

SDSU EXTENSION



# Really? You can't do that here!

*Anthony Bly, Soils Field Specialist, Farmer (Garretson, SD)*

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## Recognize this flower?



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**Why are we here!! Not to talk about our neighbor,  
but to bring light to an issue that desperately  
needs attention!!**



**April, 1993  
2 miles from our farm**



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## **Same Farm, June 2019**



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Does this look normal to you?



Where did this fill dirt come from?

Does the farmer across the fence really want to flatten his field?

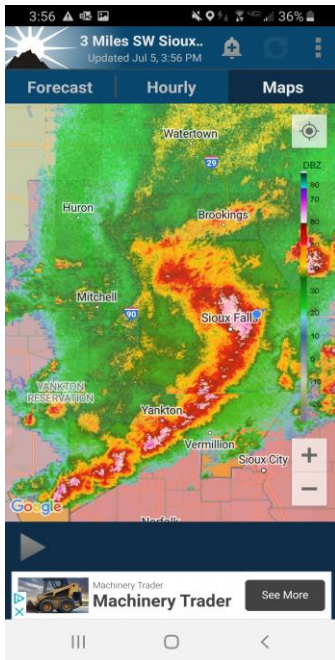
I guess if the fence wasn't there it would have all ran away to some other place?



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July 5<sup>th</sup> 2022, 3.89 inches in 1.5 hours

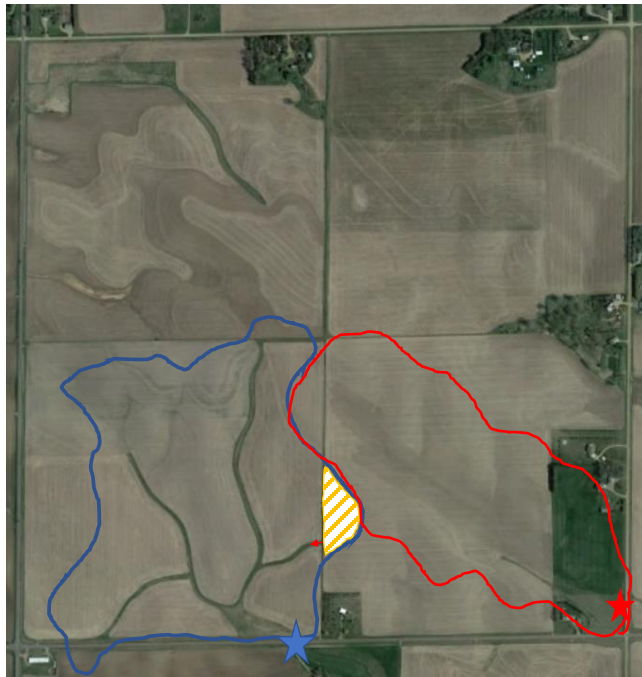


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### Tale of 2 watersheds July 5, 2022

Blue = NT (31 years, 5 year crop rotation, cc 2 out of 5 years)

Red = Conventional, corn/soybean, deep ripped fall after corn, soil finisher spring, soybeans soil finisher spring



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Blue

Red



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# How much water did the Red watershed lose?

