

Surviving Another Year of High Fertilizer Prices (or Dealing with High Fertilizer Prices Two Years in a Row)



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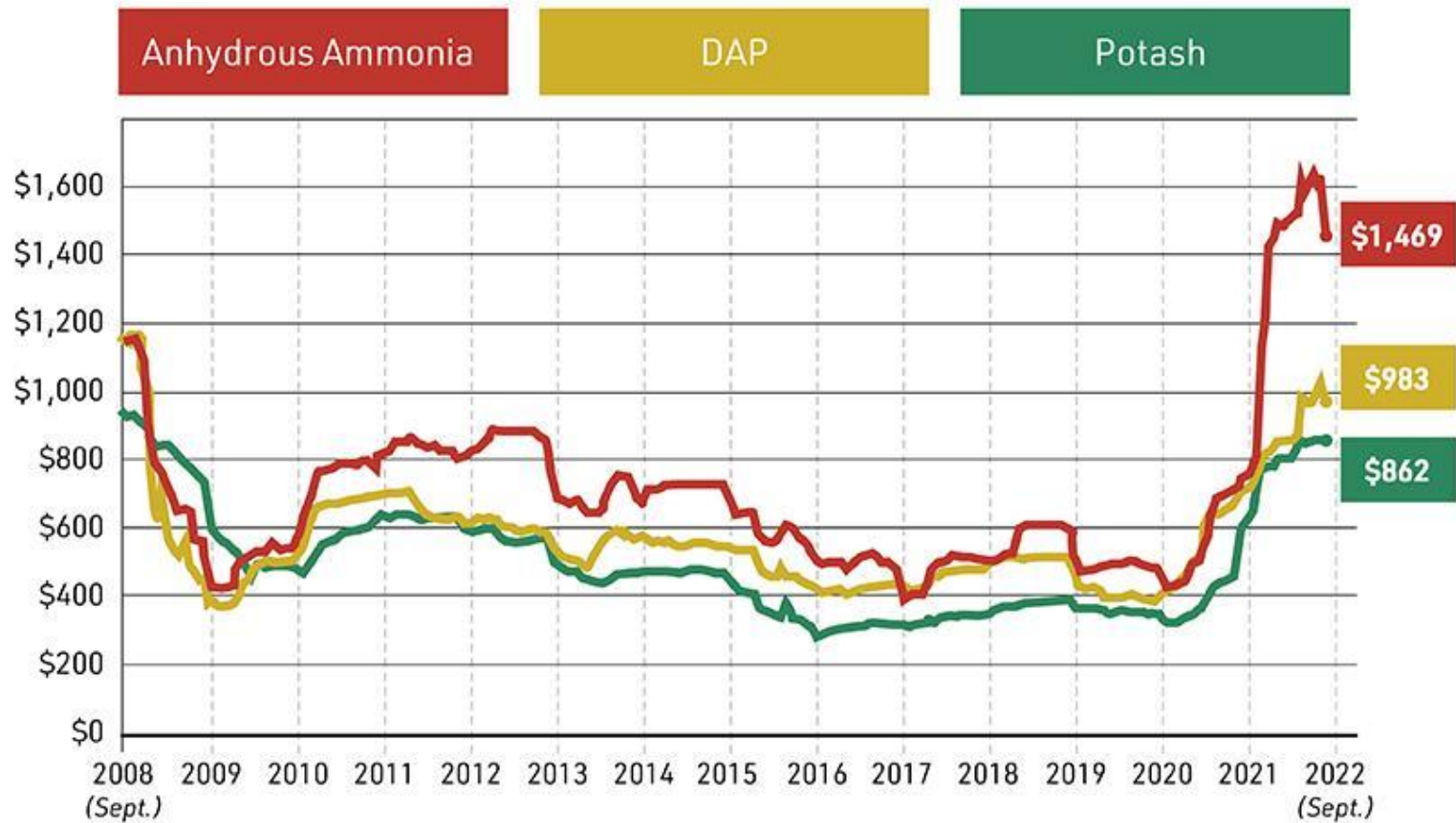
How Rough Are Fertilizer Prices ?



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Fertilizer Prices Per Ton in Illinois



