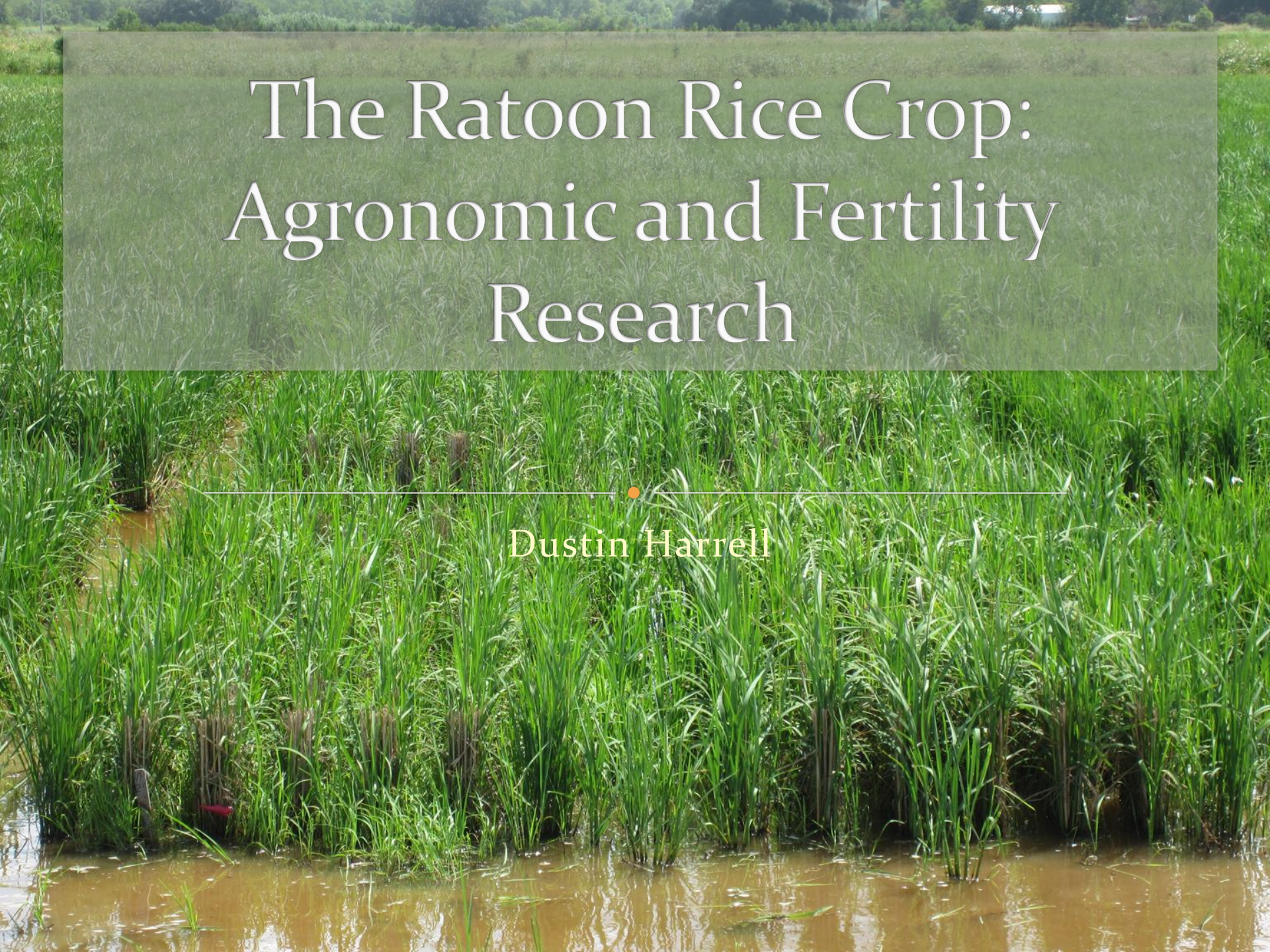


The Ratoon Rice Crop: Agronomic and Fertility Research

Dustin Harrell

Introduction

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

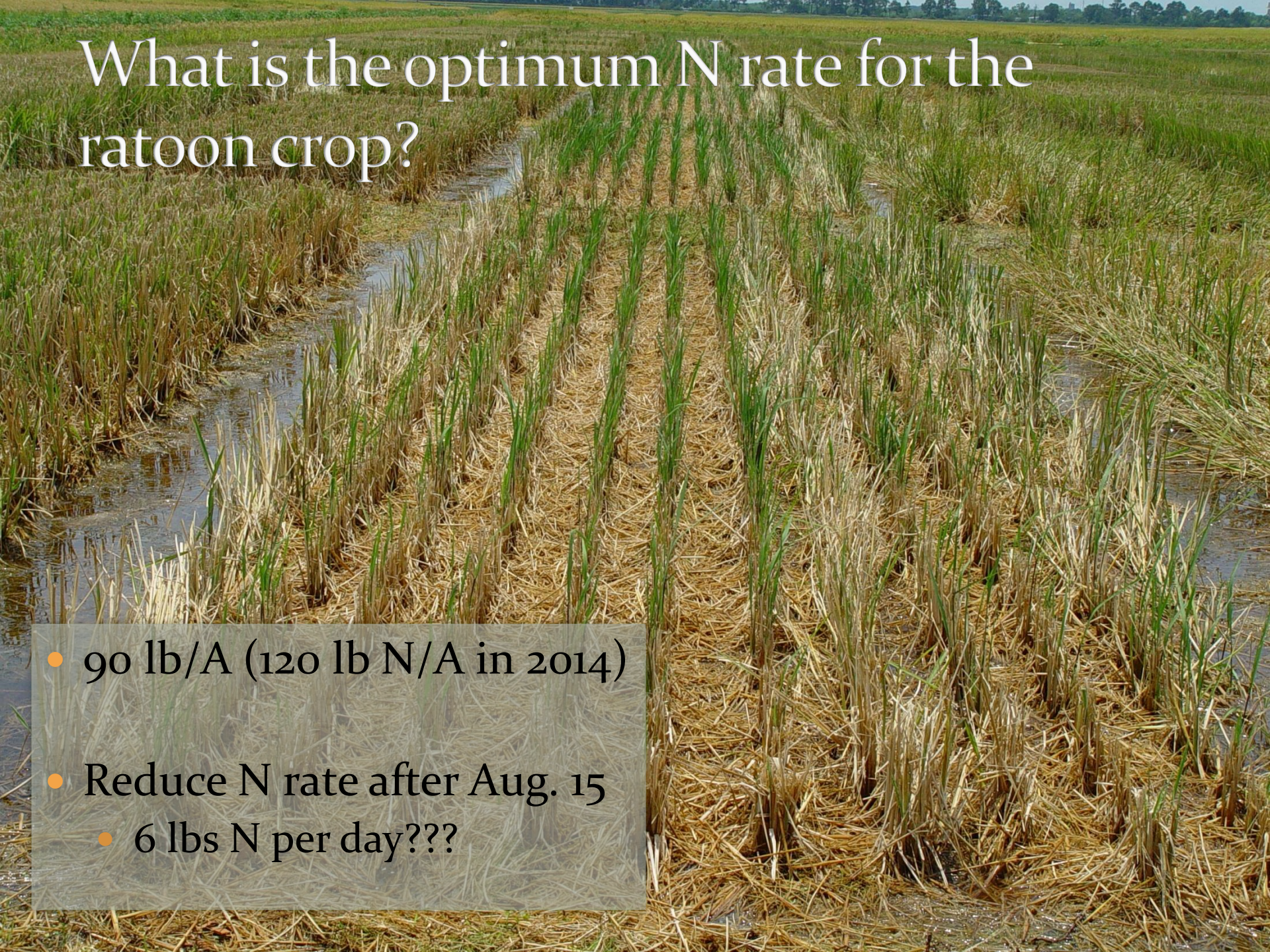
General Recommendations

- 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 1st 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 (120 lb N/A in 2014)
- Reduce N rate after Aug. 15
  - 6 lbs N per day???

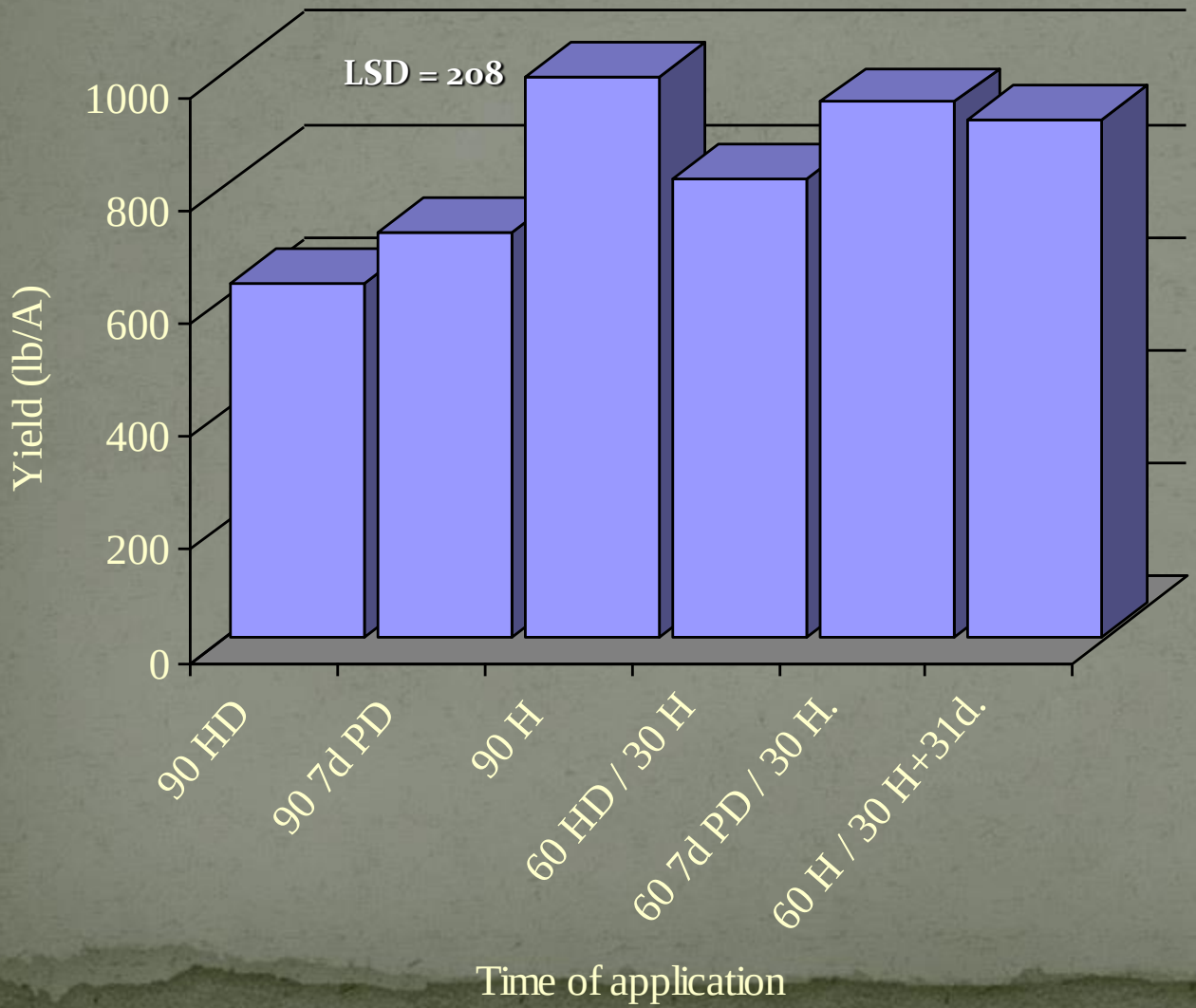

1. When is the best N fertilizer application timing?
2. Can you split N applications to improve yields and NUE?

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?

