Why You Should Add Wheat Back Into Your Rotation

Tim Norris

What are we going to discuss this hour.

- Discuss some lessons that I have learned.
- Look at the reasons why I left wheat out of my rotation.
- Discuss the benefits I see of adding it back into the rotation.

Lessons Learned

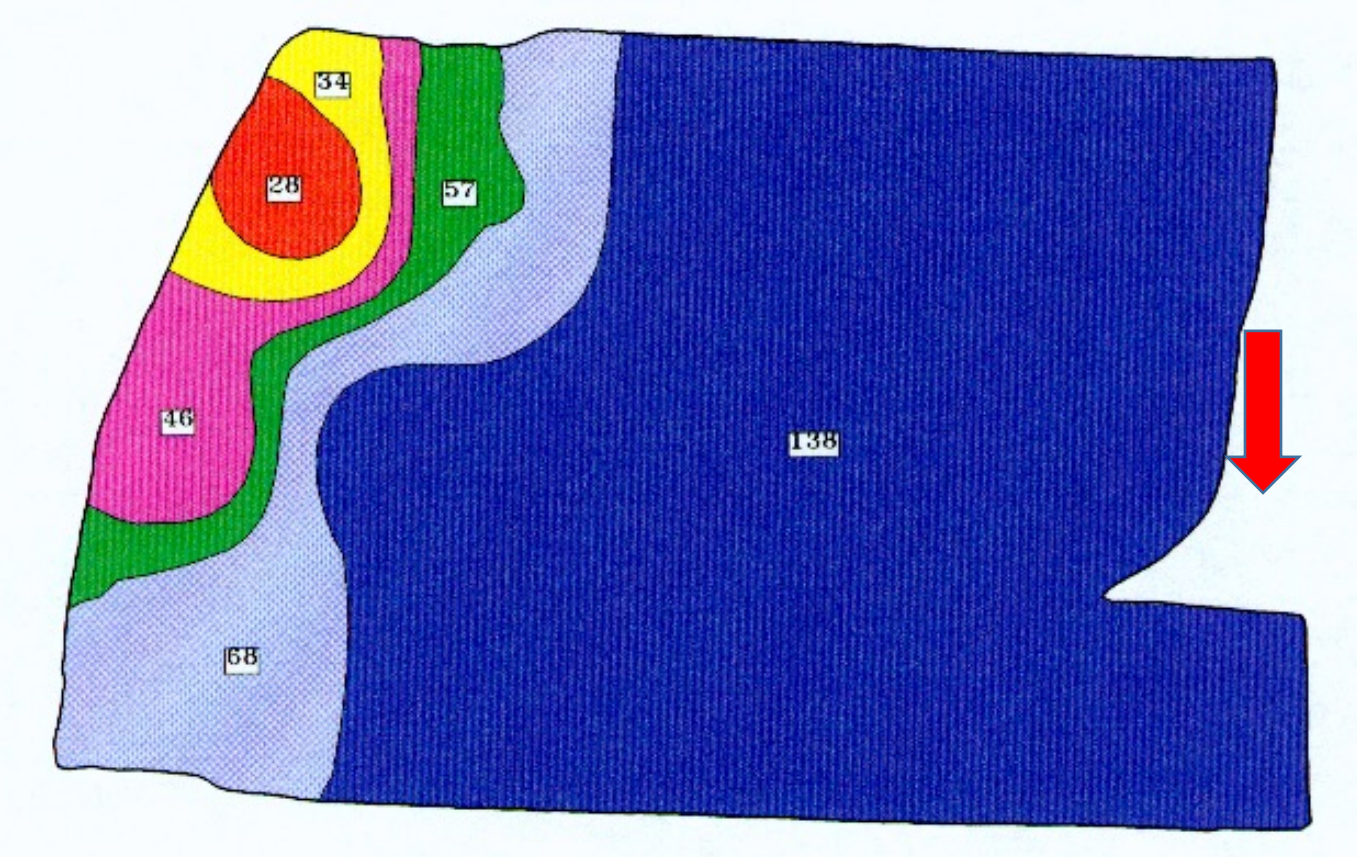
- The way our fathers and grand fathers farmed wasn't all bad.
  - Their crop rotations were good for the soil and good for weed, insect and disease control.
  - Manure supplied more than N,P & K.
  - I feel they had a better understanding of soil biology than we gave them credit for.
- I learned in my early years of farming that I was missing something by farming in a corn, soybean rotation.
  - I thought the only answer was more fertilizer and more herbicides

Cover Crops are Nothing New

- Cover crops were used generations ago to help keep weed pressure down and to add nutrients and other benefits to the soil.
- But as farms mechanized and got larger we started to specialize and get away from a more diversified agriculture.
- I can’t count the number of dairies and other livestock farms that are sitting empty today in my area.
- Those farms needed diverse cropping systems and also provided manure for their crop fields.

Grid Soil Sampling showed me the Benefits of Livestock.

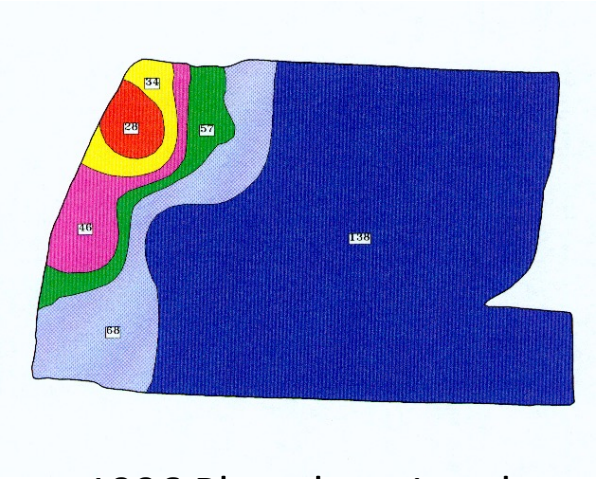
- I would constantly go over maps with growers and they could find old barns and pastures years later.
- I started grid sampling this field in 1996.
- There was a chicken house from with 3,000 chickens from 1959 to 1971.



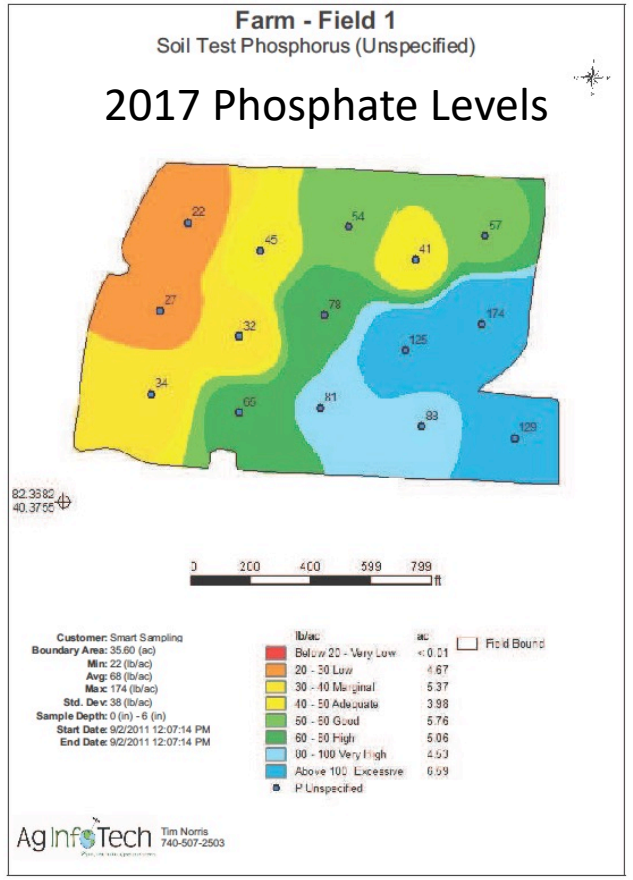
1996 Phosphate Levels

Grid Soil Sampling showed me the Benefits of Livestock.

- 25 years later 2/3 rds. Of the field averaged 138 lbs. per acre of Phosphate
- 21 years of VRT half of the field still didn't need any Phosphate other than my row starter.



1996 Phosphate Levels



Why did I drop wheat from my rotation?

- I was running a Precision Ag Business and farming 450 acres of my own and another 400 of custom work and there just wasn't enough time.
  - Fall was busy at work and with harvest and no time to get wheat planted.
  - Summer was our busy selling and meeting season.
- I also had heard horror stories about head scab and sprouting issues.
- I had an additional source of income from AIT so money in the summer wasn't as needed.

