

Evaluation of manganese (Mn) rate on glyphosate antagonism. Li, Jianmei, Jim D. Wait, and Kevin W. Bradley. The objective of this study was to investigate the rate at which antagonism between manganese fertilizer products and glyphosate occurs when applied in tank-mix combinations. 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 6.7 and 2.4% organic matter. 'DK3852' glyphosate-resistant soybean was planted 1 inch deep on June 4 in 30 inch rows. Treatments were arranged in a randomized complete block design with four replications of 10 by 35 foot plots. Herbicide applications were made with a CO<sub>2</sub> backpack sprayer equipped with XR8002 flat fan nozzles calibrated to deliver 15 GPA at 17 PSI.

Application data are listed below:

Date	July 5
Treatment	4-6" weeds
Temperature (C)	
air	27.7
soil (4 inch)	28.9
Soil moisture	wet
Wind (mph)	7
Cloud cover (%)	14
Relative humidity (%)	67
Precipitation after application	
week 1 (inch)	2.47
week 2 (inch)	0.31
Soybean	
stage	4 trif
height (inch)	13
Giant foxtail	
leaf no.	6
height (inch)	10
infestation	6/ft <sup>2</sup>
Pennsylvania smartweed	
leaf no.	10
height (inch)	13
infestation	1/ft <sup>2</sup>
Common waterhemp	
leaf no.	7
height (inch)	6
infestation	3/ft <sup>2</sup>
Ivyleaf morningglory	
leaf no.	4
height (inch)	5
infestation	1/ft <sup>2</sup>

Crop injury was less than 5% at all evaluation ratings. At 44 days after application, lower level of giant foxtail, Pennsylvania smartweed, ivyleaf morningglory, and common waterhemp control were observed with all Post-Man –glyphosate combinations compared to glyphosate alone. The 0.8 lb/A rate of Post-Man consistently provided lower control of all of the species evaluated 44 days after application. No other manganese fertilizer products or rates evaluated in these trials provided significantly lower levels of weed control than glyphosate alone. (Department of Agronomy, University of Missouri-Columbia)

Table. Evaluation of manganese (Mn) rate on glyphosate antagonism (Li, Wait and Bradley).

Application	Rate (lb/A)	Weed control													
		Soybean injury			SETFA			POLPY			IPOHE			AMATA	
		7-13	7-19	8-18	7-13	7-19	8-18	7-13	7-19	8-18	7-13	7-19	8-18	7-19	8-18
Dissolvine E-MN-6+ Glyphosate <sup>1</sup>	0.2+ 0.77	1	0	0	99	98	97	74	76	96	61	87	99	94	97
Dissolvine E-MN-6+ Glyphosate	0.4+ 0.77	3	0	0	99	96	99	75	77	98	64	82	96	95	94
Dissolvine E-MN-6+ Glyphosate	0.8+ 0.77	4	0	0	98	97	98	77	77	92	70	86	97	98	96
Dissolvine E-MN-13+ Glyphosate	0.2+ 0.77	1	0	0	99	97	100	74	80	95	72	88	99	97	98
Dissolvine E-MN-13+ Glyphosate	0.4+ 0.77	2	0	1	99	98	99	61	83	93	63	86	93	96	96
Dissolvine E-MN-13+ Glyphosate	0.8+ 0.77	3	0	1	98	98	99	68	82	97	61	87	98	96	95
Post-Man+ Glyphosate	0.2+ 0.77	1	0	0	83	89	96	56	68	85	54	75	94	91	81
Post-Man+ Glyphosate	0.4+ 0.77	0	0	0	56	73	95	49	62	94	43	62	87	77	86
Post-Man+ Glyphosate	0.8+ 0.77	1	0	0	39	66	79	559	47	80	43	52	88	66	78
Traco Mn-EDTA+ Glyphosate	0.2+ 0.77	0	0	0	100	99	100	68	77	99	65	88	100	97	99
Traco Mn-EDTA+ Glyphosate	0.4+ 0.77	2	0	0	99	99	99	75	80	96	65	90	99	98	98
Traco Mn-EDTA+ Glyphosate	0.8+ 0.77	4	0	0	99	97	99	81	800	97	77	88	99	95	96
Glyphosate	0.77	1	0	0	100	99	100	76	81	98	69	88	98	98	97
Untreated		0	0	0	0	0	0	0	0	0	0	0	0	0	0
LSD(0.05)		2	0	1	5	4	4	16	9	7	12	8	6	5	7

<sup>1</sup> Glyphosate was Roundup WeatherMax.