

N Source and Turf Response

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Soluble N Fertilizers

	Analysis	Burn	Volatility	Leachability
Urea	46-0-0	1.6	High	High
Am. Sulfate	21-0-0	3.2	Medium	High
Am. Nitrate	34-0-0	2.9	Medium	High
DAP	18-46-0	1.6	Medium	High
MAP	11-48-0	2.4	Medium	High
Cal. Nitrate	15-0-0	4.2	-	High
Pot. Nitrate	13-0-44	5.3	-	High
Sod. Nitrate	16-0-0	6.0	-	High

Background

- N fertilizers vary in response, longevity, and price.
- Slow release N sources have different release mechanisms

Slow Release N

Natural Organic



Reacted Urea



Outline

- N Sources
 - Soluble
 - Slow Release
- Turfgrass Response to N Sources
 - Quality
 - NDVI
 - Yield
 - Cost

Slow Release N

Sulfur Coat



Polymer Coat



Slow Release N Fertilizers

	Trade Name	Release	Burn	Volatility	Leachability
Nat. Organics	Milorganite, Nat. Safe	Microbial	Very low	Very low	Low
Reacted N	Nitroform, Nutralene	Microbial	Very low	Very low	Low
Sulfur Coat	XCU, Poly-S	Catastrophic Eruption	Very low	Very low	Low
Polymer Coat	Polyon, Duration	Osmotic Diffusion	Very low	Very low	Low

Materials and Methods

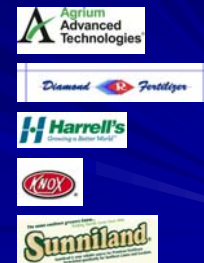
- Treatments
 - Untreated
 - Urea
 - Am. Sulfate
 - XCU
 - Biosolid
 - Nature Safe
 - UF
 - MU
 - Duration 90
 - Polyon 43
 - R-Cote
 - Surfcote XRT
- St. Augustinegrass
 - N Rates
 - 1 lb
 - 2 lb
 - Location
 - Citra
 - Time
 - May 7 application
 - 16 weeks



Materials and Methods cont.

Material	\$ / ton
Sludge	268
AS	535
Urea	688
XCU	927
Surfcote	940
Duration 90	980
R-Cote	1,250
UF	1,382
MU	1,387
Polyon	1,450
Nature Safe	1,450

Contributors



St. Augustinegrass Response to N Fertilizers

- Objective
 - To determine cost per day of acceptable quality St. Augustinegrass from various N sources

Variables Analyzed

- Rapid Laboratory Extraction
- Turf Quality
 - 1 to 9
- Yield
 - grams
- NDVI
 - Normalized difference vegetation index
 - Measures natural green color

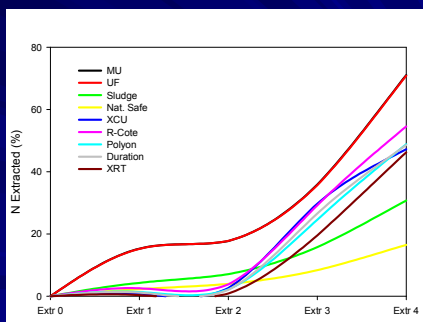
Rapid Extraction Setup



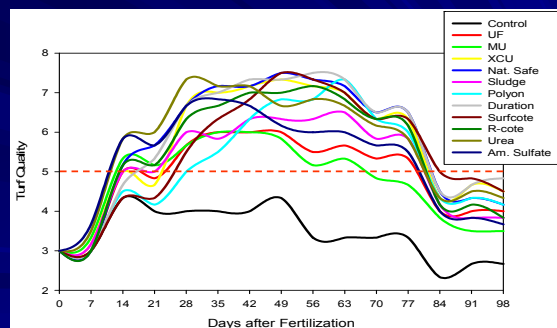
Response Determination

- Turf Quality
- Color
- Yield
- No interaction between N source x Rate
- N source are averaged across rates

