NUTRIENT MANAGEMENT PLAN

Soil Testing Plan
Soils will be tested a minimum of every 4 years to a depth of 7" in the fall after crop removal and prior to manure application. One sample shall be taken for each 2.5 acres. Samples shall be analyzed for pH, Phosphorus, and Potassium, at a minimum. *(Source - IL Agronomy Handbook, NRCS Standard 590)*

Manure Testing Plan
Manure samples shall be taken annually during manure application from each storage facility and manure type (liquid or solid), and analyzed for Total N, Ammonium Nitrogen, Organic N, P_2O_5, and K_2O.

Illinois Phosphorus Risk Assessment
(Illinois NRCS – Nutrient Management Standard, Code 590)

Phosphorus (P) loading to surface water can accelerate eutrophication. The availability of other nutrients and light penetration into the water column will also influence the response of waterbodies to phosphorus. Land managers who desire to minimize transport of phosphorus need a practical assessment procedure to assist them in making decisions concerning the applications of phosphorus-containing materials.

Factors such as: the amount of erosion and runoff; the form, amount, and distribution of Phosphorus in the soil: and fertilizer and manure application rate, timing, and placement determine P loss from agricultural fields and the resulting P loading to water resources. Most phosphorus compounds found in soils have low water solubility. Consequently, P loss from agricultural land was once thought to be primarily associated with soil erosion. In many cases, sediment-bound P is still the dominant form in which P losses from agricultural fields occur. Over the past decade, research has shown that phosphorus can be lost in runoff in dissolved forms. High dissolved P concentration in runoff is more frequently observed where soil P levels are high particularly near the soil surface. High soil P levels, however, do not automatically equate to high dissolved P in runoff. As stated earlier, numerous factors interact to create the potential for P losses from agricultural fields. Many of the basic processes that govern P transport are known. It is difficult, however, to know at any given site which factor(s) influence P loss rates proportionally more than others. Insufficient data exist in Illinois to definitively guide landowners as to which factors in a specific field contribute the most to P losses. There are indications, however, that where solution P losses from crop fields are dominant, high soil P concentration at the surface are likely the most dominant factor.

The purpose of this guide is to (1) help land managers identify factors in agricultural fields known to contribute to "P" runoff loss and, (2) identify practices that can reduce phosphorus loss from agricultural fields. The factors most commonly associated with both dissolved and sediment-bound P loss are presented. For each factor, guidance is provided to help land managers estimate the relative potential for P transport to surface water. It is important to realize that the procedure is not a predictive tool for P loading. It is merely a tool for assessing the relative potential for phosphorus transport.

Use of P Risk Assessment:
When possible, land managers should adopt management practices that minimize phosphorus loss risk factors. If phosphorus containing materials need to be applied to fields that have medium or high risk potentials, recommended management practices should be used to reduce the risk of phosphorus transport.

Practices to Reduce Phosphorus Risk Potential

Soil Erosion Control

- Use residue management and/or structural practices to reduce sheet and rill erosion
- Install filter strips, riparian forest buffers, contour buffer strips, field borders, or wetlands

Minimize Connectivity to Water Bodies

- Install water and sediment control basins to reduce quantity of sediment transported offsite
- Install conservation buffers adjacent to water resources to create nutrient application setbacks

Reduce Runoff Potential

- Terrace fields to reduce slope length
- Contour strip cropping, contour buffer strips, cover crops, crop rotations that include meadow and/or small grains, and crop residue management

Lower Soil Test Phosphorus

- Sample soils on high testing fields to determine vertical distribution of the phosphorus
- If phosphorus is concentrated in the top two inches of soil, invert the soil (e.g. moldboard plow) where soil erosion will not be a problem
- Avoid stratification by placing phosphorus materials beneath the top two inches of the soil surface

Practice Nutrient Management

- Apply no more than maintenance levels of phosphorus when soil test P reaches the levels described in the Illinois Agronomy Handbook, Chapter 11.
- When soil test P levels reach 300 lb/acre, only maintenance P levels may be applied to land.

Site Characteristic Definitions

1. **SOIL EROSION –** Sheet and rill erosion as measured by the most current version of the Revised Universal Soil Loss Equation (RUSLE).
   (Low = < T, Medium = >T, ≤ 2T, High = > 2 T)

2. **CONNECTIVITY TO WATER –** Defines the potential for P to be transferred from the site to a perennial stream or water body. The more closely connected the runoff is from the field via concentrated flow (from a defined grassed waterway or surface drain) to a perennial stream or water body the higher the potential for P transport.
   (Low = > 1,000', Medium = < 1,000', ≥ 200', High = < 200')

3. **RUNOFF CLASS –** Represents the effects of the Hydrologic Soil Group (A, B, C, D) on runoff. This factor represents the site's runoff vulnerability.
   (A = Low, B = Medium, C,D = High)

