



# The Ratoon Rice Crop: Agronomic and Fertility Research

---

Dustin Harrell



# Introduction

- SW Louisiana & Texas Gulf Coast climate
  - Long season
- *Ratoon* - 2<sup>nd</sup> crop
  - *Re-growth from 1<sup>st</sup> crop stubble*
  - “ratoon”, “stubble”, “second crop”
- *1/3 of 1<sup>st</sup> crop yield*
  - *Higher profit margin*
- *Lower input costs*
  - *Irrigation, harvest, drying*
  - *90 lb N/A*
  - *Other chemicals limited*





# General Recommendations

- Plant early
  - March 20
- Try to harvest no later than Aug. 15
- Avoid excessive N applications or stubble management
  - delays maturity



# When not to ratoon


- Remember 1<sup>st</sup> crop conditions effect ratoon crop
  - Disease and insect pressure
    - Death of tillers – prevent regrowth
- Red rice
  - Reduce yield and quality
  - may want to avoid ratoon crop to prevent germination of red rice seed
- Did you harvest under dry conditions?
  - muddy soil leads to heavy rutting



# What is the optimum N rate for the ratoon crop?

- 90 lb/A
- Reduce N rate after Aug. 15
  - 6 lbs/day???



- 
- A photograph of a cornfield with a semi-transparent text box overlaid on the left side. The text box contains two questions related to nitrogen fertilizer application. The background shows rows of corn plants, some with green leaves and some with dry, yellowed stalks, under a clear blue sky.
1. When is the best N fertilizer application timing?
  2. Can you split N applications to improve yields and NUE?



