2013 Technical Meetings
Midsouth Regional Report

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BRANDT

Brandt Consolidated

- This is the first time Brandt has had the opportunity to address the Louisiana Agricultural Consultants

- Brandt has played a role in micronutrient fertilization for 61 years
  - Founding member of the Fluid Fertilizer Foundation
  - Largest U.S. manufacturer of liquid micronutrients

- Technology is based on 3 things
  - Solubility – the key to utilization
  - Speed into the plant tissue
  - Stress Mitigation – biotic and abiotic, with emphasis on herbicide stress ….

- You don't need to take notes and I won't get through – So I'll have the PPT at my table

Micronutrients

– *Functions in Plant*

Manganese

- Improved herbicide metabolism and disease tolerance
- Assists in photosynthesis and respiration

Zinc

- Stimulates root and shoot growth
- Chlorophyll production

Sulfur

- Important for protein and enzyme synthesis
- Critical relationship with Nitrogen
- Promotes nodulation in legumes

Vegetative Growth

Boron

- Cell division and cell wall formation
- Nitrogen metabolism
- Reproduction and seed set

Molybdenum

- Essential for nodule formation in legumes
- Component of protein synthesis

Reproductive Growth

Micronutrients are integral to complete fertility

- **Brandt formulations are based on**
  - **Solubility**
  - **Speed – quickly into the plant tissue**
  - **Stress mitigation**

- **Sound Agronomic Practices come first**
  - N-P-K soil applied fertility
  - pH corrected for optimum yields
  - "Four R's" of Nutrient Stewardship
    - Right **Source** and **Formulation**
    - Right **Rate**
    - Right **Timing** for optimum uptake/utilization
    - Right **Placement**

Goal of ANY Micronutrient Application

- **Feed the crop not the field during the growing season**
  - **Use the Correct formulation for each specific application**
    - **Soil Applications and Starters –**

      EDTA chelates (12 liquids + 10 dry formulations)

    - **Foliar Applications –**

      Manni-plex Formulations *(20 products)*

      Rapid entry into plant vascular system

      Smart Formulations *(3 products)*

      Ability to mix with most herbicides & rapid entry into the plant

  - ***Solubility = Plant Availability***
    - ***This applies to foliar & soil applications!!***
  - ***Product Formulations Primary Benefit should be to drive the nutrition into the plant's vascular system (xylem & phloem) and meristematic tissue from where ever the nutrient hits the plant***

- **Brandt's portfolio allows you to match your exact needs to the product optimized for that specific job**

BRANDT

Brandt Portfolio

MANNI-PLEX FOLIAR				
Foli-Cal	L	S	S_{sp}	B
N-Boron	L	S	S_{sp}	B
Manni-Plex B Moly	L	S	S_{sp}	B
Manni-Plex Cal-Mag	L	S	S_{sp}	B
Manni-Plex Cal Zn	L	S	S_{sp}	B
Manni-Plex Fe	L	S	S_{sp}	B
Manni-Plex K	L	S	S_{sp}	B
Manni-Plex Mg	L	S	S_{sp}	B
Manni-Plex Mn	L	S	S_{sp}	B
Manni-Plex Ni	L	S	S_{sp}	B
Manni-Plex Si	L	S	S_{sp}	B
Manni-Plex Zn	L	S	S_{sp}	B
Manni-Plex for Alfalfa	L	S	S_{sp}	B
Manni-Plex for Beans	L	S	S_{sp}	B
Manni-Plex for Citrus	L	S	S_{sp}	B
Manni-Plex for Corn	L	S	S_{sp}	B
Manni-Plex for Small Grains	L	S	S_{sp}	B
Manni-Plex for Tree Nuts	L	S	S_{sp}	B
Manni-Plex for Vegetables	L	S	S_{sp}	B
Manni-Plex Complete	L	S	S_{sp}	B

BRANDT SMART SYSTEM				
Brandt Smart Mn	L	S	S_{sp}	B
Brandt Smart Trio	L	S	S_{sp}	B
Brandt Smart Zn	L	S	S_{sp}	B

BIO-YIELD ENHANCERS				
N-Boost	L	S	S_{sp}	B

AQUATIC MAINTENANCE				
Brandt Aqua Bio-Trol	L	S	S_{sp}	B
Blue Lagoon SS	L	S	S_{sp}	B

SPRAY ADJUVANTS				
Brandt AquaSurf™	L	S	S_{sp}	B
Brandt Indicate 5	L	S	S_{sp}	B
Brandt Super 7	L	S	S_{sp}	B
Prolec	L	S	S_{sp}	B
Prolec G	L	S	S_{sp}	B
Brandt Inhance (AMS)	L	S	S_{sp}	B
Brandt C.O.C.	L	S	S_{sp}	B
Brandt Infield	L	S	S_{sp}	B
Brandt Inspray 90	L	S	S_{sp}	B
Brandt MSO	L	S	S_{sp}	B
Brandt Insure	L	S	S_{sp}	B
Brandt Stop-Foam	L	S	S_{sp}	B
Brandt Disperse	L	S	S_{sp}	B

SEQUESTAR® CHELATES (LIQUID)				
Brandt Sequestar® 3% Ca	L	S	S_{sp}	B
Brandt Sequestar® Corn Mix	L	S	S_{sp}	B
Brandt Sequestar® 7.5% Cu	L	S	S_{sp}	B
Brandt Sequestar® EDTA and B Mix	L	S	S_{sp}	B
Brandt Sequestar® 4.5% Fe EDTA	L	S	S_{sp}	B
Brandt Sequestar® 4.5% Fe HEDTA	L	S	S_{sp}	B
Brandt Sequestar® 2.5% Mg	L	S	S_{sp}	B
Brandt Sequestar® 5% Mn	L	S	S_{sp}	B
Brandt Sequestar® 6% Mn	L	S	S_{sp}	B
Brandt Sequestar® Soybean Mix	L	S	S_{sp}	B
Brandt Sequestar® 6.5% Zn	L	S	S_{sp}	B
Brandt Sequestar® 9% Zn	L	S	S_{sp}	B

HUMIC ACID PRODUCTS					
Leonardite Plus Granular	OMRI	L	S	S_{sp}	B
Brandt Uptake 12		L	S	S_{sp}	B
Brandt Uptake Starter		L	S	S_{sp}	B
Brandt Uptake Advanced		L	S	S_{sp}	B

BRANDT

www.Brandt.co

EDTA Portfolio

SEQUESTAR® CHELATES (LIQUID)				
Brandt Sequestar® 3% Ca	L	S	S_{sp}	B
Brandt Sequestar® Corn Mix	L	S	S_{sp}	B
Brandt Sequestar® 7.5% Cu	L	S	S_{sp}	B
Brandt Sequestar® EDTA and B Mix	L	S	S_{sp}	B
Brandt Sequestar® 4.5% Fe EDTA	L	S	S_{sp}	B
Brandt Sequestar® 4.5% Fe HEDTA	L	S	S_{sp}	B
Brandt Sequestar® 2.5% Mg	L	S	S_{sp}	B
Brandt Sequestar® 5% Mn	L	S	S_{sp}	B
Brandt Sequestar® 6% Mn	L	S	S_{sp}	B
Brandt Sequestar® Soybean Mix	L	S	S_{sp}	B
Brandt Sequestar® 6.5% Zn	L	S	S_{sp}	B
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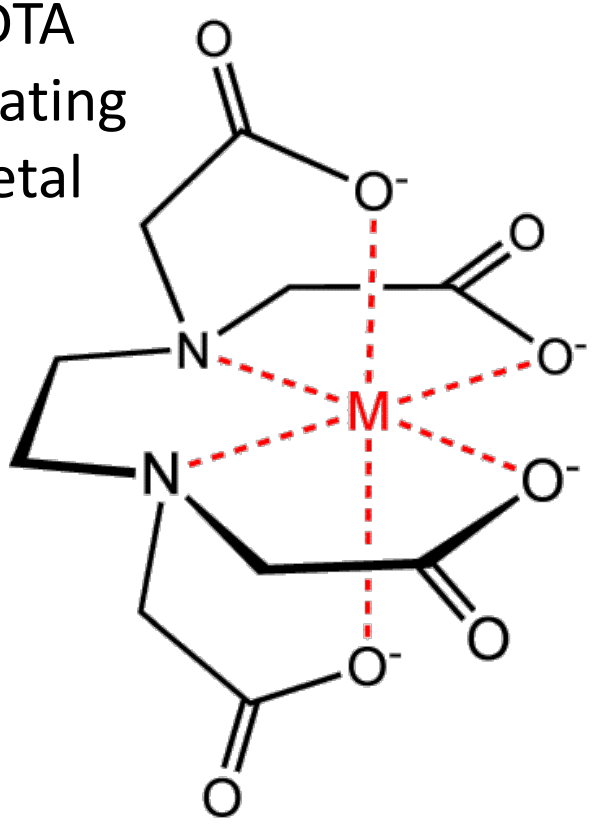
www.Brandt.co

BRANDT

EDTA Chelates
Ethylenediaminetetraacetic acid

EDTA chelating metal



- EDTA chelates can withstand harsh soil conditions
- Efficiency Ratios reported in literature vary depending on soil conditions and can go above 6x in harsh conditions
  - Zinc EDTA treatments show tissue concentrations 5 times higher than other zinc treatments (Gangloff, 2004)
  - Efficiency ratios increase up to 5x for Zinc EDTA over other sources (Alloway, 2004)
  - Zn EDTA increased zinc content of the crop twice as much as zinc sulfate in neutral solutions and up to 6 times as much in calcareous soil (Holden, Brown, 1965)
- Ideal for use in Liquid Starter Fertilizers
- Compatible with most all types of NPK solutions including orthophosphates and alkaline solutions
- Can be applied with preplant burndown herbicides
- Can be applied in side dress fertilizer solution
- Will not burn young leaf tissue, allowing OT use (Golden 2013)

FOLIAR Portfolio

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Brandt Smart Trio	L	S	S_{sp}	B
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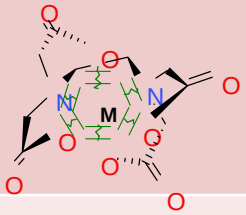
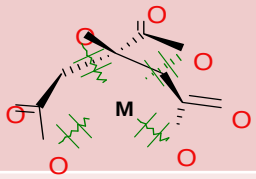
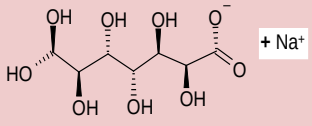
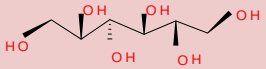
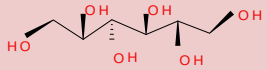
Organic Micronutrients

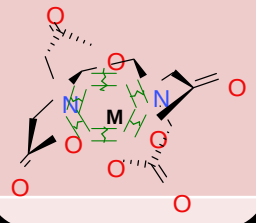
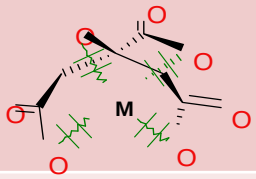
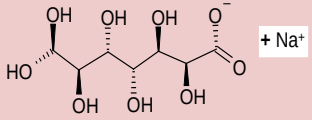
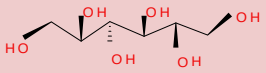
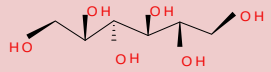
Chelate vs. Complex (why? which one for soil? foliar?)

	EDTA	Citric Acid	Glucoheptonate	Manni-Plex	Smart System
Chemical Structure					
Molecular Weight	380 - 500	192	218	136	136
Stability Constant	8.0 - 38.0	3.0 - 15.0	3.5 - 5.0	0.5 - 1.0	0.5 - 1.0
Phosphate Compatibility	**Yes**	Maybe	No	No	No
Phloem Mobile	No	No	No	Yes	Yes
Xylem Mobile	**Yes**	**Yes**	No	No	No

BRANDT

Organic Micronutrients

Chelate vs. Complex (why is one better for foliar?)

	EDTA	Citric Acid	Glucoheptonate	Manni-Plex	Smart System
Chemical Structure					
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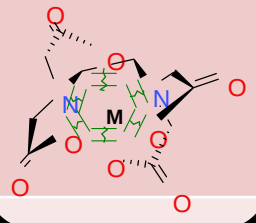
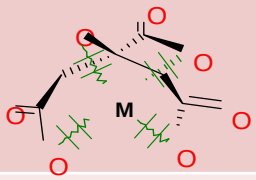
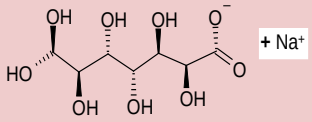
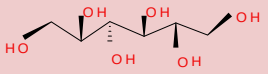
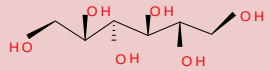
Chemical Structure					
Molecular			218		
S C			3.5-5.0		
P Co			No		
			No		
Xylem Mobile	Yes	Yes	No	No	No

Excellent for SOIL APPLICATION And Root Uptake

Designed for FOLIAR APPLICATION And Tissue Penetration

BRANDT

Foliar Application

Solubility

Speed into the Plant

Stress mitigation

Manni-Plex and Smart Technology

Soybean foliar research trials
Cotton foliar research trials
Rice foliar and soil research trials
Corn foliar research trials
Sugar Cane
Pasture

BRANDT

Manni-Plex® Maximizes Plant Tissue Uptake (complex)

Foliar Zinc Research – Univ of Calif Davis – Dr. Patrick Brown

General Information

Plant: Arabidopsis

Researcher: Dr. Patrick Brown – UC Davis

Application: 400ppm Zn to leaves -5 Reps

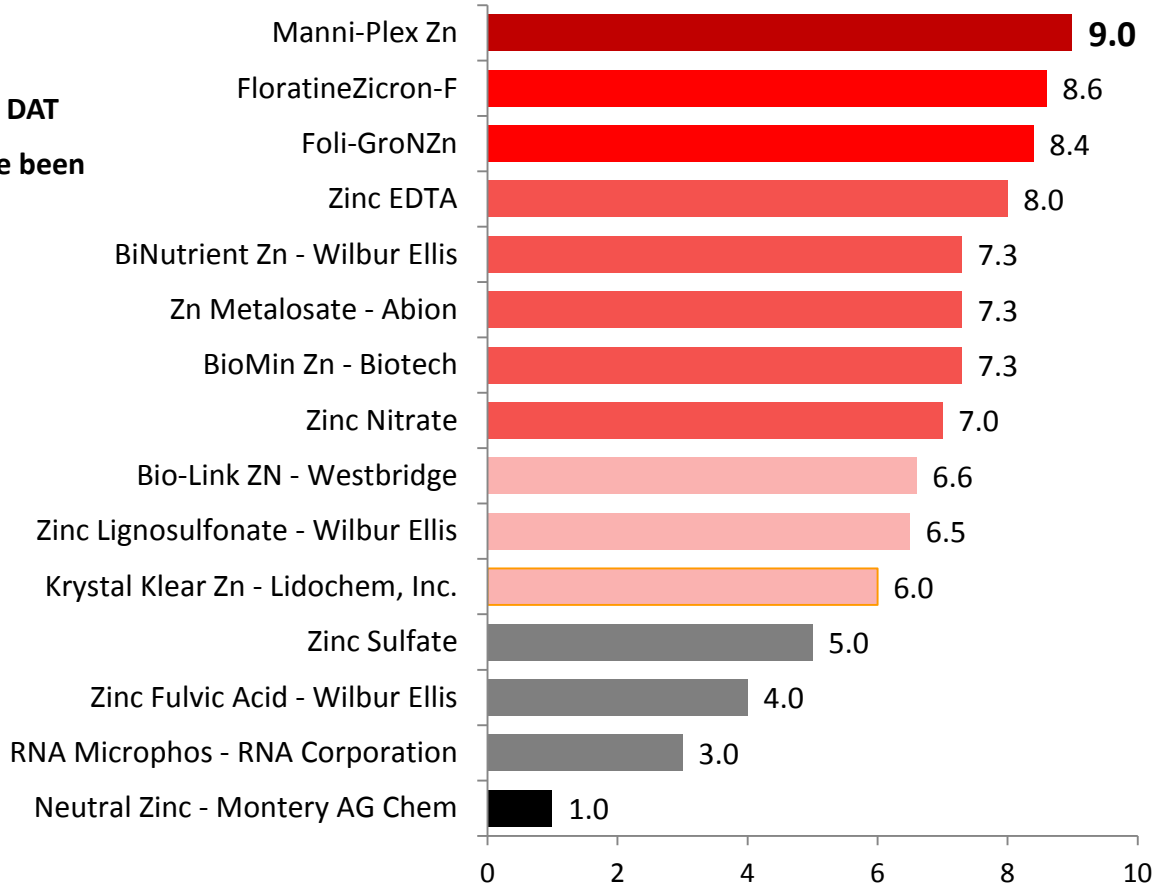
Tissue Tests: Flowers harvested – flowers appear 12 DAT

Comments: Zinc is quite phloem mobile once it have been absorbed and that is tested here

Manni-Plex Zn
#1 Foliar Zinc

"The primary limitation to effectiveness of foliar Zn applications is the rate with which the material can pass through the leaf cuticle" Dr. Patrick Brown

90% Relative Efficacy of Zn foliar materials applied at a standardized rate of 400ppm in spray solutions



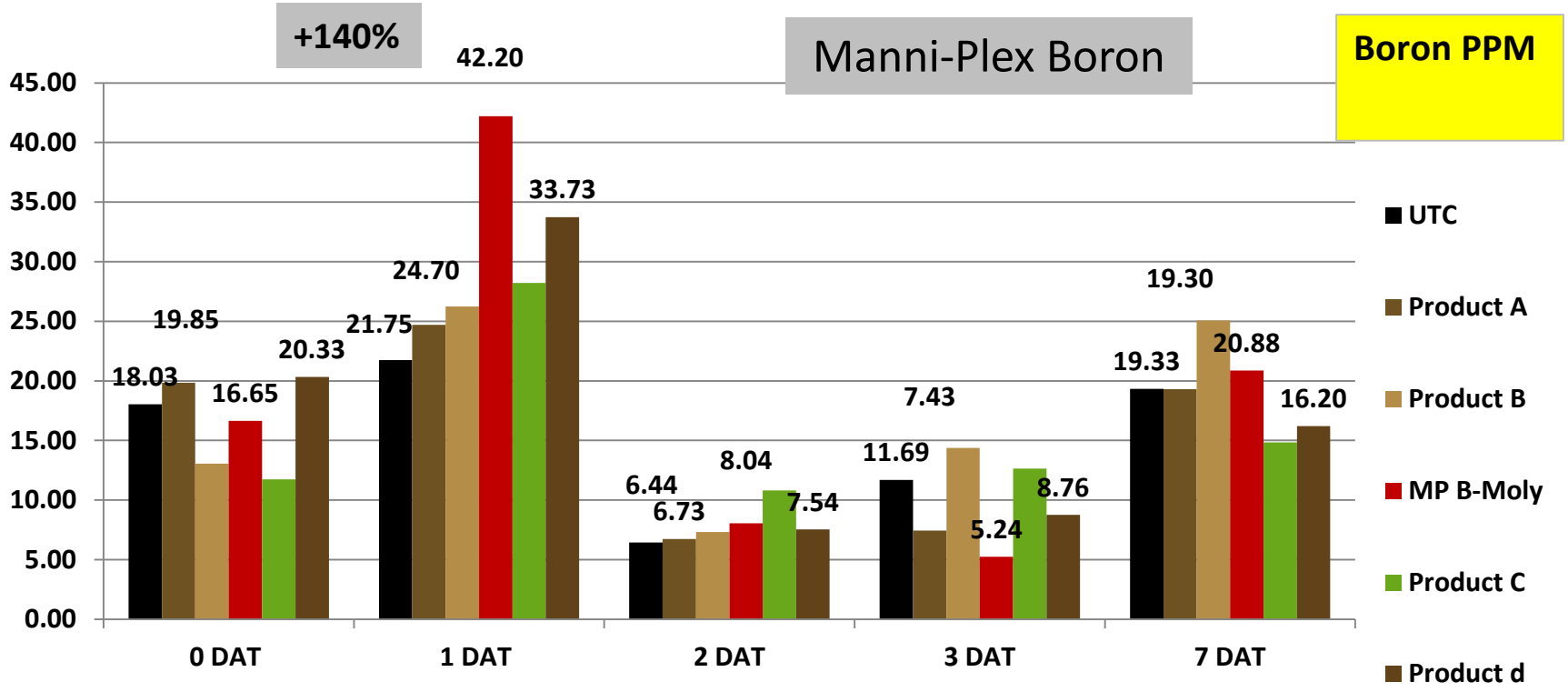
BRANDT

Products shown with numerical rankings that differ by 0.9 or greater are significantly different at the 0.05% level of significance

How fast does Manni-Plex & Smart enter the plant?

