



My Top 5 Aha! No-Till Tools

Mike Starkey





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My First AHA Moment

1. Drainage is critical and has to be fixed before starting No-Tilling



Let's First Look For The Need For Drainage Tiling

The Weather Has Changed Considerably!



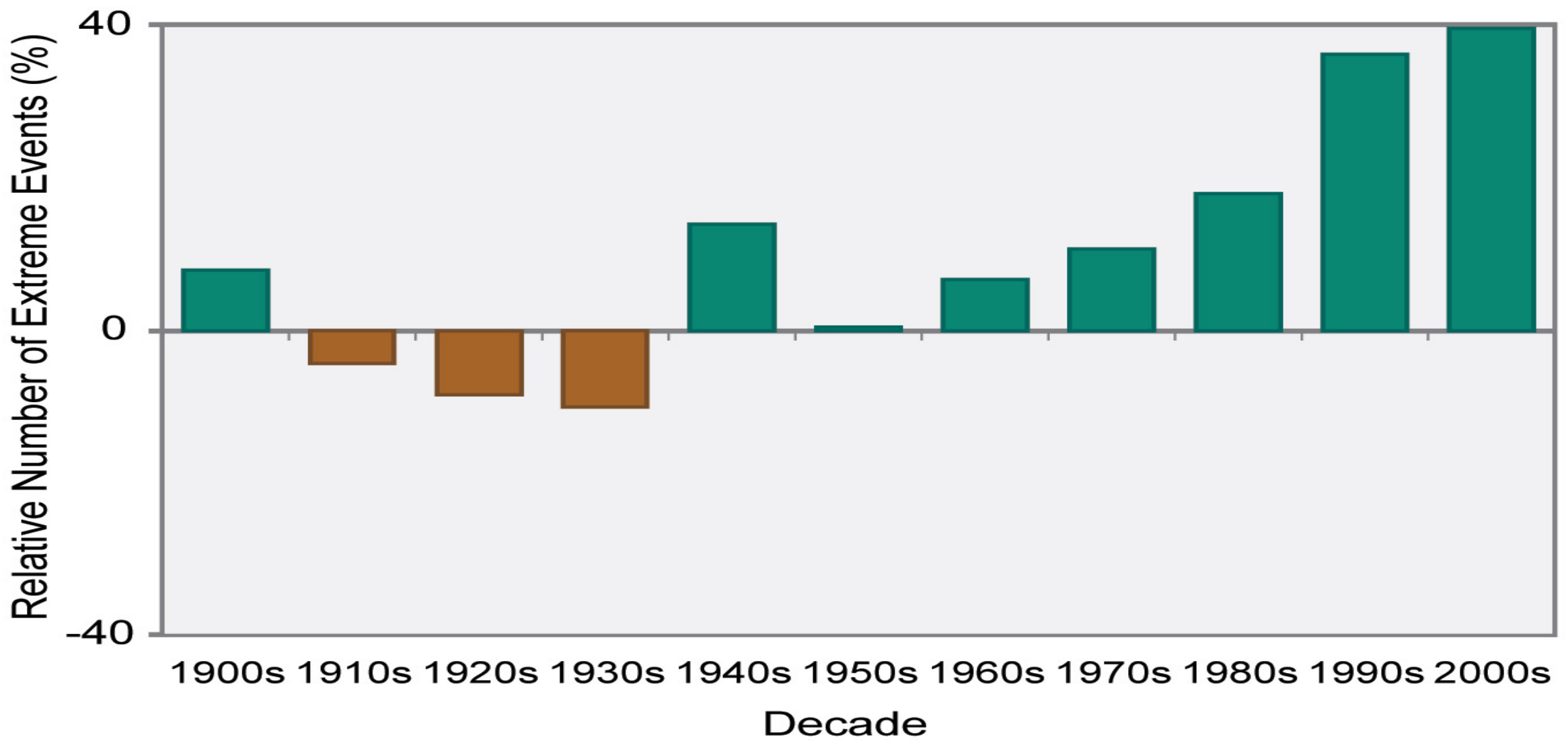


Figure 1. Suitable field days in the spring, Iowa average, April 2 to June 17

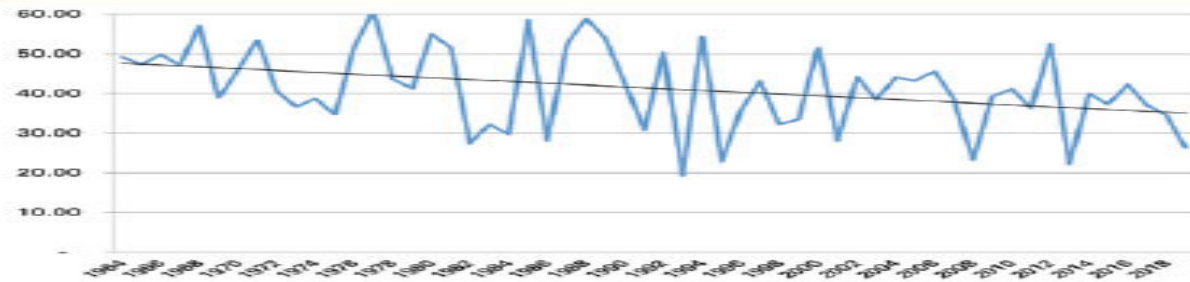


Figure 2. Suitable field days in the summer, Iowa average, June 18 to September 9