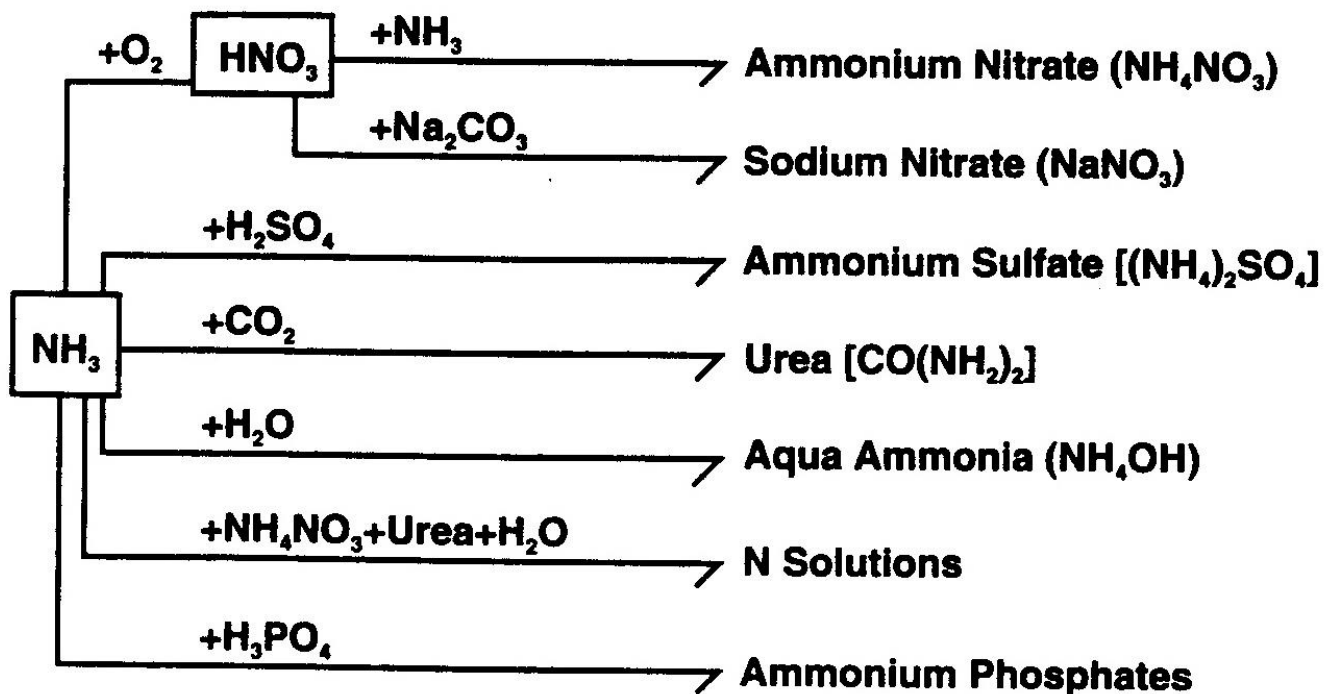
SOURCE: USDA, AGRICULTURAL MARKETING SERVICE; ILLUSTRATION: FARM JOURNAL

Industrial N Fixation



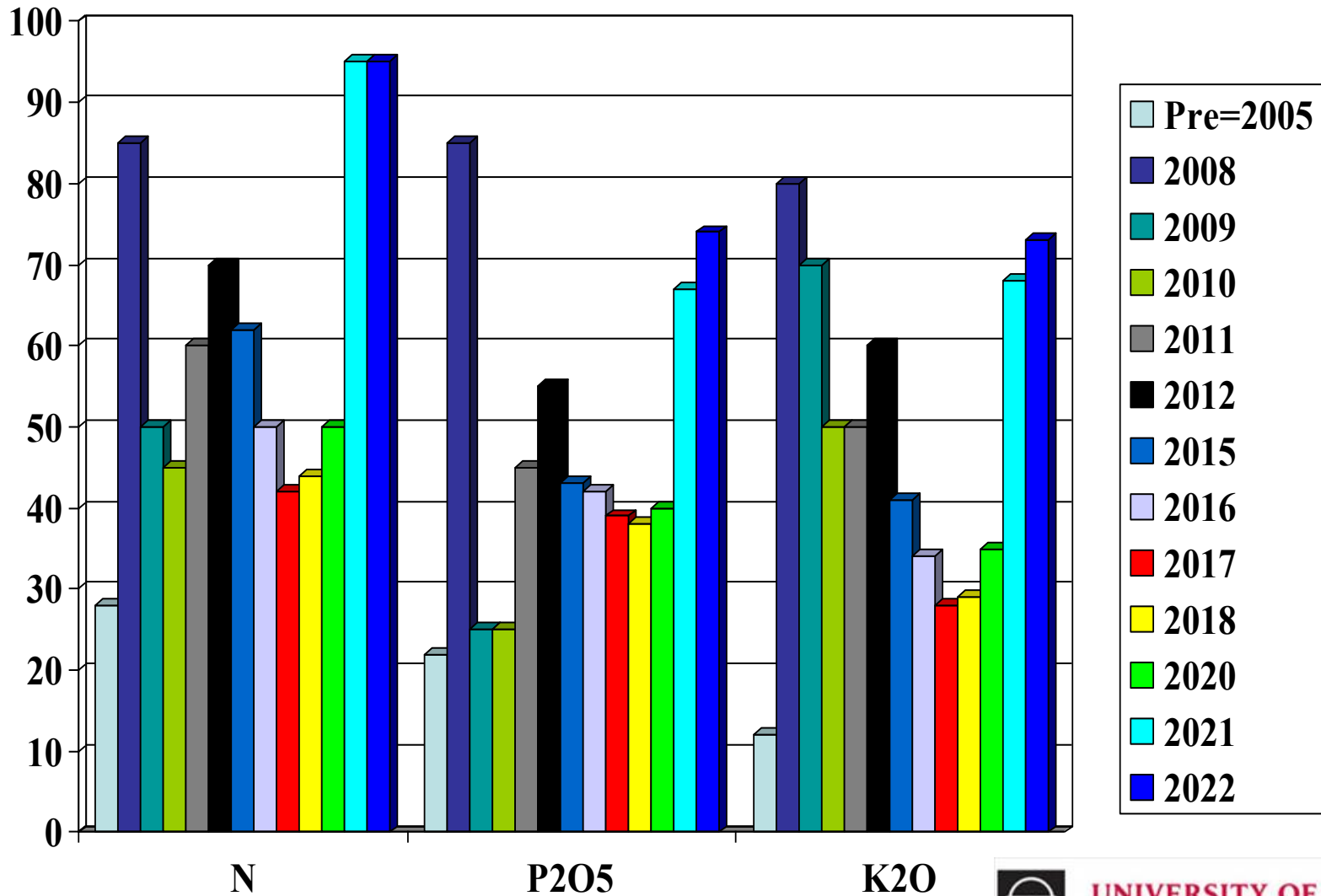
Heat

Pressure

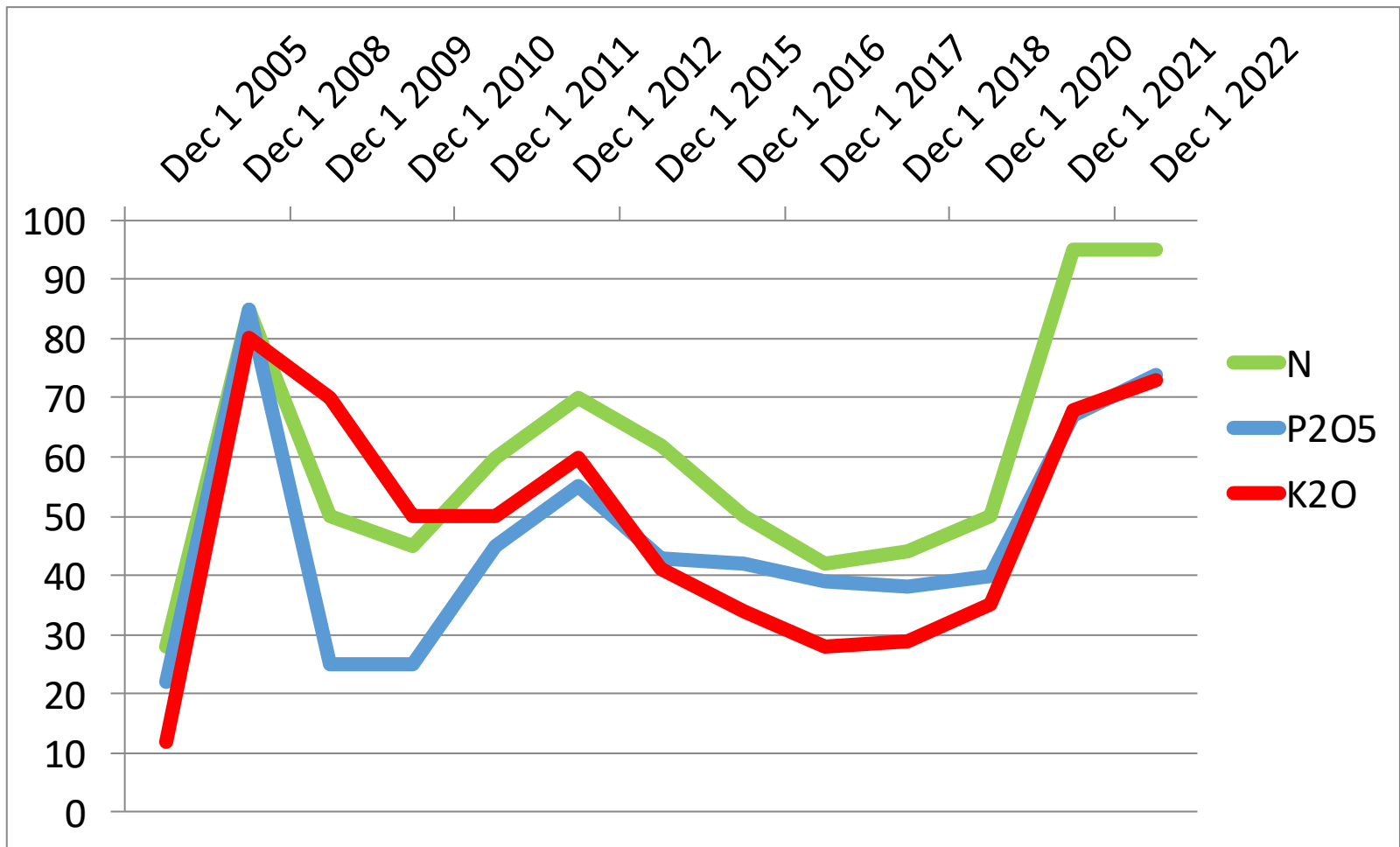


(HNO_3 = nitric acid; Na_2CO_3 = sodium carbonate;
 H_2SO_4 = sulfuric acid; CO_2 = carbon dioxide;
 H_3PO_4 = phosphoric acid)

Fertilizer Prices for N-P-K (cents/pound)



Fertilizer Prices (cents/lb N-P2O5-K2O)



Fertilizers

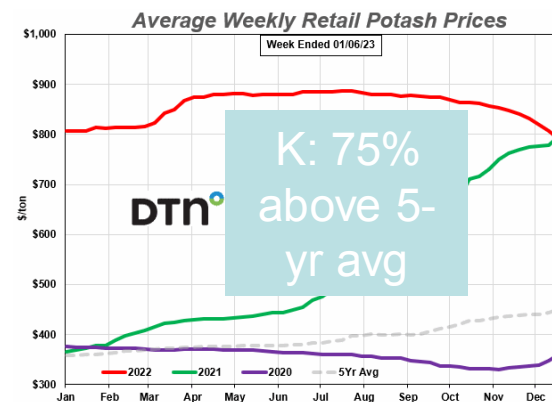
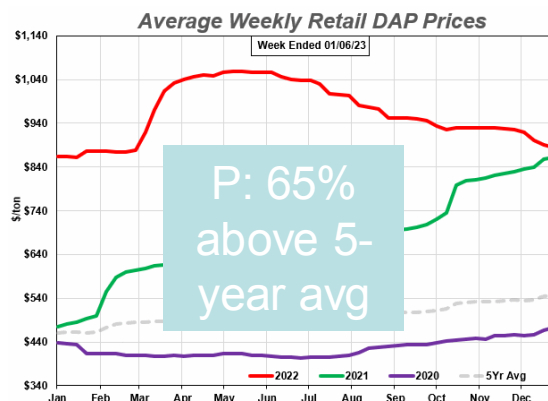
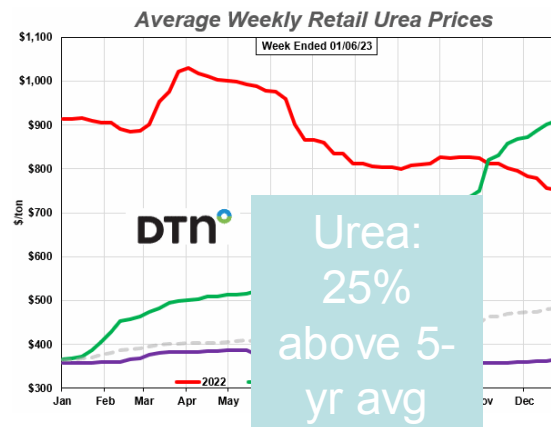
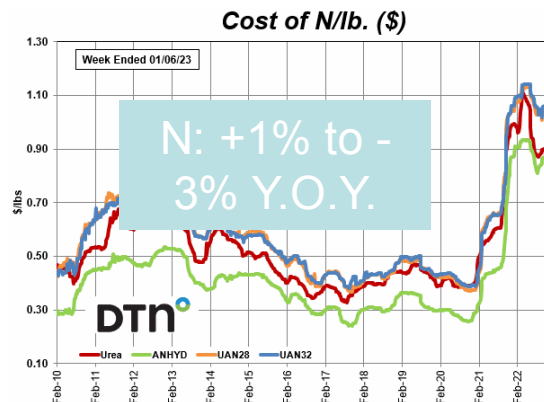
- N demand is more inelastic
- The direction N prices will go depends upon two major questions:

- Will demand stay high (corn prices)?
- How much will natural gas prices increase?

