



**Illinois Fertilizer &
Chemical Association**
Supply • Service • Stewardship

Est. 1965

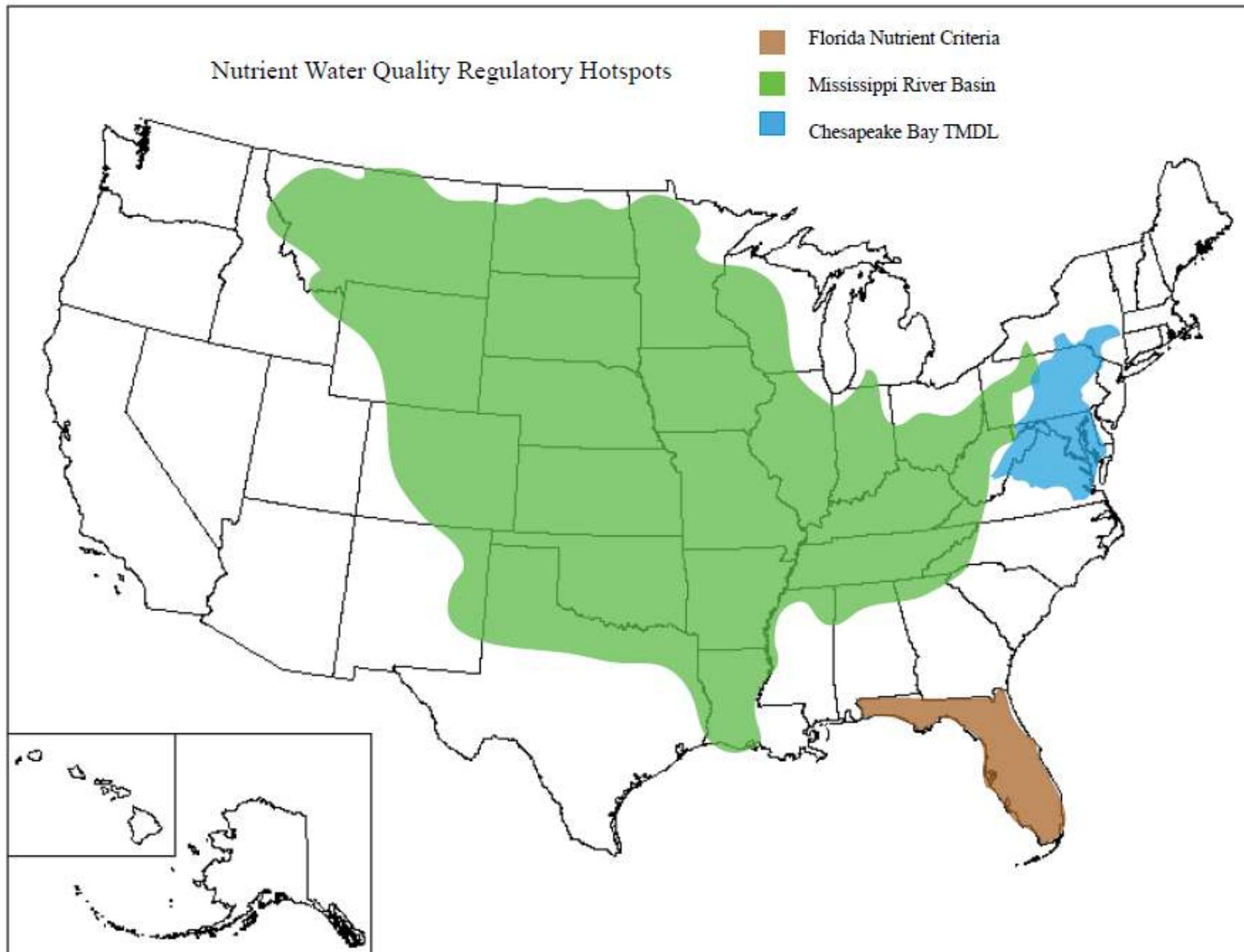
IFCA's Mission Statement: To assist and represent the crop production supply and service industry while promoting the sound stewardship and utilization of agricultural inputs



Fertilizer: The Last Frontier for Regulation

- Proposed Numeric Standards:
 - 2 ppm for Nitrogen
 - .075 ppm for Phosphorus
- Field Tile cited as “Leaky System”
- Illinois Developing Statewide Nutrient Loss Reduction Plan

Federal Programs & Litigation



HEADLINES

Minnesota Proposes Nutrient Use Regulations



Ohio Legislature Approves Licensing Regulations for Fertilizer Application; Ohio Retailers to Voluntarily Certify their Nutrient Application Programs, Maintain Records and be Audited by TNC

Farm tiling called major cause of hypoxia

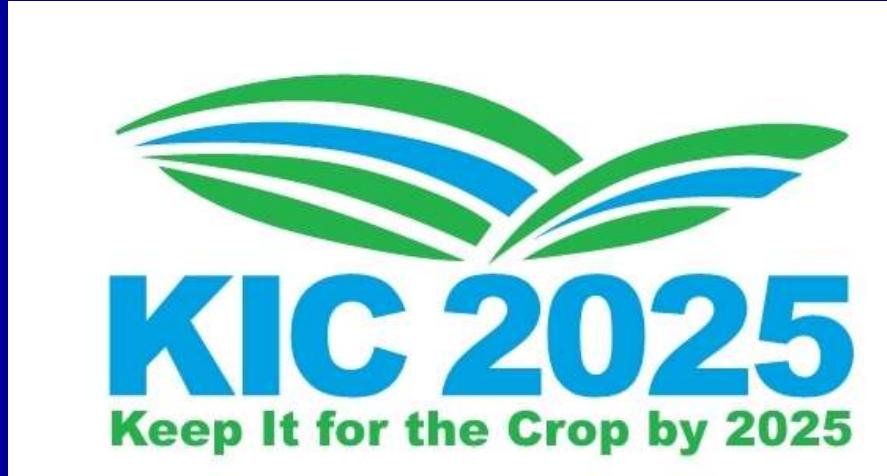
By [freshwatersocietyblog](#)

Map of Field Tiles in McLean County



- The tiles appear brighter-dry faster
- Imagery was flown 2-3 days after a major storm event

Naz et al 2009



Dan Schaefer
Director of Nutrient Stewardship
CCA, CPAg



C-BMP

Illinois Council on Best Management Practices

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

KIC Priority Watersheds

Listed by Illinois EPA as being impaired due to high levels of nitrogen, phosphorus or both

Serve as drinking water supplies for major Illinois communities



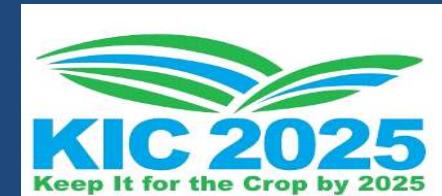
**Right
Source**

**Right
Time**

**Right
Rate**

**Right
Place**

**Nitrogen
Management
System**



N FERTILIZER MANAGEMENT

A Year-round Sport!

What happened
during the fall,
winter and early
spring?



