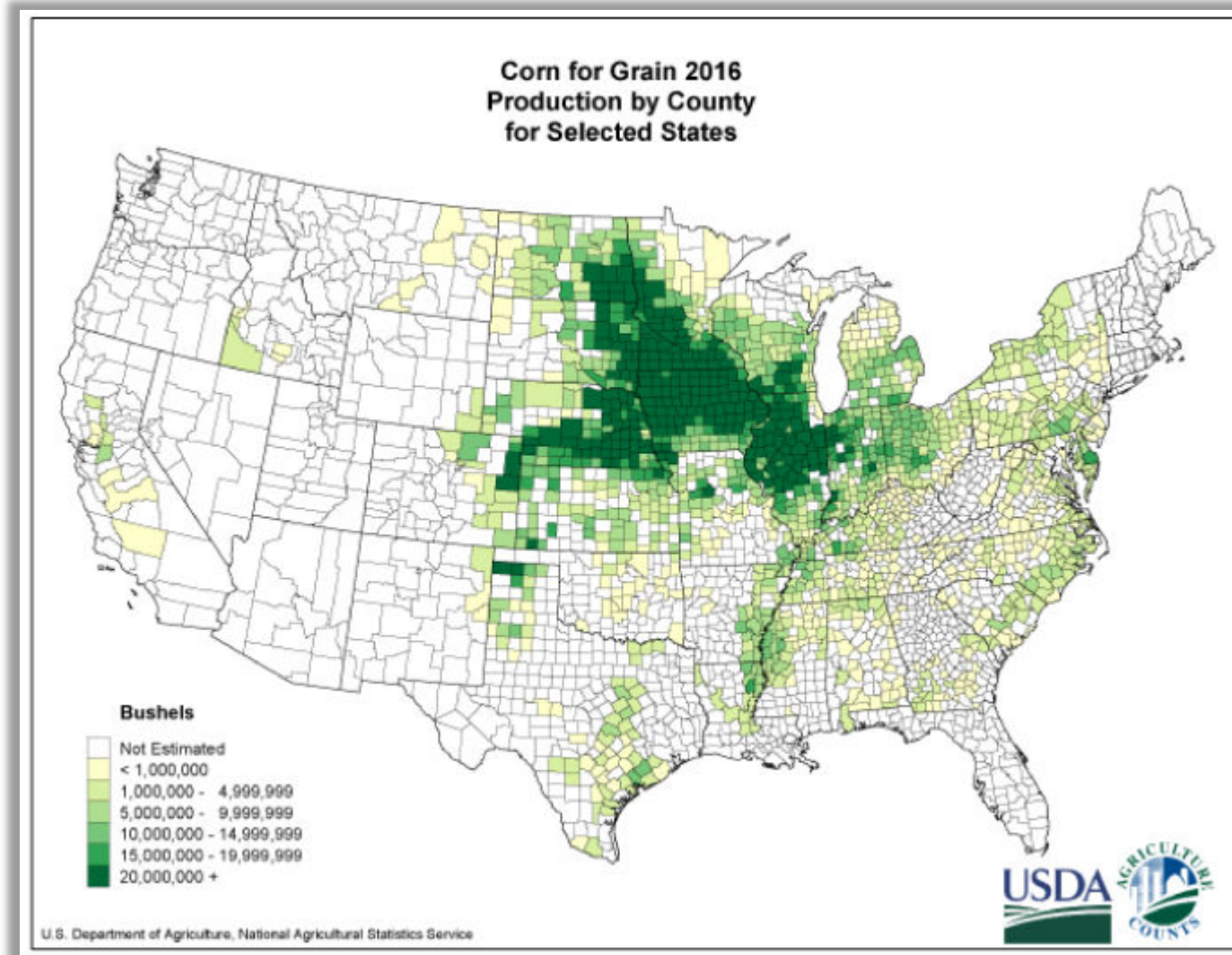


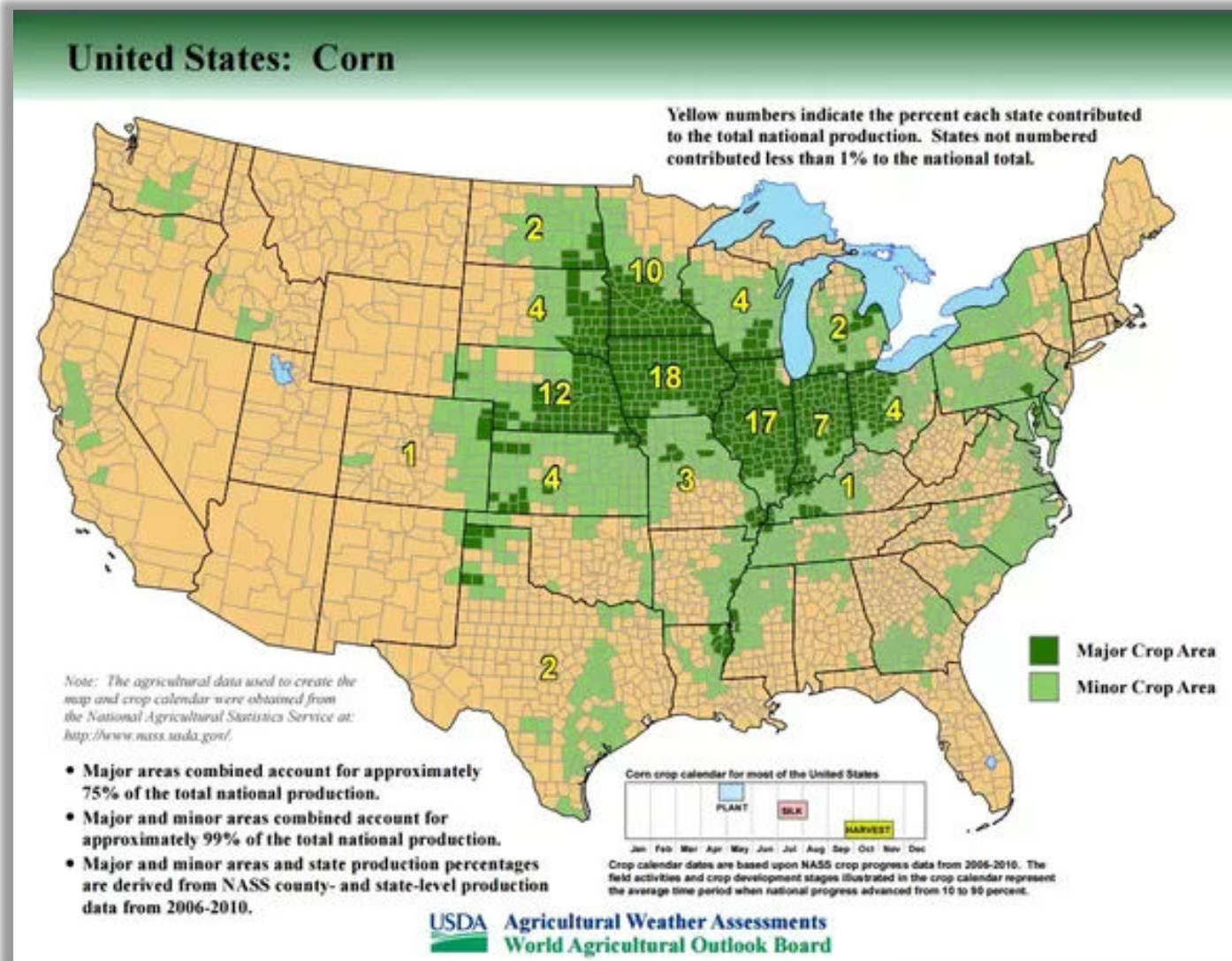
For The Soil | For The Plant | For the Future

Corn

Where should we focus our efforts on Corn (Yield per county)



Percent of total national production



How can AgroLiquid perform better than the rest?

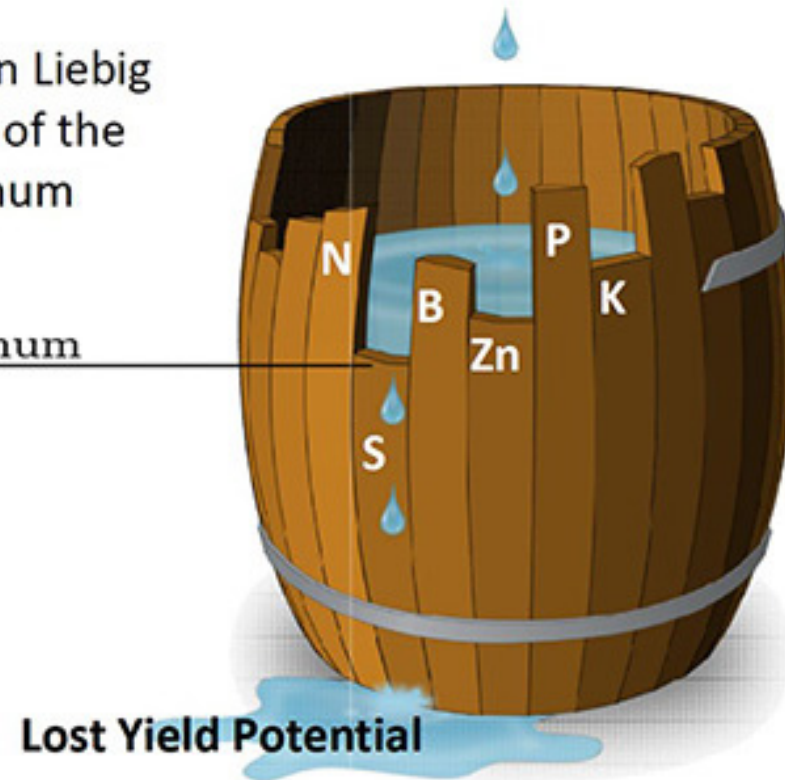
- The Right Balance
- The Right Timing
- The Right Placement
- The Right Amount
- The Right Product (and science)

The Right Balance

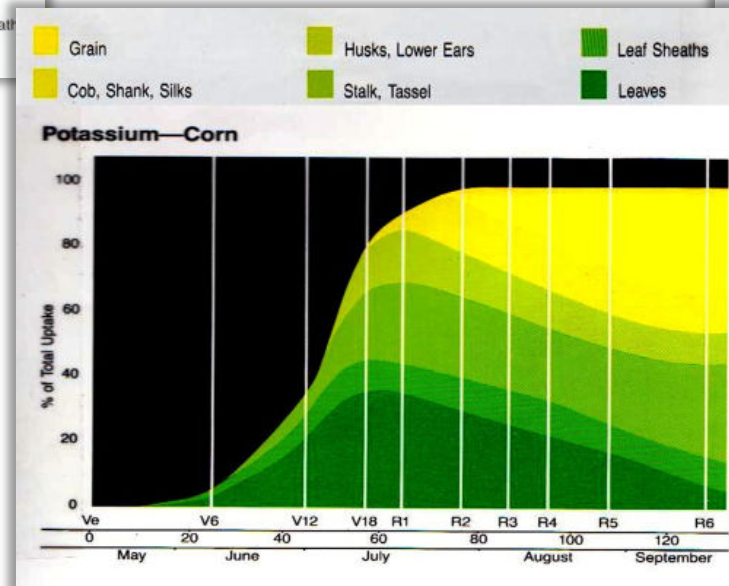
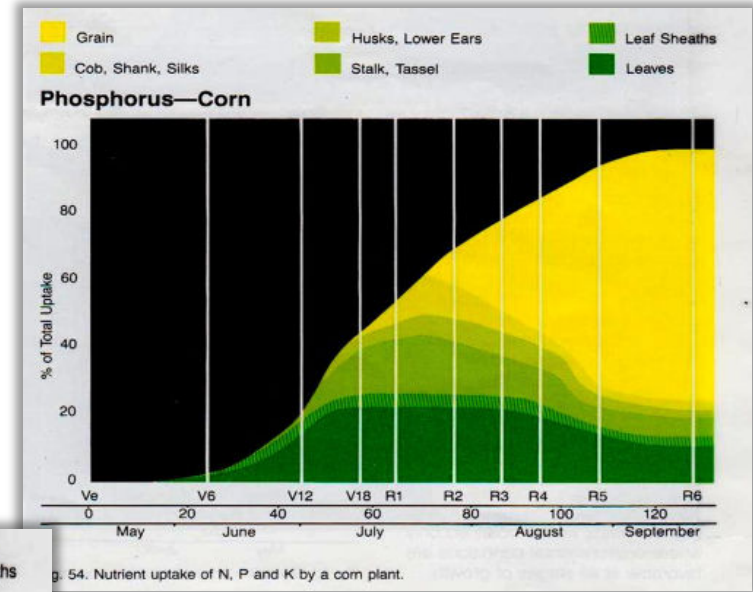
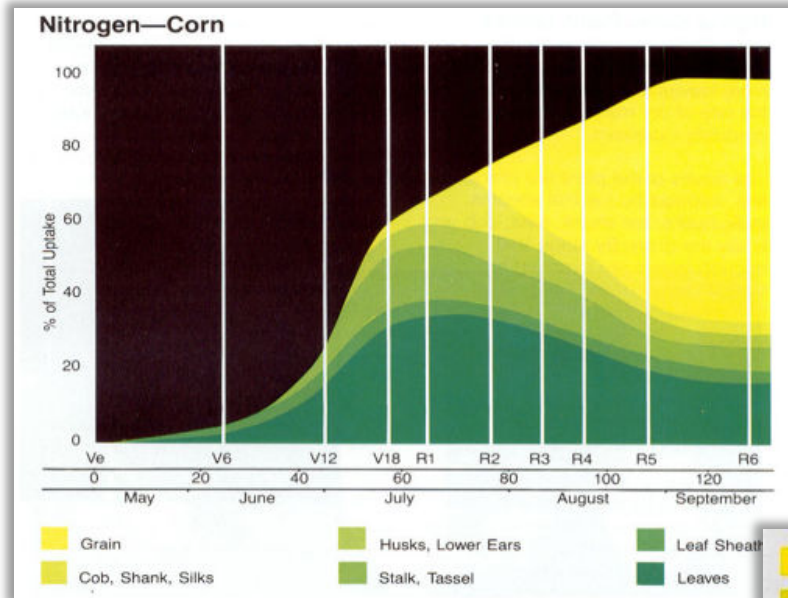
- **NUTRIENT BALANCE** is a major factor in a proper fertility program
- A crop's yield potential is determined by the “most limiting nutrient”

Justus von Liebig
The Law of the
Minimum

Minimum

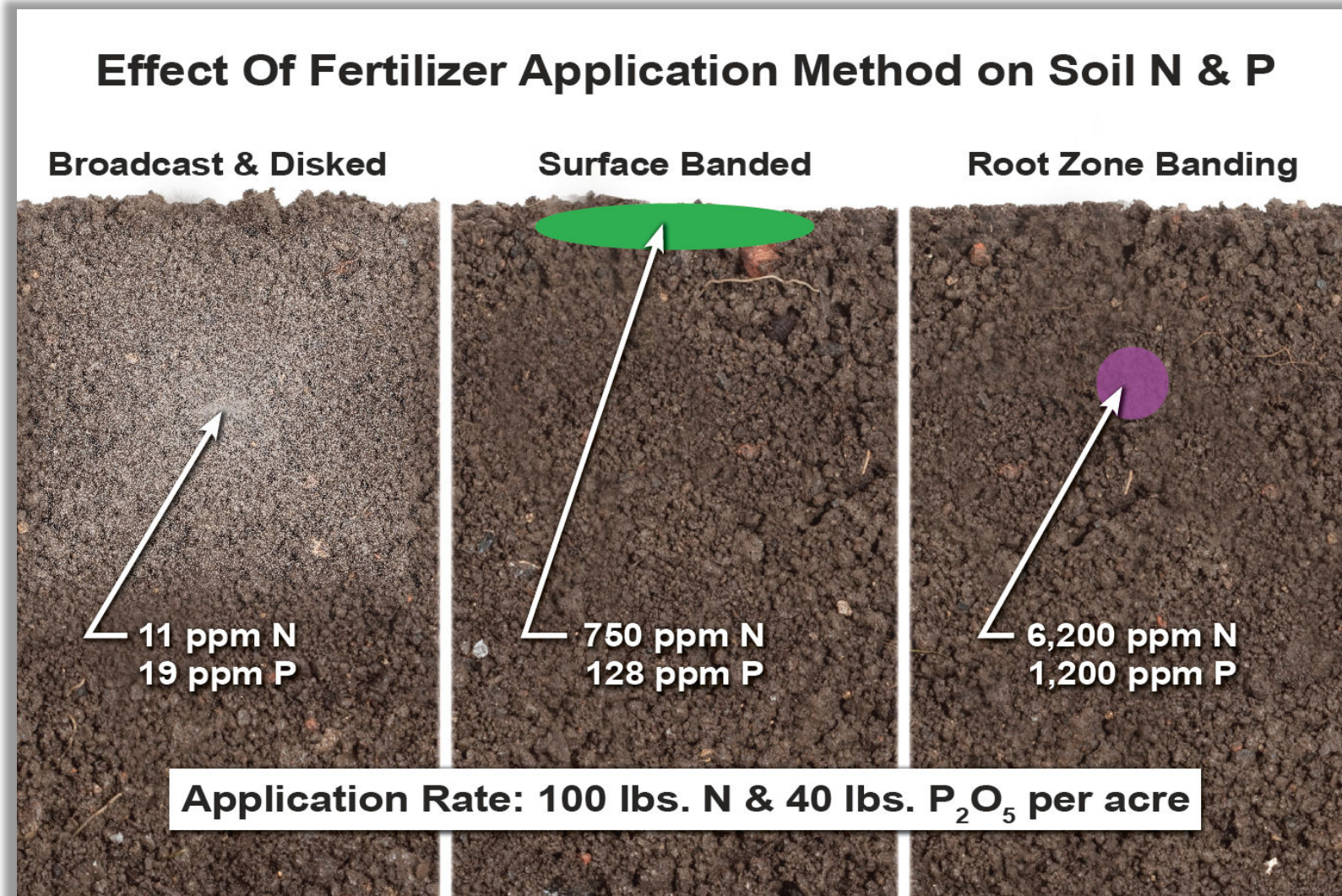


The Right Time



g. 54. Nutrient uptake of N, P and K by a corn plant.

