

# Dixon Springs Agricultural Center Brownstown Agronomy Research Center

## Crop Sciences

### Southern Illinois Newsletter

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**Weather and Crop Report.**

Wheat has gotten off to a good start at both Dixon Springs and Brownstown. High rainfall during October-December helped catch us up on our yearly totals, but obviously was too late for the corn and soybean crops. Harvest was timely with a few mechanical problems, and rutting of fields did not occur as in previous years.

It is our hope to place most of the research areas at Dixon Springs and more of the areas at Brownstown into continuous no-tillage. Most of the wheat plots at both locations, except for the variety trials, were planted no-till this past fall and stands are very good, even on corn stalks.

## Mark Your Calendars

- Corn & Soybean Classic
  - Rend Lake . . . . . Jan. 14
- IL Fertilizer & Chemical Assoc.
  - Convention (Peoria) . . . . . Jan. 21-23
- So. IL No-till Assoc. Meeting
  - Pinckneyville . . . . . Jan, 23
- Crop Management Conference
  - Rend Lake . . . . . Jan. 29-30
- Crop Management Conference
  - Springfield . . . . . Feb. 12-13

## Dixon Springs Weather Summary 2007

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	6.10	2.68	25	-11	44	29	44	42	39	35
February	4.14	0.81	31	-40	41	23	n/a	n/a	36	34
March	1.71	-2.82	323	140	67	44	n/a	n/a	56	49
April	3.28	-1.17	279	-79	65	43	n/a	n/a	62	53
May	2.92	-2.42	583	34	80	57	n/a	n/a	76	68
June	2.85	-1.17	752	42	88	65	84	79	83	72
July	3.96	0.23	807	-22.3	89	66	85	81	87	76
August	1.79	-1.72	861	66.2	97	72	88	84	92	81
September	2.97	-0.67	746	135.4	90	64	82	78	82	73
October	7.07	3.61	515	126.6	77	53	71	68	68	61
November	2.06	-2.72	177	5.1	59	38	57	55	52	46
December	7.55	3.11	24	-31.8	46	30	47	46	42	39
<i>Totals</i>	<i>46.40</i>	<i>-2.24</i>	<i>5120</i>	<i>367.0</i>						

## Brownstown Weather Summary 2007

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	4.36	1.24	10	-12	40	28	40	38	42	40
February	2.19	-0.10	4	-37	35	20	34	33	35	34
March	2.62	0.44	231	119	61	43	49	47	52	50
April	2.78	-1.97	242	-23	62	44	53	51	57	55
May	2.96	-1.98	609	135	79	60	69	67	72	69
June	3.99	-1.17	723	46	85	65	77	75	79	78
July	4.82	0.89	754	-32	88	65	81	80	84	82
August	0.97	-2.09	870	115	95	70	84	82	87	85
September	1.31	-1.98	637	87	84	60	75	73	81	76
October	4.10	1.99	400	76	72	51	64	63	68	65
November	3.07	-1.20	117	-1	54	36	48	45	51	49
December	3.12	1.36	20	-10	42	29	41	39	44	41
<i>Totals</i>	<i>36.29</i>	<i>-4.57</i>	<i>4614</i>	<i>463</i>						

## Does Manganese (Mn) application prevent soybean “flash”?

Soybean “flash” is a general yellowing of the upper soybean canopy thought to be associated with high rates of glyphosate (Roundup, RU) and reduced levels of manganese (Mn) with glyphosate-resistant soybeans (Figure 1). Several field sites varying in soil Mn levels and some with within field variable pH levels were evaluated between 2004 and 2006 for responsiveness of soybeans to glyphosate rate and Mn treatments. The objectives of this study were to 1) evaluate the effects of foliar applied Mn and soil applied Mn on yields of Roundup Ready® soybeans, 2) determine the interaction of glyphosate rates on Mn levels in soybean leaves and effects on soybean yields, 3) evaluate whether differences in soil pH levels affect glyphosate x Mn interactions. Glyphosate rates consisted of none, 1x (22 oz/acre), 2x (44 oz/acre) and 4x (88 oz/acre) rates of Roundup WeatherMax®. Mn treatments consisted of foliar Mn applied 3-5 days prior to application of Roundup (Pre RU), foliar Mn applied 10 days after Roundup (Post RU), and soil applied Mn applied surface broadcast immediately after soybean planting.

