

COMPARISONS OF CONTAINER SEEDLING PLANTING WITH OTHER METHODS
OF REFORESTATION IN NEWFOUNDLAND USING BLACK SPRUCE

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A major reforestation program focusing on black spruce (*Picea mariana* [Mill.] B.S.P.) is beginning to gain momentum in Newfoundland. It is planned to increase production from the 500,000 seedlings planted in 1979 to 19 million seedlings by 1985. To date the program has involved the use of several types of containerized seedling as well as different types of bare-root stock and direct seeding.

To determine which reforestation method will give the best survival and performance under the varied site conditions encountered in Newfoundland, a series of comparative trials is being established. These all employ the same Latin Square design. They have the immediate objective of comparing the performance of container seedling stock, bare-root planting stock and direct seeding on a variety of reforestation sites using black spruce. Three trials have been established by the Newfoundland Department of Forest Resources and Lands and one by Abitibi-Price, Grand Falls. All four are on burned cutover sites of either wildfire or prescribed burn origin; three are in central Newfoundland and one is in western Newfoundland. Design, analysis, reporting and overall coordination are carried out by the Newfoundland Forest Research Centre. Plot layout, establishment and measurements are undertaken by the cooperators on their respective trials.

Each trial has five treatments, replicated five times, as follows:

A. Department of Forest Resources and Lands trials:

1. Spencer-Lemaire overwintered stock - 55 cm³ containers
2. 2-1 bare-root stock
3. 2-2 bare-root stock
4. Direct seeding funnels - 3 seeds/funnel
5. Direct seeding cones - 5 seeds/cone

B. Abitibi-Price trial:

1. Spencer-Lemaire overwintered stock - 55 cm³ containers
2. 2-1 bare-root stock
3. 2-2 bare-root stock
4. Multipot seedlings - 55 cm³ containers
5. Paperpot seedlings - FH 408 containers

There are 25 seedlings (or seeded spots) per plot, at approximately 2 m spacing. Each trial occupies 0.25 ha. Seedlings of each type were selected carefully as being 'average' for the production run, but were also rigorously culled for uniformity. They were handled and planted with care by standard techniques--Wistfa hoes or planting spades for bare-root, Pottiputkis for containers. Planting was carried out in June 1981, and seeding treatments will be applied in fall 1981.

Average dimensions, at time of planting, of the stock included in the Abitibi-Price trial were as follows:

Seedling type	Shoot height (cm)	Root collar diam. (mm)	Shoot:root ratio (dry wt)
Spencer-Lemaire	11.4	1.5	3.1:1
2-1 bare-root	22.7	4.3	2.1:1
2-2 bare-root	26.7	4.9	1.5:1
Multipot	11.3	1.5	2.0:1
Paperpot	8.5	1.7	0.8:1

Survival, height and condition of all seedlings will be recorded in the fall of each year for at least five years. One seedling per plot will be removed at each remeasurement to determine root growth, dry weight, etc. Direct seeding treatments will be evaluated on the basis of stocked spots (one stocked spot is considered equivalent to one planted seedling) and growth.

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