The Right Placement



The Right Amount

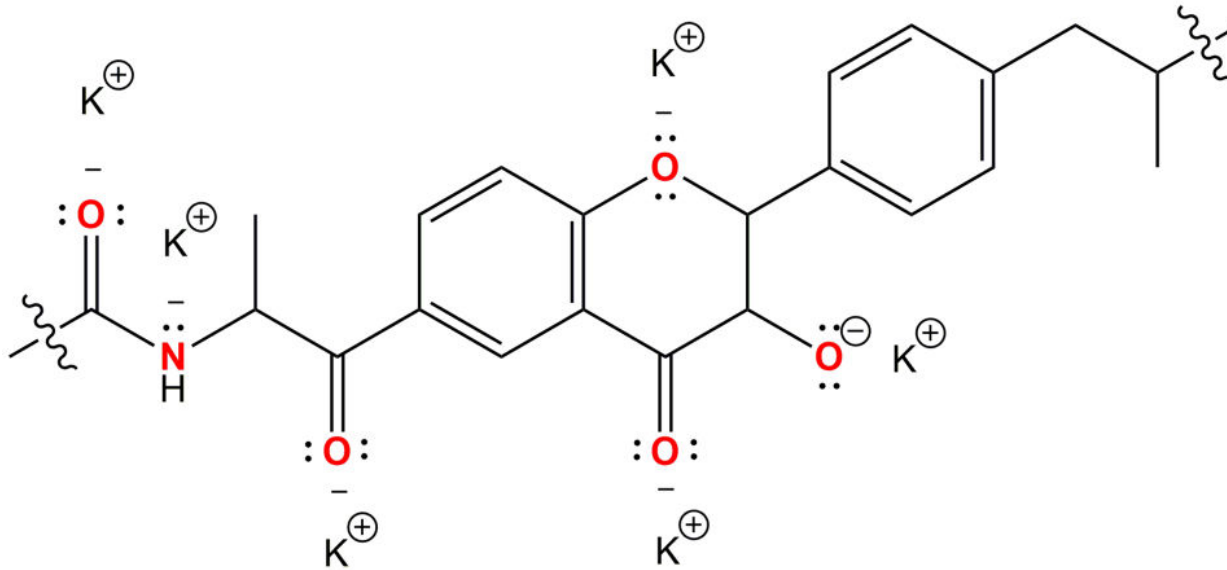
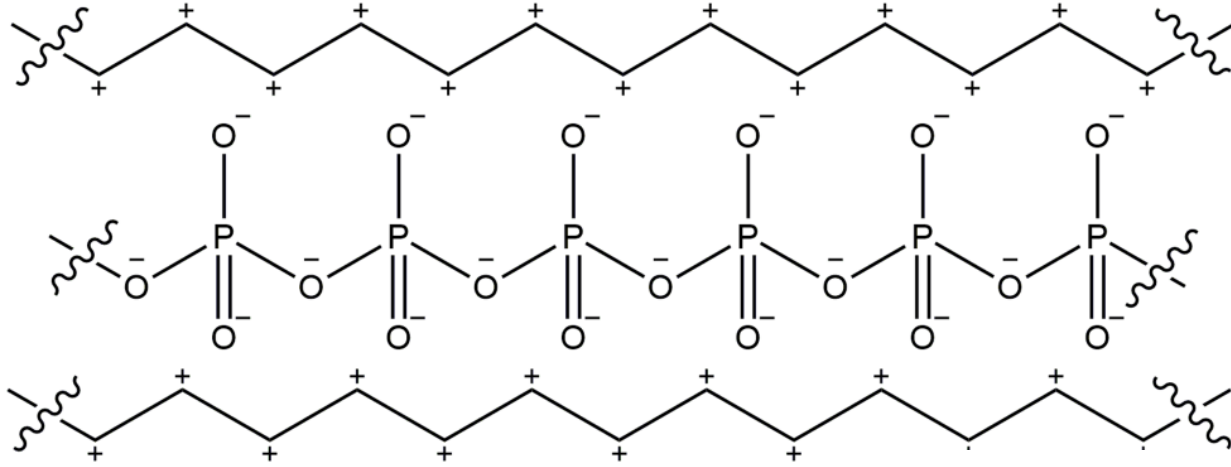


- Soil and Tissue Testing
- 30+ years of research across multiple cropping conditions and geographies
- AgroLiquid provides a talented staff of agronomists, researchers, salesmen, and retailers to help bring together all components of your fertility program!

The Right Products: What to Look For

- Consistent manufacturing
 - Quality raw materials
 - Clean, easy to use, and less corrosive
 - Low potential for plant injury
 - Research proven technology
-
- With many products hitting the market with these qualities, what separates AgroLiquid?

Flavonol Polymer Technology



The Right Products!

Pro-Germinator[®]

Sure-K[®]

Kalibrate[™]
Precision Potassium

High NRG-N

eNhance

NResponse

 **accessS**[™]

 **Boron**

 **Copper**

 **Micro 500**[™]

 **Micro 600**

FERTIRAIN

FASE 1 FASE 2 FASE 3

 **Moly**

NUTRIRAIN
17-3-2

GROWRIGHT

 **Iron**

NUTRIRAIN
20-0-2



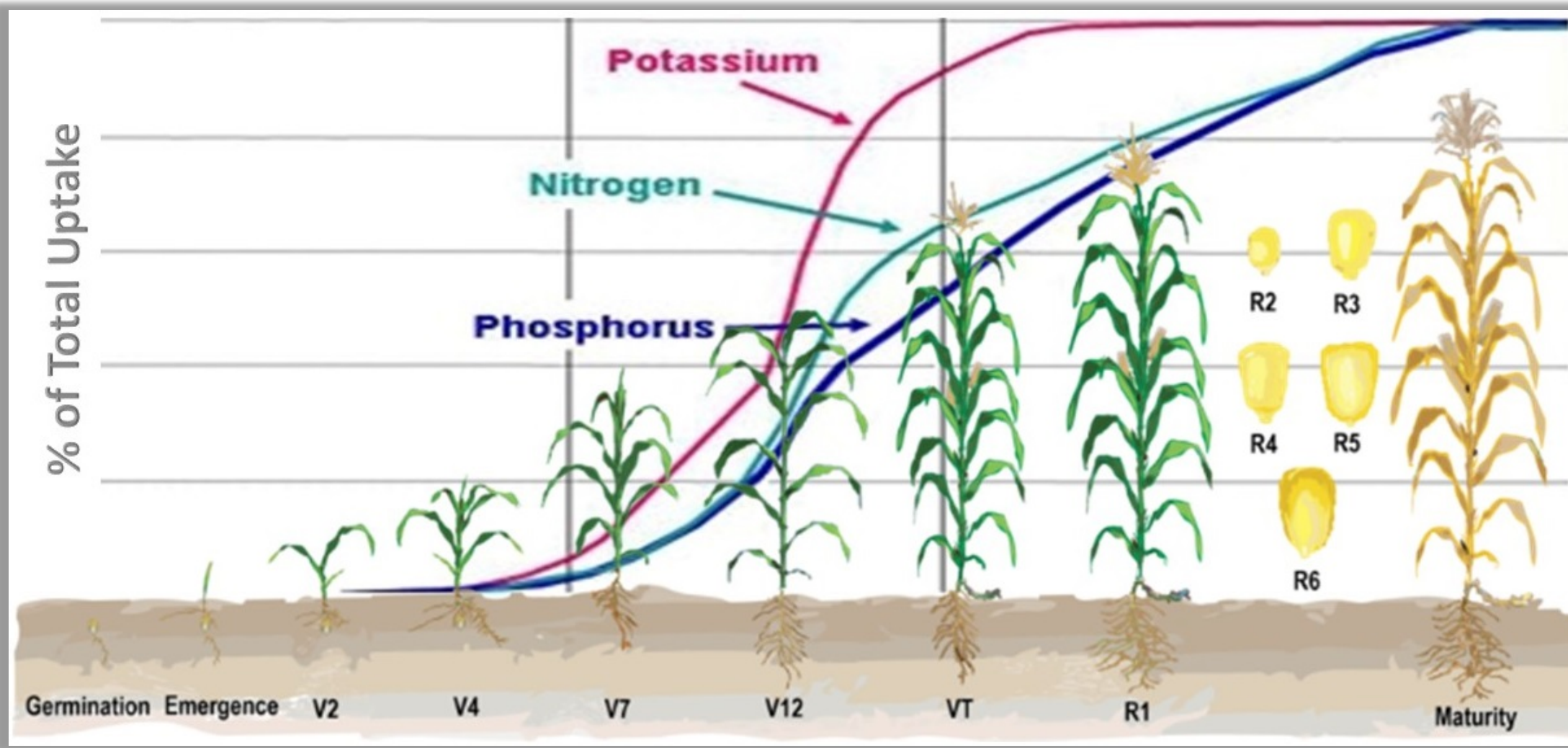
 **LIBERATECa**[™]

 **S-Calate**[™]

 **Magnesium**

 **Manganese**

 **Zinc**



Corn Nitrogen Uptake

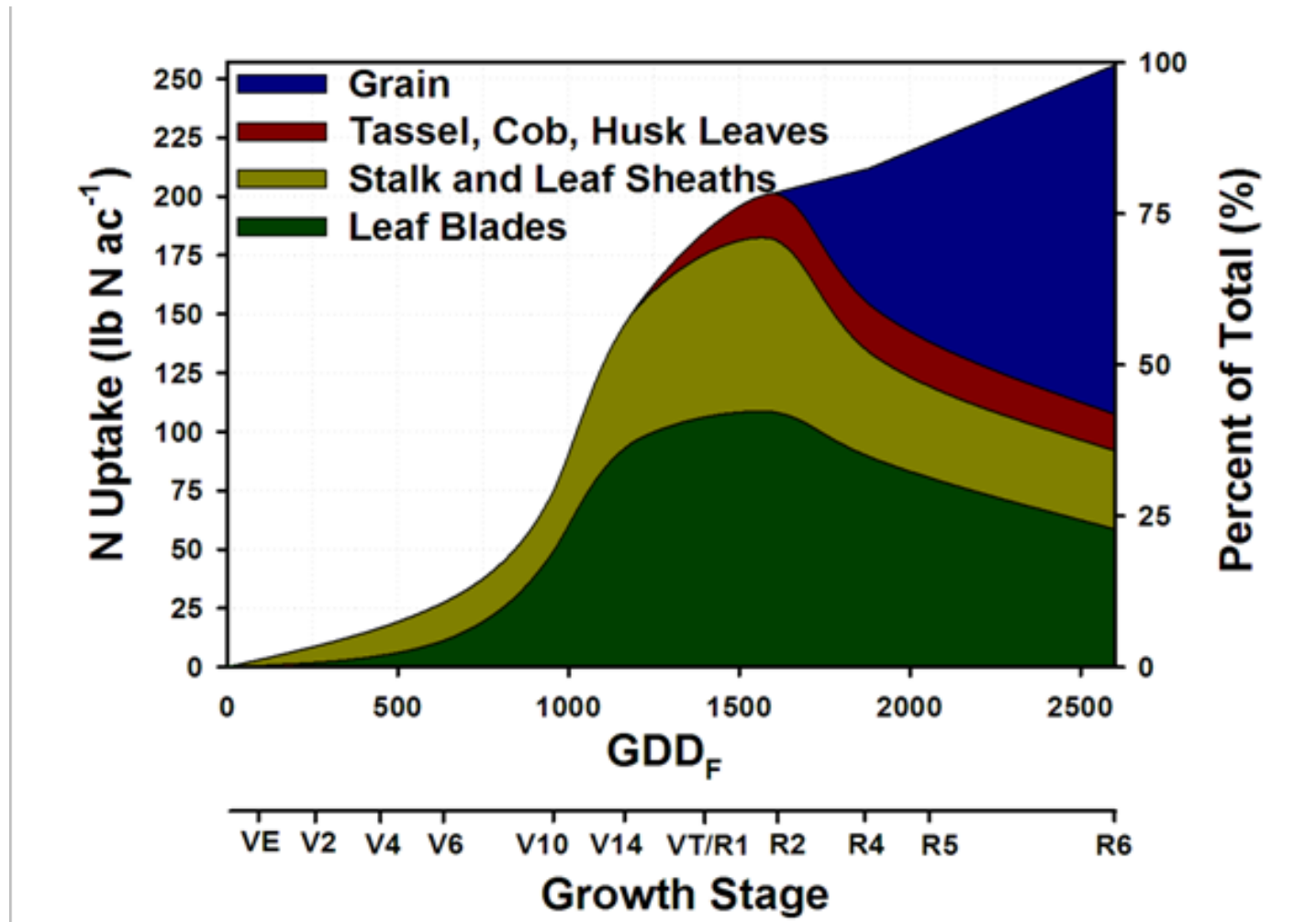
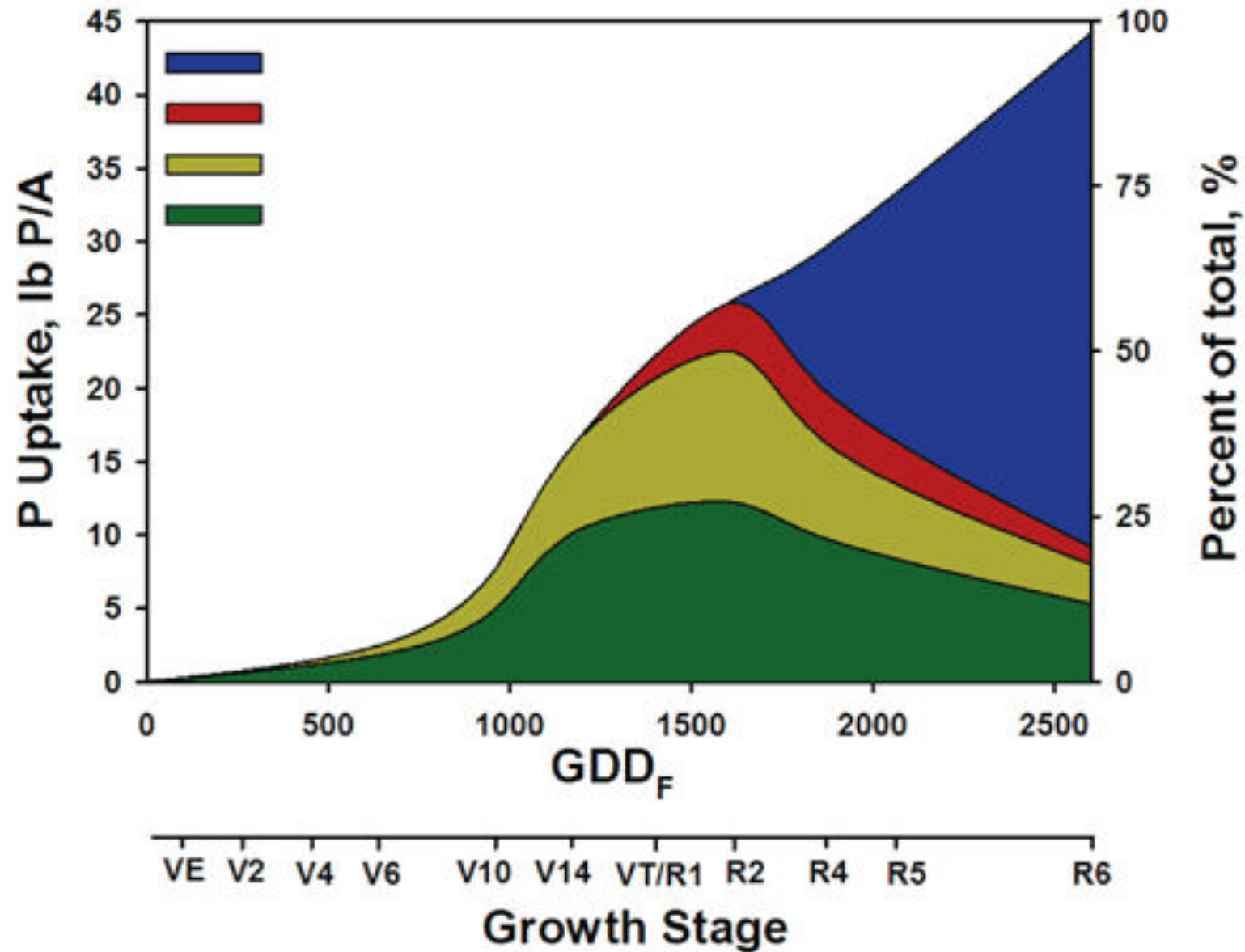
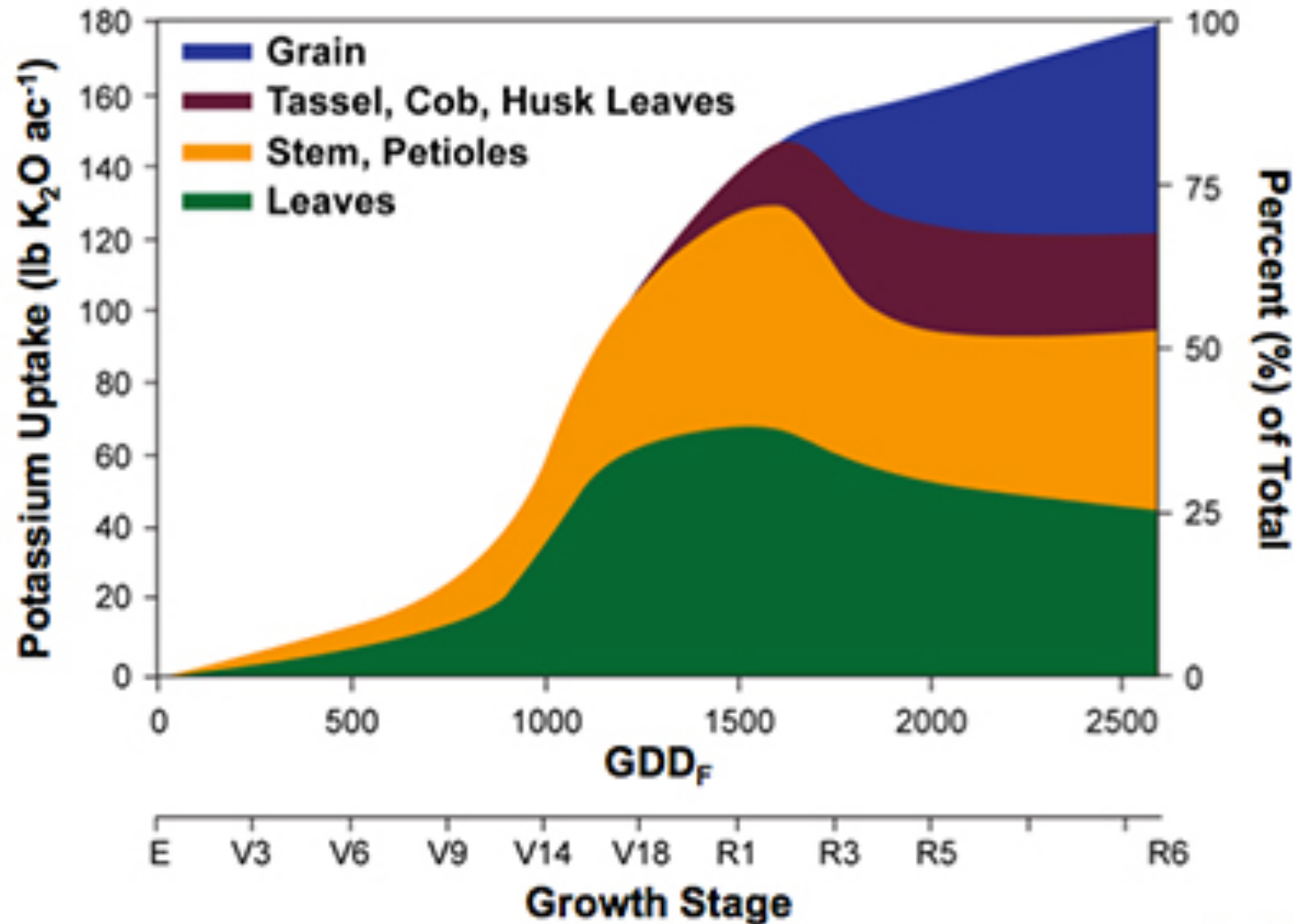


Figure 1. Seasonal nitrogen uptake in corn. Graph courtesy of Bender, R. et al. University of Illinois Crop Physiology Lab.