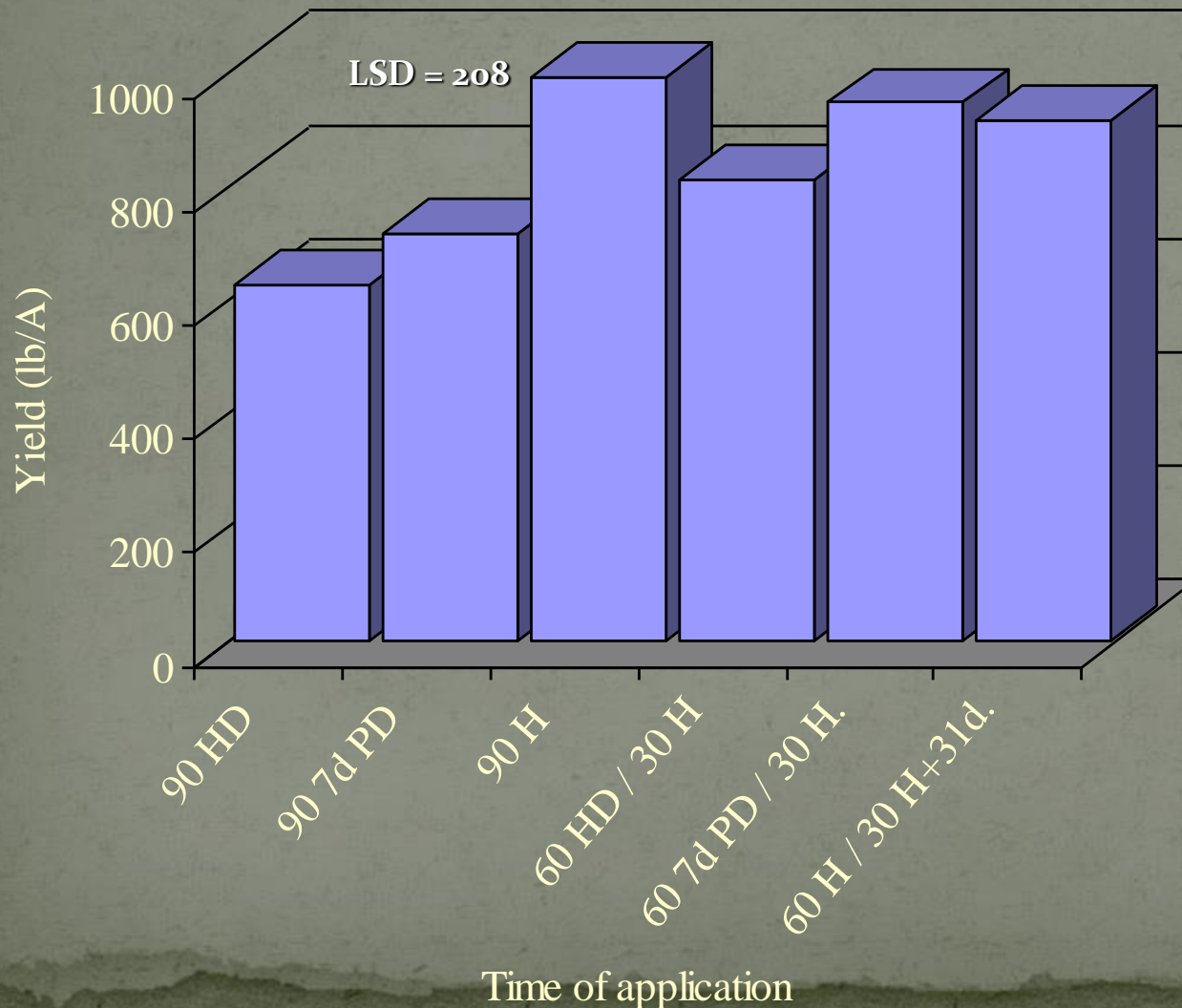
# N time of application study

## 90 lb/N A:

- 1) Heading (HD)
- 2) 7 day pre-drain (7d PD)
- 3) Harvest (90H)
- 4) 60 HD + 30H
- 5) 60 7d PD + 30 H
- 6) 60H + 30 @ 31dPH



# Effect of time of N application on Trenasse ratoon yield



Splitting ratoon N applications and early ratoon N applications do not provide any advantage over the one time harvest N application.



Do you need additional P for the ratoon Crop?

What is the optimum timing and rate?





# Nutrient Requirement by Rice

Nutrient	Removal, lb/bu
N	0.45
P <sub>2</sub> O <sub>5</sub>	0.28
K <sub>2</sub> O	0.18

Nutrient	Uptake, lb/bu
N	0.72
P <sub>2</sub> O <sub>5</sub>	0.39
K <sub>2</sub> O	1.08

So, a 200-bu (9,000 lb/A or 56 bbl) rice crop will take up 78 lb P<sub>2</sub>O<sub>5</sub>