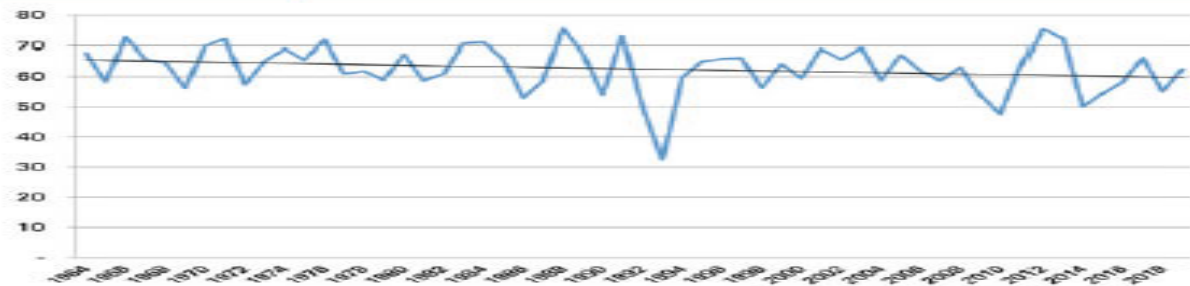


Figure 3. Suitable field days in the fall, Iowa average, September 10 to October 28

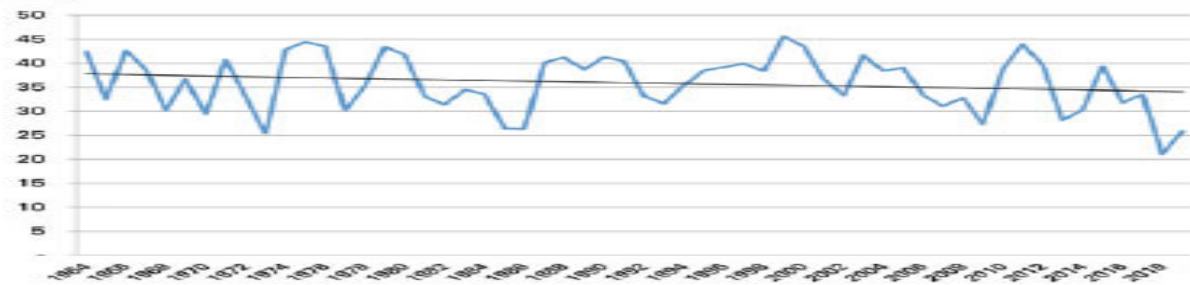
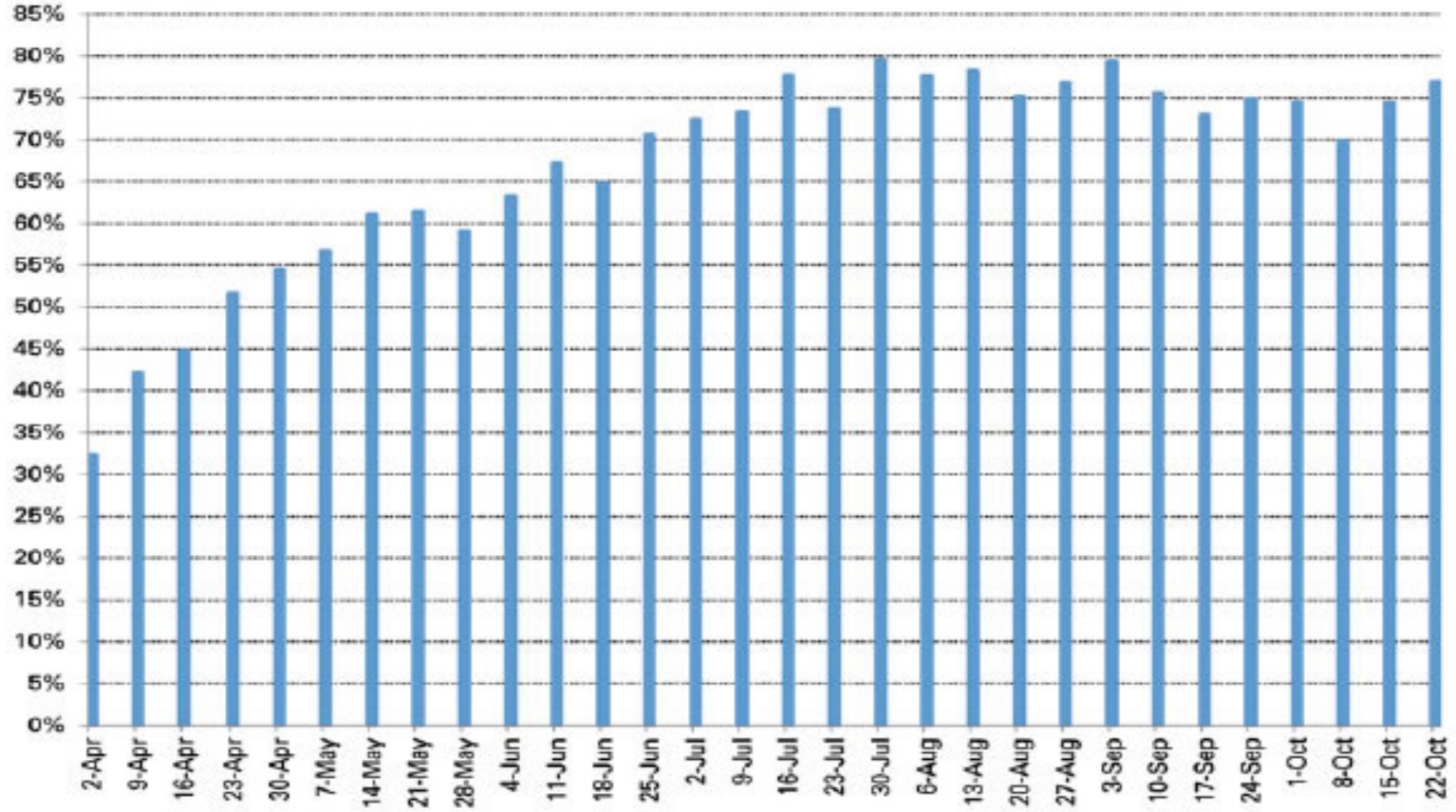
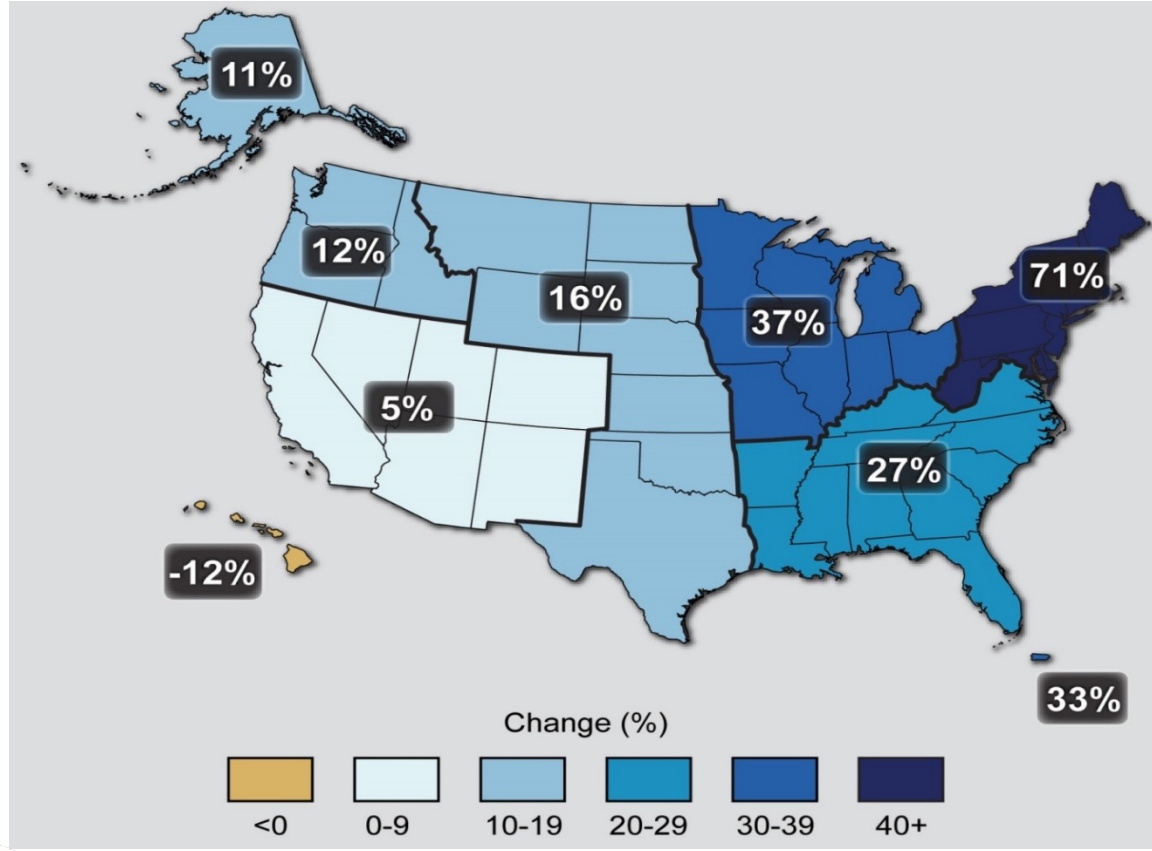


