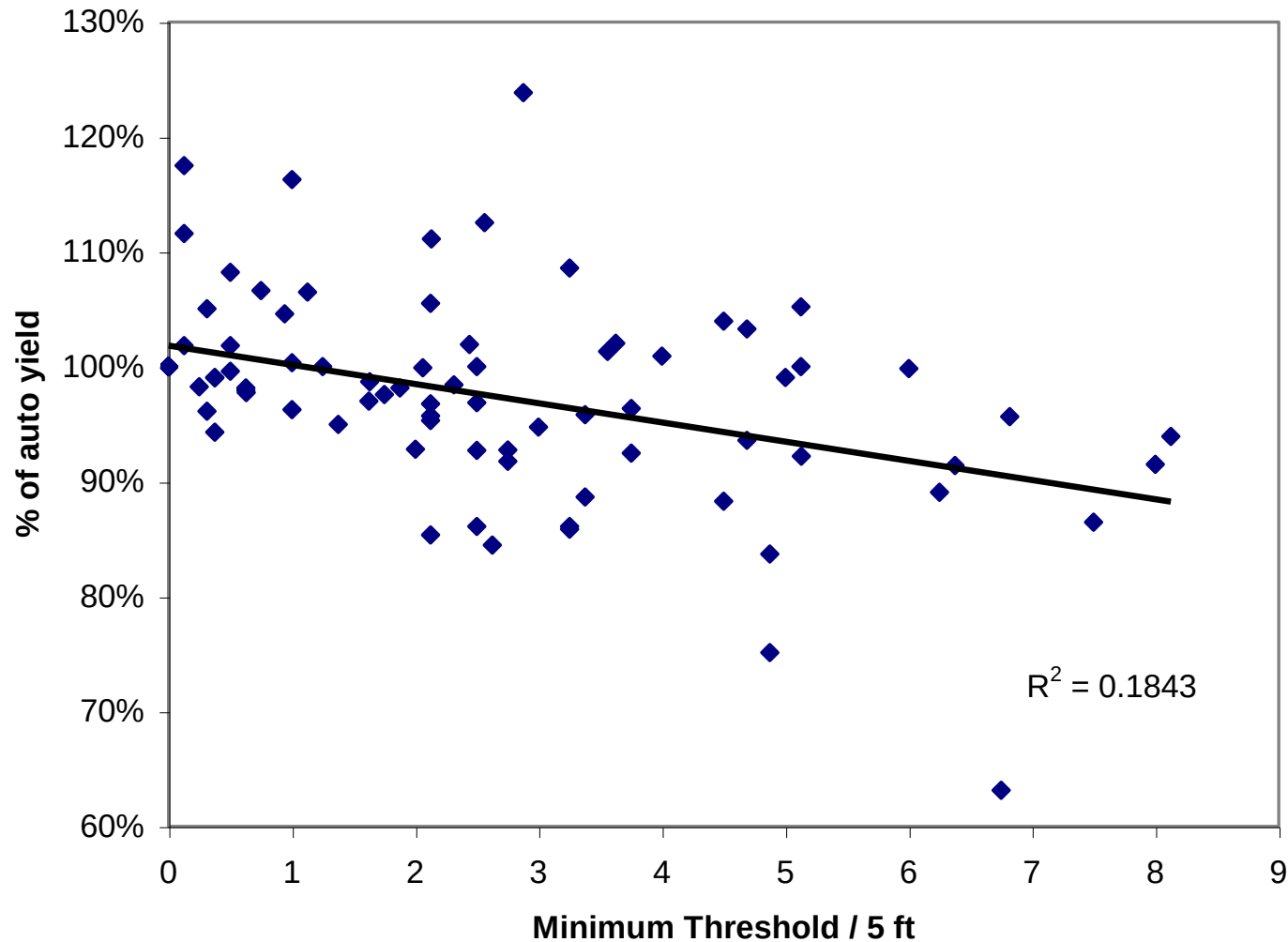
- Highest threshold still sprayed the same
 - Set to pre-determined threshold if never sprayed
- Lowest threshold still sprayed the same
 - Set to just below highest density sprayed if always sprayed



