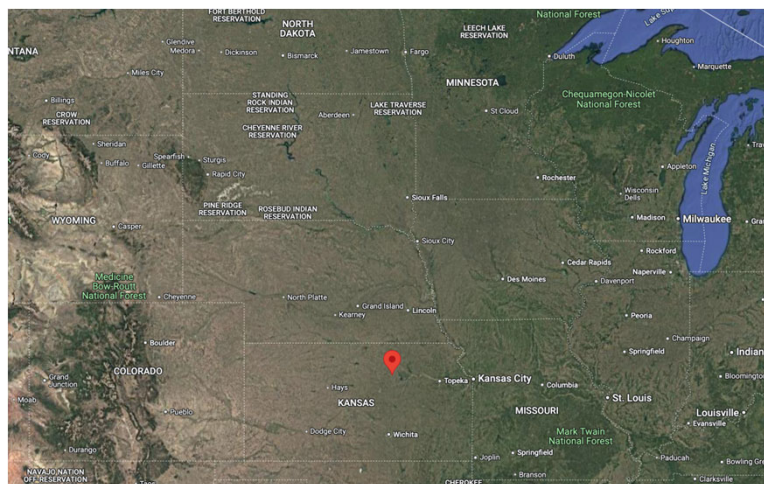


Economics of adding Livestock and Cover Crops to Cropland

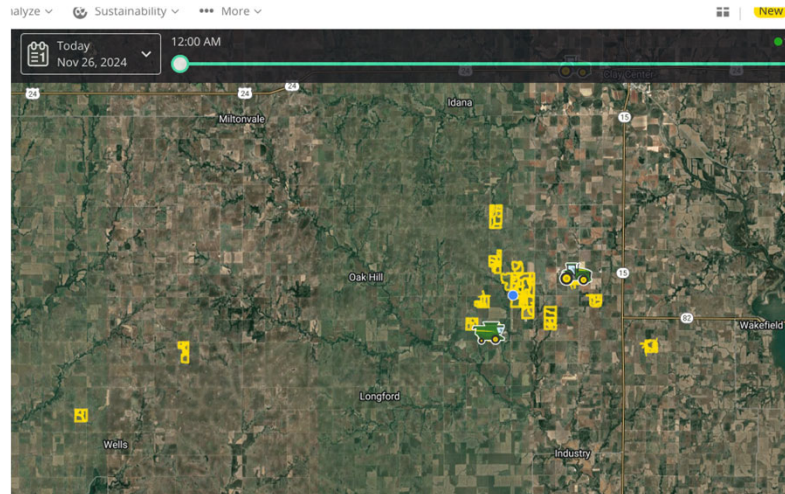
1

My location



2

3000 acres of Cropland



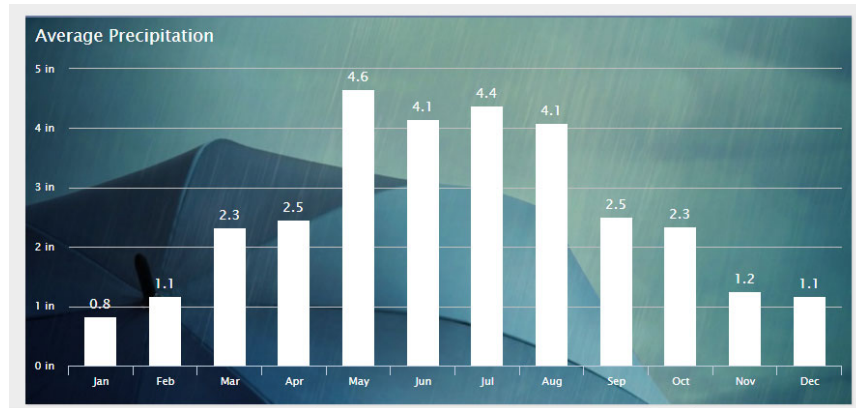
3

The Farm



4

31" Annual Rainfall

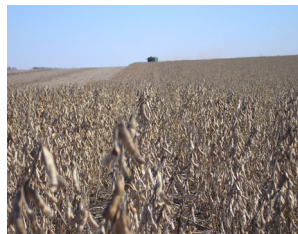


5

Crops



Hard Red Winter Wheat



Soybeans



Corn



Grazers/Covers

6

Crop Rotation

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	DC SB	Winter Wheat	Grazer then Rye	Corn	Rye	Soybean	Rye	Soybean	Winter Wheat