Figure 4. Probability of a suitable field day, by week, for Iowa, statewide



OBSERVED CHANGE IN HEAVY PRECIPITATION



One of the clearest trends in the United States observational record is an increasing frequency and intensity of heavy precipitation events... Over the last century there was a **50% increase in the frequency of days with precipitation over 101.6 mm (four inches)** in the upper midwestern U.S.; this trend is statistically significant





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Adjusting for Fewer Days

1. Crop producers can adjust for fewer expected field days in several ways. Invest in larger machinery, which can complete field operations over more acres per day.
2. Reduce the number of operations performed to cut down on the total hours of field time needed.
3. Outsource some operations to a custom operator or input supplier.
4. Improve the efficiency of field operations by using grain carts, seed tenders, auto-steer and other technologies that keep key machines running.
5. Install artificial drainage to extend the days for which fieldwork can be completed.





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Sure But What About the Cost?

What are you losing in yield and input cost per year?

Patterned tiling can cost anywhere from \$800-\$1000/acre!?

Rented ground?



How Can You Afford Not To!

Operations Center
Download Report

Field: Mikes/Blacker 51
Client: M & J Starkey Farms | Farm: Mikes Blacker 5

2020 Corn Harvest: Yield
Start: Oct 23, 2020 11:55 AM
End: Oct 24, 2020 6:36 PM

Work Totals
Area Harvested: 78.9 ac
Total Yield: 14,098 bu
Wet Weight: 10,485.6 lb/ac

Performance
Speed: 4.7 mi/hr
Working Time: 7 hrs 18 mins
Throughput (Wet): 113,143.8 lb/hr

Yield: 178.67 bu/ac
Moisture: 18.9 %
Total Wet Weight: 827,380 lb

Productivity: 10.8 ac/hr
Throughput (Dry): 1,927.9 bu/hr

JOHN DEERE

Back Download

Field: Mikes/Blacker 51
Client: M & J Starkey Farms | Farm: Mikes Blacker 5

2023 Corn Harvest: Yield
Start: Oct 18, 2023 6:18 PM
End: Oct 25, 2023 3:17 PM

Operator Name: Mike starkey

Work Totals
Area Harvested: 77.5 ac
Total Yield: 19,861 bu
Wet Weight: 15,122.1 lb/ac

Performance
Speed: 3.8 mi/hr
Working Time: 8 hrs 36 mins
Throughput (Dry): 2,253.8 bu/hr
Fuel Efficiency: 163.9 bu/gal
Fuel: 13.8 gal/hr

Yield: 256.15 bu/ac
Moisture: 19.4 %
Total Wet Weight: 1,172,502 lb

Productivity: 6.5 ac/hr
Total Fuel: 118.5 gal
Throughput (Wet): 133,040.5 lb/hr
Fuel: 1.5 gal/ac

Map: Overview

307.98
281.62
261.97
243.79
222.14
186.16
0



Cost of Tiling Comparison

200 bpa x \$4.50=\$900 gross/acre

245 bpa x \$4.50=\$1100 gross/acre

Gain of \$200 per gross/acre

5 years x \$200 per acre/gross profit =
\$1000/acre



Rented Ground?

