Weed management in glufosinate-resistant canola at Fosston, MN in 1997. Lueschen, William E., Ervin A. Oelke, Erik J. Levorson, David G. LeGare, Eric A. Ristau, and Karen Andol. The objective of this study was to evaluate herbicides for weed management in gulfosinate-resistant canola. This study was located on the Darrel Rinkenberger farm near Fosston, MN on a Knute fine sandy loam soil with 3.7% organic matter, pH 6.3 and soil test P and K levels of 47 and 134 ppm, respectively. A randomized complete block design with four replications and a plot size of 12 by 25 ft was used. Only the center 6 ft of each plot was used for data collection and yields were obtained from a 6 by 19 ft area of each plot. Wheat was the previous crop and the site was chisel plowed in the fall after wheat harvest. Prior to planting, the site was fertilized with 100 lb N/A, 10 lb P_2O_5/A and 12 lb S/A and the site was field cultivated just prior to applying the preplant (PPI) herbicides, which were incorporated twice with a field cultivar set to till 3 to 4 inches deep. On May 21 glufosinate-resistant canola that had been treated with granular carbofuran and benomyl was planted at a seeding rate of 12 viable seeds/ft^2 in rows spaced 6 inches apart. All treatments were applied with a bicycle sprayer equipped with 8002 flat-fan nozzles spaced 19 inches apart on the boom. The sprayer was calibrated to deliver 20 gpa at 22 psi. Application dates, environmental conditions, plant sizes and rainfall data are listed below:

Date	May 20	June 10	June 17
Application	PPI	POST I	POST II
Temperature (F)			
air	70	85	70
soil	65	72	72
Soil moisture	moist	dry	moist
Sky	p. cloudy	clear	p. cloudy
Wind (mph:direction)	5-10:N	10:SW	9:SW
Relative humidity(%)	50	50	65
Canola			
leaf no.	---	2-3	6
height (in)	---	3	5
Green foxtail			
leaf no.	---	2-3	5
height (in)	---	2-3	8
infestation (plants/ft^2)	---	---	10
Yellow foxtail			
leaf no.	---	2-3	5
height (in)	---	3	8
infestation (plants/ft^2)	---	---	7.5
Redroot pigweed			
leaf no.	---	2-4	11
height (in)	---	1-2	8
infestation (plants/ft^2)	---	---	2.3
Wild buckwheat			
leaf no.	---	3	5-6
height (in)	---	3	2-4
infestation (plants/ft^2)	---	---	2.3
Rainfall after application (in)			
1st week	1.25	0.31	6.35
2nd week	0.19	6.35	2.75
3rd week	0.00	2.75	1.88

No significant crop injury or stand reduction was observed with any of the herbicide treatments. Greater than 85% control of green foxtail was observed with all treatments when rated on July 14. There was a trend for all rates of glufosinate applied POST II to exhibit slightly reduced control of green and yellow foxtail compared to the same treatments applied POST I. This may have resulted from differences in environmental conditions: the air temperature at POST II was nearly 15 F lower than at POST I and rainfall totalling 0.28 inches over a 10-hour period commenced approximately 45 minutes after applying the POST II treatments, while no rainfall was received for 4 days following POST I. Reroot pigweed control was 85% or greater for all treatments when rated on July 14. When evaluated on June 23, the POST II applications exhibited reduced redroot pigweed control compared to the same treatments applied POST I, probably due to the differences in environmental conditions. Wild buckwheat control was excellent on July 14 for all treatments due to the activity of the herbicide treatments, the competitiveness of canola and the sparse stand of wild buckwheat. Neither rate of glufosinate nor addition of ammonium sulfate significantly affected weed control. All herbicide treatments resulted in higher canola yields than the weedy check and yielded similar to the hand-weeded treatment. The weedy check tended to be slightly lower in protein than the other treatments but no differences were observed among treatments for oil content. (MN Agric. Exp. Sta. Paper No. 97-1-13-0041, Misc. Journ. Series, University of Minnesota, St. Paul).

Table. Weed control in glufosinate-resistant canola at Fosston, MN in 1997 (Lueschen, Oelke, Levorson, LeGare, Ristau, and Andol).

Herbicide Treatment[a]	Rate	Green foxtail		Yellow foxtail		Redroot pigweed		Wild buckwheat		Yield	Protein	Oil
		6/23	7/14	6/23	7/14	6/23	7/14	6/23	7/14			
	(lb/A or %)	(% control)								(lb/A)	(%)	
PPI												
Trifluralin	0.75	97	96	97	96	98	100	70	100	1347	23.2	38.9
PPI trifluralin 1.0/POST I as follows:												
Endothall	0.56	98	99	97	99	97	100	98	100	1439	22.6	40.0
Glufosinate	0.27	98	99	98	99	99	100	98	100	1643	22.7	40.3
PPI trifluralin 1.0/POST II as follows:												
Glufosinate	0.27	97	99	96	99	98	99	86	100	1464	23.3	38.7
POST I												
Glufosinate	0.27	95	95	93	93	84	100	95	95	1516	22.9	39.3
Glufosinate + AMS	0.27+3.0	93	86	86	85	85	96	88	75	1497	22.8	39.6
Glufosinate + sethoxydim + MSO	0.27+0.2+1.25%	97	99	97	97	73	98	88	94	1503	22.8	39.9
Glufosinate	0.36	97	99	91	98	96	100	91	100	1529	22.9	40.3
Glufosinate + AMS	0.36+3.0	97	98	96	97	97	94	71	94	1440	22.4	39.9
Glufosinate	0.45	97	100	93	99	96	100	98	98	1669	22.9	39.8
Glufosinate	0.89	98	98	95	98	96	100	90	100	1288	23.1	38.4
POST I/POST II												
Glufosinate/glufosinate	0.27/0.27	98	99	98	97	92	100	92	100	1574	22.9	39.6
POST II												
Glufosinate	0.27	87	90	81	90	80	99	65	91	1502	22.7	39.9
Glufosinate + AMS	0.27+3.0	86	86	80	83	80	94	69	94	1480	22.1	40.4
Glufosinate	0.36	79	86	74	80	75	86	48	93	1437	22.4	40.2
Glufosinate + AMS	0.36+3.0	84	89	79	82	78	85	60	80	1531	22.6	40.3
Glufosinate	0.45	78	93	78	85	81	98	58	95	1352	22.1	39.9
Glufosinate	0.89	74	91	70	85	83	96	59	92	1477	22.7	40.2
Hand-weeded	---	98	100	100	100	100	100	100	100	1493	22.9	39.4
Weedy check	---	0	0	0	0	0	0	0	0	1211	22.0	39.9
LSD (0.10)		8	15	9	12	10	12	20	20	174	0.8	1.5

[a]Trifluralin=Trefan 4EC; endothall=Herbicide 273 3 SC, glufosinate=Liberty 1.67 SC; Sethoxydim=Poast 1.53 EC; AMS=spray grade ammonium sulfate; and MSO=methylated seed oil, Cenex Land O'Lakes Destiny with 90% soybean oil and 10% emulsifiers.