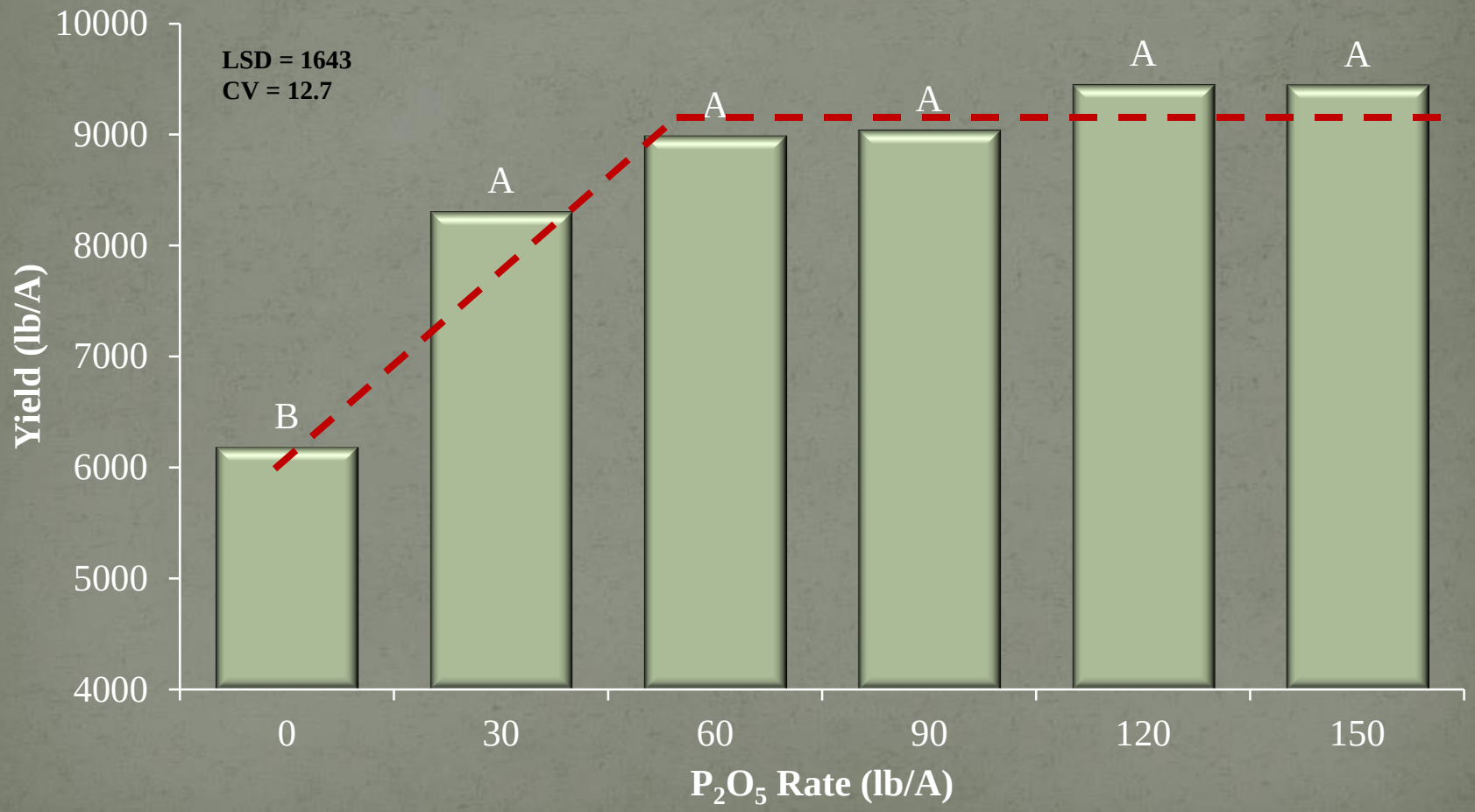
Nutrient Requirement by Rice

Nutrient	Removal, lb/bu
N	0.45
P_2O_5	0.28
K_2O	0.18
Nutrient	**Uptake, lb/bu**
N	0.72
P_2O_5	0.39
K_2O	1.08

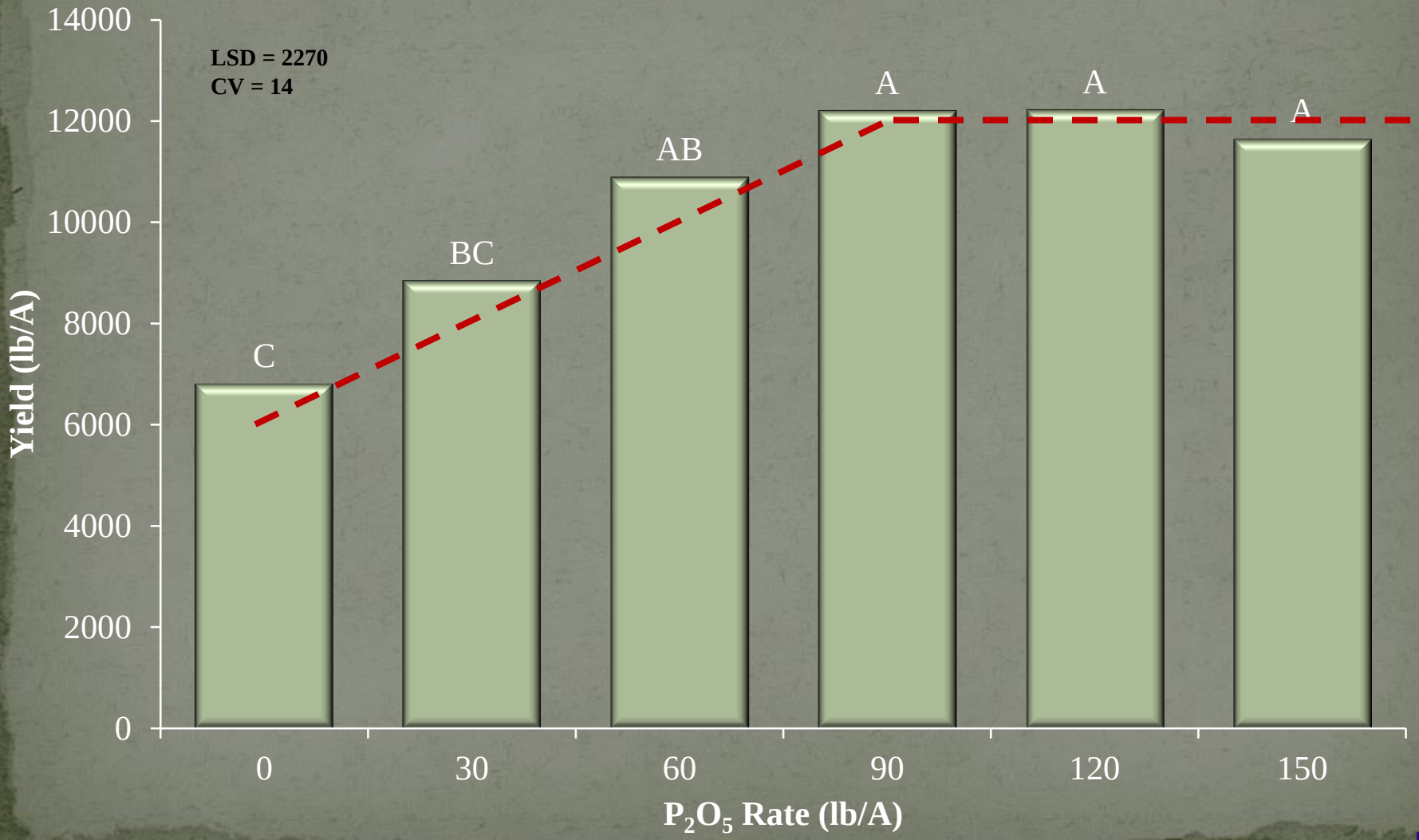
So, a 200-bu (9,000 lb/A or 56 bbl) rice crop will take up 78 lb P_2O_5

(70% grain ≈ 55 lb/A; straw ≈23 lb/A)

Evaluation of P Rate
Miller Bro. Farms – Egan, LA (2011).

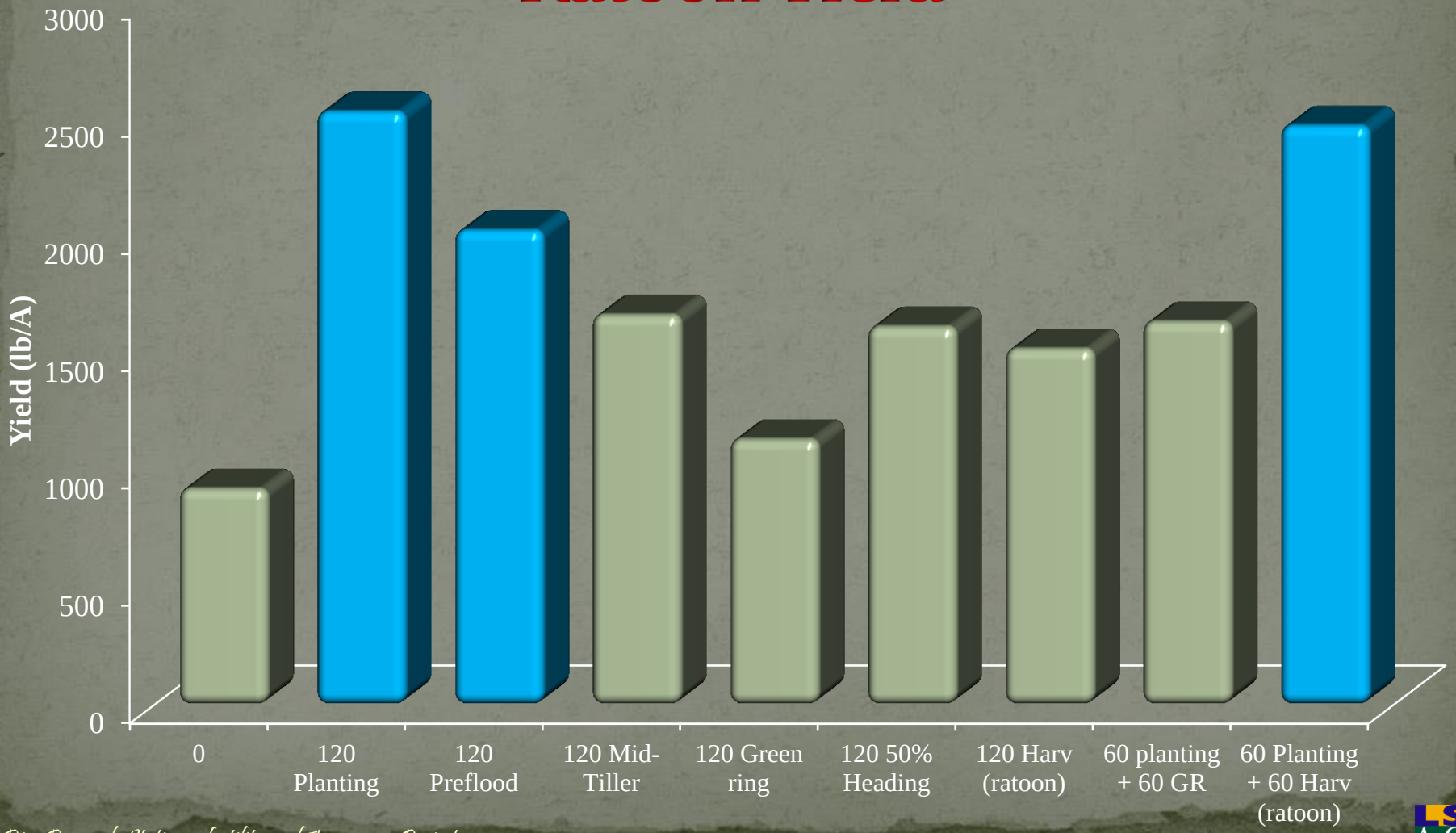


Evaluation of P Rate
Total Yield (Main + Ratoon)



