

Evaluation of Herbicides for Nutsedge Control in Carrots

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Abstract

Halosulfuron and sulfentrazone were not safe to carrots at the lowest rates tested at 0.025 and 0.188 lb AI/A, respectively. At 20 DAT, halosulfuron at 0.038 to 0.075 lb AI/A gave better than 92% control of nutsedge in carrots. Nutsedge control was 77 to 80% at 20 DAT sulfentrazone applied at 0.188 to 0.375 lb AI/A. Both herbicides demonstrated slow activity against nutsedge during the first 7 DAT and then progressed to reduce weed growth at 13 to 20 DAT. Sulfentrazone appeared to act slightly faster than halosulfuron but showed maximum activity at 13 to 20 DAT.

Introduction

Halosulfuron and sulfentrazone are two recently introduced herbicides that have demonstrated very good efficacy against purple nutsedge (*Cyperus rotundus*). Nutsedge is a common economic weed in many desert cropping systems. Arizona has a few thousand acres of carrots that are grown from the early fall season through the late spring. During the early fall planting season when the temperatures are still conducive for summer weeds growth, nutsedge may infest fields during the period for stand establishment. No soil applied preemergence herbicides are available for use in carrots for nutsedge control. Lorox® (linuron) is commonly used as a postemergence herbicide for most broadleaved weeds; however, it does not control nutsedge. This field experiment was conducted to evaluate and determine the efficacy and the safety of halosulfuron and sulfentrazone in carrots to control nutsedge with postemergence applications.

Materials and Methods

A small plot field test was conducted near Tolleson, AZ in a commercially grown carrot field that was heavily infested with purple nutsedge. The carrots were established on conventional 40-inch beds with sprinkler irrigation and then furrow irrigated during the remainder of the growing season. Treatment plots consisted of two beds measuring 25 ft long and replicated three times in a randomized complete block design. Applications were made using a backpack CO₂ sprayer with a hand-held boom equipped with four flat fan 8002 nozzle tips spaced 20 inches apart. The sprays were applied in 25 gpa water pressurized to 35 psi. An adjuvant, Latron CS-7 was added to all treatments at 0.25% v/v. At the time of application on 03 September 1999, carrots were at the 2-3 leaf stage or 2-3 inch height and nutsedge was 12 to 15 inches in height. The weather was clear with no wind and temperature at 82F.

Results and Discussion

At 20 days after treatment (DAT), halosulfuron at 0.038 to 0.075 lb AI/A gave better than 92% control of nutsedge in carrots (Table). Halosulfuron at as low as 0.025 lb AI/A was severely injurious to carrots and showed 88% injury. At 7 DAT, carrot injury was 33 to 47% and progressively worsened during the second week and injury was 77 to 95%. Sulfentrazone was severely injurious to carrots and showed 47 to 58% injury at 20 DAT. Nutsedge control was not

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as complete with sulfentrazone compared to halosulfuron where 77 to 80% control was observed at 20 DAT. Both herbicides demonstrated slow activity against nutsedge during the first 7 DAT and then progressed to reduce weed growth at 13 to 20 DAT. Sulfentrazone appeared to act slightly faster than halosulfuron but showed maximum activity at 13 to 20 DAT.

Halosulfuron and sulfentrazone were not safe to carrots at the lowest rates tested at 0.025 and 0.188 lb AI/A, respectively. Halosulfuron was marginally effective against nutsedge at 0.025 lb AI/A. Sulfentrazone was marginally effective against nutsedge at the highest rate of 0.375 lb AI/A. Efficacy of lower rates of halosulfuron and sulfentrazone might be evaluated against small annual weeds in carrots if more tolerance is also possible.

Acknowledgments

The cooperation of Rousseau Farming Company was appreciated for allowing the test to be conducted on carrots within their commercially grown field.

Table. Nutsedge control in carrots.

Treatment	Rate (lb AI/A)	Carrot Injury			Nutsedge Control		
		7 DAT	13 DAT	20 DAT	7 DAT	13 DAT	20 DAT
Untreated		0	0	0	0	0	0
Halosulfuron	0.025	33	77	88	35	72	83
Halosulfuron	0.038	43	85	95	47	78	92
Halosulfuron	0.05	40	90	96	53	82	95
Halosulfuron	0.075	47	95	96	63	82	96
Sulfentrazone	0.188	27	32	47	67	65	77
Sulfentrazone	0.375	32	57	58	73	77	80
LSD (p=0.05)		10.8	14.4	11.7	13.5	11.3	5.9

Adjuvant Latron CS-7 at 0.25% v/v added to all treatments.

Herbicides applied on 03 September 1999.