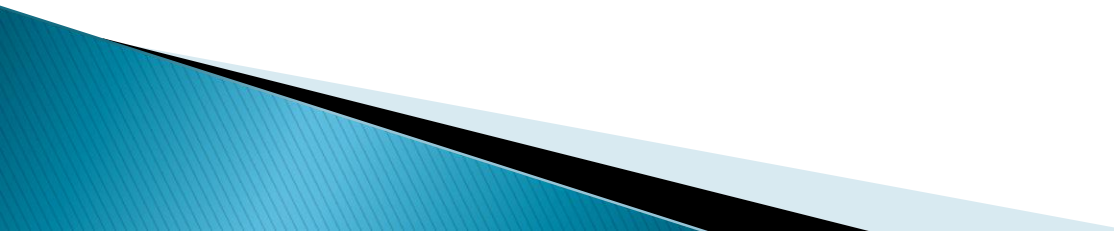


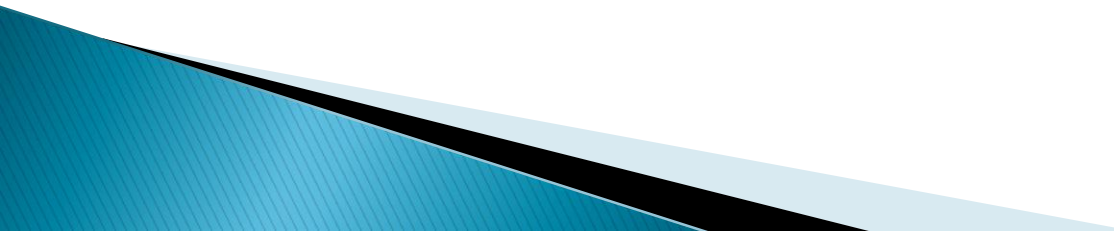
Are There Changes In N Management On The Horizon?

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Most Apparent N Shortages-- Summer 2011

- ▶ corn following corn
 - ▶ fall applied 82-0-0
 - ▶ poorly to very poorly drained soils
- 

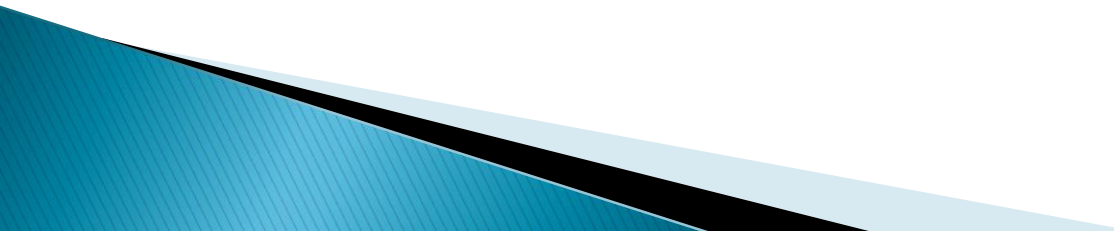
There Have Been Changes

- ▶ weather patterns-- more frequent intense storms
 - ▶ higher yields thus more residue
 - ▶ added organic matter enhances immobilization of N applied early
 - ▶ more efficient use of fertilizer N; 1.25 lb.N/bu then, 0.6 lb.N/bu.
 - ▶ prediction tools
 - ▶ risk has become a more serious consideration
- 

Possible Changes In Management Practices

- ▶ rate
- ▶ time and frequency of application
- ▶ use of extenders and additives

The Basal Stalk Nitrate Test

- ▶ has been evaluated in many fields
 - ▶ substantial variability in any field
 - ▶ affected very much by stress
 - ▶ has some value if you want to look back
 - ▶ definitely not a predictive tool
- 

Basal Stalk Nitrate Test--Instinct Use

Treatment	Basal stalk nitrate-N	Yield
	ppm	bu./acre
untreated	1963	149
Instinct Used	2402	152

N Rate and Basal Stalk Nitrate Test

Total N Applied*	Yield	Basal Stalk Values
lb./acre	bu./acre	ppm
221	173	5247
261	182	5801
311	187	8501

*120 lb.N/acre from poultry manure, 6 lb.N/acre from 10-34-0 pop-up, 45 lb.N/acre as 28-0-0 preplant; remainder injected as a sidedress treatment