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

Ratoon Yield



Ratoon Stubble Management

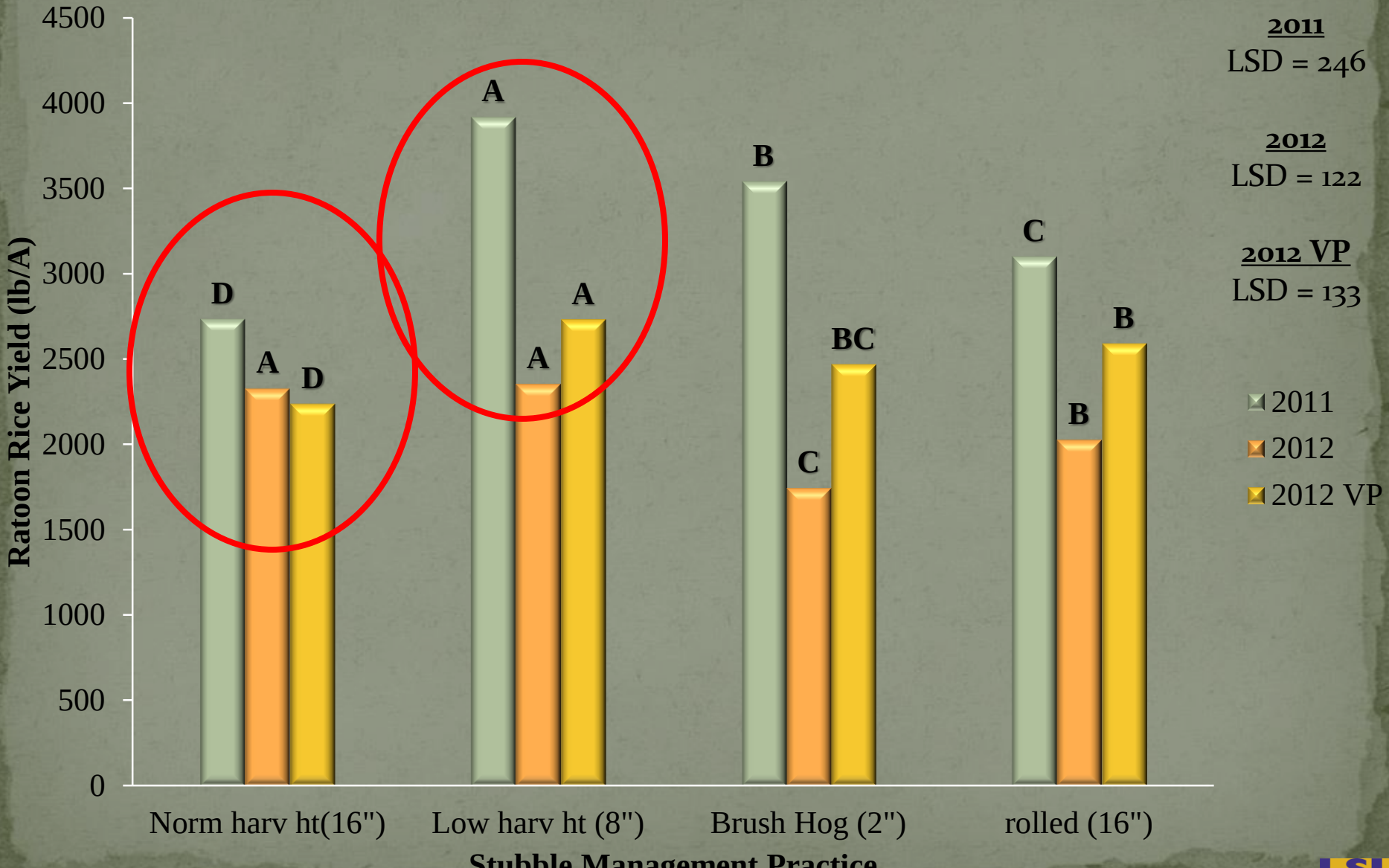
Fungicide application did not improve yield or reduce incidence of Cercospora

Standard (16”) Low Harvest (8”) Bush Hog (2”) Rolled

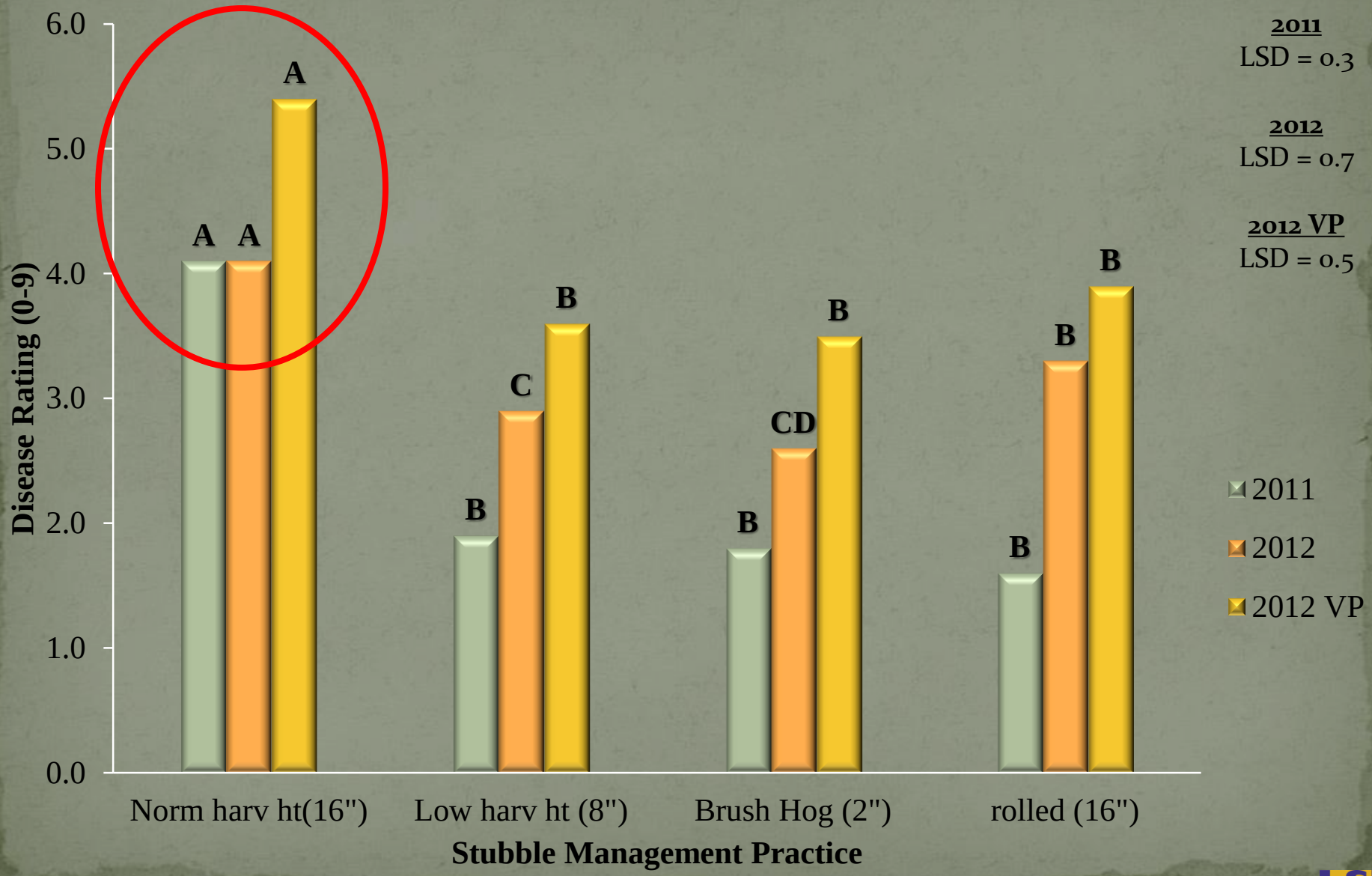
CL131 and Catahoula

Quilt XL (21 oz, 4WAH)

