

THIS FILE COPY MUST BE RETURNED

Dep
Not for publication

TO: INFORMATION SECTION
NORTHERN FOREST RESEARCH CENTRE
5320-122 STREET
EDMONTON, ALBERTA
T6H 3S5



REGENERATING CUT-OVER X₂B AND V₂ SITES BY PLANTING AND SEEDING ON SCALPED STRIPS, MANITOBA PAPER COMPANY LIMITS

PROJECT MS-238

by

V. S. Kolabinski

**FOREST RESEARCH LABORATORY
WINNIPEG, MANITOBA
INTERNAL REPORT MS-31**

**DEPARTMENT OF FORESTRY
MAY, 1966**

CONTENTS

	Page
INTRODUCTION	1
DESCRIPTION OF AREA ESTABLISHED IN 1965	2
Area 2	2
WORK DONE IN 1965	2
Seedbed treatment	2
Area 2	2
1965 Planting	2
Area 2	2
Plot establishment	3
Area 2	3
Examination plantation plots	5
Area 1	5
Area 2	5
WORK FOR 1966	9

REGENERATING CUT-OVER X₂B and V₂ SITES BY
PLANTING AND SEEDING ON SCALPED STRIPS
MANITOBA PAPER COMPANY LIMITS

by

V. S. Kolabinski

INTRODUCTION

In 1963 the Department of Forestry in co-operation with the Manitoba Paper Company (now named Abitibi Manitoba Paper Company) began a study to determine whether X₂B^{1/} and V₂^{2/} sites can be regenerated to white spruce and black spruce by planting on scalped strips and to jack pine, balsam fir, white spruce and black spruce by seeding on scalped strips. Other objectives are to compare the effectiveness of seeding, hole planting and slit planting on these sites. It is intended that the experiment be replicated for a number of years to compensate for differences in weather. So far two study areas have been established. The first area (Area - 1) was established in fall 1963 and the second (Area - 2) in the spring of 1965.

This report summarizes the work completed on the project during the summer of 1965 and the work proposed for 1966.

For further details concerning the scope of this project, design and methods of assessing results, the reader is referred to the project plan, mimeo 63-MS-23, progress report 64-MS-3 and internal report MS-7.

^{1/}X₂B sites - (Manitoba Paper Company classification) these sites occupy lower- and mid-slope positions and support merchantable stands containing various mixtures of black spruce, white spruce, jack pine and trembling aspen; the soil is a till often containing many large stones and boulders; texture varies from a sandy loam to clay loam; soil depth varies but the minimum is about 2 feet; moisture condition varies from fresh to moist; advance growth of softwood species is relatively scarce.

^{2/}V₂ sites - (Manitoba Paper Company classification) these sites occupy mid- and upper-slope positions on low rock ridges and support merchantable stands of black spruce and jack pine; soil origin and texture are similar to that on X₂B sites; soil depth averages 2 feet; moisture conditions vary from dry to moist; softwood advance growth is lacking.

DESCRIPTION OF AREA ESTABLISHED IN 1965

Area 2: The area chosen for the second replication was selected in the spring of 1965. It is about 12 chains northeast of the Manigotzen highway and adjacent to the road to camp 25. It is in Sec. 8, Twp. 21, Rge. 10, E.P.M.

The area (logged during the winter 1959-60) consists of a long rock-cored ridge which runs in a more or less southwest-northeast direction; it is bounded to the north and south by swamp. A shallow sandy loam till covers the upper- and mid-slopes; a somewhat deeper clay loam covers the lower slopes. Moisture conditions vary from dry on the upper slopes to moist on the lower slopes.

Prior to logging, the ridge supported a 120-year-old stand of black spruce, jack pine and balsam fir. Per acre stand data, typical of X₂B and V₂ sites (supplied by the Manitoba Paper Company) is shown in Table 1.

WORK DONE IN 1965

Seedbed treatment

Area 2: Seedbed treatment on this area was begun on May 10, 1965 and completed on the following day. A total of 26 strips were scalped (to mineral soil) with a bulldozer using a 10-foot wide straight blade. Strips were bulldozed in a more or less southwest-northeast direction and varied from 3/4 of a chain to approximately 8 chains in length (see Figure 1).

Following seedbed preparation, treatments were randomly assigned to each strip. Treatments assigned were: (a) slit planting white spruce, (b) hole planting white spruce, (c) slit planting black spruce, (d) hole planting black spruce and (e) seeding black spruce, white spruce, jack pine and balsam fir. Five strips were chosen for seeding. This work was carried out by the Manitoba Paper Company.