Data from TENN & GA 2013

COTTON



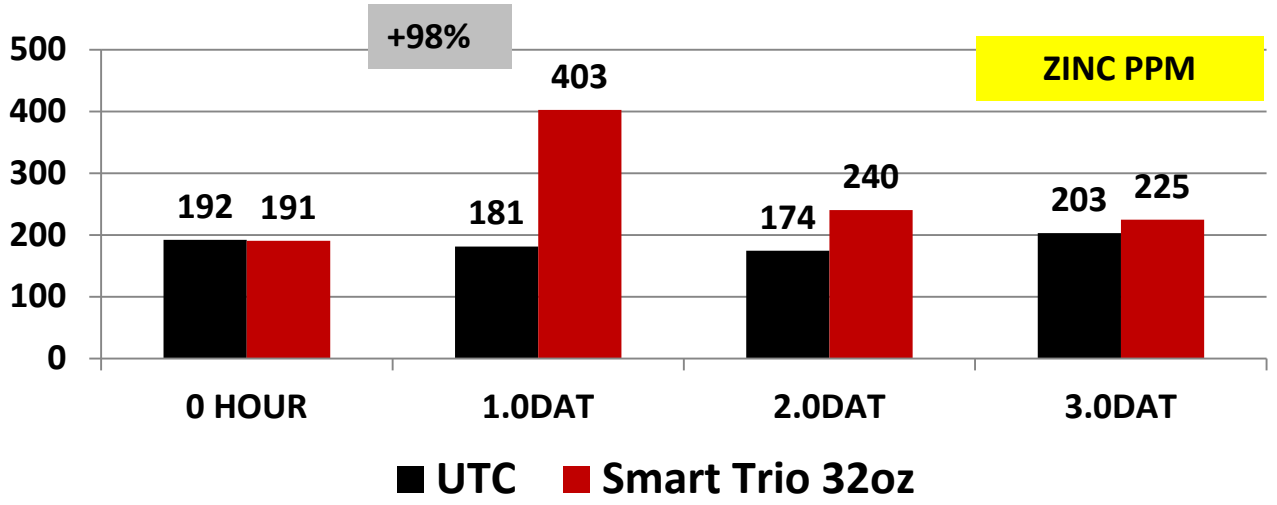
- **Quickly into the plant**
- **Quickly Utilized by Growing Cells**

BRANDT

How fast does Manni-Plex & Smart enter the plant?

Data from TENN & GA
2013
COTTON

Smart Trio



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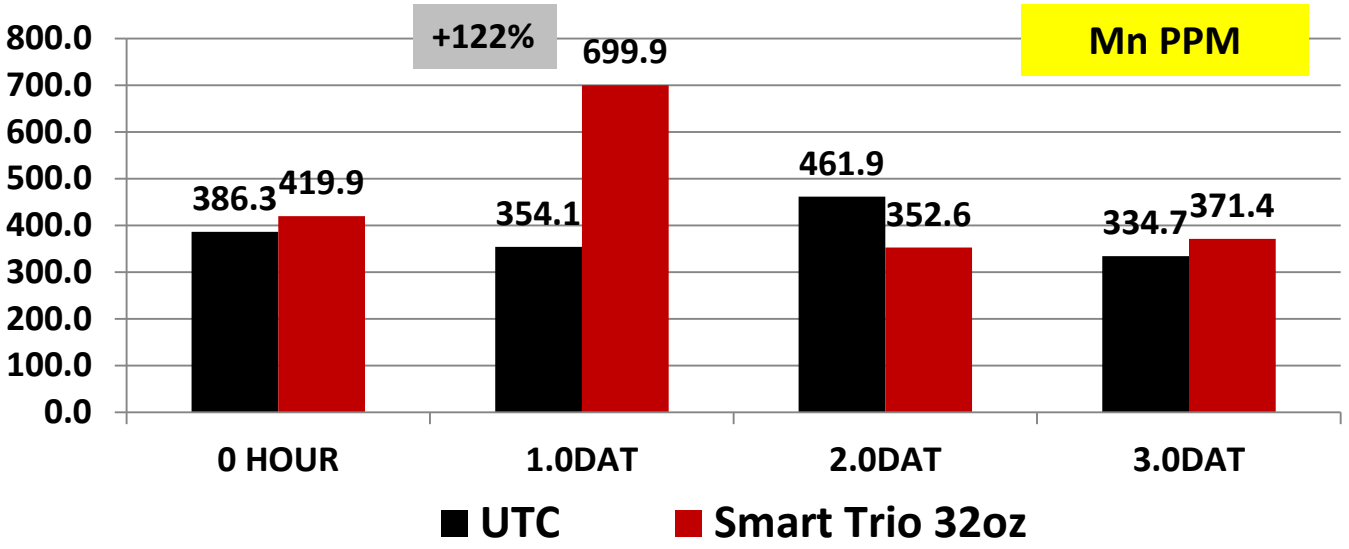
Smart Trio

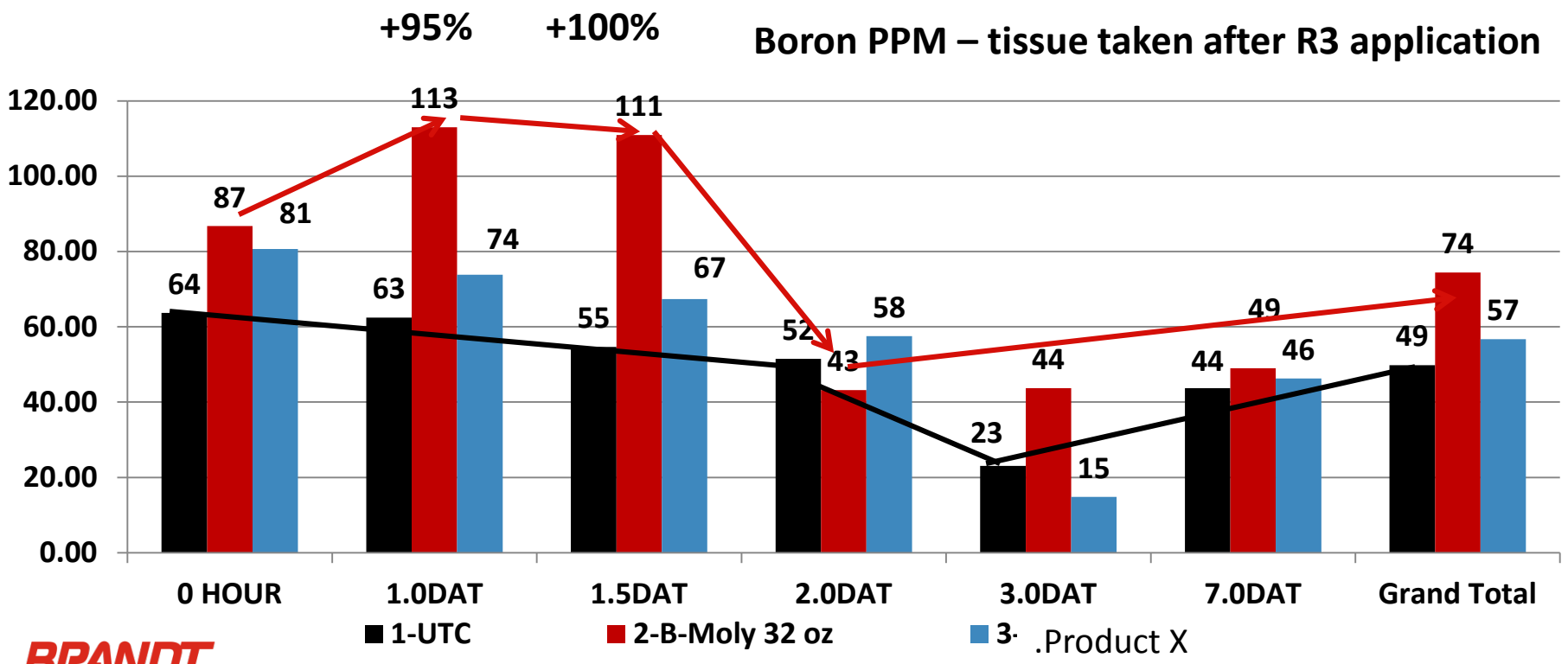


BRANDT

Soybean Foliar Boron Uptake Trial

Dr. Gary Cloud
GLC Consulting
Quitman, GA

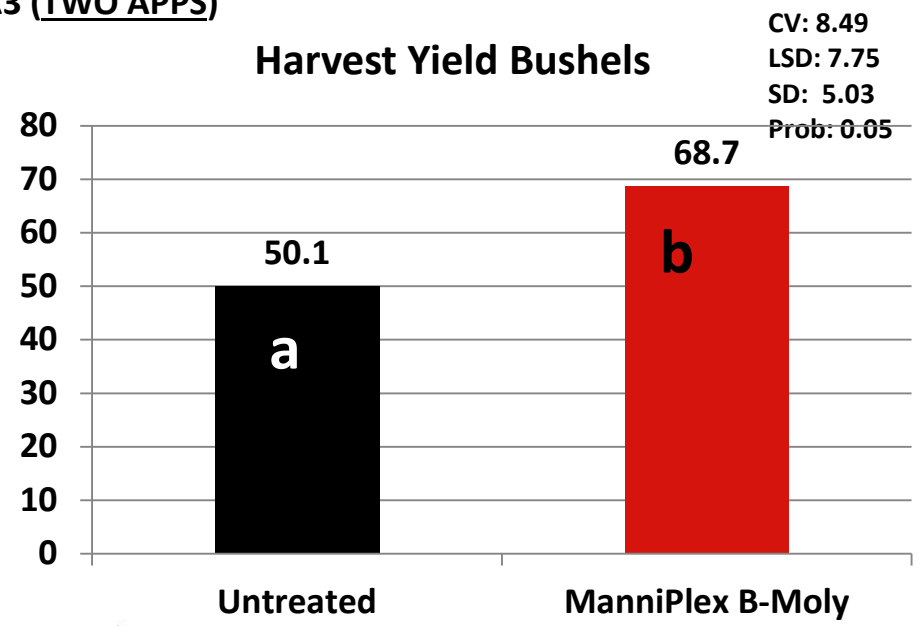
- Brandt Boron spiked boron tissue levels within 24 hours, nearly 2X
- Tissue levels remain elevated until boron is usurped from the phloem uptake
- Even at one week after application, levels are still nearly 15% above the UTC
- Boron can't do much good unless it gets into the leaf tissue

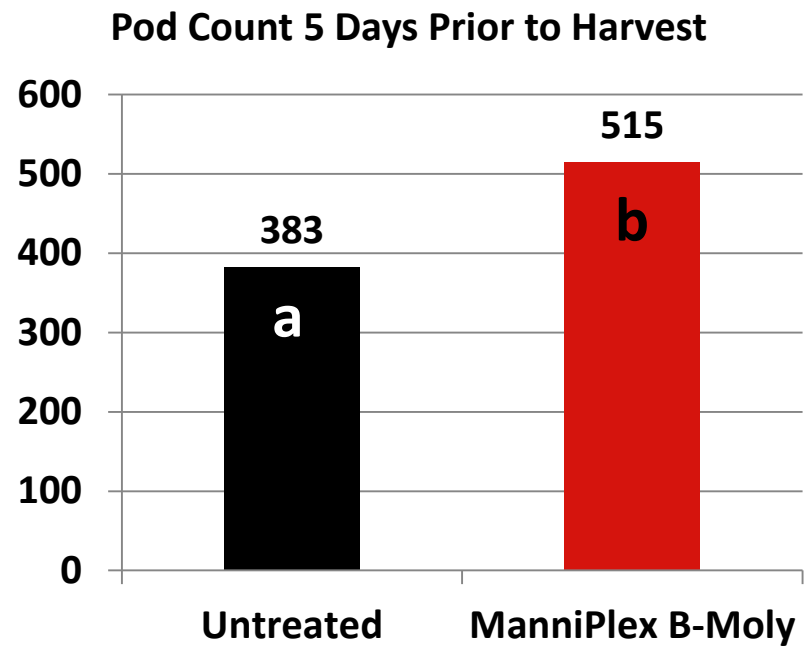


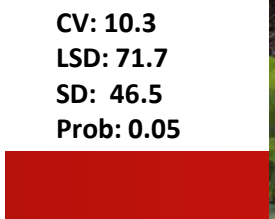
Soybean Foliar Boron Uptake Trial

Dr. Gary Cloud
GLC Consulting
Quitman, GA

- Boron applied with herbicide at V5 & with fungicide at R3 (TWO APPS)
- Replicated private research trial
  - RCB, Univ of GA protocol
  - boron soil levels Med Low, CEC 2.5 (4 reps)
- Significant yield increase at 0.05 P value
- Trial will be replicated in 2014
- Pods: 34% more viable harvested pods (132)
- Yield: 37% more bushels (18.6 bu)







Dr. Leo Espinoza, Soils Spec
Marianna Res & Extn Center

University of Arkansas – Marianna Station

- **Boron treatments made obvious visual differences in bloom size and numbers**
- **Product applied at R2 with Fortix strobi + DMI fungicide**
- **Petioles and leaves were not measured but appeared to have increased size**
- **University feels this is worth pursuing next year to better document responses**

Untreated Control – 2.7 blooms per node

MP B-Moly (Qt) – 5.6 blooms per node

Soybean Trials
Foliar Applications

University of Arkansas, Dr. Leo Espinoza, Soils Specialist
G&H Associates, Dr. Charlie Guy, Past Ark Soybean Specialist
Stoneville – Delta Research & Extn Center, Dr. Bobby Golden, MS Soy & Corn Specialist
Cresco Ag, Dr. Chism Craig, Past Univ of Tenn Cotton Specialist