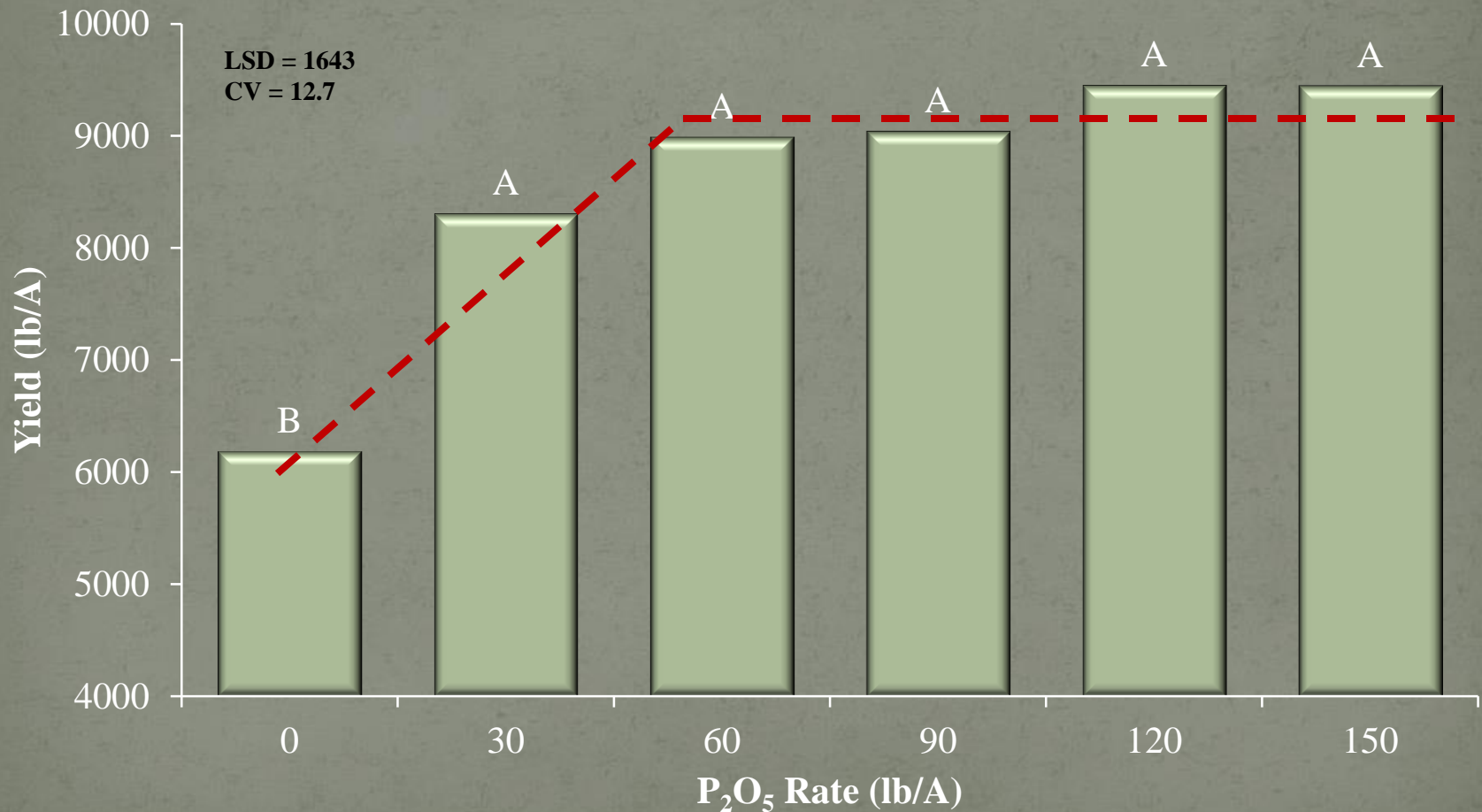
(70% grain ≈ 55 lb/A; straw ≈23 lb/A)





