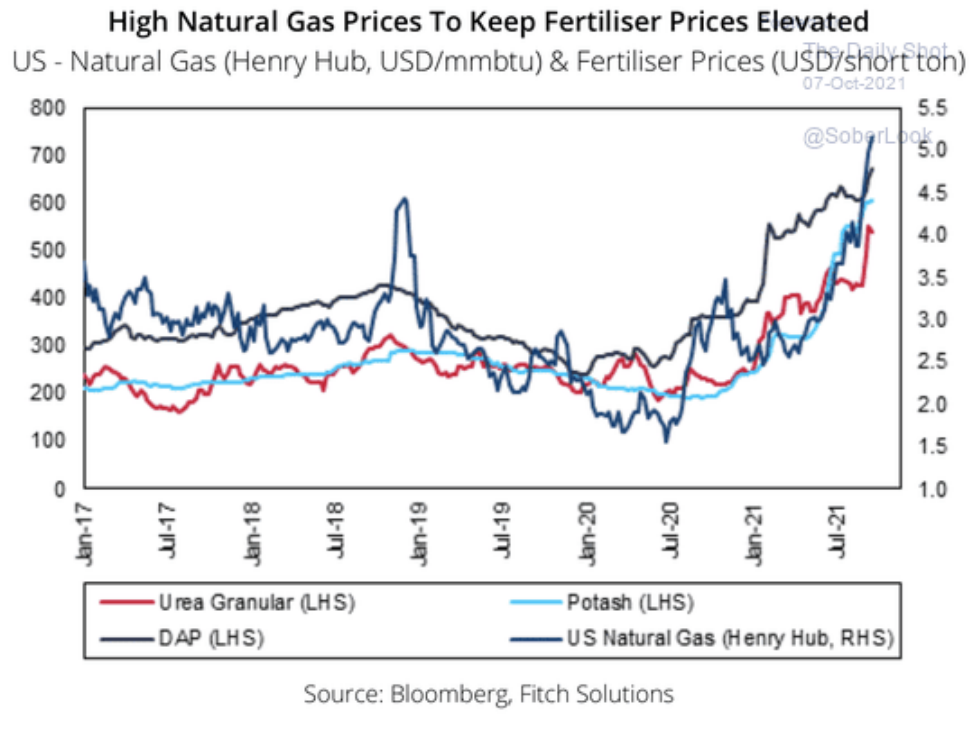


Sugarcane Fertility and Soil Amendments

Rich Johnson



Fertilizer Costs



Product	Range	Average	Change
Anhydrous Ammonia	\$1,430-1,551	\$1,519	+7.00%
Urea (Dry)	\$735-953	\$871.40	-43.9%
UAN (32%)	\$640-708	\$669.33	-1.2%
Potash	\$770-859	\$804.80	-17.9%

Soil Fertility priorities for 2022

- Soil pH
- Nitrogen
- Potassium
- Sulfur
- Micronutrients (Zn, B)
- Phosphorus (at planting?)

Nitrogen Fertilizer Recommendations for 2022

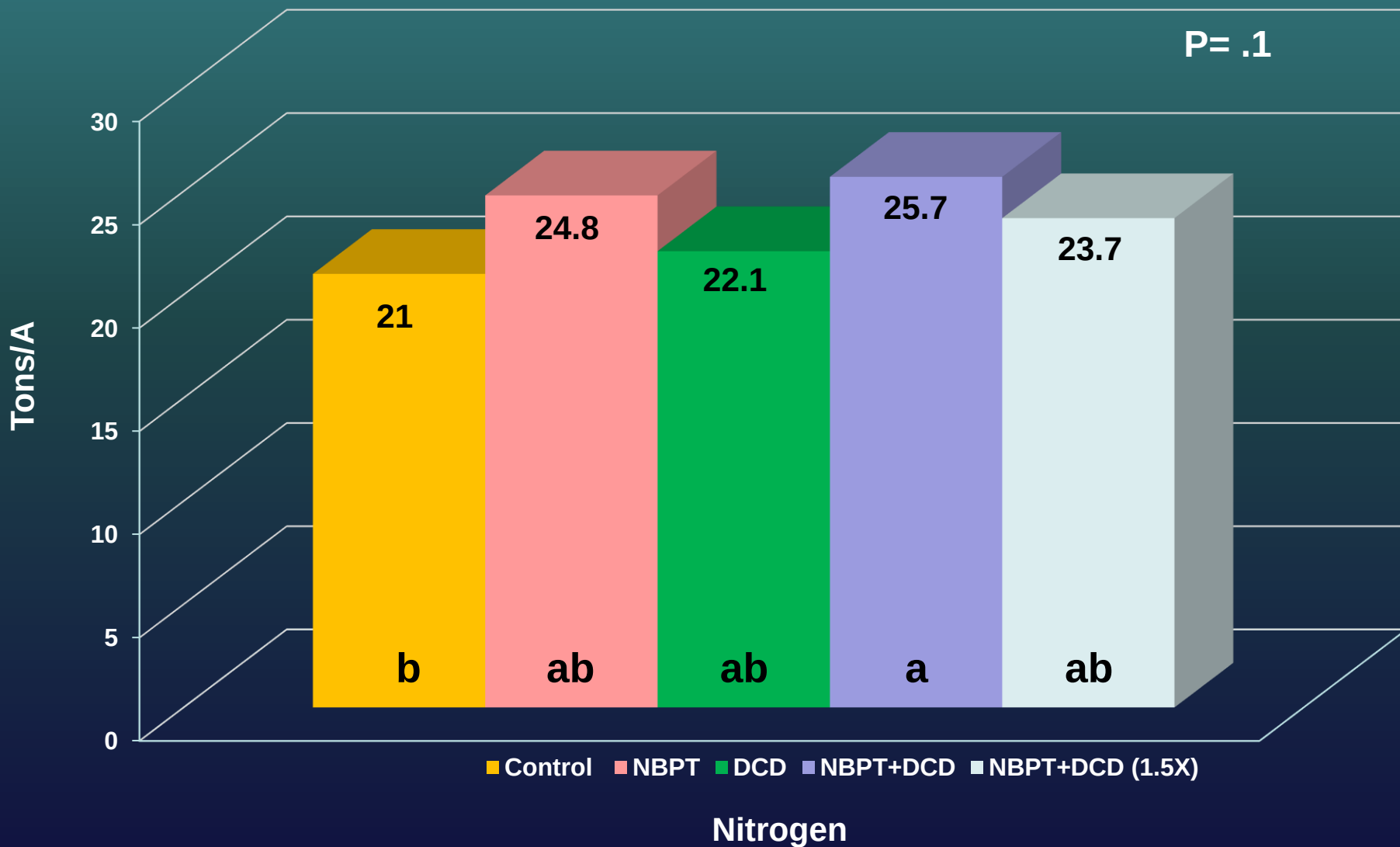
- **Plant cane:** light soils: 60-80 lb N/A
- **Plant cane:** heavy soils: 80-100 lb N/A
- **Stubble cane:** light soils: 80-100 lb N/A
- **Stubble cane:** heavy soils: 100-120 lb N/A
- Recommendations take into account data from multiple years and soil types.
- Note that these recommendations assume a proper soil pH and an application date of April 1 - 30.

Nitrogen Stabilizers

- Urea $\longrightarrow$ urease $\longrightarrow$ NH_4^+
 - Urease inhibitor - N-(n-butyl) thiophosphoric triamide (NBPT)
- NH_4^+ $\longrightarrow$ nitrosomonas, nitrobacter $\longrightarrow$ NO_3^-
 - Nitrification inhibitor – Dicyandiamide (DCD)

