

US EPA ARCHIVE DOCUMENT

Involving the Growers

State Level Nutrient Reduction Strategies Workshop
Columbus, Ohio
June 14, 2011

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www.isafarmnet.com



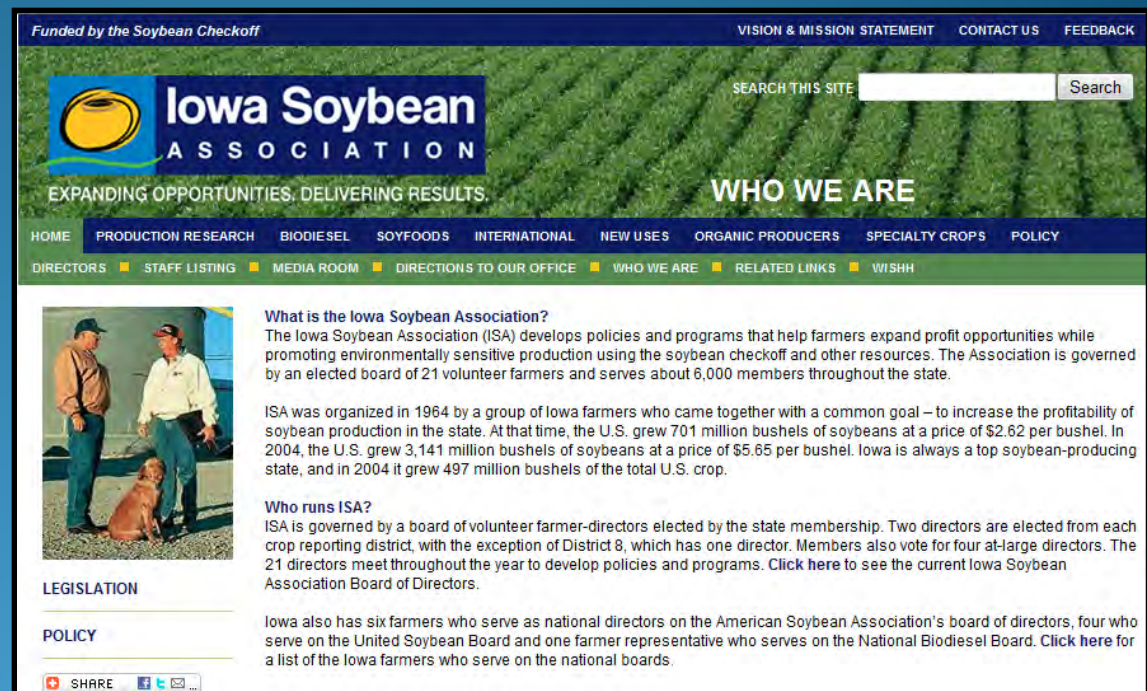
Iowa Soybean Association

Grower commodity organization

21 farmer elected farmer directors

Checkoff funded

Policy organization



The screenshot shows the Iowa Soybean Association website. At the top, it says "Funded by the Soybean Checkoff" and has navigation links for "VISION & MISSION STATEMENT", "CONTACT US", and "FEEDBACK". The main header features the Iowa Soybean Association logo and the tagline "EXPANDING OPPORTUNITIES. DELIVERING RESULTS." Below this is a search bar and a "WHO WE ARE" section. A navigation menu includes "HOME", "PRODUCTION RESEARCH", "BIODIESEL", "SOYFOODS", "INTERNATIONAL", "NEW USES", "ORGANIC PRODUCERS", "SPECIALTY CROPS", "POLICY", "DIRECTORS", "STAFF LISTING", "MEDIA ROOM", "DIRECTIONS TO OUR OFFICE", "WHO WE ARE", "RELATED LINKS", and "WISHH". The main content area has a photo of two farmers and a dog, followed by the text: "What is the Iowa Soybean Association? The Iowa Soybean Association (ISA) develops policies and programs that help farmers expand profit opportunities while promoting environmentally sensitive production using the soybean checkoff and other resources. The Association is governed by an elected board of 21 volunteer farmers and serves about 6,000 members throughout the state. ISA was organized in 1964 by a group of Iowa farmers who came together with a common goal – to increase the profitability of soybean production in the state. At that time, the U.S. grew 701 million bushels of soybeans at a price of \$2.62 per bushel. In 2004, the U.S. grew 3,141 million bushels of soybeans at a price of \$5.65 per bushel. Iowa is always a top soybean-producing state, and in 2004 it grew 497 million bushels of the total U.S. crop. Who runs ISA? ISA is governed by a board of volunteer farmer-directors elected by the state membership. Two directors are elected from each crop reporting district, with the exception of District 8, which has one director. Members also vote for four at-large directors. The 21 directors meet throughout the year to develop policies and programs. Click here to see the current Iowa Soybean Association Board of Directors. Iowa also has six farmers who serve as national directors on the American Soybean Association's board of directors, four who serve on the United Soybean Board and one farmer representative who serves on the National Biodiesel Board. Click here for a list of the Iowa farmers who serve on the national boards." At the bottom, there are social media icons for SHRE, Facebook, and Twitter.

www.iasoybeans.com

On-Farm Network

Objective

To organize growers to use precision ag technologies to collect meaningful data to improve grower profitability.



More Information

More information.

www.agtechonfarm.net

the On-Farm Network®

[Nitrogen Management](#) | [Newsletters](#) | [Questions?](#)



On-Farm Network

Growers working together to improve profitability and the environment

[What is the On-Farm Network®](#)



[Who is involved in this program?](#)



[What has it done?](#)



[How can I participate?](#)



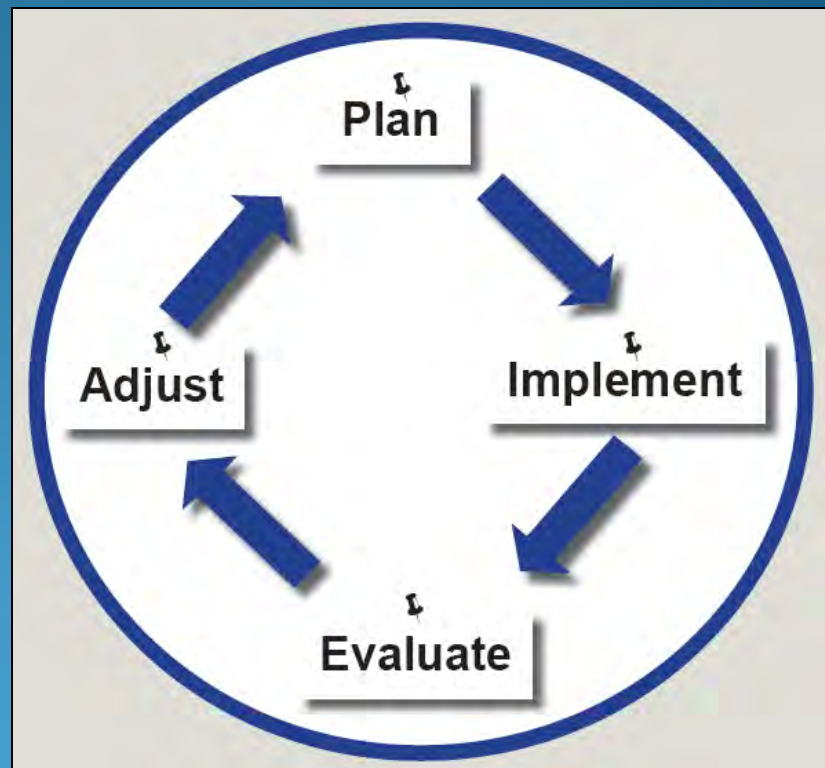
ATESF
Ag Technology & Environmental Stewardship Foundation
1255 SW Prairie Trial Parkway
Ankeny, IA 50023
800-383-1423