25,000 gallons of water/acre/inch

3.89 inches x 50% x 25,000 gallons x 80 acres=

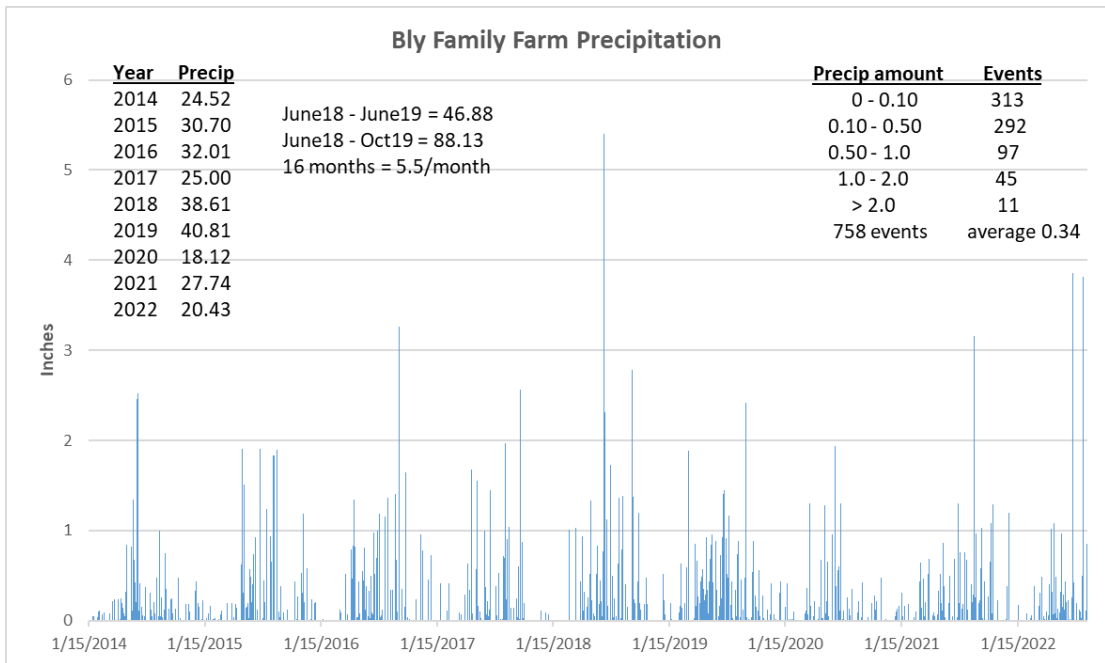
**3,890,000 gallons**

**On a high demand day, Sioux Falls, uses 40-50 million gallons of water!!!**

# How much water did the Blue watershed lose? Nothing?

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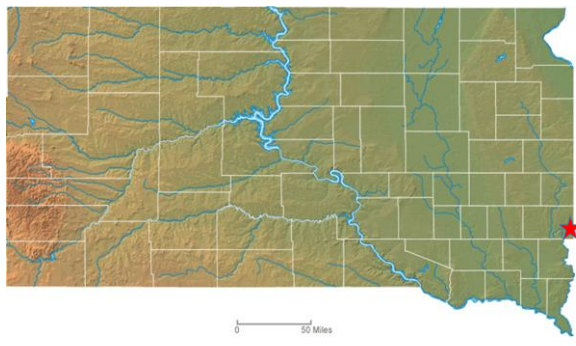
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# Wind Effects



## Location of Bly Family Farm:



| Soil Types:  | Productivity Ratings: |
|--------------|-----------------------|
| Nora: 55%    | 68                    |
| Crofton: 30% | 58                    |
| Moody: 10%   | 84                    |
| Other: 5%    | 92                    |

Most fields average from 61 to 68



## Bly Family Farm, Since 1896, 1940's pic



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## June 2020 - It's interesting how things change! Progress!!



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1920's



1947

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## Farming practices history (old)

- Prior to 1925: oats, corn, alfalfa, small dairy (< 6 cows), horses pulled the plow and other equipment, transition to tractors. Before WWI grandpa grew hemp for rope.
- Big barn built in early 1920's, dairy slowly expanded up to 40 cows, same crop rotation. Tractors started pulling the plow. Tillage getting more intense.
- Soybeans coming into rotation in late 1950's.
- Dairy quit in 1976, Tractors getting bigger, tillage more intense.
- 1980's, most fields in corn/soybean rotation, tillage intense, but moldboard plow almost gone. Chisel plow and field cultivator were main tillage implements. Terraces constructed and contour farming to fight erosion. A few oats fields and some alfalfa.

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Beans (a new crop) 1954

Beans 1954  
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First self-propelled combine. 1980's



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## Farming practices history (modern)

- 1990's, all corn and beans, No-till started in 91 and 92.
- Dwayne Beck's teaching total reason for switching to NT. "Beckite?"
- 1993-1994, very tough years for NT, couldn't get the seed furrow closed. Hauling large amounts of liquid fertilizers with tractor and planter (all band applied).
- 2000, tanks came off planter and we started broadcasting all of the nutrients expect small rates of liquid starter fertilizer. Liquids price increased, dry more economical.
- SDSU and IA research showed that broadcast fertilizer worked.
- Moved residues out of the row for corn and used a fluff and plant drill for beans (10 inch rows).
- 2013 Changed the whole farm.



