



Nitrogen Topdress Study

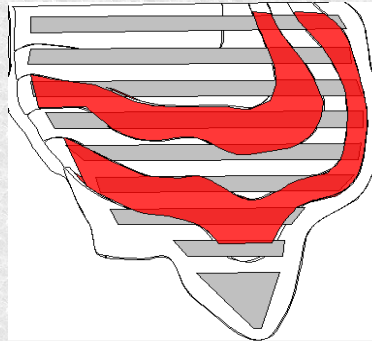
Tyler Rider

Objective

- To determine the economic optimal nitrogen topdress rate for our farm.
- Evaluate other fertilizer treatments.
 - 10-34-0 starter
 - Agrotain tankmix with 32-0-0

Starter

- Planted on Oct. 1st 2009
– 12 lbs. P/ac
- Topdressed on Mar. 5th 2009
- Harvested on June 29th 2009



Results

	Wheat Yield (bu/ac)	Yield dif. (bu/ac)	Net cost \$/ac
10-34-0	40.6	1.2	-\$18.11
no 10-34-0	39.4		

	1 (bu/ac)	2 (bu/ac)	3 (bu/ac)	4 (bu/ac)	5 (bu/ac)	6 (bu/ac)	7 (bu/ac)	Average (bu/ac)	Yield dif. (bu/ac)	Net cost \$/ac
Agrotain	38.9	44.73			46.48	43.34	47.31	44.152	0.4	-12.5966
No Agrotain	38.51	40.07			47.13	45.89	47.16	43.752		
			49.93		38.69					
			54.75		70.03					

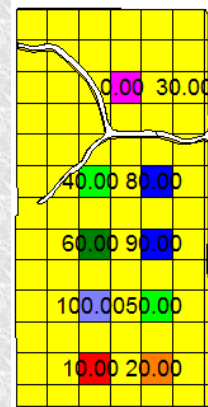
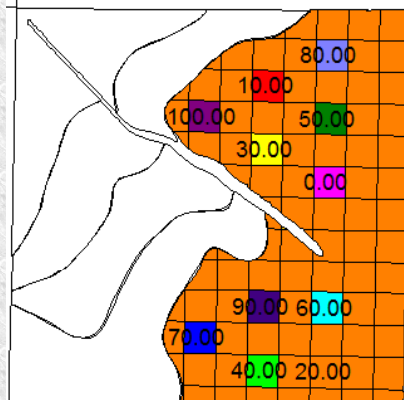
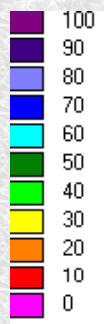
Bold data excluded

Methods

- 4 fields were used for the tests
 - Lost application data for 2 fields
- Wheat was planted on Sept. 24th & 27th 2008
- Topdress application was made Feb. 18th & 23rd 2009
 - One acre grid was laid out in each field
 - 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 lbs. N/ac. were applied in random grid cells
- Wheat was harvested and yield was mapped using JD GS1 on June 29th & 30th 2009
 - Data was corrected using Yield Editor

Prescriptions

Nitrogen rate (lbs. N/ac)

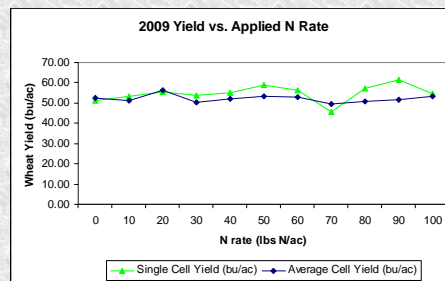
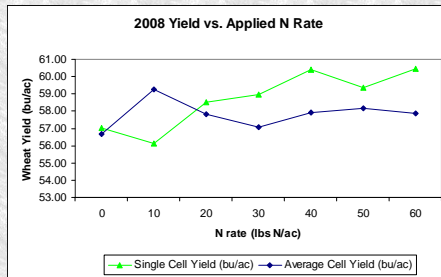


Analysis

N (lbs/ac)	Average N (lbs/ac)	Average Cell Yield (bu/ac)	t test
0	24.17	52.67	
10	16.75	51.29	0.82
20	22.82	56.24	0.65
30	28.47	50.28	0.68
40	37.08	52.15	0.96
50	33.41	53.55	0.90
60	49.11	52.79	0.99
70	60.37	49.68	0.67
80	62.49	50.77	0.75
90	77.01	51.51	0.86
100	86.60	53.31	0.94

t test in bold were statistically different from the zero rate

Analysis Continued



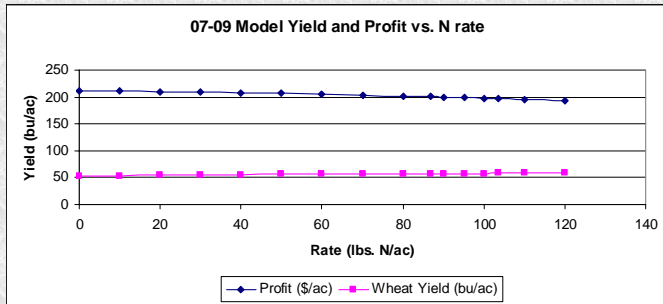
Production function

B. Yield = Rate+Rate^2+Elev+Elev^2+Field 1+Field 2+Field 3+Field 4+Field 5+Field 6+Field 7+Field 8

Regression Statistics	
Multiple R	0.841519
R Square	0.708154
Adjusted R Square	0.680479
Standard Error	5.097626
Observations	128