On-Farm Network EDF
Partnership
Finding the smart farm made.

Adaptive Management

Management is a process

Determine if plan can be improved



Performance

Did this plan work?

Do you know if you are within 50 lb N/a?

Can you look at a field and know if you are within 5 bu/a of optimal for N?



ISU Nitrogen Recs

Current N Recs

- Fertilizer savings is one component
- Protecting/increasing yield is another.
- Optimizing N usage is generally more profitable

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: Iowa
Number of sites: 188
Rotation: Corn Following Soybean
Non-Responsive Sites Included
Nitrogen Price (\$/lb): 0.40
Corn Price (\$/bu): 5.44
Price Ratio: 0.07

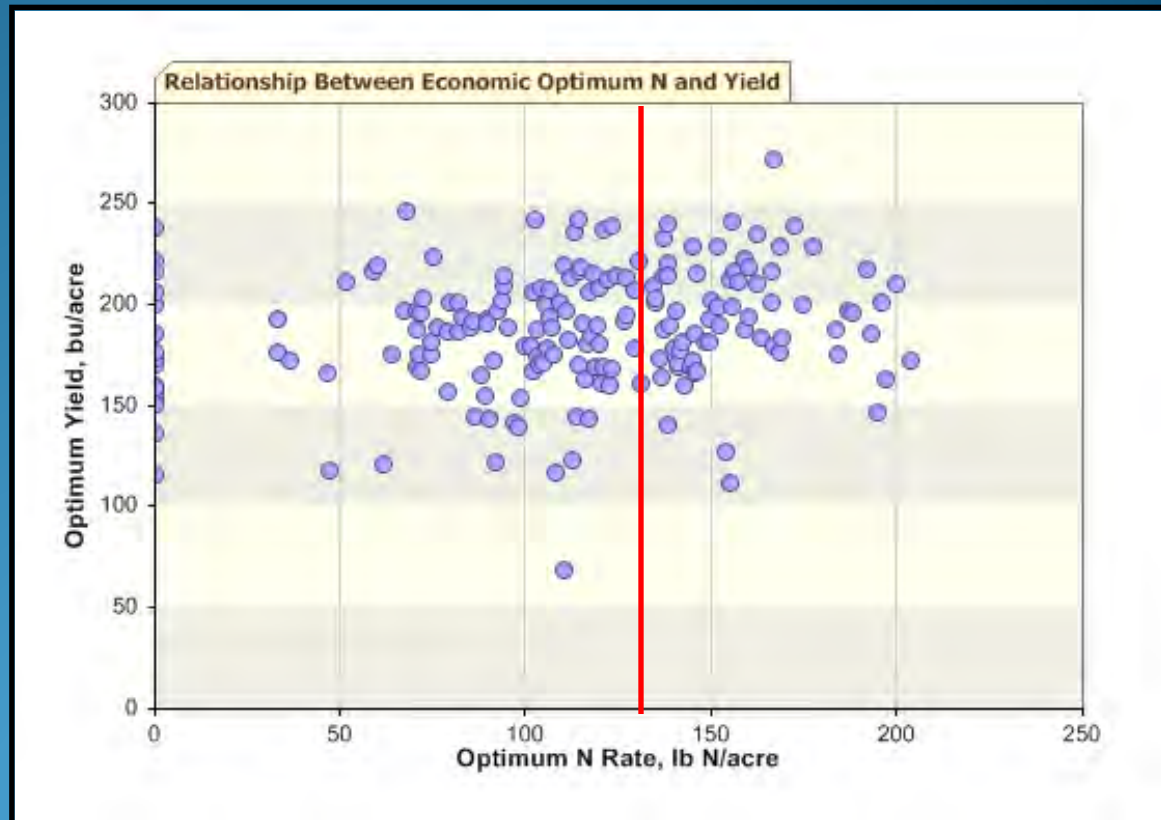
MRTN Rate (lb N/acre):	136
Profitable N Rate Range (lb N/acre):	124 - 149
Net Return to N at MRTN Rate (\$/acre):	\$232.35
Percent of Maximum Yield at MRTN Rate:	99%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	166
Anhydrous Ammonia (82% N) Cost at MRTN Rate (\$/acre):	\$54.40

Most profitable N rate is at the maximum return to N (MRTN).
Profitable N rate range provides economic return within \$1/acre of the MRTN.