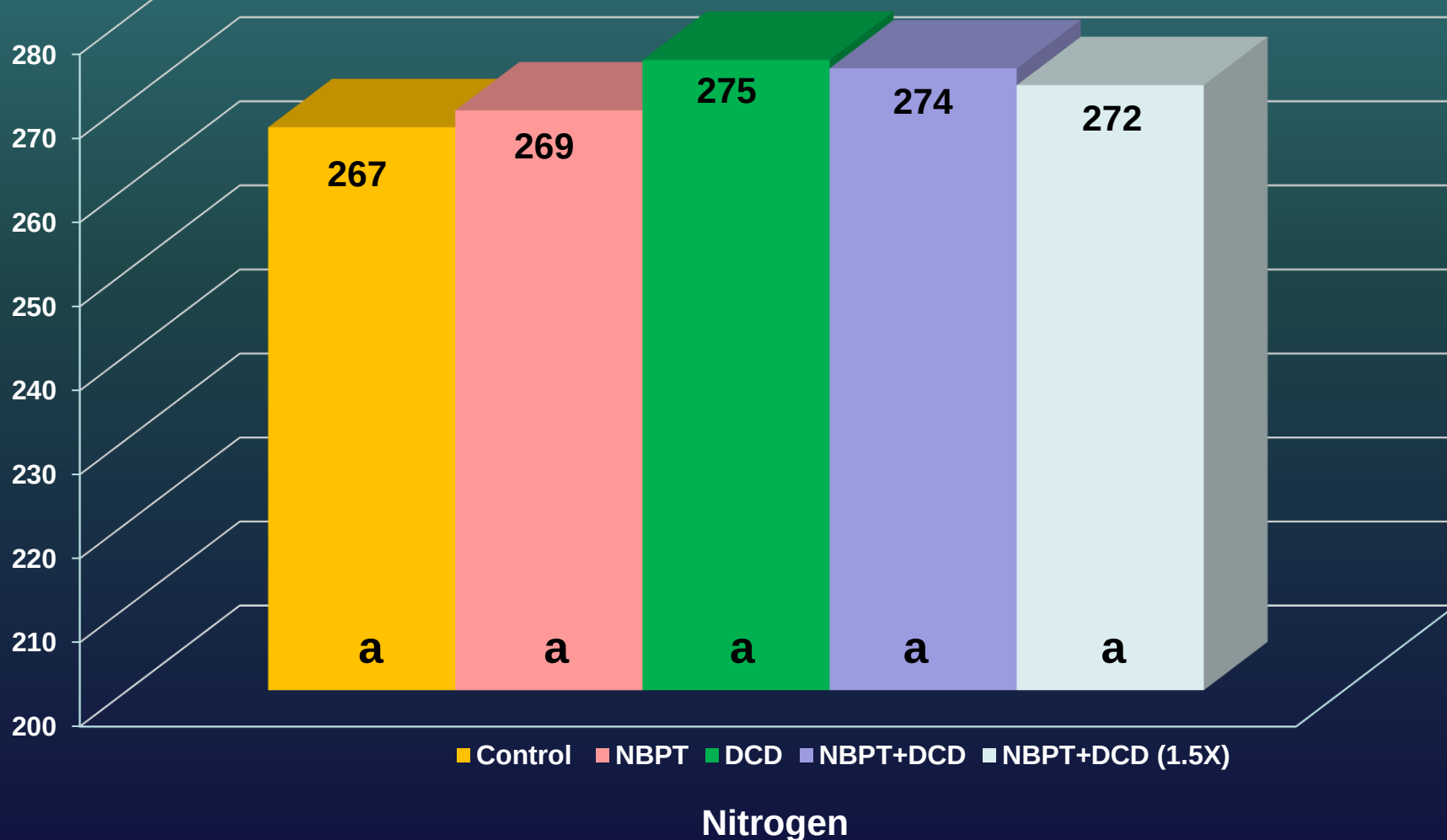
Response to Nitrogen Stabilizers

L01-299, PC, Tons/A, Gravois, 2021



Response to Nitrogen Stabilizers L01-299, PC, TRS, Gravois, 2021

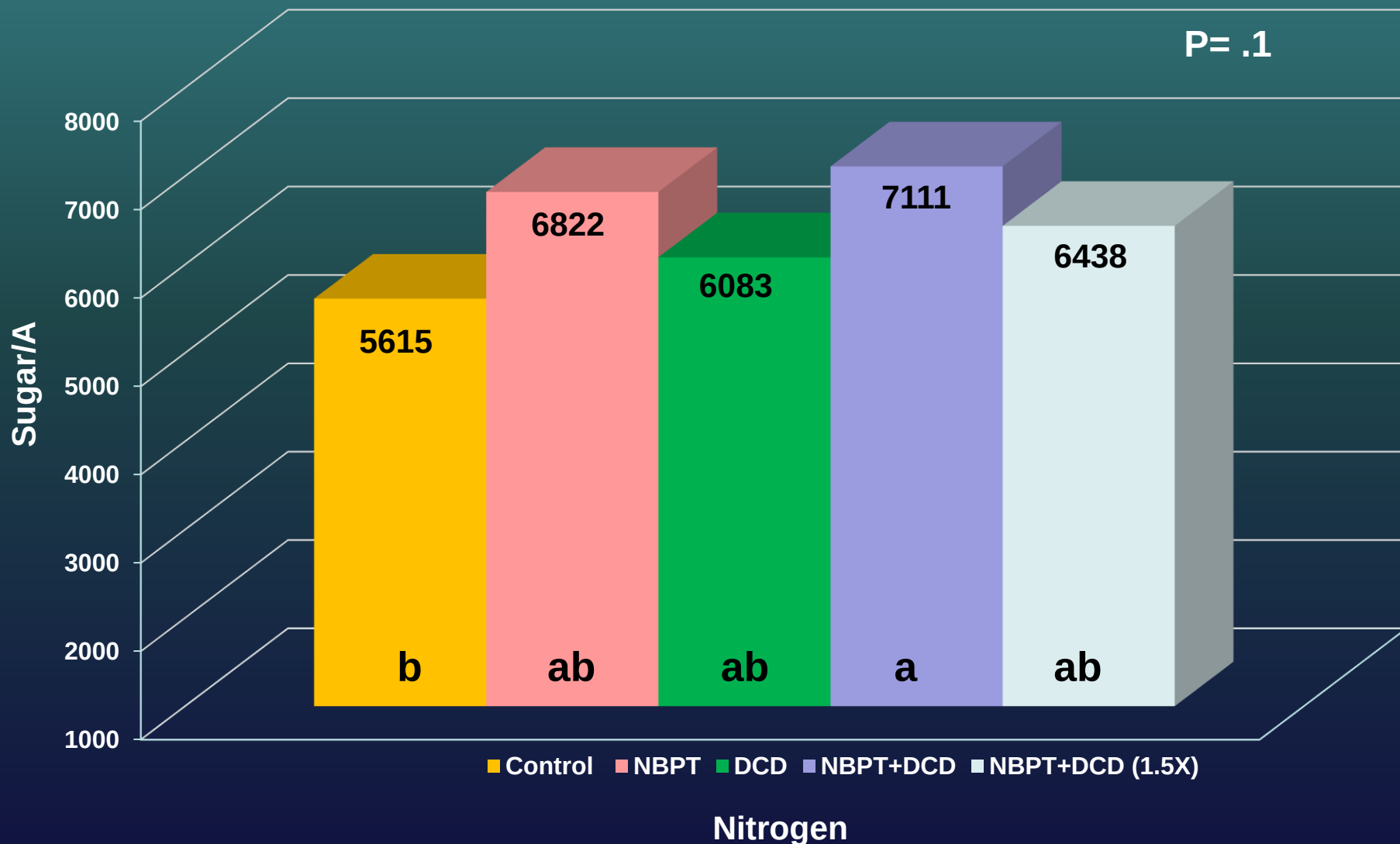
P= .05



Response to Nitrogen Stabilizers

L01-299, PC, Sugar/A, Gravois, 2021

P= .1

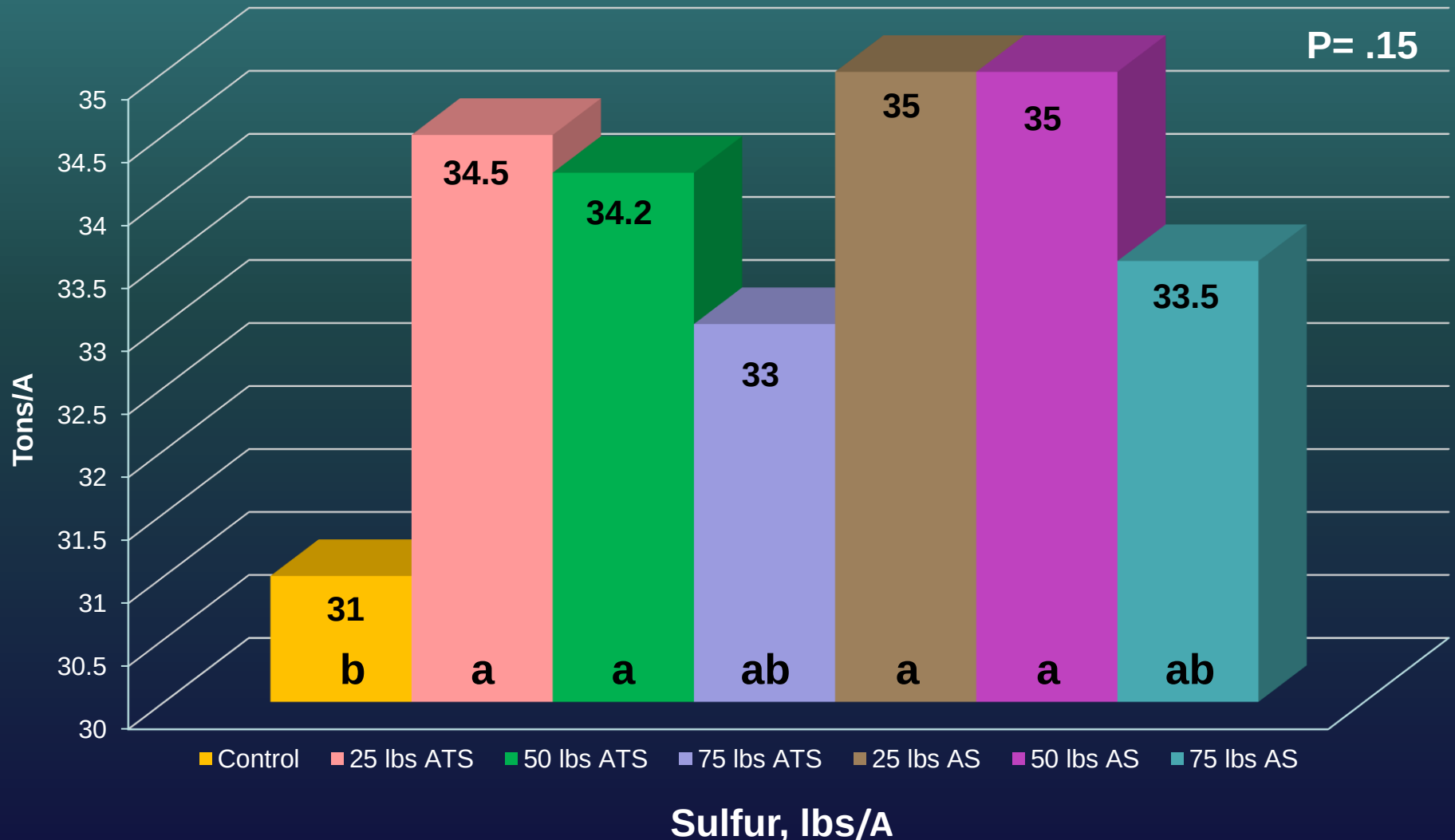


Sulfur (S)

- **Varieties:** L01-299, HoCP 96-540, HoCP 09-804
- **Crop Age:** PC, 1R, 2R
- **All soils tested low or medium for sulfur prior to treatment application.**
- **S rates:** 0, 25, 50, 75 lb S/A
- **Sources:** ATS (Liquid), AS (ammonium sulfate)
- **Reps:** 6
- **The current recommendation is 24 lb S/A, if recommended by soil test. It may be necessary to revise this due to loss of atmospheric sulfur sources.**

