NEWS AND NOTES

TECHNICAL NOTES

BLACK SPRUCE SEEDFALL IMMEDIATELY FOLLOWING FIRE ¹

By W. C. Wilton ²

It is well known that black spruce (*Picea mariana* Mill.) is a species with persistent, semi-serotinous cones and with frequent medium-to-good seed years. These characteristics imply that a supply of seed is almost always available in stands over 40 years of age. Seeds are disseminated throughout most of the year, but cones can retain viable seed for long periods (LeBarron, R. K., 1948). Studies carried out in Minnesota by Chai and Hansen (1952) demonstrate that 50 per cent or more of viable seed still remains in the cones one year after ripening and about 15 per cent remains after five years.

Following fire (in stands of seed-bearing age), it is known that seed is released in large quantities, but the dissemination pattern in such circumstances is not well documented. How soon after fire does the release begin and how long does it continue? Is all seed disseminated within a relatively short time or is it spread over a long period? The answers to such questions could be of importance in controlled burning operations to determine the time to burn and the number of seed trees required to restock an area.

The extensive forest fires in Newfoundland in 1961 provided an opportunity to obtain such information. Seed traps were established in a fire-killed 60-year-old fully-stocked upland spruce stand, before the fire was completely out. This stand contained 960 merchantable trees per acre with an average height of 40 feet and a total basal area of 188 square feet. The fire occurred on August 25 during a hot dry season. All ground vegetation was completely consumed and the humus layer was burned to an average depth of two inches. The fire travelled to the tree-tops and practically all tree needles were burned or scorched.

A total of twenty seed traps, each one-twentieth milacre in size, were mechanically arranged on a one-acre block. Seed collections were taken at intervals for 60 days and viability tests were carried out. The results are shown in Figure 1. It was intended to continue the experiment for a longer period, but the stand was removed in salvage operations during the late fall of 1961. A final seed collection, which was made in the spring of 1962, indicated an additional fall of approximately one million seeds per acre; viability of this seed had dropped to approximately 20 per cent. Because this additional seed was shaken out of the trees during cutting operations it does not indicate the true rate of fall. However it does indicate that probably less than half the natural seedfall occurred during the first 60 days after burning.

¹Department of Forestry, Canada, Forest Research Branch Contribution No. 544.

²Research Officer; Forest Research Branch, Department of Forestry, St. John's, Newfoundland.

SOMMAIRE

Dans un peuplement d'épinette noire détruit par le feu, la chute des graines de semence sur le sol a été plus abondante au cours des premiers dix jours qui ont suivi le feu; la viabilité de la semence a diminué au fur et à mesure à partir du moment où le feu a eu lieu.

REFERENCES

- LEBARRON, R. K. 1948. Silvicultural Management of Black Spruce in Minnesota. U.S. Dept. of Agriculture Circ. 791.
CHAI, TSAN-SING and H. L. HANSEN. 1952. Characteristics of Black Spruce Seed from Cones of Different Ages. School of Forestry, University of Minnesota. Forestry Note No. 2.

LOW TEMPERATURE GERMINATION OF SOME EASTERN CANADIAN TREE SEED¹

J. D. MacArthur² and J. W. Fraser³

Irmack (1961), Olsen *et al* (1959) and Stone (1958) among others have commented on the phenomenon of coniferous tree seed germinating at low temperatures during, or following prolonged stratification (moist cold storage). Allen (1960, 1962) showed that extended stratification lowered the temperature requirements of Douglas-fir, grand and noble fir (*Pseudotsuga menziesii* (Mirb.) Franco, *Abies grandis* (Dougl.) Forb. and *A. nobilis* Lind.). He concluded that the phenomenon might be common with conifers and indicated its usefulness in controlling germination in forest nurseries.

¹ Department of Forestry, Canada, Forest Research Branch Contribution No. 549.

² Research Officer, Forest Research Branch, Department of Forestry, Box 35, Sillery, P.Q.

³ Research Officer, Department of Forestry, Petawawa Forest Experiment Station, Chalk River, Ontario.