Current N Recs

Correct N rate

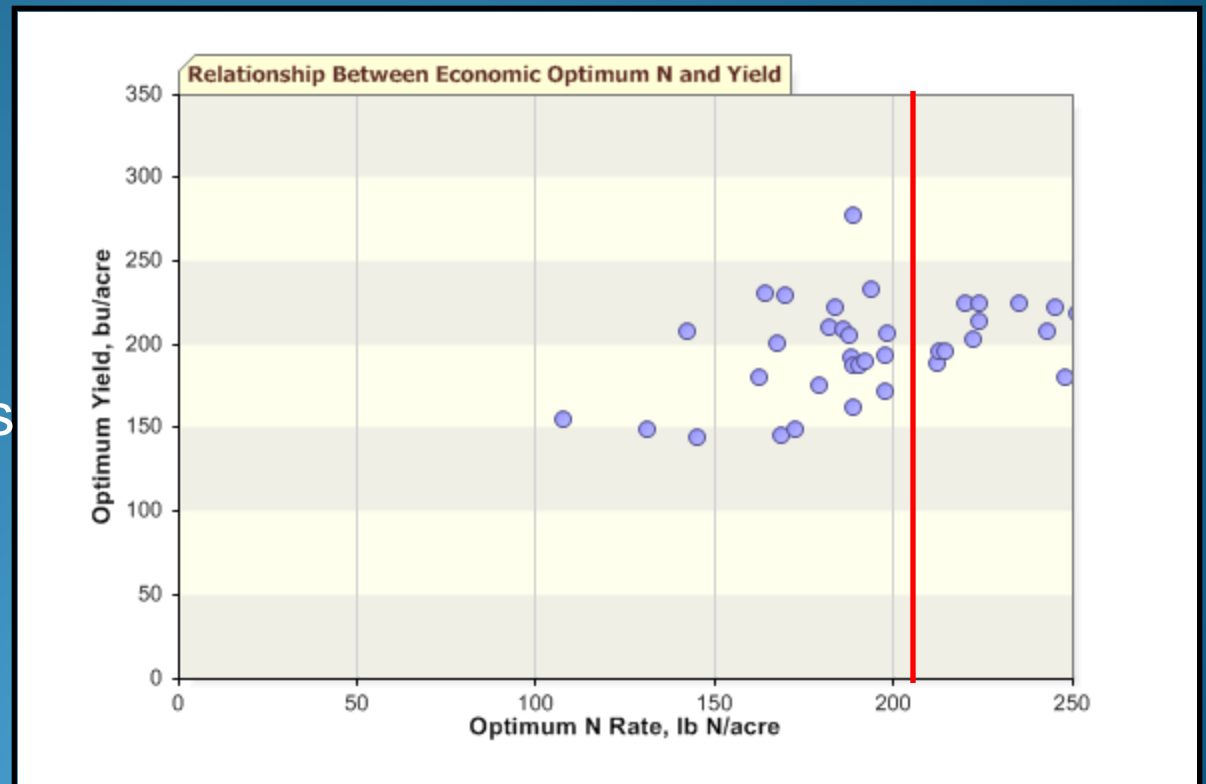
- Right rate between 0 and over 200 lbs N.
- Improve the odds
- Not yield related



Current N Recs Indiana

Correct N rate
202 lbs N/a

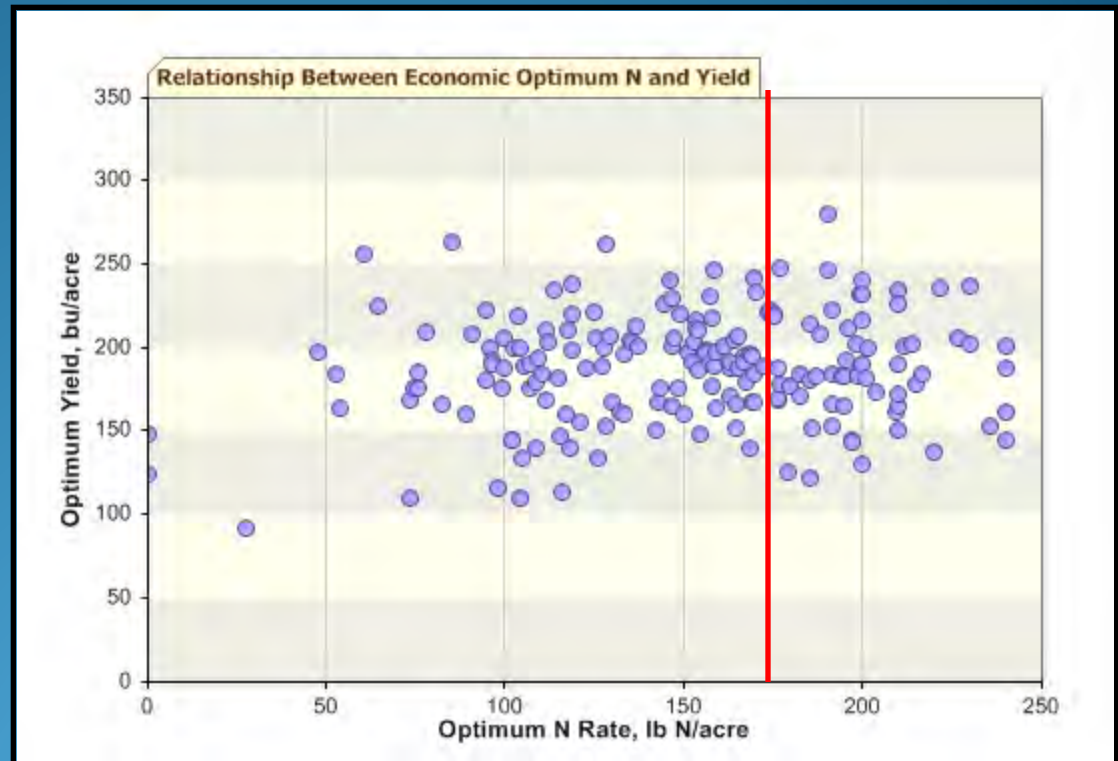
- Right rate between 100 and over 250 lbs N/a.



Current N Recs – IL-Central

Correct N rate
168 lbs N/a

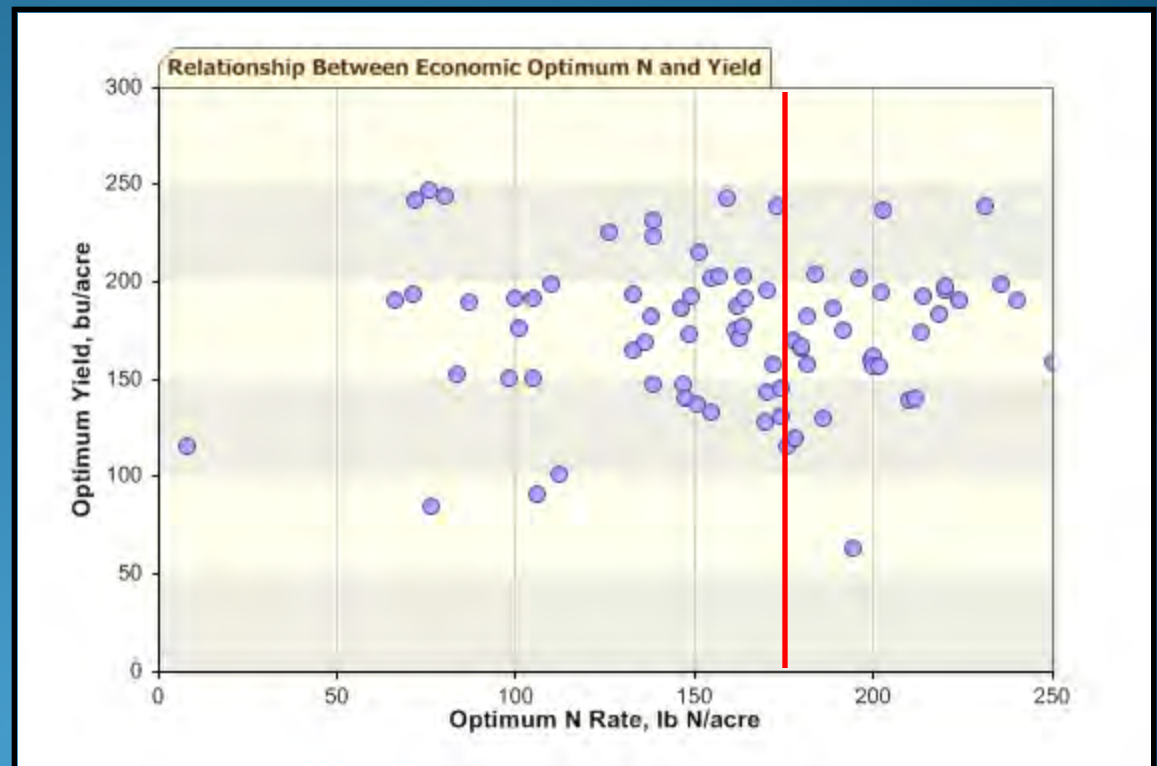
- Right rate between 0 and 250 lbs N/a.



