

What's so exciting about farmer-led watershed councils?!



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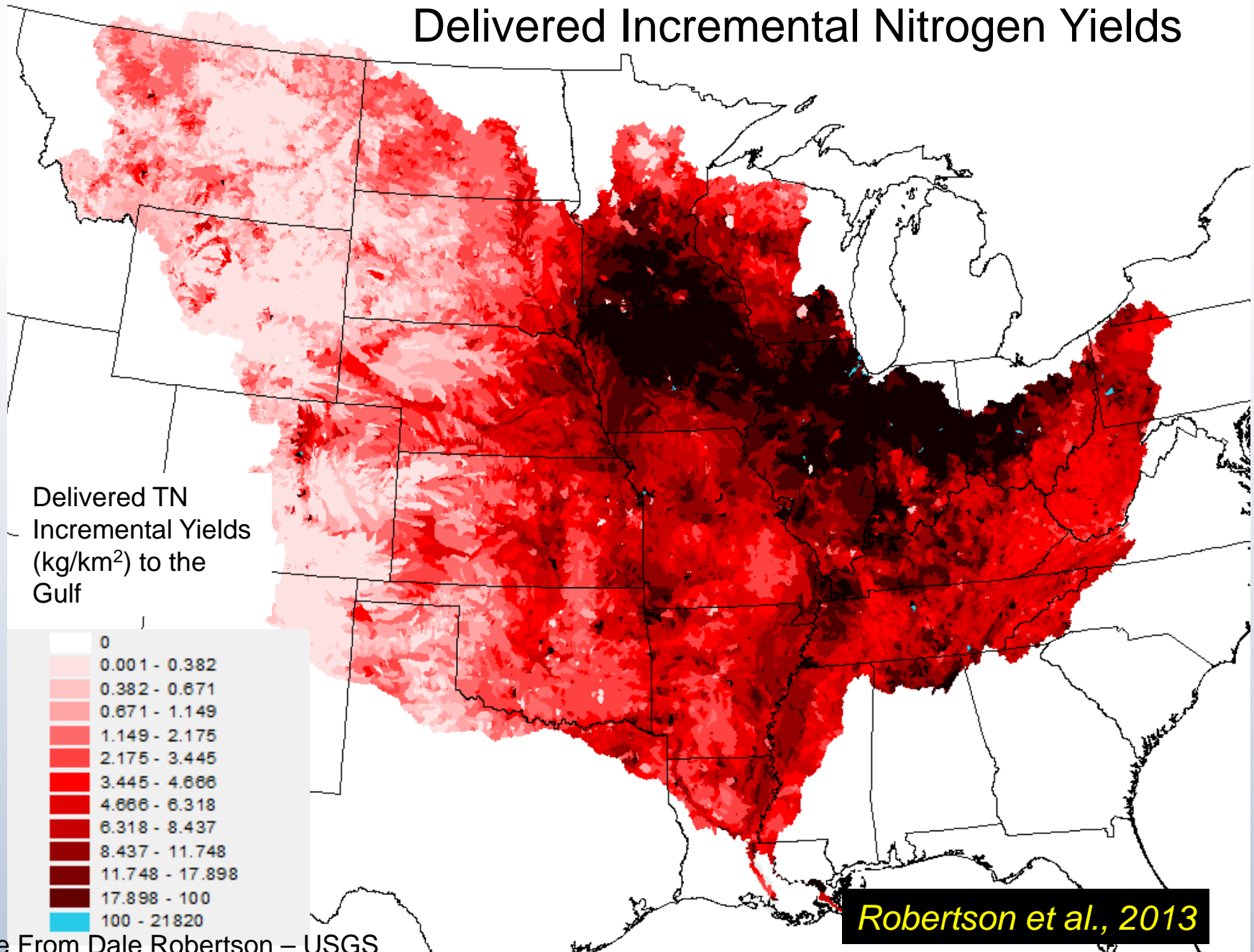
Water@UWMadison