7

150 Cows



8

1500 Hairsheep Ewes



9

25 Goats



10

Honey Bees



11

Future Pastured Poultry and Pork



12

We grow Corn and Soybeans



13

Haul it away



14

Fed to animal protein in confinement



15

Haul it Back



16

Give all the money to Dealers



17

We destroy creation doing it



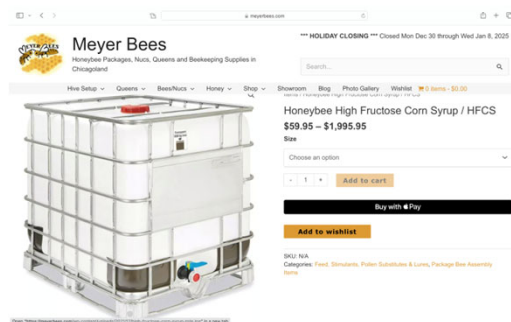
18

Why not bring the Livestock back to the Land



19

We even screw up Honey Bees



20

Overhead

	Purchase Price	Current Estimated Value	Depreciation	10% Interest Opportunity Cost	Repairs
Grain Facility as of Jan 1, 2022	\$400,000.00	\$200,000.00	\$200,000.00	\$20,000.00	
Combine	\$442,000.00	\$252,000.00	\$190,000.00	\$25,200.00	\$33,686.00
Header	\$88,850.00	\$67,000.00	\$21,850.00	\$6,700.00	\$5,000.00
Corn Header	\$45,000.00	\$35,000.00	\$10,000.00	\$3,500.00	\$3,000.00
8360R	\$270,000.00	\$180,000.00	\$90,000.00	\$18,000.00	\$20,000.00
AirSeeder with Uniforce and IntelliAg	\$240,000.00	\$125,000.00	\$115,000.00	\$12,500.00	\$35,000.00
7930 w Loader	\$155,735.00	\$100,000.00	\$55,735.00	\$10,000.00	\$22,000.00
Planter	\$45,000.00	\$31,500.00	\$13,500.00	\$3,150.00	\$6,500.00
Grain Cart	\$33,500.00	\$33,500.00	\$0.00	\$3,350.00	
Scraper	\$20,500.00	\$20,500.00	\$0.00	\$2,050.00	\$0.00
Blade	\$9,125.00	\$9,125.00	\$0.00	\$912.50	\$0.00
Mower	\$17,250.00	\$15,000.00	\$2,250.00	\$1,500.00	\$0.00
Semi Blue	\$15,000.00	\$5,000.00	\$10,000.00	\$500.00	
Semi White	\$17,500.00	\$5,000.00	\$12,500.00	\$500.00	
Jet Trailer	\$16,000.00	\$16,000.00	\$0.00	\$1,600.00	
Jet Trailer	\$20,125.00	\$16,000.00	\$4,125.00	\$1,600.00	
Sprayer	\$324,400.00	\$160,000.00	\$164,400.00	\$16,000.00	\$15,000.00
4020	\$25,000.00	\$25,000.00	\$0.00	\$2,500.00	
Skid Steer	\$48,000.00	\$20,000.00	\$28,000.00	\$2,000.00	\$5,000.00
Gator	\$26,000.00	\$15,000.00	\$11,000.00	\$1,500.00	
Ranger	\$18,700.00	\$6,000.00	\$12,700.00	\$600.00	\$5,000.00
GrassHopper	\$14,000.00	\$6,000.00	\$8,000.00	\$600.00	
Titan Trailer Flatbed	\$10,400.00	\$9,000.00	\$1,400.00	\$900.00	
Titan Trailer Livestock	\$10,750.00	\$9,000.00	\$1,750.00	\$900.00	
Trailer Flatbed	\$4,925.00	\$4,000.00	\$925.00	\$400.00	
			\$0.00	\$0.00	
Total	\$2,352,260.00	\$1,392,725.00	\$959,535.00	\$139,272.50	\$150,186.00

21

Land Overhead

1,000 acres @ \$4,000/a = \$4,000,000

Ground lays fallow half the year

Year 1		Year 2		Year 3	
Oct 1	July 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	9 months fallow	Corn	8 months fallow	Soybean	6 months fallow to Corn

22

Feed Costs

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	DC SB	Winter Wheat	Grazer	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat

Based on the USDA, Economic Research Service (ERS) commodity cost and return estimates, feed expenses are the largest operating cost for cow-calf producers, comprising 75 percent of these costs in 2021.

23

Grazing Windows

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	DC SB	Winter Wheat	Grazer	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat

Summer Window

- Opportunity to add lots of Diversity to the system

Winter Window

- Basically limited to Winter Cereals
 - Rye
 - Triticale
 - etc

24

Economics of Rye or Grazer

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	DC SB	Winter Wheat	Grazer -> Rye	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat

- Controls Weeds
- Grazing
- Builds Soil

25

Rye Cover

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	DC SB	Winter Wheat	Diverse Cover -> Rye	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat



26

Rye Cover

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	Grazer	Winter Wheat	-> Rye	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat



27

Rye Cover



28

Rye Cover



29

Economics of Rye Cover

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	Grazer	Winter Wheat	Grazer -> Rye	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat

Rye Cover		Herbicide
\$15 Rye <u>\$20 Seeder</u> \$35	Fall	\$15 Herbicide <u>\$8 Sprayer</u> \$23
	Spring	\$15Herbicide <u>\$8 Sprayer</u> \$23
\$35		\$46
1 Ton of Hay = \$100		

30

Grazer



31

Grazing Plan

100%

View

100%

Print

Add Category

Insert Table

Insert

Table

Chart

Text

Shape

Media

Comment

Share

Format

Organize

Visual Grazing Plan

Grazing Cows

Mature Value

		January	February	March	April	May	June	2024 July	August	September	October	November	December
Porter South Cropland	145 Acres	Grazer				Soybeans							
Porter Junk Pasture	200 Acres												
Bud's Rye Grazer	150 Acres				Rye		Soybeans						
Bud's Pasture	150 Acres												
Hulls N Pasture	80 Acres												
Hulls N Cropland	200 Acres	Wheat								Grazer			
Porter North	320 Acres				Corn						Corn Stalks		

