Involving the Growers

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

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On-Farm Network

www.isafarmnet.com

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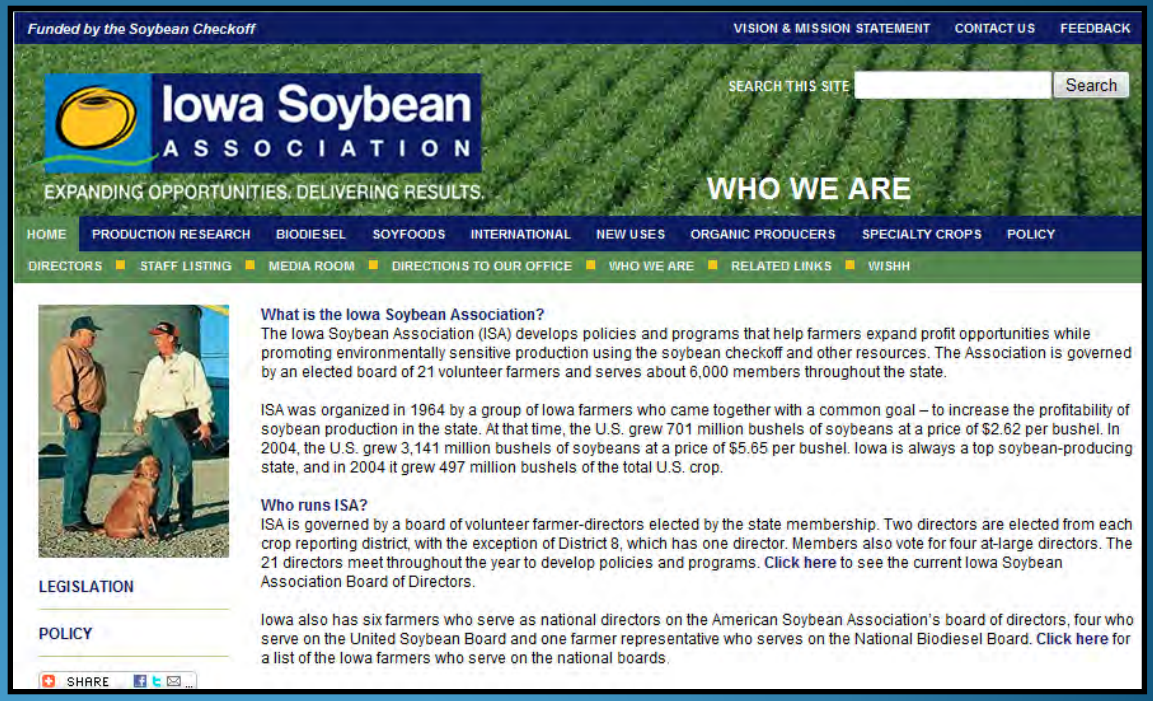
Iowa Soybean Association

Grower commodity organization

21 farmer elected farmer directors

Checkoff funded

Policy organization



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Objective

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

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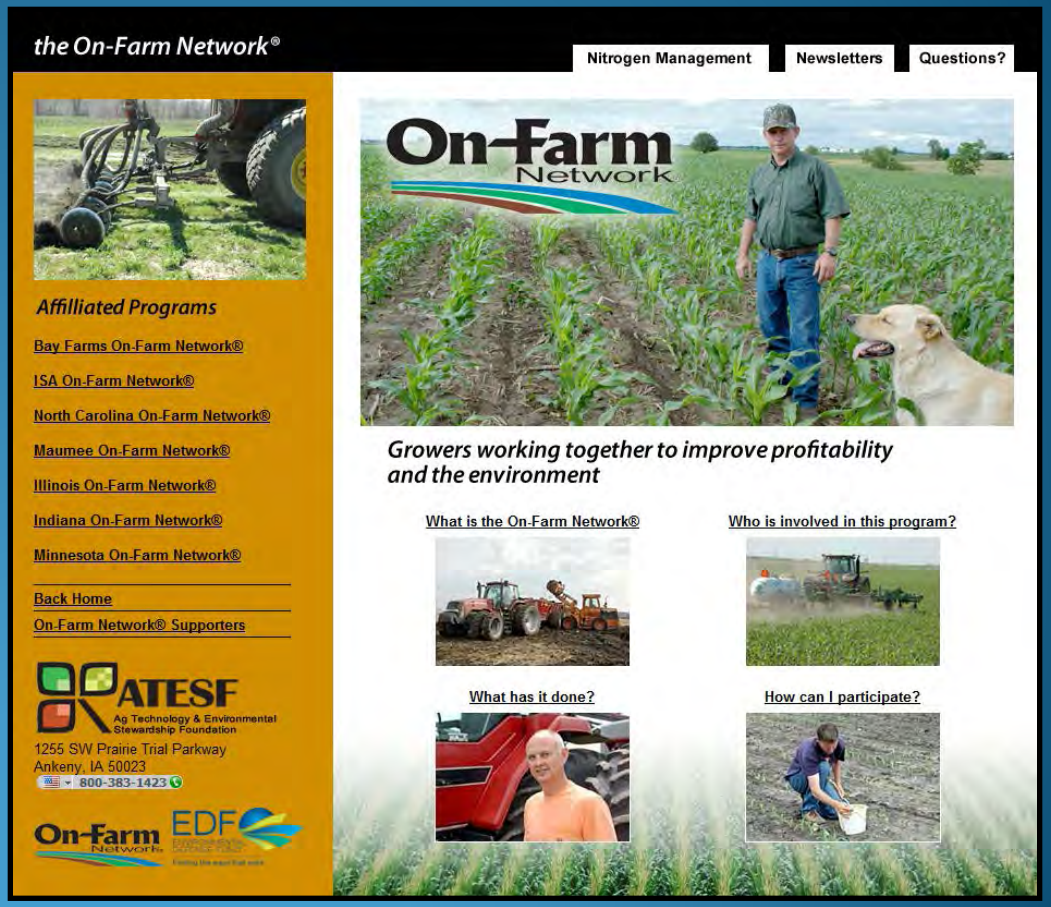
More Information

More information.