4. **SOIL "P" TEST (Bray P1 or Mehlich 3) –** Soil test procedure using the Bray P1 extraction, or other extraction test calibrated to bray P1, that provides an index of plant available P expressed in lbs. P/Acre (PPM x 2 = lbs./Acre where soil samples are obtained to the 6 2/3" depth)
   (Low = < 35 lbs/acre, Medium = 35-70 lbs/acre, High = > 70 lbs/acre)

5. **P INPUTS –** Represents the combined effect of application method and application rate on the potential for phosphorus to be transported in runoff in both dissolved and sediment-bound phases. Phosphorus application rate is expressed in terms of the University of Illinois maintenance phosphorus recommendations applicable to crops/yields grown on the site being evaluated. Phosphorus may be in the form of commercial fertilizer or organic materials such as manure, animal waste lagoon supernatant, wastewater from municipal or agricultural sources or nonagricultural biosolids such as sewage sludge or landscape waste. When using the "P Inputs Matrix", it is assumed that soil incorporation is performed prior to runoff events. Instances where incorporation is typically not performed prior to runoff events will be considered as non-incorporated surface applications.
   (See P Input Matrix Below)

P INPUT MATRIX

	Application Rate		
Application Method	**≤ UI Recommendations**	**> UI – 150% UI**	**> 150% UI**
Incorporation or injection > 3" below surface	Low	Low	Low
Shallowly incorporated surface applications < 3"	Low	Medium	High
Non-incorporated surface applications	Medium	High	High

Phosphorus Risk Assessment for Individual Fields

The table below identifies specific risk factors that may be present in a given field. No attempt has been made to "average" the factors and assign a composite rating for the field. It is recognized that risk factors do not act independently to influence phosphorus loss from agricultural fields and P loading into water resources. Simple averaging however, assumes that all risk factors have the same amount of influence. Attempts to objectively weight some factors more or less than others would be desirable, but difficult without supporting data. The phosphorus assessment procedure is not a process based or empirical model. The procedure was developed as a conservation planning tool. The tool is designed to provide guidance to select and plan conservation measures that will lower the potential for phosphorus loss from agricultural fields and P loading into water resources.

Explanation of General Risk Assessment Ratings

Low – Low potential for P movement from the field. No adverse impacts to surrounding areas (i.e. surface waters) are anticipated if current farming practices are continued.

Medium – Medium potential for P movement from the field.

High - High potential for P movement from the field. Adverse impacts to surface waters from excess P loading may occur.

Very High - Very high potential for P movement from the field. Adverse impacts to surface waters are likely. No manure shall be applied until conservation practices are put into place to reduce the potential for P movement.

Explanation of Using P Risk Assessment for Manure Applications

Soil Erosion – No manure will be applied to any field unless it rates "Low"

Connectivity to Surface Water – 200' setbacks around all surface water will bring all fields under the "Medium" rating

P soil test – Fields in this plan have "Medium/Optimum" ratings for P soil tests. Planned manure applications will maintain P, and avoid excessive buildup.

Illinois P Risk Assessment

Operation:	Strout Crossing, LLC	***County:***	Pike	***Plan Saved:***	9/27/2011
Plan File:	strout crossing8-25-11.mmp	***State:***	Illinois	***Init. File Rev:***	5/21/2008
Plan Folder:	S:\ProjectFiles\2011\11-105\CNMP\CNMP PDF - Revised 8-26-11			***Crop Years:***	2011-2015
	Soils File Rev:	9/8/2010			

Field	Crop Year	Soil Erosion	Proximity to Water	Solution Runoff Potential	Soil Test Phosphorus	Phosphorus Inputs
J2	2010	Low	High	High	High	Low
J3	2010	Low	High	High	High	High
J4	2010	Low	High	High	High	Medium
J5	2010	Low	High	High	High	Medium
51A	2010	Low	High	High	High	Medium
52A-G	2010	Low	High	Medium	High	Medium
51 AA-HH	2010	Low	Medium	Medium	High	Low
53 AA-DD	2010	Low	High	Medium	High	Low
55 A-F	2010	Low	High	Medium	High	Medium
53 A-P	2010	Low	High	Medium	High	Low
54 A-E	2010	Low	n/a	Medium	Medium	Low
59 A-D	2010	Low	Medium	Medium	Low	Low
58 A-E	2010	Low	High	Medium	High	Low
A12	2010	Low	High	Medium	High	Low
A2	2010	Low	High	Medium	Medium	Low
A8	2010	Low	Medium	Medium	High	Low
A10	2010	Low	High	Medium	High	Low
A9	2010	Low	High	Medium	High	Low
Bradshaw A	2010	Low	n/a	Medium	Low	Low
Bradshaw B	2010	Low	n/a	Medium	Medium	Low
Bradshaw C	2010	Low	n/a	Medium	Medium	Low
Bradshaw D	2010	Low	n/a	Medium	Low	Low