Mn levels were significantly reduced with the application of lime at both Dixon Springs (DS) and Brownstown (BR). In general liming of the acid soils at DS and BR reduced plant uptake of Mn which occasionally led to a yield increase. Very high rates of glyphosate showed significant symptoms of soybean flash and significantly reduced soybean yields at most of the locations studied (example, Figure 2).

Over the 20 site-years of this study, the highest RU rate significantly reduced yields by about 3 bu/acre (Figure 3). However, one needs to recognize that this rate is 4x the normal rate of RU application. There was less than 1 bu/acre difference between the check and 44 oz/acre RU rate.

Figure 1. Soybean flash (rating scale: 1 = severe, 5 = none).

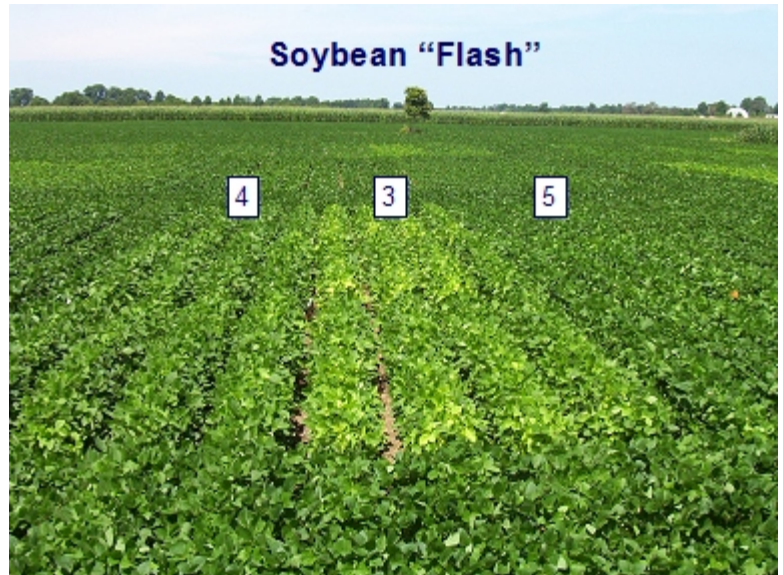


Figure 2. Effect of RU rate on flash and soybean yields.

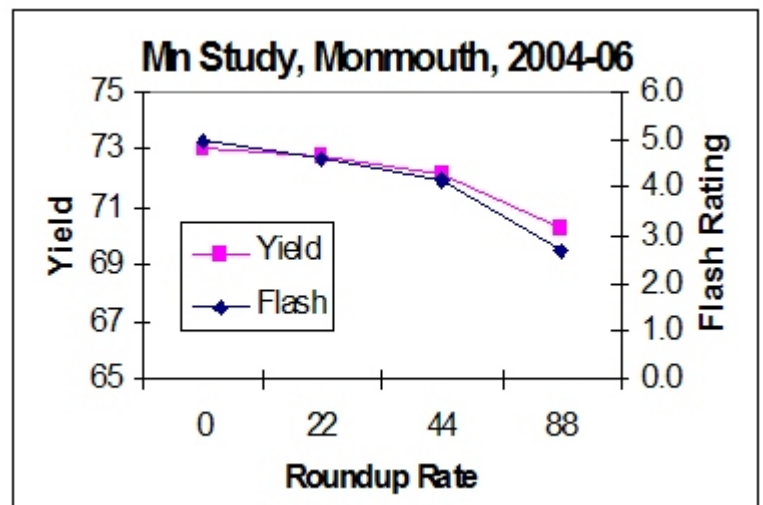
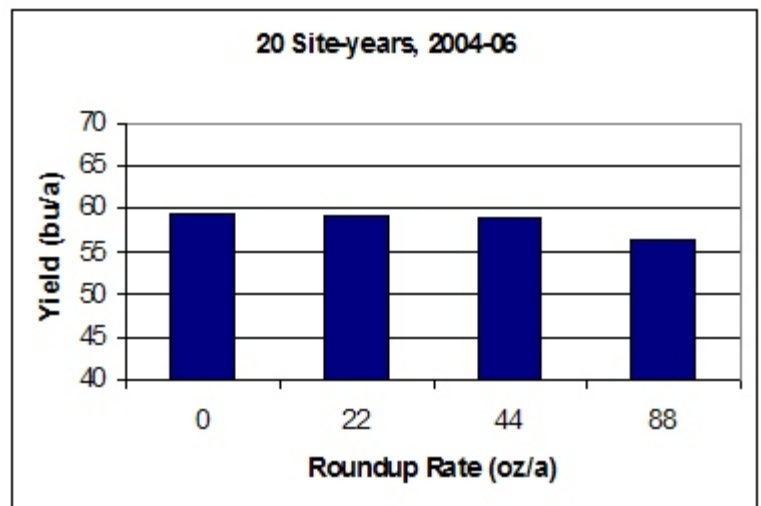