N Source and Timing -- Corn Yield

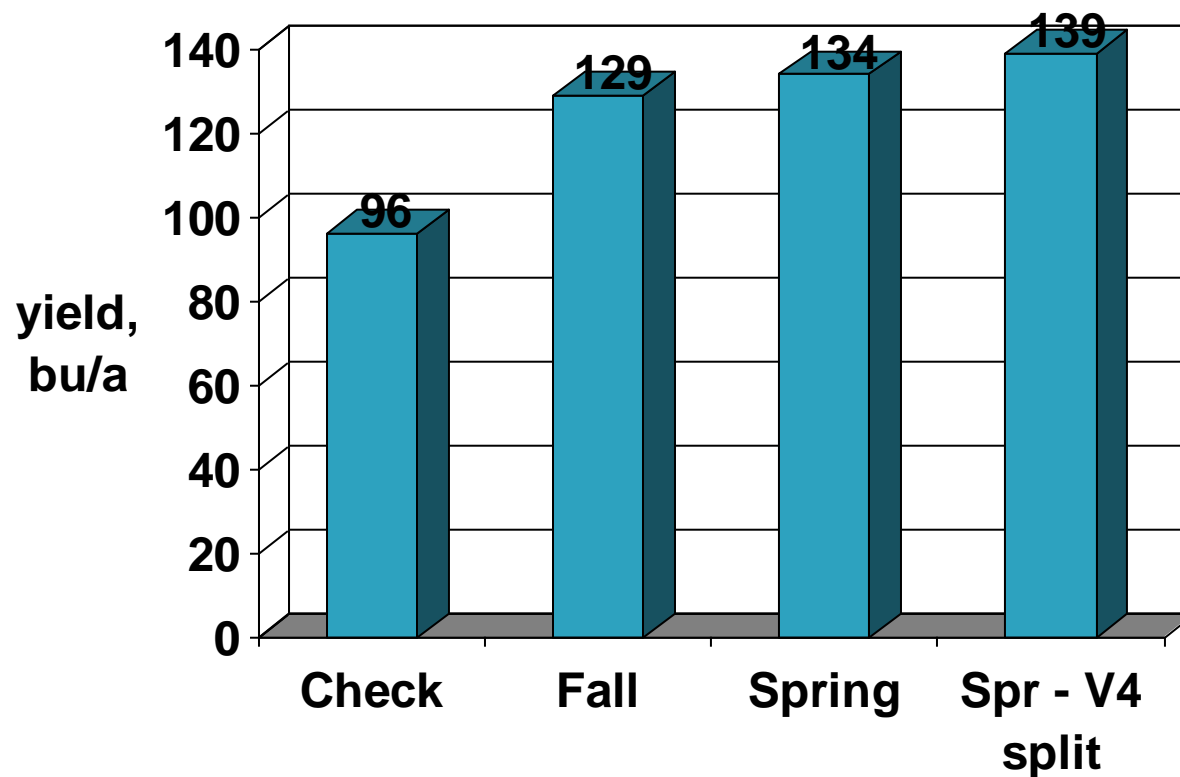
Time of Application	Source	Yield
	bu./acre	
late November	21-0-0-24	168
late fall	46-0-0	157
spring preplant	46-0-0	164
late fall + N-Serve	46-0-0	155
spring + N-Serve	46-0-0	167

Source: Southern Research and Outreach Center

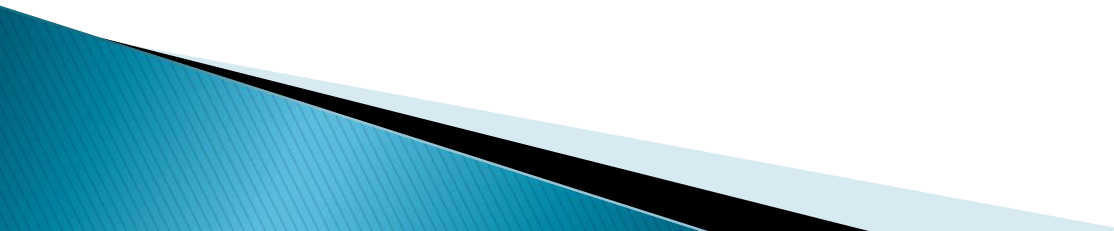
At Waseca

- ▶ sidedress N produces no reduction if applied at or before V4
- ▶ early (before v4) split application reduces risk