32

Economics of Cropland

2024									
Crop	Rotation	1=Included	Wheat	DC SB	Corn	SB	Totals		
		Acres	1	1	1	1			
			100	100	100	100			
Income									
Yield			75	20	90	20			
Price			\$5.75	\$10.00	\$4.50	\$10.00			
Income per Acre			\$431.25	\$200.00	\$405.00	\$200.00			
			\$43,125.00	\$20,000.00	\$40,500.00	\$20,000.00			\$123,625.00
Expense									
Seed			\$20.00	\$39.50	\$70.00	\$39.50			
Seed Treatment			\$8.00	\$12.50	\$0.00	\$12.50			
Fertilizer			\$83.00	\$0.00	\$48.00	\$0.00			
Herbicide			\$5.50	\$20.00	\$100.00	\$75.00			
Machinery Rent			\$89.00	\$80.00	\$107.00	\$89.00			
			\$205.50	\$152.00	\$325.00	\$216.00			
LFI			\$20,550.00	\$15,200.00	\$32,500.00	\$21,600.00			\$ 89,850.00
Cash Rent			\$40.00	\$40.00	\$80.00	\$80.00			
Crop Insurance			\$10.00	\$5.00	\$15.00	\$15.00			
Cost per Acre			\$255.50	\$197.00	\$420.00	\$311.00			
			\$25,550.00	\$19,700.00	\$42,000.00	\$31,100.00			\$118,350.00
Profit per Acre			\$175.75	\$3.00	-\$15.00	-\$111.00			
			\$17,575.00	\$300.00	-\$1,500.00	-\$11,100.00			\$5,275.00

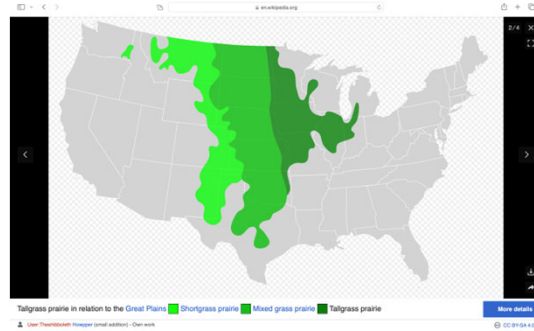
35

Economics of Cropland

Projections									
Crop	Rotation	1=Included	Wheat	DC SB	Corn	SB	Totals		
		Acres	1	1	1	1			
			100	100	100	100			
Income									
Yield			65	30	120	45			
Price			\$5.75	\$10.00	\$4.50	\$10.00			
Income per Acre			\$373.75	\$300.00	\$540.00	\$450.00			
			\$37,375.00	\$30,000.00	\$54,000.00	\$45,000.00			\$166,375.00
Expense									
Seed			\$20.00	\$39.50	\$70.00	\$39.50			
Seed Treatment			\$8.00	\$12.50	\$0.00	\$12.50			
Fertilizer			\$83.00	\$0.00	\$48.00	\$0.00			
Herbicide			\$5.50	\$20.00	\$100.00	\$75.00			
Machinery Rent			\$89.00	\$80.00	\$107.00	\$89.00			
			\$205.50	\$152.00	\$325.00	\$216.00			
LFI			\$20,550.00	\$15,200.00	\$32,500.00	\$21,600.00			\$ 89,850.00
Cash Rent			\$40.00	\$40.00	\$80.00	\$80.00			
Crop Insurance			\$10.00	\$5.00	\$15.00	\$15.00			
Cost per Acre			\$255.50	\$197.00	\$420.00	\$311.00			
			\$25,550.00	\$19,700.00	\$42,000.00	\$31,100.00			\$118,350.00
Profit per Acre			\$118.25	\$103.00	\$120.00	\$139.00			
			\$11,825.00	\$10,300.00	\$12,000.00	\$13,900.00			\$48,025.00

36

Economics of Soil Health



^ History of origin and demise

Retreating glaciers deposited the parent material for soil in the form of **till**, i.e. unsorted sediment, about 10,000 years ago. Wind-dropped **loess** and organic matter accumulated, resulting in deep levels^[citation needed] of **topsoil**. Animals such as bison, elk, deer, and rabbits

