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**CLEAR CUTTING ALTERNATE STRIPS
AND SCARIFYING IN PURE WHITE SPRUCE STANDS
TO INDUCE WHITE SPRUCE REGENERATION
SASKATCHEWAN**

PROJECT MS-211

by

V. S. Kolabinski

**FOREST RESEARCH LABORATORY
WINNIPEG, MANITOBA
INTERNAL REPORT MS-6**

**DEPARTMENT OF FORESTRY
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CLEAR CUTTING ALTERNATE STRIPS AND SCARIFYING IN PURE WHITE SPRUCE
STANDS TO INDUCE WHITE SPRUCE REGENERATION

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INTRODUCTION

In 1959 the Department of Forestry in cooperation with the Saskatchewan government initiated a project to determine whether clear cutting in alternate strips and mechanical seedbed preparation in pure white spruce stands will induce enough regeneration to form potentially merchantable stands.

So far five areas have been established, but one (Area 2) was burned and is no longer part of the study.

This report has been prepared to give a brief summary of progress on the project to 1964 and to outline work for 1965.

For details concerning the scope of this project, methods of assessing results, scarification preliminary results, etc., the reader is referred to the project plan for MS-211 and progress reports 64-MS-22, 63-MS-2, MS-211-1962, MS-211-1961, MS-211-1959.

PROGRESS TO 1964

Area 1: This area was established in 1959. It is about 53 acres in size and is located in Twp. 41, Rge. 3, W. 2. Mer. in the Hudson Bay Region. The area was divided into 2-chain-wide strips running east-west; alternate strips were marked for cutting.

The area was logged during the winter of 1959-60 and scarified in August of 1960 under the supervision of the Saskatchewan government. Scarification was confined to the clear cut strips in accordance with instructions in the project plan. A TD-14 crawler-type tractor equipped with a Saskatchewan fire-line plow was used.

In the summer of 1961 the Department of Forestry mapped the area and established 900 randomly located 1/5-acre quadrats (300 in cut and scarified areas, 301 in cut but not scarified areas and 299 in the uncut stands) to assess regeneration. Five 1/5-acre plots were established in the uncut strips to supply stand data.

In addition five permanent observation transects (each 2 feet wide) were established on scarified portions of the cut-over strips to study germination and survival of white spruce seedlings on specific seedbeds. Transects were mapped to show various seedbed types and seedling locations. Yearly examinations have been carried out, recording new germinants and seedling survival.

In the spring of 1961 small experimental plantations were set out on the area under the supervision of the Saskatchewan Department of Natural Resources. A total of 958 white spruce seedlings (2-2 stock from the Big River Nursery) were planted. Three hundred and twenty-one seedlings were set out on a cut-over scarified strip, 315 on a cut-over unscarified strip and 322 on an uncut strip. The Department of Forestry has examined the plantations annually, recording seedling survival and growth.

In the summer of 1961 the Department of Forestry set out a total of 112 seedtraps (56 on a cut-over strip and 56 on an uncut strip) to collect information on annual seed fall. Seed from the traps has been collected yearly and counted.

Area 3: This area was established in 1959. It is about 11 acres in size and is located in Twp. 53, Rge. 26, W.2. Mer. in the Prince Albert Region. The area was logged during the winter of 1959-60. In late August 1960 the cut-over strips were scarified with a TD-18 bulldozer using a straight blade. This work was carried out under the supervision of the Saskatchewan Department of Natural Resources.

In the summer of 1961 the Department of Forestry established a total of 603 randomly located permanent mil-acre quadrats (300 in cut-over scarified areas and 303 in uncut areas) to assess regeneration. Five, 1/5-acre, permanent plots were established in the uncut stands to supply stand data.

Two permanent observation transects similar to the ones on Area 1 were established on cut-over scarified strips. The transects have been examined yearly; germination and survival of white spruce seedlings have been recorded.

