Herbicide Application Methods and Adjuvants

Evaluation of adjuvants for use with foramsulfuron and foramsulfuron plus iodosulfuron.

Monnig, Nicholas H., Jimmy D. Wait, Jianmei Li, and Kevin W. Bradley. The objective of this study was to evaluate the efficacy of various adjuvants on the weed control performance of foramsulfuron and foramsulfuron plus iodosulfuron in corn. This study was conducted at the Bradford Research and Extension Center near Columbia, MO. The soil was a Mexico silt loam with a pH of 6.5 and 2.3% organic matter. 'Pioneer 35Y67 LL' was planted in 30 inch rows at a depth of 1.5 inches on April 18. Treatments were arranged in a randomized complete block design with four replications of 10 by 40 foot plots. Herbicide applications were made with a CO_2 backpack sprayer equipped with XR8002 flat fan nozzles calibrated to deliver 15 GPA at 26.5 PSI.

Application data are listed below:

Date	June 1
Treatment	5-6" weeds
Temperature (F)	
air	74
soil	69
Soil Moisture	dry
Wind (mph)	5
Cloud Cover (%)	40
Relative Humidity (%)	54
Precipitation after application	
week 1 (inch)	0.17
week 2 (inch)	3.42
Corn	
leaf no.	V6
height (inch)	18.5
Giant foxtail	
leaf no.	4
height (inch)	6
infestation	2.4/ft^2
Common ragweed	
leaf no.	4
height (inch)	4
infestation	2.5/ft^2
Common waterhemp	
leaf no.	6
height (inch)	5
infestation	2.1/ft^2

Visible crop injury from all herbicide treatments ranged from 5 to 9% 14 days after application (DAA). However, by 27 DAA there was no visible crop injury. Nicosulfuron plus rimsulfuron plus mesotrione plus crop oil concentrate (COC) and ammonium sulfate (AMS) consistently provided poor control of common ragweed and common waterhemp. Overall, treatments of foramsulfuron and foramsulfuron plus iodosulfuron containing methylated seed oil (MSO) provided greater control of giant foxtail than similar treatments containing COC.

Table. Evaluation of adjuvants for use with foramsulfuron and foramsulfuron plus iodosulfuron (Monnig, Wait, Li, Bradley).

				Weed Control					
		Corn injury		SETFA		AMBEL		AMATA	
Application	Rate	14DAA	27	14	27	14	27	14	27
	(lb/A)	----------	----------	----------	%----------	----------	----------	----------	----------
Untreated		0	0	0	0	0	0	0	0
Foramsulfuron+ Dicamba+ Diflufenzopyr+ MSO+AMS	0.033 0.087 0.035 0.83%+1.5	5	0	66	85	80	83	73	80
Foramsulfuron+ Dicamba+ Diflufenzopyr+ MSO+AMS	0.033 0.087 0.035 1.25%+1.5	6	0	70	89	80	87	71	85
Foramsulfuron+ Dicamba+ Diflufenzopyr+ COC+AMS	0.033 0.087 0.035 1.0%+1.5	5	0	56	75	80	82	72	77
Foramsulfuron+ Iodosulfuron+ Dicamba+ Diflufenzopyr+ MSO+AMS	0.009 0.0006 0.087 0.035 0.83%+1.5	9	0	64	84	80	91	71	80
Foramsulfuron+ Iodosulfuron+ Dicamba+ Diflufenzopyr+ MSO+AMS	0.009 0.0006 0.087 0.035 1.25%+1.5	6	0	68	87	82	88	69	80
Foramsulfuron+ Iodosulfuron+ Dicamba+ Diflufenzopyr+ COC+AMS	0.009 0.0006 0.087 0.035 1.0%+1.5	6	0	58	74	81	96	72	81

(continued)

Table. Evaluation of adjuvants for use with foramsulfuron and foramsulfuron plus iodosulfuron (Monnig, Wait, Li, Bradley).

				Weed Control					
		Corn injury		SETFA		AMBEL		AMATA	
Application	Rate	14DAA	27	14	27	14	27	14	27
	(lb/A)	----------	----------	----------	%----------	----------	----------	----------	----------
Nicosulfuron+ Rimsulfuron+ Mesotrione+ COC+AMS	0.018 0.009 0.062 1.0%+1.5	8	0	56	88	58	36	66	38
Foramsulfuron+ Dicamba+ MSO+AMS	0.033 0.375 1.25%	7	0	74	87	77	90	72	81
Foramsulfuron+ Dicamba+ COC+AMS	0.033 0.375 1.0%+1.5	7	0	54	73	75	83	64	77
LSD(0.05)		4	0	6	8	5	8	6	6