On-Farm Network®
Nitrogen Management

Oct. 5, 2010

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On-Farm Network®

EDF ENVIRONMENTAL DEFENSE FUND™ Finding the ways that work

Iowa Soybean ASSOCIATION
EXPANDING OPPORTUNITIES. DELIVERING RESULTS.

ATESF Ag Technology & Environmental Stewardship Foundation

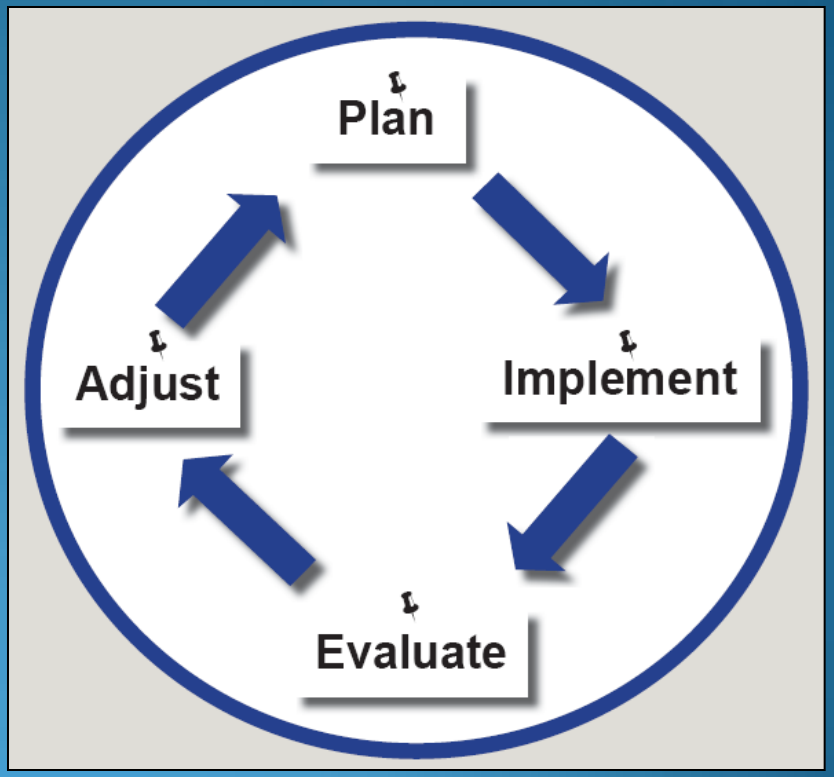
On-Farm Network® Project Description

The overall goal of this project is to improve N management in corn production. In-field evaluations will be used to guide decision-making that leads to improved management.

Adaptive Management

Management is a process.

Determine if you can do better.



Aerial Imagery

Aerial Imagery

Guided Stalk Nitrate Sampling

Involves end-of-season cornstalk sampling

Stalk samples are collected from 6-14 in. above the ground after the plant reaches physiological maturity.

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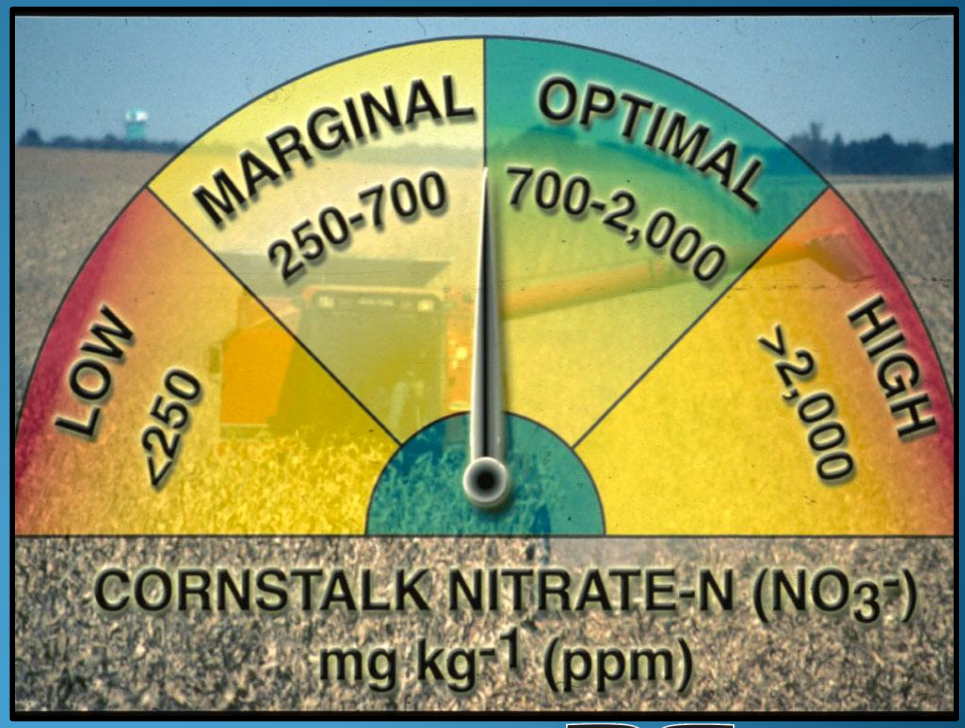
Guided Stalk Nitrate Sampling

