Imazethapyr & imazapyr, dicamba & San 1269H, dicamba & atrazine, mesotrione and atrazine applied postemergence for woolly cupgrass control in corn, Lewis, IA, 2002. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to evaluate various preemergence and postemergence herbicide combinations for crop phytotoxicity and woolly cupgrass control in corn. The soil was a Marshall, Exira clay loam with a pH 6.0 and 5.0% organic matter. The experimental design was a randomized complete block with three replications and plots were 10 by 25 ft. The 2001 crop was soybean. Tillage included a spring field cultivation. Fertilization included 140 lb/A actual N applied as anhydrous ammonia. Crop residue on the soil surface was 11% at planting. "Garst hybrid 8464 IT" corn was planted 2 inches deep on May 15, at 30,000 seeds/A in 30-inch rows. Preemergence (PRE), early postemergence (EPOST), and mid-postemergence (MPOST) treatments were applied on May 16, June 13, and 18, respectively, at 20 gpa and 30 psi using flat fan nozzles. Conditions on May 16 were: air temperature 16 C, soil temperature at the 4-inch depth 16 C, 12 mph wind, 100% cloud cover, 73% relative humidity. Conditions on June 13 were: air temperature 24 C, soil temperature at the 4-inch depth 21 C, 15 mph wind, 60% cloud cover, 40% relative humidity. Corn growth was V4 and 9.5 inches tall. Weed species, size and number per ft^2 in the untreated control included: woolly cupgrass two to four leaves, 3 to 5 inches tall, zero to thirty plants; velvetleaf three to five leaves, 1 to 4 inches tall, zero to ten plants; common waterhemp and common lambsquarters with numerous leaves, 0.5 to 6 inches tall, zero to fifteen plants. On June 18 conditions were: air temperature 27 C, soil temperature at the 4-inch depth 22 C, 15 mph wind, 45% cloud cover, 71% relative humidity. Corn growth was V4 to V5 and 10 inches tall. Weed species, size and number per ft^2 in the untreated control included: woolly cupgrass three to four leaves, 3 to 7 inches tall, zero to seventy-five plants; velvetleaf three to five leaves, 1 to 4 inches tall, zero to one plant; common waterhemp and common lambsquarters with numerous leaves, 2 to 8 inches tall, zero to forty plants. May rainfall included: 0.14, 0.03, 0.11, 0.02, 2.51, 0.01, 0.23, 0.07, 0.32, 0.04, 0.03, and 0.23 inches on May 1, 5, 6, 10, 11, 17, 22, 23, 24, 25, 28, and 29, respectively. Total rainfall for May was 3.74 inches. June rainfall included: 0.43, 0.88, and 0.02 inches on June 10, 11, 12, respectively. Total rainfall for June was 1.33 inches. July rainfall included: 0.87 inches and 1.16 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 2.03 inches. Rainfall total for August was 3.23 inches.

Significant differences in corn stand between treatments were noted on July 2, but were likely due to variable seeding rate and not the herbicides. Abnormally dry conditions occurred during the growing season that potentially affected the overall performance of the herbicides. Corn injury from most EPOST and MPOST herbicide treatment timings was significant when observed on June 18 and 25. When noted on July 2, injury had persisted with a number of the treatments. Woolly cupgrass control was 82 to 93% on July 2, where EPOST and MPOST applications followed a PRE treatment. When MPOST applied Imazethapyr & imazapyr plus dicamba & SAN 1269H, did not follow a PRE, it was ineffective and achieved only 77% control. All treatments provided excellent velvetleaf, common waterhemp, and common lambsquarters control on July 2. When observed on July 16 and August 1, many treatments no longer provided adequate control of woolly cupgrass. Velvetleaf and common lambsquarters control remained excellent on July 16 and August 1 with all treatments but, several treatments no longer provided acceptable common waterhemp control. (Dept. of Agronomy, Iowa State University, Ames)

