Sweet corn herbicide weed management trial at Waseca, MN - 2003. Becker, Roger L., Vincent A. Fritz, James B. Hebel, Douglas W. Miller, and Bradley D. Kinkaid. The objective of this experiment was to evaluate weed management systems with preemergence and postemergence herbicides in conventional sweet corn. This study was conducted on a Webster clay loam soil. The plot area was fertilized with 140 lb/A nitrogen. A randomized complete block design with three reps was utilized. Plots were 10 feet by 25 feet (4 rows). 'Jubilee' and 'Empire' sweet corn were seeded (two row subplots per plot) at 22,000 plants/A on May 20, 2003. Herbicide application data are provided below. Corn was harvested from a 20 foot row within each plot/subplot on September 20 and 21. Total ear yield, husked ear yield, and kernel yield were determined. In addition, total ears, 'usable' ears, average ear length, and average ear diameter were measured. Usable ears are defined as ears suitable for use as frozen corn-on-the-cob product. Weed control, injury, and yield data are provided in the tables below.

Application Data

Treatment	Preemergence	Postemergence
Date	5/21/03	6/17/03
Air Temp (°F)	46	75
Wind (mph)	SE 8-10	SW 5-8
Sky	Hazy	Hazy
Grassy weeds		
Size (inch)	--	1-3
Broadleaf weeds		
Size (inch)	--	2-4 (XANST up to 6)
Rainfall before Application		
Week 1 (inch)	0.29	0.35
Rainfall after Application		
Week 1 (inch)	0.06	0.29
Week 2 (inch)	0.12	1.43

Control of broadleaf weeds with POST treatments was not readily discernable at the June 30 rating (only 13 DAT) but was generally good with all products by 36 DAT on July 23. The predominant species in order of presence were giant foxtail > common cocklebur > common lambsquarter. As expected, the POST grass product nicosulfuron applied without broadleaf products gave only fair control of common lambsquarter and poor control of common cocklebur. Foramsulfuron used alone at the anticipated rate for sweet corn tended to provide higher levels of suppression of both of these species than the current labeled rate of nicosulfuron, though recommended additives differed and may confound the results. As in past trials, halosulfuron was notably weak on common lambsquarter, but adding 0.5 lb atrazine resulted in complete broadleaf control. Additionally, carfentrazone used alone had moderate weakness on common cocklebur, which also was alleviated by tank mixing a 0.5 lb atrazine.

2,4-D, dicamba, and the dicamba & diflufenzopyr package mixture all provided excellent control of cocklebur, lambsquarter, and velvetleaf. Preemergence application of metolachlor (1.9 lb a.i./A) with 0.75 lb a.i./A atrazine was weak on all broadleaf species. This rate of atrazine was intended to compare with the package mixtures with mesotrione. Mesotrione provided excellent broadleaf control whether used postemergence or preemergence and when used with or without atrazine. The preemergence application of metolachlor tended to provide slightly lower control of giant foxtail than postemergence foramsulfuron or nicosulfuron treatments.

When visual herbicide injury occurred, similar injury occurred with both varieties with all herbicide modes of action. As in years past, chlorosis and leaf crinkling were apparent in leaf tissue that was at the whorl at the time of sulfonylurea herbicide application. Chlorosis was apparent with all sulfonylurea herbicides but was significantly more evident with halosulfuron, and with foramsulfuron when foramsulfuron was tank mixed with growth regulators dicamba or 2,4-D amine. Low levels of chlorosis that occurred with nicosulfuron and foramsulfuron when used alone or with atrazine were similar and as such, appear to have similar responses on both sulfonylurea tolerant and sulfonylurea susceptible varieties. Doubling the labeled use rate of foramsulfuron significantly increased chlorosis when used alone, indicating the limits of the safeners in foramsulfuron. The chlorosis apparent when the growth regulators were tank mixed with foramsulfuron is confounded by the fact that additives were used to maintain the activity of foramsulfuron. The growth regulator products used postemergence to soil applied metolachlor did not show any chlorosis or other visible injury. The use of additives POST when tank mixed with foramsulfuron did result in faster burndown of broadleaf weeds with dicamba and 2,4-D than when these growth regulators were applied POST without additives sequential to PRE metolachlor, but additives resulted in unacceptable injury to the sweet corn. The putative claim that the safener in foramsulfuron may enhance crop tolerance to broadleaf herbicides is a question that is not conclusively answered because of the potential confounding with additives in this study, but as used in this study, safening of dicamba or 2,4-D was not apparent. Clearly, Jubilee and Empire did not differ significantly in their tolerance to sulfonylurea herbicides despite apparent differences insinuated by different labeling on the current nicosulfuron label.

