YES, REGENERATIVE AGRICULTURE WORKS.

WE HAVE PROOF!

Garry Richards

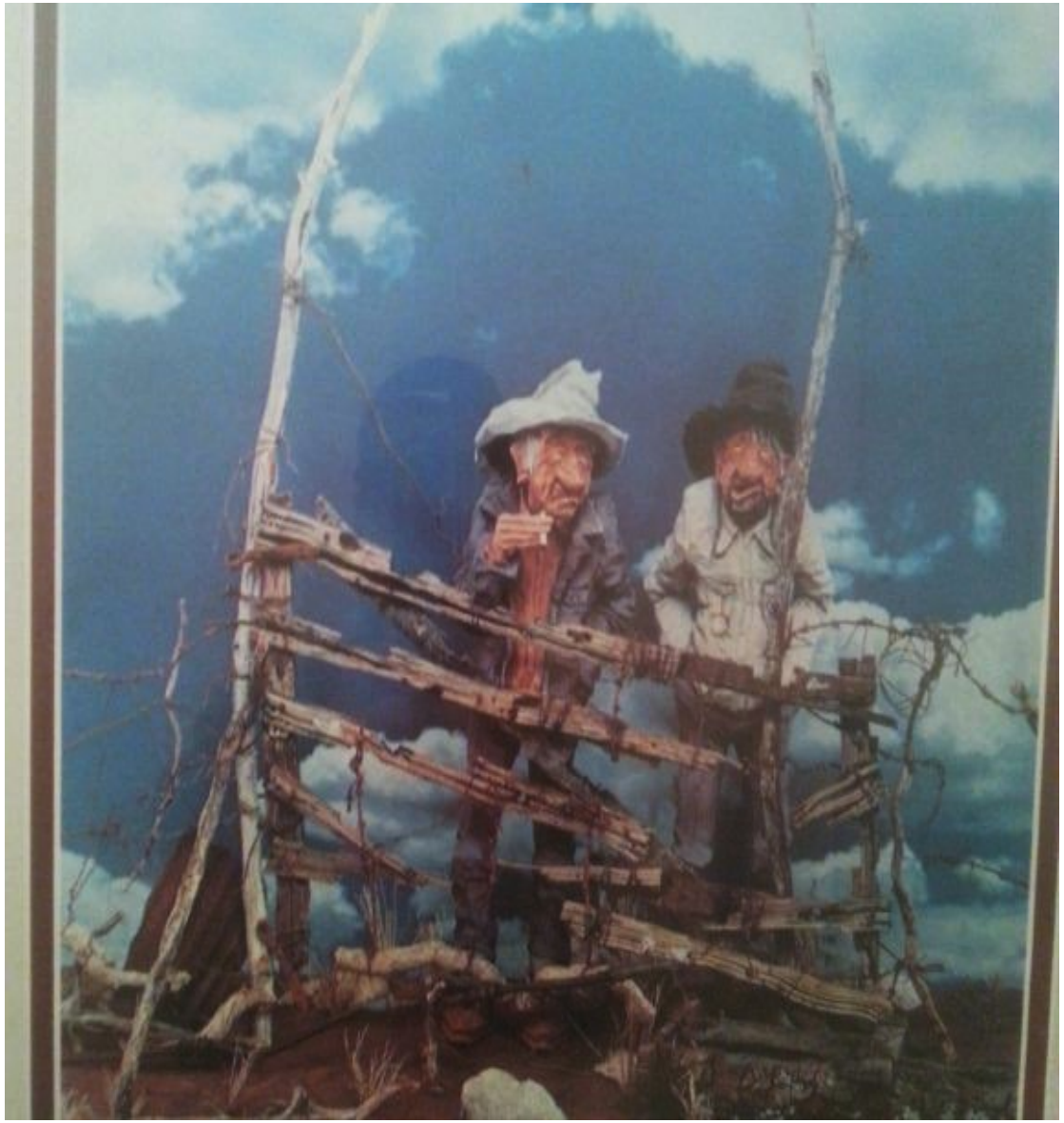
Bangor, SK

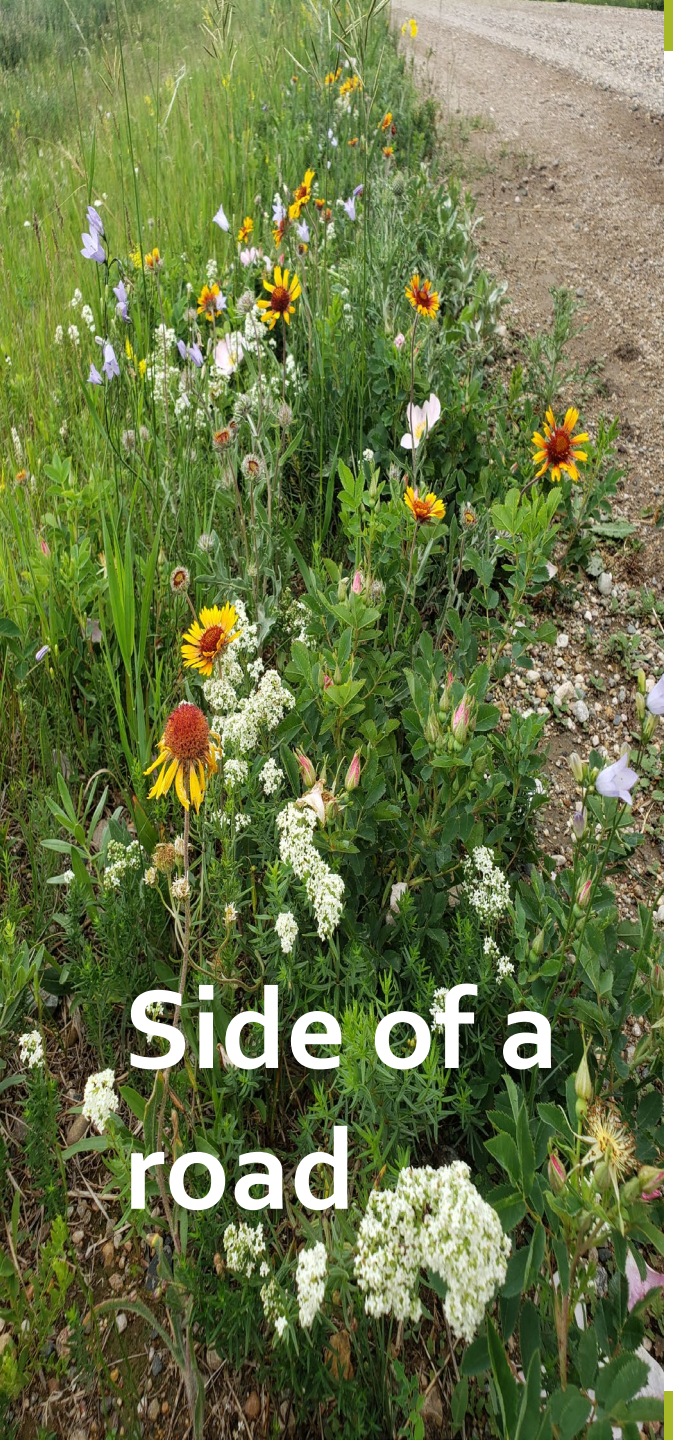
Farming is a commodity business

The only producers that will be consistently profitable will be low input producers. The average price of a commodity will usually settle out to be the breakeven price of the average cost producer.

