

CONTROL OF ROUNDUP READY® CANOLA IN ROUNDUP READY SUGARBEET - PROSPER, ND – 2010

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Introduction

Roundup Ready canola continues to increase in Minnesota and North Dakota as a weed problem in Roundup Ready crops. Roundup Ready canola seeds appear to be falling off railroad cars and infecting nearby fields, being spread as a contaminate in fertilizer and spring cover crop seed and by increasing the soil seed bank as plants are allowed to produce seed in fields.

Materials and Methods

'Dekalb DKL 72-55' Roundup Ready canola at 11 pounds per acre was seeded in 7.5 inch rows perpendicular to herbicide plots. 'SES 36711' sugarbeet was seeded 1.25 inches deep in 22 inch rows May 24. Sugarbeet seed was treated with Tachigaren at 45 grams dry product per 100,000 seeds. Counter 15G insecticide at 12 pounds product per acre was applied modified in-furrow at planting. Herbicide treatments were applied June 9, June 21 and July 1. All treatments were applied in 17 gpa water at 40 psi through XR8002 nozzles with a bicycle sprayer to the center four rows of six row plots 30 feet in length. Glyphosate (0.75 lb ae/A) plus AmStik (2.5 qt/A) was applied to the weed-free check as necessary and was applied to all treatments except the non-treated check about 10 days after the last application to control other weeds. All evaluations are a visual estimate of percent fresh weight reduction in the treated plot compared to the adjacent untreated strip. Sugarbeet from the center two rows of each plot was counted and harvested September 21. Experiment designed as a randomized complete block having four replications.

Table 1. Application information.

Application Code	1	2	3	4
Date of Application	June 9	June 21	June 21	July 1
Time of Day	1:00 pm	3:00 pm	3:00 pm	10:30 am
Air Temperature (°F)	63	82	82	83
Relative Humidity (%)	54	49	49	59
Soil Temp. (°F at 6")	63	74	74	65
Wind Velocity (mph)	15	13	13	12
Cloud Cover (%)	80	60	60	20
Soil Moisture	good	good	good	good
Sugarbeet (stage – range)	V1.5-V2.2	V2.0-V8.0	V2.0-V8.0	V4.0-V13.0
RR Canola (stage/height - range)	Cot.-2.5 lf/ 0.125-2.5" tall	Cot.-6 lf/ 1-9" tall	Cot.-5 lf/ 1-3" tall (trt.10)	2 lf-flowering/ 1-23" tall (trt. 24)
RR Canola (avg. density)	7/row foot	5/row foot	5.5/row foot	7/row foot

Summary

Glyphosate alone did not control the canola, proving it is resistant to glyphosate. Sugarbeet injury was greatest when treatments were applied applied twice starting at V1.5 to 2.2 sugarbeet. Injury declined over time and was non-existent later in the season.

Control of Roundup Ready canola was maximized when treatments were applied initially to 2-leaf canola compared to 5-leaf canola. UpBeet (1.0 oz/A) followed by Upbeet (1.0 oz/A) controlled the most Roundup Ready canola when initially applied to 2-leaf canola.

Maximum sugarbeet root yield and extractable sucrose was obtained from the weed-free check established at 2-leaf canola. Only UpBeet (1.0 oz/A) followed by UpBeet (1.0 oz/A) maintained sugarbeet root yield and extractable sucrose comparable to the 2-leaf weed-free check.

Table 2. Control of Roundup Ready® canola in Roundup Ready sugarbeet - Prosper, ND, 2010 (Stachler and Luecke).

Treatment*	Rate (lb ae or ai/A)	Timing	July 6		July 15		July 30	Sept 20
			Sgbt Inju	Cano Cntl	Sgtb Inju	Cano Cntl	Cano Cntl	Cano Cntl
Weed-Free Check	-	1,3	0	100	0	100	100	100
Glyt-PM	0.75	1	0	0	0	0	0	0
Tfsu+Glyt-PM	0.008+0.75	1	0	35	0	17	20	19
Tfsu+Glyt-PM	0.016+0.75	1	0	49	0	39	33	29
Tfsu+Glyt-PM	0.031+0.75	1	2	61	0	56	44	46
Tfsu+De&Ph+Etho+Glyt-PM	0.008+0.22+0.11+0.75	1	0	26	0	23	23	16
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	1	0	41	0	35	28	24
Tfsu+De&Ph+Etho+Glyt-PM	0.031+0.22+0.11+0.75	1	1	48	0	38	38	31
Tfsu+Glyt-PM	0.008+0.75	1,3	4	62	0	51	52	45
Tfsu+Glyt-PM	0.016+0.75	1,3	4	74	0	66	59	69
Tfsu+Glyt-PM	0.016+0.75	1						
Tfsu+Glyt-PM	0.031+0.75	3	5	80	0	68	65	72
Tfsu+Glyt-PM	0.031+0.75	1						
Tfsu+Glyt-PM	0.016+0.75	3	7	87	0	78	74	78
Tfsu+Glyt-PM	0.031+0.75	1,3	5	88	0	85	80	86
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	1,3	7	72	0	60	61	69
Weed-Free Check	-	2,4	-	-	0	100	100	100
Glyt-PM	0.75	2	-	-	0	0	0	0
Tfsu+Glyt-PM	0.008+0.75	2	-	-	0	10	9	6
Tfsu+Glyt-PM	0.016+0.75	2	-	-	0	18	11	9
Tfsu+Glyt-PM	0.031+0.75	2	-	-	0	30	26	20
Tfsu+De&Ph+Etho+Glyt-PM	0.008+0.22+0.11+0.75	2	-	-	0	17	15	17
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	2	-	-	0	21	23	25
Tfsu+De&Ph+Etho+Glyt-PM	0.031+0.22+0.11+0.75	2	-	-	0	28	27	28
Tfsu+Glyt-PM	0.008+0.75	2,4	-	-	0	19	20	17
Tfsu+Glyt-PM	0.016+0.75	2,4	-	-	0	33	31	29
Tfsu+Glyt-PM	0.016+0.75	2						
Tfsu+Glyt-PM	0.031+0.75	4	-	-	0	40	38	38
Tfsu+Glyt-PM	0.031+0.75	2						
Tfsu+Glyt-PM	0.016+0.75	4	-	-	0	44	36	38
Tfsu+Glyt-PM	0.031+0.75	2,4	-	-	0	50	41	40
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	2,4	-	-	1.3	51	45	42
Non-treated Check	0	-	-	-	0	0	0	0
CV (%)			71	10	1077	6	10	10
LSD (0.05)			2	8	N.S.	4	5	6