Mid-Season TPB Maximum Thresholds



Mid-Season TPB Minimum Thresholds



TPB Yield Impacts

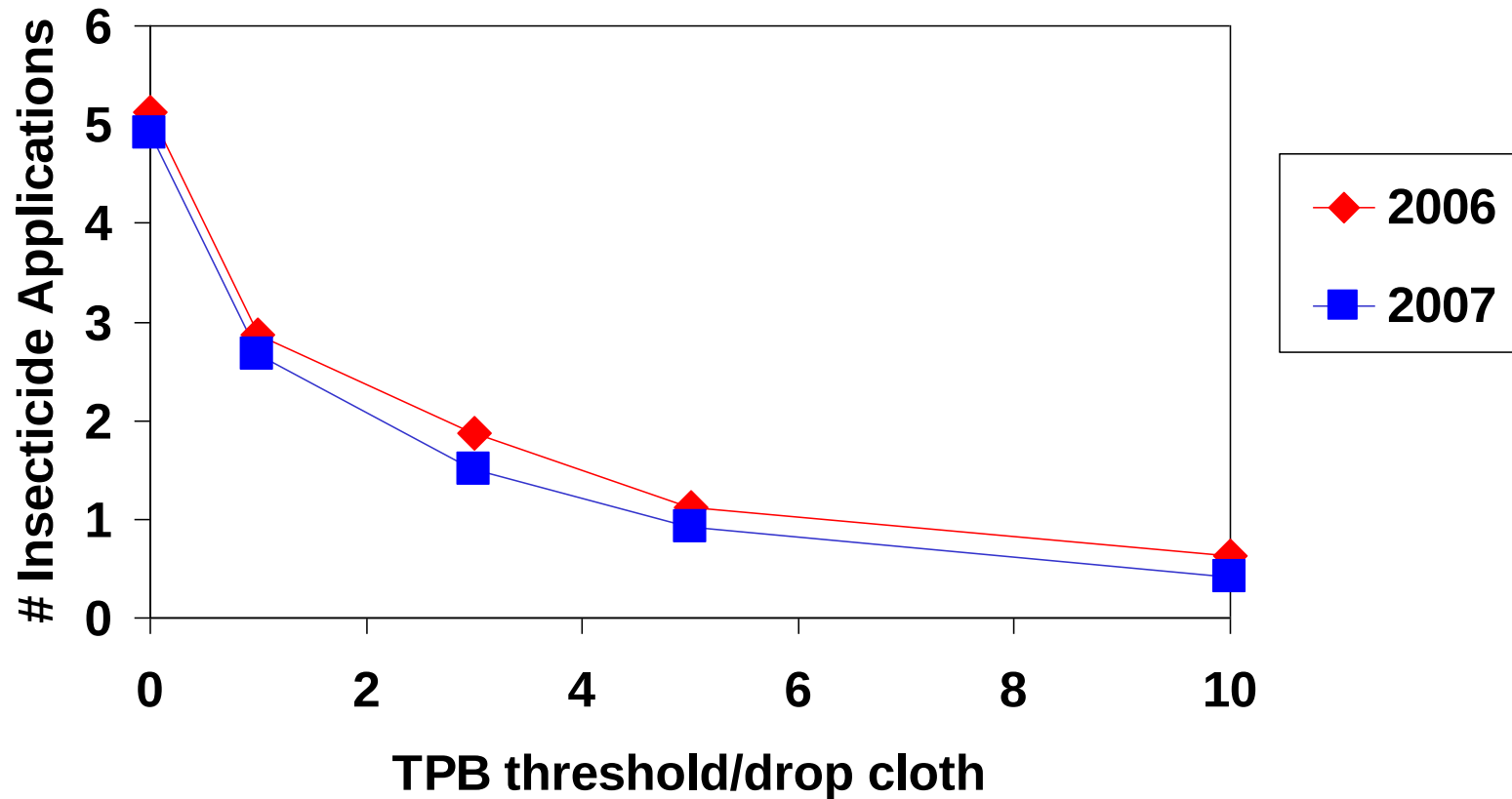
Yield change for each increase in the TPB
spray threshold