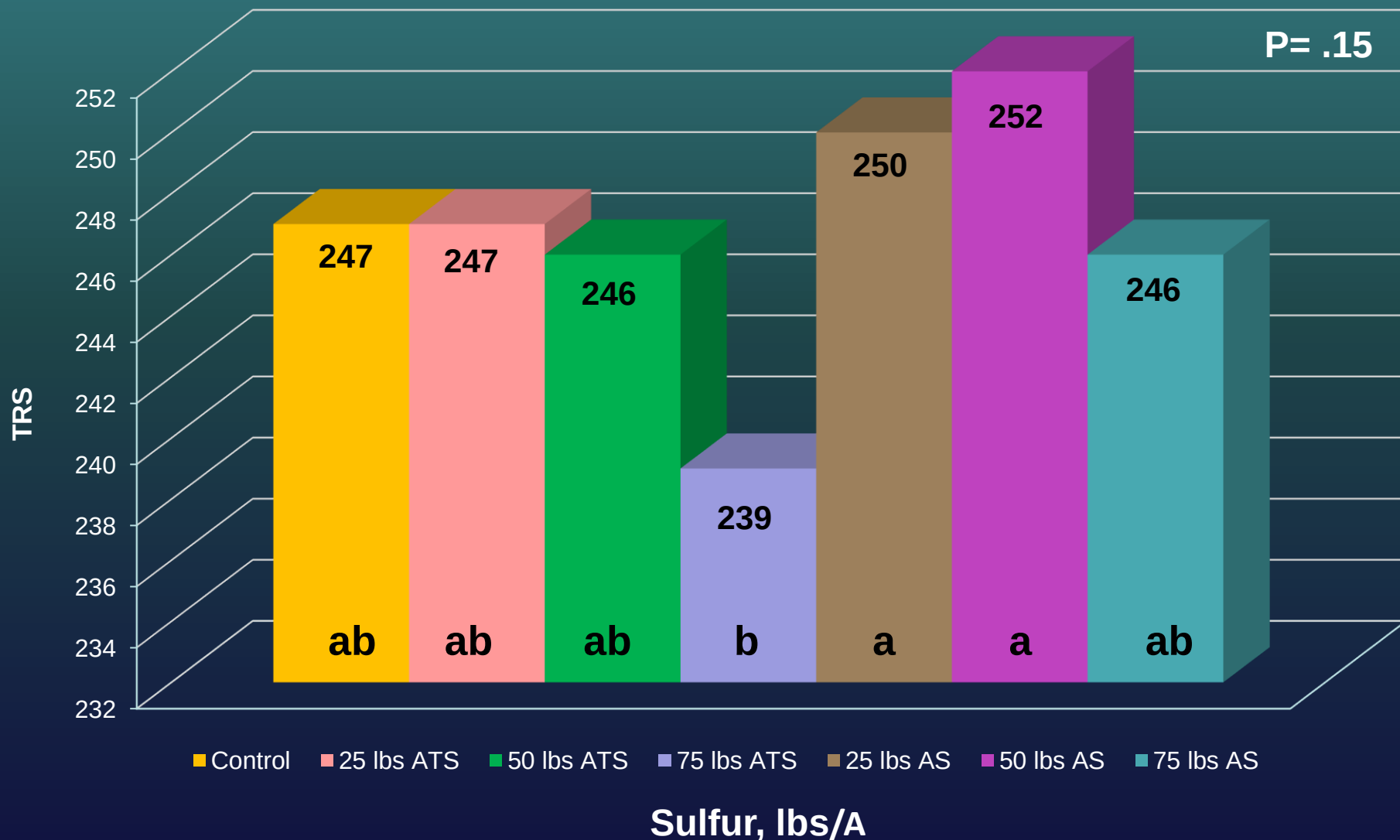
Response to Sulfur Fertilizer

HoCP 96-540, 1st Stubble, Tons/A, Gravois, 2021



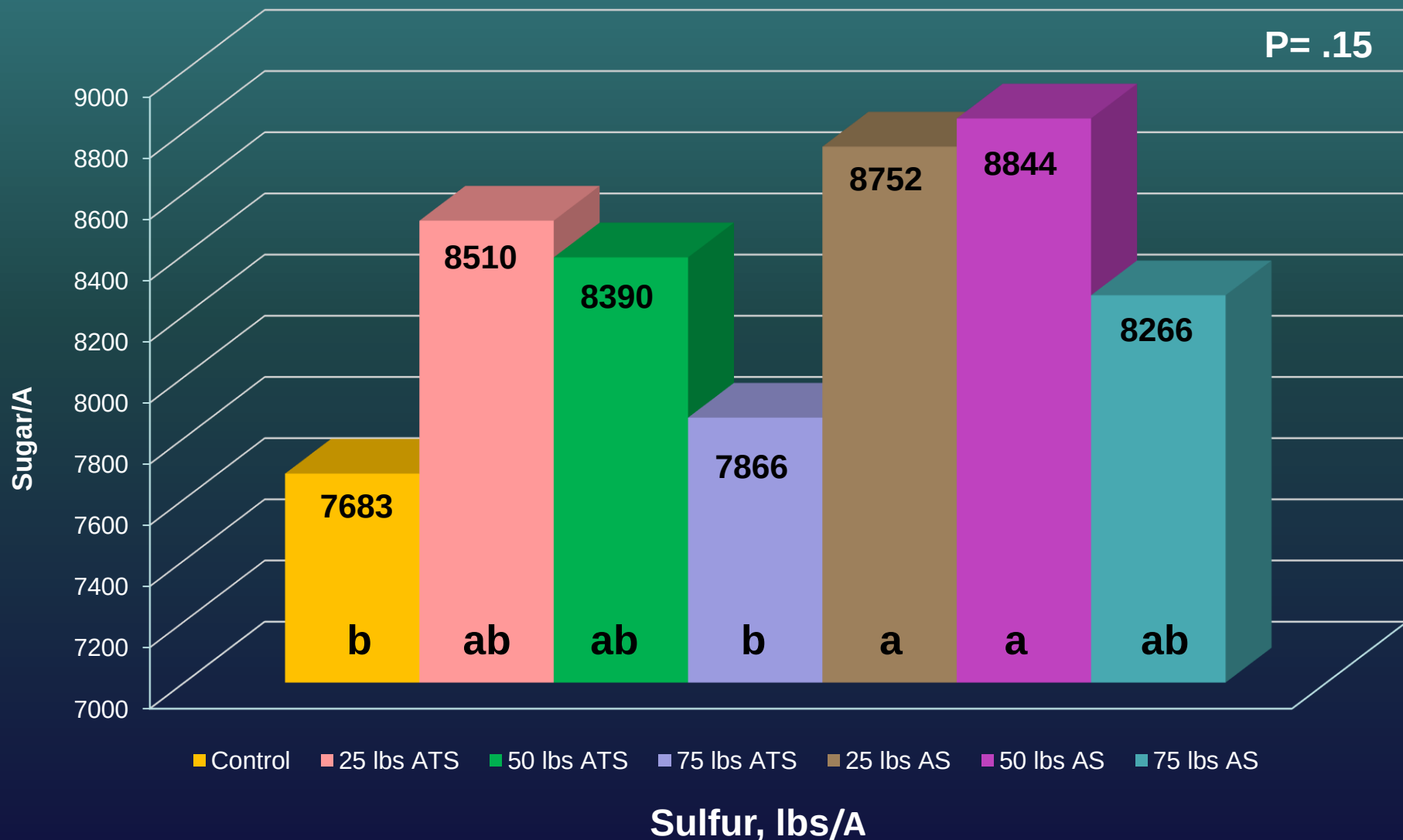
Response to Sulfur Fertilizer

HoCP 96-540, 1st Stubble, TRS, Gravois, 2021



Response to Sulfur Fertilizer

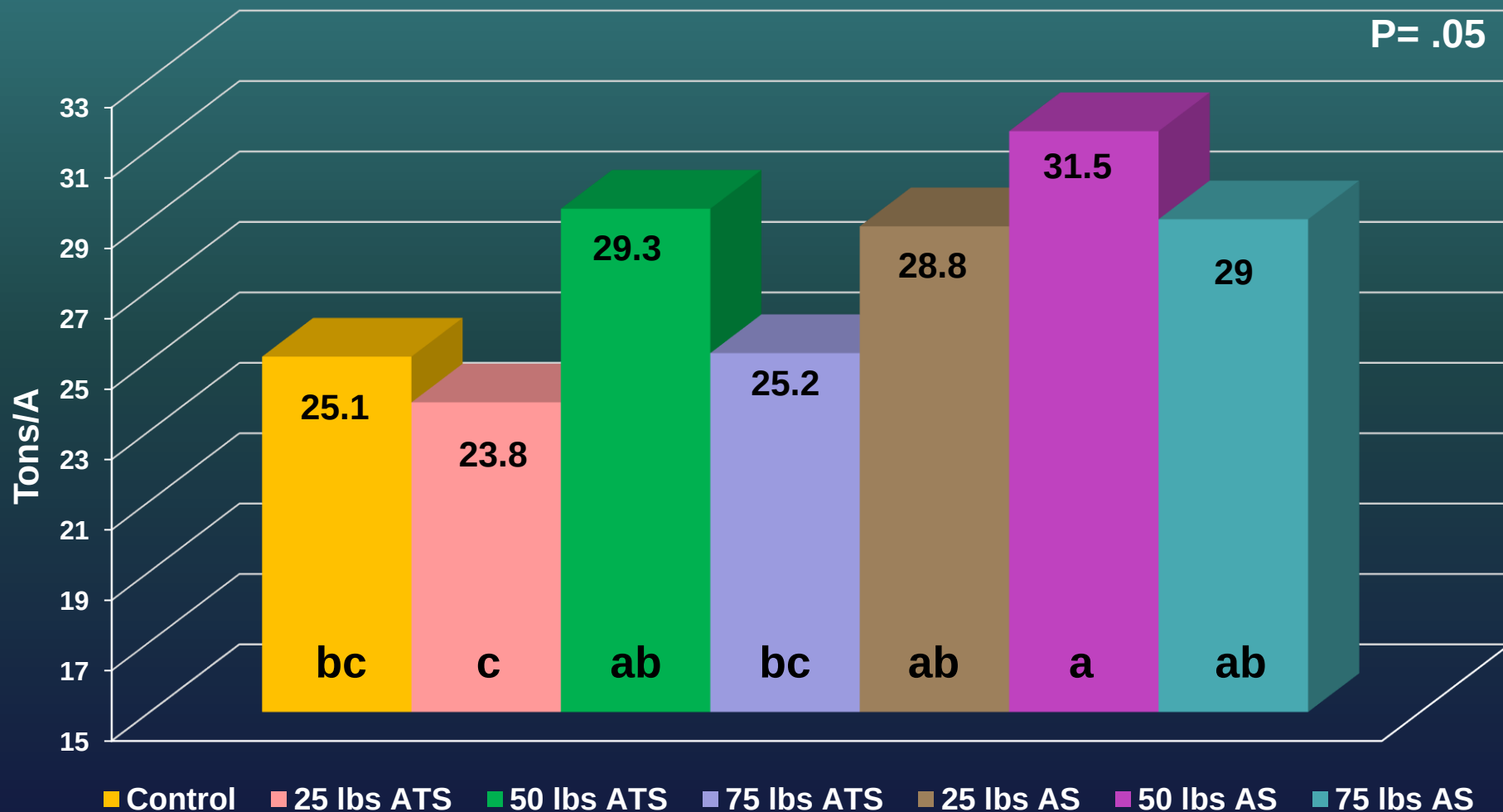
HoCP 96-540, 1st Stubble, Sugar/A, Gravois, 2021



Response to Sulfur Fertilizer

Ho 12-615, Plant Cane, Tons/A, Gravois, 2021

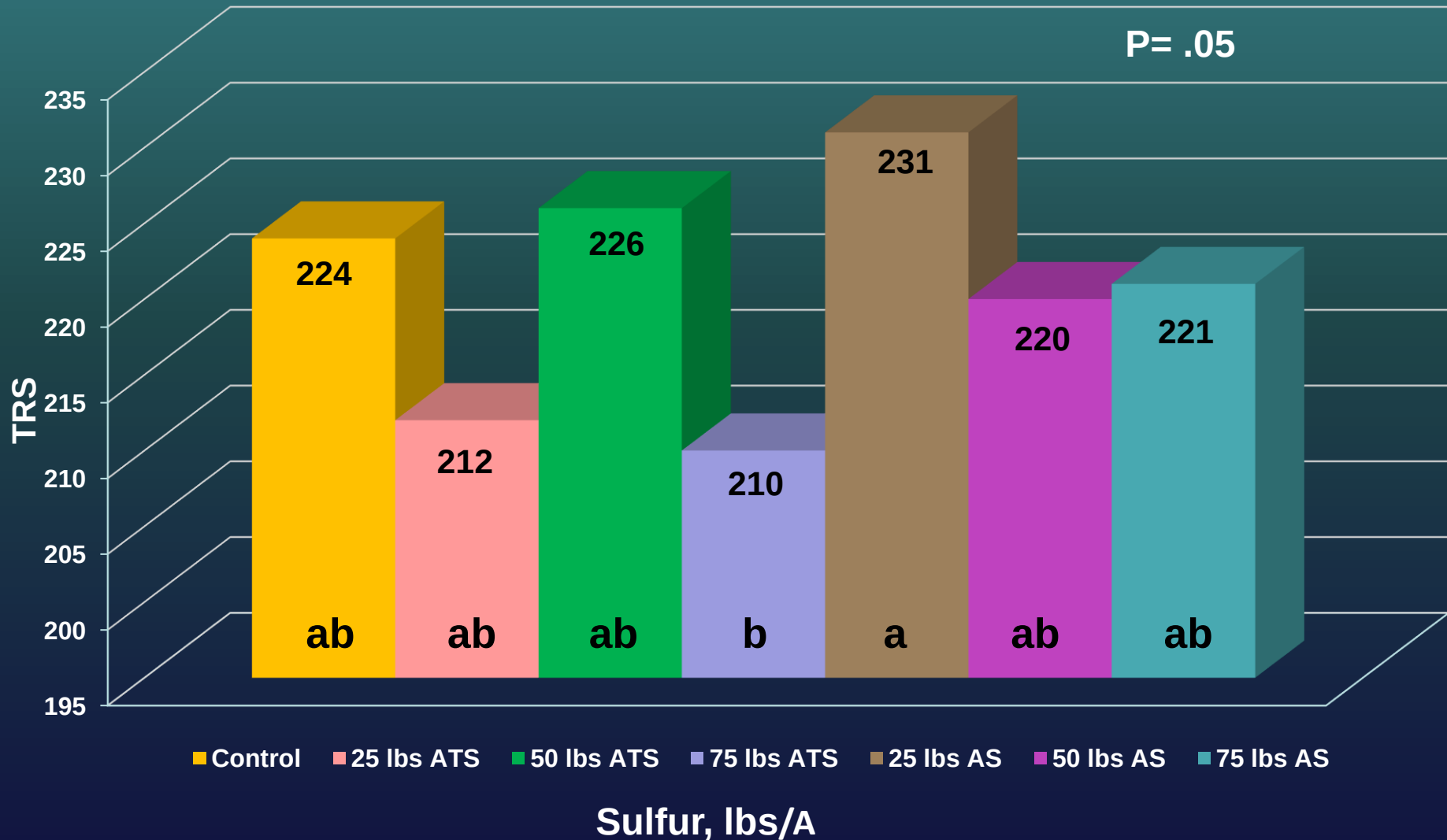
P= .05



Sulfur, lbs/A

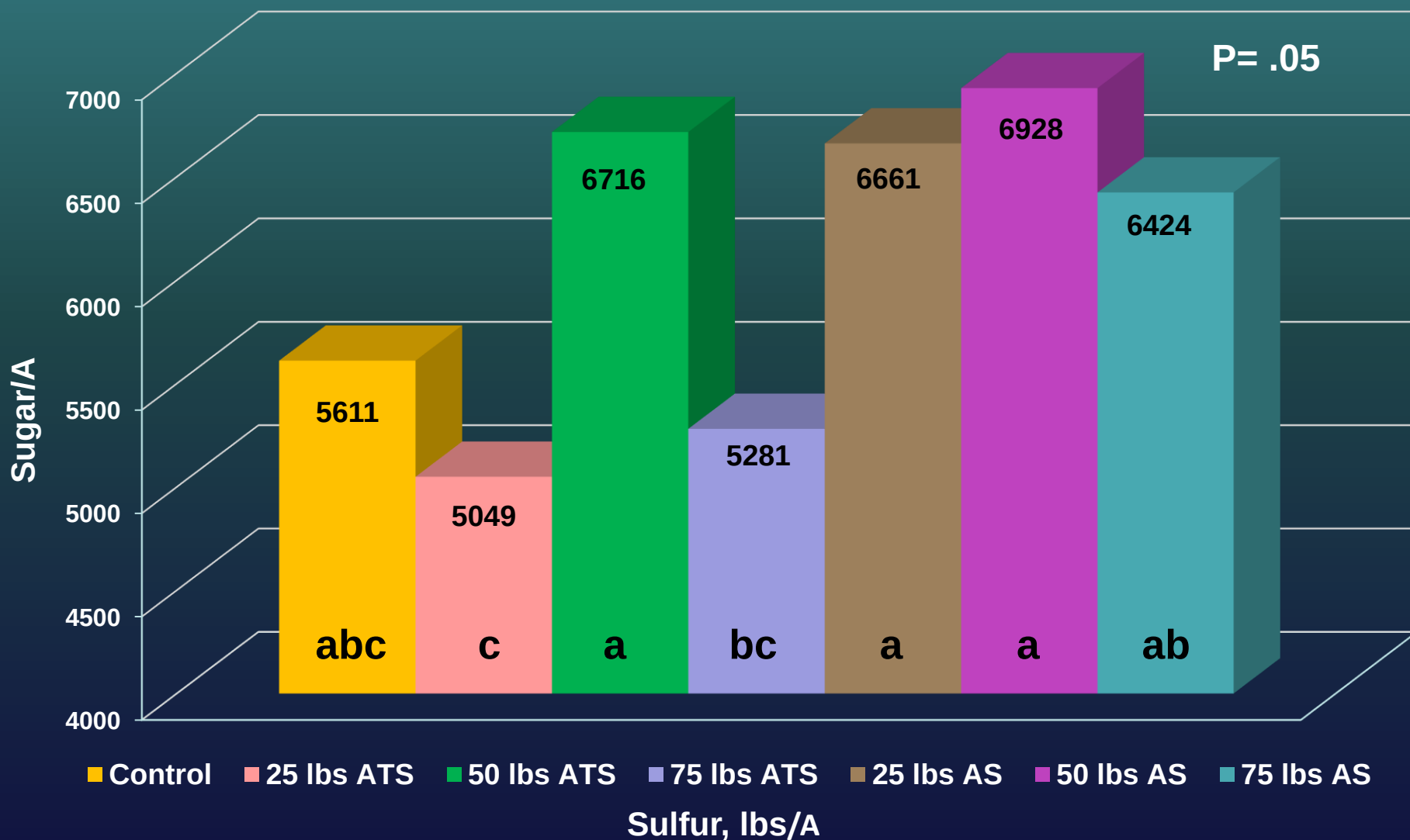
Response to Sulfur Fertilizer

Ho 12-615, Plant Cane, TRS, Gravois, 2021



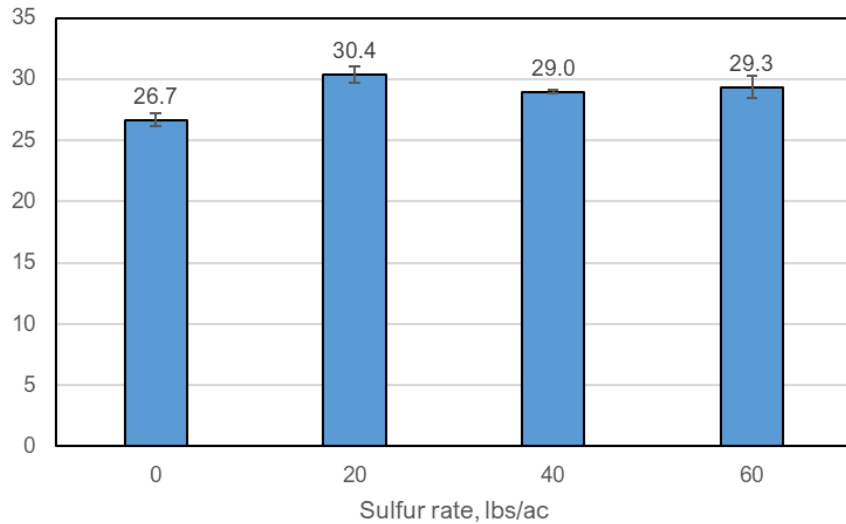
Response to Sulfur Fertilizer

Ho 12-615, Plant Cane, Sugar/A, Gravois, 2021

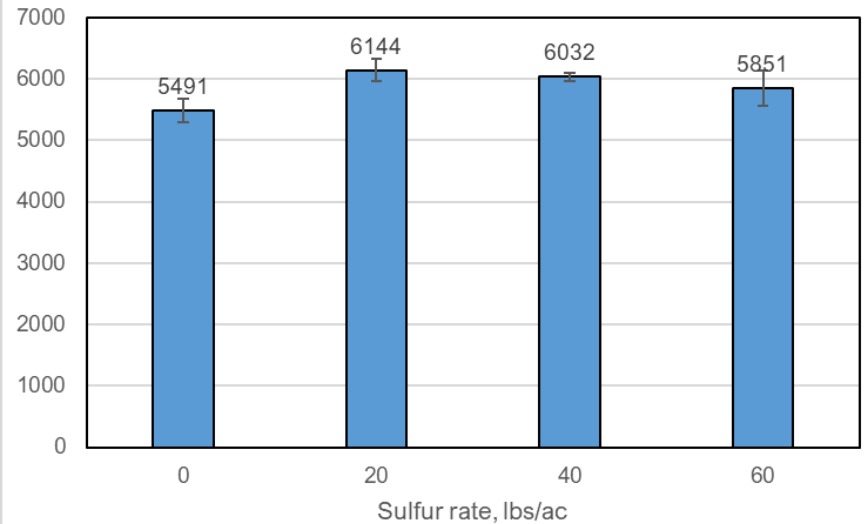


Sulfur Rate Study

Cane, tons/ac



Sugar, lbs/ac



Sulfur (S)

