



**APPLICATION INFORMATION**

	A	B	C	D	E	F
Application Date:	2-22-02	4-10-02	4-23-02	5-10-02		
Time of Day:	2 PM	10:30 AM	10 AM	10 AM		
Application Method:	BROADCAST	BROADCAST	BROADCAST	BROADCAST		
Application Timing:	LATE TILL	2nd NODE	BOOT	E. FLOWER		
Air Temp., Unit:	47 ,F	59 ,F	58 ,F	61 ,F		
% Relative Humidity:	27%	45%	55%	49%		
Wind Velocity, Unit:	1-3 ,MPH	1-3 ,MPH	1-3 ,MPH	2-4 ,MPH		
Dew Presence (Y/N):	N	N	N	N		
Water Hardness:	200	200	200	200		
Soil Temp., Unit:	46 ,F	52 ,F	60 ,F	62 ,F		
Soil Moisture:	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT		
% Cloud Cover:	0%	0%	100%	95%		

**CROP INFORMATION AT EACH APPLICATION**

	A	B	C	D	E	F
Crop 1 Stage:	L.TILLER	2nd NODE	BOOT	E. FLOWER		
Stage Scale:	HEIGHT	HEIGHT	HEIGHT	HEIGHT		
Height, Unit:	4-12,INCH	1-1«,FEET	2-3 ,FEET	3-4+,FEET		

**WEED INFORMATION AT EACH APPLICATION**

	A	B	C	D	E	F
Weed 1 Stage:	L. TILLER	2nd NODE	BOOT	E. FLOWER		
Stage Scale:	4-12 INCH	1-1« FEET	2-3 FEET	3-4+ FEET		
Density, Unit:	430 ,/M2	430 ,/M2	430 ,/M2	430 ,/M2		

**APPLICATION EQUIPMENT INFORMATION**

	A	B	C	D	E	F
Appl. Equipment:	HAND	HAND	HAND	HAND		
Operating Pressure:	22 PSI	22 PSI	22 PSI	22 PSI		
Nozzle Type:	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN		
Nozzle Size:	95015E	95015E	95015E	95015E		
Nozzle Spacing, Unit:	30 ,INCH	30 ,INCH	30 ,INCH	30 ,INCH		
Band Width, Unit:	7.5 ,FEET	7.5 ,FEET	7.5 ,FEET	7.5 ,FEET		
Boom Length, Unit:	5 ,FEET	5 ,FEET	5 ,FEET	5 ,FEET		
Ground Speed, Unit:	2.2 ,MPH	2.2 ,MPH	2.2 ,MPH	2.2 ,MPH		
Incorporation Equip.:	NONE	NONE	NONE	NONE		
Carrier:	WATER	WATER	WATER	WATER		
Spray Volume, Unit:	10 ,GPA	10 ,GPA	10 ,GPA	10 ,GPA		
Spray pH:	4.5-4.8	4.5-4.8	4.5-4.8	4.5-4.8		
Propellant:	CO2	CO2	CO2	CO2		
Tank Mix (Y/N):	Y	Y	Y	Y		

**Summary Comments:** The Land Pride seeder was calibrated on 9/13 to a low range seeding setting of 17.5 to apply 29.1 lbs./acre of annual ryegrass seed. The setting of 18 would have applied 33 lbs./acre of seed.