Yield differences can't be detected when over-fertilized.

Stalk nitrates will continue to increase when over-fertilized.



Guided Stalk Nitrate Sampling

Fields are variable.

A stalk sample only represents the location where it is taken.

We “guide” the sampling with aerial imagery and soil map units.

Guided Stalk Nitrate Sampling

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Guided Stalk Nitrate Sampling

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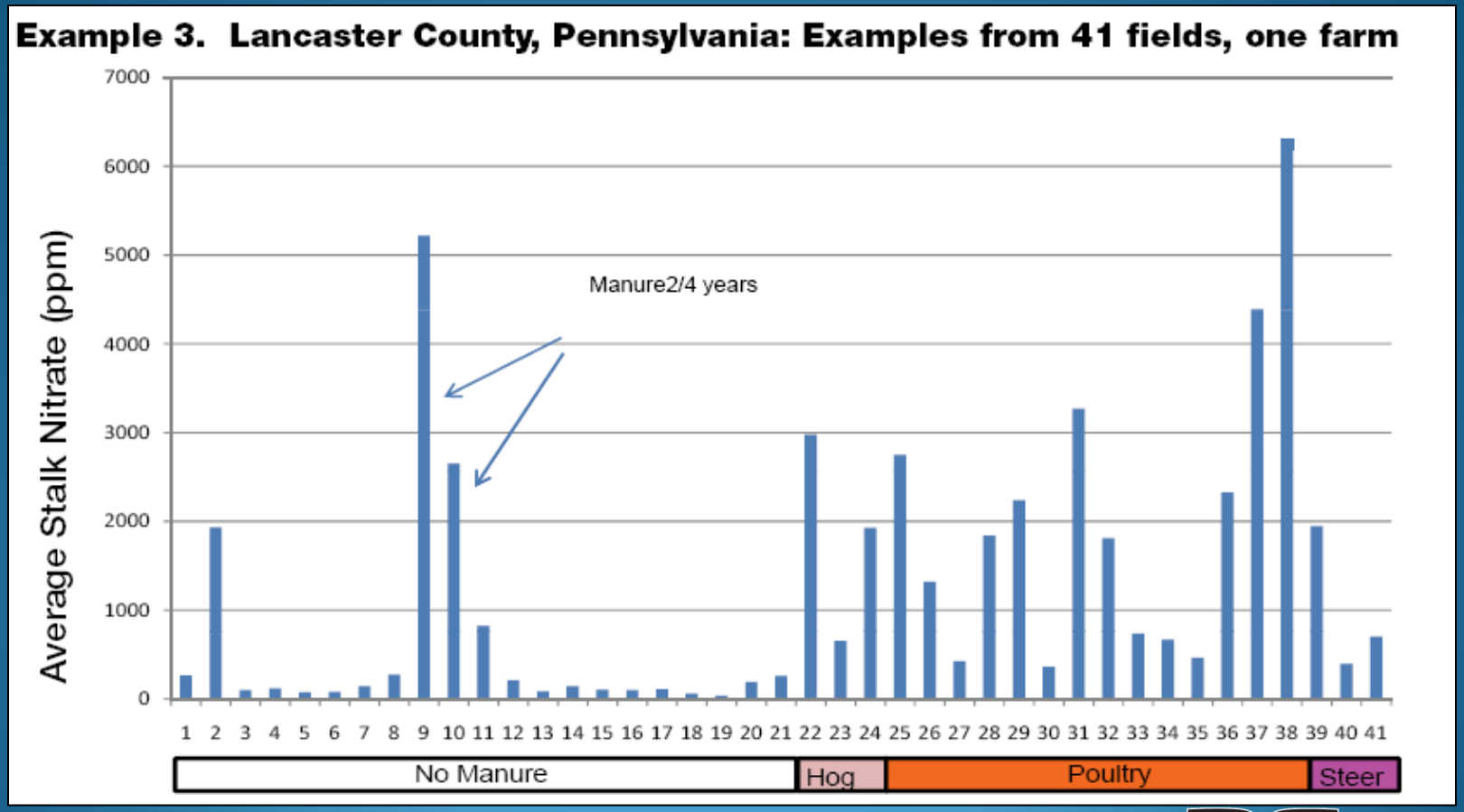
Pooling the Data