37

10,000 Years Ago



38

10,000 years later



39

Chichen Izta 1892 and Now



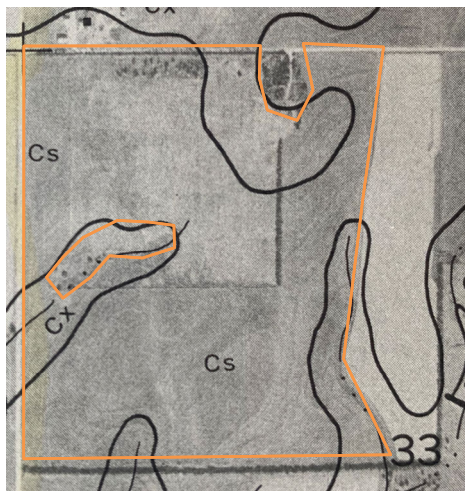
40

Our Context is a degraded state



41

Soil Map

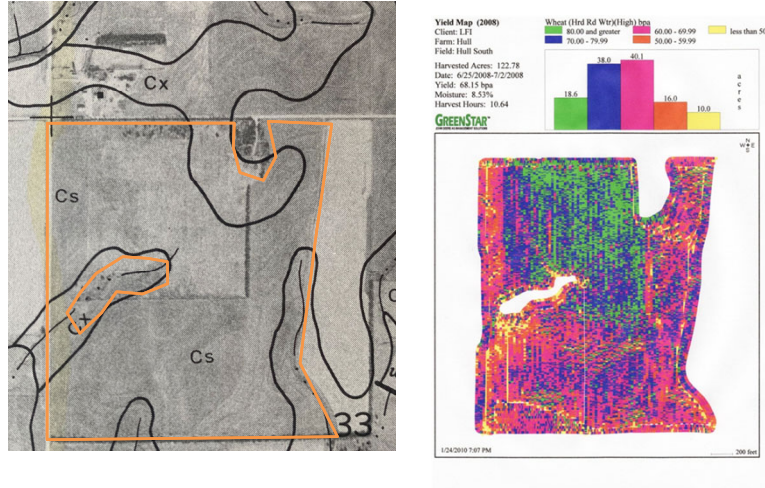


Cs - Class II
Prime Farmland

Cx - Class IV
Not Prime Farmland

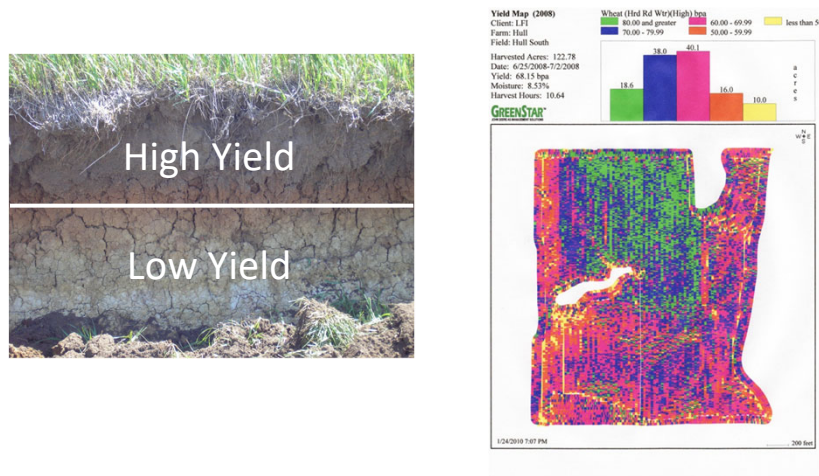
42

Soil Map vs Yield Map



43

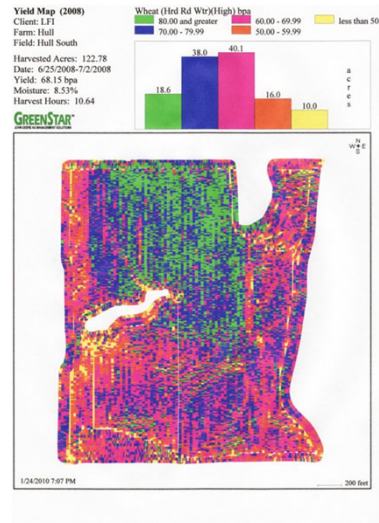
Soil Health was the Highest Yielding



44

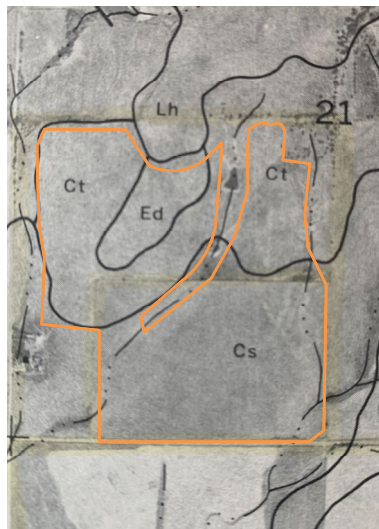
Wheat Yields

- Top Soil
 - 80 bu/a
- Soil
 - 60 bu/a



45

Soil Map



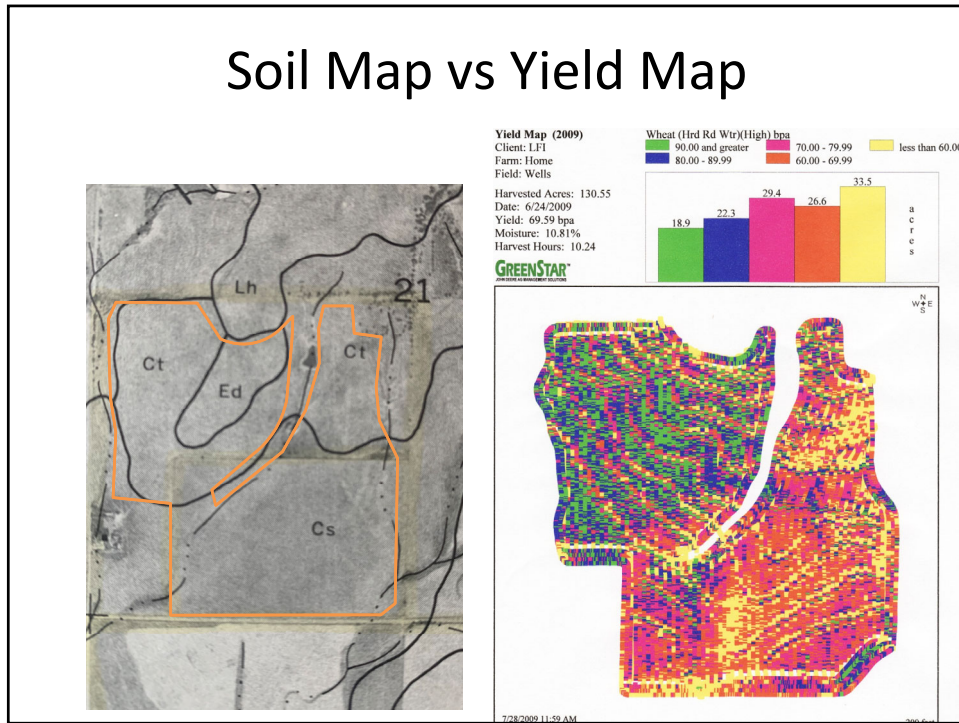