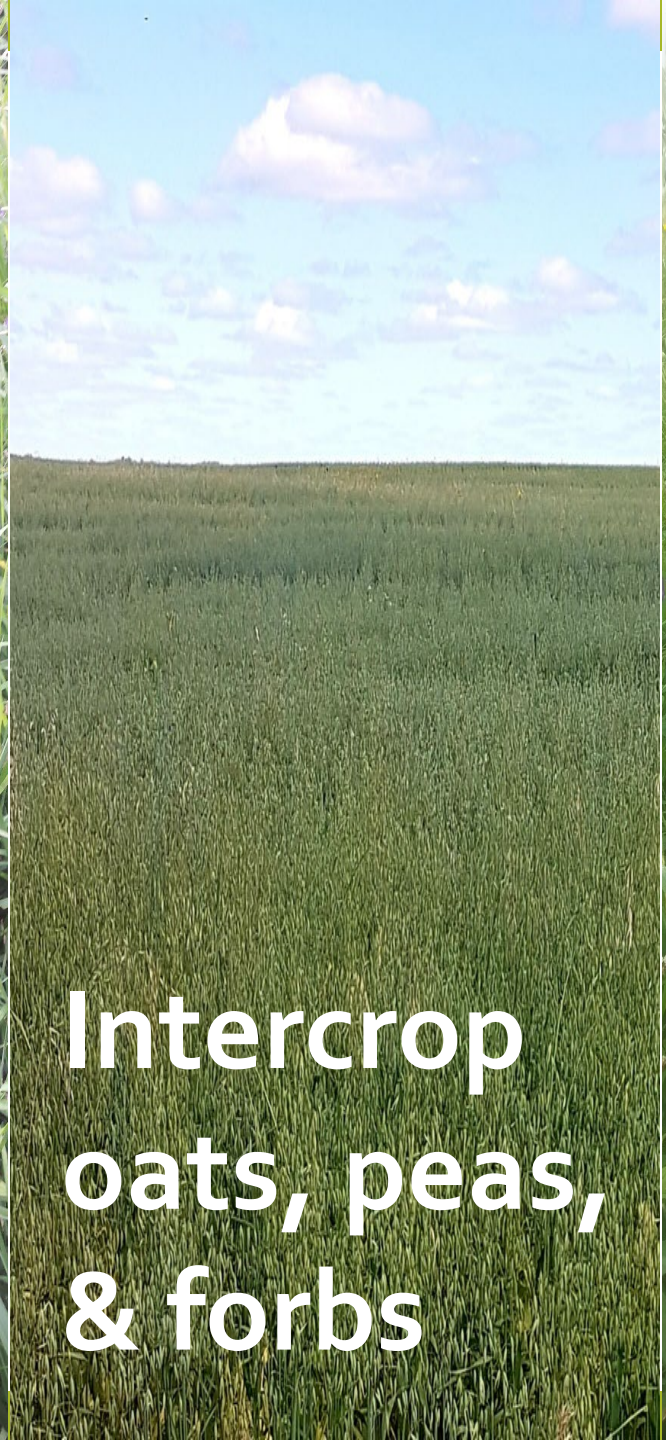
If we keep doing what we're doing we're going to keep getting what we're getting.

-Steven Covey




Side of a road


50 + Species


Intercrop oats, peas, & forbs


20 + Species

“The wealth is in the land”

The good old days-Native prairie

Cropland with perennial pasture

“As long as you spray for weeds you will have weeds.”

- -Allan Savoury

What is more important for the profitability of a farm, crop yield or organic matter?

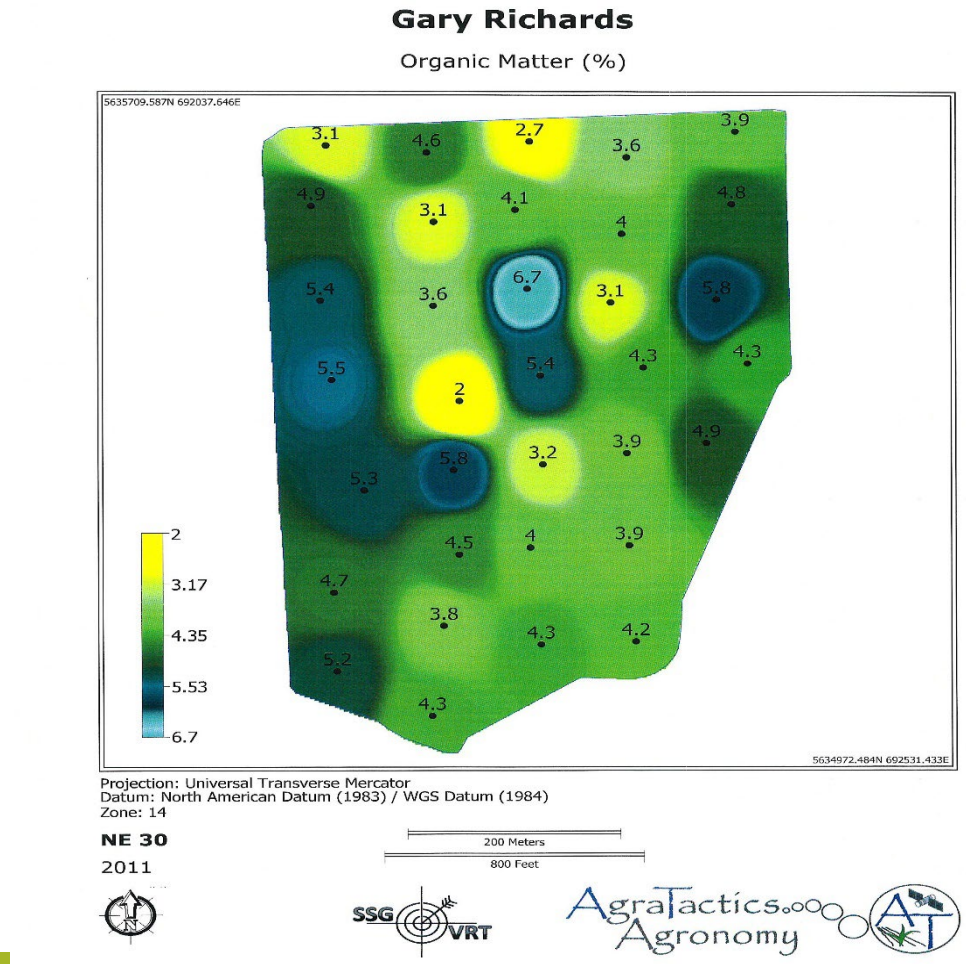
Regenerative corn fields had 29% lower grain production but 78% higher profits over traditional corn production systems.

