

Postemergence Herbicide Weed Control in Cantaloupes

Kai Umeda

Abstract

*The addition of an adjuvant, Agridex, to halosulfuron or Basagran7 (bentazon) did not increase crop injury significantly compared to treatments without Agridex. The addition of Agridex to halosulfuron slightly improved morningglory (*Ipomoea hederacea*) control compared to without the use of an adjuvant. Bentazon at 1.0 lb/A plus Agridex gave very good morningglory control at 92%. At 2 WAT on 20 Aug, cantaloupe injury decreased for halosulfuron and bentazon treatments. A second application of halosulfuron at 0.05 lb/A did not cause additional crop injury.*

Introduction

Currently, no effective postemergence (POST) herbicides are available for weed control on melons. The fall crop that is planted during the late summer in the desert growing region is a rapidly growing crop and has to compete with weeds as soon as irrigation water is applied to germinate and establish the crop. Preemergence herbicides do not offer adequate broadspectrum weed control to enable the crop to establish without weed competition. Prior investigations have offered some promise to evaluate Basagran7 (bentazon) and halosulfuron for weed control with some crop safety. These field tests were conducted to develop more experience to optimize the performance of the POST herbicides with adequate crop tolerance. One test evaluated the effect of the addition of an adjuvant on the weed control efficacy and the crop injury caused by halosulfuron or bentazon.

Materials and Methods

Two small plot field tests were established within commercial cantaloupe fields near Scottsdale, AZ. Cantaloupes were planted at the end of July 1998 on conventional 80-inch beds and germinated with sprinkler irrigation and then furrow irrigated for the remainder of the growing season. The treated plots measured 3.3 ft by 25 ft and treatments were replicated three times in a randomized complete block design. The herbicide treatments were applied with a hand-held boom equipped with two 8002 flat fan nozzle tips spaced 20 inches apart. The sprays were applied using a CO₂ backpack sprayer pressurized at 40 psi to deliver 30 gpa water. At the time of the applications, melons were at the early 1-leaf stage of growth and ivyleaf morningglory (*Ipomoea hederacea*) was at the cotyledon to 1-leaf growth stage. At the time of the first application for test 1 on 06 August 1998, the sky was clear, the air temperature at 94°F, there was a slight breeze at less than 3 mph. The test site was sprinkler irrigated immediately after applications. The weather conditions on 13 August during the second application date for test 1 was a clear sky, 110°F, with no wind. Cantaloupe was at the 2 to 3-leaf growth stage. Injured 1 to 2-leaf stage morningglory from the previous application of herbicides had new growth emerging. Test 2 was applied on 20 August when the weather was clear, 108°F with a slight breeze. Visual weed control and crop safety were evaluated at various intervals after treatment.

Results and Discussion

In test 1 at 1 week after treatment (WAT), no significant cantaloupe injury was observed for halosulfuron or bentazon treatments ($\leq 10\%$) (Table 1). The addition of an adjuvant, Agridex, to halosulfuron or bentazon did not increase crop injury significantly compared to treatments without Agridex. The addition of Agridex to halosulfuron slightly improved morningglory control compared to without the use of an adjuvant. Agridex added to halosulfuron at 0.075 or 0.1 lb/A improved morningglory control slightly though not statistically significant. Bentazon at 1.0 lb/A plus Agridex gave very good morningglory control at 92%. At 2 WAT on 20 Aug, cantaloupe injury decreased for halosulfuron and bentazon treatments. A second application of halosulfuron at 0.05 lb/A did not cause additional crop injury. Weed control after 20 Aug was not evaluated due to accidental hand-hoeing.

Test 2 showed that halosulfuron and bentazon caused minimal crop injury at 4 days after treatment (DAT) and injury was almost negligible ($\leq 5\%$) at 1 WAT (Table 2). Halosulfuron was not effective against heavy populations of morningglory and all rates appeared similar providing 60-75% control at intervals during the month after treatments were applied. Bentazon at all rates caused morningglory leaf burning at 4 DAT but control decreased during the next month as morningglory regrew.

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Table 1. Efficacy of postemergence herbicides for cantaloupe weed control. (Umeda)

Treatment	Rate (lb AI/A)	<u>Cantaloupe Injury</u>		<u>IPOHE Control</u>
		13 Aug	20 Aug	13 Aug
		----- % -----		%
Untreated check		0	0	0
Halosulfuron	0.05	7	0	75
Halosulfuron + Agridex	0.05	10	3	82
Halosulfuron + Halosulfuron	0.05 + 0.05	8	3	78
Halosulfuron	0.075	8	2	82
Halosulfuron + Agridex	0.075	10	3	85
Halosulfuron	0.1	8	7	85
Halosulfuron + Agridex	0.1	8	5	88
Bentazon	0.75	8	3	77
Bentazon + Agridex	0.75	7	0	78
Bentazon	1.0	2	3	80
Bentazon + Agridex	1.0	7	3	92
LSD (p=0.05)		7.6	7.1	9.8

Applications made on 06 and 13 August 1998

Agridex added to treatments at 1.0% v/v.

IPOHE = *Ipomoea hederacea* (ivy leaf morningglory)

Table 2. Postemergence herbicide weed control in cantaloupe. (Umeda)

Treatment	Rate (lb AI/.A)	<u>Cantaloupe Injury</u>		<u>IPOHE Control</u>		
		24 Aug	27 Aug	24 Aug	27 Aug	15 Sep
		----- % -----		----- % -----		
Untreated check		0.0	0.0	0	0	0
Halosulfuron	0.05	3.3	0.0	62	67	60
Halosulfuron	0.075	6.7	0.0	62	65	65
Halosulfuron	0.1	11.7	1.7	75	65	78
Bentazon	0.75	3.3	1.7	85	70	53
Bentazon	1.0	6.7	3.3	88	83	63
Bentazon	1.5	8.3	5.0	88	85	80
LSD (p=0.05)		3.9	5.4	15.5	18	33.8

Applications made on 20 August 1998.

Agridex at 1.0% v/v added to all treatments.

IPOHE = *Ipomoea hederacea* (ivy leaf morningglory)