What happened in
since the crop was
planted?



KIC Includes:

- Managing Nitrogen as a System instead of an Application
- On-Farm Nitrogen Rate Trials to develop Reliable, Defensible, N Rate in the Watersheds
-  NWATCH soil testing program is a nitrogen education and management tool; critical after 2012 drought
- Targeted Program in Lake Springfield with Retailers, Farmers, SWCD and CWLP to lower lake Nitrate Levels
- Promoting Cover Crops to Retain Nutrients when N-WATCH indicates high soil residual N after harvest

PURPOSE

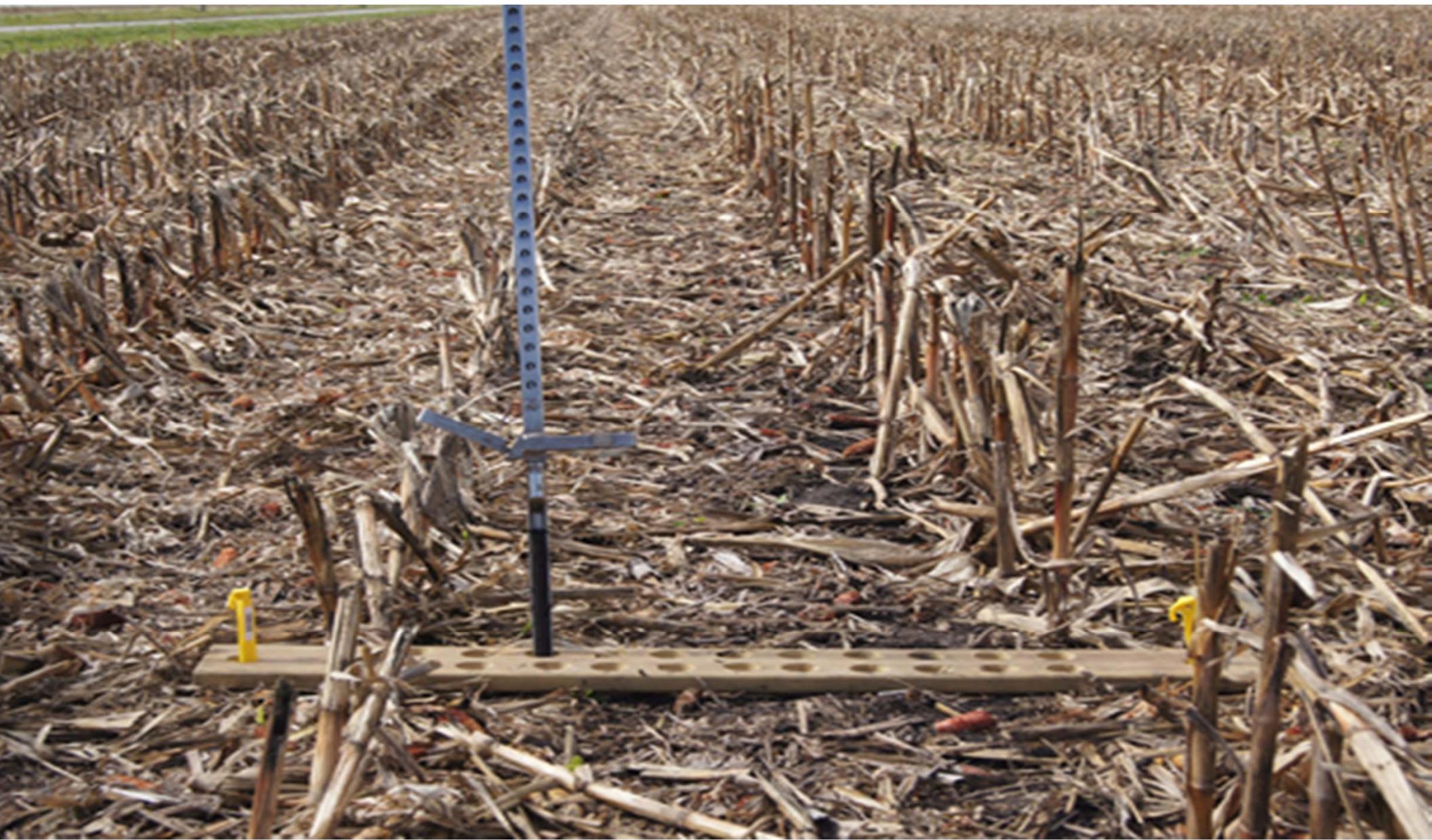
- Inventory
- Track
- Verify
- Apply



N Management System

Only Management Tool
Not a Recommendation System

N-Watch has become a tool to teach CCA's, Farmer's, Agricultural Students and the general public about nitrogen transformation in the soil. If we can understand the nitrogen cycle as agricultural producers, we can then be understood by the public for our nutrient practices. N-Watch is a tool not a recommendation but a guide in a systems approach to nitrogen management.