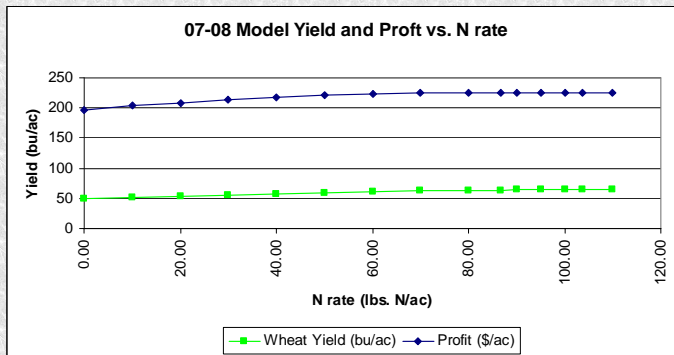
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	12250.75	7984.139	1.534386	0.127658	-3562.83	28064.34	-3562.83	28064.34
Average application rate	0.073907	0.173266	0.426554	0.670494	-0.26927	0.417082	-0.26927	0.417082
Avg rate^2	-0.00026	0.000686	-0.37761	0.706409	-0.00162	0.001099	-0.00162	0.001099
Elevation	-10.0548	6.593955	-1.52486	0.130016	-23.115	3.005309	-23.115	3.005309
Elev^2	0.002072	0.001362	1.521904	0.130754	-0.00062	0.004769	-0.00062	0.004769
VHMNE09	0.649236	2.597329	0.249963	0.803058	-4.4951	5.79357	-4.4951	5.79357
VHMS09	-10.4132	4.085564	-2.54879	0.012116	-18.5052	-2.32126	-18.5052	-2.32126
VH	7.304894	1.406755	5.192727	8.95E-07	4.51864	10.09115	4.51864	10.09115
VM	10.8037	2.535198	4.261481	4.15E-05	5.782422	15.82497	5.782422	15.82497
T	-39.9917	12.87222	-3.10682	0.002378	-65.4868	-14.4967	-65.4868	-14.4967
VHMS07	-0.29593	2.407906	-0.1229	0.902399	-5.06509	4.473226	-5.06509	4.473226
VHS07	-4.22671	2.511569	-1.6829	0.095085	-9.20119	0.747761	-9.20119	0.747761

07-09 Model Yield and Profit vs. N rate



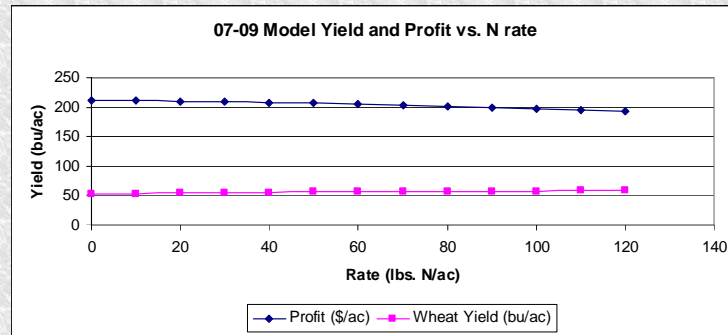
Wheat \$3.98/bu
 Nitrogen \$.33/lb
 Econ. Opt. N
 -15.7lbs/ac

07-08 Model Yield and Profit vs. N rate

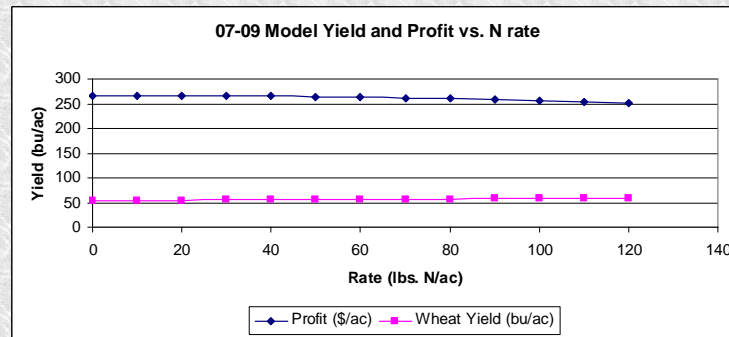


Econ. Opt. N
 87.7lb/ac

Wheat \$3.98/bu
Nitrogen \$.33/lb
Econ. Opt. N
-15.7 lbs/ac



Wheat \$5.00/bu
Nitrogen \$.33/lb
Econ. Opt. N
16.6 lbs/ac



Conclusions

- More data > More confidence ?
- Data shows a need to increase N rates
 - 8.3 bu/ac field level advantage to ~20 lbs N/ac
- Hope to continue study next year
 - Hope to do some soil testing
 - P levels may be more yield limiting
 - Try to employ Greenseeker®
- Thanks to KARA, Dietrich, Terry, and Kevin