- **Prices for most have softened recently**

- **2023 Budgets**

- N = \$1.10/lb
- P = \$0.80/lb
- K = \$0.75/lb



Source: DTN/The Progressive Farmer, Jan 2023

Basic Strategy for Dealing with High Fertilizer Prices

Soil Test

Maintain Proper Soil pH

Fertilize by Yield or Production Goals

Reduce Fertilizer Rates (?)

Band N, P and K to Increase Efficiency (?)

Give N Credits to Manure and Legume Cover Crops



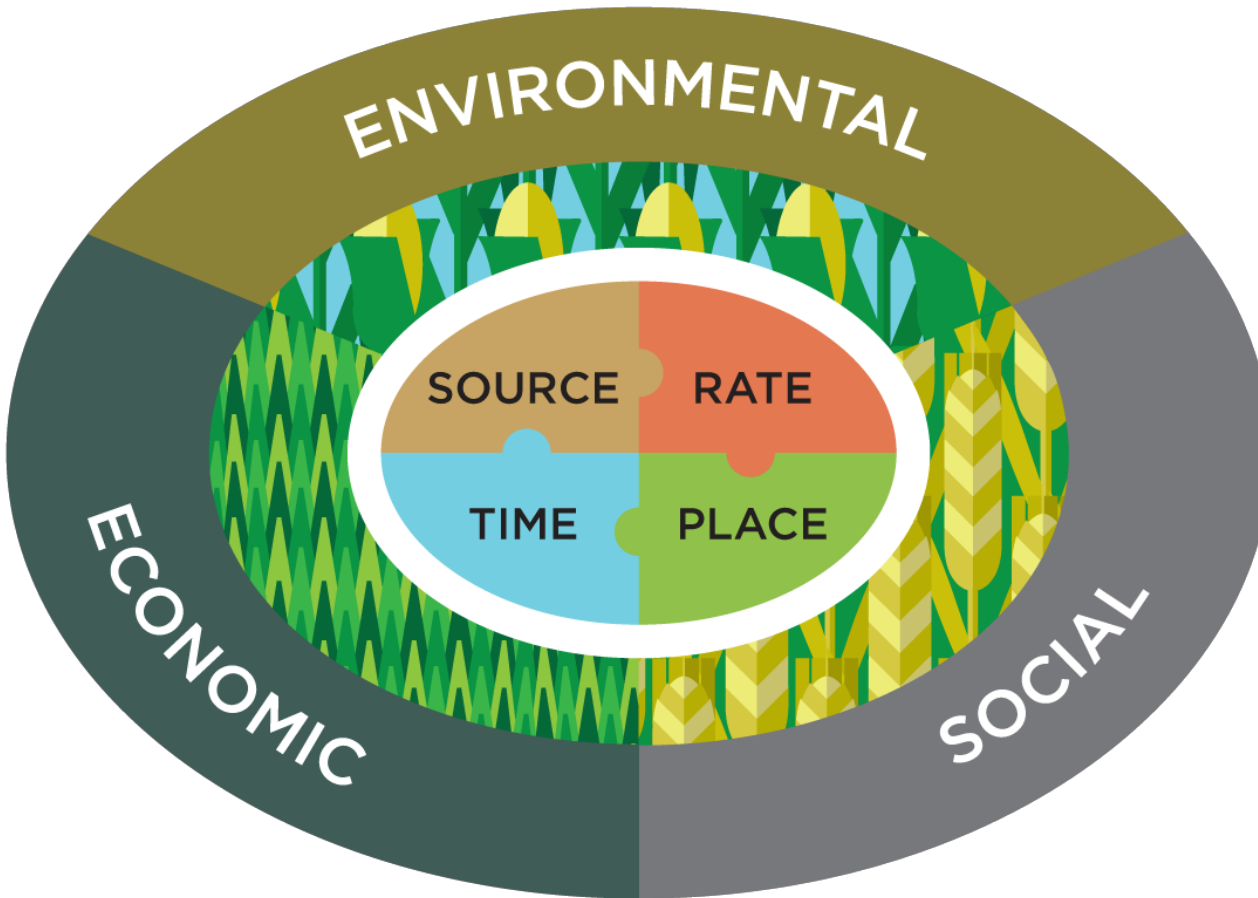
In-Season Adjustments
Split Applications (Esp. N)

Alternative/By-Product
Fertilizer Sources (?)



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The “4 R’s” Of Fertilization



Basic Strategy for Dealing with High Fertilizer Prices

Soil Test - R

Maintain Proper Soil pH - R

Fertilize by Yield or Production Goals - R

Reduce Fertilizer Rates (?) - R

Band N, P and K to Increase Efficiency (?) - P

Give N Credits to Manure and Legume Cover Crops - S



In-Season Adjustments
Split Applications (Esp. N)
- T

Alternative/By-Product
Fertilizer Sources (?) - S



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Which Crop Needs the Most Fertilizer ?

“Medium” Soil Test P and K (UGA)

Corn (300-120-190)

Cotton (90-50-50)

Soybeans (0-40-80)

Peanuts (0-0-0)

Wheat (100-40-40)

Wheat – Soybean (100-80-120)

Hay (400-60-200)

Which Crop Needs the Most Fertilizer ?

“Medium” Soil Test P and K

Staked Tomatoes	(150-200)* - 150 - 150
Collards	(175-225) - 150 - 150
Cabbage	(175-225) - 150 - 150
Sweet Corn	(200-250) - 90 - 90
Onion	(125-150) - 90 - 90
Eggplant	(125-175) - 80 - 90
Cucumber	(100-150) - 80 - 90
Watermelon	(100-150) - 80 - 90
Cantaloupes	(100-150) - 80 - 90

* Nitrogen (N) application rates will vary depending on rainfall, soil type, irrigation, plant population and method and timing of applications.

