

Herbicide tolerance in canola. Wrage, Leon J., Darrell L. Deneke, David A. Vos, Brian T. Rook, and Scott A. Wagner. The study evaluated crop tolerance and weed control for several herbicide programs. Plots were established at the Northeast South Dakota Research Farm near Watertown, South Dakota in 2002. The site had a Kranzburg silt loam soil with 3.9% organic matter and a pH of 6.3. The seedbed was prepared in oat stubble using a fall chisel operation and a field cultivator prior to planting. Plots were seeded May 14, 2002 using 8.5 lb/A seed with a press drill having 6 inches row spacings. Plots were established for each herbicide resistant test group using HyLite 243CL (Clearfield), Invigor 2653 (Liberty Link), and DeKalb DK27-20 (Roundup Ready). Herbicide treatments were arranged in a randomized complete block design with four replications of plots 10 x 50 feet. Preplant and preemergence herbicides were applied with a tractor-mounted compressed air sprayer equipped with 8003LP flat fan nozzles spaced 20 inches; set at 20 psi to deliver 20 gpa. Postemergence treatments were applied with a bicycle plot sprayer using compressed air equipped with 8002 flat fan nozzles spaced 20 inches set at 45 psi to deliver 20 gpa. Incorporated treatments were incorporated immediately with two passes using a 5-tine field cultivator with three rows of tines and a harrow mulcher; shallow preplant incorporated treatments were incorporated with one pass. Plots were visually evaluated for weed control and crop response. Yields were determined by harvesting a 5 by 45 foot area from the center of each plot using a plot combine. Application information and weather data are presented below.

Date	May 14, 2002	June 12, 2002	June 25, 2002
Treatment	Preplant, PRE	Epost	POST
Temperature (F.)	70°	73°	89°
Soil condition	moist	dry	moist
Soil temperature (F.)			
surface	48°	70°	70°
2 inch	46°	58°	63°
Canola			
height (inch)	—	3-4	12-18
Foxtail			
height (inch)	—	3-4	4-12
Lambsquarters			
height (inch)	—	—	3-8
Precipitation (inch)			
week 1	0	0.30	0
week 2	0	1.97	0

Results are summarized in the accompanying table. Crop emergence was uniform. Crop canopy was delayed due to dry conditions. Weed emergence was delayed. Foxtail and lambsquarters control were evaluated; weed density was high for yellow foxtail and moderate for lambsquarters; both had an effect on yield. Yield response to weeds is especially apparent especially in the Roundup Ready test. Visual ratings for crop stunting and yield data provide evaluation of crop tolerance. No treatments had ratings over 10% for crop response. Results suggest experimental herbicide treatments have sufficient crop tolerance for use in canola. Plant Science Department, South Dakota State University, Brookings, SD.

Table. Herbicide tolerance in canola (Wrage, Deneke, Vos, Rook, and Wagner).

Treatment ^{a/}	Rate (lb/A)	Crop stage (%)	Crop vigor reduction (%)	SETLU	CHEAL	Canola Yield (lb/bu)	Canola Test Wt
				Control 7/23/02 28 DAT (%)	Control 7/23/02 28 DAT (lb/A)		
DeKalb DK27-20 (Roundup Ready)							
Check	—	—	0	0	0	277	47
ethalfluralin	0.94	PPI	0	99	84	816	49
trifluralin	1	PPI	0	96	89	748	47
trifluralin/ clopypalid	0.75/ 0.124	PPI/ POST	0	98	97	713	48
trifluralin/ DPX-A7881+COC	0.75/ 0.0178+1%	PPI/ POST	0	97	95	775	49
s-metolachlor&CGA-154281 ^{b/}	1.52	SPPI	0	85	63	595	47
dimethenamid-P	0.098	SPPI	0	84	56	629	46
acetochlor(S)	2.4	PRE	0	71	31	454	46
sulfentrazone	0.25	PRE	0	35	45	397	47
quizalofop-P+COC	0.055+1%	EPOST	0	94	0	451	46
glyphosate ^{c/} +AMS	0.375+2	EPOST	4	99	81	711	46
glyphosate ^{c/} +AMS	0.375+2	POST	3	99	89	539	47
glyphosate ^{c/} +AMS	0.75+2	POST	9	99	97	461	47
Invigor 2653 (Liberty Link)							
Check	—	—	0	0	0	623	50
glufosinate+AMS	0.44+3	EPOST	0	98	96	928	50
glufosinate+AMS	0.88+3	EPOST	0	98	96	971	50
HyLite 243CL (Clearfield)							
Check	—	—	0	0	0	245	46
imazamox+MSO+28% N	0.0156+1.25%+1.25%	EPOST	0	98	93	429	44
imazamox+MSO+28% N	0.312+1.25%+1.25%	EPOST	0	99	97	545	44
clethodim+thifensulfuron+NIS	0.078+0.0056+0.25%	EPOST	0	89	93	442	44
LSD (P=0.05)			3	8	17	173	2

^{a/} Additives. COC is Class 17% by Cenex/Land O'Lakes; AMS is ammonium sulfate; MSO is Sun-It II by Agsco, Inc.; NIS is X-77 nonionic surfactant by Loveland Industries; and 28% N is an aqueous nitrogen solution containing urea and NH₄NO₃.

^{b/} Premix = Dual II Magnum.

^{c/} glyphosate = Roundup Ultra 3AS.

(S) = Surpass