Profit was positively correlated with the particulate organic matter of the soil, not yield.

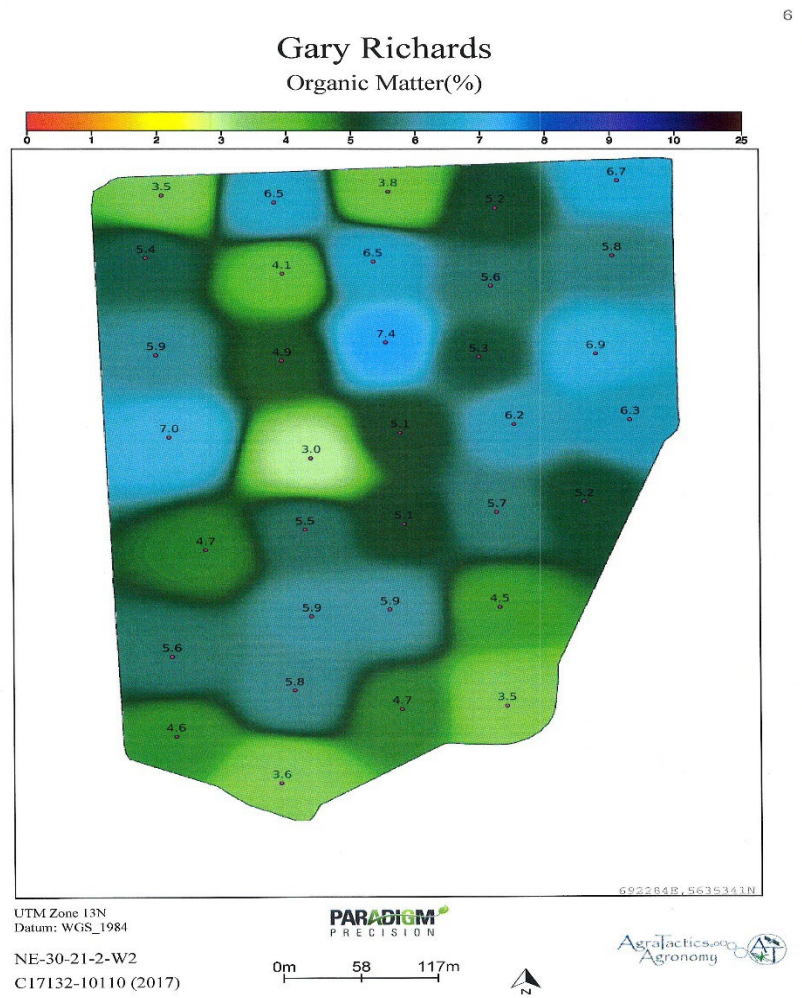
Claire LeCanne and Jonathan Lundgren

Soil Organic Matter NE 30 21 2 2

SOM=4.3%



SOM=5.3%



1-844-273-2005
contact@quoruml.com
www.quoruml.com

Chemistry

Haney	B - ppm	Mg - ppm	P - ppm	K - ppm	Ca - ppm	Mn - ppm	Fe - ppm	Cu - ppm	Zn - ppm	Mo - ppm
307	1.173	275.702	45.311	113.810	591.517	28.542	381.003	1.469	10.045	0.039
LEGEND										
LOW		pH	6.56							
AVERAGE		TOC	299.0125	Total Organic Carbon (PPM)				Ca:Mg	2:1	
OPTIMAL		IC	112.5215	Total Inorganic Carbon (PPM)						
VERY HIGH		TC	411.534	Total Carbon (Organic + Inorganic) (PPM)						

TNE	B - ppm	Mg - ppm	P - ppm	K - ppm	Ca - ppm	Mn - ppm	Fe - ppm	Cu - ppm	Zn - ppm	Mo - ppm
307	5.043	1775.357	387.835	826.495	3187.320	138.138	3217.555	8.078	22.332	0.110

Your soils are low in available manganese, however there is a large reserve of manganese in the soil as indicated by the total nutrient analysis (TNE). The soil pH is acidic with high resistance to pH changes. The soil TOC is at 299 ppm which is above our minimum benchmark of 200 ppm along with high IC. It indicates high buffering capacity of the soil. A small addition of calcium can help keep the Ca to Mg ratio at 4:1. Please do not add any more Phosphates and Potassium as it may create negative downstream effects.