Nitrogen Risk Assessment

(Illinois NRCS-Nutrient Management Standard, Code 590)

	Soil Texture[2]		
Application Timing & Temp[1]	**Coarse**	**Medium**	**Fine**
Fall with inhibitor > 60°F	High	High	High
Fall with inhibitor < 60°F	High	Medium	Medium
Fall w/out inhibitor > 60°F	High	High	High
Fall w/out inhibitor < 60°F	High	Medium	Medium
Spring w/out inhibitor	Medium	Medium	Medium-Low
Spring with inhibitor	Medium-Low	Low	Low
Spring split-applied or sidedress	Medium-Low	Low	Low

[1] Temperatures refer to soil temperature measured at a depth of 4 inches. For this assessment, inhibitors refer to nitrification inhibitors

[2] Soil Texture: Coarse: sand, loamy sand, sandy loam
Medium: silt, silt loam, loam
Fine: silty clay loam, silty clay, clay, clay loam, sandy clay, loam, sandy clay

Fields are categorized according to the predominant soil type of the field.

Coarse:

Medium: *All fields in this plan are predominantly silt loams*

Fine:

Nitrogen Risk Assessment for Individual Fields

All fields in this plan have the same risk potential for N leaching under the following levels of management.

- High potential if applied in the fall with an inhibitor when soil temperature at a depth of 4" is greater than 60°F.
- Medium potential if applied in the fall with an inhibitor when soil temperature at a depth of 4" is less than 60°F.
- High potential if applied in the fall without an inhibitor when soil temperature at a depth of 4" is greater than 50°F.
- Medium potential if applied in the fall without an inhibitor when soil temperature at a depth of 4" is less than 50°F.
- Medium (medium soils) or medium-low (fine soils) potential if applied in the spring without an inhibitor.
- Low potential if applied in the spring with an inhibitor.
- Low potential if applied in the spring split applied or sidedressed.

Commercial Nitrogen Fertilizer Management.

A bushel of corn contains approximately 0.8 lbs of nitrogen (N), thus a 200-bushel corn crop removes about 160 pounds of N from the field[1]. For those corn acres not receiving manure applications it is necessary to apply commercial nitrogen to meet the nitrogen demand of the planted crop. Until recently the guideline in Illinois was to apply 1.2 pounds of nitrogen per bushel of expected yield. Recent research has indicated that modern hybrids grown in Illinois Soils may not need as much N as previous recommendations have suggested.

The new approach recommended in the most current version of the Illinois agronomy handbook takes into consideration the value of Corn and the return to investment of additional N fertilizer. The Maximum Return to N (MRTN) is the point in which the yield increase for adding additional N just pays for the N added. Further Reading regarding the MRTN approach can be found in the Managing Nitrogen Section of the Illinois Agronomy Handbook.

The MRTN approach was a result of collaborative efforts between several Midwest Universities, Iowa State University hosts a website where N rate guidelines can be calculated using this approach. The website can be found at:

http://extension.agron.iastate.edu/soilfertility/nrate.aspx

The Illinois Agronomy Handbook describes the output of the MRTN Corn Nitrogen Rate Calculator as a guideline to N application rate. These guidelines are intended to be used as a decision aid rather than a fixed recommendation. However Illinois Agronomy Handbook strongly recommends that the new method be used for calculating N rates and that the Yield based N recommendations system no longer be used.

The N rate calculator was designed based on current N and corn prices. If N prices drop and corn prices rise so that the ratio drops to 0.05 or less (cost of N/Price of Corn), calculated N rates could be very high. The N rate calculator has built in limits and will not calculate N rates above 240 lbs per acre. In order to reach this limit corn would have to be $8 per bushel and N would have to cost less than 25 cents per pound.

It is recommended that when using manure, sewage sludge, or other N sources that usually cost less per pound of N than commercial fertilizers that a conservative approach to assigning value to those products be used. One such approach is to price the pounds of crop-available N the same as would be for a pound of N from a commercial fertilizer source. Available N from manure sources can vary and it is recommended that actual manure analysis be used to determine N available.

[1] Illinois Agronomy Handbook, 24th Edition.

How to Use the Calculator[2]

- Choose if you want to calculate for one set of prices or multiple prices (price ratio of N and corn).
- Choose which state you are interested in, or the region of a state or the soil yield potential grouping.
- Choose the rotation, either corn following soybean or corn following corn.
- Check if you want to include non N responsive sites (sites that had no yield increase to N application).
- Choose the N fertilizer product and price, and corn grain price. If you use the multiple price ratio option, then you can choose four prices for N and corn grain (four ratios). The prices for N and corn have default values already entered. You may enter either the product cost ($/ton) or unit cost ($/lb N).
- Hit the calculate button to run the calculations. This will take you to the results section. If you choose N or corn prices that are too high or low, you may get an error message in the results section. If that happens, please try another set of prices.

