

Continuation of Soil and Water Improvement through Strip-Tilling and Cover Crop Application

Final Report FY2017

Horizon Farms, Inc. Owners Brad and Darlene Nere

Collaborating Person: Holly Hatlewick, Renville SWCD District Manager

Phone: 320-826-2299

Email: bnere5@yahoo.com

1.) PROJECT ACTIVITIES COMPLETED DURING THE REPORTING PERIOD

Cover Crop application:

A bracket was built with a spring tooth behind each colter on our side dress machine to help incorporate the cover crop seed. For a cost of \$500-\$600 of materials and a couple of days of labor, we have a very workable covering system.

Row Cleaners: floating row cleaners were added to our planter which resulted in a clean surface for planting

Deep band fertilizing: the fertilizer is placed close to the root zone

Liquid fertilizer at planting: to reduce costs

Spring strip-till: done because of time constraints

Nitrate soil testing using Yield Sense 360: to get quick accurate test rather than waiting until lab tests are returned

2.) IDENTIFY ANY SIGNIFICANT FINDINGS AND RESULTS OF THE PROJECT

We tried different cover crop varieties: Our corn was all interseeded with cover crop mid-June. The mix consisted of annual rye, kale, radish, dwarf essex rape, and purple top turnip. This mix established a good root system which secured soil, captured rainfall, and reversed soil compaction. We concluded that the rye grass and kale had the best survival rate.

Did the cover crop give us a corn yield penalty?

See the attached chart. As some plots showed a loss of yield and some a yield gain, we felt the penalties were insignificant.

Deep band fertilizing:

Deep banded fertilizer resulted in better corn yield than the surface applied fertilizer.

Liquid fertilizer at planting

The cost of the liquid fertilizer was less at \$60/acre compared to our dry fertilizer program which cost \$125/acre. Although the liquid fertilizer cost was less, it did not last the entire season.

Spring strip-till

The spring strip-tilling resulted in lumpy soil which did not create a good seed bed.

3.) CHALLENGES ENCOUNTERED

Residual Herbicide

The residual herbicide resulted in cover crop damage. In 2018 we will adjust the timing and rate to prevent this.

Side-dress nitrate testing

We found the results with the machine were inconsistent compared to testing sent to the lab. Testing with the machine needs more fine tuning for accuracy.

4.) EDUCATION AND OUTREACH ACTIVITIES:

We are readily available to farmers and others for questions and information. Many people stop and ask questions about the conservation practices we are implementing.

In June we participated in a panel discussion at the Renville County SWCD/Hawk Creek Watershed District annual meeting.

In September our farm was featured on a tour of cover crop alternative tillage and fertility application held by Renville County SWCD/Hawk Creek Watershed District.

This fall our farm was nominated for Outstanding Conservationist Award at the Minnesota SWCD annual meeting. We were one of eight finalists.

Our local paper featured several articles on cover crop application and strip-tilling as well as the field day that was held.

5.) HOW CAN THE MINNESOTA CORN RESEARCH & PROMOTION COUNCIL HELP?

Grant Programs: Continue to offer grant programs to offset the costs of implementing these practices.

Publicity: Continue to educate the farmers and public the benefits of these changes.

Educate the public that farmers are already good stewards of the land and show the benefits of these practices.

Thank you to the Minnesota Corn Growers for their past and future support of these important changes to Minnesota agriculture.

12/29/2017

Year End Report

Brad Nere

Horizon Farms

These are actual examples and costs of our cover crop mixes.

We feel we need to keep the cost to under \$20/acre in these economic times.