Summary

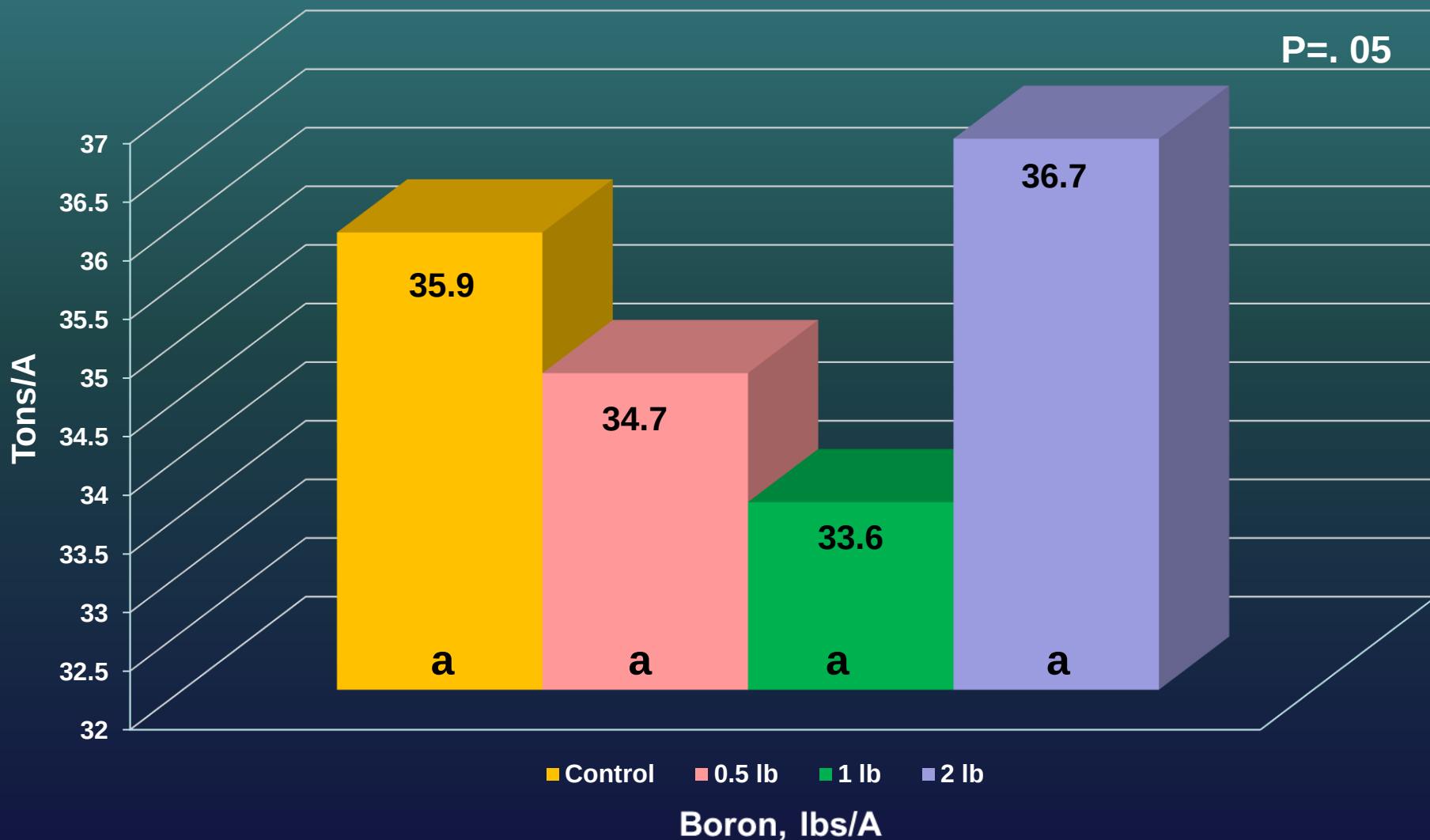
- **Consistent results have demonstrated a benefit to sulfur.**
- **The current recommendation of 24 lb S/A may be too low for optimum response to sulfur.**
- **Soil test levels for many locations continue to test low or very low even with the recommended application rate being applied.**
- **Additional trials will be conducted in 2022 to study combinations of S sources - (Gypsum + Elemental S).**

Boron (B)

- Varieties: L01-299, HoCP 09-804, Ho 12-615
- Crop Age: PC, 1R
- All soils tested low
- B rates: 0, 0.5, 1.0, 1.5, 2.0 lb B/A
- Sources: Foliar and soil applied.
- Reps: 6
- An increasing number of soil samples have been found to test “low” for boron. Research was needed to determine if a yield response could be obtained with boron application.