	Lint loss (lb/ac)		Lint Loss (% yield)	
	Min. Threshold	Max. Threshold	Min. Threshold	Max. Threshold
2006	-19.5*	-11.6	-1.6*	-0.9
2007	-21.3*	-11.5*	-1.8*	-1.0*
Overall	-20.9*	-11.6*	-1.7*	-1.0*

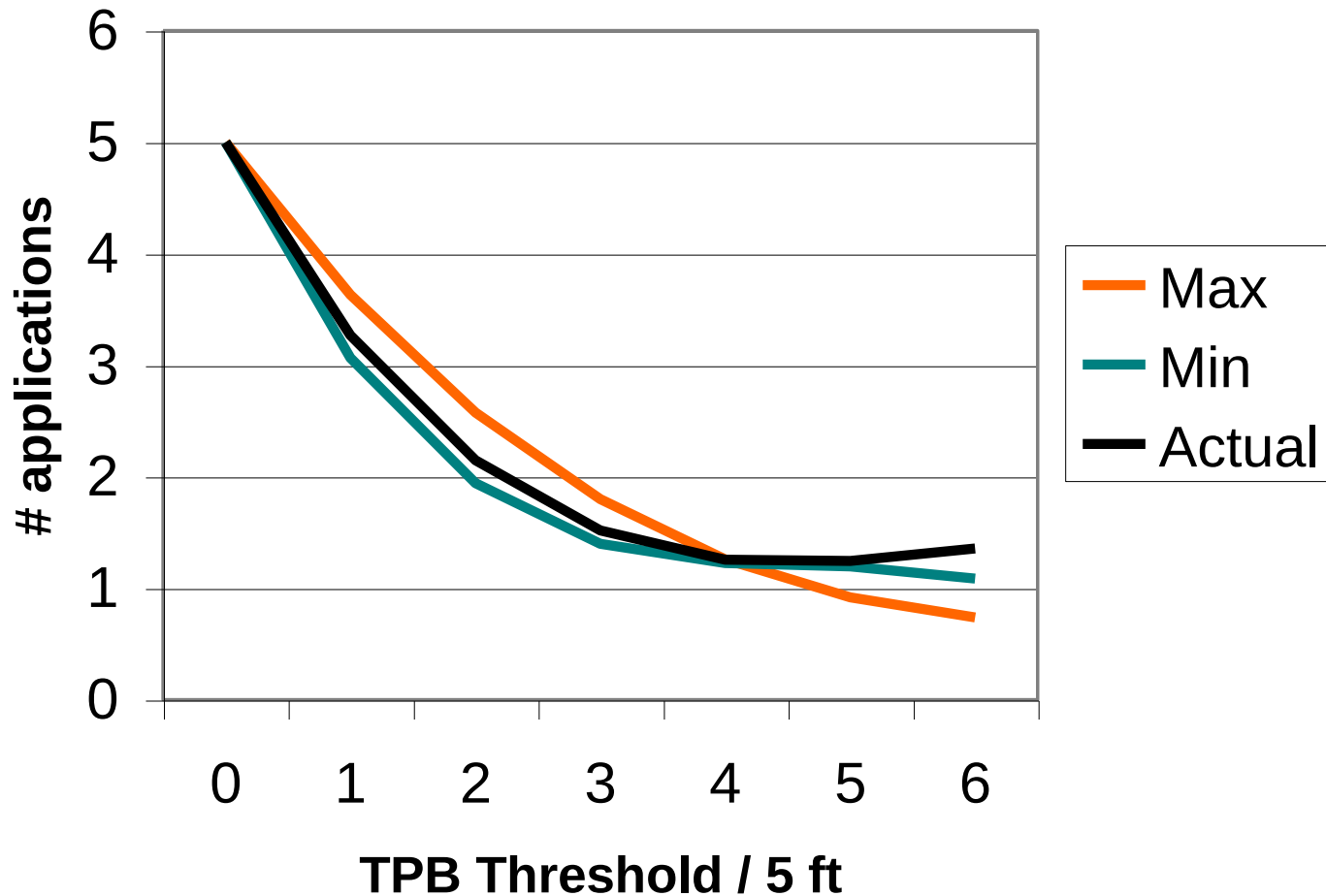
* $P < 0.05$

Lint yield ranged from 630 to 1514 lb/ac in automatic treatment

Mid-Season TPB Insecticide Applications