BRANDT

Soybean Micronutrient Program

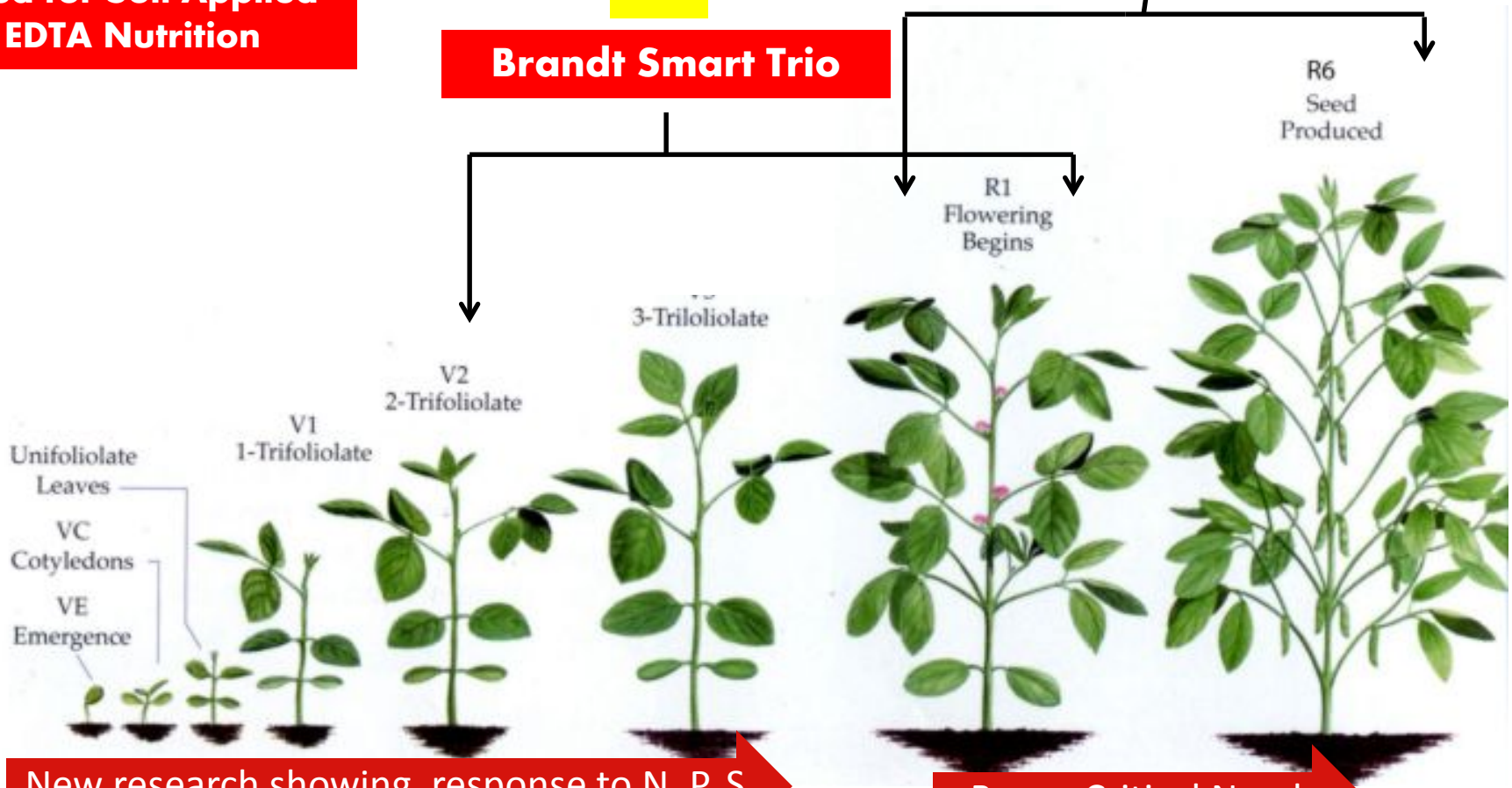
R3

Manni-Plex
B-Moly or N-Boron

Some area are seeing need for Soil Applied EDTA Nutrition

V5

Brandt Smart Trio

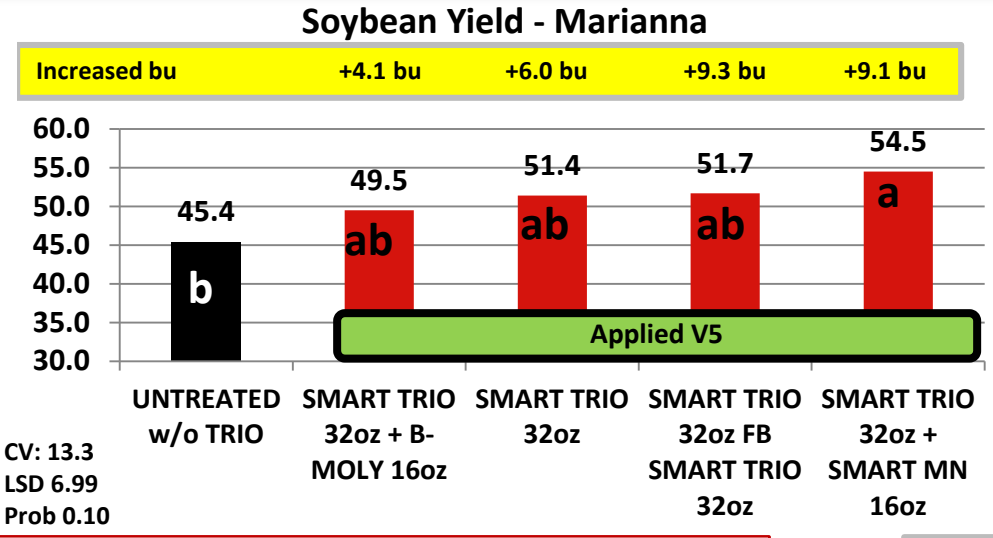


New research showing response to N, P, S

Boron Critical Need

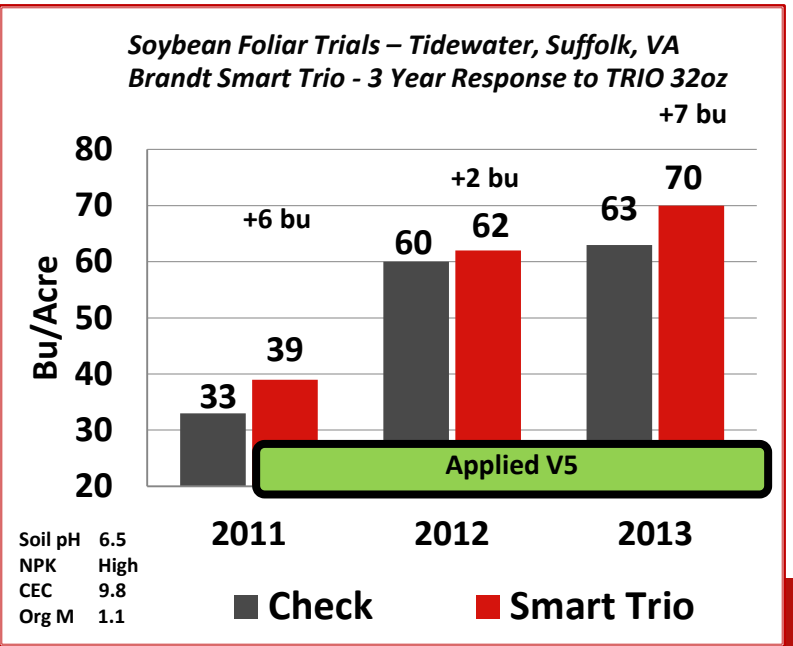
At Planting

Soybean Foliar Trial - Results

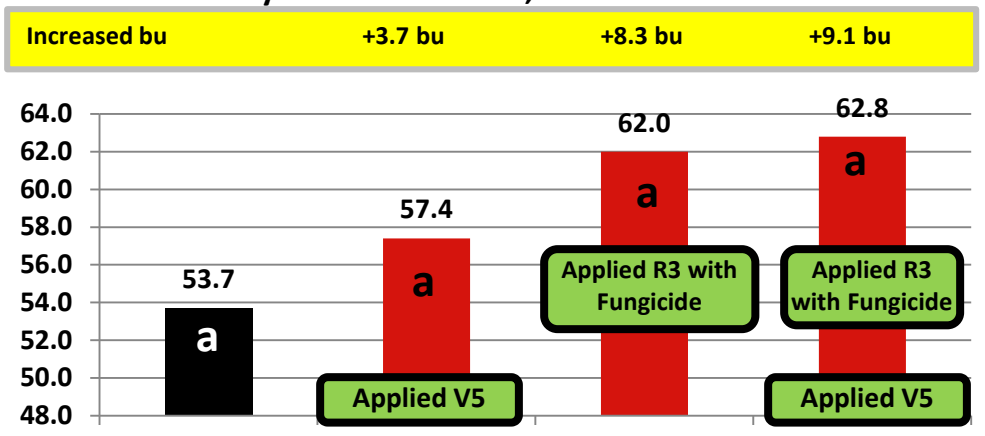


CV: 13.3
LSD 6.99
Prob 0.10

- V5 applications are designed to apply with herbicides
- Smart Trio alone and in combinations show consistent yield responses
- Fungicides at bloom improved with B-Moly
- Herbicide flash was reduced at all sites



Soil pH 6.5
NPK High
CEC 9.8
Org M 1.1



NSD in trial
CV: 14.5
LSD 1.21
Prob 0.10

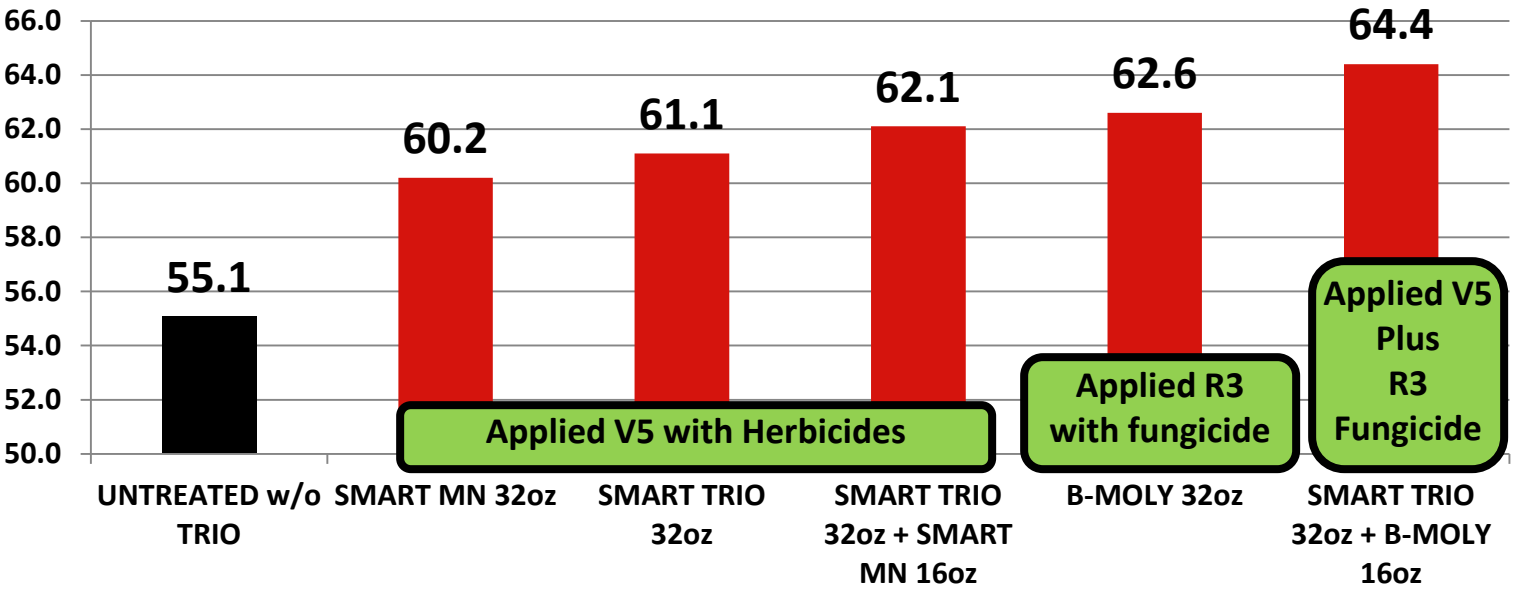
Soybean Foliar Trials Summary –
Summary of all 2013 Replicated Research

- Comparison view here is a Percent of the Untreated rather than bushels of yield
- Trio w/Herbicide followed by Trio with R3 fungicide improved yield 17%
- To achieve the most response from Trio at V5-6 it <u>should be applied with the herbicide</u>
- B-Moly with Fungicide improved yd 13% over fungicide alone

Perfect Soybean growing year in the Midsouth, very little stress this year
Still showed nice yield response

Soybean Yield Summary - All 2013 Trials

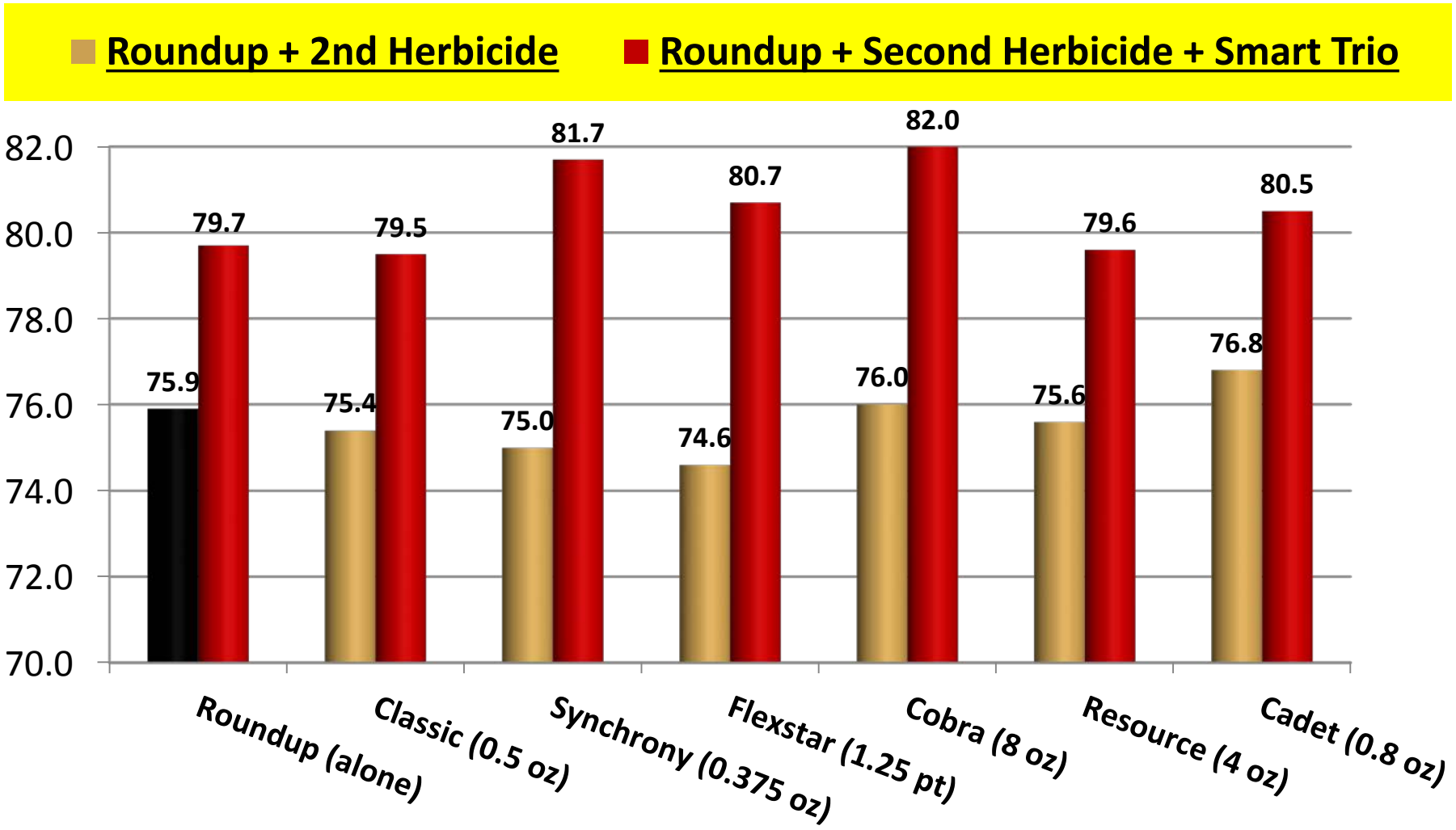
Pct More Yield	9.3%	11.0%	12.8%	13.7%	17.0%
Yield Increase	5.1 bu	6.0 bu	7.0 bu	7.5 bu	9.3 bu



Brandt Research Farm

Multiple Herbicide Combinations with SMART TRIO

Average Yield Increase +5.2 bu Across All Herbicides



Soybean Foliar Applications

Take Home Message

Smart Trio applied with herbicides increased yield in 8 of 9 trials in 2013
Smart Trio decreases foliar degradation after herbicide application at every location

Fields with low Mn levels should apply Smart Trio and add 16oz Smart Mn for max benefit

If fungicide is going out, Manni-Plex B-MOLY can improve the yield

BRANDT

Cotton

Stress Mitigation – Smart Trio/Herbicides

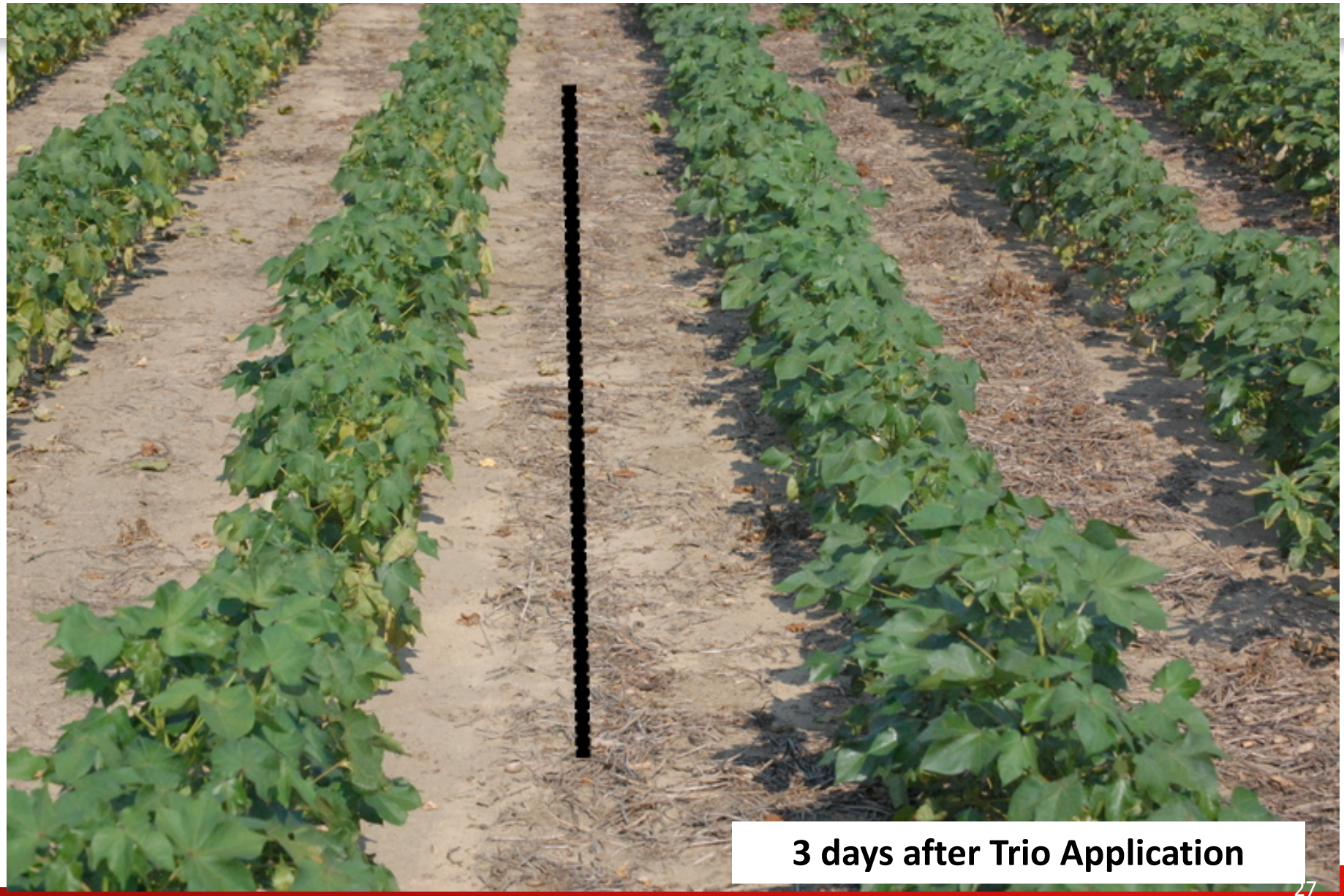
Solubility – Nutrient into the phloem & utilized w/in 24 hrs

