

Weed management in Express-tolerant sunflower, Carrington, 2006. Gregory J. Endres. The trial had a randomized complete block design with three replicates. The trial was conducted under conventional-till with lupin as the previous crop on a loam soil with 6.8 pH and 3.1% organic matter at the NDSU Carrington Research Extension Center. Herbicide treatments were applied to 10 by 30 ft plots with a CO₂ pressurized hand-held plot sprayer at 12 gal/A and 30 psi through 80015 flat fan nozzles. PP treatments were applied on May 24 on a dry soil surface with 63 F, 95% RH, 100% cloudy sky, and 7 mph wind. Rainfall totaled 0.6 inches during May 24 to 31. Pioneer ‘XF3312’ was planted in 30-inch rows on May 31 and hand-thinned to 20,000 plants/A on July 7. POST treatments were applied on June 29 with 62 F, 79% RH, clear sky, and 8 mph wind to V8-stage sunflower, 0.5- to 3-inch tall common lambsquarters, 2- to 4-inch tall hairy nightshade, and seedling- to bud-stage (1- to 30-inch tall) Canada thistle. The trial was hand harvested and seed threshed with a plot combine on October 16.

Adequate rainfall occurred for timely activation of soil-applied herbicides. Common lambsquarters control was excellent among all treatments (Table 1). Hairy nightshade and pigweed control was excellent with Spartan followed by Express (August 14). Canada thistle growth was suppressed with all Express treatments. Crop response to POST treatments included slight and variable yellowing (data not shown) and height reduction (Table 2). Sunflower development from planting to first flower and physiological maturity (data not shown) was similar among treatments. Seed yield was similar among treatments, likely due to minimal crop injury and low weed density.

Table 1. Weed control in Express-tolerant sunflower.

Treatment	Herbicide ¹		21-Jul			14-Aug		
	Rate	Timing	colq ²	hans ³	cath ⁴	colq	hans	piwe ⁵
	product/A		% control					
Prowl/Express SG + MSO	32 fl oz/0.25 oz	PP/POST	99	72	61	99	81	89
Prowl/Express SG + MSO	32 fl oz/0.5 oz	PP/POST	99	78	63	98	81	86
Spartan /Express SG + MSO	4.5 fl oz/0.25 oz	PP/POST	99	86	65	99	96	99
Spartan/Express SG + MSO	4.5 fl oz/0.5 oz	PP/POST	98	82	57	99	92	99
Express SG + MSO	0.25 oz	POST	99	73	67	93	81	62
Express SG + MSO	0.5 oz	POST	97	76	65	94	87	80
Express WG + Quad7	0.167 oz	POST	99	73	65	92	73	63
Express WG + Quad7	0.333 oz	POST	96	75	68	92	86	75
Untreated check	x	x	0	0	0	0	0	0
C.V. (%)			1.5	8.4	9.7	3.5	10.2	16.5
LSD (0.05)			2	10	10	5	13	21

¹Treatments: All treatments included Assure II at 8 fl oz/A. MSO=Destiny at 24 fl oz/A, a methylated seed oil from Agrilience. Quad7=1% v/v, a basic blend adjuvant from Agsco. Timing: PP=Preplant on May 24 and POST=Postemergence on June 29.

²colq=common lambsquarters.

³hans=hairy nightshade.

⁴cath=Canada thistle.

⁵piwe=prostrate and redroot pigweed.

Table 2. Express-tolerant sunflower response to herbicides.

Treatment	Herbicide ¹		Crop height	First	Seed
	Rate	Timing	reduction (July 21) inches	flower Jday	yield lb/A
	product/A				
Prowl/Express SG + MSO	32 fl oz/0.25 oz	PP/POST	0	214	1662
Prowl/Express SG + MSO	32 fl oz/0.5 oz	PP/POST	0	214	1697
Spartan /Express SG + MSO	4.5 fl oz/0.25 oz	PP/POST	3	214	1735
Spartan/Express SG + MSO	4.5 fl oz/0.5 oz	PP/POST	0	215	1662
Express SG + MSO	0.25 oz	POST	0	214	1384
Express SG + MSO	0.5 oz	POST	4	214	1839
Express WG + Quad7	0.167 oz	POST	3	214	1248
Express WG + Quad7	0.333 oz	POST	6	214	1542
Untreated check	x	x	0	215	838
C.V. (%)			154.1	0.4	24.2
LSD (0.05)			NS	NS	NS

¹Treatments: All treatments included Assure II at 8 fl oz/A. MSO=Destiny at 24 fl oz/A, a methylated seed oil from Agrilience. Quad7=1% v/v, a basic blend adjuvant from Agsco. Timing: PP=Preplant on May 24 and POST=Postemergence on June 29.