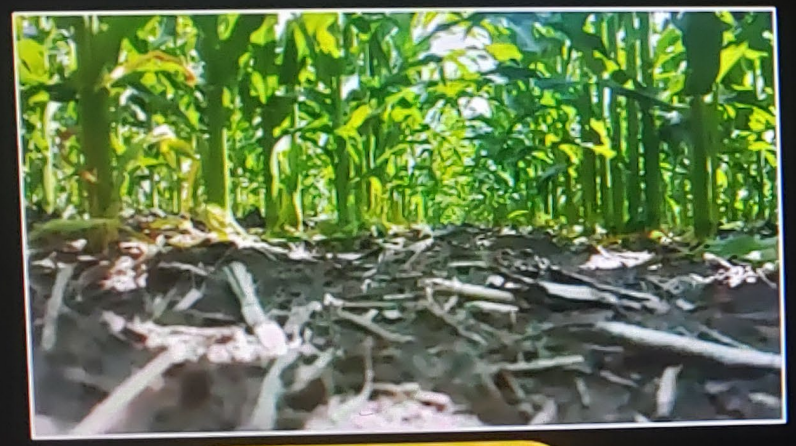
*The averages were based upon samples we have received so far and have been assessed as a reasonably healthy well balanced soil based on the client's inputs on management of the field. **The comments are based upon the available information from research articles and journals. 3. Based on available data on nitrogen cycle bacteria.

Insects a little known force of nature shaping your farmland Mike Bredeson, PhD

Watch later Share

Results

- Corn monocultures
  - 12,358 invertebrates/m^2



- Interseeded corn
  - 17,614 invertebrates/m^2

42.5% increase

MORE VIDEOS

Case study 2

- Study in partnership with Understanding Ag and General Mills
- Soil invertebrate sampling on 50 Canadian farms
  - Farm characteristics
    - No till
    - Cover crops
    - Polycultures
    - Livestock integration
    - Interseeding

837

- 246 total species
- 32,530 inverts/m²


Mike Bredeson, PhD
Watch later
Share
Mike Bredeson
MORE VIDEOS
Play (k)
56:26 / 2:18:06

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Regen Ag Lab

Account No.:	105
Invoice No.:	
Date Recd:	7/13/2021
Date Repd:	7/15/2021

Name:	KATHY RICHBURG
Company:	UNDERSTANDING AG
Address:	1908 SPRING DRIVE NW
City, State, ZIP:	FORT PAYNE, AL 35968

