

2019

Center For Excellence Agriculture Field Plot Research



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FORWARD



Annual precipitation at Bakerlads Farm during the 2019 water year which is from October 2018 through September 2019 was 42% higher than long term NOAA data . Rainfall totaling 46.7 inches fell at the Bakerlads Farm in this time period compared to the normal rainfall of 32.2 inches. Around 40% of the crops in the Clayton, Michigan area didn't get planted. Fears quickly were focused on livestock and having enough feed available to sustain and milk the dairy cows, otherwise some animals may have to go. There were discussions that family members may have to take off-farm jobs!

The surrounding landscape with washouts in many fields reminds us of how much rainfall we had and its long term effects on the agricultural community. Farmers are resilient and when pushed so far, still rise to the occasion and work towards solutions.

A meeting held at one of the local dairy farms and assisted by Lenawee County Farm Bureau generated a lot of enthusiasm regarding allowing certain cover crops to be planted on previously planted acres allowing for harvest of the cover crops for feed while providing much needed income protection through farmers crop insurance policy. In a matter of days approval came from USDA and farmers saw a glimmer of light to get them through the 2019 season of all seasons. The agricultural community united to get something done for the good of producers, community, and the State of Michigan.

Even though there were no 2019 replicated corn and soybean plots at the Center for Excellence host farms we did learn something.

After the wet spring and early summer some corn and soybeans did get planted in Lenawee County. Depending on the location of a farm in the County some producers reported record corn and soybean crops.

The Center for Excellence is starting its 24th year. The Lenawee Conservation District has been hosting the Center along with two host farms, Bakerlads Farm and Raymond and Stutzman Farms. Tim Stutzman and Blaine Baker have been giving their time for these many years to make the Center the best outdoor on-farm research center.

Funding is down by 50% due to lack of check off dollars and a very tight agricultural market, yet here we are! We haven't forgot that, over twenty years ago a group of producers challenged the local conservation office to get involved with a local on farm research project. We still hear the echo of that challenge from many years ago.

Moving forward at the Center with: on-farm research for identifying sustainable conservation projects that will work for Lenawee County farmers; implementation of new conservation projects such as saturated buffers, closed loop drainage/irrigation systems, blind inlets, and phosphorus filters; qualifying soil health and understanding the relationship to soil health and sustainable crop production while improving water quality leaving the farm.

Adapting to the new norm of weather pattern changes could keep agricultural producers in business. The livestock industry must address the phosphorus losses on their farms and work closely with government and non-government entities to reach reasonable goals of P reduction in Lake Erie.

We believe the agricultural community will figure it out given enough time and support through on-farm research projects such as the Center for Excellence. The freedoms this country offers the agricultural community also demands active participation in seeking solutions.

Thomas Van Wagner
Center for Excellence

LAST WORD FOR 2019



To sum up 2019 in a few words it would be patience, frustration, and small windows of opportunity ... and finally rewarding.

Who would have ever dreamt planting corn June 27th through July 6th would turn out so good, but cows have to eat. We had to switch our corn maturities from 110-day to 90-day hybrids. It was the perfect growing season after the corn was planted. We did not plant any soybeans because we had already lost our longest days thus losing the sunlight we needed to have a successful crop. In our eyes it would have been similar to planting double crop beans. Looking back at it now the soybeans would have thrived in the growing season we had.

Wheat Crop for 2019 was a little above average with decent test weight. Corn silage harvest was late starting the first day of October but corn was above average in yield and tonnage.

As far as fall primary tillage it is starting to feel like 2018 fall all over again as not much has been accomplished. We are looking forward to the 2020 Year. I hope this is not the new normal!!

Tim Stutzman
Raymond and Stutzman Farms



2019 was a year for the record books. We planted 60% of our ground. Planting took 11 different days between May 16th and July 2nd. After going through the summer drought, harvest started October 17th and finished January 6th. We learned some things, most of which we hope we will never have to use again.

- You can plant corn June 28th and get a respectable yield
- Are we planting longer hybrids than necessary?
- It is possible to plant green in 30" tall grass and get a good stand.
- Cover crops do control weeds and can save chemical dollars.

We learned, we lived through it, and we will be ready to go again next year.

