Introduction

Intermediate-shade-tolerant species (such as oaks), often cannot establish themselves under a mature hardwood forest. For this reason, thinning and harvest prescriptions have been designed to favor advanced oak regeneration. The three-step shelterwood is one such method.

Midstory removal is step one in this process.

This non-commercial treatment is an investment which often intimidates woodland owners. Predicting costs, and the most suitable method, would help.

We compared five common methods of midstory removal:

- Manual (Chainsaws, brushsaws)
- Mechanical (Treemower)
- Herbicide
- Manual plus Herbicide
- Mechanical plus Herbicide

Methods

Before removal

After removal

Each treatment was installed at two sites:
Cox-Haggerty, Meigs Farm
Plots between 0.6 and 0.9 acres

Time, equipment, fuel, and herbicide all accounted for.

Results

Costs at Meigs - Cox-Haggerty. Values are dollars per acre.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Labor</th>
<th>Herbicide</th>
<th>Fuel/Oil</th>
<th>Equipment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>30 - 85</td>
<td>-</td>
<td>2 - 4</td>
<td>4 - 10</td>
<td>30 - 95</td>
</tr>
<tr>
<td>Mechanical</td>
<td>30 - 50</td>
<td>-</td>
<td>1 - 2</td>
<td>173 - 272</td>
<td>210 - 330</td>
</tr>
<tr>
<td>Herbicide</td>
<td>28 - 50</td>
<td>133 - 139</td>
<td>- 4</td>
<td>171 - 183</td>
<td></td>
</tr>
<tr>
<td>Manual and Herbicide</td>
<td>120 - 245</td>
<td>120 - 126</td>
<td>4 - 10</td>
<td>6 - 12</td>
<td>251 - 385</td>
</tr>
<tr>
<td>Mechanical and Herbicide</td>
<td>50 - 82</td>
<td>17 - 48</td>
<td>1 - 2</td>
<td>260 - 296</td>
<td>309 - 406</td>
</tr>
</tbody>
</table>

Discussion/Conclusion

Initial site characteristics, especially presence or absence of Amur honeysuckle, had large influence on total cost.

Treatments

- Manual (Chainsaws, brushsaws)
- Mechanical (Treemower)
- Herbicide
- Manual plus Herbicide
- Mechanical plus Herbicide

Per inches treated, herbicide treatment was most expensive, and the manual treatments the least.

Large mechanical equipment costs made those treatments less competitive.

Non-herbicide treatments’ efficacy in question, since we have yet quantified sprouting.

Appropriate method may vary on stand structure, site, resources, and objectives.

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