Grower:	GARY RICHARDS/GM
Field ID:	FERTILIZED
Sample ID 1:	-
Sample ID 2:	
Sample Depth:	0-6

HANEY SOIL HEALTH ANALYSIS

	Nitrogen									Phosphorus					
	H3A Extract			H2O Extract						H3A Extract					
Lab #	Nitrate ppm NO3-N	Ammonium ppm NH4-N	Inorg. N ppm N	Total N ppm N	Org. N ppm N	Org. N: Inorg. N	Org. N Rel. ppm N	Org. N Res. ppm N	Avail. N lbs/A	Total P ppm P	Inorg. P ppm PO4-P	Org. P ppm P	Org. P Rel ppm P	Org. P Res. ppm P	Avail. P lbs/A
601066	22.5	1.6	24.1	47.5	23.1	0.95	13.5	9.7	67.5	10.3	6.6	3.8	1.6	2.1	18.9
Rank															

	Other Soil Measures					Fertility									
						H3A Extract									
Lab #	Soil pH 1:1	Buffer pH Mod. WDRF	Soluble Salt mmho/cm	Excess Lime	Soil OM % LOI	Potassium ppm K	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Manganese ppm Mn	Iron ppm Fe	Copper ppm Cu	Aluminum ppm Al	Sulfur ppm S
601066	8.3	-	0.46	HIGH	6.0	130	1440	1063	48	0.03	3.5	10	0.02	16	16.23
Rank															

	Soil Health						Nitrogen Comparison				Reviewer Comments
		H2O Extract									
Lab #	Soil Resp. ppm CO2-C	Org. C ppm C	MAC %	C:N	SHC	Cover Crop Suggestion	Traditional N lbs/A	Haney N lbs/A	Differ. N lbs/A	Savings N $/A	
601066	47.0	323	14.6	13.97	13.47	40% Legume 60% Grass	40.5	67.5	27.0	17.30	
Rank											

	Intended		N Credits, lbs/A			Fertility Recommendations, lbs of Required Nutrients per Acre									
Lab #	Crop	Yield Goal	Past Crop	Subsoil	Haney	N	P2O5	K2O	S	Zn	Mg	Fe	Mn	Cu	Lime T/A

Reviewed By: Lance Gunderson
Date: 7/15/2021

Recommendations Provided by Regen Ag Lab, LLC
Analysis Performed by Regen Ag Lab, LLC

Regen Ag Lab, LLC
31740 Hwy 10, Pleasanton NE 68866

Gain Ground

308-440-1681
regenaglab.com

Regen Ag Lab

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	Nitrogen									Phosphorus					
	H3A Extract			H2O Extract						H3A Extract					
Lab #	Nitrate ppm NO3-N	Ammonium ppm NH4-N	Inorg. N ppm N	Total N ppm N	Org. N ppm N	Org. N: Inorg. N	Org. N Rel. ppm N	Org. N Res. ppm N	Avail. N lbs/A	Total P ppm P	Inorg. P ppm PO4-P	Org. P ppm P	Org. P Rel ppm P	Org. P Res. ppm P	Avail. P lbs/A
601067	13.9	1.8	15.7	40.9	25.0	1.58	25.0	0.0	73.3	12.5	7.7	4.8	4.1	0.7	27.2
Rank															

	Other Soil Measures					Fertility									
						H3A Extract									
Lab #	Soil pH 1:1	Buffer pH Mod. WDRF	Soluble Salt mmho/cm	Excess Lime	Soil OM % LOI	Potassium ppm K	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Manganese ppm Mn	Iron ppm Fe	Copper ppm Cu	Aluminum ppm Al	Sulfur ppm S
601067	7.9	-	0.48	HIGH	7.3	236	2045	604	21	0.04	5.0	18	0.04	16	27.92
Rank															

	Soil Health						Nitrogen Comparison				Reviewer Comments
		H2O Extract									
Lab #	Soil Resp. ppm CO2-C	Org. C ppm C	MAC %	C:N	SHC	Cover Crop Suggestion	Traditional N lbs/A	Haney N lbs/A	Differ. N lbs/A	Savings N $/A	
601067	102.1	359	28.4	14.34	18.19	30% Legume 70% Grass	25.0	73.3	48.2	30.87	
Rank											