May 11, 2015

Watershed Nutrients



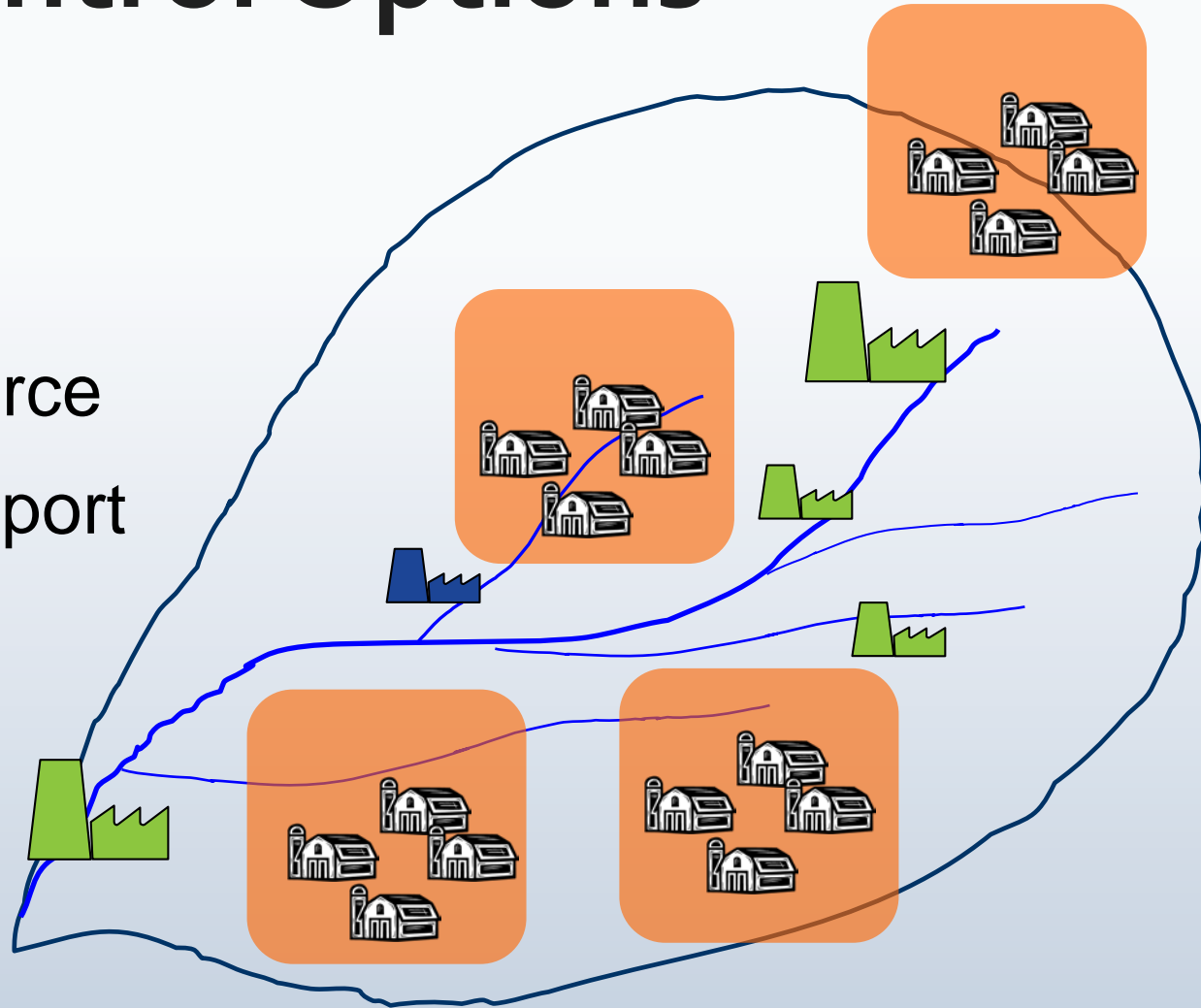
Delivered Incremental Nitrogen Yields



Robertson et al., 2013

Control Options

