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Introduction

- Tribenuron-tolerant sunflower provides growers with a post-emergent broadleaf weed control option in sunflower.

Objective

- The study evaluated herbicide efficacy and tribenuron-tolerant sunflower response to herbicides applied PRE and POST.

Results

- Broadleaf weed control was generally good to excellent (76 to 100%) with tribenuron.
- Green and yellow foxtail control from tribenuron+quizalofop-P decreased as the tribenuron rate increased from 0.25 to 0.5 oz ai/A.
- Pendimethalin and sulfentrazone did not injure the crop when evaluated on 6/29 (data not shown).
- Tribenuron was relatively safe when applied to the tribenuron-tolerant sunflower with yields of 1700-1900 lb/A.
- Thifensulfuron, thifensulfuron + tribenuron, and foramsulfuron injured the crop and reduced yield compared to the tribenuron treatments.
- Tribenuron applied at 0.125 oz ai/A seriously injured the conventional hybrid, causing a 90% reduction in height and zero seed yield.

Materials and Methods

- 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.
- Tribenuron-tolerant sunflower '02RL0009' and a conventional hybrid '63M80' were seeded May 23, 2002 into 30-inch rows at 22,000 seeds/A.

- Randomized complete block design with three replications.
- Pendimethalin and sulfentrazone were applied PRE on May 27. All other herbicides were applied on June 29 to 4- to 6-leaf sunflower, 1- to 6-leaf green and yellow foxtail, 2- to 8-inch marshelder, and emerging kochia.
- The trial was harvested on October 21.



0.25 oz ai/A tribenuron + 1.5 oz ai/A clethodim + 1 qt/A PO + 2.5 lb/A AMS



0.25 oz ai/A tribenuron + 0.99 oz ai/A quizalofop-P + 0.5% v/v NIS



0.45 oz ai/A thifensulfuron + 0.99 oz ai/A quizalofop-P + 0.5% v/v NIS



Untreated check

Table. Weed control and crop response in tribenuron-tolerant sunflower.

Treatment ¹	Rate	Weed control ²							Sunflower		
		Foxtail spp.			Marshelder		Kochia	Crop injury	Height reduct.	Seed yield	
		6/29	7/12	9/4	6/29	7/12	9/4				7/12
	oz ai/A	%							lb/A		
Express-tolerant hybrid											
Pendimethalin+sulfentrazone	19.8+3	53	0	0	87	80	88	96	0	0	1685
Sulfentrazone / clethodim	3 / 1.5	77	94	100	88	90	98	100	0	0	1564
+PO+AMS	+1qt+2.5lb										
Sulfentrazone / quizalofop-P	3 / 0.99	80	98	100	94	93	98	100	0	0	1722
+PO+AMS	+1qt+2.5lb										
Tribenuron+clethodim	0.25+1.5	-	93	100	-	100	100	99	2	0	1811
+PO+AMS	+1qt+2.5lb										
Tribenuron+quizalofop-P	0.125+0.99	-	85	100	-	100	76	98	0	0	1906
+NIS	+0.5%v/v										
Tribenuron+quizalofop-P	0.187+0.99	-	83	100	-	100	100	98	0	0	1750
+NIS	+0.5%v/v										
Tribenuron+quizalofop-P	0.25+0.99	-	75	98	-	100	99	95	3	0	1907
+NIS	+0.5%v/v										
Tribenuron+quizalofop-P	0.5+0.99	-	37	7	-	100	99	93	15	0	1705
+NIS	+0.5%v/v										
Thifensulfuron+quizalofop-P	0.225+0.99	-	90	100	-	100	91	27	50	33	663
+NIS	+0.5%v/v										
Thifensulfuron+quizalofop-P	0.45+0.99	-	92	100	-	100	98	42	63	57	448
+NIS	+0.5%v/v										
Thifensulfuron+tribenuron+quizalofop-P+NIS	0.15+0.75+0.99+0.5%v/v	-	85	100	-	100	98	83	37	13	1206
Thifensulfuron+tribenuron+quizalofop-P+NIS	0.3+0.15+0.99+0.5%v/v	-	75	86	-	100	97	88	20	23	1249
Foramsulfuron + MSO+28%	1.05+1.5pt+1.5qt	-	96	97	-	100	100	17	75	67	0
Untreated check	0	0	0	0	0	0	0	0	0	0	1147
Conventional hybrid											
Tribenuron+quizalofop-P	0.125+0.99	-	92	100	-	98	17	17	83	90	0
+NIS	+0.5%v/v										
LSD (0.05)		6	12	11	11	3	20	18	8	7	327

¹PO=petroleum oil concentrate (Peptoil), AMS=ammonium sulfate, NIS=non-ionic surfactant (Preference), and MSO=methylated seed oil (MES100)

²Foxtail spp. is a mix of green and yellow foxtail