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Terraces went in during early 1980's

Narrow base Terraces came out late 1990's  
Just narrow base terraces.



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Spring wheat in 1999.

Very well maintained, older equipment  
is something our farm has been known for.



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Marginal Lands Seeded to grass.



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## Farming practices history (Carbon focus)

- I have to say that my dad always had a Organic matter (carbon) focus, he was concerned about not having alfalfa/perennials in the rotation.
- New rotation with cover crops. Again, a Dwayne Beck influence!
- John Deere drill. Little residue moved out of corn rows.
- Corn, Corn(cc), Soybeans, Small grain w/cc (winter wheat), Soybeans (started in 2013).
  - Oats, cereal Rye, Soft white winter wheat, triticale
  - Cover crop bends included, 2021 blend (radish, turnip, rapeseed, barley, winter wheat, flax, lentil, common vetch, peas, crimson clover, sorghum sudan grass, millet)
  - Fly in cereal rye over mature corn in September, but have switched to winter wheat.
- Soil zone maps, variable rate apply fertilizer, yield maps, sprayer and planter controls.



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## The new rotation (comments):

- Corn is stacked to build up carbon to make it across the 3 year period with lower carbon crops.
- At end of year 5 (soybeans), during year 1 corn, the soil surface tends to lose its covering due to high levels of soil biology.
- Pest cycles are challenged with corn out for 3 years, beans out for 2 years and grains out for 4 years.
- Rotation forces me to rotate weed control herbicides.
- 2<sup>nd</sup> year corn is tricky, have to focus on hybrids rated very high for corn following corn.
- We do not deviate from the rotation!!
- We focus on net profit and not gross bushels.



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## Rotation is planned out for many years!!