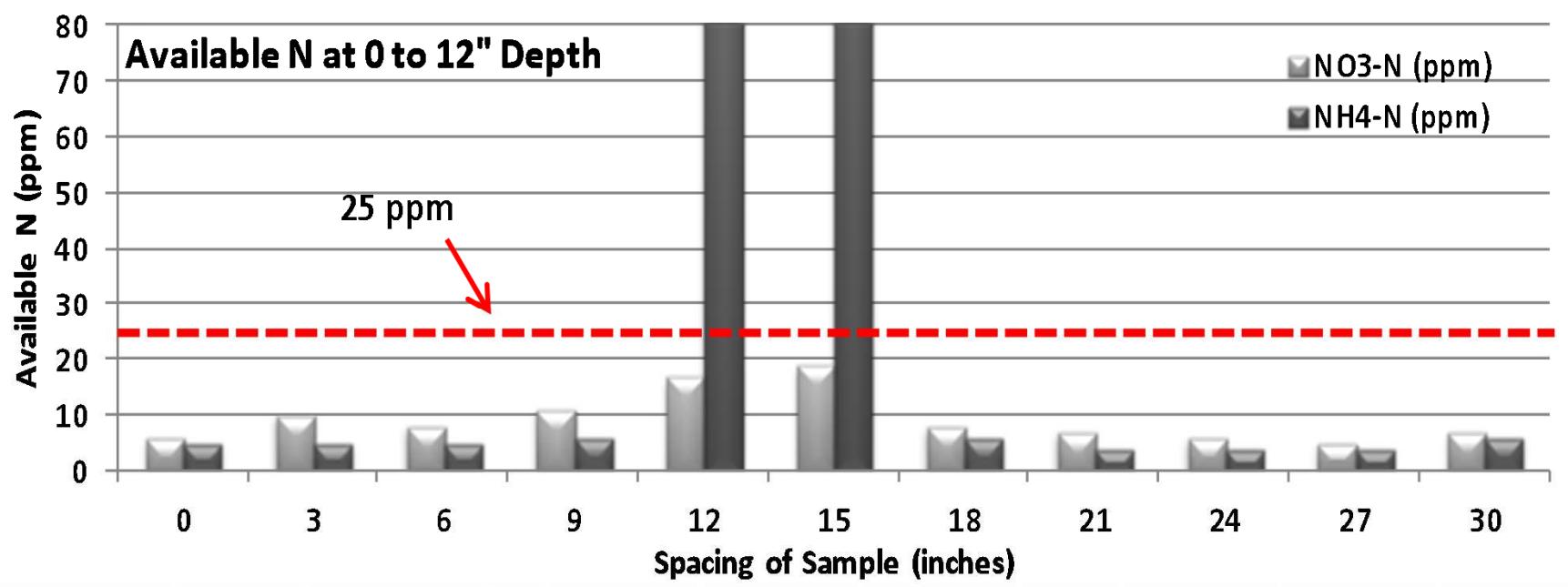


Template

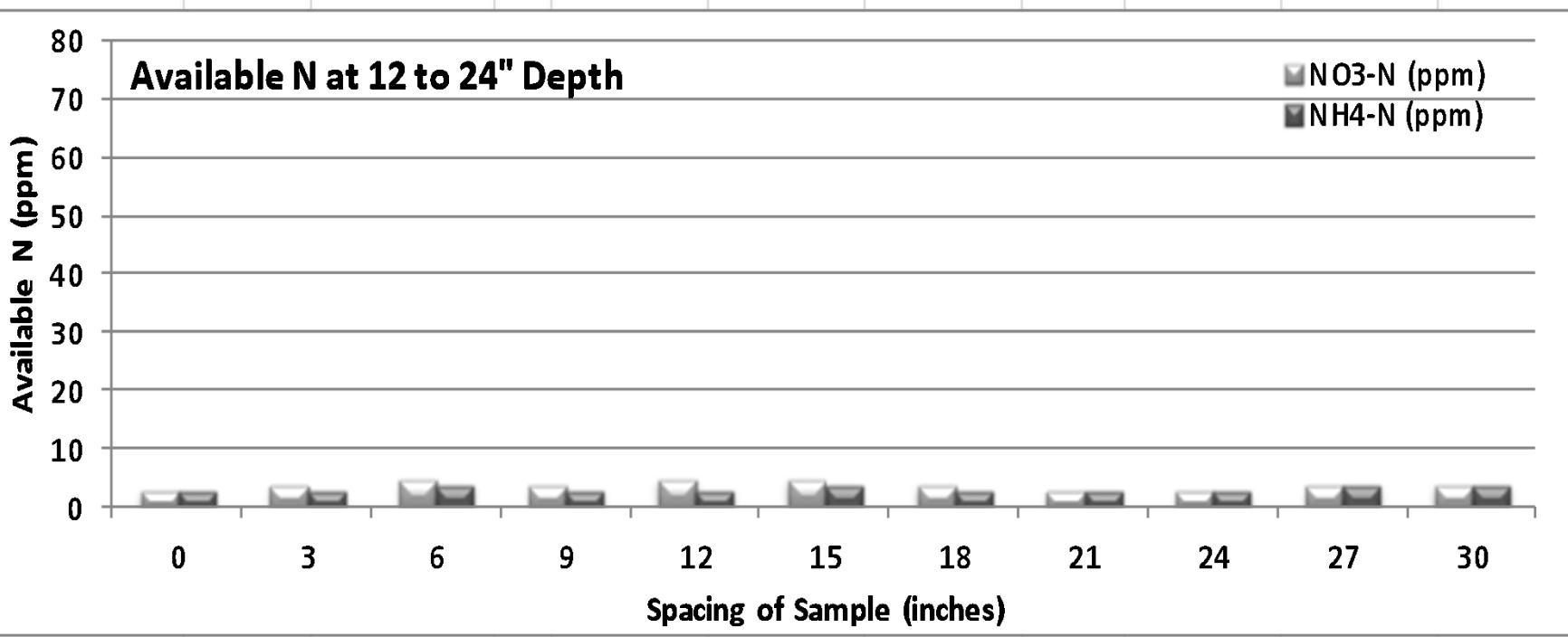


Image Source: Noland Farms, Inc.

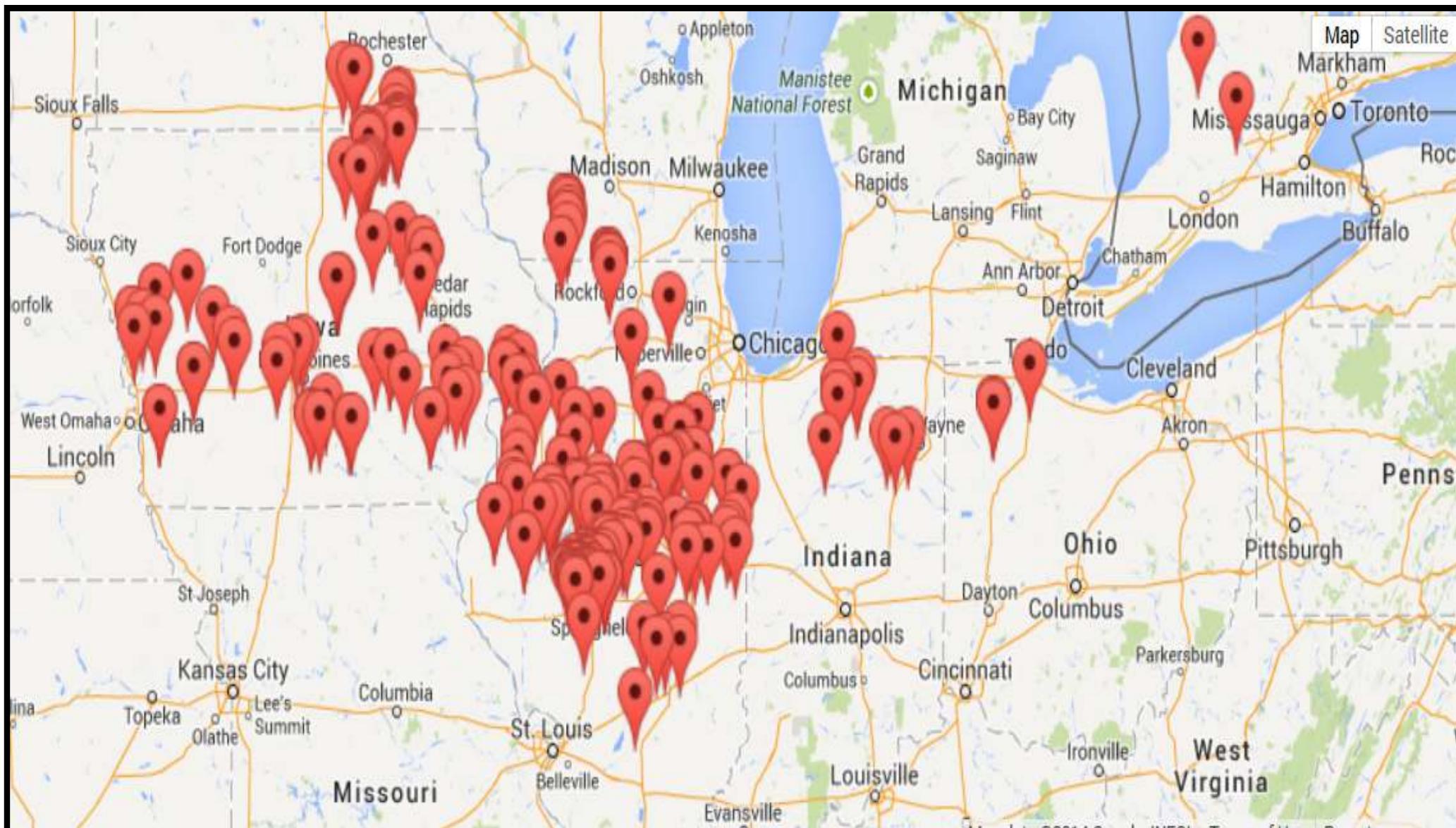
Surface



Subsurface



NWATCH Sites (2014)





