

2013 RESULTS AND RETAILER OPPORTUNITIES







Dan Schaefer Director of Nutrient Stewardship



- Farm Bureau
- Corn Growers Association
- Soybean Association
- Pork Producers Association
- Fertilizer & Chemical Association
- Syngenta Crop Protection
- GROWMARK
- Monsanto







Legend

Name

- CBMP ISU Discovery Farm
- Champaign Co. CBMP Paired Tile Research
- ISU Farm
- U of I South Farm
- 2013 KIC Fields
- 2014 KIC Fields

Name

- Evergreen Lake
- Lake Bloomington
- Lake Decatur
- Lake Mauvaise Terre
- Lake Springfield
- Lake Vermilion
- Salt Fork Vermilion
- Vermilion (Illinois Basin)



We need to manage nitrogen at the beginning, not the end.

We need to manage nitrogen as a system, not an application or activity.

It's not about adding more N It's about losing less and utilizing more.















Normal Practice 15.1 acres 100 ft Spacing Managed Nitrogen 15.2 acres 100 ft Spacing

+





FACTORS AFFECTING P RUNOFF

Fabian Fernandez, Kristin Greer, Chris Rudisill, and Dan Schaefer

OBJECTIVES

• EVALUATE THE EFFECT OF TILLAGE AND FERTILIZER PLACEMENT ON P RUNOFF









EFFECT OF TILLAGE AND P RATE ON P RUNOFF- 30 MIN



EFFECT OF TILLAGE AND P RATE ON P RUNOFF- 1 L COLLECTED



Check (0 lb P_2O_5)



Maintenance (115 lb P_2O_5)



 Δ Soil P (lb acre⁻¹)

Highest Rate (161 lb P_2O_5)



 Δ Soil P (lb acre⁻¹)







N MGT. TOOLS

- MRTN
- Light Sensors
- Models
- Aerial photographs^{LLINOIS SOIL} ISNT NITROGEN TEST
- ISNT
- Soil O.M.

Illinois Council on Best Management Practices

- Educated "guesstimates".
- Farmers Almanac?

It is not just about application -f N, but utilization of N.









N RATE STUDIES IN 2013

- 15 N Rate Trials (6 rates x 3 reps)
- 2 N Rate x Timing Trials (5 rates x 3 reps x 2 times)
- 5 VRT vs. Straight Rates
- 10 Split Application vs. One Application
- 1 Crop Canopy Sensor vs. Conventional





N RATE STUDY EMPHASIS

222 * 2

252 #3



150	150	150
0	0	250
50	200	50
250	50	100
100	250	0
200	100	200







Sam W - Clark North 2013

Yield by Lbs N Applied





Yield by Lbs N Applied

	A	в		D	E	F		G		н		J	Ň	L	IVI
1	INTERNATIONAL PLANT NUTRITION INSTITUTE	Crop Nutrie	ent Res	ponse	Tool (C	CNRT) v	4.5 comp	parison	mode	R ² -weigh	ted Mean				
2 3 4	Step 1: Enter rate and yield of Step 2: Click the Fit button. Step 3: Adjust crop and fertili	lata. zer prices.	Fertilizer rate, Ib/A	Crop Yield, bu/A	Fertilizer rate, Ib/A	Crop Yield, bu/A	Fit A		Fit B	А	В				
5	Step 4: Click to append infor	mation to summary. `	45	133	45	137			R ^{2.}	94%	94%	•			
6	Site Det	ails	45	126	45	104			MERN (Ib/A):	201	176	1			
7	Site	Brandenberg	45	136	45	131		Yield @ I	MERN (bu/A)	234	240				
8	Year	2013	95	197	95	193	Partial Facto	or Productivity	(PFP), bu/lb	1.16	1.36	1			
9	Town	Bement	95	184	95	203	Agrono	omic Efficien	cy (AE), bu/lb	0.80	0.98	1			
10	County	Piatt	95	170	95	187	Estimated Pa	artial N Balan	ice (PNB), %	75%	88%	1			
11	State or province	Illinois	145	215	145	225	Estimated Re	ecovery Efficie	ency (RE), %	78%	96%	1			
12			145	205	145	230		Delta	a Yield (bu/A)	160	173				
13	A	The 50	145	235	145	233		Relat	ive Yield (%)	31%	28%				
14	В	Clark North	195	240	195	251	(
15			195	218	195	233	300 ¬								_
16			195	240	195	252									
17		Added in UAN	245	226	245	247									
18		45# of N	245	243	245	231	050				F				
19			245	235	245	227	250 -					A			
20					295	241									
21					295	240				/					
22					295	253	200 -			2//	•				
23							2			¥					
24							₹								
25							3								
26	ESSENTIAL INFORMATION						<u>⊇</u> 150 -								
27	Crop (\$/bu)	4.15					No la		<u>/</u>						
28	Fertilizer (\$/lb)	0.45					Š.		*						
29	Price ratio (f/c)	0.11					100 -		•						
30	Crop nutrient content (lb/bu)	0.65													
31	Nutrient harvest index	0.67													
32							- I								
33							50 -								
34															
35															
36							0								
37									50	100	150	200	250	300	350
38							0	,	50	100	150	200	200	300	350
39										Fer	tilizer App	lied (lb/A)			
40															
41															

