Canada thistle control with tribenuron and adjuvants. Zollinger, Richard K. and Jerry L. Ries. An experiment was conducted near Moorhead, MN, to evaluate Canada thistle control when tribenuron was applied with adjuvants to tribenuron-resistant sunflower. Pioneer '03BM0024' sunflower was planted on May 28, 2003. POST treatments were applied on June 18 at 12:45 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/yd^2) 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.

Tribenuron-resistant sunflower are in development and may 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 on a difficult to control perennial species. Many different classes of adjuvants were used. Rate of tribenuron was 0.016 lb/A, which was intermediate in range to what will be labeled. General impression of Canada thistle control at 7 (data not shown) and 14 DAT was disappointing because slow speed of activity was unexpected. 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 28 DAT, Canada thistle control had increased to a range of 70% to 95%. The class of adjuvants that promoted the greatest control of Canada thistle was MSO + basic pH blend (Base, Renegade, and Z-64). (Dept. of Plant Sciences, North Dakota State University, Fargo).

Table. Canada thistle control with tribenuron and adjuvants (Zollinger and Ries).

		July 2	July 28
Treatment[1]	Rate	CIRAR	CIRAR
	(lb/A)	(%)	(%)
Tribenuron+Activator 90	0.016	60	72
Trib+Liberate	0.016	50	73
Trib+Liberate	0.016	70	80
Trib+Linkage	0.016	73	87
Trib+Silken	0.016	43	74
Trib+Herbimax	0.016	57	74
Trib+Scoil	0.016	70	86
Trib+Phase	0.016	57	70
Trib+Base	0.016	73	94
Trib+Z-64	0.016	70	90
Trib+Renegade	0.016	75	90
Trib+Vortex	0.016	73	72
LSD (0.05)		6	5

[1]Activator 90 = nonionic surfactant at 0.25% v/v; Liberate = nonionic surfactant at 1 pt/100 gallon for treatment two and 2 pt/100 gallon for treatment three; Linkage = basic pH blend at 1% v/v; Silken = nonionic surfactant with silicone at 4 pt/100 gallon; Herbimax = petroleum oil at 1% v/v; Scoil = methylated seed oil (MSO) at1% v/v; Phase = MSO + organosilicone surfactant at 2 pt/100 gallon; 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.