Speed into the plant - Smart Trio, B-Moly

Improved yields

BRANDT

Brandt Smart Trio applied after herbicide stress



Brandt Smart Trio Applied In Extreme Heat (SC)

2nd Application of Liberty ® Tankmixed with *Smart Trio*

Liberty ® is a registered trademark of Bayer CropScience LP

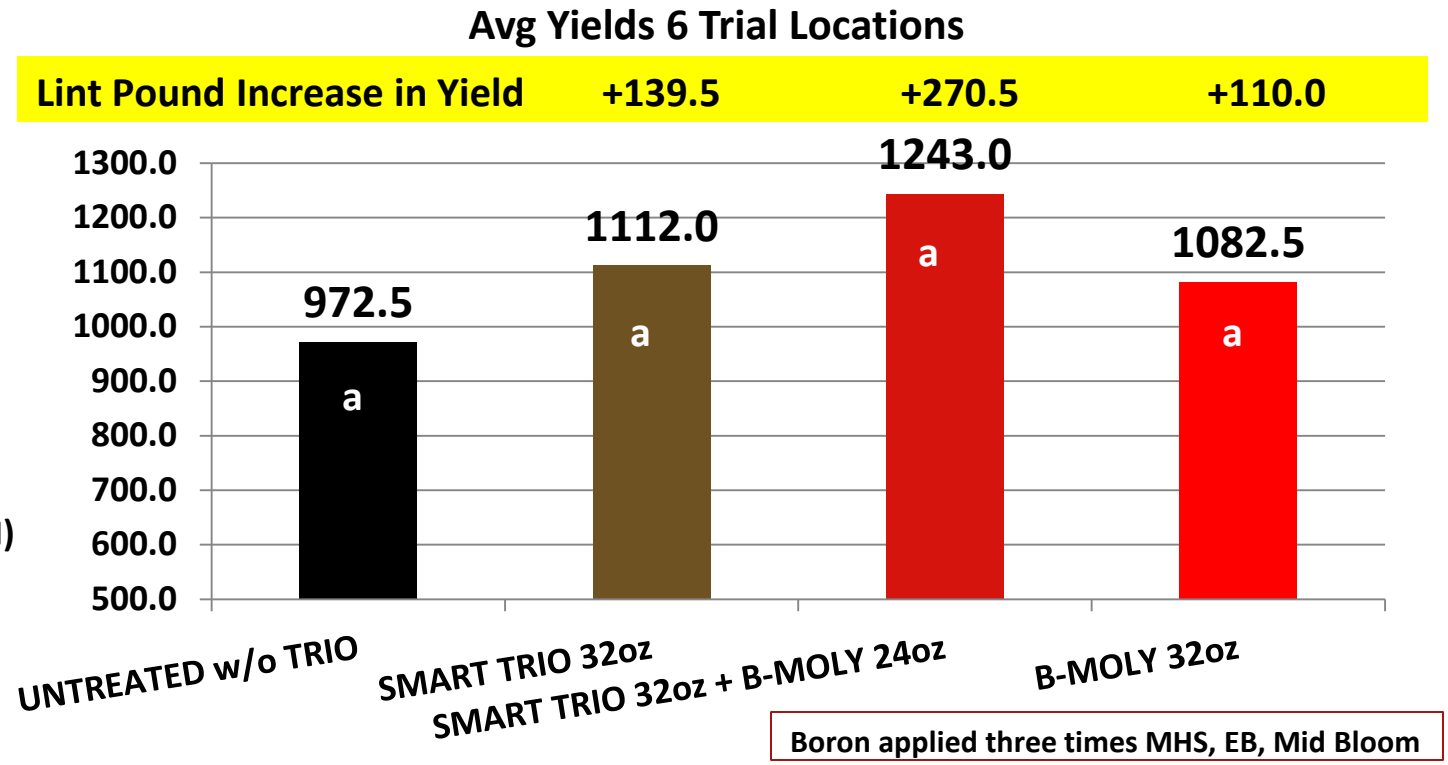
Cotton Summary of All 2013 Research Trials

Smart Trio and MP B-Moly University & Research Yield Trials

- Smart Trio performed well in getting Zn and Mn into leaf
- Manni-Plex B-Moly performed exceptionally well & had a synergistic affect w/Trio
- Trials were conducted in different states under widely varying conditions
- Visual response within 3 days of the sugar alcohols improving color & vigor

Trial Locations:
Stoneville RDC
Miss State University
University of Ark (Marianna)
G&H Associates (Ark)
Diligence Technologies (TN)
GLC Consulting (GA)

NSD - all trials merged



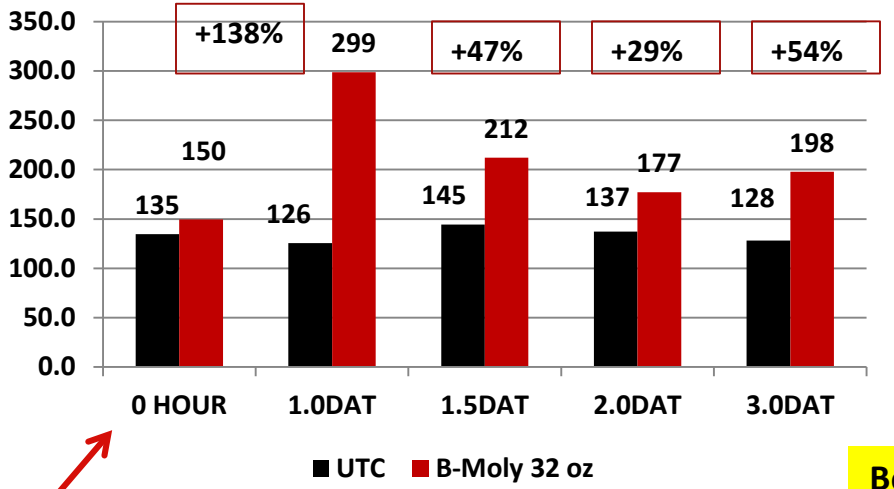
Boron applied three times MHS, EB, Mid Bloom

Brandt Boron Tissue Analysis

Results Boron Uptake

Dr. Gary Cloud
GLC Consulting
Quitman, GA Research Location

Boron PPM @ MHS APPL

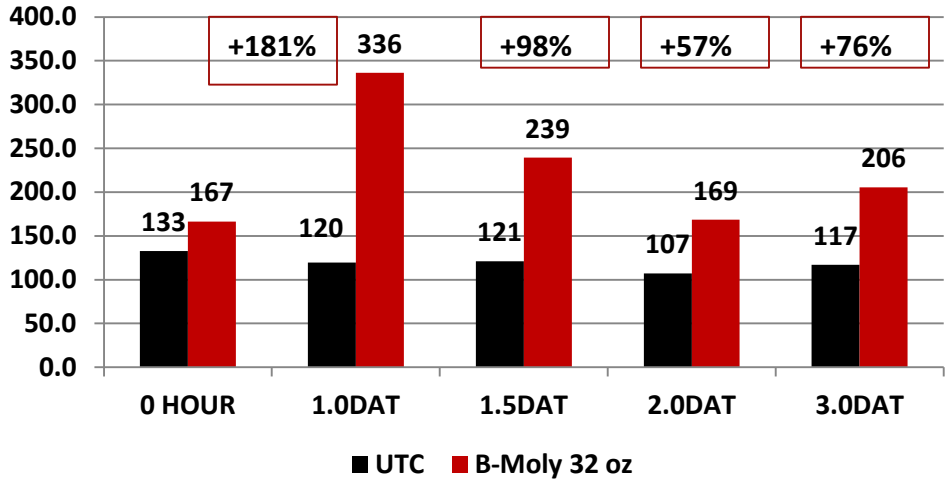


- 0 Hr Bars are PRE Application levels
- B-Moly 3.3% Boron in ManniPlex
- Trial w/be repeated 2014
- Doubled Boron in leaf within 24 hr
- Maintains elevated levels
- Boron is normally utilized within hours

Boron levels increased +100% @ 24 Hrs after MHS application

Boron levels increased +180% @ 24 Hrs after Early Bloom application

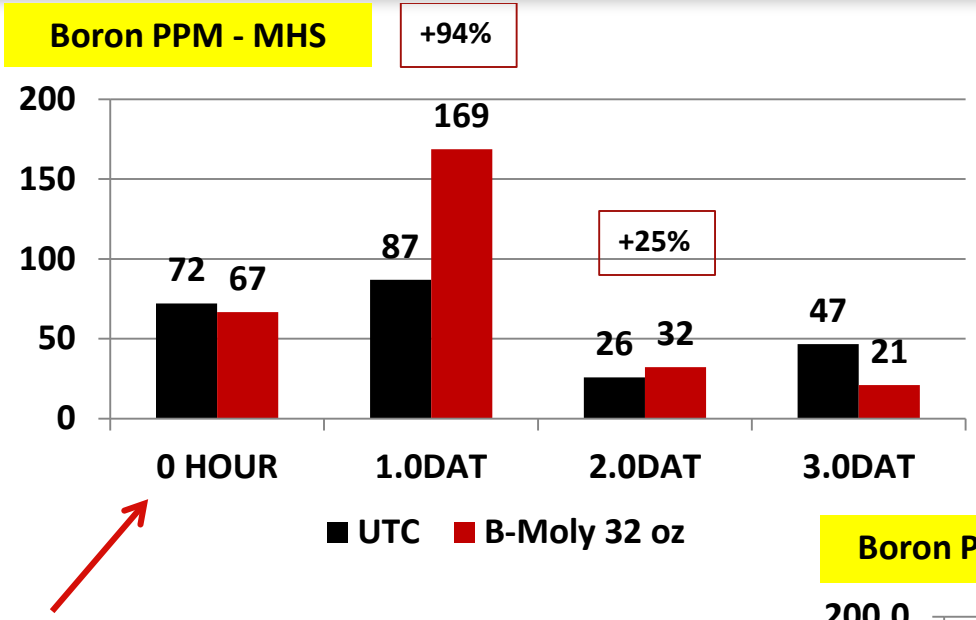
Boron PPM @ EARLY BLOOM APPL



Brandt Boron Tissue Analysis

Results Boron Uptake

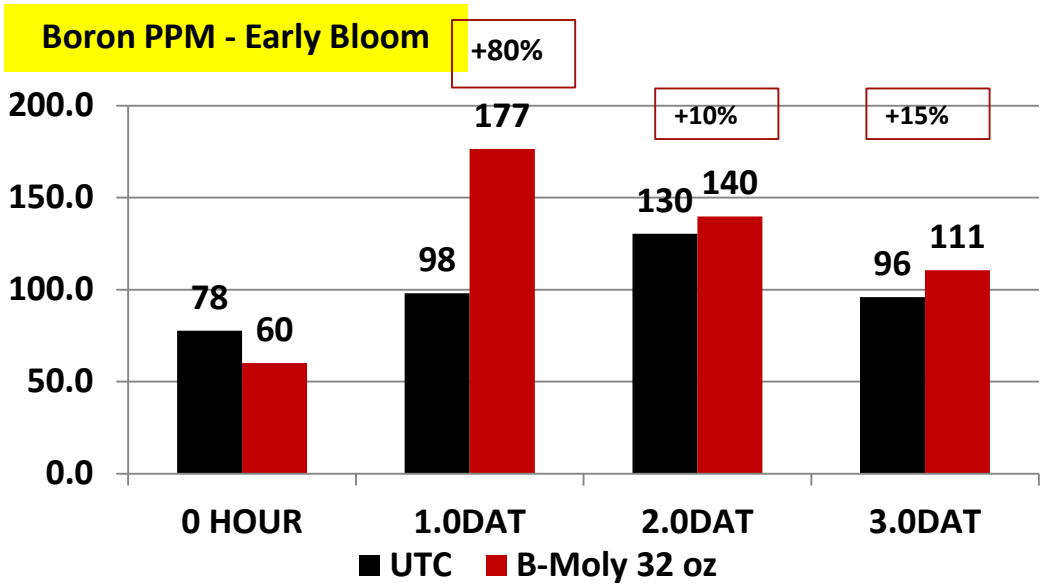
Dr. Tim Adcock
Diligence Technologies
Memphis AgriCenter



- BMOLY spiked Boron leaf levels @ 24 hr, then leveled off at 48 hrs confirming immediate utility

Boron levels increased +90% @ 24 Hrs after MHS application

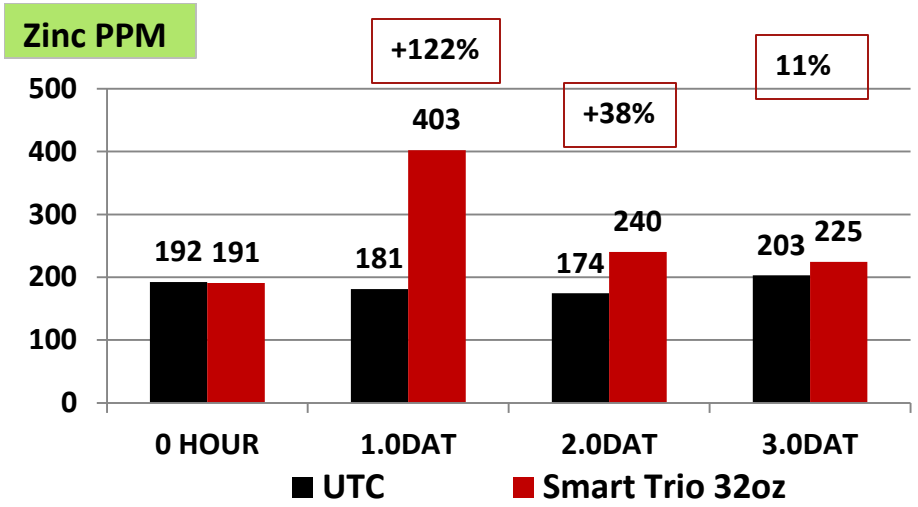
Boron levels increased +80% @ 24 Hrs after Early Bloom application



Smart Trio Tissue Analysis

Tissue Results Zn & Mn Uptake

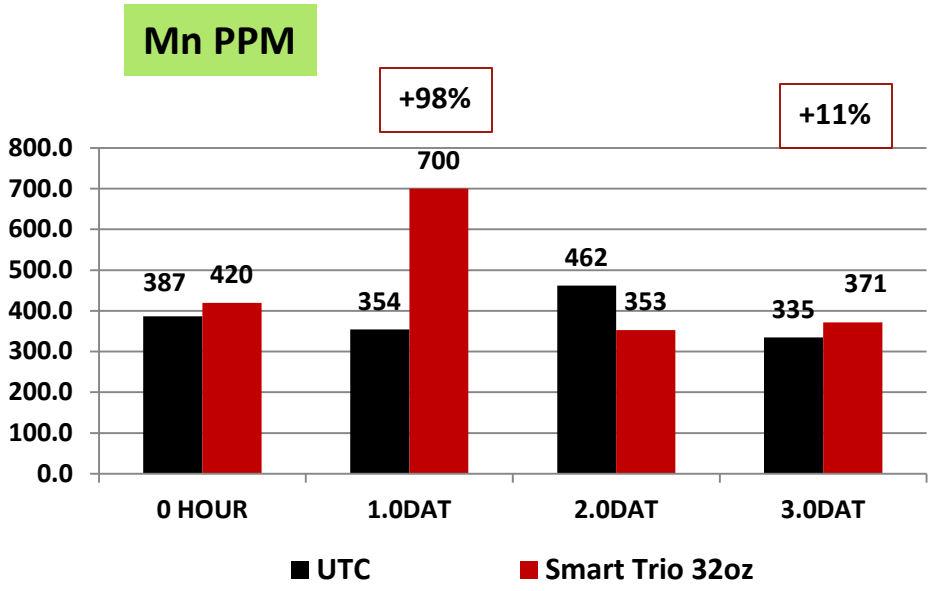
Dr. Tim Adcock
Diligence Technologies
Memphis AgriCenter



- **Trio spiked Zn and Mn leaf levels@ 24 hr, then leveled off confirming immediate utility**
- **Trio doubled Zn and Mn inside the leaf tissue**
- **The deficiency proves itself as the excess Zn and Mn is quickly utilized in Day 2**