Source: Soil Test Handbook for Georgia

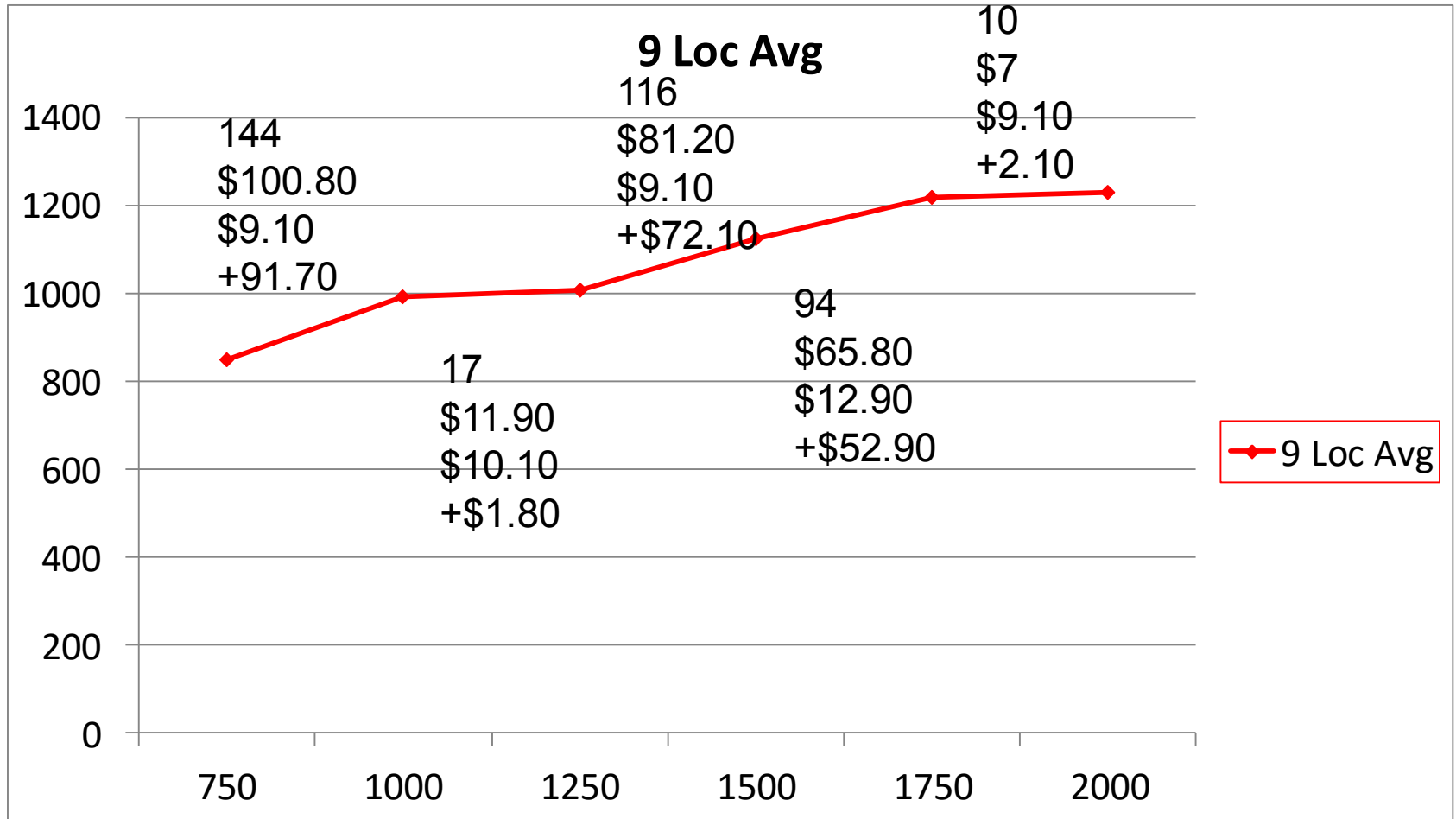


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Fertilizing Cotton (N-P-K) By Yield Goal – 2017+2018

Actual Yield (lb lint/a)

Variety = DP 1646



Yield Goal (lb lint/a)

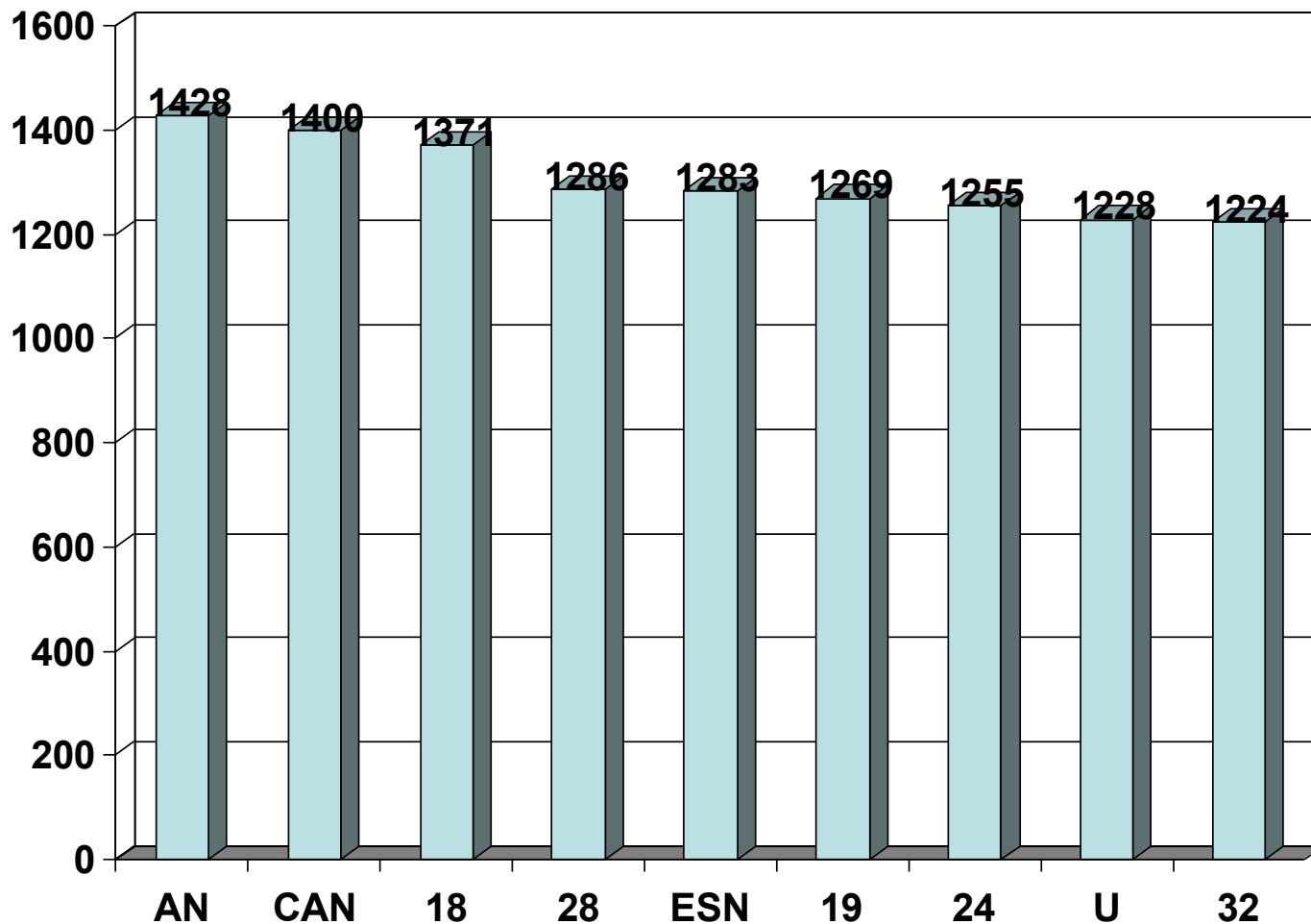


Nitrogen Sidedress "Sources"

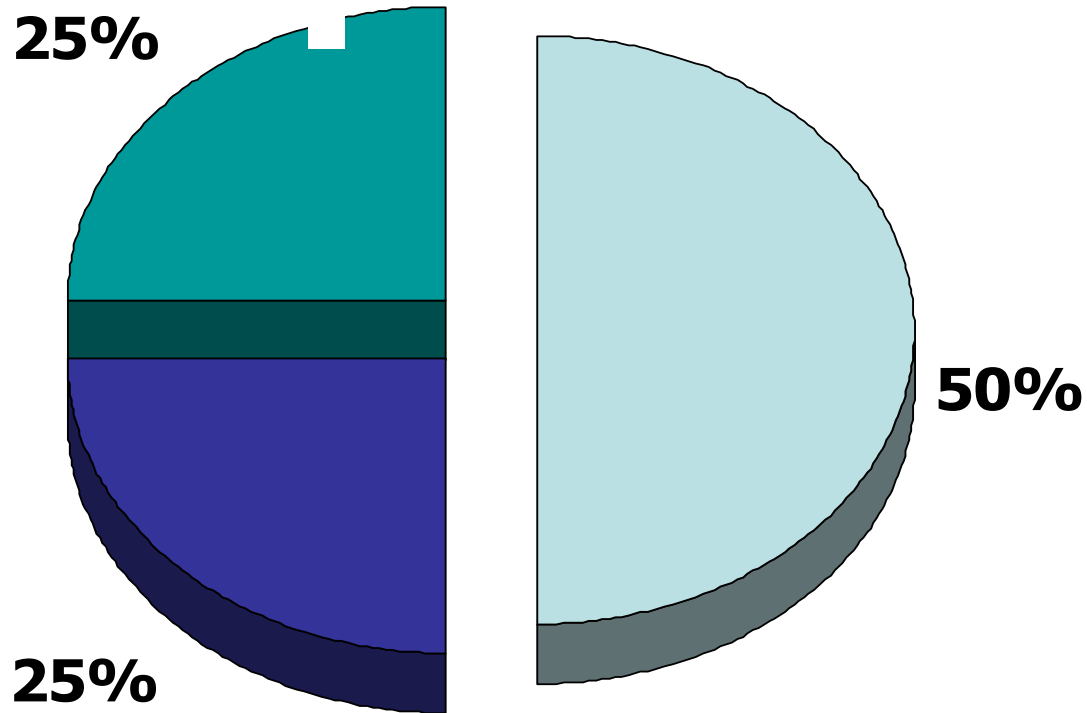
Sidedress N Source Comparison

RDC+EXPO – 2013+2014 AVG

Cotton Yield (lbs lint/a)