# Evaluation of P Rate

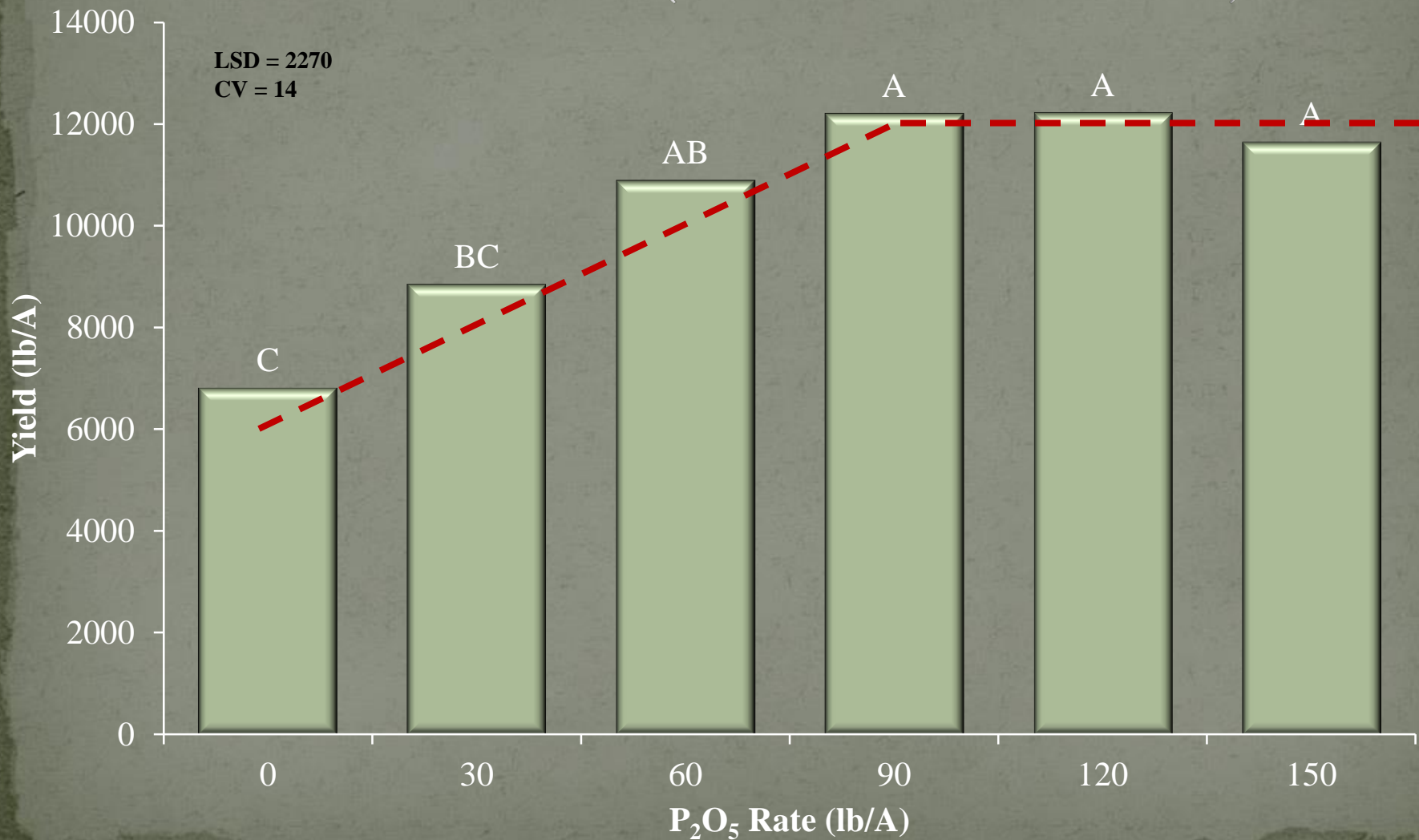
## Miller Bro. Farms – Egan, LA (2011).