State Information

- **Illinois Geographic Region –** Sites for Illinois are grouped by geographic location in the state: North, Central, and South. Northern Illinois runs from the Wisconsin border and includes those counties through which Interstate Route 80 runs. Southern Illinois includes the counties through which Interstate Route 70 runs, and the southern parts of counties (Shelby, Montgomery, Macoupin) north of those where soils have lower organic matter. Central Illinois is the area in between, and might also be considered to include southern portions of large counties (Henry, Bureau, LaSalle) through which I-80 runs. When in doubt in "border" areas, assign higher organic-matter soils to the northern of two areas and lower OM soils to the more southern area.

[2] Taken from the Nitrogen Rate Calculator Website (http://extension.agron.iastate.edu/soilfertility/nrate.aspx)

Definitions

- **EONR –** Economic optimum N rate, the point where the last increment of N returns a yield increase large enough to pay for the additional N.
- **MRTN –** Maximum return to N, the N rate where the economic net return to N application is maximized.
- **Maximum Yield –**The yield where application of more N does not result in yield increase.
- **Net Return –** The value of corn grain produced minus the N fertilization cost.
- **Price Ratio –** The ratio of N fertilizer price to corn grain price ($/lb:$/bu).
- **Site –** The land area occupied by a N rate trial, either replicated small plots in a specific field area or replicated field-length strips.
- **Site N Responsiveness –** The corn grain yield increase with N application, non-responsive indicates no yield increase with N application while high response indicates large yield increase from N application.
- **Gross (Yield) Return –** The value of corn grain increase due to N application.

Calculated Values

The results of calculations are provided in a table and in up to four graphs. Also, the chosen input information that went into the calculations is displayed.

Displayed Input Information

- State.
- The number of N rate trials (sites) that fit the chosen criteria and used in the calculations.
- The rotation.
- An indication if non-responsive sites are included in the calculations.
- The N fertilizer and corn grain prices, and the price ratio(s).

Tables

Table 2. Example of results table using MRTN website

N Price ($/lb N):	**$0.34**	**$0.43**	**$0.52**	**$0.61**
Corn Price ($/bu):	**$4.50**	**$4.50**	**$4.50**	**$4.50**
Price Ratio:	**0.08**	**0.1**	**0.12**	**0.14**
RTN Rate (lb N/acre):	**180**	**170**	**161**	**154**
Profitable N Rate Range (lb N/acre):	165 - 196	156 - 185	148 - 175	141 - 166
Net Return to N at MRTN Rate ($/acre):	$301.01	$285.30	$270.43	$256.29
Percent of Maximum Yield at MRTN Rate:	99%	98%	98%	98%
UAN (28% N) at MRTN Rate (lb product/acre):	643	607	575	550
UAN (28% N) Cost at MRTN Rate ($/acre):	$61.20	$73.10	$83.72	$93.94

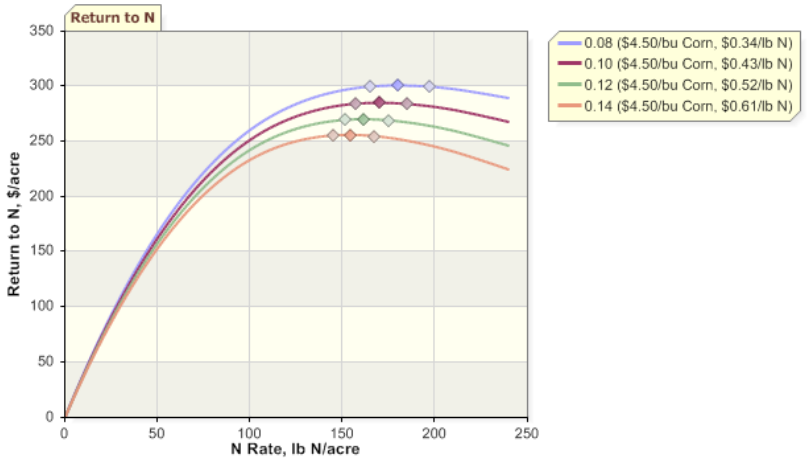
- **MRTN Rate (lb N/acre)**, is the N rate at the MRTN. For the data set, rotation, and price ratio(s), the MRTN rate would be the suggested rate to apply for maximizing net return to N application.
- **Profitable N Rate Range (lb N/acre)**, is the N rate values at a $1/acre net return range (LOW and HIGH) around the MRTN. An N rate within this range around the MRTN would provide similar expected economic return and could be considered the profitable N rate range.
- **Net return to N at MRTN Rate ($/acre)**, is the economic net return at the MRTN rate.
- **Percent of maximum yield** is the proportion of yield that might be produced at the MRTN rate and LOW/HIGH N rate range compared to the yield at the maximum response to N. It is not economical to attempt to apply N at a rate that would result in maximum yield or meet the N requirements of all sites (100% maximum yield), including the few most responsive sites. An economic rate will always result in less than 100% of maximum yield, that is, the MRTN rate will result in yield less than maximum. How far less than maximum depends on the price ratio of N and corn grain. For producers that are willing to tolerate more risk in their corn production system, then N application toward the LOW rate will have on average lower N input cost, but more frequently may supply N below maximum economic response. For producers with greater aversion to risk in their corn production system, then N application toward the HIGH rate will more frequently supply N that is at least adequate to meet corn N needs, but have on average greater N input cost and more frequently be above maximum economic response.