**Interseeding Mix:**

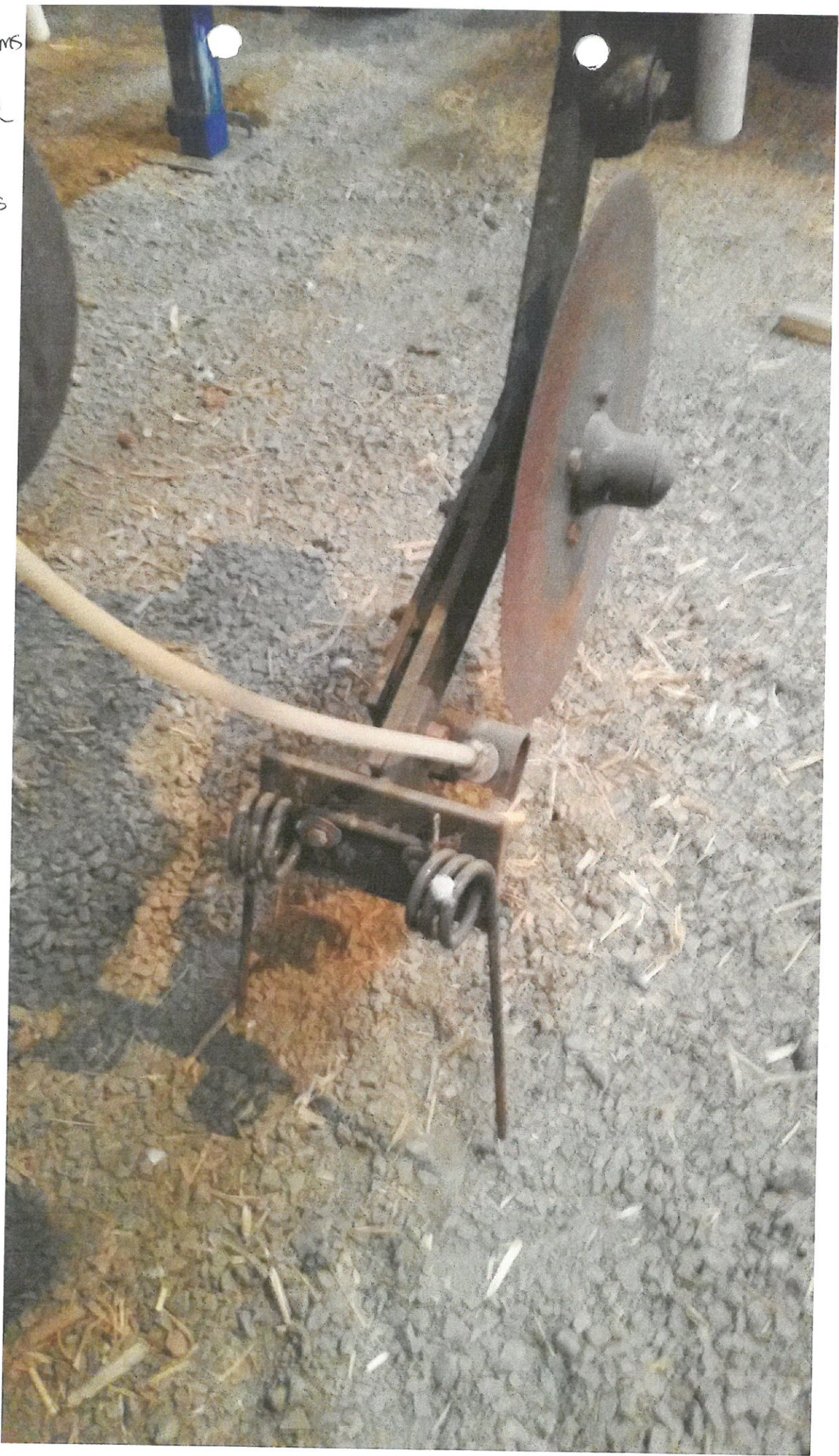
<u>Pounds per Acre</u>	<u>Cost</u>
16 lbs-Annual Rye Grass	\$13.12
1 lb- Kale	\$2.04
1 lb-Purple Top Turnip	\$1.63
1 lb-Dwarf Essex Rape	\$0.94
Shipping	<u>\$0.63</u>
Total	\$17.42

**Post Harvest Mix using cereal rye drilled into corn stalks or soybean stubble**

<u>Pounds per Acre</u>	<u>Cost</u>
60 lbs-Cereal Rye	\$11.40
.5 lb-Radish	\$0.73
1 lb- Dwarf Essex Rape	\$0.94
.5 lb- Kale	\$1.02
Shipping	<u>\$1.86</u>
Total	\$15.95/acre

Florizon Farms

Spring tooth  
for  
Side-dress  
machine



Brad Nere

Horizon Farms

Plant tissues test comparing an Agri Liquid Product (yellow shade) vs. our regular dry fertilizer program (orange shade)

Agri Liquid seemed to run out in late August.