In June of 1961 small experimental plantations were also established on this area. Personnel of the Silvicultural Section, Saskatchewan Forestry Branch, planted a total of 582 white spruce seedlings (2-2 stock from the Big River Nursery). Two hundred and four were set out on a cut-over scarified strip, 199 on a cut over unscarified strip and 179 on an uncut strip. The plantations were examined by the Department of Forestry in 1961, 62 and 63.

Annual white spruce seedfall data on this area is being collected by the Saskatchewan Forestry Branch. The first collection was made in 1960.

Area 4: This area was established in 1960 by the Saskatchewan Department of Natural Resources. It is approximately 12 acres in size and is located in Twp. 68, Rge. 25, Sec. 4 and 9, W.2. Mer. in the Prince Albert Region. Area 4 was logged during the winter of 1960-61. In the summer of 1961 hardwoods

remaining on the cut-over strips were girdled by the Department of Forestry. Seedbed treatment was carried out by the Saskatchewan government in August of 1962. The cut-over strips were scarified in accordance with instructions in the project plan. Seedbeds were made with a TD-114 tractor equipped with a Saskatchewan fire-line plow.

In July of 1963 the Department of Forestry established a total of 605 randomly located mil-acre quadrats (203 in cut-over scarified areas, 202 in cut-over unscarified areas and 200 in the uncut areas) to assess regeneration. Five 1/5-acre plots were established in the uncut strips to supply stand data.

Small experimental plantations were set out on the area by personnel of the Saskatchewan Forestry Branch in May of 1963. A total of 558 white spruce seedlings (2-2 stock from the Big River Nursery) were planted. On hundred and ninety-two were set out on a cut-over scarified strip, 192 on a cut-over unscarified strip and 172 on an uncut strip. In the summer of 1964 the plantations were examined and measured by the Department of Forestry.

Area 5: This area was established in 1962 by the Saskatchewan Department of Natural Resources. It is approximately 3/4 acres in size and is located in Twp. 42, Rge. 3, Sec. 10, W.2. Mer. in the Hudson Bay Region. Six 2-chain-wide strips comprising nearly 17 acres were clear-cut during the winter of 1962-63. In September of 1963 approximately 7 1/2 acres of the cut-over strips were scarified with a D-7 bulldozer using a straight blade. Logging and scarification were done under the supervision of the Saskatchewan government.

In October of 1963 following scarification the Department of Forestry seeded approximately 5 acres of the scarified areas with white spruce seed. The seed¹ was sown with a cyclone seeder at the rate of one-half pound per acre (viability at time of sowing was 50 per cent).

In July of 1964 a total of 622 randomly located mil-acre quadrats (213 in cut-over scarified areas, 212 in cut-over unscarified areas and 197 in the uncut areas) was established to assess regeneration. Six 1/5-acre plots were established in the uncut stands to supply stand data.

In the spring of 1964 a total of 363 white spruce seedlings (2-2 stock from the Big River Nursery) was planted by the Saskatchewan Department of Natural Resources. One hundred and thirty seedlings were set out in a cut-over scarified strip, 114 in a cut-over unscarified strip and 119 on an uncut strip. Growth and survival of seedlings are being followed by the Department of Forestry.

1 Seed was treated with captan.

WORK FOR 1965

Area 1: The first five-year remeasurement of all sample plots on the area will be carried out during the summer of 1965. This work will include: (1) a regeneration survey on the mil-acre transect plots, (2) measurement of the 1/5-acre permanent plots for stand information, (3) seedling survival counts on the observation transect plots, (4) plantation measurement for survival and rate of growth and (5) collection of seed from the seed-traps.

Area 3: In the summer of 1965 a five-year remeasurement will be conducted on this area. Plots to be measured will include: (1) mil-acre transect plots, (2) 1/5-acre sample plots, (3) observation transect plots and (4) plantations.

Area 4: Plantations will be remeasured.

Area 5: Plantations will be remeasured.

Reconnaissance

A brief reconnaissance may be made to select additional areas in the Dore Lake area. This will depend upon the cutting program of the Saskatchewan government.

Reports

Data to be collected in the 1965 survey will be analyzed and presented for publication.