Weed management in Clearfield 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 CO_2 pressurized hand-held plot sprayer at 12 gal/A and 30 psi through 80015 flat fan nozzles. Preplant (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. Mycogen NuSun '8N429CL', treated with Maxim + Apron XL LS, 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 V6- to V8-stage sunflower, 0.5- to 6-inch tall common lambsquarters and 0.5- to 3-inch tall redroot and prostrate pigweed. 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. The preplant herbicides provided 73 to 78% control of common lambsquarters and pigweed species when visually evaluated on June 29 (Table 1). Common lambsquarters control ranged from 64 to 82% with POST Beyond applied alone or following soil-applied herbicides while pigweed control was excellent. Crop injury from herbicides was not detected in the trial (data not shown). Sunflower development from planting to first flower and physiological maturity was similar among treatments (Table 2). Seed yield was highest with soil-applied herbicides followed by Beyond. Yield was reduced with POST treatments due to delay in controlling weeds in combination with drought stress.

Table 1. Weed control in Clearfield sunflower.

Herbicide[1]			29-Jun		21-Jul		7-Aug	
Treatment	Rate	Timing	colq[2]	piwe[3]	colq	piwe	colq	piwe
	product/A		% control					
Prowl H_2O/Beyond + NIS + UAN	48 fl oz/4 fl oz	PP/POST	73	78	77	96	74	96
Spartan F/Beyond + NIS + UAN	3 fl oz/4 fl oz	PP/POST	78	78	80	95	82	98
Prowl H_2O + Spartan F/ Beyond + NIS + UAN	24 + 1.5 fl oz/ 4 fl oz	PP/POST	76	76	77	97	79	98
Beyond + NIS + UAN	4 fl oz	POST	x	x	69	91	64	92
Beyond + MSO + UAN	4 fl oz	POST	x	x	71	91	70	96
Untreated check	x	x	0	0	0	0	0	0
mean			57	58	62	78	62	80
C.V. (%)			4.7	2.6	3.2	4.9	4.9	6.7
LSD (0.05)			5	3	4	7	5	10

[1]Treatments: NIS=Preference at 0.25% v/v, a nonionic surfactant from Agriliance; MSO=Destiny at 1% v/v, a methylated seed oil from Agriliance; UAN at 2.5% v/v. Timing: PP=Preplant on May 24 and POST=Postemergence on June 29.

[2]colq=common lambsquarters.

[3]piwe=prostrate and redroot pigweed.

Table 2. Clearfield sunflower response to herbicides.

Herbicide[1]			Sunflower		
Treatment	Rate	Timing	First flower	Physiological maturity	Seed yield
	product/A		Jday	Jday	lb/A
Prowl H_2O/Beyond + NIS + UAN	48 fl oz/4 fl oz	PP/POST	216	258	1233
Spartan F/Beyond + NIS + UAN	3 fl oz/4 fl oz	PP/POST	217	258	1102
Prowl H_2O + Spartan F/ Beyond + NIS + UAN	24 + 1.5 fl oz/ 4 fl oz	PP/POST	217	258	1269
Beyond + NIS + UAN	4 fl oz	POST	219	258	401
Beyond + MSO + UAN	4 fl oz	POST	220	258	494
Untreated check	x	x	219	258	91
mean			218	258	765
C.V. (%)			0.6	0.2	37.4
LSD (0.05)			3	NS	521

[1]Treatments: NIS=Preference at 0.25% v/v, a nonionic surfactant from Agriliance; MSO=Destiny at 1% v/v, a methylated seed oil from Agriliance; UAN at 2.5% v/v. Timing: PP=Preplant on May 24 and POST=Postemergence on June 29.