	Intended		N Credits, lbs/A			Fertility Recommendations, lbs of Required Nutrients per Acre									
Lab #	Crop	Yield Goal	Past Crop	Subsoil	Haney	N	P2O5	K2O	S	Zn	Mg	Fe	Mn	Cu	Lime T/A

Reviewed By: Lance Gunderson
Date: 7/15/2021

Recommendations Provided by Regen Ag Lab, LLC
Analysis Performed by Regen Ag Lab, LLC

	Fertilized	Un-Fertilized
SOM	6.0	7.3
CO_2 Resp.	47.0	102.1
Available N	67.5 lbs/ac	73.3
Available P	18.9	27.2
Available K	130 ppm	236
Available S	16.23 ppm	27.92

Water Infiltration Times

	1st Run	2nd Run
Point #1	7 min 54 sec	Not done
Point #11	35 sec	5 min 28 sec
Point #12	10 plus minutes	Not done

*Please Note: On most of the other farms it was very rare to have a measurement time of less than 10 minutes.

Lab No. : 4346

Haney - Soil Health Analysis Contd.

Nutrient Quantity Available for Next Crop		Nitrogen Savings by using the Haney Test	
Nitrogen, lbs N/A	58.1	Traditional evaluation, lbs N/A	30.5
Phosphorus, lbs P_2O_5/A	19.9	Haney Test N evaluation, lbs N/A	58.1
Potassium, lbs K_2O/A	135.6	Nitrogen Difference, lbs N/A	27.6
Nutrient Value, $/A	112.77	N savings, $/A	17.66

Recommendations
In Actual Pounds of Plant Nutrients per Acre

N Credit : Cover Crop - 40
Sub-Soils :

Crop (Haney) Spring Wheat BU/A	
Yield	50
Nitrogen N	0
Phosphorus P_2O_5	35
Potassium K_2O	0
Sulfur S	0
Zinc Zn	0
Magnesium Mg	0
Iron Fe	0
Manganese Mn	0
Copper Cu	0

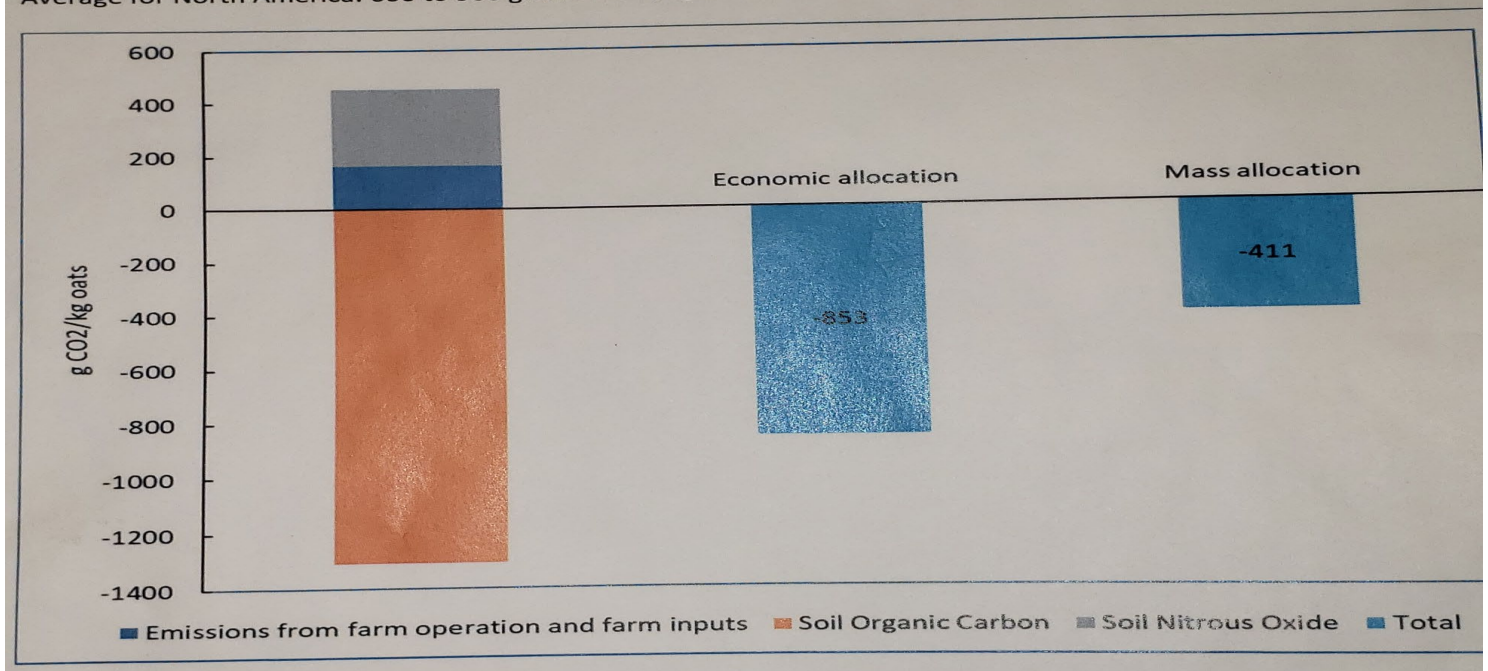
Crop (Haney) Canola, BU/A	
Yield	40
Nitrogen N	10
Phosphorus P_2O_5	35
Potassium K_2O	0
Sulfur S	0
Zinc Zn	0
Magnesium Mg	0
Iron Fe	0
Manganese Mn	0
Copper Cu	0