Effect of Stubble Management on Yield

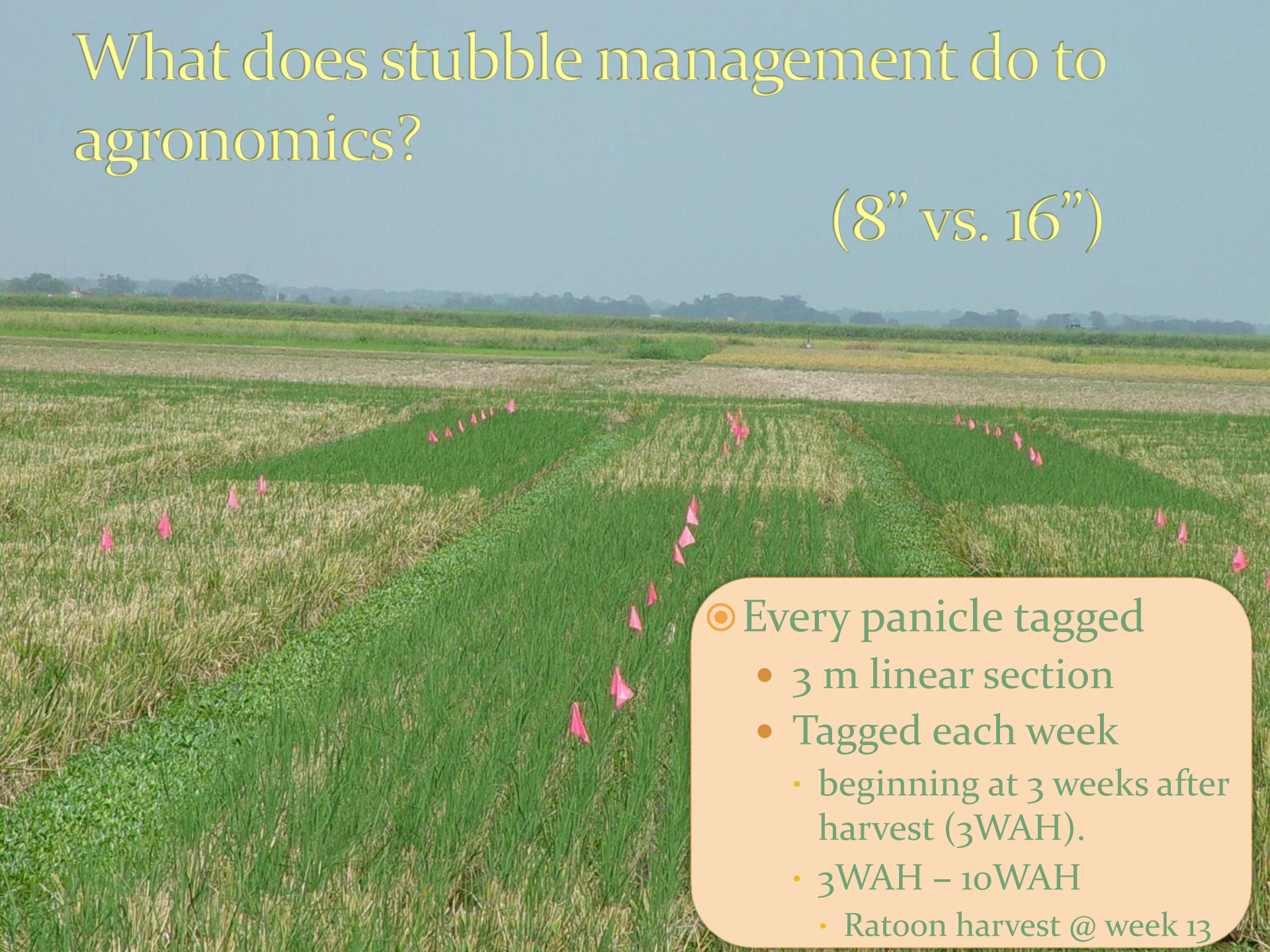


Effect of stubble management on Cercospora



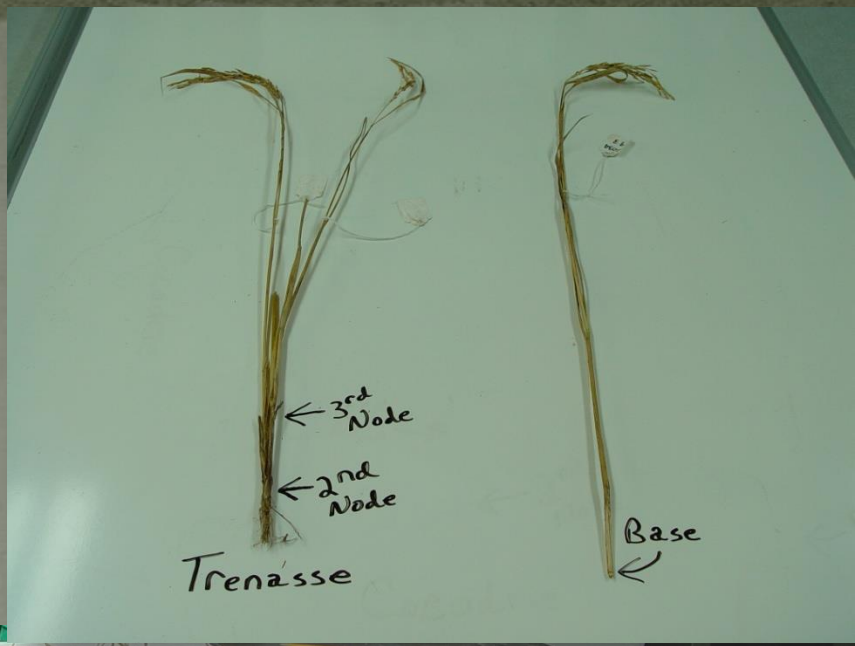
What does stubble management do to agronomics?

(8” vs. 16”)



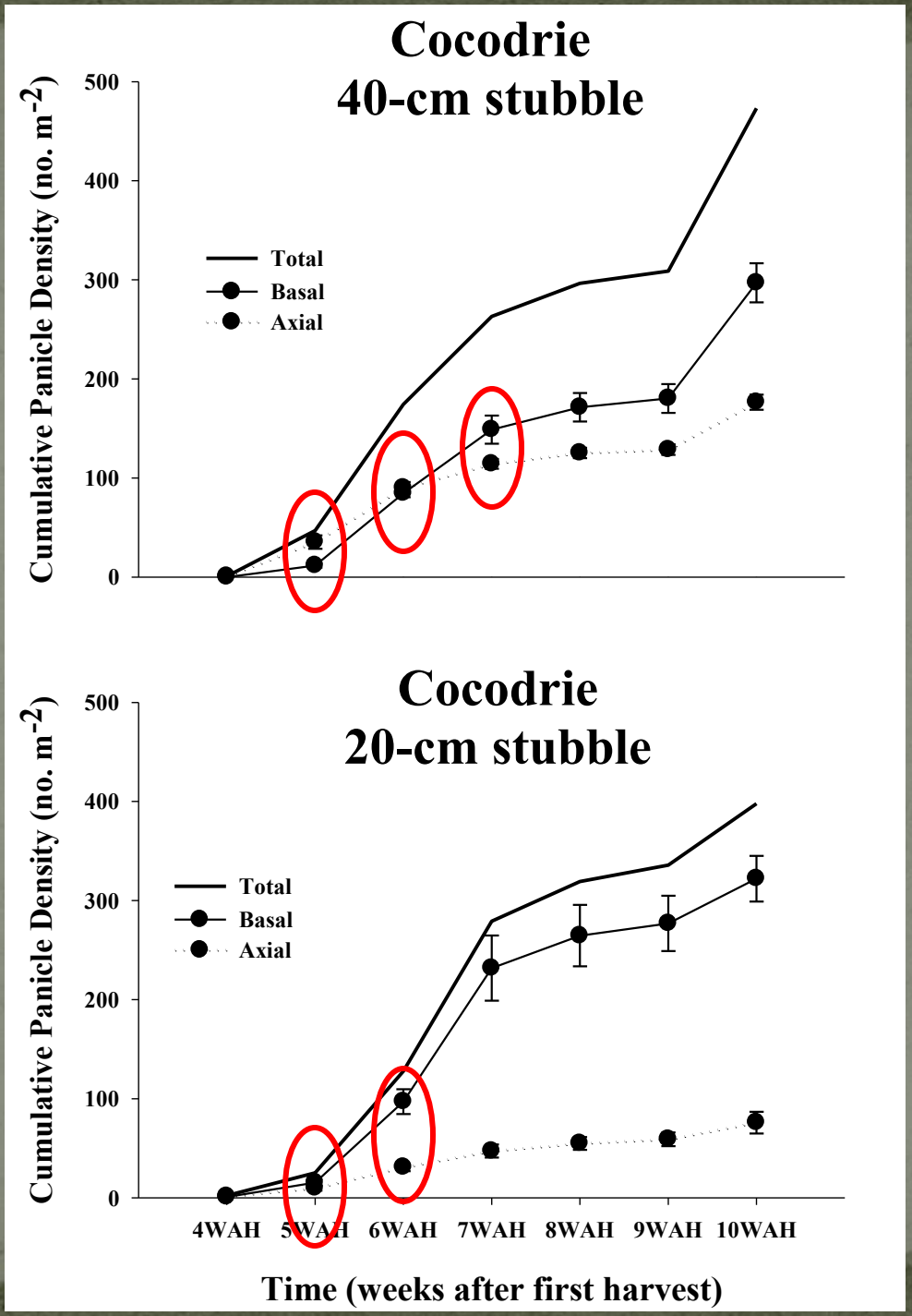
- Every panicle tagged
  - 3 m linear section
  - Tagged each week
    - beginning at 3 weeks after harvest (3WAH).
    - 3WAH – 10WAH
      - Ratoon harvest @ week 13

- Tagged samples were hand harvested:
  - Panicle # / week
  - Wt. of panicle / week
  - Point of origin
    - Axial node
    - Basal node
      - Summary data 2006
      - Each week 2007

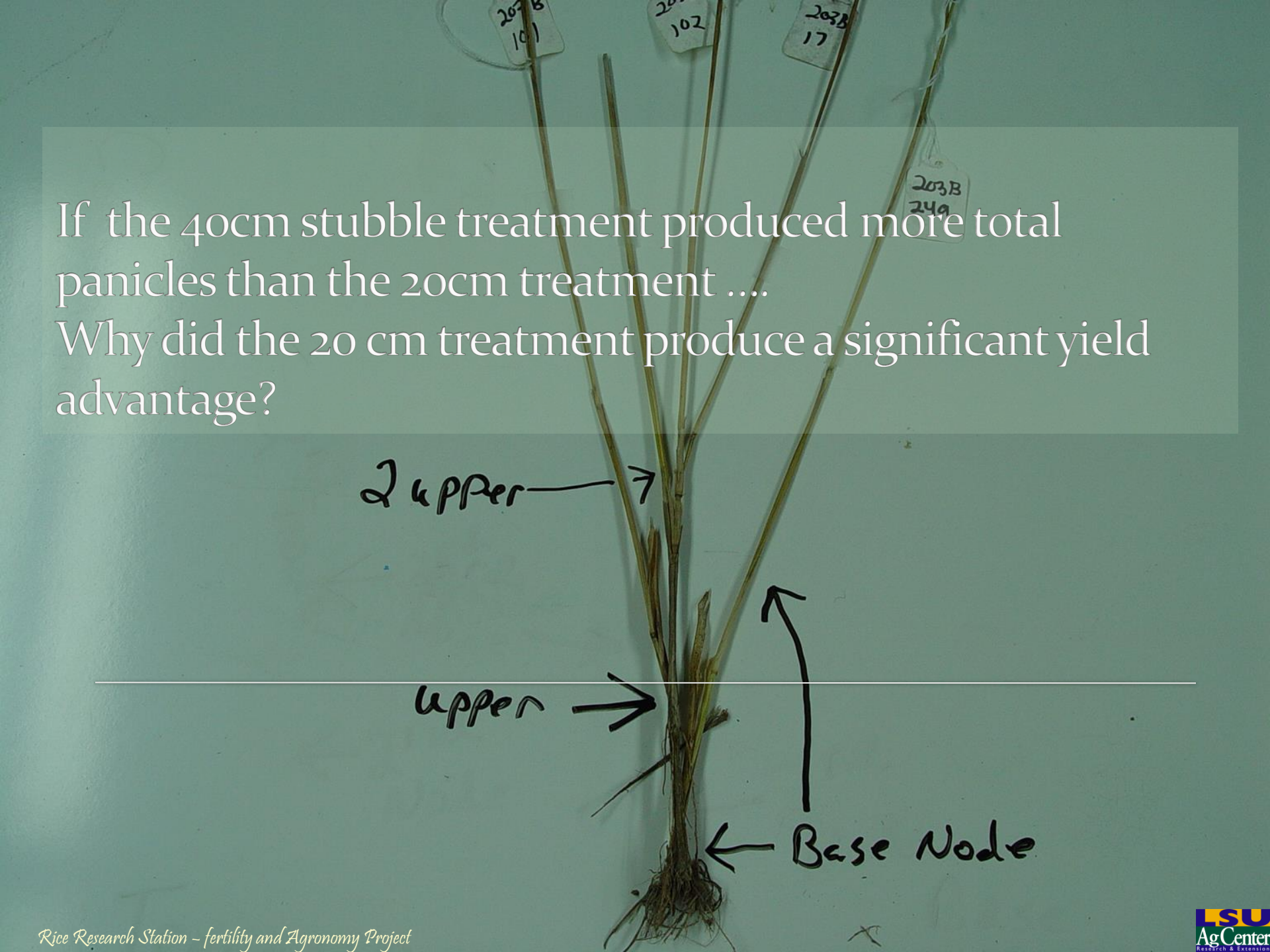


Cumulative ratoon panicle emergence of Trenasse (pooled over years)

