

Crop response and weed control in tribenuron-resistant sunflower, Carrington, 2003
(Endres and Howatt)

Crop response and weed control were investigated with selected PRE imidazolinone and sulfonyleurea herbicides to simulate impact of soil residue on tribenuron-resistant sunflower. The trial had a randomized complete block design with four replicates. The experiment was conducted on a loam soil with 7.2 pH and 3.9% organic matter at the NDSU Carrington Research Extension Center. The trial area was tilled with a Melroe culti-harrow on May 22. Herbicide treatments were applied to 10 by 30 ft plots with a CO₂ pressurized hand-held plot sprayer at 20 gal/A and 30 to 35 psi through 8002 flat fan nozzles. Pioneer '03BM0024' was planted on May 22 in 30-inch rows. PRE treatments were applied on a dry soil surface on May 23 with 63 F, 57% RH, 100% cloudy sky, and 15 mph wind. Rainfall totaled 1.10 inches during May 23 to June 9. The POST treatment was applied on June 27 with 55 F, 96% RH, 50% clear sky, and 5 mph wind to V8- to V10-stage sunflower, 1- to 15-inch common lambsquarters (3/ft²), 1- to 5-inch tall redroot and prostrate pigweed (15/ft²), and 3- to 5-inch tall hairy and eastern black nightshade (1/ft²). Clethodim at 0.13 lb/A + MSO at 2 pt/A was applied on July 1 to plots with PRE treatments and untreated checks.

Sunflower stand did not differ among treatments (Table). Sunflower plant chlorosis and early height reduction was not detected (data not shown). Minor plant stunting was noted later in the season. Lack of crop response may have been due to delayed rainfall after PRE herbicide application. High rates of imazethapyr and metsulfuron provided excellent control of pigweed. Tribenuron+clethodim generally provided good to excellent weed control.

Table. Crop response and weed control with PRE herbicides in tribenuron-resistant sunflower.

Treatment	Herbicide Rate oz ai/A	Sunflower stand		Sufl stunting ² %	Weed control ¹		
		6/17 — plants/A —	7/25		colq	piwe ³ %	nish ⁴
<u>PRE</u>							
Imazethapyr	0.5	16154	15065	3	85	98	96
Imazethapyr	0.25	17061	17969	4	79	89	83
Imazethapyr	0.125	13794	12887	3	71	87	71
Metsulfuron	0.06	15065	14883	6	75	92	66
Metsulfuron	0.03	16335	15972	7	73	79	75
Metsulfuron	0.015	11072	11072	9	52	64	45
Flucarbazone	0.42	13250	14157	5	0	43	0
Flucarbazone	0.21	14702	13976	11	0	26	0
Flucarbazone	0.105	12342	13068	8	0	20	0
Sulfentrazone	3	13431	13250	7	67	68	76
<u>POST</u>							
Tribenuron+clethodim+PO ⁵	0.25+1.5	17787	18332	x	97	79	85
untreated check	x	15791	16154	0	0	0	0
<u>LSD (0.05)</u>		NS	NS	NS	18	22	10

¹PRE=June 30; POST=July 29.

²PRE=8 wk after sunflower emergence.

³piwe=redroot and prostrate pigweed.

⁴nish=hairy and eastern black nightshade.

⁵PO=Peptoil at 2 pt/A.