Nitrogen Timing on Corn, SE Farm, 1990 – 2006 (8 yr) Rec. N rate



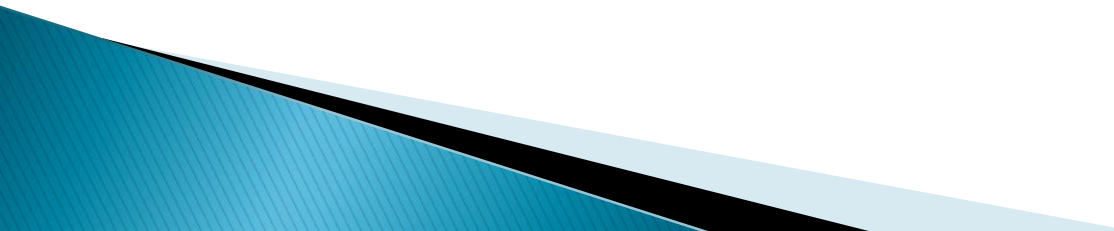
Considering Sidedress N

- ▶ A serious consideration as yields increase
 - ▶ Agronomics suggest positive benefits for corn
 - ▶ Period of greatest uptake is 45 to 80 days after planting for corn
 - ▶ For spring wheat, period of greatest uptake is 30 to 60 days after planting
 - ▶ Changes in equipment are needed
- 

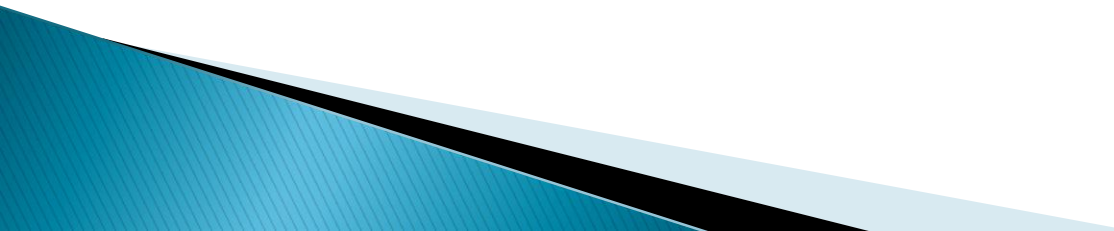
Split N Applications At 25 Sites

- ▶ 1 positive yield increase
- ▶ 8 sites where yields were decreased
- ▶ 16 no yield increase or decrease from a sidedress application

Concerns With Late Sidedress

- ▶ 28-0-0 and 46-0-0 need rain to incorporate
 - ▶ application date does not match time of maximum N uptake
 - ▶ rain delays application
 - ▶ best to inject at least 4 inches
- 

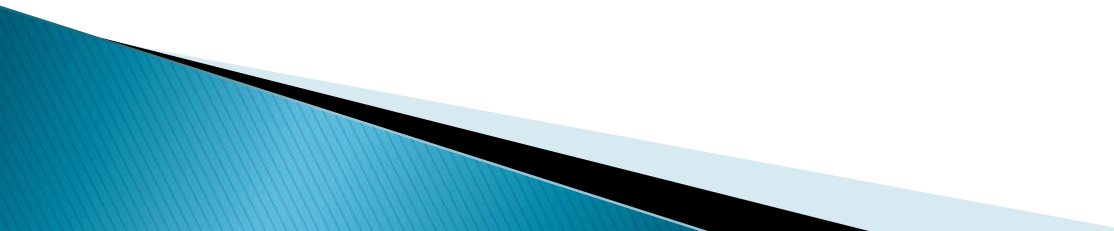
Foliar N for corn

- ▶ Big movement in foliar N application
 - ▶ Promises of greater availability and can use less pounds
 - ▶ Sounds good in theory
 - ▶ In practice has not been shown to consistently work
 - ▶ In most cases where rates can be cut by using foliar the rates were already too high
 - ▶ Cannot supply all the N needed
 - ▶ High rates of N can burn tissues
- 

Minot–Roseglen– McKay. Preplant treatment compared to 1 gal/a Coron flag–leaf application after a preplant treatment, 20

Treatment	Yield, bu/a	Protein, %
Check	60	13.8 a
90 U	71.8	14.9 b
90 GP 43	69.8	14.8 b
90 UAN	68.7	14.3 ab
90 GP 30L	71.6	14.7 b
90 U + 1 gal/a CoRon	69.1	15.1 b
LSD 5%	NS	0.6

