IMPACT OF FOLIAR OVERSPRAYS ON DUAL-GENE COTTONS

COTTON INCORPORATED'S
2012 - CROP MANAGEMENT SEMINAR AND WORKSHOPS

TUNICA, MS
NOVEMBER 7-9, 2012

David Kerns – LA

Gus Lorenz – AR, Scott Stewart – TN, Angus Catchot, Jeff Gore and Don Cook – MS, Ryan Jackson – USDA-ARS, Stephen Biles – TX, Roy Parker – TX, Sebe Brown - LA

GENERAL BT TECHNOLOGY COMPARISON

Pest	Bollgard (Cry1Ac)	Bollgard II (Cry1Ac + Cry2Ab)	Widestrike (Cry1Ac + Cry1F)	TwinLink (Cry1Ab + Cry2Ac)
	1996	2003	2005	2013
Bollworm	4	2.5	3	2.5
Tobacco Bubworm	1	1	1	1
Pink Bollworm	1	1	1	1
Beet Armyworm	2	2	2	2
Fall Armyworm	2.5	2	1	2
Soybean Looper	1	1	1	1
	1 = Complete control	2 = Rarely requires oversprays	3 = Sometimes requires oversprays	4 = Frequently requires oversprays

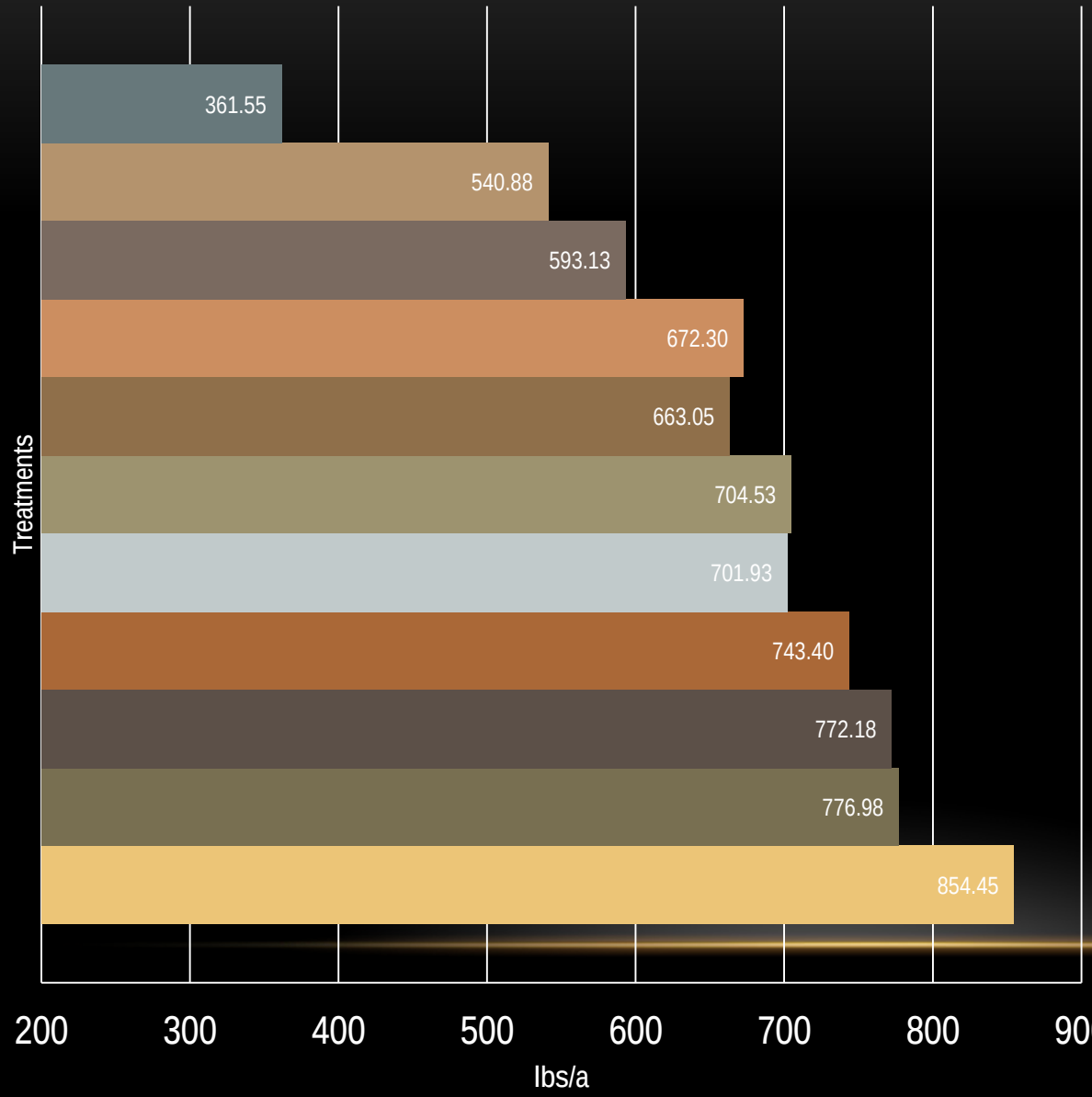
SPRAYING DUAL GENE COTTON FOR WORMS

- Current technologies are not bullet proof
- Under what conditions
  - Bt technology in question
    - BGII vs WS
  - Threshold/pressure
- Insecticide choice
  - Efficacy/resistance
  - Other considerations
    - Other pests
    - Yield enhancement

MID-SOUTH THRESHOLDS

	Non-Bt	Bt
Louisiana	5 worms per 100 plants plus eggs present	Treat when 2-3% live larvae in fruit or when 10% plant terminals infested
Mississippi	(small larvae) Before bloom and cutout: 8 larvae/100 plants, After bloom: 4 larvae per 100 plants	(at least 1/8 inch long larvae) Before bloom: 8 larvae/100 plants or 5% damaged fruit, After bloom: 4 larvae per 100 plants or 2% damaged bolls and larvae are present
Tennessee	Before bloom and cutout: 8 small larvae/100 plants or square retention of < 80%, After bloom: 4 small larvae per 100 plants or 5% damaged squares	(at least 1/8 inch long larvae) Before bloom: 8 larvae/100 plants or 5% damaged fruit, After bloom: 4 larvae per 100 plants or 2% damaged bolls and larvae are present
Arkansas	1 larvae (< 0.25 inch) per 2 row ft, or 1 per 4 row ft for larger larvae, or 1 damaged square per row ft plus eggs and small larvae, time to egg hatch	1 per 4 row ft larvae (≥ 0.25 inch)