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



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^{-1}	
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

Zinc Deficiency

- Bronzing
- Flaccid
- Death of tillers
- Complete death

Problem Areas

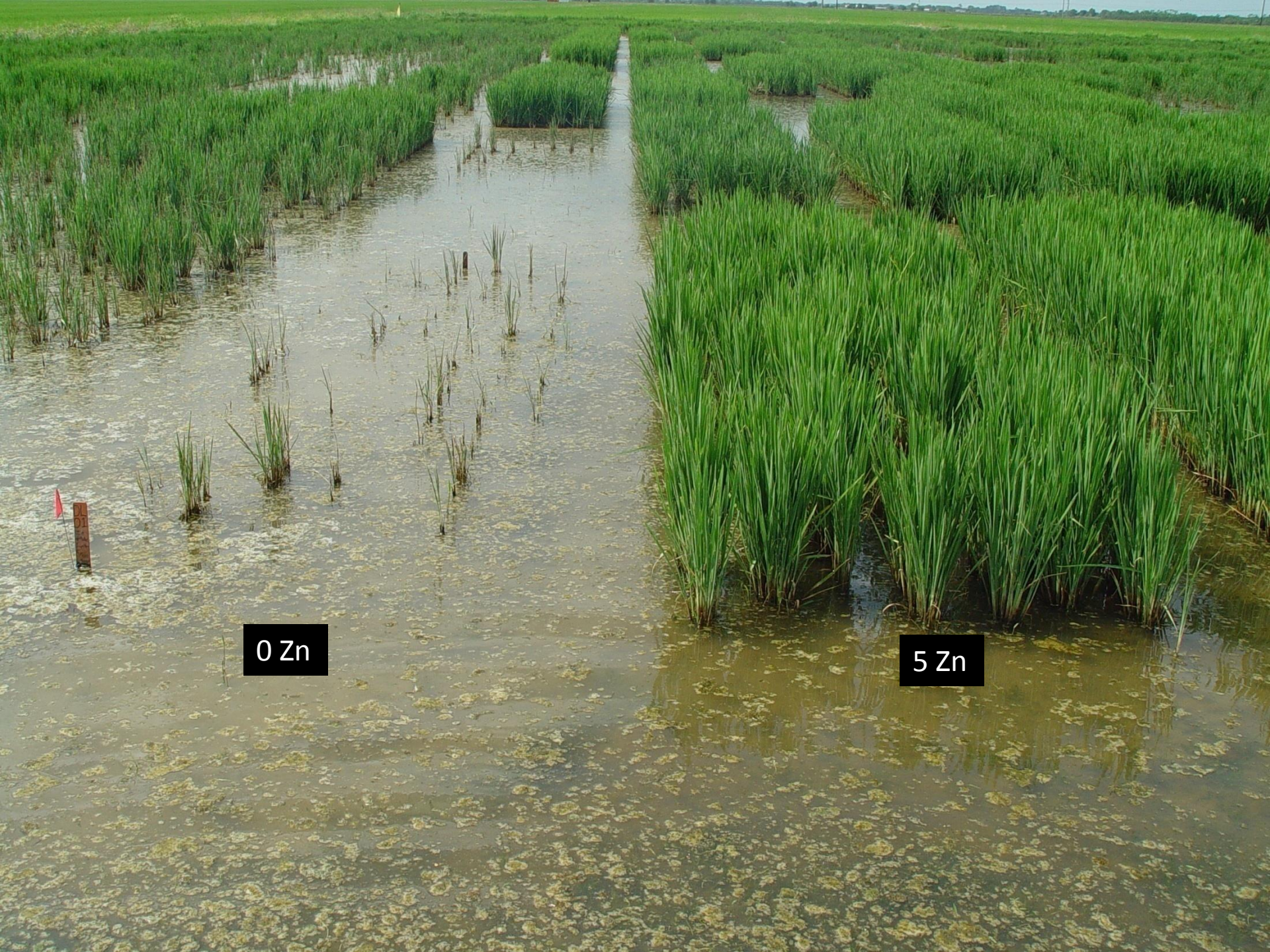
- High pH soils (≥7)
  - 100x less available
- Low soil test Zn
  - ≤ 1 ppm
- Early season cold stress

Zinc trial

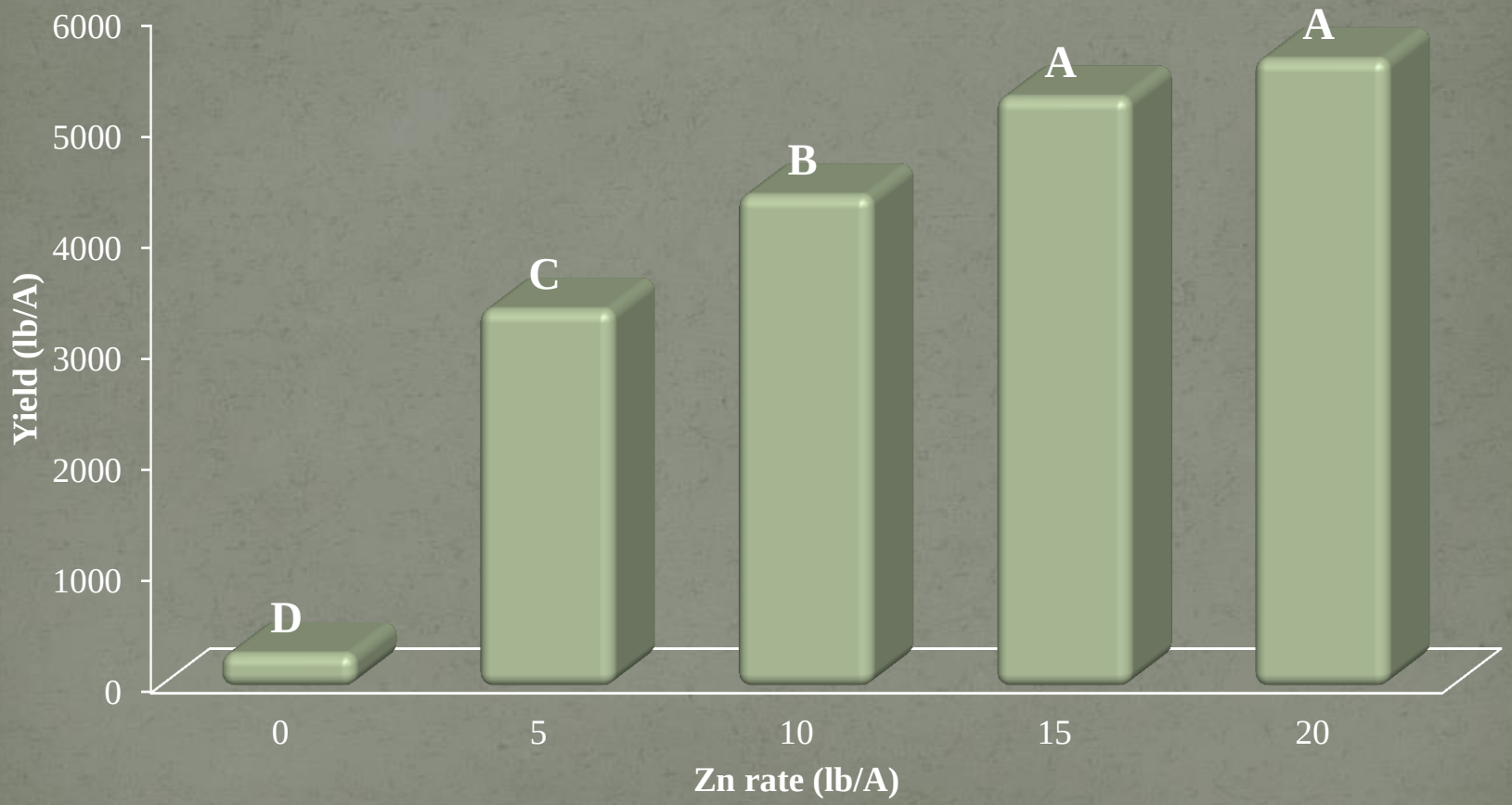
- Site
  - pH 7.9
  - Zn 1.0 ppm
- Zn Rates:
  - 0, 5, 10, 15, 20 lb/A
  - $ZnSO_4$
- 2 N Sources
  - Urea or Amm. Sulfate
- Sulfur balanced
  - 100 lb Amm. Sulfate (24%S)