Current N Recs - Ohio

Correct N rate
174 lbs N/a

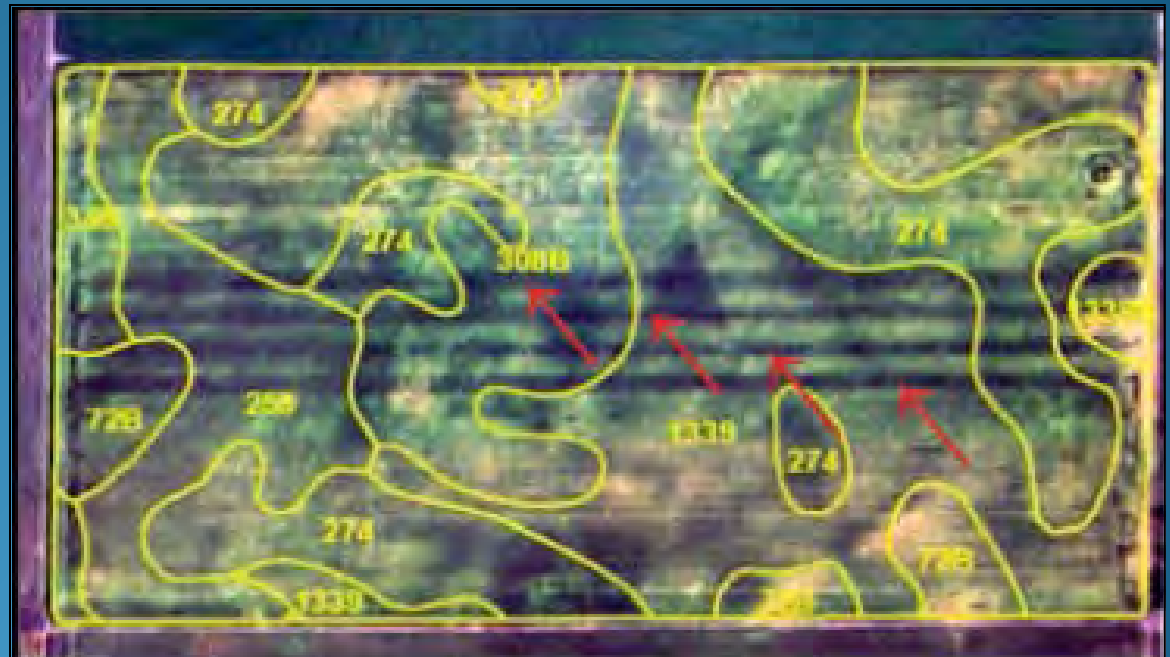
- Right rate between 0 and over 250 lbs N.



Evaluation

The 4 test strips
show a difference.

Yield data confirmed
higher rate more
profitable.



Impact

The success in changing grower behavior with the ISA On-Farm Network's approach has been quantified by (Padgitt and Lasley, 2004) with an 84% change in Iowa grower behavior with an average rate reduction of 32.2 lbs N/a.

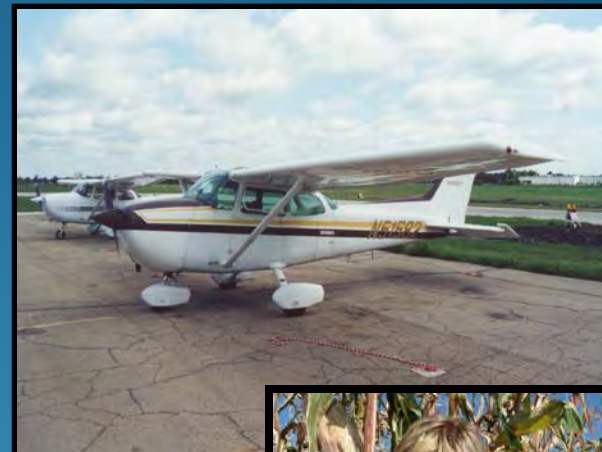
Evaluation

Guided stalk nitrate sampling

Imagery

Soil map units

End of the season stalk nitrate test



Cross Checks

Using multiple tools is important

Credibility is strengthened with more than one evaluation tool

	Nitrate Conc (ppm)	Interpretation
1.	1	Deficient
2.	587	Marginal
3.	1255	Optimal
4.	2629	Excess

Spatial Variability

Fields are variable

Accounting for this variation is important.

