EVALUATION OF S-METOLACHLOR IN BEET GREENS AND SWISS CHARD

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Introduction

Yield losses and decreased marketability of beet greens due to weeds makes imperative the need for new weed management strategies. Leafy greens encompass over 20,000 acres of production in Georgia and amount to over $75 million in farm-gate value. Beet greens are a new addition to the list of leafy green crops grown here as is Swiss chard. Yellow nutsedge is a perennial problem in greens. The use of s-metolachlor can provide fair to good control of yellow nutsedge. Although s-metolachlor would assist our beet greens and Swiss chard growers in controlling nutsedge, application rates, application timing and crop tolerance are not fully understood in production of these crops. The objectives of this study were to evaluate beet green/Swiss chard tolerance to s-metolachlor applied early post-emergence and late post-emergence and to evaluate the most effective use patterns of s-metolachlor and currently labeled herbicides for weed management systems in beet greens/Swiss chard.

Methods

Land was tilled and preplant fertilizer consisting of 800 pounds of 10-10-10 per acre was applied and rototilled into slightly raised beds. Preplant treatments were applied and incorporated according to the protocol (treatments listed in Table 1). Beets ("Lutz Green Leaf", Rupp Seed Co.) and Swiss chard ("Lucullus", Rupp Seed Co.) were direct seeded into a Tifton sandy loam (fine-loamy siliceous thermic Plinthic Kandiudults) soil on January 6, 2004. Pre-emergence treatments were applied after the crops had reached a stand. Early post-emergence treatments were applied on January 30, 2004 and late post emergence treatments were applied on February 13, 2004. Plots were side dressed with 600 pounds 10-10-10 on February 6 and March 8. Plots were rated for injury on March 5, 2004. Crops were harvested on April 15, 2004 and data taken on yield.

Results

Results are presented in Table 1. In both crops the untreated check produced the highest or close to the highest yields. The combination of pyrazon + Stinger produced the lowest yield in both crops. Only the lowest rate of s-metolachlor, cycloate + s-metolachlor, pyrazon + Stinger and s-metolachlor + Stinger produced beet yields significantly lower than the untreated check. Only pyrazon + Stinger and Stinger alone produced Swiss chard yields lower than the untreated check. Combinations with cycloate and Stinger as well as some late post treatments with s-metolachlor produced the most injury symptoms.

Table 1. Beet green and swiss chard yields per acre and percent beet green injury

when treated with various herbicide combinations in Tifton, Georgia in 2004.

Treatment	Formulation		Rate		Timing	Beet Wt/A (lbs.)	Sw. Chard Wt/A (lbs.)	Injury (%)
Non-treated						6096a	7239ab	0.00b
s-metolachlor	7.62	EC	12	OZ/A	EPOST	2477bcd	3048bcd	8.75ab
s-metolachlor	7.62	EC	16	OZ/A	EPOST	3810abcd	5334abc	0.00b
s-metolachlor	7.62	EC	24	OZ/A	EPOST	3429abcd	7239ab	8.75ab
s-metolachlor	7.62	EC	12	OZ/A	LPOST	3048abcd	4953abcd	0.00b
s-metolachlor	7.62	EC	16	OZ/A	LPOST	3429abcd	3810bcd	11.25ab
s-metolachlor	7.62	EC	24	OZ/A	LPOST	3810abcd	6287abc	5.00ab
phenmedipham	1.3	EC	72	OZ/A	LPOST	4001abcd	3239bcd	0.00b
pyrazon	4.5	DF	86	OZ/A	EPOST	3048abcd	3048bcd	0.00b
+crop oil			32	OZ/A	EPOST			
pyrazon	4.5	DF	86	OZ/A	EPOST	3429abcd	3048bcd	0.00b
+crop oil			32	OZ/A	EPOST			
+phenmedipham	1.3	EC	72	OZ/A	LPOST			
pyrazon	4.5	DF	86	OZ/A	PRE	4953abc	9144a	3.75ab
+s-metolachlor	7.62	EC	16	OZ/A	EPOST			
cycloate	6	EC	80	OZ/A	PPI	5715ab	4991abcd	7.50ab
+s-metolachlor	7.62	EC	16	OZ/A	EPOST			
cycloate	6	EC	80	OZ/A	PPI	2477bcd	4001bcd	0.00b
+pyrazon	4.5	DF	86	OZ/A	PRE			
+s-metolachlor	7.62	EC	16	OZ/A	EPOST			
s-metolachlor	7.62	EC	16	OZ/A	EPOST	4953abc	7239ab	0.00b
+phenmedipham	1.3	EC	72	OZ/A	LPOST			
cycloate	6	EC	80	OZ/A	PPI	4953abc	4953abcd	2.50ab
+s-metolachlor	7.62	L	16	OZ/A	EPOST			
+phenmedipham	1.3	EC	72	OZ/A	LPOST			
cycloate	6	EC	80	OZ/A	PPI	3048abcd	6858abc	0.00b
+Stinger	3	EC	8	OZ/A	LPOST			
pyrazon	4.5	DF	86	OZ/A	EPOST	1524d	381d	7.50ab
+crop oil			32	OZ/A	EPOST			
+Stinger	3	EC	8	OZ/A	LPOST			
cycloate	6	EC	80	OZ/A	PPI	4953abc	6477abc	16.25a
+s-metolachlor	7.62	L	16	OZ/A	EPOST			
+Stinger	3	EC	8	OZ/A	LPOST			
s-metolachlor	7.62	EC	16	OZ/A	EPOST	2286cd	4191bcd	0.00b
+Stinger	3	EC	8	OZ/A	LPOST			
Stinger	3	EC	8	OZ/A	LPOST	3239abcd	2286cd	0.00b
Mean						3557	4657	3.56
LSD (0.05)						3124	4519	14.13
C.V. (%)						62.0	68.5	280.1

Means followed by the same letter within a column are not significantly different at p=0.05.