It was easier to not have the extra work load at times that were not great for my schedule

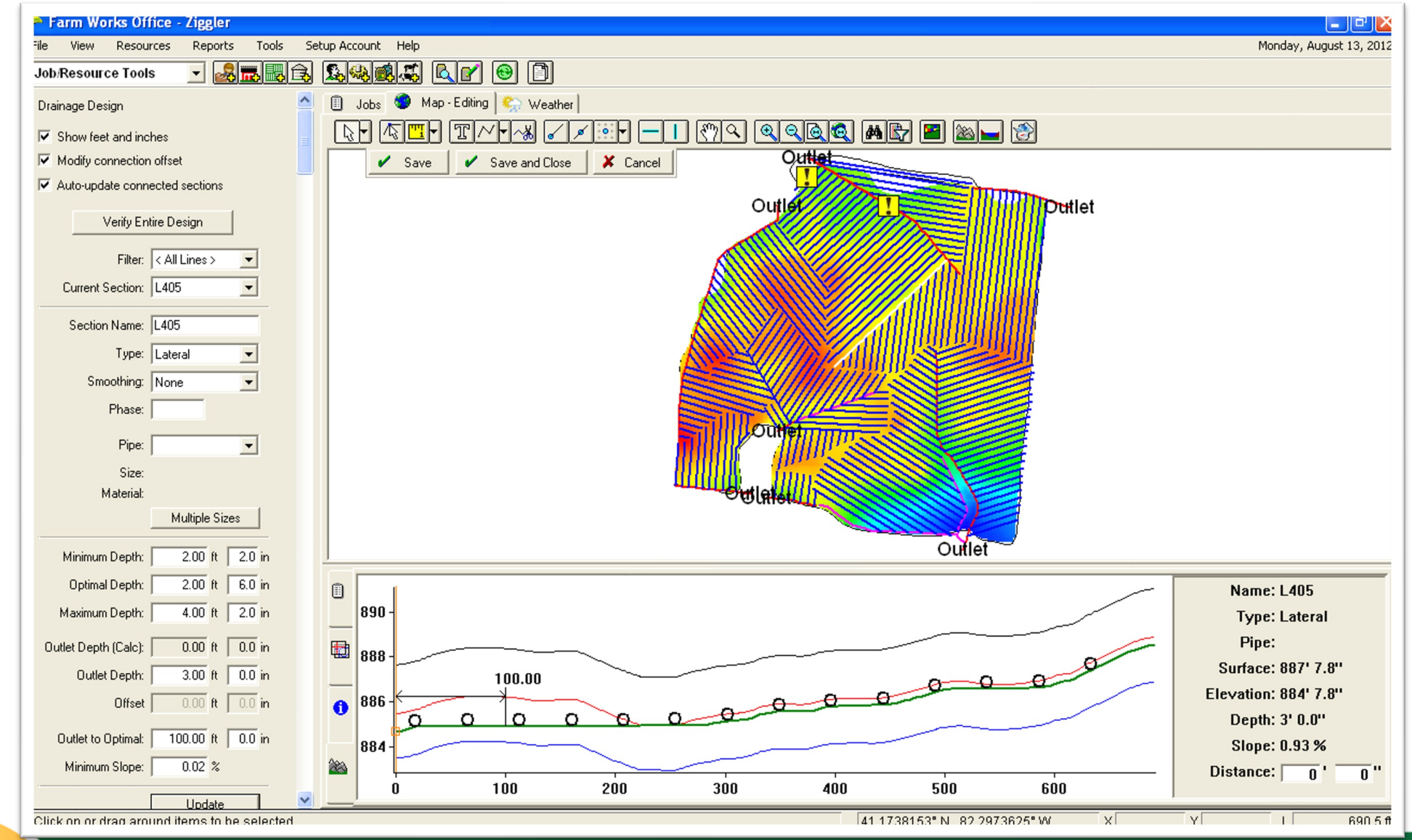
- But now my situation has changed.
- Farming is not a side business for me anymore it is my main source of income.
- My time requirements of my schedule is much different then when I had the precision ag business.
- I started to look at other things to do to keep busy in the off seasons.

Drainage Tile is something that was needed as well.

- Trying to install tile in December thru March is a Challenge.
- It's wet, cold and just a miserable job in the winter.
- We put about 10 runs in that day then it was too smeary.
- Too bad the fields had crops on them from April till November.

From my Ag Info Tech days I knew that Wheat was an ideal time to install tile.

- Ohio has complete LIDAR coverage and it works quite well to create tile plans.
- This 90 acre field I designed a tile layout for one of our customers.
- He installed it using a tile plow and grade control system that he had purchased from us as well.
- This field was quite the challenge as it had several pockets that were quite difficult to drain.
- The software worked out perfect.



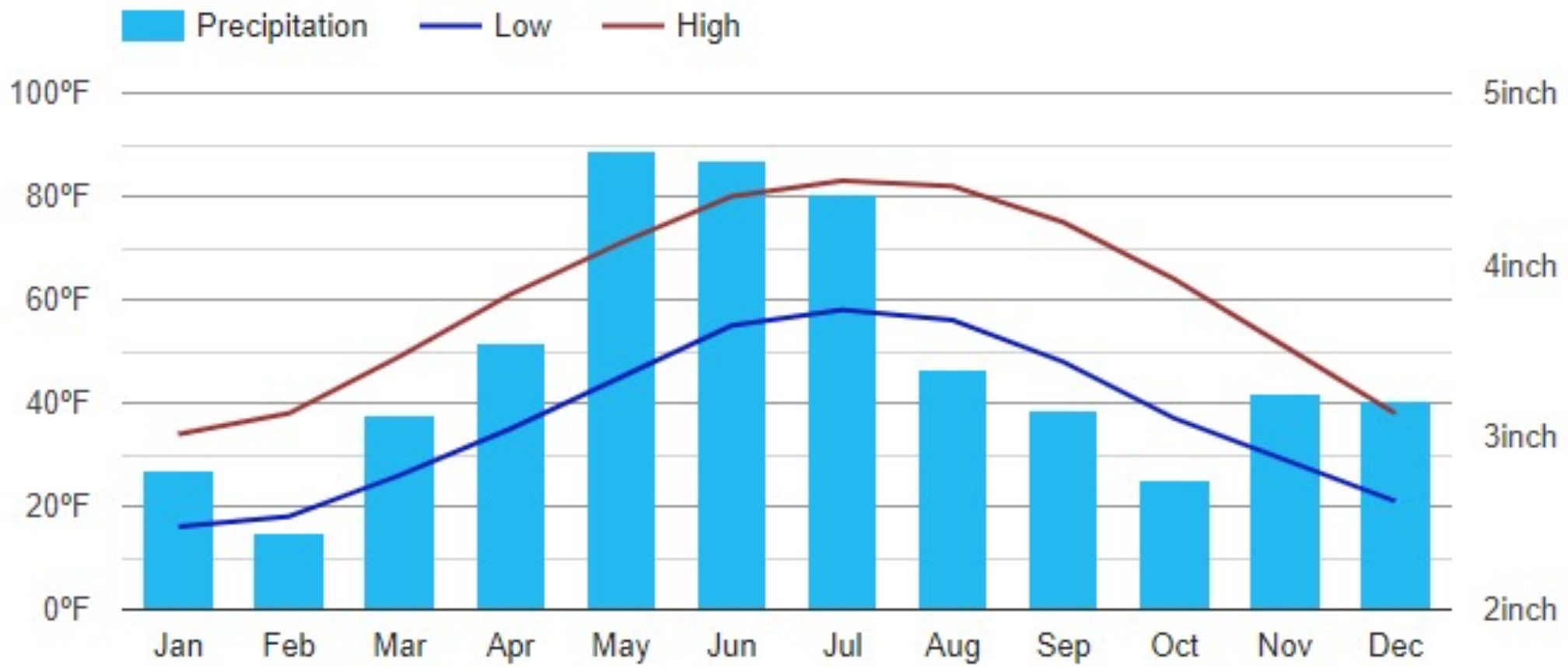
We have since been adding manure to our fields.

- I partnered with a friend who spreads manure and we bought 2 chicken barns worth of manure and haul everything that our fairgrounds creates.
- I haul and he spreads.
- I used about 500 ton last year.

