

Sugarcane Fertility Update

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Louisiana Sugarcane Fertilizer Recommendations

- **Current fertilizer recommendations for potassium, phosphorus, and sulfur are based on research conducted in Louisiana 30-40 years ago.**
- **New varieties may be more efficient in their use of fertilizer.**
- **New technologies are available to apply fertilizer more accurately and current variable-rate technologies allow producers to better target deficient areas and ultimately save money.**
- **We have recently updated N recommendations, reducing rates, while maintaining sugar yields and increasing cane quality.**
- **It's time to re-evaluate and update the recommendations for potassium, phosphorus and sulfur.**

Nutrients Important for Sugarcane Production in Louisiana

- ***Nitrogen*** – a constituent of amino acids, proteins, nucleic acids and chlorophyll. Excessive nitrogen will decrease TRS, increase lodging and may increase disease (rust).
- ***Potassium*** – important for proper water use and may help in drought tolerance and deficient plants are more prone to certain diseases and more likely to lodge.
- ***Phosphorus*** – important for root development and in the transfer and storage of energy within the plant.
- ***Sulfur*** – important in chlorophyll production and photosynthesis. Sulfur may also help plants use nitrogen more efficiently.
- ***Cobalt*** – delays senescence and helps plants manage stress by inhibiting ethylene production.

Phosphorus (P_2O_5)

| | Soil Test | Plant | Stubble |
|--|-----------|-------|---------|
| • About 1 lb is removed / T cane. | | | |
| • Availability depends on pH and soil type. | Very Low | 50 | 60 |
| • Phosphorus rate recommendations are based on soil test. | Low | 45 | 50 |
| • Phosphorus is important for root development. | Med. | 40 | 40 |
| • Phosphorus is important in the transfer and storage of energy. | High | 0 | 0 |
| | Very High | 0 | 0 |

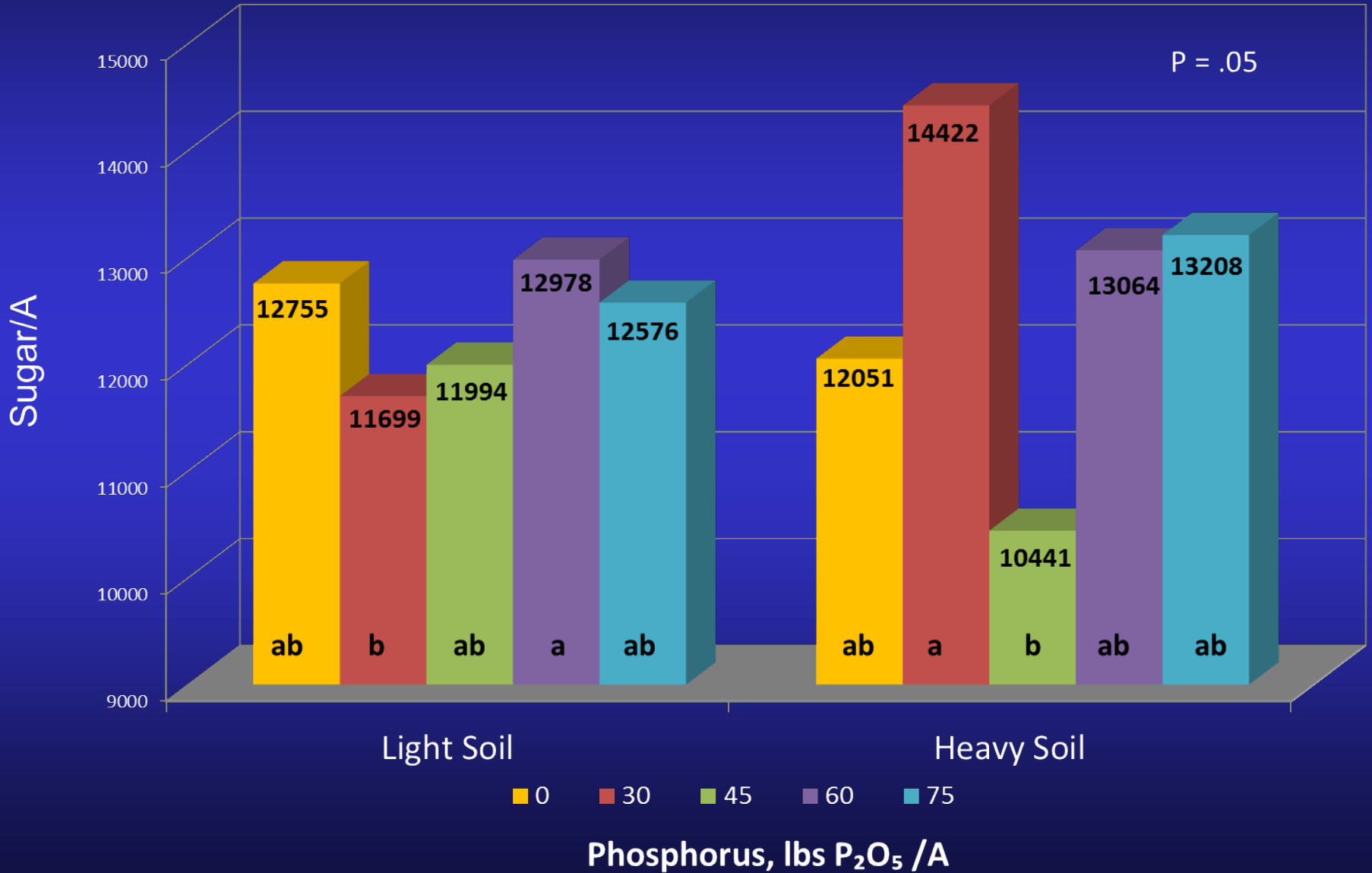
- Recent studies (2005-2007, 2010-2015) have not documented a significant cane or sugar yield response to phosphorus fertilizer.

USDA Phosphorus Fertilizer Studies, 2015

- Varieties: HoCP 96-540, L 01-299
- Crop Age: PC, 1R
- All soils tested very low, low or medium for phosphorus
- P rates: 0, 30, 45, 60, 75 lbs P_2O_5/A (TSP)
- Reps: 6