Blaine Baker
Bakerlads Farm

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Partners

Lenawee Conservation District
Corn Marketing Program of Michigan
Michigan Soybean Promotion Committee

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Andre Land Forming Blissfield State Bank Bruggeman Law Offices, P.C.
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Supplemental Support

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Sieler's Water Systems Spring Party Store

CENTER ON THE ROAD 2019 WHEAT NITROGEN MANAGEMENT TRIALS



PURPOSE

Quantify the benefits of using OptRx optical sensors to determine application rate of nitrogen on wheat. Sensors and imagery are becoming more important in agriculture to provide adequate nutrients to the growing crop while at the same time reducing potential unwanted loss of nitrogen through leaching or volatilization. Wheat could potentially benefit from split applications of nitrogen.

Data collected on similar studies in corn has shown a statistically significant difference in efficiency of nitrogen used in a similar design.

TREATMENTS

Control – solid rate (not controlled by sensor) using MSU nitrogen recommendations formula:

$$\text{Nitrogen rate} = -13 + (1.33 \times \text{yield potential})$$

Example with yield potential of 95: $-13 + (1.33 \times 95) = 113.35$ pounds N per acre

Variable Rate Nitrogen (VRN) – variable rate as determined by the OptRx system

Treatments should be applied in a field large enough for at least three replications (four is preferred).

Apply no more than 15-20 pounds of nitrogen in fall at planting. This trial will be a split application.

Due to perceived risk of allowing OptRx to apply a rate too low, 40 pounds per acre of nitrogen will be applied at green-up. The balance should be applied at Feekes 5-6 according to the treatments.

METHODS

The study was designed to evaluate the impact of flat rate application of nitrogen as compared to using a sensor that applies nitrogen based on crop need through algorithms that rely on calibration and initial data entered in the display such as yield goal, maximum and minimum N application and nitrogen credits. The sensors can only work with proper calibration and data entry prior.

Measurable data points included nitrogen used in each trial, yield, and economics. Data was analyzed using a simple Analysis of Variance (ANOVA) and considered significant at $P < .05$. Economics were calculated using relevant crop prices comparing total nitrogen used with the cost of the nitrogen product. The price of wheat used was \$4.78/bushel and 28% nitrogen at \$240/ton or \$.43 per pound of actual Nitrogen.

2019 CENTER ON THE ROAD WHEAT NITROGEN MANAGEMENT TRIALS



Location	Treatment	Starter N lbs./ac	Green-Up Application lbs./ac	Feekes 6-N Rate Gal/ac	Total lbs. N used/ac	Total Cost N Used \$	Mean Yield Bu/ac	Significant Diff. (p<.05)	Net Return Over Cost of N \$
1	Straight rate	20	40	24.1	132.3	56.89	99.3	LSD 4.24, CV 2.46	464.44
1	OptRx	20	40	19.9	119.7	51.47	99.7	Not-Significant	471.95
2	Straight rate	20	40	17.96	113.88	49.01	111.4	SD 7.07 CV 3.65	535.84
2	OptRx	20	40	18.19	114.57	49.26	112.9	Not Significant	552.23
3	Straight rate	0	40	19.22	117.66	50.59	95.18	LSD 18.26 CV 4.49	449.1
3	OptRx	0	40	16.63	109.89	47.25	93.75	Not Significant	444.94
4	Straight rate	20	40	18.1	114.3	49.15	81.2	LSD-18.66, CV 5.55	426.3
4	OptRx	20	40	17.1	111.3	47.86	75.0	Not significant	345.89

SUMMARY

1 gallon of 28% is 3 lbs. of actual Nitrogen • 28% nitrogen at \$240/ton is \$.43/lb. Actual N • \$5.25/bushel

- All of the plots had no yield significance.
- The average yield on the plots for straight rate was 96.77 acre applying 19.85 gallons of 28% (59.53) pounds N applied at Feekes 5-6).
- The average yield for the OptRx sensor was 95.34 bushel/acre applying 17.96 gallons of 28% (53.9 pounds of N applied at Feekes 5-6).
- The average yield difference between the treatments is 1.43 bushel/acre difference and using 1.89 gallons/acre more of 28% nitrogen in the straight rate.
- The average gross income advantage 1.43 bu/ac @ \$5.25/bu=\$7.50
- Net income advantage to straight rate \$7.50-\$2.44 added N= \$5.06

DISCUSSION

The spring of 2019 turned out to be one of the most difficult springs to carry out farming practices and was very similar to 2018. Although excessive rainfall caused spring management challenges for crops four nitrogen management plots were able to follow the planned protocol for the N application plots.

All the wheat plots had starter fertilizer applied in the fall of 2018 resulting in 20 lbs. of actual Nitrogen introduced into the system. The fall of 2018 had above average rainfall.