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

MRTN Calculator | 2014 Plan

Single Application

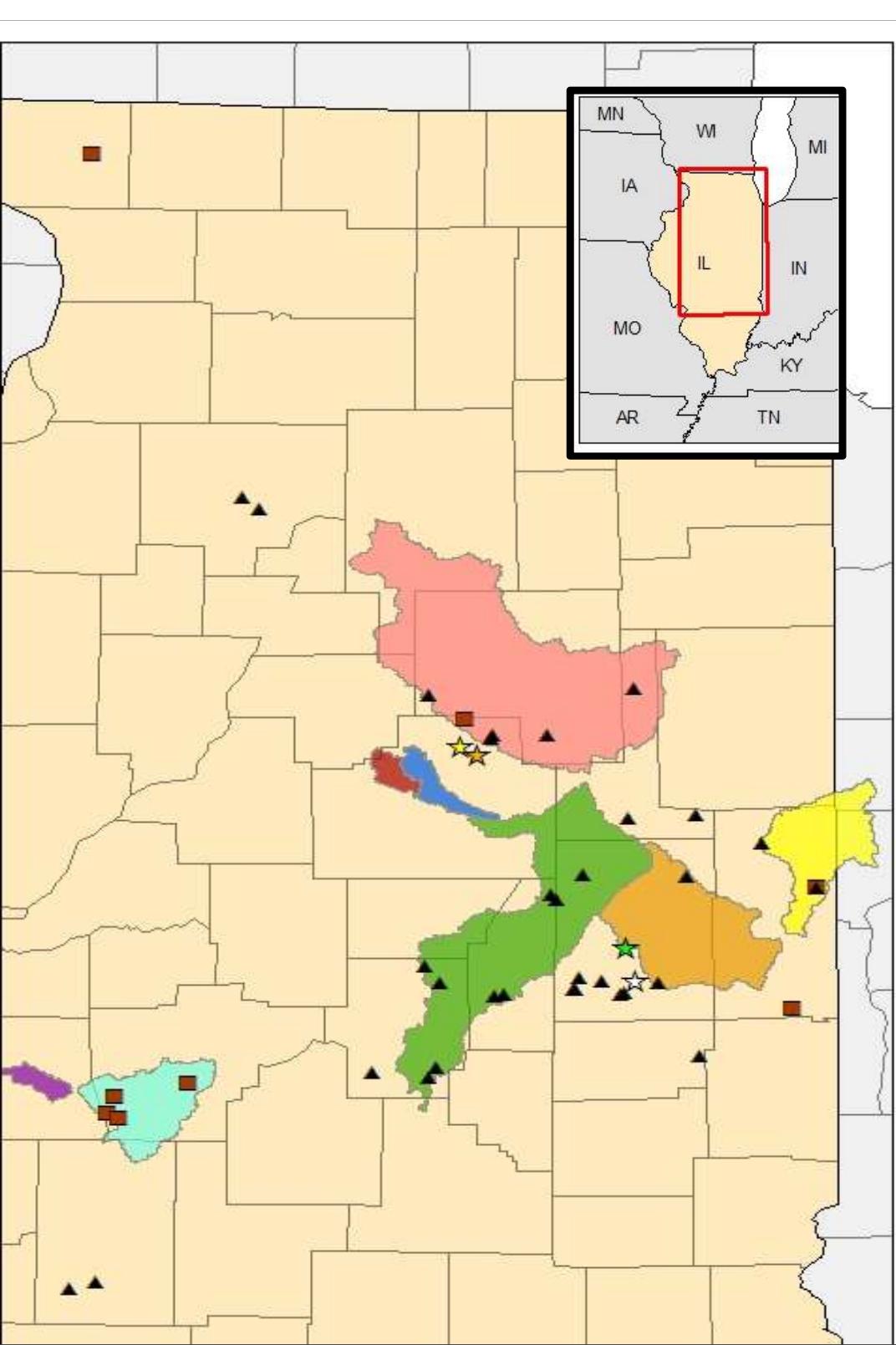
Source	Anhydrous Ammonia (82%)	Price of product	\$650.00 / Ton
Application fees	\$9.00 / Acre	Calculated N price per lb	\$0.40 N / lb
Additives	N-Serve	Price per acre of additive	\$13.00 / Acre
Location/rotation	Central Corn after Soybean	Corn per bushel	\$4.25
N price to corn price ratio (R)	0.09	Calculated 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)	25% (44 #/A)	25% (44 #/A)
Amount of product	107.32 Lbs / Acre	157.14 Lbs / Acre	95.65 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



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)

Illinois Nutrient Reduction Strategy

Illinois' Plan to Reduce Nitrogen and Phosphorus in Illinois Waters and Gulf of Mexico



Riverine N and P Loads (1997-2011)