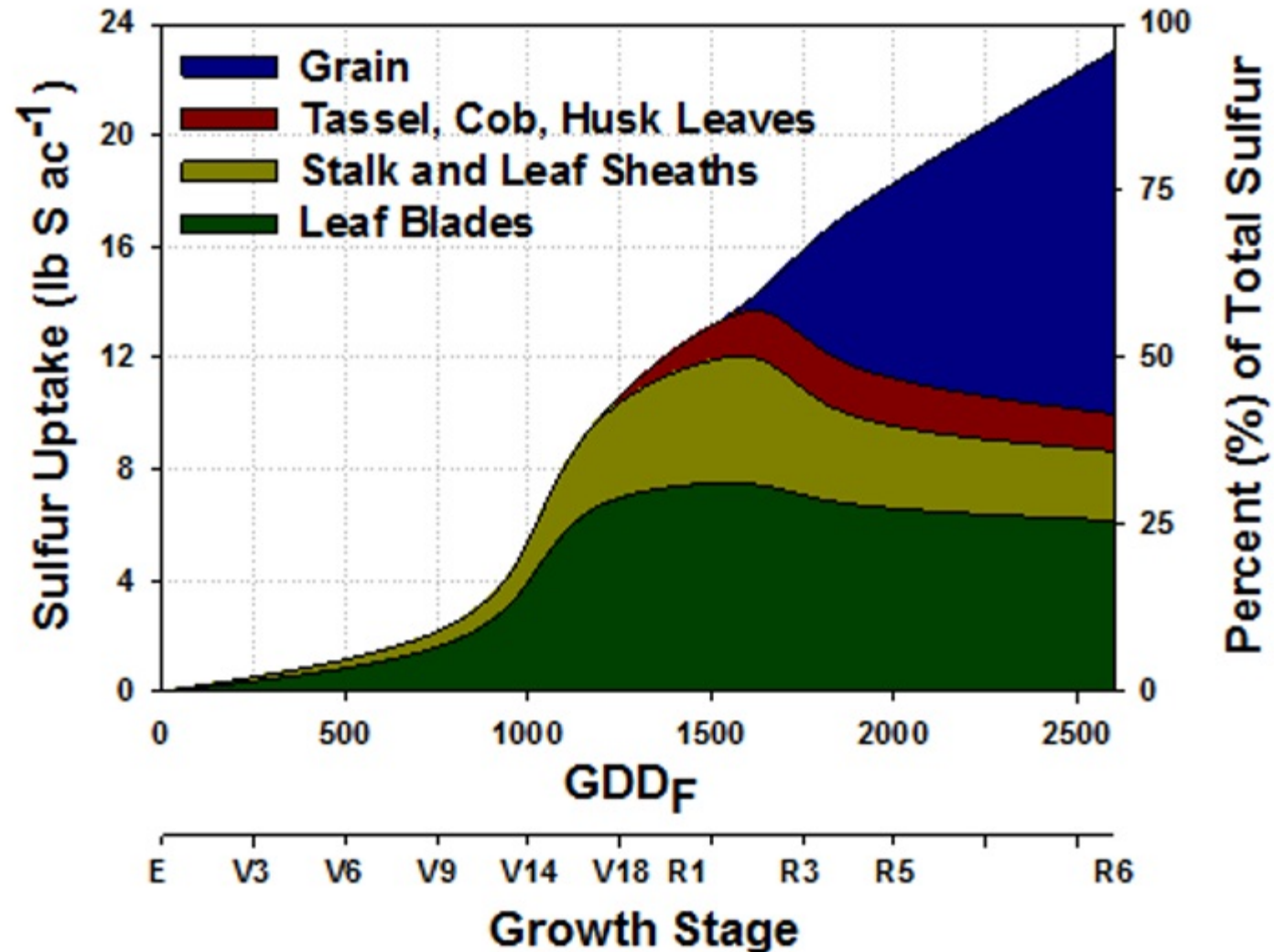
Corn Phosphorus Uptake



Corn Potassium Uptake



Corn Sulfur Uptake



Source: Bender, Haegele, Ruffo, Below. *Agron. J.* 2012.

Foliar Nitrogen Application Options



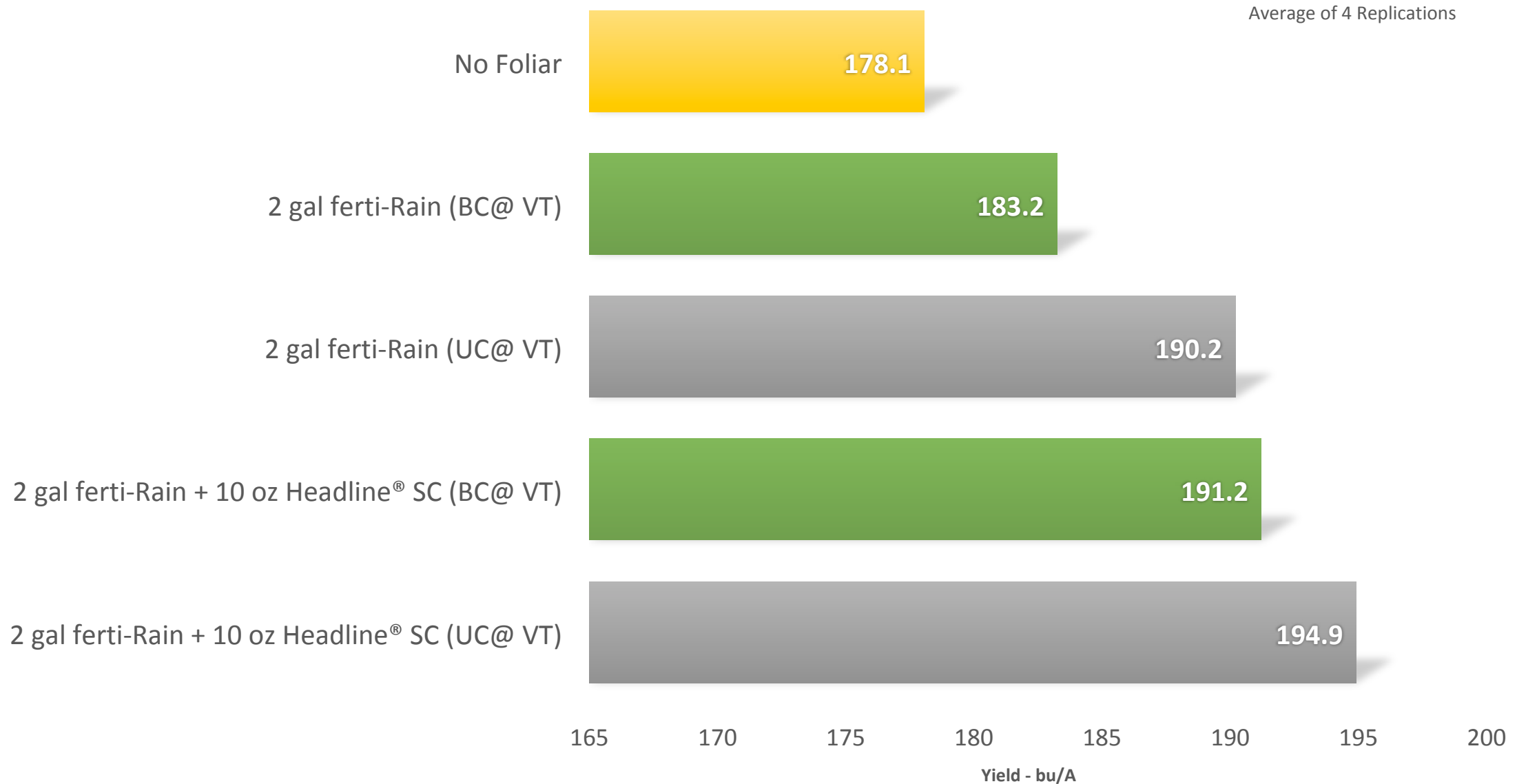
Broadcast Application



360 Yield Center: Undercover

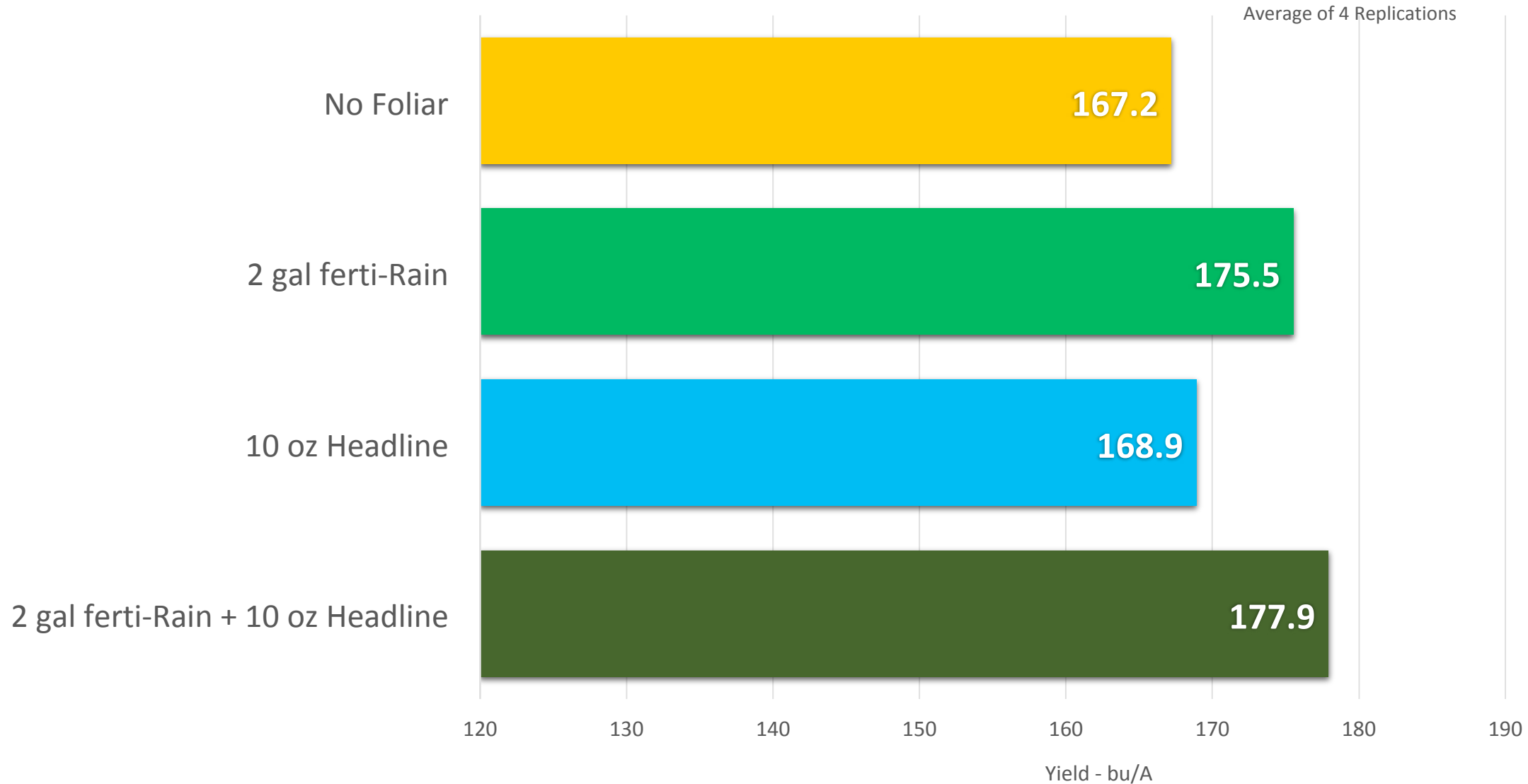
Foliar Fertilizer Applications Method Comparison in Corn

North Central Research Station - 2015 and 2016



All treatments included: 4 gal Pro-Germ. +6 Sure-K + 2 qt Micro 500 (in-furrow); 45 High NRG-N (sidedress)

Foliar Fertilizer Applications on V8 Corn North Central Research Station - 2017



Applications applied at V8 at a total of 10 gpa using 360 UnderCover
All treatments included: 4 gal Pro-Germ. + 6 gal Sure-K + 2 qt Micro 500 (IF); 44 gal High NRG-N (YD)

17-712

Nitrogen Methods of Application

Product	2015 Corn – bu/A	2016 Corn – bu/A	2017 Corn – bu/A	Average Corn – bu/A
No Foliar	194.7	161.4	167.2	174.4
2 gal ferti-Rain (BC)	201.2	165.3	164.9	177.1
2 gal ferti-Rain (UC)	212.9	167.5	160.0	180.1
2 gal fR + Headline (BC)	210.5	171.9	169.9	184.4
2 gal fR + Headline (UC)	218.7	171.1	168.5	186.1

Nitrogen Application Method Options



360 Yield Center
Y-Drop



Coulter
Inject



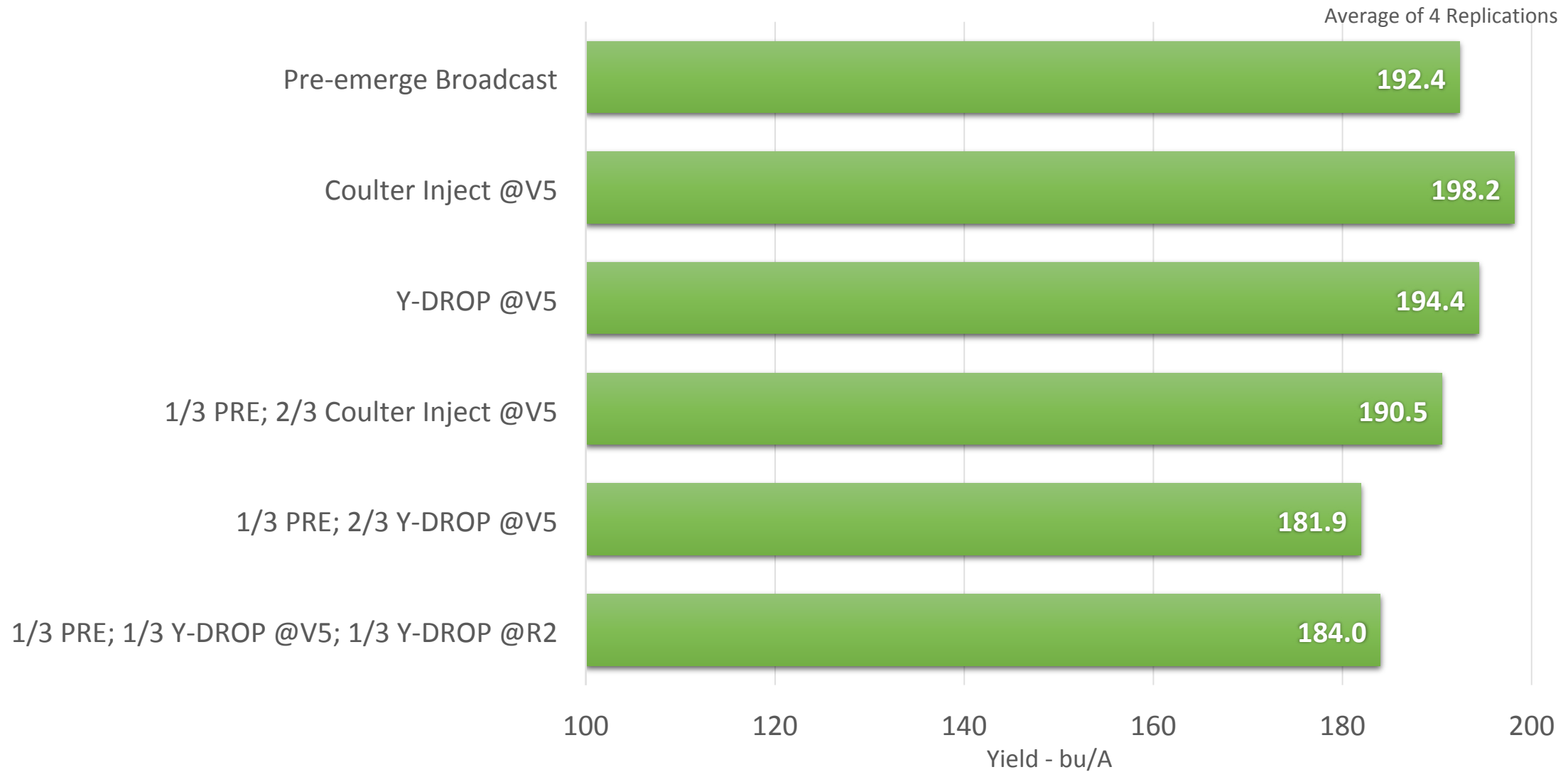
Nitrogen Methods of Application

N Method of Application	2015 Corn – bu/A	2016 Corn – bu/A	2017 Corn – bu/A	Average Corn – bu/A
Pre Emergence	125.3	136.0	192.4	151.2
Coulter Inject at V5	133.7	148.2	198.2	160.0
Y-Drop at V5	-	156.2	194.4	
1/3 PRE; 2/3 SD V5	128.5	141.4	190.5	153.5
1/3 PRE; 2/3 YD V5	141.4	154.9	181.9	159.4
1/3: PRE; SD V5; SD V10	128.8	148.7	-	
1/3: PRE; SD V5; YD V10	130.7	133.8	184.0*	149.5