Two-way learning

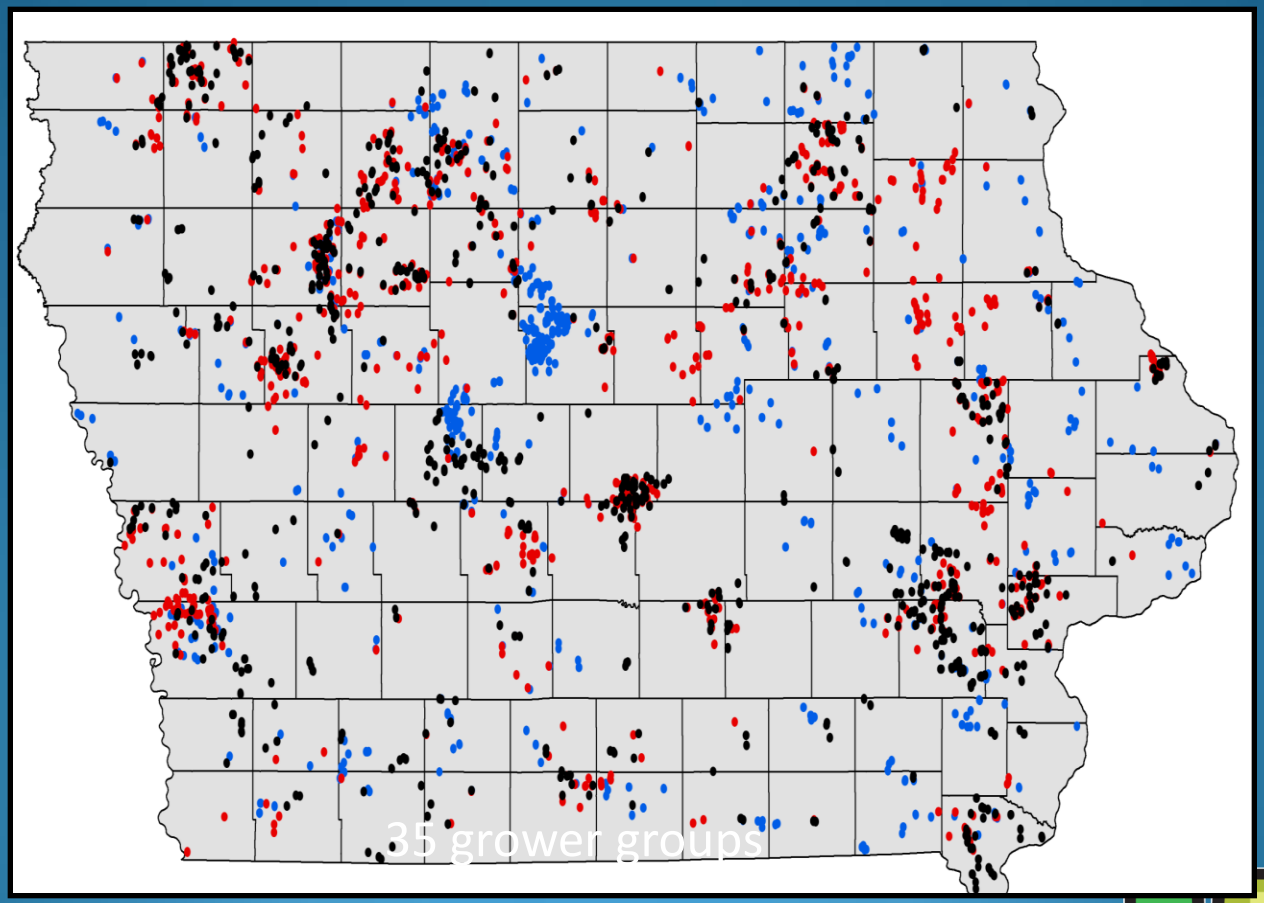
Developing plans for evaluations

