WEED CONTROL IN ROUNDUP READY SUGARBEET, 2005.

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The pesticide regulatory agencies for the United States have approved the production of Roundup Ready sugarbeet. However, some of the companies, countries and individuals that purchase sugar, pulp and molasses are reluctant to accept product from Roundup Ready sugarbeet. The sugarbeet industry in the United States will not produce Roundup Ready sugarbeet in 2006 except for a demonstration of less than 1000 acres planned for Idaho. The time when Roundup Ready sugarbeet will be fully accepted is not known but an experiment was conducted in 2005 to compare weed control and sugarbeet injury from Roundup and conventional herbicide treatments applied to Roundup Ready sugarbeet.

Amaranth, canola, quinoa (tame lambsquarters), and flax were seeded across the plots on May 16 at Prosper. Sugarbeet was seeded May 17. The dates of herbicide application and conditions at treatment are provided in Table 1. The center four row of the six-row plots were treated with herbicides in 17 gpa of water at 40 psi through 8002 nozzles. Sugarbeet was hand thinned to an 8-inch spacing June 15 and sugarbeet injury was evaluated July 19. Weed and bioassay species control were evaluated July 19 and August 3. The two control evaluations were averaged and are presented in Table 2. Eminent fungicide at 13 fl oz/A was applied July 26 and Headline fungicide at 9 fl oz/A was applied August 22. Sugarbeet from the center two rows of 30 foot long plots was counted and harvested September 21.

All treatments that included Roundup gave 100% control of all species so determining if weed control was influenced by adding PRE Nortron, POST Headline fungicide, lay-by Outlook, lay-by Dual Magnum or POST Stinger to Roundup was not possible (Table 2).The micro-rate (Treatment 4) and PRE Nortron followed by the micro-rate (Treatment 5) gave less control of amaranth, canola and flax than the treatments that included Roundup. Pre Nortron followed by the micro-rate (Treatment 5) gave better control of amaranth, canola and flax than the micro-rate alone (Treatment 4).

Plots treated with herbicides yielded at least twice as much extractable sucrose per acre compared to untreated plots. Sugarbeet injury was visually evaluated as zero on July 19 so differences in visible sugarbeet injury do not explain the observed significant differences in yield. Plots treated with Roundup on June 3 and July 6 yielded 9250 lb/A of sucrose (Treatment 1) which was significantly more than plots treated with the micro-rate (Treatment 4), PRE Nortron plus the micro-rate (Treatment 5) and Roundup plus Outlook (Treatment 7). The lower yield from the conventional treatments (Treatments 4 and 5) probably was due to less weed control and more competition. Roundup + Outlook (Treatment 7) gave total weed control so weed competition would not explain the reduced yield with that treatment. Perhaps the Outlook caused some early season growth retardation that was not visible on July 19 when sugarbeet injury was evaluated. The Outlook was applied on June 3 to sugarbeet in the cotyledon to two-leaf stage. Outlook should be applied when sugarbeet has four or more leaves for reduced risk of sugarbeet injury.

SUMMARY

All treatments that included Roundup gave total weed control. The conventional herbicide treatments gave less control of amaranth, canola and flax than the Roundup treatments.

Table 1. Herbicide application dates and conditions at Prosper, 2005[1].

Date	May 17	June 3	June 9	June 21	June 27	July 6	July 12
Time of day	9:00 A	11:45 A	5:30 P	5:30 P	1:30 P	2:15 P	11:15 A
Air temperature (F)	59	65	74	85	74	78	80
Relative humidity (%)	48	73	32	32	60	40	53
6-inch soil temp. (F)	47	60	65	69	71	69	72
Soil moisture	good	good	good	good	good	good	good
Sugarbeet (3H412A RR)	seed, PRE	V1.0-1.8	V2.1-2.8	V5.8-75	V8.8-10.2	V10.9-12.7	canopy
Amaranth	-	cot-3 lf	2-3 lf	5-10"	8-14"	18-24"	20-24"
Quinoa	-	2-4 lf	2-5"	10-14"	12-18"	18-26"	24-36"
Flax	-	0.5-1.5"	1-4"	5-10"	12-14"	24"	28"
Canola	-	1-3 lf	2-4 lf	12-14"	28"	35"	38"
Redroot pigweed	-	cot	cot-2 lf	3-6"	6-10"	10-18"	12-22"
Common lambsquarters	-	cot-2 lf	2-4 lf	4-8"	8-12"	12-18"	16-24"

[1]lf = leaf or leaves, cot = cotyledon, " = inches tall, V = number of expanded leaves with decimal indicating partial expansion of youngest visible leaf.