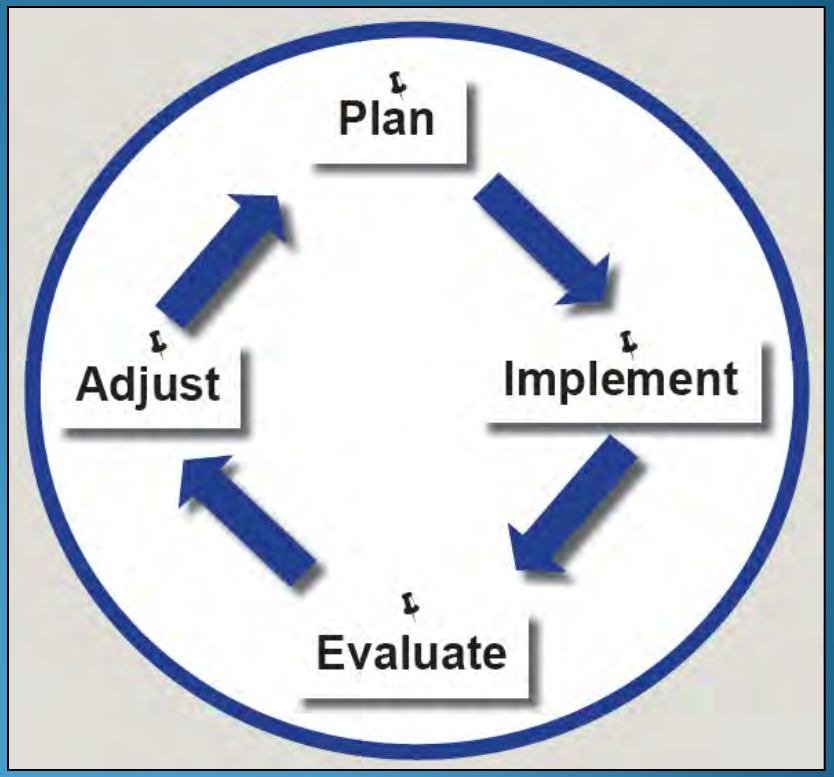
www.agtechonfarm.net



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

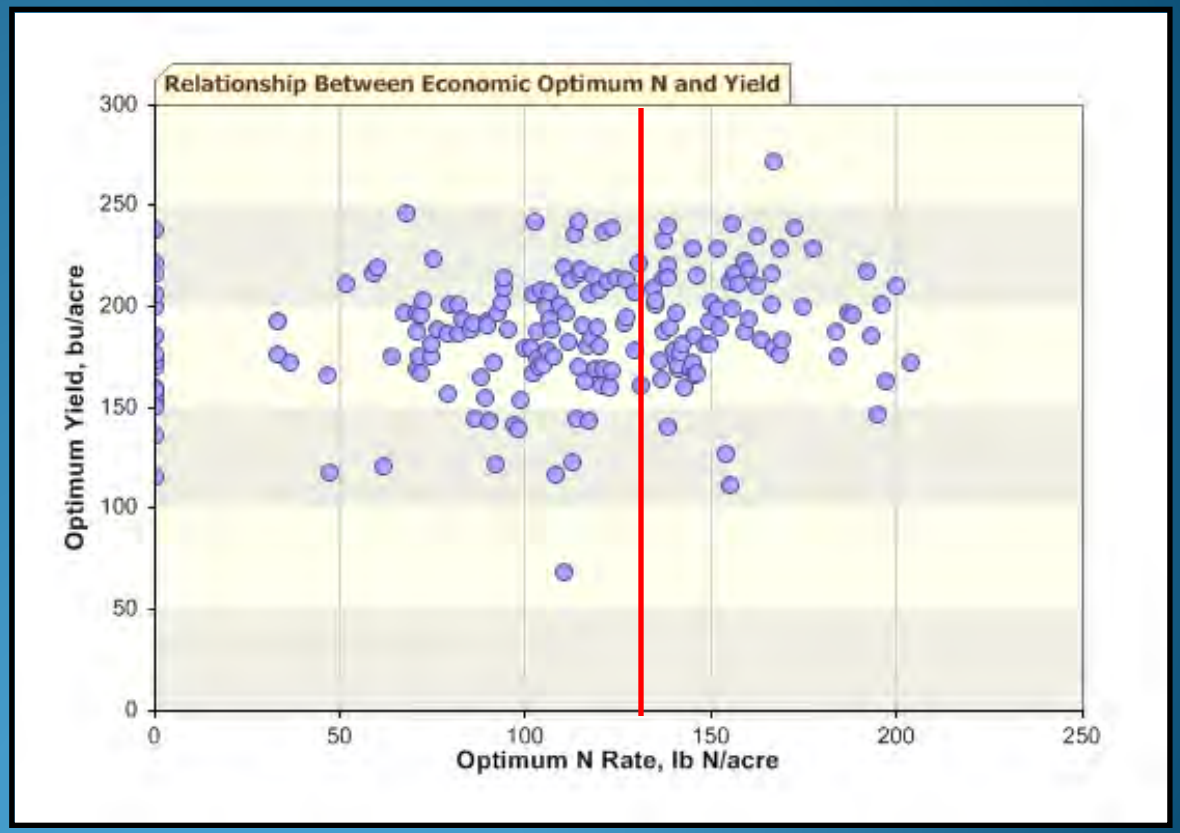
MRTN Rate (lb N/acre):	**136**
Profitable N Rate Range (lb N/acre):	124 - 149
Net Return to N at MRTN Rate ($/acre):	$232.35
Percent of Maximum Yield at MRTN Rate:	99%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	166
Anhydrous Ammonia (82% N) Cost at MRTN Rate ($/acre):	$54.40