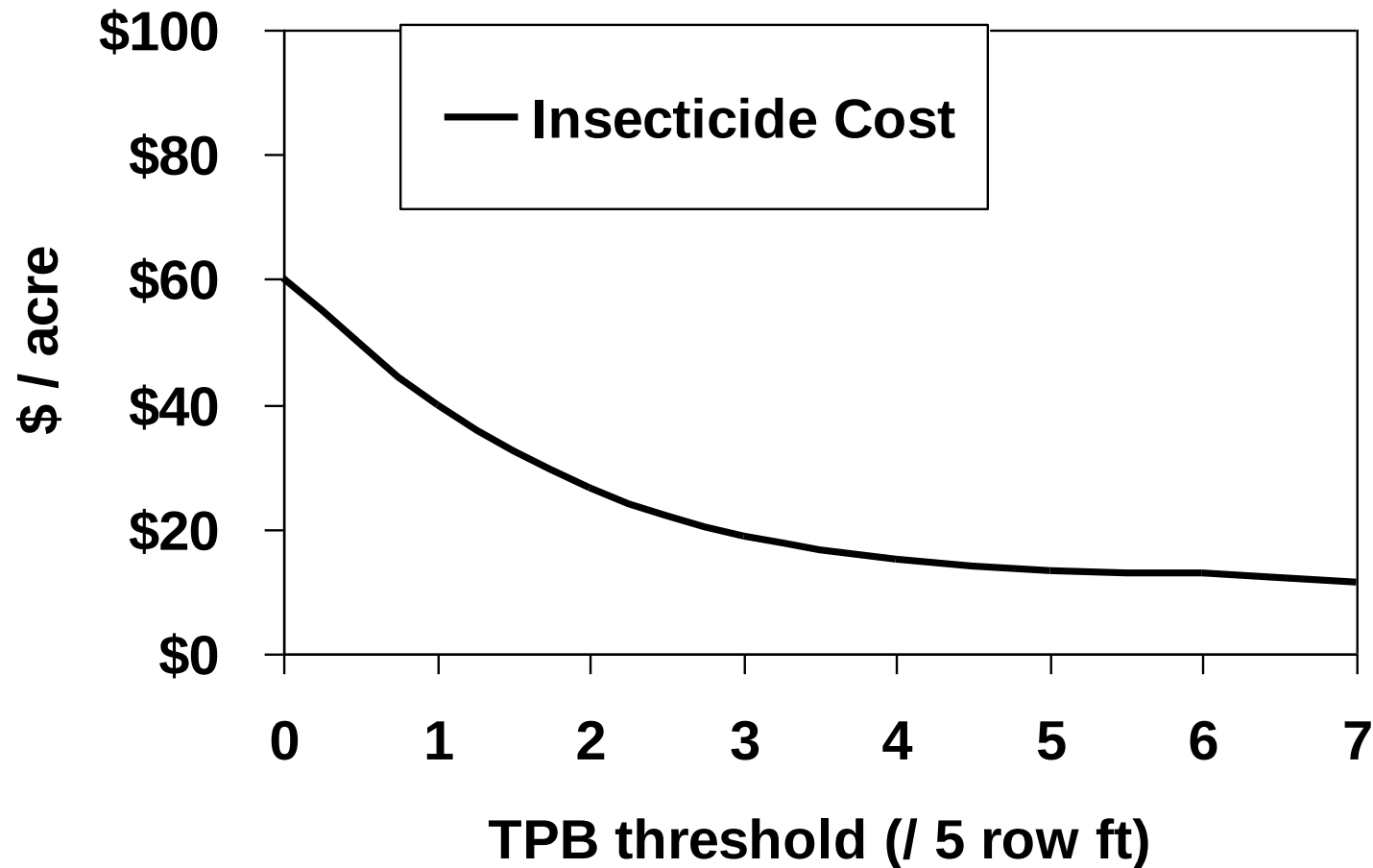
Mid-Season TPB Insecticide Applications



Mid-Season TPB Costs

Current Economics

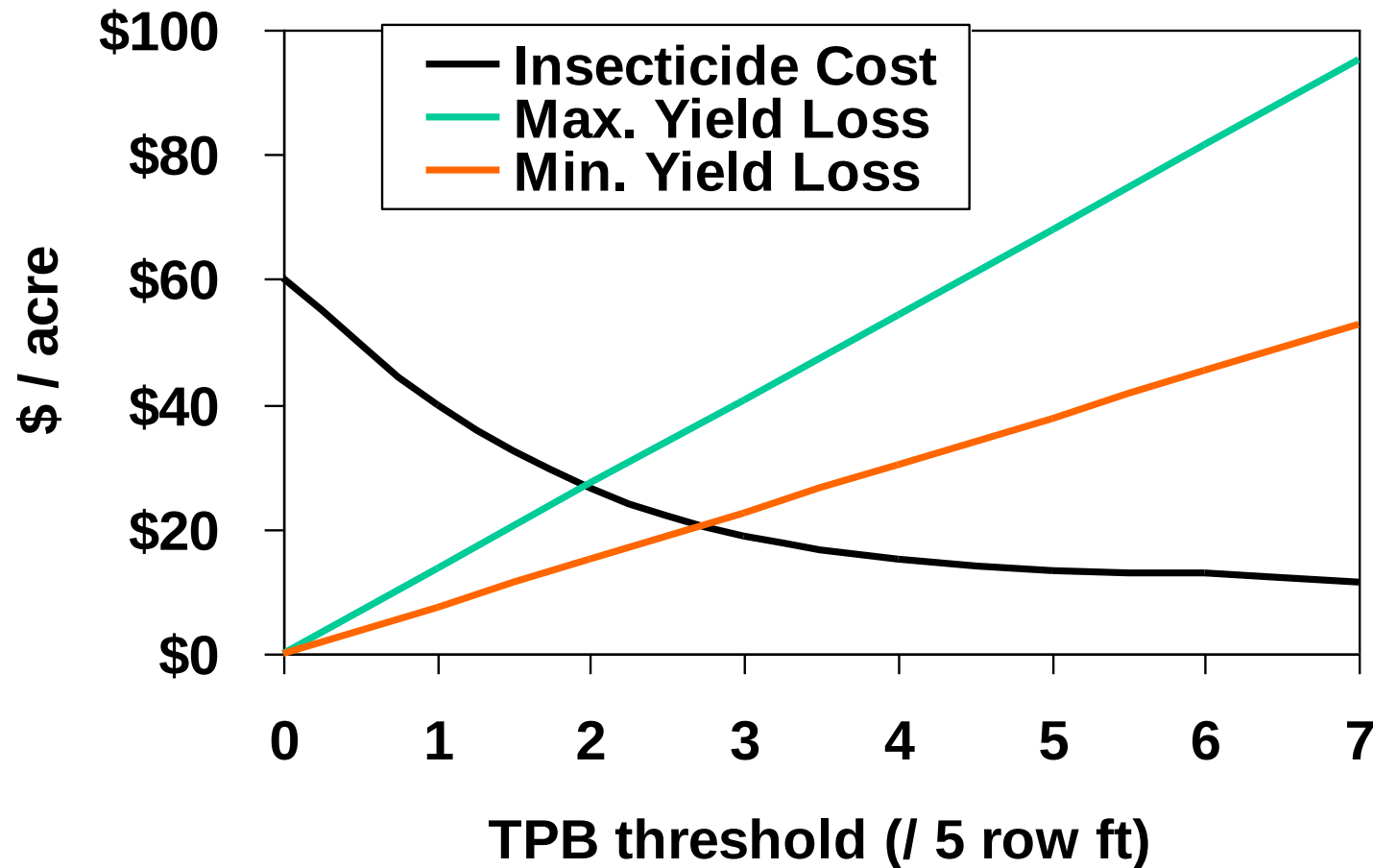