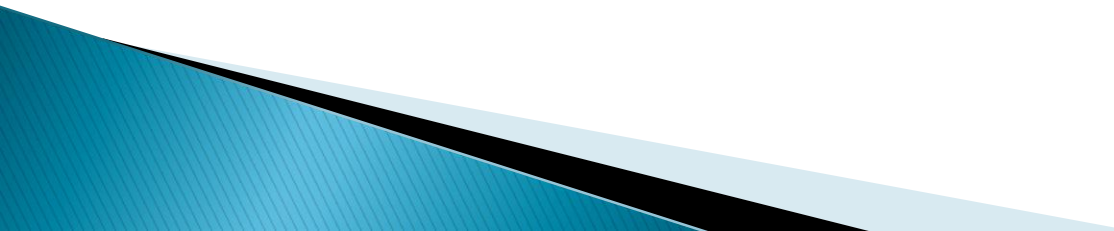
Potential For Green Sensing

- ▶ highly dependent on algorithm developed
 - ▶ affected by bare soil
 - ▶ must plan to sidedress some N probably as 28-0-0
 - ▶ no substitute for measuring soil nitrate N
- 

Greenseeker Evaluation

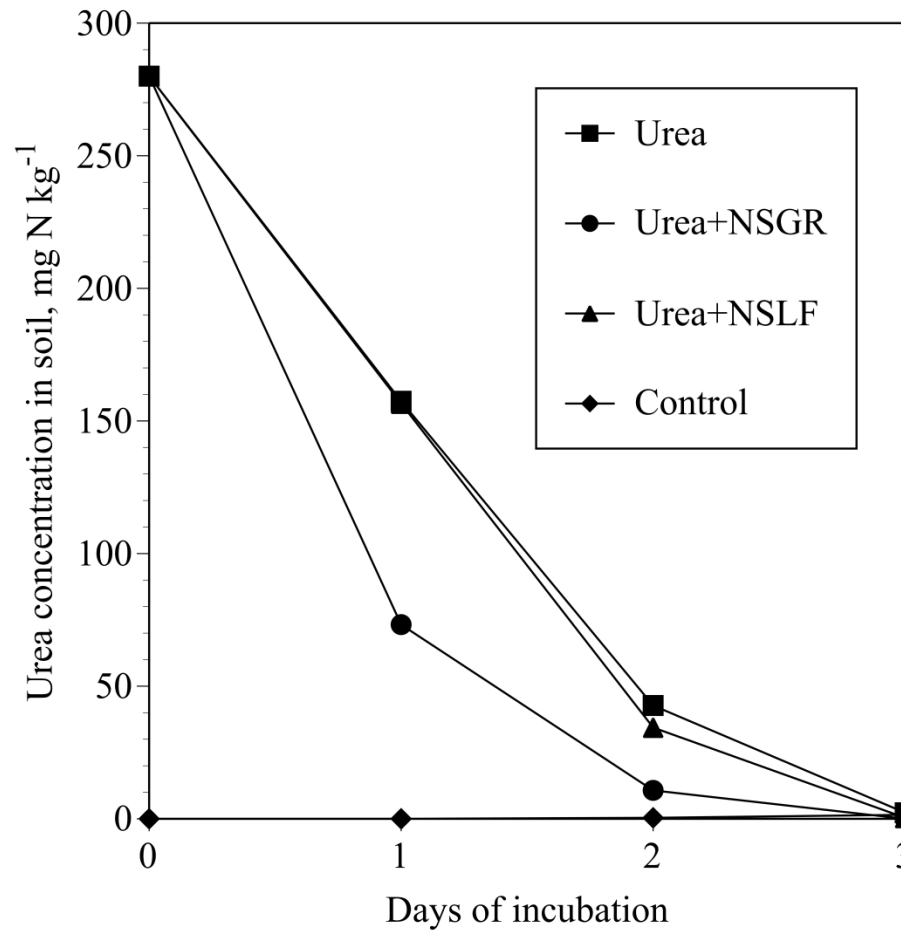
Site	Texture	EONR	Yield	NDVI rate	NDVI split	NDVI
		lb.N/acre	bu./acre	Lb.N/acre	bu./acre	bu./acre
H08	l sand	180	289	90	212	253
CF08	loam	150	222	150	222	205
SW09	l sand	192	223	120	196	227
SE09	silt loam	148	242	120	235	232

What About Extenders and Additives?

- ▶ N-Serve and Instinct; they work; Beneficial where high soil moisture is a concern
 - ▶ ESN; works as advertised--added cost
 - ▶ Agrotain; works as advertised; buying time
 - ▶ Nutrisphere N (NSN)--I doubt it
- 



Urea concentration in laboratory study with and without Nutrisphere. Goos, 2000



Cumulative Ammonia Loss

	Days After Application			
	3	7	11	15
N Source	% of N Applied			
46-0-0	14.5	35.9	51.8	56.9
21-0-0-24	0.1	0.2	0.5	0.6
46-0-0 + 25% NSN	17.6	42.2	57.8	62.7

Source: Norman and others University of Arkansas





Thank You For Your Attention



