THE STATUS OF CONTAINER PLANTING PROGRAMS IN CANADA

10. NEWFOUNDLAND

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Abstract.--Container planting programs were initiated in 1979, and are still being expanded, particularly in insular Newfoundland. Primary emphasis is on black spruce *(Picea mariana* [Mill.] B.S.P.), which accounts for approximately 98% of all seedling production. The Spencer-Lemaire "Rootrainer" and Can-Am multipot are the principal container systems being used.

Résumé.--Les programmes de plantation de plants en mottes emballées ont débuté en 1979, et on les élargit encore, en particulier sur l'île, à Terre-Neuve. L'intérêt principal porte sur l'épinette noire *(Picea mariana* [Mill.] B.S.P.), pour laquelle on produit environ 98% de tous les plants. Les principaux systèmes d'emballage utilisés sont le "Rootrainer" de Spencer-Lemaire, et le système à pots multiples de Can-Am.

INTRODUCTION

The province of Newfoundland began planting containerized tree seedlings in 1979. The paperpot system used at that time was found to be unsatisfactory, and has since been replaced with the Spencer-Lemaire "Rootrainer" and Can-Am multipot systems. Annual production from the six existing greenhouses is one million seedlings. Construction has started on a new facility consisting of 34 greenhouses which will have a single crop capacity of 5 million seedlings. It is anticipated that container-grown seedlings will eventually make up half the total provincial planting stock production.

PRESENT FACILITIES

Production facilities for growing containerized seedlings have been established at Goose Bay in Labrador, Mount Pearl on the Avalon Peninsula, and Wooddale in central Newfoundland. All the production from these facilities has been used in insular Newfoundland, but it is anticipated that container outplanting will be started in Labrador in the near future. Total growing space is 3,558 m^2.

Three Vary steel arch and three wooden arch greenhouses are in current use. Two of the steel arch houses are covered with fibreglass, and the other houses are covered with double layers of polyethylene. Oil-fired hot water or forced air furnace heating is used.

FUTURE DEVELOPMENTS

The first phase of a new container complex was started in December, 1980 at Wooddale. When completed in 1983, this complex will consist of 34 double-poly-covered greenhouses (29.3 m x 7.9 m), connected to a central headerhouse and storage area (45.7 m x 15.2 m) by a 192 m service way. This will bring the total area of growing space at Wooddale to 7,870 m^2. The first phase calls for the construction of the main headerhouse and 10 of the greenhouses. This construction should be completed by 1 September, 1981 and put into production in December of the same year. Projected capacity for this first phase is 1.4 million Spencer-Lemaire seedlings per crop. We anticipate that two crops per year will be grown in the greenhouses.

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CONTAINERS, EQUIPMENT AND SPECIES

The Mount Pearl greenhouse facility and the Goose Bay operation both utilize Can-Am multipots to grow black spruce seedlings. These pots have a volume of 55 cm^3. All of the soil loading is done by hand at both sites and the trays are seeded with a modified Lannen seeding head and gritting machine.

At Wooddale, the Spencer-Lemaire "Root-rainer-5" (55 cm^3) is used to grow black spruce, which forms 99% of the crop, and some red pine *(Pinus resinosa* Ait.). Only black spruce is grown in Labrador. In 1981, the three nurseries produced approximately 1 million black spruce seedlings in containers (Table 1). It is projected that total production of black spruce container stock will reach 3.8 million by 1983.

SEEDLING STANDARDS

While results of current research and development are pending, the following seedling standards recommended by Carlson (1979) are being used:

Seedling height	12-15 cm
Dry weight - shoots	565 mg
roots	185 mg
Root collar diameter	2.0 mm
Root dry weight vs. container volume	40 mg/cm^3 (minimum)

Table 1. Production statistics for Newfoundland.

	Greenhouse area (m^2)	Seedling production: Container stock ('000)	Seedling production: Bare-root stock ('000)
1981			
Mainland Nfld	3,195	800	1,153
Labrador	363	150	-
1983			
Mainland Nfld	8,796	3,691	2,397
Labrador	363	150	-

Some difficulties have been experienced in attaining these standards, especially with low seedling dry weights. Modified fertilizer and water regimes and longer growing periods may rectify the problem.