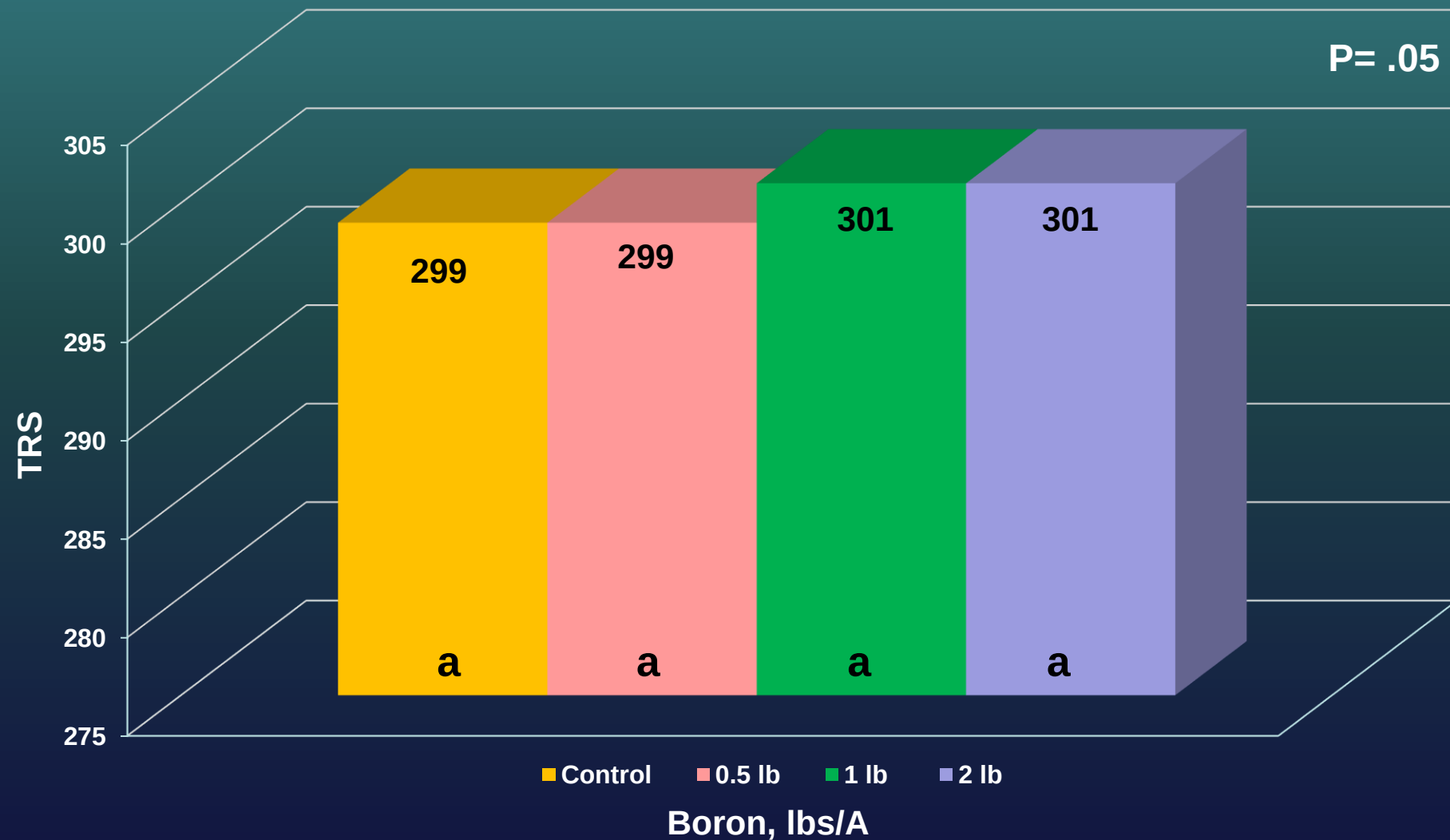
Response to Soil Boron Fertilizer

Ho 12-615, Plant Cane, Tons/A, Dugas, 2021



Response to Soil Boron Fertilizer

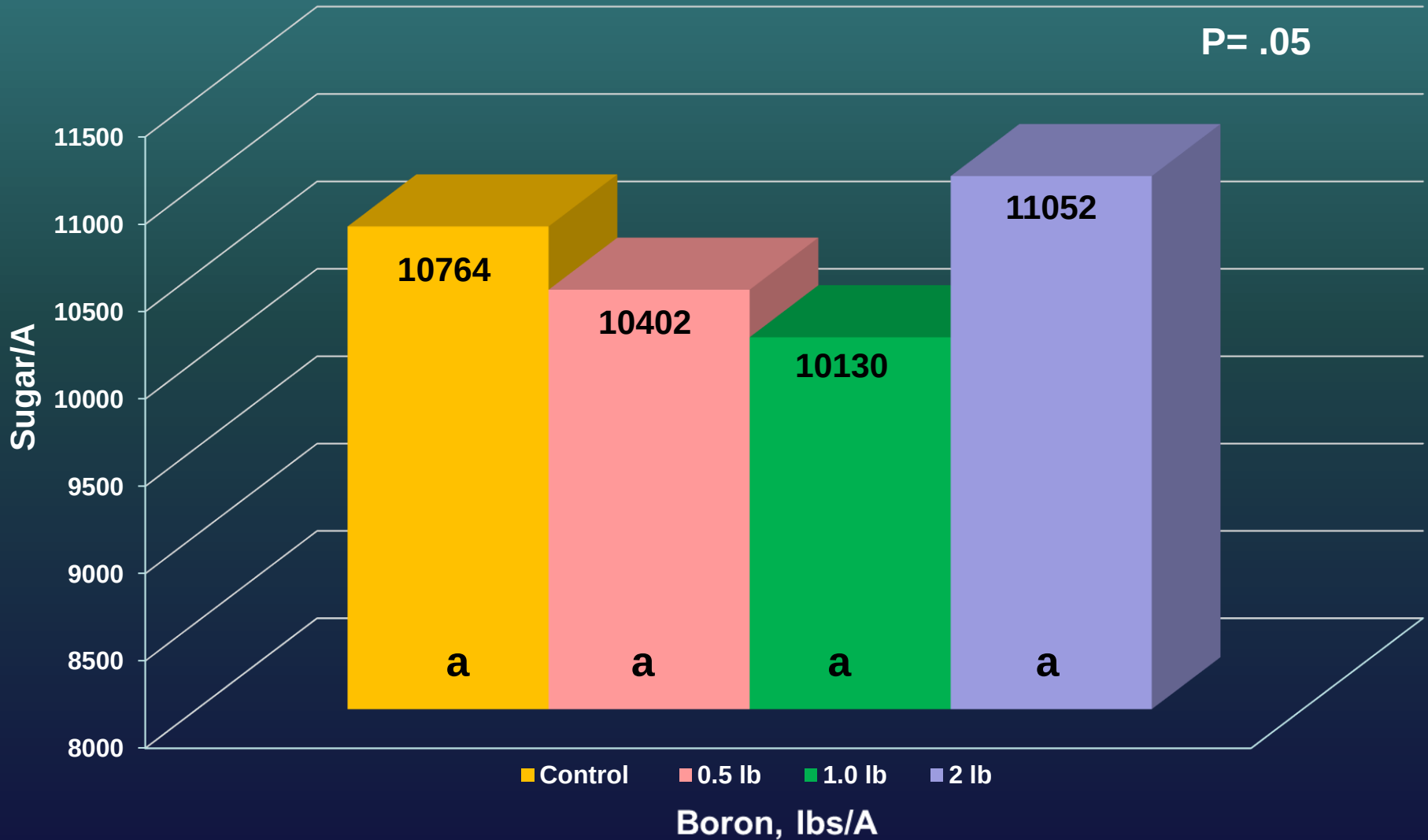
Ho 12-615, Plant Cane, TRS, Dugas, 2021



Response to Soil Boron Fertilizer

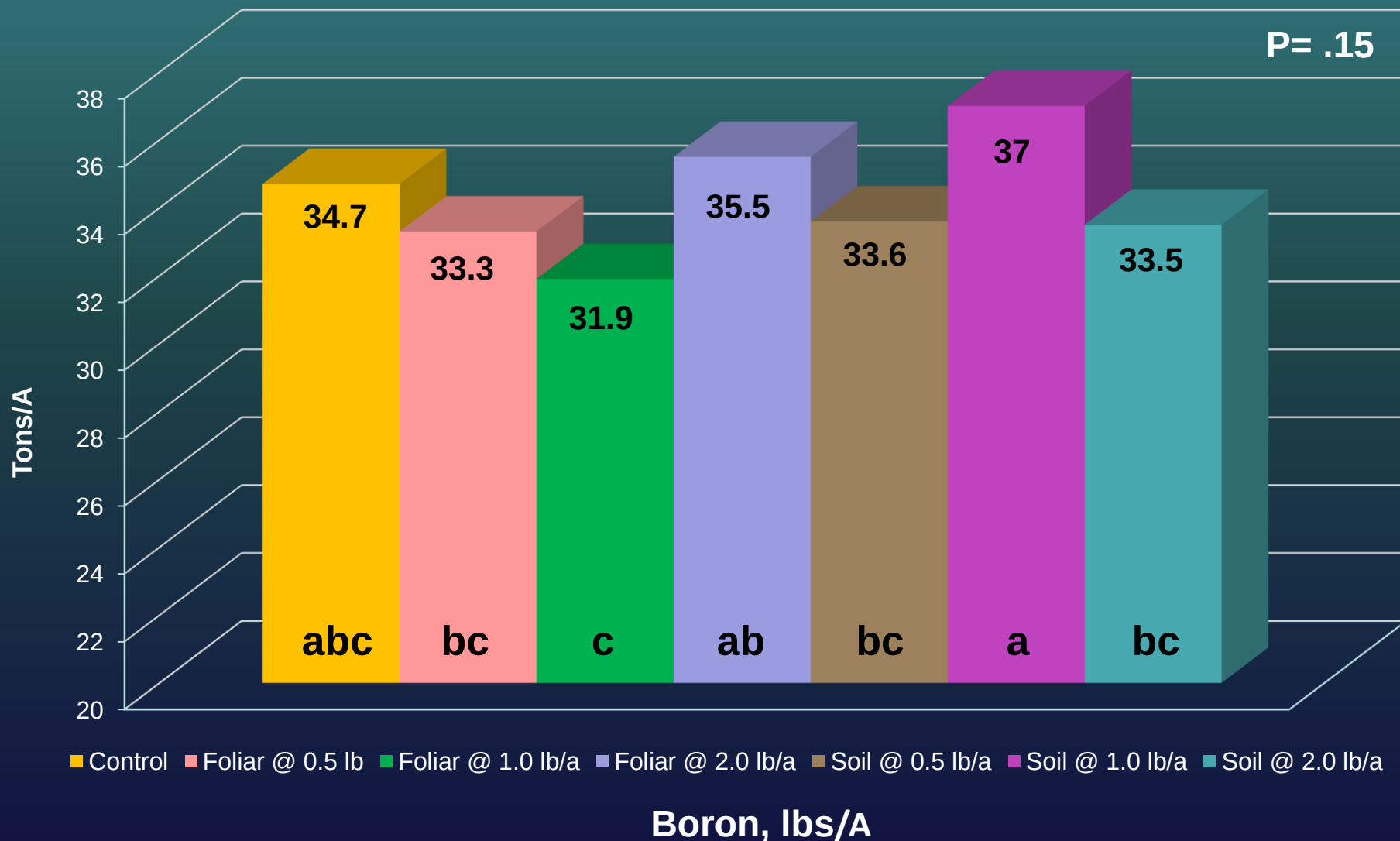
Ho 12-615, Plant Cane, Sugar/A, Dugas, 2021

