

Common lambsquarters control in soybeans with various glyphosate formulations. Trower, Timothy L. and Chris M. Boerboom. The purpose of this study was to investigate the postemergence efficacy of various glyphosate formulations on common lambsquarters (CHEAL) at two application dates. Glyphosate formulations were applied postemergence at 0.75 lb ae/a with ammonium sulfate to common lambsquarters that ranged from 10 to 22 inches at site one to 17 to 24 inches at site two. Glyphosate was evaluated at 0.75 lb ae/A, without ammonium sulfate, and at the higher 1.12 lb ae/A rate with ammonium sulfate. Glyphosate was also evaluated as a tank mixture with thifensulfuron-methyl. Site one was conducted non-crop while site two was applied to soybeans at the V5 to R1 growth stage. The study was conducted at the University of Wisconsin Arlington Research Station on a Plano silt loam with a pH of 6.0 and 3.2% organic matter. Trial design was a randomized complete block with 10 by 25 foot plots replicated four times. Herbicide applications were made with a CO₂ backpack sprayer calibrated at 20 gpa and equipped with XR8003 nozzles. Application data were as follows:

Site	One	Two
Date	6/16/04	7/02/04
Treatment	POST	POST
Spray		
gpa	20	20
psi	23	23
mph	3	3
Temperature (F)		
air	82	81
soil	76	74
Soil moisture (surface)	moist	dry
Wind/direction (mph)	3-5, SW	4-7, E
Relative humidity (%)	60	48
Cloud cover (%)	80	0
Soybean	non-crop	
leaf no.	--	V5-R1
height (inch)	--	13
Common lambsquarters		
leaf no.		
height (inch)	10-22	17-24

Rainfall differed between the two sites. Site one received 0.47 inches of rainfall starting 3 hours 20 minutes after application while site two was rain-free for 24 hours. No crop injury was observed at site two.

No glyphosate formulation provided acceptable common lambsquarters control at site one, which was likely a result of the rainfall. Roundup Original Max plus NIS and ammonium sulfate provided the best control 28 days after application at 76%. Roundup WeatherMax applied at 0.75 and 1.12 lb ae/A provided equal common lambsquarters control 28 days after application, averaging 55% control. Adding ammonium sulfate to Roundup WeatherMax at 0.75 lb ae/A did not improve control over Roundup WeatherMax applied alone. Touchdown provided common lambsquarters control that was equal to Roundup WeatherMax applied at 0.75 and 1.12 lb ae/A. ClearOut 41 Plus, Glyphomax Plus, and Glystar Plus provided equal common lambsquarters control at 28 days after application, ranging from 38 to 35%. Tank mixing thifensulfuron-methyl with Roundup WeatherMax did not improve common lambsquarters control over Roundup WeatherMax applied alone.

Differences in the speed of control of the large common lambsquarters were observed among the glyphosate formulations at site two. Common lambsquarters control with ClearOut 41 Plus, Glyphomax Plus, and Glystar Plus averaged 88, 81 and 77%, respectively, 24 days after application compared to 94% control or greater for the remaining glyphosate formulations. No differences in common lambsquarters control were noted between Roundup WeatherMax applied at 0.75 or 1.12 lb ae/A, Roundup WeatherMax applied at 0.75 lb ae/A with or without ammonium sulfate, or Roundup WeatherMax applied at 0.75 lb ae/A with or without thifensulfuron-methyl (Department of Agronomy, University of Wisconsin-Madison).

Table 1. Common lambsquarters control with various glyphosate formulations at site one (Trower and Boerboom).

Treatment	Rate (lb ae/A)	CHEAL control ^a		
		June 29 (%)	July 14 (%)	July 26 (%)
Glyphosate (Roundup WeatherMax)+AMS	0.75+2.5 lb/A	58	61	59
Glyphosate (Roundup WeatherMax)	0.75	53	55	53
Glyphosate (Roundup WeatherMax)+AMS	1.12+2.5 lb/A	58	55	48
Glyphosate (Roundup Original Max)+AMS+NIS	0.75+2.5 lb/A+0.25%	78	76	71
Glyphosate (Touchdown)+AMS	0.75+2.5 lb/A	50	48	40
Glyphosate (ClearOut 41 Plus)+AMS	0.75+2.5 lb/A	30	35	35
Glyphosate (Glyphomax Plus)+AMS	0.75+2.5 lb/A	36	38	40
Glyphosate (Glystar Plus)+AMS	0.75+2.5 lb/A	30	35	35
Glyphosate (Roundup WeatherMax)+ thifensulfuron-methyl	0.75+ 0.0025 lb ai/A	65	60	58
LSD (P=0.1)		13	11	11

^aWeed control is a visual rating of biomass reduction ranging from 0 to 100%, where 100% is complete weed control.

Table 2. Common lambsquarters control with various glyphosate formulations at site two (Trower and Boerboom).

Treatment	Rate (lb ae/A)	CHEAL control ^a		
		July 14 (%)	July 26 (%)	August 18 (%)
Glyphosate (Roundup WeatherMax)+AMS	0.75+2.5 lb/A	86	100	100
Glyphosate (Roundup WeatherMax)	0.75	87	98	99
Glyphosate (Roundup WeatherMax)+AMS	1.12+2.5 lb/A	86	98	100
Glyphosate (Roundup Original Max)+AMS+NIS	0.75+2.5 lb/A+0.25%	85	100	100
Glyphosate (Touchdown)+AMS	0.75+2.5 lb/A	86	94	99
Glyphosate (ClearOut 41 Plus)+AMS	0.75+2.5 lb/A	83	88	97
Glyphosate (Glyphomax Plus)+AMS	0.75+2.5 lb/A	81	81	94
Glyphosate (Glystar Plus)+AMS	0.75+2.5 lb/A	78	77	97
Glyphosate (Roundup WeatherMax)+ thifensulfuron-methyl	0.75+ 0.0025 lb ai/A	86	100	100
Glyphosate (Roundup WeatherMax)+ thifensulfuron-methyl+AMS	0.75+ 0.0025 lb ai/A+2.5 lb/A	87	100	100
LSD (P=0.1)		2	4	3

^aWeed control is a visual rating of biomass reduction ranging from 0 to 100%, where 100% is complete weed control.