Cs - Class II
 Prime Farmland

Ct - Class III
 Prime Farmland

Ed - Class IV
 Not Prime Farmland

46

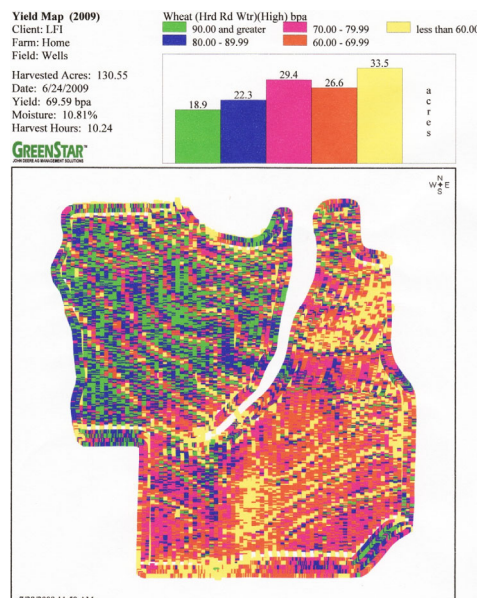
Soil Map vs Yield Map



47

Wheat Yields

- Top Soil
 - 90 bu/a
- Soil
 - 60 bu/a



48

Soil Health yields at minimum 50% better



Sand, Silt, Clay



Soil Health

49

Soil Health is Grown



50

Economics of Soil Health

	Wheat	Sorghum	Soybean
Price	\$6	\$4.50	\$10
Sand, Silt, Clay	60	110	40
Sand, Silt, Clay	\$360	\$495	\$410
Soil Health	90	165	60
Soil Health	\$540	\$742.50	\$600
Difference	\$180	\$247.50	\$190

