**2010 Annual Report for the Nebraska Wheat Board**
**from**
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## To Fallow or Not To Fallow

We completed the second year of data collection for winter wheat and spring triticale at Sidney, NE and Akron, CO in July of 2010. We will complete data collection for the second year of corn by the middle of October. We were going to terminate the field study with the 2010 corn harvest, but we have decided to continue the field study into 2011 in order to have a larger data set for crop modeling. We seeded winter wheat in September of 2010 and we plan to seed spring triticale in late March or early April. We will not be planting any more corn. Data from the 2011 corn crop would come too late for our crop simulation modeling purposes.

Table 1 contains a summary of the winter wheat and triticale data collected in 2010 at Sidney, NE and Akron, CO. Irrigated treatments were not fully irrigated. Irrigation was only applied when precipitation over the previous half-month fell below the 30-year average for that period of time, and then only enough irrigation water was applied to bring precipitation up to the average for that two-week period.

Winter wheat yields were greater following fallow than following spring triticale forage at both locations, although water use did not explain this difference at Sidney. Winter wheat following fallow at Sidney used less water than winter wheat following triticale. Winter wheat following fallow had a greater harvest index, that is, it produced a higher percentage of grain per total aboveground biomass than winter wheat following triticale at both locations. Winter wheat grain protein levels were low (10% or less) for all treatments at Sidney, but were greater following fallow than following triticale. This suggests that our nitrogen fertilization at Sidney was inadequate in 2009-2010.

Tritcale was replanted at Akron due to poor stand establishment. It was harvested at a less mature stage than at Sidney and consequently it had lower biomass and a higher relative feed value (RFV). Water use was also lower at Akron than at Sidney.

We will begin simulation modeling efforts at the beginning of 2011. Juan Miceli Garcia, the M.S. graduate student working on this project, will be familiarizing himself with the simulation model AquaCrop and getting his data sets from 2009 and 2010 ready for use with the model. We hope to be able to report on our modeling progress by the summer of 2011.

Table 1. Yield, water use, biomass at harvest, relative feed value (RFV), seed protein, and harvest index (HI) for wheat and triticale grown in two rotational sequences at Akron, CO and Sidney, NE in 2010.

| Location | Water Trt. | Rotation | Grain Yield | Water Use | | Harvest Biomass | | RFV | Protein | HI |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Wheat | Wheat | Triticale | Wheat | Triticale | Triticale | Wheat | Wheat |
| | | | (lb/a) | (in) | (in) | (lb/a) | (lb/a) | | (%) | (%) |
| Akron | Dryland | WCF | 3150 | 17.1 | --- | 7640 | --- | --- | 14.2 | 36.6 |
| | | WCT | 2890 | 14.2 | 9.1 | 7840 | 2420 | 141 | 14.6 | 33.1 |
| | Irrigated | WCF | 4310 | 20.2 | --- | 10,600 | --- | --- | 13.2 | 36.2 |
| | | WCT | 3860 | 17.5 | 10.0 | 10,800 | 2300 | 127 | 11.5 | 31.5 |
| Sidney | Dryland | WCF | 4420 | 23.0 | --- | 10,800 | --- | --- | 9.8 | 32.6 |
| | | WCT | 3910 | 23.6 | 11.3 | 8160 | 4600 | 87 | 9.0 | 30.8 |
| | Irrigated | WCF | 4500 | 23.7 | --- | 10,700 | --- | --- | 10.0 | 32.1 |
| | | WCT | 3940 | 25.4 | 11.4 | 9190 | 4720 | 88 | 8.5 | 31.7 |

WCF = wheat-corn-fallow rotation.
WCT = wheat-corn-triticale rotation.
Wheat yield reported at 12.5% moisture.
Biomass reported at 0% moisture.

Total irrigation applied to wheat was 2.0” (Akron) and 2.35” (Sidney).
Total irrigation applied to triticale was 1.5” (Akron) and 0.4” (Sidney).