Table 1. Imazethapyr & imazapyr, dicamba & SAN 1269H, dicamba & atrazine, mesotrione, and atrazine applied postemergence for woolly cupgrass control in corn, Lewis, IA, 2002 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn[a] stand	Corn injury 6/5	Corn injury 6/18	Corn injury 6/25	ERBVI 6/25	ABUTH 6/25	AMATA 6/25	CHEAL 6/25
	(lb/A)			---------- (%) ----------			---------- (% weed control) ----------			
Untreated	-	-	27	0	0	0	0	0	0	0
Imazethapyr&imazapyr+ dicamba&San 1269H+ NIS[b]+ammonium sulfate	0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	MPOST	26	0	0	10	73	93	85	95
Atrazine/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	1.0/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ EPOST	29	0	13	7	90	96	90	99
Dimethenamid-P&atrazine(L)[c]/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	0.423&0.517/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ MPOST	29	0	0	3	82	95	90	99
dimethenamid-P/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	0.56/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ EPOST	27	0	8	3	92	96	96	96
imazethapyr&imazapyr+ dicamba&atrazine+ NIS+ammonium sulfate	0.042&0.014+ 0.344+0.656+ 0.25+12.0 lb/100 GAL	EPOST	30	0	13	10	87	98	87	99
imazethapyr&imazapyr+ mesotrione+atrazine+ COC[d]+ammonium sulfate	0.042&0.014+ 0.0625+0.25+ 1.0+12.0 lb/100 gal	EPOST	28	0	13	7	90	99	99	99
Dimethenamid-P&atrazine/ dicamba&San 1269H+ NIS+ammonium sulfate	0.85&1.65/ 0.125&0.05+ 0.25+5.0 lb/100 GAL	PRE/ MPOST	31	0	0	0	83	93	96	99
Acetochlor&dichlormid/ nicosulfuron&rimsulfuron+ dicamba&atrazine+ COC+ammonium sulfate	1.0/ 0.023&0.012+ 0.14&0.26+ 1.0+2.0 lb/A	PRE/ EPOST	29	0	18	2	92	86	96	98
Acetochlor/ nicosulfuron&rimsulfuron+ dicamba&San 1269H+ COC+ammonium sulfate	0.71/ 0.023&0.012+ 0.0625&0.025+ 1.0+2.0 lb/A	PRE/ EPOST	30	0	20	2	88	96	96	96
LSD (P=0.05)			4	0	4	5	6	8	4	4

[a] Corn stand per 17.5 row feet on July 2.

[b] NIS = Activator 90, a non-ionic surfactant from Loveland Industries, Inc. Rate in % v/v.

[c] Dimethenamid-P&atrazine(L) = G-Max Lite from BASF.

[d] COC = Riverside/Terra Prime oil, a petroleum base oil additive with a 17% emulsifier. Rate in % v/v.

Table 2. Imazethapyr & imazapyr, dicamba & SAN 1269H, dicamba & atrazine, mesotrione, and atrazine applied postemergence for woolly cupgrass control in corn, Lewis, IA, 2002 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn inj 7/2	ERBVI 7/2	ABUTH 7/2	AMATA 7/2	CHEAL 7/2
	(lb/A)		---- (%) ----	---------- (% weed control) ----------			
Untreated	-	-	0	0	0	0	0
Imazethapyr&imazapyr+ dicamba&San 1269H+ NIS[a]+ammonium sulfate	0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	MPOST	10	77	96	88	98
Atrazine/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	1.0/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ EPOST	7	92	99	95	99
Dimethenamid-P&atrazine(L)[b]/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	0.423&0.517/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ MPOST	3	82	99	95	99
dimethenamid-P/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	0.56/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ EPOST	0	93	98	95	99
imazethapyr&imazapyr+ dicamba&atrazine+ NIS+ammonium sulfate	0.042&0.014+ 0.344+0.656+ 0.25+12.0 lb/100 GAL	EPOST	10	90	99	90	99
imazethapyr&imazapyr+ mesotrione+atrazine+ COC[c]+ammonium sulfate	0.042&0.014+ 0.0625+0.25+ 1.0+12.0 lb/100 gal	EPOST	5	90	99	99	99
Dimethenamid-P&atrazine/ dicamba&San 1269H+ NIS+ammonium sulfate	0.85&1.65/ 0.125&0.05+ 0.25+5.0 lb/100 GAL	PRE/ MPOST	0	83	98	96	99
Acetochlor&dichlormid/ nicosulfuron&rimsulfuron+ dicamba&atrazine+ COC+ammonium sulfate	1.0/ 0.023&0.012+ 0.14&0.26+ 1.0+2.0 lb/A	PRE/ EPOST	0	92	93	98	99
Acetochlor/ nicosulfuron&rimsulfuron+ dicamba&San 1269H+ COC+ammonium sulfate	0.71/ 0.023&0.012+ 0.0625&0.025+ 1.0+2.0 lb/A	PRE/ EPOST	0	88	99	96	98
LSD (P=0.05)			4	4	5	4	2