*Destiny HC (high surfactant oil [MSO] concentrate) at 1%v/v from Winfield Solutions and AmStik (AMS) at 2.5 qt/A from West Central was added to all treatments. Glyt-PM = Roundup PowerMAX from Monsanto; Tfsu = UpBeet from DuPont; De&Ph = Betamix from Bayer; Etho = Nortron from Bayer.

Table 2b. Control of Roundup Ready® canola in Roundup Ready sugarbeet - Prosper, ND, 2010 (Stachler and Luecke).

Treatment*	Rate (lb ae or ai/A)	Timing	September 21				
			Sgbt Popl. #/60'	Sucro %	Root Yield ton/A	Impur Index	Extr Sucr lb/A
Weed-Free Check	-	1,3	110	15.7	30.8	558	8822
Glyt-PM	0.75	1	85	14.4	6.0	683	2329
Tfsu+Glyt-PM	0.008+0.75	1	101	14.2	12.0	715	3039
Tfsu+Glyt-PM	0.016+0.75	1	104	14.7	14.6	642	3907
Tfsu+Glyt-PM	0.031+0.75	1	111	14.7	18.9	664	5024
Tfsu+De&Ph+Etho+Glyt-PM	0.008+0.22+0.11+0.75	1	98	13.4	9.7	851	2254
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	1	102	14.3	12.1	670	3104
Tfsu+De&Ph+Etho+Glyt-PM	0.031+0.22+0.11+0.75	1	103	14.0	12.6	771	3099
Tfsu+Glyt-PM	0.008+0.75	1,3	113	15.1	19.8	641	5396
Tfsu+Glyt-PM	0.016+0.75	1,3	117	14.4	25.4	734	6481
Tfsu+Glyt-PM	0.016+0.75	1					
Tfsu+Glyt-PM	0.031+0.75	3	110	14.9	25.93	701	6921
Tfsu+Glyt-PM	0.031+0.75	1					
Tfsu+Glyt-PM	0.016+0.75	3	119	15.0	27.8	681	7544
Tfsu+Glyt-PM	0.031+0.75	1,3	113	15.2	29.0	651	7964
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	1,3	118	14.3	24.1	749	6107
Weed-Free Check	-	2,4	113	14.8	24.1	692	6335
Glyt-PM	0.75	2	77	13.4	3.8	727	1105
Tfsu+Glyt-PM	0.008+0.75	2	84	13.9	6.0	706	1675
Tfsu+Glyt-PM	0.016+0.75	2	88	14.1	7.0	714	2122
Tfsu+Glyt-PM	0.031+0.75	2	93	13.7	10.0	790	2415
Tfsu+De&Ph+Etho+Glyt-PM	0.008+0.22+0.11+0.75	2	84	14.0	6.9	732	1695
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	2	95	13.8	8.8	787	2150
Tfsu+De&Ph+Etho+Glyt-PM	0.031+0.22+0.11+0.75	2	76	13.9	8.2	787	2012
Tfsu+Glyt-PM	0.008+0.75	2,4	86	13.8	7.3	756	1783
Tfsu+Glyt-PM	0.016+0.75	2,4	90	13.8	10.1	773	2453
Tfsu+Glyt-PM	0.016+0.75	2					
Tfsu+Glyt-PM	0.031+0.75	4	89	13.9	11.1	787	2728
Tfsu+Glyt-PM	0.031+0.75	2					
Tfsu+Glyt-PM	0.016+0.75	4	85	14.3	10.1	687	2584
Tfsu+Glyt-PM	0.031+0.75	2,4	96	14.2	11.8	696	2979
Tfsu+De&Ph+Etho+Glyt-PM	0.016+0.22+0.11+0.75	2,4	86	14.3	12.0	712	3078
Non-treated Check	0	-	65	-	2.4	-	-
CV (%)			13	4	18	14	19
LSD (0.05)			18	0.9	3.6	142	1039

*Destiny HC (high surfactant oil [MSO] concentrate) at 1%v/v from Winfield Solutions and AmStik (AMS) at 2.5 qt/A from West Central was added to all treatments. Glyt-PM = Roundup PowerMAX from Monsanto; Tfsu = UpBeet from DuPont; De&Ph = Betamix from Bayer; Etho = Nortron from Bayer.