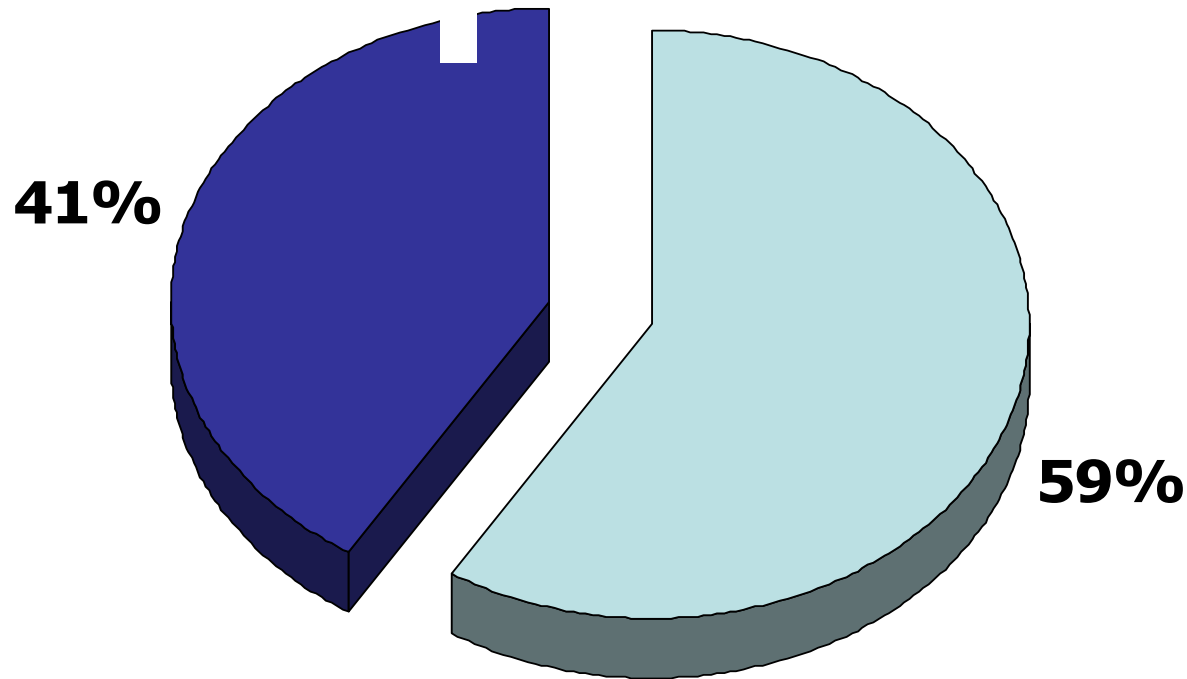
Composition of UAN (32% N) (urea + ammonium nitrate)



■ Urea ■ Ammonium(NH₄) ■ Nitrate (NO₃)

* Add ATS to make 28-0-0-5(S)

Composition of "19-E" (19%N) (ammonium nitrate + sodium nitrate)

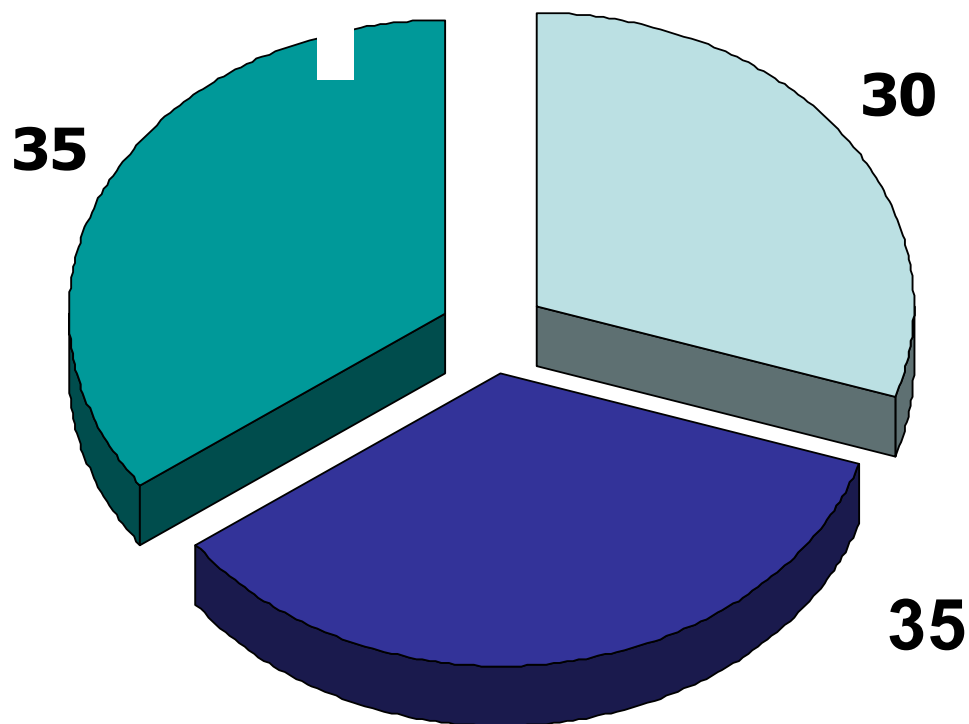


■ Nitrate (NO₃)

■ Ammonium (NH₄)

* Add ATS to make 18-0-0-3(S)

Composition of "24% N" (urea + ammonium nitrate + sodium nitrate)



■ Urea ■ Ammonium(NH₄) ■ Nitrate (NO₃)

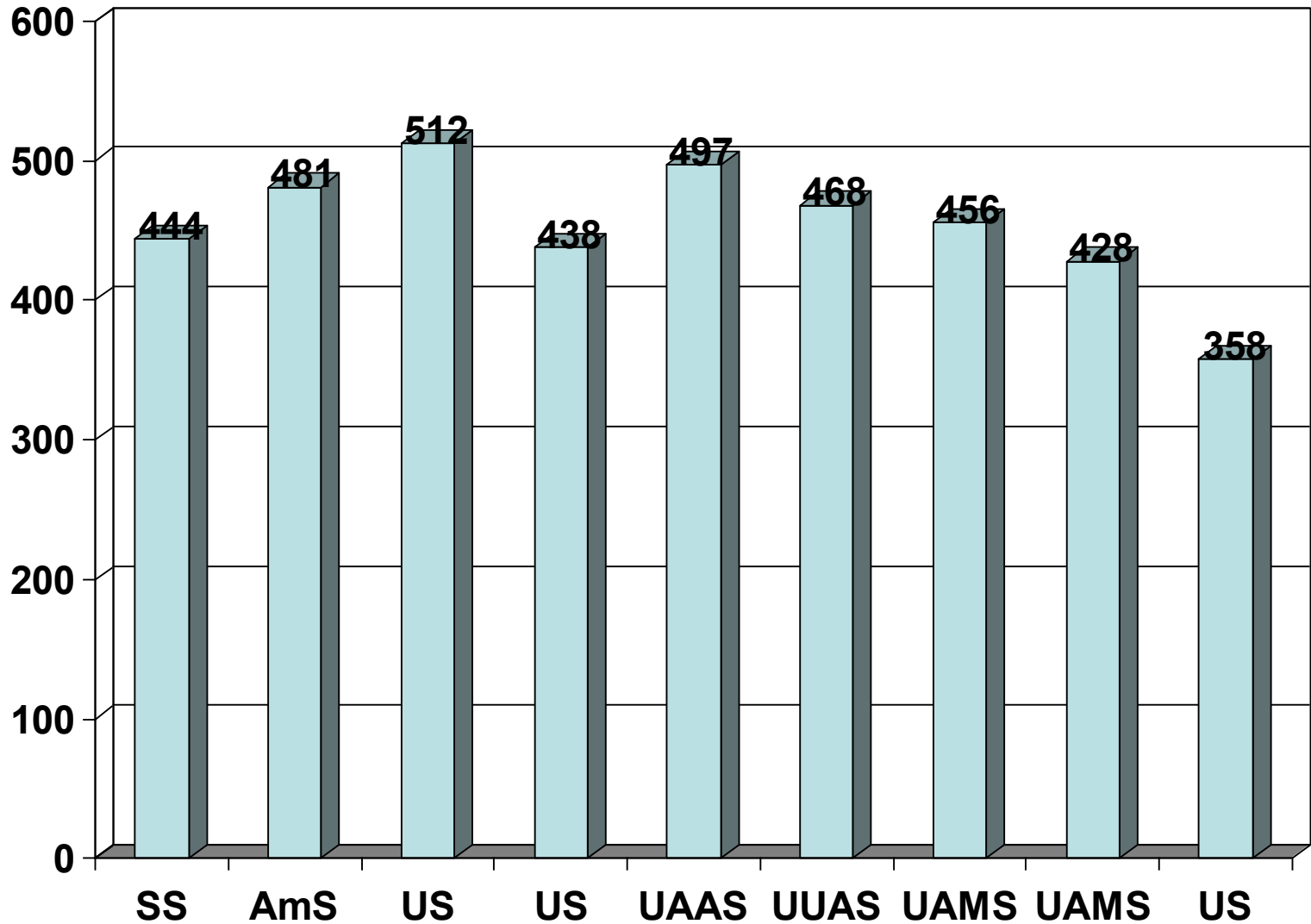
* Add ATS to make 24-0-0-3(S)





