

EFFECTS OF VARIOUS POWDERS ON THE FIELD GERMINATION OF WHITE SPRUCE AND JACK PINE SEED

Demonstration MS-2

by
J. M. Shoup

**FOREST RESEARCH LABORATORY
WINNIPEG, MANITOBA
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**FORESTRY BRANCH
DEPARTMENT OF FISHERIES AND FORESTRY
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INTRODUCTION

In the summers of 1966 and 1967 field tests at Hadashville and the Riding Mountain Forest Experimental Area were set up to determine whether or not the addition of baby powder could increase seed germination of field sown white spruce (Picea glauca (Moench) Voss) and jack pine (Pinus banksiana Lamb) when compared with seed treated with Captan 50W, A.E.A. (a mixture of Arasan 75, Endrin 75W and aluminum flakes) and untreated seed or control (Shoup 1967, 1968).

This experiment was repeated in 1968 using the 1967 layout. Captan 50W has been found to be phytotoxic to jack pine and white spruce seed and therefore was not included as a seed treatment in the 1968 field tests. (Cayford and Waldron 1967).

Rainfall was abnormally high during the 1968 growing season at Riding Mountain (1968 - 20 inches, 1967 - 6 inches, 1966 - 13 inches) and correspondingly wet in southeast Manitoba.

At Riding Mountain a shaded jack pine site which was established in 1967 had to be abandoned during 1968 due to flooding.

White spruce natural seedfall was extremely high at Riding Mountain and resulted in contamination of both the open and shaded white spruce plots. These plots were abandoned. Therefore only jack pine on the open site at Riding Mountain and at Hadashville were examined during the summer of 1968.

METHODS

Seedbed preparation

At Hadashville, the same location was used as in the 1967 tests; three foot wide furrows of sandy mineral soil, moisture regime 1.

At Riding Mountain again the 1967 location was used; open site, clay loam-textured mineral soil, moisture regime 3.

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Seed treatment

The jack pine seed was collected in southeast Manitoba by the Manitoba Department of Mines and Natural Resources in 1967 and had a viability of 92%.

All seed used in this experiment was dewinged. A.E.A. application was according to Ontario Department of Lands and Forests rates as follows:

Arasan 75 - 2.6 lbs. per 100 lbs. of seed
 Endrin 75W - 1 lb. per 100 lbs. of seed
 Aluminum flakes - 1 lb. per 100 lbs. of seed

Baby powder was applied at the maximum adhering dosage.

Dow latex 512-R was used as the sticker at one part to nine parts of water.

Plot layout and seeding techniques

At Hadashville the germination tests on jack pine were carried out on the open site using 30 one-foot-square plots marked with numbered wooden stakes laid out in the mineral soil furrows.

On April 23, 1968 one hundred jack pine seeds were sown to each of the one foot square plots. Each of the three seed treatments were replicated 10 times.

Germination counts were made on June 10, July 15 and September 11, 1968. All germinants were removed at the time of each counting. This was not done in the 1966 and 1967 field tests.

At Riding Mountain the experiment was repeated on an open site. To control seeds from being washed out of the plots four strips of wood 1"x1"x2' were laid down to form a square around each plot.

On April 24, 1968 the plots were seeded similarly to that at Hadashville. Germination counts were made on June 11, July 15 and September 11, 1968.

RESULTS AND DISCUSSION

At Hadashville the germination counts were low but it is indicated that seed treated with baby powder did not improve germination over untreated seeds, both treatments gave less than 2 per cent germination. Seed treated with A.E.A. showed a germination of 6 per cent (Table I).

At Riding Mountain the germination counts were considerably higher, showing 21 per cent for A.E.A., 19 per cent for baby powder and 14 per cent on controls.

The results of three years field tests (1966-1968) showed that jack pine seed treated with baby powder (7.6 per cent) does not improve germination over seed treated with A.E.A. (9.5 per cent). Jack pine seed treated with baby powder does appear to give improved germination over untreated seed (5.4 per cent).

The results of two years field tests (1966-1967) on the germination of treated white spruce seed were inconclusive (baby powder 3.5 per cent, A.E.A. 4.0 per cent, untreated 4.1 per cent).

REFERENCES

- Cayford, J.H. and R.M. Waldron. 1967. Effects of captan on the germination of white spruce, jack and red pine seed. For. Chron. 43:381-384.
- Shoup, J.M. 1967. Effects of various powders on the field germination of white spruce and jack pine seed. Canada, Dept. of Forestry and Rural Development, For. Br., For. Res. Lab., Winnipeg, Man., Int. Rep. MS-55, 5 p.
- _____. 1968. Effects of various powders on the field germination of white spruce and jack pine seed. Canada, Dept. of Forestry and Rural Development, For. Br., For. Res. Lab., Winnipeg, Man., Int. Rep. MS-75, 4 p.

TABLE I

EFFECT OF VARIOUS POWDERS ON THE FIELD GERMINATION OF JACK PINE SEED IN 1968

Seed Treatment ¹	Per Cent Live Germinants		Per Cent Live Germinants		Per Cent Live Germinants		Total Per Cent Live Germinants	
	Hadashville	Riding	Hadashville	Riding	Hadashville	Riding	Hadashville	Riding
	June 10	June 11	July 15	July 15	Sept. 10	Sept. 11		
Baby powder	0.9	11.1	0.5	6.9	0.2	1.0	1.6	19.0
A.E.A.	3.5	11.3	2.4	8.8	0	1.1	5.9	21.2
Control	0.7	9.1	0.6	4.4	0.1	0.7	1.4	14.2

¹ 10 one-foot square plots with 100 seeds per plot or 1000

seeds for each treatment at both areas