All the plots spread 40 lbs. of actual N using Urea sometime in late March and early April when the green-up period of wheat starts. Follow-up nitrogen application using 28% at the Feekes stage 5-6 was done on all the plots. When using the Nitrogen sensor, a calibration must occur in each field plus the entry of data which includes plant stage, nitrogen credits, minimum and maximum nitrogen application rates to allow the sensors to geo-spatially apply nitrogen based on crop need and algorithms that work behind the scenes to delivery N to the plant.

Due to the wet fall of 2018 and spring of 2019, it was decided by the growers not to give the starter fertilizer nitrogen credits prior to final N application.

SMaRT Soybean Trials in Michigan



2017-2018 Complete seed treatment trial

Purpose: Soybean producers have identified seed treatments as a high priority for evaluation in SMaRT on-farm research trials. The purpose of this trial was to provide an opportunity for cooperators to evaluate the performance of the complete seed treatment (fungicides plus an insecticide) of their choosing on their farms in 2017 and 2018.



Procedure: This trial compared two treatments (a complete seed treatment including multiple fungicides plus an insecticide vs. untreated seed). Eight trials were conducted in 2017 and 13 were conducted in 2018. The cooperating producers worked closely with their seed dealers to ensure that all seed planted in each trial was the same variety and came from the same seed lot. We also took final stand counts to determine the effect that seed treatments had on soybean stands.

Results: Complete seed treatments increased soybean yield at two of the eight locations in 2017 and five of the 13 locations in 2018. The yield increases ranged from 1.2 to 2.6 bushels per acre in 2018 (table 2).

When all 21 sites were combined and analyzed, the complete seed treatments increased soybean yields by 1.2 bushels per acre. This is less than the 1.6 bushels per acre required to recoup the cost of a basic fungicide plus insecticide seed treatment costing \$14.00 per acre.

The seed treatments led to significantly higher final plant stands at five of the 21 locations (two in 2017 and three in 2018).

When all the 2017 and 2018 sites were combined and analyzed, the complete seed treatments increased plant stands by 7,100 plants per acre. The next page shows the varieties and tolerance to phytophthora.

We appreciate the help provided by local seed dealers.

SMART Soybean Trials in Michigan



Table 1. 2018 Seed treatments, varieties, phytophthora genes/tolerance rating, tillage

Location	Seed Treatment	Variety	Phytophthora gene/ Tolerance	Tillage fall/ spring	Planting Date
Sanilac 18-2	Agrishield + Insecticide	Great Lakes GL1675X	1c/8 (9=excellent, 1=poor)	NT	May 23
Cass 18	PPST FST/IST/ ILeVO	Pioneer P31T11R	1k/6 (9=excellent, 1=poor)	VT/--	May 7
Saginaw 18	Stine XP-F&I	Stine 20RD20	1c,1k/very good	NT	May 7
Barry 18	PPST FST/IST	Pioneer P25A70R	1k/4 (9=excellent, 1=poor)	NT	May 9
Sanilac 18-3	PPST FST/IST	Pioneer P24A99X	1k/5 (9=excellent, 1=poor)	DR/FC	May 24
Ionia 18	Vibrance Trio	Northrup King S20T6	1c/5 (1=best, 9=worst)	VT/--	May 5
Washtenaw 18-1	PPST FST/IST	Pioneer P28T08R	1k/4 (9=excellent, 1=poor)	VT/--	May 29
Washtenaw 18-2	PPST FST/IST	Pioneer P28T08R	1k/4 (9=excellent, 1=poor)	NT	June 1
Branch 18	PPST FST/IST	Pioneer P32T16R	1k,3a/6 (9=excellent, 1=poor)	NT	April 26
Sanilac 18-5	Equity VIP	DynaGro 24LL98	1k,7 (9=excellent, 1=poor)	--/FC (2x)	May 17
Sanilac 18-4	Dfender	DF Seeds Jackson	1k/1.3 (1= best, 5= worst)	CP/FC	May 25
Shiawassee 18	CruiserMaxx + Vibrance	Golden Harvest 2788X	1c/4 (1=best, 9=worst)	--/CP,SF	June 4
Sanilac 18-1	Dfender	DF 155	1k/1.3 (1= best, 5= worst)	CP/FC	April 30

Using Class A Bio solids in Michigan



Biosolids help provide:

- Micro and Macro nutrients
- Slow release nitrogen
- Organic matter
- Improves water retention
- Improves plant growth and crop yields
- Cost effective alternative to chemical fertilizer

Additional information on biosolids can be found at https://www.mj-wea.org/biosolids_land_application.php

Building Healthy Soils Class A Biosolids Fertilizer

What are biosolids?

