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Pumpkin and Winter Squash Weed Control

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Abstract
There are at least three major species differences among the pumpkins and winter squashes. And, their response to herbicides differ, so it is important to know which types are sensitive to a particular herbicide to avoid crop injury. The major jack o'lantern pumpkin belongs to Cucurbita pepo (as does summer squash, acorn squash, and gourds), butternut wintersquash is a member of C. moschata, and the buttercups and hubbards belong to C. maxima. The primary preemergence herbicides used are Curbit, Command, Sandea, and Strategy. Curbit and Command control a number of broadleaves and grasses, and Sandea has both pre and postemergence activity on many broadleaves. Strategy, a premix of Curbit and Command, is labeled for all the vine crops, including jack-o-lanterns. All of the vine crops are somewhat sensitive to Sandea, so careful use is recommended. Squash in the C. maxima species tend to be more sensitive to Sandea than other types.

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Pumpkin and Winter Squash Weed Control

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Introduction

There are at least three major species differences among the pumpkins and winter squashes. And, their response to herbicides differ, so it is important to know which types are sensitive to a particular herbicide to avoid crop injury. The major jack o'lantern pumpkin belongs to *Cucurbita pepo* (as does summer squash, acorn squash, and gourds), butternut winter squash is a member of *C. moschata*, and the buttercups and hubbards belong to *C. maxima*. The primary preemergence herbicides used are Curbit, Command, Sandea, and Strategy. Curbit and Command control a number of broadleaves and grasses, and Sandea has both pre and postemergence activity on many broadleaves. Strategy, a premix of Curbit and Command, is labeled for all the vine crops, including jack-o-lanterns. All of the vine crops are somewhat sensitive to Sandea, so careful use is recommended. Squash in the *C. maxima* species tend to be more sensitive to Sandea than other types.

Our objectives of this trial were to evaluate herbicide combinations for: 1) effective season-long weed control; 2) injury to mature fruit; and 3) cost of treatment (chemical only, application cost not included).

Materials and Methods

The project was established at the Armstrong Research Farm in southwestern Iowa on a well-drained silt loam soil. Fertilizer was applied according to soil test reports with the addition of 50 lb N/acre as urea prior to seeding. All species were direct seeded on May 21 in rows spaced 8-ft apart and in-row spacing of 3 ft. Each plot consisted of three varieties: Magician pumpkin, *C. pepo*; buttercup winter squash, *C. maxima*; and butternut winter squash, *C. moschata*. There were two replications of each herbicide treatment (Table 1). Herbicide preemergence application was made the same day. On June 23, when most species were at the initial vining stage of growth, post application herbicide treatments were made. Plots were allowed to grow to maturity with an insecticide application of Sevin or Baythroid as needed.

Once-over harvest was made on September 16 for pumpkin and October 16 for the squashes. Fruit were sorted into marketable and cull categories with cull consisting of small, immature, and rots. Number and weight of each category was determined.

Results and Discussion

Treatment No. 1 would be considered the standard for good weed control and excellent yields (Table 2). Treatment No. 4 contains additional Command for improved broadleaf weed control, but there is risk of bleaching the color with orange jack o'lanterns and bright pink types of squash (Table 2). Treatment No. 5, Reflex, is primarily a broadleaf herbicide cleared for use in soybeans. Some vine crop species may have tolerance.

At initial vining, June 23, the major weed escapes were pigweed and lambsquarters (Figure 1). The broadcast treatments, No. 4 and 5, were essentially weed free. After post application on June 23 the plots remained weed free with the exception of pigweed in treatment No. 1 (Strategy + Sandea). Reflex provided excellent weed control but was injurious to all three species. However, butternut (*C. moschata*) was particularly sensitive and plant population was severely

reduced resulting in low yields (Table 2). Pumpkin and buttercup recovered during the long growing season and marketable yield and cullage was not different from the other treatments (Table 2).

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Table 1. Herbicide treatments applied to pumpkin and winter squash direct seeded May 21 at the Armstrong Research Farm, 2009. PRE application on May 21 and POST application on June 23, at initial vining.

Treatment	Rate/acre	Application timing
1.Strategy	4 pts.	PRE as a 5-ft band over the seeded row
+ Sandea	1/5 oz.	POST to row middle after tilling
+ Poast	1 1/5 pts	POST to row middle after tilling
Cost = $72.86/ac		
2.Strategy	4 pts	PRE as a 5-ft band over the seeded row
+ Treflan 4E	1 ½ qts	POST to row middle and rotovated in
Cost = $45.69/ac		
3.Strategy	4 pts	PRE as a 5-ft band over the seeded row
+ Dual Magnum	1 ¼	POST to row middle after tilling
Cost = $51.49/ac		
4.Strategy	4 pts	PRE both Strategy and Command tanked mixed and applied
+ Command 3ME	1 ¼ pts	broadcast over entire plot area
Cost = $51.30/ac		
5.Reflex*	1 qts	PRE as a broadcast over entire plot area
cost = $29.25		

*Reflex is not cleared for use on cucurbit vegetables.

Table 2. Pumpkin and winter squash fruit yield and quality response to herbicide treatments, Armstrong Farm, 2009. Observational study and data average of two replications.

	Pumpkin			Buttercup			Butternut		
Trt	Mkt[1]	Fruit size[2]	Cull %	Mkt[1]	Fruit size[2]	Cull %	Mkt[1]	Fruit size[2]	Cull %
1	32.3	13.3	33.1	14.4	2.5	7.0	14.3	3.2	2.1
2	25.3	12.8	27.3	14.7	3.4	6.6	10.8	3.3	5.9
3	25.7	13.0	29.8	13.0	3.4	5.5	10.9	3.3	3.0
4	35.2	13.5	20.2	10.8	2.1	7.0	12.5	4.0	11.6
5	22.3	13.1	31.0	22.5	2.5	7.0	4.8	3.2	15.8

[1]Tons/acre.
[2]Lb/each.

Strategy applied at seeding as a row band, May 21

Strategy + Command applied at seeding as broadcast to entire plot, May 21

Figure 1. The effect of herbicide application at seeding on growth of vine crops and weeds on June 23, the time of the post application.

Pumpkin – pumpkin from Strategy with Command in background

Buttercup

Butternut

Figure 2. The effect of Reflex on growth of three vine crop species on June 23 when applied at seeding, May 21.