# Evaluation of P Rate

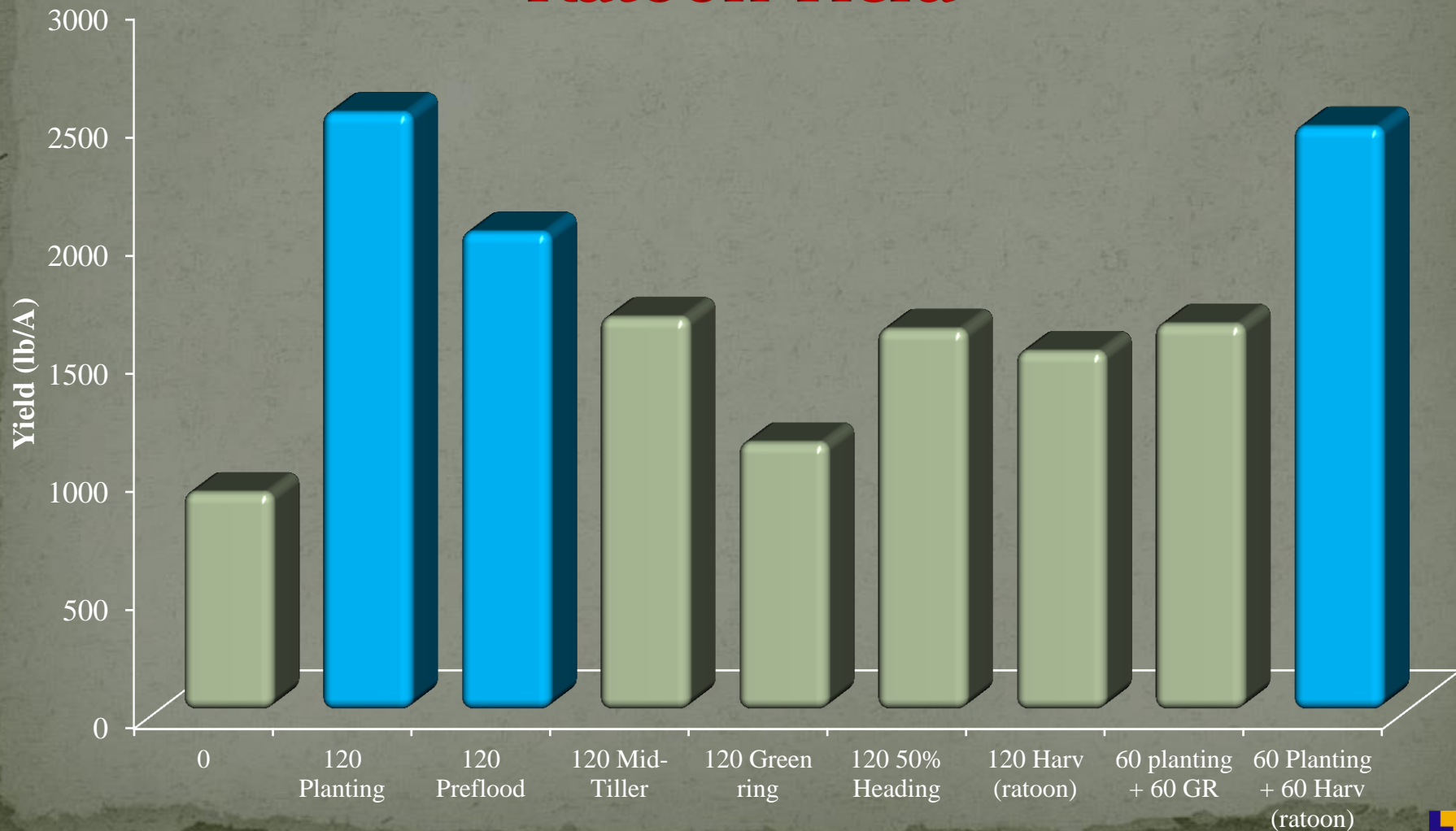
## Total Yield (Main + Ratoon)





# Evaluation of P Fertilizer Timing on Yield Miller Bros. Farm – Egan, LA (2011).

## Ratoon Yield





# Ratoon Stubble Management

Fungicide application did not improve yield or reduce incidence of Cercospora



Standard (16")

Low Harvest (8")

Bush Hog (2")

