

32nd Annual
**NATIONAL
NO-TILLAGE
CONFERENCE**

January 9-12, 2024 • Indianapolis, Ind.

Struggles with Stratification

Marion Calmer



Marion Calmer

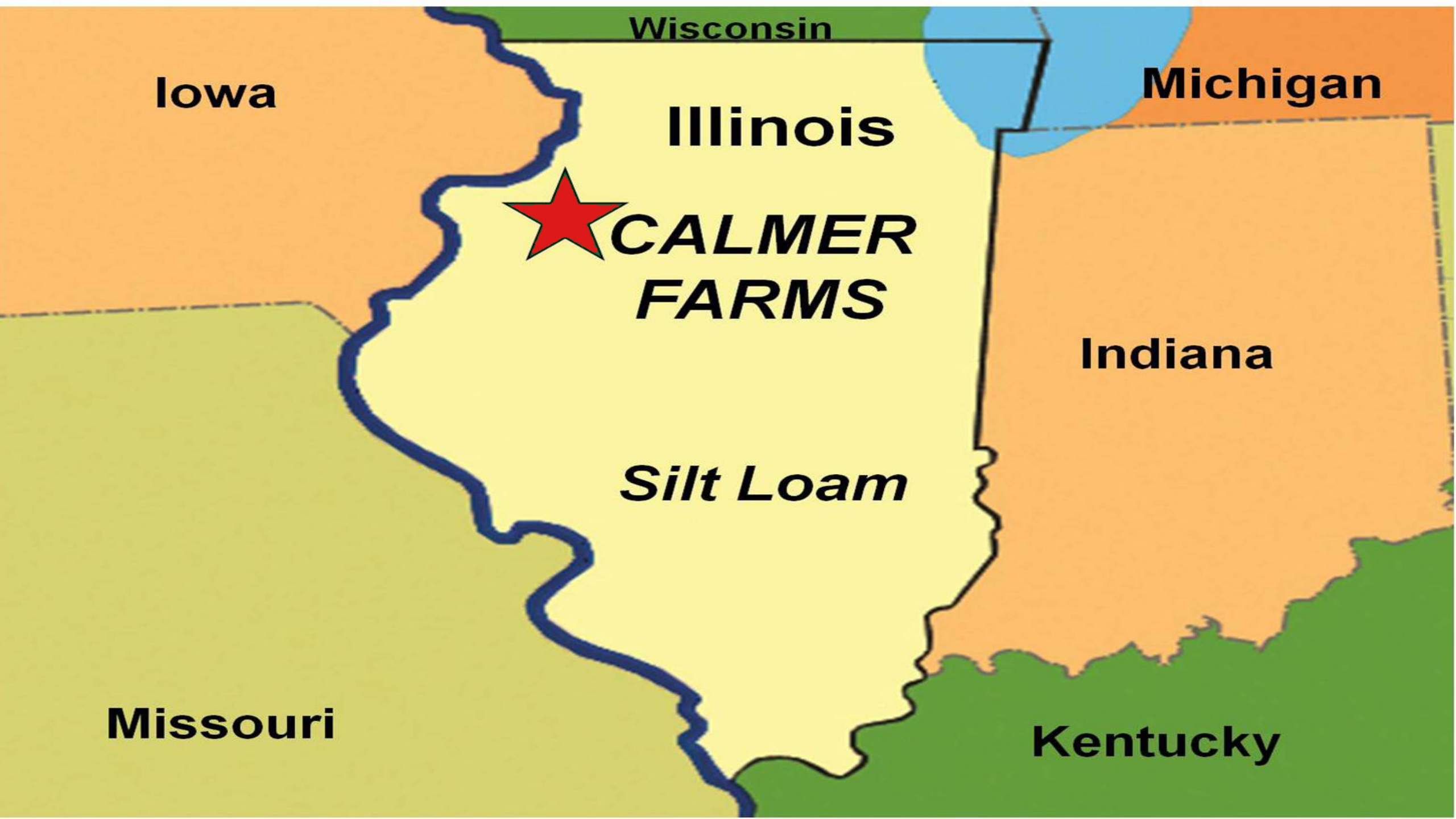
- Fourth Generation Farmer in Alpha, IL
- Founder of Calmer's Agronomic Research Center
- Inventor of World's First 15-inch Corn Head and BT Chopper Stalk Rolls
- Founder/CEO of Calmer Corn Heads, Inc.





7
*Congratulations
Alpha!*
from the  family





Wisconsin

Iowa

Michigan

Illinois

 **CALMER
FARMS**

Indiana

Silt Loam

Missouri

Kentucky



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TILLAGE TOOLS
Cultivating Solutions for Growth

Ag Leader
FARM EQUIPMENT
SINCE 1930

MidWest
Bio-Tech^{INC.}

MonTag

The Andersons

GS3
QUALITY
SEED

HOLGANIX
Soil Nourishing Root Stimulating[™]

CopperheadAg
PRODUCTS

APACHE ET
SPRAYERS

Martin Till

ForGround
by Bayer

Great Plains
"Harvest Starts Here."

L
LAFORGE[™]

Sound

“We can’t improve on things we don’t measure or research.”
-Lord Kelvin

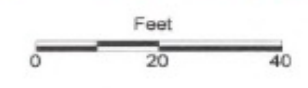
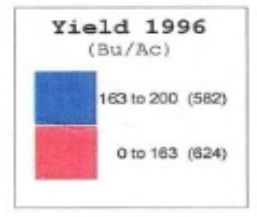
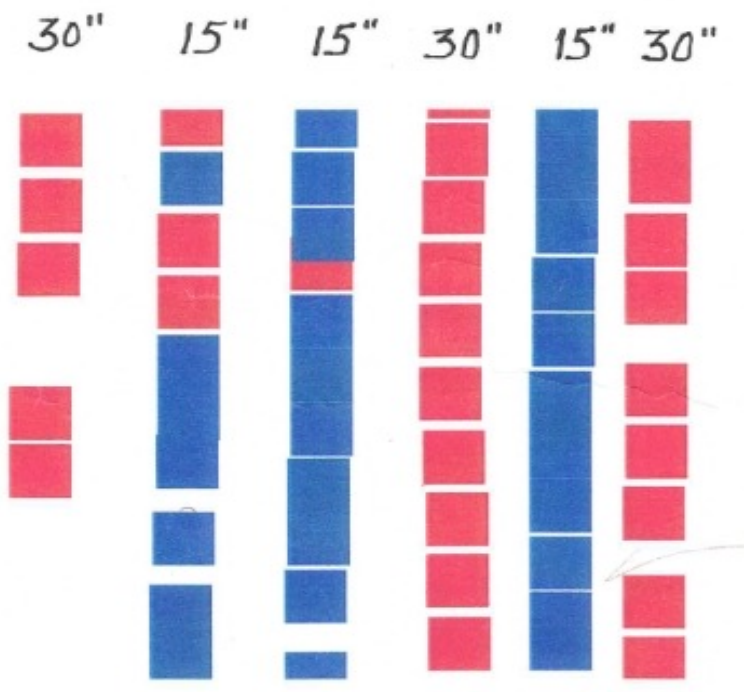




AFS



CASE III



Calmar: F4
 4/6/96
 Crop: Corn - *Stine 9702*
 Average Yield: 156.6
 Average Moisture: 25.9

Struggles With Stratification

1. What is Surface Stratification?
2. What is Destratification?
3. Is there a Yield Advantage to Destratification?
4. Does Surface Stratification Occur Naturally?
5. National Stratification Results
6. Changes I'm Making for 2024