Chlorosis was evident with carfentrazone in the form of severe leaf speckling, which in some cases coalesced into relatively large lesions on the leaf surface. Large, contiguous lesions occurred with the atrazine & bentazon package mixture. There were no differences between Jubilee and Empire crop injury with carfentrazone or the bentazon & atrazine package mixture.

Leaf crinkling was a minor injury compared to chlorosis, stunting, buggy whip, or necrosis. In general, chlorosis, necrosis, leaf crinkling, and buggy whip were no longer evident by the July 23 ratings (36 DAT). Leaf crinkling, typical with sulfonylurea herbicides and with growth regulators occurred in the leaf zone that was the whorl at the time of application. Though minor, in general there was a higher incidence of leaf crinkling with Jubilee compared with Empire. Leaf crinkling was more evident with the expected labeled rate of foramsulfuron compared to label use rates of nicosulfuron, though leaf crinkling was a relatively minor injury symptom compared to sulfonylurea induced chlorosis.

Growth reduction was most evident by the July 23 ratings. Growth reductions were striking with the growth regulator treatments when used in combination with foramsulfuron with additives, and as with the early buggy whip symptoms, growth reductions did not occur when these same growth regulator herbicides were applied at the same rates postemergence to soil applied metolachlor. Again, this injury may be confounded with the use of additives but it is clear that with the use of additives to ensure efficacy of foramsulfuron on targeted grasses, the safeners in foramsulfuron did not adequately protect sweet corn from potential injury from dicamba or 2,4-D. Growth reduction did not occur with other herbicide treatments, including halosulfuron even though halosulfuron showed considerable early chlorosis.

Yield data was taken on both varieties and included total yield, harvested yield, kernel yield, total ears, useable ears, ear length and ear diameter. Useable ears is defined as the center 5 ½ inches of a corn cob that has cosmetic appeal for marketable frozen corn on the cob. This year, with moisture limiting, the number of useable ears was most affected with less impact on kernel yield and even less impact on ear diameter or length. Jubilee seemed more stable in its response to the environment x weeds x herbicide tolerance than did Empire. Jubilee only had significant differences in the number of useable ears, whereas Empire had significant differences on all traits except number of total ears.

Both varieties appear to be affected by herbicide injury. There seems to be a trend with possible reduction in number of useable ears associated with the use of mesotrione, most noticeably when used preemergence (Lumax or Camix package mixtures) with Jubilee and with both preemergence or postemergence applications with Empire. The number of useable ears was significantly low with both varieties compared to many treatments, and weed control was very good, so there is no confounding interaction with weed competition. However, the lack of consistency in response, for example with Jubilee, when mesotrione was used as Camix (with atrazine) versus Lumax (without atrazine) prevents me from suggesting that there is a definitive link to injury from mesotrione use. The possibility of the number of useable ears being impacted with the use of mesotrione when corn is under moisture stress deserves further investigation. Additionally, mesotrione used in combination with foramsulfuron had low to very low useable ear numbers compared to the range of values recorded across treatments.

Halosulfuron use resulted in a distinct reduction in useable ears with both varieties. However, the lack of common lambsquarter control when halosulfuron was not tank mixed with atrazine may have some confounding effect on the potential reduction in yield values associated with halosulfuron injury, unlike mesotrione treatments. Note that with Jubilee, a reduction in useable ears did not show a strong correlation to reduction in kernel yield, ear length or ear diameter though values were at the low end compared across treatments. With Empire, again the correlation of kernel yield and low useable ear numbers were sporadic. However, ear length and ear diameter tended to be at the average or below average range of values observed compared to other treatments when low number of usable ears occurred, and was most notably associated with mesotrione use or halosulfuron use. As in previous studies, there does not seem to be a distinct difference in sulfonylurea tolerance between the Jubilee and Empire though Empire is a putative sulfonylurea tolerant variety on current nicosulfuron labels. Additionally, differential herbicide tolerance to other mode of action chemistries such as mesotrione and to the growth regulator groups was not apparent between the varieties.