Sharing results and information

Example Group



Iowa



2006
2007
2008

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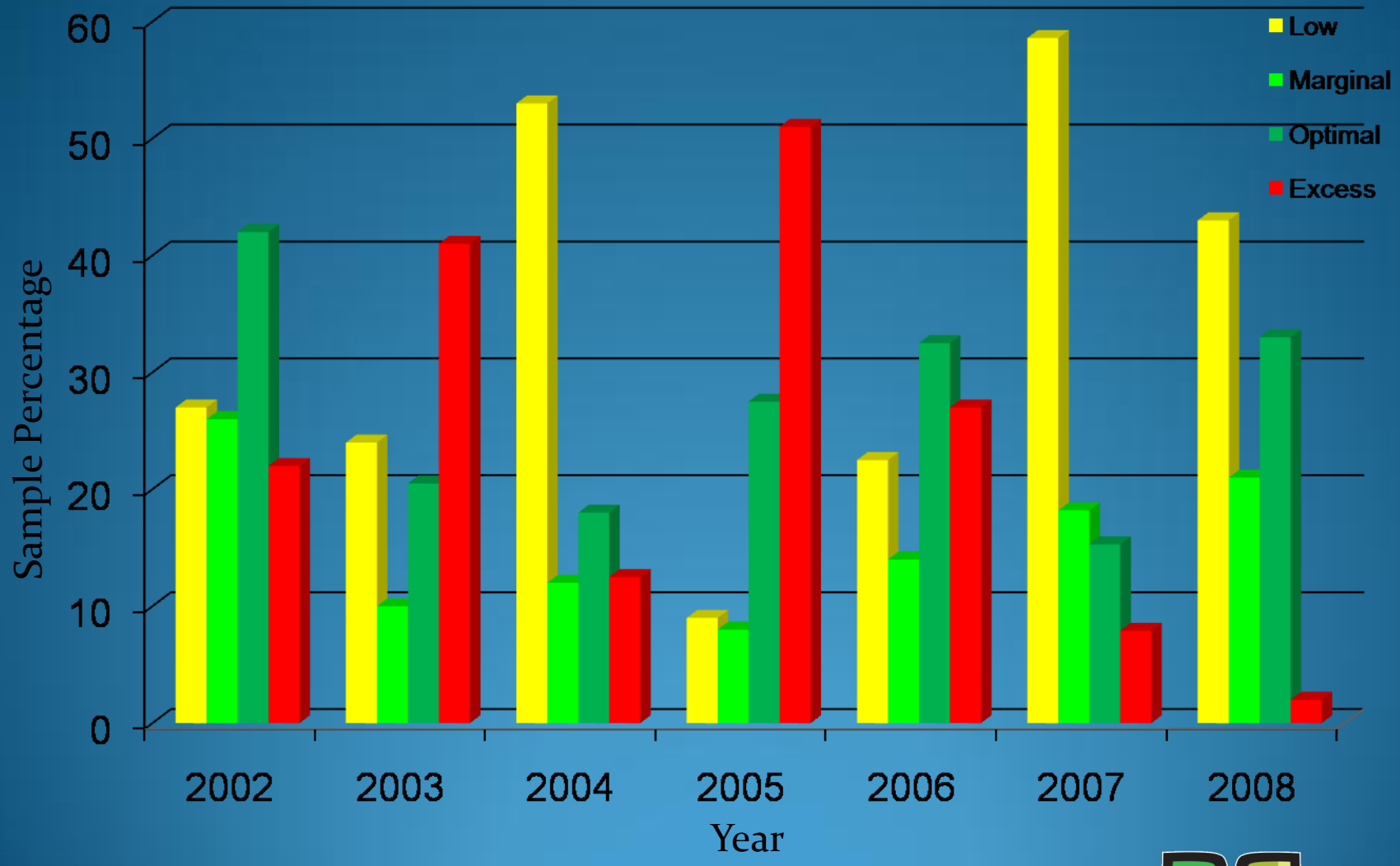
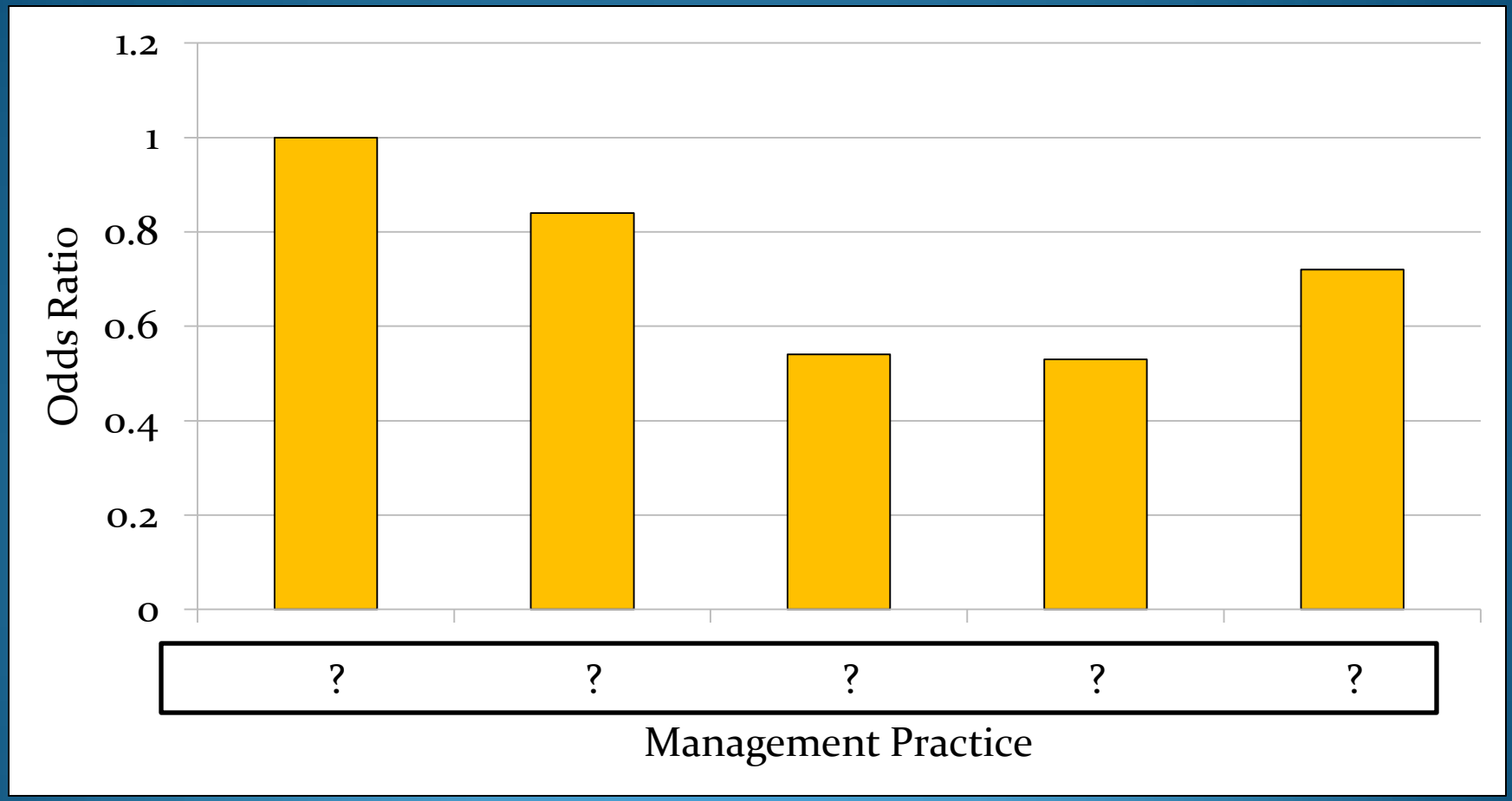