Getting that manure hauled in the spring before planting was a challenge

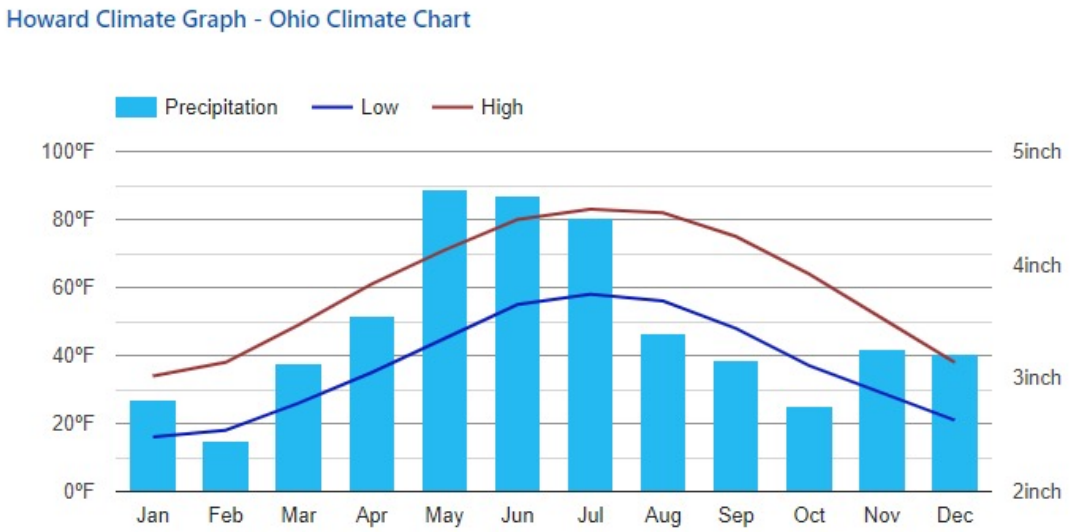
- I also had some waterways and some erosion areas that needed fixed.
- Trying to “fix” them in the spring before planting didn’t seem to work well.
- Inevitably we would get them nice and get it planted but before the crop had a good start we would get a large rain and they would need fixed again.
- So I started to think about the best time to fix those issues.

Howard Climate Graph - Ohio Climate Chart



I decided for my fields that needed things fixed, wheat was a Great Idea

- I could take the Wheat of in early July.
- Work on fixing issues.
  - Hauling manure
  - Spreading lime
  - Installing water ways
  - Fixing washouts
  - Fixing ground hog condominiums.
- Get a good established cover crop.



But What about the Budget for Wheat?

- When I started planting wheat again the budget was very favorable.
  - I had contracted 60 bushels at $10.40 a bushel and I felt that I could easily do the 60 bu. and I could make money at that, not much but some.
- So I decided to plant wheat in my worst two fields and give this plan a try in 2021.

I Sort my Fields into 3 Categories

- High Management
  - No known issues. Productive soil types, good drainage and good fertility. Very little shade.
- Average Fields
  - A few issues. Productive soil types but may have some drainage or fertility issues. Maybe more shady headlands.
- Low Management Fields
  - Lots of issues. Poor soil type or poor fertility or drainage, small fields with lots of shade. Those fields that come with other fields but you have to farm.

I decided to give it a try and I picked my 2 of my low management fields

- I decided to put this plan to a test and if I could make money on these fields and see an improvement in them, it would work anywhere.

First Field

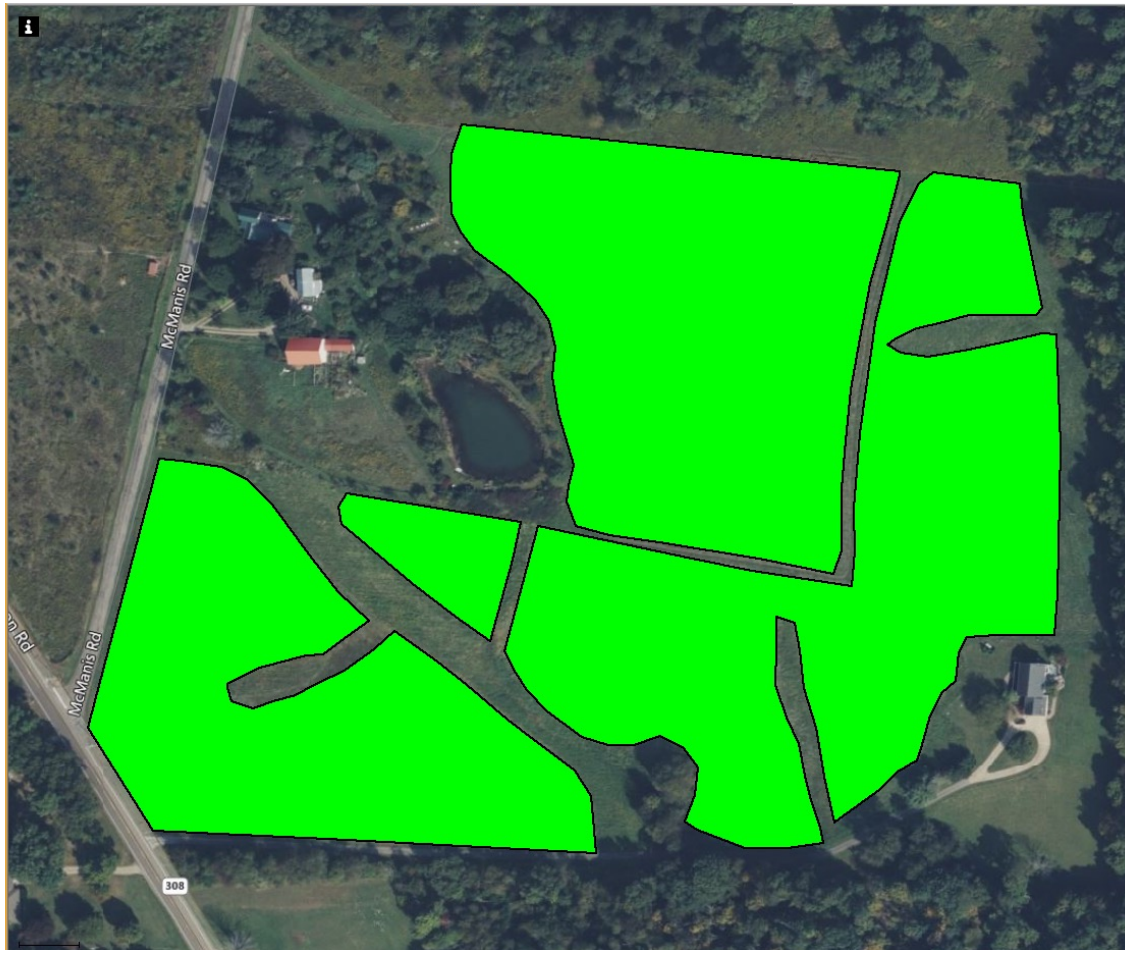
- 20 acre field or really a 8 and a 12 acre field.
- Owned by the local collage and I farm another 140 acres of their land.
- Surrounded by a 340 acre park.

Deer are a terrible problem in this field.

- It’s not uncommon to see 40 or 50 deer at a time in there.
- We planted a bearded wheat and it seems to keep the damage caused by them to a minimum.

Second Field

- 20 acre field.
- Walking path and 5 waterways.
- The man who owns the farm house and barn had been trying to get me to farm it for years and I said no.
- Then the college bought part of it and it now has 3 different owners.



Like I said these fields were a Challenge

- We ended up averaging 78 bu. per acre on the wheat in on these two fields in 2022.
- Do I harvest the straw or leave it on the field?
  - I decided for the extra fertilizer that would be removed and the extra OM I should get from leaving the straw I would just leave it on the field.
- Plus this got us started on the cover crop sooner.

My Goals for my Cover Crop after Wheat

- Establish a cover crop for erosion control.
- Improve my soil health by enhancing the biology of the soil
- Produce nitrogen for the following crop
- Grow sunflowers inexpensively and pay for my cover crop with them

I challenged Cody Beacom at Bird Agronomics with providing a mix to accomplish my goals

- He formulated a mix of Grasses, Brassicas, broadleaves and legumes.
- It was a balancing act have enough seed to get the cover established but not so thick to not allow for sunflower growth.