OUTPLANTING

While nurseries traditionally are the responsibility of the provincial government in Newfoundland, outplanting of nursery stock is carried out by both industry and government. Most container outplanting has been on scarified sites, although some experimentation with container-grown seedlings is under way on burned sites. Shark fins and barrels, SFIs, Brackes, and TTS disk trenchers were used for scarification prior to 1981 with varying results. An Eden Slash Rake, Young's Teeth, and a C & H Plow were obtained in 1981, but none of the areas treated with this newer machinery have yet been planted.

Early evaluations of the first three years of container planting indicate that planters have paid insufficient attention to microsite selection, and consequently there have been nutritional difficulties and problems with frost heaving. Both governmental and industrial field foresters agree that a larger container-grown seedling could be advantageous in Newfoundland conditions.

CONTAINERS AND TREE IMPROVEMENT

The provincial plus-tree program has been affected to a certain extent by the current budworm epidemic in Newfoundland. For this reason and others, a program of vegetative propagation of bare-root and container-grown black spruce superseedlings has been started with initially promising results. Some of the early propagants will be used in the province's first seed orchard now under development. Less promising but still acceptable results are being obtained with the vegetative propagation of older plus-tree material.

LITERATURE CITED

Carlson, L.W.
1979. Guidelines for rearing containerized conifer seedlings in the Prairie Provinces. Dep. Environ., Can. For. Serv., Edmonton, Alta. Inf. Rep. NOR-X-214. 62 p.

STATISTICAL SUMMARY OF CONTAINERIZED SEEDLING AND BARE-ROOT PROGRAMS IN CANADA: 1980 SITUATION AND PROJECTIONS FOR 1983[1]

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Province	Types of container currently used[a]	Number of nurseries		Greenhouse area			
				Private		Government	
		Private	Government	Heated (m^2)	Unheated (m^2)	Heated (m^2)	Unheated (m^2)
British Columbia	1,2	-	8	23,435	3,255	27,645	3,660
Alberta	4	2	1	5,471	-	13,780	-
Saskatchewan	4,6	-	4	-	-	1,383	-
Manitoba	6	-	1	-	-	642	-
Ontario	4,5,6,7	5	6	1,790	509	10,146	2,887
Quebec	1,2,3,6,8	2	2	1,083	-	9,988	-
New Brunswick	6	6	3	3,420	6,800	17,000	6,000
Nova Scotia	8	4	3	1,990	6,702	7,331	1,056
Prince Edward Island	4	-	1	-	-	4,040	-
Newfoundland	4,8	-	3	-	-	3,558	-

[a]Container types: 1 = BC/CFS Styroblock 2A; 2 = BC/CFS Styroblock 4A; 3 = BC/CFS Styroblock 8; 4 = Spencer-Lemaire "Rootrainer"; 5 = FH 308 paperpot; 6 = FH 408 paperpot; 7 = Leach container; 8 = Can-Am Multipot.

[1]Compiled from provincial status reports.

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Province	1980 containerized seedling production		1983 production targets (000)	1980 area planted		1983 planting targets	
	Heated (000)	Unheated (000)		Container (ha)	Bare-root (ha)	Container (ha)	Bare-root (ha)
British Columbia[a]	58,000[b]		95,000[c]	19,651	-	80,000[e]	-
Alberta	13,960		16,030	11,030	526	16,023	12,628
Saskatchewan	2,600		20,000	x	x	x	x
Manitoba	502	-	1,700	400	700	4,000 to 4,500[6]	
Ontario	10,587	4,015	24,841	5,387	26,863	11,750	32,086
Quebec	1,900	-	11,300	788	13,363	4,795	20,240
New Brunswick	26,600	6,400	32,300	13,602	9,897	22,515	6,765
Nova Scotia	6,500[b]		17,900[d]	4,650[g]	4,650[g]	6,510[g]	2,790[g]
Prince Edward Island	1,100	-	4,000	450	-	1,100	-
Newfoundland	950[b]	-	3,841	x	x	x	x

[a]British Columbia also has an additional 7,085 m^2 (private) and 19,815 m^2 (government) shadehouse or open compound growing area.
[b]1981 production
[c]1985 production target
[d]1984 production target
[e]1985 planting target
[f]Range for both containerized and bare-root planting target
[g]Estimated figures
x = Not reported