P= .05



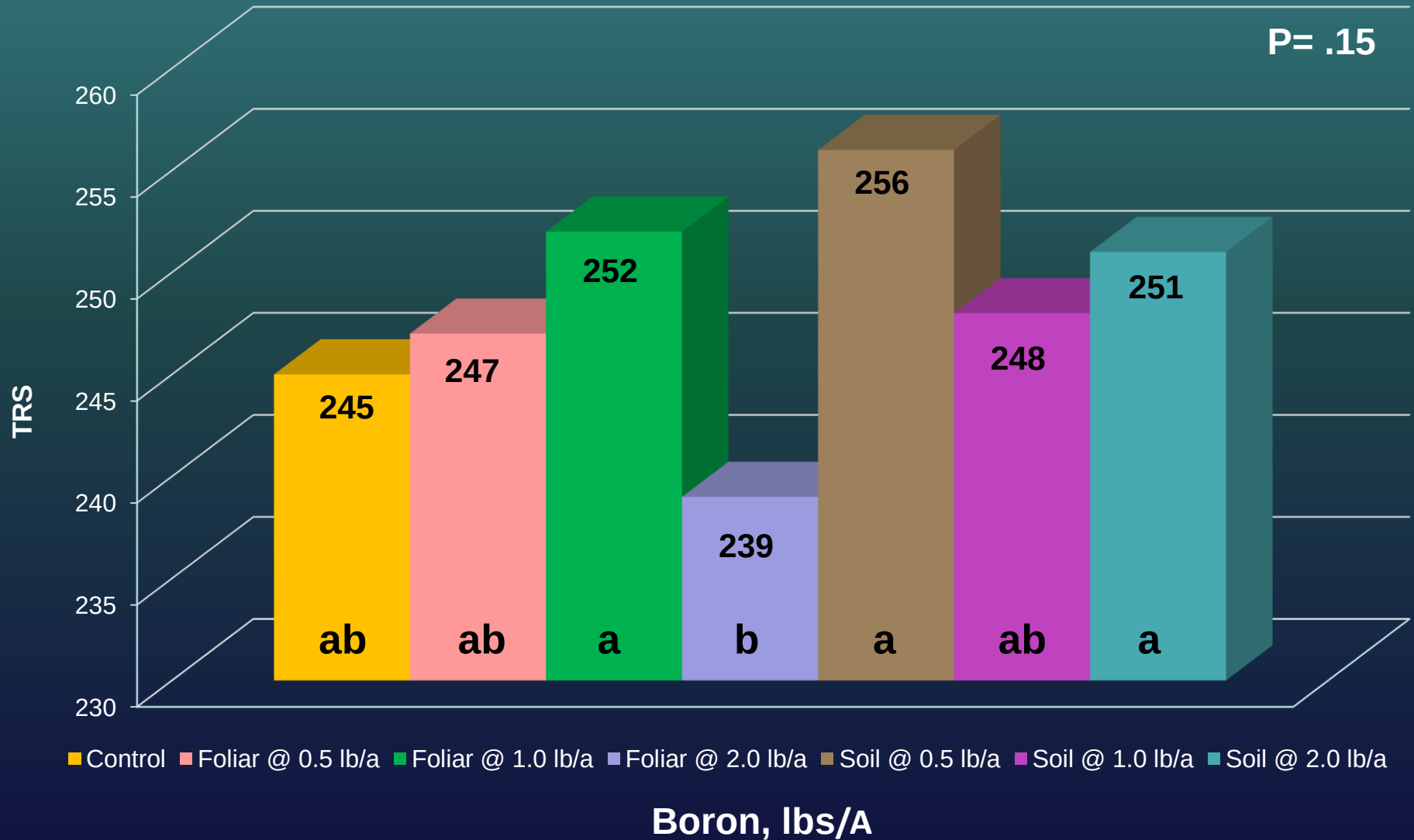
Response to Boron Fertilizer

L 01-299, 1st Stubble, Tons/A, Adolph, 2021



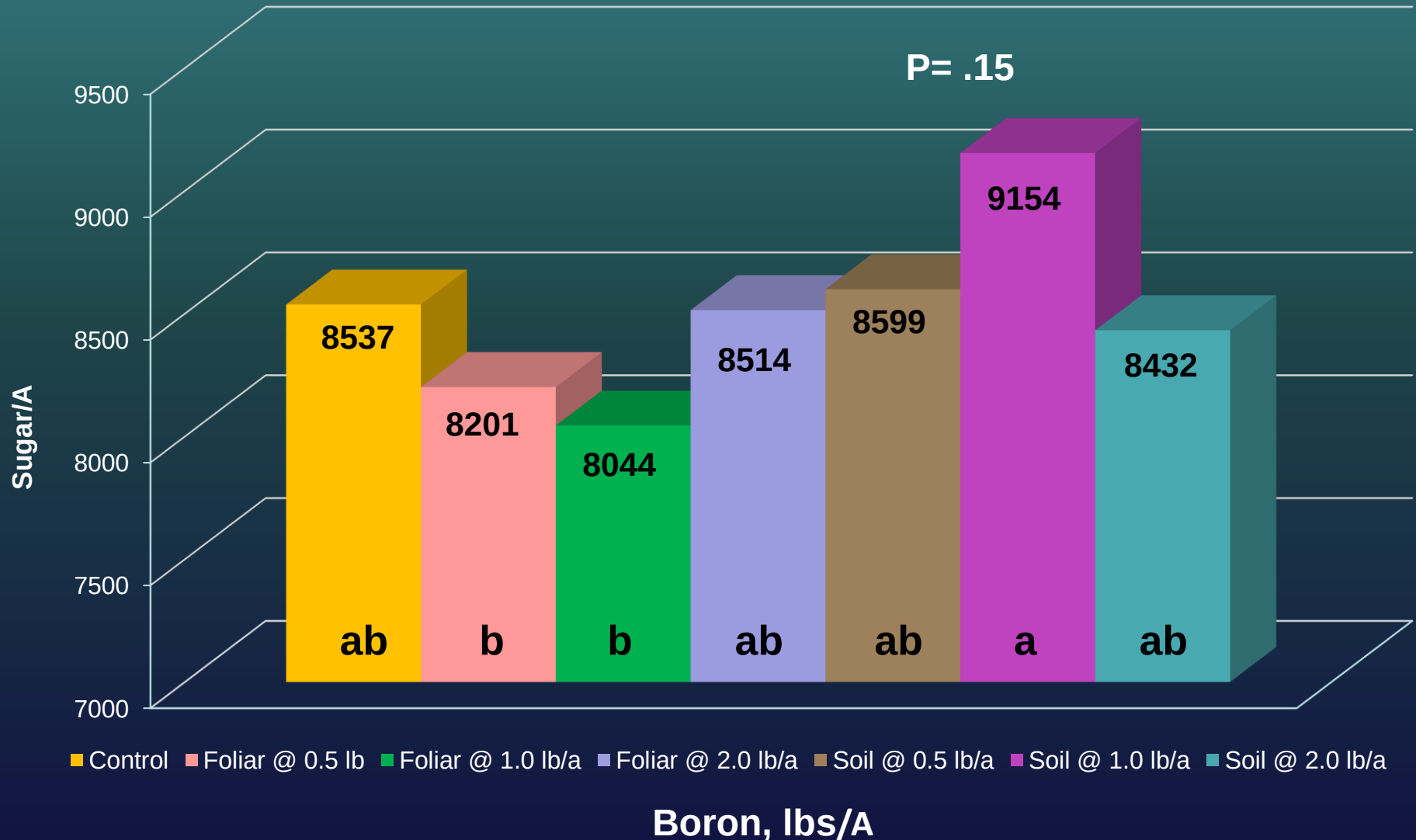
Response to Boron Fertilizer

L 01-299, 1st Stubble, TRS, Adolph, 2021



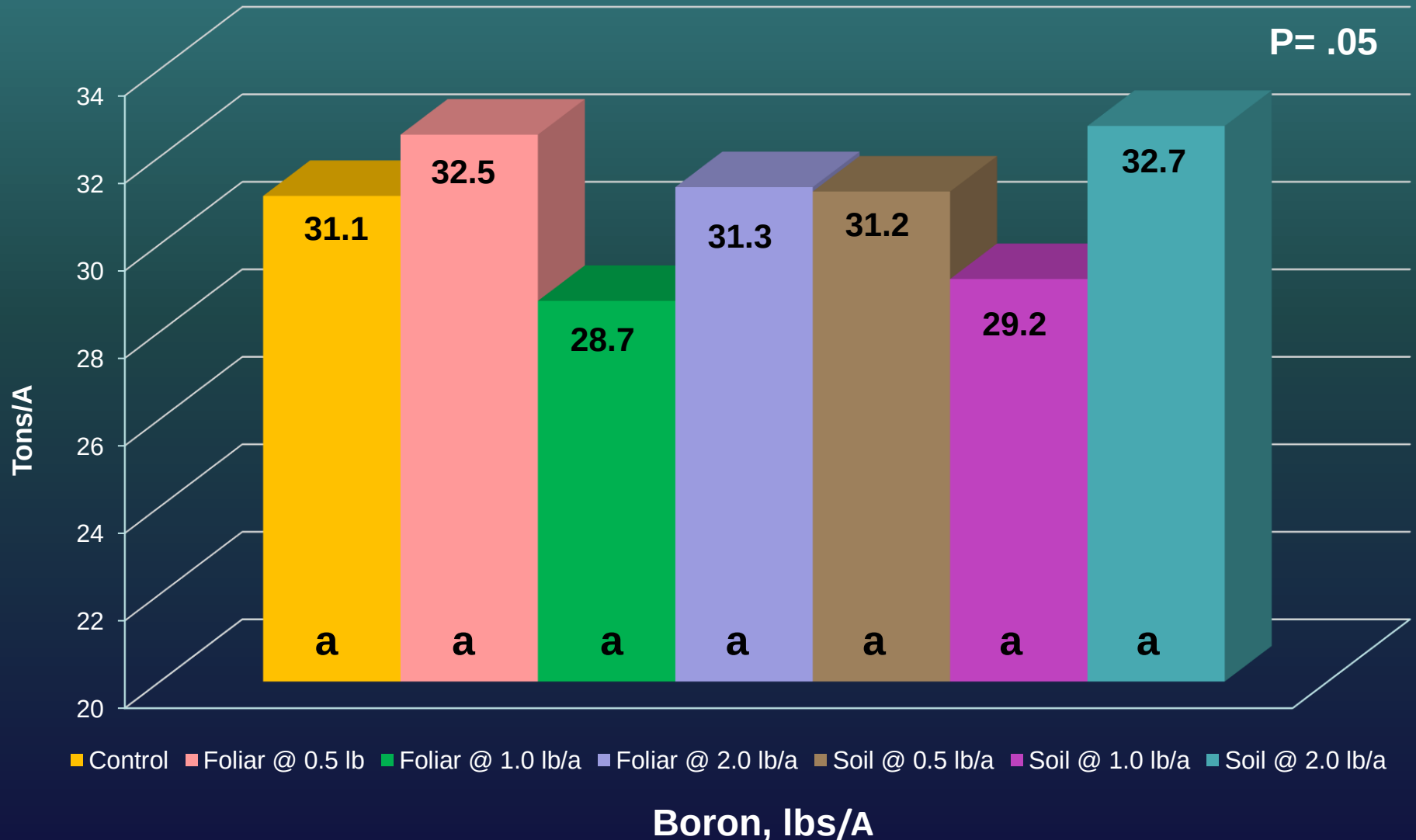
Response to Boron Fertilizer

L 01-299, 1st Stubble, Sugar/A, Adolph, 2021



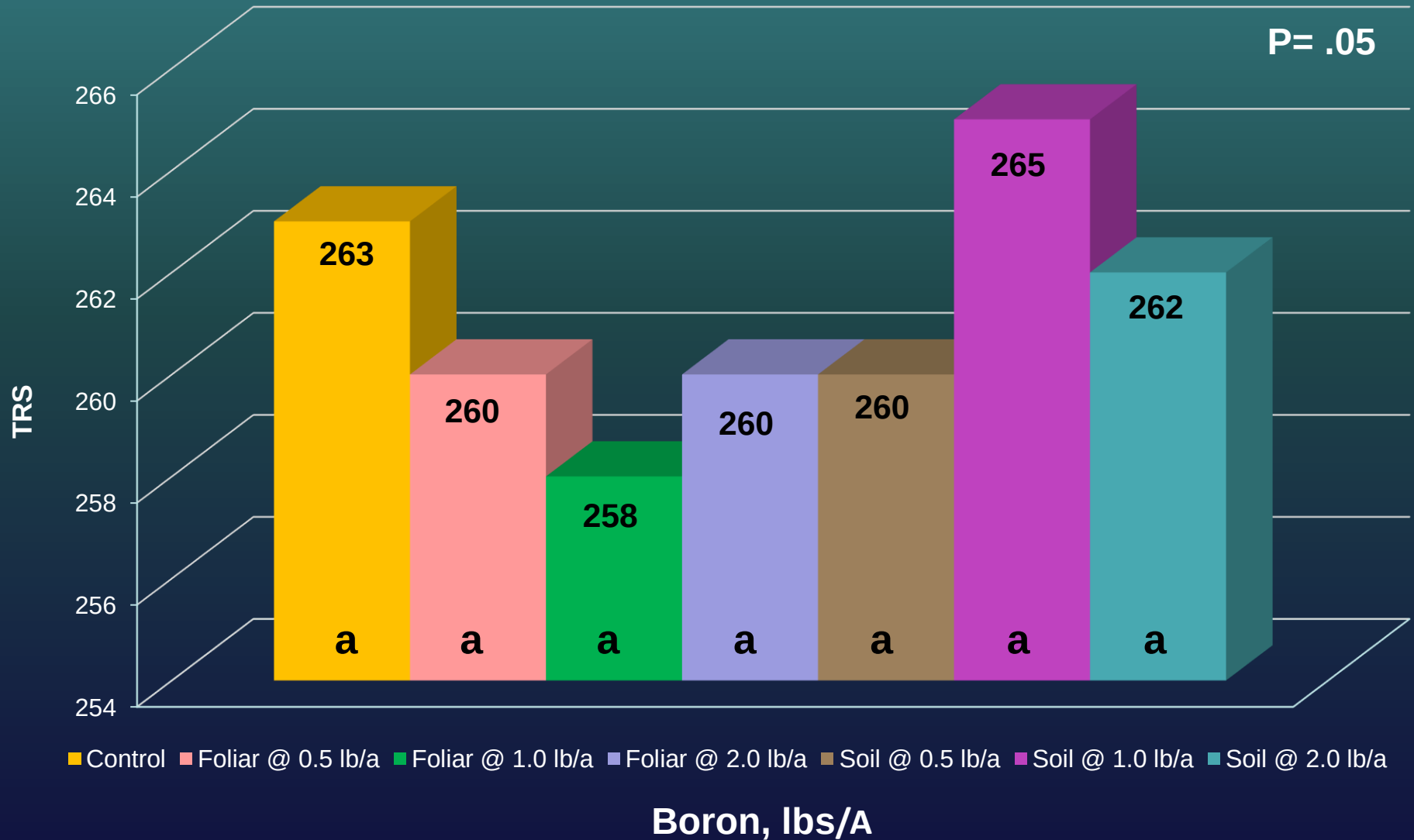
Response to Boron Fertilizer

HoCP 09-804, 1st Stubble, Tons/A, C. Gravois, 2021



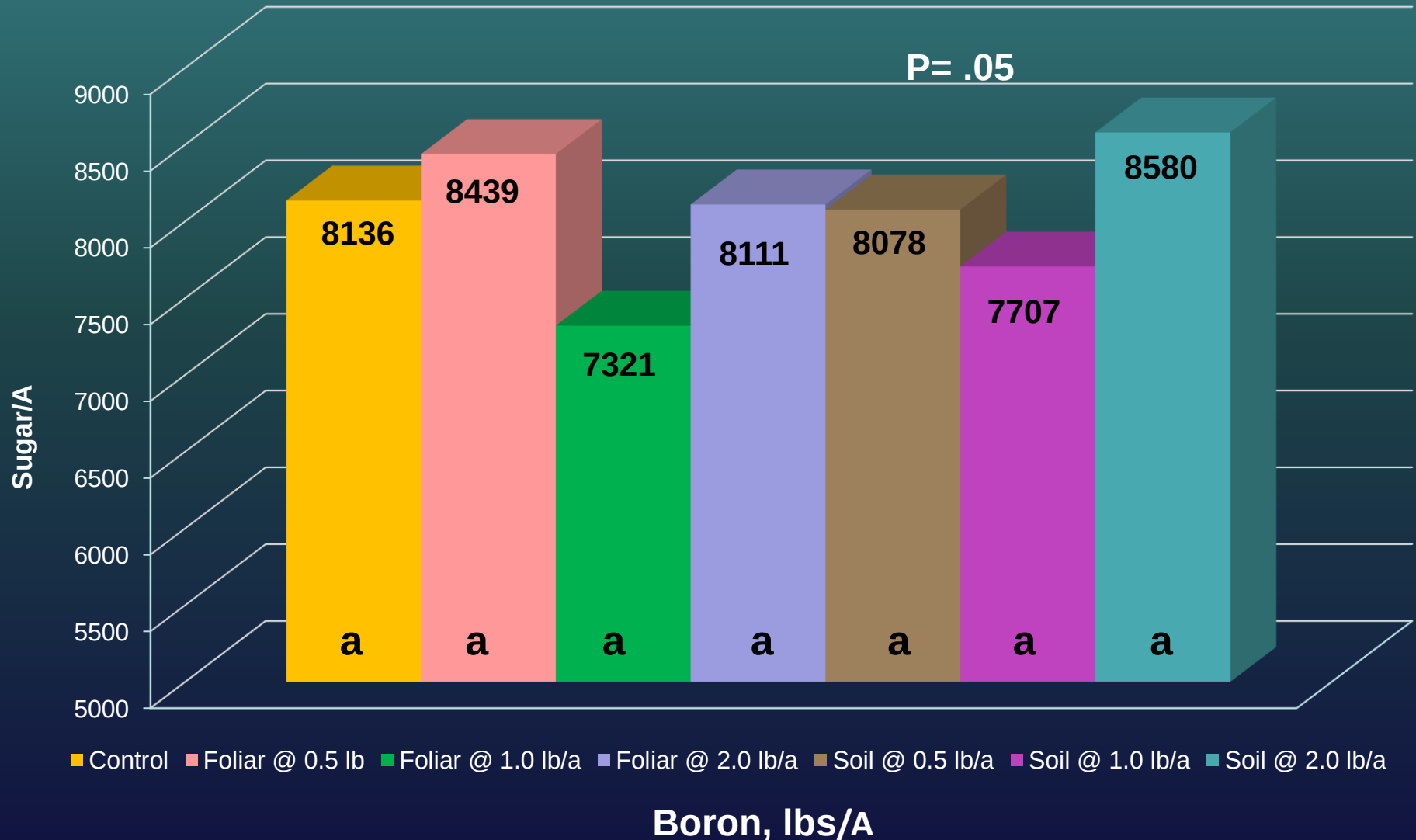
Response to Boron Fertilizer

HoCP 09-804, 1st Stubble, TRS, C. Gravois, 2021



Response to Boron Fertilizer

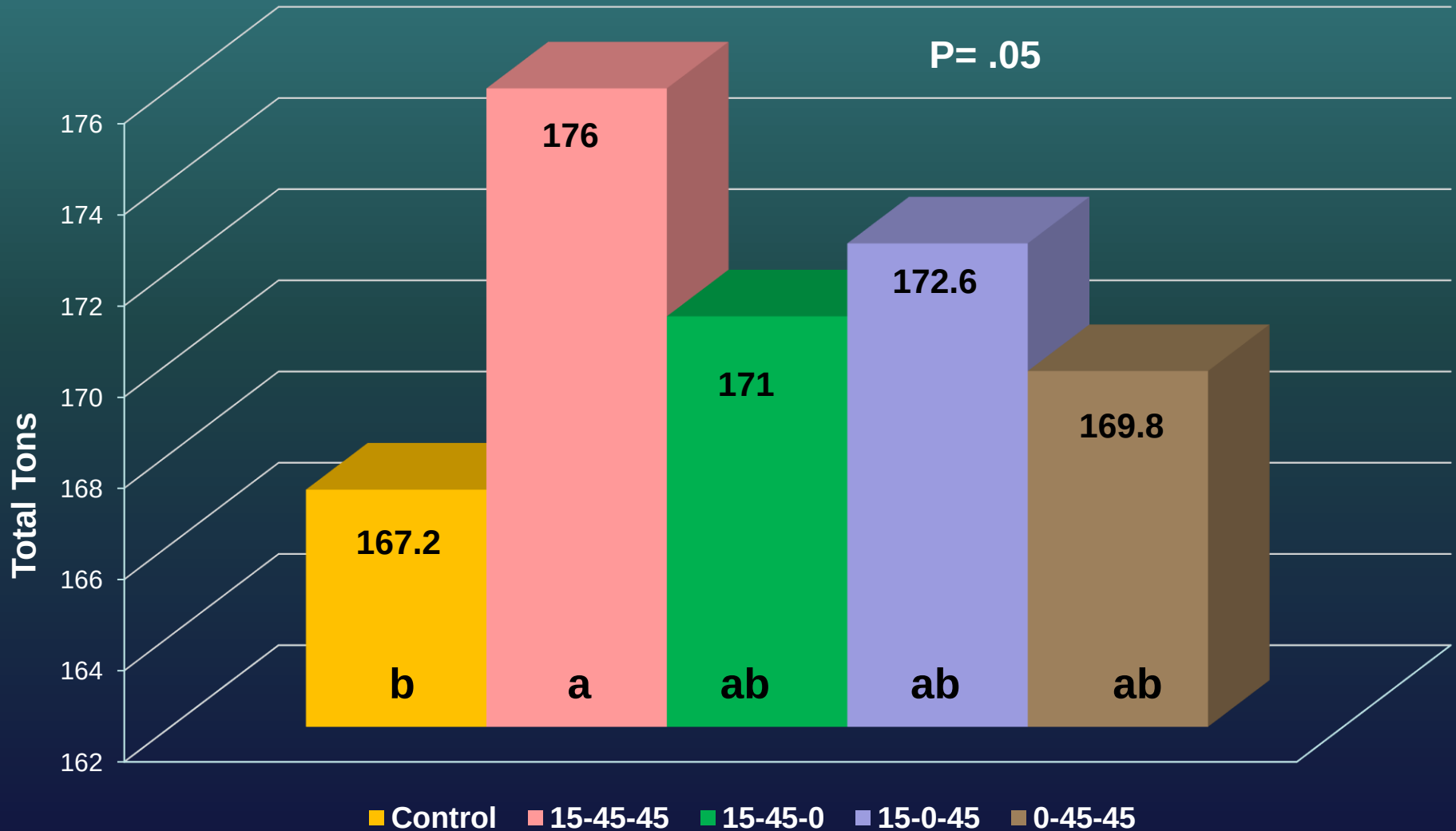
HoCP 09-804, 1st Stubble, Sugar/A, C. Gravois, 2021