*2017 3rd application applied at R2

Nitrogen Methods of Application Comparison in Corn

North Central Research Station - 2017

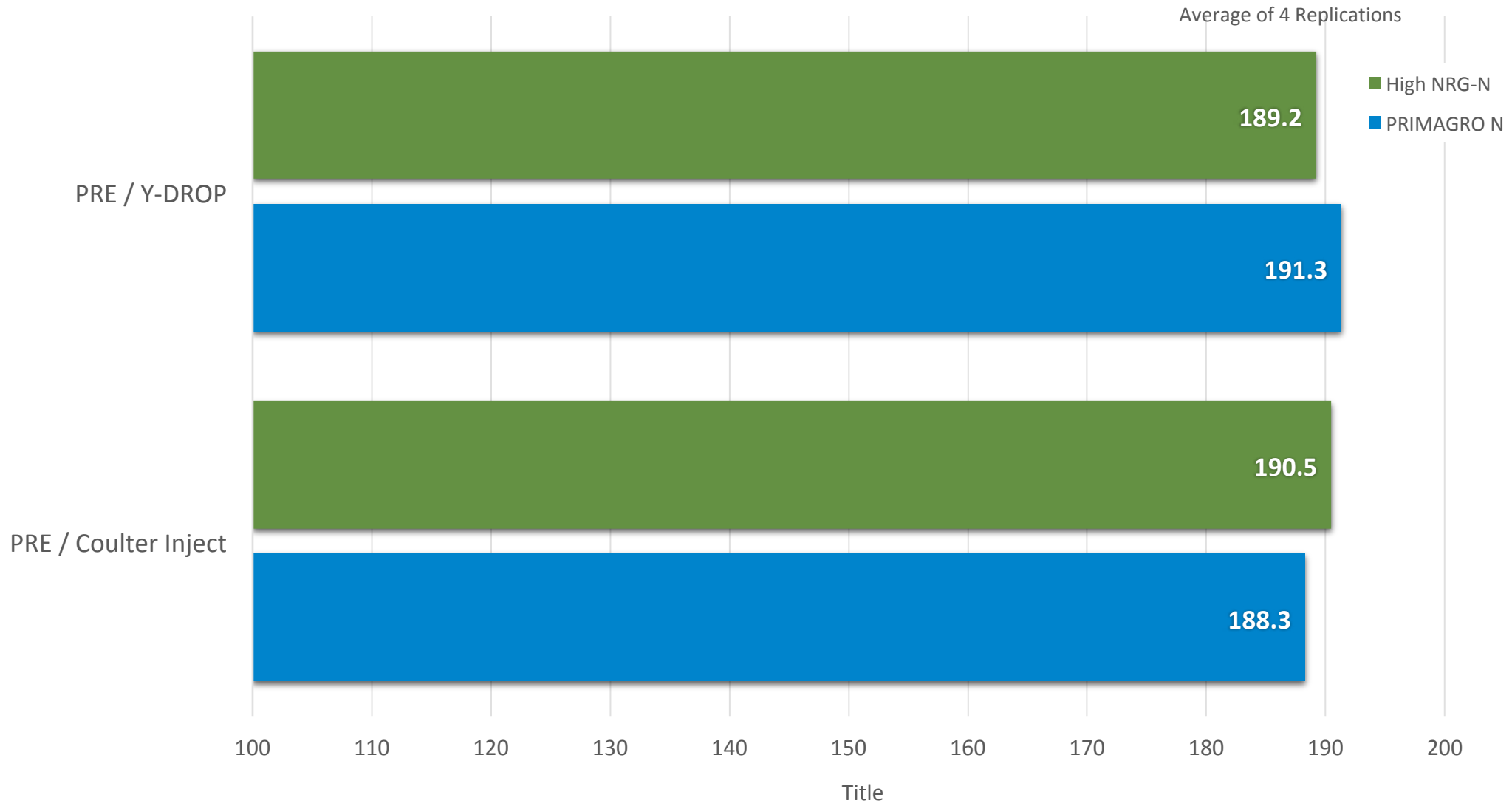


All treatments included: 6 gal/A Pro-Germ. + 3 gal/A Sure-K + 2 qt/A Micro 500 (IF)

17-710

Nitrogen Source and Placement Comparison in Corn

North Central Research Station - 2017



Planter Placement Options



For The Soil | For The Plant | For the Future

2 x 2



Keeton



Furrow Jet



(2) two streams
to the side of
the seed trench

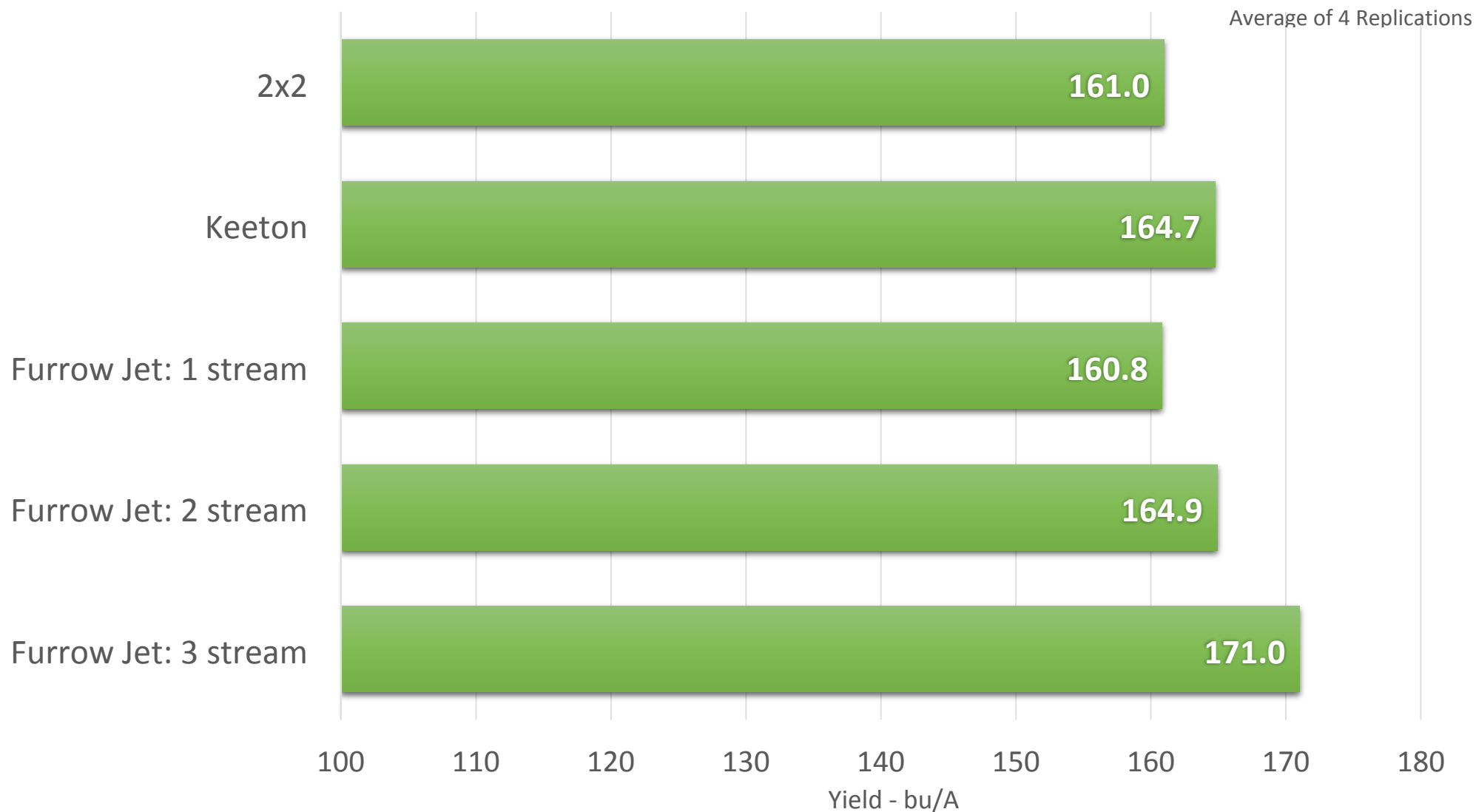
(1) single
stream over
top of the
seed

(3) three
streams for all
placements



Planter Fertilizer Method of Application Comparison in Corn

North Central Research Station - 2017

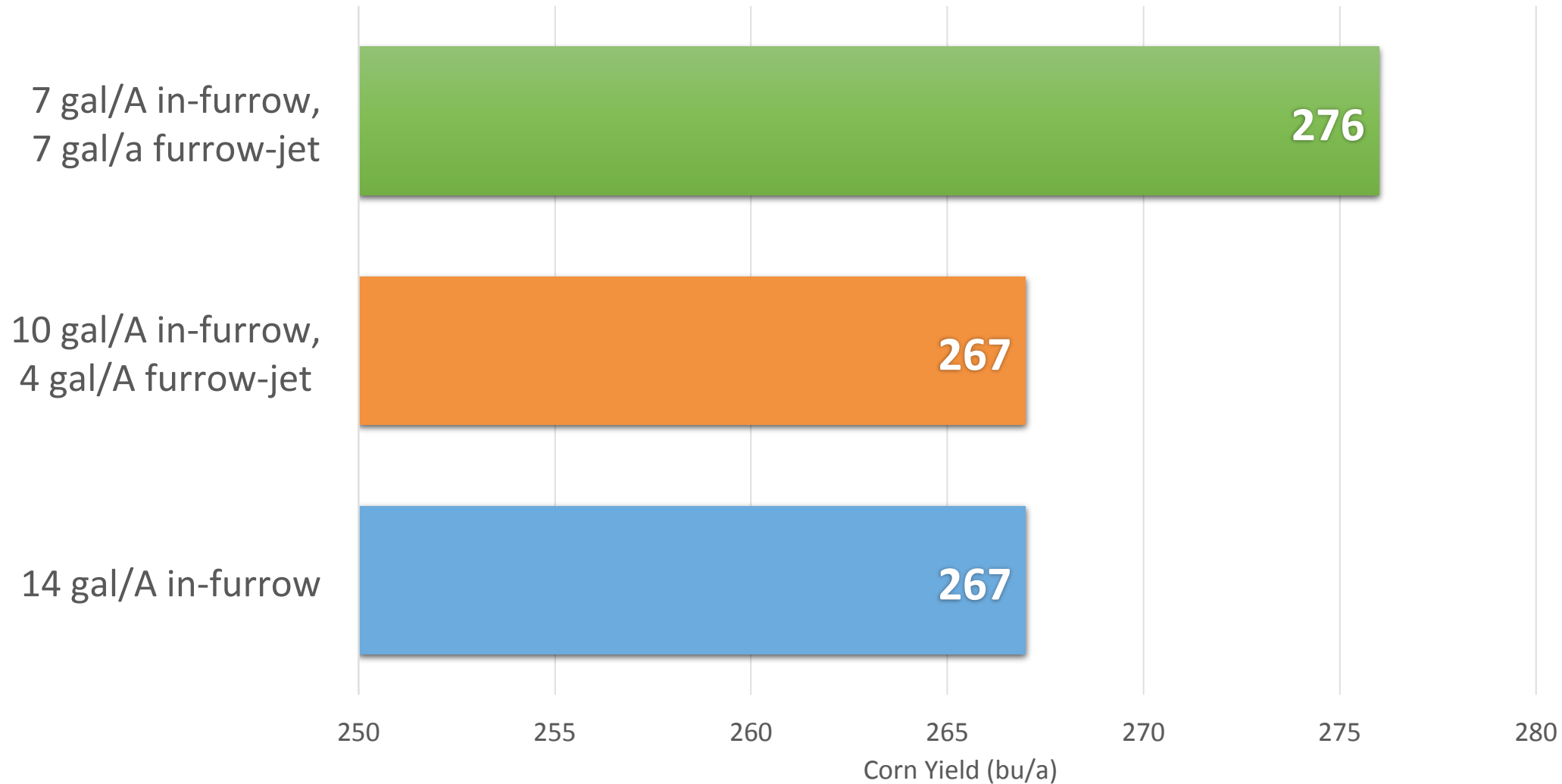


All treatments included: 4 gal Pro-Germ. + 3 gal Kalibrate + 2 qt Micro 500; 45 gal/A High NRG-N (V5 YDrop)

17-709

Effect of Fertilizer Placement through Furrow-Jet on Corn Yield

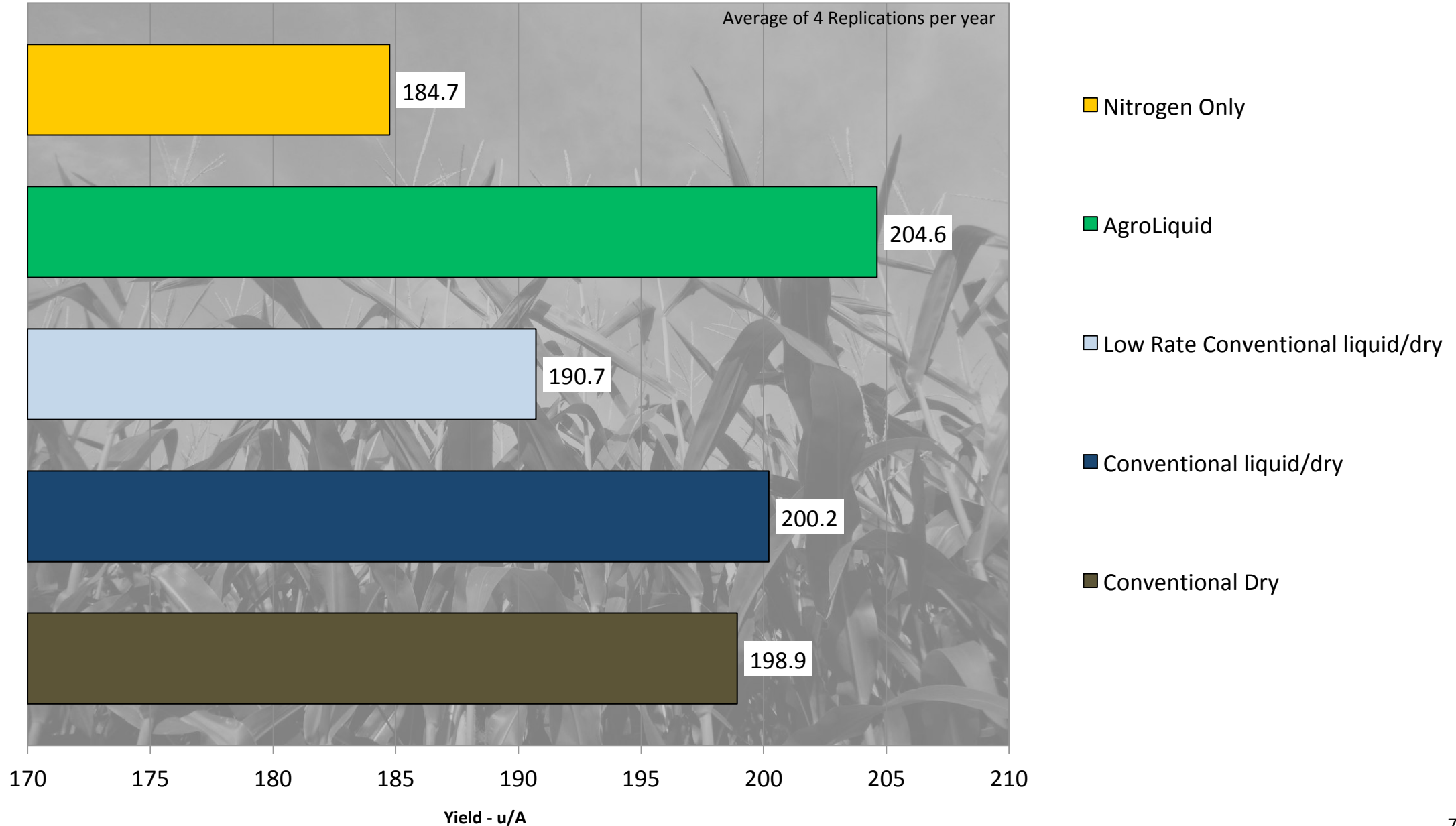
Cooperative Project with Precision Planting, IL



All treatments included: 7 gal Pro-Germinator, 6 gal Kalibrate, 0.75 gal Micro 500, 0.25 gal eNhance
260 lb/a Nitrogen was split applied at planting and side-dress.