Fit A	Fit B	A	B
	R^2 :	94%	94%
	MERN (lb/A):	201	176
N	Yield @ MERN (bu/A)	234	240
Partial Factor Pro	oductivity (PFP), bu/lb	1.16	1.36
Agronomic	Efficiency (AE), bu/lb	0.80	0.98
Estimated Partial	N Balance (PNB), %	75%	88%
Estimated Recover	ery Efficiency (RE), %	78%	96%
	Delta Yield (bu/A)	160	173
	Relative Yield (%)	31%	28%



100 Spring	100 Spring	100 Spring
150 Fall	200 Spring	50 Fall
150 Spring	200 Fall	50 Spring
50 Spring	50 Fall	150 Fall
50 Fall	50 Spring	150 Spring
200 Spring	100 Fall	0 Fall
200 Fall	100 Spring	200 Fall
0 Fall	0 Fall	200 Spring
100 Fall	150 Spring	100 Fall
100 Spring	150 Fall	100 Spring
100 Spring	100 Spring	100 Spring







0	0	0
150 Fall	0	50 Fall
0	200 Fall	0
0	50 Fall	150 Fall
50 Fall	0	0
0	100 Fall	0 Fall
200 Fall	0	200 Fall
0 Fall	0 Fall	0
100 Fall	0	100 Fall
0	150 Fall	0
0	0	0







100 Spring	100 Spring	100 Spring
0	200 Spring	0
150 Spring	0	50 Spring
50 Spring	0	0
0	50 Spring	150 Spring
200 Spring	0	0
0	100 Spring	0
0	0	200 Spring
0	150 Spring	0
100 Spring	0	100 Spring
100 Spring	100 Spring	100 Spring







PLANT NUTRITION INSTITUTE	Crop Nutrie	ent Res	ponse	1001 (0	SNR I) V	4.5 com	paris	son mode	R'-weigh	nted Mean				
Enter rate and yield d Click the Fit button. Adjust crop and fertili.	ata. zer prices.	Fertilizer rate, Ib/A	Crop Yield, bu/A	Fertilizer rate, Ib/A	Crop Yield, bu/A	Fit A	-	Fit B	А	В				
Click to append inform	mation to summary.	45	123	45	120			R ² .	49%	68%				
Site Deta	ails	45	128	45	136			MERN (Ib/A):	205	187				
Site	Kleiss Grimm	45	93	45	115		Yie	eld @ MERN (bu/A)	164	168				
Year	2013	95	126	95	153	Partial Fac	ctor Prod	uctivity (PFP), bu/lb	0.80	0.90				
Town	Tolono	95	148	95	160	Agroi	nomic E	fficiency (AE), bu/lb	0.33	0.39				
County	Champaign	95	146	95	164	Estimated I	Partial N	Balance (PNB), %	52%	59%				
State or province	Illinois	145	91	145	152	Estimated F	Recover	/ Efficiency (RE), %	32%	38%				
		145	156	145	162			Delta Yield (bu/A)	67	74				
A	Fall Applied	145	152	145	142			Relative Yield (%)	59%	56%				
В	Spring Applied	195	177	195	162	(
		195	175	195	171	250	-							_
d Fall vs Sidedress		195	178	195	174									
g 2013 45# N UAN		245	126	245	161									
12 31# of N from DAP		245	176	245	177									
		245	187	245	197	200								
		295	158	295	165	200								
		295	168	295	180						B 🔥 🔥		•	
		295	169	295	159									
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ITIAL INFORMATION						=								
Crop (\$/bu)	4.20					P								
Fertilizer (\$/lb)	0.45					ເ≞ 100	-							
Price ratio (f/c)	0.11					ſ								
utrient content (Ib/bu)	0.65													
lutrient harvest index	0.67													
						50	_							
						U	+							
							0	50	100	150	200	250	300	350
									Fe	rtilizer App	lied (lb/A)			

Fit A	Fit B	A	B
	R^2 :	49%	68%
	MERN (lb/A):	205	187
N	Yield @ MERN (bu/A)	164	168
Partial Factor Pro	oductivity (PFP), bu/lb	0.80	0.90
Agronomic	Efficiency (AE), bu/lb	0.33	0.39
Estimated Partial	N Balance (PNB), %	52%	59%
Estimated Recover	ery Efficiency (RE), %	32%	<mark>38</mark> %
	Delta Yield (bu/A)	67	74
	Relative Yield (%)	59%	56%