Biosolids are highly treated solids from a water resource recovery facility (WRRF). Biosolids are analyzed for contents, and carefully regulated by State agencies to create a safe, stable and valuable fertilizer. Biosolids can be utilized as a fertilizer and soil amendment on agricultural land, public use land, forestlands, and mine reclamation sites. The level of treatment affects the options by which the biosolids can be land applied. By state and federal regulation, there are two types of biosolids, Class A-Exceptional Quality biosolids, and Class B biosolids. Class A biosolids have had pathogens virtually eliminated where Class B biosolids have reduced pathogens that are still detectable. Class A biosolids have less restrictions for land application. Depending on the treatment process, biosolids come in various forms such as, liquid, slurry, composted materials, or dried pellets.

Permitting fields for Class A biosolids land application

In Michigan, biosolids land application is regulated by the Michigan Department of Environment, Great Lakes and Energy (EGLE). Site packages are required to land apply. The producers of the biosolids will be able to put together the site packages for each field on your behalf. The following information must be provided to the producer to determine if the field(s) are appropriate to receive biosolids fertilizer.

Farmers need to provide:

- Field Name
- Acreage
- Previous Year Crop
- Current Year Crop
- Expected Yield
- Field Slope %
- Field Tiled (Yes/No)
- Field Irrigated (Yes/No)
- Prior Crop Residual? (lbs/acre credit)
- Latitude/Longitude, location and outline of field
- Prior Manure or Biosolids (lbs/acre Credit)
- Soil sample for each field, taken within last 2 years.



NEFCO provides a Class A dried biosolids pellet from the GLWA drying facility in Detroit. Pricing is dependent on distance from drying facility. Contact Felicia at fmorrisette@nefcobiosolids.com or (817) 372-6284 for more information.



Industrial Hemp Production In Michigan



Industrial Hemp Update

Theresa Sisung, Michigan Farm Bureau, Associate Field Crops & Advisory Team Specialist

More than 600 Michigan farmers jumped at the chance to try their hand at growing a new crop in 2019: hemp. While 2019 provided a great educational opportunity for farmers interested in the new crop, the learning curve was and continues to be steep going into the 2020 growing season.

The 2014 Federal Farm Bill authorized colleges/universities and state departments of agriculture to grow and market hemp as part of a pilot program. The Michigan Department of Agriculture and Rural Development (MDARD) implemented the state's first Industrial Hemp Ag Pilot Program in April 2019, which opened the door for interested growers to begin producing the crop.

The first crucial fact growers need to know, and most already do, is that hemp is not marijuana. Though the plants are related and appear similar, they are distinctly different. Hemp is generally considered to be non-psychoactive and must have a tetrahydrocannabinol (THC) level of not more than 0.3%. In Michigan, hemp and marijuana are legal, however, marijuana is federally illegal.

Understanding the rules, knowledge of the best agronomic practices, overcoming a lack of handling and processing infrastructure, and the lack of a well-defined market channel for the end-product (s) were all challenges that first-time hemp growers faced in 2019. Despite these challenges, there was still a tremendous amount of interest; growers registered 15,477 outdoor acres and 10 million square feet indoors for hemp production, although not all registered space was planted. The number of individuals and/or businesses registered to process or handle/sell hemp totaled 483. This figure reflects primarily licenses to sell hemp, there are far fewer processors.

Under Michigan's industrial hemp licensing law, Public Act 641 of 2018, a person interested in **growing** industrial hemp must submit to MDARD an application and a \$100 registration fee. For anyone wanting to **process, handle, broker, or market** industrial hemp in Michigan, they must submit an application to MDARD as well as a \$1,350 application fee. The law also requires growers, on their application, to identify all growing locations and post signage at the boundaries of each growing area.

Growers must test their crop for THC concentration by submitting a sample within 15 days prior to harvest. If the THC level is above 0.3%, the crop cannot be harvested and must be destroyed. According to MDARD, more than 800 hemp samples were submitted in 2019 with a compliance rate of 84 percent.

Samples above 0.3% THC could either be retested or the crop had to be destroyed. If a sample fails two additional retests, MDARD must order destruction of the crop.