First you ask if the landlord can help share the cost



Rented Ground

If paying the cost get a five year agreement and prorate the cost of reimbursement if ground is sold or rented out to someone else.



Rented Ground

Walk away if the return of investment is not paying off.

We are not farming for a hobby! We are farming to make a profit.



My 2nd AHA Moment

Equipment Setup



It All Starts With the Planter



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Error on Planting Deep than Shallow!



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My Number 3 AHA Moment

Nutrient Management



Corn Loves Nitrogen!



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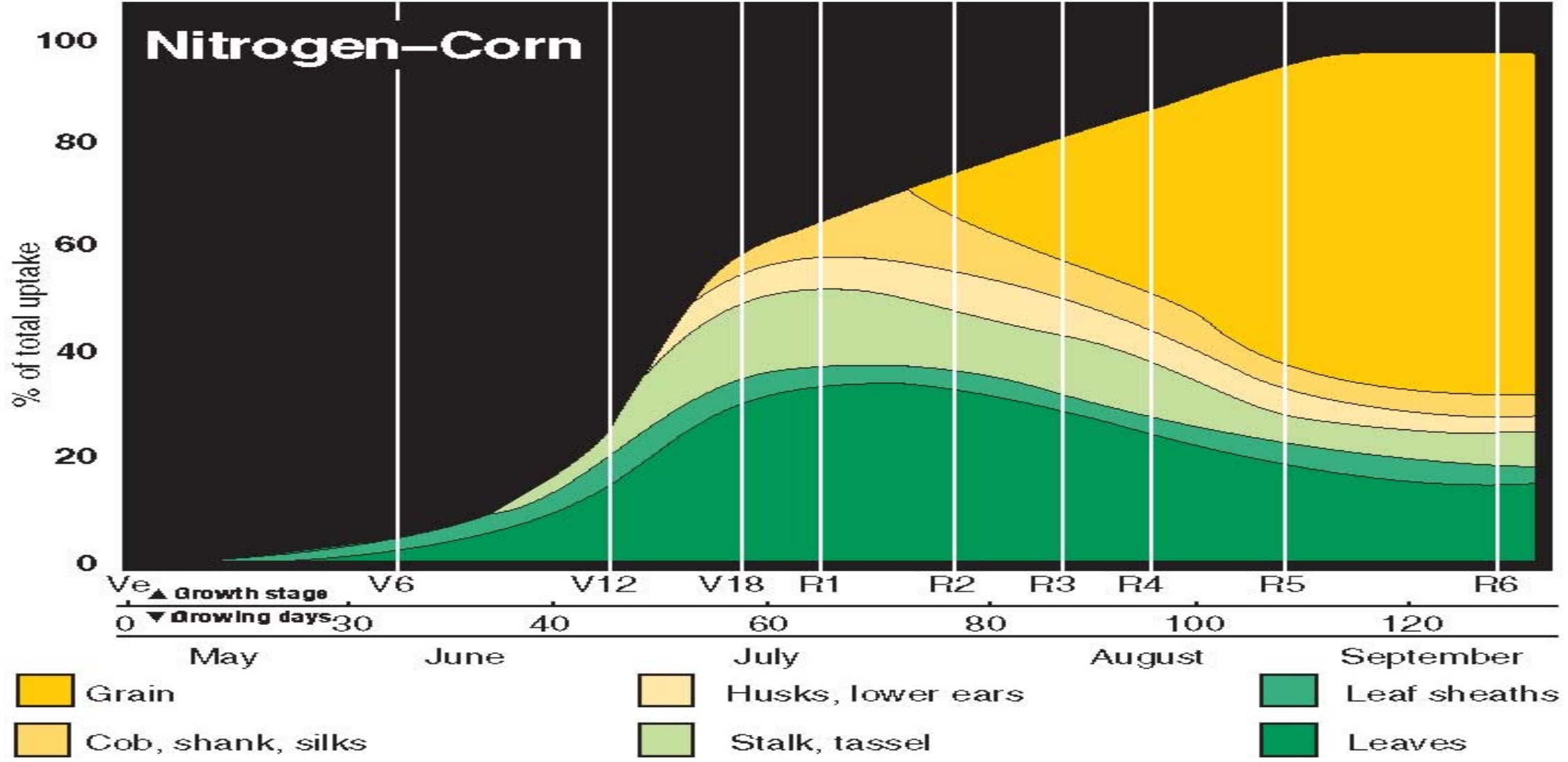
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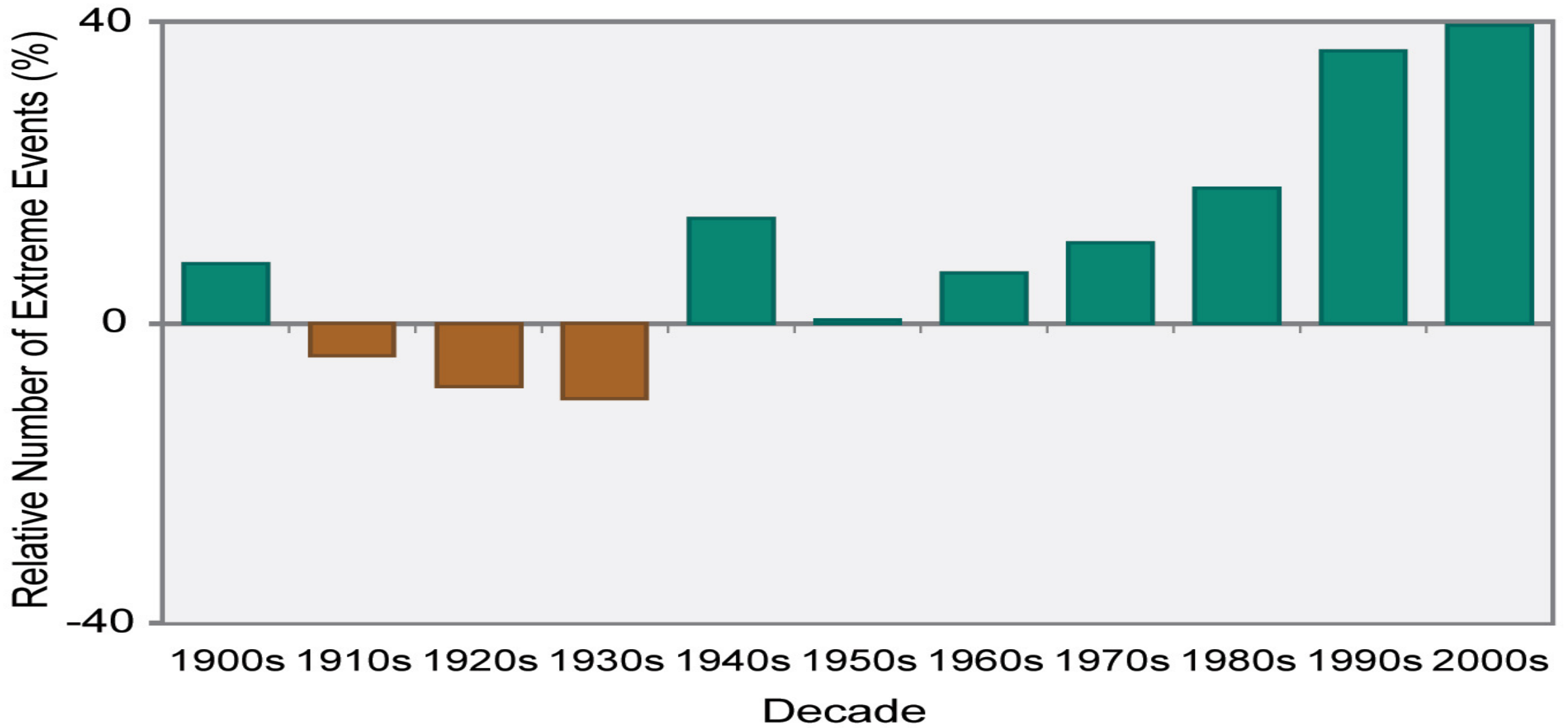


