

THE STATUS OF CONTAINER PLANTING PROGRAMS IN CANADA

7. NEW BRUNSWICK

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Abstract.--The use of containerized seedlings is increasing rapidly in New Brunswick. Total production by forest industry and the province is expected to increase from 33 million seedlings in 1980 to 45.7 million by 1983. Of the 1983 production target, 55% (25 million seedlings) will be grown at three provincially operated nurseries.

Résumé.--L'utilisation des semis en mottes emballées se répand rapidement au Nouveau-Brunswick. On s'attend à ce que, d'ici 1983, la production totale de ce type de semis par l'industrie forestière et par la province passera de 33 millions qu'elle était en 1980 à 45.7 millions. De ce chiffre, 55% (25 millions de semis) seront cultivés dans trois pépinières exploitées par la province.

INTRODUCTION

In relation to population, New Brunswick has the most intensive reforestation program of all Canadian provinces. This is an expression of the province's dependence on its widespread, fully utilized forest cover. The total forest area of 6.3 million ha is almost evenly divided between public and private ownership. The private freehold is again divided between large holdings (44%) and woodlots of less than 4,000 ha (56%).

Substantial financial support under the Forestry Sub-Agreement between the federal and provincial governments has enabled the province to establish and expand its reforestation system rapidly. By 1981 production had reached 30 million seedlings. The larger private freeholders have now achieved an annual planting rate of well in excess of 20 million seedlings and appear to be still expanding.

Because of the rapid program expansion, reforestation in New Brunswick has by no means settled into a fixed pattern. While the majority of the 50 million seedlings are outplanted by hand, the species mix and the type of planting stock are constantly changing as our experience grows.

As an illustration of the diversity of approach it is noteworthy that the private company most prominent in reforestation relies, at present, largely on bare-root planting stock, while other large private freehold operators use only various types of containerized stock. The province itself is moving from two-thirds containerized stock to total dependence on this type of stock on Crown lands.

In view of the rapidly changing situation, it is impossible to make long-term forecasts for the various reforestation programs in New Brunswick. However, it may safely be predicted that the magnitude of reforestation by planting will not likely be reduced in the next decade, and that the proportion of container planting stock to bare-root stock will likely continue to increase.

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BIOLOGICAL AND MANAGEMENT CONSIDERATIONS

Each agency must be assumed to have a particular rationale for its containerized seedling production program. This rationale is not generally publicized or even enunciated in any definitive way. Consequently, the comments that follow represent the current views of the staff of the Forest Management Branch.

We have now used FH 408 paperpots for more than 10 years. Over this period we have tested many other containers (styroblocs, Kys-cubes, multipots, Finnpots, Spencer-Lemaire "Rootainers" and several others) without ever seriously being tempted to abandon paperpots. In the nurseries we consider paperpots inexpensive and easy to handle, at all stages in the production sequence, from filling and seeding, watering, handling and overwintering to final transportation to the planting sites. Because of a fairly tightly scheduled program for growing, hardening and outplanting we have minimal problems with root intergrowth between containers. Our occasional examinations of root development in young plantations convince us that paperpot seedlings have as good root development as our bare-root seedlings.

Those concerned with reforestation are intuitively anxious about root form, above all because roots invariably lack the obvious, tidy symmetry of the upper parts of softwood seedlings. A related concern is whether the initial root system enables a given species to adapt to the soil of a given planting spot. A recent examination of the roots of outplanted container stock in young black spruce (*Picea mariana* [Mill.] B.S.P.) and jack pine (*Pinus banksiana* Lamb.) plantations indicates that seedlings started in paperpots are rather better rooted than bare-root seedlings. The more obvious deformations of roots of container-grown stock would appear to be attributable to unfavorable site conditions and faulty planting practices (shallow planting, excessive heeling-in). No final conclusion can be reached on the significance of root deformations in container-grown seedlings until we see the evidence from fully established plantations.

Program Objectives

The current reforestation rate of 30 million seedlings annually on Crown lands in New Brunswick is equated with industrial demand for wood and is designed to keep the most productive and most accessible portions of the annual cut-over area in full production. The forests of New Brunswick are fully

utilized; there are no reserve areas to fall back on. Productivity per ha is low, while the consistency and the quality of the trees now being cut is often unsatisfactory. In conjunction with its reforestation program, the province is pursuing a sensible tree improvement program, the results of which are to be immediately incorporated into operational reforestation work.

A planting program based exclusively on the use of containerized seedlings will permit a long planting season, thereby providing steady work for experienced planters who will require minimal supervision.

For the time being, the provincial reforestation program encompasses only native species of softwood. Exotic species will be tested on a very limited experimental basis.