Low useable ear values occurred in three or four treatments with carfentrazone use comparing both Jubilee and Empire. In the case of carfentrazone, as with mesotrione, weed control was generally good so the decrease in the number of usable ears should not be confounded with weed competition. (Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul).

Table 1. Sweet corn herbicide weed management trial at Waseca, MN - 2003. Weed control results. (Becker et al.).

Treatment[1]	Rate[1]	Weed Control SETFA 6/30	SETFA 7/23	XANST 6/30	XANST 7/23	CHEAL 6/30	CHEAL 7/23	ABUTH 6/30	ABUTH 7/23
	(lb ai/A)	(%)							
Postemergence									
Nicosulfuron + COC[2] + 28%N[3]	0.031 + 1.0% + 2.5%	98	98	53	65	71	88	99	91
Nicosulfuron + atrazine + COC + 28%N	0.031 + 1.0 + 1.0% + 2.5%	96	98	95	96	96	99	99	96
Foramsulfuron + MSO[4] + 28%	0.0328 + 0.94% + 2.5%	97	98	85	86	91	96	93	94
Foramsulfuron + MSO + 28% + atrazine	0.0328 + 0.94% + 2.5% + 1.0	96	98	94	96	99	99	99	96
Foramsulfuron + MSO + 28% + dicamba	0.0328 + 0.94% + 2.5% + 0.25	97	97	90	99	89	99	99	99
Foramsulfuron + MSO + 28% + 2,4-D amine	0.0328 + 0.94% + 2.5% + 0.5	97	94	90	97	95	99	98	93
Foramsulfuron + MSO + 28% + halosulfuron	0.0328 + 0.94% + 2.5% + 0.031	98	98	97	98	93	99	99	96
Foramsulfuron + MSO + 28% + mesotrione	0.0328 + 0.94% + 2.5% + 0.094	99	98	99	99	99	99	99	98
Foramsulfuron + MSO + 28%	0.066 + 0.94% + 2.5%								
(Preemergence) and Postemergence									
(s-metolachlor & CGA-154281) + halosulfuron + NIS[5]	(1.9) + 0.016 + 0.25%	92	85	94	97	44	71	96	99
(s-metolachlor & CGA-154281) + halosulfuron + NIS	(1.9) + 0.032 + 0.25%	92	88	93	98	43	74	99	99
(s-metolachlor & CGA-154281) + halosulfuron + atrazine + NIS	(1.9) + 0.0016 + 0.5 + 0.25%	98	94	88	92	99	99	98	93
(s-metolachlor & CGA-154281) + carfentrazone + NIS	(1.9) + 0.008 + 0.25%	94	91	91	82	90	91	98	93
(s-metolachlor & CGA-154281) + carfentrazone + atrazine + NIS	(1.9) + 0.008 + 0.5 + 0.25%	94	91	91	97	99	99	98	99
(s-metolachlor & CGA-154281) + atrazine & bentazon[6] + COC + 28%N	(1.9) + 0.625 & 0.625 + 1.25% + 0.625%	97	94	99	99	99	99	99	99
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr[7] + NIS	(1.9) + 0 0.129 & 0.051 + 0.25%	98	95	84	98	90	99	81	95
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr + NIS	(1.9) + 0.186 & 0.074 + 0.25%	97	98	98	98	91	99	91	96
(s-metolachlor & CGA-154281) + 2,4-D amine	(1.9) + 0.5	98	92	89	95	88	94	84	93
(s-metolachlor & CGA-154281) + dicamba	(1.9) + 0.25	94	90	74	97	69	98	71	97
(s-metolachlor & CGA-154281) + mesotrione + COC	(1.9) + 0.094 + 1.0%	89	81	99	98	99	99	99	99
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.25 + 1.0%	94	84	98	99	99	99	99	99
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.5 + 0.094 + 0.5 + 1.0%	91	89	99	99	99	99	99	99
Premergence									
s-metolachlor + atrazine	1.9 + 0.75	92	86	18	67	25	72	33	52
s-metolachlor & atrazine & mesotrione & CGA-154281[8]	2.01& 0.75 & 0.201 & --	88	82	93	94	99	99	99	99
s-metolachlor & mesotrione & CGA-154281[9]	2.0 & 0.204 & --	95	97	90	86	99	99	96	99
Weedy check		--	--	--	--	--	--	--	--
Hand weeded check		100	100	100	100	100	100	100	100
LSD (0.05)		ns	11	13	13	17	10	14	6

[1] Treatments and rates in parenthesis represent a separate application.
[2] COC = Class Crop Oil Concentrate.
[3] 28%N = 28% UAN fertilizer solution.
[4] MSO = Methylated soy oil.
[5] NIS = Class Preference nonionic surfactant.
[6] Premix = Laddok S-12.
[7] Premix = Distinct 70WG.
[8] Premix = Camix 3.67SE.
[9] Premix = Lumax 3.94 SE.