|    | A          | B               | C      | D       | E       | F            | G            | H       | I       | J            | K            | L            | M          | N          | O          | P          | Q       | R       |
|----|------------|-----------------|--------|---------|---------|--------------|--------------|---------|---------|--------------|--------------|--------------|------------|------------|------------|------------|---------|---------|
| 1  | Field      | a pre           | a poll | 2014    | 2015    | 2016         | 2017         | 2018    | 2019    | 2020         | 2021         | 2022         | 2023       | 2024       | 2025       | 2026       | 2027    | 2028    |
| 2  | E1         | 40              | 40     | beans   | rye/cc  | corn         | corn/cc      | beans   | SWWW/cc | beans        | corn         | corn/cc      | beans      | SmGr/cc    | beans      | corn       | corn/cc | beans   |
| 3  | E2         | 37              | 37     | oats/cc | beans   | corn         | corn/cc      | beans   | Oats/cc | beans        | corn         | corn/cc      | beans      | SmGr/cc    | beans      | corn       | corn/cc | beans   |
| 4  | NE1        | 62              | 61     | beans   | oats/cc | beans        | corn         | corn/cc | beans   | Oats+SWWW/cc | beans        | corn         | corn/cc    | beans      | SmGr/cc    | beans      | corn    | corn/cc |
| 5  | NE2        | 33              | 33     | corn    | beans   | corn/cc      | beans        | SWWW/cc | beans   | corn         | corn         | corn/cc      | beans      | SmGr/cc    | beans      | corn       | corn/cc | beans   |
| 6  | NE3        | 47              | 44     | corn    | beans   | oats/cc      | beans        | SWWW/cc | beans   | corn         | corn         | corn/cc      | beans      | SmGr/cc    | beans      | corn       | corn/cc | beans   |
| 7  | SW1 north  | 26              | 26     | beans   | corn/cc | beans        | triticale/cc | beans   | corn    | corn/cc      | beans        | triticale/cc | beans      | corn       | corn/cc    | beans      | SmGr/cc | beans   |
| 8  | SW1 south  | 8               | 8      | beans   | corn/cc | beans        | SWWW/cc      | corn    | beans   | corn         | beans        | triticale/cc | beans      | corn       | corn/cc    | beans      | SmGr/cc | beans   |
| 9  | SW3        | 50              | 50     | beans   | corn/cc | beans        | SWWW/cc      | beans   | corn    | corn/cc      | beans        | SWWW/cc      | beans      | corn       | corn/cc    | beans      | SmGr/cc | beans   |
| 10 | SW2        | 62              | 59     | corn    | beans   | triticale/cc | beans        | corn    | corn/cc | beans        | Oats+SWWW/cc | beans        | corn       | corn/cc    | beans      | SmGr/cc    | beans   | corn    |
| 11 | BachmanE   | 40              | 40     | corn    | beans   | corn         | beans        | corn    | beans   | corn         | beans        | corn         | SmGr/cc    | beans      | corn       | corn       | beans   | SmGr/cc |
| 12 | BachmanW   | 34              | 34     | corn    | beans   | corn         | beans        | corn    | beans   | corn         | beans        | Oats/cc      | beans      | corn       | corn       | beans      | SmGr/cc | beans   |
| 13 | J east     | 72.5            | 72.5   |         |         |              |              |         |         |              |              | beans        | corn       | beans      |            |            |         |         |
| 14 | J west     | 72.5            | 72.5   |         |         |              |              |         |         |              |              | corn         | beans      | corn       | beans      |            |         |         |
| 15 | NE1 poll.  |                 | 0.85   |         |         |              |              |         |         |              |              | Pollinator   | Pollinator | Pollinator | Pollinator | Pollinator | ?       | ?       |
| 16 | SW 2 poll. |                 | 3.1    |         |         |              |              |         |         |              |              | Pollinator   | Pollinator | Pollinator | Pollinator | Pollinator | ?       | ?       |
| 17 | NE3 Poll.  |                 | 3.1    |         |         |              |              |         |         |              |              | Pollinator   | Pollinator | Pollinator | Pollinator | Pollinator | ?       | ?       |
| 18 |            |                 |        |         |         |              |              |         |         |              |              |              |            |            |            |            |         |         |
| 19 |            | corn            |        | 182     | 84      | 101          | 139          | 211     | 138     | 238          | 269.5        | 210.5        | 192.5      |            |            |            |         |         |
| 20 |            | soybeans        |        | 124     | 219     | 84           | 182          | 161     | 190     | 139          | 252.5        | 248.5        | 267.5      |            |            |            |         |         |
| 21 |            | oats            |        | 37      | 62      | 47           | 40.0         |         | 37      | 31           | 31           | 34           | 40         |            |            |            |         |         |
| 22 |            | CC              |        | 37      | 186     | 142          | 161.0        | 94      | 139     | 137          | 136          | 195          | 178        |            |            |            |         |         |
| 23 |            | triticale       |        |         |         | 62           | 27           |         |         |              |              | 34           | 33         |            |            |            |         |         |
| 24 |            | SWWW            |        |         |         |              | 16           | 33      | 40      | 31           |              | 50           | 44         |            |            |            |         |         |
| 25 |            | Pollinator plot |        |         |         |              |              |         |         |              | 3.95         | 7.05         | 7.05       |            |            |            |         |         |

= winter wheat flown cc



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## 2<sup>nd</sup> year corn



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## New Practices / Experiments on the farm:

- Fly winter camelina over soybeans just before leaf drop and corn at maturity. (we need a winter broadleaf). (worked in 2020 and not in 2021?)
- Pollinator plots.
- More focused on Regenerative Practices (Jim Ristau)
  - Worm Juice (seed treatment on soybeans)
  - Organic compost extract and foods (sprayed on cover crop – 2x)



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## Organic compost extract (humic acid + biology)



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## How do I know? Why am I confident with all of these practices on our farm?

- It’s science based for sure!!
- Respected soil scientists are saying the same things!!
- My mentors led the way with teaching about soil management.
- History has shown us that depletion of soil and water resources leads to social downfall.
- There are farmer examples of these practices all over SD and the world!!
- Why do policies continue to support soil destructive practices?