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

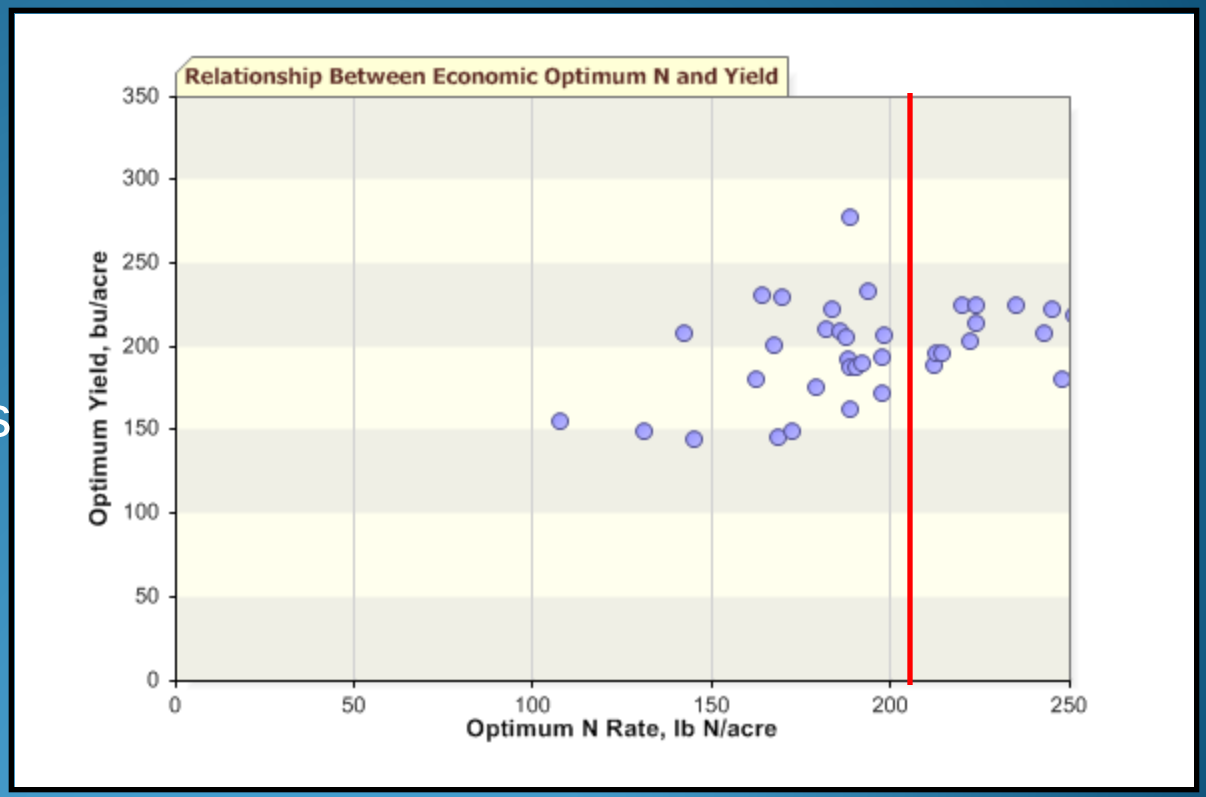


Current N Recs Indiana

Correct N rate

202 lbs N/a

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

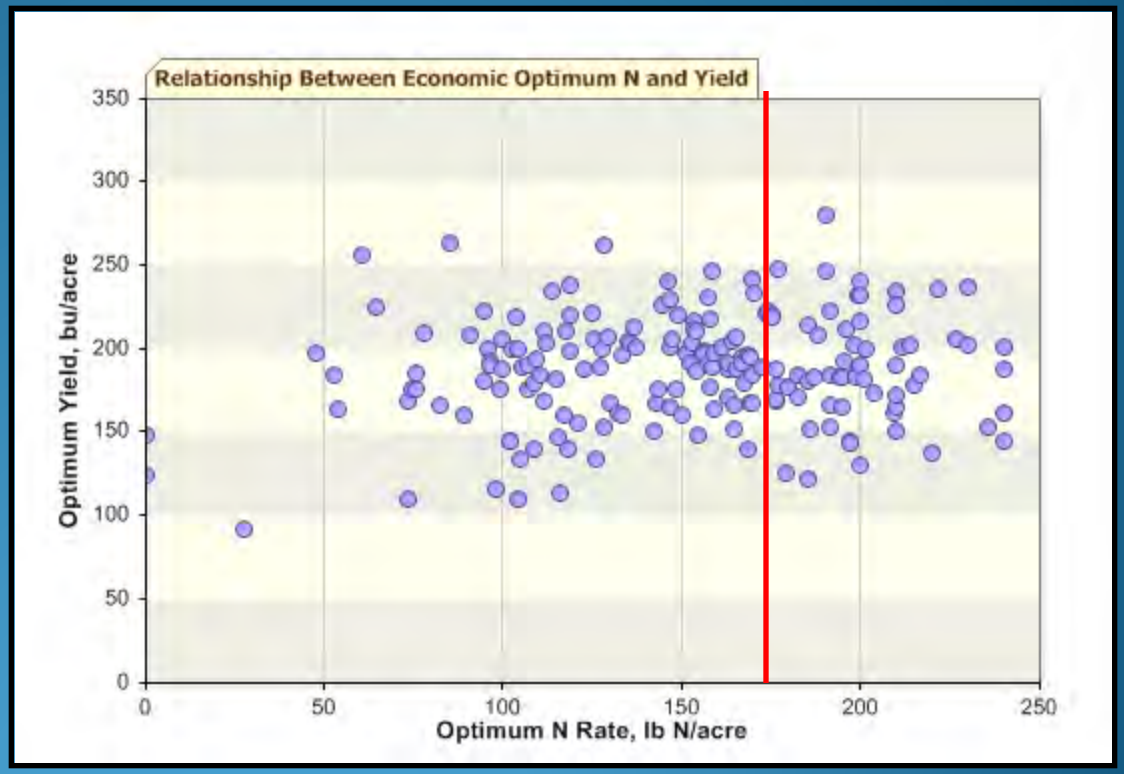


Current N Recs – IL-Central