insecticide = \$12/application



Mid-Season TPB Costs

Current Economics

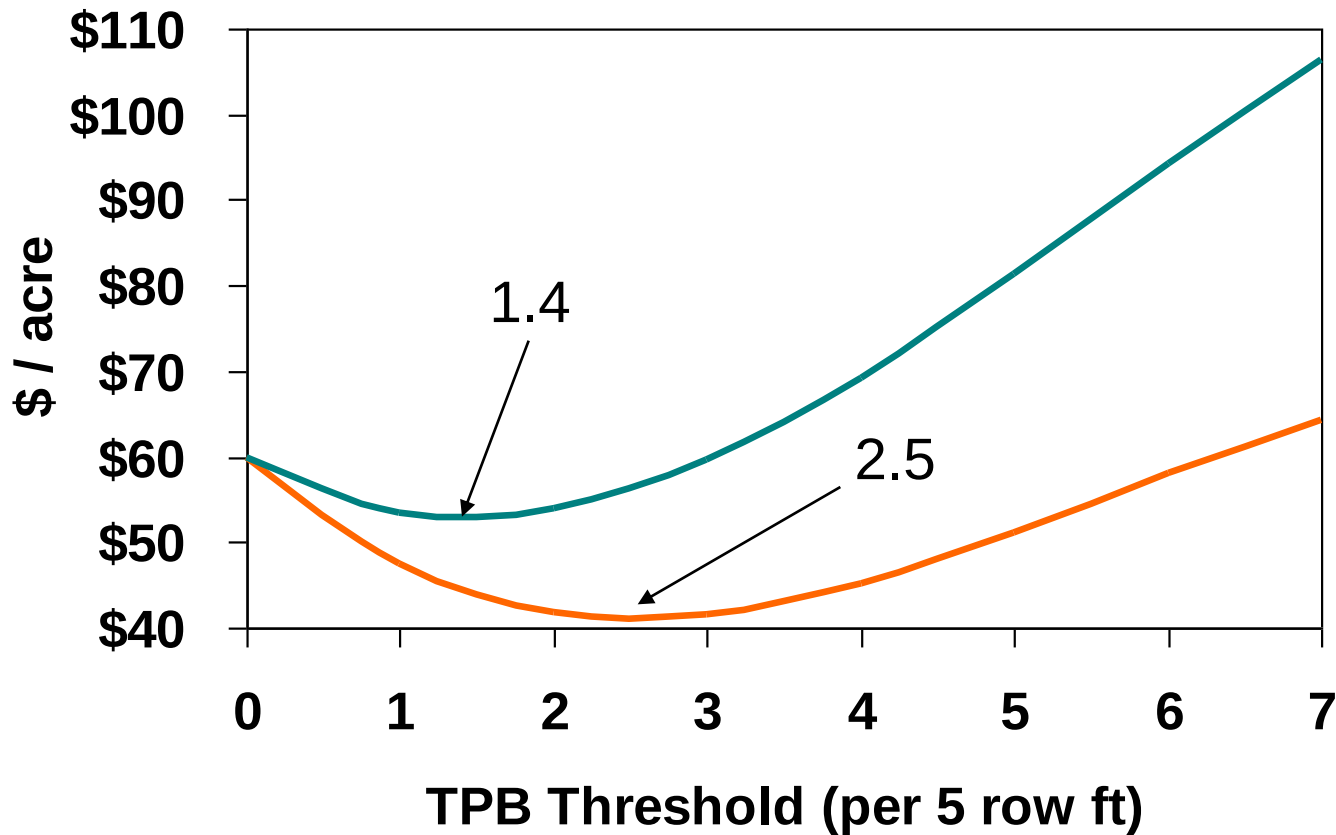
insecticide = \$12/application, lint = \$0.65/lb