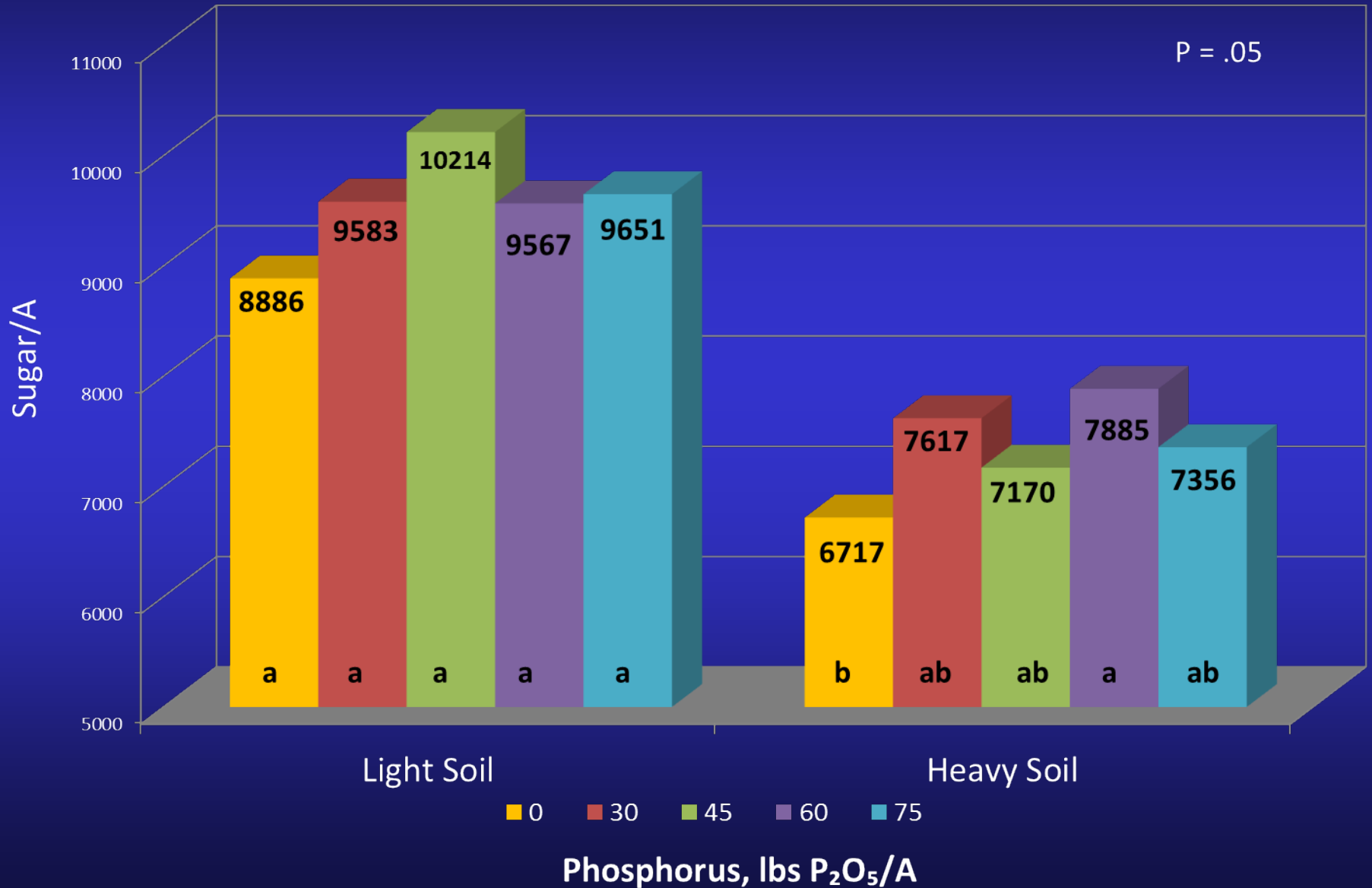
Response to Phosphorus Fertilizer

HoCP 96-540, 1st Stubble, Sugar/A, John Gay 2015



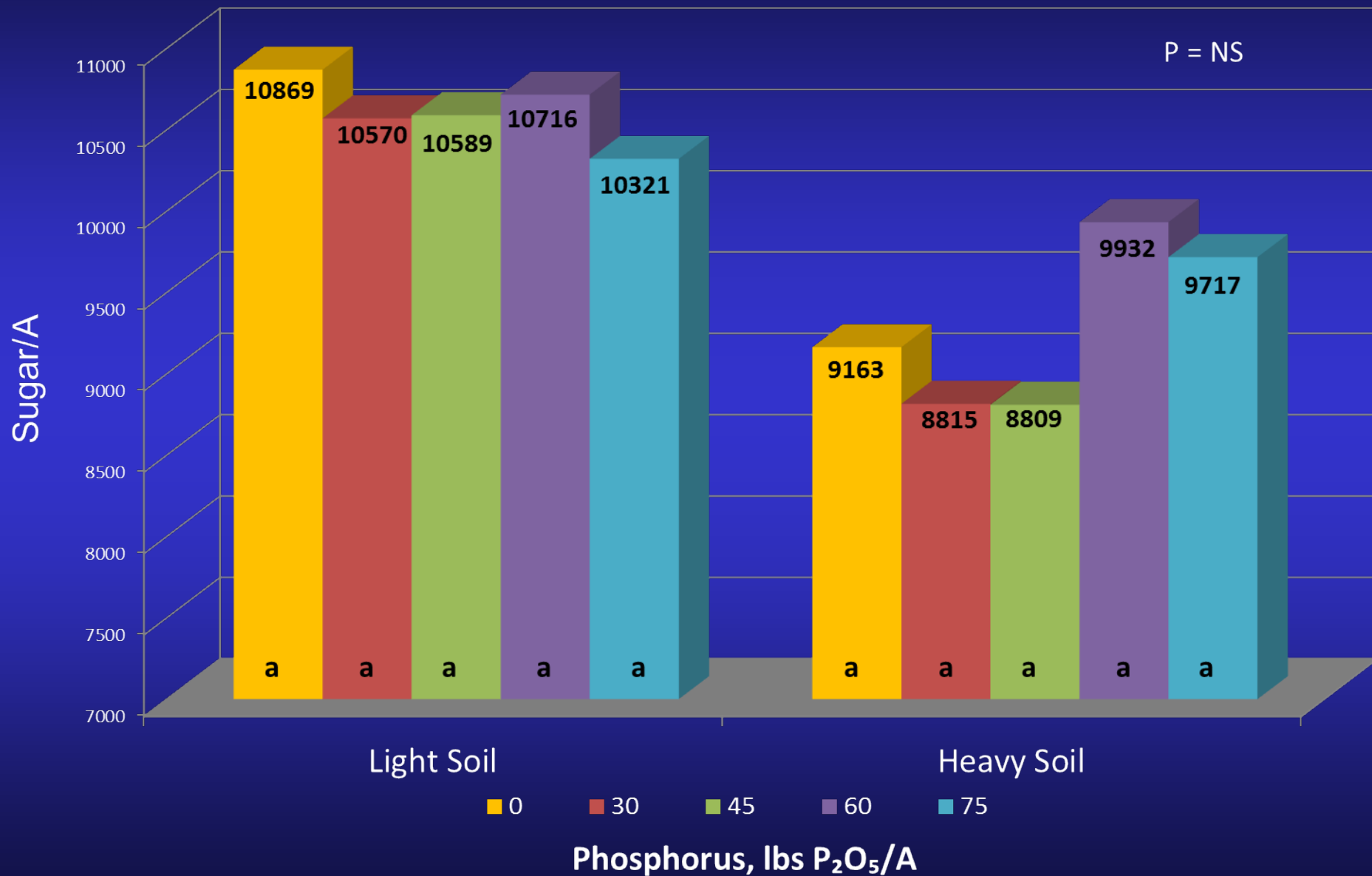
Response to Phosphorus Fertilizer

L01-299, 1st Stubble, Sugar/A, Trial Plantation 2015



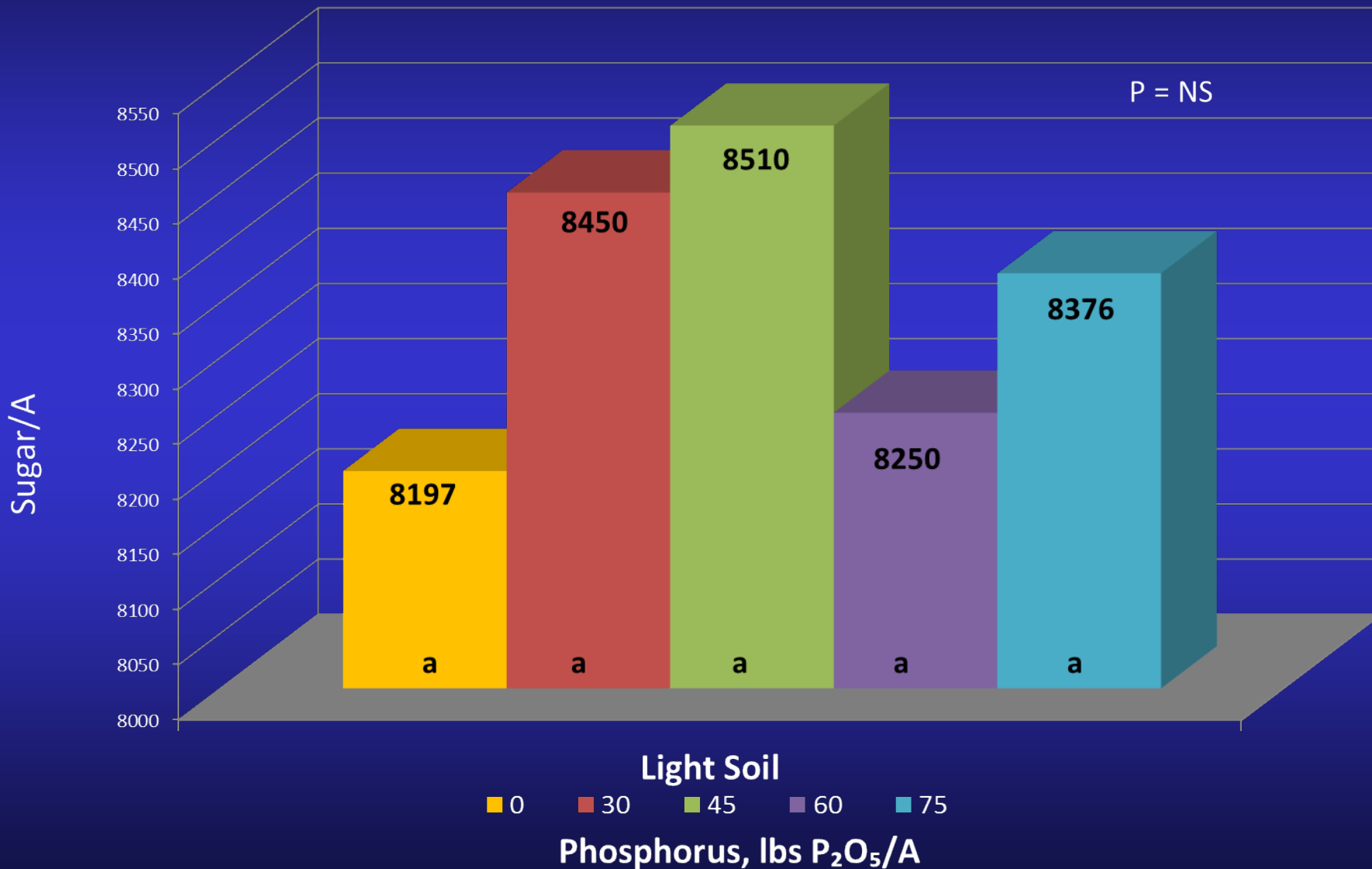
Response to Phosphorus Fertilizer

HoCP 96-540, Plant Cane, Sugar/A, Keith Dugas, 2015



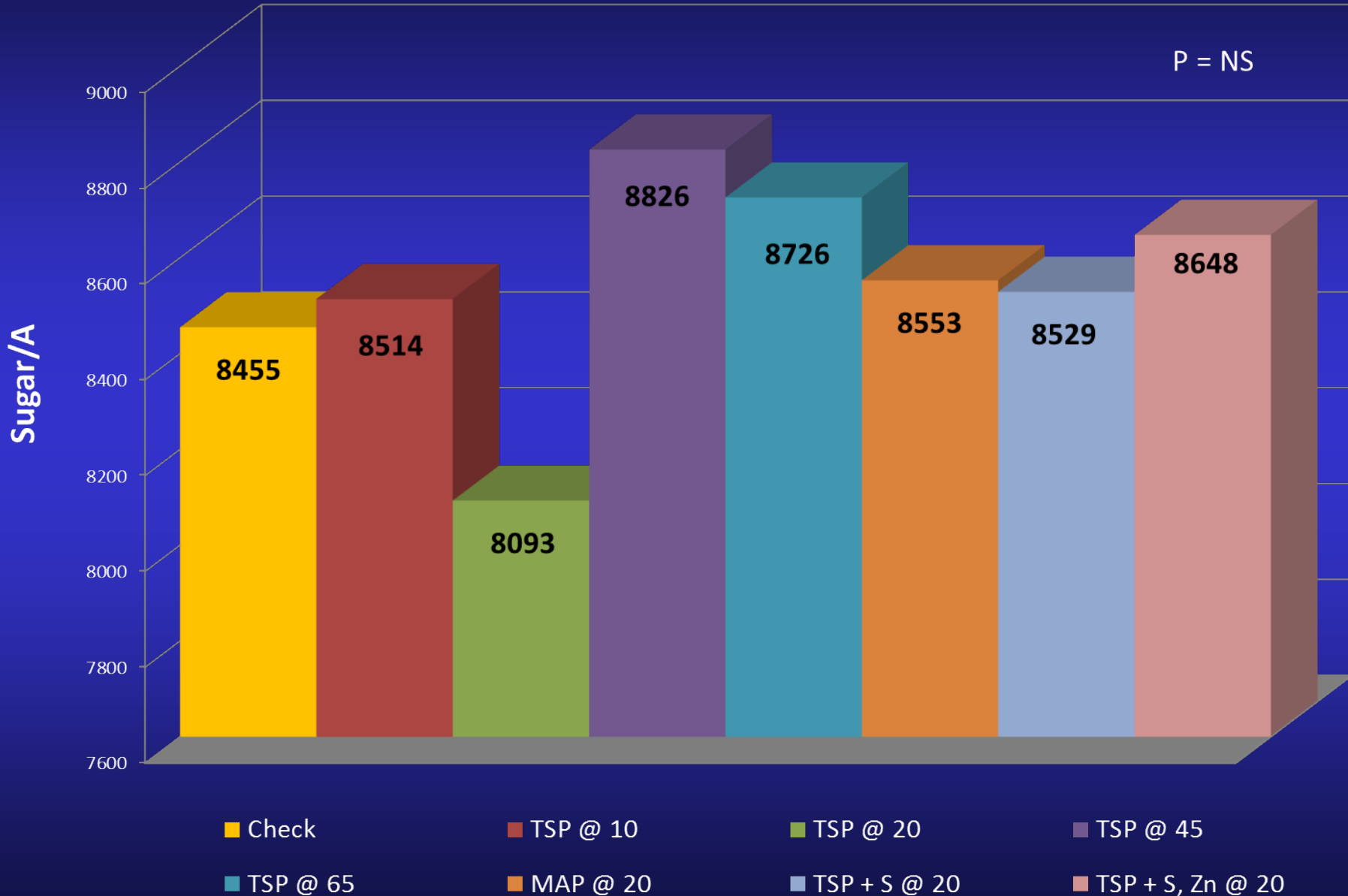
Response to Phosphorus Fertilizer

L 01-299, Plant Cane, Sugar/A, Danny Naquin, 2015



Phosphorus Study in St. Gabriel

2nd Ratoon L 01-299, 2015



Summary of Phosphorus Studies

- A significant response to phosphorus fertilizer was only observed in one trial for HoCP 96-540 and L01-299, plant cane, and 1st stubble trials.
- Additional research is needed to clarify rate requirements and possibly revise recommendations. All studies will be continued through 2nd stubble.

Potassium (K₂O)

- About 3 lbs removed / T cane.
- Potassium rate recommendations are based on soil test.
- Potassium is important for proper water use and may help in drought tolerance.
- Potassium deficient plants are more prone to certain diseases and more likely to lodge.

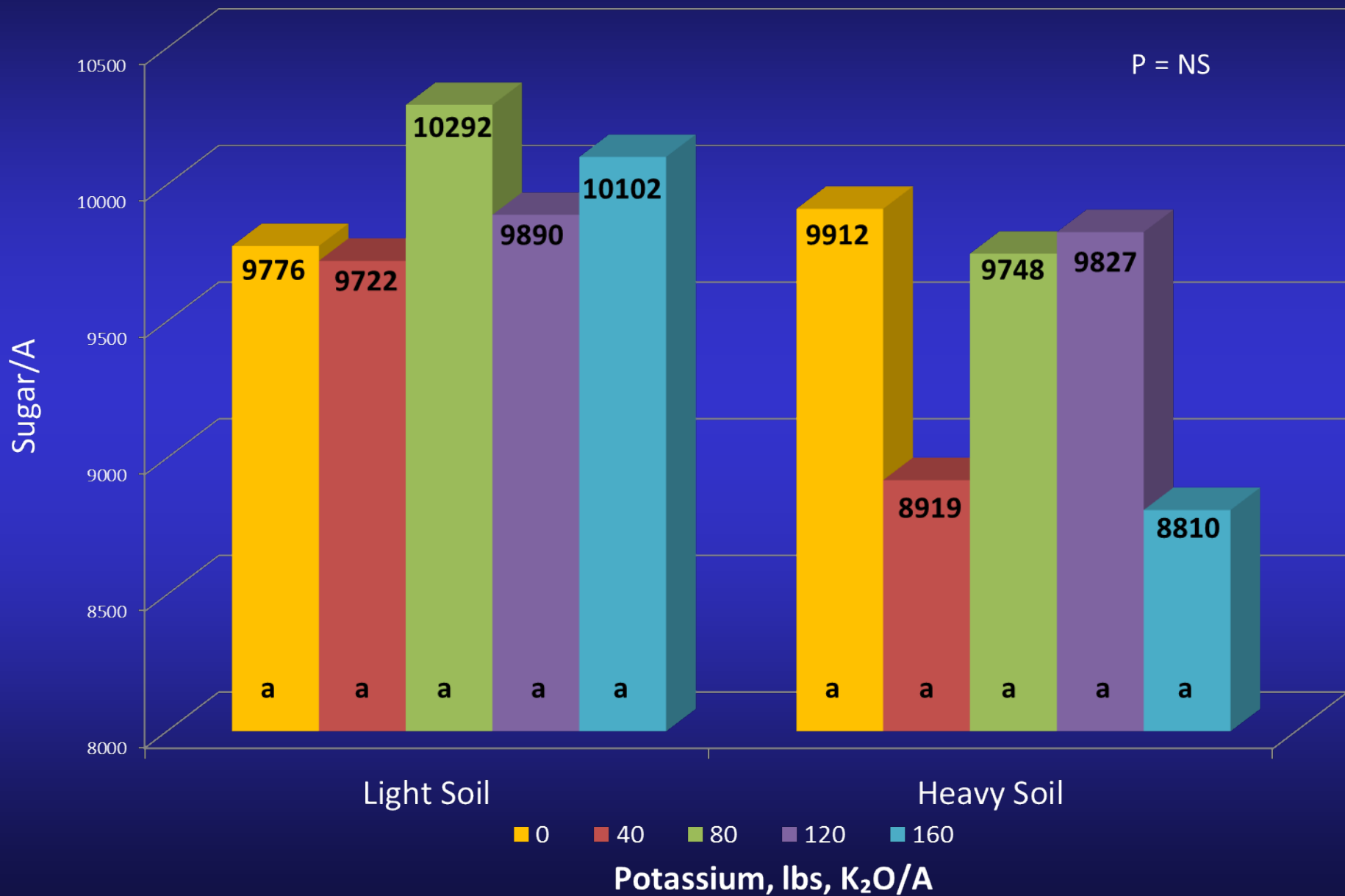
| Soil test | Plant | Stubble |
|-----------|-------|---------|
| Very Low | 130 | 140 |
| Low | 110 | 120 |
| Medium | 80 | 80 |
| High | 0 | 0 |
| Very High | 0 | 0 |