Leonards Zn Trial 2009

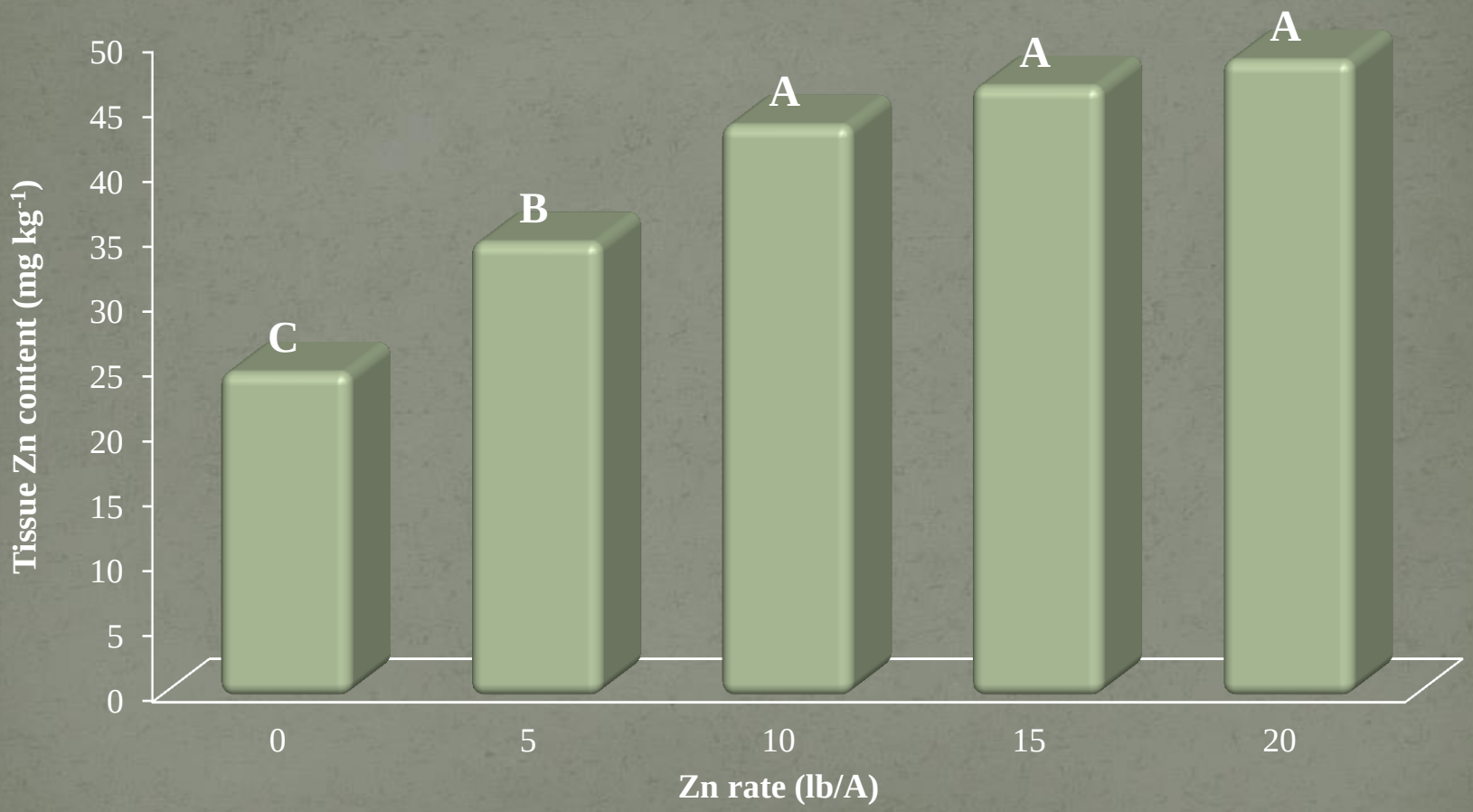
Leonards Zn Trial 2009


0 Zn
5 Zn

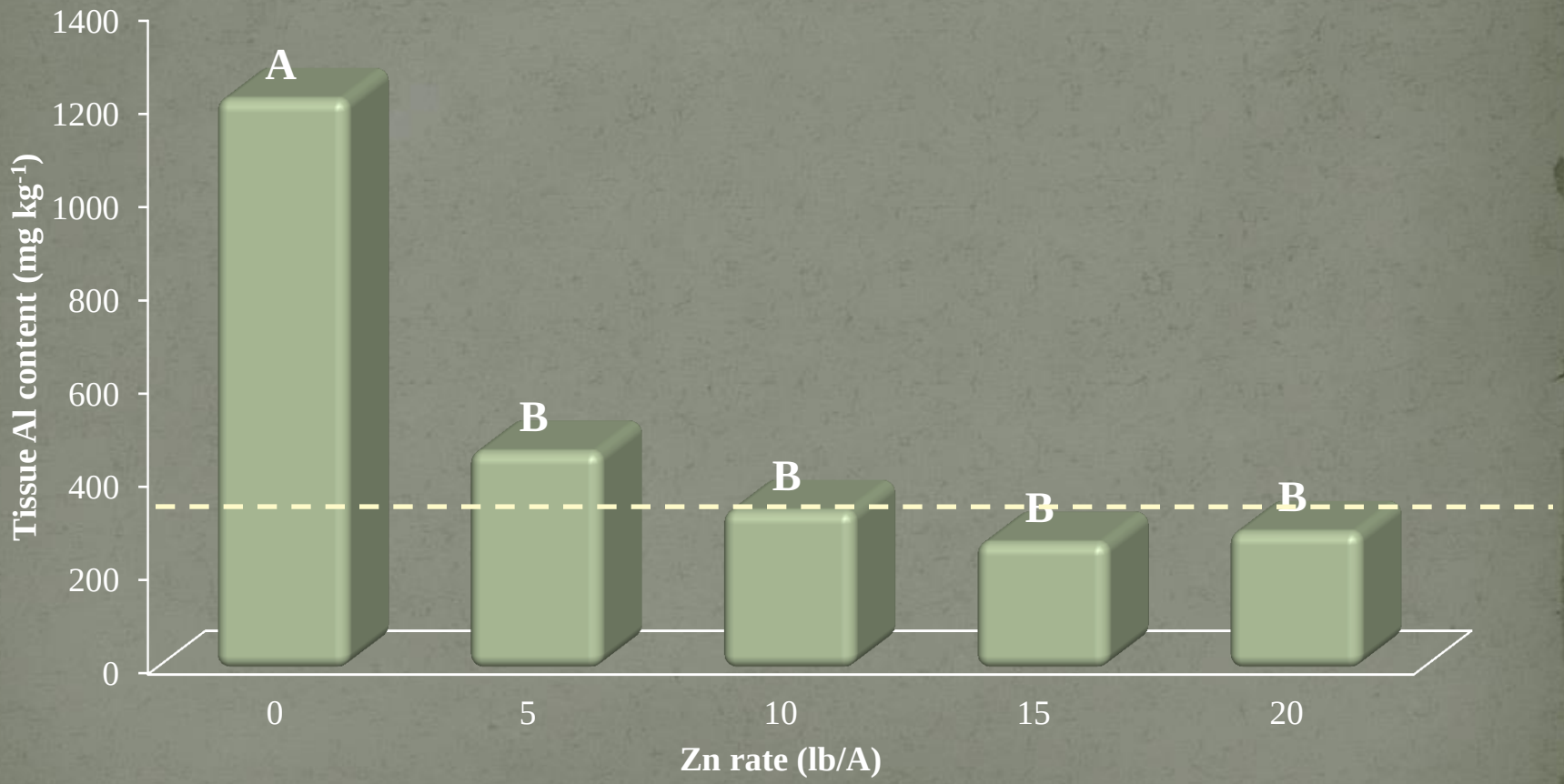
Grain Yield Results



Plant Zn Uptake

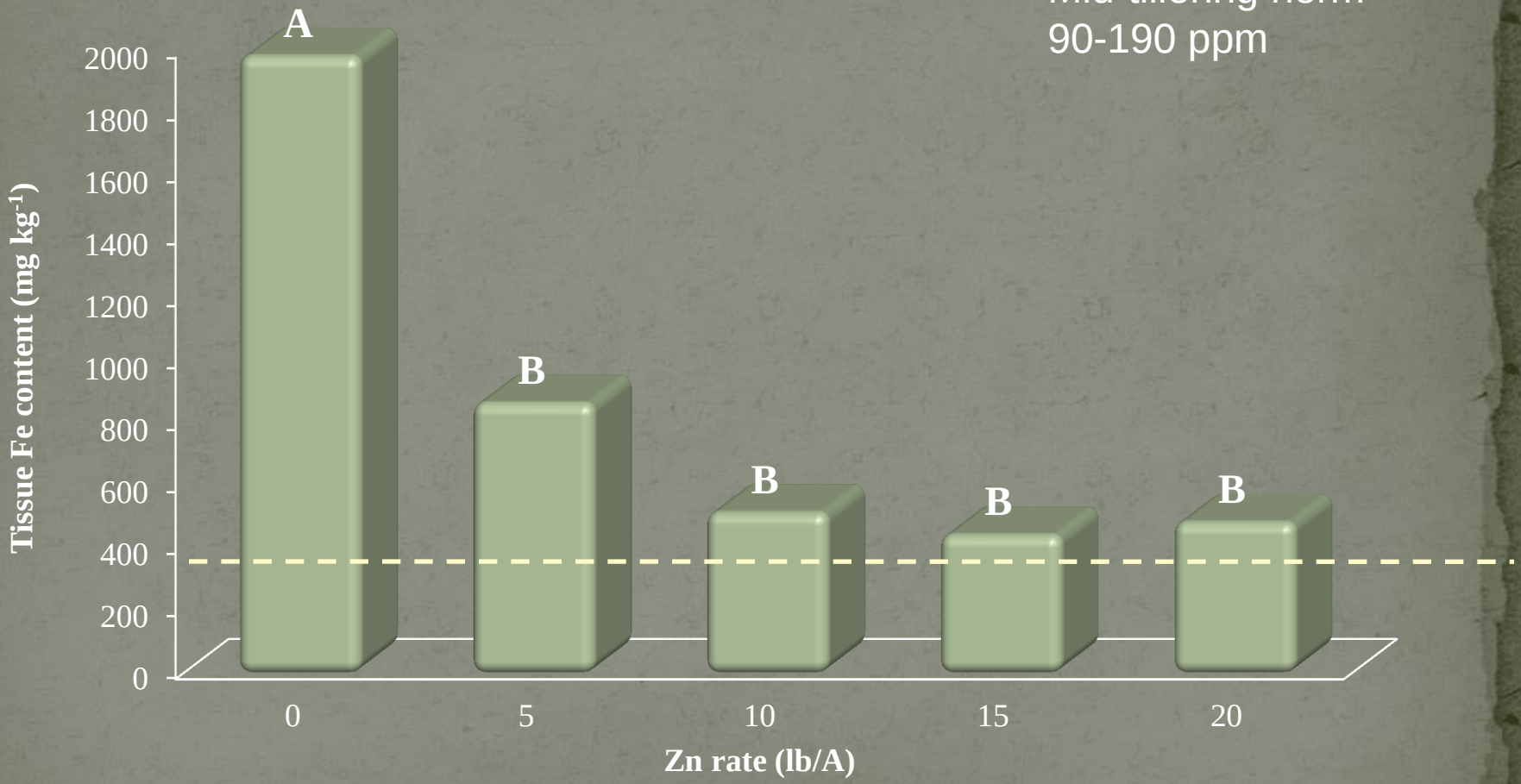


Plant tissue Al uptake



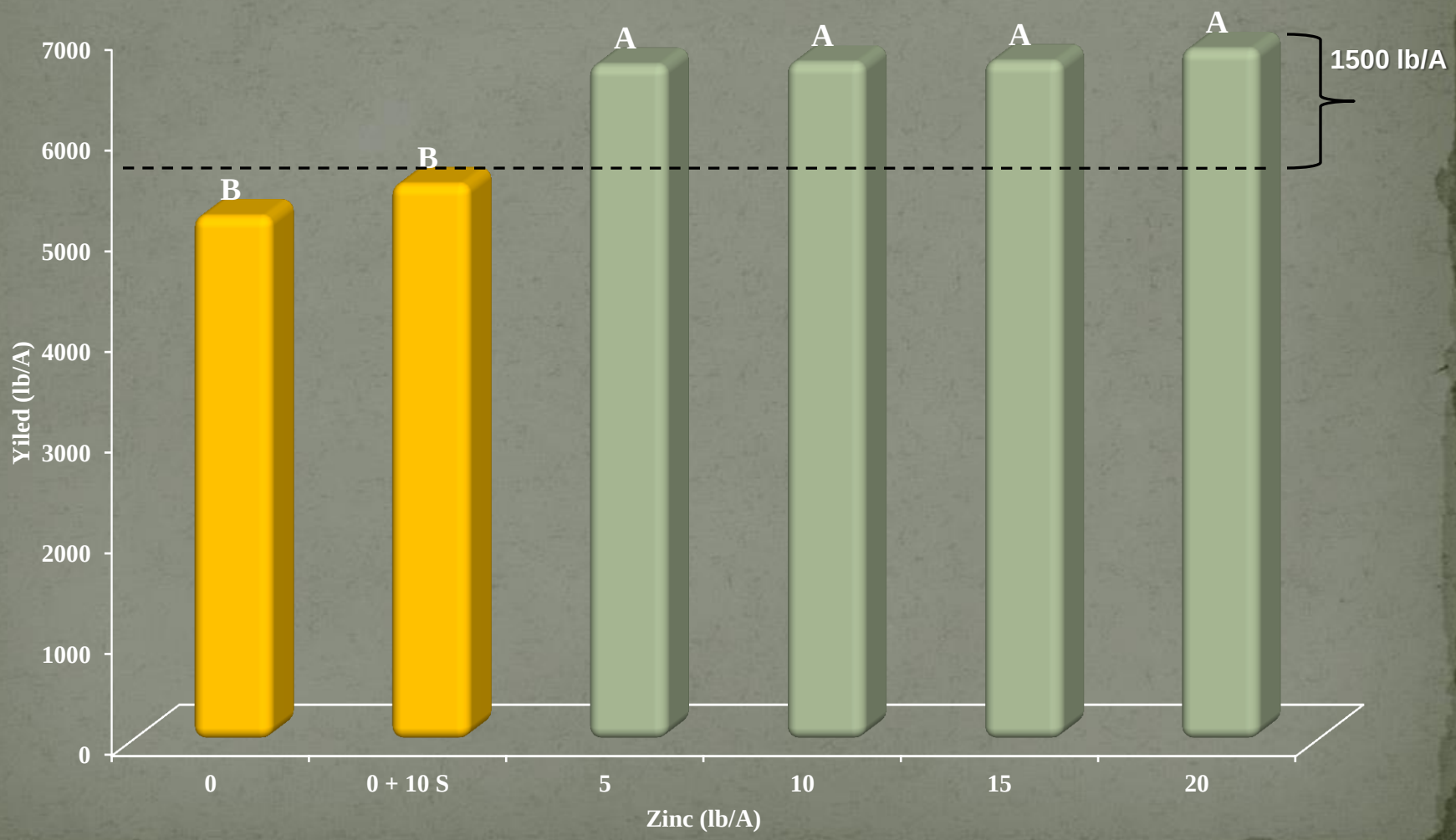
Plant tissue Fe uptake

Mid-tillering norm
90-190 ppm




Zinc trial 2008
20lb Zn from $ZnSO_4$ PPI
0 Zn + 10 lb S from
elemental S (90%) PPI

Yield results for Zn trial 2008



Zinc Recommendations

Recommendation for zinc granular fertilizer sources for rice production†

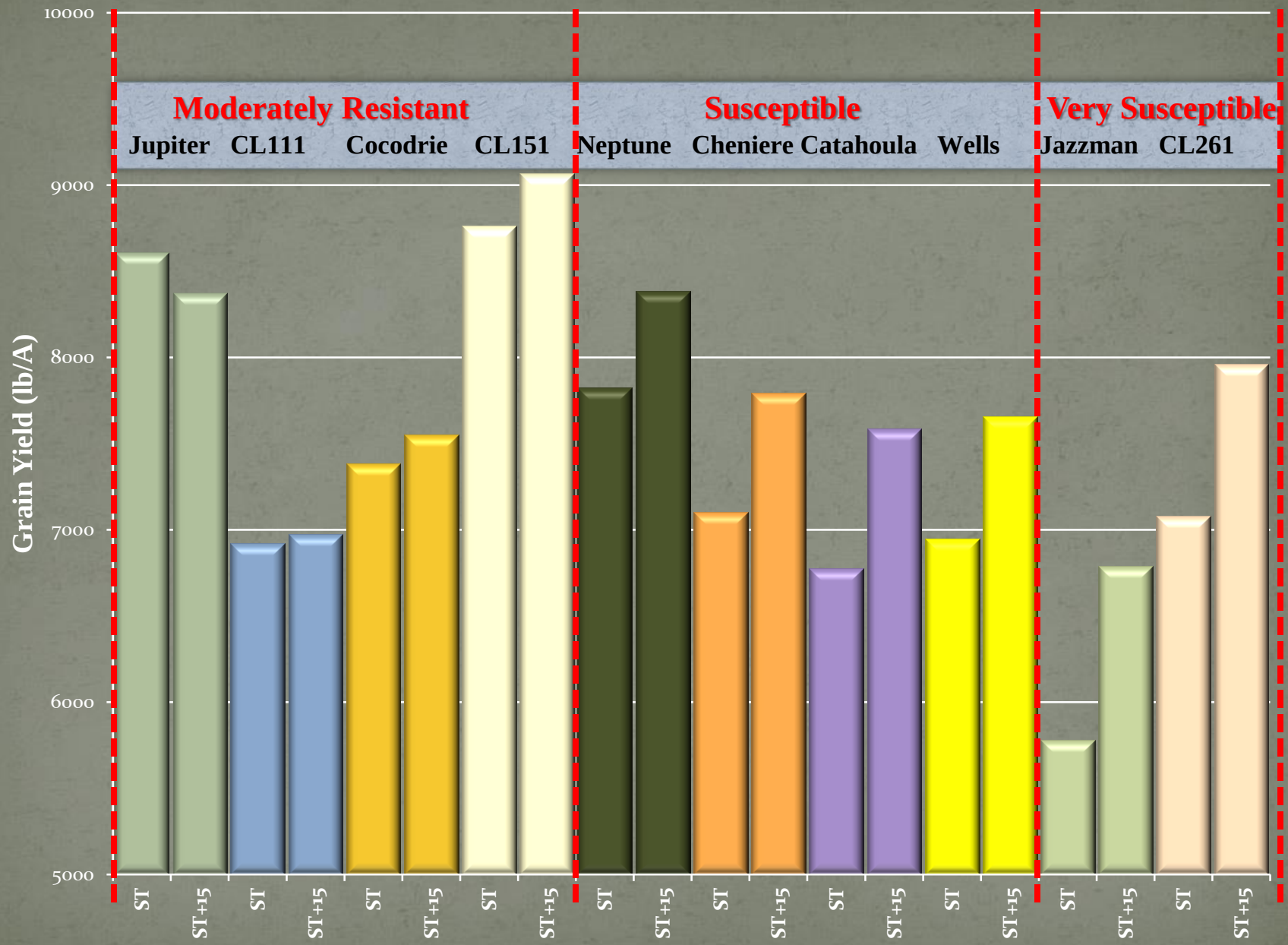
Soil Test	≤ 1 ppm		1 - 1.5 ppm			1.6 - 2 ppm	
pH	≥ 7	< 7	≥ 7	6.9 - 6.0	< 6	≥ 7	< 7
Granular fertilizer recommendation	15 lb/A	10 lb/A	10 lb/A	5 lb/A‡	none	5 lb/A	none

† The granular zinc fertilizer source must be at least 50% water soluable or higher rates of zinc may be needed.

