WORKING PLAN

Sx92112G

Lodgepole Pine
Copper Prune with Gromax vers
Control

Prince George Region
Vanderhoof
Cluculz Creek

Russell Warkman

92-05-13
TITLE: Evaluation and Comparison of Control Copper Pruned seedlings vers Copper Pruned with Gromax seedlings.

INTRODUCTION: Studies by Burdett (1984), Thompson and Brockley have indicated benefits due to fertilization at time of planting. This trial will examine the benefits of adding slow release fertilizer at time of planting to compare the resultant survival and growth of outplanted seedlings.

"Gromax" is a trade name for the product distributed by Promac Forestry Research of Duncan, B.C. Fertilizer formulation is granular with a specific amount for each seedling contained in a "teabag".

OBJECTIVES: 1. To compare:
   a) Control(Copper Pruned) seedlings
   b) Copper Pruned with Gromax seedlings

Comparisons will consist of measuring the seedlings' height growth, root collar calliper, survival and root development. Subjective comparisons of vegetative competition will also be recorded.

STOCK: Pl 1+0 211A PCT Seedlot 29098 Vernon Nursery.

All stock was operationally grown and stored no special handling or treatments applied prior to outplanting.

TREATMENTS: All treatments will be applied at the time of planting, as follows:

<table>
<thead>
<tr>
<th>TREATMENT NO.</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Control. 1+0 PCT 211A with no special fertilizer treatment.</td>
</tr>
<tr>
<td>2.</td>
<td>1+0 PCT 211A with one Package of Gromax Transplant 2 (12-5-8).</td>
</tr>
</tbody>
</table>

Gromax; 12-5-8
21% Copolymer Acrylamide (gel)
LOCATION: Prince George Region (Tabor Mountain - Spey Creek)

TRIAL DESIGN: Two location replications for 2 treatments will be established. For each treatment 140 seedlings (4 replications of 35 seedlings) are required at each location. A total of 560 seedlings will be planted and marked at the two locations.

Of the 35 seedlings in each row:

10 - measured for height and calliper and estimated for vegetation competition (#11-20)

25 - measured for survival (#1-25)

10 - available for root examination and destructive sampling (#26-35)

Trees will be spaced 2.0 m apart in rows with rows spaced 3.0 m apart

METHOD: Seedlings will be planted using a planting shovel.

Vegetation competition will be subjectively determined by estimation the percentage of occupancy by all potentially competing species of vegetation within a 30 cm radius plot surrounding the seedling (to the nearest 10%).

At each remeasurement, the survival and condition of each seedling will be recorded. Condition codes are:

(0) = Dead
(1) = Good - dark green needles, average growth, no damage/disease
(2) = Chlorotic and less than average damage
(3) = Poor - may have dead leaders or branch tips, less than average growth or growth stressed
(4) = Missing
(5) = Multiple Top
(6) = Frosted
(7) = Animal Damage
(8) = Animal Kill
(9) = Other
Photography will illustrate the site conditions, examples of each condition, seedling performance in each treatment and other pertinent findings.

Photographs will be taken throughout the scheduled measurements. These will be of tree #11 in the first row of each treatment.

**SCHEDULE:**

<table>
<thead>
<tr>
<th>MEASUREMENT</th>
<th>S/92</th>
<th>F/92</th>
<th>F/93</th>
<th>F/96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height/Calliper</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Survival</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Vegetative Comp.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Photography</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Establish Report</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Interim Report</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Final Report</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**REPORTS:**

Establish Report (Fall 1992) - this report will include original stock measurements and summary; maps (1:100,000) showing location of test sites, (1:15,000) showing location of trial plots within treatment blocks and sketches showing the row order for stock treatment types, and representative photography. Trial locations will be documented on mylars and History Records. Map clearance will be requested.

**DISTRIBUTION:**

Research Officer - All regions
Silviculture Officers - All regions
Resource Officer Silviculture - Prince George District
Silviculture Branch Agrologist
Manager, Nursery and Seed Extension Services
MoF Library
**TRIAL DESIGN:**

At location #1 and #2 2 treatments will be replicated 4 times. Each replication consisted of 35 trees per row spaced 2 meters apart. Of the 35 seedlings in each row:

- Trees (#1-25) measured for survival and condition.
- Trees (#11-20) measured for height and caliper and estimated for vegetation competition.
- Trees (#26-35) available for destructive sampling.

There were a total of 140 trees of each treatment planted at each location.

Location #1-#2 have 8 rows each, each row is spaced 3 meters apart. A total of 560 trees will be planted.

---

**PLOT MAP SHOWING LOCATION OF TREATMENTS**

<table>
<thead>
<tr>
<th>ROW#</th>
<th>TREATMENT</th>
<th>SURVIVAL</th>
<th>EXCAVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>[--------] [--------] [-----] [---------]</td>
<td></td>
</tr>
</tbody>
</table>

>---11-20--->

Used for height & Root Caliper Diameter Measurements