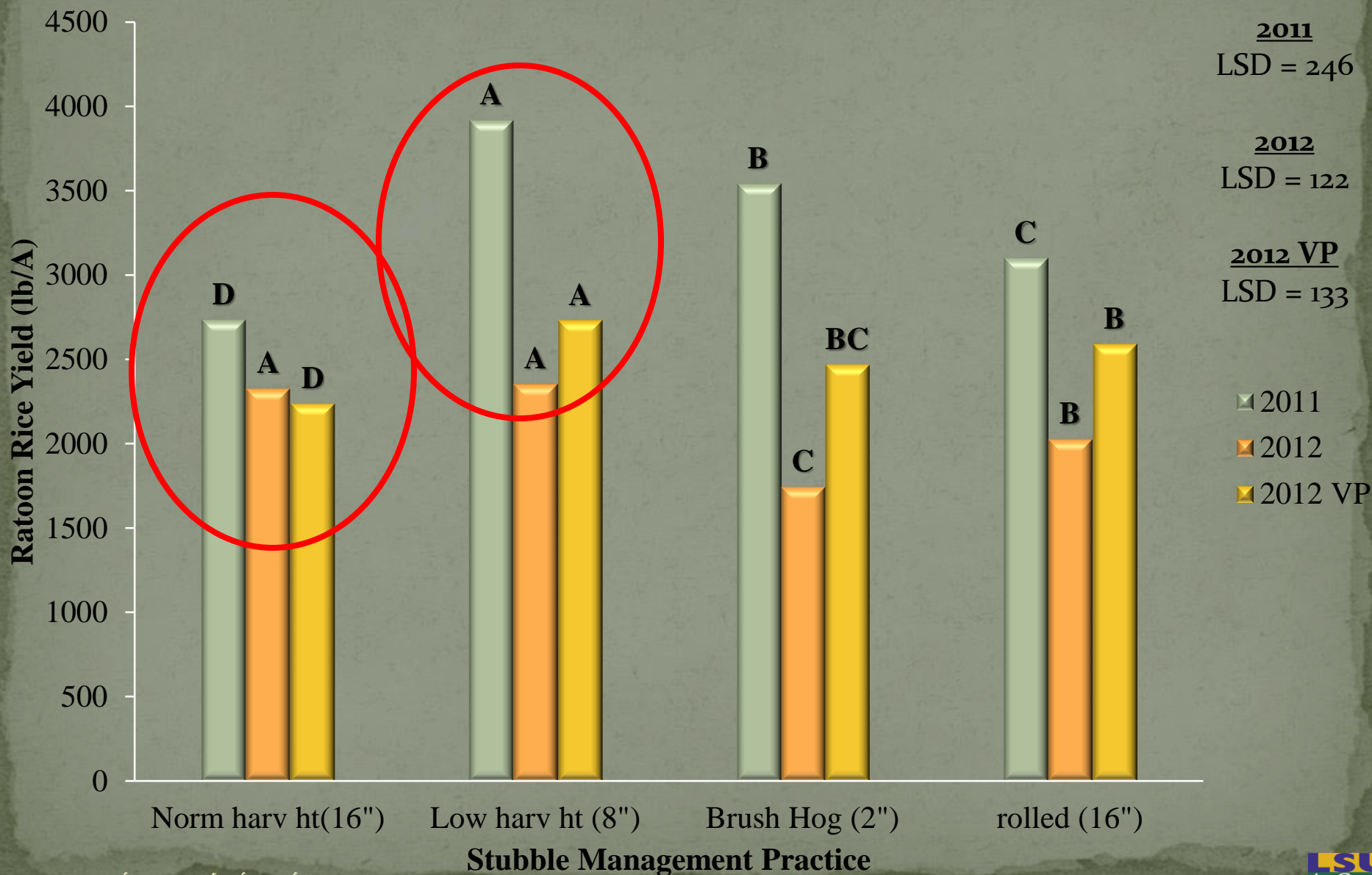
Rolled

CL131 and Catahoula

Quilt XL (21 oz, 4WAH)