- Dry matter weights from the untreated check Treatment #13 at each app. was:
  - Late tiller the ryegrass had 69.8% moisture with 1.32 tons/a dry matter.
  - 2nd Node the ryegrass had 75.1% moisture with 1.77 tons/a dry matter.
  - Boot the ryegrass had 83.1% moisture with 2.06 tons/a dry matter.
  - Early Flower the ryegrass had 78.45% moisture with 3.8 tons/a dry matter.
- 2nd Node was the hardest time to control annual ryegrass using the 1X and 2X rates of glyphosate. The boot stage was next, followed by late tillering and early flowering.
- Annual ryegrass control had a direct rate response to glyphosate use rates regardless of the timing of application. The 2X rate produced significantly better control than the 1X (25.6 ozs. of Roundup UltraMAX) rate. The 1X rate provided significantly better control than the 1/2X rate.
- Through ratings on May 23 the only timing of treatment that could prevent production of viable seed was late tillering. The other timings all had escape plants producing viable seed on that date. The late tillering escape plants produced viable seed in June.
- All treatments were rotary mowed on 5/24 in an attempt to prevent viable seed production. The 6/24 control ratings indicate the percent of plants in each treatment that had regrowth after the mowing and were producing viable seeds through visual observations on that date. This demonstrated the need for a second spring glyphosate application regardless of glyphosate rate or timing if seed production was to be prevented.
- The final summary in this research is that no single application of glyphosate regardless of rates or ryegrass growth stage at application could prevent viable seed production from occurring during the growing season. A second herbicide application would be required for seed production prevention in annual ryegrass.

Effect of glyphosate rate and application timing on annual ryegrass seed production and viability near Simpson, Illinois, 2002.

Glyphosate treatment	Rate	Annual ryegrass seed
		Produced/Viable
Timing	Lb/A	-----Yes/no-----
<b>Late tiller</b>		
	0.5	YY
	1.0	YY
	2.0	YY
<b>Second node</b>		
	0.5	YN
	1.0	YY
	2.0	YN
<b>Boot</b>		
	0.5	YY
	1.0	YY
	2.0	YY
<b>Early flower</b>		
	0.5	YY
	1.0	YY
	2.0	YN
<b>Untreated</b>		
	0	YY

University of Illinois  
ANNUAL RYEGRASS COVER CROP CONTROL IN THE SPRING AT VARIOUS GROWTH STAGES USING  
ROUNDUP ULTRAMAX AT VARIOUS AI RATES IN SOUTHERN ILLINOIS IN 2002

Project Code: RYEGRSO2

Location: DSAC FIELD #321 WEST

Investigator: RON HINES

By: D.S.A.C.

All rates are specified as oz pr/A

Trt No	Treatment Name	Form Amt	Fm Ds Rate	Grow Stg	Appl Code	ANNUAL RYEGRASS CONTROL PERCENT	ANNUAL RYEGRASS CONTROL PERCENT	RYEGRASS GREEN IN FIELD PERCENT	RYEGRASS DEAD IN FIELD PERCENT	RYEGRASS DRY MATTER PERCENT	RYEGRASS DRY MATTER TONS/A
						06-24-02	05-23-02	05-23-02	05-23-02	05-24-02	05-24-02
1	Late Tillering			LT	A	12.5 g	27.5 f	100.0 a	0.0 e	34.8 efg	2.27 ef
1	Roundup UltraMAX	5	SL 12.8		A						
2	Late Tillering			LT	A	40.0 e	65.0 c	100.0 a	0.0 e	29.3 g	0.40 g
2	Roundup UltraMAX	5	SL 25.6		A						
3	Late Tillering			LT	A	72.5 bc	82.5 a	100.0 a	0.0 e	39.2 c-f	0.17 g
3	Roundup UltraMAX	5	SL 51.2		A						
4	2nd Node			Node 2	B	15.0 fg	25.0 f	95.0 a	5.0 e	35.1 d-g	2.79 de
4	Roundup UltraMAX	5	SL 12.8		B						
5	2nd Node			Node 2	B	22.5 f	50.0 d	91.3 a	8.8 e	41.7 bcd	1.94 f
5	Roundup UltraMAX	5	SL 25.6		B						
6	2nd Node			Node 2	B	37.5 e	71.3 bc	71.3 bc	28.8 cd	47.7 b	0.26 g
6	Roundup UltraMAX	5	SL 51.2		B						
7	Boot			Boot	C	22.5 f	25.0 f	77.5 b	22.5 d	40.9 cde	3.49 c
7	Roundup UltraMAX	5	SL 12.8		C						
8	Boot			Boot	C	32.5 e	45.0 d	61.3 cd	38.8 bc	44.8 bc	2.92 d
8	Roundup UltraMAX	5	SL 25.6		C						
9	Boot			Boot	C	70.0 c	77.5 ab	16.3 e	83.8 a	57.7 a	2.89 d
9	Roundup UltraMAX	5	SL 51.2		C						
10	Early Flowering			Flower	D	52.5 d	35.0 e	77.5 b	22.5 d	38.5 c-f	4.16 b
10	Roundup UltraMAX	5	SL 12.8		D						
11	Early Flowering			Flower	D	80.0 ab	72.5 b	62.5 cd	37.5 bc	37.6 def	4.33 ab
11	Roundup UltraMAX	5	SL 25.6		D						
12	Early Flowering			Flower	D	87.5 a	72.5 b	52.5 d	47.5 b	38.1 c-f	4.06 b
12	Roundup UltraMAX	5	SL 51.2		D						
13	No Herbicide - Check					0.0 h	0.0 g	100.0 a	0.0 e	33.6 fg	4.80 a
	LSD (.05) =					8.1	7.0	13.1	13.1	6.7	0.55
	Standard Dev.=					5.58539	4.81495	9.09647	9.09647	4.65026	.380581
	CV =					13.32	9.65	11.77	40.09	11.65	14.35
	Block F					4.027	0.131	0.387	0.387	0.997	0.756
	Block Prob(F)					0.0144	0.9408	0.7628	0.7628	0.4052	0.5261
	Treatment F					102.329	115.134	29.909	29.909	9.495	69.227
	Treatment Prob(F)					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, LSD). Treatment 13 is the standard/comparison treatment.