## How are we doing? (compare to neighbors?)

- Neighbor with a very good soil: 240 bu/a
  - Moody (0-2 %): 89
  - Trent (0-2 %): 98
  - Alcester (0-2%): 99

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### Bly Family Farm Soils

Soil Types:      Productivity Ratings:

|              |    |
|--------------|----|
| Nora: 55%    | 68 |
| Crofton: 30% | 58 |
| Moody: 10%   | 84 |
| Other: 5%    | 92 |

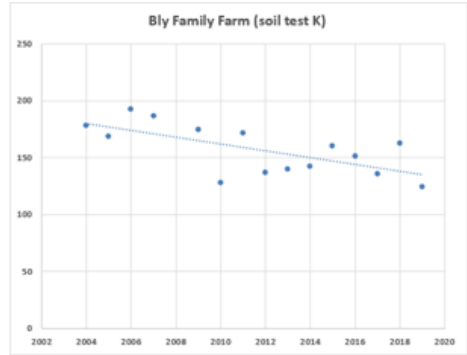
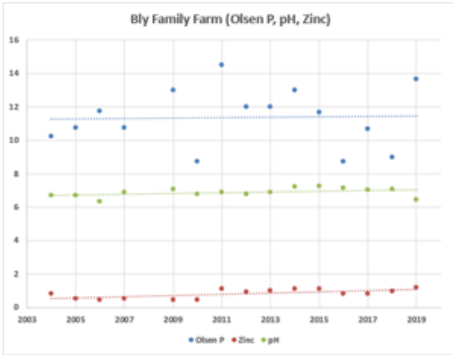
| Rotation  | Yield 2021 | Prod. Rating | Yield compare to neighbor <sup>^</sup> |
|---|------------|--------------|--|
| 1 <sup>st</sup> yr. corn<br>(3 years out of corn) | 205        | 68           | 173                                    |
| Corn after corn<br>(2 <sup>nd</sup> year corn)    | 182        | 66           | 168                                    |
| Corn after corn<br>(2 <sup>nd</sup> year corn)    | 196        | 64           | 163                                    |
| Corn after corn<br>(2 <sup>nd</sup> year corn)    | 149*       | 63           | 161                                    |
| Corn after Soybeans**                             | 184        | 65           | 166                                    |

\* Poor hybrid choice  
 \*\* new field  
<sup>^</sup> Bly field Prod. Rating x 255 (240 / .94)



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# Practice what I teach (soil fertility)



Soil test results prior to 2021

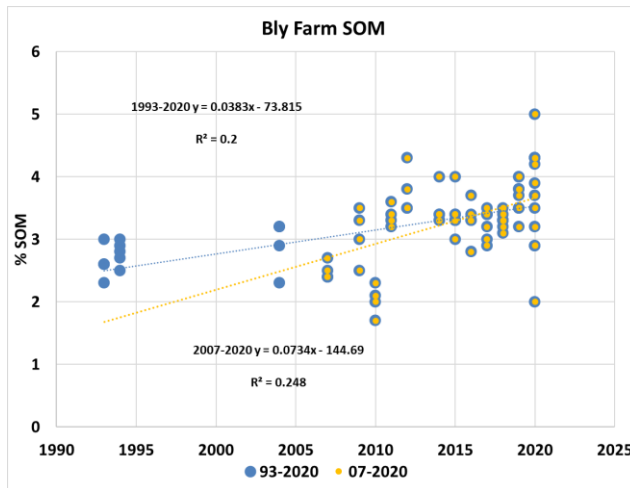
| Zone | NO3-N 2 ft | OM  | Olsen P | K   | S  | Zn   |
|------|------------|-----|---------|-----|----|------|
| 1    | 62         | 4.7 | 16      | 129 | 24 | 0.92 |
| 2    | 45         | 4.3 | 13      | 116 | 16 | 0.80 |
| 3    | 26         | 3.4 | 9       | 109 | 12 | 0.73 |

Nutrients applied

| Zone | N   | P2O5 | K2O | S  | Zn |
|------|-----|------|-----|----|----|
| 1    | 120 | 50   | 70  | 5  | 0  |
| 2    | 130 | 60   | 85  | 10 | 0  |
| 3    | 150 | 70   | 100 | 15 | 0  |

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**Carbon belongs to you!! Build it and keep it!!  
If they want to pay you for practices! Then take it!**