Mid-Season Total TPB Cost

Current Economics

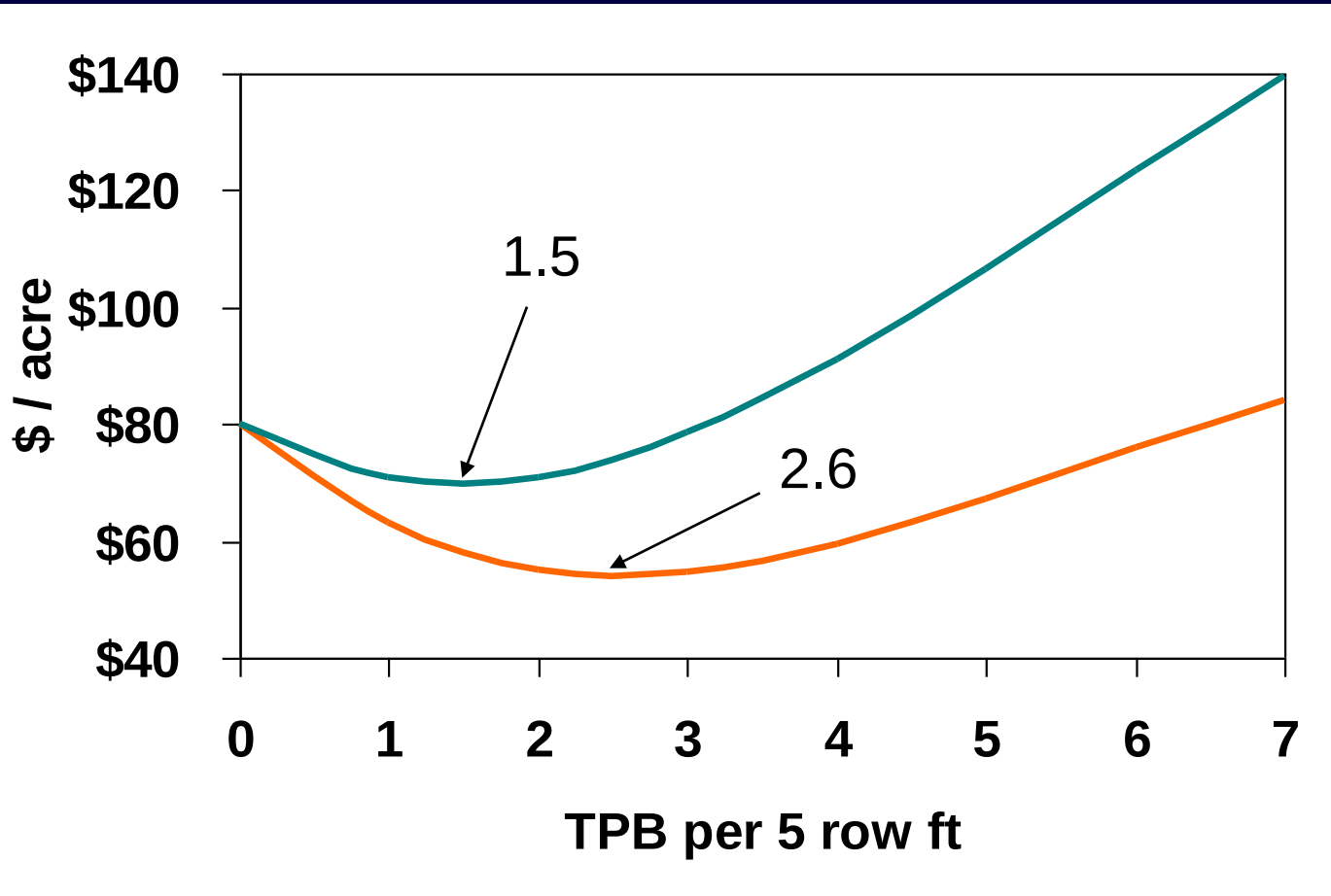
insecticide = \$12/application, lint = \$0.65/lb



