

Comparison of Liberty programs in field corn at Rochester, MN in 2004.

Behnken, Lisa, M. Fritz, R. Breitenbach, Kristal L. Schaufler, and Angela L. White.

The objective of this trial was to compare the performance of Liberty programs for weed control 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 T/A of lime. The area was topdressed with 40 lbs/A of nitrogen on June 15. The field was disked and field cultivated once prior to planting. The corn hybrid, NK N45-A6, was 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 and II) 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 15, and October 20. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	April 29	June 2	June 7
Treatment	PRE	POST I	POST II
Temperature (F)			
air	61	70	91
Relative humidity (%)	57	46	43
Wind (mph)	7	10	29
Soil moisture	--	--	--
Corn			
stage	seeded	3 collar	4 collar
height (inches)	--	4.7	11.0
Giant ragweed			
weed density	--	heavy	heavy
height (inch)	--	4.1	10.0
Common lambsquarters			
weed density	--	light	light
height (inch)	--	1.4	2.1
Common waterhemp			
weed density	--	moderate	moderate
height (inch)	--	0.5	1.25
Giant foxtail			
weed density	--	moderate	moderate
height (inch)	--	2.2	3.6
Rainfall after application (inch)			
week 1	0.01	4.27	5.65
week 2	1.44	3.24	1.85
week 3	1.02	0.11	0.63

A preemergence application of Lumax provided significantly better giant ragweed, common lambsquarters, and common waterhemp control than preemergence applications of Define (June 2 rating). Two treatments resulted in significantly lower giant ragweed and common waterhemp control than all other treatments, Define / Equip and Liberty + Callisto (October 20 rating). Late season giant foxtail control was also significantly lower with the Liberty + Callisto treatment compared to all other treatments (October 20 rating). Grain yield from these three treatments, however, were not adversely affected when compared to treatments with better weed control.

Grain yield appears to be affected by early season giant ragweed control. POST I and POST II applications provided better than 89 percent giant ragweed control. POST I applications all yielded over 200 bushels whereas the POST II applications were in the 180's and 190's, with the exception of Lumax followed by Liberty where the Lumax provide better than 90 percent giant ragweed control, (University of Minnesota Extension Service, Regional Center, Rochester, MN).

Table. Performance of Liberty programs in corn on June 2, June 15, and October 20 at Rochester, MN in 2004 (Behnken, Breitenbach, Schaufler, and White).

Treatment	Rate	Giant ragweed control			Common lambsquarters control			Common waterhemp control			Giant foxtail control			Injury	Corn yield	
		6/2	6/15	10/20	6/2	6/15	10/20	6/2	6/15	10/20	6/2	6/15	10/20			
	(lb/A)	6/2 6/15 10/20 (%)			6/2 6/15 10/20 (%)			6/2 6/15 10/20 (%)			6/2 6/15 -10/20 (%)			6/7 6/15 (%)	(bu/A)	
Preemergence / Postemergence I																
Define / Equip + MSO + 28% UAN	12 oz / 1.5 oz + 1.5 pts + 1.5 qts	0	89	88	43	100	99	89	99	88	97	100	99	5	1	201
Preemergence / Postemergence II																
Define / Liberty + atrazine + AMS	12 oz / 32 oz + 1 pt + 3 lbs	0	97	95	37	100	99	91	99	97	95	100	99	0	3	183
Define / Option + Distinct + MSO + 28% UAN	12 oz / 1.5 oz + 4 oz + 1.5 pts + 1.5 qts	0	92	98	41	100	99	89	100	97	95	100	99	2	6	190
Define / Buctril + atrazine + Callisto	21.7 oz / 2 pts + 1 oz	0	98	97	58	100	100	92	100	97	97	96	97	2	6	195
Lumax / Liberty + AMS	2 qts / 32 oz + 3 lbs	94	100	99	99	100	100	99	100	99	98	100	100	0	0	210
Postemergence I																
Liberty + Callisto + AMS	32 oz + 1.5 oz + 3 lbs	0	97	84	0	100	99	0	99	85	0	97	81	6	0	202
Liberty + Lumax + AMS	32 oz + 3 pts + 3 lbs	0	100	99	0	100	99	0	100	99	0	98	94	4	0	200
Untreated		0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
LSD (0.05)		3	2	4	9	1	0.4	6	2	5	3	4	6	3	5	19

MSO = methylated sunflower oil; Loveland; 28% UAN = an aqueous solution of urea and ammonium nitrate, Helena; AMS = spray grade ammonium sulfate, Helena.