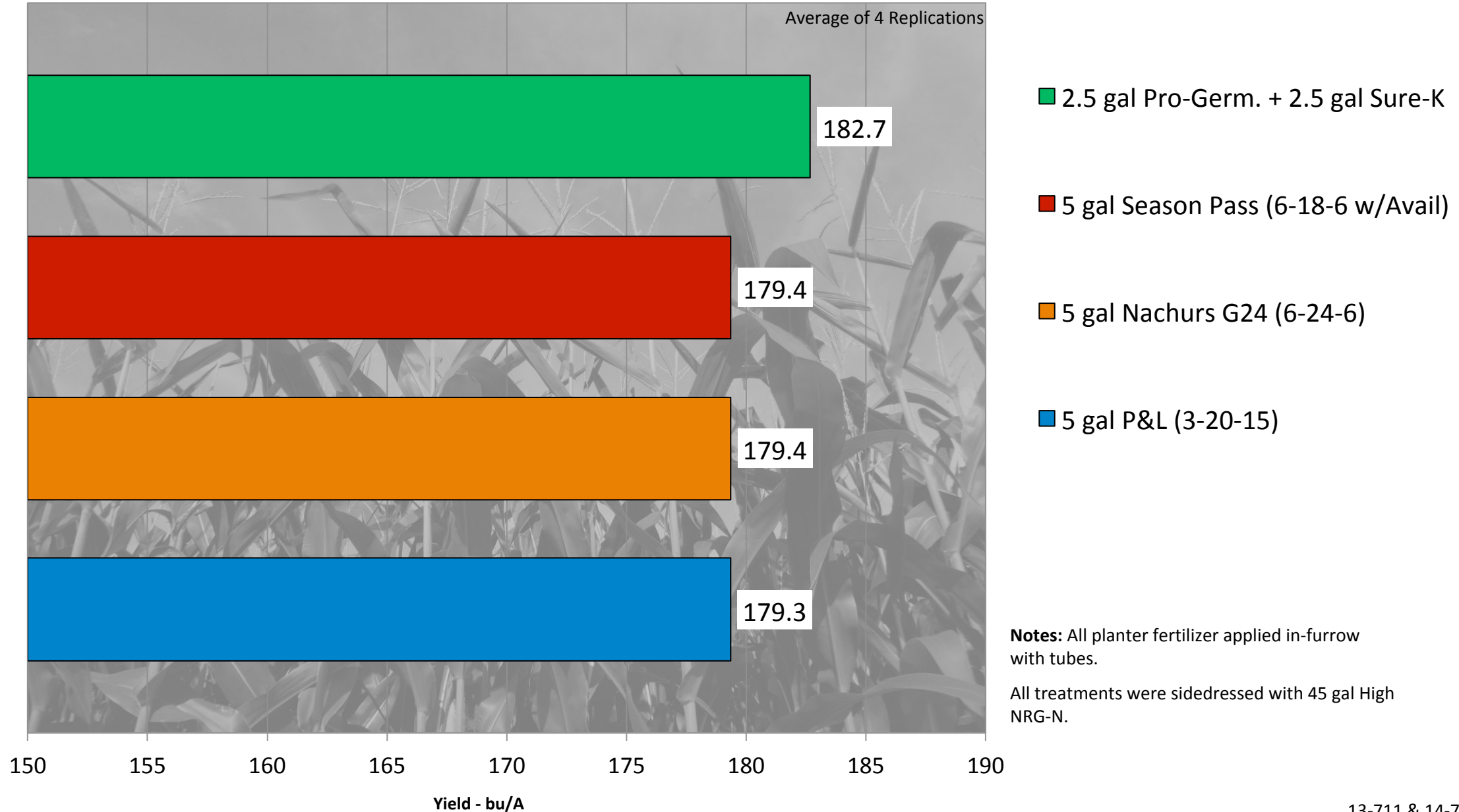
Long-Term Fertilizer Program Comparison - 7 Year Yield Average

North Central Research Station: 2011-2017



Planter Fertilizer Comparisons in Corn

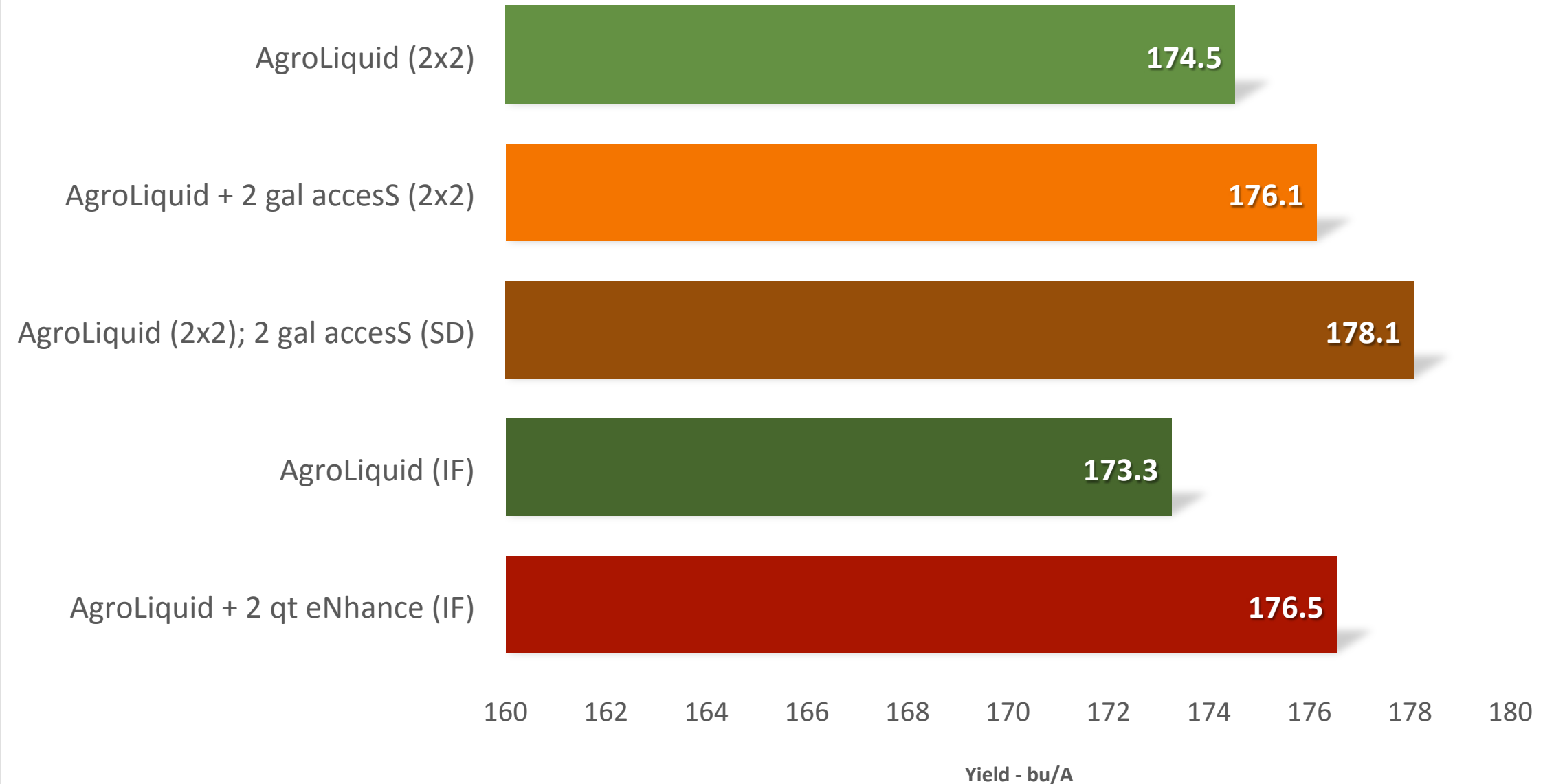
North Central Research Station - 2013/2014 Average



AgroLiquid Sulfur Fertilizer Options for Corn

North Central Research Station - 2016

Average of 4 Replications



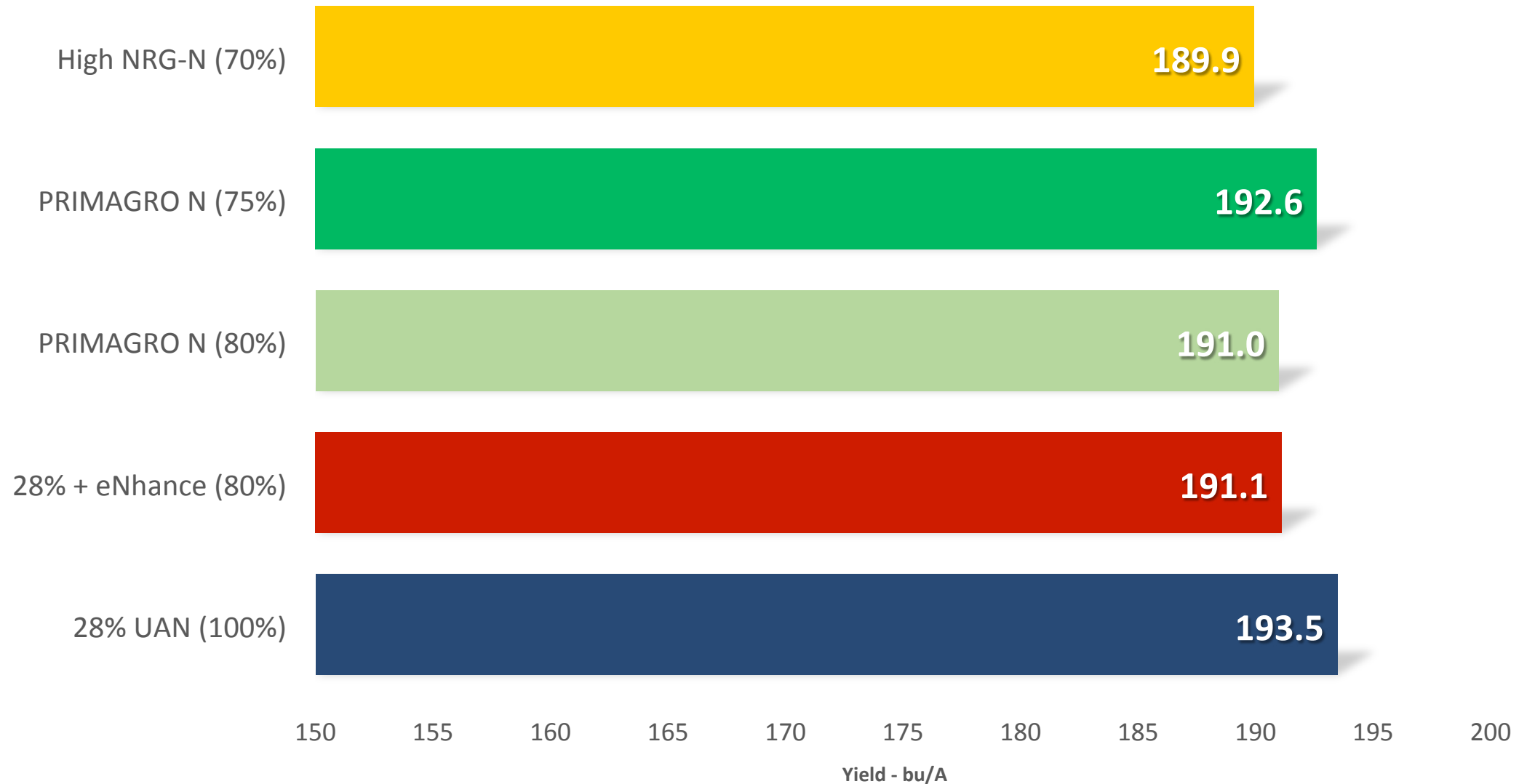
AgroLiquid: 7 gal/A Pro-Germ. + 3 gal/A Sure-K + 2 qt/A Micro 500
All treatments included: 45 gal/A High NRG-N + 6 gal/A Kalibrate

16-716

Sidedress Nitrogen Source Comparison on Corn

North Central Research Station - 2016

Average of 2 Experiments



All treatments included the same planter application based on soil test by field.

16-504, 708

For The Soil | For The Plant | For the Future

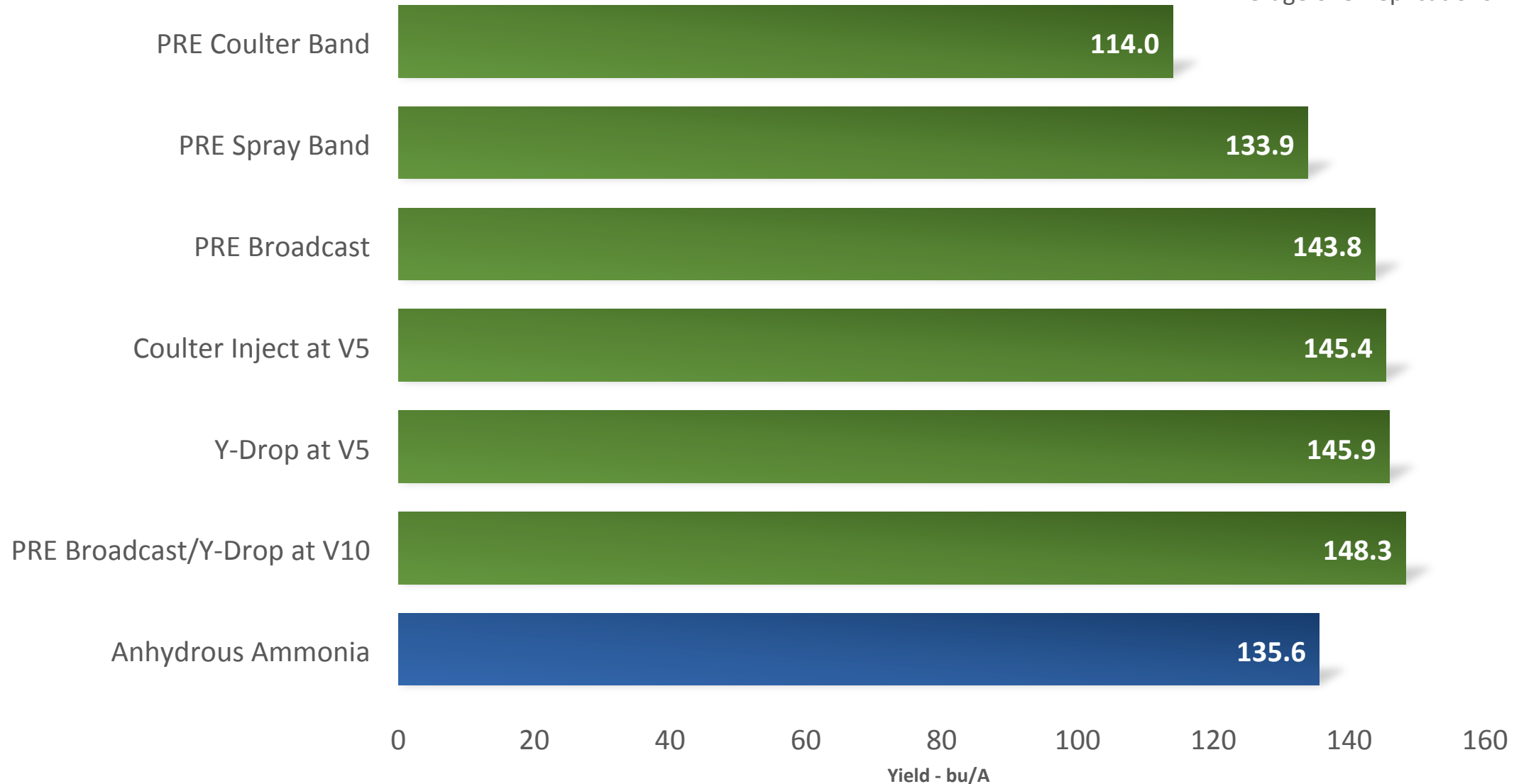


Nitrogen Method of Application Comparison

North Central Research Station - 2016

**All Treatments
Provide 165 lbs N/A**

Average of 3 Replications



All treatment included: 5 gal Pro-Germ. + 5 gal Sure-K + 2 qt Micro 500 (IF)
Except Anhydrous Ammonia treatment, all treatments received 55 gal/A 28% + eNhance

