Express-Tolerant Sunflower, Carrington, 2002. (Hendrickson and Zollinger) The study was conducted at the NDSU Carrington Research Extension Center on a loam soil with a 6.2 pH and 3.9% organic matter. Express-tolerant sunflower '02RL0009' and a conventional hybrid '63M80' were seeded May 23 into 30-inch rows at 22,000 seeds/A. Guard plots were present between treated plots. Individual plots were 5 ft by 30 ft and arranged in a randomized complete block design with three replications. Herbicide treatments were applied with a CO_2 pressurized hand-held plot sprayer. PRE treatments were applied at 20 gal/A and 20 psi through XR8003 flat fan nozzles. POST treatments were applied at 10 gal/A and 20 psi through XR80015 flat fan nozzles. Prowl and Spartan were applied PRE on May 27 with 66º F, 33% RH, 0% cloud cover, 0 mph wind, and 54º F soil temperature. The soil was dry to a depth of 2.5 inches with no significant rain for 12 days after application. All other herbicides were applied on June 29 with 76º F, 77% RH, 5% cloud cover, 6 mph wind, and 78º F soil temperature to 4- to 6-leaf sunflower, 1- to 6-leaf green and yellow foxtail, 2- to 8-inch marshelder, and PRE to emerging kochia. The sunflowers were harvested on October 21.

Broadleaf weed control was generally good to excellent (76 to 100%) with the Express treatments. When Assure II was added to Express, green and yellow foxtail control decreased as the Express rate increased from 0.25 to 0.5 oz ai/A. Prowl and Spartan did not injure the crop when evaluated on 6/29 (data not shown). Express was relatively safe when applied to the Express-tolerant sunflower with yields of 1700-1900 lb/A. Harmony GT, Harmony Extra, and Option injured the crop and reduced yields when compared to the Express treatments. Express applied at 0.125 oz ai/A seriously injured the conventional hybrid, causing a 90% reduction in height and zero seed yield. The poor broadleaf weed control with this treatment was probably due to a lack of crop competition.

Table.

		Weed control[b]							Sunflower			
		Grft and Yeft			Marshelder			Kochia	Crop injury	Height reduct.	Seed yield	Test weight
Treatment[a]	Rate	6/29	7/12	9/4	6/29	7/12	9/4	9/4	7/12	9/4	10/21	
	oz ai/A	%									lb/A	lb/bu
Express-tolerant hybrid												
Prowl+Spartan	19.8+3	53	0	0	87	80	88	96	0	0	1685	29.1
Spartan / Select +PO+AMS	3 / 1.5 +1qt+2.5lb	77	94	100	88	90	98	100	0	0	1564	29.3
Spartan / Assure II +PO+AMS	3 / 0.99 +1qt+2.5lb	80	98	100	94	93	98	100	0	0	1722	29.8
Express+Select +PO+AMS	0.25+1.5 +1qt+2.5lb		93	100		100	100	99	2	0	1811	29.9
Express+Assure II +NIS	0.125+0.99 +0.5%v/v		85	100		100	76	98	0	0	1906	29.7
Express+Assure II +NIS	0.187+0.99 +0.5%v/v		83	100		100	100	98	0	0	1750	29.5
Express+Assure II +NIS	0.25+0.99 +0.5%v/v		75	98		100	99	95	3	0	1907	29.7
Express+Assure II +NIS	0.5+0.99 +0.5%v/v		37	7		100	99	93	15	0	1705	29.1
Harmony GT+Assure II +NIS	0.225+0.99 +0.5%v/v		90	100		100	91	27	50	33	663	27.6
Harmony GT+Assure II +NIS	0.45+0.99 +0.5%v/v		92	100		100	98	42	63	57	448	26.7
Harmony Extra+Assure II +NIS	0.225+0.99 +0.5%v/v		85	100		100	98	83	37	13	1206	28.7
Harmony Extra+Assure II +NIS	0.45+0.99 +0.5%v/v		75	86		100	97	88	20	23	1249	28.1
Option +MSO+28%	1.05 +1.5pt+1.5qt		96	97		100	100	17	75	67	0	0.0
Untreated Check	0	0	0	0	0	0	0	0	0	0	1147	29.3
Conventional hybrid												
Express+Assure II +NIS	0.125+0.99 +0.5%v/v		92	100		98	17	17	83	90	0	0.0
LSD (0.05)		6	12	11	11	3	20	18	8	7	327	1.0

[a]PO=Peptoil, AMS=ammoniom sulfate, NIS=Preference, and MSO=MES100

[b]Grft=green foxtail, Yeft=yellow foxtail