SX 84708R

ASSESSING THE EFFECTIVENESS OF
GIRDLING ALDER

Working Plan
1984

J. Eastwood
INTRODUCTION:

Manual girdling was performed on stands of red alder in the Kalum Forest District throughout 1983. This SX trial evaluates the performance of several girdling techniques used at various times of the year in the Kitimat Provincial Forest.

OBJECTIVES:

The objectives of the SX trial are:

A. To evaluate the effect of time of year on the success of girdling of red alder.
B. To evaluate the effect of method of girdling on success.

LOCATION:

The trial was established in the Kitimat Forest. The sites were situated near Humphreys Creek, Deception Creek, Big Wedeene River and the Kitimat River (see attached maps).

DESIGN & LAYOUT:

The project is an ex post facto study because the operational work has already been completed. Randomization and formal experimental layout are not possible. Nonetheless the study will be broken down into two assessments in which objectives A and B are evaluated separately.

A. Timing Study:

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>LEVELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of girdling</td>
<td>9 (Jan/Feb, Mar-Oct.)</td>
</tr>
</tbody>
</table>

conditions: - 40 trees per time of girdling will be assessed
- stands will be approximately the same age (sites harvested between 1965-67)
- only one method of girdling is assessed (the most common)
B. Girdling Method Study:

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>LEVELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Girdling</td>
<td>6 (felled, sandvik, double ring with saw, single ring with saw, slab with rings, and 6 - 12&quot; of bark removed with saw)</td>
</tr>
</tbody>
</table>

conditions: - 40 trees per method of girdling will be assessed
- one or two adjacent stands are used in which all methods are present
- stands are of equal age

ASSESSMENT PROCEDURES:

A. Identify the appropriate stands for each study.
B. Run a line through each stand and select 40 dominant/codominant red alder stems which meet the timing or method of girdling criteria for each study.
C. Permanently mark the stems so relocation is possible.
D. Assess as noted in section V.

SECTION V. ASSESSMENT.

Each girdled red alder was assessed for:

1. dbh
2. # of stump suckers
3. condition of the tree (1 to 5 where 1 = dead w/o leaves and 5 = apparently normal)
4. bark bridging (0 to 10 where 1 = 10% of cambium intact, 2 = 20% of cambium intact, etc.)

Assessments were conducted in the spring of 1984 when the trees flushed (1st assessment) and in the fall of 1984 prior to leaf drop (2nd assessment). A fall 1985 assessment may be performed.

The fall assessment was conducted from September 11 to 13, 1984.

The mortality of treated stems varied. The variation in mortality after 1 year was associated with the month of treatment (timing). The method of girdling did not seem to be a factor.
PLATES 1 - 3: View of block A08 (girdled Sept 83 with sandviks). The trees were well girdled, yet the trees had vigorous growth with some suckering during 1984.

Plate 1 Sept 17/84

Plate 2 Sept 17/84

Plate 3
Sept 17/84
PLATES 4 - 6: View of block A09 (girdled Oct 83 with sandviks). The trees expressed vigorous growth in 1984 even though the trees were well girdled and no bridging occurred.
PLATE 7: View of alder not girdled adjacent to treated area of block A09.

Plate 7
Sept 17/84
PLATES 8 - 11: View of girdled trees in Block A06 (girdled July 83). The underbrush has exploded, shading the lower trunks of the trees, resulting in minor sprouting. Bridging is present on most of the trees, consequently the growth for 1984 was substantial. Signs of stress are apparent with some of the trees.

Plate 8 Sept 17/84  BRIDGING OVER OF GIRDLED AREA

Plate 9 Sept 17/84  Bridging over of girdled area
Plate 10 Sept 17/84
Brush explosion due to girdling

Plate 11 Sept 17/84
Brush explosion due to girdling
RECOMMENDATIONS & CONCLUSIONS:

When girdling was prescribed, it was anticipated that there would be 90% mortality over 3 years. Consequently the trial should be continued next year.

The trees girdled in May, June, July, August, September, October and November flushed this year. This may be due to the abnormally wet growing season this year.

The following conclusions are only preliminary at this time. More conclusive information may be deduced next year after the final assessment of the trial.

TIMING

From the collated information it appears that girdling is more effective during the months of January, February, March and April. During the months of May, June and July vigorous growth was expressed during the 1984 growing season. Trees girdled during the months of August, September and October flushed this year but did show some signs of stress.

METHOD

Method of girdling does not appear to be a factor. Five methods of girdling were assessed. The mortality of all the trial trees were the same (100% mortality).

BRIDGING

Bridging appears to be influenced by the "timing" of the girdling. No bridging occurred during the months of January, February, March, April, August, September and October. During the months of May, June and July bridging was very notable. The tree vigor was good and bridging seemed to be apparent factor (bridging varied from 10 to 90% bridging with an average of 60% bridged).

The quality of work was good. However it appears that this time period (May, June, July) is more critical. It is imperative to ensure that all the cambium is removed and that the girdling is completed into the wood. As a result it may not be feasible to girdle during this time period. It takes longer to girdle into the wood (which creates an unstable tree, subject to blow down) and the quality has to be 100%.

These results may be inconclusive and premature at this time. After reassessing the trial next year, more accurate recommendations and conclusions can be made.

Spruce was underplated in some of the areas. Due to the brush explosion some of the spruce has done poorly. Cedar may be a better choice for underplanting in the future.