To: Don Summers  
Manager, Nursery Extension

From: Allan McDonald

Date: 92-03-02

Our File:

Your File:

Re: SX92201Q  A COMPARISON OF THE EFFECTS OF AMINO ACID SUPPLEMENTS, MICROORGANISM AMENDMENT, AND SIX PROPRIETARY FERTILIZERS ON THE GROWTH AND DEVELOPMENT OF CONIFER SEEDLINGS

INTRODUCTION

Manufacturers and distributors of agricultural products are constantly developing new fertilizers and other nutritional amendments which they feel will benefit the container conifer industry. This year, three manufacturers have approached the test nursery and requested trials to evaluate their products under operational conditions.

Coast Agri is marketing two new fertilizers with similar formulations to Plant Prod®. One is a 12-17-29 'Conifer Special' and the other is a 20-8-20 'Conifer Grower'. These are manufactured by Smith and Ardussi (S&A) whose fruit orchard fertilizers performed well in past proprietary fertilizer trials.

Dyna-gro® Canada is marketing a range of liquid fertilizer formulations, emphasizing balance of macronutrients, completeness of micronutrients, and ease of application. These fertilizers are delivered in a range of container sizes up to 55 gallons. The company feels that their 7-9-6 and 9-3-6 formulations are well suited to conifer seedlings.

LBE Inagrosa of Madrid is producing a series of synthesised amino acid nutrients. Fosnutren® is said to facilitate foliar phosphorus uptake, Aminol Forte® is supposed to enhance mineral absorption and transport, and Humiforte N-6® is expected to increase growth rate subsequent to outplanting. In addition, they also produce Biorgan®, a media amendment made up of living microorganisms, which is meant to increase the fertility of the media.
MATERIALS AND METHODS

The trial will be conducted from April to November, 1992 at the B.C. Ministry of Forests' Saanich Test Nursery in Saanichton, B.C. Seedlots from four conifer species are to be double-sown into PSB 313 Styrofoam containers (160 cavities per container, 62 ml/cavity). The styroblocks will be loaded with the standard 3 peat:1 vermiculite media, incorporating 2 kg/m³ 12 mesh and finer dolomite lime, and 0.75 kg/m³ Micromax\(^1\). STEM\(^2\) will be applied throughout the season at 0.5% of the fertilizer weight.

The seedlots to be used are:

<table>
<thead>
<tr>
<th>Spp</th>
<th>Seedlot</th>
<th>Zone</th>
<th>Grid, class, elev.</th>
<th>Germination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sw</td>
<td>04177</td>
<td>(MRB)</td>
<td>93H11/B3/04177/0.91 - 95% 436 s/g</td>
<td></td>
</tr>
<tr>
<td>Fc</td>
<td>16501</td>
<td>(CSM)</td>
<td>92D08/B3/16501/0.40 - 94% 99 s/g</td>
<td></td>
</tr>
<tr>
<td>Cw</td>
<td>20202</td>
<td>(1050)</td>
<td>92H04/B2/20202/0.23 - 91% 816 s/g</td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>03679</td>
<td>(TOD)</td>
<td>92J15/B3/03679/1.32 - 94% 351 s/g</td>
<td></td>
</tr>
<tr>
<td>Hw</td>
<td>18752</td>
<td>(1010)</td>
<td>92F15/B3/18752/0.42 - 94% 422 s/g</td>
<td></td>
</tr>
<tr>
<td>Ba</td>
<td>07941</td>
<td>(M)</td>
<td>92L06/B3/07941/0.06 - 76% 35 s/g</td>
<td></td>
</tr>
</tbody>
</table>

Each conifer species will be treated with the following fertilizer treatments:

1. Control: Plant Prod 20-8-20
2. Control: Plant Prod 12-17-29 with recommended calcium nitrate and magnesium sulphate amendments
3. Fosnutren/Aminol Forte/Humiforte supplement to 20-8-20
   i) Fosnutren at .5 ml/l at 5 - 7 cm seedling height
   ii) Fosnutren at .75 ml/l at 1 week after i)
   iii) Aminol Forte at 1 ml/l at 10-12 cm seedling height
   iv) Aminol Forte at 1 ml/l at 1 week after iii)
   v) Humiforte at 3 ml/l prior to packaging
4. Biorgan soil amendment in media, 20-8-20 fertilizer
5. Dyna-gro 7-9-5 fertilizer
6. Dyna-gro 9-3-6 fertilizer
7. Plant Marvel 20-8-20 fertilizer
8. Plant Marvel 12-17-29 fertilizer

\(^1\)Trace element supplement produced by Sierra Chemical Co.
\(^2\)Soluble Trace Element Mix produced by Peters Fertilizer Co.
All fertilizers are to be applied at either 100 ppm Nitrogen as "growers" and 75 ppm Nitrogen as "finishers" on all species.

The treatments will be set out in a random complete block design with 5 replicates/treatment.

EVALUATION

Static sample data, in which the same sample seedlings are measured at intervals throughout the season, will be collected and used to generate growth curves. Random samples collected at the time of bud-set and at the end of the year will be processed for morphological comparison. Tissue analysis samples are to be collected during the growing season and analyzed for nutrient levels. Conductivity and pH will be measured on soil samples collected over the summer to ensure that adequate soil conditions were maintained.

During the growing season, observations will be made on the incidence of disease and general appearance (colour differences, growth) of the seedlings. At the end of the year, all seedlings are to be graded as per standard Ministry specifications. The number of seedlings culled on the basis of height, root collar diameter, root development or incidence of disease will be recorded.

Statistical analysis (PC SAS ANOVA and various multiple stage tests) is to be performed and the morphological data. Duncan's, Student-Neuman-Keul's, and T tests will be used to examine groupings of height and root collar diameter.
April 23, 1992

Allan McDonald
Test Nursery Manager
Saanich Test Nursery
7380A Puckle Road
Saanichton, British Columbia
V0S 1M0

Dear Al:

I have kept the Sx Trial Numbers that you assigned yourself. I need you to send me a better fax copy of your Sx Trial titles. I had difficulty reading your writing. In addition, I need a draft copy of your working plans on file or please fill out the enclosed summary sheets for our files. Please send me the your Sx Trial title names and the summary sheets as soon as possible. Thank you.

Sx Trial: 922010
Title: Amino Acid/Proddlewary Fertilizer Trial?

Sx Trial: 922020
Title: Nitrate: Ammonia Ratio Trial?

Sx Trial: 922030
Title: Cellulose Acetate Media Trial

Sx Trial: 922040
Title: Subirrigation Trial

If any further information is required regarding Sx Trials, please contact me at 387-8913.

Yours truly,

Curt Clarke
Site Preparation and Planting Technician
Silviculture Branch

Enclosure

cc: Sx Trials Specialist, Victoria