Yield Increase Compared to UTC Conventional Cotton, 2011

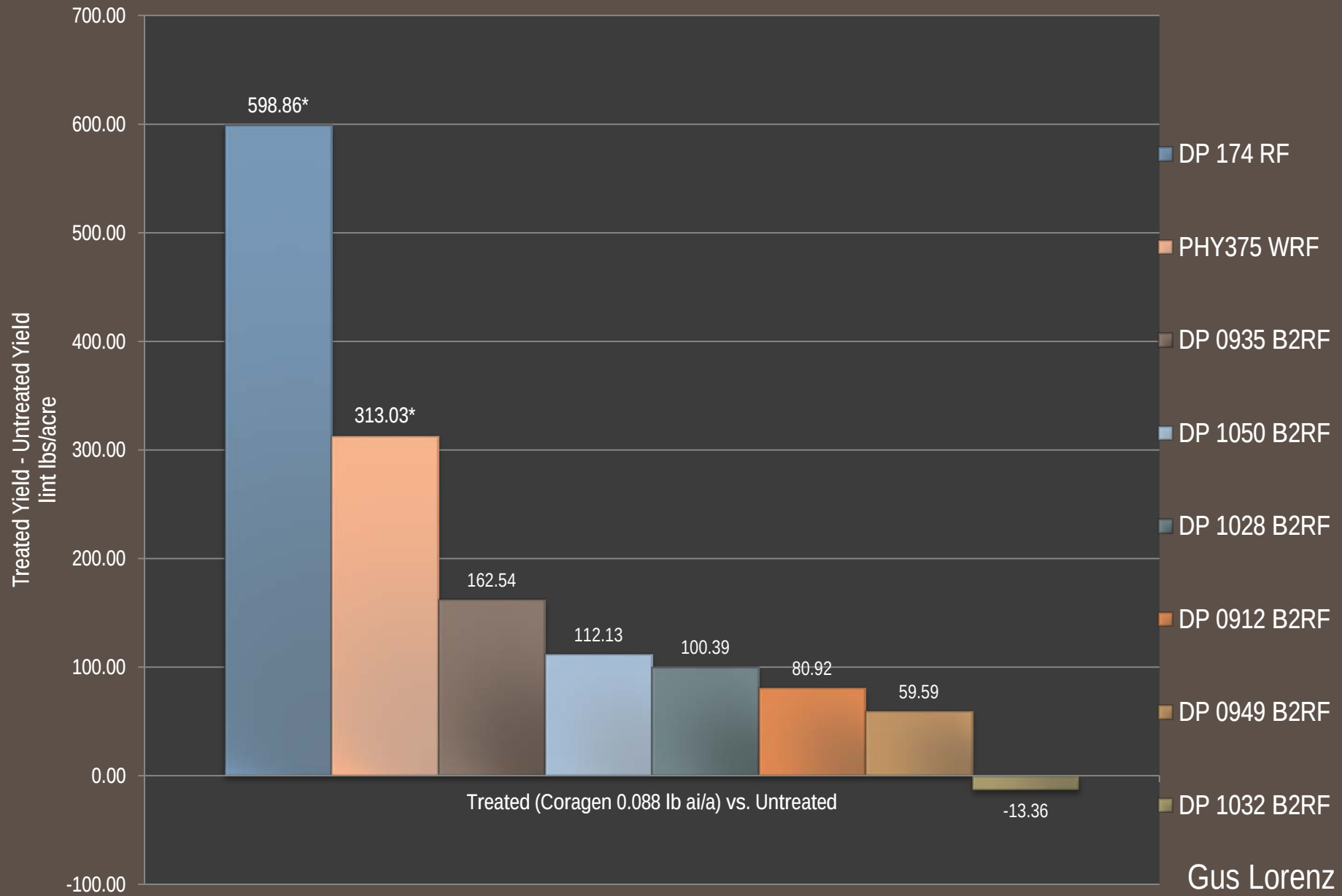


- Cobalt Adv 25 fl oz/a
- HGW86 6.75 oz/a
- HGW86 13.5 oz/a
- HGW86 10.1 oz/a
- Brigade 6.4 fl oz/a
- Belt 2 fl oz/a
- Belt 1.5 fl oz/a+ Brigade 6.4 fl oz/a
- Beseige 9 fl oz/a
- Belt 3 fl oz/a
- Beseige 12.5 fl oz/a
- Prevathon 20 oz/a

