Puncturevine Control in Right-of-Way Areas

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Abstract

Control of puncturevine (*Tribulus terrestris*) in areas adjacent to cropland is difficult because seeds can germinate throughout the summer and then rapidly flower and produce viable seed. Six soil-active herbicides were tested for residual puncturevine control on two roadside locations near Prineville and Madras, Oregon. Across the two locations, puncturevine control was consistently good with imazapyr plus diuron (Sahara®, BASF).

Introduction

Control of puncturevine (*Tribulus terrestris*) in areas adjacent to cropland is difficult because seeds can germinate throughout the summer then rapidly flower and produce viable seed. Many postemergence herbicides control puncturevine well, but prevention of viable seed formation requires treating infested areas every 3 weeks throughout the summer. It is not reasonable for most landowners to treat this frequently. Puncturevine control in right-of-ways is further complicated by the gravelly soil conditions that typically characterize these areas. These soil conditions limit the efficacy of soil-active herbicides. The objective of these experiments was to evaluate efficacy on puncturevine of six soil-active herbicides.

Methods and Materials

Six soil-active herbicides were tested for residual puncturevine control on two roadside locations near Prineville and Madras. Treatments were applied preemergence to the puncturevine and postemergence to the prickly lettuce (*Lactuca serriola*) on April 7 and May 9, 2006, respectively at rates currently registered for non-cropland use. Plots were 7 ft by 15 ft with three replications arranged as randomized complete blocks. Treatments were applied with a CO_2 backpack sprayer delivering 20 gal/acre operating at 20 psi and 3 mph. Herbicide efficacy was determined by making visual evaluations using a 0 to 100 percent standard rating scale, with 0 percent being no control.

Results and Discussion

Precipitation varied between the two sites and the timing of precipitation relative to application likely had a strong influence on herbicide efficacy. At Prineville, 0.38 inches of precipitation fell 3 days after the April 7 application. At Madras, 0.21 inches of precipitation fell 10 days after the May 9 application. There was only one germination flush of puncturevine at each location. In Prineville, flumioxazin (Chateau®, Valent), imazapyr plus diuron, and oryzalin (Surflan®, UPI) controlled 100 percent of the puncturevine 117 days after application (Table 1). Also in Prineville, hexazinone (Velpar®, DuPont), flumioxazin, and imazapyr plus diuron controlled 97 percent or more of the prickly lettuce. At Madras only imazapyr plus diuron controlled 100 percent of the

puncturevine 92 days after application. Across the two locations, puncturevine control was consistently good with imazapyr plus diuron.

Table 1. Puncturevine and prickly lettuce control on August 4 from herbicide applications on roadsides near Madras and Prineville, Oregon, 2006.

Treatment[†]	Rate (lb ai or ae/acre)	Prineville		Madras	
		Puncturevine	Prickly lettuce	Puncturevine	Prickly lettuce
		% Control			
Hexazinone	3.0	67	100	33	67
Chlorsulfuron	0.14	50	33	87	43
Flumioxazin	0.38	100	97	73	7
Sulfentrazone	0.38	33	33	26	0
Imazapyr + Diuron	1.0 + 8.0	100	100	100	25
Oryzalin	6.0	100	50	33	10

[†] Trade names commonly used for these herbicides: hexazinone = Velpar, chlorsulfuron = Telar® (DuPont), flumioxazin = Chateau, sulfentrazone = Spartan® (FMC Corp.), imazapyr + diuron = Sahara, and oryzalin = Surflan.