

Evaluation of the performance of adjuvant/deposition aids with Liberty in field corn at Potsdam, MN in 2005.

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The objective of this trial was to evaluate and compare the performance of Liberty with various spray adjuvant/depositions aids for weed control in field corn in southeastern Minnesota. The research site was a Port Byron silt loam containing 3.2% organic matter with a pH of 6.7 and soil test P and K levels of 65 ppm and 273 ppm, respectively. The previous crop was soybean. The area was fertilized in the spring with 144 lb/A nitrogen, 23 lb/A phosphorus, 120 lb/A potash, and 24 lb/A sulfur. The field was disked and field cultivated twice prior to planting. The corn hybrid, Pioneer 38H69, was planted on May 6, 2005 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. Postemergence (POST) 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 June 16 and 27. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	June 10
Treatment	POST
Temperature (F)	
Air	78
Relative humidity (%)	75
Wind (mph)	15
Soil moisture	wet
Corn	
stage	V3
height (inch)	8
Velvetleaf	
weed density (ft ²)	1
height (inch)	2.9
Common lambsquarters	
weed density(ft ²)	59
height (inch)	3.0
Wild proso Millet	
weed density(ft ²)	3
height (inch)	2.5
Rainfall after application (inch)	
week 1	0.19
week 2	0.15
week 3	1.23

CONCLUSIONS

Common lambsquarters control ranged from 53 to 99%, June 27 rating, and control was significantly impacted by the adjuvant or deposition aid, the rate of Liberty used, and the addition of atrazine. The best control, 98 to 99%, of common lambsquarters was achieved when atrazine was included in the treatments. Liberty at 26 oz/A + either Premium AMS or Cornbelt N-Tense provided significantly greater common lambsquarters control than when applied at the 20 oz/A rate with either product. Liberty at 20 oz/A plus either of these products resulted in similar control, 80 to 81%, however, when the higher rate of Liberty was used with Cornbelt N-Tense, common lambsquarters control increased to 89% compared to 85% for Premium AMS, July 27 rating. Liberty at 20 oz/A + One-Ap XL resulted in significantly lower control, 63% on June 16 and 53% on June 27, compared to all other treatments, including the Liberty alone treatment.

Wild proso millet control was significantly lower in the Liberty + One-Ap XL treatment compared to all other treatments, except one, Liberty at 20 oz/A + Cornbelt N-Tense. Increasing the rate of Liberty from 20 to 26 oz/A + Cornbelt N-Tense significantly increased wild proso millet control, from 87 to 93%, respectively. No difference in wild proso millet control was recorded when an increased rate of Liberty was used with Premium AMS.

The lowest corn yield was observed in the Liberty + One AP XL treatment. (University of Minnesota Extension Service, Regional Center, Rochester)

Table. Performance of adjuvant/deposition aids with Liberty for weed control in corn on June 16 and June 27 at Potsdam, MN in 2005.

Treatment ^a	Rate	Wild proso millet control		Common lambsquarters control		Velvetleaf control		Corn yield ^b
		6/16	6/27	6/16	6/27	6/16	6.27	
	(rate/A)	(%)		(%)		(%)		(bu/A)
Postemergence								
Liberty	20 oz	88	91	78	73	99	98	205
Liberty+ Premium AMS	20 oz + 3 lb	93	91	85	81	99	98	214
Liberty+ atrazine ¹ + Premium AMS	20 oz + 1 pt + 3 lb	93	96	83	99	99	99	224
Liberty+ One-Ap XL	20 oz + 3 lb	91	85	53	53	99	97	202
Liberty+ atrazine ¹ + One-Ap XL	20 oz + 1 pt + 3 lb	90	91	84	98	99	98	220
Liberty+ Cornbelt N-Tense	20 oz + 0.75%	93	87	84	80	99	98	215
Liberty + atrazine ¹ + Cornbelt N-Tense	20 oz + 1 pt + 0.75%	91	95	84	99	99	98	214
Liberty+ atrazine ¹ + WC045	20 oz + 1 pt + 0.75%	92	97	82	99	99	99	212
Liberty+ Premium AMS	26 oz + 3 lb	94	90	88	85	99	99	214
Liberty+ Cornbelt N-Tense	26 oz + 0.75%	94	93	89	89	99	99	219
Weedy Check		0	0	0	0	0	0	54
Weed Free		100	100	100	100	100	100	226
	LSD (P = 0.10)	4	4	7	3	0	2	12

a. Atrazine¹ = Cornbelt atrazine

b. Yield at 15.5% moisture.