

MEDUSAHEAD (*TAENIATHERUM CAPUT-MEDUSAE*) CONTROL WITH PRE-EMERGENCE HERBICIDES LABELED IN KENTUCKY BLUEGRASS APPLIED AT 3 FALL APPLICATION TIMINGS

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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 seedling emergence pattern is affected by rainfall patterns. The efficacy of pre-emergence herbicides applied in the fall for medusahead control relies on rainfall for appropriate incorporation because irrigation water is not available. For this reason, it is important to time the herbicide application with the fall precipitation to ensure the control of seedling medusahead. A field study was conducted comparing Outlook[®] (21 fl oz/acre) and Prowl H₂O[®] (3.2 qt/acre) applied at three different timings during the fall for Medusahead control. Herbicide performance was affected by the amount of rainfall after the application, particularly of Prowl H₂O[®], a less water soluble herbicide. Medusahead control with Prowl H₂O[®] was poor and it only reached 19 percent when applied in October. In comparison, control with Outlook[®] was significantly better, particularly with the November and December applications where control was above 80 %. Results indicate that Outlook[®] can be an option for Medusahead control in KBG when irrigation water to incorporate herbicides is no longer available.

Introduction

Due to morphological and physiological similarities, it is very difficult to control annual grasses within a field of perennial grass grown for seed. The persistence of annual grass weed infestations result in perpetual loss of seed yield. Medusahead is an ubiquitous invader of rangelands and pastures in OR. Recent reports indicate the annual grass weed species is now present in Kentucky bluegrass (KBG) seed production fields in central Oregon. Medusahead infestations in pastures and rangelands are characterized by rapid and aggressive spread, therefore, a rapid and effective response is required to address infestations in KBG fields. The presence of medusahead is of economic concern among producers because of the potential to reduce KBG

seed yield and affects seed quality. In rangeland and pasture medusahead infestations can produce large amounts of dry biomass which serves as fine fuel, thus, creating hazardous fire conditions. Finding an effective chemical control for medusahead that is already labeled for use in KBG is a high priority because obtaining a label for a new herbicide in grasses grown for seed requires time.

Materials and Methods

A field study to evaluate fall applications of pre-emergence herbicides for Medusahead control was initiated in October of 2011 in Jefferson County, Oregon. The study was conducted on non-agricultural land to ensure a high density Medusahead infestation. A lawn mower was used to mow and remove the medusahead thatch with minimal soil disturbance 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 3.2 qt/a and 21 fl oz/a respectively. Herbicides were applied at three different application timings, the first in mid-October followed by November and December applications with about 30 days intervals. To determine the time of the year when the majority of the Medusahead germination occurred, three sets of untreated checks were included, one for each herbicide application timing. At each application timing, the corresponding untreated check was sprayed with glyphosate to eliminate the medusahead that had previously germinated. 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 provided in Table 1. Treatments were evaluated 120 days after the last application (DAT) during the spring of 2012.

Results and Discussion

The number of Medusahead seed heads in the untreated checks averaged 46 head/ft², and no significant differences were observed in the densities among the untreated checks, suggesting that most Medusahead plants germinated during spring. Medusahead control with Prowl H₂O[®] was not commercially acceptable regardless of the application timing with control levels ranging from 8 to 19 % (Table 2). Control with Outlook[®] was significantly higher, particularly when applied in November or December with 83 and 84 % control achieved, respectively. These levels of control can be considered good levels of control for four months after the applications, when one takes into consideration that the herbicides tested require moisture after application to ensure soil incorporation and activation. The amount of rainfall for proper herbicide incorporation was a critical

factor as indicated by the precipitation recorded after the applications (Table 3). Outlook[®] is a more water soluble herbicide (1174 mg/l) and the amount of precipitation after the November and December applications was probably enough to incorporate the herbicide in the soil. In contrast, Prowl H₂O[®] is a less soluble herbicide (0.275 mg/l) that is deactivated by sunlight if not incorporated after the application. These preliminary results suggest that Outlook[®] can be an option for Medusahead control for fall applications when irrigation water is no longer available. Prowl H₂O[®] should not be discarded as an alternative for controlling Medusahead. The efficacy of Prowl H₂O[®] if applied when irrigation water is still available to ensure incorporation should be further explored.

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Table 1. Application dates and environmental conditions for herbicide application timings.

	A	B	C
Application Date	10/15	11/20	12/14
Time of Day	1 PM	11 AM	1 PM
Air temperature (F)	51	42	38
Relative Humidity (%)	59	72	54
Wind Speed (MPH)	6	3	5
Wind Direction	N	W	ENE

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

	Treatment ¹	Rate	Unit	Code ²	% Control ³
1	Prowl H ₂ O [®]	3.2	qt/acre	A	19 c
2	Prowl H ₂ O [®]	3.2	qt/acre	B	9 c
3	Prowl H ₂ O [®]	3.2	qt/acre	C	8 c
4	Outlook [®]	21	fl oz/acre	A	46 b
5	Outlook [®]	21	fl oz/acre	B	83 a
6	Outlook [®]	21	fl oz/acre	C	84 a
7	Untreated Check				0 c
LSD (P=.05)					16

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= 10/15/2011; B=11/20/2011; C=12/14/2012

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

Table 3. Amount of rainfall (inches) recorded over the duration of the study.

<u>Period 2011-2012</u>	<u>Inches</u>
10/15 – 11/15	0.08
11/15 – 12/15	0.14
12/15 – 1/15	0.77
1/15 – 5/1	4.41