

Herbicide Application Methods and Adjuvants

Adjuvants rate based on spray volume and area of coverage. Zollinger, Richard K. and Jerry L. Ries. An experiment was conducted near Casselton, ND, to evaluate weed control when applying adjuvants at a percent volume basis versus at an area basis. Treatments were applied on July 1, 2004 at 8:05 am with 66 F air, 81 F soil surface, 57% relative humidity, 5% clouds, 4 to 7 mph NE wind, dry soil surface, moist subsoil, and no dew present to 2 to 6 inch (1 to 3/ft²) common cocklebur. 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 TeeJet flat fan nozzles. The experiment had a randomized complete block design with three replicates per treatment.

Many herbicide labels that allow application with oil adjuvants recommend oil adjuvants rates at 1% v/v. At 1% v/v, herbicides applied at high spray volumes may have sufficient adjuvant for optimal weed control while the amount of oil adjuvant at low spray volumes may be inadequate. Pesticide Use Surveys conducted in North Dakota show that over 88% of herbicides are applied at 10 gpa or less. Data show that weed control from tribenuron applied with adjuvants gave greater control at 1.5 pt/A than at 1% v/v and 2% v/v. North Dakota State University routinely recommends oil adjuvants at 1.5 pt/A to maintain sufficient adjuvant concentration in the spray tank regardless of spray volume used. Basic pH blend (BB) adjuvants are recommended and used at 1% v/v because previous research has shown adequate weed control in a wide range of spray volumes. However, these data support BB use in at least a 2% v/v concentration. Adjuvant rate may not be as critical if higher herbicide rates are used or if herbicides are applied to susceptible weeds species. (Dept. of Plant Sciences, North Dakota State University, Fargo).

Table. Adjuvants rate based on spray volume and area of coverage (Zollinger and Ries).

Treatment ¹	Rate (lb/A)	XANST (28 DAT), adjuvant rate		
		1% v/v (0.68 pt/A) (%)	2 % v/v (1.4 pt/A) (%)	1.5 pt/A (%)
Tribenuron+Quad 7	0.01	42	69	
Tribenuron+Scoil	0.01	35	44	57
Tribenuron+Renegade	0.01	42	64	74
LSD (0.05)		----- 5 ² -----		

¹Tribenuron = Express SG - 50 SG; Quad 7 = basic pH blend; Scoil = methylated seed oil (MSO);
Renegade = MSO basic pH blend.

²LSD of 5 can be used to compare any two values in table.