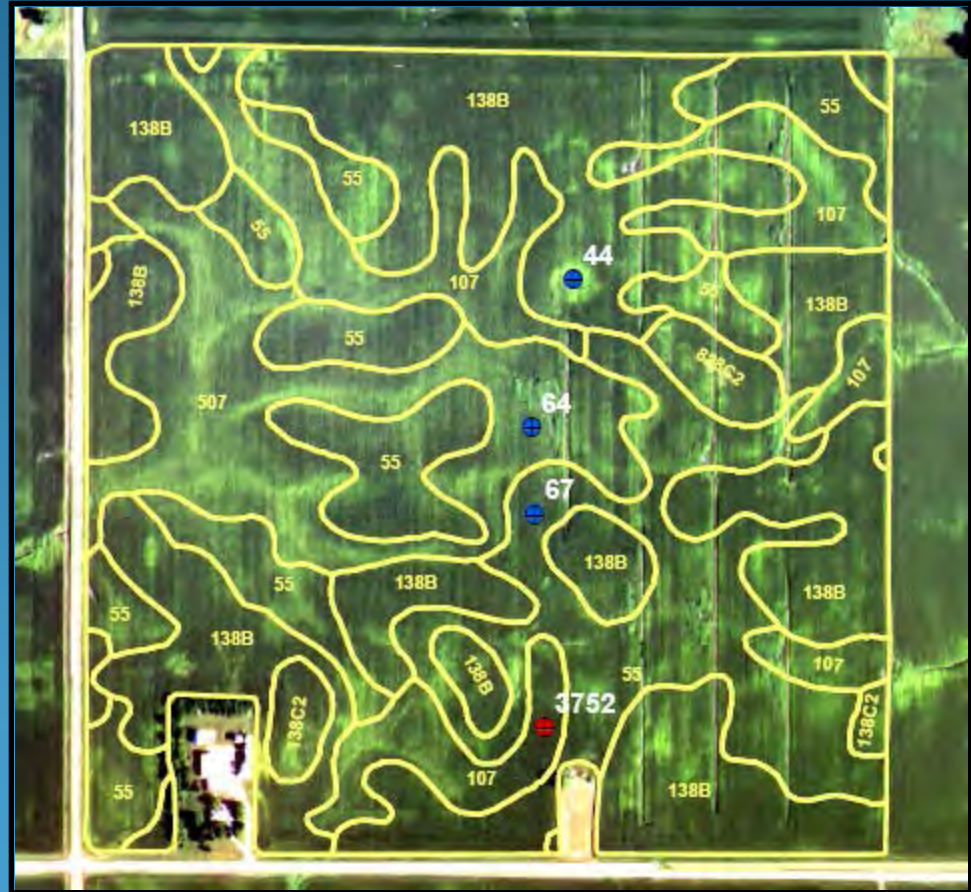


Example

Deficient Field

Stalk test results are low

Variability in image color



Example

Excess Field

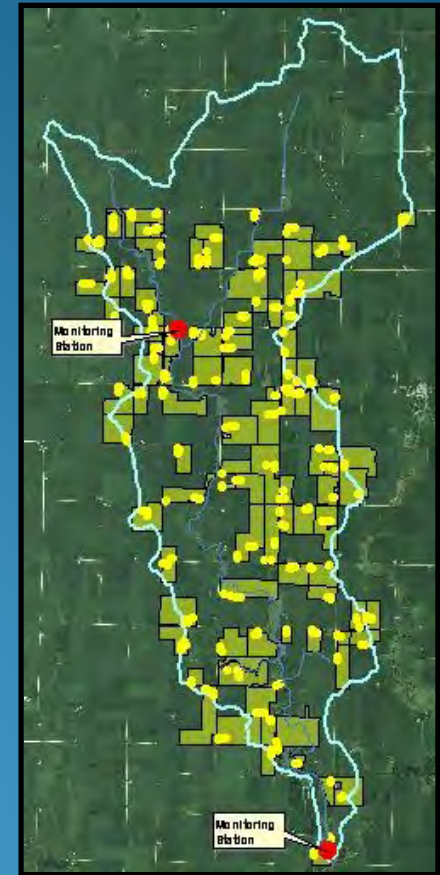
Stalk test results are all in “Excess”

Little variability in image color



Can be Targeted

- Data from same local area
- Comparison amongst peers
- Allows contrasts across actual management practices