‡ Even distribution of most granular zinc fertilizer sources at rates of less than 10 lbs/A is difficult to achieve however, it can be achieved when the zinc is premixed with a starter N application using 50 -100 lbs. ammonium sulfate.

Evaluation of varietal response to zinc deficiency

- 10 Varieties
  - CL151, CL111, CL261, Catahoula, Cocodrie, Cheniere, Wells, Jazzman, Jupiter, and Neptune
- 2 Zinc Fertilization rates
  1) Seed Trt. only (1 lb)
  2) ST + 15 lb Zn/A
- 0.7 ppm; pH 7.7


Moderately Resistant
Susceptible
Very Susceptible
Jupiter CL111 Cocodrie CL151 Neptune Cheniere Catahoula Wells Jazzman CL261
Grain Yield (lb/A)
10000
9000
8000
7000
6000
5000
ST
ST+15

LSD = 837

Ag Summary 2014

456,047 planted acres

7539 lb/A (167.5 bu/A; 46.5 bbl/A)

34,380,704 Hundred Weights Total Production

$515,710,560 Gross Farm Value

$154,713,168 Value Added

$670,423,728 Total Value

1040 Growers

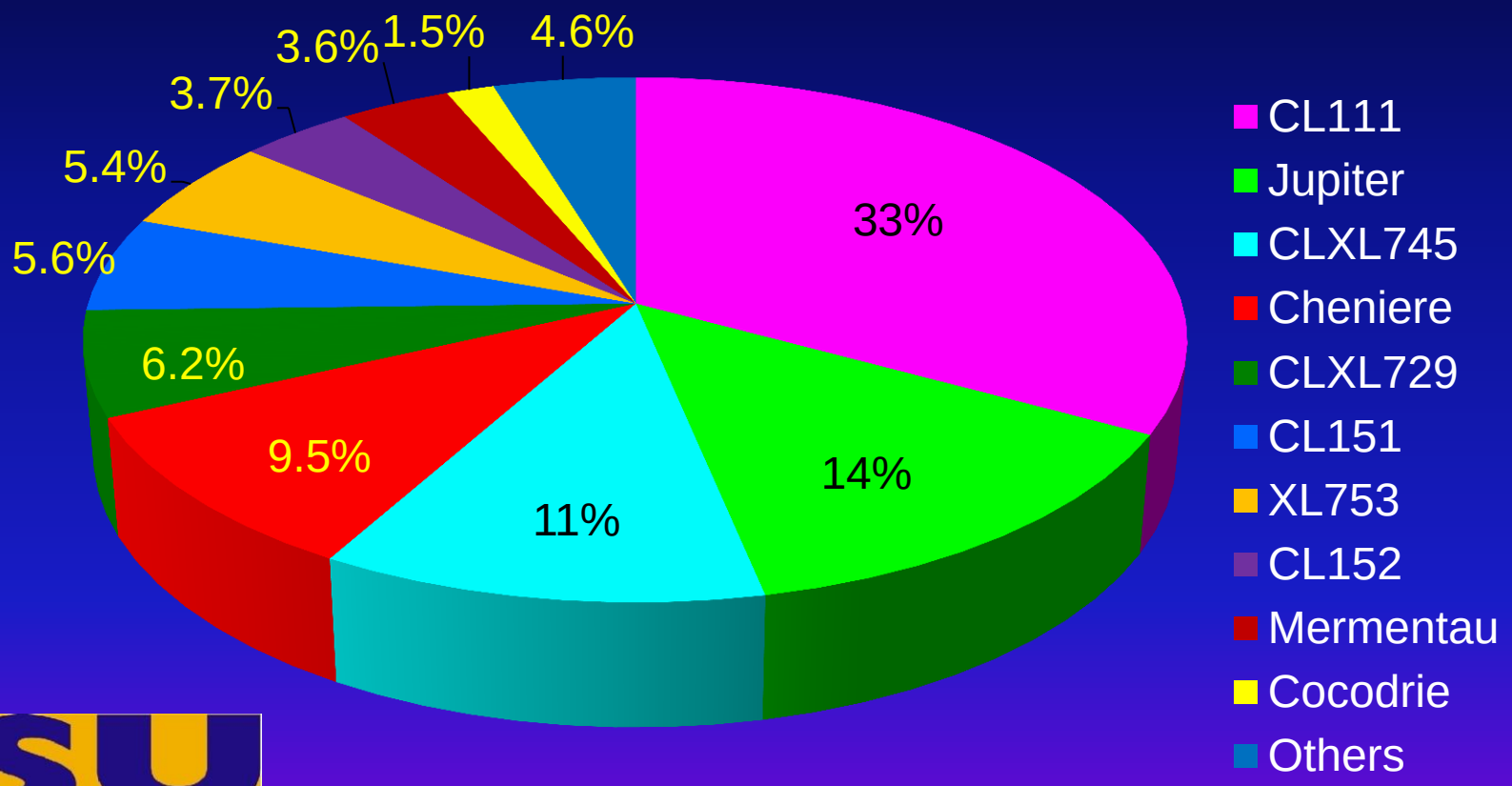
Rice was produced in 29 parishes in 2014

Acres by Parish in 2014

Table 1. Rice acres by parish in 2014.