I will run this trial again in 2018

REPORT NUMBER  
**17-179-7183**

REPORT DATE  
**Jun 30, 2017**

RECEIVED DATE  
**Jun 28, 2017**

ACCOUNT  
**8689**



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HEFTY SEED COMPANY  
MIKE DREY  
47504 252ND ST  
BAL TIC SD 57003-

IDENTIFICATION  
BRAD NERE  
HORIZON FARMS  
80393 280TH STREET  
DANUBE MN 56230

3rd COPY TO HEFTY SEED COMPANY  
15746 ACCOUNTS PAYABLE

**PLANT ANALYSIS**

INFO SHEET: 188445

SAMPLE ID	REPORT OF ANALYSIS-PERCENT							REPORT OF ANALYSIS - PARTS PER MILLION						
	N NITRO- GEN	P PHOS- PHORUS	K POTAS- SIUM	Mg MAG- NESIUM	Ca CALCIUM	S SULFUR	Na SODIUM	Fe IRON	Mn MANGA- NESE	B BORON	Cu COPPER	Zn ZINC		
W/AGROLIQU CORN-4	4.33	0.42	1.34	0.37	0.43	0.29	0.001	145	68	8	12	23		
3487943 NORMS	H	S	D	S-H	S	S	S	L	S-L	D	S	L		
Stage of growth: V8, 4 Week, 8 Leaves														
W/OAGROLIC CORN-4	4.17	0.43	1.01	0.50	0.52	0.30	0.001	154	75	9	14	24		
3487944 NORMS	S-H	S	D	H-E	S	S-H	S	S	S	L	S-H	S-L		
Stage of growth: V8, 4 Week, 8 Leaves														

D or Deficient    L or Low    S or Sufficient    H or High    E or Excessive

By John Menghini

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.  
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# Harvest Information Form Due December 1, 2017

Field Trial Site ID:

Crop Adviser: Submit completed Harvest Information Form Ryan Lemickson, MDA, 625 Robert St. North, St. Paul, MN 55155 or email to: [ryan.lemickson@state.mn.us](mailto:ryan.lemickson@state.mn.us)

<b>Farmer Name</b>		<b>Crop Adviser</b>	
Name	Brad Nere	Jason Rice	
Company/Farm Name		212 Seed & Ag	
Address	80398 280th St	PO Box 688	
City	Danube	Renville	
State	MN	MN	
Zip Code	56230	56284	
Phone	320-522-1637	320-979-5168	
e-mail address	bnere@yahoo.com	jason.rice@plantpioneer.com	
Prof. Cert. & Number			

<b>Type of Field Trial</b>	Cover Crop	<b>Location</b>	
	Other :	County	Renville
<b>Harvest Information</b>		Township	Troy
	Harvest Date	Section	30
Harvest Date	11/10/2017	Quarter Section	40
Weigh Wagon Operator	Jason Rice		

Strip Number	Practice ID	Harvested Length in Feet	Row Width Inches	# of Rows Harvested	Moisture (ex: 15.5)	Test Weight	Harvest Weight	Adjusted Yield @ 15.0%	Yield (other)	Average Yields
1	Cover Crop	2385	30	8	21.1	54.0	15814	239.38	+3.38	Normal
2	No C/C	2385	30	8	21.1	54.5	15558	235.50		Practice
3	Cover Crop	2385	30	8	20.3	54.0	15714	240.27	-3.17	
4	No C/C	2385	30	8	20.9	54.0	16042	243.44		
5	Cover Crop	2385	30	8	20.7	53.9	15622	237.67	-7.06	Alternative Practice
6	No C/C	2385	30	8	20.5	54.2	16046	244.73		
7								#DIV/0!		
8								#DIV/0!		

If using other methods to determine yield (Example: yield mapping) only complete the appropriate columns and record yield result in Yield (Other) column.

**Other Notes:**

**Please complete harvest according to general requirements listed on the Nutrient Management Initiative website document: Guidance Protocol for Minnesota Farmers and Crop Advisers**

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.