Mid-Season Total TPB Cost

Higher Input Costs

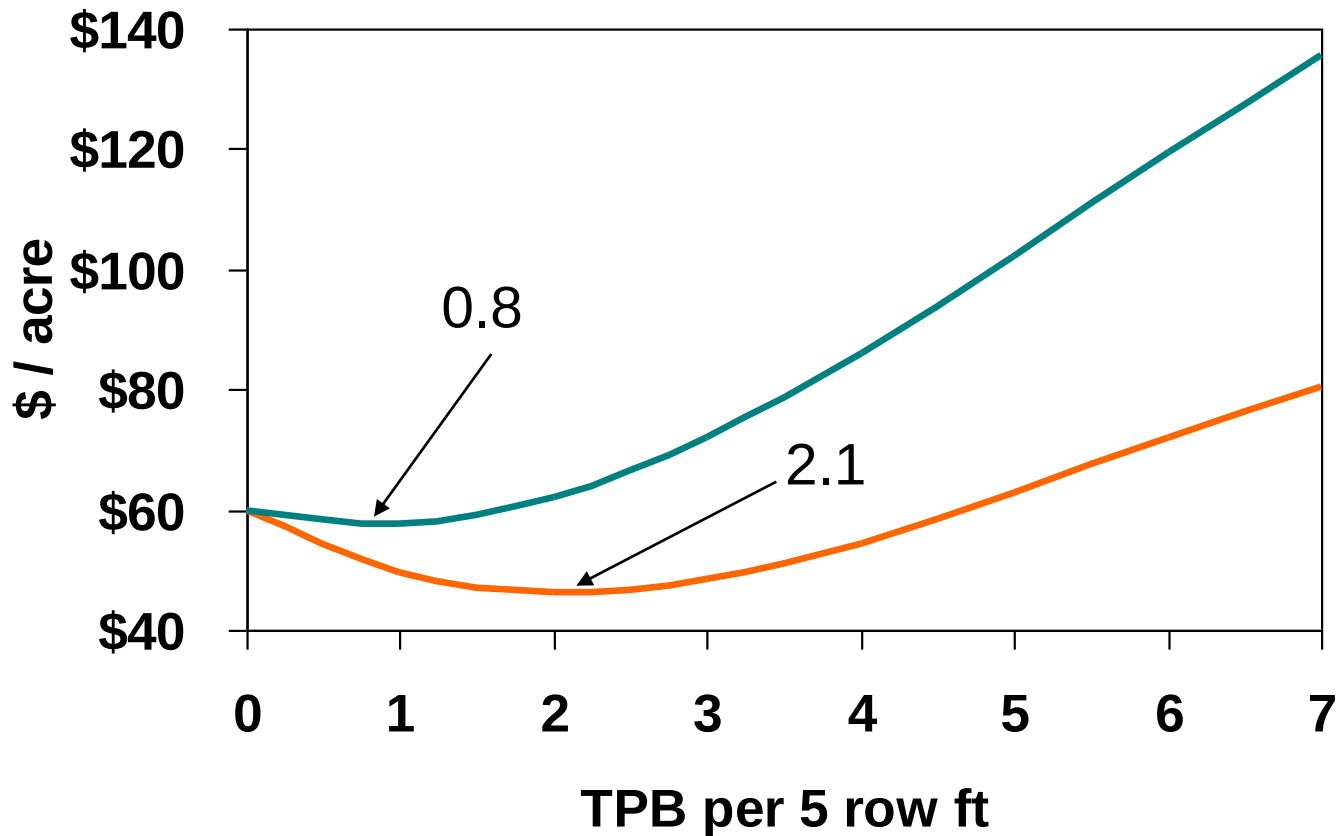
insecticide = \$16/application, lint = \$0.65/lb



Mid-Season Total TPB Cost

Higher Cotton Price

insecticide = \$12/application, lint = \$0.85/lb



Bloom Threshold Conclusions

- Lose between 12 and 20 lb lint/ac for each increase in threshold of 1 TPB/drop cloth
- Number of applications per season altered greatly by changing the threshold
- Threshold of 1.5-2.5 TPB per drop cloth (5 row ft) economically justified in 2006 and 2007
- Insecticide costs do NOT include indirect costs of insecticides
- Threshold affected by scouting frequency and insecticide efficacy

Acknowledgements



Cooperating Growers