Gus Lorenz

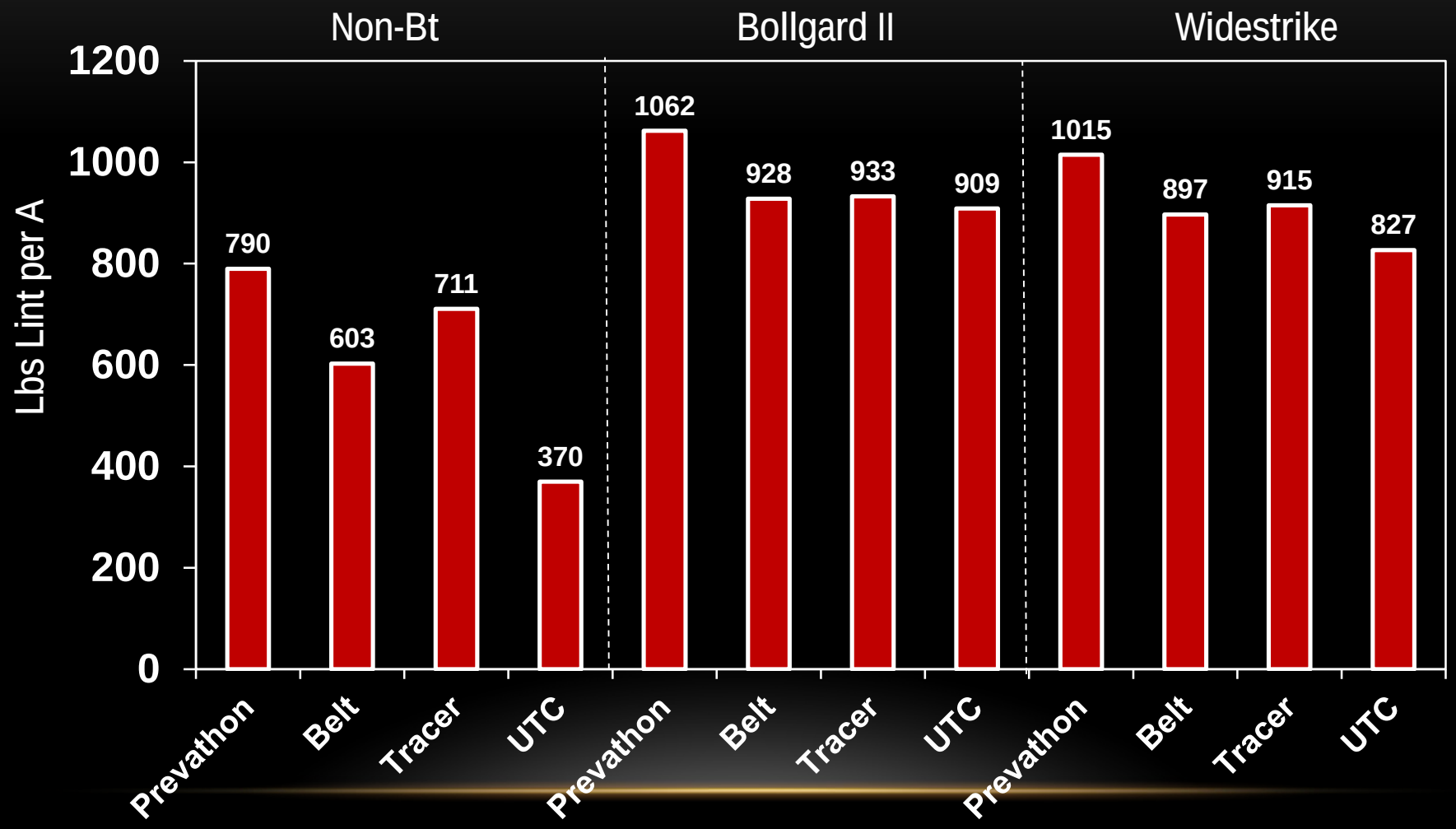
DUAL-GENE COTTON OVER SPRAYS
HIGH BOLLWORM PRESSURE

High Pressure 2010
Yield Difference Comparison
Treated (Coragen 0.088lb ai/a) vs. Untreated