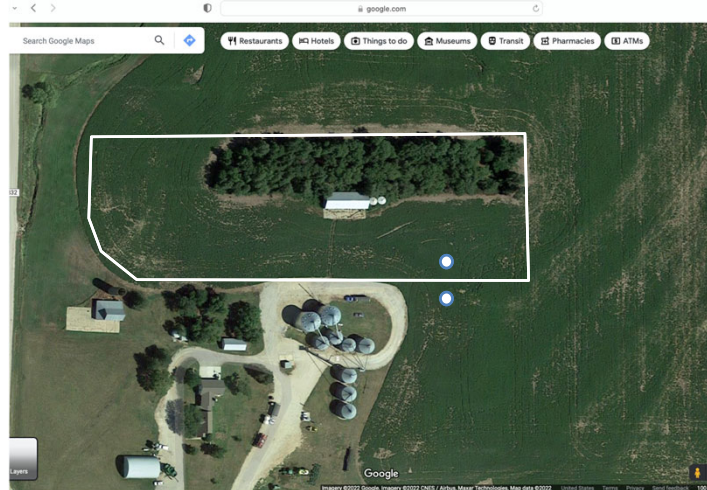
51

Economics of Soil Health

\$205 per Acre x 1,000 Acres = \$205,000 extra
income per year

52

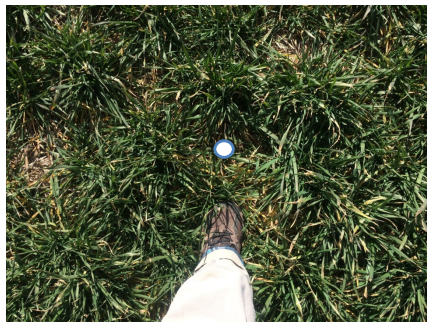
Economics of Imported Soil Health



53



54



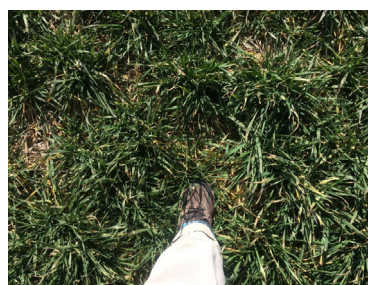
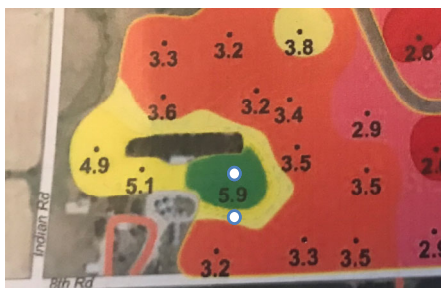
Feed Lot



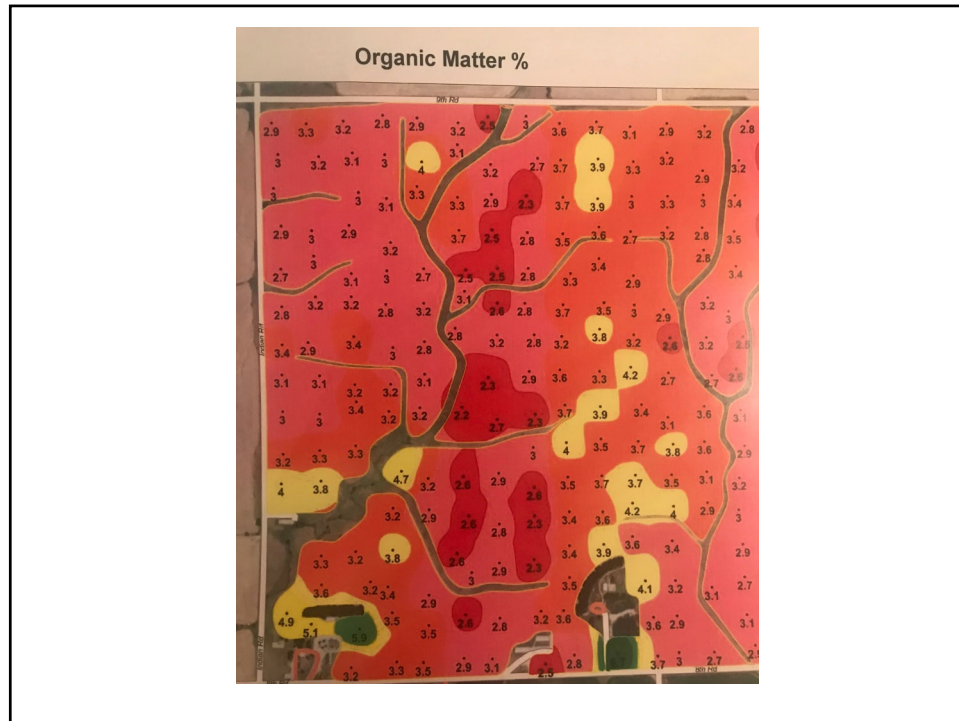
Field

55

Organic Matter



56



59

Economics of a Plant Material

It takes 200,000 pounds (100 Tons) of Residue to increase 1% OM for every 6 inches of Top Soil.

- Per NRCS 10 pounds of Residue = 1 pound OM
- 1% OM = 20,000 pounds (6 inches)

60

The Takeaway

Growing plants increases fertility

The high OM and fertility areas were increased with:

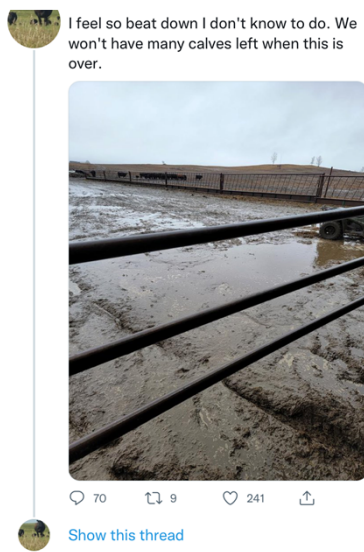
- A. Grain
- B. Crop Residues
 - A. Bales
 - B. Silage
 - C. Mineral

that passed through Livestock

Not through Industrial N, P, K

61

Economics of Animal Health



62

Economics of Animal Health



63

Economics of Self Sufficient Cows

- Don't have a Calf. Gone
- Lose Calf. Gone
- Health issue. Gone
- Bad Disposition. Gone
- Don't respect the Fence. Gone.

64

In Summary

I'm trying to work with
Creation to build a system
of Soil and Animal Health
that reduces or eliminates
the need for inputs instead
of imposing my will on
Creation.