USDA Potassium Fertilizer Studies, 2011-2015

- Varieties: HoCP 96-540, L 99-226, L01-299
- Crop Age: PC, 1R, 2R
- All soils tested low or medium for potassium
- K rates: 0, 40, 80, 120, 160 lbs K_2O/A (KCl)
- Reps: 6

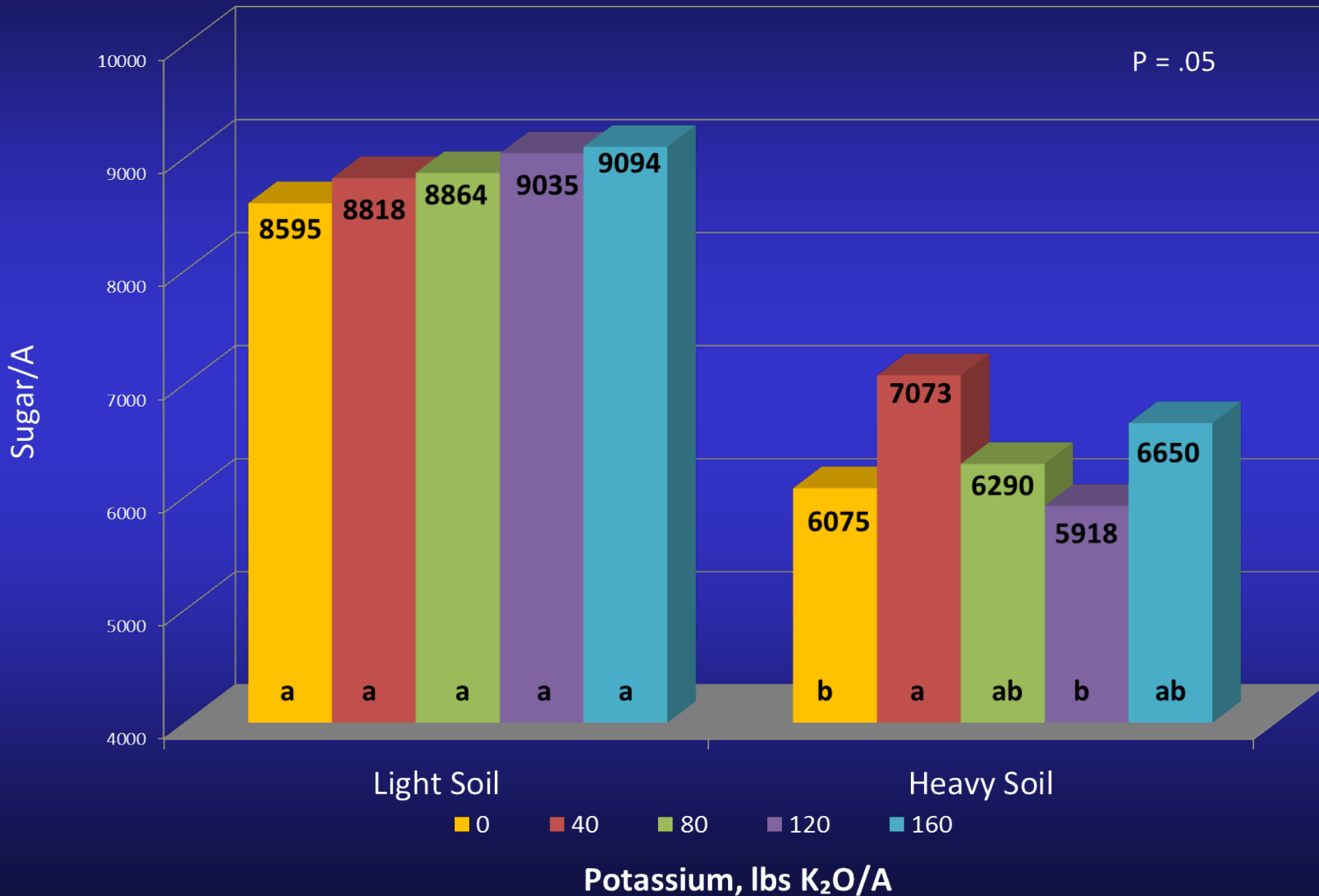
Response to Potassium Fertilizer

HoCP 96-540, 1st Stubble, Sugar/A, Al Landry, 2015



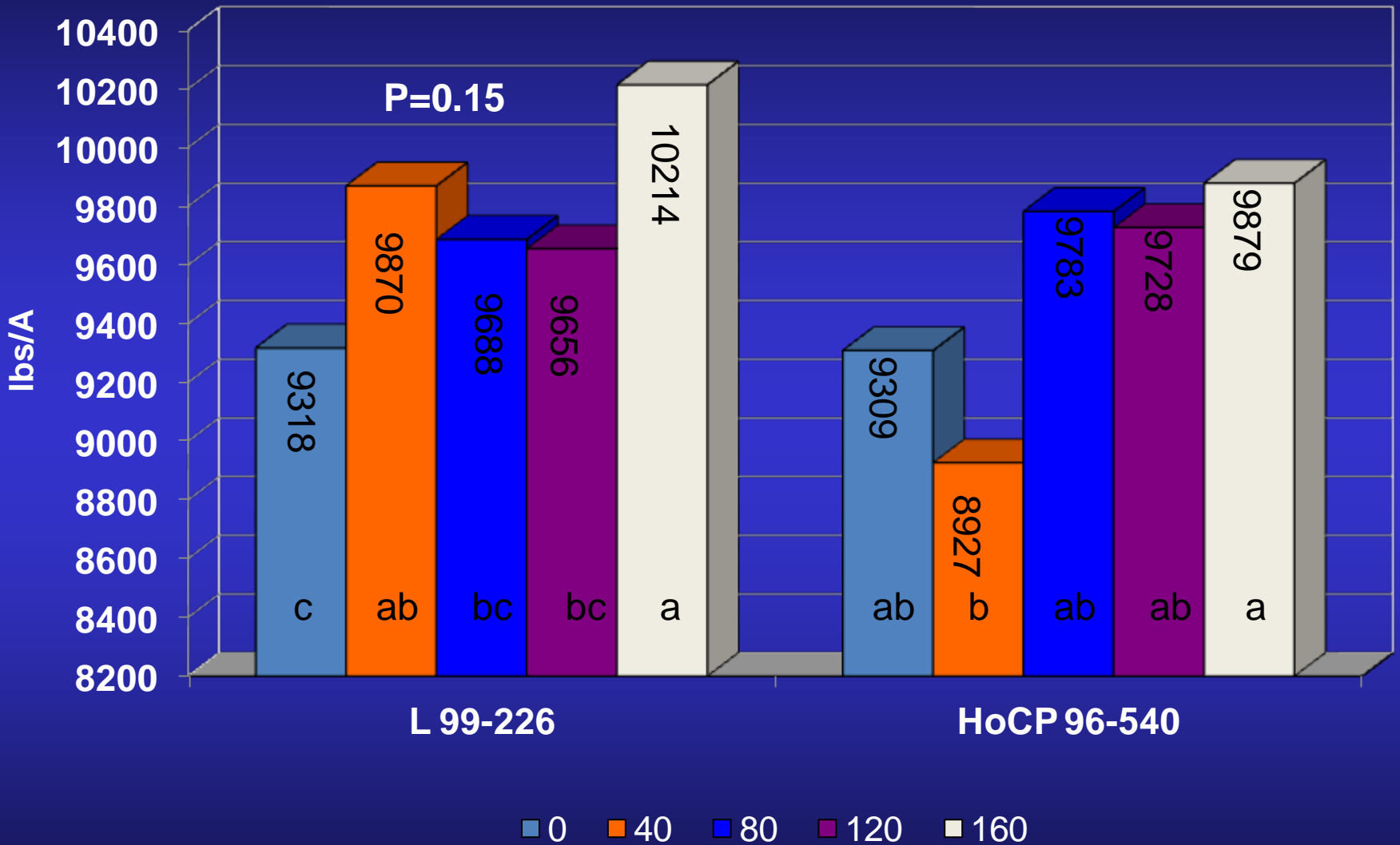
Response to Potassium Fertilizer

L 01-299, 1st Stubble, Sugar/A, Danny Naquin, 2015

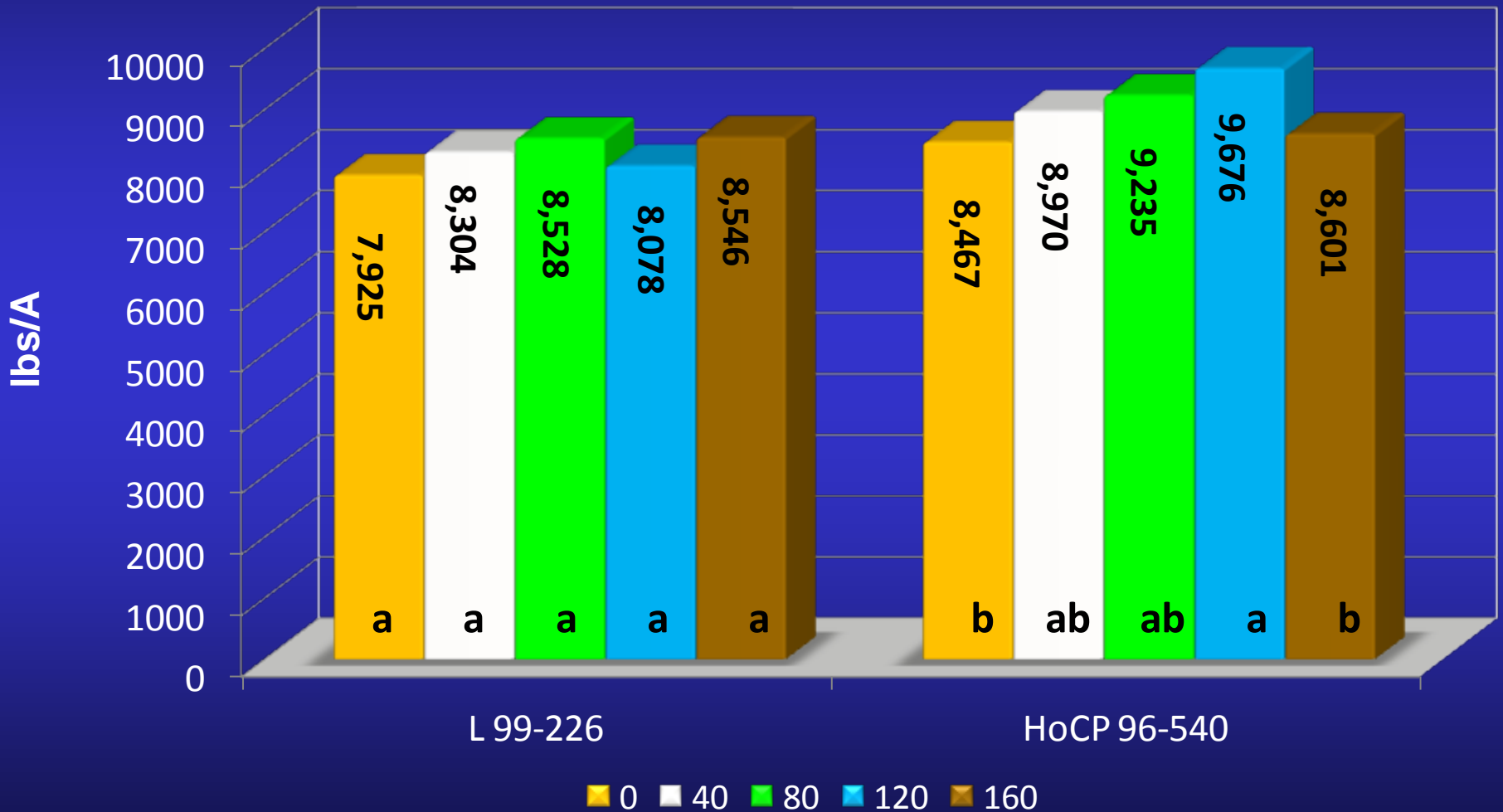


Varietal Response to Potassium Fertilizer

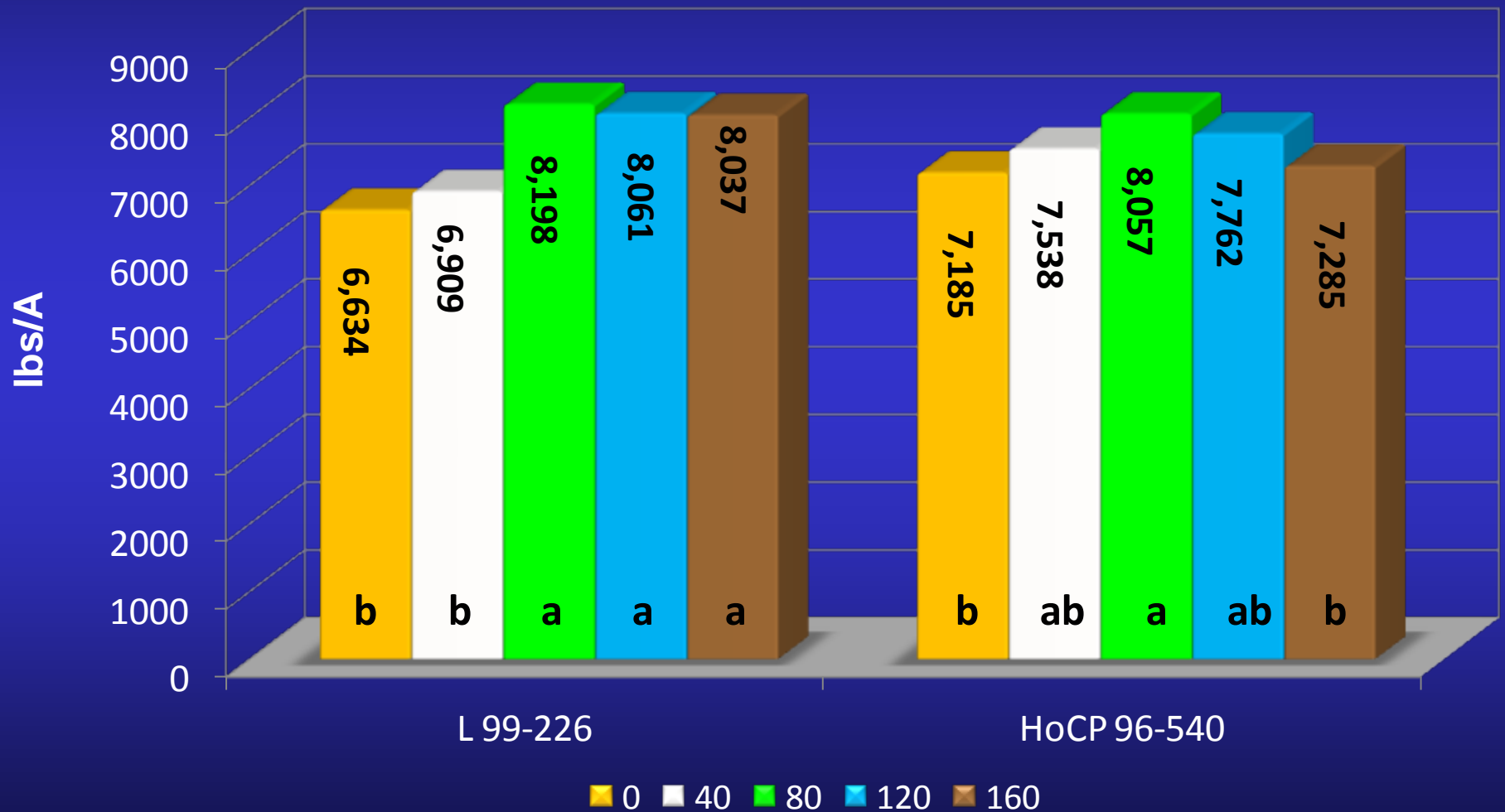