Plow Down
Phosphorus Moves 1 Inch
Potassium Moves 2 Inches



60' w/
P&K

60' w/o
P&K

60' w/
P&K

60' w/o
P&K

Over 20 years, I **spent \$936** in dry
P&K to grow **\$395** in grain



\$1 worth of P&K only grows
approx. **\$.40 back** in grain

Horizontal Variability of Phosphorus

16 ppm/33 lbs/ac

29ppm/
57 lbs/ac

12 ppm/24 lbs/ac
Variability

Nutrient Deficiencies



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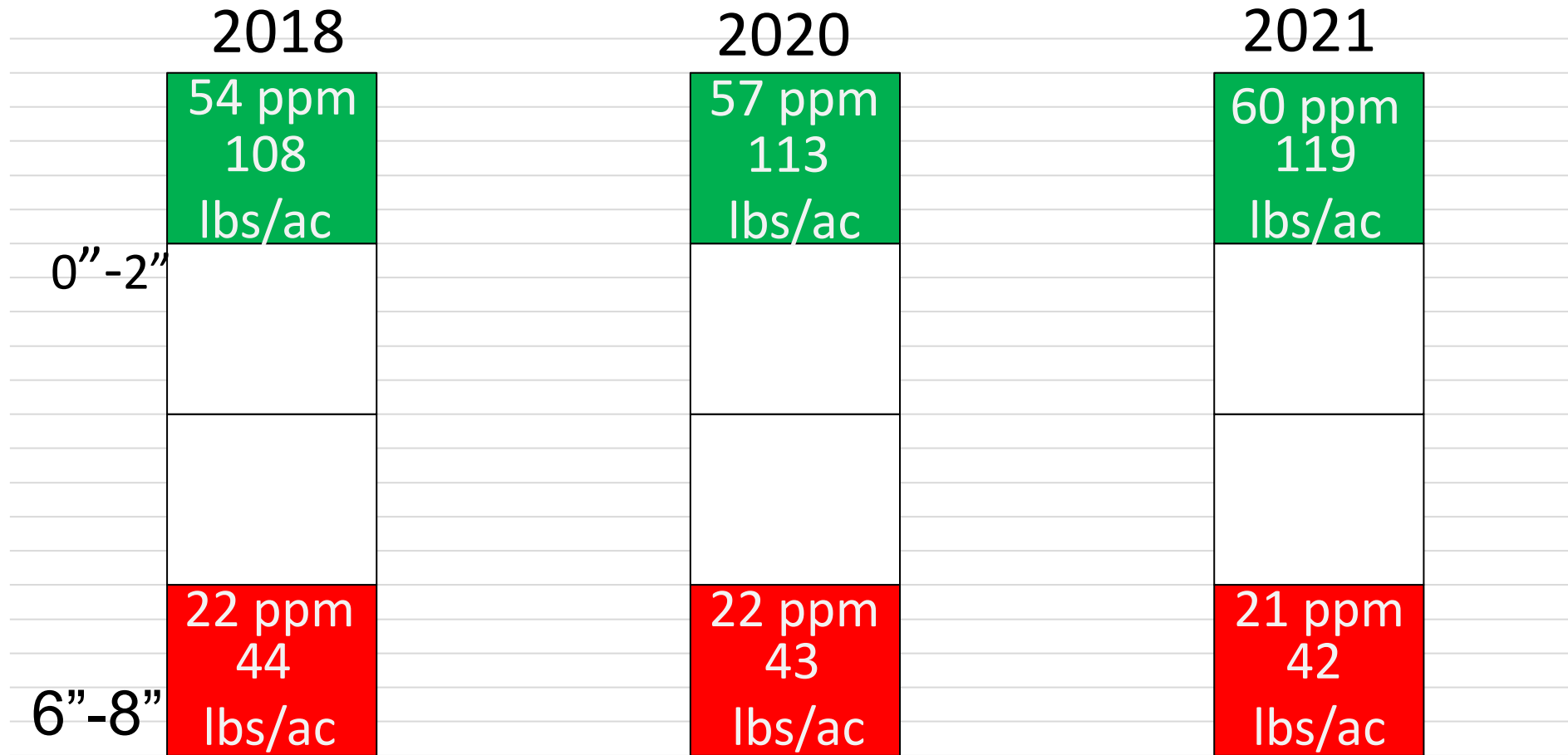
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by Bayer