But Spoonfeed N!

What are the corn plant needs throughout the growing season



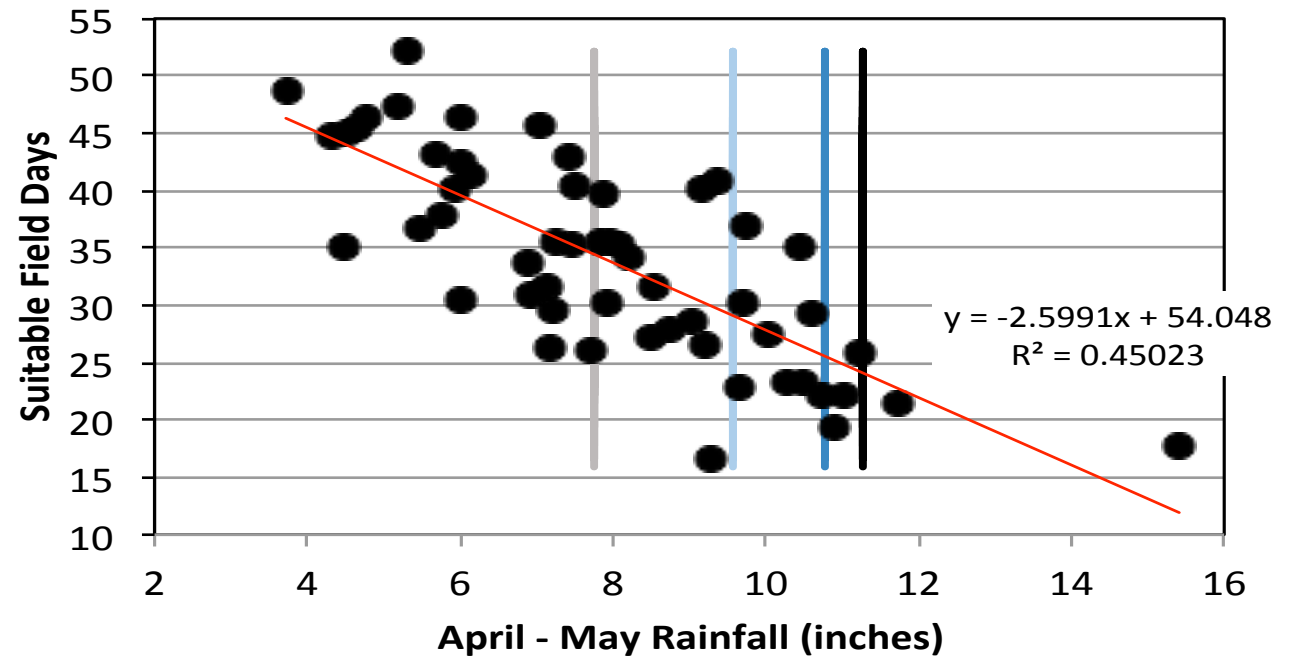




WE NEED TO BE PLANTING WHEN THE GROUND CONDITIONS ARE SUITABLE

Every 1" Increase of April-May Rainfall
Reduces Suitable Field Days by
2.6 days

Suitable Field Days (Apr 2 - Jun 3) versus
April-May Rainfall, Iowa Average (1959-2013)



So Why Are We Doing This Before Planting?



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Corn Plants Needs of N

**A corn plant acquires
63% of its N supply from a
horizontal radius of <7”**

Source:

Hodgen, P.J., Ferguson, R.B., Shanahan, J.F., & Schepers, J.S., (2009).
Uptake of point source depleted ¹⁵N fertilizer by neighboring corn
plants. *Agronomy Journal*, 101, 99-105.





