

**Dixon Springs Agricultural Center
Brownstown Agronomy Research Center
Crop Sciences
Southern Illinois Newsletter**

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Weather Report. Dixon Springs finished 2005 with 8.72 inches less rainfall than normal and was short by 4.93 inches during the April-July period (see tables below). Brownstown finished the year 7.59 inches short, but was short by 12.55 inches during April-July. This would explain the painfully low yields at Brownstown. Let's hope for better weather in 2006.

Mark Your Calendars

Field Days for 2006:

Brownstown -- Thursday July 27
Dixon Springs -- Thursday August 3
Urbana -- Thursday August 17

¹Ron Hines, Senior Research Specialist, reports regularly on pest management at the Center in "The Hines Report" found at http://www.ipm.uiuc.edu/pubs/hines_report/index.html

Dixon Springs Weather Summary 2005

Month	Total Rainfall	Departure From Normal	Growing Degree Days	Departure From Normal	Ave. Air Temp.		Soil Temp. 4" Sod		Soil Temp. 4" Bare	
					High	Low	High	Low	High	Low
January	5.21	1.88	85	52	47	33	48	45	42	39
February	3.00	-0.44	73	0.5	53	35	50	46	45	39
March	3.93	-0.66	137	-46.5	58	36	52	48	48	40
April	4.01	-0.50	343	-8.0	71	49	66	62	62	54
May	1.86	-3.58	514	-30.0	78	52	74	68	71	60
June	2.59	-1.60	752	50.0	88	66	85	79	83	74
July	4.32	0.75	838	12.5	89	69	87	83	85	77
August	7.26	3.54	864	74.5	92	70	86	83	84	78
September	2.72	-0.83	691	94.5	86	62	80	78	77	71
October	0.42	-2.93	404	21.0	74	48	68	67	64	59
November	3.73	-0.92	248	80.5	63	41	60	57	55	49
December	1.02	-3.43	20	-35.5	43	26	42	42	35	33
<i>Totals</i>	<i>40.07</i>	<i>-8.72</i>	<i>4966</i>	<i>265.5</i>						

Brownstown Weather Summary 2005

Month	Total Rainfall	Departure From Normal	Growing Degree Days	Departure From Normal	Ave. Air Temp.		Soil Temp. 4" Sod		Soil Temp. 4" Bare	
					High	Low	High	Low	High	Low
January	7.76	4.64	42	27	39	24	43	41	44	43
February	1.89	-0.40	22	-12	44	32	42	41	45	43
March	2.06	-0.12	47	-52	46	34	43	41	45	44
April	1.71	-3.04	249	0.0	64	48	57	54	60	58
May	1.11	-3.83	420	-56	72	53	63	62	69	66
June	1.34	-3.82	758	18	86	68	79	76	82	78
July	2.07	-1.86	790	6	86	68	82	79	86	84
August	3.49	0.43	813	83	86	69	81	79	84	81
September	4.30	1.01	629	117	82	61	78	74	79	76
October	1.04	-1.07	256	-47	64	46	59	57	62	60
November	4.92	0.65	108	9	51	36	49	47	51	49
December	1.58	-0.18	2	-20	32	22	39	38	42	40
<i>Totals</i>	<i>33.27</i>	<i>-7.59</i>	<i>3143</i>	<i>73</i>						

Economical Rate of N for Wheat

We are revisiting the Agronomy Handbook nitrogen recommendations for wheat and trying to account for the impact of changing N prices. Over the past few years, several N rate studies on wheat have been conducted at the UI research farms. Many of the N rate studies involve different N sources and timing of spring application, both of which affect the calculation of maximum return to N (MRTN) which is the rate of N which produces the maximum return above the check yields. The return to N is calculated as the change in income (value of yield increase or decrease above the check) associated with an increment of N less the cost of that N.

The effect of N timing for urea is shown in Figure 1. In this particular case urea was applied in the fall, at Feekes GS 3.0 (mid- to late-Feb.), or Feekes GS 5.0 (mid- to late-Mar.). The MRTN was about 120 lb N/acre for the application of urea at GS 5.0, whereas the application of urea at GS 3.0 was still increasing at 170 lb N/acre, which indicates that a significant portion of the N applied at GS 3.0 is lost from the system, therefore requiring a higher N rate to compensate. The fall application was even worse.