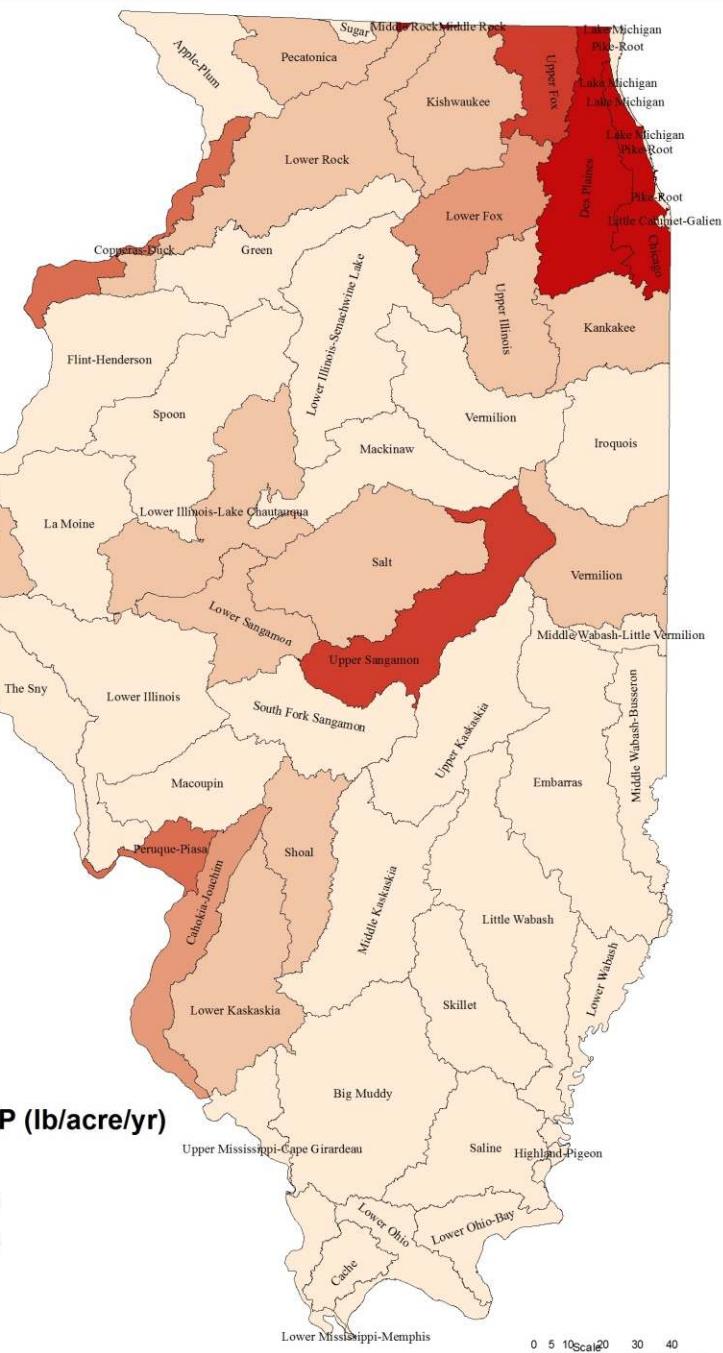


	<u>Million pounds/year</u>	
	Nitrate-N	Total P
Illinois River	229.3	18.7
Green River	9.0	0.4
Big Muddy	19.8	1.1
Kaskaskia River	10.4	2.9
Little Wabash	5.5	2.4
Rock River	28.7	1.8
Vermilion River	19.0	0.9
Embarras River	14.6	1.3
State	410.1	37.9

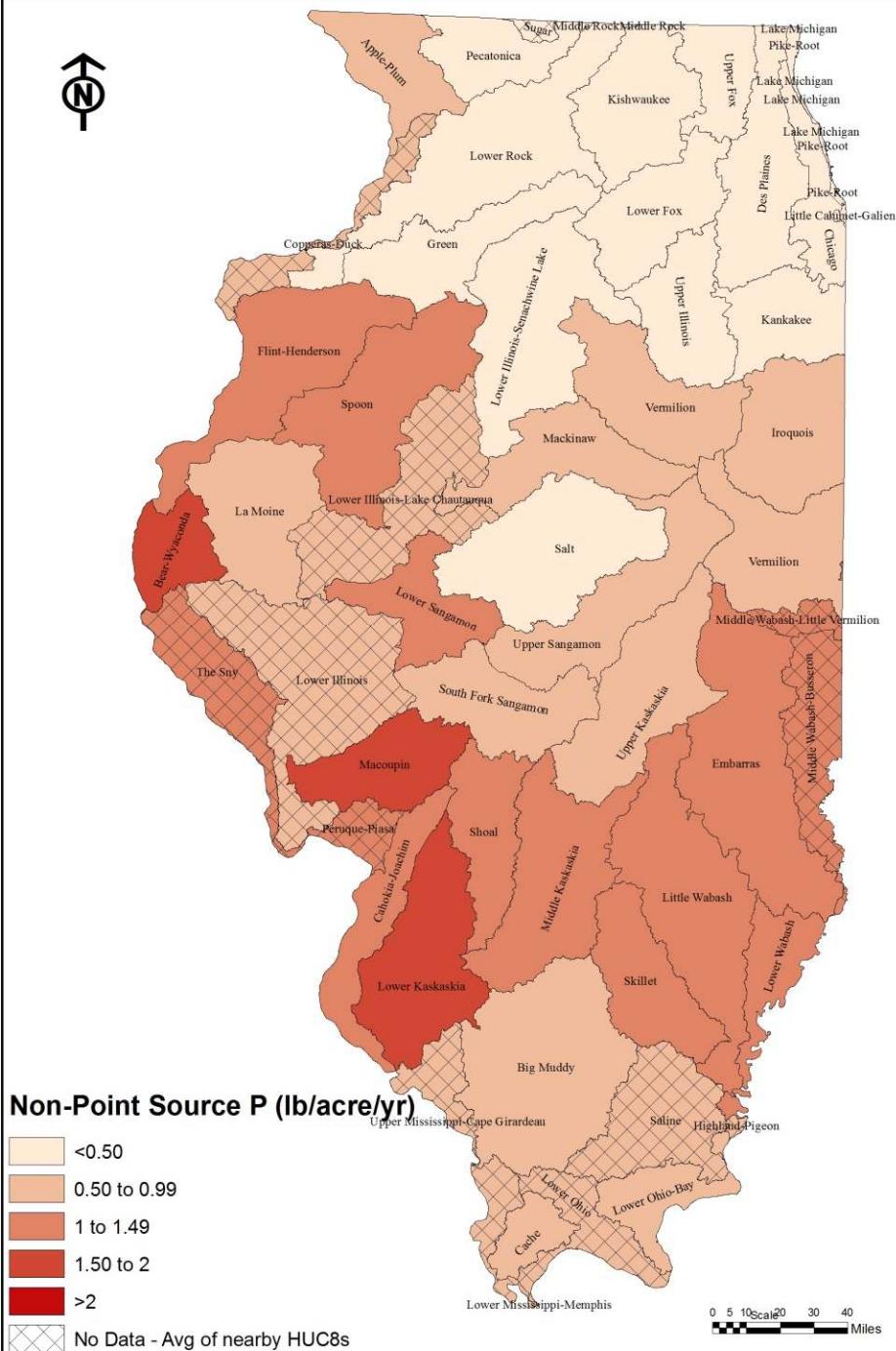
Loss Reduction Goals for Ag:

- 200 million lbs of nitrogen (100,000 tons)
- 18 million lbs of phosphorus (9,000 tons)
- Wastewater treatment plants must reduce N & P levels but will do so under new regulatory permits and increased costs passed on to water users
- Agriculture given opportunity to achieve reductions through **voluntary practices**