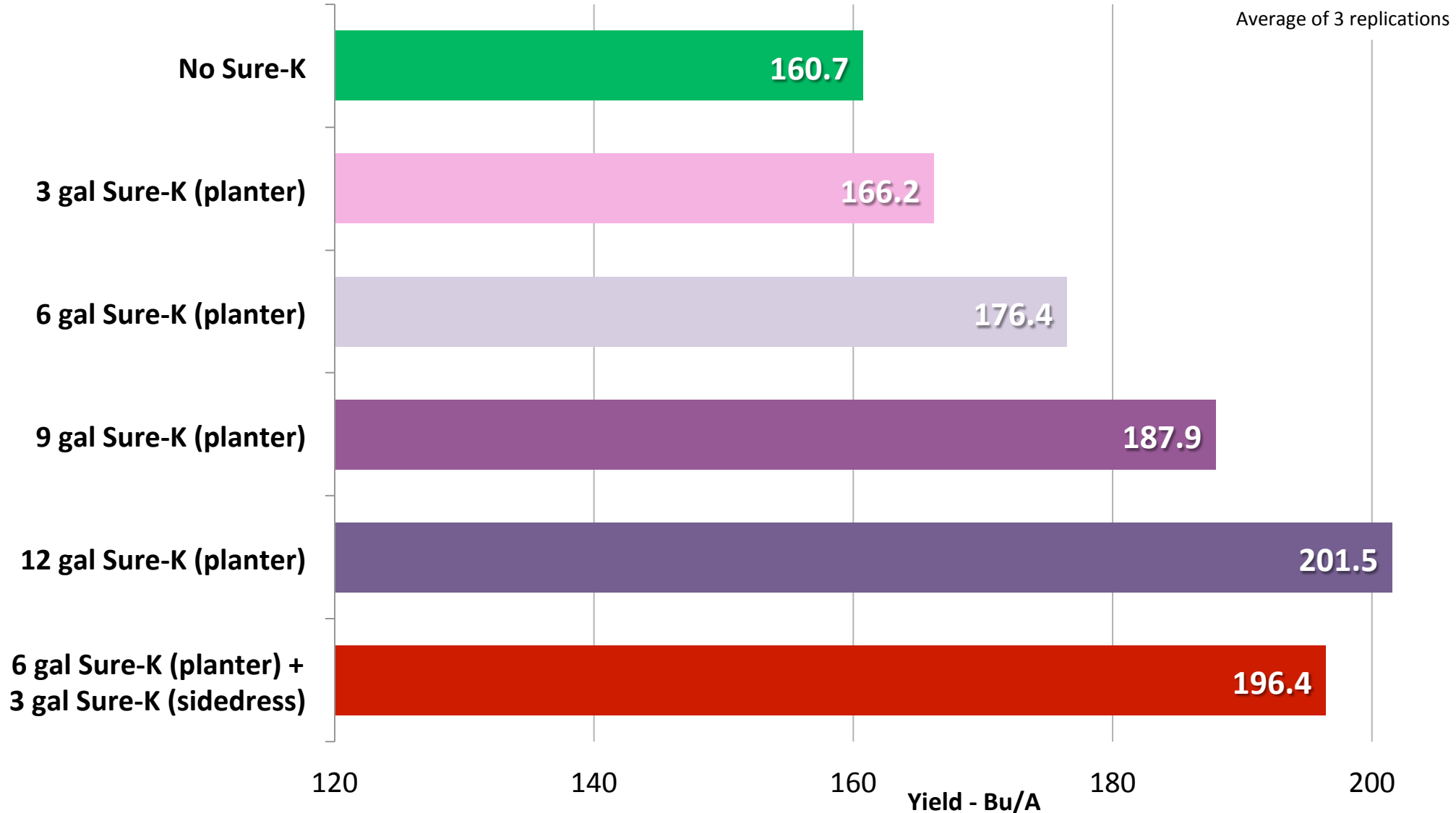
16-1101

For The Soil | For The Plant | For the Future



Sure-K Rate Comparison on Corn

North Central Research Station - 2009

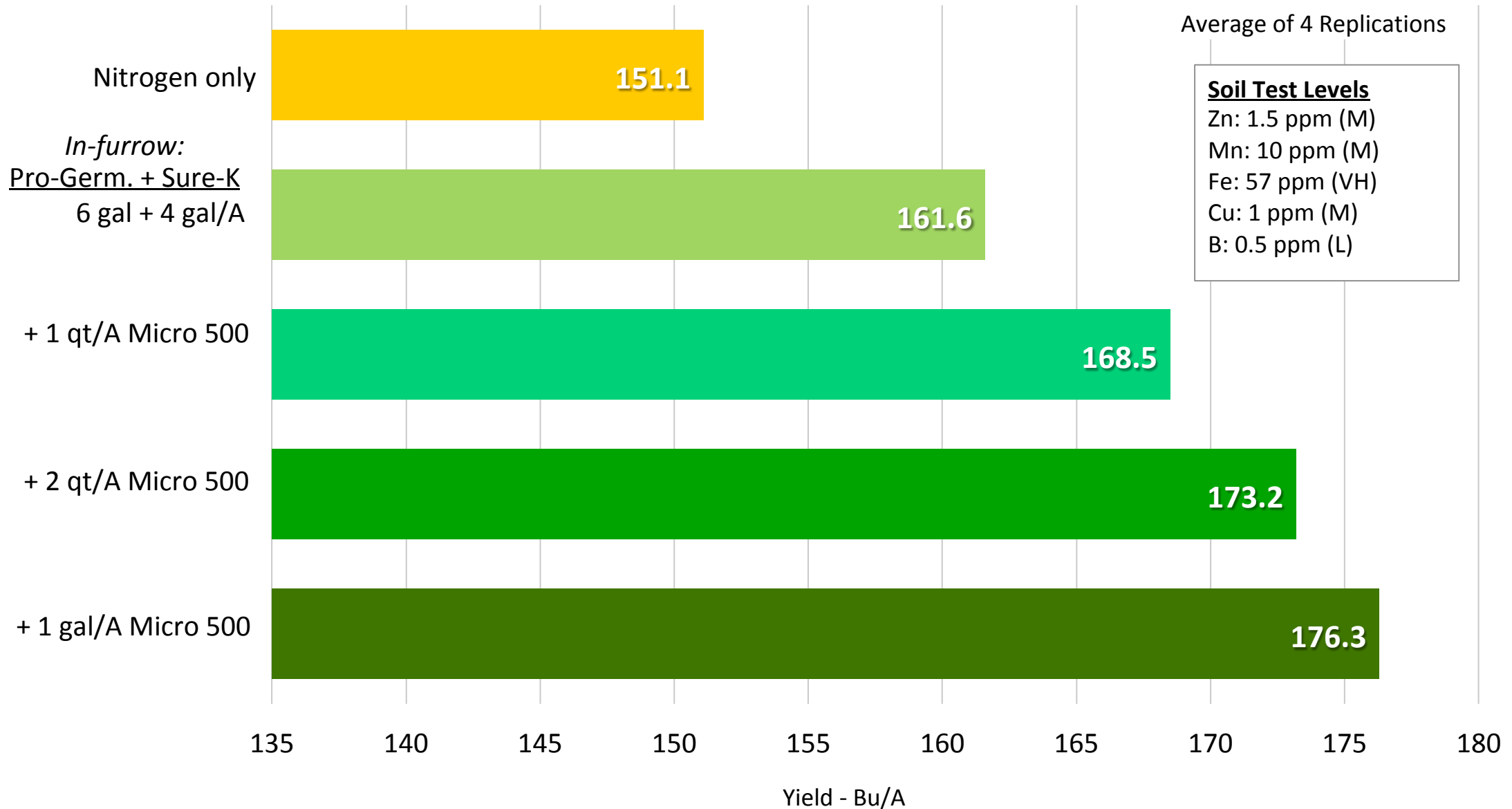


All rates of Sure-K were applied in combination with 3 gal Pro-Germinator + 2 qt Micro 500 (in-furrow);
All treatments received 43 gal High NRG-N. at sidedress.

09-501

Effect of Planter-Applied Micro 500 on Corn Yield

North Central Research Station - 2010

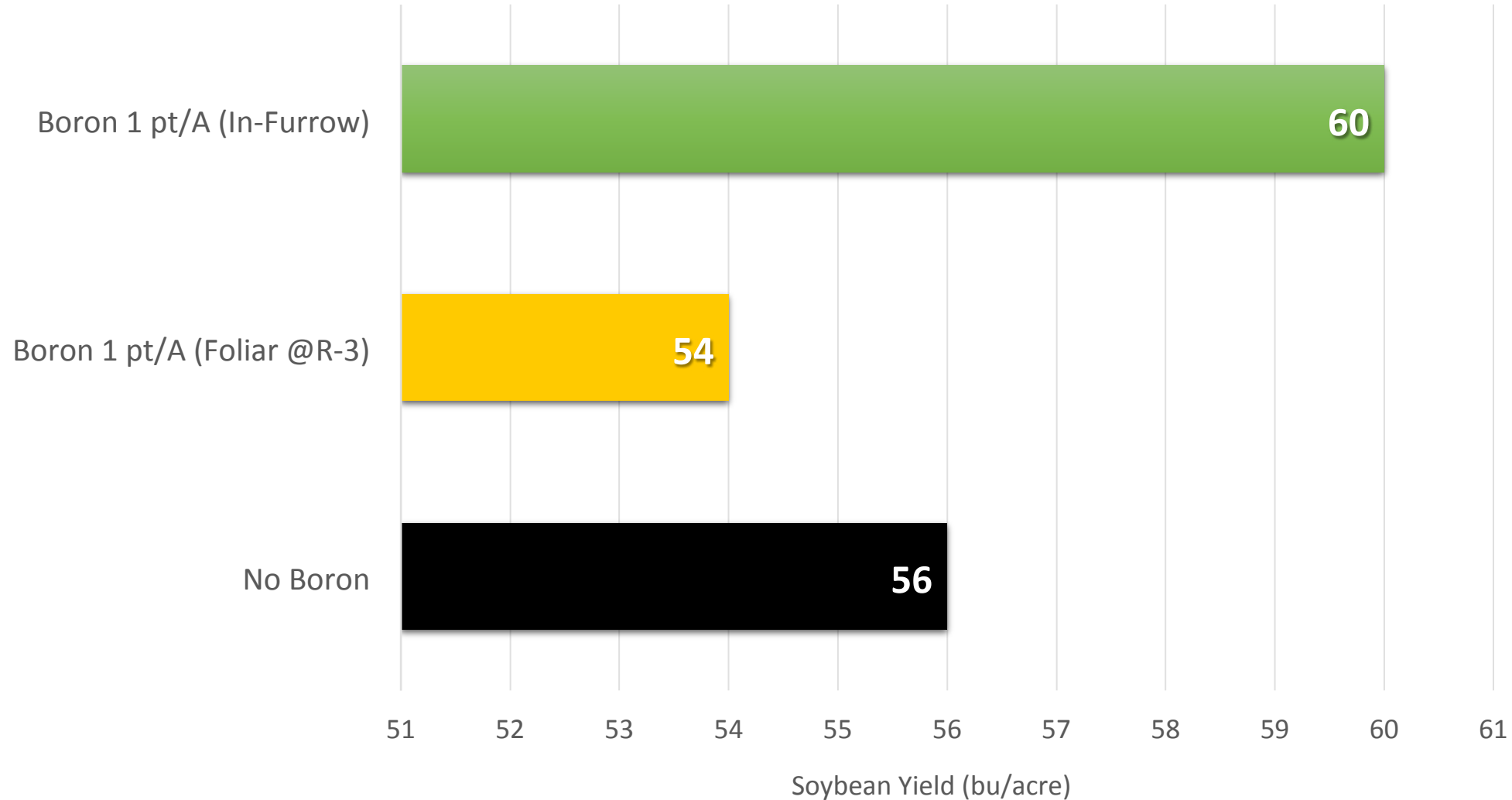


Sidedressed with 44 gal/A 28% + eNhance (165 lb-equivalent N/A)

10-703

Effect of Boron on Soybean Yield Brownsburg, IN, 2017

Average of 3 - 4 Replications



All treatments included: 2 gal/a Pro-Germinator, 2 gal/a Kalibrate, 1 qt/a Micro 500, 1 pt/a Manganese.
Foliar applications included 1 gal/a ferti-Rain and 2 gal/a Sure-K

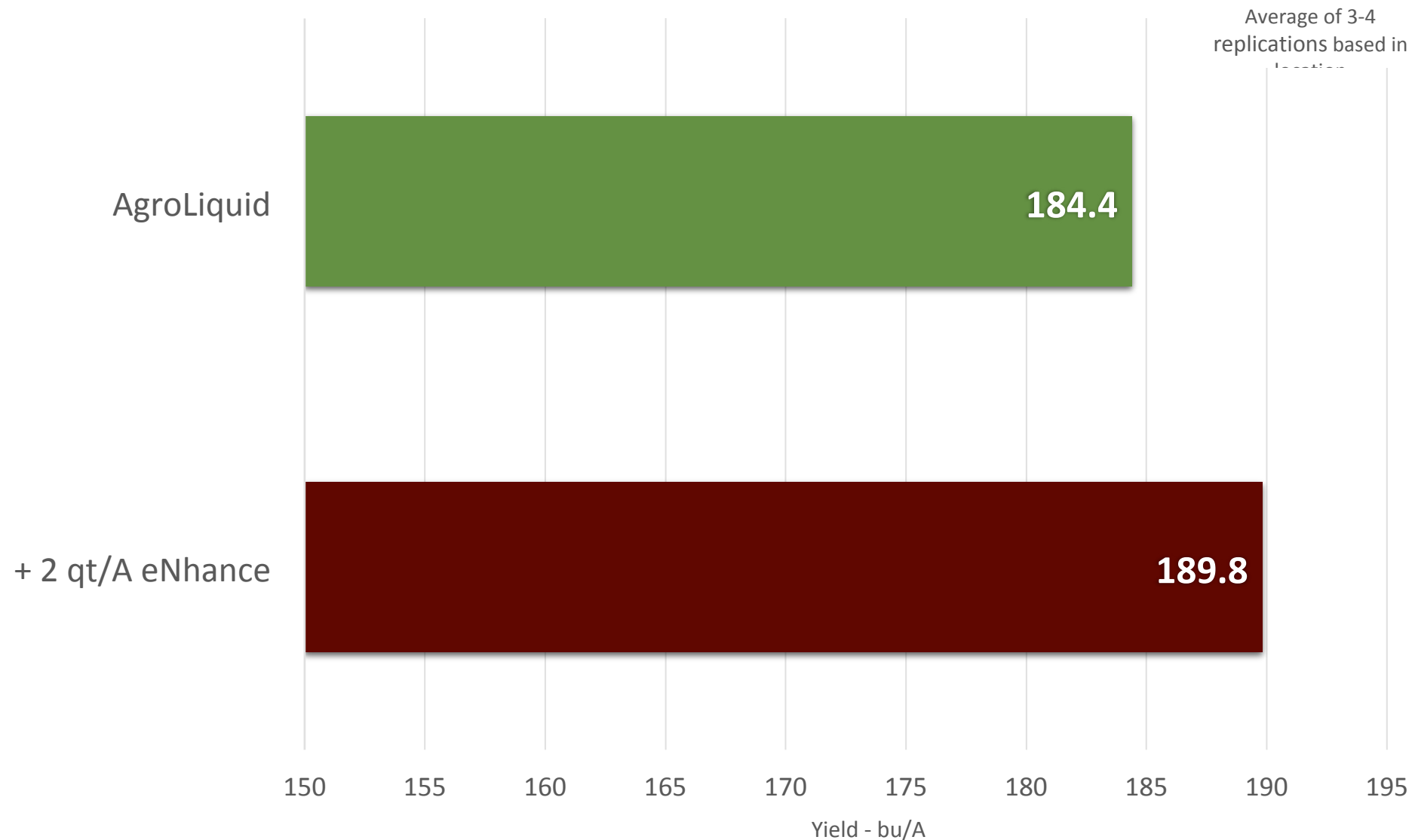
Boron Toxicity

- Pale yellow to white corn shortly after emergence.
 - Poor emergence may occur.
 - Plants may die.
-
- Use caution with in-furrow:
 - Low CEC
 - Cool soils
 - Slow emergence conditions



Yield Benefit of eNhance Applied In-Furrow on Corn

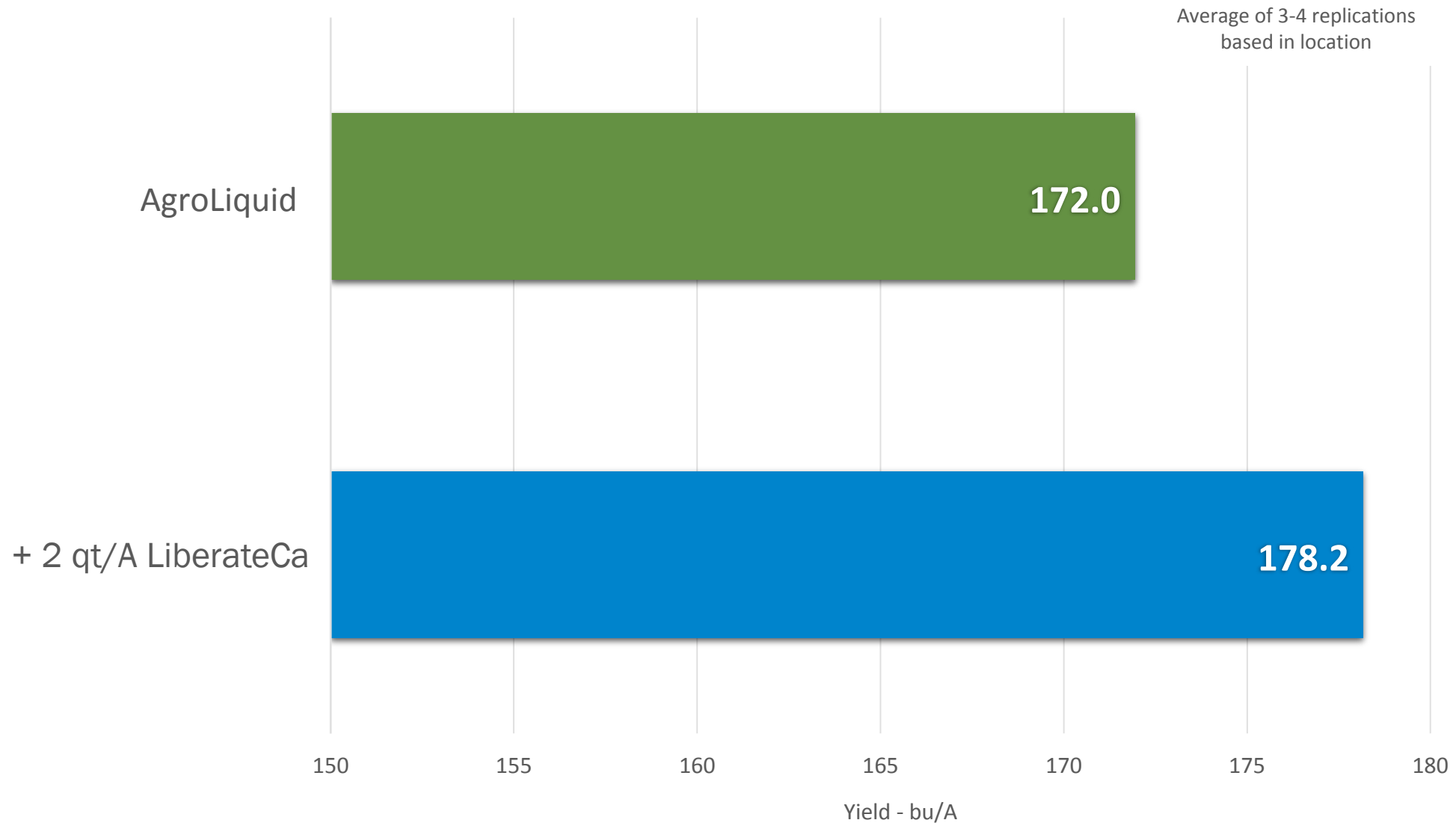
Average of 7 Locations 2013 - 2017



All treatments included the same planter and sidedress fertilizer program within site.