Cotton Yield (lbs lint/a)

Timac Sulfur Bowen Farm 2022



P=0.1473 CV = 15 %

Agricultural, Municipal and Industrial By-Products

Chicken Litter
“Poultash”
Gin Trash



Biosolids
Symtrex
Sus-Terra



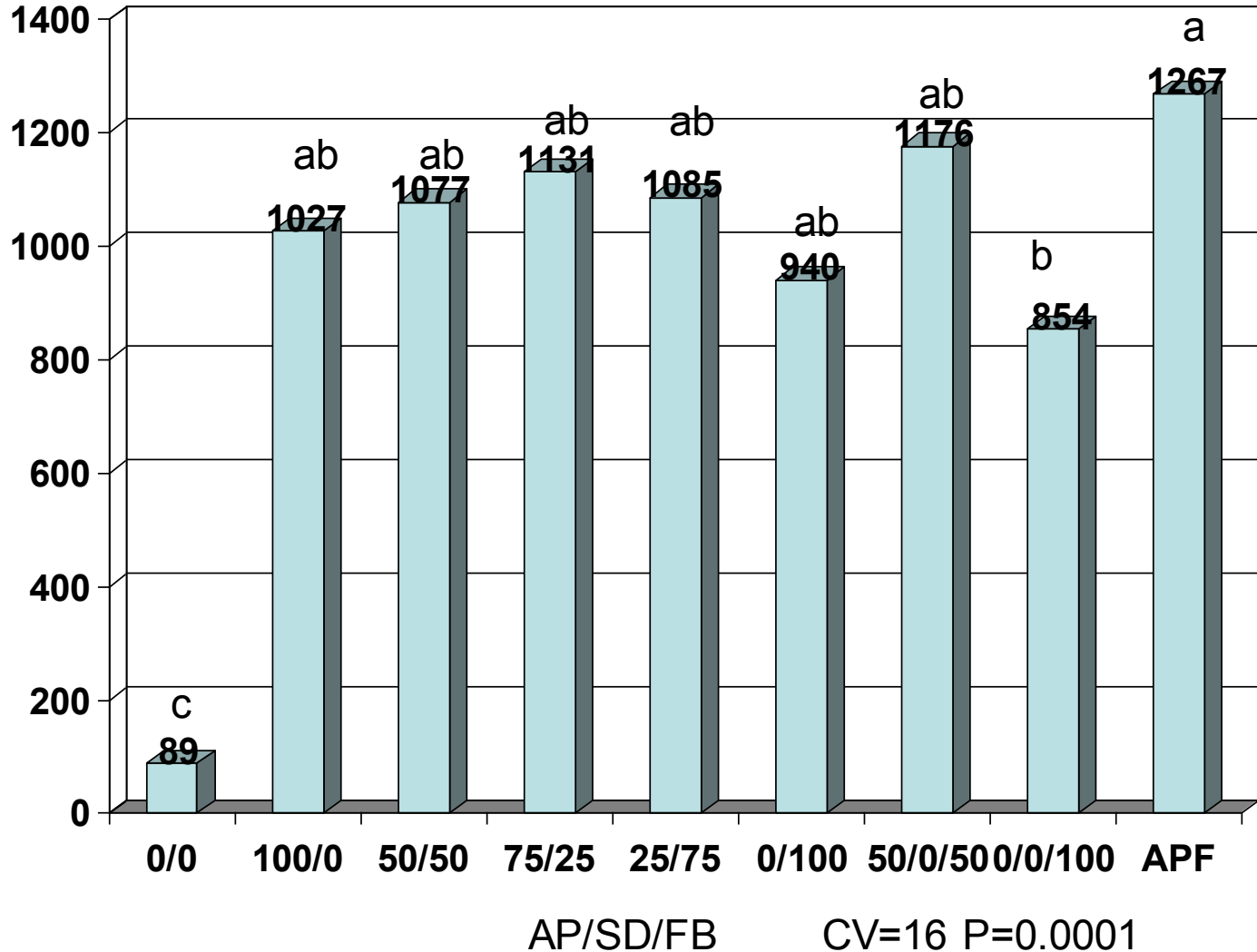
FGD Gypsum
Wood Ash
Wallboard
RecycLime



Preliminary K Timing on Cotton

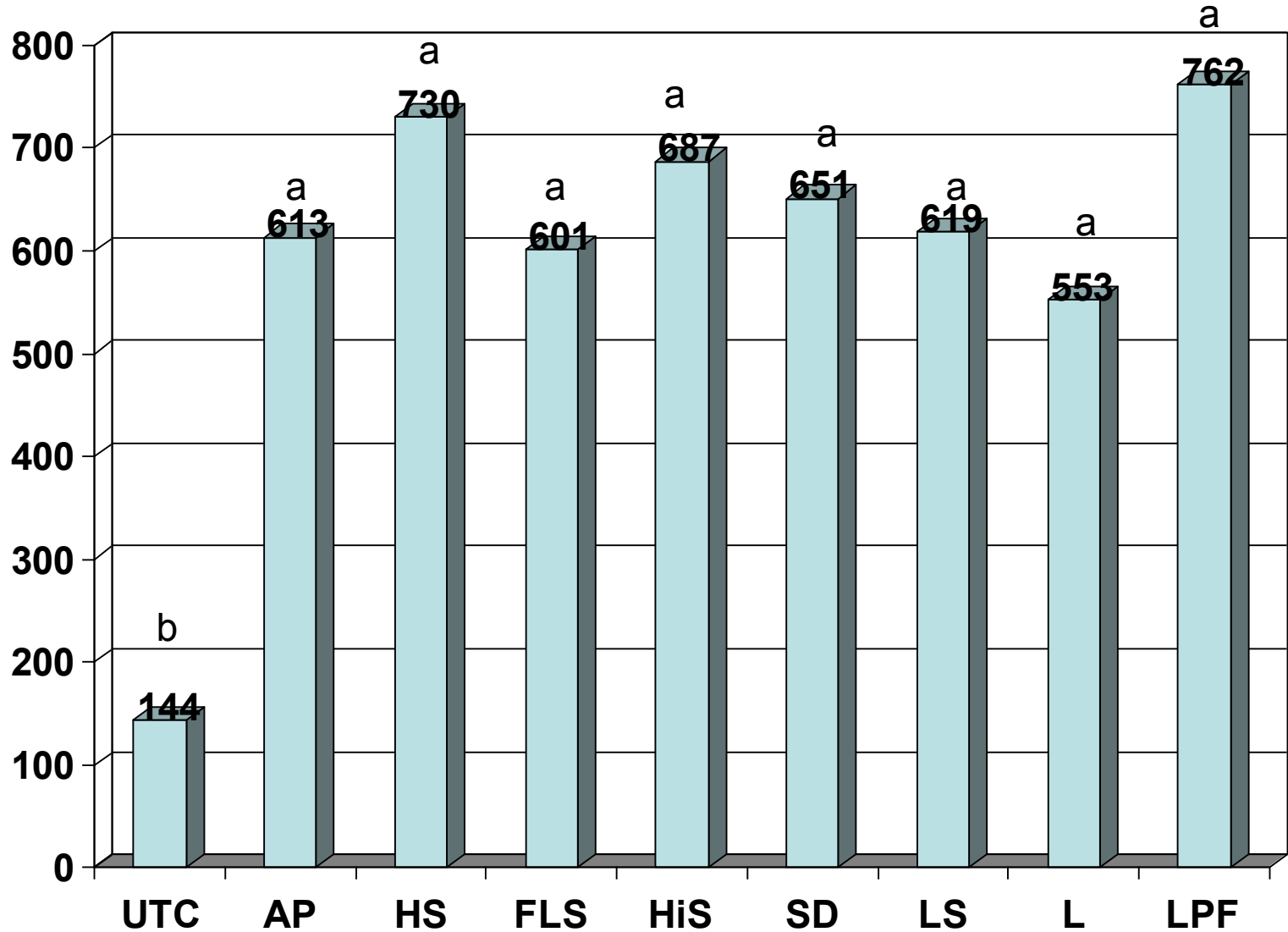
Bowen 2021 DPL 1646

Lb lint/a



Cotton Yield (lbs lint/a)

