

Nitrogen Topdress Study

Tyler Rider

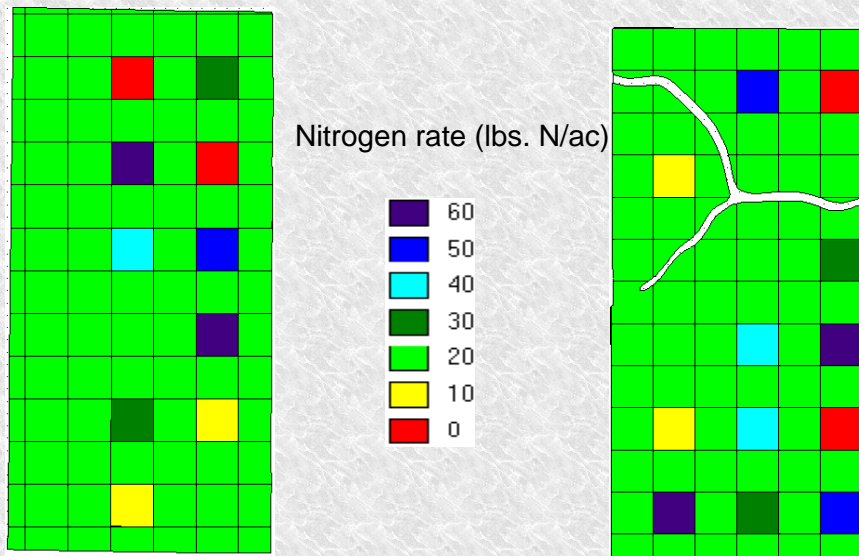
Objective and History

- To determine the economic optimal nitrogen topdress rate for our farm.
- We do not have a history of fertilizing on our farm.
 - No yield advantage in our conventional tillage wheat fallow rotation.
 - One landlord does request nitrogen topdress application.

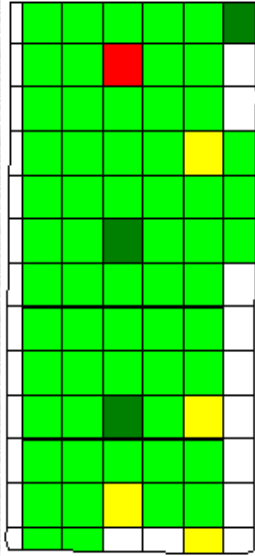
Methods

- 3 fields were used for the tests
- Wheat was planted on Sept. 23rd & 24th, 2007
- Topdress application was made Mar. 21st, 2007
 - One acre grid was laid out in each field
 - 0, 10, 20, 30, 40, 50, 60 lbs. N/ac. was applied in random grid cells
- Wheat was harvested and yield was mapped using JD GS1 on June 26 & 27th
 - Data was corrected using Yield Editor

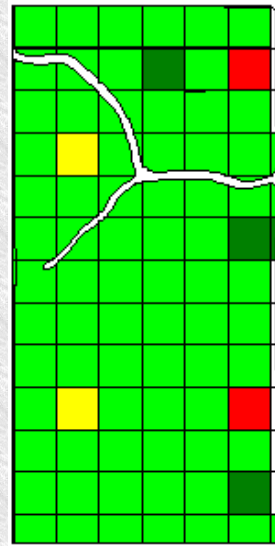
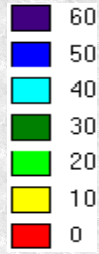
Prescriptions