Sugar/A, 1st stubble, USDA, 2012



Varietal Response to Potassium Fertilizer, 1st Stubble, Sugar/A, USDA, 2013

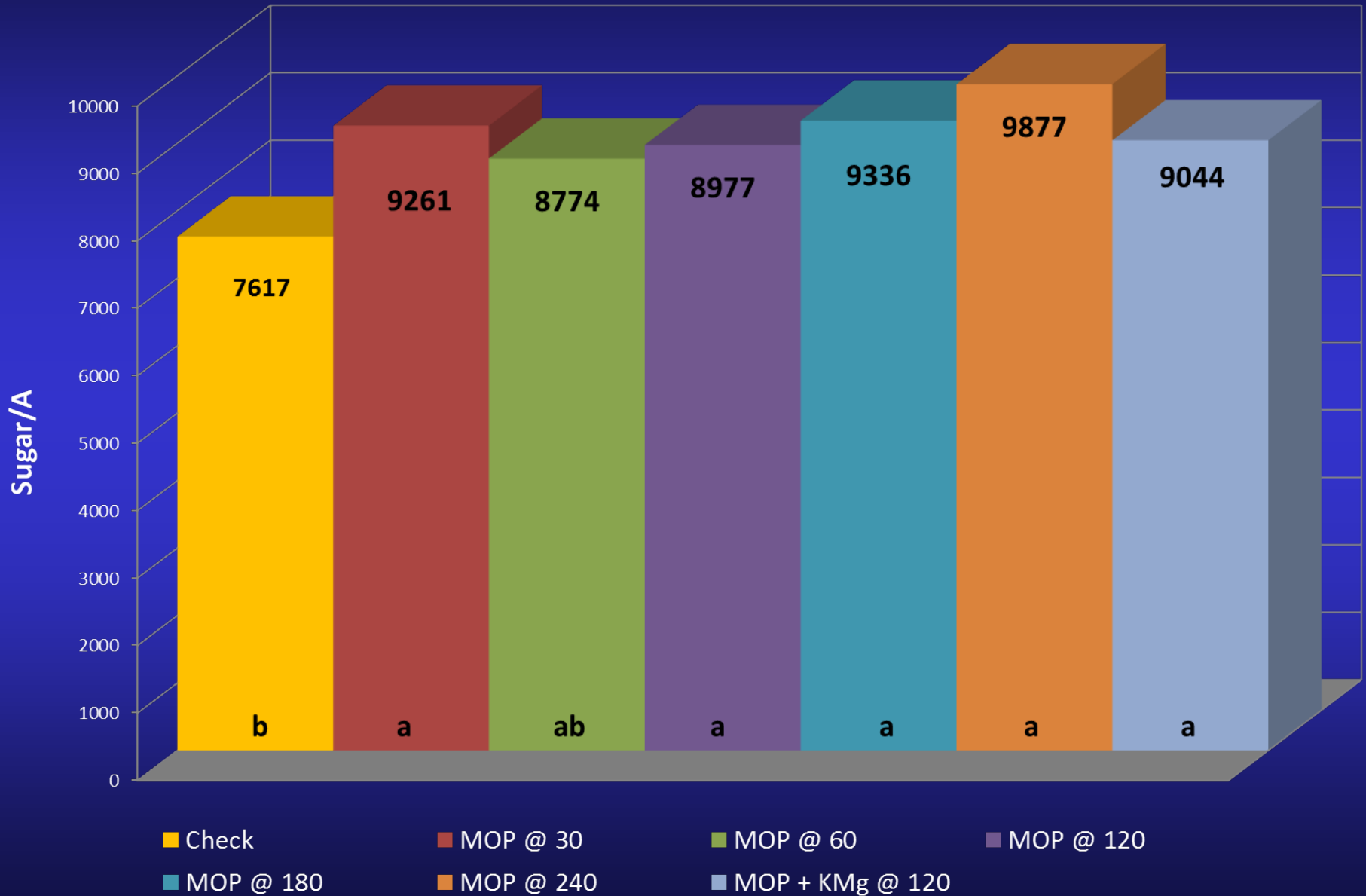


Varietal Response to Potassium Fertilizer, 2nd Stubble, Sugar/A, USDA, 2013



P = .10

Potassium Study in St. Gabriel 2nd Ratoon L 01-299, 2015



Summary of Potassium Studies (2011-2015)

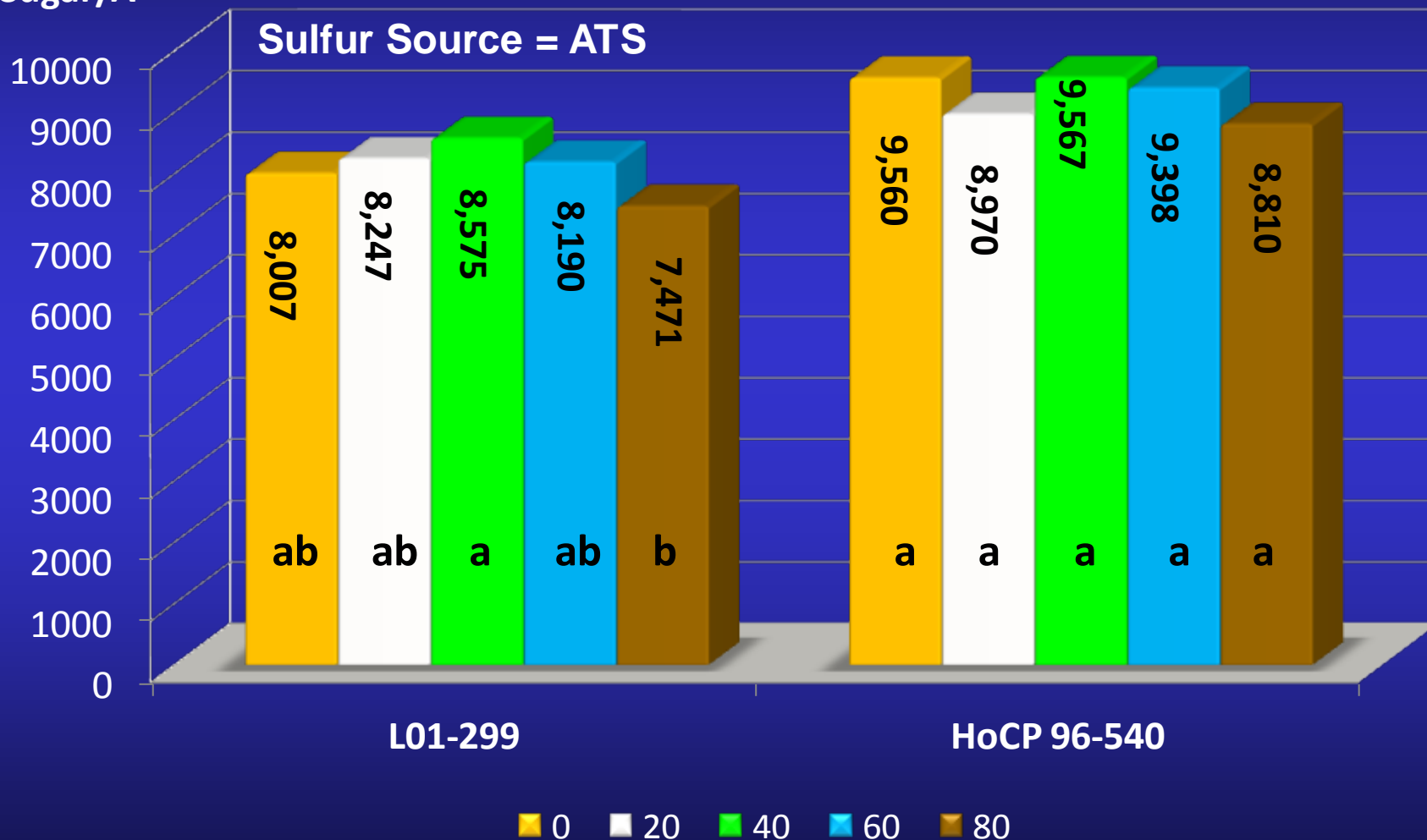
- Optimum K Rate - 0-160 lb K_2O/A :
HoCP 96-540, L 99-226, L01-299, Plant cane, 1st and 2nd stubble.
- Responses to potassium were observed in all crop stages.
- Additional research needed and all studies will be continued through 2nd stubble.

