Alkali Grass Removal Program

Gustavo Sbatella and Sasha Twelker

Abstract

Growers planting Alkali grass and rotating to a new crop often face the challenge of removing volunteer plants and controlling seedlings growing from seed left in the soil due to seed shatter or seed loss at harvest. A study is being conducted near Madras, Oregon to evaluate pre- and post-emergence herbicide options for control of germinating seeds and mature volunteer plants of Alkali grass. Preliminary results from these studies suggest that there are viable options for alkali grass control growing from seed with pre-emergence herbicides such as dimethenamid and primisulfuron. However, control may decline with time if seed germination is delayed, increasing the risk of herbicide break down. Initial observations suggest that mature plants can also be controlled with post-emergence herbicides such as clethodim and glyphosate. Spring evaluation of these treatments should provide a more definitive conclusion.

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 erosion. 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. Growers rotating to a new crop often face the challenge of having to remove volunteer plants and control seedlings growing from seed left in the soil due to seed shatter or seed loss at harvest. The objective of this study was to evaluate pre- and post-emergence herbicide options for control of germinating seeds and mature volunteer plants of Alkali grass.

Materials and Methods

Two studies were conducted in a field under irrigation at the Central Oregon Agricultural Research Station in Madras, Oregon, during 2012. The study design was a randomized complete block with three replications. Plot sizes were all 10 feet wide by 25 feet 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 detailed 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®). Pre-emergence herbicide rates are detailed in Table 2. Treatments for Alkali grass control with the post-emergence herbicides included clethodim (Select Max®), terbacil (Sinbar®), diuron (Diuron 4L®), glyphosate (Roundup PowerMax®). Post-emergence herbicides rates are detailed in Table 3. Herbicide efficacy was evaluated 30 and 60 days after treatment (DAT) for the pre-emergence treatments and 30 DAT for the post-emergence treatments.

Results and Discussion

The level of Alkali grass control achieved with pre-emergence treatments changed with time. Control with Outlook® at 16 fluid ounces per acre was very good and remain high 60 DAT (Table 2). This was not the case for Prowl H20®, for which the initial 92 percent control observed 30 DAT declined to 50 percent by 60 DAT. Alkali grass control levels with Sencor 75DF® and Dual Magnum® also declined by the time of the second evaluation, but in this case, the initial control recorded for these treatments was not satisfactory. Control with one application of Beacon® improved with time and achieved 94 percent at 60 DAT. Splitting the rate of Beacon® into two applications did not improve Alkali grass control.

The 30 DAT evaluations of the post-emergence herbicides showed that control of Alkali grass mature plants with Roundup PowerMax® at 32 fluid ounces per acre was 97 percent and 83 percent. Select Max®. 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 control growing from seed, but control may decline with time if seed germination is delayed increasing the risk of herbicide break down. Initial observations suggest that mature plants can also be controlled with post-emergence herbicides. In this regard, spring evaluation of these treatments should provide a more definitive conclusion.

Acknowledgments

The authors would like to thank Jim Carroll from CHS for his collaboration on the project.

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

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

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

	Treatment[1,2]	Product/acre	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 for 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. Alkali grass mature plants control with post emergence herbicides, 30 days after treatment (DAT)

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

[1]Some treatments included in the study were used for 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.