THE STATUS OF CONTAINER PLANTING PROGRAMS IN CANADA

8. NOVA SCOTIA

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Abstract.--Nova Scotia is rapidly expanding its planting program to increase productivity and offset wood shortages caused by spruce budworm. Production of nursery stock will increase from 14 million seedlings in 1981 to 28 million by 1984. Over 70% of the planting stock produced in 1984 will be container grown, primarily in heated greenhouses.

Résumé--La Nouvelle-Écosse se hâte d'élargir son programme de plantation pour augmenter sa production de plants et compenser la pénurie de bois causée par les ravages de la tordeuse des bourgeons de l'épinette. La production de plants en pépinières, qui était de 14 millions en 1981, atteindra 28 millions d'ici 1984, et, cette même année, plus de 70% du matériel sera produit en mottes emballées, surtout dans des serres chauffées.

INTRODUCTION

In Nova Scotia, planting of nursery stock is increasing at a rapid rate. In the 1970s total production of bare-root and container-grown seedlings was less than 5 million per year. In 1981 approximately 14 million seedlings were produced and planted (Table 1). In 1982 production is expected to be 16 million seedlings and, by 1984, total production will reach 28 million. This will be sufficient to reforest 9,300 ha per year, or one-third of the total area of softwoods cut each year in Nova Scotia. Surveys indicate that the remaining two-thirds will regenerate naturally.

Of the 1984 target of 28 million seedlings, 30% will be produced by the forest industry and the remaining 70% by provincial nurseries. Of the stock produced, 85% will be red spruce *(Picea rubens* Sarg.), black spruce *(P. mariana* [Mill.] B.S.P.), white spruce *(P. glauca* [Moench] Voss) and Norway spruce *(P. abies* [L.] Karst); the remaining 15% will be red pine *(Pinus resinosa* Ait.), white pine *(P. strobus* L.), jack pine *(P. banksiana* Lamb.) and larch *(Larix* spp.).

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CONTAINER PRODUCTION

It will be seen (Table 1) that the ratio of containerized to bare-root stock will increase from the present 50% to 70% by 1984. With the exception of approximately 2 million seedlings grown in Nisula Rolls, all container-grown stock is produced, and will be for the forseeable future, in the relatively new 65 cm^3 67-cavity Can-Am multipot container. The seedlings produced in these containers will be grown for two seasons prior to outplanting, the first season in the greenhouse and the second in an outside holding area. Seedlings produced in this fashion are well rooted, sturdy and roughly 20 cm tall.

MANAGEMENT CONSIDERATIONS

The rapid expansion in nursery stock production and planting is largely an outcome of the depredations of the spruce budworm *(Choristoneura fumiferana* [Clem.]) in Nova Scotia and the present and future losses in softwood volumes resulting from its activities. The planned reforestation program, in combination with an intensified spacing and protection program, will eliminate the projected wood deficit and therefore avoid the necessity of cutting back on forest industry harvesting operations. Plantations are ex-

pected to produce approximately 150% more wood per ha annually, on average, than natural stands, and should be harvestable at 30 to 40 years rather than 60 to 80 years of age.

The decision to emphasize the planting of container-grown stock in the reforestation program is based on two factors. First, container-grown seedlings are cheaper and easier to plant than bare-root stock: a 50% advantage in planting productivity is not uncommon. Second, we have found that survival and growth rates of multipot stock are acceptable, provided that:

- they are planted in humus microsites. (If this precaution is taken, susceptibility to frost-heave can be countered.)

- they are adequately protected from browsing and weed competition. (Browsing by rabbits is one of the main factors affecting the survival and growth of planted stock in Nova Scotia. Experience has shown that rabbits can be persuaded not to venture into plantations if herbicides are applied 1 or 2 years after planting to remove all ground cover. With this cover removed, rabbits usually do not browse seedlings at distances greater than 20 m from the plantation edge.)

With respect to site preparation techniques, there are indications that the majority of sites prepared in the future will be recent softwood cutovers. The plan is to prepare these sites immediately after cutting with brush rakes mounted on skidders or bulldozers, or with rolling choppers. Preparation by these scarifiers results in very little disturbance of the LFH soil horizons, and provides the planter with adequate opportunity to select a desirable humus microsite at the required 2 m interval.

Types of scarification equipment and extent of use are summarized in Table 1.

Table 1. Forest nursery and site preparation statistics.

Agency	Nursery	Greenhouse area Heated (m^2)	Greenhouse area Unheated (m^2)	Planting stock production: Bare-root 1981 (000,000 seedlings)	Bare-root 1984 (000,000 seedlings)	Container 1981 (000,000 seedlings)	Container 1984 (000,000 seedlings)	Nisula 1981 (000,000 seedlings)	Nisula 1984 (000,000 seedlings)	Site preparation equipment[a,b] 1981	Site preparation equipment[a,b] 1984
Industry											
NSFI[c]	Bras d'Or	-	-	-	-	-	-	-	-	2(50)	2(70)
	St. Andrews	-	4,640	-	-	2.8	3.5	-	-	3(50)	3(30)
Bowater[d]	Liverpool	278	278	-	-	0.4	0.6	-	-	-	2(?)
Scott[e]	Springhill	1,712	1,784	-	-	1.9	2.0	0.7	2.0	1(35)	1(<35)
										2(55)	2(>55)
										4(10)	4(?)
Subtotal		1,990	6,702	-	-	5.1	6.1	0.7	2.0		
Government											
	Lawrencetown	618	-	6.5	6.0	0.2[f]	1.8	-	-	1(38)	1(20)
										2(14)	2(40)
	Wittenburg	2,763	1,056	-	-	1.2	5.0	-	-	3(3)	3(30)
										4(3)	4(+)
	Strathlorne	4,350	-	0.5	2.0	-	5.0	-	-	6(29)	6(5)
										7(13)	7(5)
Subtotal		7,331	1,056	7.0	8.0	1.4	11.8	-	-		
Grand total		9,721	7,758	7.0	8.0	6.5	17.9	0.7	2.0		

[a] 1. Disks, 2. Brush rakes (D6, 7 and 8 with regular root rake blades) (C & H root rake mounted on a skidder), 3. Rollers, 4. Shark Fins, 5. Disk trenchers, 6. Finnish plow, 7. C & H plow

[b] Numbers within parentheses represent the percentage of the total area planted or prepared by the indicated piece of equipment

[c] Nova Scotia Forest Industries Ltd.

[d] Bowater Mersey Paper Co. Ltd.

[e] Scott Paper International Inc.

[f] Vegetative propagation experiment (produced but not planted)