2022 Cover Crop after Wheat

- **Used a 8 variety Mix**
  - **Oats**
  - **Cereal Rye**
  - **Bayou Kale**
  - **Crimson Clover**
  - **Austrian Winter Peas**
  - **Buckwheat**
  - **Flax**
  - **Sunflower**

Oats – 10 lbs. Acre

- Quick almost instant growth
- Helps hold the soil in the fall
- Boosts soil biology
- Will die off at frost

Cereal Rye – 15 lbs. Acre

- Quick growth
- Helps with erosion all season
- Helps keep weeds out
- Planted at a light enough rate that it won't affect planting.
- Will overwinter

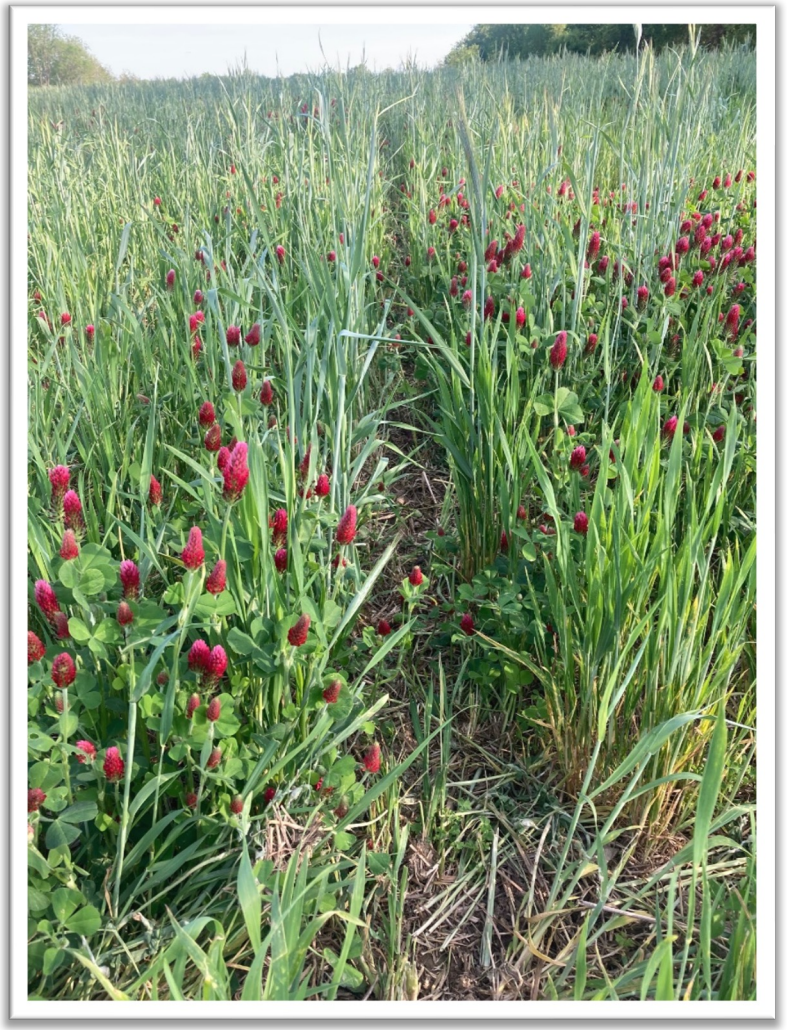
Bayou Kale – .25 lbs. Acre

- Brassica
- Compaction Relief
- Overwinter

Picture is of a pure stand not a mix.

Crimson Clover – 4 lb. Acre

- Nitrogen fixation
- Over winter



Austrian Winter Peas - 6 lb. Acre

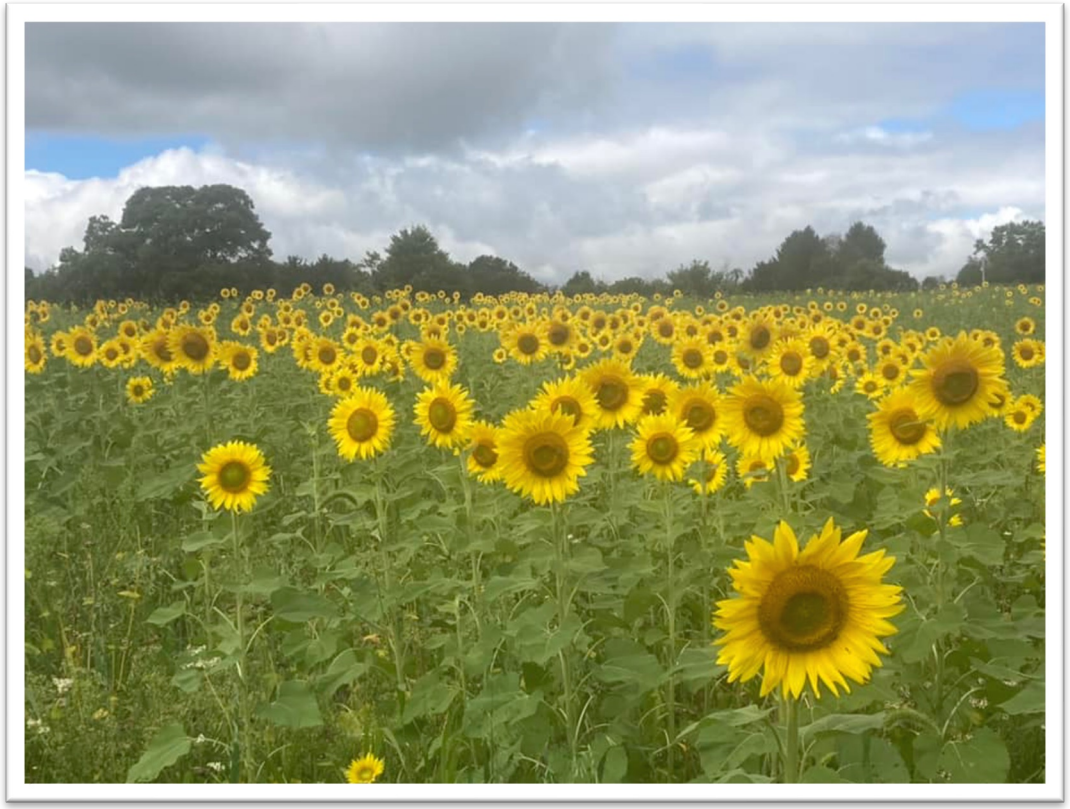
- Nitrogen Fixation
- Over winter

Buckwheat - 4 lbs. Acre

- Quick Growth to out compete the Weeds
- Pollinator
- Helps convert inorganic Phosphorus it available to the next crop
- Improve topsoil tilth
- Winter kill

Sunflower – 3.4 lbs.

- Beautiful
- Hoping to harvest to help pay for the seeding
- Good fibrous root system



Flax – 1 lb. Acre

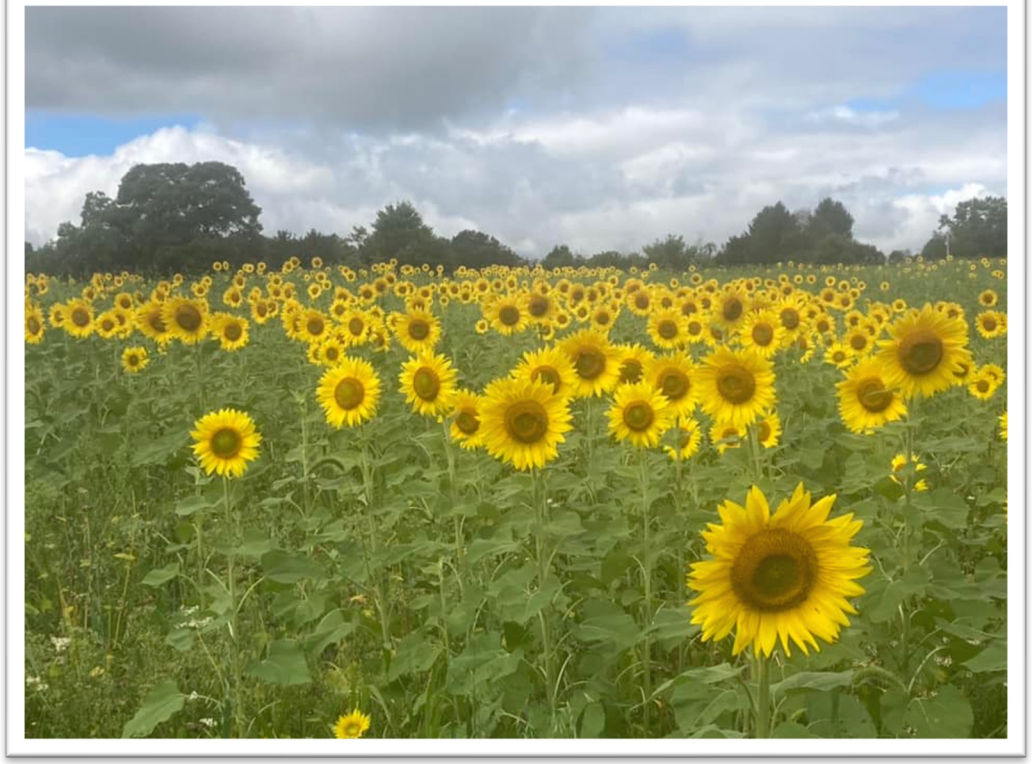
- Improves soil Tilth
- Pollinator
- Boosts Soil Biology
- Winter Kill