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Sound

LAFORGE

Phosphorus Levels



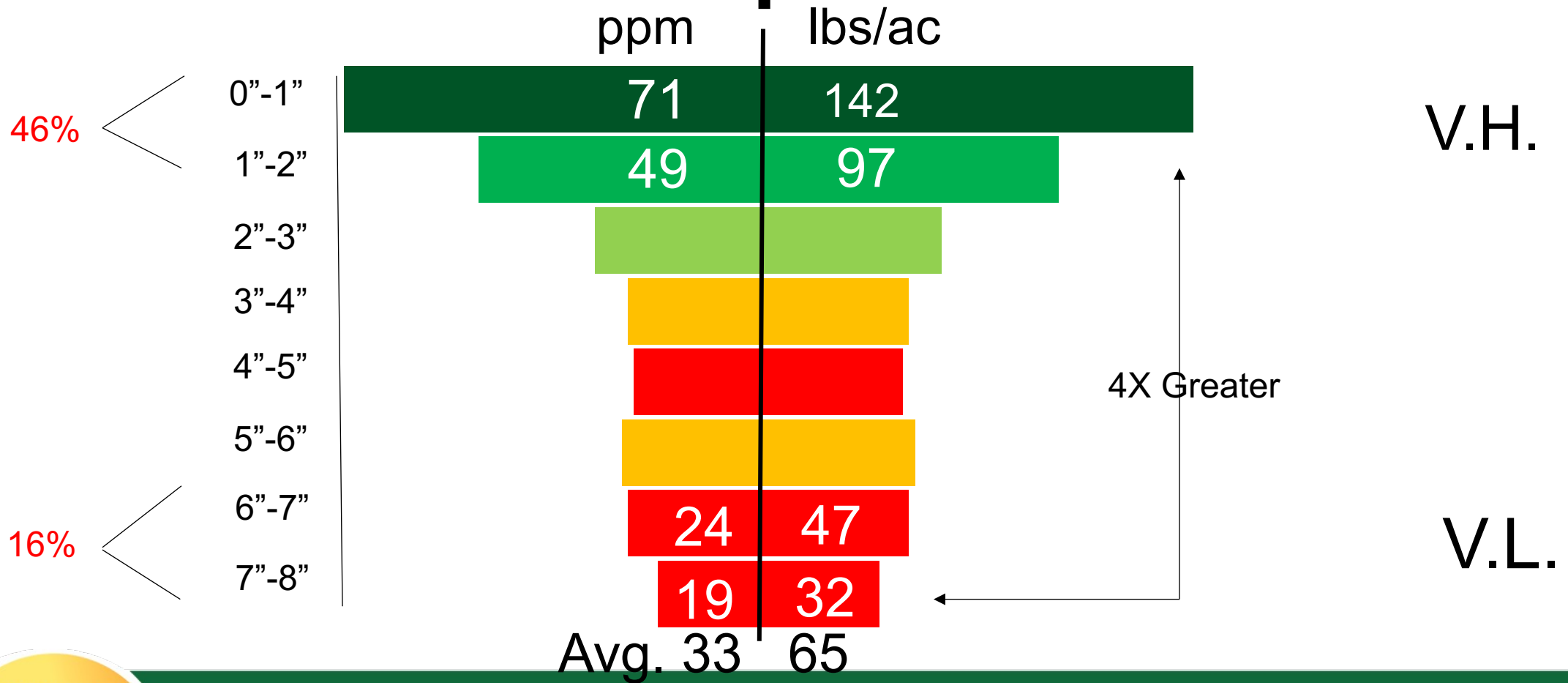
**Calmer
Farms**

**Struggles With
Stratification**

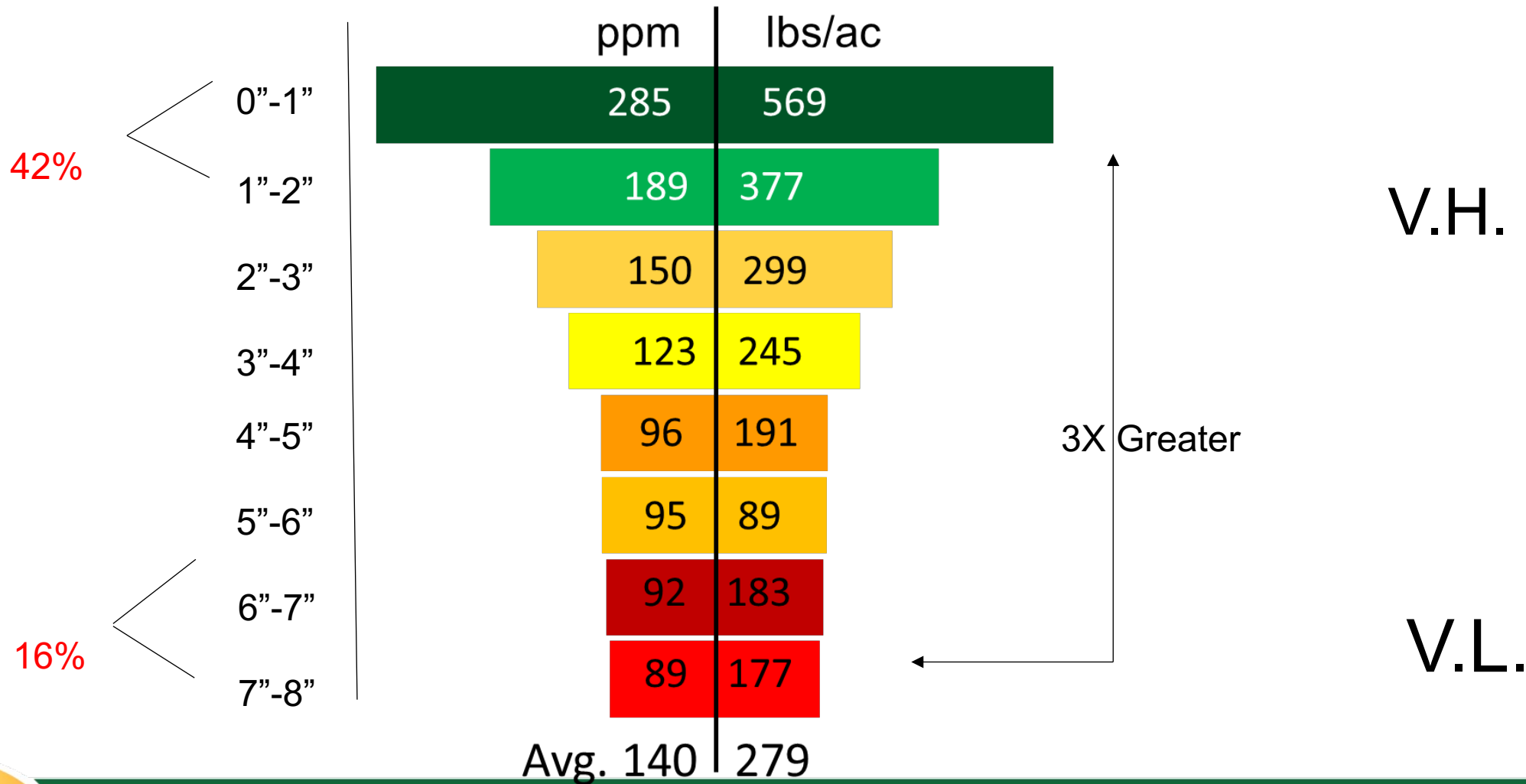
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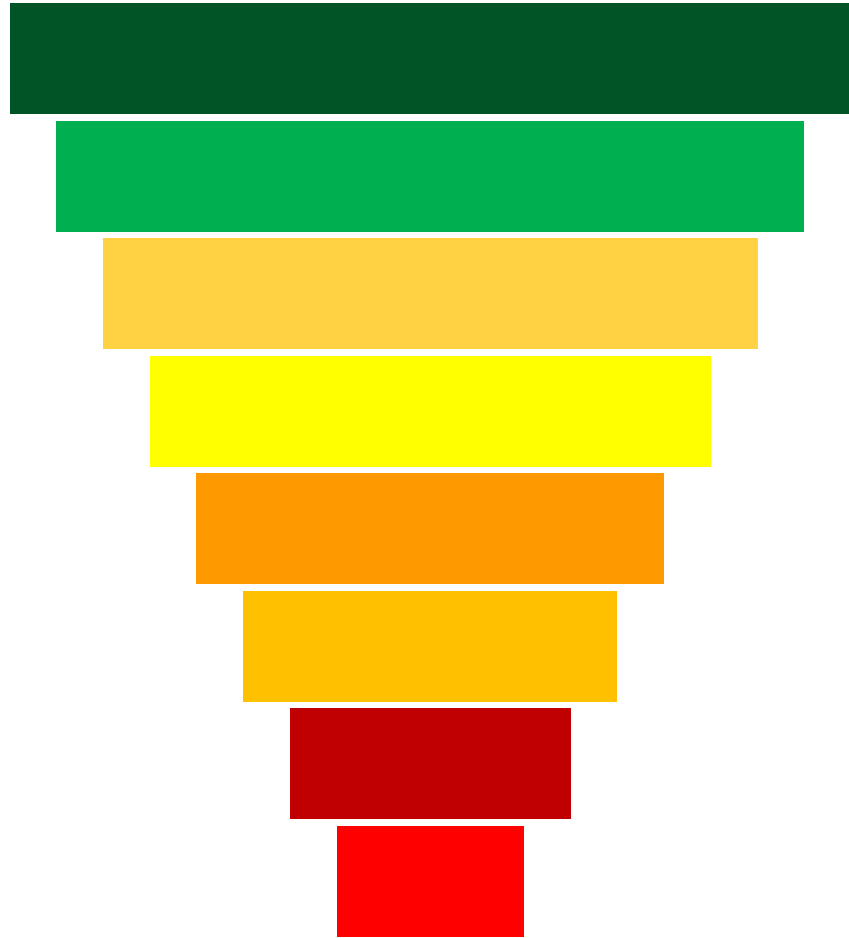


14 Years of Surface-Applied Phosphorus



14 Years of Surface-Applied Potassium

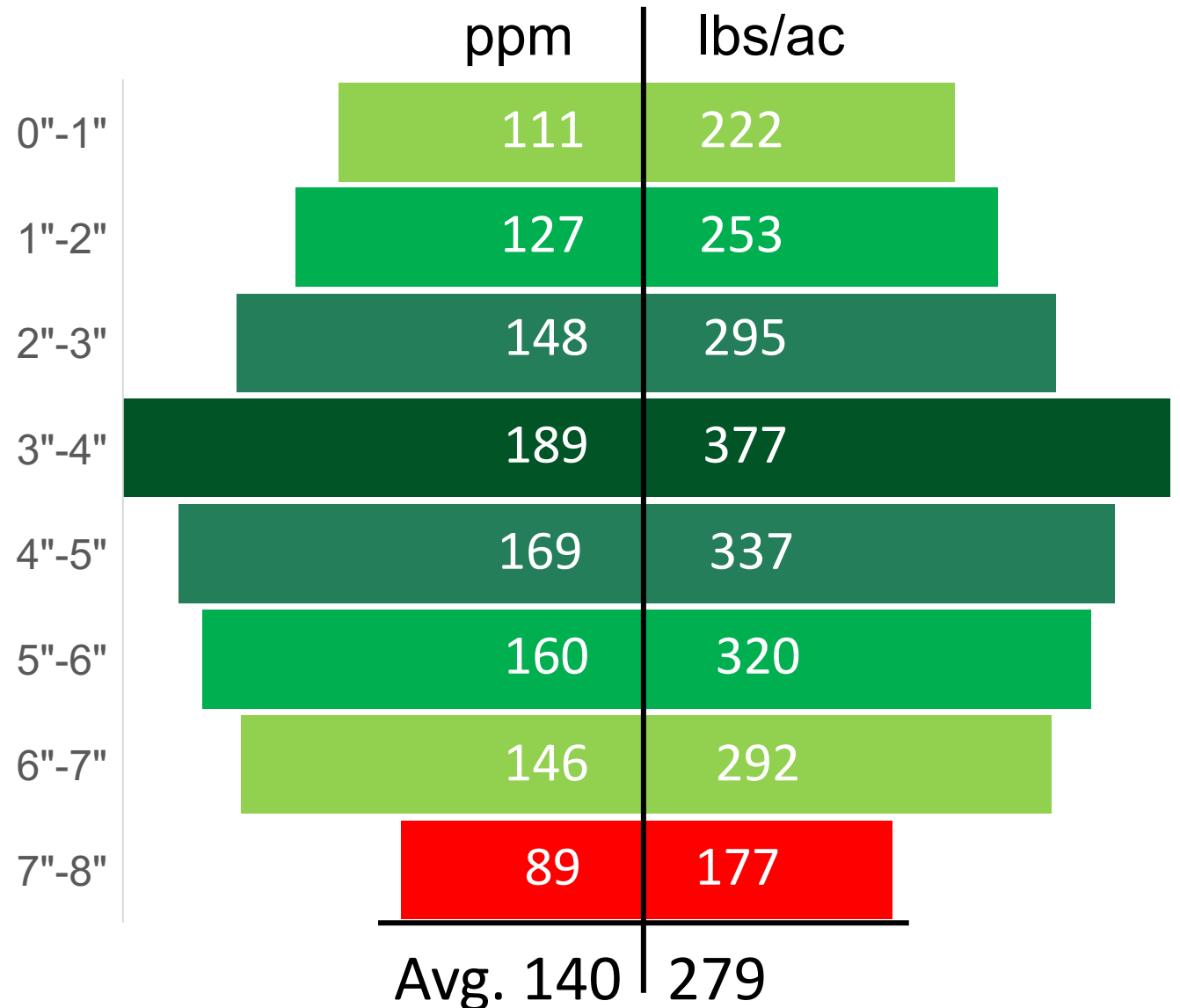
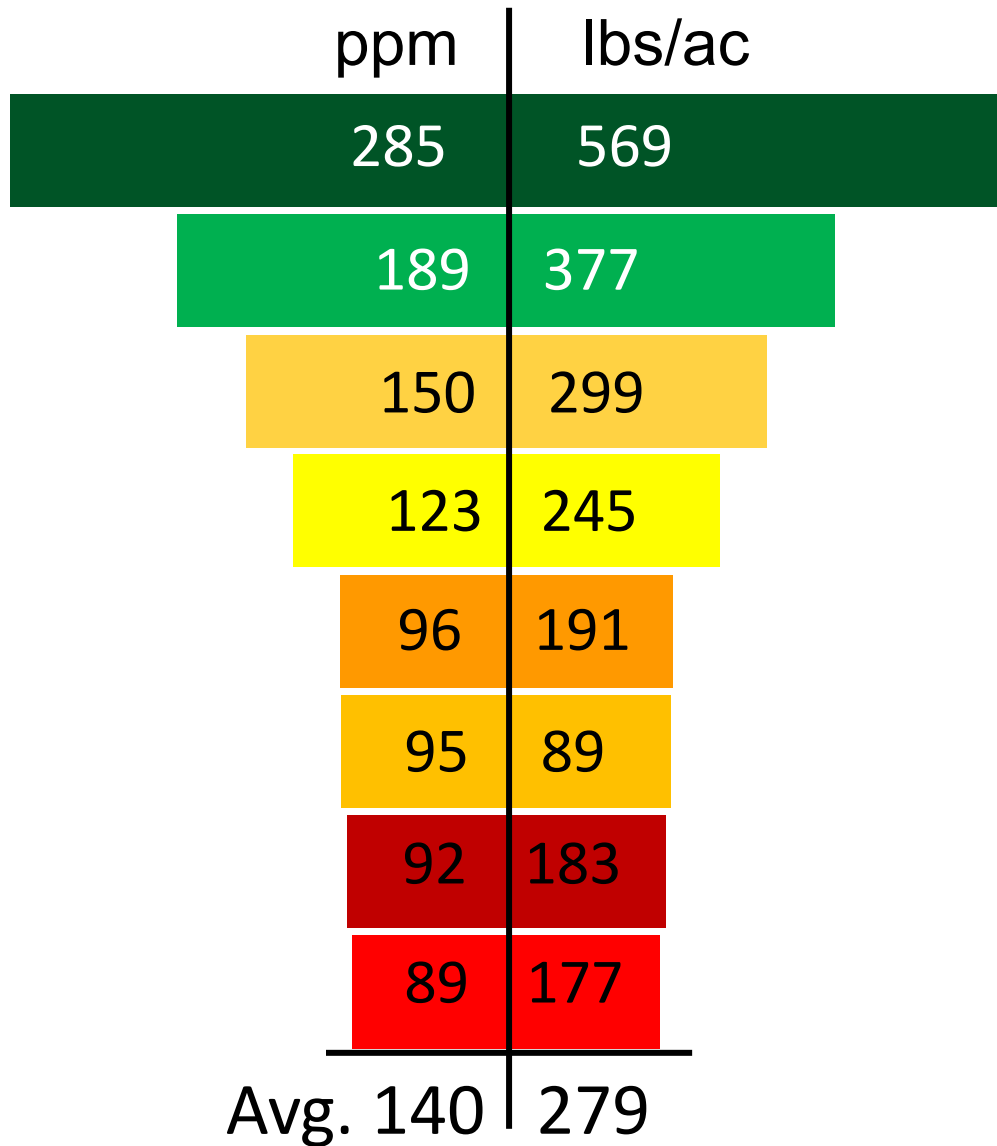