1965 Planting

Area 2: On May 13 and 14 white spruce and black spruce seedlings (2 - 2 stock from the Hadashville Nursery) were slit planted and hole planted on the designated strips (see Figure 1) by the Manitoba Paper Company. Seedlings were planted at a 6-foot spacing with 3 rows per strip; seedlings in the middle row were staggered in respect to those in outside rows.

Following planting the Department of Forestry made a survey of the area and prepared a sketch showing location and length of each strip (see Figure 1).

TABLE 1

PER ACRE STAND DATA

D.B.H	Black spruce	Balsam fir	Jack pine
5	4	11	1
6	7	11	1
7	11	7	2
8	7	6	2
9	6		1
10	2		
11	2		1
12	4		
13	0		
14	0		
15	2		

* Figures for jack pine are estimates; no jack pine was tallied during the cruise.

Plot establishment

Area 2: In the fall of 1965 the Department of Forestry established 40 randomly located plantation plots (15 seedlings per plot) to follow development and survival. Ten plots were located on strips planted to white spruce by the slit method (total 150 seedlings), 10 were on strips planted to white spruce by the hole method (150 seedlings), 10 were on strips planted to black spruce by the slit method (150 seedlings), and 10 were on strips planted to black spruce by the hole method (total only 135 seedlings).