Correct N rate

168 lbs N/a

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

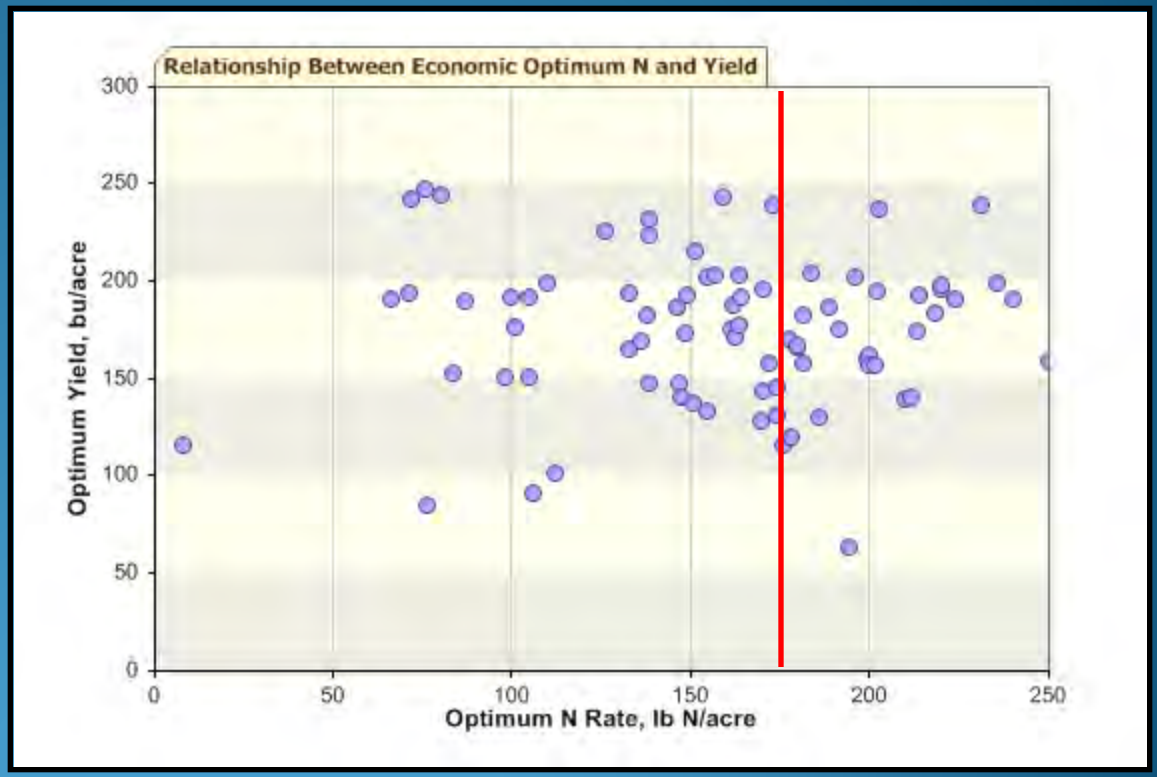


Current N Recs - Ohio

Correct N rate

174 lbs N/a

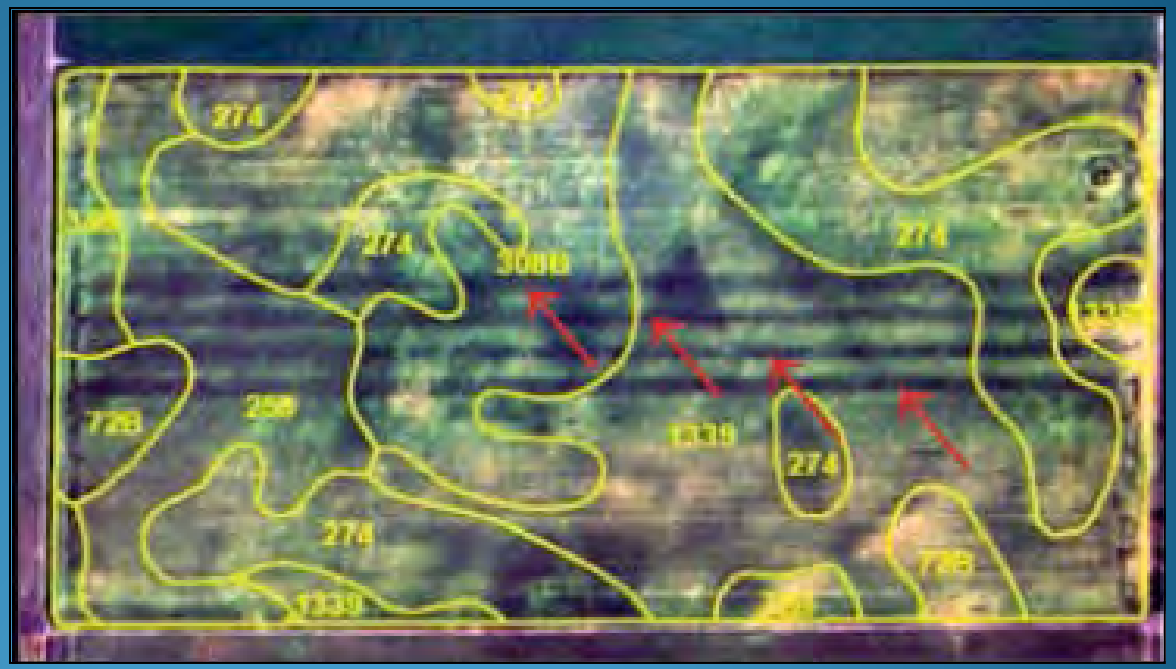
- Right rate between 0 and over 250 lbs N.



