DRAFT

WORKING PLAN

SX 90109Q

EVALUATION and COMPARISON of FERTILIZATION at TIME of PLANTING with GROWMAX - Summer Planting

COLENE WOOD

Silviculture Branch

90-09-28
Evaluation and Comparison of Fertilization at time of Planting with Growmax - Summer Planting

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 the time of planting, comparing the resultant survival and growth of outplanted seedlings.

"Growmax" 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".

1. To compare:
   a) outplanted seedlings which have had fertilizer incorporated at the time of planting, with
   b) control seedlings

2. To collaborate with the licensee in obtaining impressions from tree planters of these methods of production planting.

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

Se 2+0 PSB 313 Seedlot _____, Request Key No. ____________, K&C Nursery, summer "hot" lift.

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

All treatments will be applied at the time of planting, as follows:
TREATMENT NO.   TREATMENT

1  Control. No other amendments.

2  1 package of Growmax (18-10-6) package fertilizer placed in planting hole.

3  2 packages of Growmax (18-10-6) package fertilizer placed in planting hole.

LOCATION:  Castlegar Forest District, Nelson Region, Openings in Plant Creek. Both sites will be operationally planted in early July 1990, by production planting crews. Opening ______ will also be production planted using Growmax fertilizer in early July 1990.

TRIAL DESIGN:  The trial will be established by Silviculture Branch personnel, in collaboration with personnel from Arrow Forest District and Westar Timber Limited, Nakusp division.

Two location replications for all 3 treatments will be established. For each treatment, 140 seedlings (4 replications of 35 seedlings) are required at each location. A total of 420 seedlings will be planted and marked at one location. A total of 840 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. A total of 12 rows are required at each location.

METHOD:  The beginning and end of each row will be marked with large cedar stakes. A small cedar stake will mark the tenth, twentieth and twenty-fifth tree in each row. Wire flags will mark each seedling.
Seedlings will be planted using a planting shovel. Growmax "tea-bags" will be placed in the planting hole near the centre portion of the plug.

Vegetation competition will be determined by estimating the percentage of occupancy (or cover) by all potentially competing species of vegetation within a 30 cm radius plot surrounding the seedling (to the nearest 10%). A list of the species considered competition will be recorded.

The survival and condition of a seedling will be coded, as follows:

(0) = Dead
dark green needles, above average height growth, no damage/disease
(1) = Good-
average growth
(2) = Average-
green needles, average growth
(3) = Poor-
chlorotic or growth stressed, less than average, may have dead/damaged leader/buds

In addition, damage will be recorded, as follows:

(4) = Dead terminal
(5) = Frost damage to buds
(6) = Animal damage (comment)
(7) = Other damage (comment)

Measurements will consist of total height (to nearest 0.5 cm) and root collar diameter (to nearest 0.01 cm). Root development will be compared visually at the final remeasurement, from extracted seedlings. The radial and lateral root egress will be described.

**SCHEDULE:**

<table>
<thead>
<tr>
<th>MEASUREMENT</th>
<th>S/90</th>
<th>F/91</th>
<th>F/92</th>
<th>F/95</th>
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<tbody>
<tr>
<td>Height/Calliper</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Survival</td>
<td>X</td>
<td>X</td>
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<td>Vegetative Comp.</td>
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<td>X</td>
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<td>Root development</td>
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<td>Photography</td>
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<td>Interim Report</td>
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<td>Final Report</td>
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**REPORTS:**

Establish Report (Fall 1990) - 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; a completed FS 739, ecological evaluation and planting report; and representative photography. Trial locations will be documented on mylars and History Records. Map clearance will be requested.

**DISTRIBUTION:**
Research Officers - All Regions
Silviculture Officers - All Regions
Resource Officer Silviculture - Arrow District
Silviculture Branch Agrologist
Manager, Nursery and Seed Extension Services
MoF Library
Westar Timber Ltd. - Attn: Sue Harris
SX90109Q  Plant Creek
Gromax At Time Of Planting

Location #1 - #2

Abandoned

Location #1 partly assessed.

We found that production planters planted through both locations.

They planted within inches of our trial trees.

Some flags are missing and it's almost impossible to know who's
trees are who's.