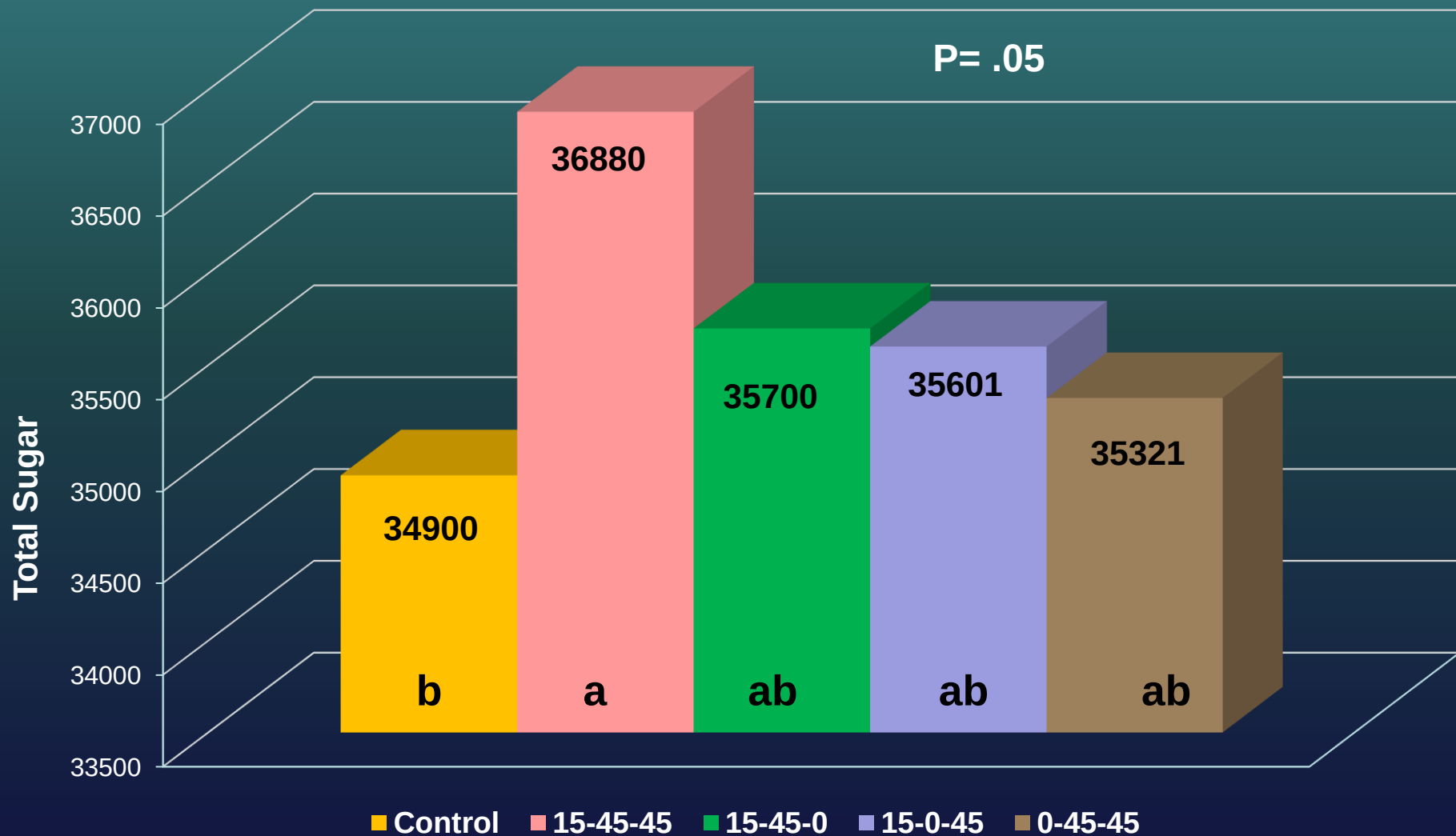
Starter Fertilizer

- Varieties: L01-299, HoCP 96-540
- Crop Age: PC, 1R, 2R, 3R
- Treatments:
 - No starter
 - 0-45-45 (N-P-K)
 - 15-0-45
 - 15-45-0
 - 15-45-45
- Reps: 6

Response to Starter Fertilizer
Averaged Over Varieties L 01-299 & HoCP 96-540
PC – 3rd Stubble, Tons/A, AF, 2021



Response to Starter Fertilizer
Averaged Over Varieties L 01-299 & HoCP 96-540
PC – 3rd Stubble, Sugar/A, AF, 2021

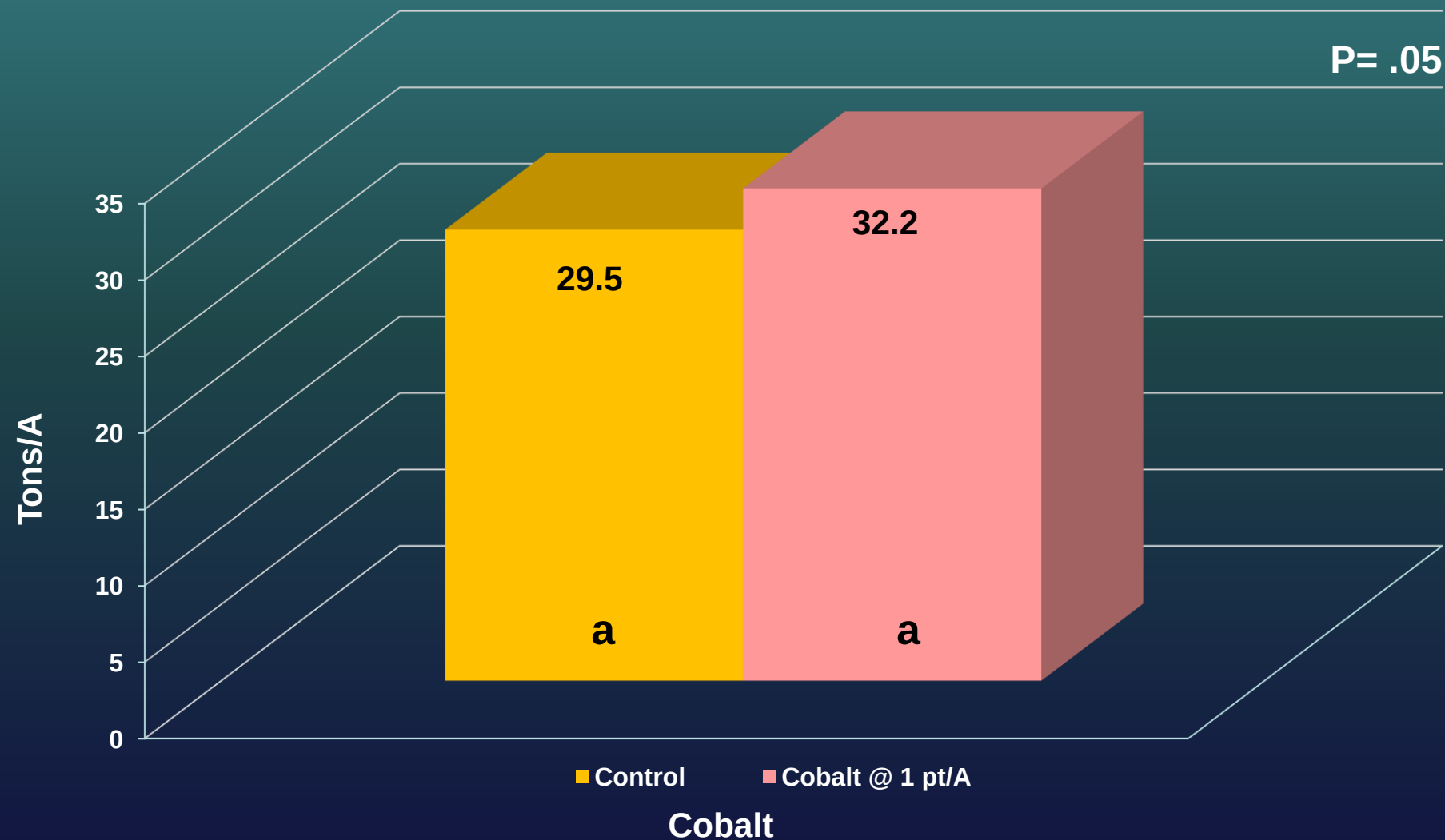


Cobalt (Co)

- Varieties: L01-299
- Crop Age: 1R
- Co rate: 1 pt/A (soil applied)
- N Rate: 0, 40, 80, 120, 160 lb/A
- Reps: 4
- Can cobalt application stimulate sugarcane to fix-atmospheric nitrogen?