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

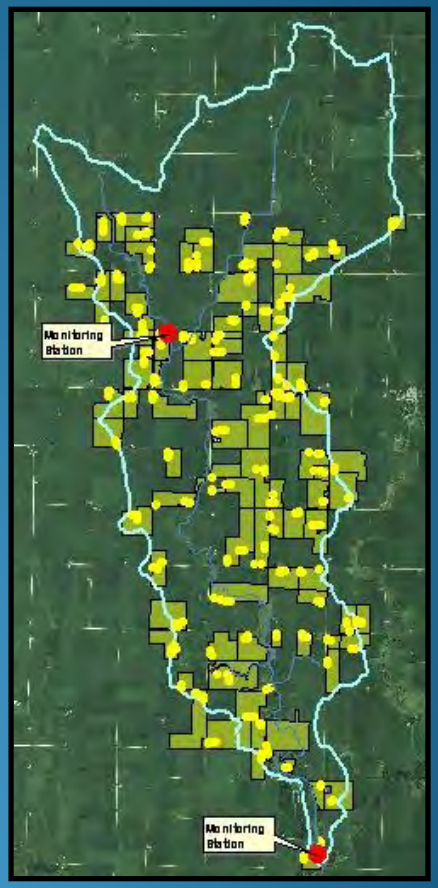
Excess Field

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



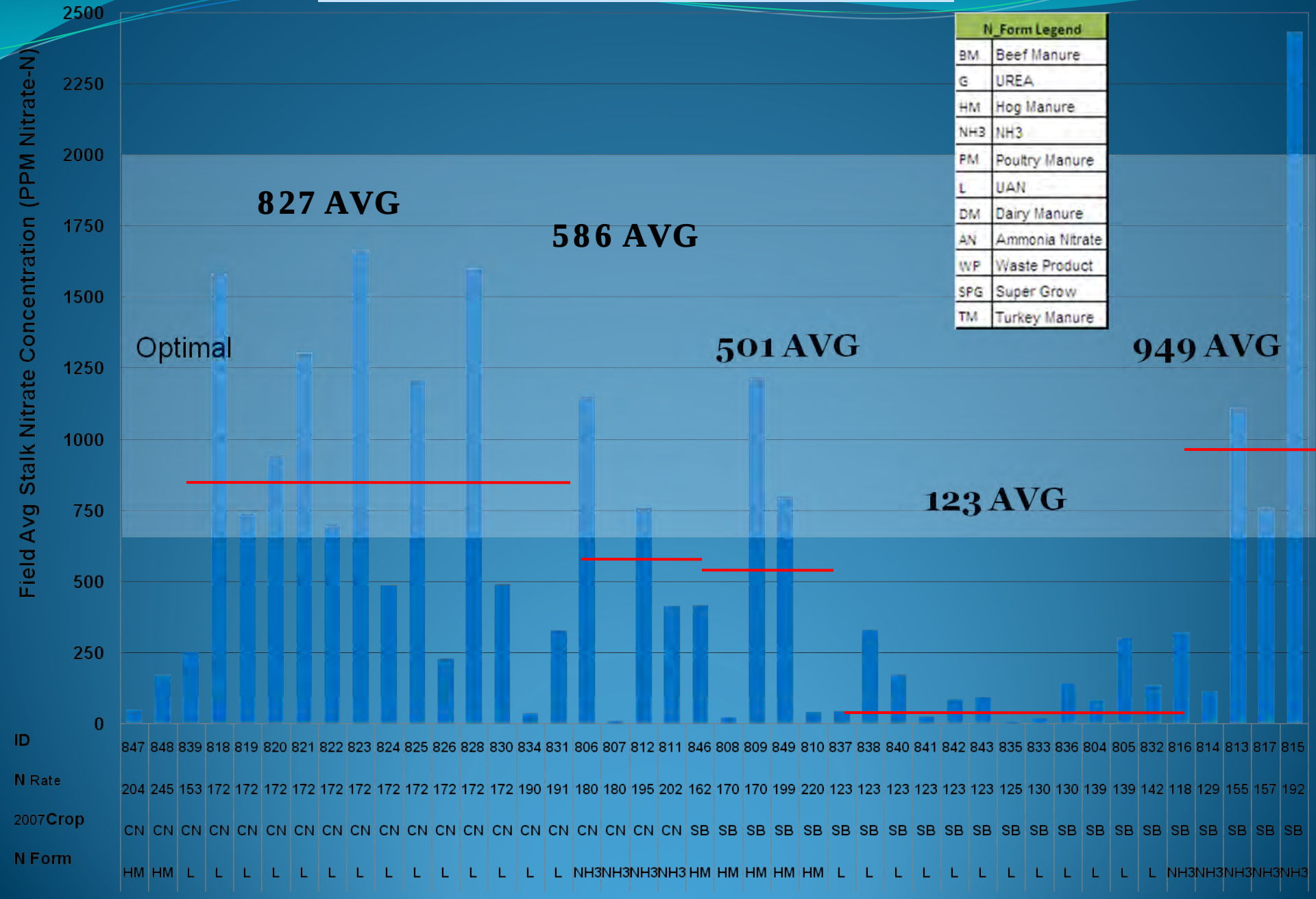
