

Evaluation of isoxaflutole, s-metolachlor & mesotrione & CGA-154281, and s-metolachlor & atrazine & mesotrione & CGA-154281 for weed control in corn at Rochester, MN in 2003. Behnken, Lisa M., Fritz R. Breitenbach, Kevin R. Griffin, and Kristal L. Schaufler. The objective of the trial was to evaluate the performance of isoxaflutole, s-metolachlor & mesotrione & CGA-154281, and s-metolachlor & atrazine & mesotrione & CGA-154281 in combination with other herbicides for weed control in corn in southeastern Minnesota. The research site was a Lawler loam soil, containing 2.6% organic matter, pH of 5.6 and soil test P and K levels of 54 ppm and 285 ppm, respectively. The previous crop was soybean. The area was fertilized with 625 lb/A Pel-lime and 134, 23, 120, and 24 lb/A of nitrogen, phosphorus, potassium and sulfur in the spring. Spring tillage consisted of two passes with a field cultivator. The corn hybrid, Pioneer P37H27, was planted on April 28, 2003, at a depth of 2 inches in 30-inch rows at a population of 32,000 seeds/A. A randomized complete block design with four replications was used. Preemergence (PRE) treatments were applied with a tractor-mounted sprayer, delivering 20 gallons per acre at 32 psi using TurboTee 11002 nozzles. Evaluations of the plots were taken on May 20 and 29, and June 26, 2003. Application dates, environmental conditions, crop and weed stages are listed below.

Date	April 28
Treatment	PRE
Temperature (F)	
air	59
soil	---
Relative humidity (%)	41
Wind (mph)	14
Soil moisture	adequate
Corn	
stage	---
height (inch)	---
Giant ragweed	
weed density/ft ²	22
height (inch)	---
Common lambsquarter	
weed density/ft ²	78
height (inch)	---
Common waterhemp	
weed density/ft ²	35
height (inch)	---
Woolly cupgrass	
weed density/ft ²	86
height (inch)	---
Rainfall after application (inch)	
week 1	1.89
week 2	2.58
week 3	0.26

Dry conditions at this research site, only 0.7 inches of rain from July 12 to September 15, resulted in reduced corn yields and premature death of the corn. All treatments provided very good to excellent control of common lambsquarters, 94 to 99%. Season long giant ragweed control, with ratings of mid to upper 90% plus woolly cupgrass control of greater than 80% (June 26 ratings) were key to higher yields in this trial. Yield was reduced slightly when giant ragweed control fell below this. The four treatments of s-metolachlor & atrazine & mesotrione & CGA-154281 + isoxaflutole resulted in the best yields of the trial (66 to 78 bu/A), and very good overall weed control of all four weed species. The two isoxaflutole + flufenacet + atrazine treatments also had very good overall weed control of the four weed species. Isoxaflutole at 0.047 lb/A + flufenacet at 0.375 lb/A provided only marginal season-long control of common waterhemp (60% on the 6/26 rating date), and fair season-long control of woolly cupgrass and giant ragweed, 76% and 80% (6/26 rating date), respectively. (Southeast District, University of Minnesota Extension Service, Rochester).

Table. Performance of isoxaflutole, s-metolachlor & mesotrione & CGA-154281, and s-metolachlor & atrazine & mesotrione & CGA-154281 for weed control in corn on May 20, 29 and June 26 at Rochester, MN in 2003. (Behnken, Breitenbach, Griffin, and Schaufler)

Treatment	Rate	----AMBTR---- control			----CHEAL---- control			----AMATA---- control			----ERBVI---- control			Corn yield
		5/20	5/29	6/26	5/20	5/29	6/26	5/20	5/29	6/26	5/20	5/29	6/26	
	(lb/A)	(%)			(%)			(%)			(%)			(bu/A)
<u>Preemergence</u>														
Isoxaflutole + atrazine	0.047 + 1.0	91	89	86	95	96	95	96	95	69	81	66	66	46
Isoxaflutole + atrazine	0.086 + 1.0	94	92	91	96	97	94	93	97	83	86	75	72	50
Isoxaflutole + flufenacet	0.047 + 0.375	84	84	80	95	97	96	96	98	60	94	79	76	33
S-metolachlor & mesotrione & CGA-154281	1.658&0.167	95	88	93	96	97	98	95	95	95	95	74	49	47
Isoxaflutole + flufenacet	0.078 + 0.375	96	88	95	96	97	96	98	97	73	96	86	87	59
S-metolachlor & meso & CGA-154281	1.982&0.2002	99	92	97	94	98	98	97	96	97	95	87	53	55
Isoxaflutole + flufenacet + atrazine	0.047 + 0.375 + 1.0	99	91	91	96	98	98	92	95	92	97	86	85	53
s-meto & atra & meso & CGA-154281	1.675&0.627&0.167	98	93	96	98	96	97	93	94	96	92	71	46	55
Isoxaflutole + flufenacet + atrazine	0.07 + 0.375 + 1.0	95	87	86	95	98	96	94	97	88	97	85	80	51
S-meto & atra & meso & CGA-154281	2.007&0.752&0.2007	98	95	95	99	97	98	97	95	95	92	82	63	55
S-meto & meso & CGA-154281 + simazine	1.658&0.167 + 1.0	96	91	96	97	98	98	93	98	97	96	83	63	55
S-meto & meso & CGA-154281 + atrazine	1.658&0.167 + 0.75	95	90	91	96	98	97	97	93	96	96	82	55	48
S-meto & atra & meso & CGA-154281+atra	1.675&0.627&0.167 + 0.45	98	95	94	96	97	98	97	96	95	93	75	50	50
Acetachlor & atrazine + flumetsulam & clopyralid	2.196&0.824+0.035&0.093	98	86	80	98	98	97	94	95	93	97	84	64	42
Acetachlor & atrazine + flumetsulam & clopyralid	2.196&0.824+0.0462&0.125	96	86	79	97	98	96	97	98	93	98	87	56	48
S-meto&atra&meso & CGA-154281 + isxf	1.675&0.627&0.167+ 0.0312	99	98	95	98	99	98	95	99	98	99	90	80	68
S-meto&atra& meso & CGA-154281 + isxf	1.675&0.627&0.167 + 0.047	99	94	94	98	98	98	93	97	97	99	90	80	78
S-meto&atra&meso & CGA-154281 + isxf	1.675&0.627&0.167+ 0.0625	99	94	98	98	99	98	97	99	97	99	87	82	66
S-meto&atra&meso & CGA-154281 + isxf	1.675&0.627&0.167 + 0.078	99	96	98	98	99	99	93	98	96	99	93	91	66
Untreated		0	0	0	0	0	0	0	0	0	0	0	0	3
LSD (0.10)		3	5	4	3	1	2	5	3	6	5	12	8	15