Gus Lorenz

MID-SOUTH BT OVERSPRAY – YIELD



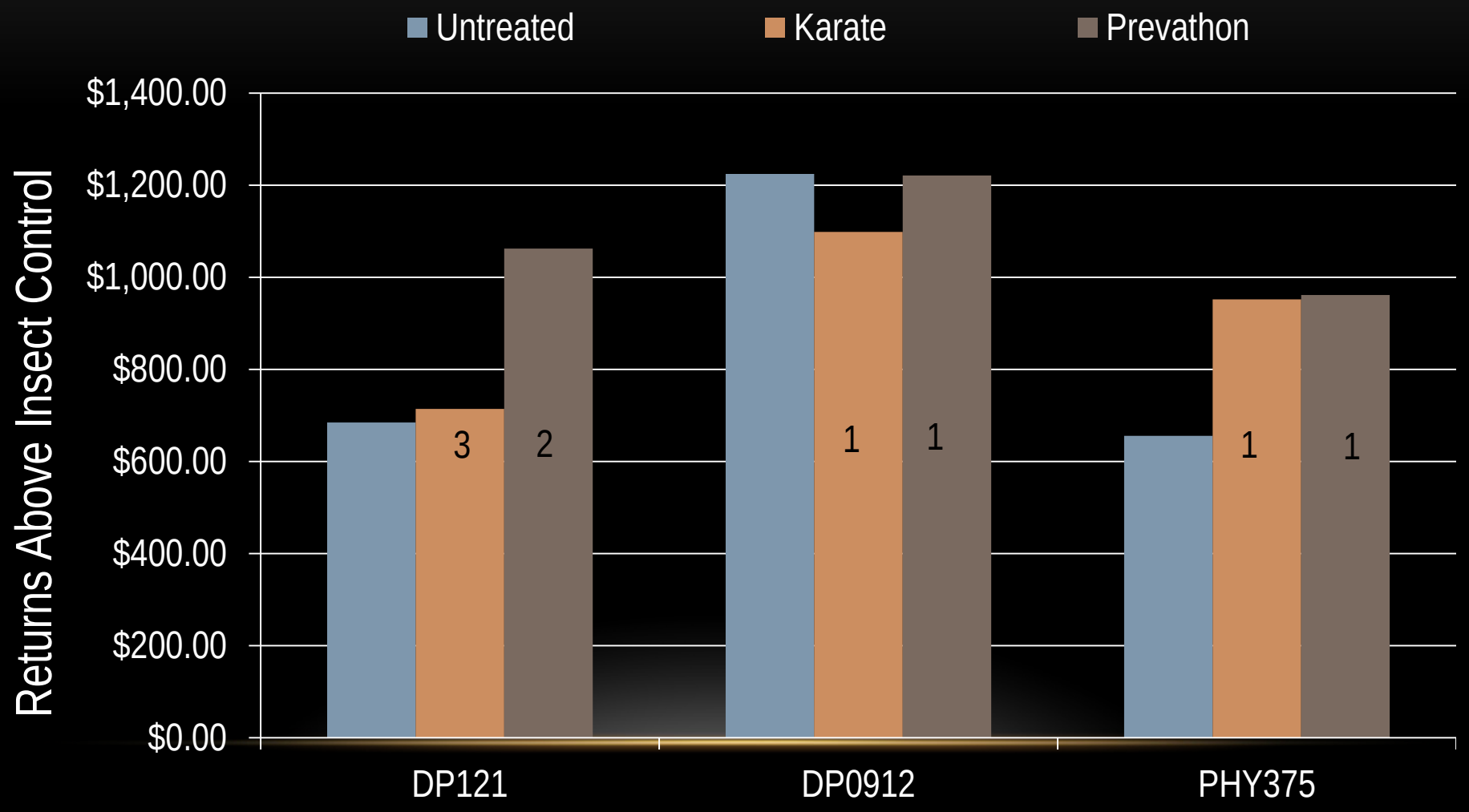
MISSISSIPPI STATE UNIVERSITY

Jeff Gore

Off-Station Value-Added Trait Study – Tchula

Insecticide Applications Triggered on Larval Thresholds Individually

2012

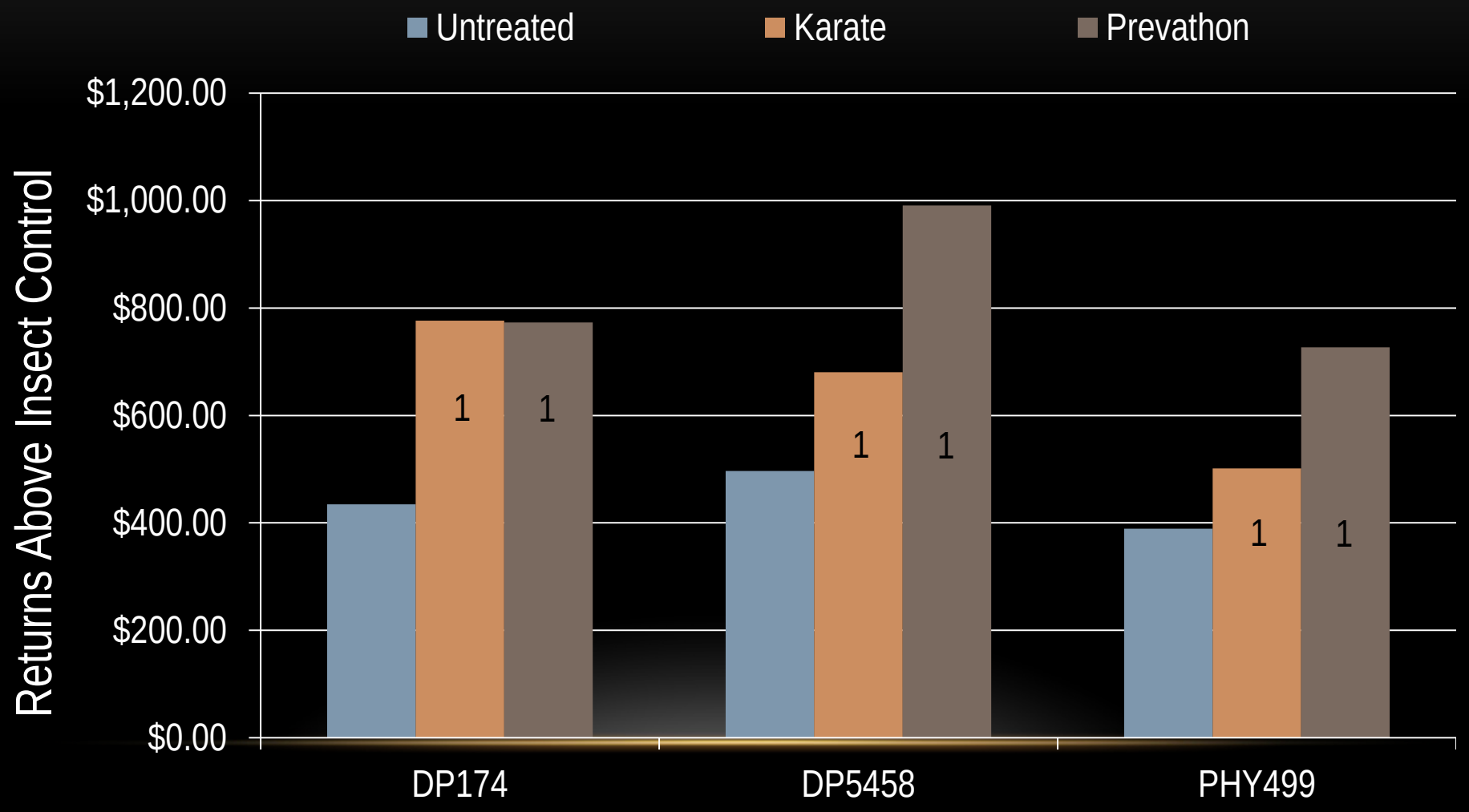


Ryan Jackson

Off-Station Value-Added Trait Study – Twin Bayou