Pooling the Data

Two-way learning

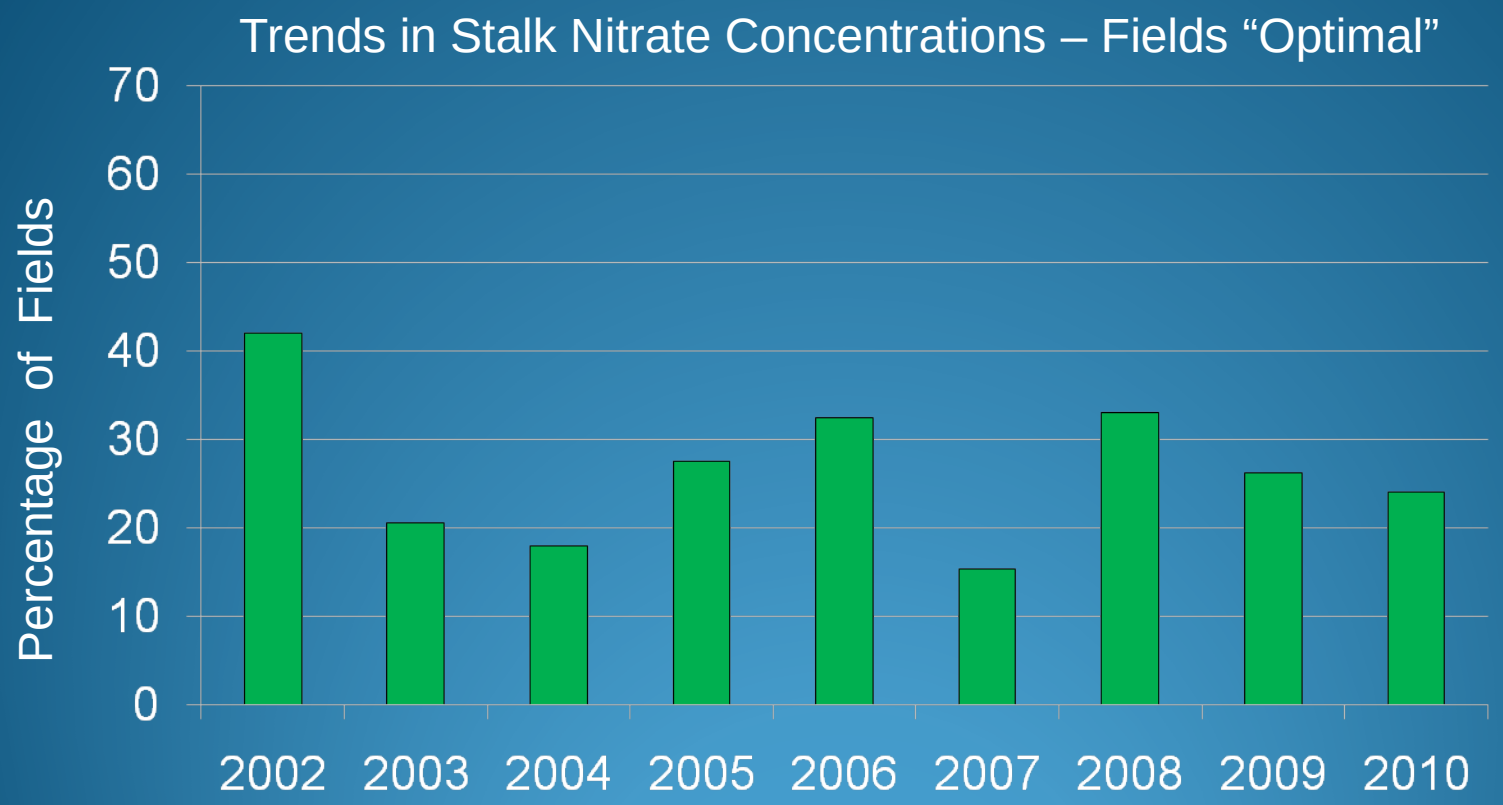
Developing plans for evaluations

Sharing results and information

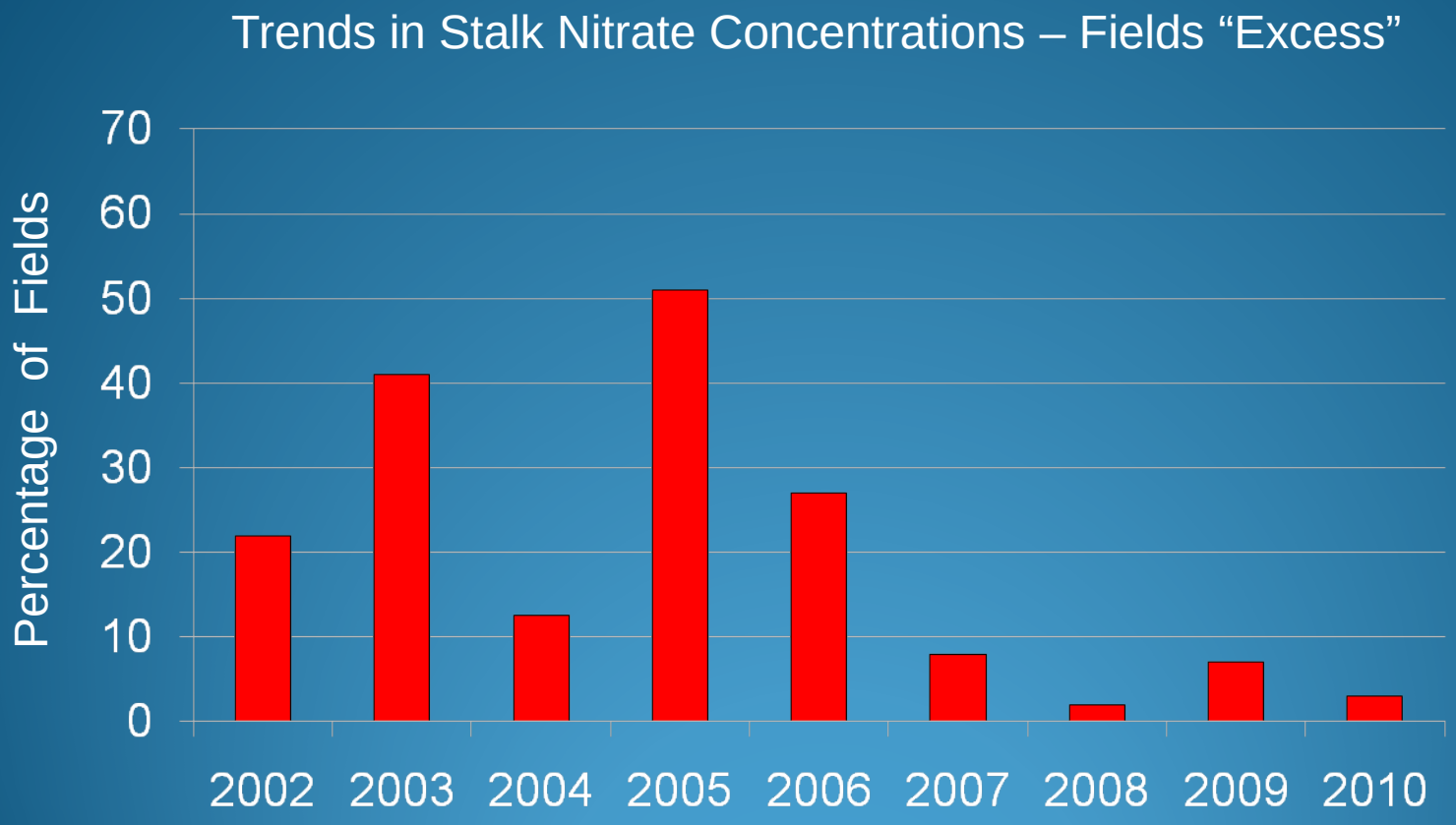
Jefferson Group