Zinc levels increased over 100% within 24 Hrs after application

Mn levels increased +90% @ 24 Hrs after application

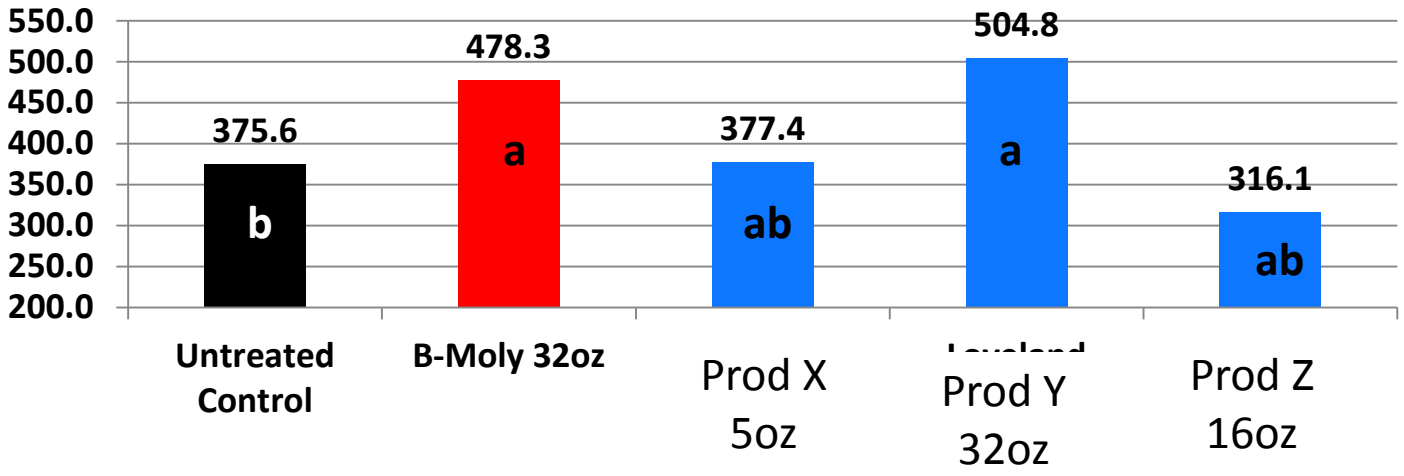


Boron Uptake Trials Summary

Compared to three leading boron products

BOLL COUNT

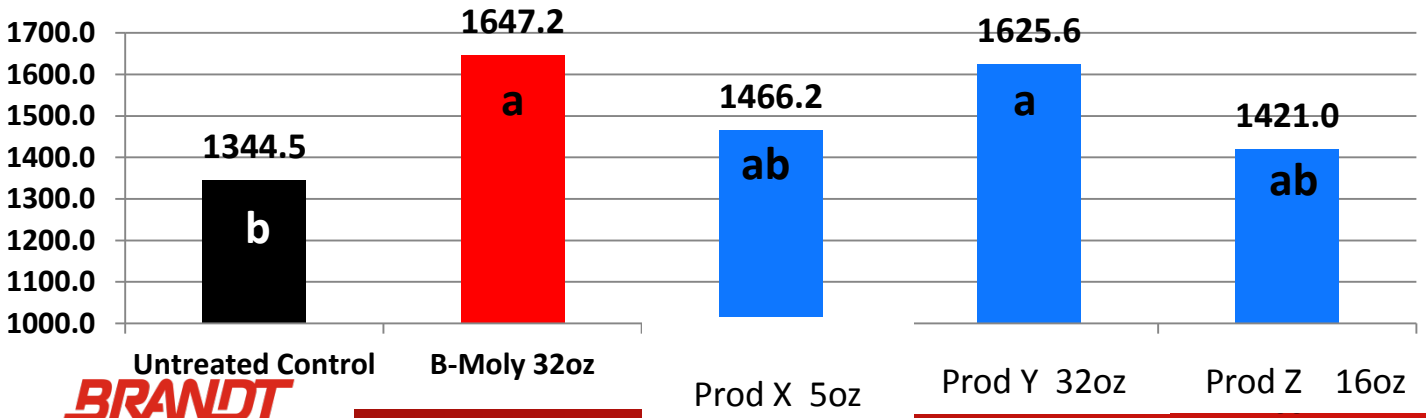
Percent Increase in Yield	27.3%	0.5%	34.4%	(15.8%)



LSD: 0.06t
SD: 0.04t
CV: 1.07

LINT YIELD

Percent Increase in Yield	22.5%	9.1%	20.9%	5.7%



LSD: 0.13t
SD: 0.09t
CV: 3.3

RICE

Two trials

- **University of Arkansas, soil applied Zinc comparison trial**
- **G&H Associates, Past Univ Ark Soybean Specialist foliar trial**

Dr. Nathan Slaton, Univ of Ark Soils Scientist

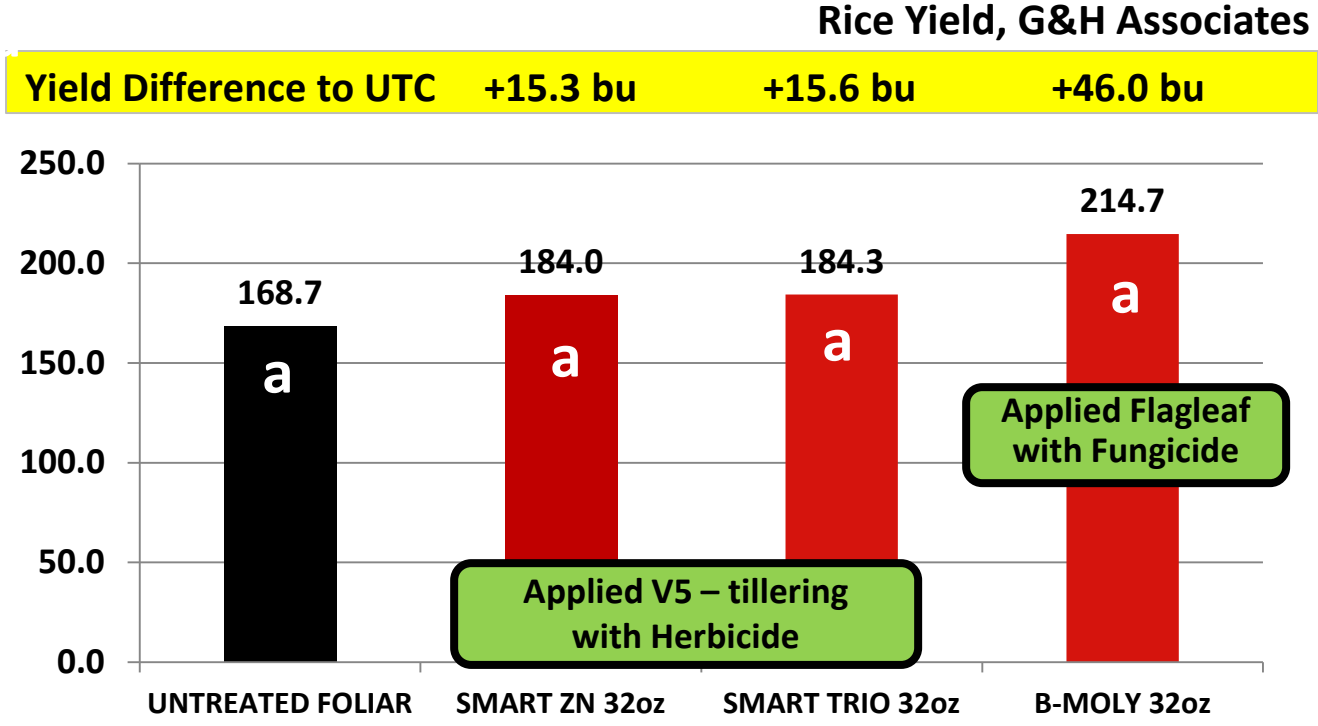
BRANDT

Rice – Foliar Applied Products

Dr. Charlie Guy
G&H Associates
Winchester, AR

- Random Complete Block, University of Ark protocols, procedures and methods
- SMART TRIO applied preflood with Final herbicide application
- Boron applied WITH Flagleaf Fungicide

LSD (P=0.10)
CV: 19.61
Stand Deviation: 37.12

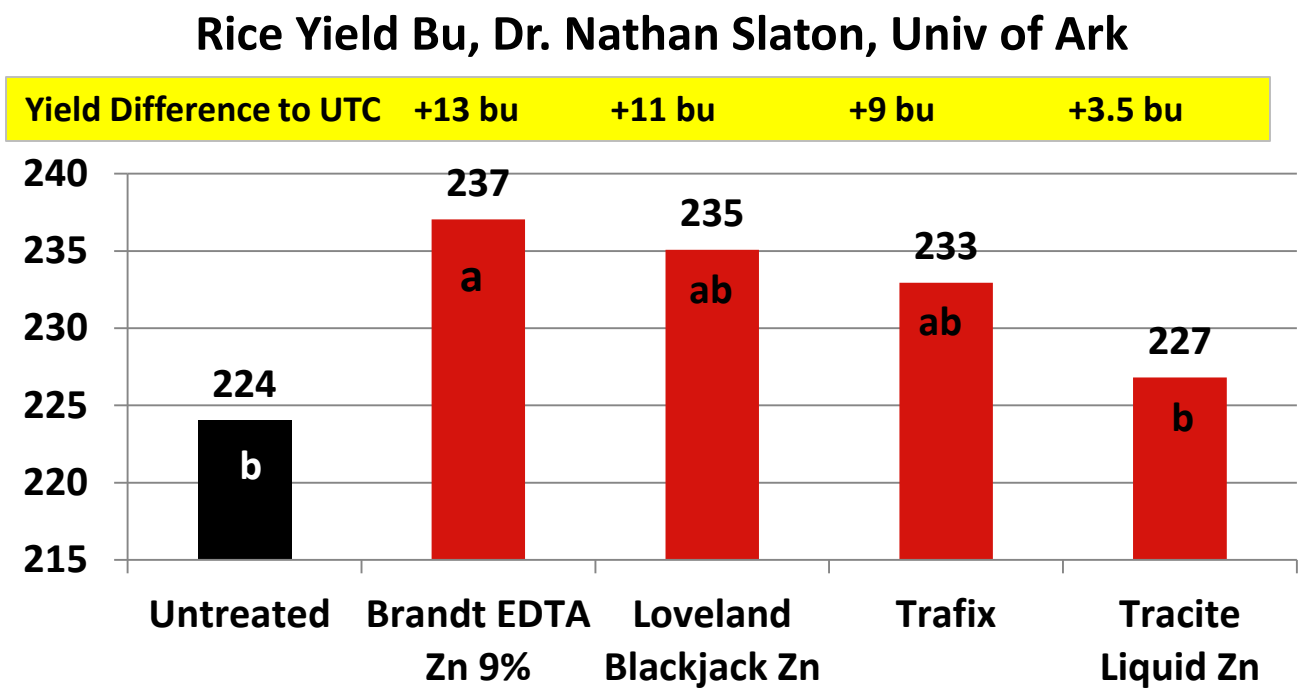


Rice Soil Applied Zinc Study –

Univ of ARK

Dr. Nathan Slaton
Univ of Ark Soils & Fertility Specialist
Pine Tree Research Station

- Random Complete Block, University Trial at Pine Tree Research Station
  - Conducted by Univ of Ark protocols, soil and tissue testing included
  - University wants growers to use ONE POUND of metallic Zinc per acre
- Test compared preplant apps of most all available Zn products in Ark at equal 1 lb Zn/acre
- Brandt EDTA Zn 9% was top yielder and statistically more yield
- Statistically > UTC



Corn Micronutrient Program

Micros applied timely to need

VT

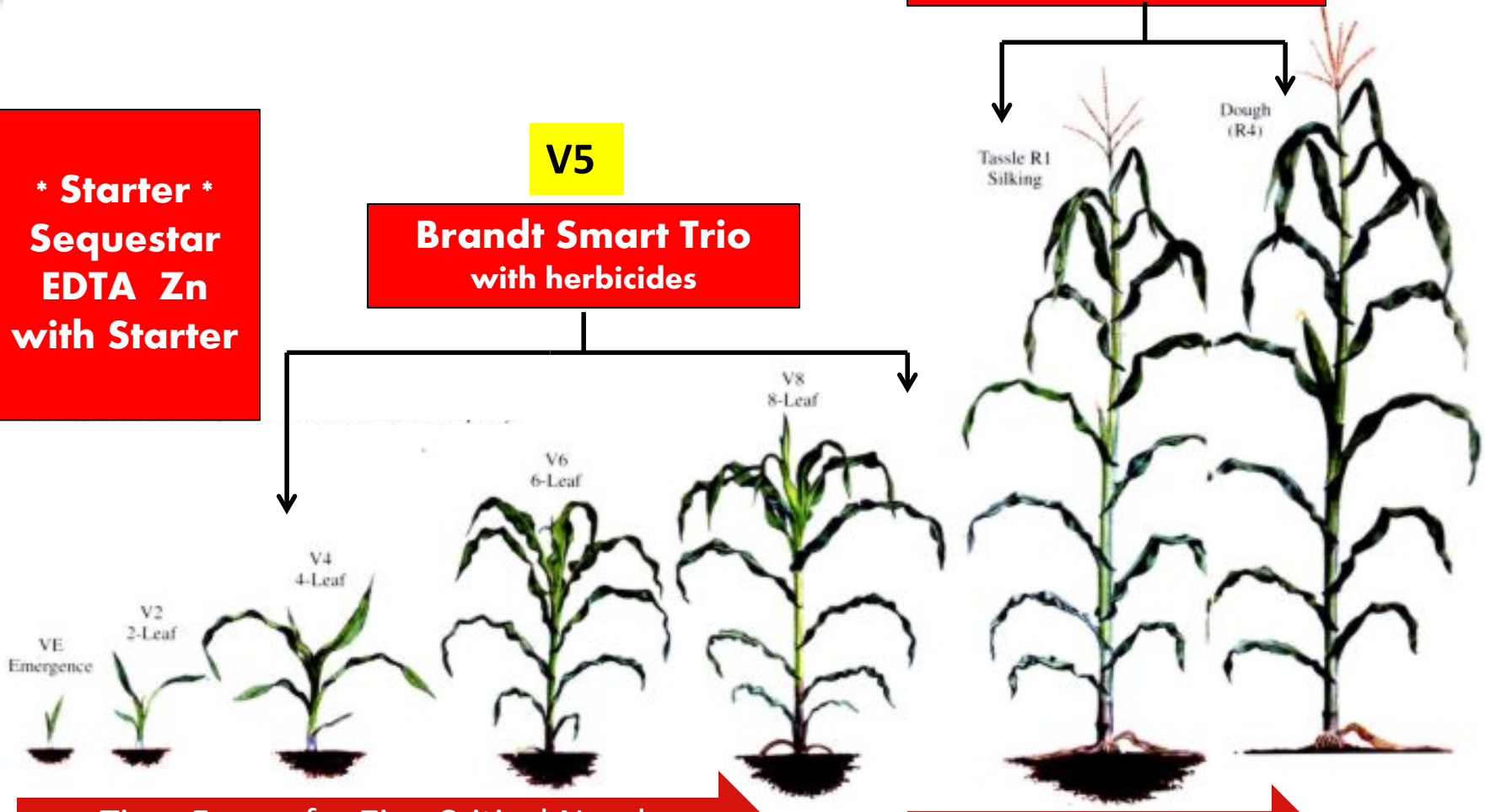
Manni-Plex
B-Moly or N-Boron
with fungicides

V5

Brandt Smart Trio
with herbicides

*** Starter ***
Sequestar
EDTA Zn
with Starter

At planting



Time Frame for Zinc Critical Needs

Boron Critical Need

At Planting

Corn Trials

InFurrow Application

Objective: to prove efficacy of EDTA Zn and Starter

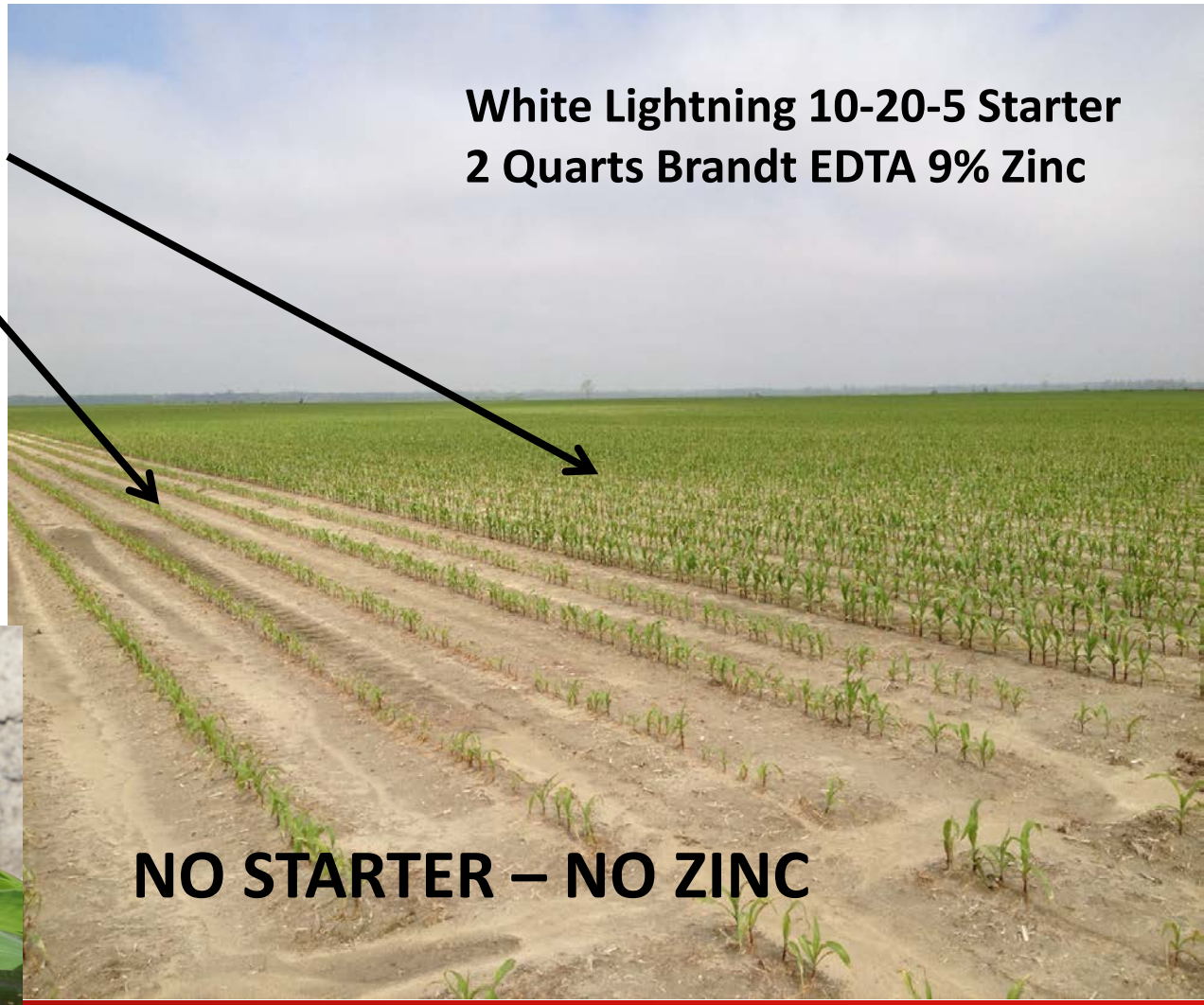
University of Arkansas, Dr. Leo Espinoza, Soils Specialist
Mississippi State University, Dr. Bobby Golden, Corn, Soy, Cotton Fertility
G&H Associates, Dr. Charlie Guy, Past Ark Soybean Specialist
Diligence Technologies, Dr. Tim Adcock, Memphis AgriCenter
Cresco Ag, Dr. Chism Craig, Past Univ of Tenn Cotton Specialist