Insecticide Applications Triggered on Larval Thresholds Individually

2012

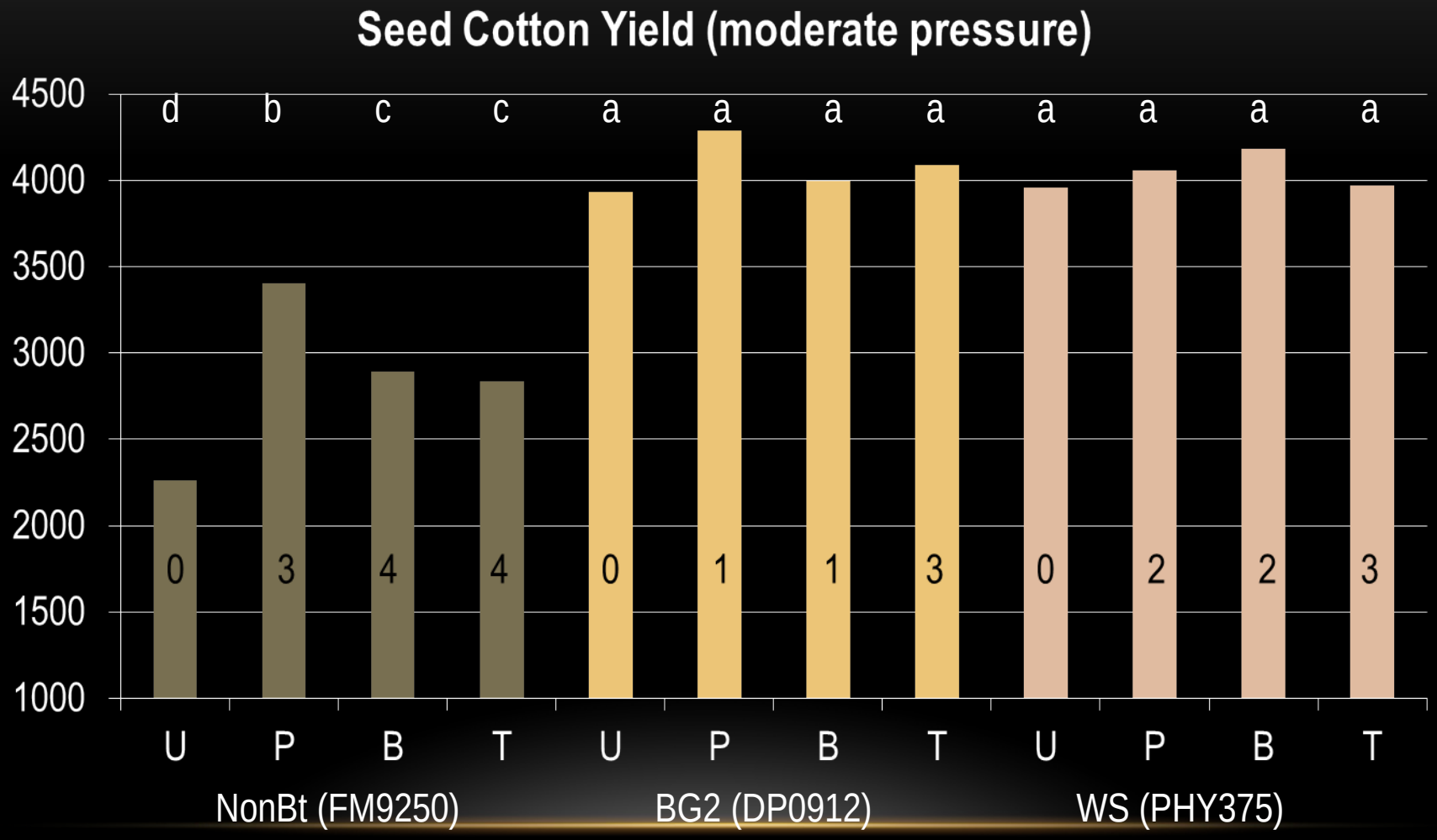


Ryan Jackson

DUAL-GENE COTTON OVER SPRAYS

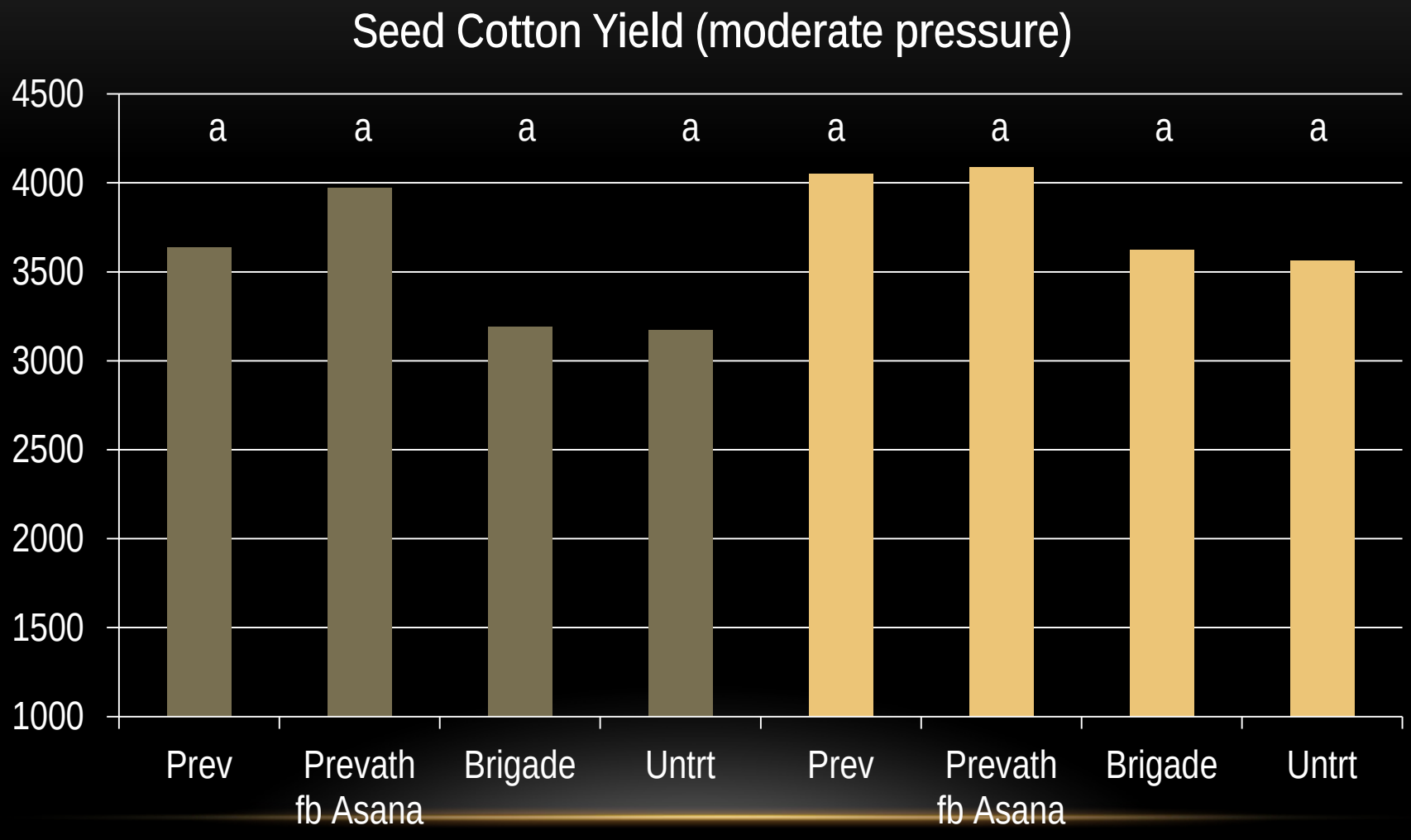
MODERATE BOLLWORM PRESSURE

TECHNOLOGY X FOLIAR INSECTICIDE TRIAL 1 (2012)



Scott Stewart

TECHNOLOGY X FOLIAR INSECTICIDE TRIAL 2 (2012)