Pooling the Data

Two-way learning

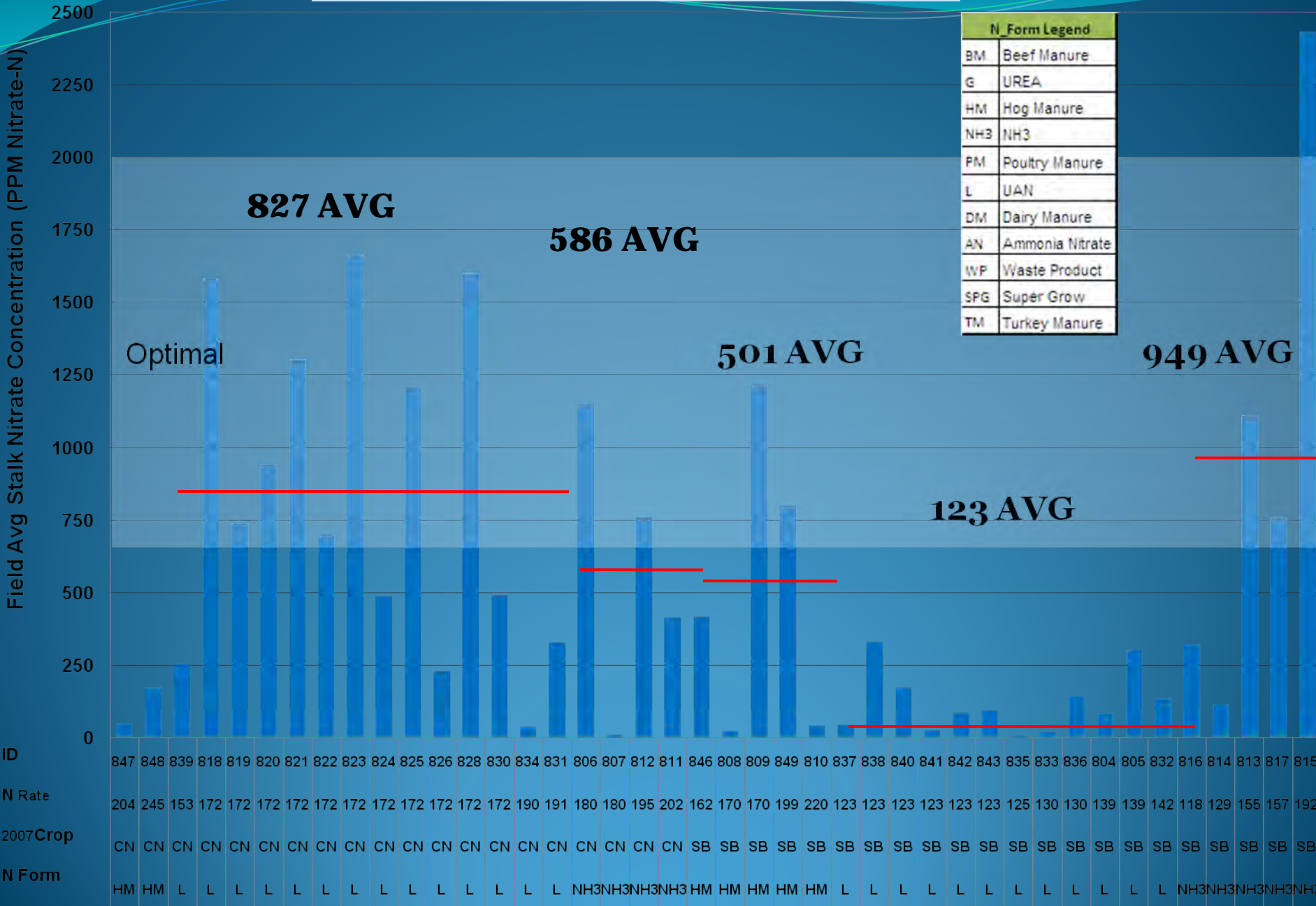
Developing plans for evaluations

Sharing results and information



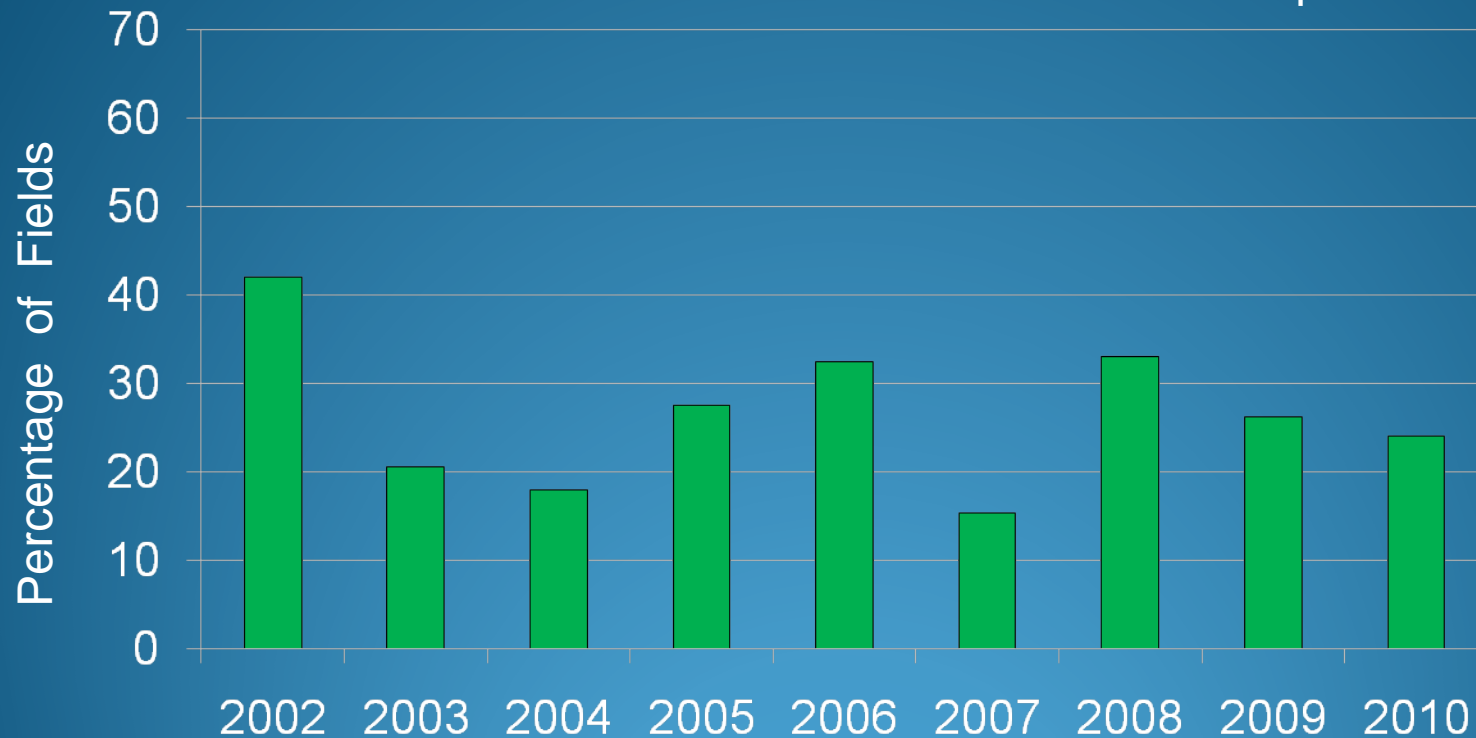
Jefferson Group

N Form Legend	
BM	Beef Manure
G	UREA
HM	Hog Manure
NH3	NH3
PM	Poultry Manure
L	UAN
DM	Dairy Manure
AN	Ammonia Nitrate
WP	Waste Product
SPG	Super Grow
TM	Turkey Manure



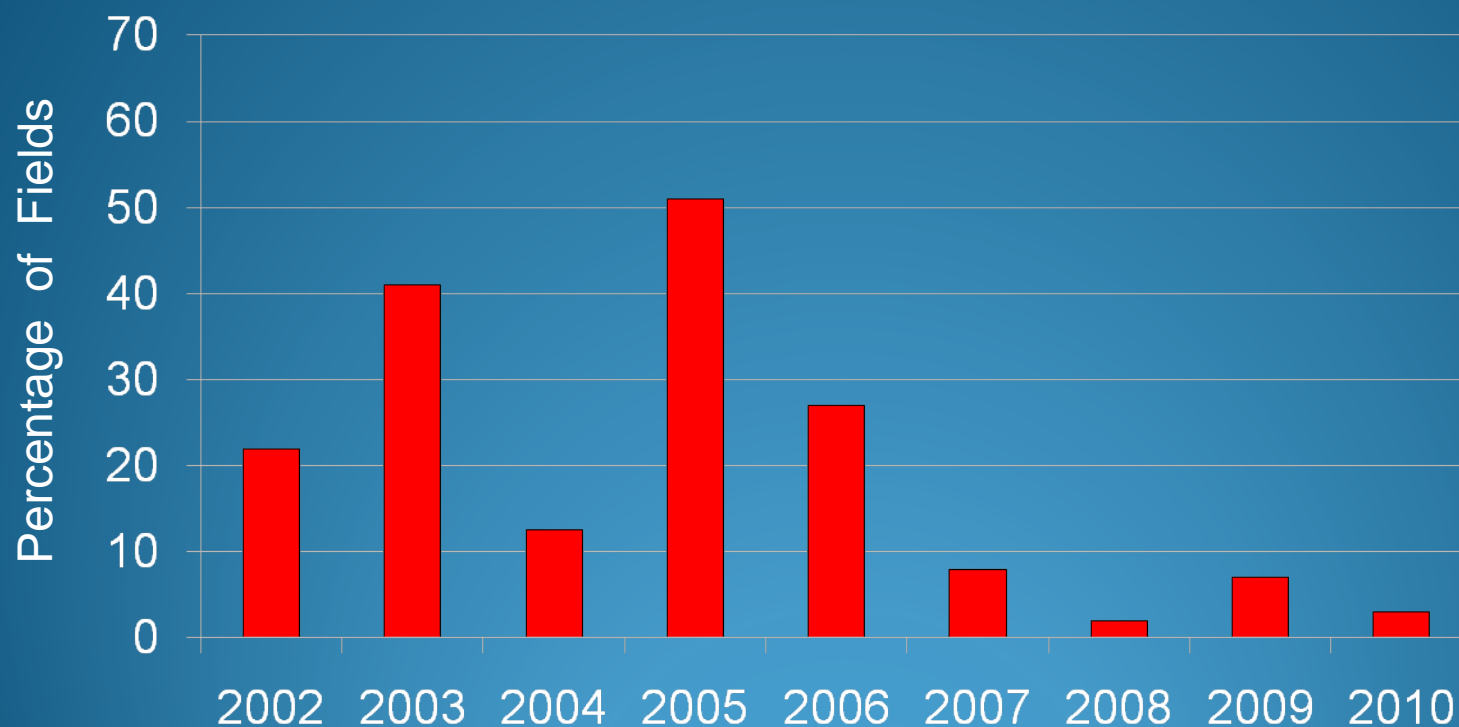
Trends in Jefferson area

Trends in Stalk Nitrate Concentrations – Fields “Optimal”