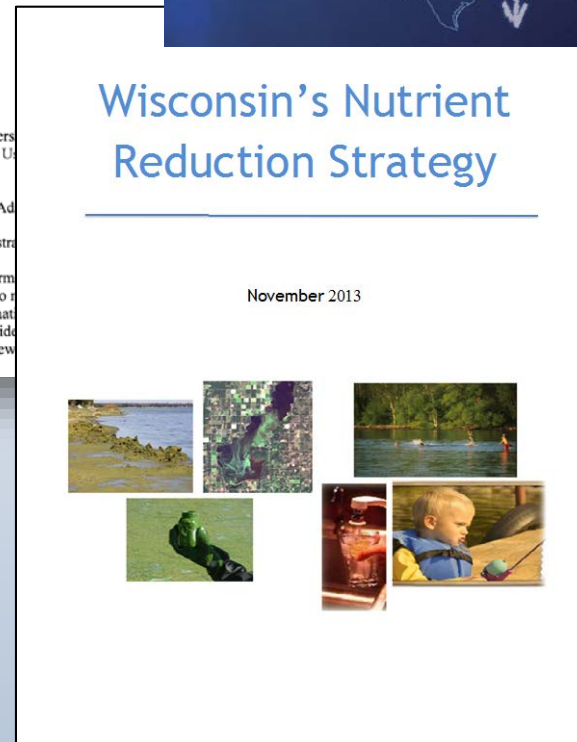
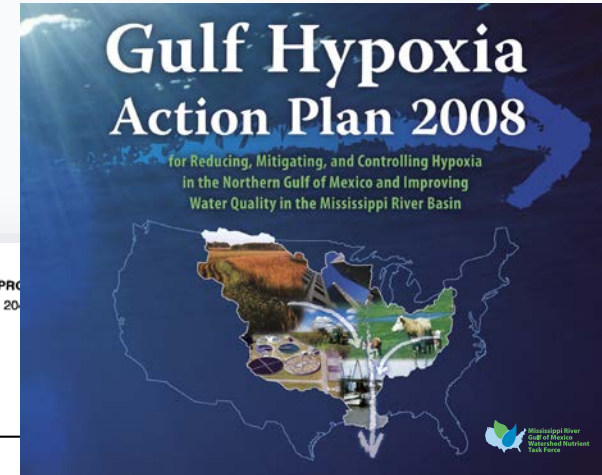
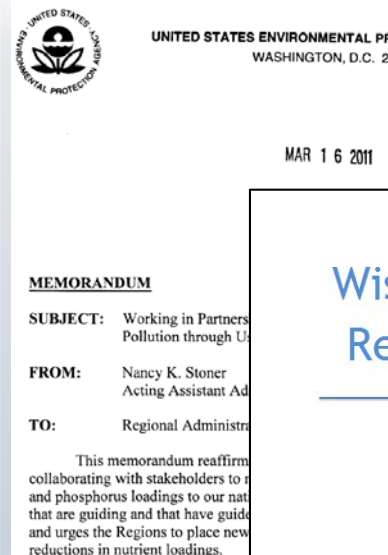
- Regulate/Enforce
- Persuade/Support