- **Nitrogen Product at MRTN Rate (lb product/acre)**, is the amount of product at the MRTN rate.
- **Nitrogen Product Cost at MRTN Rate ($/acre)**, is the cost of N at the MRTN rate.

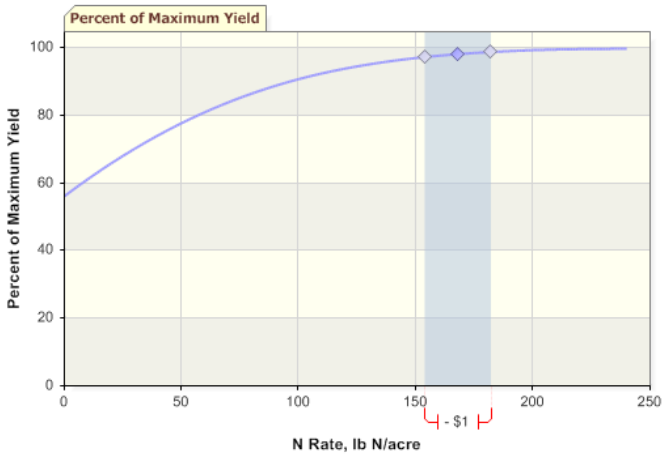
Charts

Four graphs are available for viewing. Each presents a different component of the economic rate calculations, and compliment results shown in the table.

- **Return to N.** This graph shows the two components for calculating net return across N rates; the gross return from yield increase and the fertilizer cost. The net economic return to N is the difference between these two values at each N rate. The point of maximum net return (MRTN, solid symbol) and the profitable N rate range (shaded symbol) within $1/acre of the maximum is shown on the graph. The N rate at the MRTN provides the greatest economic return to N application for the dataset, prices, and rotation chosen and would be the suggested N application rate. If multiple price ratios are chosen, then only net return to N is shown for each ratio.

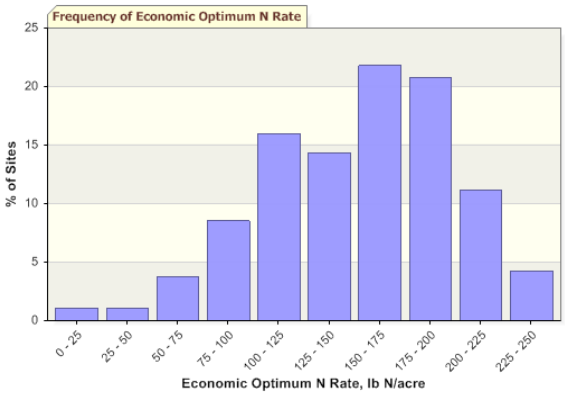


- **Percent of maximum yield.** This graph shows the percent of maximum yield across N rates for all sites in the dataset and rotation chosen. The N rate at the MRTN and the profitable N rate range (LOW - HIGH) within $1/acre of the MRTN are shown. As N rates move toward the LOW end of the range, the risk of having inadequate N increases and percent of maximum yield decreases, while as N rates move toward the HIGH end of

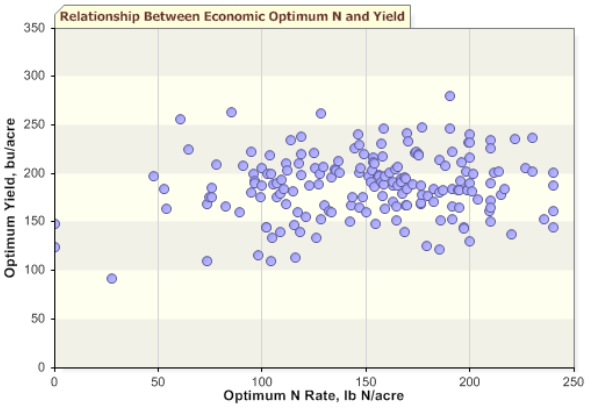


the range the risk of having inadequate N decreases and percent of maximum yield increases. The greater the N cost relative to corn grain price (the larger the price ratio), the lower the economic rate, the farther the MRTN rate moves down the N response curve, and the more yield will be below the maximum yield. This graph helps with decisions regarding choice of N rate in regard to risk management. Reducing risk of insufficient N (that is, using a higher N rate) does result in greater N input cost, which in the long run could reduce economic return to N use. If multiple price ratios are chosen, then the percent of maximum yield is shown for each ratio.