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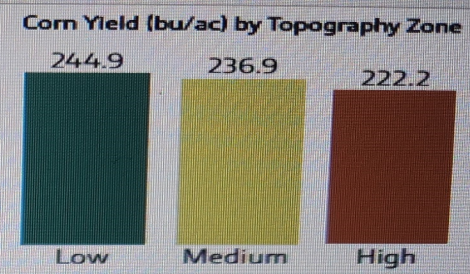
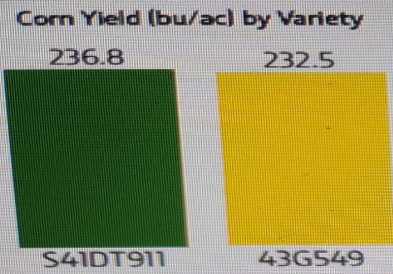


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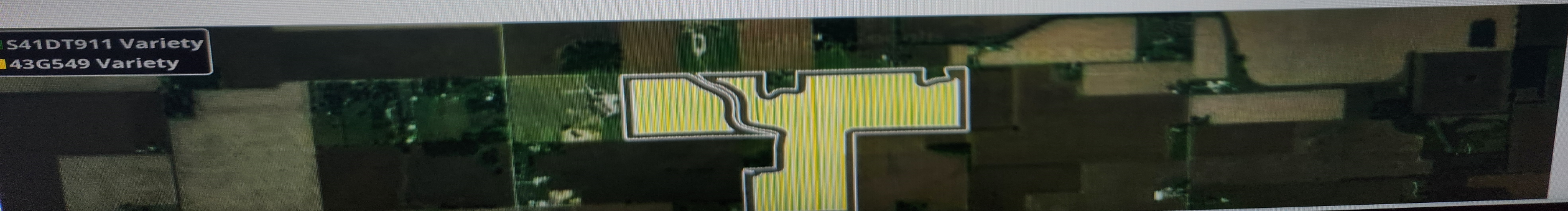
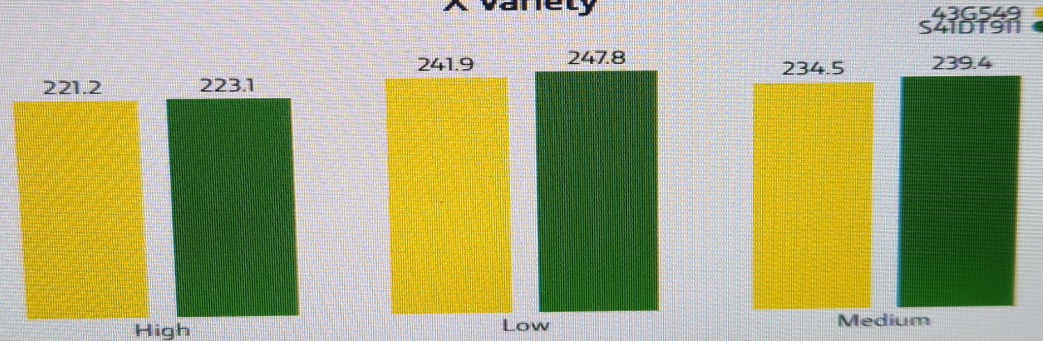
My 4th AHA Moment

Use of technology and apply it for profitability analysis





Corn Yield (bu/ac) by Topography Zone X Variety



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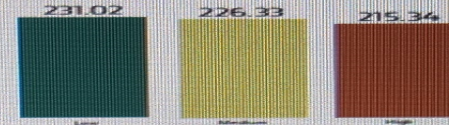


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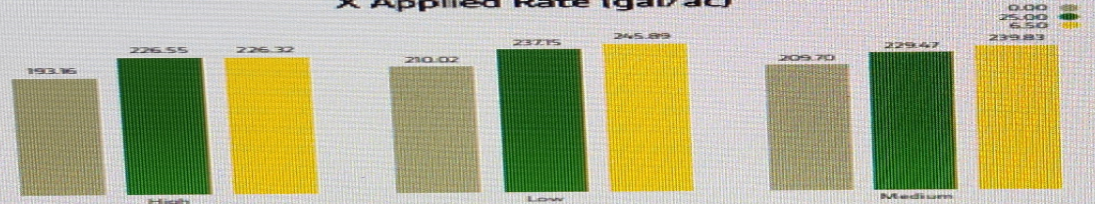
Corn Yield (bu/ac) by Applied Rate (gal/ac)



Corn Yield (bu/ac) by Topography Zone

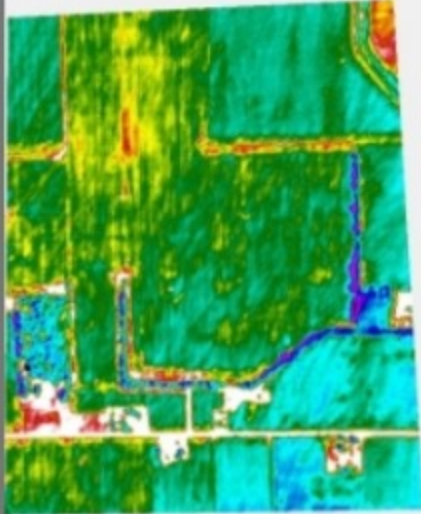


Corn Yield (bu/ac) by Topography Zone X Applied Rate (gal/ac)



Imagery ©2023 Airbus, CNES / Airbus, IndianaMap Framework Data, Landsat / Copernicus, Maxar Technologies, USDA/FRAC/GEO

