FINAL REPORT
RNX 7504

Engelmann Spruce
Bareroot-Mudpack
Trial

Silviculture Branch
80.11.13

R.E. Robson
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DATE
1. Trial Number
   RNX 7504

2. Location
   Porcupine Creek, approx. 25 km west of Castlegar, F.D. 3, Nelson Region.

3. Object
   To compare the performance of 2+0 bareroot Engelmann spruce with that of 2+0 mudpacks in terms of survival and growth.

4. Treatment and Code
   (a) 2+0 bareroot = BA, January lifted and coldstored for 6 months.
   (b) 2+0 mudpacks = MA, January lifted, mudpacked, and coldstored for 6 months.

5. Plot Layout
   8 plots x 4 lines x 50 trees = 1600 trees in all.

6. Planting Dates
   July 12-15, 1975
7. **Assessments**

July, 1975  
October, 1975  
September, 1976  
September, 1977  
June, 1980

8. **Seedlot**

Engelmann spruce 82F5/B2/2035/1490 m from Sentinel Mtn., S.Z. 3010

9. **Site Factors**

a. Biogeoclimatic zone: e S al F  
b. Seedzone: 3010  
c. Elevation: 1460-1680 m  
d. Former stand: PI S B74  
e. Slope: 10-30%  
f. Aspect: Mainly SE  
g. Topography: Upper slope  
h. Soil texture: Sandy loam + gravel  
i. Organic layer: Mainly absent  
j. Planting in: Mineral soil (95+%)  
k. Vegetative competition: Light  
l. Slash cover: Light

10. **Weather etc. at Planting**

<table>
<thead>
<tr>
<th>Date</th>
<th>Soil Condition</th>
<th>Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 12-15/75</td>
<td>Very moist</td>
<td>10-17°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heavy rain</td>
</tr>
</tbody>
</table>
11. Condition of Stock at Planting

<table>
<thead>
<tr>
<th>Stock Type</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+0 bareroot</td>
<td>Some mold around root collar. Some needles missing on lower stem. Judged to be in fair-good condition, based on appearance.</td>
</tr>
<tr>
<td>2+0 mudpacks</td>
<td>Some needles missing from lower stem. Buds swelling. Fair-good condition.</td>
</tr>
</tbody>
</table>

12. Results

Table 1: Percent Survival of Engelmann Spruce, Grown as Two Stock Types, After 1, 2, 3, and 4 Growing Seasons

<table>
<thead>
<tr>
<th>Growing Seasons After Planting</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+0 Bareroot</td>
<td>74</td>
<td>57</td>
<td>55</td>
<td>53</td>
</tr>
<tr>
<td>2+0 Mudpacks</td>
<td>22</td>
<td>11</td>
<td>11</td>
<td>10%</td>
</tr>
</tbody>
</table>

Comments -
(a) The survival of bareroot, although borderline, is noticeably superior to that of mudpacks.
(b) There was little additional mortality after the second growing season.
(c) Drought was assumed to be the exclusive cause of death and injury.

Table 2: Total Height (cm) and Height Growth of Engelmann Spruce, Grown as Two Stock Types, After 4 Complete Growing Seasons

<table>
<thead>
<tr>
<th></th>
<th>At Establishment</th>
<th>After Four Growing Seasons</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+0 Bareroot</td>
<td>20.0</td>
<td>38.5</td>
<td>18.5</td>
</tr>
<tr>
<td>2+0 Mudpacks</td>
<td>13.5</td>
<td>28.5</td>
<td>15.0 cm</td>
</tr>
</tbody>
</table>

Root Development

(a) Initial root egress from the mudpack was concentrated in that part of the stem immediately above the pack and to places where there were cracks in it.

(b) After 4 years growth, although restriction is still evident, the mudpacked root has been able to overcome some of its initial deformation.
(c) Root development of bareroot has been generally superior to that of mudpacks in that the former has a noticeably larger root mass that is more evenly distributed in the soil.

P.E. Robson
Forester
Silviculture Branch
80-10-24
SAMPLES OF TWO AND THREE-YEAR DEVELOPMENT:
MA1 = 2+0 MUDPACK AND BRI = 2+0 BAREROOT

TWO YEAR

THREE-YEAR
SAMPLES OF TWO AND THREE-YEAR DEVELOPMENT:
MA1 = 2+0 MUDPACK AND BR1 = 2+0 BAREROOT.

TWO YEAR

THREE-YEAR