- **EONR Frequency.** This graph shows the frequency distribution, in 25 lb N increments, of the EONR for each site in the dataset and rotation chosen. The higher the bar for a N rate increment the more times sites had an EONR in that increment. Typically N trial datasets have a range of EONR values, with the most frequent range of EONR's being around the MRTN value. If multiple price ratios are chosen, then the frequency of EONR is shown for each ratio.



- **EONR vs. Yield.** This graph shows the relationship between the site EONR and yield at the EONR for each site in the dataset and rotation chosen. The number of symbols will match the number of sites in the dataset. You can scroll the cursor over the symbol to see the state, county, and manure history for that site. If multiple price ratios are chosen, then the graph will display the results for the first ratio.



Several scenarios have been run using the Nitrogen Rate calculator. These scenarios are provided in order to guide nitrogen applications on areas where manure is not applied. The following table is a summary of those scenarios.

Table 1. Summary of scenarios calculated using the MRTN rate calculation website.
All scenarios were calculated using a corn value of $4.50 per bushel

Crop Rotation	Fertilizer Type	Cost Per Ton
Corn following Soybeans	Anhydrous Ammonia (82%)	550-1000
Continuous Corn	Anhydrous Ammonia (82%)	550-1000
Corn following Soybeans	UAN (28%)	190-342
Continuous Corn	UAN (28%)	190-342

Producers are encouraged to use the online version of the Nitrogen Rate Calculator to fine tune Nitrogen Application Rates.

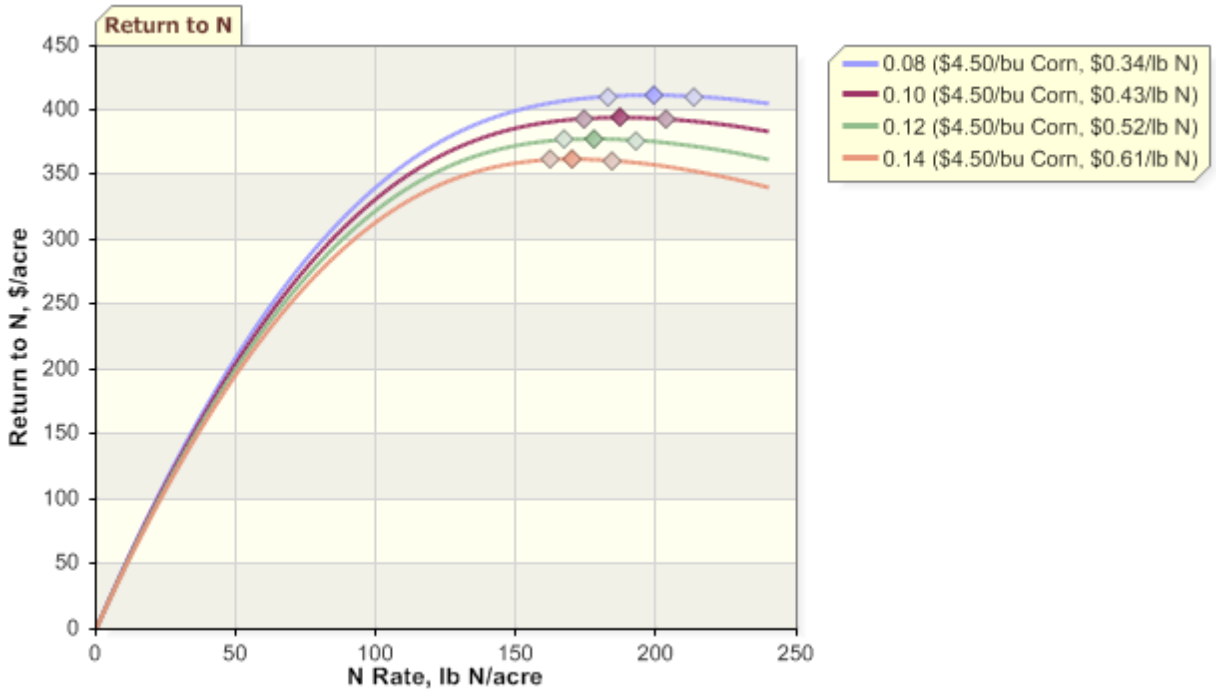
Corn Nitrogen Rate Calculator

Finding the Maximum Return To N and Most Profitable N Rate

A Regional (Corn Belt) Approach to Nitrogen Rate Guidelines

State: Illinois - Central
Number of sites: 93
Rotation: Corn Following Corn
Non-Responsive Sites Not Included