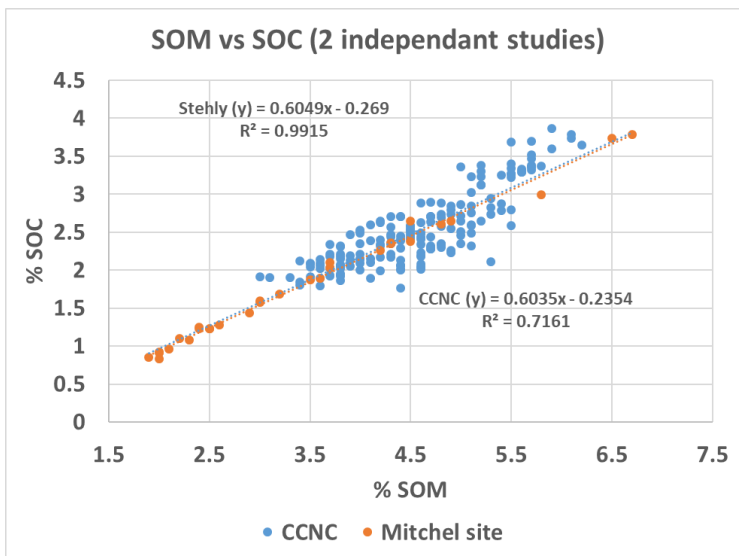


| Time period | Number of samples | Years | C coef | OM change %/time period | OM change %/year |
|-------------|-------------------|-------|--------|-------------------------|------------------|
| 1993-2020   | 86                | 28    | 0.0383 | 1.1                     | 0.0383           |
| 2007-2020   | 71                | 14    | 0.0734 | 1.0                     | 0.0734           |

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## Converting OM to OC, real SD on-farm data.

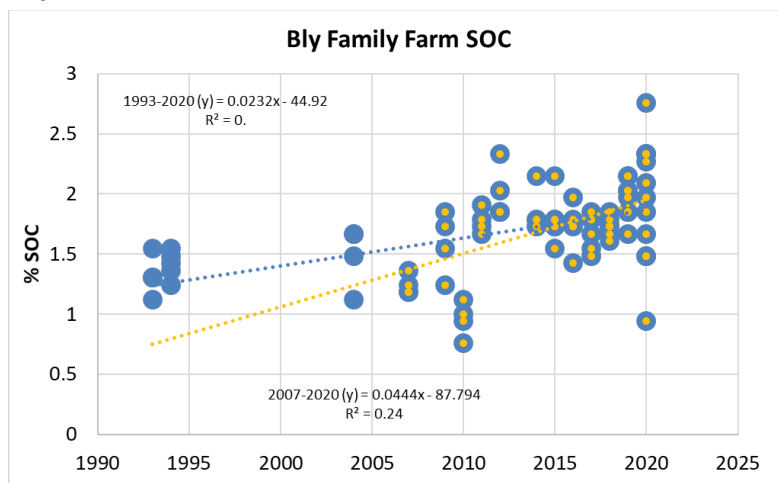


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## What is your carbon worth?



| Time period | Number of samples | Years | C coef | C/yr | T CO2 equiv/a/yr | Total T CO2/a | \$/a (\$100/T) |
|-------------|-------------------|-------|--------|------|------------------|---------------|----------------|
| 1993-2020   | 86                | 28    | 0.0232 | 464  | 0.61944          | 17.34432      | 1734           |
| 2007-2020   | 71                | 14    | 0.0444 | 888  | 1.18548          | 16.59672      | 1660           |



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## The whole world needs/wants your carbon credits!!!

- These firms want to purchase your carbon for some other firm's carbon neutrality.
- Most are not willing to pay enough.
- There will be a lot of records required from you.



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## What about your farm's carbon neutrality?

- In the future will you be required to be carbon neutral through the payment of taxes on purchases of inputs and equipment?
- Why not focus on keeping your Carbon and applying it to your carbon neutrality?
- After all, why do so many firms want your carbon?
- They want to continue to do what they do, by purchasing your credits for a little of nothing.
- I really think you should think about these things?
- Because if you have to do the first point in this list, you should just keep your carbon and use it for your own operation.



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## Summary :

Really? You can't do that here!

Really? You Should Do This Everywhere!!!!

This = Soil Health Practices

I don't think we have any choice!!



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## CONTACT INFORMATION

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