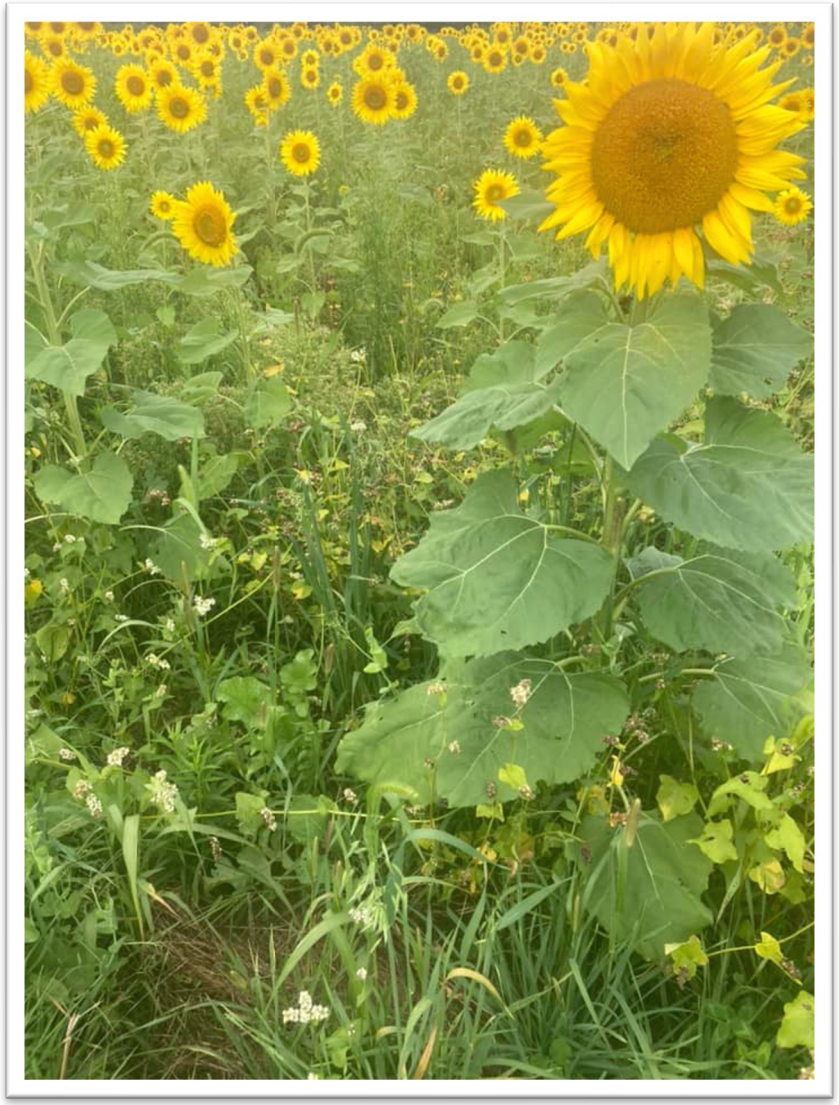
Picture is of a pure stand not a mix.

About a Month after Planting

About 45 days after Planting

60 Days after Planting, Late September





I didn’t feel there were enough sunflowers to harvest

- If I do it again I thing I will plant the sunflowers with a planter and seed the cover crop with the drill.
- I still have a goal of the cover crop producing something I can sell.

Harvesting Sunflowers

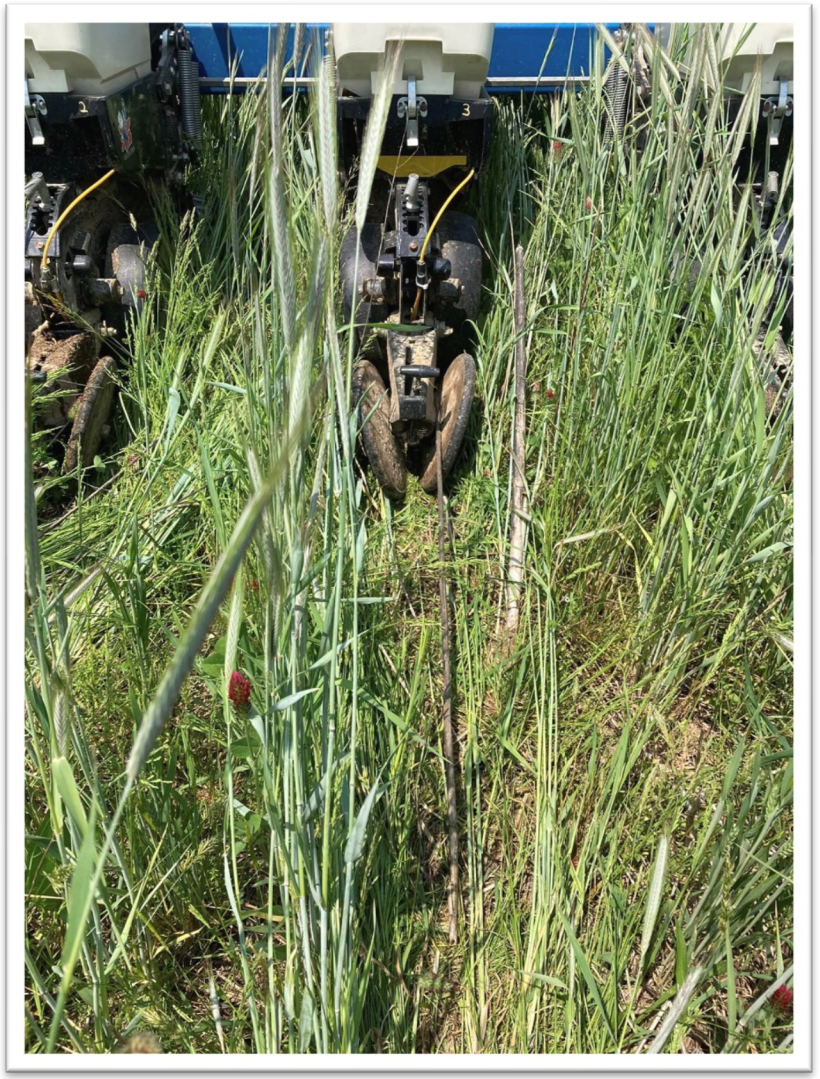
- We clean them and bag them in nice burlap bags.
- Sell them locally for $12.00 for a 15 lb. bag and $25.00 for a 40 lb. bag.

Next Spring

- The field by the park had a surprisingly better stand of clover than the other field.