Anhydrous Ammonia (82% N) Cost per Ton	**$550**	**$700**	**$850**	**$1000**
N Price ($/lb N):	**$0.34**	**$0.43**	**$0.52**	**$0.61**
Corn Price ($/bu):	**$4.50**	**$4.50**	**$4.50**	**$4.50**
Price Ratio:	**0.08**	**0.10**	**0.12**	**0.14**
RTN Rate (lb N/acre):	**199**	**187**	**178**	**170**
Profitable N Rate Range (lb N/acre):	183 - 213	173 - 203	165 - 192	158 - 183
Net Return to N at MRTN Rate ($/acre):	$412.24	$394.87	$378.44	$362.79
Percent of Maximum Yield at MRTN Rate:	99%	99%	98%	98%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	243	228	217	207
Anhydrous Ammonia (82% N) Cost at MRTN Rate ($/acre):	$67.66	$80.41	$92.56	$103.70



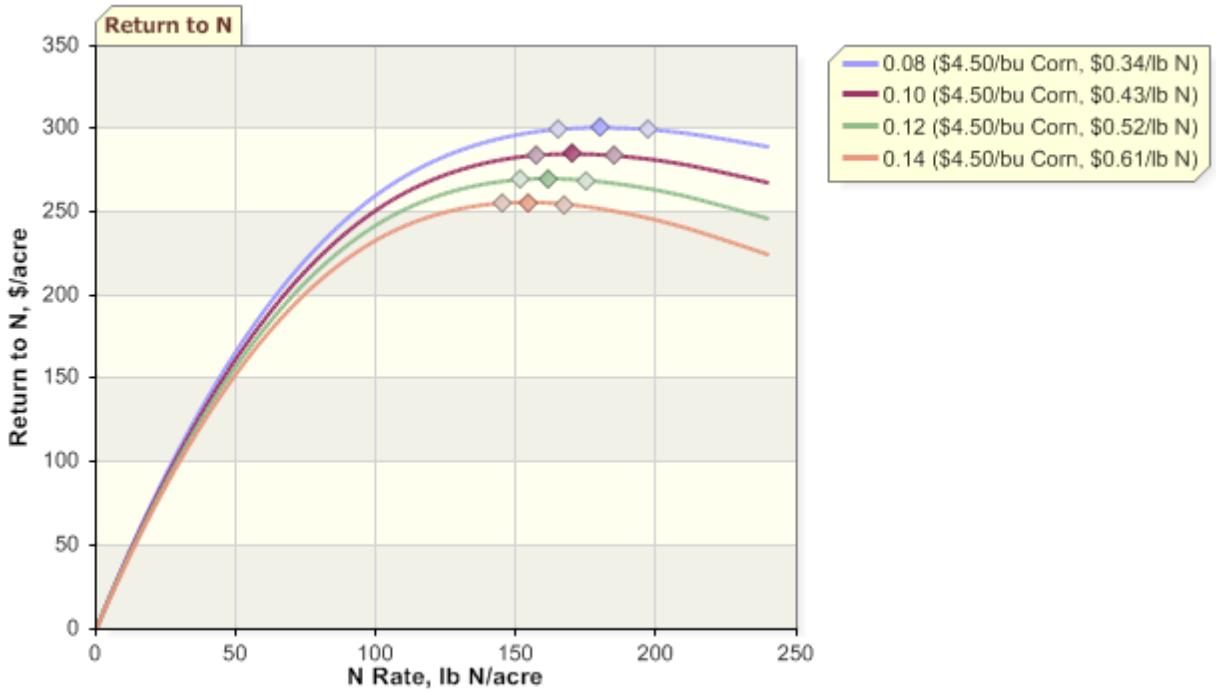
Corn Nitrogen Rate Calculator

Finding the Maximum Return To N and Most Profitable N Rate

A Regional (Corn Belt) Approach to Nitrogen Rate Guidelines

State: Illinois - Central
Number of sites: 188
Rotation: Corn Following Soybean
Non-Responsive Sites Not Included

Anhydrous Ammonia (82% N) Cost per Ton	**$550**	**$700**	**$850**	**$1000**
N Price ($/lb N):	**$0.34**	**$0.43**	**$0.52**	**$0.61**
Corn Price ($/bu):	**$4.50**	**$4.50**	**$4.50**	**$4.50**
Price Ratio:	**0.08**	**0.10**	**0.12**	**0.14**
RTN Rate (lb N/acre):	**180**	**170**	**161**	**154**
Profitable N Rate Range (lb N/acre):	165 - 196	156 - 185	148 - 175	141 - 166
Net Return to N at MRTN Rate ($/acre):	$301.01	$285.30	$270.43	$256.29
Percent of Maximum Yield at MRTN Rate:	99%	98%	98%	98%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	220	207	196	188
Anhydrous Ammonia (82% N) Cost at MRTN Rate ($/acre):	$61.20	$73.10	$83.72	$93.94