Trends in Jefferson area

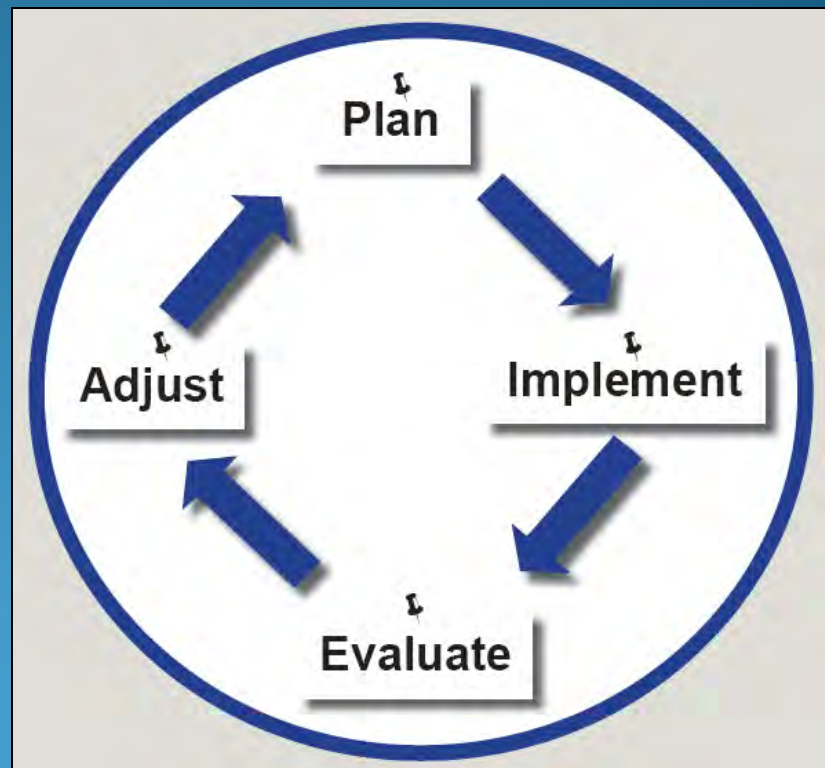
Trends in Stalk Nitrate Concentrations – Fields “Excess”



Adaptive Management

Management is a process.