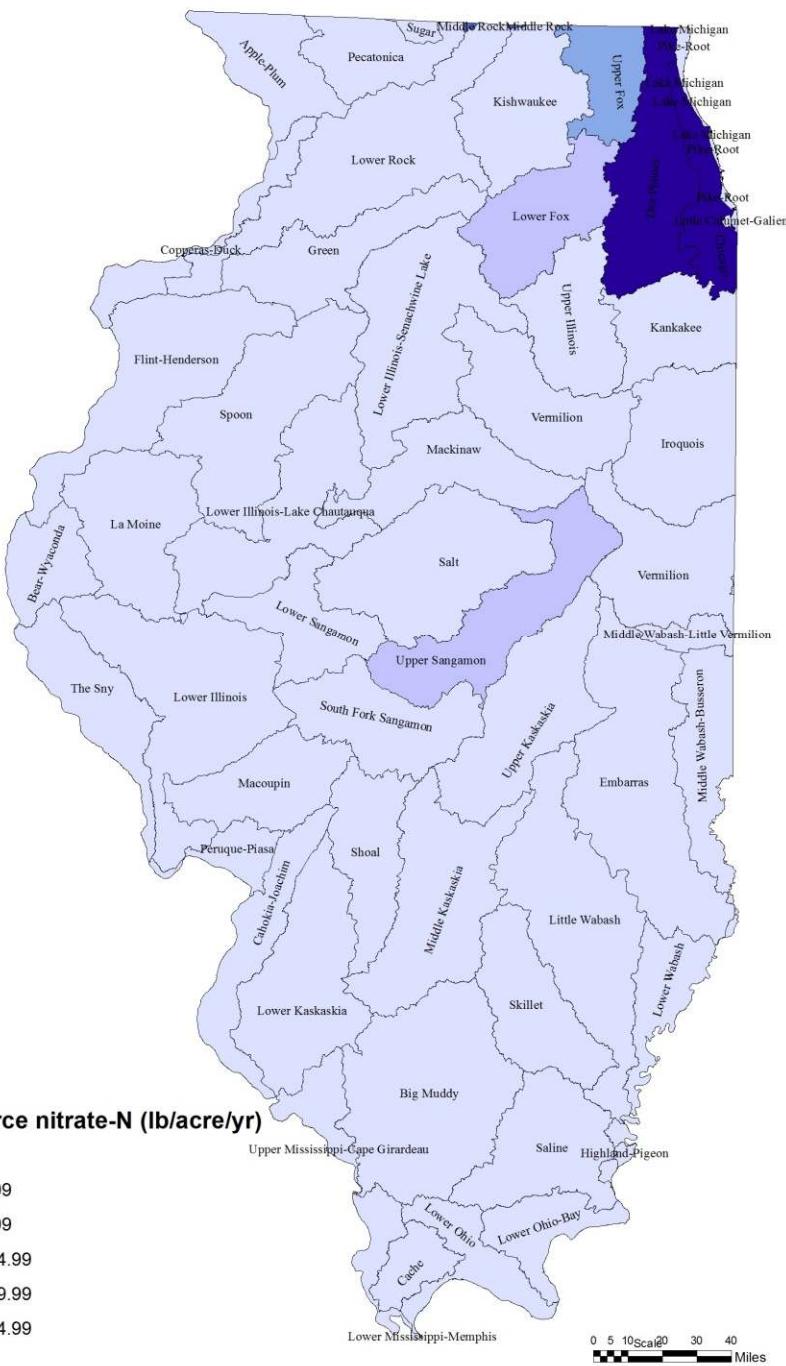
HUC8 Point Source P Yields



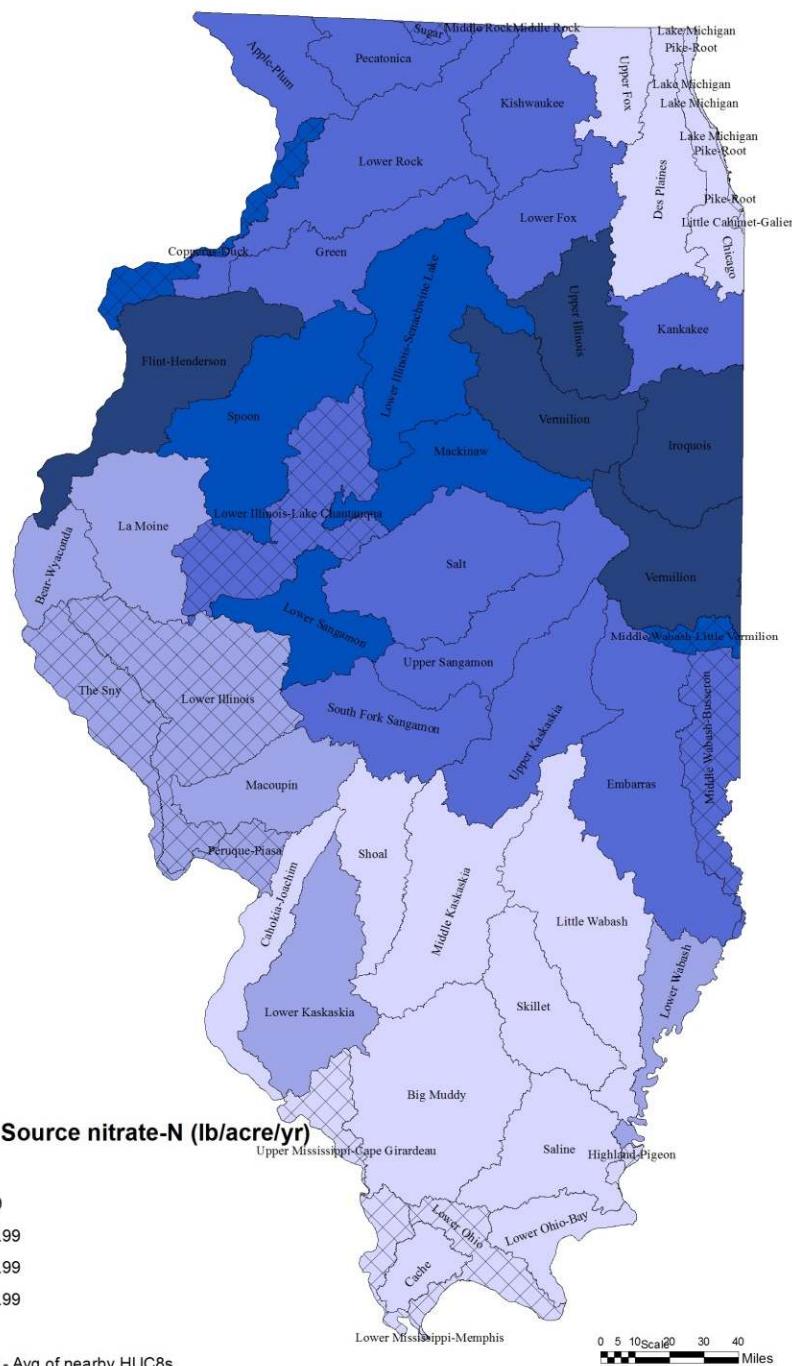
HUC8 Non-Point Source P Yields



HUC8 Point Source nitrate-N Yields



HUC8 Non-Point Source nitrate-N Yields



Example Statewide N Scenarios

Name	Combined Practices and/or Scenarios	Nitrate-N (% reduction)	Total P (% reduction)	Cost of N Reduction (\$/lb)	Annualized Costs (million \$/year)
N1	MRTN rate, all spring N application, cover crops 70% tile-drained & 45% non-tiled, bioreactors 50%, wetlands 25%, all ag streams have buffers	45	20	3.71	690
N2	MRTN rate, all spring N application, cover crops 100% tile-drained & 70% non-tiled, bioreactors 50%, perennial crops non-tiled, point source to 10 mg nitrate-N/L	45	33	4.30	800
N3	MRTN rate, cover crops 100% tile-drained & 70% non-tiled, wetlands 25%, perennial crops non-tiled, all ag streams have buffers, point source to 10 mg nitrate-N/L	45	24	4.51	838
N4	MRTN rate, all spring N application, cover crops 5% tile-drained, bioreactors 50%	20	0.3	1.99	163
N5	MRTN rate, cover crops 35% tile-drained, bioreactors 50%	20	2	2.00	162
N6	MRTN rate, cover crops 75% tile-drained, 55% non-tiled	20	8	4.62	382

The Estimated Cost of the Illinois Nutrient Reduction Strategy?