65

Questions

Joshua Lloyd

joshua.t.lloyd@icloud.com

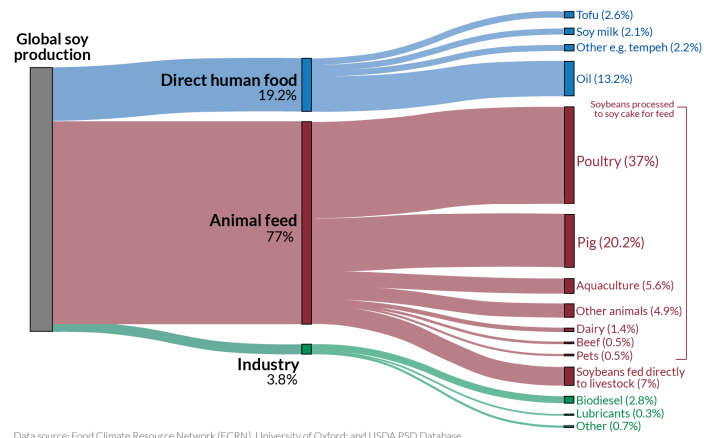
WhatsApp +1 (785) 632-7256

66

The World's Soy: is it used for Food, Fuel, or Animal Feed?

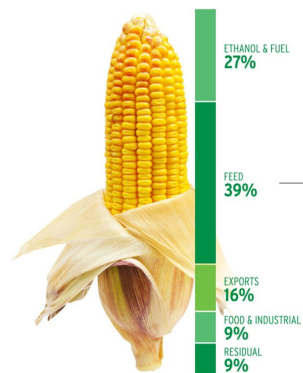
Shown is the allocation of global soy production to its end uses by weight. This is based on data from 2017 to 2019.

Our World
in Data

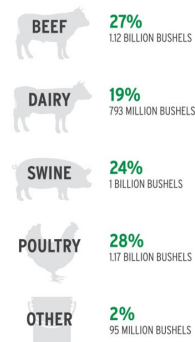


67

U.S. CORN USAGE

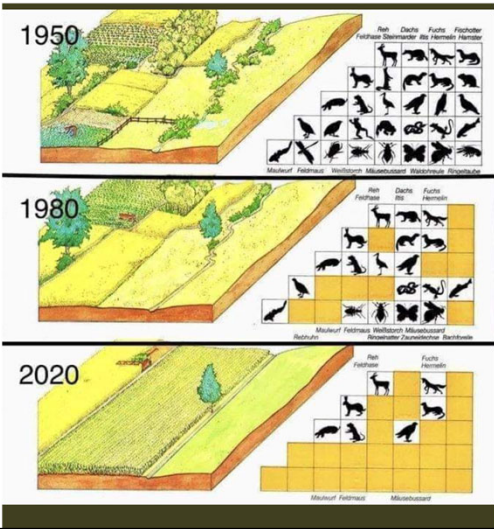


U.S. FEED USAGE



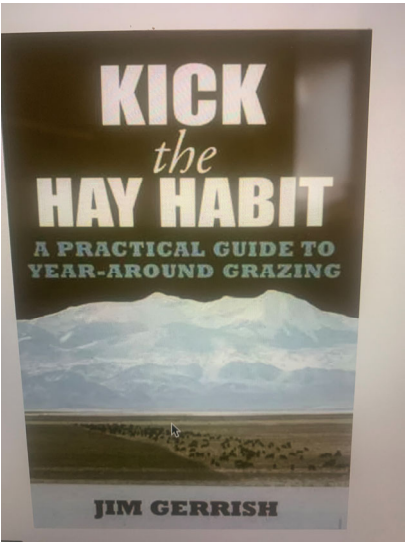
68

Animal Diversity and Density



69

KICK *the* CROP HABIT



Input	1973	2022	Increase
Combine	\$35,000	\$450,000	1300%
Fuel	\$0.17/gal	\$3.35/gal	2000%
Labor and Nitrogen	\$1.50/hr and \$0.09/#	\$25/hr and \$0.80/#	1000%
Corn	\$2.17/bu	\$7	325%

70

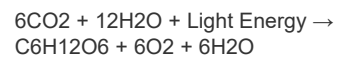
Its all Carbon

- OM
- Biology
- Plants
- Roots
- Microbes
- Residue
- Livestock
- Manure



71

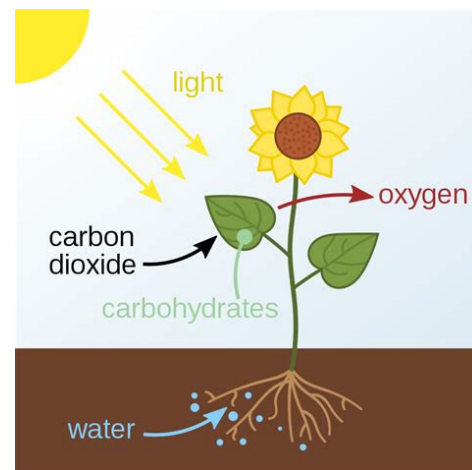
Photosynthesis



Carbon and Water are your 2 most important nutrients.