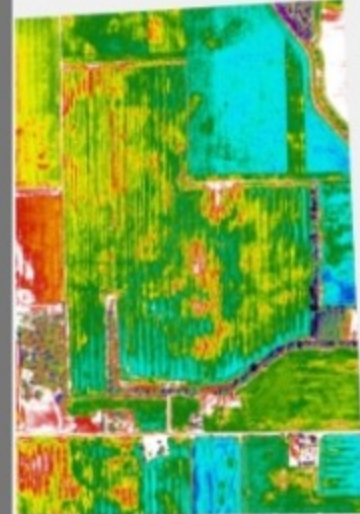




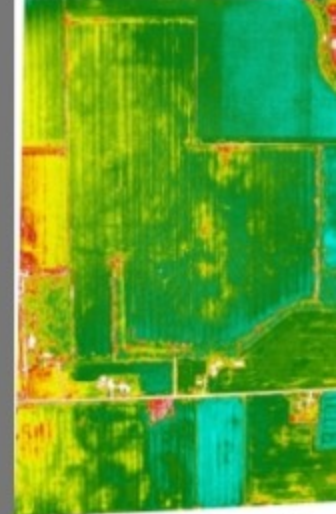
Thermal



Visual

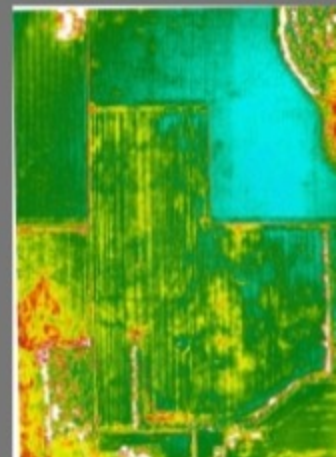
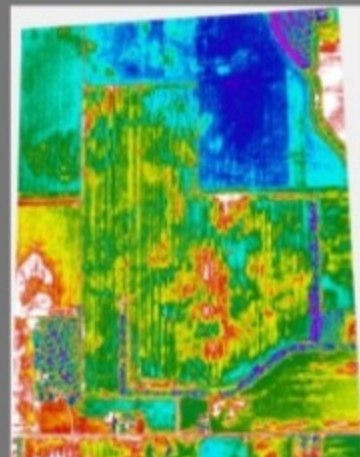
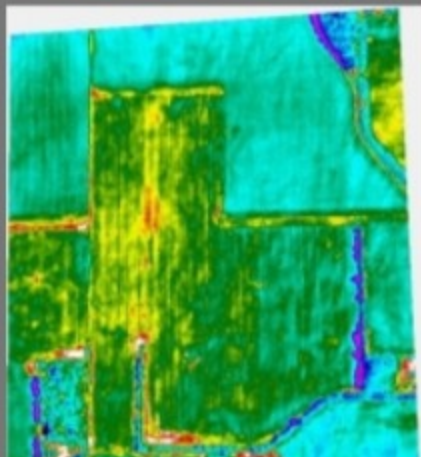