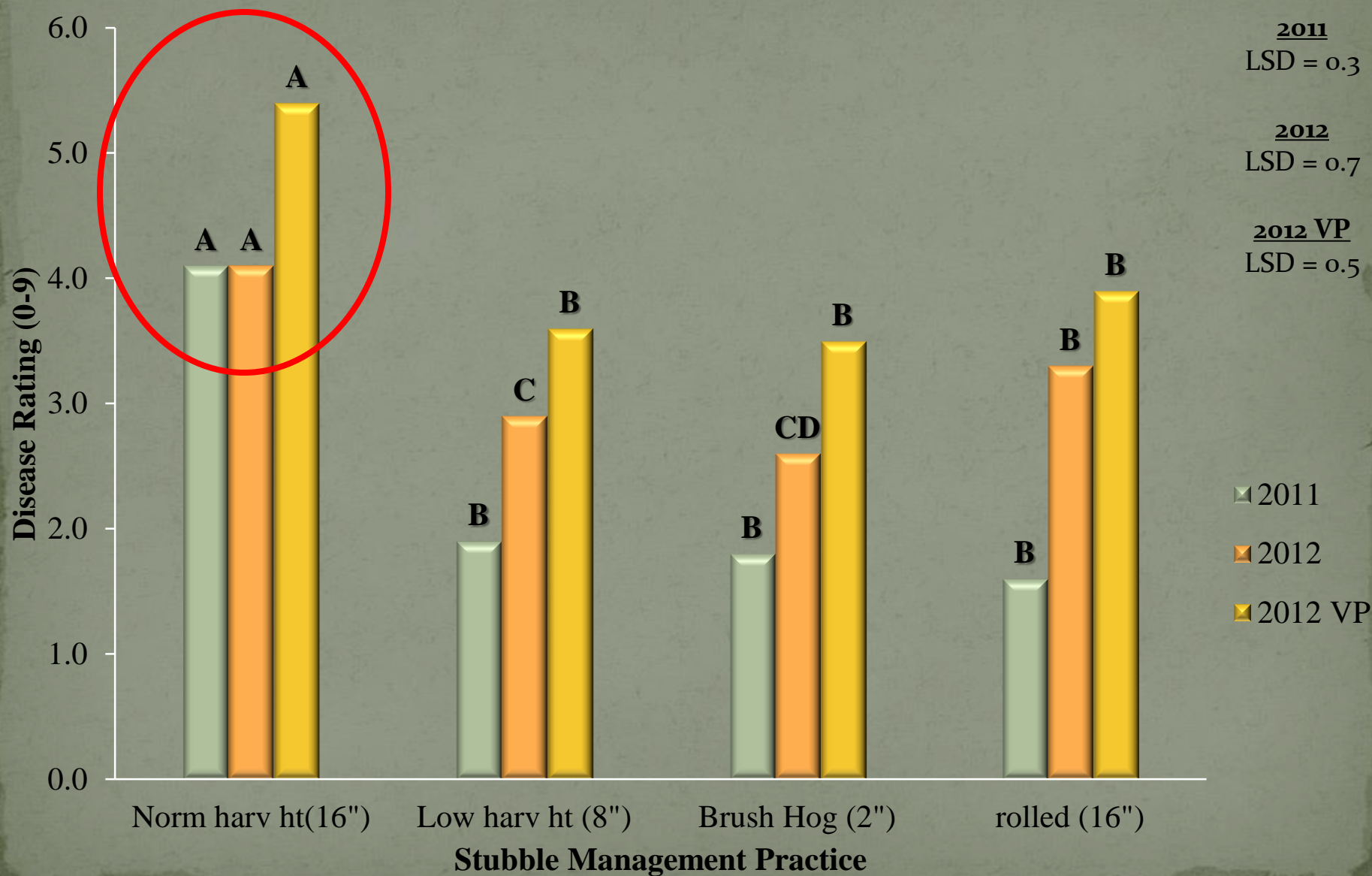


# Effect of Stubble Management on Yield





# Effect of stubble management on Cercospora





# What does stubble management do to agronomics?

(8" vs. 16")



- ◎ Every panicle tagged
  - 3 m linear section
  - Tagged each week
    - beginning at 3 weeks after harvest (3WAH).
    - 3WAH – 10WAH
    - Ratoon harvest @ week 13



# Tagged samples were hand harvested:

- Panicle # / week
- Wt. of panicle / week
- Point of origin
  - Axial node
  - Basal node
- Summary data 2006
- Each week 2007





