EVALUATION OF 2, 4-D AMINE
AND GLYPHOSATE FOR HARDWOOD CONTROL
USING TWO SINGLE TREE APPLICATION METHODS

SXL 83404G

Establishment Report
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SILVICULTURE BRANCH
INTRODUCTION

An area suitable for the study was selected in April, 1983 by T. Jones (B.C.F.P.) near Williston Lake and Scovill Creek (see Figure 1 and 2). The site consists primarily of aspen and willow saplings with an understory of spruce and subalpine fir (type label AP1(S) 430-M). The site supported an adequate distribution of target species with which to assess treatment efficacy. The distribution of crop trees was less than ideal, yet should permit a future assessment of release. Table 1 indicates the distribution of all species on the treatment plots. A similar tally of the control plot must be completed in 1984.

Table 1. Distribution of target and crop tree species on treatment plots

<table>
<thead>
<tr>
<th></th>
<th>Plot 1</th>
<th>Plot 2</th>
<th>Plot 3</th>
<th>Plot 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willow</td>
<td>139</td>
<td>121</td>
<td>86</td>
<td>88</td>
</tr>
<tr>
<td>Aspen</td>
<td>139</td>
<td>134</td>
<td>108</td>
<td>106</td>
</tr>
<tr>
<td>Birch</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Spruce</td>
<td>59</td>
<td>26</td>
<td>26</td>
<td>44</td>
</tr>
<tr>
<td>Subalpine fir</td>
<td>23</td>
<td>14</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Lodgepole pine</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Plot Layout

Treatment plots were selected and laid out on July 18, 1983. Treatments were randomly allocated to four of the five plots as illustrated in Figure 3. Plot boundaries were only ribbon marked at this time and will require staking and brushing out during 1984.
Figure 1. Location of Scovill Creek study site (scale 1:250,000; inset 1:63,360)
Figure 2. Location of Scovill study site (scale 1:15,840)
Figure 3. Study plot layout near Scovill Creek
TREATMENT APPLICATIONS

All treatments were carried out as prescribed in the working plan on July 18, 1983. Each target stem received only one injection or core hammer application. A spot-gun manufactured by DuPont Can. Ltd. was used to apply the herbicide to core hammer holes. A red dye (rodamine) was mixed with both herbicides to facilitate easier identification of treated stems. A stem analysis shortly after treatment confirmed rapid translocation of herbicide from the injection location both up and down the treatment bole.

FUTURE REQUIREMENTS

1. Site Description - the treatment plots and study site should be fully characterized.

2. Boundary Marking - all plot boundaries should be permanently marked for a period of up to five years.

3. Target Vegetation Assessment - a sampling system and efficacy assessment must be initiated in July, 1984.

4. Crop Tree Assessment - crop trees to be assessed after 5 years should be selected, labelled and measured during July, 1984.
Evaluation of 2,4-D Amine and Glyphosate for Hardwood Control Using Two, Single Tree Application Methods

Officer i/c: L. Herring
Location: Scovill Creek, west of Williston Lake
Region/District or Nursery: Prince George/Mackenzie Forest District
Objective: To test and compare the suitability of two single-tree herbicide applicators: an M.O.F. injection lance and a "core hammer". To determine the efficacy of glyphosate and 2,4-D Amine for controlling hardwood species of alder, cottonwood, birch and aspen. To obtain growth response data for white spruce and sub-alpine fir which are subjected to conifer release treatments.
Progress: Incidence of stem mortality and percent defoliation were stratified by diameter class. The punch and fill treatment with glyphosate was superior to the other 3 treatments. In all cases, there was a trend to decreasing control with increasing stem diameter.

Next Scheduled Assessment/Treatment: Assessment Fall 1985.
Report Distribution: Silviculture Branch Library

Incompleteness
Abandoned

Lack of time for regular maintenance of trial

MAY 1985
COMPARISON of two herbicides and two stem injectors for control of trembling aspen. Fahlman, E. and Herring, L.J. A trial, using 2,4-D amine and glyphosate, was initiated on July 18, 1983 to test the suitability of two stem injection systems for controlling trembling aspen. An injection lance and a "punch and fill" procedure were the two systems employed. For descriptions of the methods see Gilmore, 1984, Forestry Chronicle Vol. 60(4):222-3. Both systems delivered 1 ml of solution per injection. Glyphosate concentration was a 50/50 mix with water; while 2,4-D was used full strength. Average injection rate was 1 ml per 3 cm d.b.h. The site was an immature aspen stand near Mackenzie, B.C. Each treatment was applied to a 35 x 35 m plot, containing approximately 150 trees. Assessment was done in early August, 1984. Incidence of stem mortality and percent defoliation were stratified by diameter class. The punch and fill treatment with glyphosate was superior to the other 3 treatments. In all cases, as shown in the table below, there was a trend to decreasing control with increasing stem diameter.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>% defoliation</th>
<th>% stem mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8-12 cm dbh</td>
<td>20+ cm dbh</td>
</tr>
<tr>
<td>2,4-D lance</td>
<td>99</td>
<td>34</td>
</tr>
<tr>
<td>2,4-D hammer</td>
<td>100</td>
<td>74</td>
</tr>
<tr>
<td>glyphosate, lance</td>
<td>100</td>
<td>59</td>
</tr>
<tr>
<td>glyphosate, hammer</td>
<td>99</td>
<td>97</td>
</tr>
</tbody>
</table>

At a 50/50 glyphosate, water mix, considerable contact necrosis of cambial tissue was observed, which may have effected subsequent translocation of the chemical. Further research is required to determine both optimum herbicide concentration and rate of application. (B.C. Ministry of Forests, Prince George, B.C.)