K Timing (3 Reps) Bowen Farm 2022

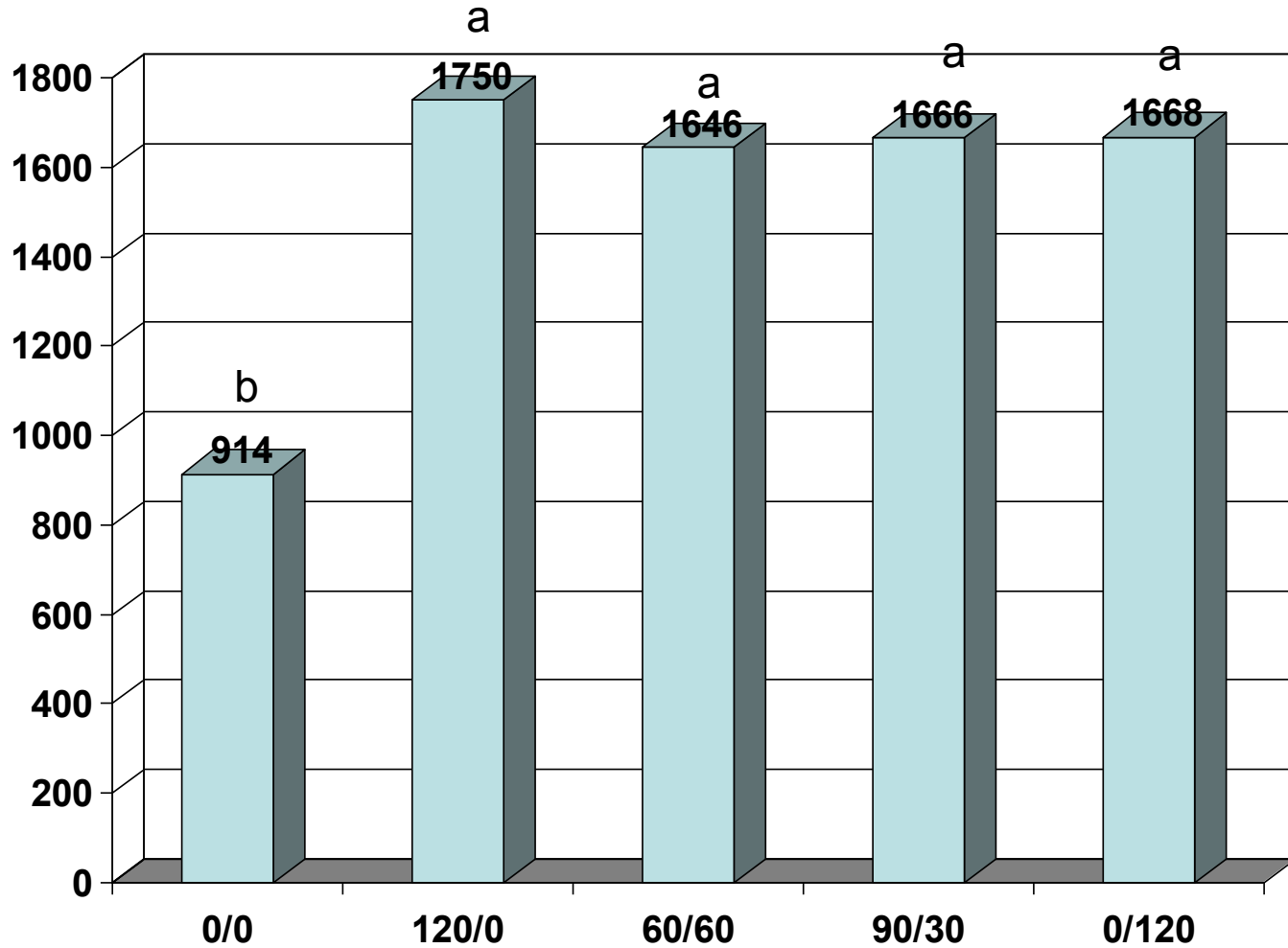


P=0.0001 CV = 17 %

K Timing on Cotton

Midville 2021 DPL 1646

Lb lint/a



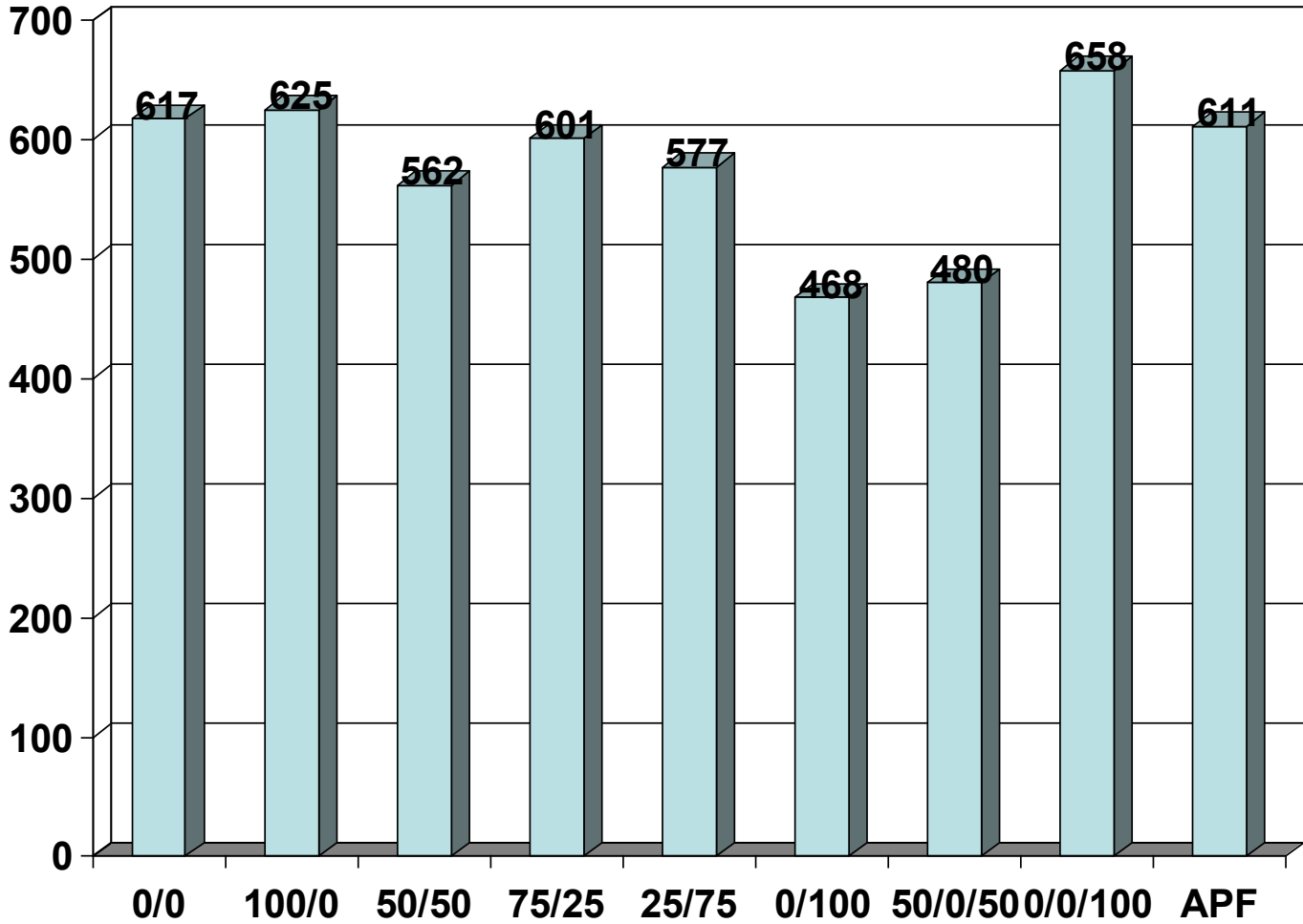
AP/SD

Assume 40 % TO for all plots (CV=9 P=.0001)