Sulfur (S)

- **Stubble Cane is more likely to respond to sulfur than plant cane.**
- **A response to sulfur is more likely to occur on heavy soils.**
- **Apply 24 lbs Sulfur per acre if recommended by soil test.**
- **Sulfur is important in chlorophyll production and photosynthesis.**
- **Sulfur may help plants use nitrogen more efficiently.**

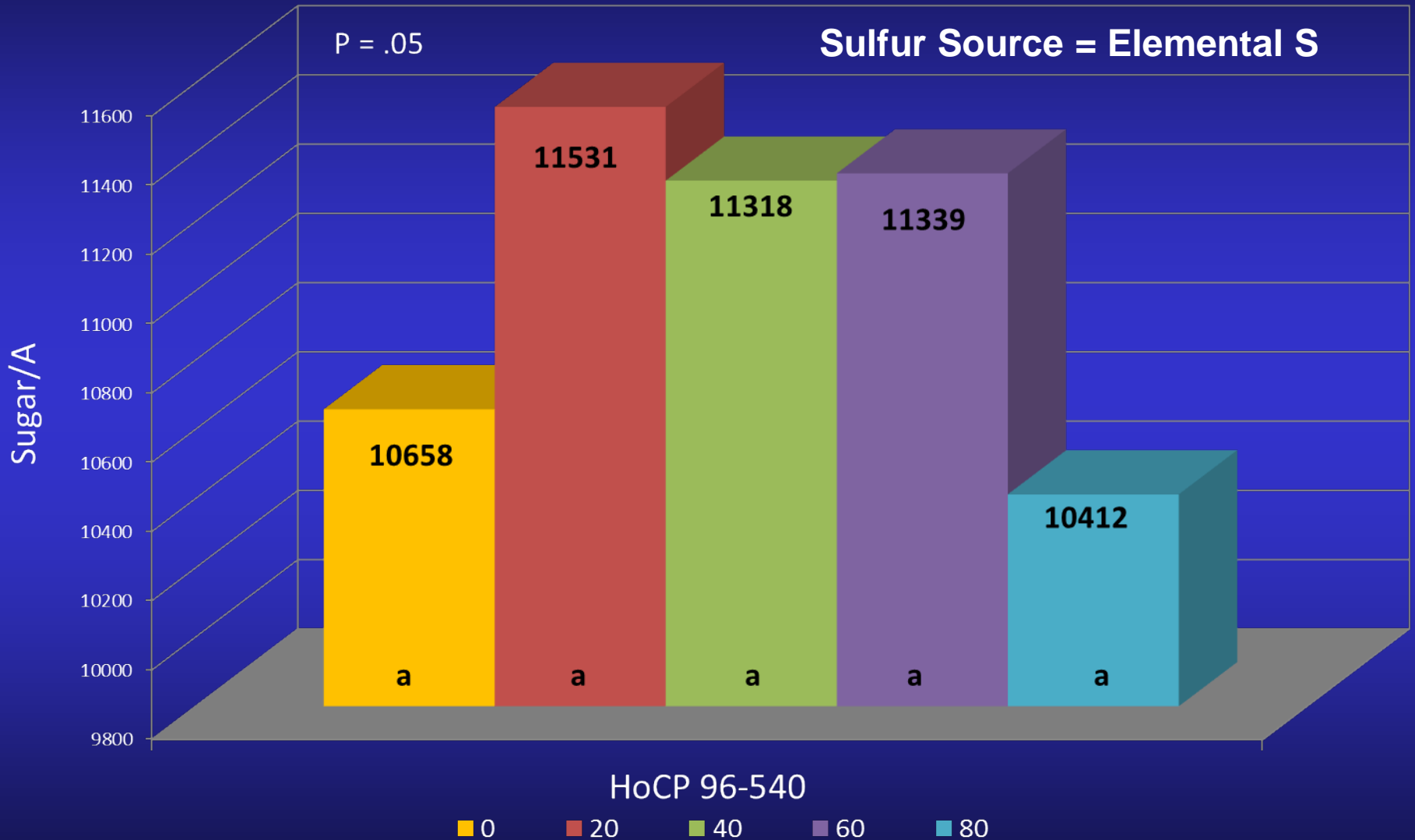
Varietal Response to Sulfur Fertilizer, L01-299 and HoCP 96-540, Plant-cane, Sugar/A, USDA, 2014

