Sweet corn tolerance to s-metolachlor&atrazine&mesotrione&CGA-15428 and mesotrione. Trower, Timothy L. and Chris M. Boerboom. The purpose of this study was to investigate sweet corn tolerance to preemergence applications of s-metolachlor&atrazine&mesotrione&CGA15428 and postemergence applications of mesotrione following s-metolachlor&CGA-154281+atrazine applied preemergence to six sweet corn varieties. Application rates were such that mesotrione was evaluated at 1X and 2X rates, 0.2 and 0.4 lb/a preemergence and 0.094 and 0.188 lb/a postemergence. *S*-metolachlo&CGA-154281+atrazine applied preemergence at 1.91+0.75 lb/a was the standard. The following sweet corn varieties were evaluated for crop tolerance: Max, Suregold, Super Sweet Jubilee Plus, Zenith, HMX 0393, and FMX516 F1. Plots were maintained weed-free by mechanical cultivation. The study was conducted at the University of Wisconsin Arlington Research station on a Plano silt loam with a pH of 6.3 and 3.2% organic matter. Trial design was a split plot with herbicide treatments as the main effect. Sweet corn varieties were paired and randomized between replicates. Plots were 30 by 25 foot and replicated four times. Herbicide applications were made with a CO_2 backpack sprayer calibrated at 20 gpa and equipped with XR8003 nozzles. Application data were as follows:

Date	6/03/03	6/28/03
Treatment	PRE	POST
Spray		
gpa	20	20
psi	23	23
mph	3	3
Temperature (F)		
air	66	72
soil	60	70
Soil moisture (surface)	dry	moist
Wind/direction (mph)	5, E	3, SW
Relative humidity (%)	46	60
Cloud cover (%)	100	20
Sweet corn:		
Max		
leaf no.	--	V4-5
height (inch)	--	8-12
Suregold		
leaf no.	--	V4
height (inch)	--	6-8
Super Sweet Jubilee Plus		
leaf no.	--	V4
height (inch)	--	6-9
Zenith		
leaf no.	--	V4
height (inch)	--	5-8
HMX 0393		
leaf no.	--	V4
height (inch)	--	7-9
FMX516 F1		
leaf no.	--	V5
height (inch)	--	8-10

No crop injury was observed with preemergence applications of s-metolachlor&CGA-154281+atrazine or s-metolachlor&atrazine&mesotrione&CGA15428. Mesotrione+atrazine applied postemergence at the use rate of 0.094+0.25 lb/a averaged 10% chlorosis 5 days after application which decreased to 5% 18 days after application when averaged across all varieties. The 2X rate of mesotrione+atrazine applied postemergence more than doubled crop injury, averaging 28% chlorosis 5 days after application when averaged across all varieties. Injury decreased to 13% and 5% chlorosis at 18 and 30 days after application, respectively, when averaged across all varieties.

Differences in crop injury were observed among the six sweet corn varieties. Zenith exhibited the greatest crop response to postemergence applications of mesotrione+atrazine, averaging 28% chlorosis at the 1X rate and 50% chlorosis at the 2X rate at 5 days after application. Suregold and Super Sweet Jubilee Plus exhibited similar injury compared Zenith at the 2X application rate, 45% and 46% chlorosis, respectively, but less injury than Zenith at the 1X rate. Max exhibited a moderate 14% chlorosis at the 2X rate while injury with HMX 0393 and FMX516 F1 averaged 7% or less at 5 days after application. Chlorosis decreased over time with all treatments. Mesotrione+atrazine applied at the 2X rate caused moderate injury 30 days after application to Max, Suregold, Super Sweet Jubilee Plus, and Zenith, ranging from 5%-9% chlorosis. No differences in sweet corn yields were noted among treatments. (Department of Agronomy, University of Wisconsin-Madison).

Table. Sweet corn tolerance to *s*-meto&atra&meso&CGA-15428 and mesotrione. (Trower and Boerboom).

			ZEAMS				
	Application		Chlorosis[a]			Stunting[b]	Yield
Treatment	Rate	Timing	July 3	July 16	July 28	July 28	Sept. 5
A Means	(lb/a)		----------(%)----------				--(t/a)--
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	5.3
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	0	5.48
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	0	5.89
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	10	5	1	0	6.07
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	28	13	5	1	5.96
mesotrione+atrazine+COC	0.188+0.25+1%	Post					
LSD (P=0.1)			2	1	1	NS	NS
B Means							
Max			3	1	1	0	6.55
Suregold			12	6	1	0	5.44
Super Sweet Jubilee Plus			12	6	2	1	5.12
Zenith			16	8	3	0	5.08
HMX 0393			2	0	0	0	5.53
FMX516 F1			1	1	0	0	6.71
LSD (P=0.1)			2	1	1	NS	0.53
AB Means							
Max							
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	6.46
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	1	6.26
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	1	6.61
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	3	0	0	1	6.55
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	14	6	5	0	6.85
mesotrione+atrazine+COC	0.188+0.25+1%	Post					
Suregold							
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	4.67
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	0	5.24
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	0	5.32
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	16	7	1	0	6.05
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	45	22	6	2	5.93
mesotrione+atrazine+COC	0.188+0.25+1%	Post					
Super Sweet Jubilee Plus							
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	4.29
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	0	5.71
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	0	4.87
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	12	6	3	1	5.73
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	46	23	9	3	5.02
mesotrione+atrazine+COC	0.188+0.25+1%	Post					

(continued)

Table. Sweet corn tolerance to *s*-meto&atra&meso&CGA-15428 and mesotrione. (Trower and Boerboom) (continued)

			ZEAMS				
	Application		Chlorosis[a]			Stunting[b]	Yield
Treatment	Rate	Timing	July 3	July 16	July 28	July 28	Sept. 5
Zenith	(lb/a)		----------(%)----------				--(t/a)--
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	4.51
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	0	4.82
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	0	5.5
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	28	15	4	0	5.16
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	50	25	9	0	5.39
mesotrione+atrazine+COC	0.188+0.25+1%	Post					
HMX 0393							
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	5.26
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	1	4.62
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	0	5.99
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	5	0	0	0	5.82
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	7	2	1	0	5.97
mesotrione+atrazine+COC	0.188+0.25+1%	Post					
FMX516 F1							
s-metolachlor&CGA-15428+atrazine	1.91+0.75	Pre	0	0	0	0	6.58
s-meto&atra&meso&CGA-15428	2&0.2&0.75	Pre	0	0	0	0	6.21
s-meto&atra&meso&CGA-15428	4&0.4&1.5	Pre	0	0	0	0	7.07
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	0	0	0	0	7.11
mesotrione+atrazine+COC	0.094+0.25+1%	Post					
s-metolachlor&CGA-15428+atrazine fb	1.91+0.75	Pre	6	3	0	0	6.6
mesotrione+atrazine+COC	0.188+0.25+1%	Post					
LSD (P=0.1)			5	3	1	1	NS

[a]Chlorosis is a visual rating of plant bleaching ranging from 0-100, where 100 is complete bleaching.

[b]Stunting is a percent reduction in plant height compared to *s*-metolachlor&CGA-15428+atrazine.

fb denotes sequential application.