BRANDT

2013 was the year to visualize zinc deficiencies

- Lake Providence, LA
- Hybrid - Terral 26HR50
- Starter yield 194 bu
- No Starter yield 152 bu

- 27.6% increase in yield
- Non-use costs him 42 bu

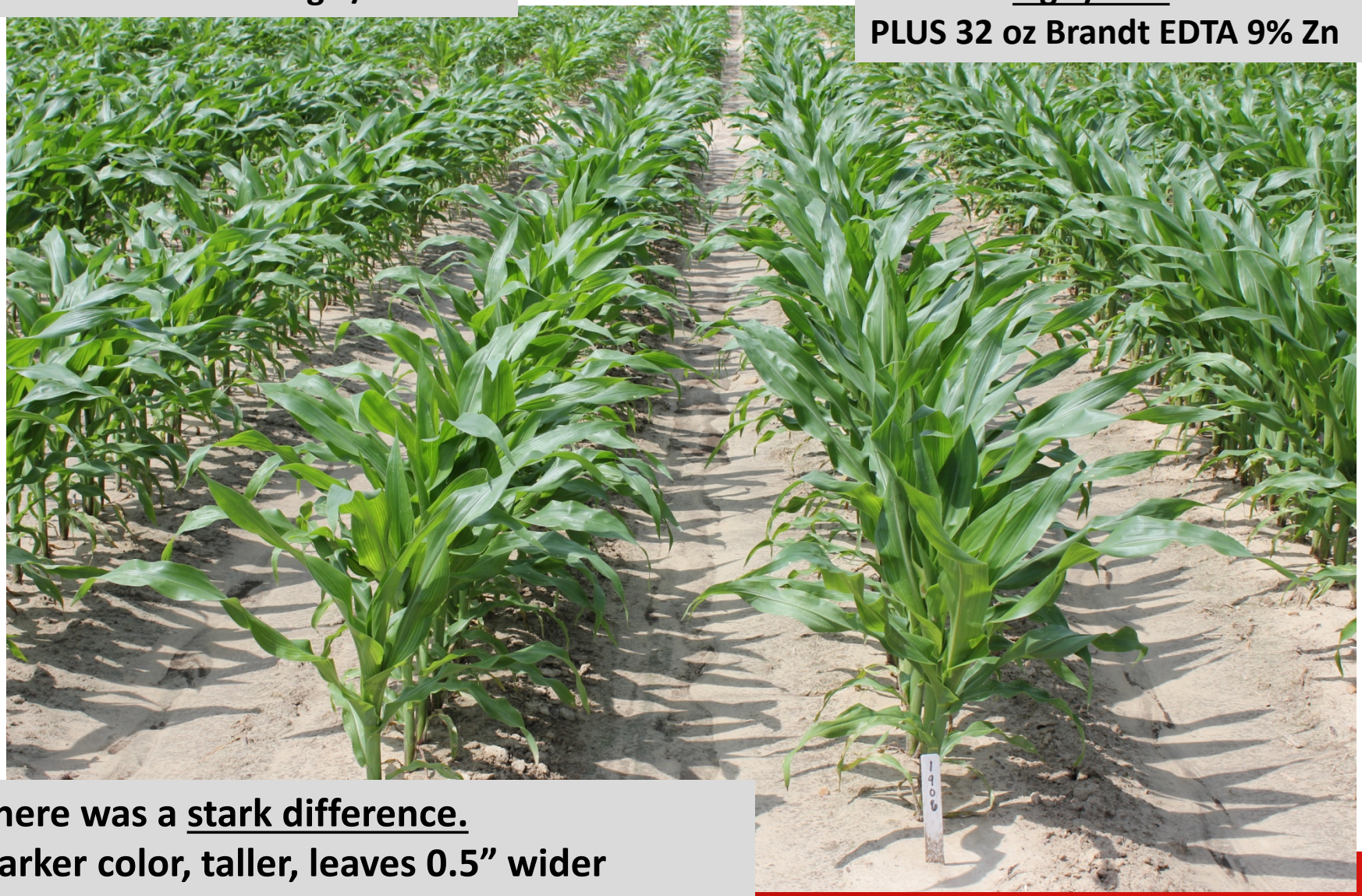


Dr. Bobby Golden
Stoneville, MS

Corn In-Furrow Starter, Zn, Exp H-005

Starter Alone – 4 gal/ac IF

Starter – 4 gal/ac IF
PLUS 32 oz Brandt EDTA 9% Zn

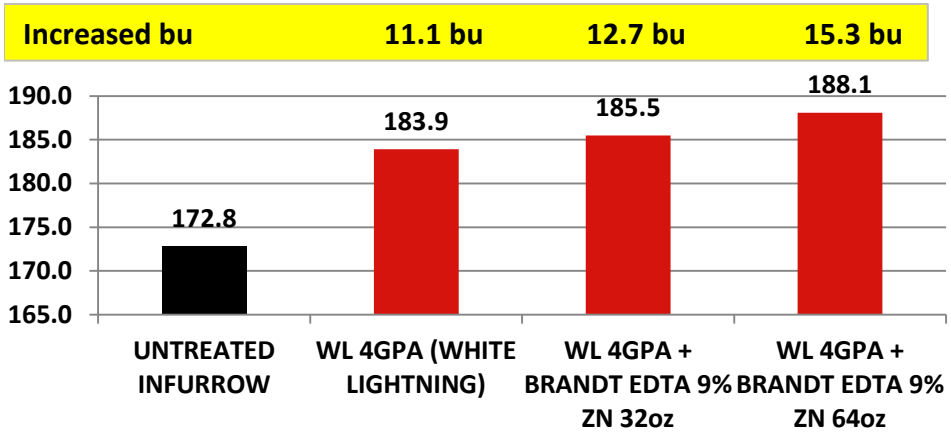


There was a stark difference.
Darker color, taller, leaves 0.5” wider

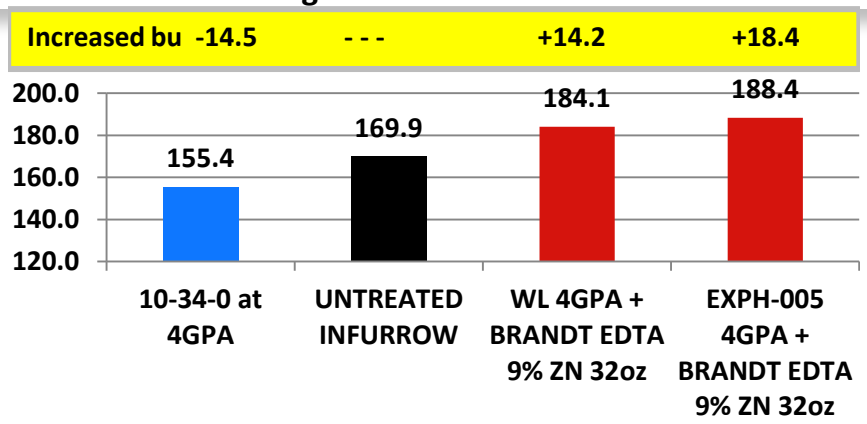
Corn In-Furrow Starter with Zinc Trials

Soil P levels	Med
Soil Zinc levels	ML
Soil pH	6.6

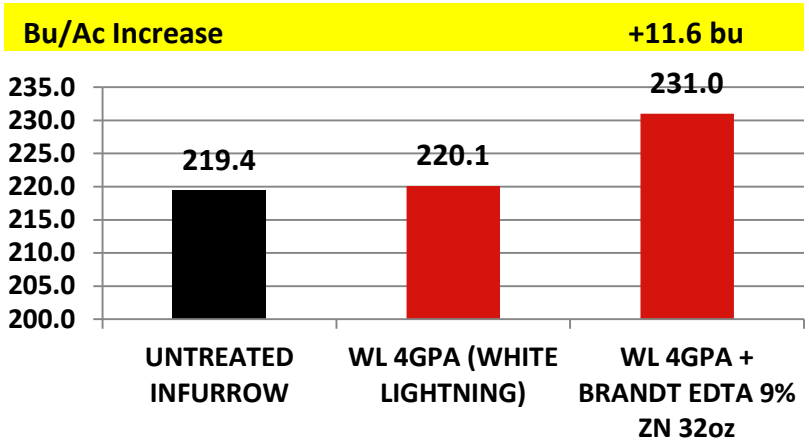
Marianna Research Station, Univ of ARK



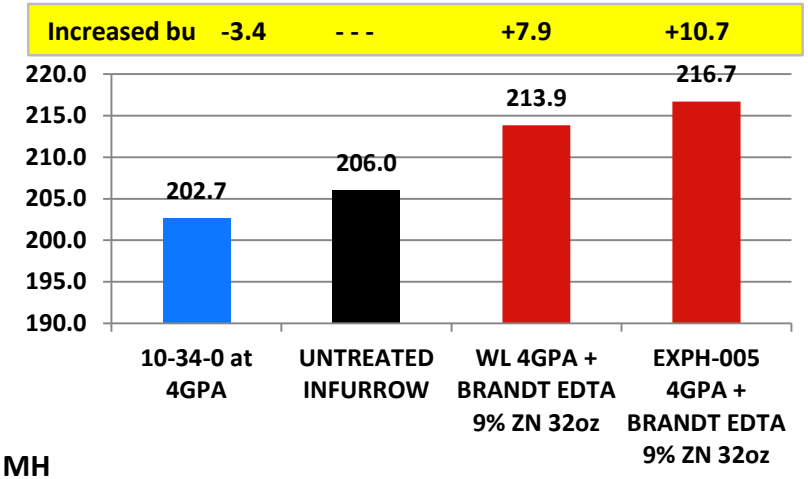
AgriCenter Trial Yield



G&H Associates, Winchester, Ark



Burdette Farm Trial Yield

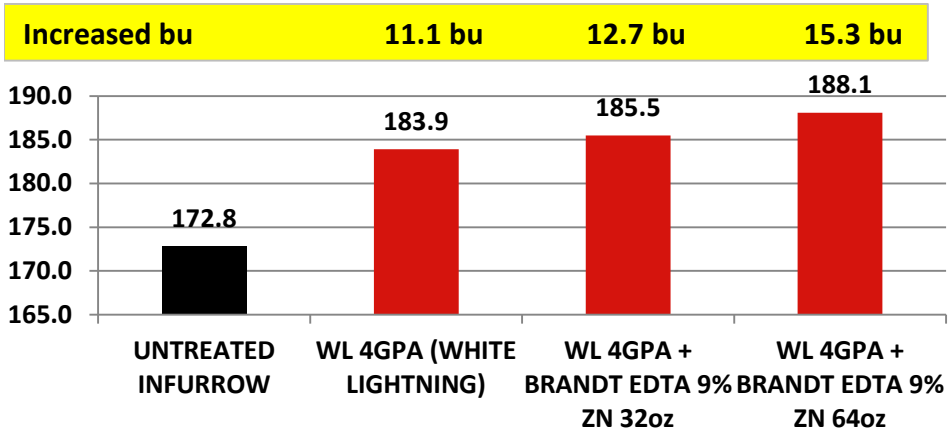


Soil P levels	MH
Soil Zinc levels	Med
Soil pH	6.8

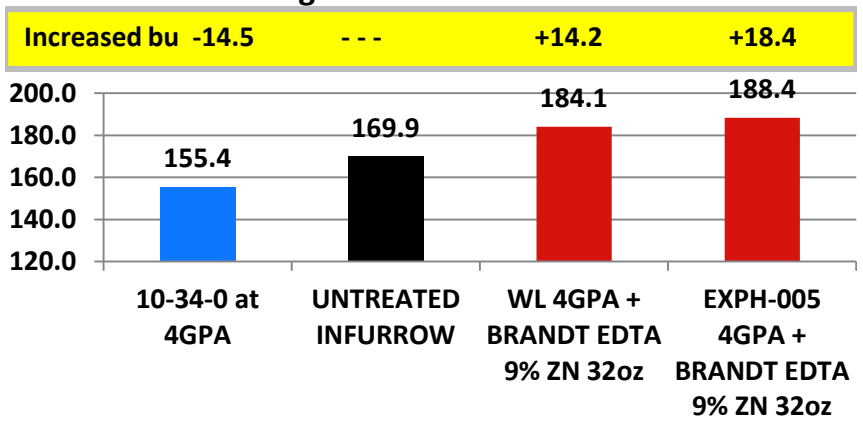
Interesting that 10-34 < UTC in all trials

Starter Alone avg 7 bu Increase with 2 of 4 positive trials
Add EDTA Zinc – 4 for 4 with 12+ bu increase

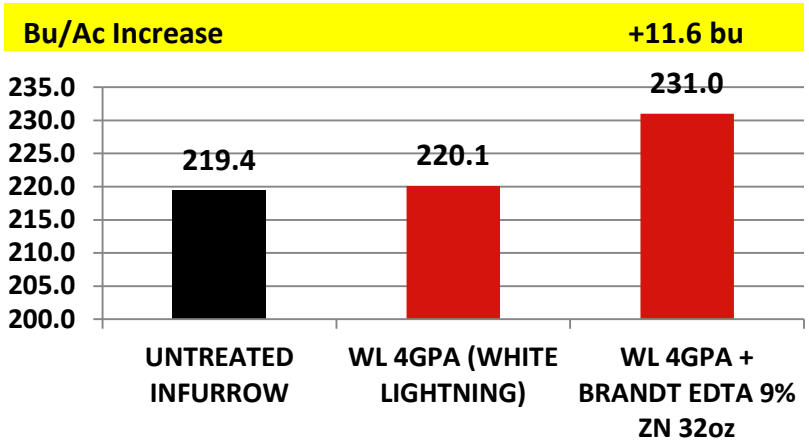
Marianna Research Station, Univ of ARK



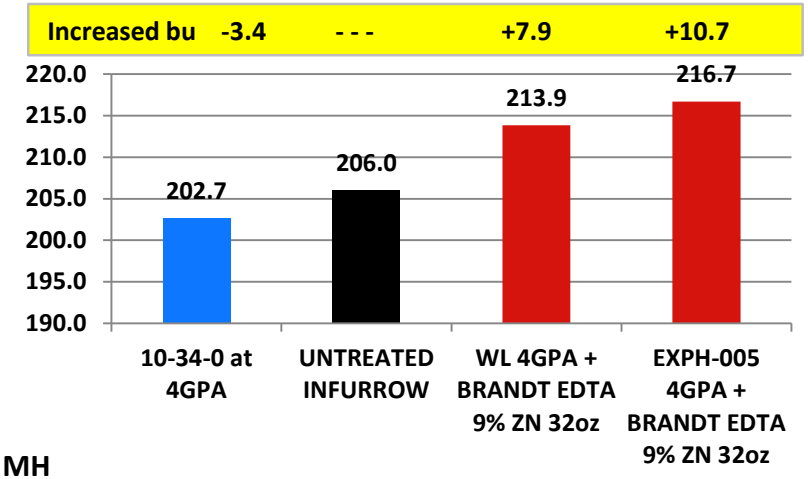
AgriCenter Trial Yield



G&H Associates, Winchester, Ark



Burdette Farm Trial Yield

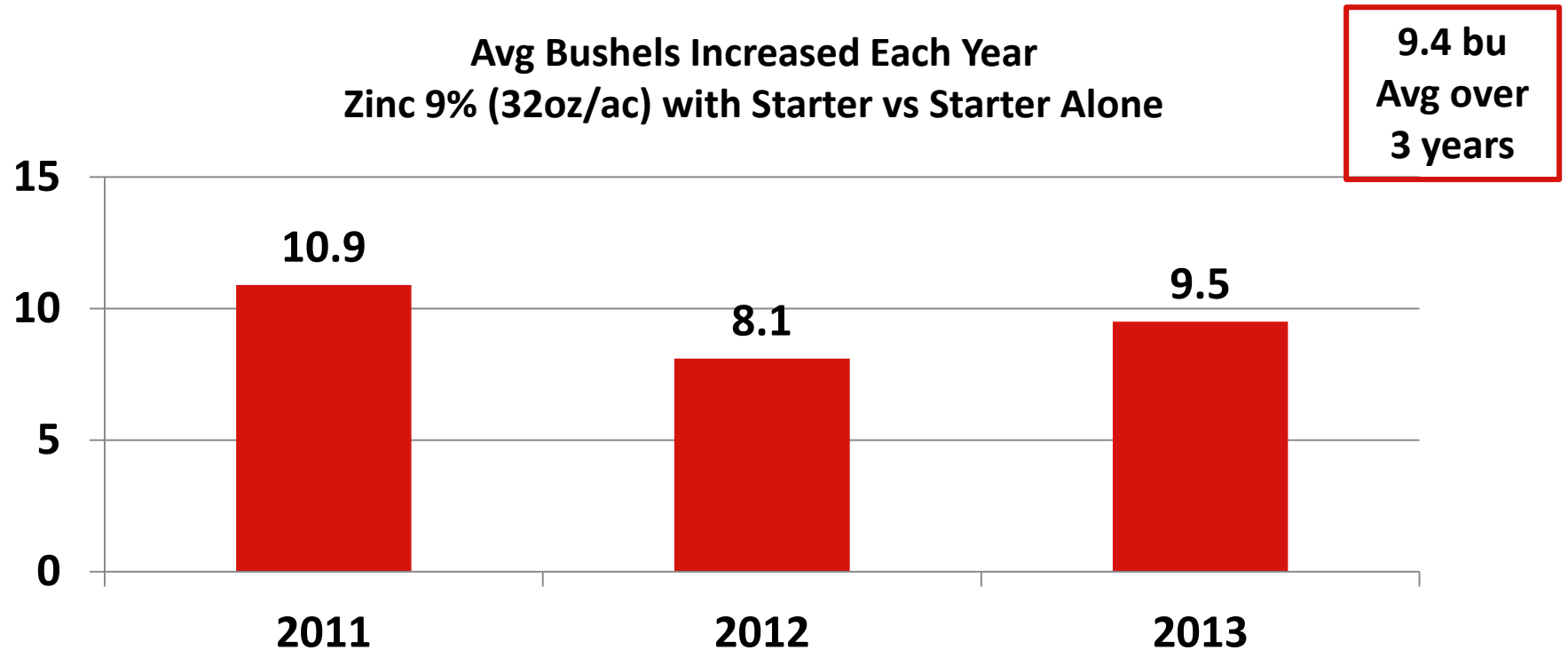


Soil P levels	MH
Soil Zinc levels	Med
Soil pH	6.8

Interesting that 10-34 < UTC in all trials

Brandt Research Farm
Average of All Starter and Pop Up Trials (2011-2013)

- Averaging all 50 starter trials conducted by Brandt Research Team
- Zinc is critical to corn growth in the first 45-60 days after emergence
- Zinc proved to increase yields in over 20 locations where soil Zn levels were M or >
- Zinc applied with side dress Nitrogen is beneficial but should be applied ASAP



University Results

Univ of Ark 1989

Take Away Notes:

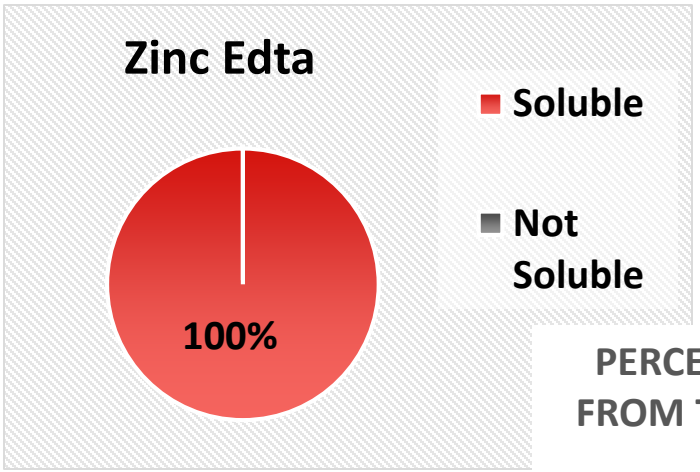
WHY use EDTA Zinc vs ZnSO4?