Yield Benefit of Planter Applied LiberateCa on Corn

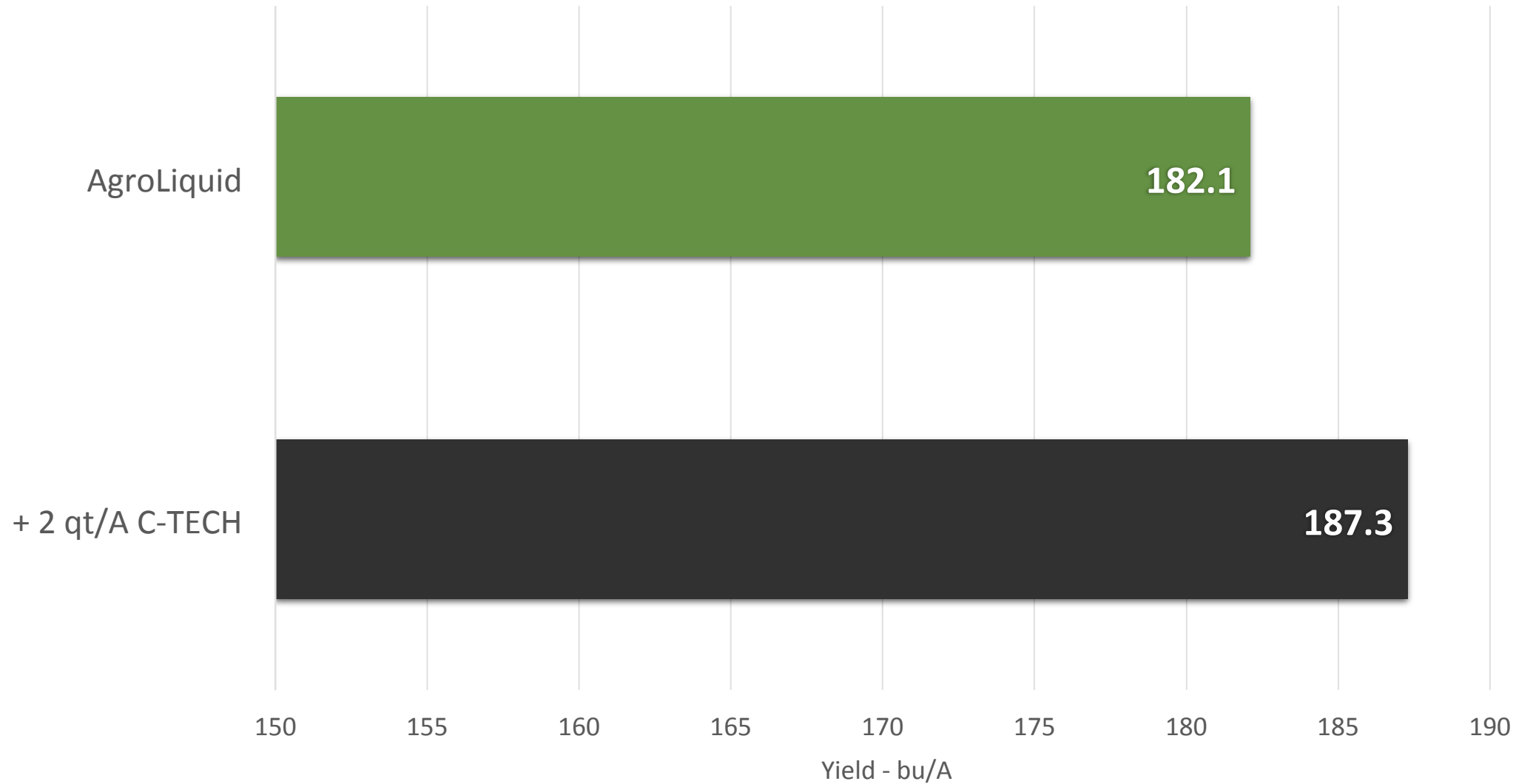
Average of 6 Locations 2013 - 2017



All treatments included the same planter and sidedress fertilizer program within site.

Yield Benefit of Planter Applied C-TECH on Corn

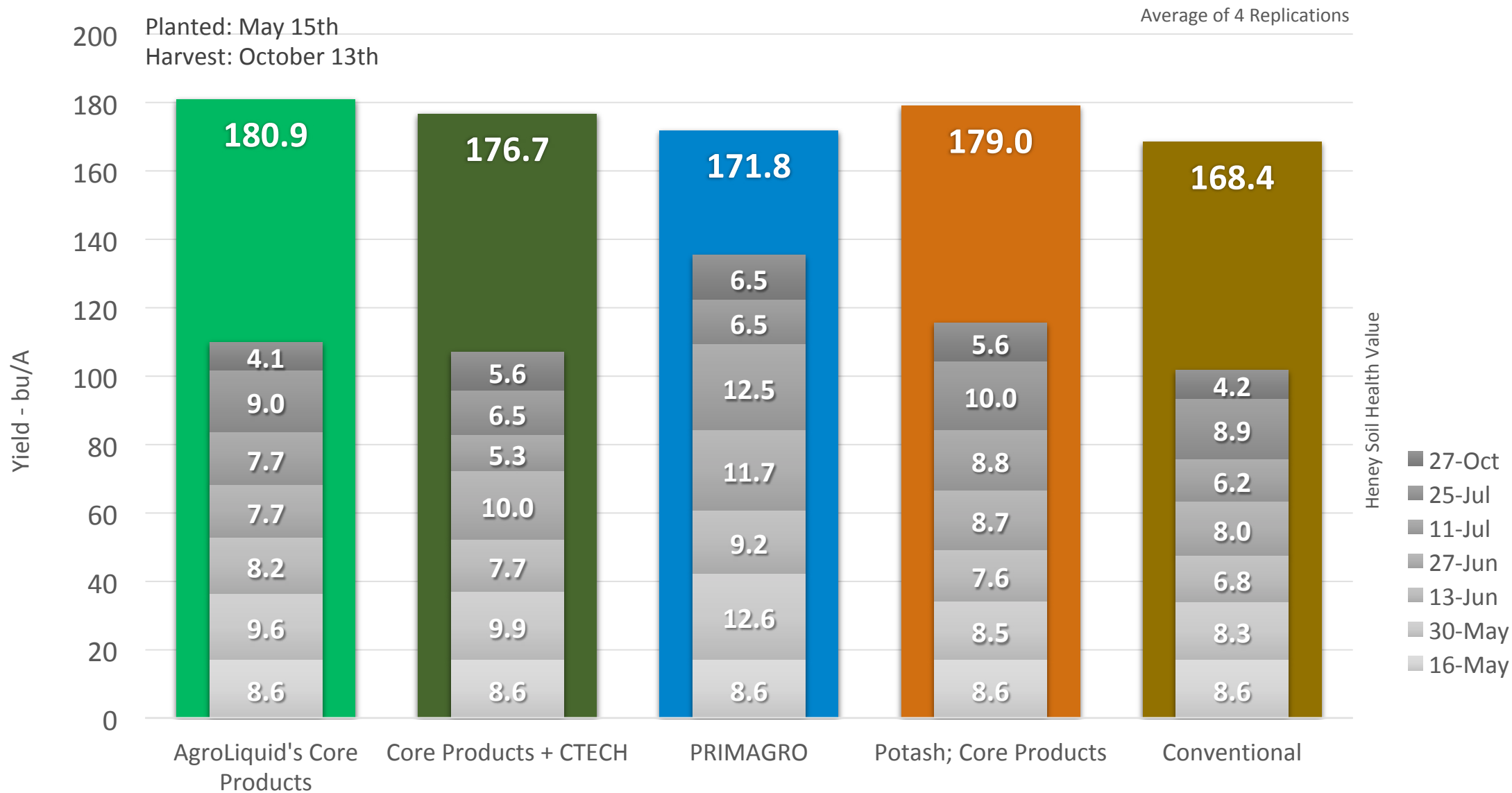
Average of 9 Locations 2015 - 2017



All treatments included the same planter and sidedress fertilizer program within site.

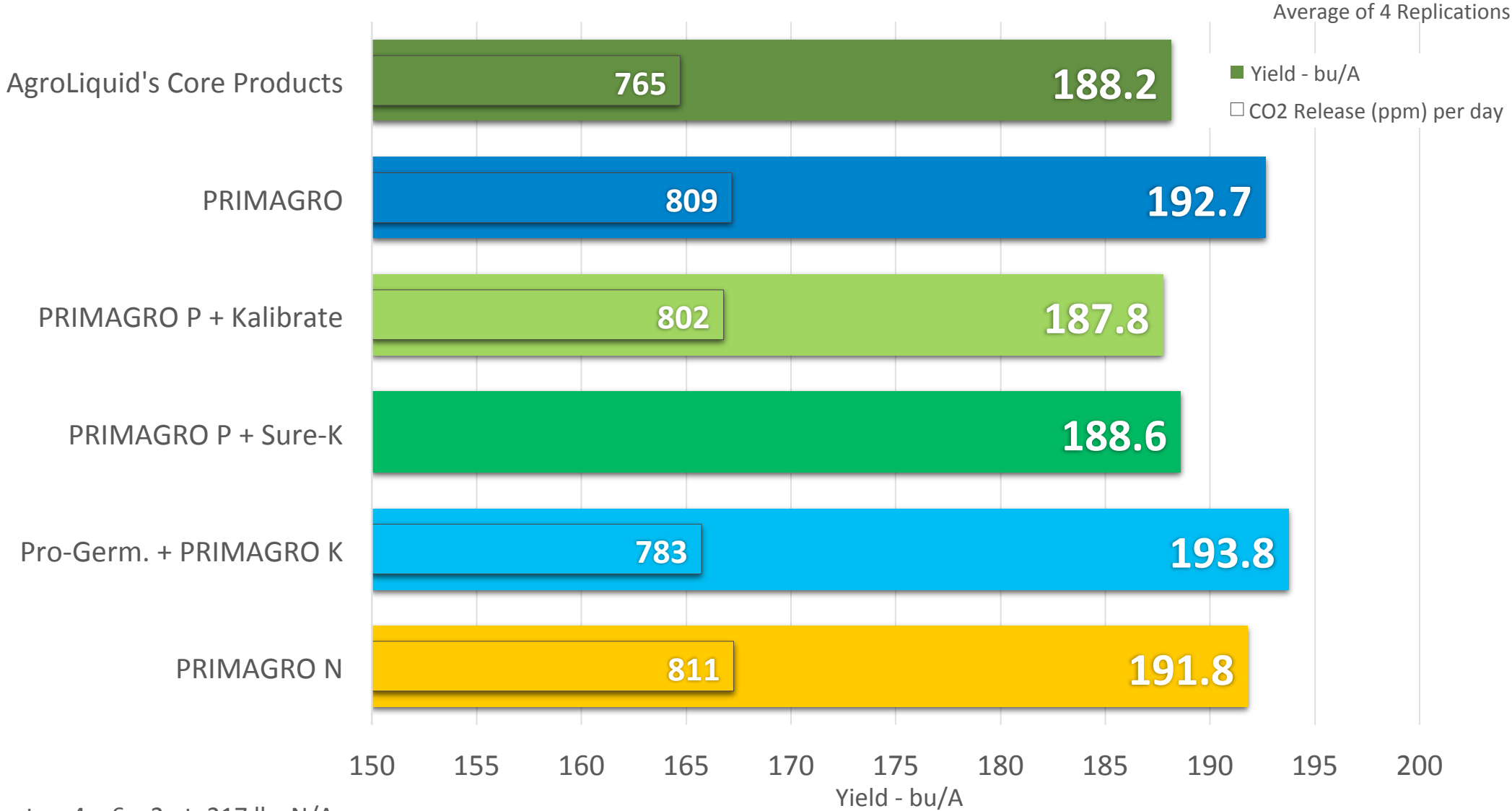
Corn Fertility Program Effects on Yield and Soil Health

North Central Research Station - 2017



17-903

PRIMAGRO Components in a Corn Fertilizer Program
North Central Research Station - 2017



503 rates: 4 + 6 + 2 qt; 217 lbs N/A
706 rates: 6 + 4 + 2 qt; 217 lb N/A

17-503 and 706

Strip-Tillage Fertilizer Program Comparison in Irrigated Corn.

Irrigation Research Foundation. Yuma, CO - 2015

	Strip Till	Planter	Yield -Bu/A
1	Standard IRF	Standard IRF	153.1
2	Standard IRF	AgroLiquid Planter	159.7
3	15 gal High NRG-N	AgroLiquid Planter	161.2
4	15 gal High NRG-N	Standard IRF	147.4
5	Full AgroLiquid	No planter fertilizer	156.6
6	Full AgroLiquid	Starter AgroLiquid	160.4

Strip Till fertilizers

Standard IRF:

17-8-1-4.8S

10 gal/A at 4" and

13 gal/A at 10"

Full AgroLiquid

15 gal/A High NRG-N +

5 gal/A Pro-Germ. +

2 qt/A Micro 500 +

2 qt/A accessS

21 total gal/A:

10 gal/A at 4" and

11 gal/A at 10"

Planter fertilizers

Standard IRF:

15.7-8.9-2.6-2.6S-0.1Zn

18 gal/A 2x2

AgroLiquid Planter:

5 gal/A Pro-Germ. +

2 qt/A Micro 500 +

2 qt/A eNhanCe In-Furrow

Starter AgroLiquid:

2 gal/A Pro-Germ. +

1 qt/A Micro 500 +

1 qt/A eNhanCe In-Furrow

Standard IRF Strip Till fertililzer:

blend of water, potash, 10-34-0,
ammonium thio-sulfate, 32% UAN

Standard IRF planter fertilizer:

blend of water, 32% UAN, zinc,
KTS, ATS, 10-34-0

(fertilizers prepared by local dealer)

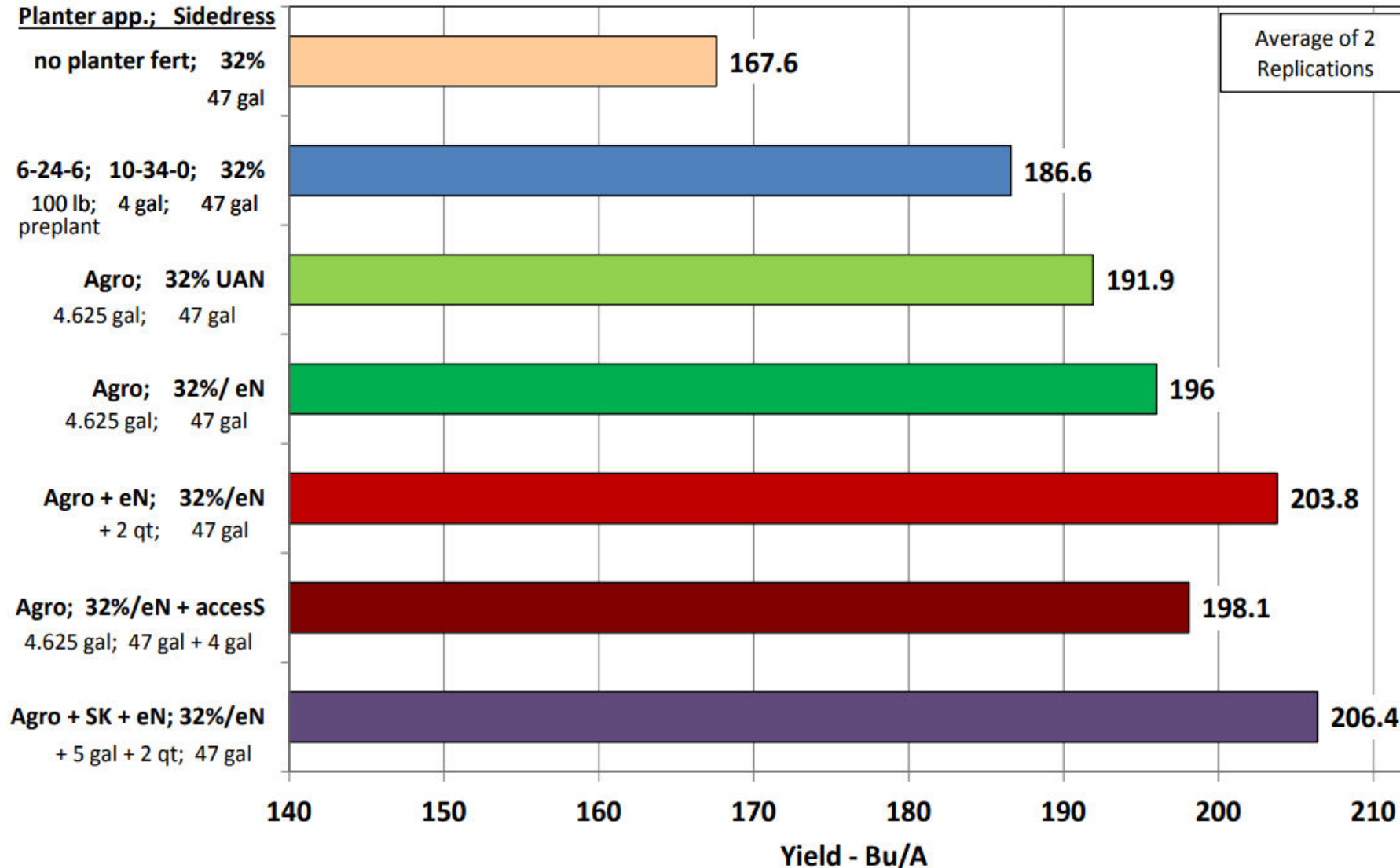
Applied to all plots: 40 gal/A 28-0-0-5 in 6 apps, 5/15 thru 7/28.

10.46" irrigation plus 14.44" rainfall during season.

Hail storm on 8/20 caused severe leaf stripping and reduced yield potential. But hopefully yields reflect relative performance.

Fertilizer Program Comparisons in Corn

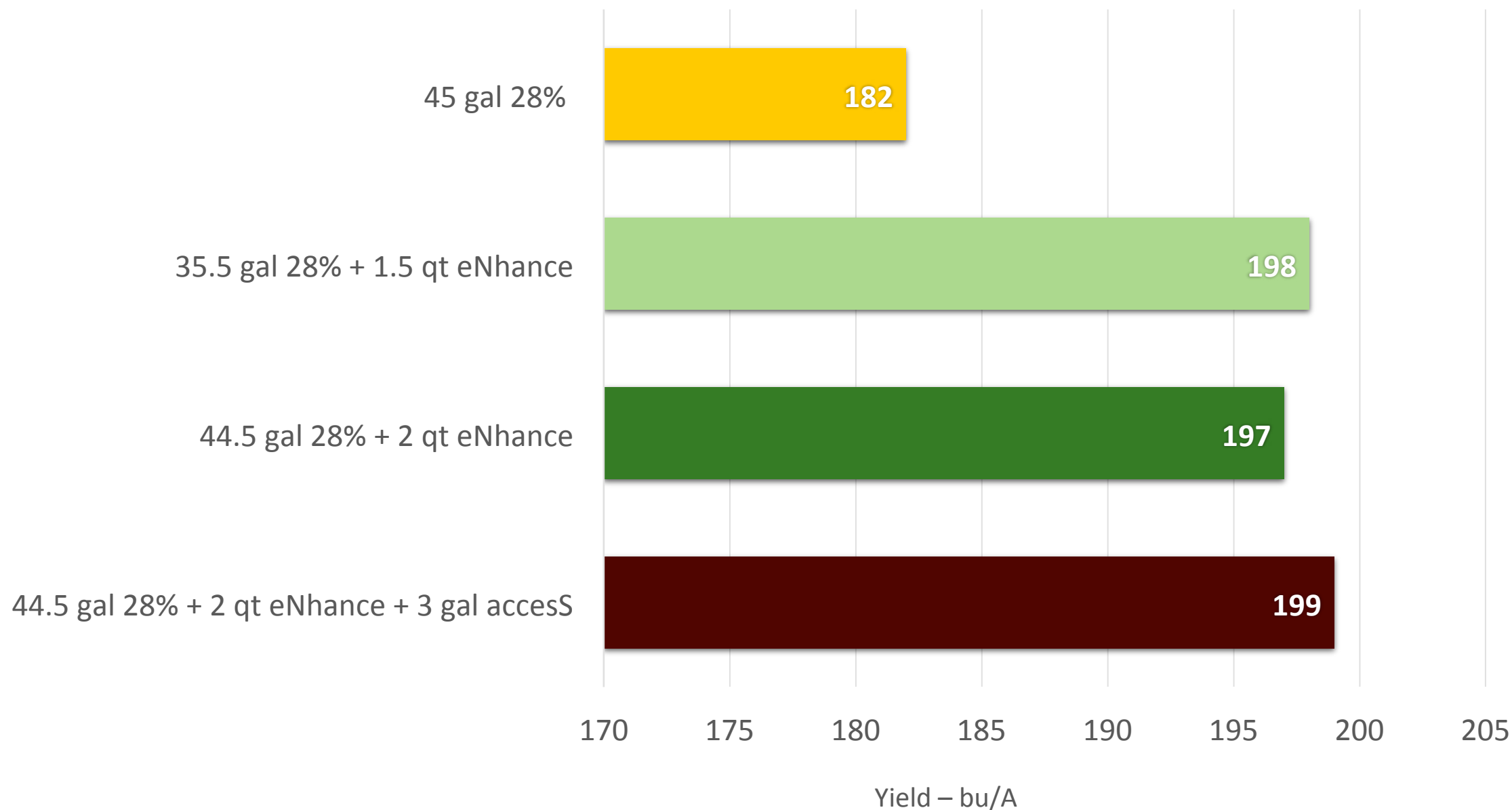
Security Seed & Chemical Research Farm. Hopkinsville, KY - 2013



Planter fertilizer: "Agro": 4 gal/A Pro-Germinator + 2 qt/A Micro 500 + 1 pt/A MicroLink Boron applied in-furrow.
Sidedress application was surface dribbled between the rows.