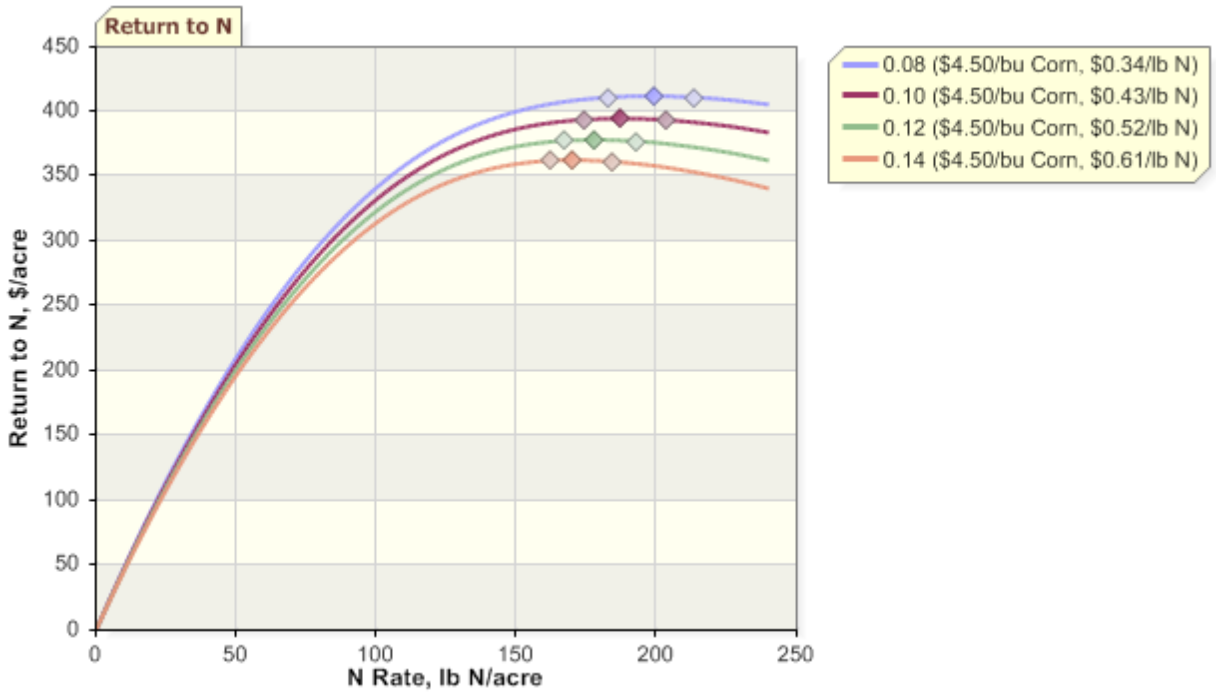
Corn Nitrogen Rate Calculator

Finding the Maximum Return To N and Most Profitable N Rate

A Regional (Corn Belt) Approach to Nitrogen Rate Guidelines

State: Illinois - Central
Number of sites: 93
Rotation: Corn Following Corn
Non-Responsive Sites Not Included

UAN (28%) Cost per Ton	**$190**	**$241**	**$291**	**$342**
N Price ($/lb N):	**$0.34**	**$0.43**	**$0.52**	**$0.61**
Corn Price ($/bu):	**$4.50**	**$4.50**	**$4.50**	**$4.50**
Price Ratio:	**0.08**	**0.10**	**0.12**	**0.14**
RTN Rate (lb N/acre):	**199**	**187**	**178**	**170**
Profitable N Rate Range (lb N/acre):	183 - 213	173 - 203	165 - 192	158 - 183
Net Return to N at MRTN Rate ($/acre):	$412.24	$394.87	$378.44	$362.79
Percent of Maximum Yield at MRTN Rate:	99%	99%	98%	98%
UAN (28% N) at MRTN Rate (lb product/acre):	711	668	636	607
UAN (28% N) Cost at MRTN Rate ($/acre):	$67.66	$80.41	$92.56	$103.70



Corn Nitrogen Rate Calculator

Finding the Maximum Return To N and Most Profitable N Rate

A Regional (Corn Belt) Approach to Nitrogen Rate Guidelines

State: Illinois - Central
Number of sites: 188
Rotation: Corn Following Soybean
Non-Responsive Sites Not Included

UAN (28%) Cost per Ton	**$190**	**$241**	**$291**	**$342**
N Price ($/lb N):	**$0.34**	**$0.43**	**$0.52**	**$0.61**
Corn Price ($/bu):	**$4.50**	**$4.50**	**$4.50**	**$4.50**
Price Ratio:	**0.08**	**0.10**	**0.12**	**0.14**
RTN Rate (lb N/acre):	**180**	**170**	**161**	**154**
Profitable N Rate Range (lb N/acre):	165 - 196	156 - 185	148 - 175	141 - 166
Net Return to N at MRTN Rate ($/acre):	$301.01	$285.30	$270.43	$256.29
Percent of Maximum Yield at MRTN Rate:	99%	98%	98%	98%
UAN (28% N) at MRTN Rate (lb product/acre):	643	607	575	550
UAN (28% N) Cost at MRTN Rate ($/acre):	$61.20	$73.10	$83.72	$93.94