Table 2. Sugarbeet injury, weed control and sugarbeet yield from Roundup Ready sugarbeet treated with herbicides. (Table continued on next page)

Treatment[1]	Application dates	Colq[2] cntl	Quinoa cntl	Rrpw cntl	Amaranth cntl
Rate/A	month/day	%	%	%	%
1. Roundup + AMS 2 pt + 3 lb	6/3, 7/6	100	100	100	100
2. PRE Nortron 7.5 pt *f*b Roundup + AMS 2 pt + 3 lb	5/17 6/3, 7/6	100	100	100	100
3. Roundup + AMS 2 pt + 3 lb	6/3, 6/21, 7/12	100	100	100	100
4. Progress + UpBeet + Stinger + Select + MSO 5.7 fl oz + 0.125 oz + 1.3 + 2 fl oz + 1.5%	6/3, 6/9 6/21, 6/27	100	100	99	84
5. PRE Nortron 7.5 pt *f*b Progress + UpBeet + Stinger + Select + MSO 5.7 fl oz + 0.125 oz + 1.3 +2 fl oz + 1.5%	5/17 6/3, 6/9, 6/21, 6/27	100	100	100	96
6. Roundup + AMS 2 pt + 3 lb Roundup + AMS + Headline 0.75 + 3 lb + 9 fl oz	6/3, 6/21 7/12	100	100	100	100
7. Roundup + AMS 2 pt + 3 lb + 21 fl oz Roundup + AMS 2 pt + 3 lb	6/3 6/21	100	100	100	100
8. Roundup + AMS 2 pt + 3 lb Dual Magnum 1.68 pt	6/3, 7/6 7/12	100	100	100	100
9. Roundup + AMS + Stinger 2 pt + 3 lb + 8 fl oz Roundup + AMS 2 pt + 3 lb	6/3 7/6	100	100	100	100
10. Untreated check	-	0	0	0	0
LSD (0.05)		0	0	1	2

Table 2 (continued). Sugarbeet injury, weed control and sugarbeet yield from Roundup Ready sugarbeet treated with herbicides.

Treatment[1]	Canola cntl	Flax cntl	July 19 Sugb inj	Extractable sucrose
Rate/A	%	%	%	lb/A
1. Roundup + AMS 2 pt + 3 lb	100	100	0	9250
2. PRE Nortron 7.5 pt *f*b Roundup + AMS 2 pt + 3 lb	100	100	0	8700
3. Roundup + AMS 2 pt + 3 lb	100	100	0	8200
4. Progress + UpBeet + Stinger + Select + MSO 5.7 fl oz + 0.125 oz + 1.3 + 2 fl oz + 1.5%	73	49	0	7980
5. PRE Nortron 7.5 pt *f*b Progress + UpBeet + Stinger + Select + MSO 5.7 fl oz + 0.125 oz + 1.3 +2 fl oz + 1.5%	90	86	0	7950
6. Roundup + AMS 2 pt + 3 lb Roundup + AMS + Headline 0.75 + 3 lb + 9 fl oz	100	100	0	8700
7. Roundup + AMS 2 pt + 3 lb + 21 fl oz Roundup + AMS 2 pt + 3 lb	100	100	0	7830
8. Roundup + AMS 2 pt + 3 lb Dual Magnum 1.68 pt	100	100	0	8730
9. Roundup + AMS + Stinger 2 pt + 3 lb + 8 fl oz Roundup + AMS 2 pt + 3 lb	100	100	0	8910
10. Untreated check	0	0	0	3972
LSD (0.05)	3	4	NS	1010

[1]RoundUp = Ultramax II, AMS = ammonium sulfate, MSO = methylated seed oil from Loveland, Headline = fungicide. [2]Colq = common lambsquarters, Quinoa = tame lambsquarters, Rrpw = redroot pigweed, Amaranth = tame pigweed, Sugb = sugarbeet.