Preliminary K Timing on Cotton

Sunbelt Expo 2021 DPL 1646

Lb lint/a

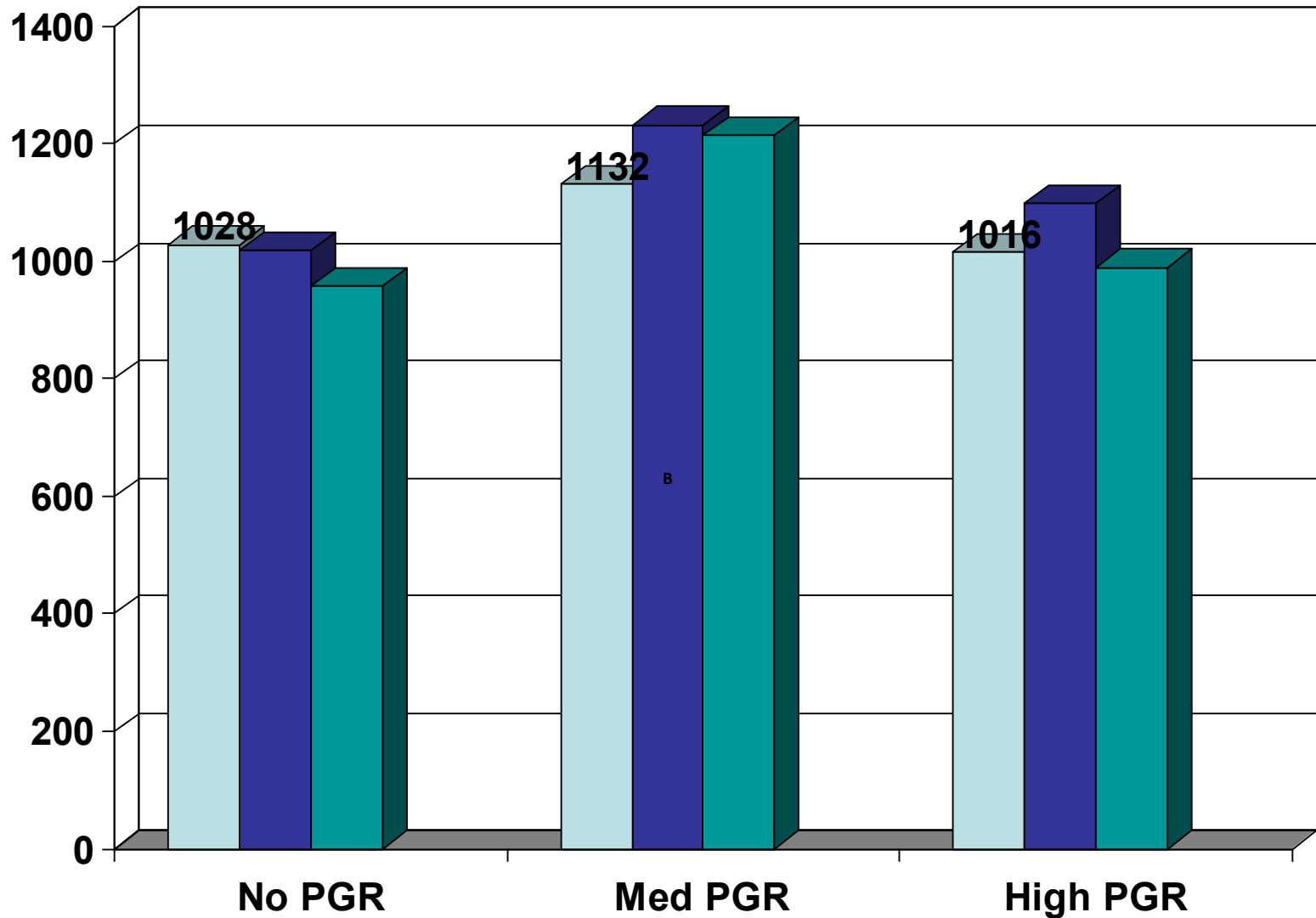


AP/SD/FB

CV=26 P=0.6813 so "NS"

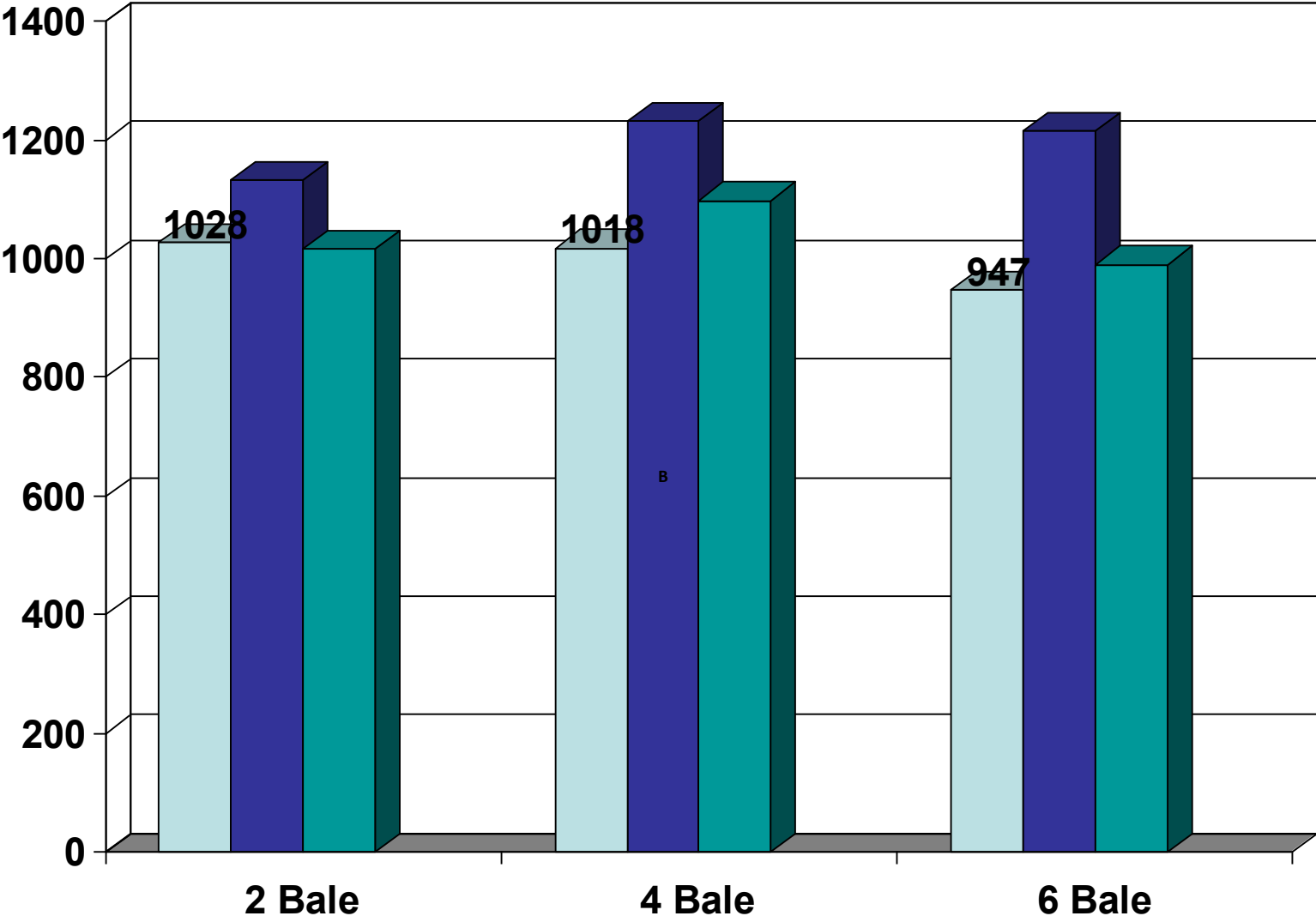
Cotton Yield (lb lint/a)

Fert by PGR 2022 RDC Pivot – 4 Reps



Cotton Yield (lb lint/a)

Fert by PGR 2022 RDC Pivot – 4 Reps



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Fertilizer Sources (?)



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There are no...



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Thanks to:

Georgia Cotton Commission

Georgia Plant Food Ed Soc

UGA Cotton Team

Sunbelt Expo

UGA Microgin

Waters Laboratory



The University of Georgia

Cotton Team





Thank You !

Questions?

gharris@uga.edu

Thanks to:

Georgia Cotton Commission

Georgia Plant Food Ed Soc

National Peanut Board

Waters Laboratory