In 2021, I
Moldboard Plowed
14 Years/\$1,000 Worth
of Surface-Applied P&K
into the Rootzone on
1.4 Acres.



Potassium Before vs. After Moldboard Plowing



Soybean Yield Advantage to Destratification



■ P&K Stratified on Surface ■ Destratified w/ Moldboard Plow





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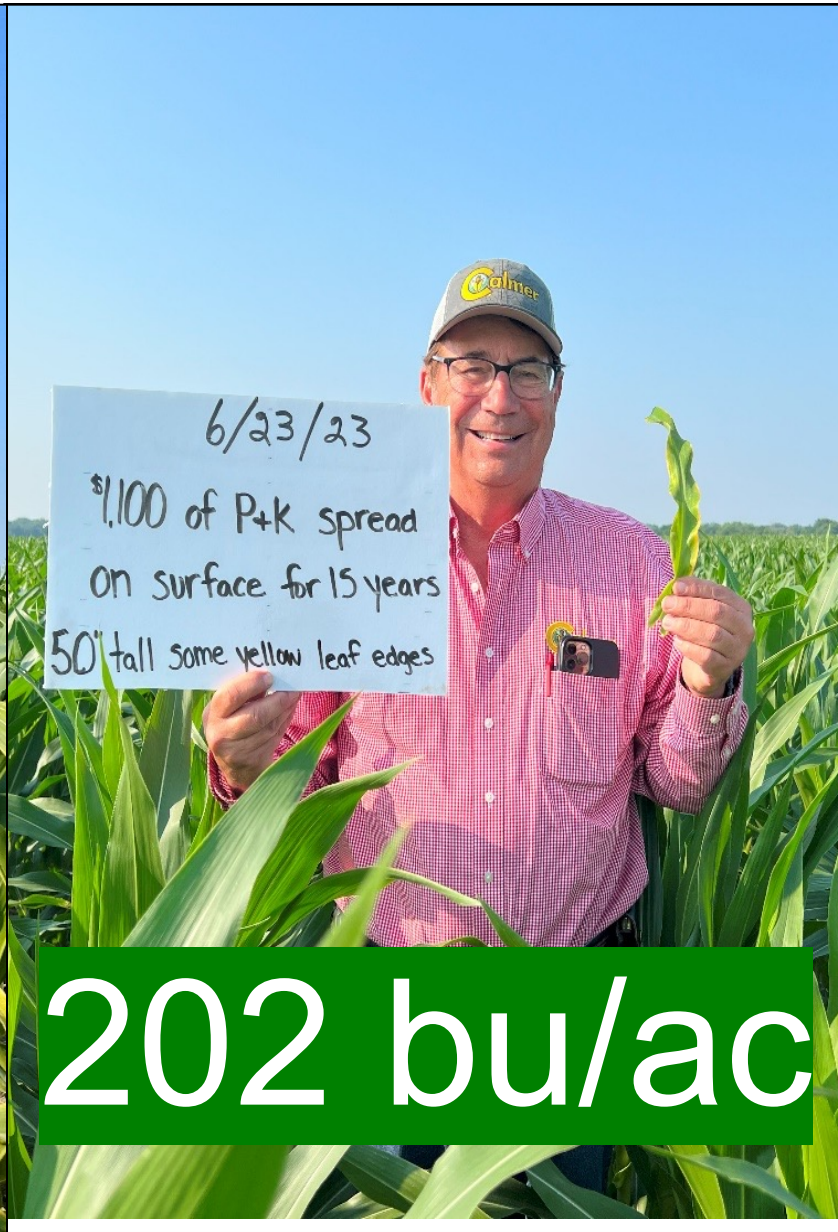


Sound

Difference in Plots June 2023



173 bu/ac



202 bu/ac



222 bu/ac



Surface Fertilizer

Subsurface Fertilizer





What Caused the Yield Advantage?

- Because Plowing Loosened the Soil?
- Mixing of Nutrients?
- \$1,000 of Fertilizer in the Root Zone?