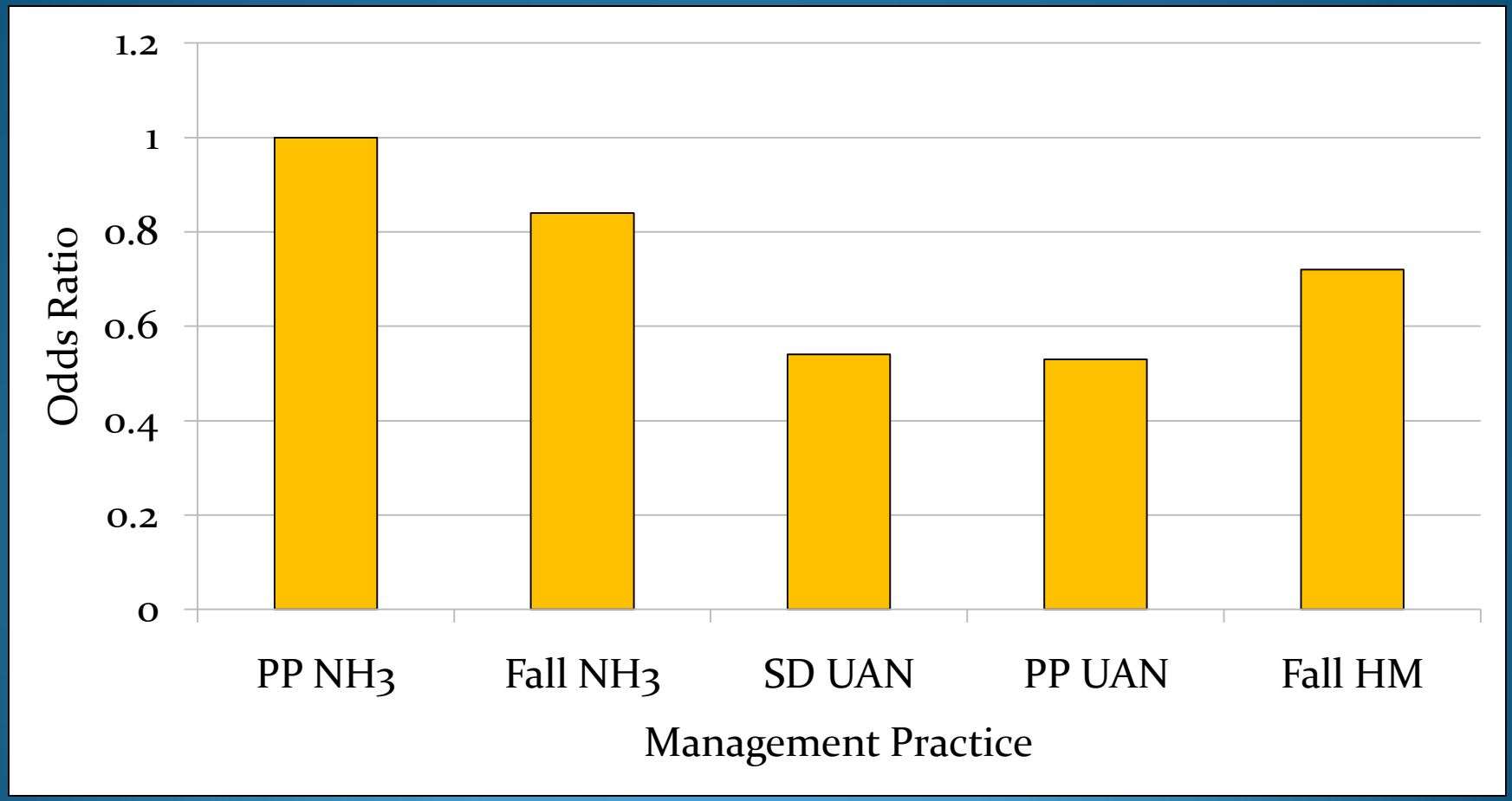
Stalk Nitrate Concentration from 2002–2008 for Jefferson Group