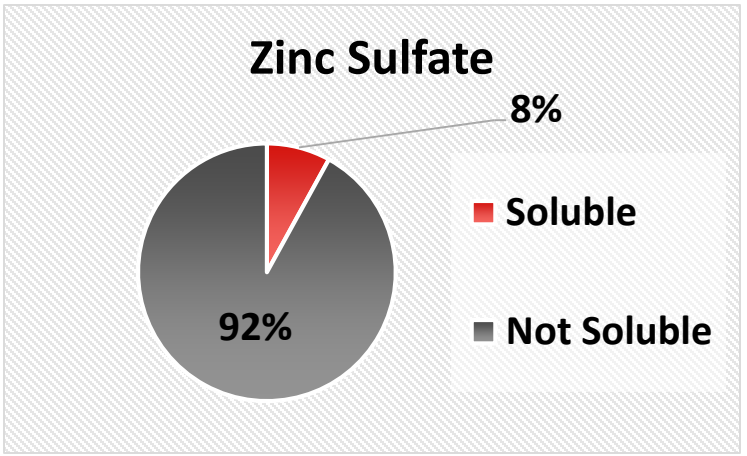
Zinc is critical in every Southern Crop

It must be soluble to enter the root

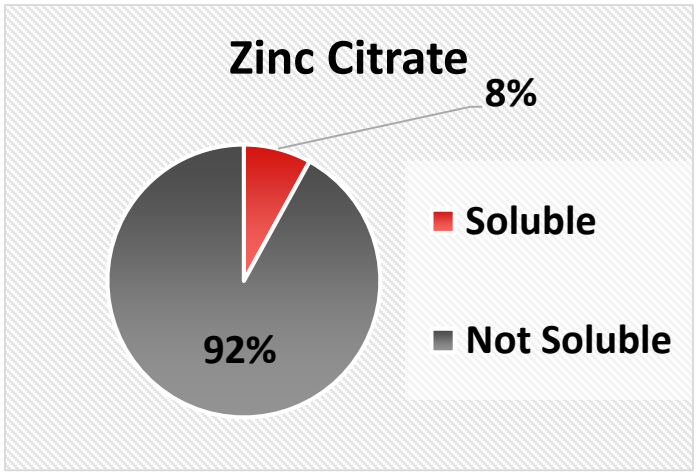
It can be quickly tied up when not chelated

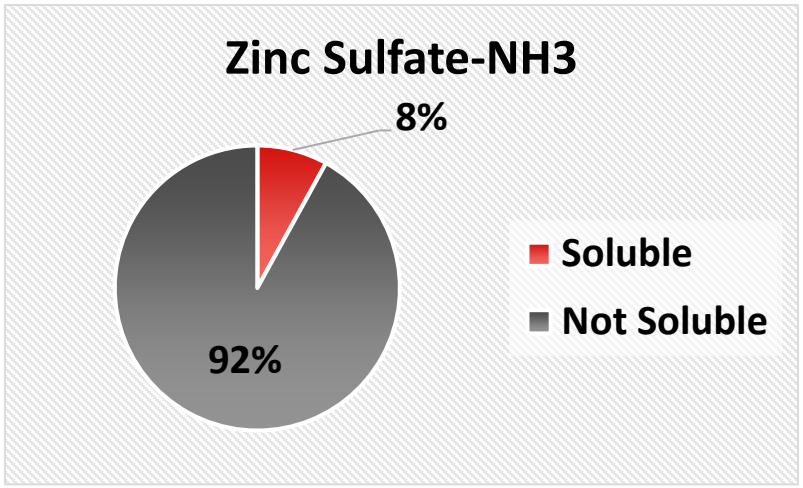
Value of Phosphate is lower if P/Zn ratio out of balance





PERCENTAGE OF SOLUBLE ZINC REMAINING FROM TEST SOLUTION AFTER 4 MINUTES IN A 10-15-0 FERTILIZER SOLUTION





Corn Trials

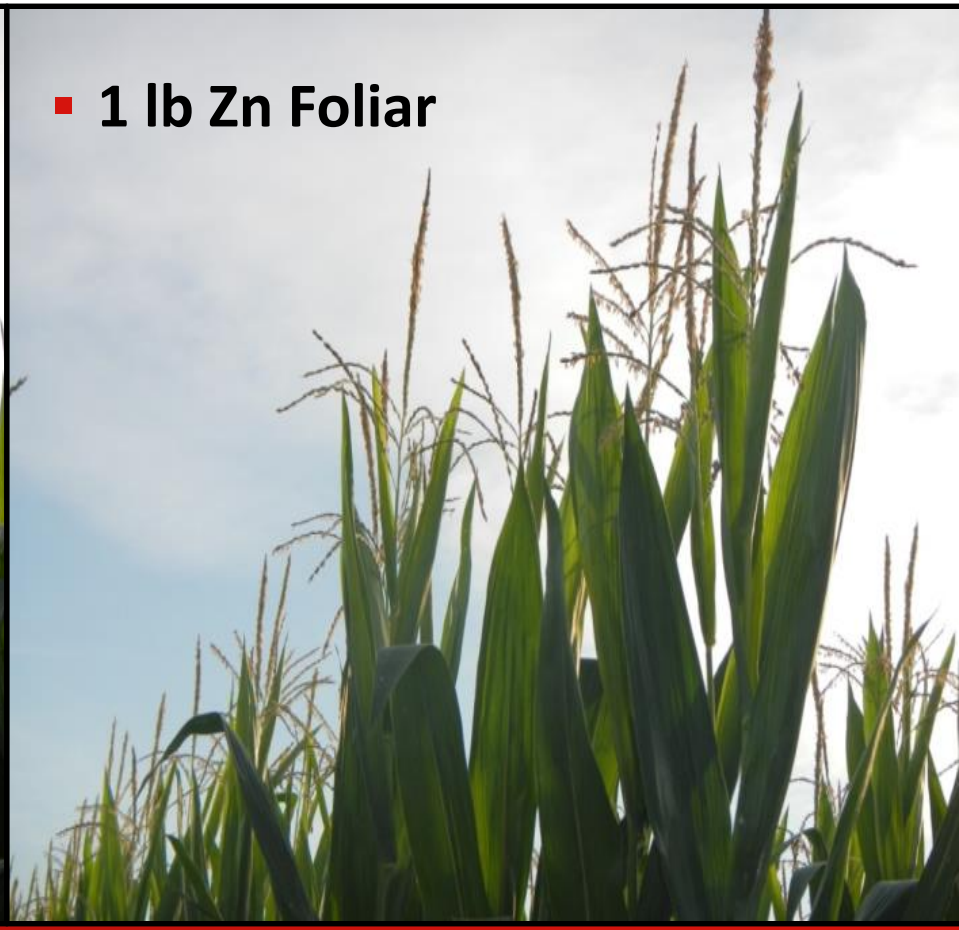
Foliar Application

Stoneville – Delta Research & Extn Center, Dr. Bobby Golden, MS Soy & Corn Specialist
University of Arkansas, Dr. Leo Espinoza, Soils Specialist
G&H Associates, Dr. Charlie Guy, Past Ark Soybean Specialist
Diligence Technologies, Dr. Tim Adcock, Memphis AgriCenter
Cresco Ag, Dr. Chism Craig, Past Univ of Tenn Cotton Specialist

BRANDT

Visual Response to Foliar Zinc Application Noted by Dr. Golden at Miss State…..

- Trial at Stoneville Research Station
- Every Zinc treated plot had fully emerged tassels 8 days prior to plots with no Zn
- Maturity estimated at a similar differential in days
- This was documented at 4 other research sites in 2013



DATA and PHOTOS from Dr. Bobby Golden, Mississippi State University .

Tutwiler, MS Foliar Corn Application <AgWeb>

- Grower - Mike and Chad Swindoll
- Brandt Smart Trio applied with herbicide, Left one pass with no Smart Trio
- The field caught terrible weather from early on until harvest
- Hybrid: Terral 28R30
- Population: <30,000 after bad weather

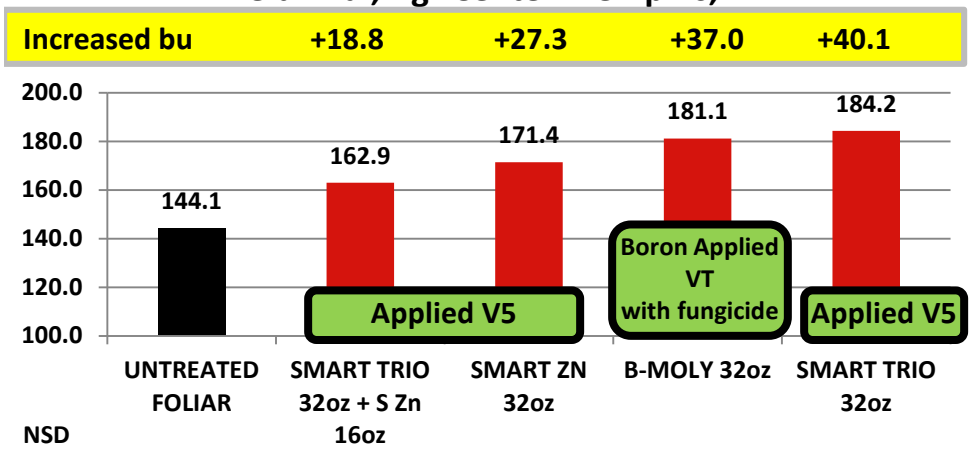
TRIO 32 oz applied with Halex GT & Atrazine on April 28

Smart Trio 106 bu
12 row UTC 92 bu
15% Yield Increase

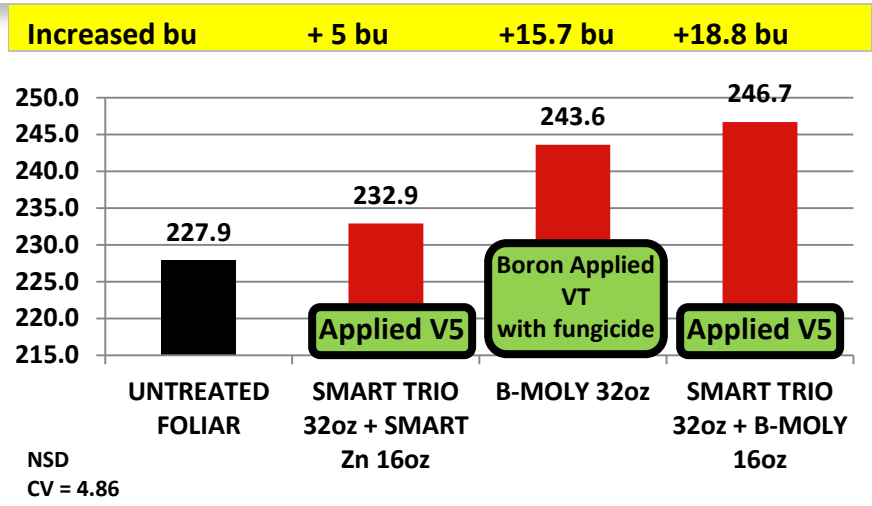
Corn Foliar Trials - 2013

All Treatments > UTC no foliars
VT applications slightly more response than V5
Boron with VT fungicide continues to show utility