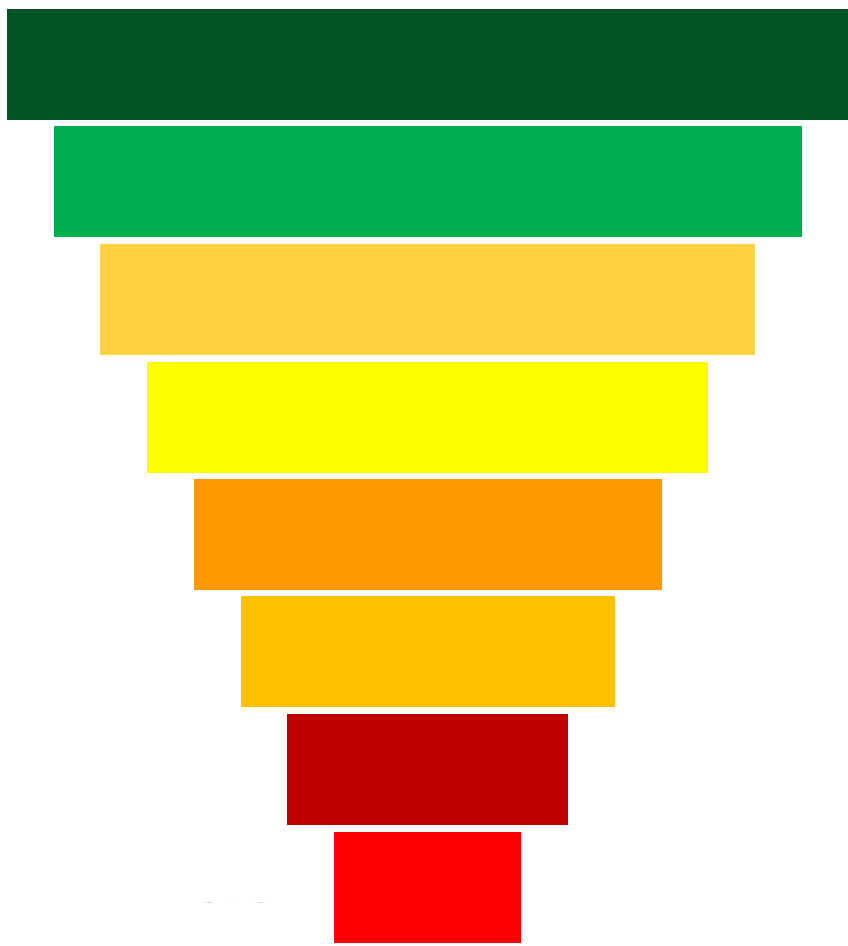


MANSON BROTHERS

DELTA
750

750
750

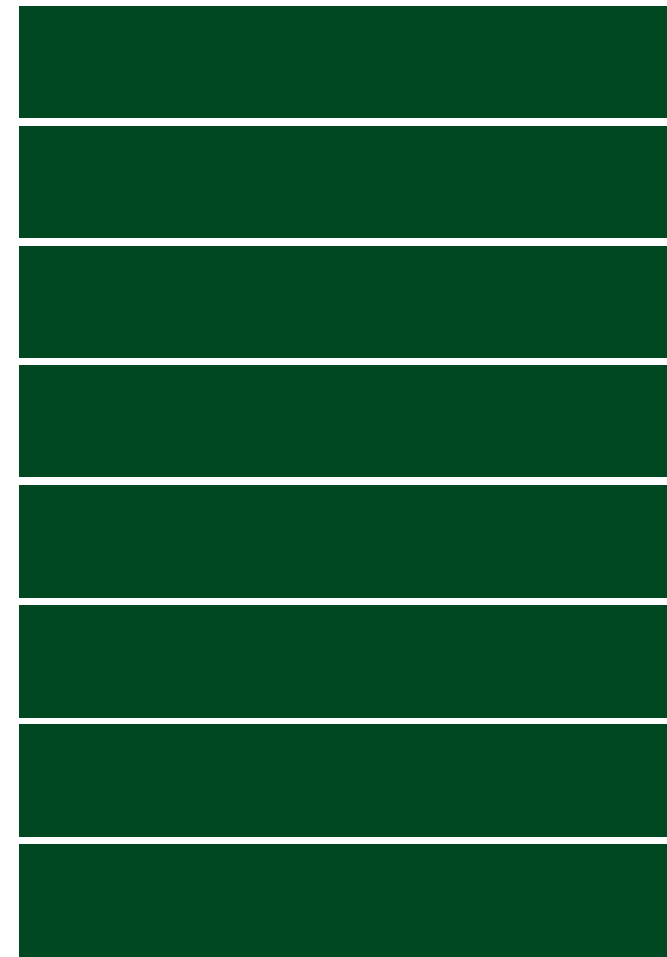
Nutrient Levels by Inch



350 lbs/ac



350 lbs/ac

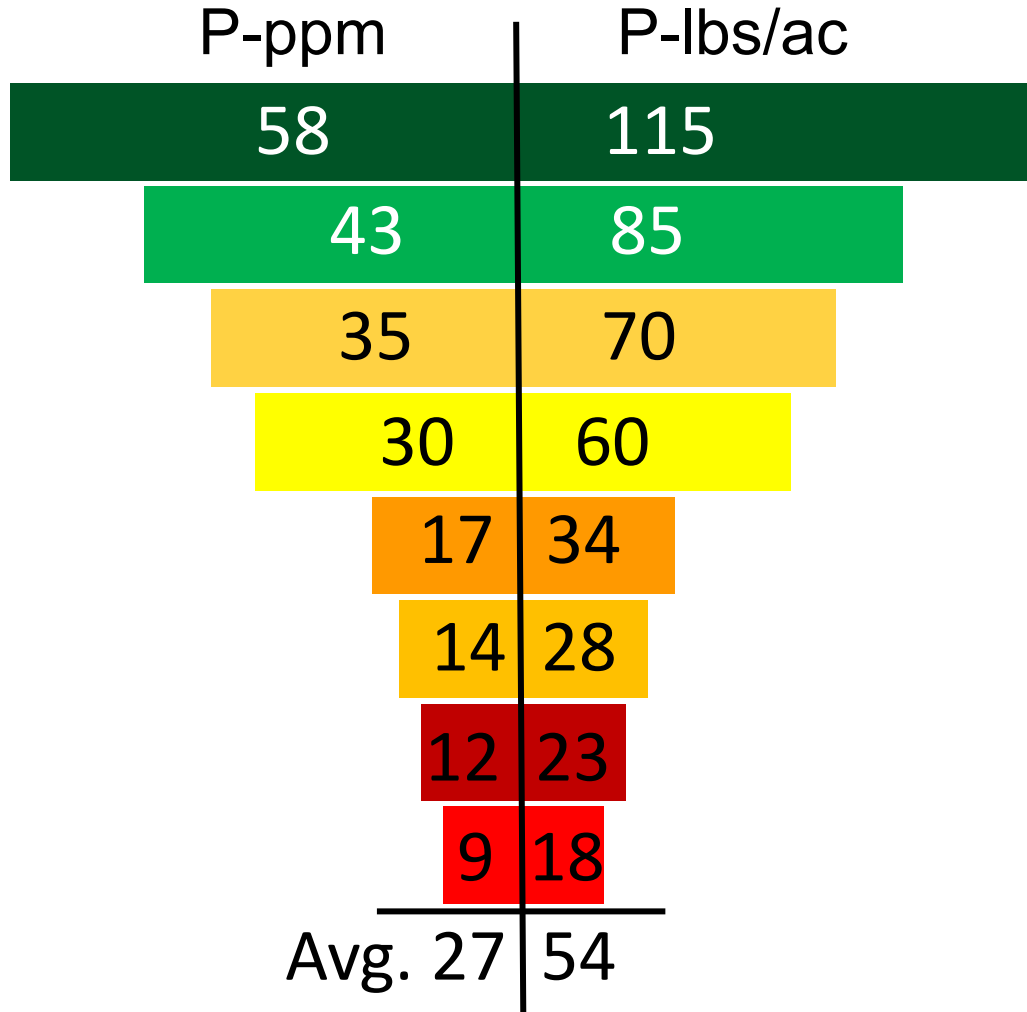


350 lbs/ac

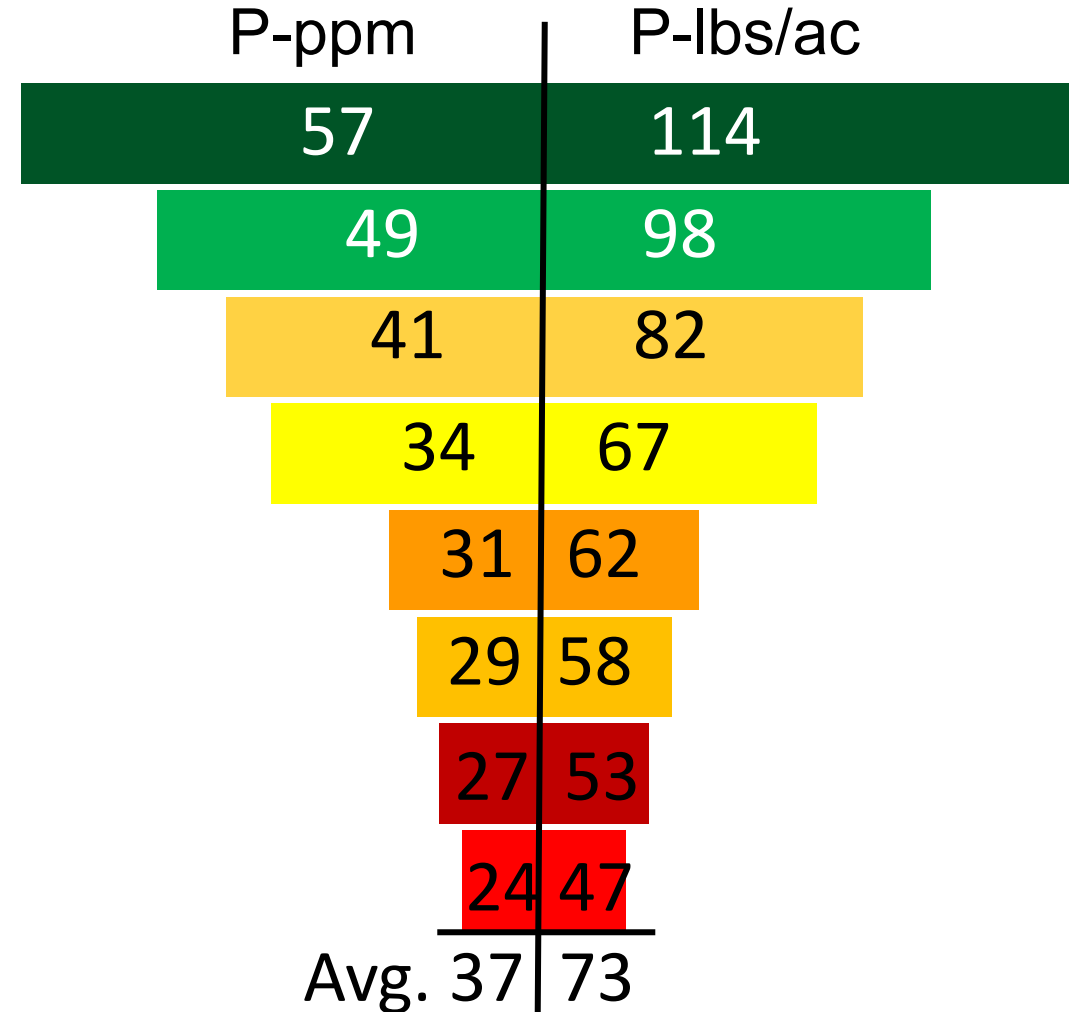


2022 National Stratification Study

No-Till