\$800 million dollars per year if the recommended practices to reduce nutrient losses must be implemented

(bioreactors, wetlands, perennial crops, all spring N, cover crops on 70% of acres)

How Does Illinois Agriculture Meet the Challenges of the Nutrient Reduction Strategy **and** Retain Ownership of Nutrients?

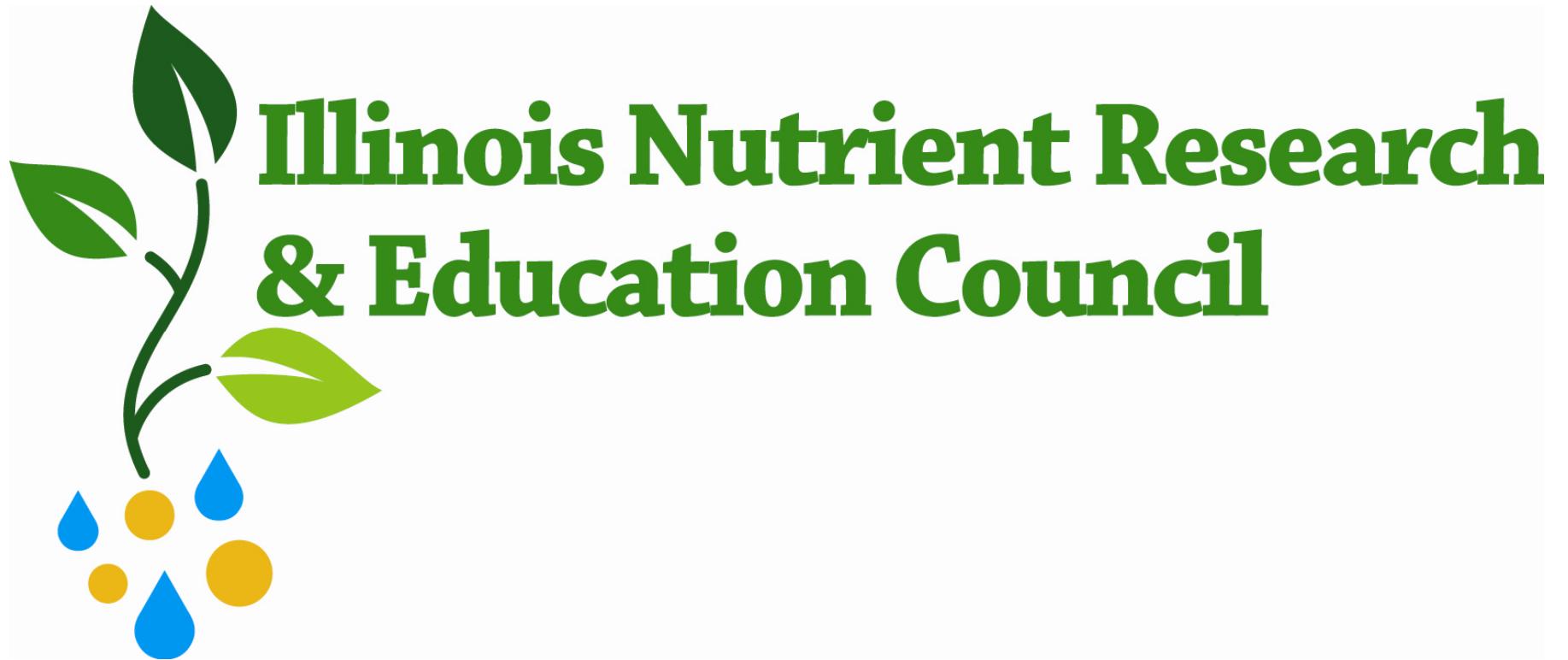


Minimize Environmental Impact
Optimize Harvest Yield
Maximize Input Utilization

Illinois Agriculture at Crossroads

- ❑ Fertilizer Research Council
(state fund from 12.5 cent fertilizer tonnage fee)
swept of over \$1 million
between 2006-2010
- ❑ CFAR Funding Cut to 0
dollars in 2010
- ❑ Cuts to UI Extension &
Nutrient Programs
- ❑ How do you address
nutrient issues with no \$?





**Illinois Nutrient Research
& Education Council**



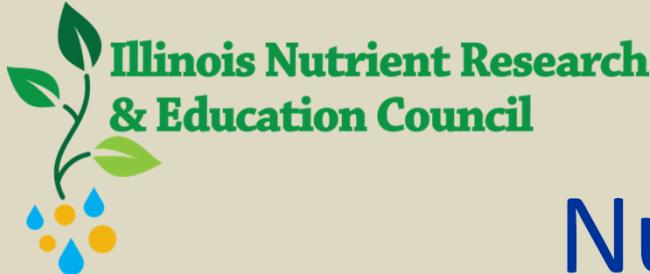
How NREC Works

- In Illinois Fertilizer Act, it is now a condition of fertilizer distributor license to remit the NREC assessment:

25¢ to IDA – check made out to IDA and used to support fertilizer inspectors to assure quality, guaranteed analysis and safety.