Determine if plan can be improved



Other Outcomes

Uneven application

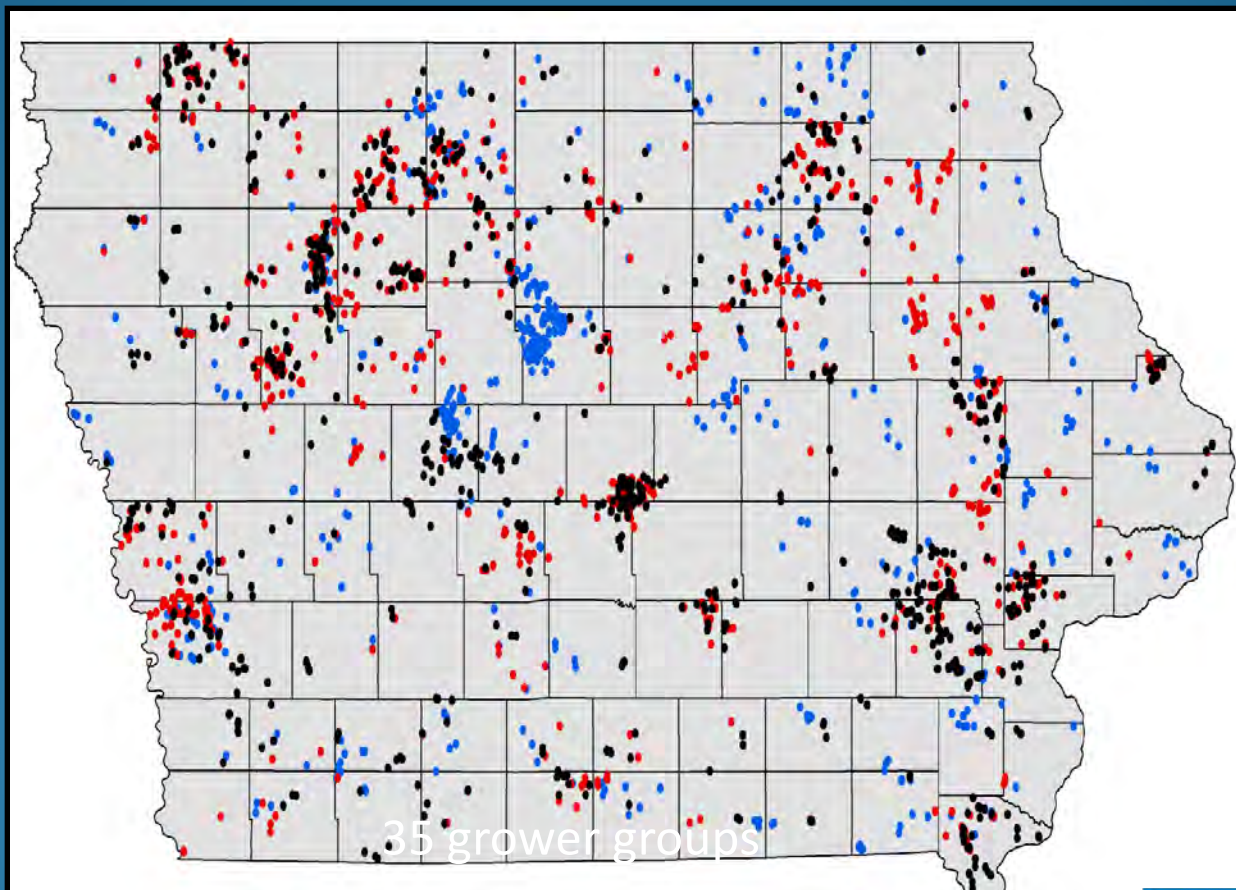


Other Outcomes

Variable rate
application

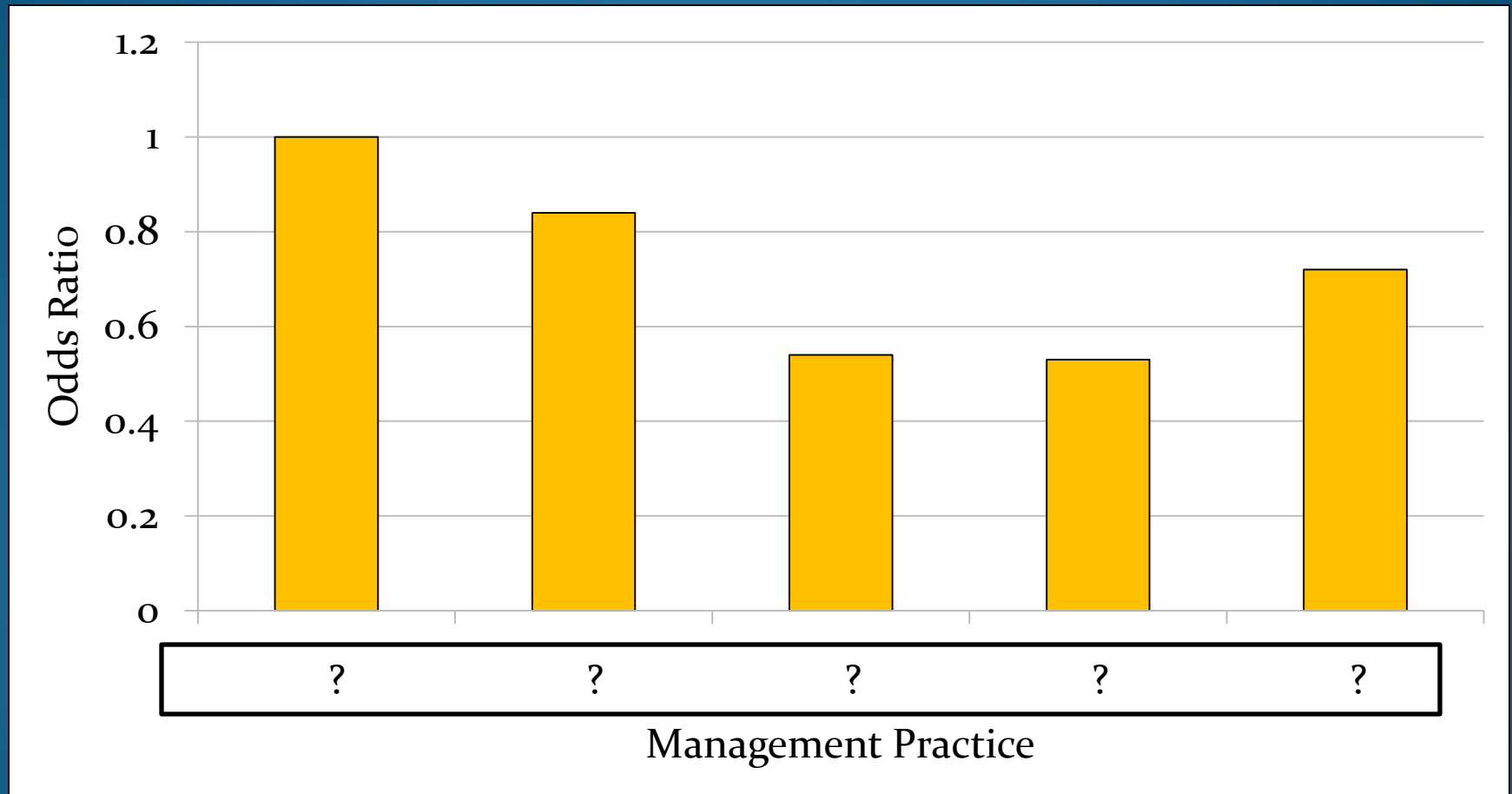


Iowa



● 2006
● 2007
● 2008

Quantifying the Differences



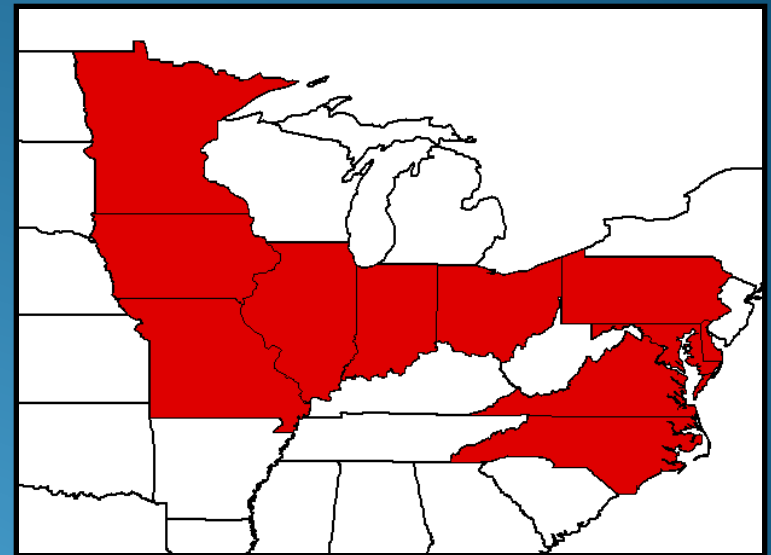
Quantifying the Differences

Table 2. Effects of explanatory variables on the cumulative probability of corn stalk samples to test in a higher stalk test nitrate category as observed in the guided corn stalk nitrate survey of 683 fields across Iowa in 2006 and of 824 fields in 2007.

Factor	Management category†	2006		2007	
		Odds ratio‡	95% Confidence interval	Odds ratio	95% Confidence interval
N form§	AA Fall	0.84**	0.71-0.99	0.60***	0.50-0.72
	UAN SD	0.54***	0.42-0.68	0.54***	0.48-0.67
	UAN Spring	0.53***	0.43-0.65	0.58**	0.48-0.71
	LSM Fall	0.72***	0.68-0.87	0.28***	0.22-0.35
	<u>AA Spring</u>				
	AA Fall vs LSM Fall	1.17*	1.00-1.38	2.17***	1.72-2.83
	UAN SD vs UAN Spring	1.01	0.78-1.32	0.93	0.74-1.15
Previous crop	Soybean <u>Corn</u>	1.15	0.96-1.37	0.72***	0.62-0.83
Soil drainage	Well	1.32**	1.10-1.59	1.62**	1.34-1.45

Partners

Varies with every group
Environmental Defense Fund
SWCD
Ag retailers
State Department of Ag
Extension
NRCS
Commodity groups
Foundations
Corporations
SWCS



Resources Needed

Financial
Technical
Political
Coordination
Integration
Educational
Patience/endurance

Conflicts

Sales/support

Plans vs. outcomes

Profit vs. performance

Data vs. intuition

Participatory vs. authoritative

Educational

Patience/endurance

Structured vs. flexible

Questions?

Contact:

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