PRODUCTION

The area of greenhouse space available for containerized seedling production is summarized for forest industry and provincially operated nurseries in Table 1. Current (1980) and forecast (1983) seedling production figures are presented in Table 2, and planting programs in Table 3.

Table 1. Greenhouse areas available for containerized seedling production in New Brunswick, 1980.

Agency	No. of nurseries	Total growing area (m ²)	
		Heated	Unheated
Forest industry			
Fraser ^a	1	-	3,600
Irving ^b	2	2,000	3,200
Geo. Pac. ^c	1	270	-
N.B.I.P. ^d	1	850	-
Valley F.P. ^e	1	300	-
Total	6	3,420	6,800
N.B. Natural Resources			
	3	17,000	6,000
Total, all agencies	9	20,420	12,800

^aFraser Companies Ltd., Edmundston, N.B.

^bJ.D. Irving Ltd., Juniper and Sussex, N.B.

^cGeorgia-Pacific Ltd., St. Stephen, N.B.

^dNew Brunswick International Paper Co., Dalhousie, N.B.

^eValley Forest Products, Ste. Anne de Nackawic, N.B.

Table 2. Current (1980) and forecast (1983) containerized seedling production in New Brunswick.

Agency	Production 1980		Production 1983		Container system(s) used ^a	Estimated current production by species ^b (%)					
	Heated (000,000)	Unheated (000,000)	Heated (000,000)	Unheated (000,000)		Sb	Sw	Sr	Pj	Pr	L
Forest industry											
Fraser	-	6.4	-	10.0	MP	80	20	-	-	-	-
Irving	3.0	-	7.0	-	SB/MP/PP	7	3	-	80	-	10
Geo. Pac.	1.2	-	1.2	-	SB	20	-	-	25	50	5
N.B.I.P.	2.0	-	2.0	-	SB/MP	70	-	10	10	-	-
Valley F.P.	0.1	-	0.5	-	PP/MP	50	-	-	-	-	50
Total	6.3	6.4	10.7	10.0							
N.B. Natural Resources	20.3	-	20.0	5.0	PP/MP	45	10	-	40	-	5
Total, all agencies	26.6	6.4	30.7	15.0		48.0 ^c	10.5 ^c	0.8 ^c	34.3 ^c	1.4 ^c	5.0 ^c

^aContainer system abbreviations: MP - multipot
SB - styroblock
PP - paperpot

^bSpecies abbreviations: Sb - Black spruce
Sw - White spruce (*Picea glauca* [Moench] Voss)
Sr - Red spruce (*Picea rubens* Sarg.)
Pj - Jack pine
Pr - Red pine (*Pinus resinosa* Ait.)
L - Eastern larch (*Larix laricina* [Du Roi] K. Koch)

^cWeighted means

The provincially operated nurseries grow two closely scheduled crops of FH 408 paperpot seedlings annually in heated greenhouses. A winter crop of spruce (mainly black spruce) is grown indoors for 21-24 weeks before being shipped in spring after a few weeks of hardening-off. This is followed by a summer crop of jack pine (with some eastern larch) grown for 12-14 weeks for shipping in late summer. Both crops are shipped in prime condition and are not held long enough to allow the roots to become intertwined or active seedling roots to grow outside the paperpot.

The province will expand its production of containerized seedlings from 20 to 25 million by 1983 (Table 2) and to 30 million by 1984. The additional seedlings will be

raised in unheated greenhouses. We recognize that such seedlings will require a longer growing period to reach an acceptable size--probably 1 1/2 growing seasons--and that the paperpot may consequently not be suitable. For this reason, we plan to use a solid-walled container to grow plug seedlings with a rooting volume of at least 100 cm³ and not more than 10 cm deep. Our insistence on a rather shallow container is based on the fact that the main species planted become established and prosper in the uppermost few centimetres of the forest floor. This venture into the use of unheated greenhouses reflects our growing concern over heating costs, which last winter (1980-1981) were in the order of \$26 per thousand seedlings.

Table 3. Current (1980) and forecast (1983) planting of containerized and bare-root planting stock in New Brunswick.

Agency	Planting 1980		Planting 1983	
	Containers (ha)	Bare-root (ha)	Containers (ha)	Bare-root (ha)
Forest industry				
Fraser	3,500	-	6,500	-
Irving	1,400	5,400	3,300	4,100
Geo. Pac.	600	-	600	-
N.B.I.P.	1,000	-	900	-
Valley F.P.	47	12	235	-
Total	6,547	5,412	11,535	4,100
N.B. Natural Resources	7,055	4,485 ^a	10,980 ^b	2,665 ^c
Total, all agencies	13,602	9,897	22,515	6,765

^aIncludes 683 ha planted on small private freehold lands

^bIncludes 380 ha planted on small private freehold lands

^cIncludes 525 ha planted on small private freehold lands