ALKALI GRASS REMOVAL PROGRAM FOR CENTRAL OREGON

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Abstract

Growers face the challenge of removing established stands and controlling volunteer seedlings when rotating out of an established alkali grass seed production field due to seed left onsite due to natural seed shatter or seed loss during harvest. A study is being conducted near Madras, Oregon, to evaluate pre- and post-emergence herbicide options for control of alkali grass at different growth stages. Preliminary results from these studies suggest that there are viable chemical control options for alkali grass seedling control with pre-emergence herbicides such as dimethenamid and primisulfuron. However, if seed germination is delayed, control may decline over time as the risk of herbicide degradation increases. Initial observations suggest that mature alkali grass plants can be controlled with post-emergence herbicides such as clethodim and glyphosate.

Introduction

Alkali grass (*Puccinellia distans*) is a native perennial bunchgrass that grows in a wide range of soils, but it is particularly adapted to alkali soils. Alkali grass is used to help stabilize soils and reduce the risk of soil erosion in disturbed areas. Therefore, it is frequently used in reclamation projects or roadside stabilization. Alkali grass is one of the many grass species grown in Central Oregon for seed, and controlling matures plants and seedlings is a challenge when rotating out of the crop. The objective of this study was to evaluate pre- and post-emergence herbicide options for control of volunteer seedling and mature alkali grass plants.

Materials and Methods

Two studies were conducted in a field under irrigation at the Central Oregon Agricultural Research Station in Madras, Oregon, during 2012. Studies were designed as a randomized complete block with three replications. Plot sizes were all 10 ft wide by 25 ft long. Herbicides were applied with a backpack sprayer calibrated to deliver 20 gallons of spray solution per acre at 40 psi pressure using XR 8002 Teejet® nozzles. Application date, environmental conditions, and alkali grass growth stage are provided in Table 1. Treatments for alkali grass control with the pre-emergence herbicides included dimethenamid (Outlook®), pendimethalin (Prowl H20®), metribuzin (Sencor DF 75®), S-metholachlor (Dual Magnum®), and primisulfuron (Beacon®). Application rates of these pre-emergence herbicides are provided in Table 2. Treatments for alkali grass control with the post-emergence herbicides included clethodim (Select Max®), terbacil (Sinbar®), diuron (Diuron 4L®) and glyphosate (Roundup PowerMax®). Application rates of these post-emergence herbicides are provided in Table 3. Herbicide efficacy was estimated 30 and 60 days after treatment (DAT) for the pre-emergence treatments and 30 DAT for the post-emergence treatments through visual evaluations.

Results and Discussion

The level of alkali grass control achieved with pre-emergence treatments changed with time. Outlook® applied at 16 fluid ounces/acre provided very good control was very good and remained highly effective 60 DAT (Table 2). This was not the case for Prowl H20®, r which resulted initially in 92% control observed 30 DAT but then declined to 50% by 60 DAT. Alkali grass control levels with Sencor 75DF® and Dual Magnum® also declined by 60 DAT, however, the initial control resulting from these treatments was not commercially acceptable. Control with one application of Beacon® improved with time and was 94 % at 60 DAT. Splitting the full rate of Beacon® into two applications did not improve alkali grass control.

Evaluations of the post-emergence herbicides 30DAT indicated that control of mature alkali grass plants with Roundup PowerMax® at 32 fluid oz/acre was 97 % and 83 %t with Select Max® applied at 32 fluid oz/ac. Sinbar® and Diuron 4L® were not effective in controlling alkali grass at the tested rates.

The results from these studies suggest that there are viable options for alkali grass seedling control, but control may decline with time if seed germination is

delayed. Initial observations suggest that mature plants can also be controlled with post-emergence herbicides.

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Table 1. Applications dates, environmental conditions, and alkali grass growth stage at time of herbicide applications.

Application Date	9/22/2012	Application Date	10/4/2012
Time of Day	12:00 PM	Time of Day	10:00 AM
Air Temperature	68	Air Temperature	47
Relative Humidity	34	Relative Humidity	50
Wind Speed	3	Wind Speed	3
Wind Direction	NNE	Wind Direction	WNW
Crop Stage	Pre emergence	Crop Stage	Mature plants

Table 2. Alkali grass percent control with pre emergence herbicides, 30 and 60 days after treatment (DAT).

	Treatment[1][2]	Rate	30 DAT	60 DAT
1	Outlook®	16 fl oz/a	98 a	95 a
2	Prowl H2O®	4 qt/a	92 a	50 b
3	Sencor 75DF®	0.5 lb/a	73 b	47 b
4	Dual Magnum®	1.3 pt/a	60 b	48 b
5	Beacon®	0.76 oz/a	88 a	94 a
6	Beacon® Beacon®	0.38 oz/a 0.38 oz/a	88 a	82 a
	Untreated Check		0 c	0 c
7	LSD		18	16

[1]Some treatments included in the study were used with experimental purposes and are NOT currently labeled for public use. Before using an herbicide make sure is properly labeled for the intended use.

[2]Means among columns followed by the same letter are not different at P=0.05.

Table 3. Mature alkali grass plant control with post-emergence herbicides 30 days after treatment (DAT).

	Treatment[123]	Rate	30 DAT
1	Select Max®	32 fl oz/a	83 b
	AMS	4 lb/a	
2	Sinbar®	0.5 lb/a	0 c
	COC	0.5% v/v	
3	Diuron 4L®	1 qt/a	
	NIS	0.25 % v/v	0 c
4	Roundup PowerMax®	32 fl oz/a	97 a
	AMS	4 lb/a	
7	Untreated Check		0 c
	LSD		9

[1]Some treatments included in the study were used with experimental purposes and are NOT currently labeled for public use. Before using an herbicide make sure is properly labeled for the intended use.

[2]Abbreviations: AMS, ammonium sulfate, COC, crop oil concentrate, NIS, Non ionic surfactant.

[3]Means among columns followed by the same letter are not different at P=0.05.