

Weed control in imidazolinone-resistant sunflower. Endres, Gregory J. and Richard K. Zollinger. Weed control and crop response to selected herbicide treatments in imidazolinone-resistant (Clearfield™) sunflower were investigated. The trial had a randomized complete block design with three replicates. The experiment was conducted on a loam soil with 6.2 pH and 3.9% organic matter at Carrington, ND in 2002. Mycogen experimental line '6101 10180' was planted on May 22 in 30-inch rows. Herbicide treatments were applied to 10 by 30 ft plots with a CO₂ pressurized hand-held plot sprayer. PRE treatments were applied on a dry soil surface at 17 gal/A and 30 psi through 8002 flat fan nozzles on May 23 with 44 F, 53% RH, 65% clear sky, and 11 mph wind. Rainfall did not occur until 16 d following application of PRE treatments (1.15 inches). POST treatments were applied at 11.5 gal/A and 30 psi through 8001 flat fan nozzles on June 29 with 81 F, 61% RH, 80% clear sky, and 6 mph wind to V10-stage sunflower, 1- to 10-inch tall green and yellow foxtail (8 plants/ft²), and 1- to 2-inch tall marshelder (1 plant/ft²). The trial was hand-thinned to a population of about 20,000 sunflower/A on June 14.

Weed control was poor with PRE treatments due to the extended delay in rainfall after herbicide application (Table). Foxtail and marshelder control generally was good to excellent with imazamox four and eight weeks after herbicide application. Use of MSO as an adjuvant or addition of imazapyr did not improve weed control compared to imazamox+NIS+28%N. Sunflower tolerance to imazamox and imazamox+imazapyr was excellent. Sunflower tolerance to tribenuron and nicosulfuron was excellent while response was high with thifensulfuron, thifensulfuron&tribenuron, foramsulfuron, and chloransulam. (Carrington Research Extension Center, North Dakota Agric. Exp. Stn., North Dakota State Univ.)

Table. Weed control and crop response with imidazolinone-resistant sunflower (Endres and Zollinger).

Treatment ^a	Rate (lb/A)	2 wk after trt		4 wk after trt		8 wk after trt		Sunflower response		
		SETSS	A	SETSS	A	SETSS	A	2 wk after trt	4 wk after trt	
		----- % control -----						---- % growth reduction ----		
Untreated	x	0	0	0	0	0	0	0	0	
<u>PRE</u>										
Pendimethalin+sulfentrazone	1.24+0.164	x	x	25	36	20	13	x	0	
Pendimethalin H ₂ O+suen	1.24+0.164	x	x	44	40	23	0	x	0	
<u>PRE/POST</u>										
Pend/Imazamox+NIS+28%N	1.0/0.031+0.25%+1%	73	87	83	86	92	82	0	0	
%N	1.0/0.031+0.014+0.25%+1%	75	83	90	88	94	83	0	0	
Pend/Immx+impr+NIS+28%N	1.0/0.022+0.010+0.25%+1%	72	87	81	85	90	86	0	0	
Pend+suen/Immx+NIS+ 28%N	1.0+0.125/0.031+0.25%+1%	76	84	87	88	96	89	0	0	
Pend+suen/Immx+impr+NIS+ 28%N	1.0+0.125/0.022+0.010+0.25%+1%	73	89	91	83	94	81	0	0	
<u>POST</u>										
Immx+NIS+28%N	0.031+0.25%+1%	70	90	76	92	90	92	0	0	
Immx+MSO+28%N	0.031+1%+1%	70	87	80	92	93	96	1	0	
Immx+impr+NIS+28%N	0.031+0.014+0.25%+1%	72	85	90	92	98	91	0	0	
Immx+impr+NIS+28%N	0.031+0.010+0.25%+1%	71	88	77	88	84	84	0	0	
Tribenuron+NIS	0.014+0.25%	0	56	0	38	0	68	0	0	
Thifensulfuron+NIS	0.014+0.25%	0	95	0	95	0	98	90	90	
Thif&trib+NIS	0.014+0.25%	0	93	0	96	0	98	89	77	
Nicosulfuron+NIS	0.031+0.25%	57	66	57	45	65	37	0	0	
Foramsulfuron+MSO+28%N	0.033+1.6%+3.3%	75	90	73	93	80	94	70	38	
Chloransulam+NIS	0.016+0.25%	0	88	0	95	0	98	71	47	
LSD (0.05)		8	8	24	22	18	13	4	6	

^aNIS=Preference, a nonionic surfactant from agrilience, St. Paul, MN; MSO=Destiny, a methylated seed oil from Agrilience, St. Paul, MN.