Looking ahead to the 2020 growing season, the U.S. Department of Agriculture (USDA) released their interim final rule for hemp production on October 29, 2019. The rules were called for when the 2018 Farm Bill made growing hemp legal and they provide guidance to state departments of agriculture for developing state-specific plans. Michigan will have up to one year to continue its pilot program and update rules and regulations to be consistent with federal regulations. MDARD is currently planning for a 2020 Industrial Hemp Ag Pilot Program, that will be similar to the 2019 program, and is licensing growers and processors.

When Michigan transitions from regulation under a state pilot program to a USDA-approved state plan, some rules will change. One key rule change will be who collects and submits samples for THC testing. Under the pilot program, growers submit their own samples. Under a USDA-approved state plan, only designated officials will be permitted to collect and submit samples. An additional change affects samples testing over the legal limit. If this occurs, the crop must be collected by a person authorized under the Controlled Substances Act to handle marijuana and be disposed of in accordance to Drug Enforcement Agency regulations. One final change, under the state plan, is that growers must submit their acreage to the Farm Service Agency.

For farmers growing hemp who are interested in risk management options, USDA's Risk Management Agency announced a new crop insurance option for growers in select counties of 21 states, including Michigan, in 2020. The pilot insurance program will provide Actual Production History coverage under 508(h) Multi-Peril Crop Insurance. To be eligible, among other requirements, a hemp producer must have at least one year of history producing the crop and have a contract for the sale of the insured hemp. Provisions of the program state that having THC above the legal level will not constitute an insurable cause of loss. Additionally, hemp will not qualify for re-plant payments or prevented plant payments under the crop insurance.

The hemp industry is constantly evolving, which requires farmers to stay up to date as possible. For more information regarding regulations and licensing, visit MDARD's Industrial Hemp website. USDA also has information on how hemp fits into Farm Bill programs on their website at www.farmers.gov/manage/hemp

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THEY ARE A GREAT PLACE TO ASK THOSE IMPORTANT WHEAT QUESTIONS AND GET ANSWERS FROM THE EXPERTS WHO KNOW.

There is no cost to attend any of the Michigan Wheat Program's events.

2020 Annual Winter Grower Meeting
Wednesday, March 18, 2020
We'll be at the Eagle Eye Country Club, Bath.
Check in begins at 8:15 a.m. Talks begin at 9
and conclude by 4 p.m.

2020 Annual Summer Field Day
Wednesday, June 10, 2020
We're loading wagons for tours at the MSU
Saginaw Valley Research & Extension Center,
3775 S. Reese Road, Frankenmuth. Check in
begins at 8:15 a.m. Wagons roll at 9 and
conclude by 2 p.m.



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The Soybean Checkoff

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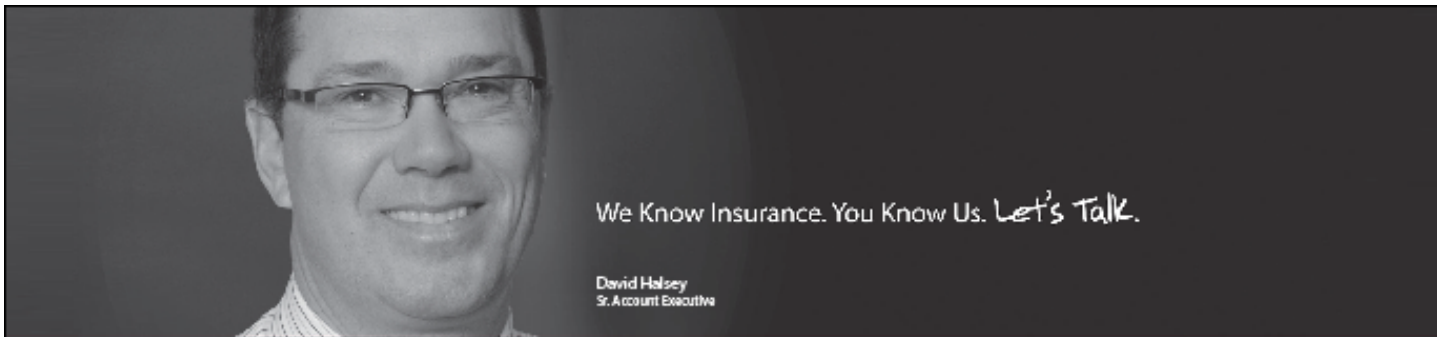


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2020 FIELD DAY



WEDNESDAY, AUGUST 12TH, 2020