Sugar/A



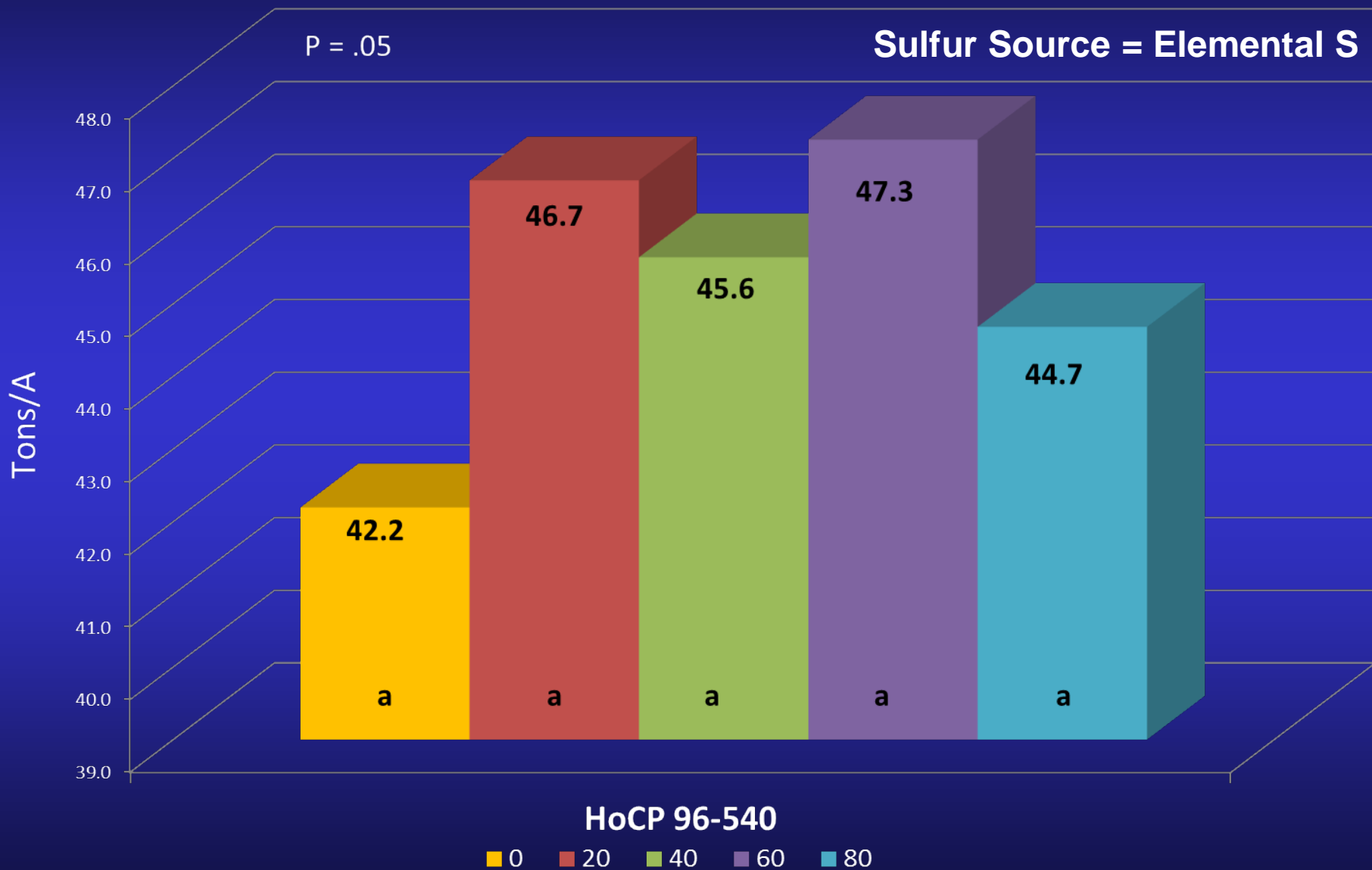
Response to Sulfur Fertilizer

HoCp 96-540, 1st Stubble, Sugar/A, Dean Gravois, 2015



Response to Sulfur Fertilizer

HoCP 96-540, 1st Stubble, Tons/A, Dean Gravois, 2015

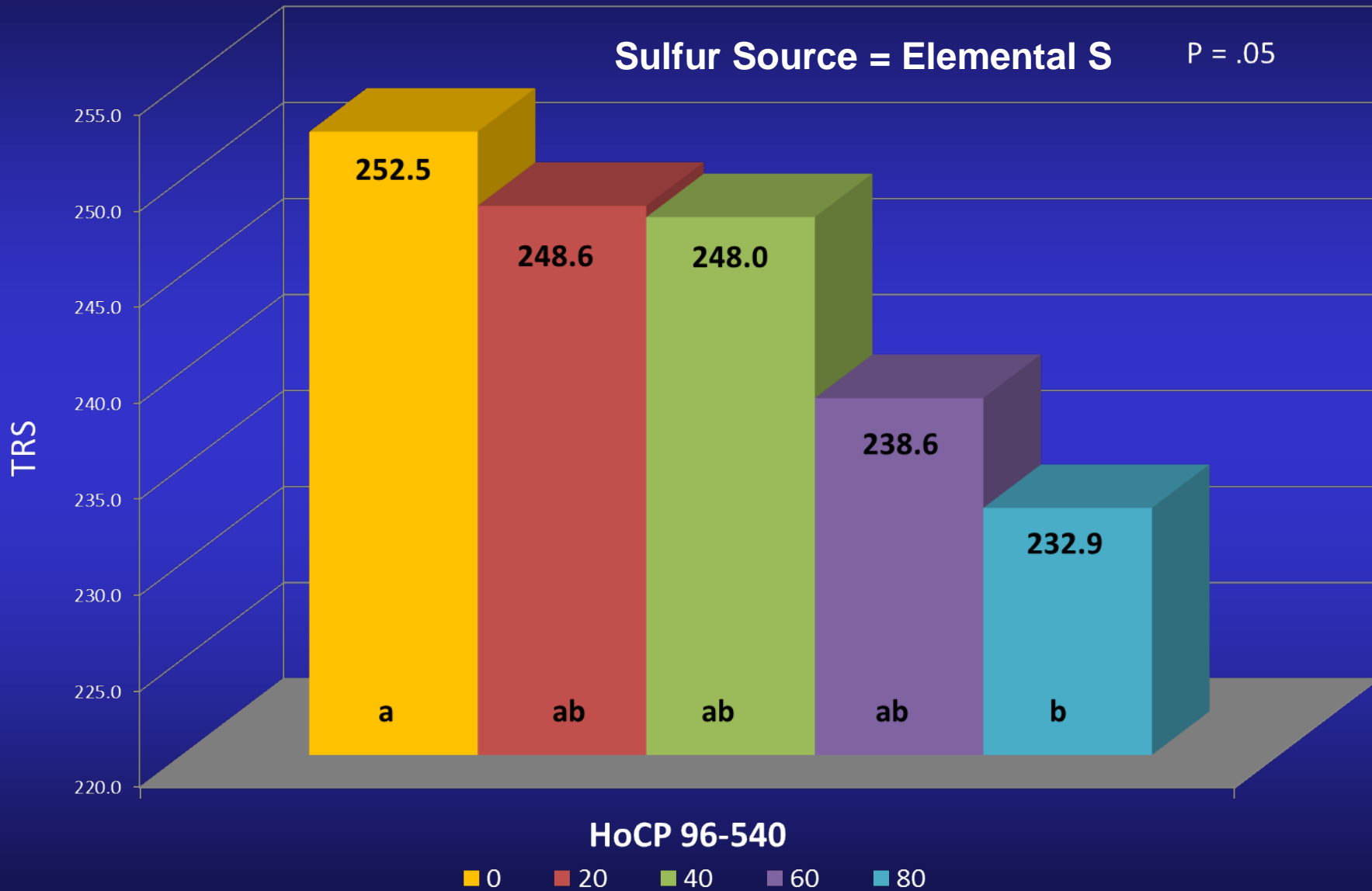


Response to Sulfur Fertilizer

HoCP 96-540, 1st Stubble, TRS, Dean Gravois, 2015

Sulfur Source = Elemental S

P = .05

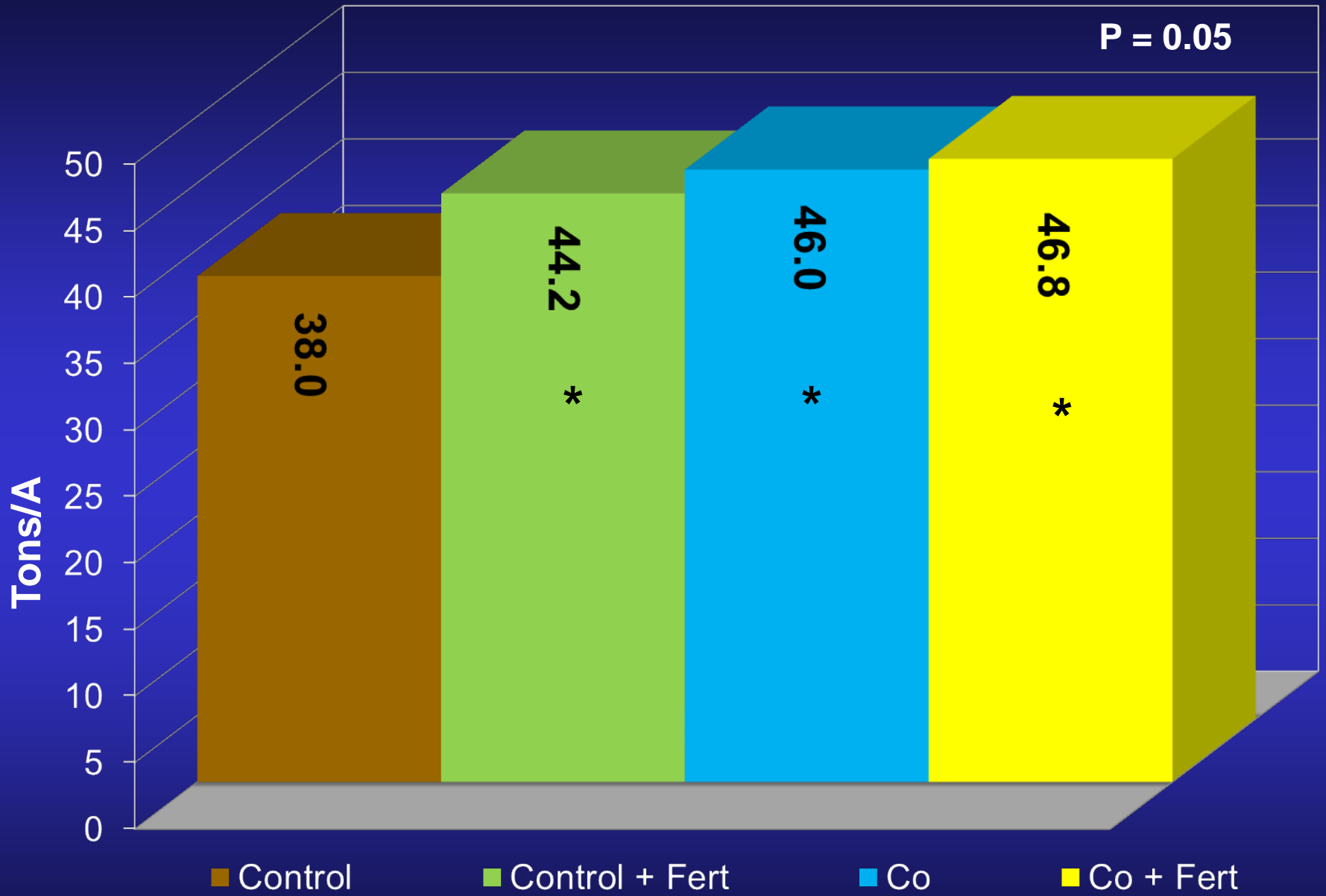


Micronutrient Studies

Sugarcane Planting Study

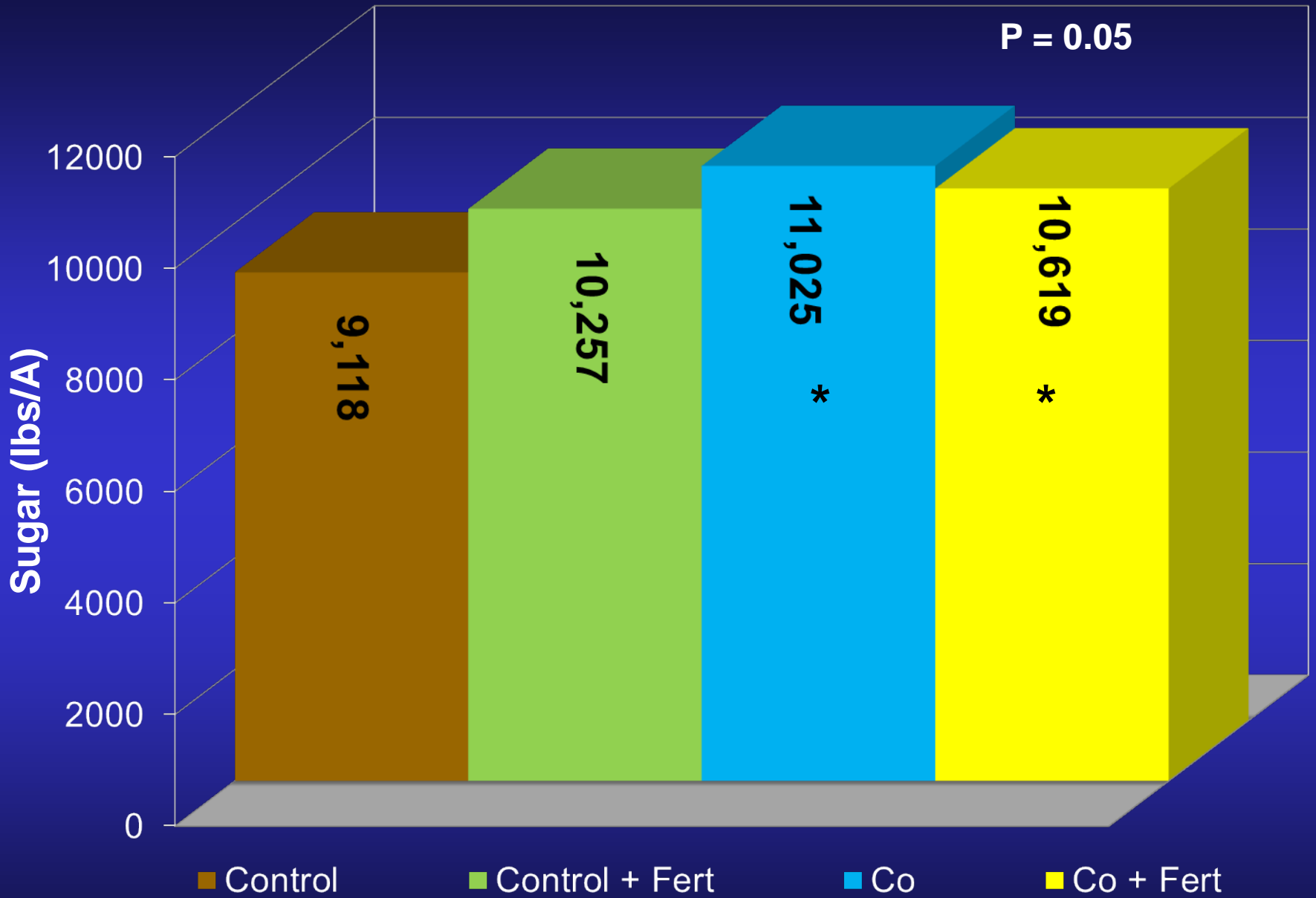
- Sugarcane Variety: HoCP 04-838, Plant-cane.
- Treatments: Planted 2013
 - Control.
 - Control + 10-45-45 Starter Fertilizer.
 - Keylate Co drench (0.05 lb/A, 25 g/a) at planting.
 - Keylate Co drench (0.05 lb/A, 25 g/a) at planting + 10-45-45.

Sugarcane Planting Study 2014 – Cane (Tons/A)



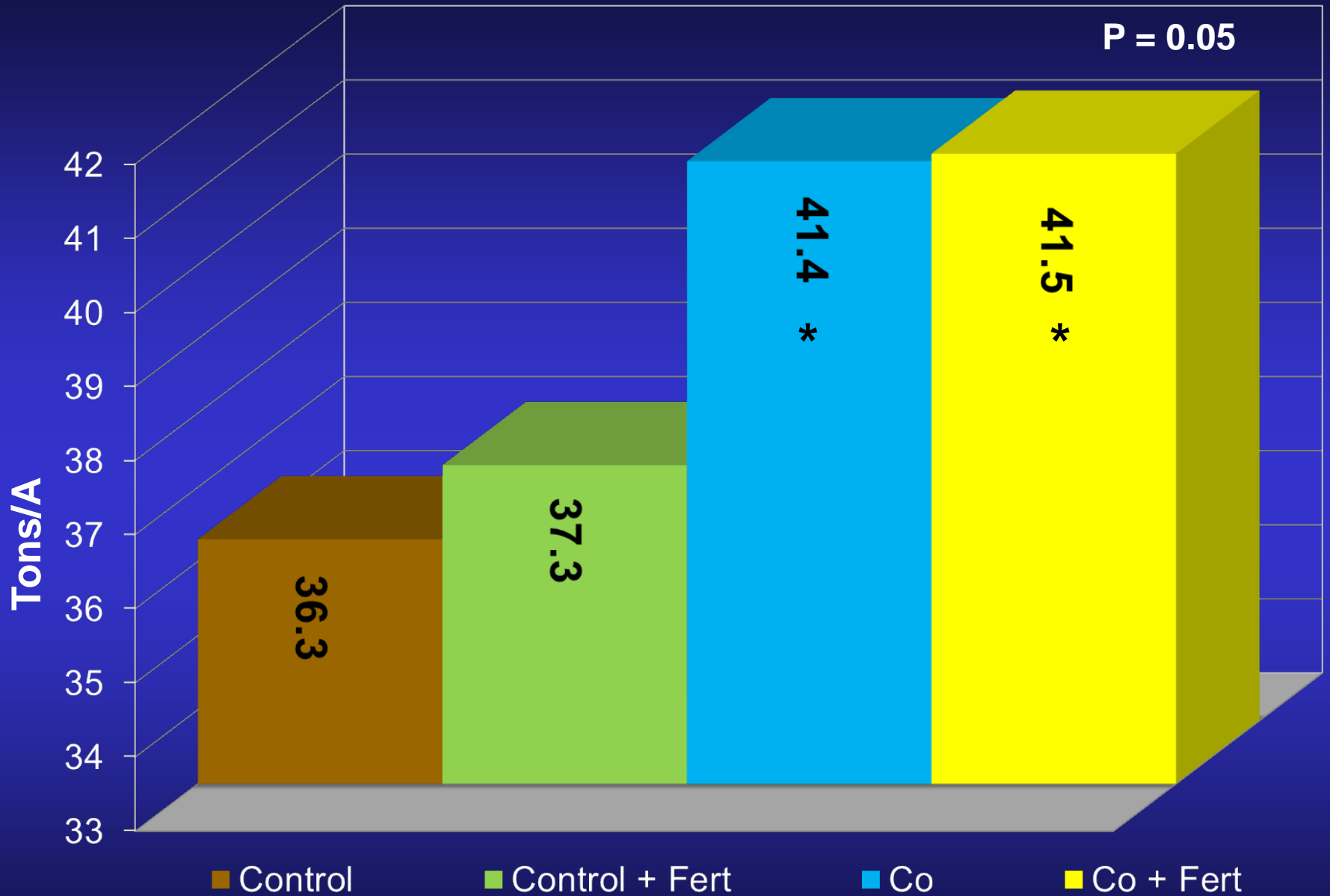
* - Significantly different from control

Sugarcane Planting Study 2014 – Sugar (lbs/A)



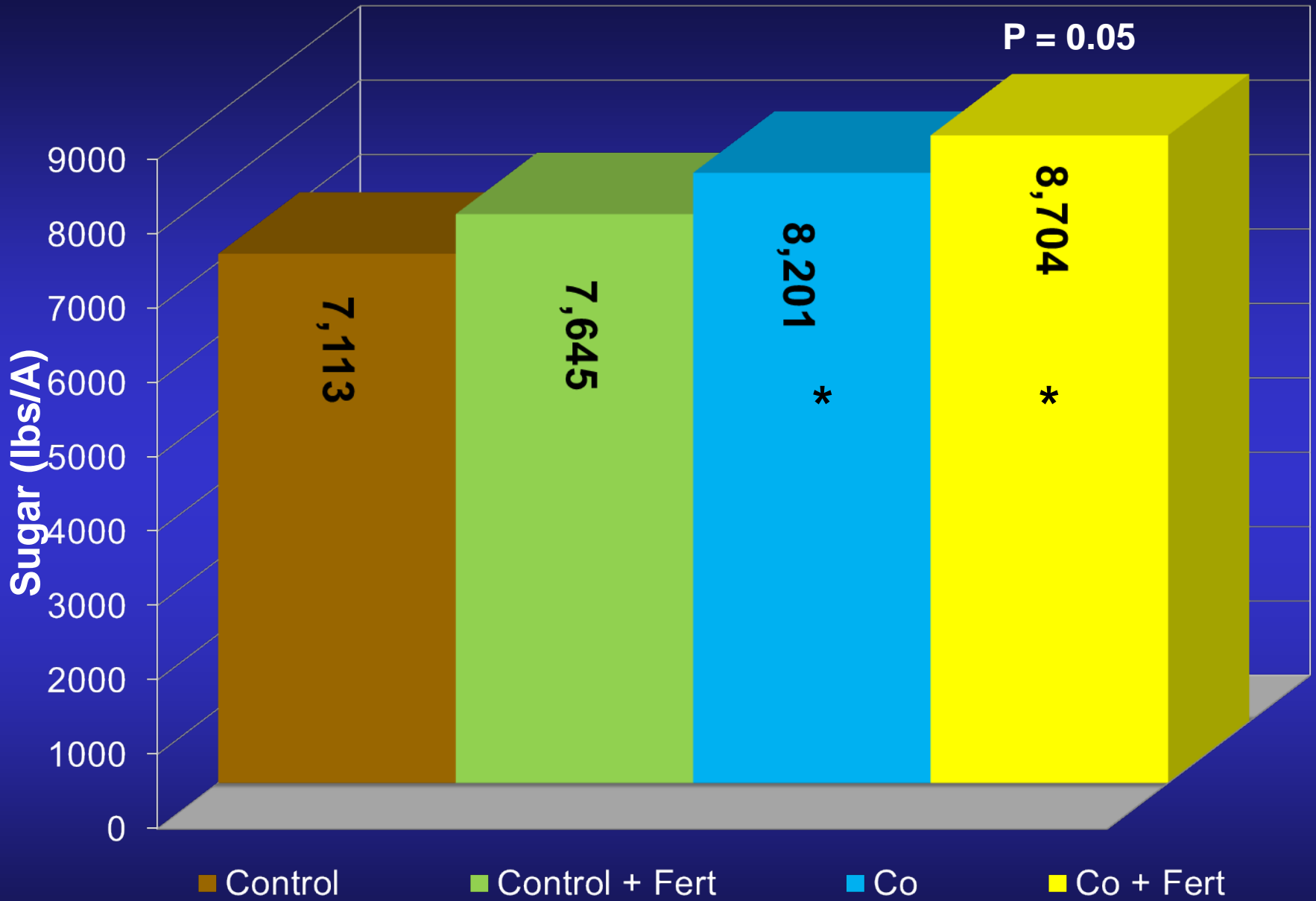
* - Significantly different from control