Scott Stewart

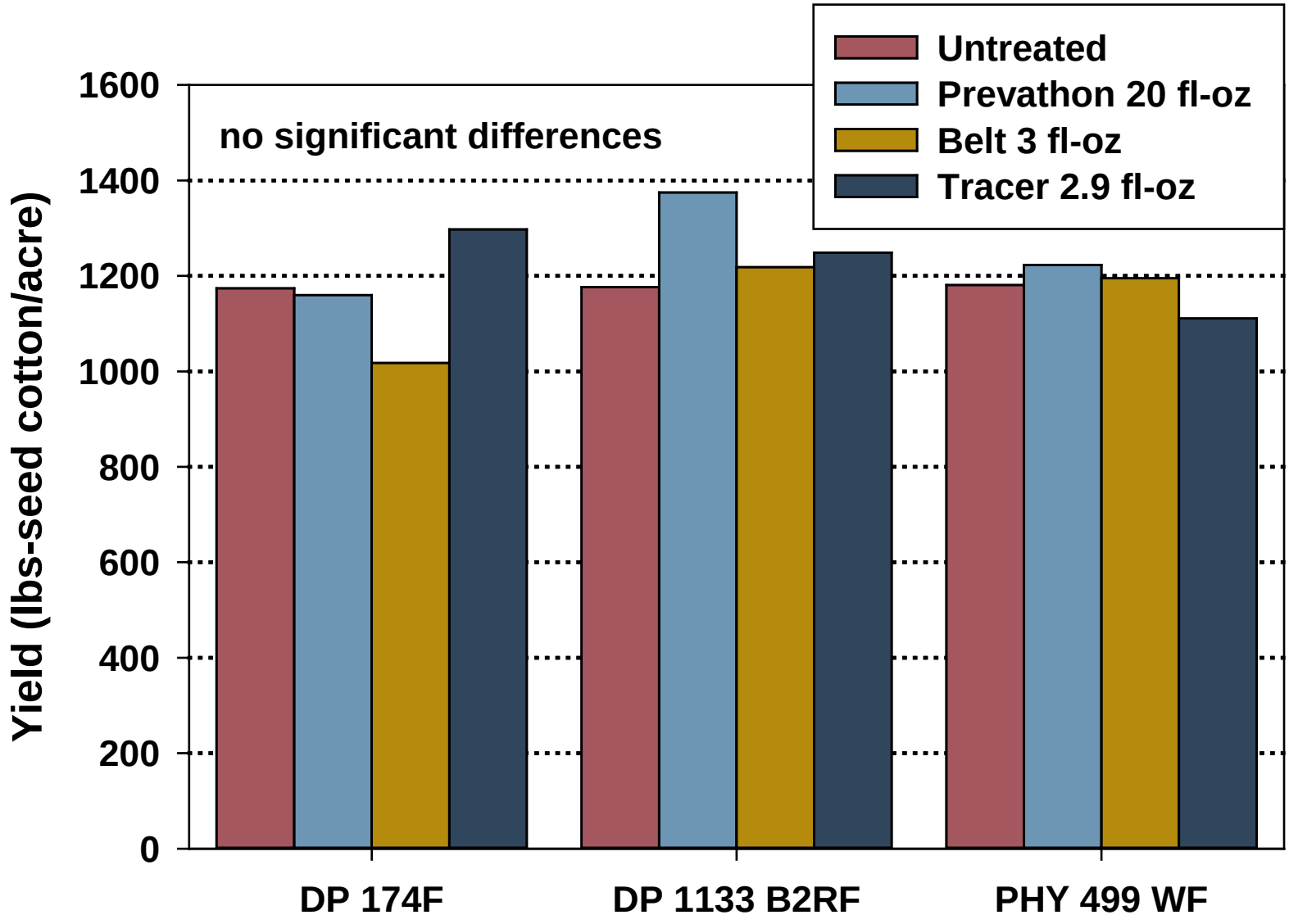
DOES PREVATHON PROMOTE YIELD VIA SUPERIOR WORM CONTROL, OR THROUGH SOME OTHER FACTOR?

DUAL-GENE COTTON OVER SPRAYS

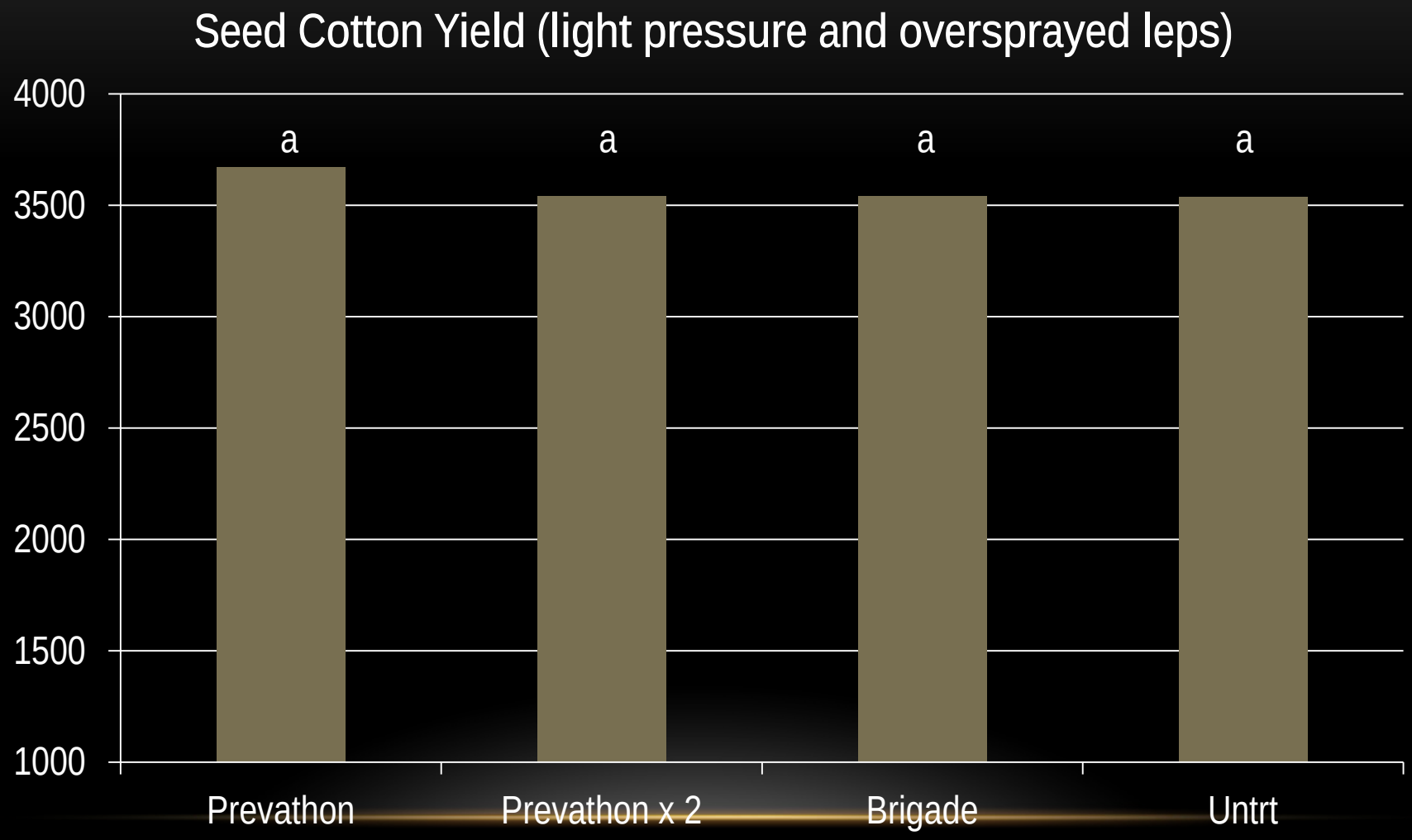
LOW BOLLWORM PRESSURE

TECHNOLOGY X INSECTICIDE OVERSPRAY

LOW BOLLWORM PRESSURE – WINNSBORO, LA



TECHNOLOGY X FOLIAR INSECTICIDE TRIAL 3 (2012)