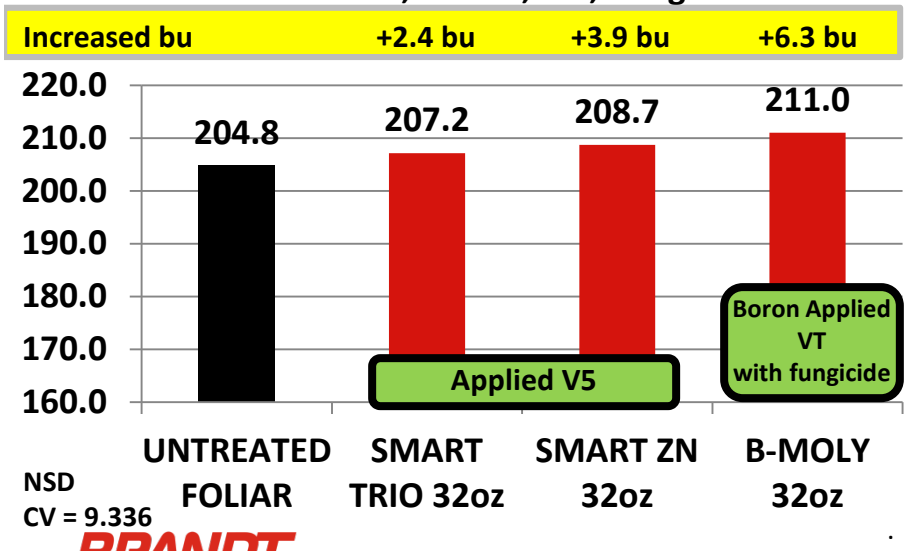
Yield Trial, AgriCenter Memphis, TN



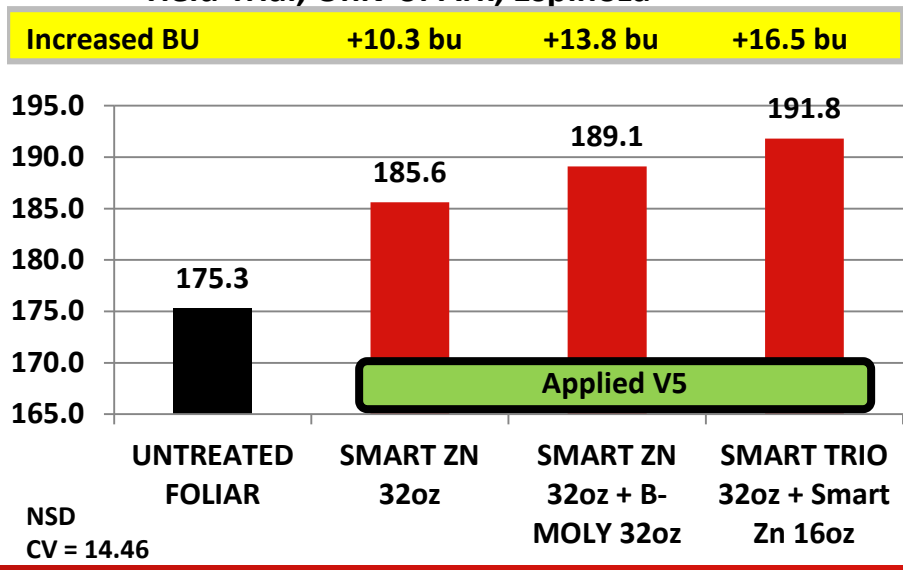
Yield Trial, Miss State Univ - Golden



Yield Trial, Leland, MS, Craig

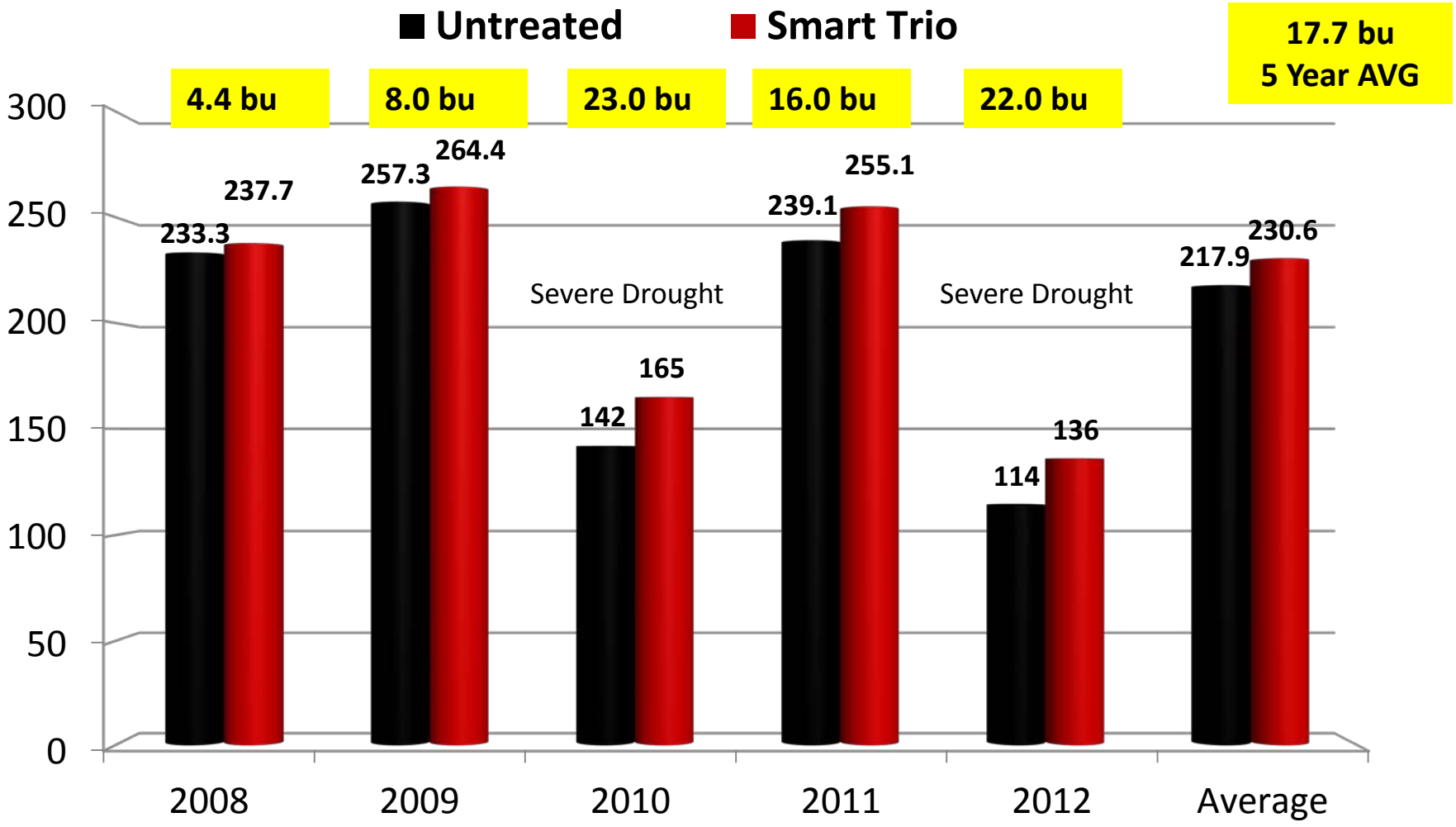


Yield Trial, Univ of Ark, Espinoza



Brandt Research Farm

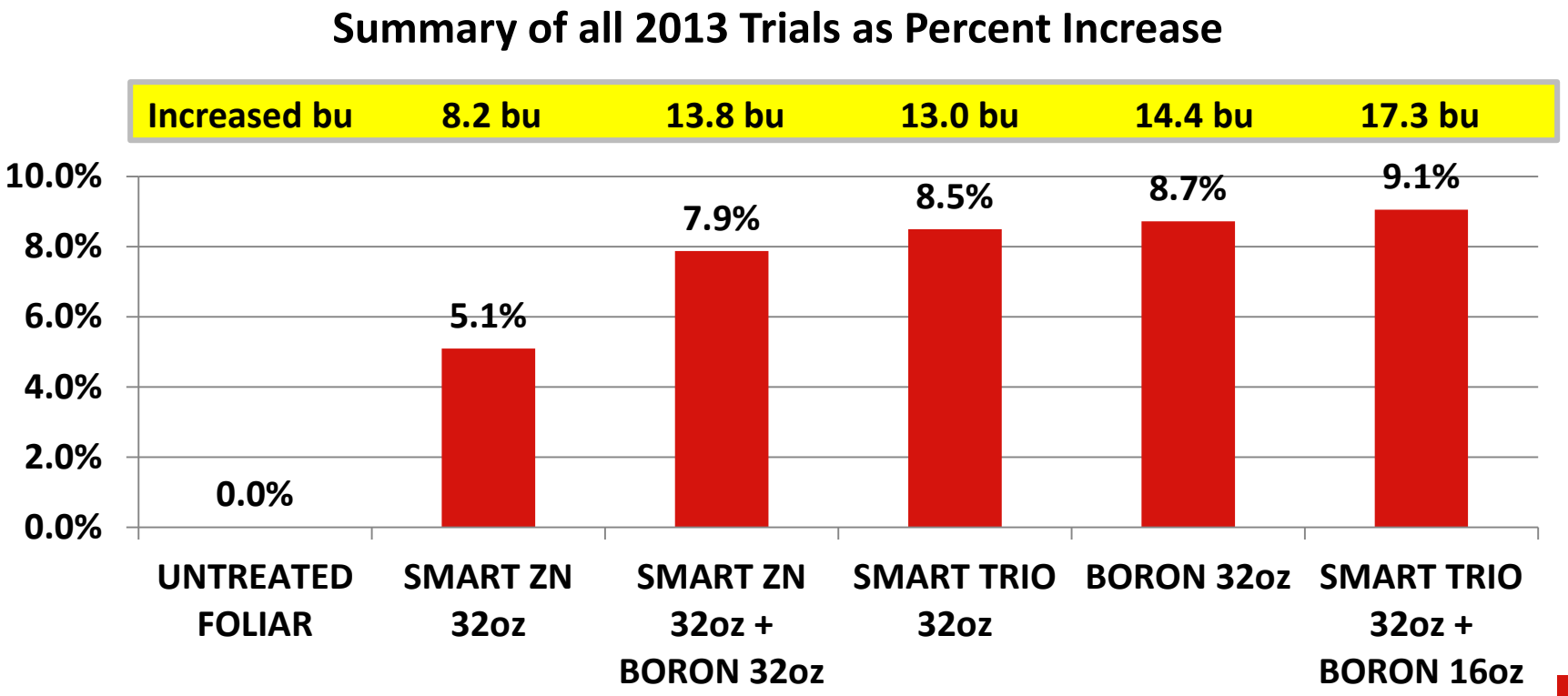
Smart Trio on Corn – 5 Continuous Years with Positive Yield Increase at 1qt/Acre



* All other practices held exactly the same through the season

Corn Foliar Trials Summary (total of all replicated trials)

- Data summarized into Net Bu Increase and Percent Increase – site variability
- Average of all treatments > Untreated
- Trio and B-Moly set the tone for good net monetary return for the grower
- N-Boost had solid showing to start building a market
- Smart Trio – Smart Zn – Manni-Plex B-Moly all show strong benefits



Herbicide Stress Mitigation

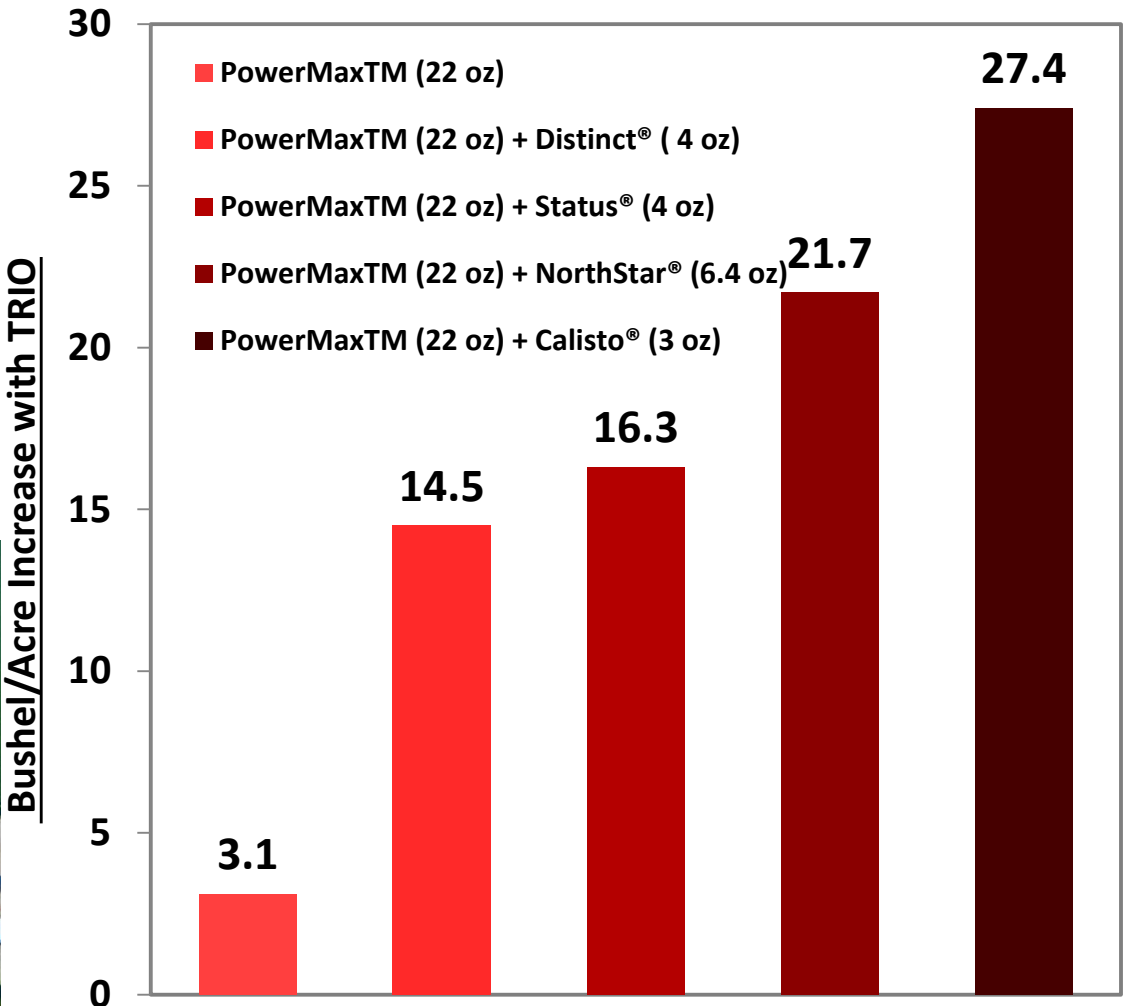
Brandt Smart Trio w/HOT Foliar Herbicides Combinations

Herbicide Combinations Were Compared WITH and WITHOUT Smart Trio THE HOTTER THE HERBICIDE THE MORE IMPACT THE TRIO HAS

GENERAL TRIAL INFORMATION

Grower: Brandt Research Farm
Agronomist: Ed Corrigan
Location: Pleasant Plains, Illinois
Crop: Corn
Population: 33,000
Hybrid: DK 61-22
Rotation: 3rd Year Corn
Fertility: 240-90-180
Tillage: Strip Till
Harvest: Yield Monitors
Application Timing: V7
Application Rate: TRIO – 1qt/acre

2009 Brandt Research Farm



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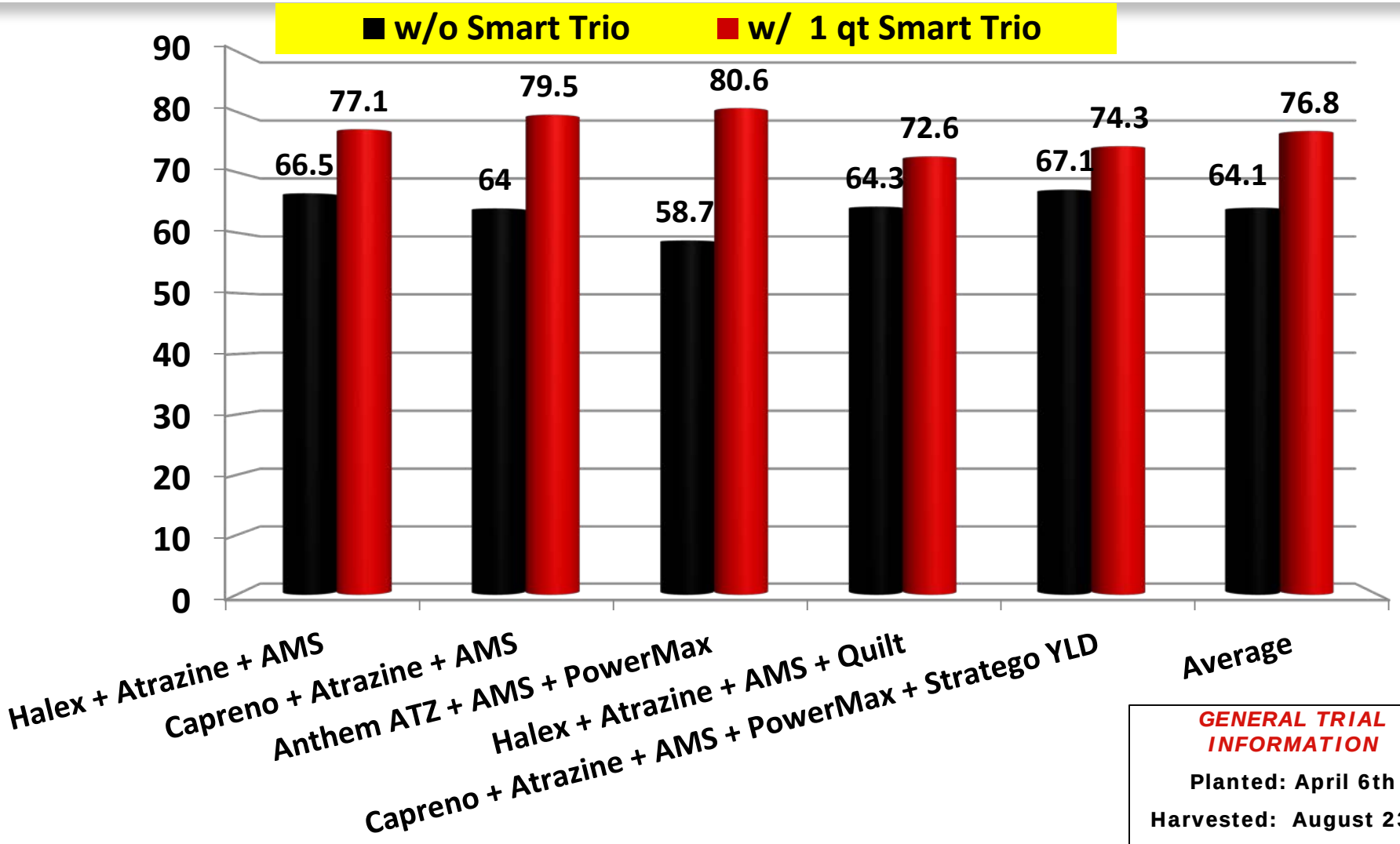
BRANDT

2012 Southern States

Herbicide Tankmix Plots for Corn - Franklin, KY

Average Yield Increase
+12.7 bu



GENERAL TRIAL INFORMATION

Planted: April 6th

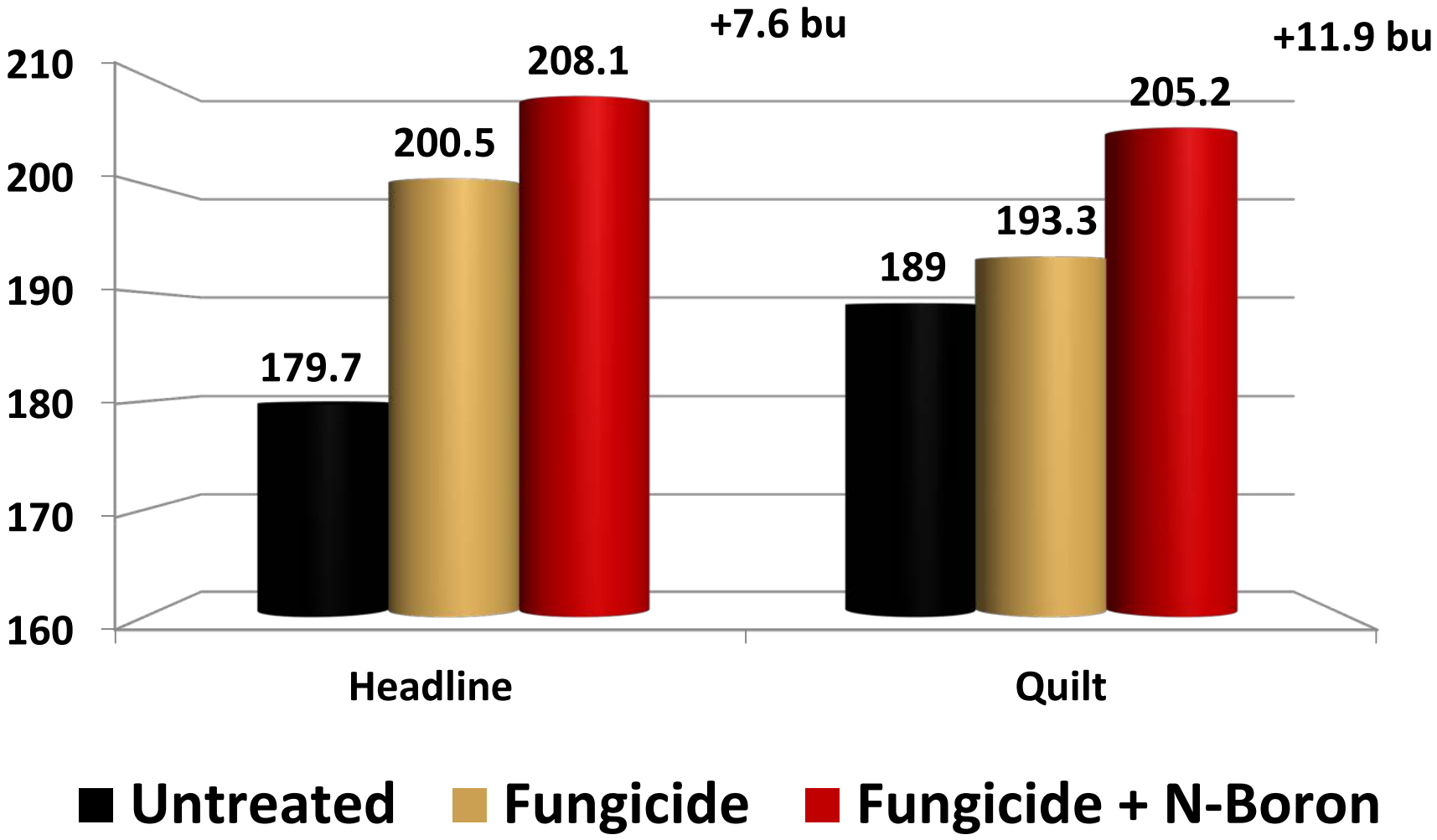
Harvested: August 23rd

Hybrid: DKC 63-87

Population: 31,000

Brandt Research Farm - 2008

Manni-Plex N-Boron with Fungicide on Tassel Stage Corn



Thank you very much

Questions

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