Quantifying the Differences



Quantifying the Differences

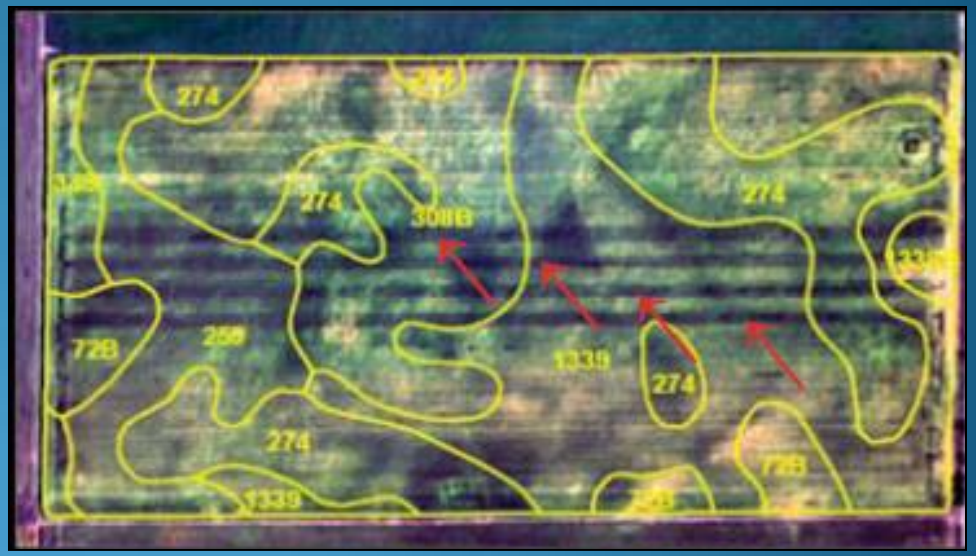


Replicated Strip Testing

Compares two management practices in the same field.

Alternating strips are replicated at least 3 times.

Grower use GPS and yield monitors to measure differences in grain yield.



Replicated Strip Trials

A single grower

8 years of N rate evaluations

Proof that his management improved

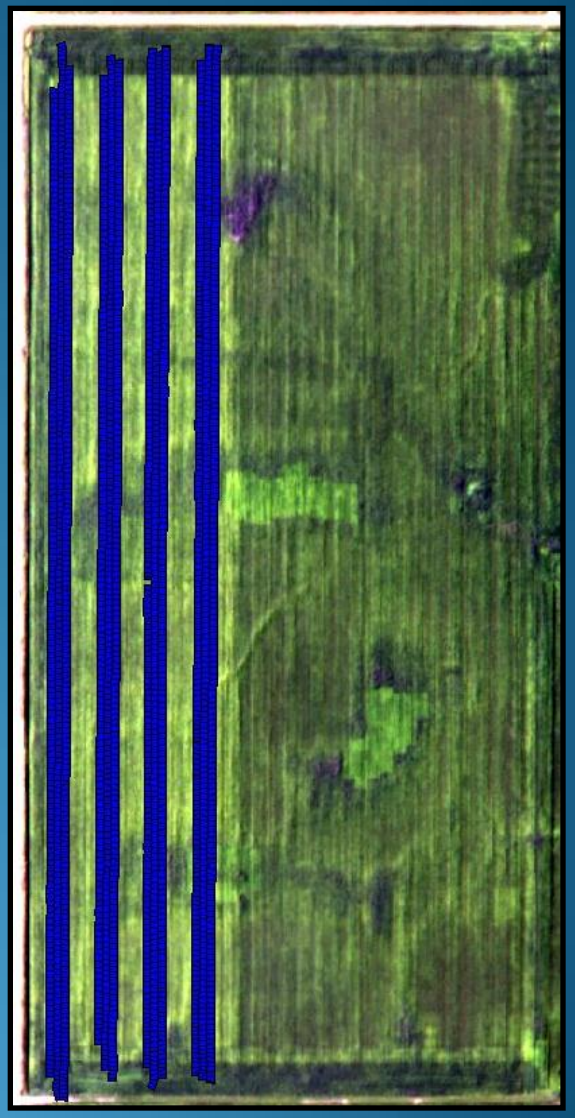
		Fertilizer N		Grain Yield		
Year	Rotation	Low Rate	High Rate	Low Rate	High Rate	Diff.
		--------lb N/acre-------		----------bu/acre----------		
2001	**C-SB**	**80**	**130**	**177**	**176**	**-1**
2002	**C-SB**	**70**	**120**	**193**	**195**	**2**
2003	**C-C**	**130**	**180**	**167**	**166**	**-1**
2004	**C-SB**	**60**	**110**	**200**	**206**	**6**
	C-C	**110**	**160**	**172**	**178**	**6**
2005	**C-SB**	**60**	**110**	**192**	**197**	**5**
	C-C	**110**	**160**	**182**	**194**	**12**
2006	***C-C***	***120***	***150***	***188***	***193***	***4***
2007	***C-C***	***125***	***150***	***177***	***182***	***5***
2008	***C-C***	***130***	***155***	***169***	***174***	***4***