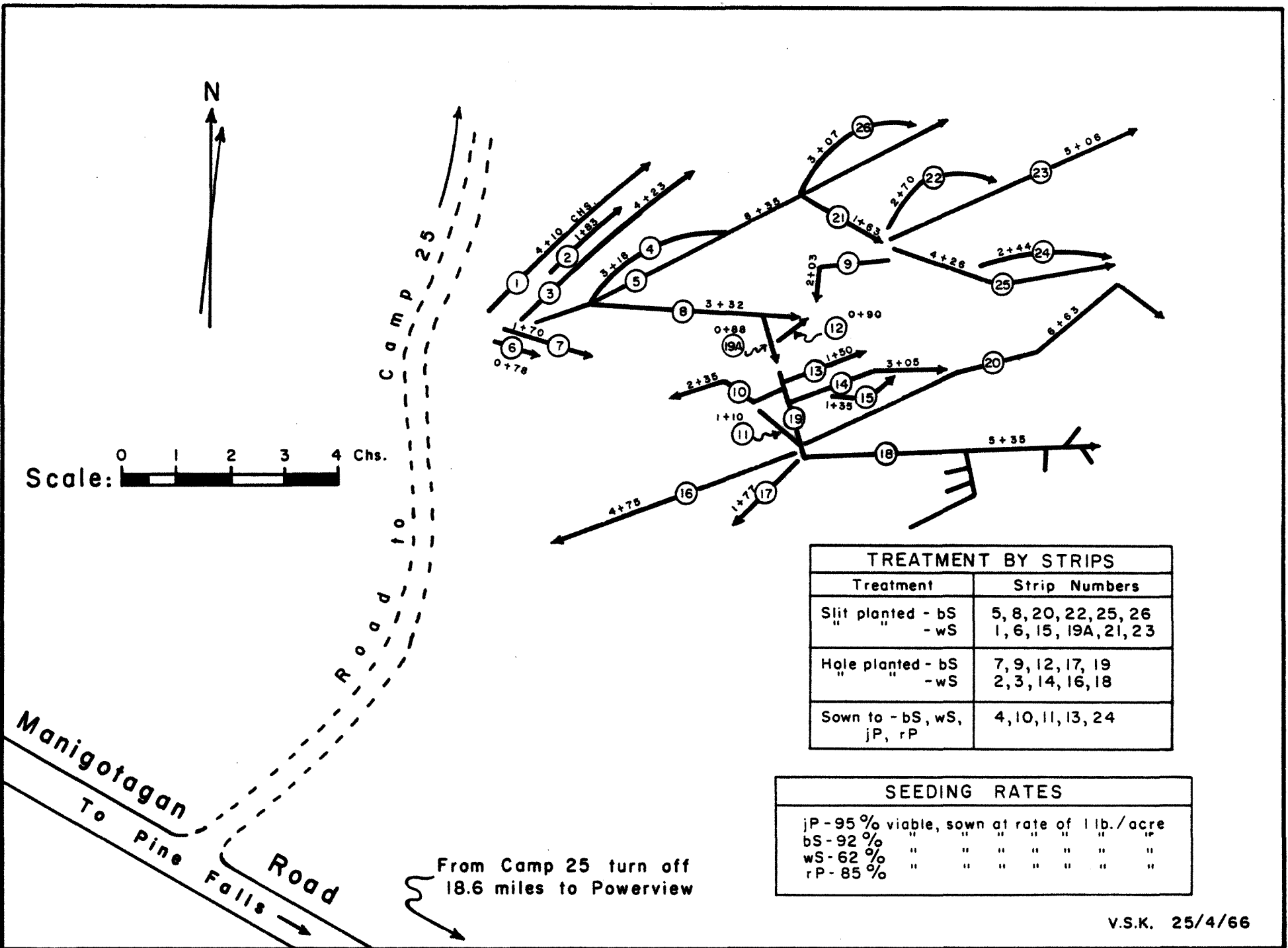


Figure 1. Sketch showing layout of strips established in 1965. Project MS-238. Located in Twp. 21, Rge. 10, Sec. 8, E.P.M.

Examination of plantation plots

Area 1: This area was established in the fall of 1963 on the Manitoba Paper Company Limits near Pine Falls. It is located in Sec. 33, Twp. 20, Rge. 10, E.P.M.

White spruce and black spruce transplants were set out on the area in May of 1964. Seedling survival and growth is being followed by the Department of Forestry.

The plantation plots on the area were examined in the fall of 1964 and 1965. Survival, condition of survivors and total heights of seedlings were recorded. A summary of seedling survival by planting methods to the fall of 1965 is shown in Table 2. The average height of the plantation plots following planting and height of survivors to the fall of 1964 and 1965 is shown in Table 3.

Area 2: Plantation plots were also examined on Area 2 in the fall. Survival, condition and total height of the white spruce and black spruce transplants to the end of the first growing season were recorded. The heights of seedlings following planting was determined at the time of the examination.

Seedling survival by planting methods is shown in Table 4. The average height of plantation plots is shown in Table 5.

TABLE 2

PER CENT SURVIVAL WHITE SPRUCE AND BLACK SPRUCE SEEDLINGS
ON AREA 1, FALL 1964 AND FALL 1965

Species planted	Planting method	Number plots	Number seedlings	Survival fall 1964		Survival fall 1965	
				Per cent living	Per cent dead	Per cent living	Per cent dead
wS	Slit	10	150	91	9	81	19
wS	Hole	10	150	93	7	86	14
All white spruce		20	300	92	8	84	16
bS	Slit	10	150	93	7	87	13
bS	Hole	10	150	95	5	85	15
All black spruce		20	300	94	6	86	14

TABLE 3

AVERAGE HEIGHTS WHITE SPRUCE AND
BLACK SPRUCE SEEDLINGS ON AREA 1
TO FALL 1964 AND FALL 1965

Species planted	Planting method	Average height (inches)		
		After planting	Fall 1964	Fall 1965
wS	Slit	5.0	6.4	8.6
wS	Hole	4.8	6.5	9.0
All white spruce		4.9	6.5	8.8
bS	Slit	7.8	9.5	12.8
bS	Hole	7.9	9.5	12.7
All black spruce		7.8	9.5	12.8

TABLE 4

PER CENT SURVIVAL WHITE SPRUCE AND BLACK SPRUCE
SEEDLINGS ON AREA 2, TO FALL 1965

Species planted	Planting method	Number plots	Number seedlings	Survival Fall 1965	
				Per cent living	Per cent dead
wS	Slit	10	150	91	9
wS	Hole	10	150	87	13
All white spruce		20	300	89	11
bS	Slit	10	150	86	14
bS	Hole	10	135	93	7
All black spruce		20	285	89	11

TABLE 5

AVERAGE HEIGHTS WHITE SPRUCE AND
BLACK SPRUCE SEEDLINGS ON AREA 2,
TO FALL 1965

Species planted	Planting method	Average height (inches)	
		After planting	Fall 1964
wS	Slit	4.8	6.1
wS	Hole	5.0	6.5
All white spruce		4.9	6.3
bS	Slit	8.2	9.9
bS	Hole	7.3	8.9
All black spruce		7.8	9.4

WORK FOR 1966

Strips chosen for seeding on Area 2 will be sown with jack pine, black spruce, white spruce and red pine seed in the spring of 1966^{3/}. Viability and seeding rates of the seed to be used is shown in Figure 1.

Attempts will be made to establish a third replication during the summer of 1966; this will depend upon other commitments the Abitibi Manitoba Paper Company may have at the time.

Progress in the establishment of new areas will be reported.

^{3/}Balsam fir seed is not available at this time, therefore, red pine seed will be used in place of balsam fir.