SX TRIAL PROPOSAL
WORK PLAN

Seed Production V. Cone Abortion in the Bulkley Valley
Spruce Seed Orchards Located at Skimikin Nursery

- C. Hewson and K. Cox -

Introduction

The Bulkley Valley high and low elevation spruce seed orchards were established at Skimikin Nursery in 1980. The orchards are clonal in origin and were grafted between 1977 and 1985. Since commencement of cone and seed production, various degrees of conelet abortion have been noted, on some ramets abortion has been estimated to be greater than 20%. The time, extent and cause of abortion is as yet unknown.

Objective

To determine the time and extent of conelet abortion in 1989 in the Bulkley Valley high and low elevation seed orchards.

Method

The high and low elevation orchards consist of one ramet of 144 and 130 clones respectively in each of nine blocks. All blocks are randomized individually to ensure no two ramets of the same clone are adjacent.

Ramets must have at least 100 female flowers and may be of any age or height. Two ramets from twenty-five clones in each orchard will be randomly identified that meet the above criteria. Where possible alternates will be identified. Five branches, each containing ten female flowers will be randomly selected throughout the crown. Where a branch contains more than ten flowers, only the first ten, counted from the outermost portion of the branch, will be recorded. Plastic or vinyl tape will be used to identify branches and delineate the extent of the count. Ramets and/or clones will be rejected and alternates selected if ramets do not meet the above criteria. Ramets will be selected one week after completion of pollination.
Data Collection

The following data will be recorded:
1. Clone number
2. Ramet number
3. Location in orchard
4. Branch number
5. Direction branch facing
6. Height to mid point of sample area on branch
7. Initial flower count (10)
8. Mid season flower count
9. Final cone count

Measurement and Analysis of Data

Female flowers will be counted
1. One week after pollination complete
2. Mid summer (end of June)
3. At time of cone collection

If abortion has occurred prior to the first count, the aborted flowers will be included as part of the sample and a note will be made as to the number.

The Huntcom program "General Data Collection System" (Version 4.0) in conjunction with the Husky datalogger will be used to collect the data. Analysis of variance will be used to determine if statistically significant differences exist between

1. Orchards
2. Clones within one orchard
3. Ramets of the same clone
4. Branch height
5. Time of abortion

In addition, the percentage of abortion on each ramet will be mapped to determine if abortion is localized within the orchards.

Analysis of data will be carried out by Silviculture Branch, Victoria.
Discussion

The primary purpose of this trial is to determine if conelet abortion is a significant problem in the Bulkley Valley seed orchards in 1988 and if so, is the abortion clonal or is it localized (in terms of height, physical location or exposure) in the orchards. No attempt will be made to identify cause other than casual observation.

If the problem is significant (as determined through discussions with orchard manager and other appropriate staff), then a further study will be initiated to determine the cause using clones or locations that appear most susceptible as identified in this study.

Responsibilities and Cost

This study will be conducted by the Seed Orchard Projects Forester (PF) with assistance from the Skimikin Senior Seed Orchard technician (SOT). Estimated person days are provided below for the entire project.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Person Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation and writing of working plan</td>
<td>2 PF 1 SOT</td>
</tr>
<tr>
<td>Selection of study trees</td>
<td>1</td>
</tr>
<tr>
<td>Identify, mark and record -1st record</td>
<td>1.5</td>
</tr>
<tr>
<td>2nd record (late June)</td>
<td>.5</td>
</tr>
<tr>
<td>3rd record (just prior to cone collection)</td>
<td>.5</td>
</tr>
<tr>
<td>Data analysis and final report</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>8.5</td>
</tr>
</tbody>
</table>

All equipment (including the Husky datalogger) will be supplied by the Projects Forester.

* - includes evaluation of flowering and is standard orchard practice.