

Medusahead (*Taeniatherum caput-medusae*) Control Efficacy of Pre-emergence Herbicides Labeled in Kentucky Bluegrass Applied at 3 Different Timings During Fall of 2012.

Gustavo Sbatella and Sasha Twelker

Abstract

Reports indicate that Medusahead is present in Kentucky bluegrass (KBG) seed production fields in central Oregon. Medusahead plants establish primarily during the fall, but the emergence pattern is affected by moisture distribution. The efficacy of pre-emergence herbicides applied in the fall for Medusahead control relies on rainfall for appropriate incorporation, since irrigation water is no longer available. For this reason, a timely application of pre-emergence herbicide is important. A field study was conducted in the fall of 2012, comparing Outlook[®] (21 fl oz/acre) and Prowl H₂O[®] (3.2 qt/acre) applied at three different timings during the fall for Medusahead control. The majority of the rainfall recorded during the duration of the study was concentrated in the first 60 days. Medusahead control with Prowl H₂O[®] was poor (25 percent) when applied in October and no control was obtained with the later applications. The best medusahead control was observed with the November and December applications of Outlook, 82 percent and 75 percent respectively, but control failed with the early application in October. Results indicate that Outlook[®] applications when timely applied can be an option for Medusahead control when irrigation water is no longer available.

Introduction

Because of their morphological and physiological similarities, it is difficult to control annual grasses within a field of perennial grasses. The persistence of annual grass infestations results in a perpetual loss of yield. Medusahead is a ubiquitous invader of rangelands and pastures, and recent reports indicate that this annual grassy weedy species is present in Kentucky bluegrass (KBG) seed production fields in central Oregon. The presence of Medusahead raises concerns among producers because it has the potential to reduce yields, and affect seed quality. Finding an effective control for Medusahead that is already labeled for KBG is a high priority because obtaining a label for a new product requires time. Medusahead infestations in pastures and rangelands are characterized by rapid and aggressive spread. To address infestations in KBG fields, a rapid and effective response is required. Medusahead plants establish primarily during the fall, but the emergence pattern is often not uniform because germination is strongly affected by moisture distribution. The control efficacy of pre-emergence herbicides in the fall can be compromised under these conditions, since herbicides can be broken-down before seed germination by light, soil microorganisms, etc., affecting the performance. For this reason, a timely application of pre-emergence herbicide is important.

Materials and Methods

A field study looking at fall applications of pre-emergence herbicides for Medusahead control was initiated in October, 2012 in Jefferson County, Oregon. The study was conducted on non-agricultural land in order to ensure a high level of Medusahead infestation. Medusahead thatch was removed before spraying to improve soil contact by herbicides. The entire area was later

sprayed with glyphosate, to ensure that the Medusahead plants inside the plots would only be those that germinated after the initiation of the study. The study design was a randomized complete block with four replications. Plot size was 10 ft wide by 30 ft long. The treatments consisted of applying pendimethalin (Prowl H₂O[®]) and dimethenamid (Outlook[®]) at three different timings. To determine the time of the year when the majority of the Medusahead germinations occurred, three sets of untreated checks were included, one for each application timing. At each application, the corresponding untreated check was sprayed with glyphosate to eliminate the medusahead that had previously germinated. Herbicide efficacy was evaluated in the spring of 2013. 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 dates and environmental conditions are detailed in Table 1. Herbicides were evaluated 120 days after the last application (DAT).

Results and Discussion

The number of medusahead seed heads in the untreated checks of the application timings, averaged 15 heads/ft² for October, 9 heads/ft² for November and 5 heads/ft² for December. Counts indicate that most of the seed germination occurred during the first 60 days of the study, period when the highest rainfall was recorded (Table 3). Weed control with Prowl H₂O[®] was poor (25 percent) after the first application and no control was observed with the November and December applications (Table 2). Outlook[®] provided satisfactory levels of control when applied in November (85 percent) and December (72 percent), but no control was provided by the early application in October.

Fall rainfall patterns determine the germination of medusahead seeds, and successful control with pre-emergence herbicides is going to depend on the active ingredient used and a timely application that will ensure soil incorporation with rain. Results suggest that Outlook[®] is a herbicide capable to perform under these conditions.

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Table 1. Application dates, environmental conditions, for all application timings.

	A	B	C
Application Date	10/21	11/23	12/11
Time of Day	12 PM	11 AM	10 AM
Air temperature (F)	48	42	46
Relative Humidity (%)	42	79	47
Wind Speed (MPH)	5	4	6
Wind Direction	SW	ENE	S

Table 2. Medusahead percent control compared to the untreated checks, 120 days after the last application.

	Treatment ¹	Rate	Unit	Code ²	% Control ³
1	Prowl Prowl H ₂ O [®]	3.2	qt/acre	A	26 b
2	Prowl Prowl H ₂ O [®]	3.2	qt/acre	B	0 c
3	Prowl Prowl H ₂ O [®]	3.2	qt/acre	C	0 c
4	Outlook [®]	21	fl oz/acre	A	0 c
5	Outlook [®]	21	fl oz/acre	B	85 a
6	Outlook [®]	21	fl oz/acre	C	72 a
7	Untreated Check				0 c
	LSD (P=.05)				26

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

²Application codes: A= 10/21/2012; B=11/23/2012; C=12/11/2012

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

Table 3. Amount of rainfall in inches recorded during the period of study.

Period 2012-2013	Inches
10/21 – 11/21	1.46
11/21 – 12/21	2.23
12/21 – 1/21	0.64
1/21 – 4/20	1.04