# Harvest Information Form Due December 1, 2017

Field Trial Site ID:

Crop Adviser: Submit completed Harvest Information Form Ryan Lemickson, MDA, 625 Robert St. North, St. Paul, MN 55155 or email to: [ryan.lemickson@state.mn.us](mailto:ryan.lemickson@state.mn.us)

<b>Farmer Name</b>		<b>Crop Adviser</b>	
Name	Kyle VanOverbeke	Jason Rice	
Company/Farm Name		212 Seed & Ag	
Address	80401 280th St	PO Box 688	
City	Danube	Renville	
State	MN	MN	
Zip Code	56230	56284	
Phone	507-530-2274	320-979-5168	
e-mail address	kbvanoverbeke@gmail.com	jason.rice@plantpioneer.com	
Prof. Cert. & Number			

<b>Type of Field Trial</b>	Cover Crop	<b>Location</b>	Renville	<b>Yield Monitor Information</b>	
<b>Other :</b>		<b>County</b>	Renville	<b>Data Available</b>	
<b>Harvest Information</b>		<b>Township</b>	Troy	<b>Equipment Name</b>	
<b>Harvest Date</b>	11/12/2017	<b>Section</b>	30	<b>Notes:</b>	
<b>Weigh Wagon Operator</b>	Jason Rice	<b>Quarter Section</b>	80		

Strip Number	Practice ID	Harvested Length in Feet	Row Width Inches	# of Rows Harvested	Moisture (ex: 15.5)	Test Weight	Harvest Weight	Adjusted Yield @ 15.0%	Yield (other)	Average Yields
1	No C/C	1865	30	8	21.3	53.9	9696	187.21		Normal Practice
2	Cover Crop	1865	30	8	22.3	54.2	9946	189.60	+2.37	
3	No C/C	1865	30	8	21.9	53.2	9480	181.65		
4	Cover Crop	1865	30	8	21.7	54.6	9740	187.11	+5.46	
5	No C/C	1865	30	8	21.5	54.0	9670	186.24		Alternative Practice
6	Cover Crop	1865	30	8	21.4	54.1	9775	188.50	+2.26	
7	No C/C	1865	30	8	21.9	53.2	9620	184.33		
8	Cover Crop	1865	30	8	21.9	53.5	9640	184.71	+0.38	

If using other methods to determine yield (Example: yield mapping) only complete the appropriate columns and record yield result in Yield (Other) column.

**Other Notes:**

**Please complete harvest according to general requirements listed on the Nutrient Management Initiative website document: Guidance Protocol for Minnesota Farmers and Crop Advisers**

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**2017 NMI Crop Management Information Form--page 2--Due June 30, 2017**

**Field Trial Site ID:**

Mail completed 2 pages to: MDA, Ryan Lemickson, 625 Robert St. N, St. Paul, MN 55155

or email to: [ryan.lemickson@state.mn.us](mailto:ryan.lemickson@state.mn.us)

Does field trial meet minimum size requirements? (30 x 600 ft. strips)

Yes

Explain if Different

Account for all sources and credits. Values automatically transfer from Normal Farmer Practice down into the Alternative Practice. **You only need to manually change the nitrogen treatments under Alternative Practice that are different from above.** Actual Nutrients amounts have to be manually calculated.

Normal Farmer Practice		Actual Nutrients (manually figure amounts)						
Nutrient Source	Applied Date or Crop Stage	Application Timing & Placement	N	P	K	Sulfur	Other (optional)	Nitrogen Stabilizer Used?
46-0-0	05/12/2017	Spring Preplant Broadcast	120.0					
21-0-0-24	05/12/2017	Spring Preplant Broadcast	21.0			24.0		
Agro-Liquid Blend	05/13/2017	At Planting Band	7.0	71.0	75.0			
28-0-0	06/23/2017	Sidedress Band	60.0					
<u>No Cover Crop</u>								
N Stabilizer Cost/acre?			208.0	71.0	75.0	24.0	0.0	
Other: (Equipment or Dealer Program Used, Cover Crop Seeding Rates, Issues)								

Alternative Practice		Actual Nutrients (manually figure amounts)						
Nutrient Source	Applied Date or Crop Stage	Application Timing & Placement	N	P	K	Sulfur	Other (optional)	Nitrogen Stabilizer Used?
Fertilized the same								
<u>Cover Crop Planted</u>								
Annual Ryegrass 16#	6/23/2017	Seeded when N was sidedressed						
Tillage Radish 1#								
Kale 1#								
Dwarf Essex Rape 1.75#								
Purple Top Turnip .5#								
N Stabilizer Cost/acre?			0.0	0.0	0.0	0.0	0.0	
Other: (Equipment or Dealer Program Used, Cover Crop Seeding Rates, Issues)								

**All other nutrient rates should be the same for both treatments on nitrogen rate field trial sites. Nitrogen rate comparisons should maintain a minimum of 30 lbs/acre rate separation.**

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