COMPLETE FACTORIAL AOV FOR ANNUAL, RYEGRASS, CONTROL, PERCENT, 06-24-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	32191.6667				
R	3	408.3333	136.11111	4.356	0.0179	4.8
A	3	14691.6667	4897.22222	103.706	0.0001	6.3
RA	9	425.0000	47.22222	1.511	0.2177	9.6
B	2	13679.1667	6839.58333	393.960	0.0001	3.6
RB	6	104.1667	17.36111	0.556	0.7596	8.3
AB	6	2320.8333	386.80556	12.378	0.0001	8.3
RAB	18	562.5000	31.25000			

FACTORIAL/POOLED ERROR AOV FOR ANNUAL, RYEGRASS, CONTROL, PERCENT, 06-24-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	32191.6667				
R	3	408.3333	136.11111	4.115	0.0138	4.8
A	3	14691.6667	4897.22222	148.038	0.0001	4.8
B	2	13679.1667	6839.58333	206.754	0.0001	4.2
AB	6	2320.8333	386.80556	11.693	0.0001	8.3
ERROR	33	1091.6667	33.08081			

COMPLETE FACTORIAL AOV FOR ANNUAL, RYEGRASS, CONTROL, PERCENT, 05-23-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	22082.8125				
R	3	9.8958	3.29861	0.158	0.9232	3.9
A	3	1268.2292	422.74306	9.805	0.0034	6.1
RA	9	388.0208	43.11343	2.064	0.0912	7.8
B	2	18684.3750	9342.18750	803.149	0.0001	3.0
RB	6	69.7917	11.63194	0.557	0.7587	6.8
AB	6	1286.4583	214.40972	10.263	0.0001	6.8
RAB	18	376.0417	20.89120			

FACTORIAL/POOLED ERROR AOV FOR ANNUAL, RYEGRASS, CONTROL, PERCENT, 05-23-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	22082.8125				
R	3	9.8958	3.29861	0.131	0.9412	4.2
A	3	1268.2292	422.74306	16.730	0.0001	4.2
B	2	18684.3750	9342.18750	369.720	0.0001	3.6
AB	6	1286.4583	214.40972	8.485	0.0001	7.3
ERROR	33	833.8542	25.26831			

COMPLETE FACTORIAL AOV FOR RYEGRASS, GREEN, IN FIELD, PERCENT, 05-23-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	30541.6667				
R	3	104.1667	34.72222	0.446	0.7228	7.6
A	3	16841.6667	5613.88889	49.901	0.0001	9.8
RA	9	1012.5000	112.50000	1.446	0.2410	15.1
B	2	6316.6667	3158.33333	33.940	0.0005	8.3
RB	6	558.3333	93.05556	1.196	0.3523	13.1
AB	6	4308.3333	718.05556	9.232	0.0001	13.1
RAB	18	1400.0000	77.77778			