Trends in Jefferson area



Trends in Jefferson area



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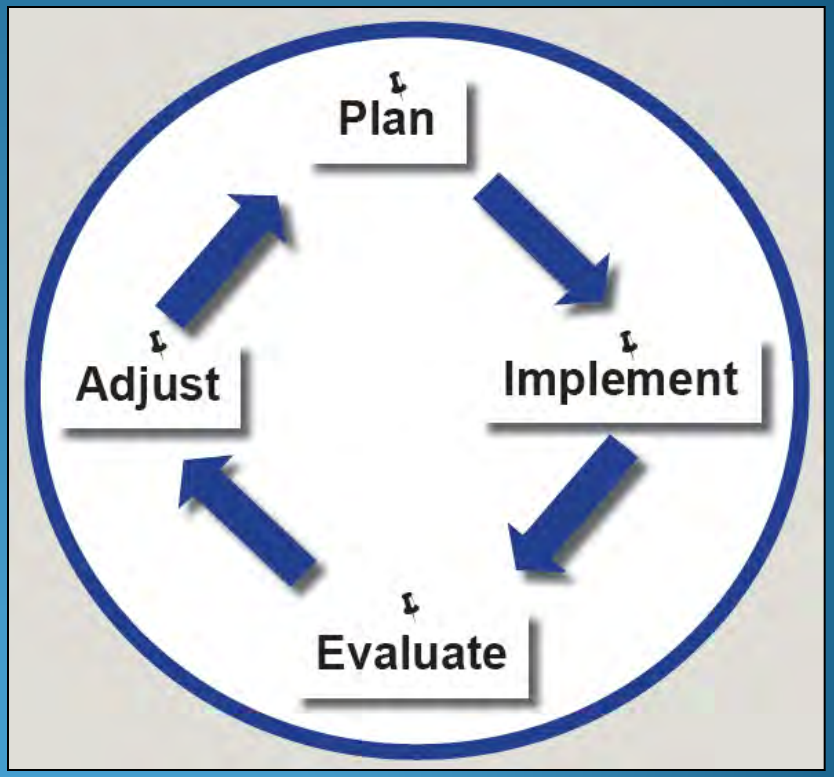
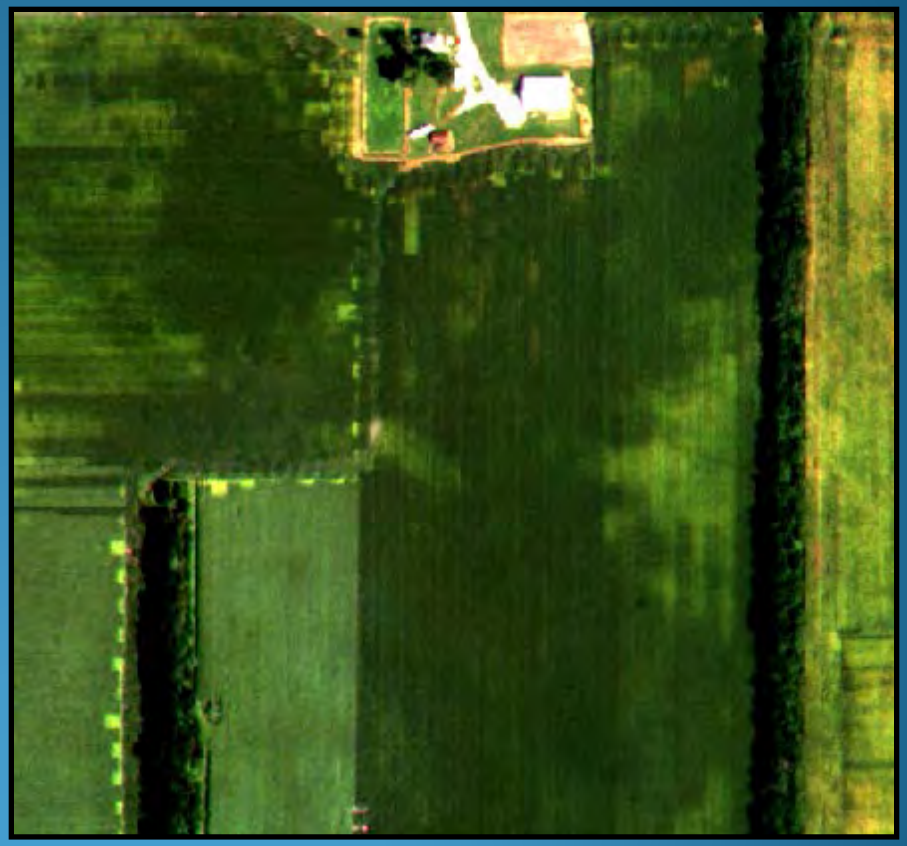