Effect of accesS and eNhance Applied Sidedress on Corn Yield

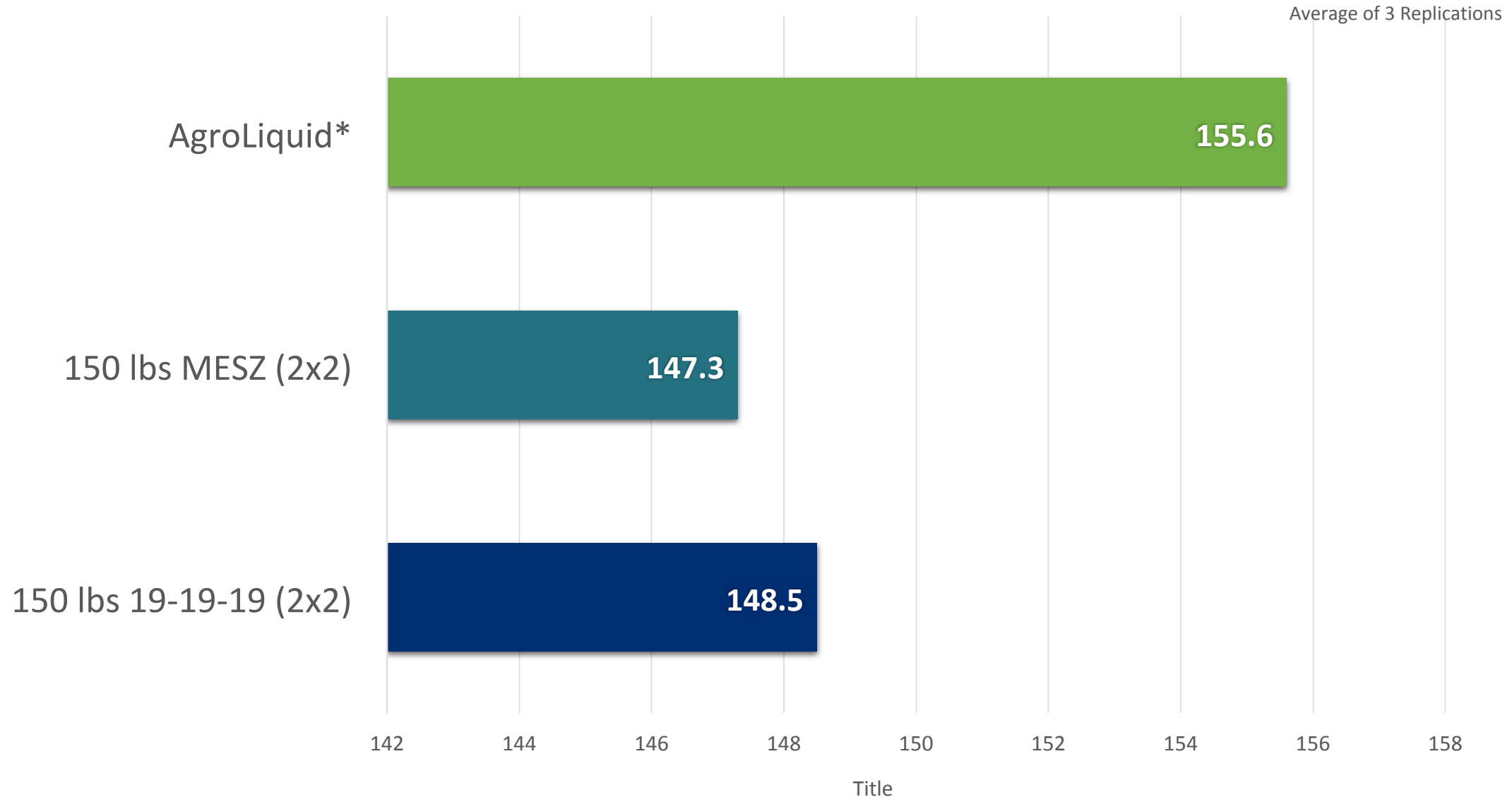
Georgetown, IL - 2017



All treatments included: 9 gal 28% + 3 gal ATS + 2 qt Micro 500 (2x2)

Fertilizer Source Comparison in Corn

Agrospray Research Farm: Canada - 2017

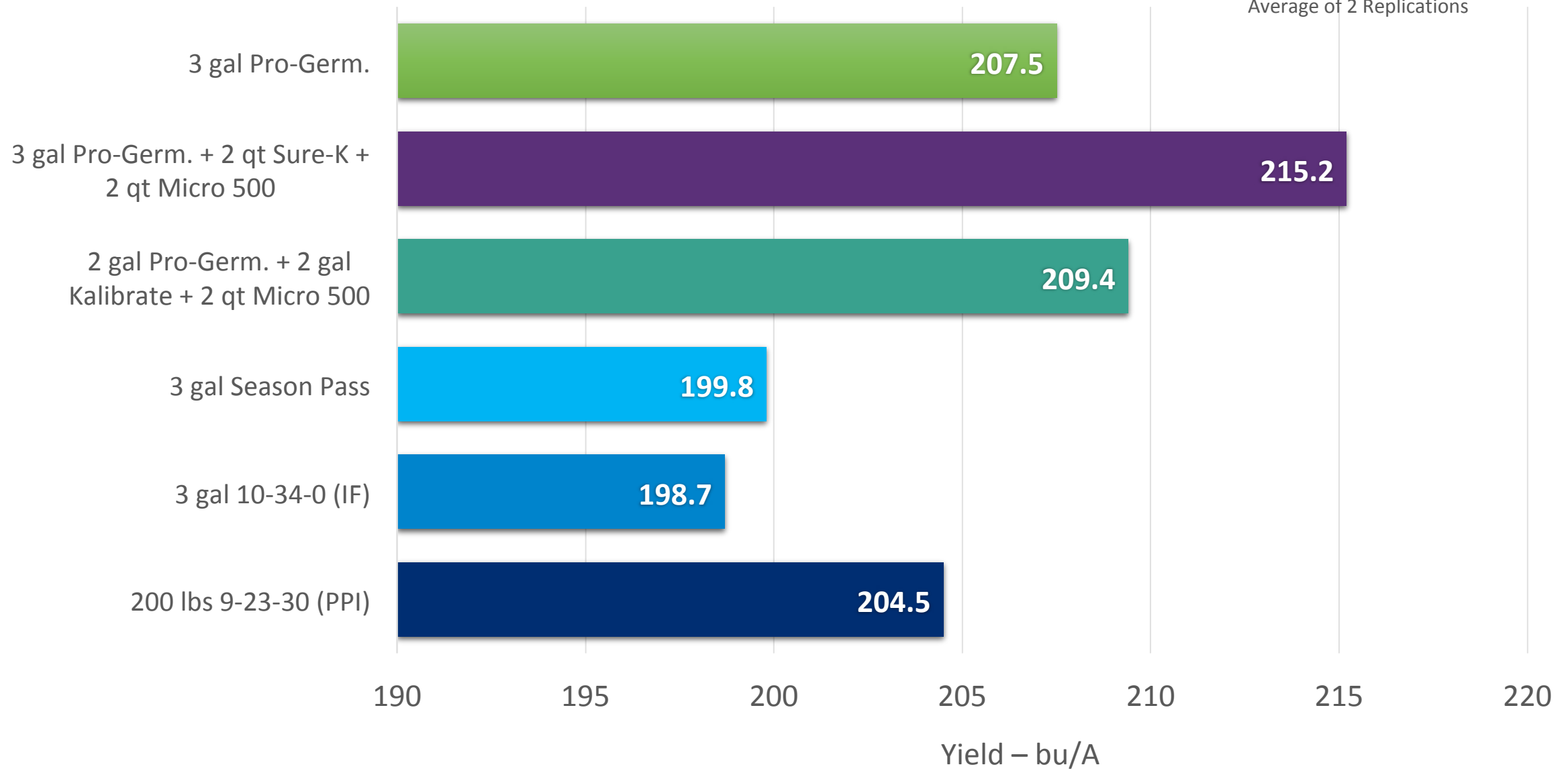


*AgroLiquid: 3.5 gal Pro-Germ. + 4 gal Sure-K + 1 L LiberateCa + 1 L Micro 500 + 1 L eNhance + 0.5 L Boron (In-furrow)

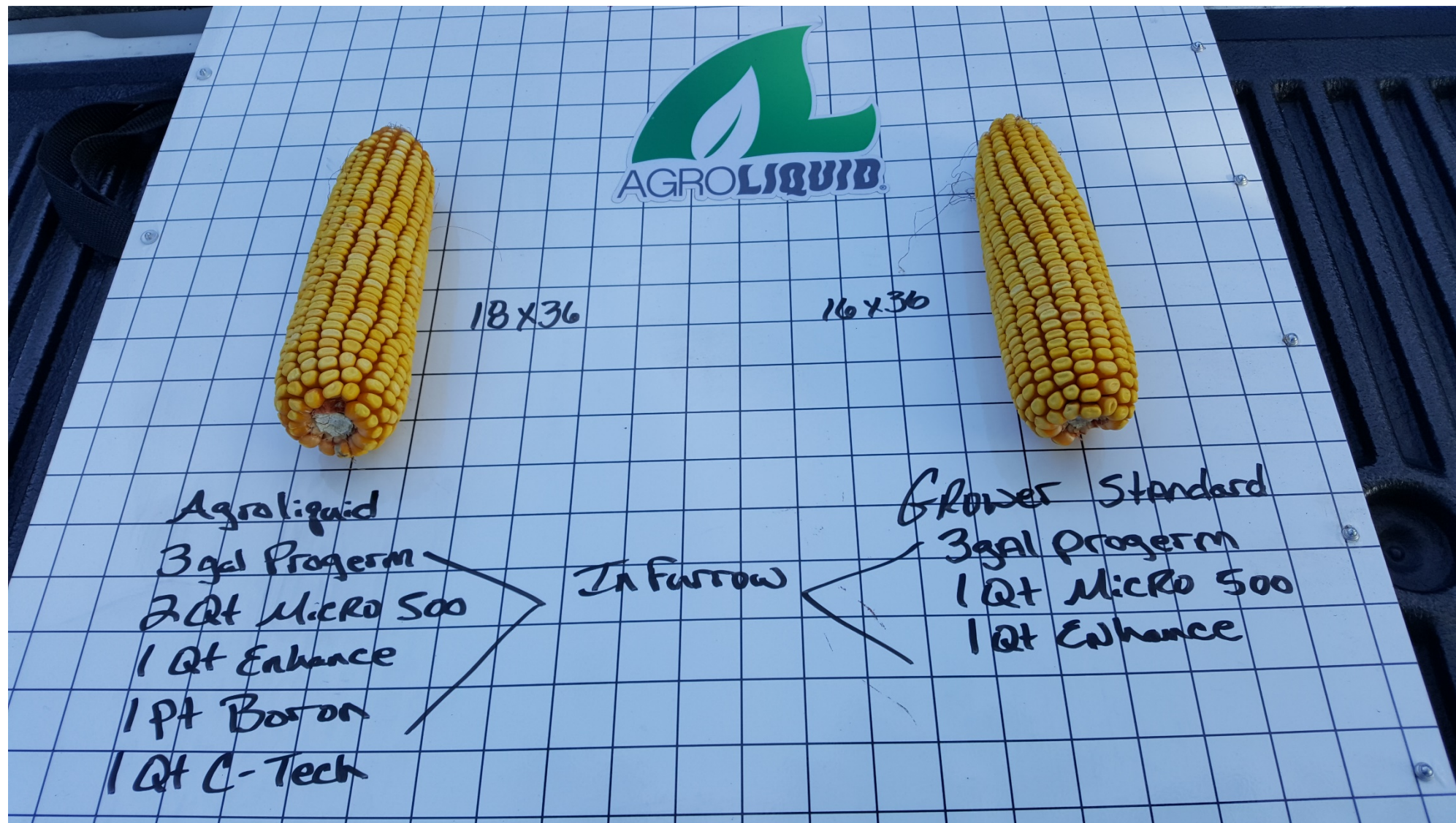
Fertilizer Program Comparison in Corn

Poplar Farms: WI - 2015

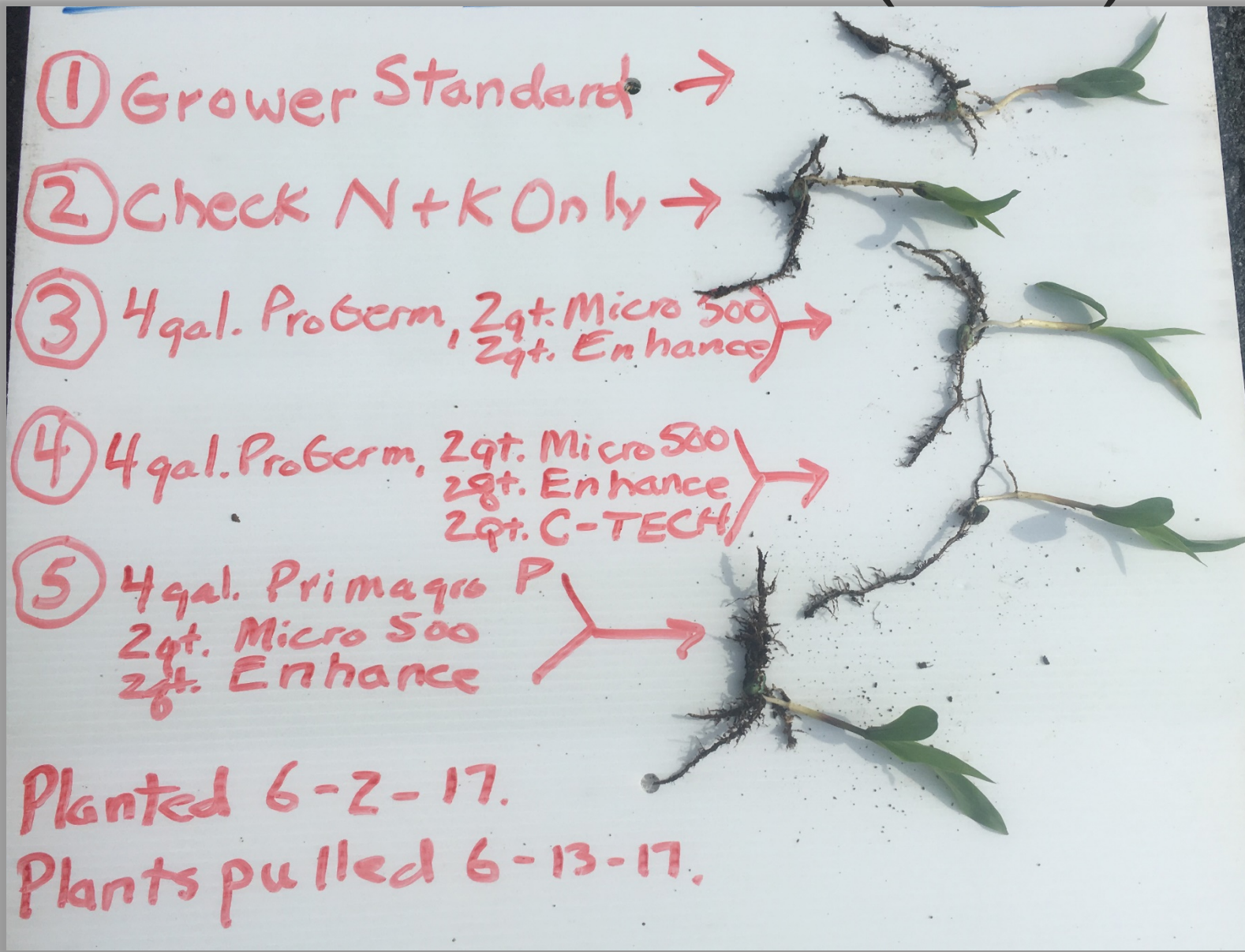
Average of 2 Replications



Corn Comparison: Tennessee (2017)



Early season corn: New York (2017)



Mid-season Corn: Ohio (2017)



Right: Primagro starter/acre
3.5 gal Primagro P
5.5 gal Primagro K
0.5 gal eNhance
2.4 pt LiberateCa
1.2 pt Micro 500
1.2 pt Boron

Left: Non primagro starter/acre
4.9 gallons sure k
4 gallons progerm
0.5 gallon eNhance
0.5 gallon micro 500
12 oz boron
5 oz zinc

Both sides:
Pre: 25 Gallons High N with Lexar herbicide
Side Dress 20 gallon 28%UAN with eNhance