Plumeless Thistle Herbicide Evaluation

Purpose of Study
Demonstrate effective chemical and cultural strategies for managing plumeless thistle and improve the profitability and sustainability of grazing systems.

Results (see data on next page)

Plumeless thistle is a relatively new noxious and invasive weed predominantly located in central and west central MN. It is a biennial plant reproducing by seed only and commonly found in pastures, CRP, and wastelands. Management of plumeless thistle must focus on reducing seed production in the attempt for long term control. Research was conducted at a cow/calf beef operation in an actively grazed pasture with a severe plumeless thistle infestation.

All herbicides and rates provided excellent plumeless thistle control when applied to plumeless thistle at the rosette stage, in year one. Delayed spraying (bolt stage) still provided very good control with Redeem and Curtail at both rates but control was poor with 2, 4-D and Clarity, suggesting that selecting the correct herbicide was more critical at some application timings than others. Fall ratings were obtained the first year to illustrate soil residual control of newly emerging plumeless thistle. Redeem and Clarity at all rates and timing provided excellent control. Grass injury was noted in some plots but not measured while legume injury was significant in all treated plots ranging from 80 (2, 4-D at 2 pt – bolt) to 100% (Redeem at 1.5 pt – rosette).

In year two of the study, treatments were repeated. No significant differences were found in grass production leading researchers to believe minimal damage occurred to the grasses with the herbicide usage. Even though significant legume injury was visually recorded the previous year, biomass production differences were non-significant. Plumeless thistle biomass differences were the result of herbicide carry-over control from the previous year. 2, 4-D treatments at rosette and bolting stages had thistle biomass statistically similar to the non-treated even with visual control ratings above 90%. This is probably due to the slowness of the growth regulator type mode of action. Visual and biomass ratings identified complete control with Redeem and Curtail regardless of variables and Clarity applied at the rosette stage.

The research was conducted to determine and illustrate the best approaches to effectively control plumeless thistle. All herbicides were found to be effective but some of the success was dependent upon thistle growth stage. Cost to treat varied from $3.15/a 2, 4-D to $12.20/a (Redeem at 1.5 pt) and must be included in the evaluation of approaching a problem site. Considerable thought must also continue beyond the successful control of plumeless thistle as the pasture system must be managed to incorporate proper soil fertility, presence of desirable plants, and animal grazing parameters to insure a competitive natural system leading to pasture sustainability and profitability.

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Organic Soybean Management Evaluation

Purpose of Study
To evaluate soybean response to organic soil amendments ASA 50 and compost tea at two rates under a certified organic production system.

Results
The soil amendments did not influence yield compared with the control treatment. The oil content was greater than the control plot when compost tea at 1/2 gallon per acre was applied at the Fertile location.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (b/a) Control</th>
<th>Fertile Control</th>
<th>Protein (%) Control</th>
<th>Fertile Control</th>
<th>Oil (%) Control</th>
<th>Fertile Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA 50 1 gal/a</td>
<td>23.9</td>
<td>24.8</td>
<td>35.7</td>
<td>39.6</td>
<td>16.3</td>
<td>17.5</td>
</tr>
<tr>
<td>ASA 50 1/2 gal/a</td>
<td>22.2</td>
<td>26.7</td>
<td>35.4</td>
<td>39.6</td>
<td>16.4</td>
<td>17.5</td>
</tr>
<tr>
<td>Compost tea 1 gal/a</td>
<td>24.4</td>
<td>29.0</td>
<td>35.3</td>
<td>39.8</td>
<td>16.7</td>
<td>17.4</td>
</tr>
<tr>
<td>Compost tea 1/2 gal/a</td>
<td>25.8</td>
<td>28.6</td>
<td>35.1</td>
<td>39.3</td>
<td>16.6</td>
<td>17.7</td>
</tr>
<tr>
<td>Control</td>
<td>25.7</td>
<td>28.1</td>
<td>35.6</td>
<td>39.6</td>
<td>16.5</td>
<td>17.5</td>
</tr>
</tbody>
</table>

* Yield was reduced by a late season hail storm.

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