Table 2. Sweet corn herbicide weed management trial at Waseca, MN - 2003. Sweet corn injury. (Becker et al.).

		Jubilee						Empire					
		Chlorosis	Nec[1]	Crk[2]	Whp[3]	G.R.[4]		Chlorosis	Nec	Crk	Whp	G.R.	
Treatment[5]	Rate[5]	6/23	6/23	6/23	6/30	6/30	7/23	6/23	6/23	6/23	6/30	6/30	7/23
	(lb ai/A)	------------	------------	------------	------------	------------	------------	(%)	------------	------------	------------	------------	------------
Postemergence													
Nicosulfuron + COC[6] + 28%N[7]	0.031 + 1.0% + 2.5%	4	0	1	0	0	7	2	0	1	0	0	7
Nicosulfuron + atrazine + COC + 28%N	0.031 + 1.0 + 1.0% + 2.5%	5	0	3	0	0	8	0	0	1	0	0	5
Foramsulfuron + MSO[8] + 28%	0.0328 + 0.94% + 2.5%	4	0	12	0	0	2	3	0	5	0	0	3
Foramsulfuron + MSO + 28% + atrazine	0.0328 + 0.94% + 2.5% + 1.0	4	0	1	0	0	2	3	0	1	0	0	2
Foramsulfuron + MSO + 28% + dicamba	0.0328 + 0.94% + 2.5% + 0.25	11	0	9	16	0	19	6	0	5	24	0	26
Foramsulfuron + MSO + 28% + 2,4-D amine	0.0328 + 0.94% + 2.5% + 0.5	12	0	6	22	0	14	10	0	4	34	0	18
Foramsulfuron + MSO + 28% + halosulfuron	0.0328 + 0.94% + 2.5% + 0.031	10	0	9	0	0	6	3	0	7	0	0	7
Foramsulfuron + MSO + 28% + mesotrione	0.0328 + 0.94% + 2.5% + 0.094	8	0	9	0	0	0	4	0	2	0	0	0
Foramsulfuron + MSO + 28%	0.066 + 0.94% + 2.5%	16	0	8	0	0	3	5	0	4	0	0	1
(Preemergence) and Postemergence													
(s-metolachlor & CGA-154281) + halosulfuron + NIS[9]	(1.9) + 0.016 + 0.25%	6	0	4	0	0	0	10	0	4	0	0	0
(s-metolachlor & CGA-154281) + halosulfuron + NIS	(1.9) + 0.032 + 0.25%	20	0	9	0	3	6	13	0	4	0	5	5
(s-metolachlor & CGA-154281) + halosulfuron + atrazine + NIS	(1.9) + 0.0016 + 0.5 + 0.25%	7	0	8	0	0	3	5	0	3	0	0	2
(s-metolachlor & CGA-154281) + carfentrazone + NIS	(1.9) + 0.008 + 0.25%	0	19	0	0	0	0	0	11	0	0	0	2
(s-metolachlor & CGA-154281) + carfentrazone + atrazine + NIS	(1.9) + 0.008 + 0.5 + 0.25%	0	15	0	0	0	0	0	10	0	0	0	0
(s-metolachlor & CGA-154281) + atrazine & bentazon[10] + COC + 28%N	(1.9) + 0.625 & 0.625 + 1.25% + 0.625%	0	16	0	0	0	0	0	14	0	0	0	2
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr[11] + NIS	(1.9) + 0 0.129 & 0.051 + 0.25%	0	0	1	0	0	2	0	0	2	0	0	2
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr + NIS	(1.9) + 0.186 & 0.074 + 0.25%	1	0	0	0	0	0	1	0	0	0	0	0
(s-metolachlor & CGA-154281) + 2,4-D amine	(1.9) + 0.5	0	0	1	0	0	0	0	0	1	0	0	0
(s-metolachlor & CGA-154281) + dicamba	(1.9) + 0.25	0	0	3	0	0	3	0	0	4	0	0	3
(s-metolachlor & CGA-154281) + mesotrione + COC	(1.9) + 0.094 + 1.0%	0	0	0	0	0	3	0	0	0	0	0	3
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.25 + 1.0%	0	0	0	0	0	0	0	0	0	0	0	0
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.5 + 0.094 + 0.5 + 1.0%	0	0	0	0	0	4	0	0	0	0	0	3
Premergence													
s-metolachlor + atrazine	1.9 + 0.75	0	0	0	0	0	6	0	0	0	0	0	4
s-metolachlor & atrazine & mesotrione & CGA-154281[12]	2.01& 0.75 & 0.201 & --	0	0	0	0	0	2	0	0	0	0	0	3
s-metolachlor & mesotrione & CGA-154281[13]	2.0 & 0.204 & --	0	0	0	0	0	0	0	0	0	0	0	0
Weedy check		0	0	0	0	0	0	0	0	0	0	0	0
Hand weeded check		0	0	0	0	0	0	0	0	0	0	0	0
LSD (0.05)		8	1	6	3	ns	8	5	2	4	4	ns	6