Parish	Total Acres	Gross Farm Value
Acadia	85,725	104,155,875
Allen	15,436	15,281,640
Avoyelles	11,988	15,122,850
Beauregard	1,372	1,687,560
Calcasieu	15,212	14,375,340
Caldwell	1,141	1,163,400
Cameron	11,834	12,407,940
Catahoula	2,093	2,429,970
Concordia	9,782	11,298,210
East Carroll	2,713	3,052,530
Evangeline	45,907	52,430,370
Franklin	3,004	4,035,120
Iberia	1,128	1,370,520
Jefferson Davis	83,484	93,919,500
Lafayette	534	622,770
Madison	7,320	9,772,200
Morehouse	37,618	42,320,250
Natchitoches	3,813	4,003,650
Ouachita	8,977	9,425,850
Pointe Coupee	1,590	1,323,675
Rapides	10,528	11,243,895
Red River	440	495,000
Richland	5,613	7,009,230
St. Landry	26,061	30,882,375
St. Martin	3,437	4,021,290
Tensas	3,141	3,863,430
Vermilion	53,427	54,527,595
West Baton Rouge	575	560625
West Carroll	2,154	2907900
Total	456,047	515,710,560

Top 10 Varieties by Acres Grown in Louisiana in 2014



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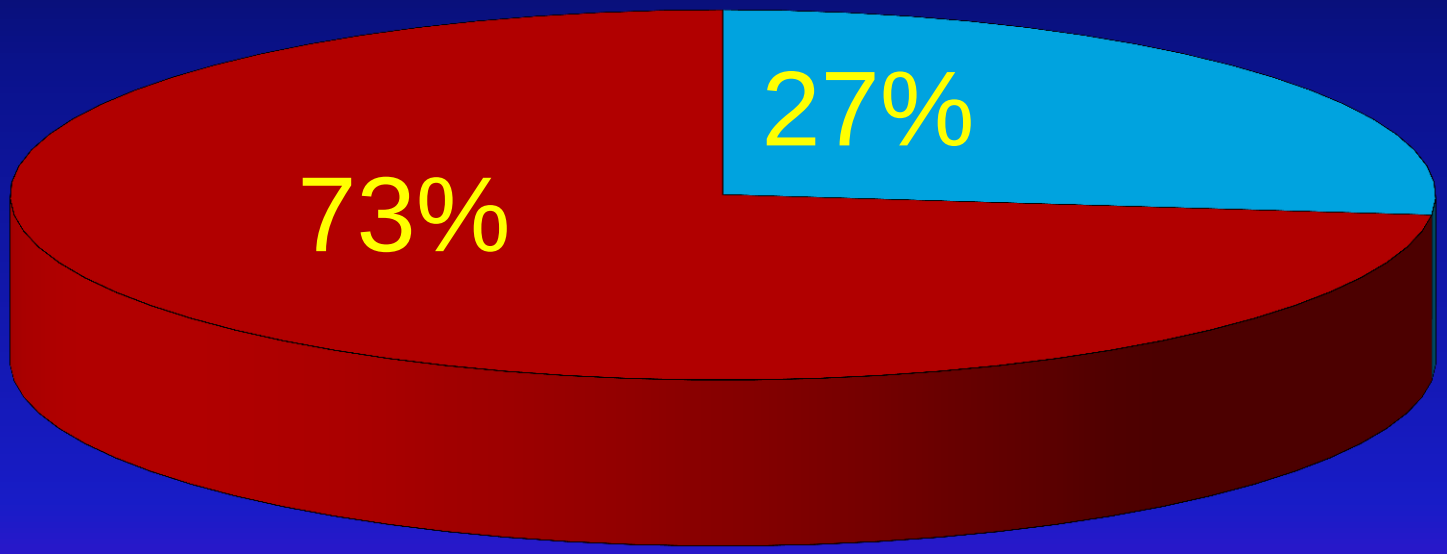
Distribution of RiceTec Hybrids versus Pure Line Varieties 2014



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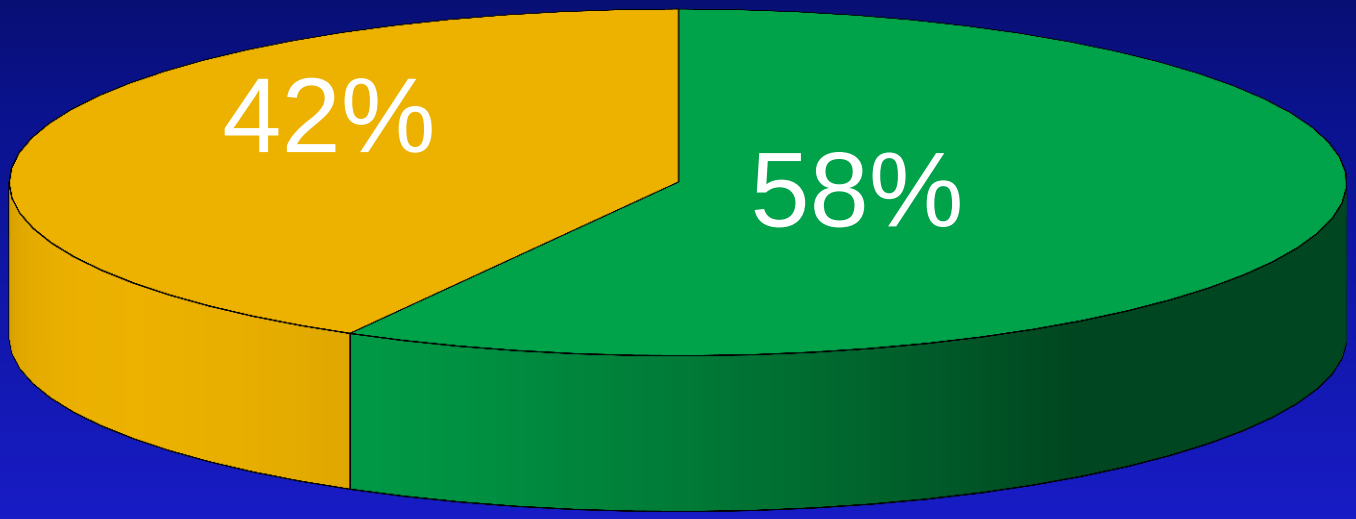
Distribution of Clearfield versus Traditional Varieties 2014



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LOUISIANA RICE NOTES

Dr. Dustin Harrell

February 9, 2015 No. 2015-02

Acephate found on exported rice

A detectable a level of acephate (an organophosphate insecticide) was identified in a recent shipment of rice by a receiving country's grain inspection service. This is the third time acephate has been detected in U.S. exported rice the past three months.

In Louisiana, acephate is labeled for use for control of stinkbugs, corn ear worm, salt marsh caterpillar and the threecornered alfalfa hopper in soybeans. It is also labeled for use to control thrips, plant bugs and stinkbugs in cotton. One advantage of acephate has over pyrethroid insecticides for control of stink bugs is its longer residual. However, acephate is not labeled for use in rice to control stink bugs.

The origin of the acephate on the exported rice is unknown. It is very possible that a drift event from a nearby soybean field being sprayed with acephate (Orthene) to control stinkbugs occurred, which contaminated the rice. Although the exact origin of the acephate is unknown, one thing that we do know is that if acephate continues to show up in U.S. exported rice, it will surely undermine our efforts to promote and sell our high quality rice to export markets. So please, make every effort to ensure that acephate does not find its way on U.S. rice in the future. The future of our industry depends on it.

2014 Louisiana rice crop worth over $670 million

Every year the LSU AgCenter tabulates the value of Louisiana agriculture commodities and publishes this information in the Louisiana Agriculture Summary of Agriculture and Natural Resources. This publication serves as a historical record of the Louisiana cropping season and estimates how agriculture industries contribute to our state's economy. The Agriculture Summary for the 2014 cropping season is still being put together. However, the preliminary rice data has been completed.

Rice acreage in Louisiana increased from 410,902 acres in 2013 to 456,047 acres in 2014. Medium-grain production increased from approximately 4% in 2013 to 14% in 2014. Much of this increase in medium-grain production was due to the decrease in rice acreage in California. The variety Jupiter was the predominant medium-grain grown.

The 2014 rice crop began with a cool and wet March. This delayed much of the drill-seeding and caused a slight increase in water-seeded acreage. The cool March also slowed the early season growth and development. Disease and insect pressure were average to below average in 2014. Daytime and nighttime high temperatures were not excessive during grain fill. Harvest season was again marred with wet conditions, which led to delayed first crop harvest and postponed the onset of the ratoon crop. The wet conditions also slightly decreased the ratooned acres in southwest Louisiana. The mild temperatures coupled with below average disease and insect pressure led to high crop yields with excellent milling and grain quality traits. Average yield in 2014 was 7,539 pounds per acre, slightly lower than the record yield of 7,600 pounds per acre set in 2013.

The 2014 Louisiana rice crop was harvested by 1,040 producers. The gross farm value of the state's rice crop was $515.7 million for 2014, $21 million (4 percent) more than the year before. The higher acreage, combined with high yields, accounted for the significant increase in overall farm-gate value in 2014. Value added of $154.7 million, when combined with farm-gate value, brought the total value of rice production in Louisiana to $670.4 million.

The Louisiana Agriculture Summary of Agriculture and Natural Resources publication from 2000 to 2013 can be found online on the LSU AgCenter's website at: http://www.lsuagcenter.com/agsummary/.

Do you know which parishes grew the most rice in 2014?

Twenty-nine Louisiana parishes grew rice in 2014.Table 1 below indicates the total estimated acres per parish.

Louisiana State University Agricultural Center, Louisiana Agricultural Experiment Station,
Louisiana Cooperative Extension Service, and Louisiana State University College of Agriculture.
The LSU AgCenter is a statewide campus of the LSU System and provides equal opportunities in programs and employment.
This project was partially supported by USDA National Institute of Food and Agriculture and the Louisiana Rice Research Board.