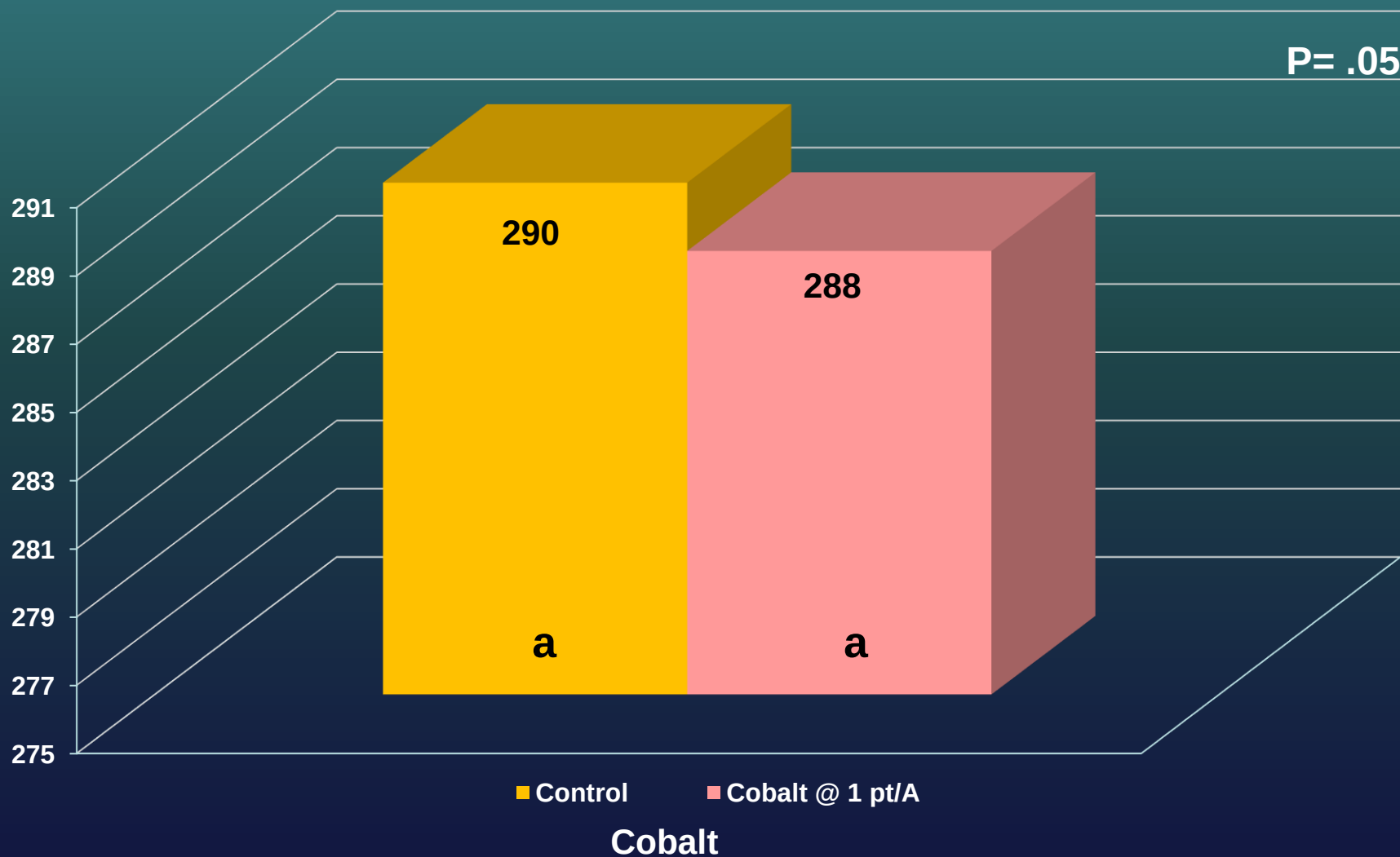
Response to Cobalt

L 01-299, 1st Stubble, Tons/A, Simmoneaux, 2021



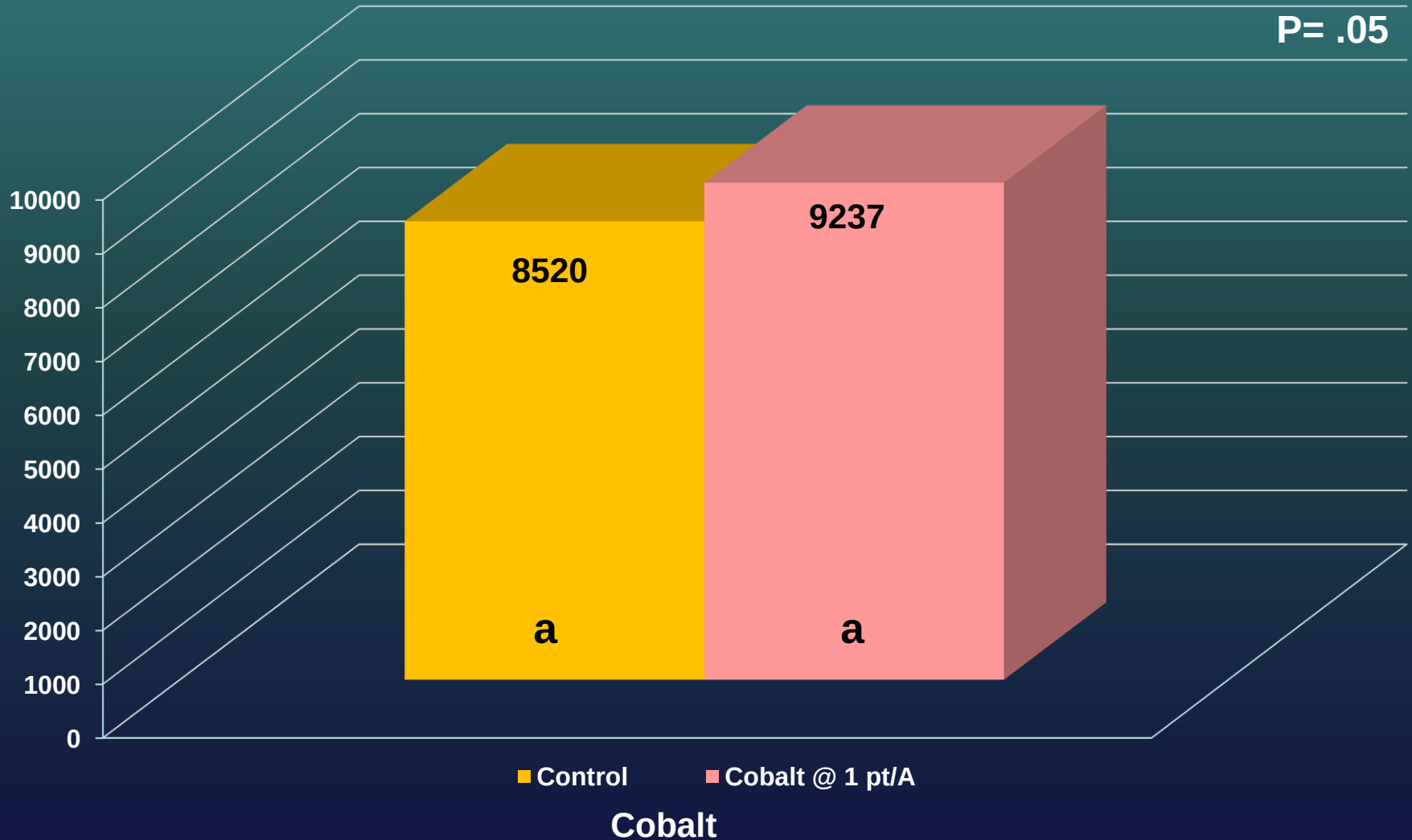
Response to Cobalt

L 01-299, 1st Stubble, TRS, Simmoneaux, 2021



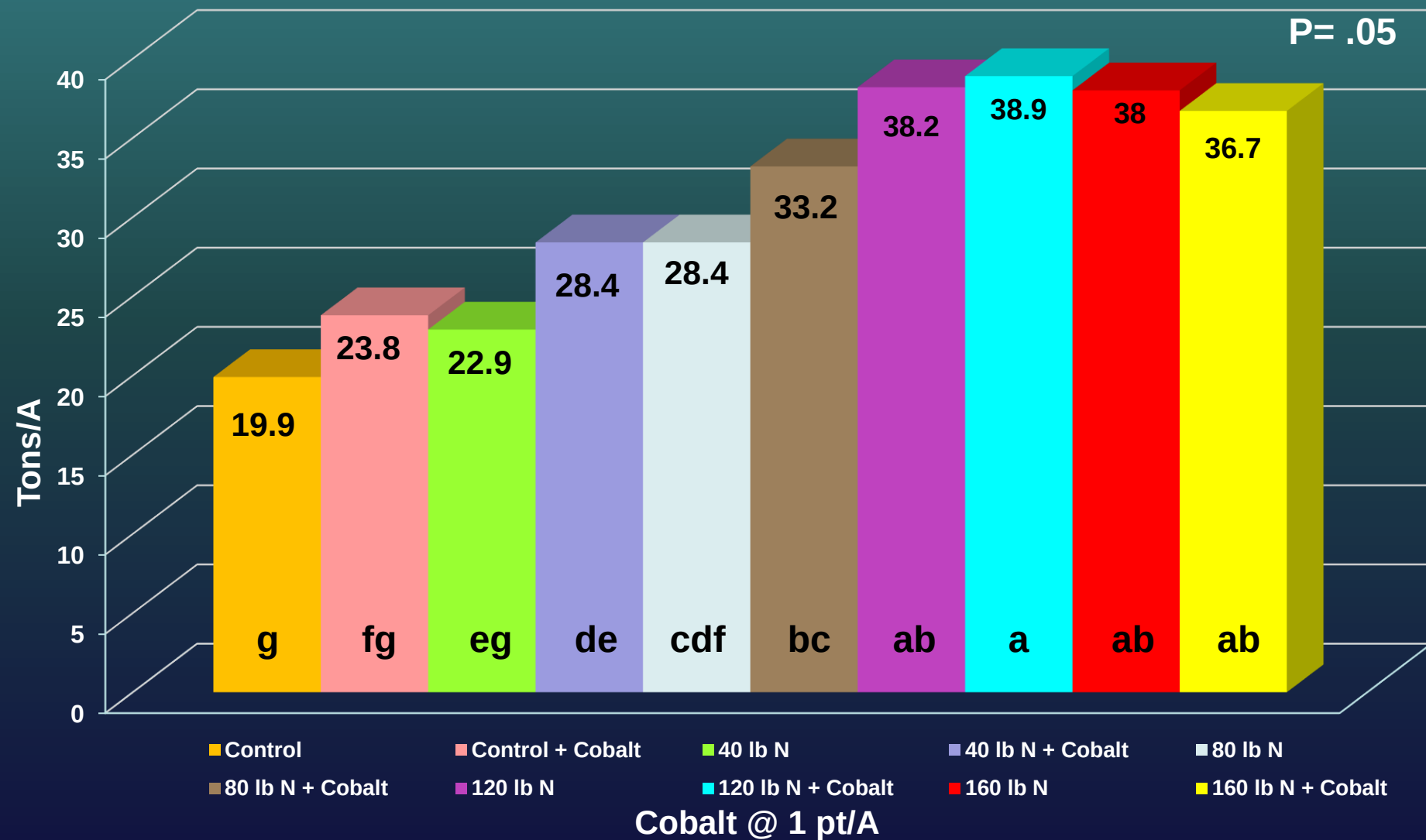
Response to Cobalt

L 01-299, 1st Stubble, Sugar/A, Simmoneaux, 2021



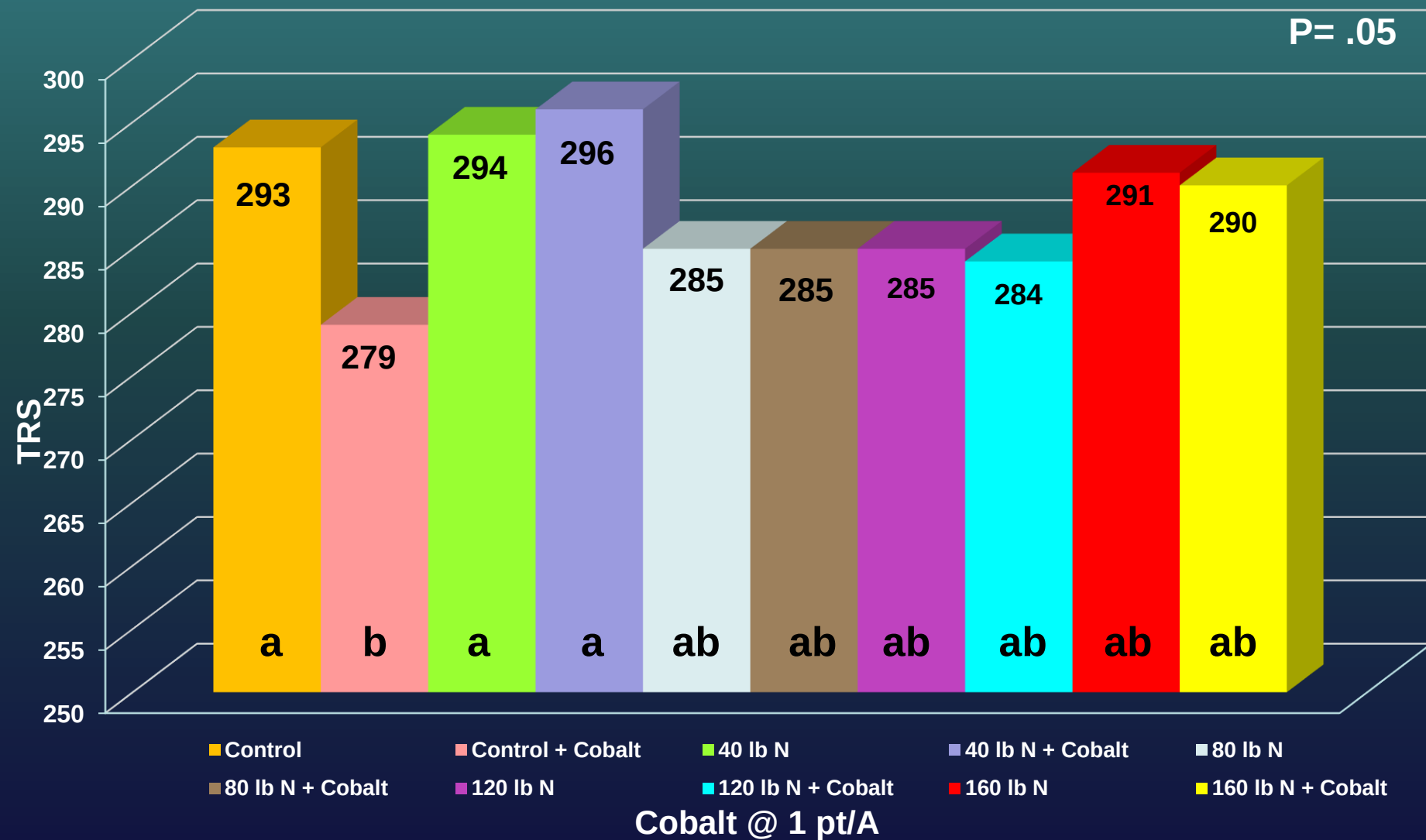
Response to Cobalt x Nitrogen

L 01-299, 1st Stubble, Tons/A, Simmoneaux, 2021



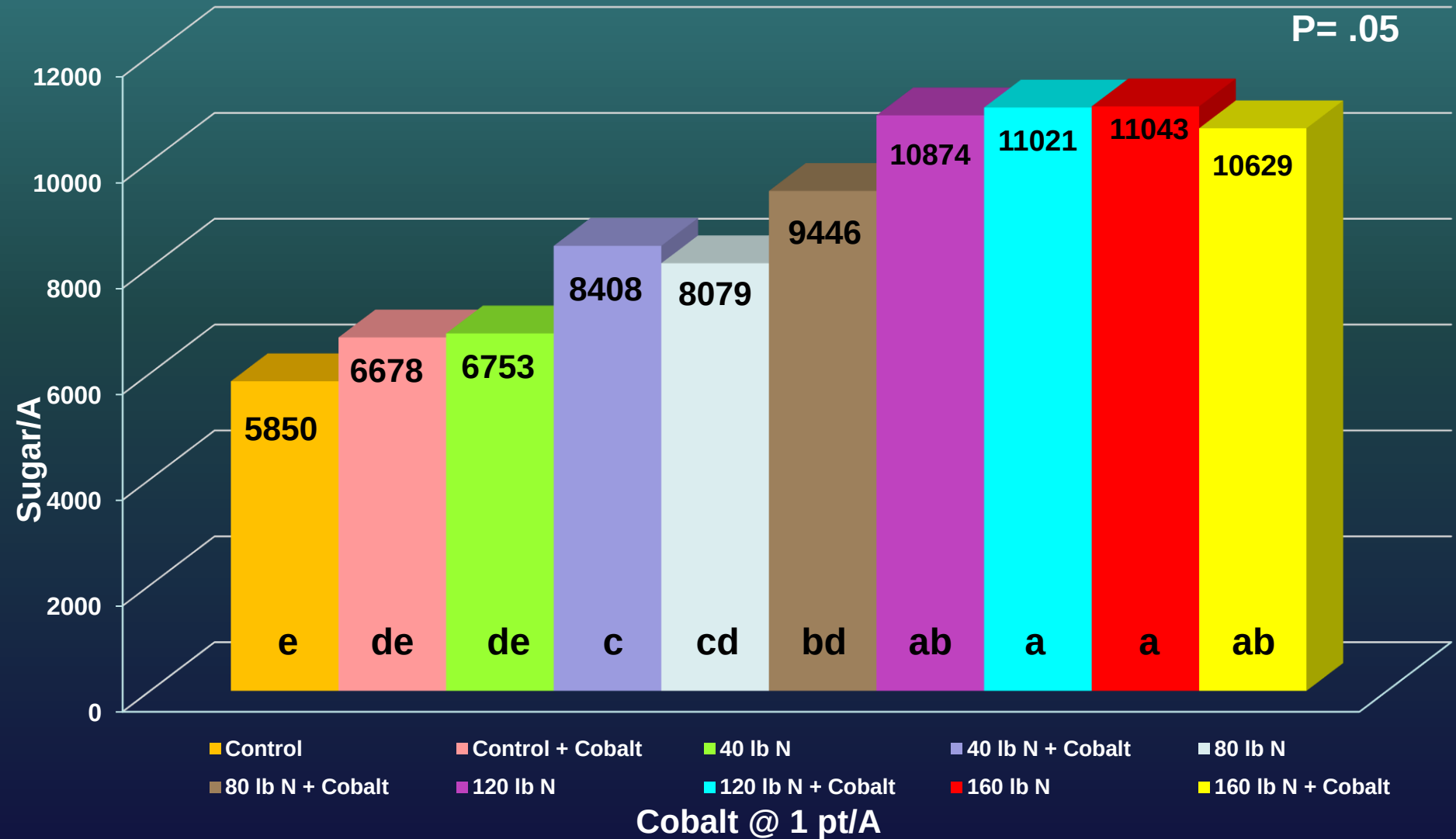
Response to Cobalt x Nitrogen

L 01-299, 1st Stubble, TRS, Simmoneaux, 2021



Response to Cobalt x Nitrogen

L 01-299, 1st Stubble, Sugar/A, Simmoneaux, 2021



Soil Fertility priorities for 2022

- Soil pH
- Nitrogen
- Sulfur
- Potassium
- Micronutrients (Zn, B)
- Phosphorus (at planting?)

Acknowledgements

- American Sugar Cane League
- Cultural Practices Staff: Katie Richard, Deise da Silva, Brenda King, Mandy Guidry
- All cooperating growers



Questions?

Rich Johnson, richard.johnson@usda.gov, (985) 870-4188