Plans and Strategies

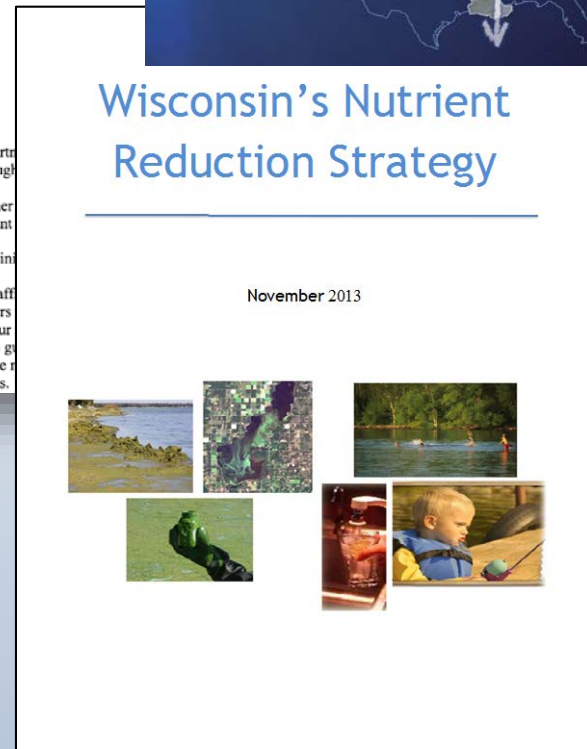
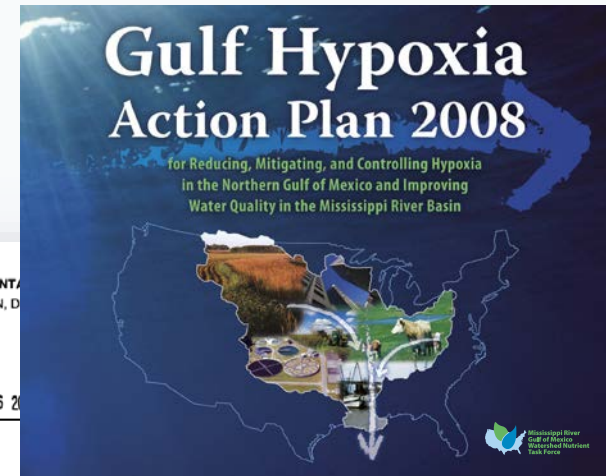
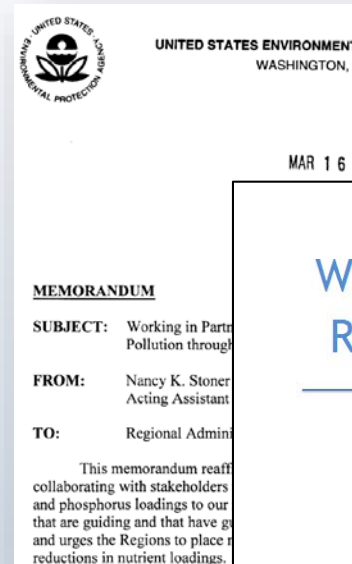
“...**best approaches** will entail States, federal agencies, conservation districts, private landowners and other stakeholders **working collaboratively** to develop **watershed-scale** plans that **target** the most effective practices to the acres that need it most.”

- USEPA Memorandum, March 2011



Common Theme

“Engage
Agriculture”

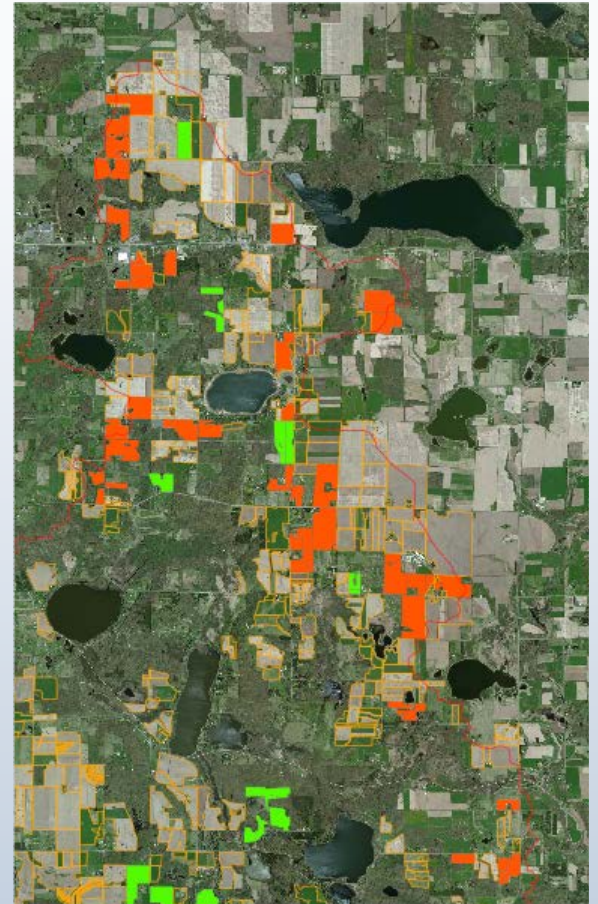


Whose Plans?