Sugarcane Planting Study 2015 – Cane (Tons/A)



* - Significantly different from control

Sugarcane Planting Study 2015 – Sugar (lbs/A)



* - Significantly different from control

Foliar Cobalt Test

Variety: HoCP 96-540, 3rd ratoon

Sprayed: 6/9/15

Treatments:

1 = Control

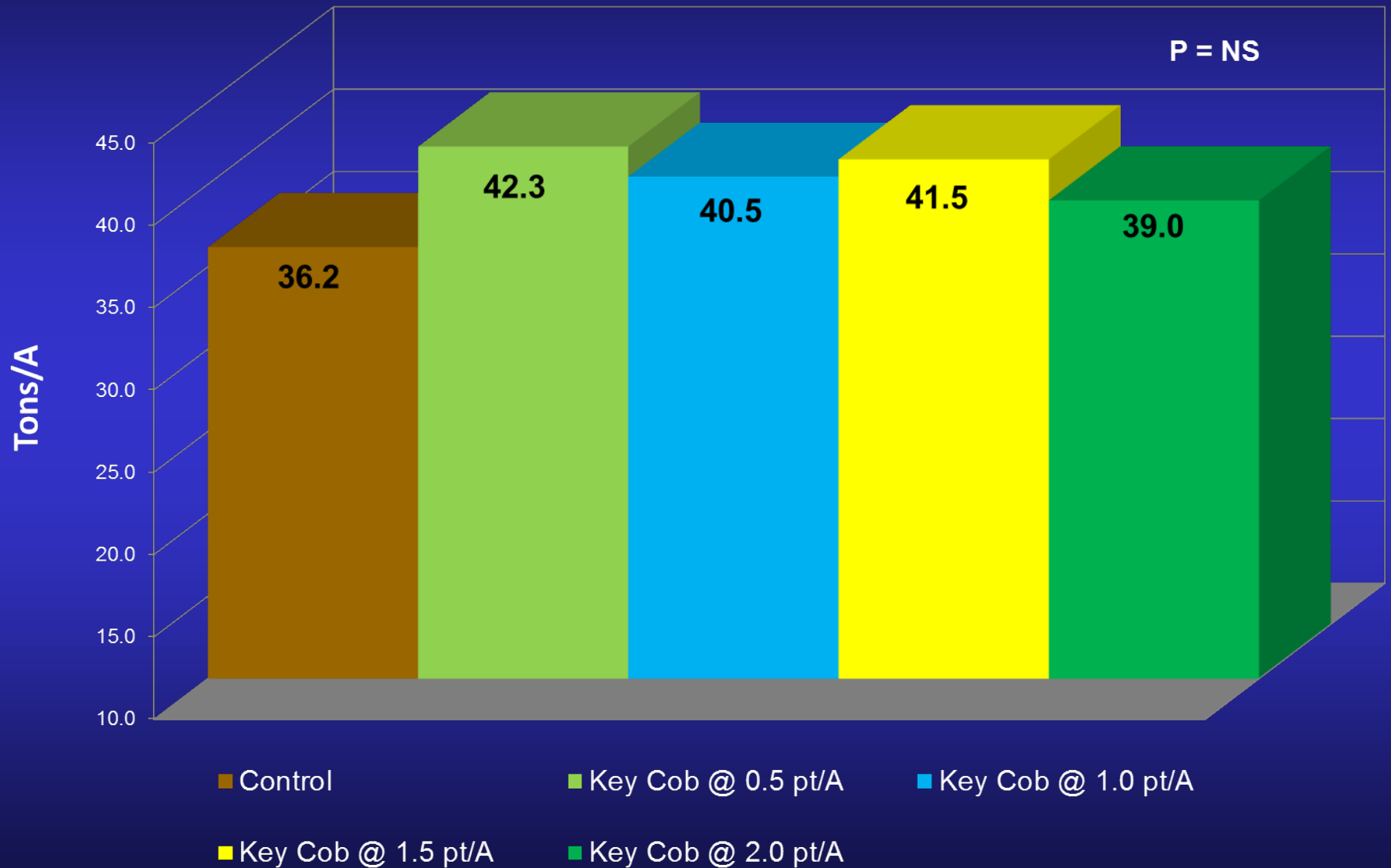
2 = Keylate Cobalt @ 0.5 pt/A

3 = Keylate Cobalt @ 1 pt/A

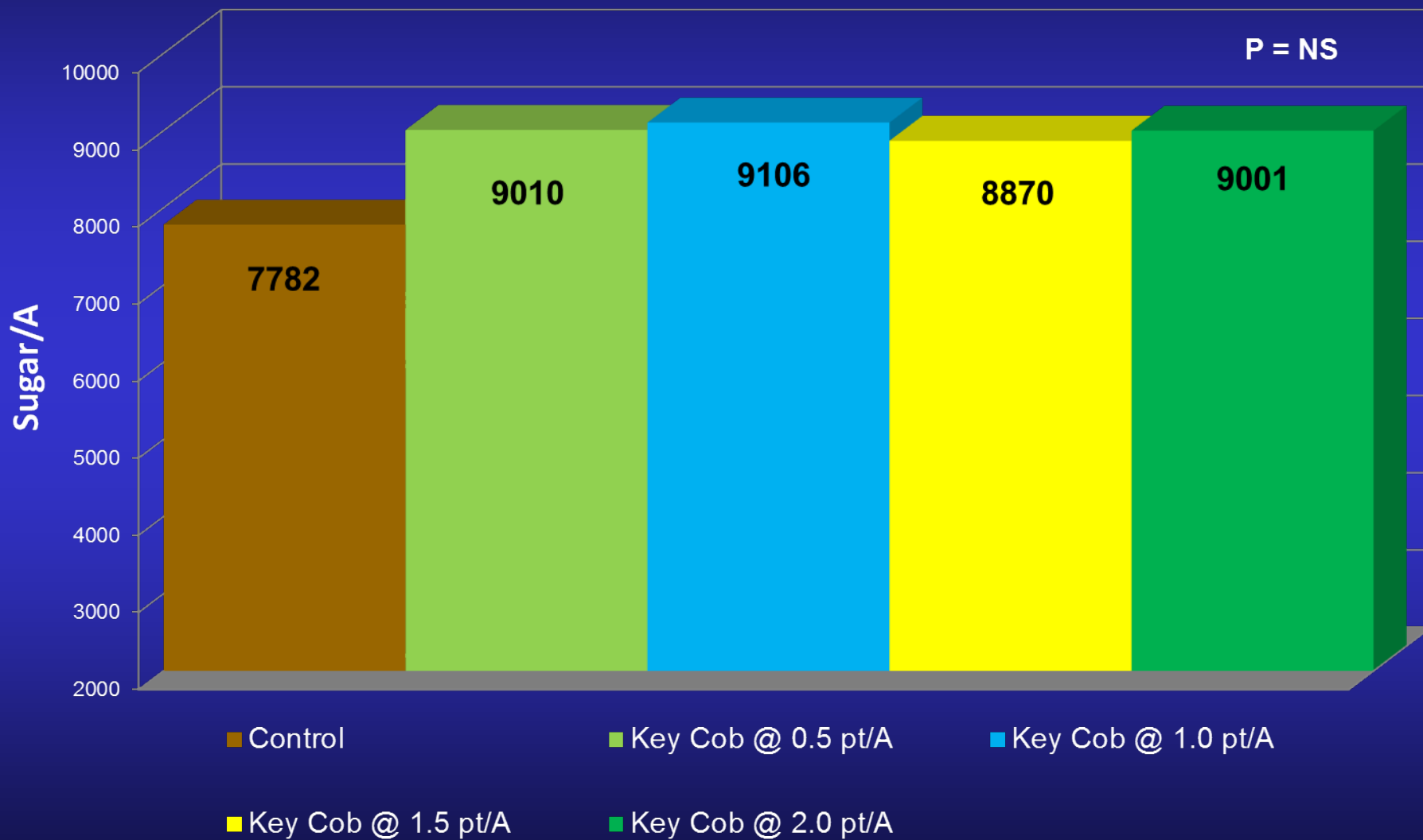
4 = Keylate Cobalt @ 1.5 pt/A

5 = Keylate Cobalt @ 2 pt/A

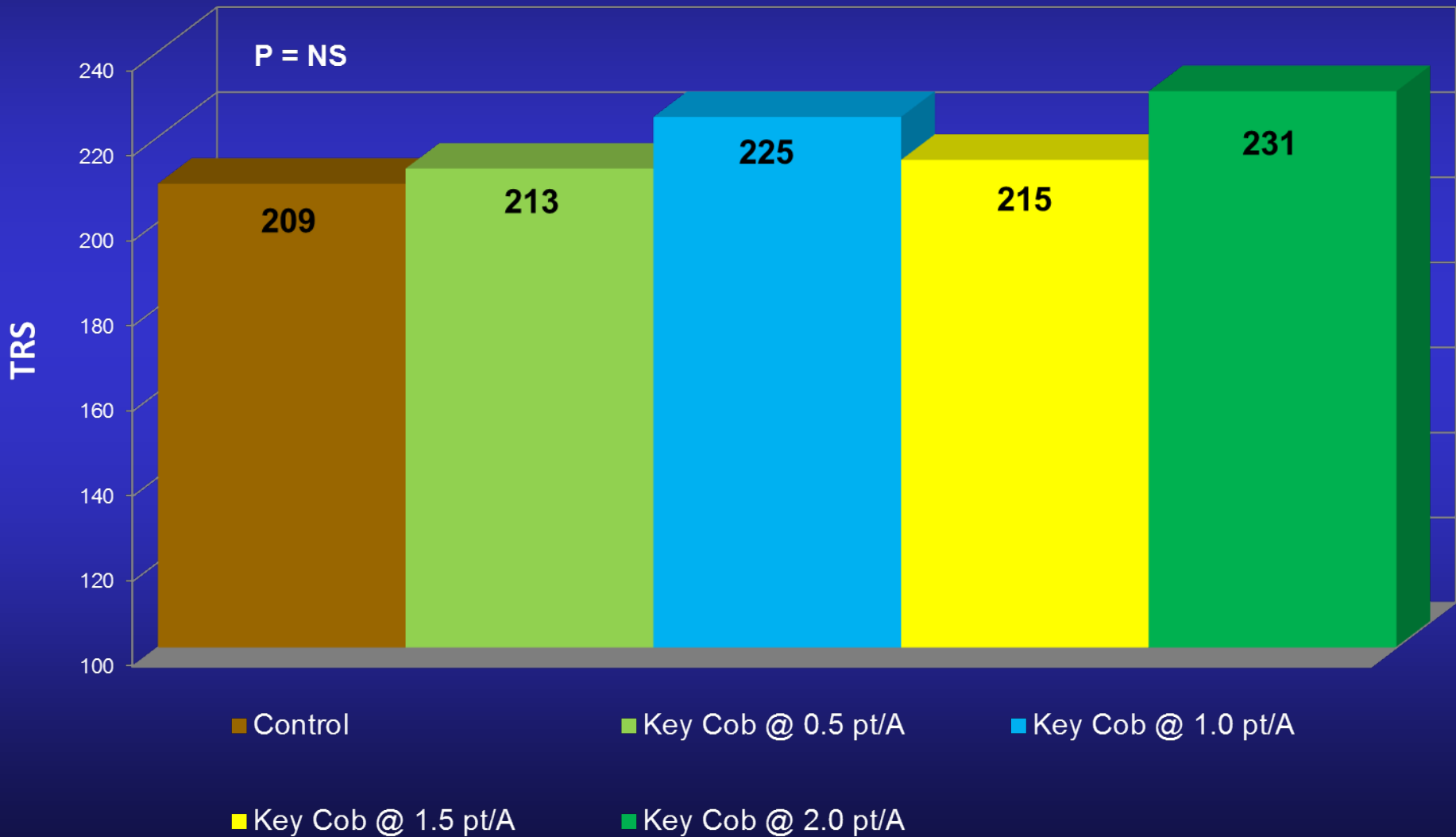
Foliar Cobalt Test 2015



Foliar Cobalt Test 2015



Foliar Cobalt Test 2015



Cobalt & Glyphosate Test

Variety: HoCP 96-540, 3rd ratoon

Sprayed: 6/9/15

Treatments:

1 = Control

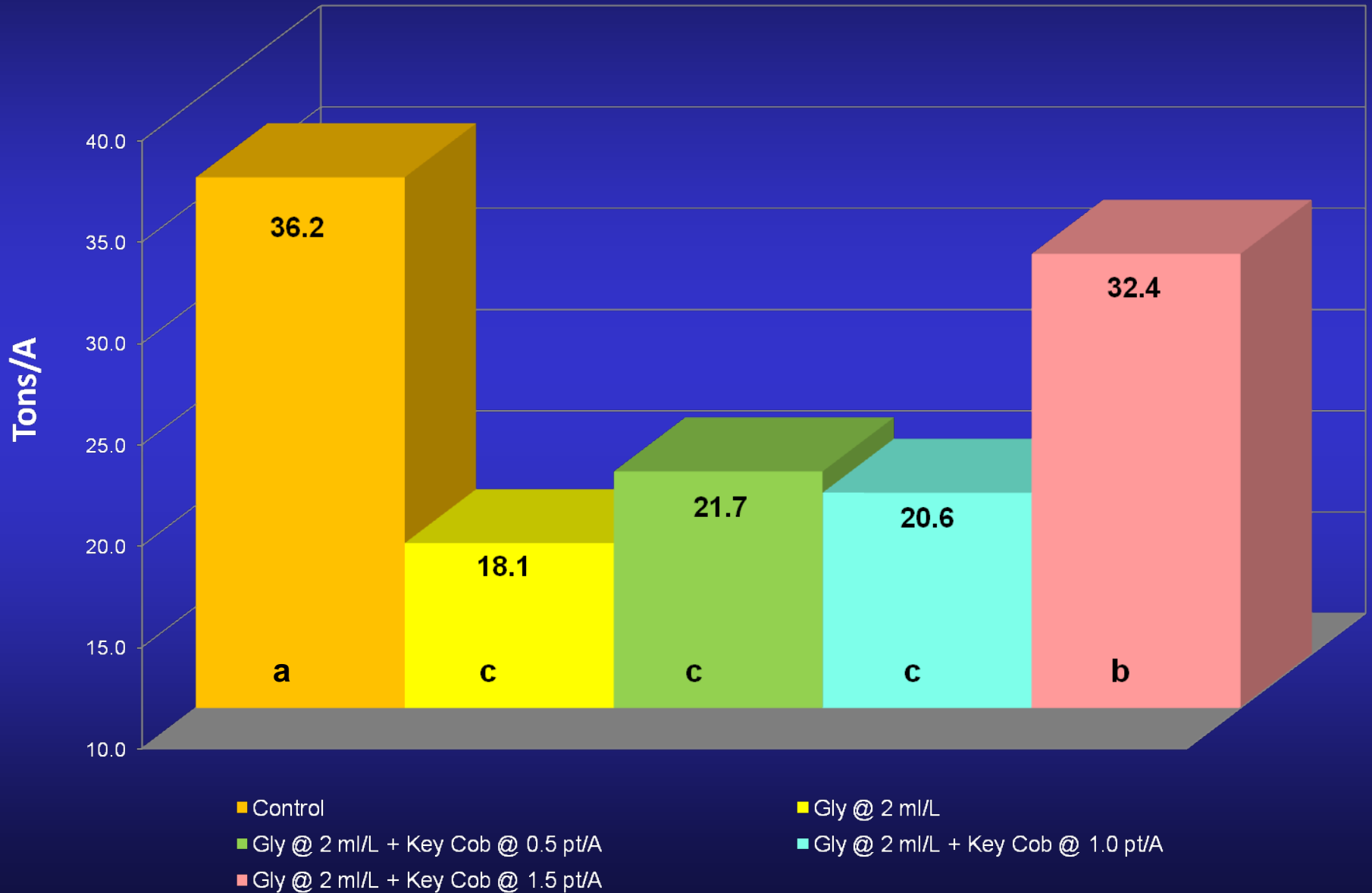
2 = Glyphosate @ 2 ml/L

3 = Glyphosate @ 2 ml/L + Keylate Cobalt @ 0.5 pt/A

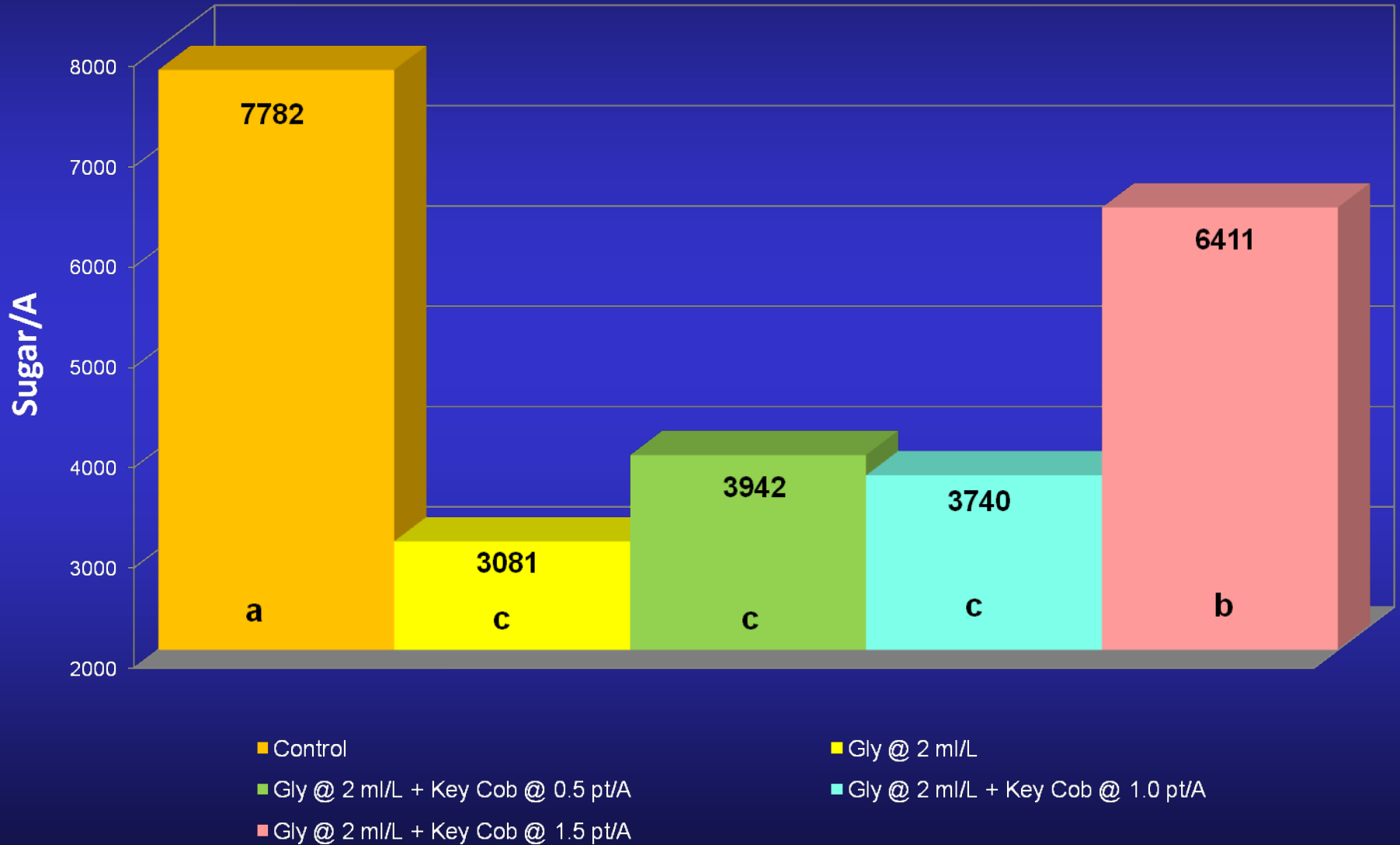
4 = Glyphosate @ 2 ml/L + Keylate Cobalt @ 1.0 pt/A

5 = Glyphosate @ 2 ml/L + Keylate Cobalt @ 1.5 pt/A

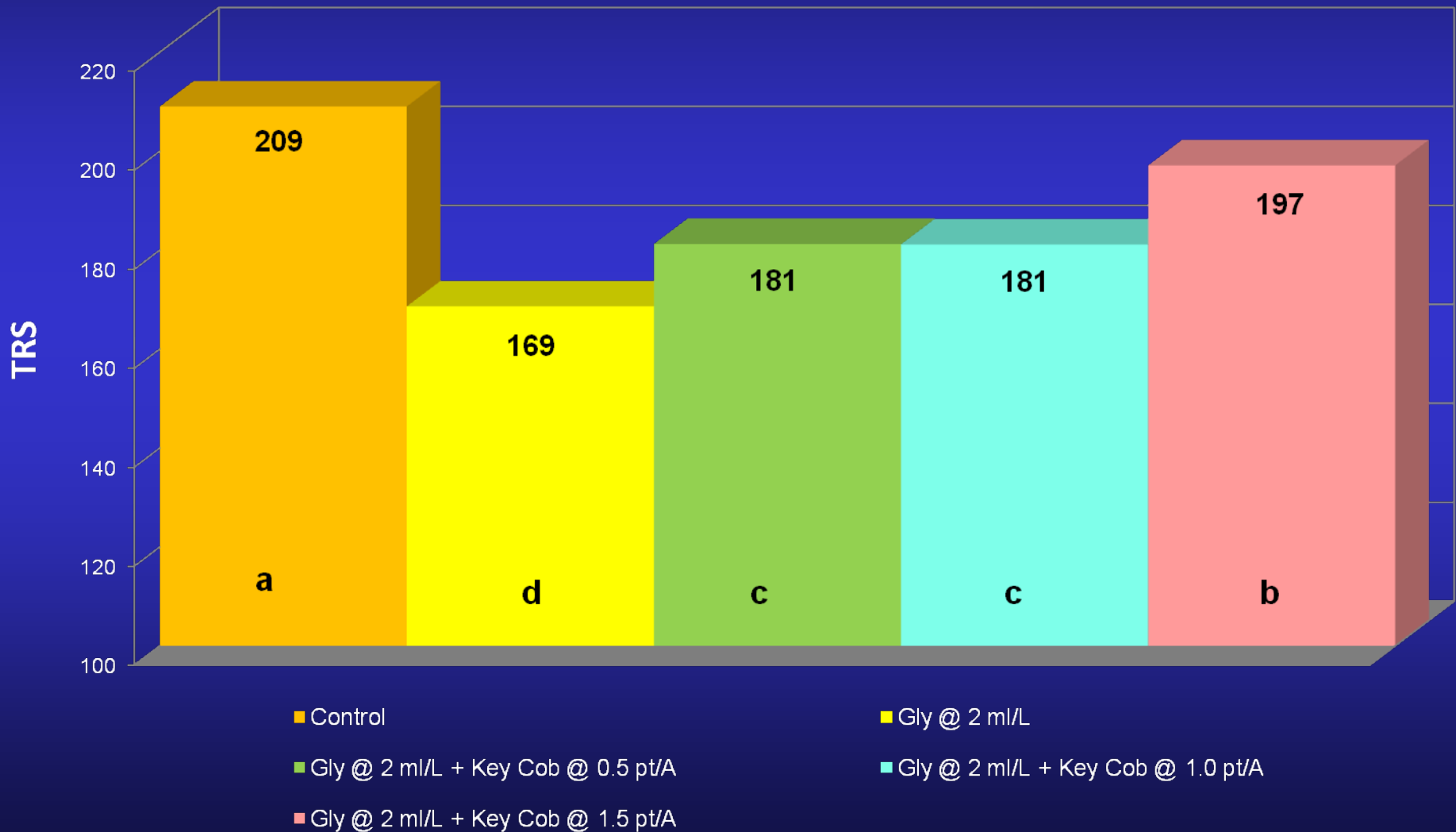
Cobalt & Glyphosate Test



Cobalt & Glyphosate Test



Cobalt & Glyphosate Test



Questions ?