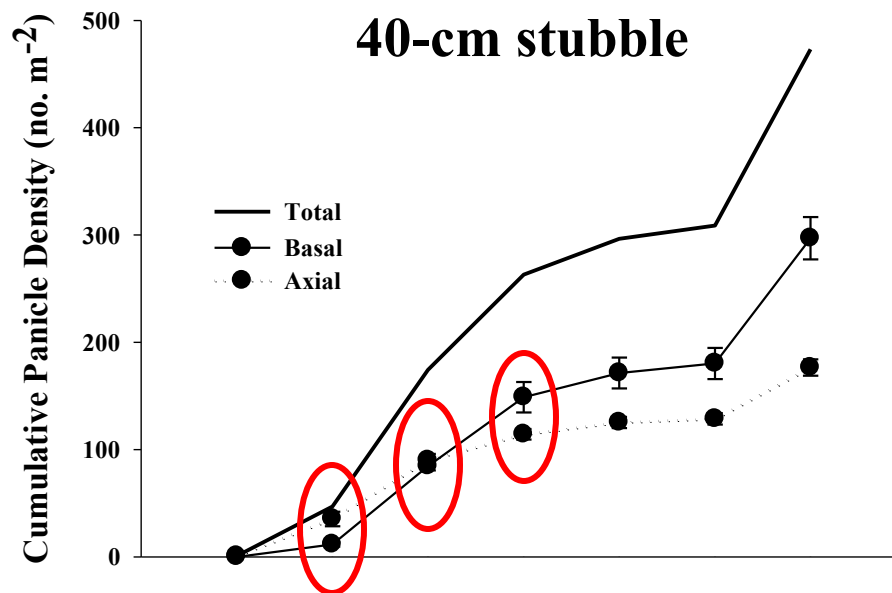
# Cumulative ratoon panicle emergence of Trenasse (pooled over years)



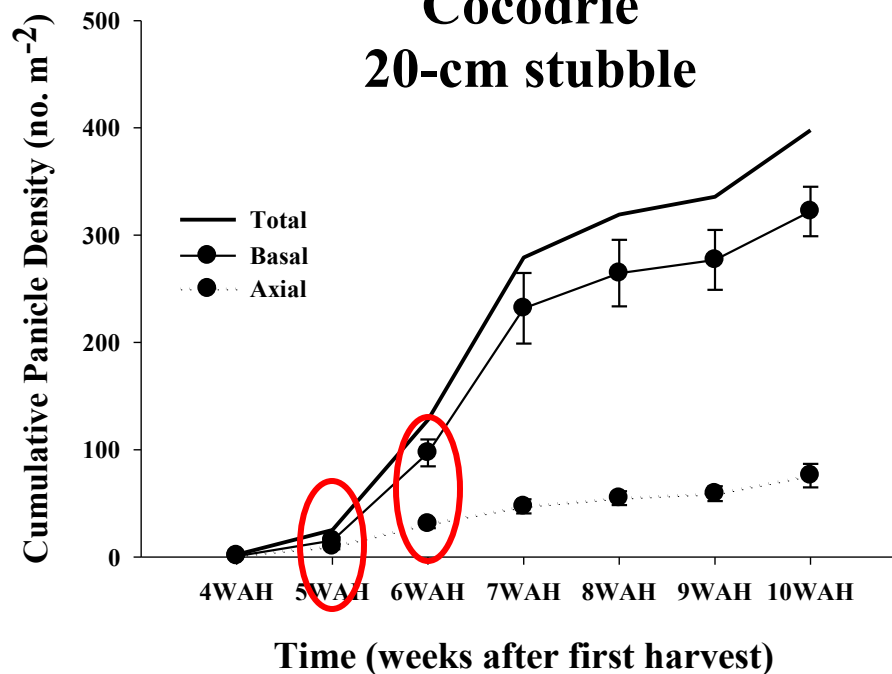


2007  
Panicle emergence was also differentiated by panicle origin on a weekly basis

## Cocodrie 40-cm stubble



## Cocodrie 20-cm stubble





If the 40cm stubble treatment produced more total panicles than the 20cm treatment ....  
Why did the 20 cm treatment produce a significant yield advantage?





# Axial and Basal Panicle Weights (pooled over years)

- Axial

	F	P
Variety (V)	0.4	0.53
Stubble Height (SH)	2.9	0.09
V x SH	0.1	0.78

- Basal

	F	P
Variety (V)	2.3	0.13
Stubble Height (SH)	39.2	<.001
V x SH	0.4	0.55

	Axial	Basal
Stubble Height	g panicle <sup>-1</sup>	
20 cm	0.4	0.9
40 cm	0.5	0.7
LSD	0.2	0.1



# Conclusions

- Stubble management practices
  - delay maturity
  - force regrowth from lower/crown nodes
  - Increase uniformity (grain quality)
  - Increases yield (in high yielding years)
  - Reduces Cercospora incidence