[1] Nec = Necrosis.
[2] Crk = Leaf crinkling.
[3] Whp = Leaf buggy whip.
[4] G.R. = Growth reduction.
[5] Treatments and rates in parenthesis represent a separate application.
[6] COC = Class Crop Oil Concentrate.
[7] 28%N = 28% UAN fertilizer solution.
[8] MSO = Methylated soy oil.
[9] NIS = Class Preference nonionic surfactant.
[10] Premix = Laddok S-12.
[11] Premix = Distinct 70WG.
[12] Premix = Camix 3.67SE.
[13] Premix = Lumax 3.94 SE.

Table 3. Sweet corn herbicide weed management trial at Waseca, MN - 2003. Jubilee sweet corn yield September 20 and 21. (Becker et al.).

		Jubilee						
Treatment[1]	Rate[1]	Total Yield	Husked Yield	Kernel Yield	Total Ears	Usable Ears	Ear Length	Ear Diameter
	(lb ai/A)	--------- (ton/A)	----------		----- (#/A)	-----	(inch)	(cm)
Postemergence								
Nicosulfuron + COC[2] + 28%N[3]	0.031 + 1.0% + 2.5%	6.1	4.7	3.1	19457	13358	7.6	4.6
Nicosulfuron + atrazine + COC + 28%N	0.031 + 1.0 + 1.0% + 2.5%	6.6	5.1	3.4	20038	15681	7.7	4.7
Foramsulfuron + MSO[4] + 28%	0.0328 + 0.94% + 2.5%	5.4	4.2	2.6	18295	13359	7.7	4.4
Foramsulfuron + MSO + 28% + atrazine	0.0328 + 0.94% + 2.5% + 1.0	6.3	4.8	3.0	20328	13358	7.6	4.5
Foramsulfuron + MSO + 28% + dicamba	0.0328 + 0.94% + 2.5% + 0.25	5.0	3.9	2.5	18295	11035	7.4	4.5
Foramsulfuron + MSO + 28% + 2,4-D amine	0.0328 + 0.94% + 2.5% + 0.5	5.5	4.3	2.7	20328	10164	7.5	4.5
Foramsulfuron + MSO + 28% + halosulfuron	0.0328 + 0.94% + 2.5% + 0.031	6.8	5.4	3.5	22651	15391	7.5	4.5
Foramsulfuron + MSO + 28% + mesotrione	0.0328 + 0.94% + 2.5% + 0.094	5.5	4.3	2.6	18005	9002	7.1	4.4
Foramsulfuron + MSO + 28%	0.066 + 0.94% + 2.5%	5.1	4.0	2.9	17714	10745	7.4	4.6
(Preemergence) and Postemergence								
(s-metolachlor & CGA-154281) + halosulfuron + NIS[5]	(1.9) + 0.016 + 0.25%	3.9	3.1	2.0	13939	7260	7.2	4.5
(s-metolachlor & CGA-154281) + halosulfuron + NIS	(1.9) + 0.032 + 0.25%	5.2	4.0	2.6	18585	8422	7.5	4.5
(s-metolachlor & CGA-154281) + halosulfuron + atrazine + NIS	(1.9) + 0.0016 + 0.5 + 0.25%	5.3	4.3	2.8	18586	10745	7.4	4.5
