

Comparison of glyphosate programs in field corn at Rochester, MN in 2004. Behnken, Lisa M., Fritz R. Breitenbach, Kristal L. Schaufler and Debra L. Lewis. The objective of this trial was to compare glyphosate programs in field corn in southeastern Minnesota. The research site was a Lawler loam series containing 2.9% organic matter with a pH of 6.0 and soil test P and K levels of 74 ppm and 268 ppm, respectively. The previous crop was soybean. The area was fertilized in the spring with 122 lb/A nitrogen, 23 lb/A phosphorus, 120 lb/A potash, 23 lb/A sulfur and 3 tons/A of lime. The area was topdressed with 40 lb/A of nitrogen on June 15. The field was disked and field cultivated once prior to planting. The corn hybrids, DeKalb DKC 47-10 and Garst NE-839 IT, were planted on April 29, 2004 at a depth of 1.5 inches in 30-inch rows at 32,000 seeds/A. A randomized complete block design with four replications was used. Preemergence (PRE) and postemergence (POST I, POST II and POST III) treatments were applied with a tractor-mounted sprayer, delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on May 18, June 2, June 7, June 15, and October 20, 2004. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	April 29	June 3	June 8	June 21
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
air	59	69	79	69
Relative humidity (%)	57	47	68	65
Wind (mph)	8	8	13	7
Soil moisture	adequate	adequate	adequate	adequate
Corn				
stage	seeded	4 collar	5 collar	7 collar
height (inches)	--	7.8	10	21.9
Giant ragweed				
weed density	--	heavy	heavy	heavy
height (inch)	--	5.6	14.4	2 regrowth
Common lambsquarters				
weed density	--	light	light	light
height (inch)	--	4.7	1.7	8 regrowth
Common waterhemp				
weed density	--	moderate	moderate	moderate
height (inch)	--	0.5	1.0	2 regrowth
Giant foxtail				
weed density	--	moderate	moderate	moderate
height (inch)	--	4.6	3.6	3 regrowth
Rainfall after application (inch)				
week 1	0.01	4.27	5.65	0.63
week 2	1.44	3.24	1.92	0.16
week 3	1.02	0.11	0.57	2.82

Dimethenamid-P applied at 0.98 lb/A gave some early season control of giant ragweed, 50%, compared to no control when applied at 0.56 lb/A, May 18 rating. Dimethenamid-P / dicamba & diflufenzopyr + atrazine + NIS + AMS, dimethenamid-P / glyphosate<sup>2</sup> + dicamba & diflufenzopyr + NIS + AMS, imazethapyr & imazapyr + dicamba & atrazine + NIS + AMS, and the sequential application of glyphosate<sup>1</sup> + AMS applied at POST I and III provided superior season-long control of giant ragweed compared to the dimethenamid-P / glyphosate<sup>1</sup> + AMS and glyphosate<sup>1</sup> + AMS treatments, October 20 rating. The treatment that included a glyphosate<sup>2</sup> application at POST II provided better giant ragweed control compared to treatments with glyphosate<sup>1</sup> or glyphosate<sup>2</sup> applied at POST I, 94% compared to 71 to 88%, respectively. Common waterhemp control was significantly better when dimethenamid-P, was followed by a POST II application of glyphosate<sup>2</sup> + dicamba & diflufenzopyr + NIS + AMS compared to the POST I application of the same herbicides, 93% compared to 85%, respectively. Dimethenamid-P / dicamba & diflufenzopyr + atrazine + NIS + AMS applied PRE / POST I, dimethenamid-P / glyphosate<sup>2</sup> + dicamba & diflufenzopyr + NIS + AMS applied PRE / POST II, and imazethapyr & imazapyr + dicamba & atrazine + NIS + AMS applied at POST I provided significantly better common waterhemp control than the single-pass applications at POST I of glyphosate<sup>1</sup> + AMS, glyphosate<sup>2</sup> + dicamba + NIS + AMS, and glyphosate<sup>2</sup> + dicamba & diflufenzopyr + NIS + AMS. Giant foxtail control decreased to 66% by the end of the season for imazethapyr & imazapyr +

dicamba & atrazine + NIS + AMS treatment compared to all other treatments that maintained control at or above 93%. The sequential application of glyphosate<sup>1</sup> + AMS applied at POST I and III resulted in weed control similar to the dimethenamid-P / glyphosate<sup>2</sup> + dicamba & diflufenzopyr + AMS treatment applied at POST II. (University of Minnesota Extension Service, Regional Center, Rochester, MN)

Table. Performance of glyphosate programs for weed control in corn on May 18, June 15, and October 20 at Rochester, MN in 2004 (Behnken, Breitenbach, Schaufler, and Lewis).

Treatment	Rate	AMBTR control			CHEAL control			AMATA control			SETFA control		
		5/18	6/15	10/20	5/18	6/15	10/20	5/18	6/15	10/20	5/18	6/15	10/20
	(lb/A)	(%)			(%)			(%)			(%)		
<b>PRE / POST I</b>													
Dimethenamid-P / glyphosate <sup>1</sup> + AMS	0.56 / 0.77 + 3.0	0	96	77	94	100	97	100	100	85	98	100	95
Dimethenamid-P / glyphosate <sup>2</sup> + dicamba&diflufenzopyr + NIS + AMS	0.56 / 0.56 + 0.094&0.037 + 0.25% + 3.0	0	98	85	96	100	99	100	100	85	97	100	95
Dimethenamid-P / dicamba&diflufenzopyr + atrazine + NIS + AMS	0.98 / 0.125&0.05 + 0.5 + 0.25% + 3.0	50	98	96	96	100	99	100	100	91	98	100	94
<b>PRE / POST II</b>													
Dimethenamid-P / glyphosate <sup>2</sup> + dicamba&diflufenzopyr + NIS + AMS	0.56 / 0.56 + 0.094&0.037 + 0.25% + 3.0	0	97	94	97	100	99	100	100	93	97	100	98
<b>POST I</b>													
Glyphosate <sup>1</sup> + AMS	0.77 + 3.0	0	96	71	0	99	96	0	96	73	0	99	93
Glyphosate <sup>2</sup> + dicamba + NIS + AMS	0.56 + 0.25 + 0.25% + 3.0	0	96	86	0	100	99	0	95	83	0	100	94
Glyphosate <sup>2</sup> + dicamba&diflufenzopyr + NIS + AMS	0.56 + 0.094&0.037 + 0.25% + 3.0	0	98	88	0	99	99	0	98	80	0	100	94
Imazethapyr&imazapyr + dicamba&atrazine + NIS + AMS <sup>3</sup>	0.042&0.014 + 0.275&0.525 + 0.25% + 3.0	0	97	93	0	100	98	0	97	93	0	84	66
<b>POST I / POST III</b>													
Glyphosate <sup>1</sup> + AMS / glyphosate <sup>1</sup> + AMS	0.77 + 3.0 / 0.77 + 3.0	0	98	91	0	100	99	0	97	89	0	99	99
Untreated		0	0	0	0	0	0	0	0	0	0	0	0
LSD (0.10)		3	2	5	2	1	3	0	3	7	1	3	5

Glyphosate<sup>1</sup> = Roundup Weathermax, Glyphosate<sup>2</sup> = Roundup Original, 3. Hybrid used for this treatment was Garst NE-839 IT, the hybrid DeKalb DKC 47-10 was used for all other treatments, AMS = spray grade ammonium sulfate, Helena, NIS = AGRI-DEX nonionic surfactant, Helena.