Minimum Till





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Sound

Beans planted
into 30 inch
corn stubble





FEATURE STORY



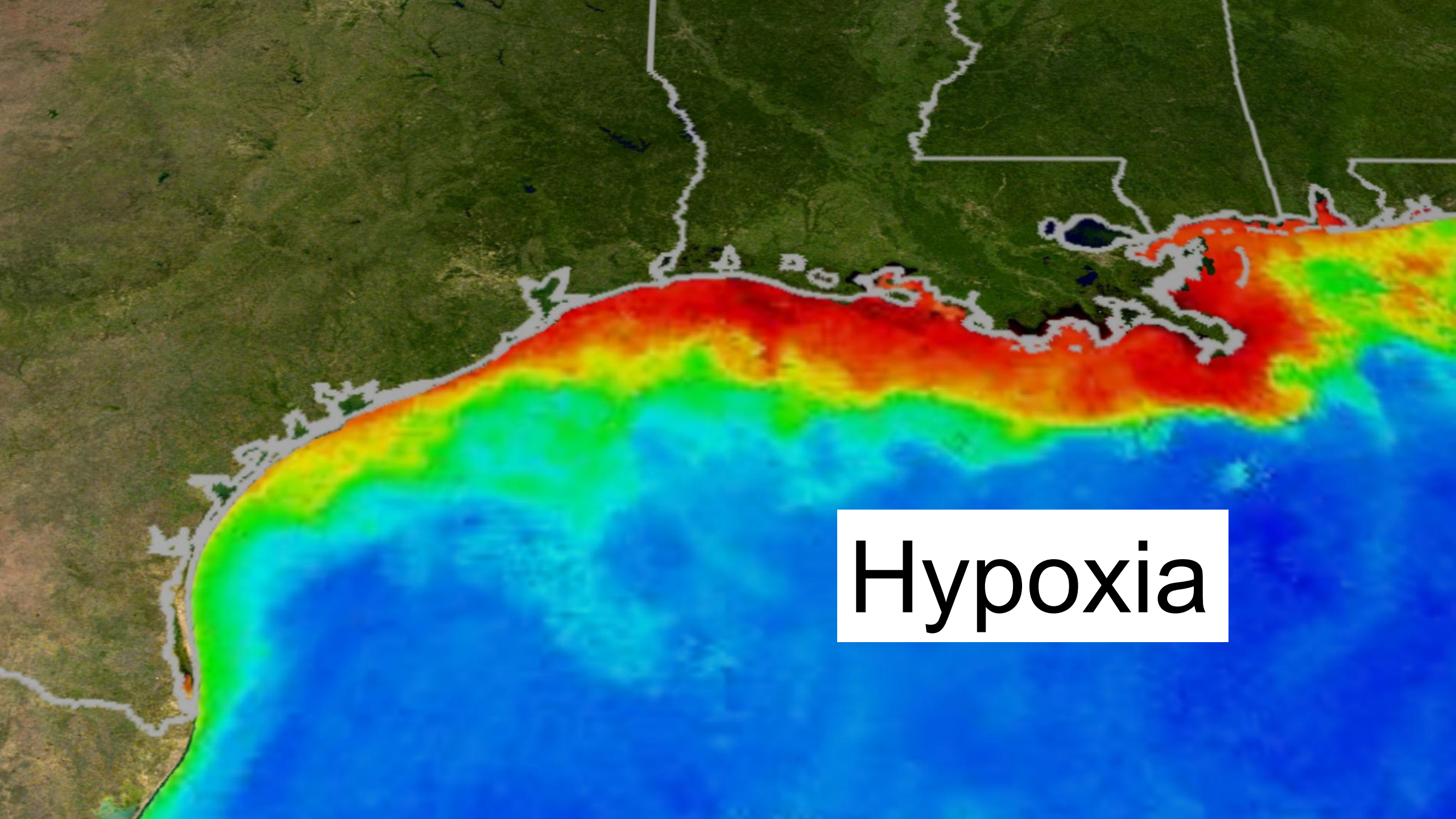




pH & Nutrient Availability

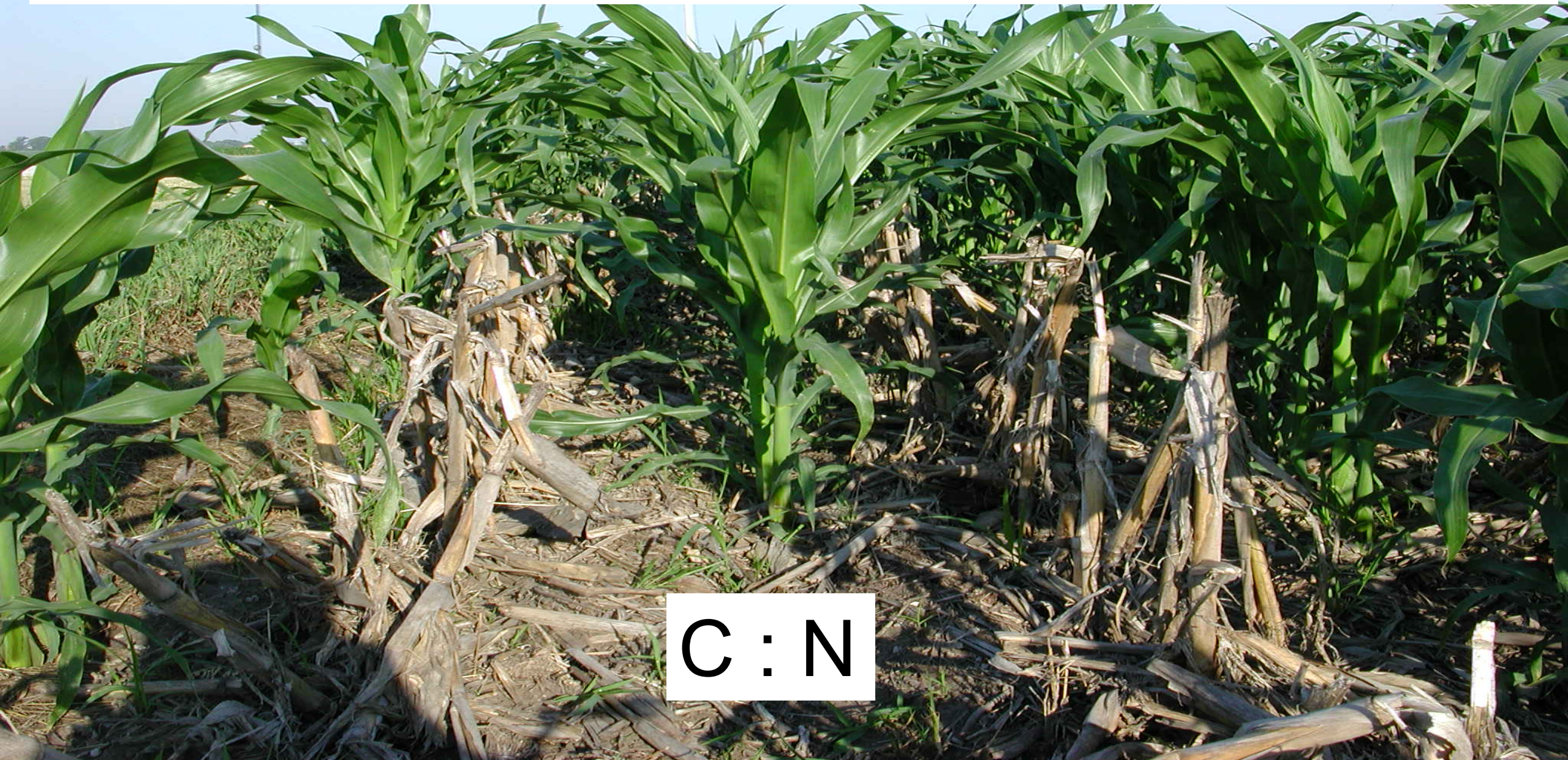
Soil Acidity	N	P	K
7.0	100%	100%	100%
6.0	89%	52%	100%
5.5	77%	48%	77%