Figure 3. Roundup rate effects on soybean yields.



The effects of glyphosate rate on soybean flash and grain yields do not appear to be related to Mn level in the plant (Figure 4). Mn treatment had little effect on preventing soybean flash or in preventing a loss of soybean yield associated with high rates of glyphosate.

12 of the 20 site-years had direct comparisons of no Mn, soil applied Mn, and foliar Mn applied prior to RU treatments. None of these three Mn treatments had any impact on soybean yields (Figure 5). The same can be said for the 13 site-years where comparisons of no Mn, soil applied Mn, and foliar Mn after RU treatments were made (Figure 6).

Figure 4. Effect of RU rate on leaf Mn and soybean yields.

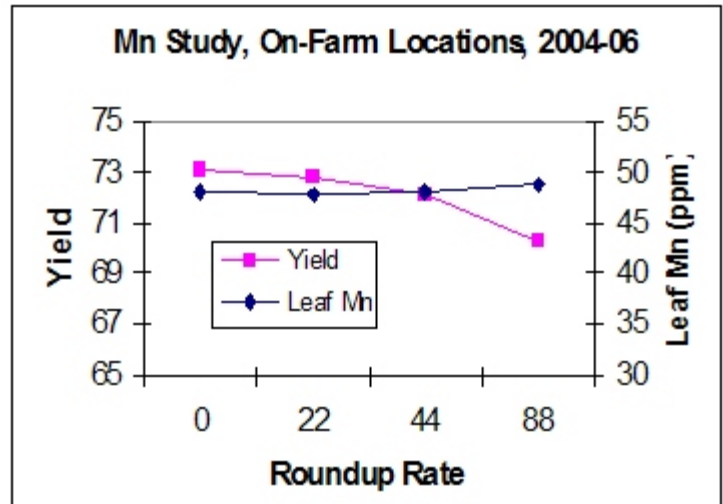


Figure 5. Effect of Mn treatment, including pre-RU, on soybean yields.

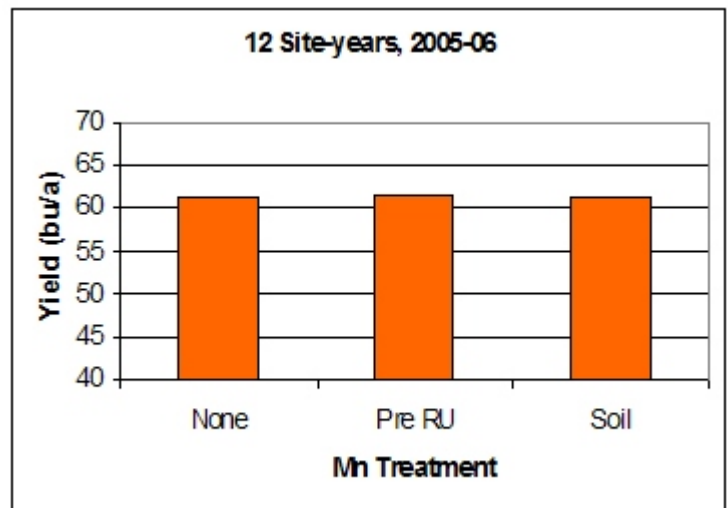


Figure 6. Effects of Mn treatment, including post-RU, on soybean yields.