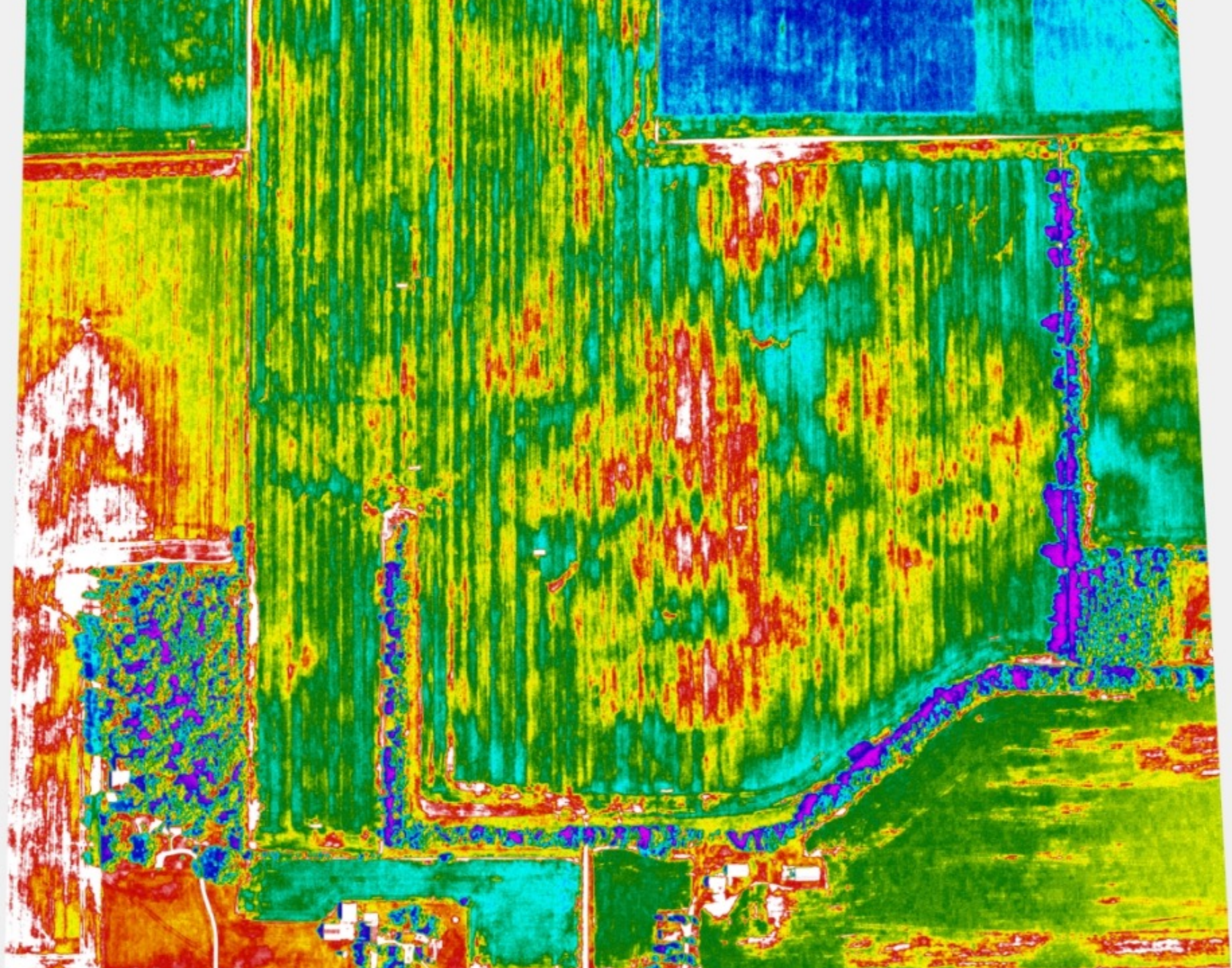
ADVI

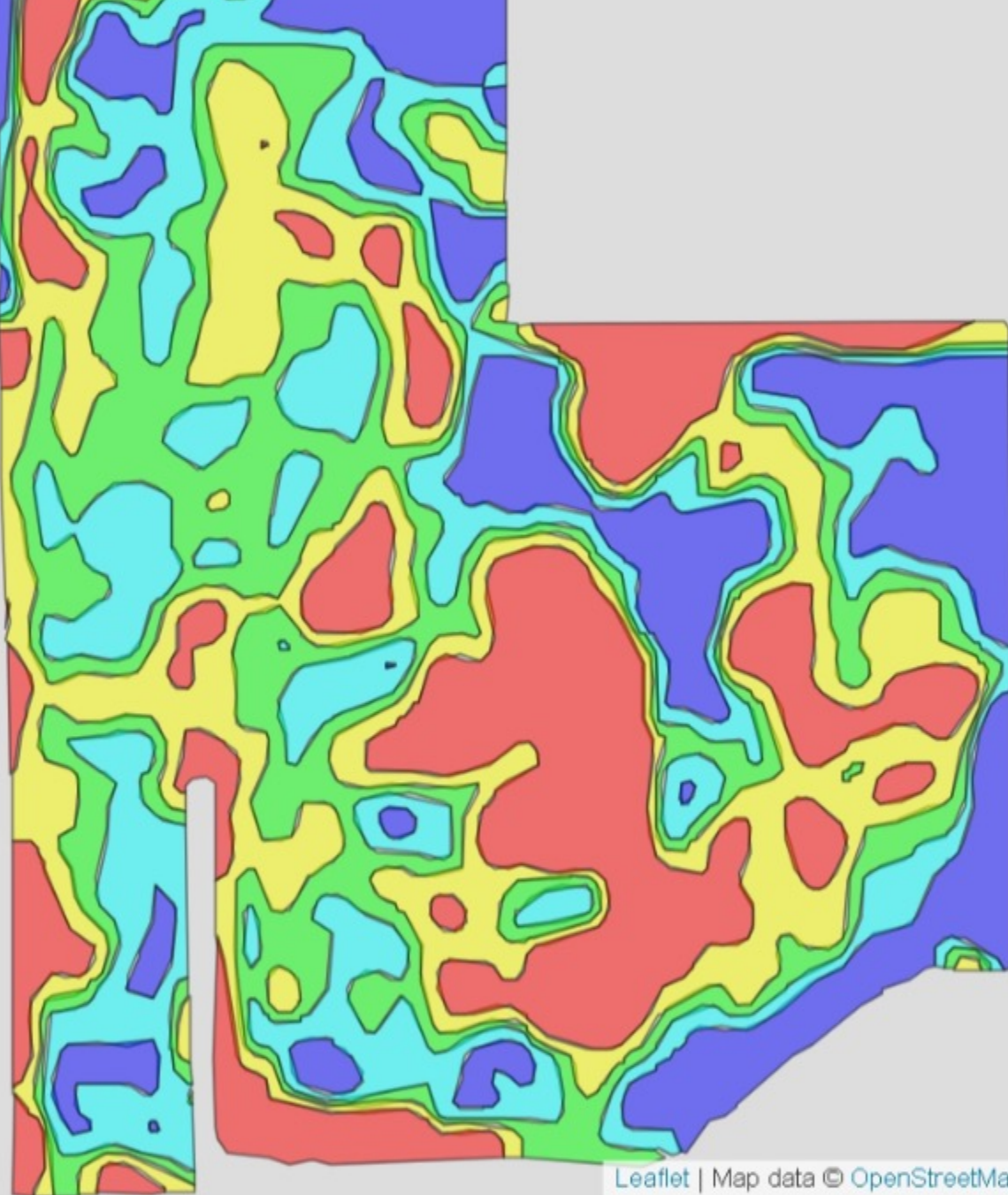


NDVI

07-05-2023







REDRAW

By Va

SPLIT ZONE

Product Rates:

30

27.5

25

22.5

20



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My 5th AHA No-Till Tool

Cover Crop Management



Cover Crops

Diversity, Diversity, Diversity!





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Annual Ryegrass

Great for removing soil compaction and improvement soil structure

Incredible Root Mass

Soil absorbs intense rainfall events like a sponge





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Rules for Termination of ARG

Don't even think about spraying it until you mowed your yard twice

Don't spray until you have 3 consecutive nights above 50 degrees

Spray between 10am and 4pm preferably with sunshine

If using Glyphosate bring water PH to 4.0 or less. AMS does not do this!



Clovers

Great N producer

Be patient in terminating as it needs to wake up in the spring before actively growing to get maximum benefit

Don't use after wheat because of risk of armyworm and slugs





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Buckwheat

Great phosphorus scavenger especially on low P soil tests soils

Super pollinator

Easy to terminate





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Hairy Vetch

Mass producer of Nitrogen

Perfect companion for other species ahead of corn

Huge producer of Biomass





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Cereal Rye

Always plant ahead of soybeans for weed suppression especially hard to manage weeds like marestail

Can seed late if need to and would still get a good stand

Always plant into green with ease. Will have issues if planted after termination because of high residue to manage





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Sunflowers

Adds diversity to other cc species

Great pollinator

Eye appealing to landlords

Great for granddaughter's pictures!





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Questions?

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Starkeyfarmpartnership.com