(s-metolachlor & CGA-154281) + carfentrazone + NIS	(1.9) + 0.008 + 0.25%	5.1	4.1	2.7	18005	11616	7.3	4.5
(s-metolachlor & CGA-154281) + carfentrazone + atrazine + NIS	(1.9) + 0.008 + 0.5 + 0.25%	5.0	4.0	2.7	19166	8712	7.2	4.5
(s-metolachlor & CGA-154281) + atrazine & bentazon[6] + COC + 28%N	(1.9) + 0.625 & 0.625 + 1.25% + 0.625%	6.3	5.0	3.3	22942	15101	7.7	4.6
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr[7] + NIS	(1.9) + 0 0.129 & 0.051 + 0.25%	6.1	5.1	3.4	21780	14810	7.5	4.5
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr + NIS	(1.9) + 0.186 & 0.074 + 0.25%	5.5	4.5	2.9	17714	10745	7.4	4.5
(s-metolachlor & CGA-154281) + 2,4-D amine	(1.9) + 0.5	6.5	5.2	3.5	21780	13649	7.7	4.6
(s-metolachlor & CGA-154281) + dicamba	(1.9) + 0.25	5.3	4.1	2.7	18876	11907	7.4	4.5
(s-metolachlor & CGA-154281) + mesotrione + COC	(1.9) + 0.094 + 1.0%	6.2	5.0	3.3	21490	10745	7.6	4.5
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.25 + 1.0%	5.2	4.1	2.7	18586	11035	7.6	4.5
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.5 + 0.094 + 0.5 + 1.0%	5.2	4.4	2.7	17715	11326	7.8	4.6
Premergence								
s-metolachlor + atrazine	1.9 + 0.75	4.9	3.8	6.8	18876	9002	7.2	4.4
s-metolachlor & atrazine & mesotrione & CGA-154281[8]	2.01& 0.75 & 0.201 & --	3.8	3.0	1.9	13358	6389	7.3	4.5
s-metolachlor & mesotrione & CGA-154281[9]	2.0 & 0.204 & --	5.8	4.7	3.2	19747	12487	7.5	4.6
Weedy check		3.0	2.4	1.5	13649	2003	6.8	4.4
Hand weeded check		6.5	5.2	3.4	23232	16843	7.7	4.7
LSD (0.05)		ns	ns	ns	ns	6293	ns	ns

[1] Treatments and rates in parenthesis represent a separate application.
[2] COC = Class Crop Oil Concentrate.
[3] 28%N = 28% UAN fertilizer solution.
[4] MSO = Methylated soy oil.
[5] NIS = Class Preference nonionic surfactant.
[6] Premix = Laddok S-12.
[7] Premix = Distinct 70WG.
[8] Premix = Camix 3.67SE.
[9] Premix = Lumax 3.94 SE.

Table 4. Sweet corn herbicide weed management trial at Waseca, MN - 2003. Empire sweet corn yield September 20 and 21. (Becker et al.).

