Heli-Applicator Trial

Working Plan

G. Ackerman

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Heli-Applicator Trial
Blk. 141 - Shawnigan Lake

Objectives

1. To assess efficacy of the Heli-Applicator using the herbicide Roundup for control of juvenile alder (0.5 - 1.5 m in height).

2. To determine production, safety, chemical requirements and equipment suitability of the Heli-Applicator when used under operational conditions for broadcast and spot treatment.

Introduction

Foliar application of herbicides to juvenile alder stems can be accomplished using aerial or ground backpack sprayers. Although the potential for greater worker exposure does exist with ground application, this method is often preferred since greater control over the application is achieved.

Studies, carried out throughout the province, indicate that the Ultra Low Volume (U.L.V.) technique can achieve results, comparable to low volume application, using lesser quantities of chemical per hectare.

The Engineering Branch of the Ministry of Forests has undertaken modifying a small radio controlled helicopter for the incorporation of a U.L.V. sprayer head. It is believed that use of the Heli-Applicator will:

1) control alder using low rates of chemical application,
2) offer control of application, similar to backpack spraying, and
3) reduce, if not eliminate, operator exposure.

Site Information

Map Sheet - 92B12a
Land District - Malahat
Lot Number - Blk 141
Land Status - Crown
Opening Number - 3
Inventory Label - F 340 -G
Biogeoclimatic subzone - CDF xb
Logged & Burned - 1980
Site Prep. - Mechanical, 1980, to eradicate phellinus
Planting Stock - Fc 3285 2+0 BR
                     Pw 3553 1+0 MP
Manual Brushing - 1984
History Key Record - 050195
Methods

1. Layout of Trial Area

Within the permit area, two trial blocks designated Unit 1 and Unit 2 on the map, will be established. Unit 1 shall be used to test the Heli-Applicator for broadcast treatment. On Unit 2, the Heli-Applicator will be tested for spot application.

Adjacent to Unit 2, two untreated control blocks will be established. Unit A received manual brushing during Aug./84 and Unit B received similar treatment during March/85.

Treatments

To determine the suitability of the Heli-Applicator for herbicide application, 2 treatment units plus untreated control areas will be established. Details of the treatments are outlined as follows.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Area</th>
<th>Percent Solution</th>
<th>Est. Solution Rate/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1 - Broadcast Spray</td>
<td>1.6 ha</td>
<td>33.3</td>
<td>6 L</td>
</tr>
<tr>
<td>Unit 2 - Spot Treatment</td>
<td>1.0 ha</td>
<td>33.3</td>
<td>2 L</td>
</tr>
<tr>
<td>Unit A - Manual Brushing Aug./84</td>
<td>0.12 ha</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Unit B - Manual Brushing March/85</td>
<td>0.12 ha</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Unit 1 - Broadcast Treatment

The operator will be instructed to maintain a average flying height of 4 metres with treatment strips spaced at approximately 3.5 m. Previous field test indicate this should result in 100% coverage. Several repeated treatment over the same area will be required to obtain optimum droplet distribution. The number of repeated treatments will depend on flying speed, sample cards distributed throughout the treatment area will identify when optimum coverage has been achieved.

Unit 2 - Spot Treatment

A minimum of 20 individual points will be established and flagged within unit 2. The operator will be instructed to hover and spray for 10 seconds over the flagged plot. If desired, the operator may leave the sprayer on while travelling between individual plots.
Assessments

Prior to treatment, 20 sample plots measuring $5m^2$ (radius 1.26 m) will be established within each of the treatment and control blocks. Crop trees and target species shall be assessed prior to treatment, 1 year post treatment and 2 years post treatment. Data collected on crop trees will include condition (good, fair, poor or dead), height and diameter. The target species will be assessed for % cover, average height, number of stems/plot and vigour.

Conclusion of Project

At the time of final assessment at 2 years post treatment a final report will be prepared by Silviculture Branch. Following this report and depending on the results achieved, a further herbicide treatment (backpack application) may be required to return the site to a productive state. If required, this treatment shall be undertaken by Silviculture Branch.
The 0.4 ha treated area of SX85704 (treated September 24, 1985) was viewed on May 21, 1986. A visual assessment indicates that approximately 95% control of alder stems have occurred. In addition to lack of leaves, many stems were cut with a knife to confirm mortality had occurred. Few alder stems remained alive, possibly due to lack of coverage, some were noted to be alive on only one side which would indicate lack of coverage due to wide runs.

In addition to alder mortality, a general reduction in herbaceous ground cover was observed. Arbutus, both within the treated and untreated control area, appears in poor condition. No conifer mortality was noted on Fd, Pw and Hw seedling on the site. Indications are that Roundup at 1 kg a.i./ha in 10L solution/ha applied by the Heli-Applicator (U.L.V.) in late summer will achieve successful results on coastal juvenile alder.

G. C. Ackerman
Silviculture Branch

GCA/dak