For many farmers:

“[t]he assessment measures are not understood, the remediation plan does not feel local, and **the prescribed strategies for water improvement are someone else’s**, not the persons whose land management practices are being targeted.”

Morton and Brown (2011, p 34)



Farmer-led Councils

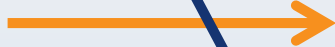
- Farmer-led
- performance based
- Small incentives, set by council
- Shifting norms



Other Farms



Your Farm



ID	Sample #	Stalk NO3-N (ppm)	Nitrogen application	Estimated N (lbs/a)	Rotation	Yield (bu/a)
24	4	5,900	190# 28% Spring	190	CC	148
1	4	5,640	160# NH3 spring, 15 ton solid manure	236	CC	211
19	1	5,210	150# 28% Spring	150	CC	197
19	4	4,650	105# 28% Spring, 3000 gal liquid hog spring	218	CC	223
12	1	4,256	140# 28% spring, 36# DAP spring (poorer stand than comparison)	176	CC	151
4	2	4,120	15# urea spring, 11,000 gal liquid dairy injected Fall	225	CC	217
4	3	4,040	15# urea spring, 11,000 gal liquid dairy injected Fall	225	CC	193
32	3	3,890	28%, Extra Fertilizer Spring, Manure History	150	CC	181
20	1	3,870	90# 28% spring, 60# 28% side dress	150	CC	187
17	3	3,750	125# 28% Spring, 7.5 ton/acre steer manure	163	CC	203
19	2	3,400	150# 28% Spring	150	CC	151
4	1	3,250	100# Anhydrous and 15# urea Spring	115	CC	205
8	1	3,240	130# encapsulated urea Spring	130	CC	193
25	2	3,214	45# 28% spring, 35 ton/acre free stall manure	221	CC	181
23	2	3,170	135# urea spring (40# P & 60#K)	135	CC	190
15	3	3,137	25# urea @ planting, 50# 28% side-dress, 60 ton/acre spring manure	342	CC	168
16	3	3,000	60# 28% side-dress, 2 ton/acre dry fall manure, 3000 gal spring manure	217	CC	205
25	5	2,980	45# 28% spring, 12,000 gal liquid dairy spring manure	207	soo-C	181
17	2	2,870	50# 28% Spring, 4000 gal liquid hog	200	CC	187
33	2	2,840	120# Anhydrous spring	120	CC	203
1	1	2,760	160# NH3 spring	160	CC	210
2	2	2,590	150# 28% Spring, 4000 gal liquid dairy spring	209	CC	182
25	6	2,436	30# 28% spring, 12,000 gal liquid dairy spring manure	192	soo-C	176
20	3	2,350	60# 28% spring, 60# 28% side dress	120	CC	209
12	2	2,293	140# 28% spring, 36# DAP spring	175	CC	171
13	3	2,290	110# 28% spring	110	CC	181
32	1	2,090	28%, Foliar Feeds In Spring/Summer	110	CC	175
1	2	1,980	160# NH3 spring, 15 ton solid manure	236	CC	181
2	1	1,970	150# 28% Spring, 4000 gal liquid dairy spring	209	CC	205
22	2	1,860	90# 28% spring, 90# urea spring	180	CC	211
23	3	1,860	170# urea spring (no P & K)	170	CC	175
15	2	1,835	25# urea @ planting, 50# 28% side-dress, 60 ton/acre fall manure	342	soo-C	184
16	4	1,806	40# 28% side-dress, 5500 gal fall/spring manure	329	BC	211
15	4	1,533	25# urea @ planting, 50# 28% side-dress, 60 ton/acre fall manure	342	soo-C	170
16	2	1,500	40# 28% side-dress, 5500 gal fall/spring manure (heavy lodging)	309	soo-C	176
25	4	1,488	45# 28% spring, 12,000 gal liquid dairy fall manure	207	CC	170
16	1	1,469	40# 28% side-dress, 2 ton/acre dry fall manure, 3000 gal spring manure	197	CC	197