Treatment[1]	Rate[1]	Empire Total Yield	Empire Husked Yield	Empire Kernel Yield	Empire Total Ears	Empire Usable Ears	Empire Ear Length	Empire Ear Diameter
	(lb ai/A)	--------- (ton/A)		----------	----- (#/A)	-----	(inch)	(cm)
Postemergence								
Nicosulfuron + COC[2] + 28%N[3]	0.031 + 1.0% + 2.5%	7.4	5.9	3.7	26136	12487	7.8	4.5
Nicosulfuron + atrazine + COC + 28%N	0.031 + 1.0 + 1.0% + 2.5%	8.0	6.3	4.1	24684	15681	7.8	4.7
Foramsulfuron + MSO[4] + 28%	0.0328 + 0.94% + 2.5%	7.6	5.9	3.8	24394	13358	7.6	4.6
Foramsulfuron + MSO + 28% + atrazine	0.0328 + 0.94% + 2.5% + 1.0	8.6	6.5	4.2	25846	14811	8.0	4.6
Foramsulfuron + MSO + 28% + dicamba	0.0328 + 0.94% + 2.5% + 0.25	7.7	6.0	3.9	27298	14230	7.7	4.6
Foramsulfuron + MSO + 28% + 2,4-D amine	0.0328 + 0.94% + 2.5% + 0.5	7.5	6.1	3.8	27007	13359	7.8	4.6
Foramsulfuron + MSO + 28% + halosulfuron	0.0328 + 0.94% + 2.5% + 0.031	7.3	5.6	3.7	22651	14520	8.0	4.6
Foramsulfuron + MSO + 28% + mesotrione	0.0328 + 0.94% + 2.5% + 0.094	6.4	5.1	3.3	22071	11616	7.6	4.6
Foramsulfuron + MSO + 28%	0.066 + 0.94% + 2.5%	6.8	5.4	3.4	23522	11906	7.8	4.6
(Preemergence) and Postemergence								
(s-metolachlor & CGA-154281) + halosulfuron + NIS[5]	(1.9) + 0.016 + 0.25%	6.0	4.8	3.1	20328	9002	7.4	4.5
(s-metolachlor & CGA-154281) + halosulfuron + NIS	(1.9) + 0.032 + 0.25%	4.9	3.8	2.4	18876	6679	7.3	4.5
(s-metolachlor & CGA-154281) + halosulfuron + atrazine + NIS	(1.9) + 0.0016 + 0.5 + 0.25%	6.9	5.6	3.5	25265	10164	7.6	4.6
(s-metolachlor & CGA-154281) + carfentrazone + NIS	(1.9) + 0.008 + 0.25%	5.5	4.4	2.8	20037	7841	7.2	4.5
(s-metolachlor & CGA-154281) + carfentrazone + atrazine + NIS	(1.9) + 0.008 + 0.5 + 0.25%	5.8	4.7	2.9	22361	6969	7.1	4.5
(s-metolachlor & CGA-154281) + atrazine & bentazon[6] + COC + 28%N	(1.9) + 0.625 & 0.625 + 1.25% + 0.625%	7.4	5.9	3.8	24394	13068	7.8	4.7
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr[7] + NIS	(1.9) + 0 0.129 & 0.051 + 0.25%	6.6	5.3	3.4	23813	11326	7.5	4.5
(s-metolachlor & CGA-154281) + dicamba & diflufenzopyr + NIS	(1.9) + 0.186 & 0.074 + 0.25%	5.7	4.6	2.9	21490	10454	7.4	4.6
(s-metolachlor & CGA-154281) + 2,4-D amine	(1.9) + 0.5	6.5	5.4	3.5	22361	13068	7.7	4.6
(s-metolachlor & CGA-154281) + dicamba	(1.9) + 0.25	6.9	5.5	3.4	24974	11035	7.4	4.6
(s-metolachlor & CGA-154281) + mesotrione + COC	(1.9) + 0.094 + 1.0%	5.5	4.4	2.9	20328	7841	7.5	4.5
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.25 + 1.0%	6.4	5.2	3.4	19457	9874	7.6	4.7
(s-metolachlor & CGA-154281) + mesotrione + atrazine + COC	(1.9) + 0.094 + 0.5 + 0.094 + 0.5 + 1.0%	6.1	4.9	3.1	22361	6970	7.5	4.5
Premergence								
s-metolachlor + atrazine	1.9 + 0.75	5.5	4.6	3.0	20328	7260	7.6	4.5
s-metolachlor & atrazine & mesotrione & CGA-154281[8]	2.01& 0.75 & 0.201 & --	5.5	4.5	2.9	20618	7260	7.4	4.5
s-metolachlor & mesotrione & CGA-154281[9]	2.0 & 0.204 & --	6.2	5.0	3.3	21490	10164	7.4	4.7
Weedy check		4.8	3.8	2.4	21199	4066	6.9	4.3
Hand weeded check		7.6	6.0	3.9	24394	15972	8.0	4.7
LSD (0.05)		2.0	1.5	1.0	ns	6629	0.5	0.2

[1] Treatments and rates in parenthesis represent a separate application.
[2] COC = Class Crop Oil Concentrate.
[3] 28%N = 28% UAN fertilizer solution.
[4] MSO = Methylated soy oil.
[5] NIS = Class Preference nonionic surfactant.
[6] Premix = Laddok S-12.
[7] Premix = Distinct 70WG.
[8] Premix = Camix 3.67SE.
[9] Premix = Lumax 3.94 SE.