1994 TRIALS - NURSERY EXTENSION SERVICES

SX Q - DELAYED RELEASE FERTILIZER TRIAL - WORKING PLAN

Background

Fertilization at time of sowing may be more cost-effective for the field forester than fertilization at time of planting, as well as ensuring a more consistent supply of fertilizer to the tree. Silviculture Branch trials have demonstrated improved caliper and stem volume of outplanted seedlings when slow release (8-9 month) fertilizers were incorporated into the growing media (Low and Winter, 1991a, 1991b).

In 1993, a Silviculture Branch trial (SX93202Q) was initiated incorporating longer term (up to 3-4 year) slow release fertilizers into the growing media. Several different formulations from three different manufacturers were compared. Seedlings were grown at Saanich Test Nursery, and will be outplanted in spring 1994 in the Prince George District by the Regeneration section of Silviculture Branch. Some seedlings were also outplanted at Saanich Test Nursery in August, 1993. With all of these formulations there was considerable release of fertilizer in the nursery, however.

Uneven release of fertilizer in the nursery affects nursery culture, as well as leaving less fertilizer for the seedling after outplanting. Of greater benefit would be a fertilizer which does not release at all during the first year in the nursery, but which releases slowly after planting, at least into the second year in the field. Grace Sierra is using a new technology to produce an Osmocote prill coating with a delayed release. This product apparently does not begin to release for 8-9 months, then there is a linear release period of about 9 months at 70°C. The linear release period would presumably be of longer duration at lower temperatures.

Proposed Trial

The Osmocote formulation is 18-7-12. It will be mixed into the growing media at three different rates, as follows:

1. Control - no fertilizer in the growing media.
2. Osmocote 18-7-12 delayed release fertilizer at 6 kg/m³
3. Osmocote 18-7-12 delayed release fertilizer at 12 kg/m³
4. Osmocote 18-7-12 delayed release fertilizer at 18 kg/m³

The same interior spruce seedlot will be used as for the 1993 trial:

Sw 04205 B2\DPG\950 m \80% germ \516 seeds/g.

The stock will be grown in styroblock PSB 410's as 1 + 0 summer plant. Stock will be sown in January 1994, and planted in July 1994. Five styroblocks will be sown for each treatment.
Standard growing regimes will be used. Static height measurements will be taken throughout the growing season. Soil pH and conductivity will be monitored regularly. Samples for foliar analysis will be taken regularly as well. Height, caliper and dry weight measurements will be conducted on a random sample of fifteen seedlings per block, at the time of lifting.

A laboratory analysis will be performed on the fertilizer prills in the media at the time of lifting to determine what percentage of the fertilizer, if any, has been released in the nursery.

The seedlings will be planted in the Prince George District. The outplanting and monitoring of these seedlings will be carried out by Rob Bowden of the Regeneration Section of Silviculture Branch. Some seedlings will also be outplanted at the Green Timbers Extension Services facility in Surrey.

Fertilizer release will also be tested directly by placing 1 kg of prills in 5L of water at the time of sowing, and monitoring the electrical conductivity of the solution over time.

References