Hypoxia

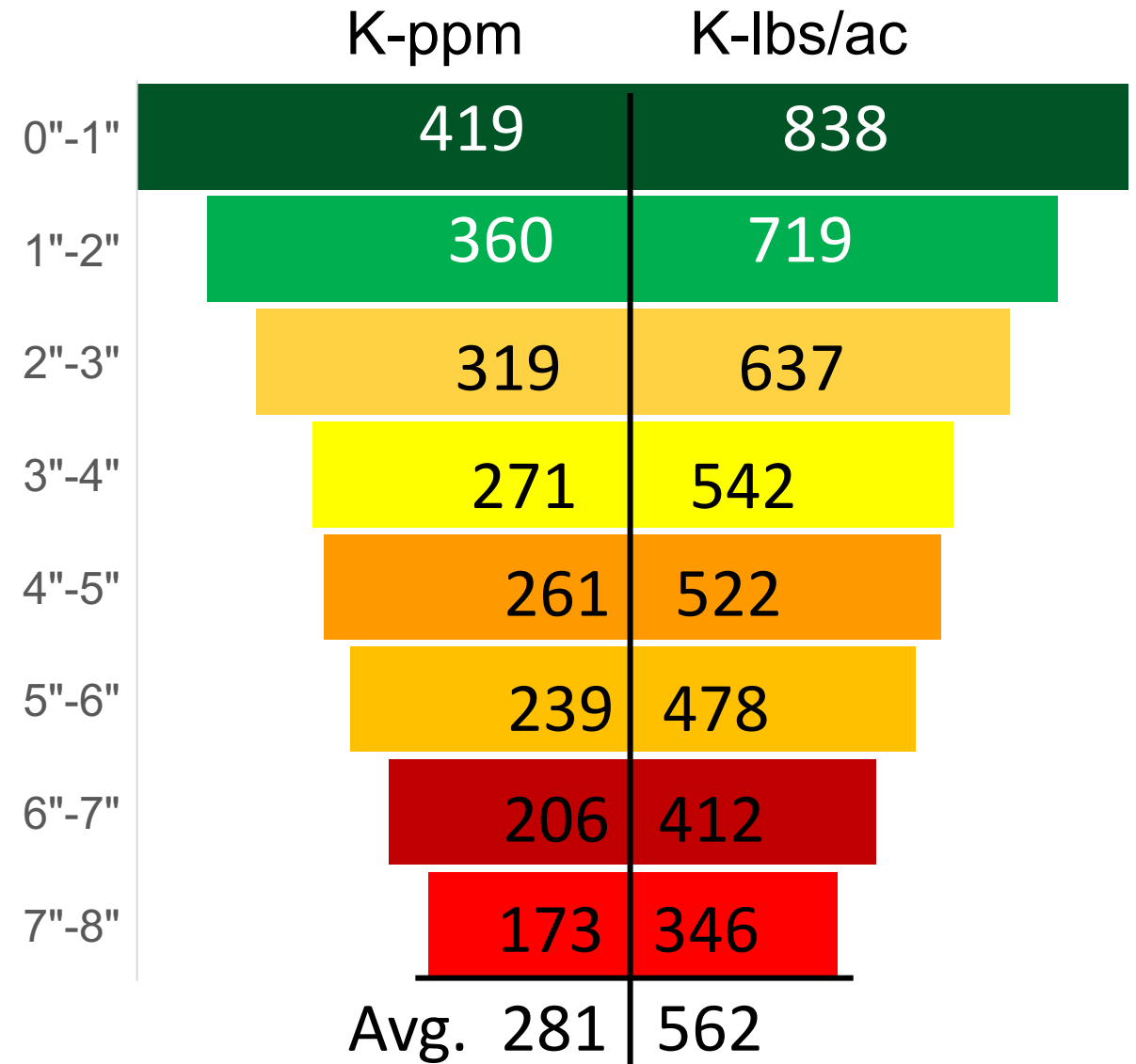
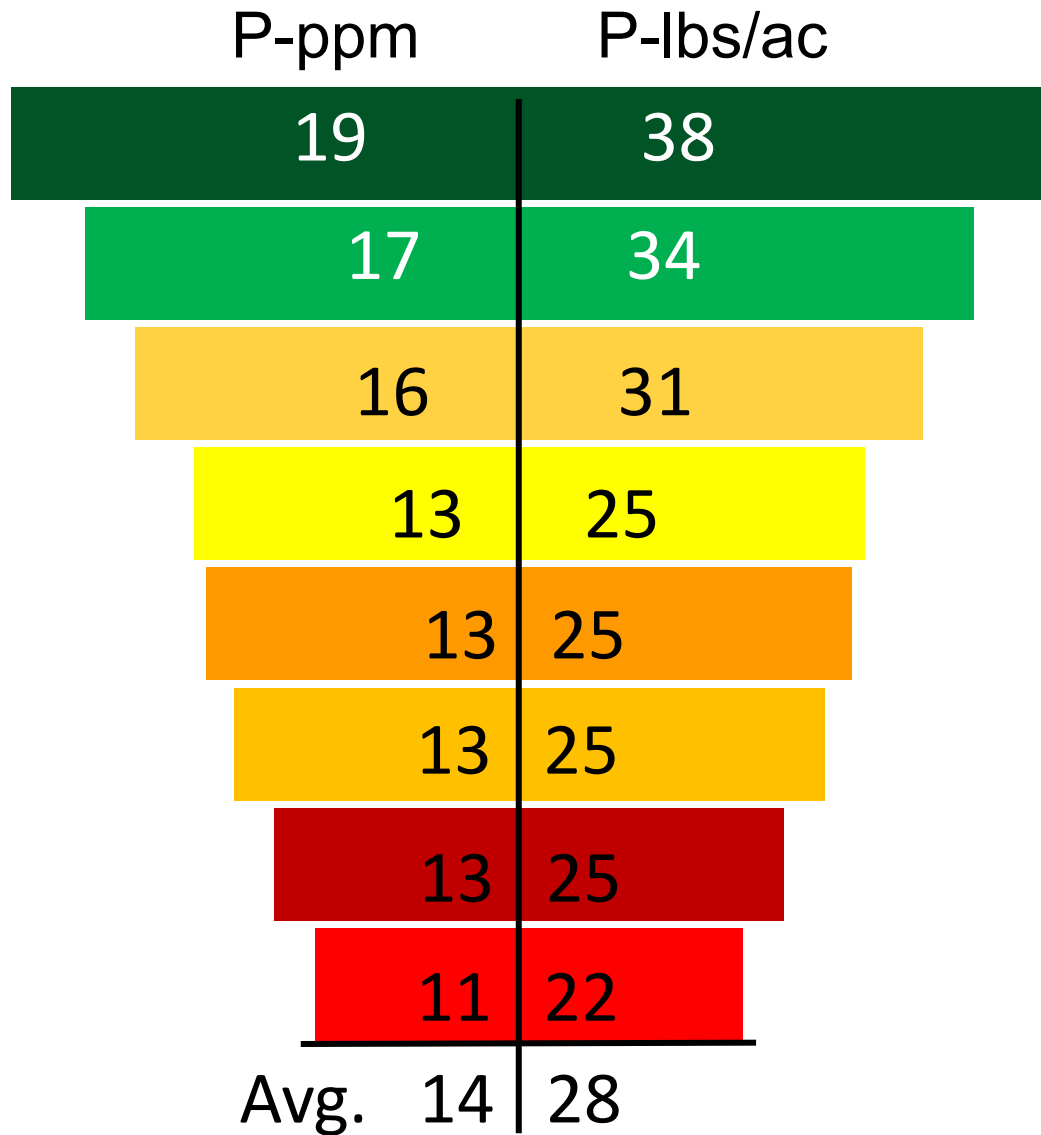
Does Growing Plants Cause Vertical Stratification?



C : N



Virgin Soil 2022 (Continuous Grass)



A man wearing a grey baseball cap with the word 'EASER' on it, a maroon long-sleeved shirt, and blue denim overalls stands in a field of green rutabaga plants. He is holding a large, white rutabaga root with both hands, showing it to the camera. The background shows a line of trees and a clear blue sky.

David
Brandt

10.11.2009

Photo Source: David Brandt

Marion and Herman Warsaw in 1985 370 bu/AC



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round
by Bayer



Marion and Francis Childs in 2002

442 bu/AC



Marion and Randy Dowdy in 2016

521 bu/AC



Marion and David Hula in 2020 broke own record in 2023 626 bu/AC





Herman Warsaw
First Producer to Raise 300 bu. / ac. corn



The AgroVantage® System



Marion's Goal in the Future

Place P&K in the root zone, not on top of the root zone!