Other Outcomes

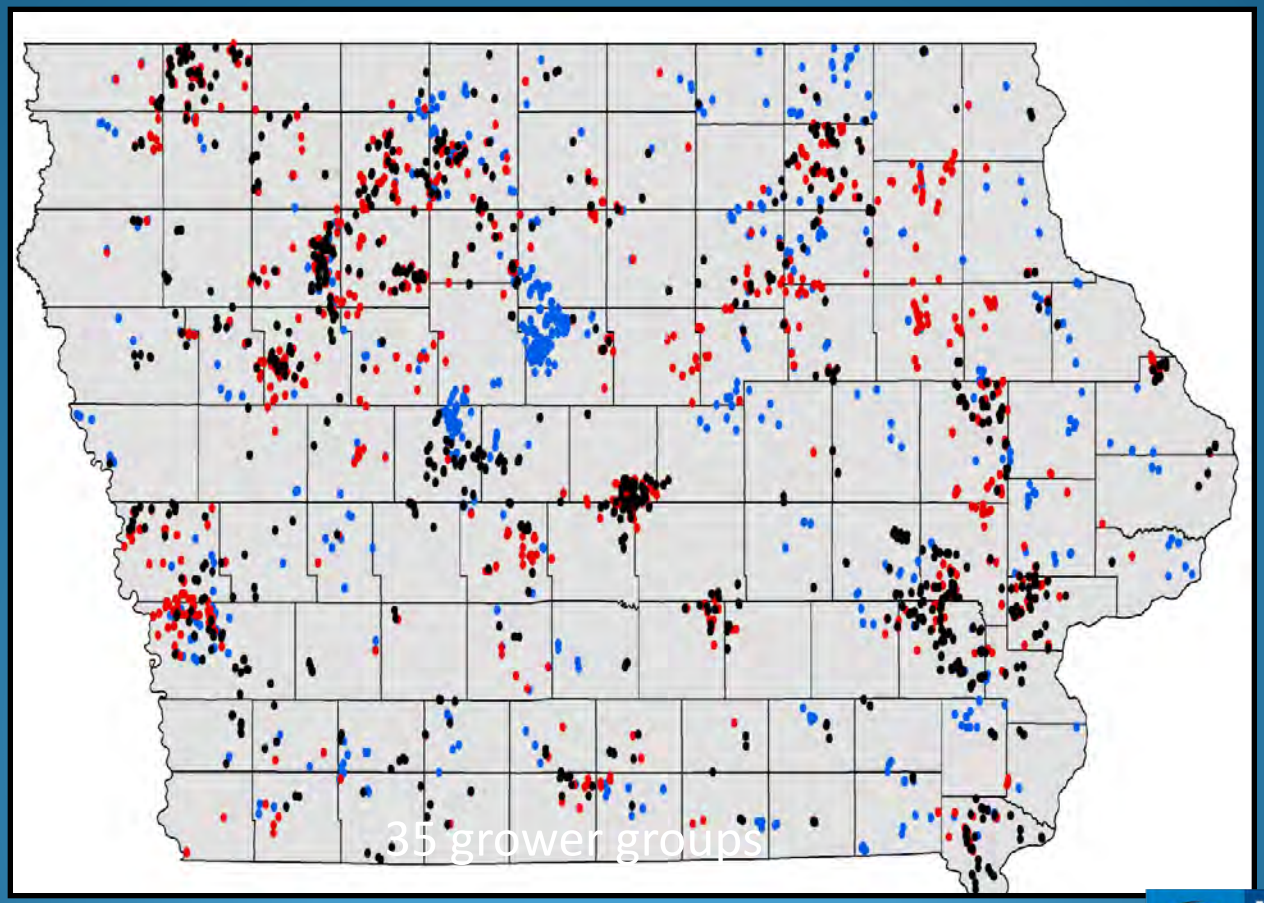
Uneven application

Other Outcomes

Variable rate application



Iowa



2006
2007
2008

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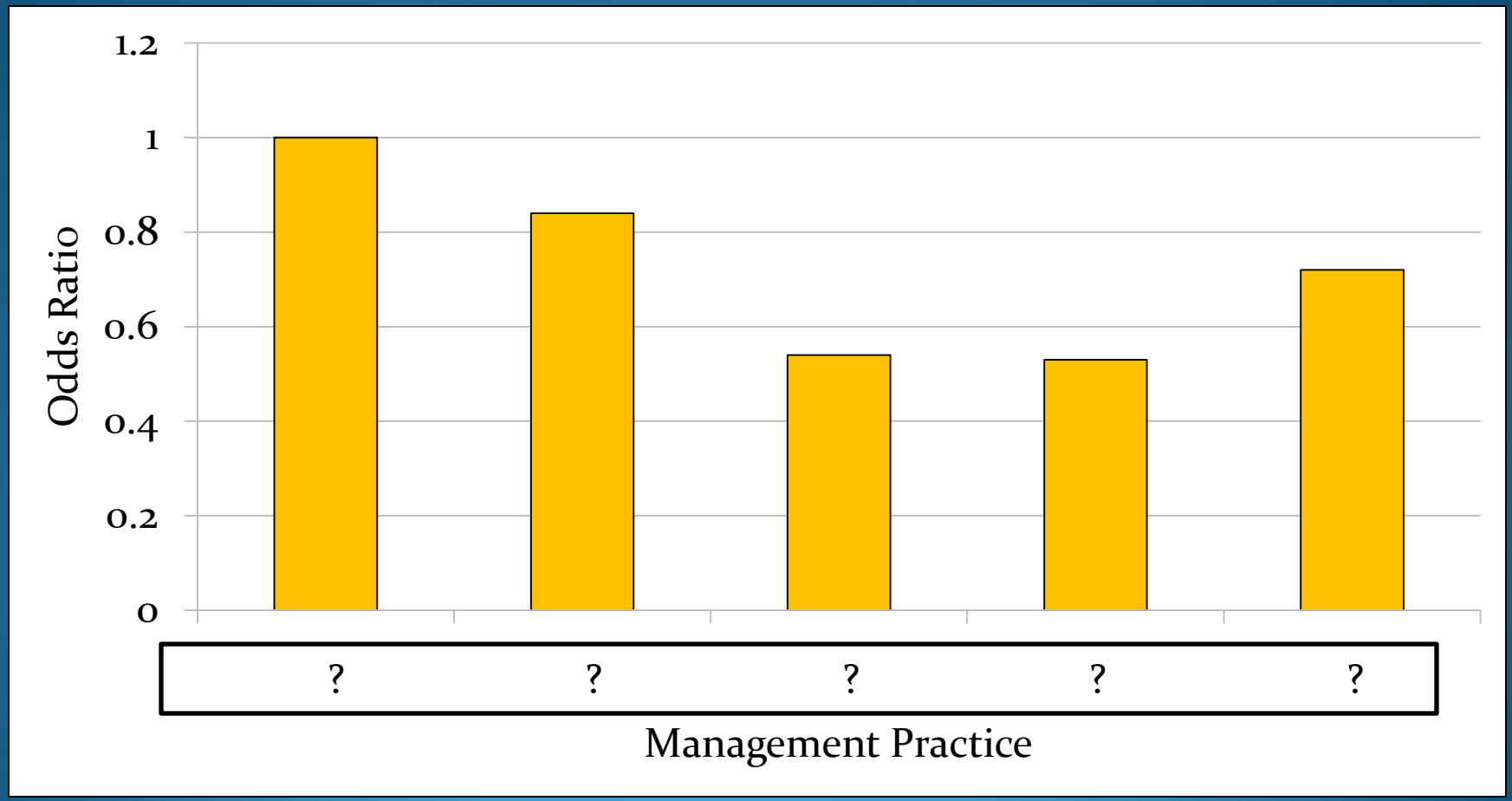
Quantifying the Differences



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.

		2006		2007	
Factor	Management category†	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
	AA Spring				
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	1.15	0.96-1.37	0.72***	0.62-0.83
	Corn				
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

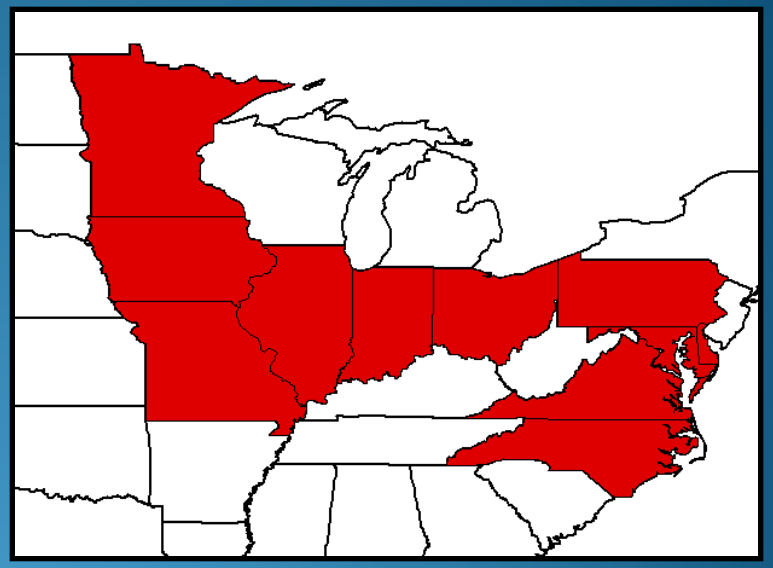
NRCS

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?

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