75¢ to NREC – check sent to NREC (not for profit entity)

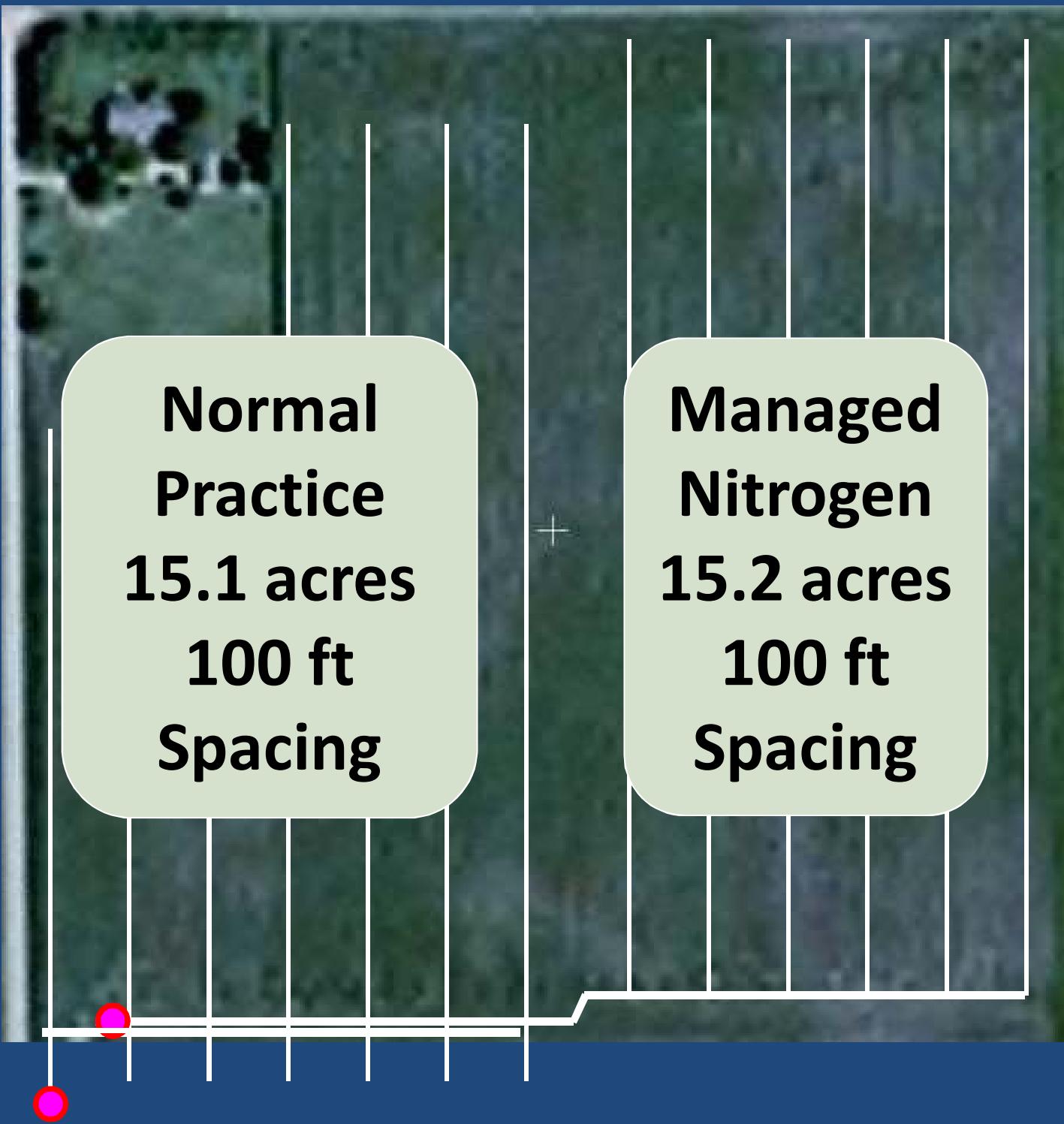
- Payable semi-annually based on tonnage (July 31 on spring tons, Feb 28 on fall tons)



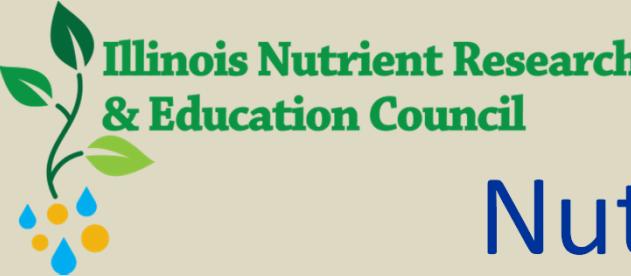
2014 NREC Projects

Nutrients & Water Quality

- Determine Level of Nitrogen Loss Reductions & Yield Improvements from N Management Practices Over Tile Drained Fields (UI, David/Nafziger)
- Nitrogen Management & Cover Crops over Tile Drained Fields to Reduce N Losses (ISU, CBMP)
- Late N Application to Improve Yield and Reduce N Loss in Southern Illinois (SIU)
- Paired Cover Crop Study; Water Quality Impacts (ISU, City of Bloomington)







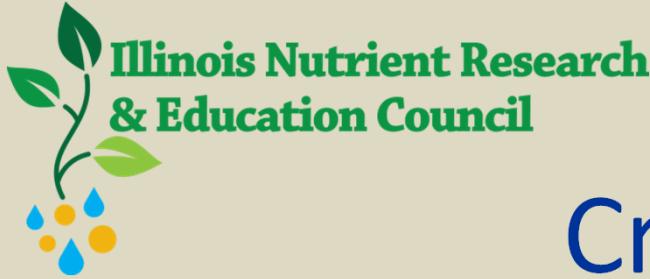
2014 NREC Projects

Nutrients & Water Quality, cont

- Phosphorus Runoff Potential from P Management Practices on Fields with Minimal Slope (2nd year, UI)
- Use of Multi-Functional Buffers on Marginal Farmland to Improve Water Quality and Provide Harvest Potential from Buffer Plantings (UI)
- Agronomic & Environmental Benefits from Cover Crops in a Corn/Soy Rotation (2nd year, UI)

A close-up photograph of a rainfall simulator system in operation. A black metal pipe with numerous small holes is angled downwards, spraying a fine mist of water onto a dark, textured surface covered in dry, brown crop residue. The background shows more of the same agricultural landscape under a clear sky.

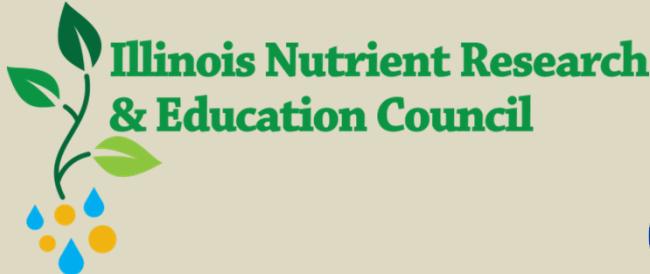
Rainfall Simulator Tracks P
Runoff under Various Tillage
Scenarios



2014 NREC Projects

Crop Production Research

- New Corn Research Program for Illinois (UI)
- Update P & K Removal Rates (UI)
- Update P & K Recommendations (UI, 2nd Year)
- Changes in Soil Quality in Corn/Soy Rotations (UI)
- Effects of Tillage, Residue Management and N Management in Continuous Corn (UI FREC Began)



2014 NREC Projects

Outreach & Education

- Keep it for the Crop Program (2nd Year, CBMP)
 - N Rate Trials
 - N-Watch®
 - Retailer & Farmer Involvement
 - Educating the Next Generation on the 4Rs
- Discovery Farms (2nd year, CBMP)
- Farmer Survey in Lake Bloomington to Assess Adoption of 4Rs (ISU, CBMP)

Go to www.illinoisnrec.org

Agriculture Supports the 4Rs

Right Source

Right Rate

Right Time

Right Place



With NREC and Innovation, we are
Investing in Agriculture;
The Alternative is to Invest in Lawyers.