At Planting

At Planting



Termination

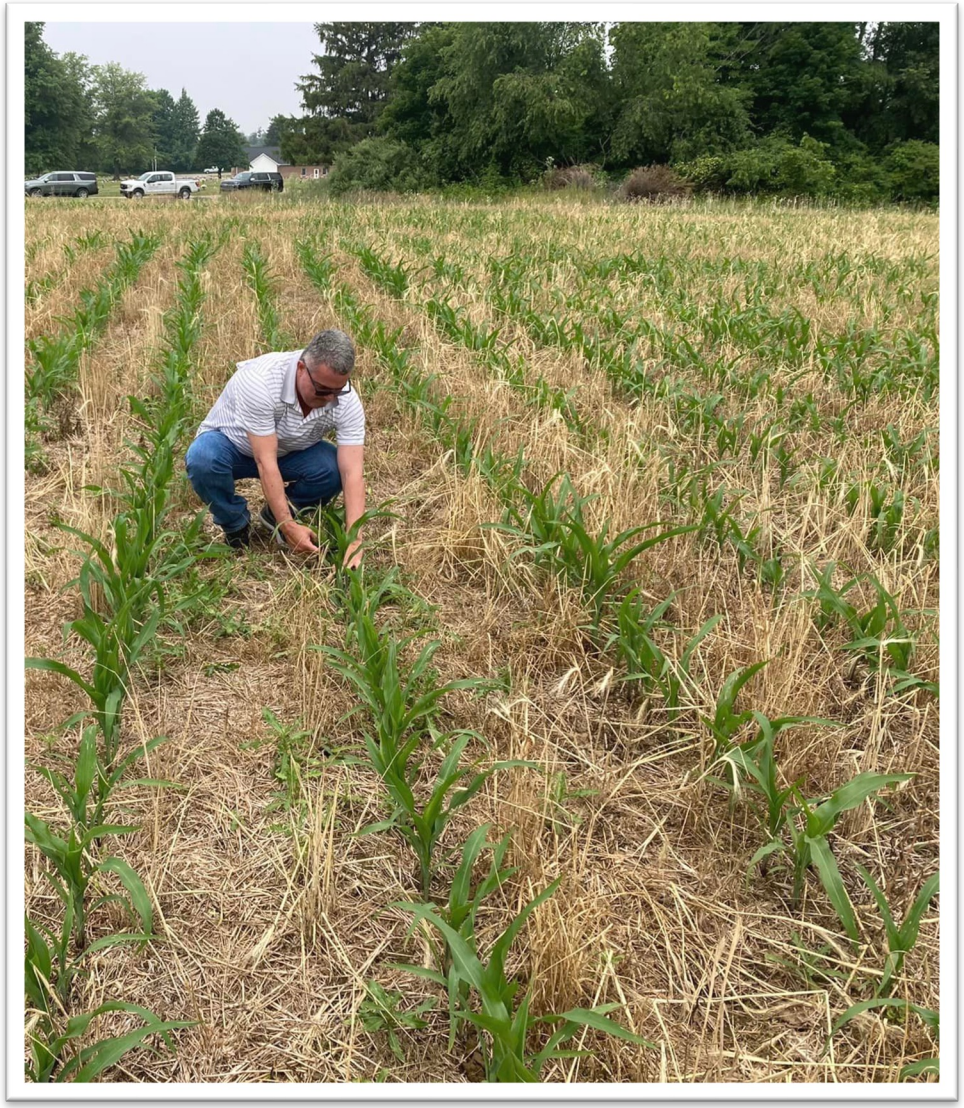
- I used Generic Glyphosate
- 24D Ester
- Generic Harness Extra
- Callisto
- I used 20 Gal. of 28% as a Carrier

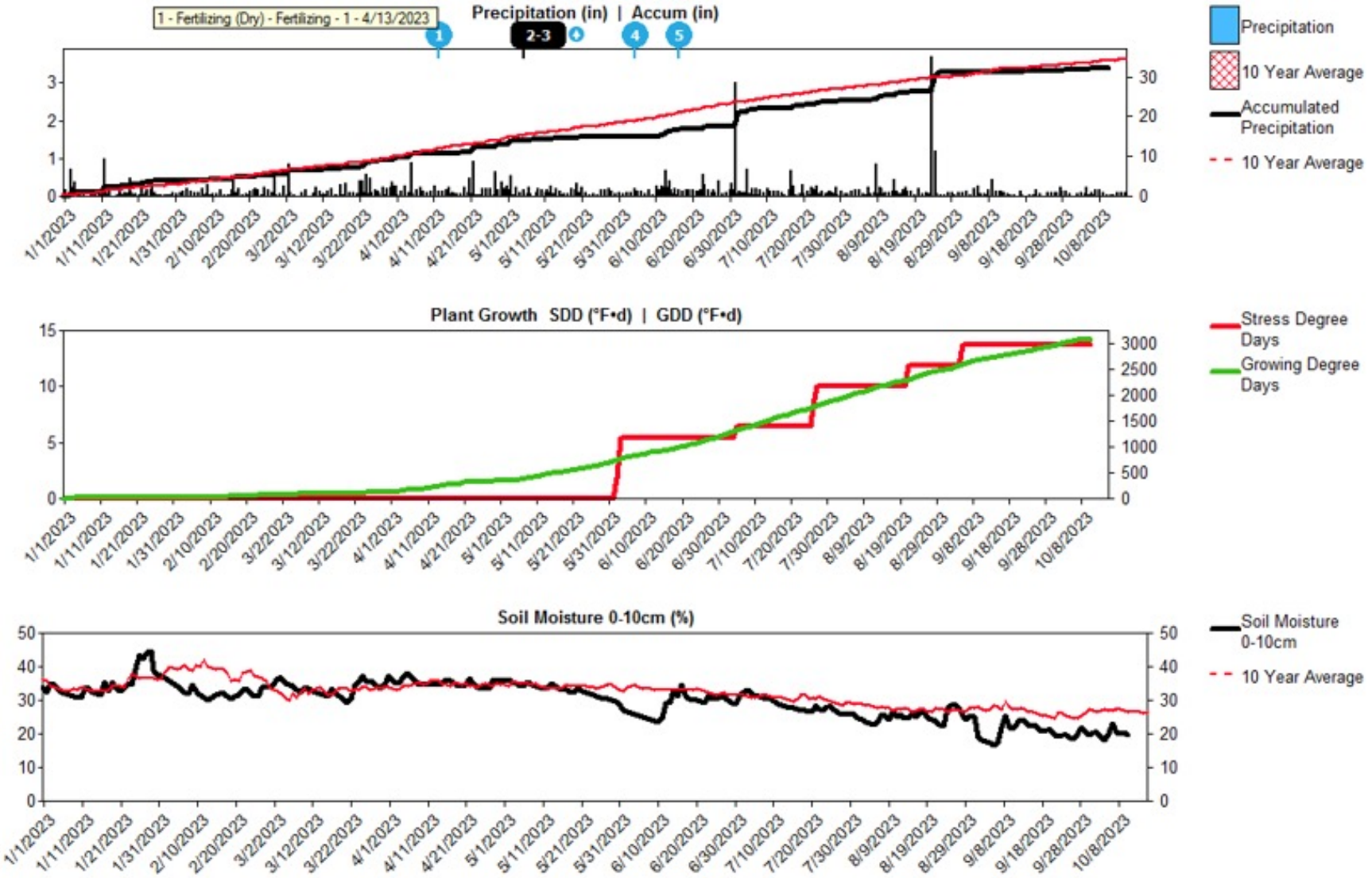
Fertility Plan

- 2 Year Application of VRA MAP.
- 4 gal.s of Vitalize Silver 9-16-3-1S.27Zn
- 20 gals of 28% as a pre emerge carrier
- 20 gals. Of 28% side dress.
- 124 lbs. of N. Total Applied

45 days after planting

- We planted a little heavy.
- We went for 32 days after planting with only .2 of an inch of rain.
- I expected this to handle the dry weather better but it seemed to just sit.





Sara Moore from Pheasants Forever showed me to measure how quickly the soil can absorb rainfall.

- **Keeping our moisture in the soil instead of running off does 2 things.**
  - **Retains the water for the use of the crop.**
  - **And it keep our soil and nutrients in the field instead of washing away with the water.**
- **This is a simple and in expensive, but interesting way to demonstrate this**

Take a piece of stove pipe and add a measured amount of water to simulate 1” of water.

- **Pound the pipe about an inch into the ground so the water has to infiltrate the soil and not leak out the sides.**
- **I did this in the same soil type in every field.**
- **Time it till the water disappears.**
- **I tested this in 5 different fields and in a fence row.**
- **You need to try this on your own fields.**

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds
Chisel Plowed 3 years ago, No-Till, No-Till Wheat then 7 Species Cover Crop Mix.	

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds
Chisel Plowed 3 years ago, No-Till, No-Till Wheat then 7 Species Cover Crop Mix.	3 Minutes

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds
Chisel Plowed 3 years ago, No-Till, No-Till Wheat then 7 Species Cover Crop Mix.	3 Minutes
Neighbors Long Term No-Till & Cover Crops 20+ Years.	