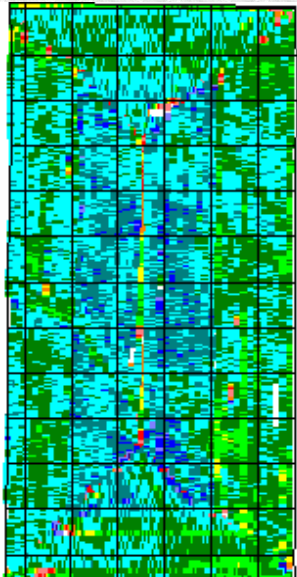
Application



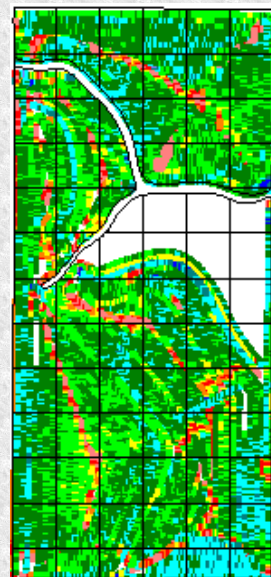
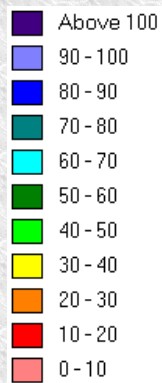
Nitrogen rate (lbs. N/ac)



Yield data



Wheat Yield (bu/ac)



Analysis

| Actual | | | Average | | |
|------------|-----------|---------------|------------|-----------|---------------|
| N (lbs/ac) | Average N | Yield (bu/ac) | N (lbs/ac) | Average N | Yield (bu/ac) |
| 0 | 1.96 | 56.52 | 0 | 17.23 | 51.29 |
| 10 | 11.92 | 52.1 | 10 | 17.69 | 54.64 |
| 20 | 20.68 | 54.33 | 20 | 17.91 | 56.99 |
| 30 | 26.63 | 53.59 | 30 | 18.23 | 55.08 |
| Rate | | | | | |
| t test | 10 | 0.48 | | 0.54 | |
| | 20 | 0.44 | | 0.45 | |
| | 30 | 0.86 | | 0.34 | |

No topdress rate was not statistically significant

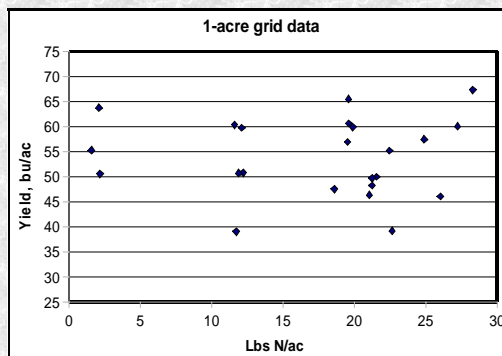
Analysis continued

$$\text{Yield} = \text{Nitrogen rate} + \text{Nitrogen rate}^2$$

| Regression Statistics | |
|-----------------------|-------|
| Multiple R | 0.26 |
| R Square | 0.07 |
| Adjusted R Sq | -0.02 |
| Standard Error | 7.85 |
| Observations | 23 |

| ANOVA | | | | | |
|------------|----|---------|-------|------|----------------|
| | df | SS | MS | F | Significance F |
| Regression | 2 | 92.56 | 46.28 | 0.75 | 0.48 |
| Residual | 20 | 1232.28 | 61.61 | | |
| Total | 22 | 1324.84 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% |
|-------------|--------------|----------------|--------|---------|-----------|-----------|
| Intercept | 58.67 | 5.58 | 10.5 | 0 | 47.02 | 70.31 |
| appl rate | -2.92 | 2.46 | -1.19 | 0.25 | -8.06 | 2.22 |
| appl rate^2 | 0.31 | 0.25 | 1.23 | 0.23 | -0.21 | 0.63 |



Problems

- Sprayer mechanical problems
 - Test sprayer with water
- Incomplete yield data
- Data file compatability
- Not enough data for economic analysis
 - Third field
 - Covering all of the rates

Conclusions

- No firm conclusion from this data
 - Continue with status quo
 - May topdress more acres
 - Stick with 20 lbs. N/ac. base rate
- Hope to continue study next year
- Thanks to KARA, Dietrich, Terry, and Kevin