MAXIMUM RETURN TO NITROGEN (MRTN) Web Version

Single Price Ratio Multiple Price Ratios <u>V. 1.5</u> Choose rotation pattern(s) Choose state ~ Corn following soybean Illinois - Central Illinois - South Corn following corn Indiana - West & Northwest Indiana - East & Central Indiana - Remainder Michigan Minnesota Ohio Wisconsin – VH/HYP Soils Include non-responsive sites Wisconsin – M/LYP Soils Wisconsin - Irr. Sands Wisconsin - Non-Irr, Sands Set corn and nitrogen prices 820 Anhydrous Ammonia (82% N) (\$/Ton) Nitrogen price 0.50 (\$/lb N) Corn price 5.00 (\$/bu)

App Droid/iPad

	3554inc_bow
	MRTN Calculator
l	Start MRTN Calculator
l	More information about the MRTN can be found at:http://extension.agron.iastate.edu/ soilfertility/nrate.aspx
l	UNIVERSITY OF ILLINOIS EXTENSION College of Agricultural, Consumer and Environmental Sciences
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Calculator

Sir

Nitrogen Calculator | Spring 2014 plan

Total to apply



Split 2		🗹 Apply
* Timing	Pre-Plant	
* Source	UAN (28%)	
* Amount of nitrogen to apply	25 % OR 52 #/A	
Amount product per acre	185.71 Lbs / Acre	
Gallon per acre	17.20 Gallon / Acre	
* Set price per ton of product	\$ 360.00 / Ton	
Set application fee	\$ 6.50 / Acre	
Calculated N price per acre	\$ 33.43 N / Acre	
Additive	Agrotain DC	
Set price per acre of additive	\$ 5.00 / Acre	
Cost for split	\$ 44.93	

Split 3



* Timing	Post-Emergence
* Source	Super-U (46%)
* Amount of nitrogen to apply	25 % OR 52 #/A
Amount product per acre	113.04 Lbs / Acre
* Set price per ton of product	\$ 600.00 / Ton
Set application fee	\$ 5.50 / Acre
Calculated N price per acre	\$ 33.91 N / Acre
Additive	Please select additive
Set price per acre of additive	\$ 0.00 / Acre
Cost for split	\$ 39.41

MRTN Calculator | 2014 Plan

Single Application

Source	Anhydrous Ammonia (82%)	Price of product	\$650.00 / Ton
Application fees	\$9.00 / Acre	Calculated N price per lb	\$0.40 N / Ib
Additives	N-Serve	Price per acre of additive	\$13.00 / Acre
Location/rotation	Central Corn after Soybean	Corn per bushel	\$4.25
N price to corn price ratio (R)	0.09	Calculated MRTN value	Low 161, Optimum 175, High 193
Cost per acre	\$91.30	Choosen rate	175

Split Applications

	Split 1	Split 2	Split 3
Timing	Fall	Pre-Plant	Post-Emergence
Source	Anhydrous Ammonia (82%)	UAN (28%)	Super-U (46%)
Amount of Nitrogen to apply	50% (88 #/A)	50% (88 #/A) 25% (44 #/A)	
Amount of product	107.32 Lbs / Acre	107.32 Lbs / Acre 157.14 Lbs / Acre	
Amount of product		14.55 Gallon / Acre	
Price of product	\$650.00 / Ton	\$360.00 / Ton	\$600.00 / Ton
Price of N	\$34.88 / Acre	\$28.29 / Acre	\$28.70 / Acre
Application fee	\$9.00 / Acre	\$6.50 / Acre	\$5.50 / Acre
Additive	N-Serve	Agrotain Ultra (UAN)	
Price of additive	\$13.00 / Acre	\$6.50 / Acre \$0.00 / Acre	
Cost for split	\$56.88 / Acre	\$41.29 / Acre \$34.20 / Acre	

Comparison of Cost

Single application total	\$91.30	Split application total	\$132.37
Cost difference in dollars	\$41.07	Cost difference in bushels	9.7 bu

Using MRTN and N Rate Studies helps us come up with a reliable, responsible and defensible N recommendation















NITROGEN UPTAKE IN CORN



Management Practices

APPLICATION CONSIDERATIONS

- Early
- Pre-plant
- Post-emerge



Its not about increasing N rates. Its about increasing N utilization.







N FERTILIZER MANAGEMENT A Year-round Sport!

What happened during the fall, winter and early spring?



What happened in since the crop was planted?











Available Soil NO₃-N (1 Ac Grid)



Flat Rate left VRT Flat Rate Right



WAS THERE A RETURN-ON-INVESTMENT?

Treatment	Avg. N Rate	Yield	\$ of N/lb	Recovery \$5.00/Bu
Flat Rate	60	217	\$30.00	
VRT	129	233	\$64.50	
Difference	+69	+16	+\$34.50	7 Bu/A

Cost of N: \$.50/lb Price/Bu: \$5.00 Cost of sampling: \$25.00/A



MAINTAINING OWNERSHIP OF NUTRIENT MANAGEMENT THROUGH:

Accountability Sustainability Profitability





CONTACT INFORMATION

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"We're seeing a significant drop in customer complaints since we stopped answering our phones."

