Weed Control in Dormant Alfalfa

Gustavo Sbatella1,2

Introduction
Proper herbicide selection and subsequent treatments to dormant alfalfa allow the use of active ingredients that otherwise would injure the crop if applied during vegetative growth. New herbicides have to be tested for efficacy and crop safety before labeled for use. Indaziflam is a new active ingredient that controls annual broadleaf and grassy weeds in perennial crops, but to my knowledge weed control efficacy and crop safety of indaziflam on alfalfa has not been established in the U.S.

Objectives
Objectives were to evaluate weed control efficacy and crop response of indaziflam (Alion®) when applied to dormant established alfalfa.

Materials and Methods
Alfalfa variety ‘Vernal’ was drill planted at the Powell Research and Extension Center (PREC) at the rate of 8 lb/ac in spring 2014. The trial was furrow irrigated, and water was supplied according to crop needs. Herbicide treatments were applied to established dormant alfalfa in March 2015 with a CO2-pressurized knapsack sprayer delivering 16 gallons of total volume per acre at 40 psi with TeeJet® 8002-DG nozzles. Plots were 11 feet wide by 30 ft long and arranged in a randomized complete block design with four replications. Herbicide treatments and rates are detailed in Table 1. Flumioxazin (Chateau®) was added for comparison. No further herbicides were applied in 2016. Visual evaluations for weed control and crop injury in 2016 were assessed 365 days after treatment (DAT). Alfalfa hay was cut on June 15 and August 14, and fresh and dry biomass production was estimated by harvesting a 135 ft² area with a forage plot harvester.

Results and Discussion
Indaziflam provided excellent weed control during the 2016 season, with no visual injury observed for any of the treatments or rates. In addition, alfalfa dry hay yields were similar between treatments suggesting no negative effects from the application of indaziflam. Results from this study suggest that indaziflam could be an option for weed control in alfalfa grown for hay in northwest Wyoming.

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Table 1. Dry alfalfa hay yield (ton/ac) at PREC one year after application.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Control 1 (%)</th>
<th>Yield-dry (ton/ac) 365 DAT</th>
<th>Yield-dry (ton/ac) First cut</th>
<th>Yield-dry (ton/ac) Second cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Non-treated Check</td>
<td></td>
<td>0</td>
<td>1.8</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>2 Alion 1 fl oz/ac</td>
<td>95</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Alion 2 fl oz/ac</td>
<td>97</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Alion 3 fl oz/ac</td>
<td>97</td>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Alion 4 fl oz/ac</td>
<td>99</td>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Alion 5 fl oz/ac</td>
<td>97</td>
<td>1.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Chateau 2 oz wt/ac</td>
<td>0</td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Least significant difference p=0.05 5 .8 .4

*means followed by same letter do not differ at p<0.05
1mainly kochia

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