FACTORIAL/POOLED ERROR AOV FOR RYEGRASS, GREEN, IN FIELD, PERCENT, 05-23-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	30541.6667				
R	3	104.1667	34.72222	0.386	0.7640	7.9
A	3	16841.6667	5613.88889	62.359	0.0001	7.9
B	2	6316.6667	3158.33333	35.083	0.0001	6.9
AB	6	4308.3333	718.05556	7.976	0.0001	13.7
ERROR	33	2970.8333	90.02525			

COMPLETE FACTORIAL AOV FOR RYEGRASS, DEAD, IN FIELD, PERCENT, 05-23-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	30541.6667				
R	3	104.1667	34.72222	0.446	0.7228	7.6
A	3	16841.6667	5613.88889	49.901	0.0001	9.8
RA	9	1012.5000	112.50000	1.446	0.2410	15.1
B	2	6316.6667	3158.33333	33.940	0.0005	8.3
RB	6	558.3333	93.05556	1.196	0.3523	13.1
AB	6	4308.3333	718.05556	9.232	0.0001	13.1
RAB	18	1400.0000	77.77778			

FACTORIAL/POOLED ERROR AOV FOR RYEGRASS, DEAD, IN FIELD, PERCENT, 05-23-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	30541.6667				
R	3	104.1667	34.72222	0.386	0.7640	7.9
A	3	16841.6667	5613.88889	62.359	0.0001	7.9
B	2	6316.6667	3158.33333	35.083	0.0001	6.9
AB	6	4308.3333	718.05556	7.976	0.0001	13.7
ERROR	33	2970.8333	90.02525			

COMPLETE FACTORIAL AOV FOR RYEGRASS, DRY, MATTER, PERCENT, 05-24-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	3111.2901				
R	3	62.2106	20.73687	0.947	0.4386	4.0
A	3	1160.5924	386.86413	12.030	0.0017	5.2
RA	9	289.4135	32.15705	1.469	0.2325	8.0
B	2	660.9082	330.45411	26.243	0.0011	3.1
RB	6	75.5538	12.59229	0.575	0.7450	7.0
AB	6	468.6321	78.10535	3.568	0.0166	7.0
RAB	18	393.9796	21.88776			

FACTORIAL/POOLED ERROR AOV FOR RYEGRASS, DRY, MATTER, PERCENT, 05-24-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	3111.2901				
R	3	62.2106	20.73687	0.902	0.4508	4.0
A	3	1160.5924	386.86413	16.821	0.0001	4.0
B	2	660.9082	330.45411	14.369	0.0001	3.5
AB	6	468.6321	78.10535	3.396	0.0102	6.9
ERROR	33	758.9468	22.99839			

COMPLETE FACTORIAL AOV FOR RYEGRASS, DRY, MATTER, TONS/A, 05-24-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	104.9594				
R	3	0.5513	0.18376	1.710	0.2008	0.28
A	3	75.5751	25.19170	181.454	0.0001	0.34
RA	9	1.2495	0.13883	1.292	0.3067	0.56
B	2	14.2988	7.14938	52.944	0.0002	0.32
RB	6	0.8102	0.13504	1.256	0.3253	0.49
AB	6	10.5398	1.75663	16.343	0.0001	0.49
RAB	18	1.9348	0.10749			

FACTORIAL/POOLED ERROR AOV FOR RYEGRASS, DRY, MATTER, TONS/A, 05-24-02

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	Prob(F)	LSD
TOTAL	47	104.9594				
R	3	0.5513	0.18376	1.518	0.2280	0.29
A	3	75.5751	25.19170	208.119	0.0001	0.29
B	2	14.2988	7.14938	59.064	0.0001	0.25
AB	6	10.5398	1.75663	14.512	0.0001	0.50
ERROR	33	3.9945	0.12105			

- End of Report -