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds
Chisel Plowed 3 years ago, No-Till, No-Till Wheat then 7 Species Cover Crop Mix.	3 Minutes
Neighbors Long Term No-Till & Cover Crops 20+ Years.	29 Seconds

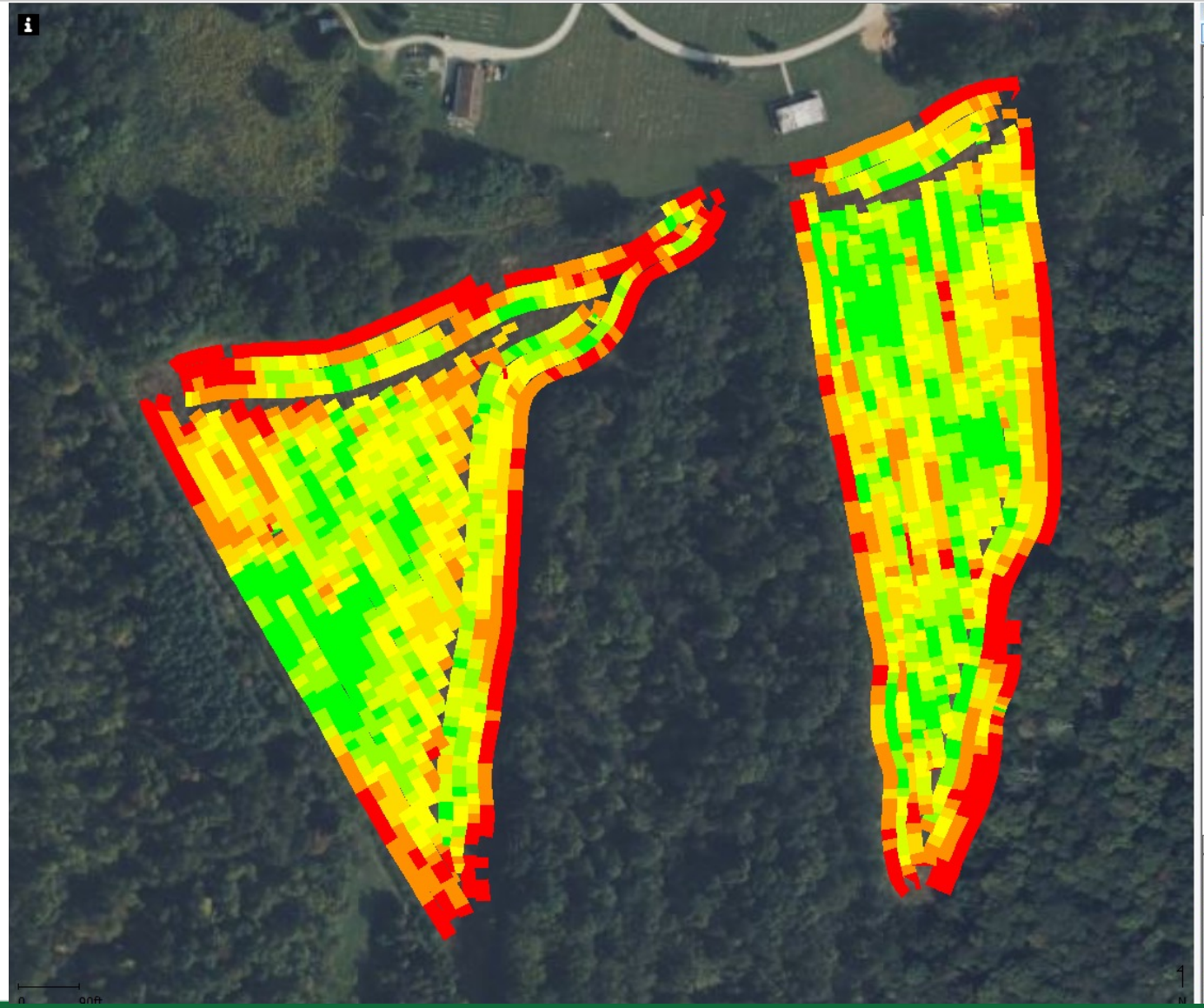
Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds
Chisel Plowed 3 years ago, No-Till, No-Till Wheat then 7 Species Cover Crop Mix.	3 Minutes
Neighbors Long Term No-Till & Cover Crops 20+ Years.	29 Seconds
My Fence Row	

Tillage Practice	Time for 1” of rainfall to infiltrate
Chisel plowed 2 years ago, no-tilled last year and vertical tilled this year	Over 5 Minutes
Chisel Plowed last year, No-Till this year.	5 Minutes 30 Seconds
Long Term 10 plus years of No-Till no Cover Crops	50 Seconds
Chisel Plowed 3 years ago, No-Till, No-Till Wheat then 7 Species Cover Crop Mix.	3 Minutes
Neighbors Long Term No-Till & Cover Crops 20+ Years.	29 Seconds
My Fence Row	17 Seconds

Come September it looked amazing for the fields that they were and for the amount of fertilizer that was applied.

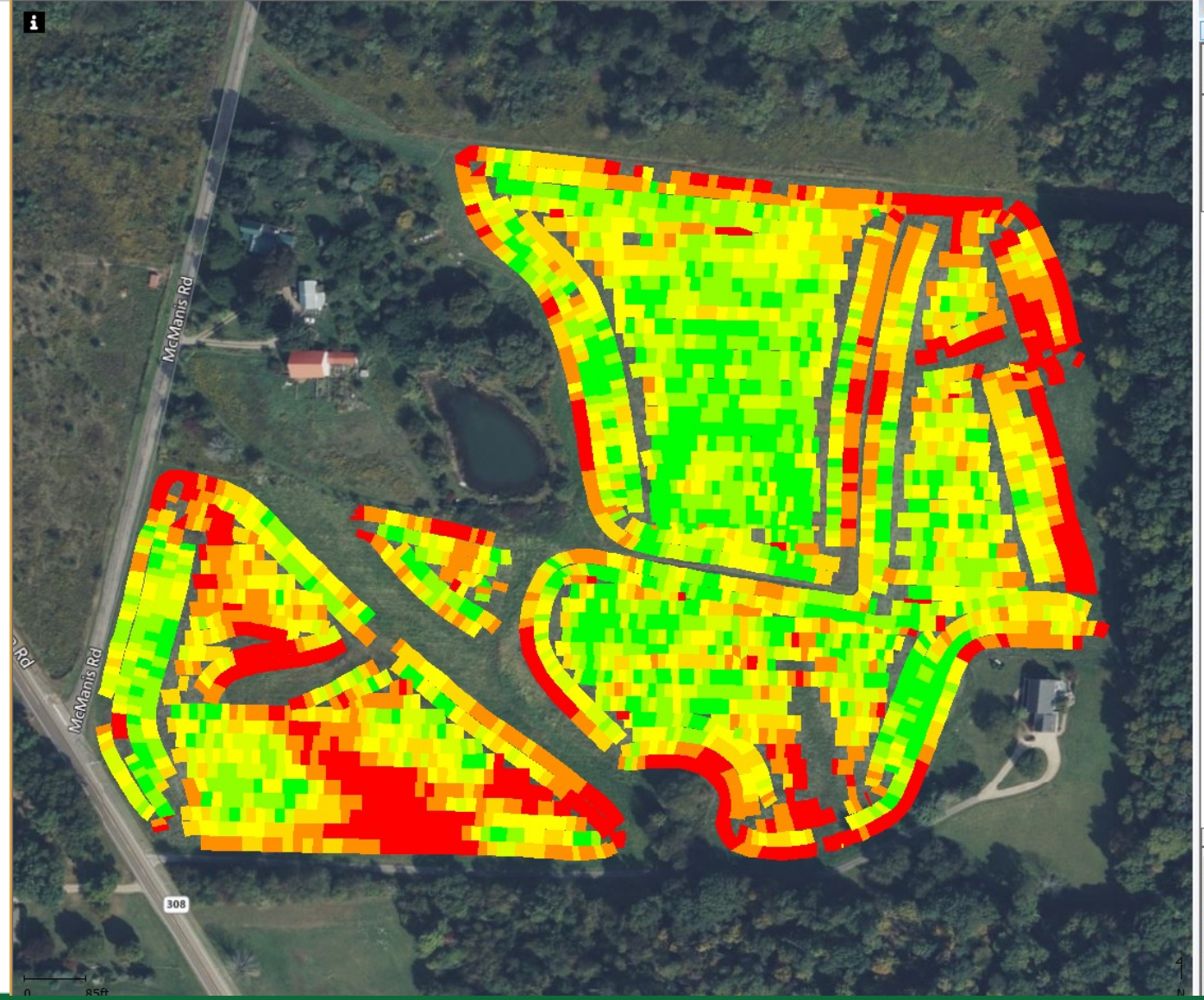
Field 1

- 144.7 Field Average
- 173 With removing the headlands
- 124 lbs. of total N applied.