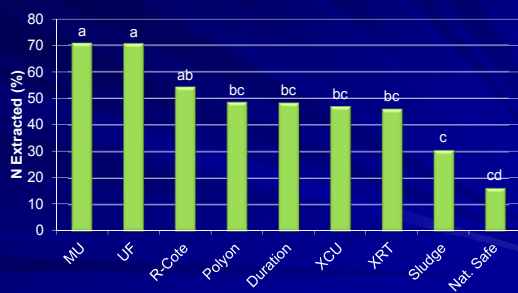
Rapid Lab Extraction



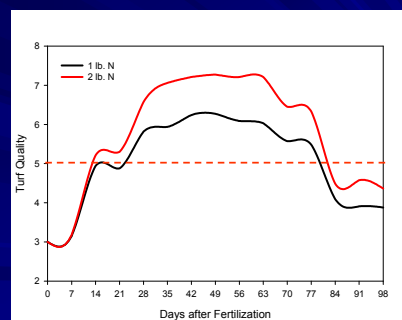
Turf Quality



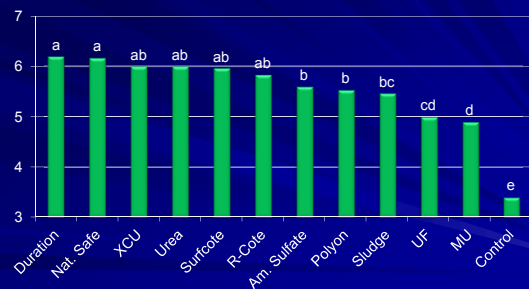
Total N



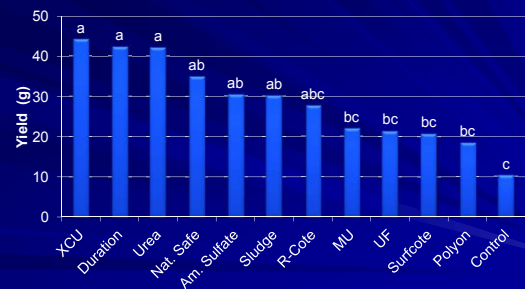
Turf Quality



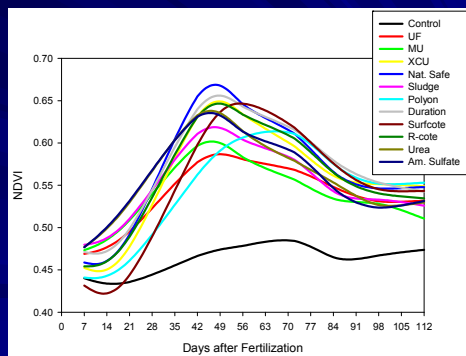
Turf Quality



Cumulative Yield of Initial 8 weeks



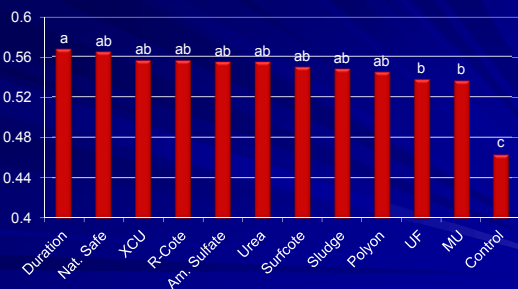
NDVI



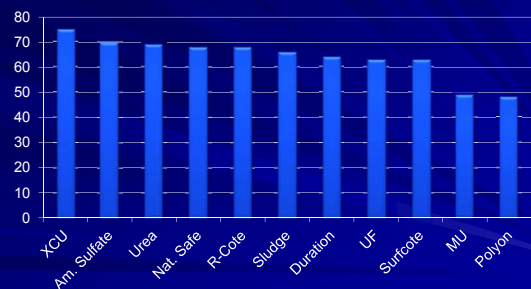
Days of Response

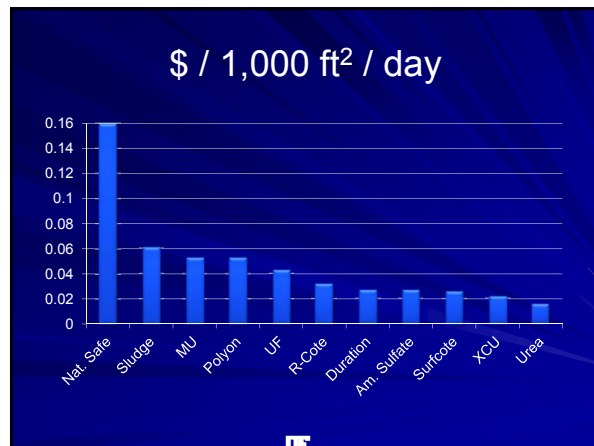
	Response I	Response F	Total Response	Ton	N/ton	N	Cost/ton	Cost/1.58N	Cost/day
	Days			Lbs.		%		\$	
UF	14	77	63	2000	760	38	1382	2.73	0.043
MU	12	61	49	2000	800	40	1387	2.60	0.053
XCU	14	89	75	2000	860	43	927	1.62	0.022
Nat. Safe	14	82	68	2000	200	10	1450	10.88	0.160
Sludge	14	80	66	2000	100	5	268	4.02	0.061
Polyon	32	80	48	2000	860	43	1450	2.53	0.053
Duration	16	80	64	2000	860	43	980	1.71	0.027
Surfcoate	26	89	63	2000	860	43	940	1.64	0.026
R-Cote	13	81	68	2000	860	43	1250	2.18	0.032
Urea	11	80	69	2000	920	46	688	1.12	0.016
Am. Sulfate	10	80	70	2000	420	21	535	1.91	0.027

Average NDVI



Days of Acceptability





Summary

- 2 lb. rate increase quality by 15% and extended response by ~10 days
- For < 90 day slow-release materials, coated materials are less expensive than natural organic and reacted ureas.

Contact Info

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