Assuming an application timing of Feekes GS 5.0, we can then demonstrate the effect of changing N costs (Figure 2) on MRTN at a constant wheat price (in this case \$3.00/bu). As N costs per lb of N increase from \$0.20 to \$0.50, the N rate producing the MRTN decreases from about 140 down to 100 lb/acre.

Using information from this economic analysis, we can formulate a table (shown below) which identifies the spring nitrogen rate which provides the MRTN as either N price changes or value of wheat changes. This table sets the upper limit of N application on low OM soils at 140 lb N/acre. Note that N rates greater than 135 would be considered a high risk for lodging, especially if N is not applied uniformly. N rates of 125 to 135 would be considered a moderate risk for lodging and below 125 a low risk of lodging.

Figure 1.

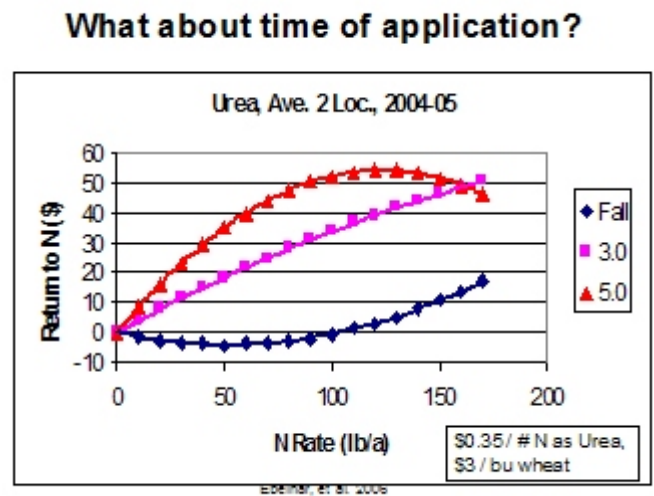
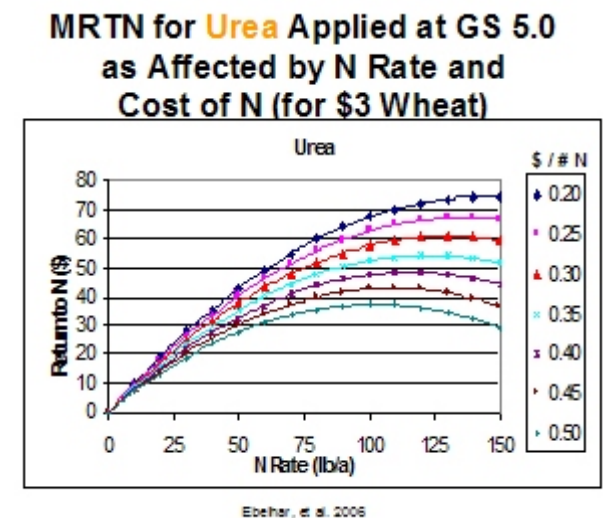


Figure 2.



A rule of thumb would be to decrease N rate by 10 lb/acre for each \$0.05 increase in N price. For instance, if you applied 100 lb N/acre to wheat last year at a N cost of \$0.30/lb N and this year the cost of N is \$0.35/lb, then you would be justified in cutting the N back to 90 lb/acre.

We are hopeful to add more data to this database over the next few years, looking at N sources and time of application, to fine-tune our nitrogen recommendations.

Spring N Recommendations (lb N/acre) for Wheat Based on Price of N and Value of Wheat

N Price	Price of Wheat								
	\$2.00	\$2.25	\$2.50	\$2.75	\$3.00	\$3.25	\$3.50	\$3.75	\$4.00
\$0.20	130	135	138 [†]	140	140	140	140	140	140
\$0.25	120	125	130	134	137	140	140	140	140
\$0.30	109	116	122	126	130	133	136	138	140
\$0.35	99	107	113	119	123	127	130	133	135
\$0.40	88	97	105	111	116	120	124	127	130
\$0.45	78	88	96	103	109	114	118	122	125
\$0.50	67	79	88	96	102	107	112	116	120
[†] Rates >135 have a higher risk of lodging Rates >125 but <135 have a moderate risk Rates <125 have a lower risk of lodging				Assumptions: Fall N: 20-25 lb/acre Urea applied at Feekes GS 5.0 N is applied uniformly For soils with 2% OM or less. For wheat after soybeans					
Additional Comments: Subtract 20 lb N if OM >2% but <3% Subtract 40 lb N if OM >3% Subtract 20 lb N for alfalfa or clover seeding Add 20 lb if No-till									