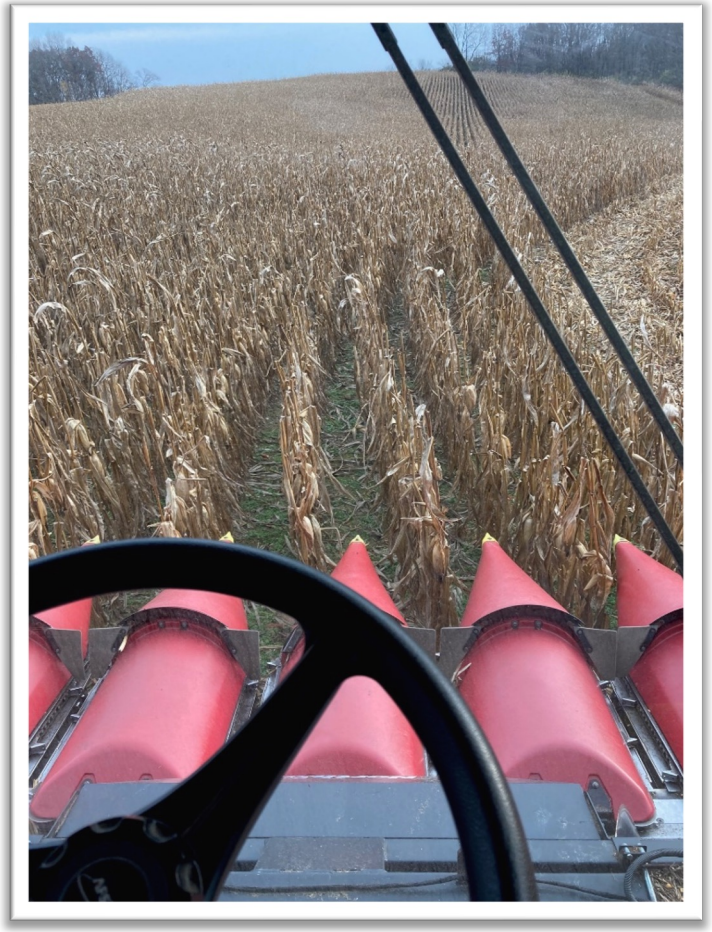
Field 2

- 173.8 Field Average
- 199 With removing the headlands
- 124 lbs. of total N applied.



We felt fairly successful with the corn and reducing the nitrogen rates

- Those aren't the greatest yields but on these types of fields I try to budget for a break even at 140 bu.



Fall of 2022 we decided to do a 35 acre Highly Productive Field and an 58 acre Average Field

- The highly productive field needed some waterway work.
- The average field used to be my uncles farm about 12 miles from home.
  - I just started to farm it in 2022 and knew it needed a lot of work. Previous farmer took all the waterways out and left nice washouts.
  - After grid sampling it in march of 2022 I found out that about 1/3 of the field had Phosphate levels in the single digits and a pH under 5. Another 1/3 had Phosphate levels in the teens and pH between 5 and 5.5.
  - Potassium wasn't great either but not terrible.
  - So I knew we had a lot of work to do on it.

My plan for 2023

- We were going to plant Wheat on both of these farms.
- I was going to plant my cover crop mix and sunflowers with the corn planter in the highly productive 35 acre field.
- Then in May of 2023 I was informed that they were splitting the farm up and auctioning it off. So no cover crop.
- We also had a 4 week long trip planned to drive to Alaska and see our son and tour around so I knew August was shot.
- I had a lot of work to do with the other field so I decided we couldn't get it all done before I left for Alaska so we did not to do the cover crop.

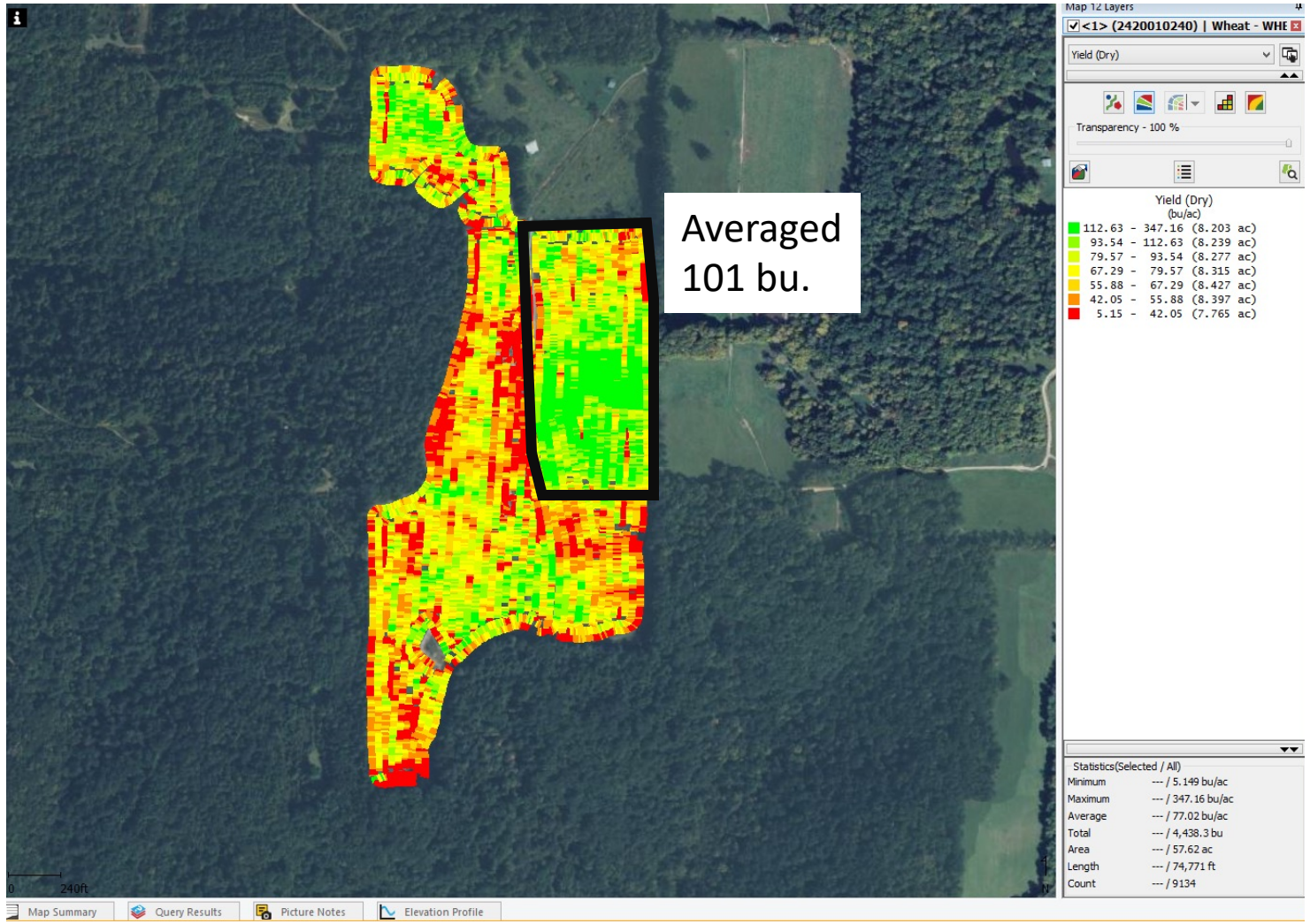
I was pleased when we ran the combine

Highly Productive Field Results

- Field averaged 112.9 bushels per acre.
- I also baled 120 square bales of straw per acre.
- It was a good profitable crop.
- Too bad it sold off into 6 building lots.

Average farm Results

- Averaged 77.0 Bushels per acre.
- A little deer damage on the out sides but low pH and Phosphate areas were the red areas in the middle of the field




In 1900 feet it drops 280 feet in elevation
Click here for Legal Disclaimer

We went to work on the waterways as they are essential to keeping these fields.

Seeded Waterway

- We reinstalled 6 waterways.
- It will make it a pain to farm around but its what is needed.

So for Myself, Adding Wheat Back Into the Rotation has been a Positive.

- Allows me to focus on repairing and improving my farms in the right season to have the best results possible.
- Provides some income when you have only had expenditures for 7 months.
- Spreads the workload out over a longer period of time.
- It has added additional custom income from people that have combines but don't want to mess with getting it out for 40 or 50 acres of wheat.

I believe that the Manure and Cover Crops are going to make a big difference.

- Is improving water infiltration.
- I believe cover crops are most certainly releasing nutrients from the soil.
- It has to be helping to build OM.
- It is improving compaction.

Thank You

- Tim Norris

  tnorris226@gmail.com

- Facebook

  Norris Grain Farms