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FOREST RESEARCH BRANCH

- Progress Report 1963 -

THE RELATIVE EFFECTIVENESS OF VARIOUS EQUIPMENT FOR SCARIFICATION IN SPRUCE-ASPEN STANDS

(Project A-62)

by

J.C. Lees

Calgary, Alberta

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INTRODUCTION

In August 1961, a trial area of 15 acres in partially-cut spruce-aspen stands near Smith, Alberta, was divided into strips (Figure 1). Each of the following machines was assigned to three strips at random.

1. TD9 tractor with 6-toothed blade
2. TD9 tractor with Imset scarifier
3. TD9 tractor with Athens plow
4. American-Marietta (Seaman) tiller

The scarifier bar shown in Figure 1 was not available at the time. Allowance was made for additional machines to be tested.

Effective mineral soil seedbed area exposed by each machine was assessed in 1961 and 15 sample ¼ milliacre seedspots were sown with 100 white spruce seeds. This report presents the results of seedling tallies on the seedspots during the 1962 season.

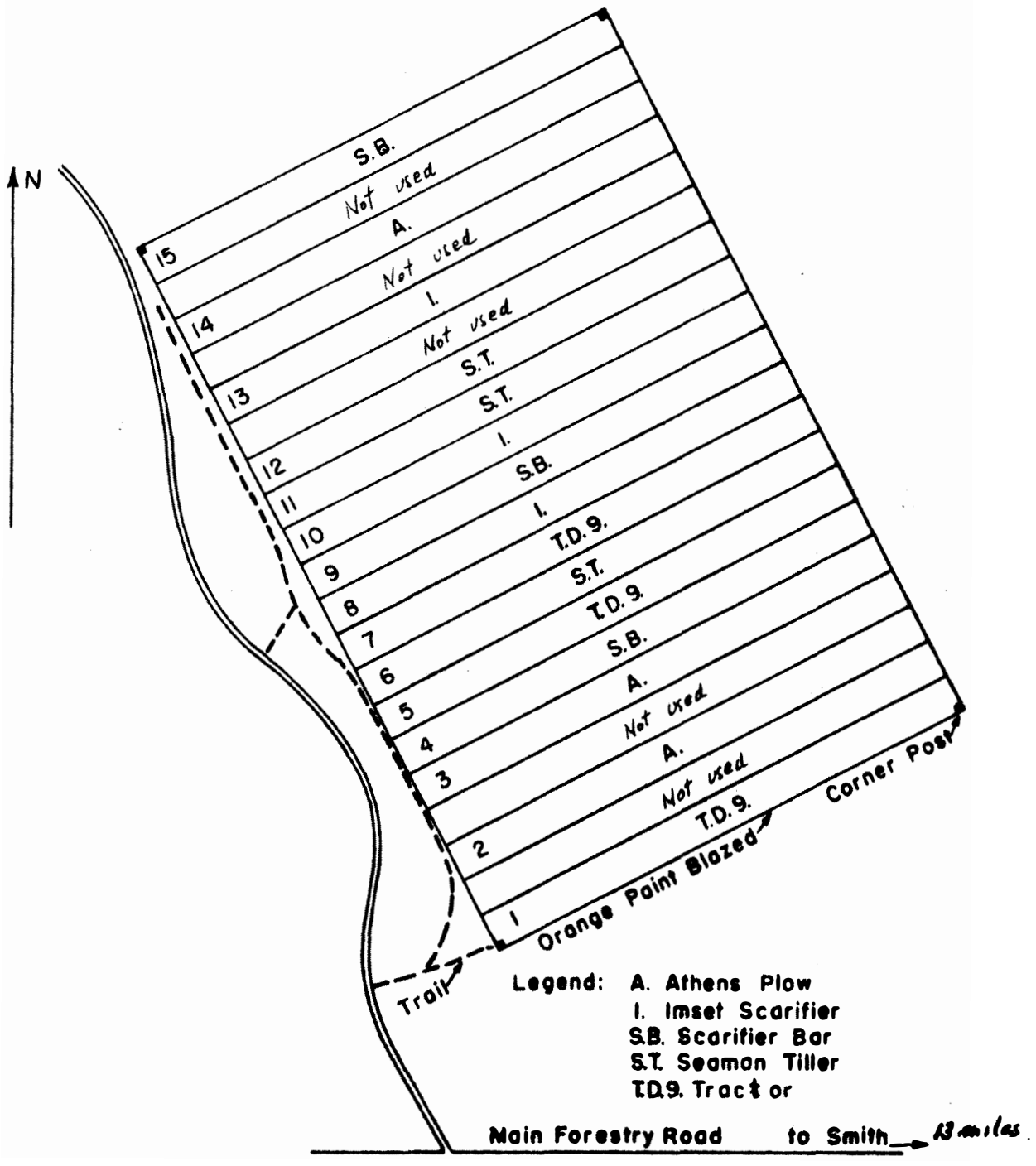
RESULTS AND DISCUSSION

Germination and survival tallies on the total 60 ¼ milliacre seedspots were carried out on June 20 and June 26, and on September 10.

Fig. 1. SCARIFICATION TRIALS.
SMITH, 1961.

Section 35-73-3-W5

Scale : chains 3 0 3 6



In September, 15 seedspots per machine treatment were sown with 100 white spruce seeds and a freshly hand scarified area was sown. Germination and survival on the original and freshly scarified seedbeds will be compared in 1963 to assess seedbed deterioration for each machine.

Results of the 1962 tallies are presented in Table 1.

TABLE 1. AVERAGE NUMBER OF FIRST YEAR SEEDLINGS ON $\frac{1}{4}$ MILLIACRE QUADRATS 1962.

Machine	Number of Seedlings	Per cent Survival
TD9 + blade	14	74.3
Imset Scarifier	9	74.3
Athens Plow	9	67.8
Seaman Tiller	9	83.5

The tractor-and-toothed-blade combination and the Seaman tiller show much promise in this study. The former is readily available in the region from logging operations and most operators can quickly become familiar with the technique required in scarification. The latter, a 4-wheel model, is an adaptation of an agricultural breaking tiller which has found world wide application in road-bed mixing and preparation. A model suitable for woods operation is available and initial results indicate that further study of this machine is warranted.

FUTURE WORK

As soon as possible, a pull-type Seaman tiller will be tested on the available strips on the study area.

Seedbed deterioration and overall regeneration establishment for each machine will be assessed 1964. Experience of the Alberta Forest

service with these machines under operational conditions will be assessed to that date and a report for publication prepared in 1964-1965.