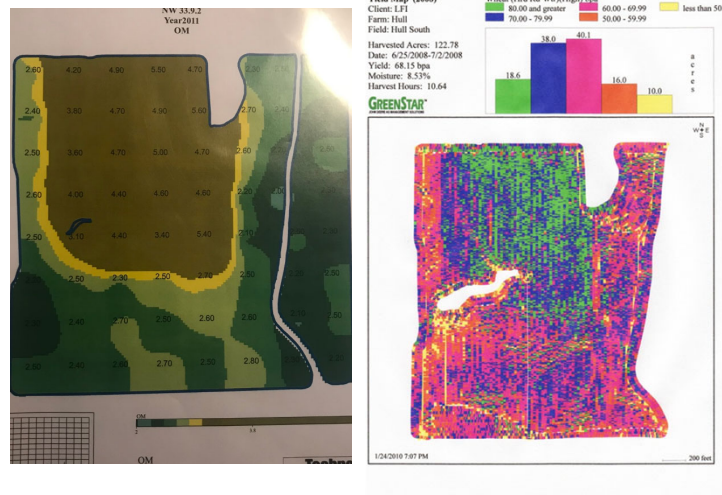
You need to capture as much Carbon and Water as possible.

Which means Photosynthesis needs to happen all year.



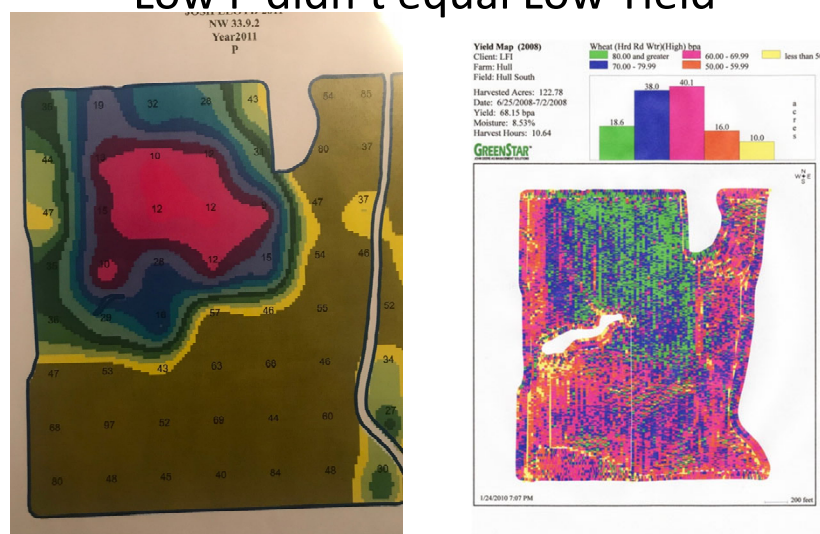
72

High Organic Matter - High Yield



73

High P didn't equal High Yield Low P didn't equal Low Yield

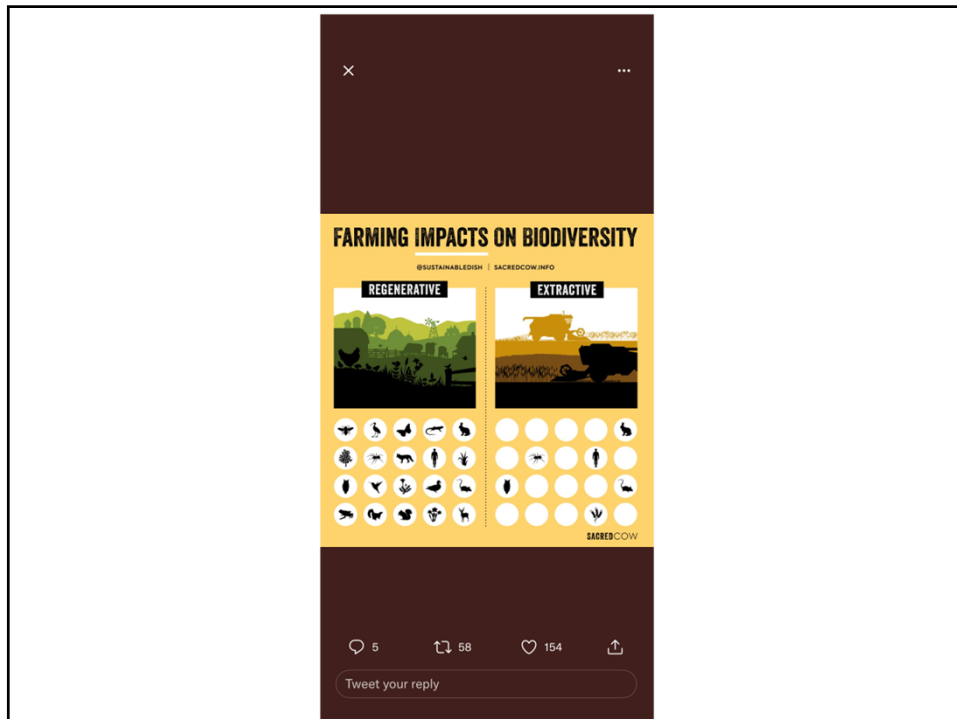


74

Nitrogen (Nutrient Cycling)



75



76

Rye Cover - Termination Timing

Table 1

Year 1		Year 2		Year 3		Year 4		Year 5	
Oct 1	July 1	Oct 15	July 1	May 1	Nov 1	May 1	Nov 1	May 1	Oct 1
Winter Wheat	DC SB	Winter Wheat	Diverse Cover -> Rye	Corn /Milo	Rye	Soybean	Rye	Soybean	Winter Wheat