29	4	1,380	10 gal 28% starter spring, 6 ton/acre dairy and 100 gal hog manure sea	78	C-hay	204
20	2	1,350	60# 28% spring, 60# 28% side dress	120	CC	223
25	7	1,337	15# 28% spring, 12,000 gal liquid dairy spring manure	177	soo-C	182
25	8	1,316	12,000 gal liquid dairy spring manure	175	soo-C	181
29	2	1,250	160# 28% Spring	160	CC	187
6	2	1,250	60# Ammonium Sulfate Fall, 14 ton/acre shed manure seasonal	131	CC	193
6	3	1,200	90# 28% spring, 90# urea spring	180	CC	203
1	3	1,150	125# 28% Spring, 10,000 gal liquid hog	500	CC	196
23	1	1,110	170# urea spring (30# P & 40#K)	170	CC	182
6	1	1,050	60# Ammonium Sulfate Fall, 14 ton/acre shed manure seasonal	131	CC	210
29	1	1,010	140 # Anhydrous Spring, 10 gal 28% starter spring, 6 ton/acre dairy and	218	CC	182
25	1	963	60# 28% spring, 15,000 gal liquid dairy fall manure, fall cover crop	262	CC	180
11	2	805	60# urea w/plantier, 15 tons shedded manure	136	CC	199
32	2	802	28% Spring	180	CC	180
19	3	770	60# 28% Spring, 5860 gal liquid hog fall	280	CC	203
33	1	710	140# NO3N Spring	140	C-soo	201
24	1	613	120# 28% Spring	120	CC	187
6	3	590	60# Ammonium Sulfate Fall, 14 ton/acre shed manure seasonal	131	CC	201
13	2	571	110# 28% spring	110	CC	180
25	3	557	45# 28% spring, 35 ton/acre free stall manure	221	CC	175
7	2	513	30# 28% Spring, 4000 gal liquid hog manure October 08.	204	CC	203
13	1	502	110# 28% spring	110	CC	181
29	3	470	140 # Anhydrous Spring, 10 gal 28% starter spring, 6 ton/acre dairy and	218	CC	187
22	1	451	90# 28% spring	90	C-soo	229
3	1	450	100# Urea, 10 ton/acre Dairy free stall manure	154	CC	198
22	3	439	90# 28% spring, 50# urea spring	140	CC	179
23	4	423	135# urea spring (40# P & 60#K)	135	CC	185
15	1	412	25# urea @ planting, 50# 28% side-dress, 60 ton/acre winter manure	342	CC	180
7	1	374	30# 28% Spring, 4500 gal liquid hog manure November 08.	225	CC	198
8	4	356	130# encapsulated urea Spring	130	CC	182
8	2	345	130# encapsulated urea Spring	130	CC	218
3	2	315	100# Urea, 10 ton/acre Dairy free stall manure	154	CC	204
35	3	291	160# 28% Spring	160	CC	184
24	3	289	190# 28% Spring	190	CC	181
19	1	284	70 gal 28% Spring (196 wt), 3000 gal liquid hog	309	CC	193
2	3	263	No N or Manure	0	C-soo	154
19	2	276	62 gal 28% Spring (175 wt), 3000 gal liquid hog	268	CC	193
11	1	276	60# urea w/plantier, 15 tons shedded manure	136	CC	217
11	4	262	60# urea w/plantier, 15 tons shedded manure	136	C-pasture	193
32	4	251	28% Spring	176	CC	176
35	1	229	120# 28% & Foliar Spring	120	CC	174
11	3	218	60# urea w/plantier	60	CC	181
6	4	217	60# Ammonium Sulfate Fall, 14 ton/acre shed manure seasonal	131	CC	175
8	3	216	130# encapsulated urea Spring	130	CC	176
35	4	208	120# 28% & Foliar Spring	120	CC	144
35	2	207	160# 28% Spring	160	CC	163

Research Directions

- Context & conditions for success
- Measuring adoption & maintenance
- Social networks
- Nutrient loads
- Spatial issues and scale impacts



“This project has been an inspiration and has re-ignited my interest in exploring other potential possibilities for our farm...”

<http://blogs.ces.uwex.edu/wflcp/>