SoilWarrior XD Row Unit





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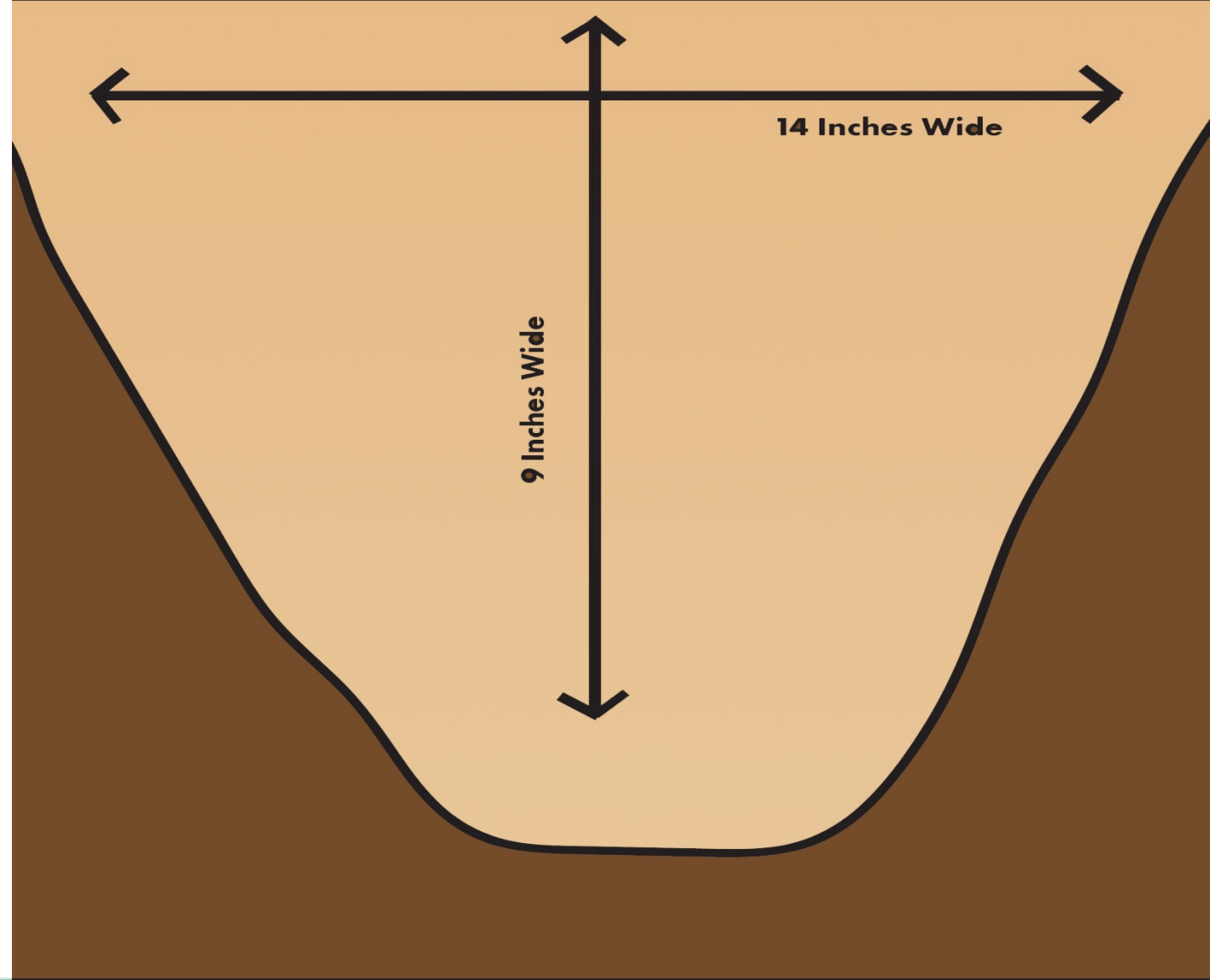
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Unrestricted Root Zone

Maximum roots
+Maximum fertility
=Maximum yield



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LAFORGE
Sound

Unthreshed Pods in Sample



Key Takeaways

1. Vertical stratification doesn't go away. It gets worse!
2. Vertical stratification is not caused by no-till.
 - a) Soybean yield advantage to destratification=9 bu/ac x 15=\$130/ac
3. Corn yield adv. to destratification = 20 bu. X 5 =
\$100/AC



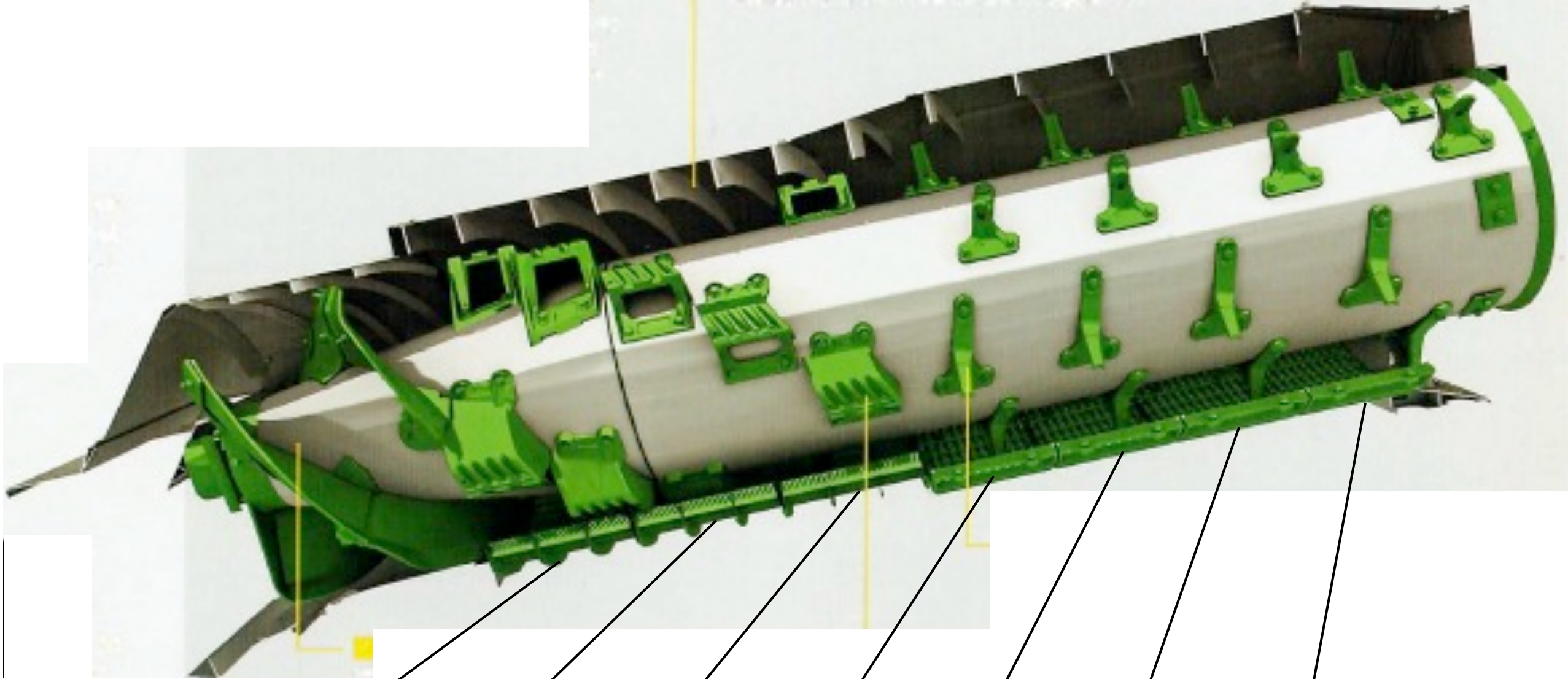
**Calmer
Farms**

**Struggles With
Stratification**



A wide, flat agricultural field, likely a cornfield, with a line of trees in the distance under a cloudy sky. The field is mostly brown and tilled, with some green grass in the foreground. A tall antenna tower is visible on the left side of the horizon.

FRIDAY MORNING CLASSROOM SESSION
RESIDUE MANAGEMENT



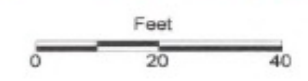
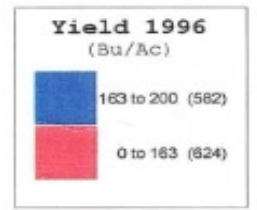
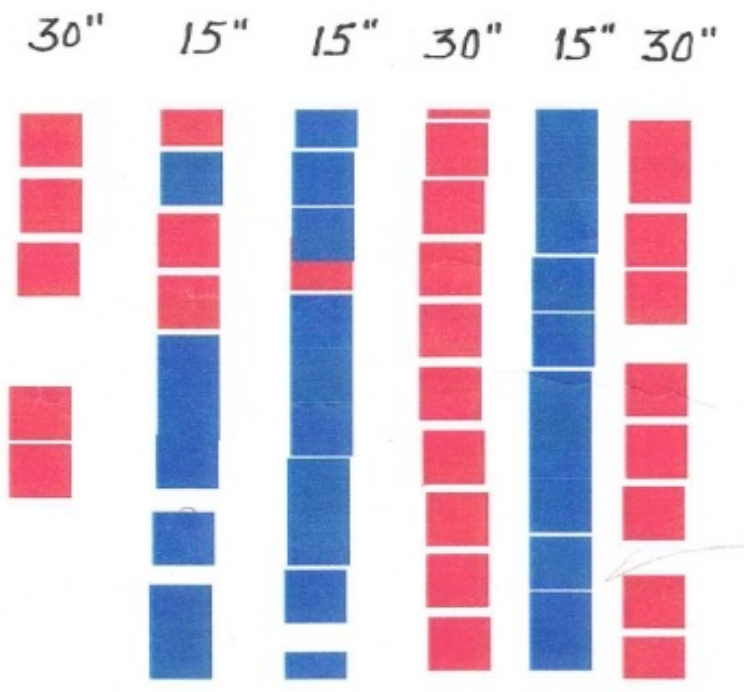
Position # 1 Position # 2 Position # 3 Position # 4 Position # 5 Position # 6 Position # 7



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 Crop: Corn - *Stine 9702*
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Marion's Cell: 309-368-1182

Calmercornheads.com