Replicated Strip Testing

Many types of comparisons are possible:

- Rates
- Form
- Timing
- Placement

ST2009011A



Manure N Rate: 125
Manure Application Date: Fall

Additional Nitrogen: None
Yield Difference: None

Nitrification Inhibitors

Table 1. On-Farm Evaluations of Instinct Nitrification Inhibitor with Liquid Swine Manure on Corn in 2009.

Trial ID	County	Previous Crop (yrs. of continuous corn)	Manure		Additional N (N rate, form amd time of application)	Rainfall			Yield		Yield Difference
			Total N Rate	Time of Application		Spring	June	July	Manure with Instinct	Manure	
			lb N/acre			in			bu/acre		
ST2009002A	Greene	Corn (3)	108	11/3/2008	50, UAN, SD	10.1	4.1	3.3	202	202	0.5
ST2009003A	Boone	Soybeans	123	11/5/2008		10.9	4.4	3.3	196	198	-1.9
ST2009004A	Greene	Soybeans	165	11/1/2008		8.8	4.3	3.6	222	218	3.7
ST2009005A	Greene	Soybeans	175	Fall		9.2	4.7	3.9	196	194	1.7
ST2009006A	Hancock	Soybeans	194	10/31/2008		9.8	4.8	6.0	179	179	0.0
ST2009009A	Webster	Soybeans	156	11/24/02008		10.0	5.1	3.3	143	145	-1.9
ST2009010A	Greene	Soybeans	113	Fall		8.8	4.3	3.6	206	206	0.1
ST2009012A	Boone	Soybeans	163	11/30/2008		9.9	4.1	2.7	232	234	-2.0
ST2009015A	Dallas	Soybeans	261	11/27/2008		12.2	4.3	2.6	162	167	-5.6
ST2009016A	Boone	Corn (3)	100	12/7/2008	75, UAN, SD	10.5	4.3	3.2	182	188	-5.8
ST2009019A	Boone	Corn (12)	125	Spring	75, UAN, SD	8.7	5.1	3.2	155	152	3.1
Average						**9.9**	**4.5**	**3.5**	**189**	**189**	**-0.7**

SD; Sidedressed

Results from use of PSNT and CSNT by farmers in Bay Farms Program - 2007 season

Improvement in N management:

- Average decrease in N of 45 pounds per acre on 3,890 acres
- Average increase in N of 58 pounds per acre on 860 acres

Results from use of PSNT and CSNT by farmers in Bay Farms Program - 2008 season

Improvement in preplant N fertilizer management:

- Average decrease of 34 lbs/a on 2663 acres
- Average increase of 46 lbs/a on 230 acres

Improvement in sidedress N fertilizer:

- Average decrease of 42 lbs/a on 2139 acres
- Average increase of 33 lbs/a on 788 acres

Questions?

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