FIRST PROGRESS REPORT

SX85605V

OPERATIONAL FLOWER INDUCTION OF DOUGLAS FIR

USING GIBBERELLIN A 4/7

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ABSTRACT

The objectives of this study are to develop operational procedures for, and monitor the productivity of, the ultra low volume (U.L.V.) spray applications of gibberellins to the foliage of 15 year old Douglas-fir Seed Orchard trees at Snowdon Seed Orchard in Campbell River.
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1.0 INTRODUCTION

1.1 Design:

This is a "family crossed with treatment" design to study the effect of GA 4/7 treatment on low producing families under normal seed orchard conditions.

Thirty families with the lowest production history were selected, and from within the families a pair of trees with similar tree height, diameter and crown form were used.

All trees were from the cone induction block were normal induction techniques of root pruning at approximately 40% drip-line and fertilizing with 400 kg/ha N at vegetative budburst had been carried out.

1.2 Treatments:

The treatment factor GA 4/7 was applied at two levels:

T0 0 mg/litre 30 trees
T1 200 mg/litre 30 trees

1.3 Tree Selection:

The flower production history of all 72 families, clones and crosses in Snowdon Seed Orchard was ranked. The 31 lowest producers were selected as follows:

25 half sib families
1 full sib family
5 clones

Matched pairs of individuals were selected for each clone/family after visually comparing tree height, diameter and crown form.

The selection of treated/untreated tree within a pair was made by the flip of a coin.
2.0 MATERIALS AND METHODS

2.1 GA 4/7 Solution:

The spray solution was prepared in the following manner:

Stock solution was prepared as follows:

1.6 g GA 4/7
1.24 g Aromox C-12/W
10 ml 95% ethanol
And stored at 0-4 C.

Working solution was prepared on the day of application by diluting:

10 ml stock solution
20 ml Sunspray 6E horticultural oil
970 ml distilled water (dH2O)

This yielded a concentration of 1600 mg GA 4/7 per 1 litres of solution.

N.B. In order to get the super saturated stock solution to dissolve into the distilled water without a precipitate forming, the distilled water had to be pre-heated to 32 C and added to the stock solution a few mls at a time while constantly stirring the solution. Any precipitate had to be filtered out and re-dissolved in ethanol.
3.2 Calibration and Application:

A hand-held U.L.V. (ultra low volume) sprayer was utilized to apply the GA 4/7 solution to the foliage of the trees. This works on the principle of introducing a stream of fluid onto a rotating disc and a stream of forced air passing around the disc sheers off small droplets of the solution.

Preliminary tests using water and a dye revealed that an average of 375 ml was required to completely cover the size of trees in the test. Application was carried out using a U.L.V. sprayer from a 5 m self-propelled manlift. This was necessary as inclination of the U.L.V. sprayer at greater than 15 degrees to the vertical stops the spray action.

Conditions for application were as follows:

- Wind speed less than 5 m.p.h. (usually early morning or late evening).
- Overcast but not inclement weather. It was felt that the longer the solution stayed on the trees without evaporating, the better the chance for uptake of GA 4/7 salts.
4.0 DISCUSSION

It is difficult to get one day a week during mid May to the end of June with the ideal spray conditions. This year we were lucky in that it was a dry spring and an early summer. However, this may tend to cloud the results somewhat, as the weather conditions proved ideal to induce a good crop throughout the orchard.

We had some problems with the GA 4/7 salts precipitating out and blocking the nozzle of the U.L.V. sprayer. This increased down, application and preparation time, however, with experience, these losses should be reduced.