Bus: 308-234-2418
Fax: 308-234-1940
web site
www.wardlab.com
1007 Cherry Ave., P.O. Box 788
Kearney, Nebraska 68848-0788

Richards Farm Report
Carbon footprint analysis of oat production
Provided by Soil Metrics, LLC
Fort Collins, CO 80522

Net score: -758 to -853 grams CO2e/kg oats

Average for North America: 600 to 900 grams CO2e/kg oats



Practices that make a carbon footprint worse:

- Over-application of fertilizers leads to higher soil nitrous oxide emissions
- Tillage cause organic matter in soil to decompose, leading to carbon dioxide emissions
- Frequent (e.g. every other year or every 2 years) fallow periods reduce opportunities to build organic matter in soil.

Practices that improved the carbon footprint of the operation:

- Grazing livestock on crop stubble, or integrating summer livestock grazing/forage crops helps to build organic matter in soil, leading to carbon sequestration. It can also help to reduce the need for manufactured fertilizers for crops that follow grazing periods as it builds soil nitrogen levels.

Believing is Seeing

Agriculture was never meant to be done without livestock

Reflections turn observations into insight.

-John Maxwell

Illinois could feed approx 3 million beef cows over each winter on 11 million acres of post-harvest corn stalks.
Saskatchewan has approximately 1 million cows and 64 million acres of crop land.

Cover Crop Blend 2018

-Goal of 2-3 year persistence for economy, soil health, resilience, less work

-Grazed in year one and options in subsequent year depending on our needs.

-A type of polyculture. A biological primer to address concerns in soil health and forage gaps.

- Sweet Clover 3 lbs/acre
- Alfalfa 1 lb/acre
- Red Clover .5 lb/acre
- Italian Rye Grass 3 lbs/acre
- Annual Rye Grass 2 lbs/acre
- Festulolium 1 lb/acre
- Brassica 1 lb/acre
- Plantain .4 lb/acre
- Misc grass 1lb/acre

Chicory .4 lb/acre

Phacelia .2 lb/acre

Buckwheat 2 lbs/acre

Sunflower 3 lbs/acre

Winter Triticale 20 lbs/acre

Hairy Vetch 4 lbs/acre

Oats/Barley 15 lbs/acre

Peas 10 lbs/acre

Misc (incl. millet) 1 lb/acre



Second year grazing of our cover crop

- Sweet clover
- Red clover
- Alfalfa
- Plantain
- Annual/Italian Ryegrass
- Winter Triticale
- Hairy Vetch
- Chicory

-silage 8 mt/ac
-50 grazing days/ac.
-Seeded winter triticale and hairy vetch in September.
-Or annual grain the following spring.

The difficulty lies, not in the new ideas, but in escaping the old ones.

John Maynard Keynes

If we keep doing what we're doing we're going to keep getting what we're getting.

-Steven Covey