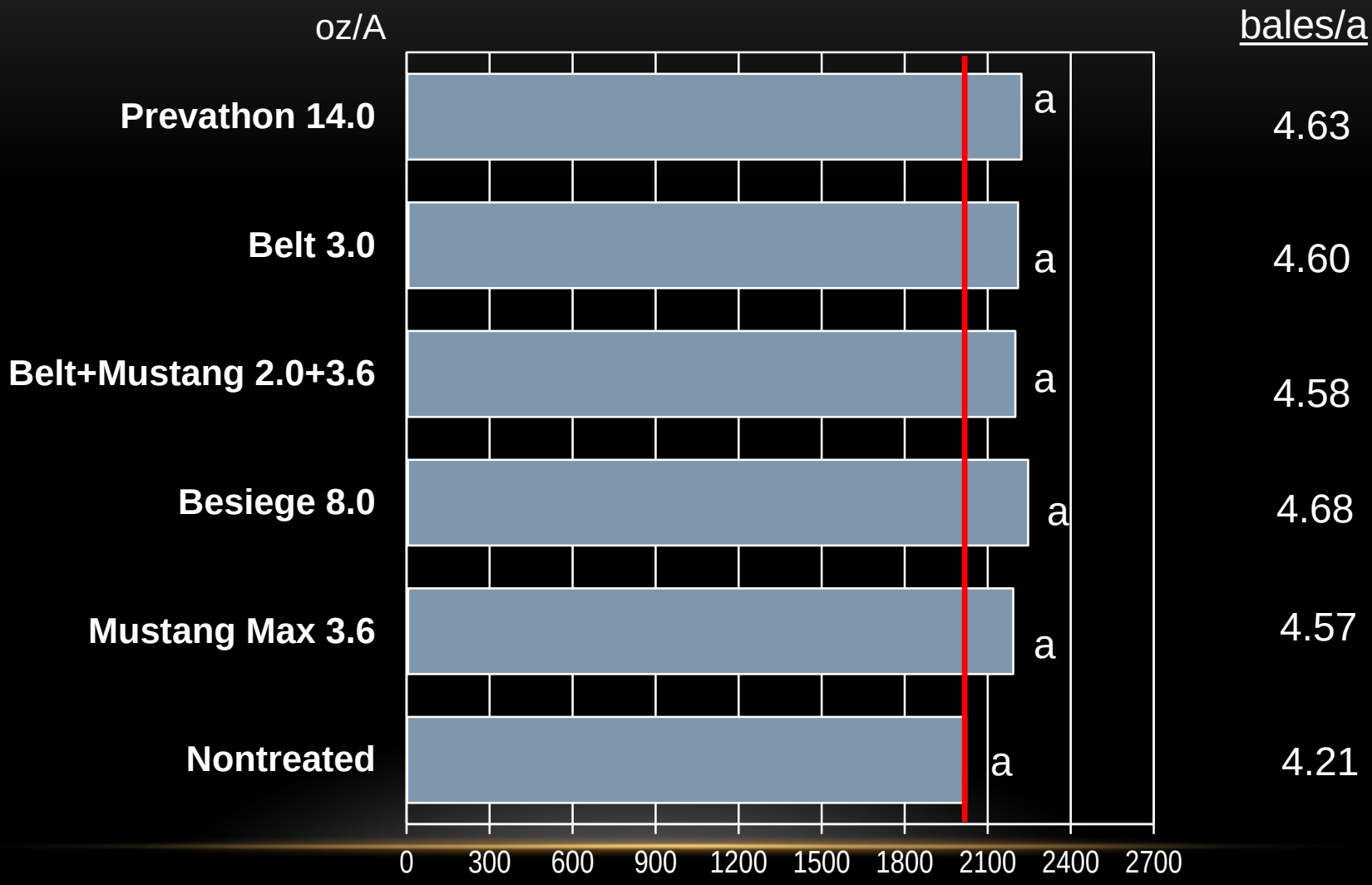
WS (PHY375)

