

Canada thistle control in tribenuron-resistant sunflower. Zollinger, Richard K. and Jerry L. Ries. An experiment was conducted near Moorhead, MN, to evaluate Canada thistle control using split applications of tribenuron with adjuvants. Pioneer '03BM0024' sunflower was planted on May 28, 2003. EPOST (early postemergence) treatments were applied on June 18 at 1:00 pm with 78 F air, 90 F soil surface, 31% relative humidity, 10% clouds, 3 to 5 mph E wind, dry soil surface, moist subsoil, good crop vigor, and no dew present to cotyledon to V4 sunflower. Weed species present were: 1 to 4 inch (5 to 20/yd²) Canada thistle. POST treatments were applied on July 3 at 3:00 pm with 90 F air, 100 F soil surface, 45% relative humidity, 10% clouds, 0 to 2 mph E wind, moist soil surface, moist subsoil, good crop vigor, and no dew present to V4 to V10 sunflower. Weed species present were: 1 to 8 inch (10 to 20/yd²) Canada thistle. Treatments were applied to the center 6.7 feet of the 10 by 40 foot plots with a backpack-type plot sprayer delivering 8.5 gpa at 40 psi through 8001 flat fan nozzles. The experiment had a randomized complete block design with three replicates per treatment.

The July 2 ratings are 14 DAT of EPOST applications and July 17 and 31 are 14 and 28 DAT after POST applications, or 42 DAT after EPOST. Tribenuron-resistant sunflower are in development and will possibly be registered in 2005. Tribenuron controls many broadleaf weeds but antagonizes most postemergence grass herbicides. Previous research has shown basic pH blend adjuvant enhancement of sulfonylurea herbicides by increasing pH of the spray carrier and increasing herbicide solubility. Imazamox is registered for use in Clearfield (imidazolinone resistant) sunflower. Tribenuron and imazamox have a similar broadleaf weed control spectrum, except tribenuron is more active on Canada thistle. This study was conducted to observe adjuvant enhancement of tribenuron from sequentially applied treatments on a difficult to control perennial species. Many different classes of adjuvants were used. Tribenuron rate used in each application was half of the total amount allowed by label. General impression of Canada thistle control at 14 DAT after second application was impressive. Tribenuron is registered for use in small grains and is exclusively applied with phenoxy herbicides which increases the speed of activity. Weed control data from tribenuron applied alone is deficient. At 14 and 28 DAT after second application, Canada thistle control was 79% to 95%. Basic pH blend and MSO + basic pH blend type adjuvants gave the greatest enhancement of Canada thistle control. Sunflower injury was not visible at any treatment. (Dept. of Plant Sciences, North Dakota State University, Fargo).

Table. Canada thistle control in tribenuron-resistant sunflower (Zollinger and Ries).

Treatment ¹	Rate	July 2	July 17	July 31
		CIRAR	CIRAR	CIRAR
	(lb/A)	(%)	(%)	(%)
<u>EPOST/POST</u>				
Tribenuron+Activator 90/ Tribenuron+Activator 90	0.012/0.012	57	79	79
Trib+Linkage/Trib+Linkage	0.012/0.012	75	94	94
Trib+Herbimax/Trib+Herbimax	0.012/0.012	70	84	84
Trib+Scoil/Trib+Scoil	0.012/0.012	70	85	85
Trib+Base/Trib+Base	0.012/0.012	77	95	95
Trib+Z-64/Trib+Z-64	0.012/0.012	80	94	94
Trib+Renegade/Trib+Renegade	0.012/0.012	78	95	95
Trib+Vortex/Trib+Vortex	0.012/0.012	57	86	86
LSD (0.05)		7	3	3

¹Activator 90 = nonionic surfactant at 0.25% v/v; Linkage = basic pH blend at 1% v/v; Herbimax = petroleum oil at 1% v/v; Scoil = methylated seed oil (MSO) at 1% v/v; Base and Renegade = MSO basic blend at 1% v/v; Z-64 = MSO basic blend + 28-0-0 + surfactant at 1% v/v; Vortex = MSO + water conditioning agent at 2 pt/100 gallon.