[a] NIS = Activator 90, a non-ionic surfactant from Loveland Industries, Inc. Rate in % v/v.

[b] Dimethenamid-P&atrazine(L) = G-Max Lite from BASF.

[c] COC = Riverside/Terra Prime oil, a petroleum base oil additive with a 17% emulsifier. Rate in % v/v.

Table 3. Imazethapyr & imazapyr, dicamba & SAN 1269H, dicamba & atrazine, mesotrione, and atrazine applied postemergence for woolly cupgrass control in corn, Lewis, IA, 2002 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn inj 7/16	ERBVI 7/16	ABUTH 7/16	AMATA 7/16	CHEAL 7/16	ERBVI 8/1	ABUTH 8/1	AMATA 8/1	CHEAL 8/1
	(lb/A)		- (%) -	---------- (% weed control) ----------							
Untreated	-	-	0	0	0	0	0	0	0	0	0
Imazethapyr&imazapyr+ dicamba&San 1269H+ NIS[a]+ammonium sulfate	0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	MPOST	10	67	99	87	99	60	99	80	99
Atrazine/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	1.0/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ EPOST	2	90	99	95	99	85	99	92	99
Dimethenamid-P&atrazine(L)[b]/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	0.423&0.517/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ MPOST	2	77	99	95	99	73	99	95	99
dimethenamid-P/ imazethapyr&imazapyr+ dicamba&San 1269H+ NIS+ammonium sulfate	0.56/ 0.042&0.014+ 0.125&0.05+ 0.25+12.0 lb/100 GAL	PRE/ EPOST	0	90	98	95	99	83	98	92	99
imazethapyr&imazapyr+ dicamba&atrazine+ NIS+ammonium sulfate	0.042&0.014+ 0.344+0.656+ 0.25+12.0 lb/100 GAL	EPOST	8	85	99	82	99	80	99	70	99
imazethapyr&imazapyr+ mesotrione+atrazine+ COC[c]+ammonium sulfate	0.042&0.014+ 0.0625+0.25+ 1.0+12.0 lb/100 gal	EPOST	3	85	99	99	99	80	99	99	99
Dimethenamid-P&atrazine/ dicamba&San 1269H+ NIS+ammonium sulfate	0.85&1.65/ 0.125&0.05+ 0.25+5.0 lb/100 GAL	PRE/ MPOST	0	77	99	99	99	65	99	98	99
Acetochlor&dichlormid/ nicosulfuron&rimsulfuron+ dicamba&atrazine+ COC+ammonium sulfate	1.0/ 0.023&0.012+ 0.14&0.26+ 1.0+2.0 lb/A	PRE/ EPOST	0	87	93	96	99	80	93	96	99
Acetochlor/ nicosulfuron&rimsulfuron dicamba&San 1269H+ COC+ammonium sulfate	0.71/ 0.023&0.012+ 0.0625&0.025+ 1.0+2.0 lb/A	PRE/ EPOST	0	87	98	96	99	80	96	95	99
LSD (P=0.05)			4	7	4	3	0	10	4	6	0

[a] NIS = Activator 90, a non-ionic surfactant from Loveland Industries, Inc. Rate in % v/v.

[b] Dimethenamid-P&atrazine(L) = G-Max Lite from BASF.

[c] COC = Riverside/Terra Prime oil, a petroleum base oil additive with a 17% emulsifier. Rate in % v/v.