Scott Stewart

Bt Cotton Overspray Test
4.545 bales/acre avg.
2012

Insecticide Overspray of PHY367 WRF

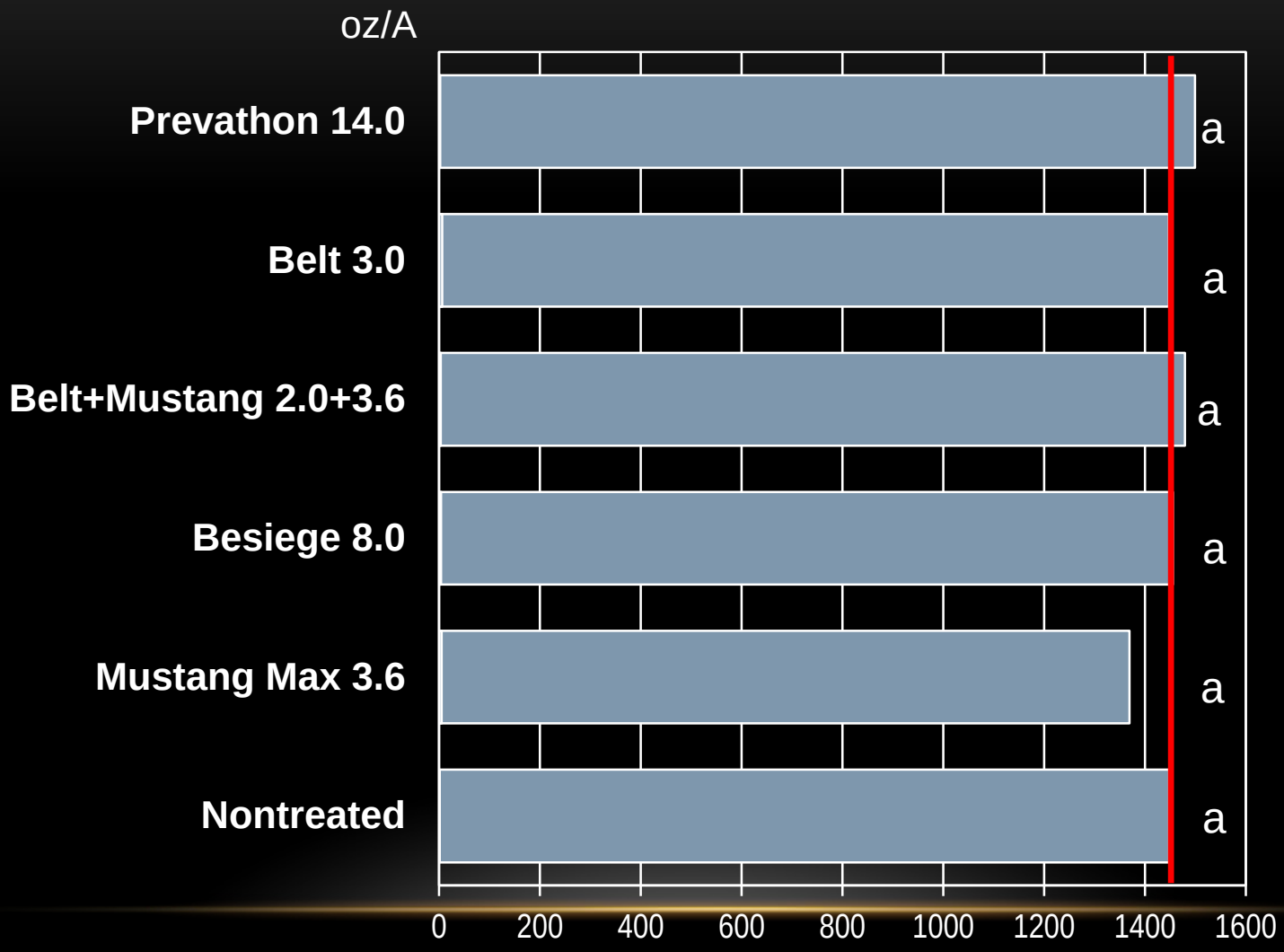
Yield lb lint/acre



Roy Parker - TX

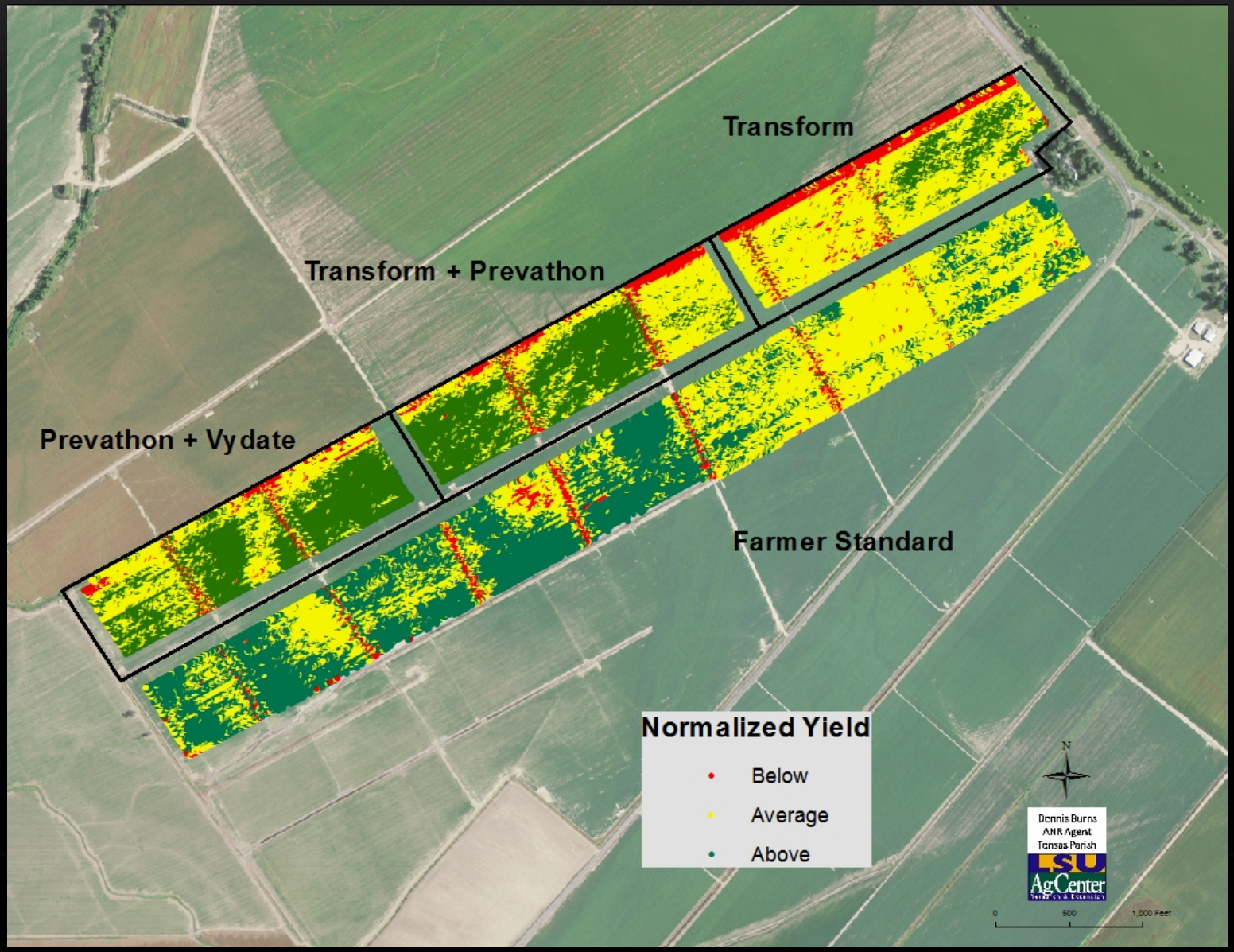
Insecticide Overspray of DP 1044 B2RF

Yield lb lint/acre



Stephen Biles - TX

PERCEPTIONS OF INCREASED YIELD



Sebe Brown – LSU AgCenter

SUMMARY

- The benefit of overspraying dual-gene Bt cotton for bollworms is dependent on the technology in question and the level of bollworm pressure
  - Bollgard II is more efficacious towards bollworms than Widestrike
    - Varietal differences also occur
  - Both Bollgard II and Widestrike can benefit from insecticide oversprays targeting bollworms when bollworm pressure in high
- Need research into adjusting action thresholds on dual gene cotton
  - Should we be basing worm sprays in Bt cotton on egg lays?
- Does Prevathon enhance cotton yield in the absence of bollworm pressure?
  - The current body of data suggests that it does not; that increases in yield appear to be due to insect control