Report Title:
"Efficacy of Three Filmforming Antitranspirants as a Means of Improving Survival of Douglas-fir [Pseudotsuga menziesii (Mirb.) Franco]] Seedlings on Xeric Sites in the IDFe1 Biogeoclimatic Subzone, (Fraser TSA)."

Problem Identification:
Survival of Douglas-fir seedlings has been poor on certain xeric sites that have been clearcut harvested in the IDFe1 biogeoclimatic subzone. A possible cause of mortality has been attributed to post-planting plant moisture stress. Several different silvicultural treatments have been tried in order to improve the survival, including the use of filmforming antitranspirants. I propose to document some of the trials that have been established to date and carry out my own trial using 3 antitranspirants. The main objective of this report will be to assess the efficacy of post-planting application of 3 antitranspirants; XEF-4-3561-A, Wilt Pruf and Vapor Gard. Survival and cost vs benefit will be examined.

Report Outline:
INTRODUCTION
A general outline of the problem of poor Douglas-fir survival will be presented. This will include a synopsis of what has been tried to date with specific reference to the use of filmforming antitranspirants. Completed and ongoing trials will
be summarized and a new trial will be introduced. Most antitranspirant applications to date have been done at the nursery or just before planting. This new trial will be based on the premise that mortality is caused more from later season droughts, that antitranspirants may have an adverse effect on growth of spring-planted seedlings and therefore that post-flush application will be more effective. Specific objectives will be outlined as follows:

(1) To assess the effectiveness of summer application of three antitranspirants (XEF-4-3561-A, Wilt Pruf and Vapor Gard) on survival of spring-planted Douglas-fir 1-0 PSB 313.

(2) To show the difference in efficacy between each of the three antitranspirants, if any.

(3) To compare the specific results of this trial with the general results other trials using filmforming antitranspirants.

(4) To assess the cost effectiveness of using this particular methodology (post-planting spraying, cost/benefit analysis).

(5) To present fragmented information about filmforming antitranspirants in a single report.

(6) To identify the characteristics of sites prone to poor survival in the IDFe1 (Fraser TSA).

SITE CHARACTERISTICS

The sites on which survival has been poor will be described, including the new trial block. This will allow easier
identification of proposed cutblocks prone to the poor survival problem. The site characteristics to be examined will include; pre-harvesting indicator plant spp., elevation, aspect, slope, slope position, soil and humus type, climate (with specific reference to precipitation patterns) and post-harvesting ground cover. Stock type will also be described.

MATERIALS AND METHODS

The 3 antitranspirants will be applied on a representative clearcut-harvested area. Application method will be by low pressure garden type or "Solo" backpack type sprayer. Two rows of 25 trees for each of the antitranspirants plus the control will be established. Rows will be numbered from 1 to 8 and the specific rows for each treatment will be chosen by a random draw. This will be replicated two more times for a total sample of 150 trees for each treatment (plus control). The treated trees will be marked by one of four different colored stakes for easy identification.

Only apparently healthy trees will be chosen. The initial seasonal growth (flush) will have occurred and the trees will have begun to set bud. Height and stem diameter measurements will be taken so that growth measurements may be made in the future. All data will be recorded in a tabular format for efficient recording, collation and assessment. Growth will not be a major concern of this trial because remeasurement will take place before much, if any, further growth occurs. Size measurement and
seedling condition will be assessed in October, 1989 and again in February, 1990 in order to relate to summer and winter effects respectively.

RESULTS AND DISCUSSION

The differences of survival rates (if any) between the 3 antitranspirants and the untreated control will be examined, including the statistical significance of these differences. Possible reasons for the differences will be hypothesized.

COST/BENEFIT ANALYSIS

An assessment of the costs associated with the application method used in this trial and the benefits (if any) will be made. The benefits will be related as an improvement in survival rate and a possible net benefit compared to the costs, risks and delay associated with replanting.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions will relate to the specific objectives of the report, outlined in the Introduction, and to the empirical data presented in this trial and other cited trials. Recommendations for future actions will be based on these conclusions. Inconclusive evidence will indicate a need for further study.