TEST OF SEEDING GERMINATED WESTERN WHITE PINE SEED

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Present recommended methods of direct-seeding western white pine call for planting in the fall following the control of seed-eating rodents by poisoning. The Northern Rocky Mountain Forest and Range Experiment Station began field tests in 1948 to determine the practicability of spring-sowing germinated white pine seed as a method of avoiding the need for direct rodent control. A series of four plots was seeded from 1948 to 1950 on two freshly burned sites within the white pine type. In all, 2, 200 seed spots were planted in the test.

The two major factors studied in the tests were (1) advance preparation of seed (germinated versus nongerminated seed) and (2) protection from rodents (screened versus

unscreened seed spots.)

In the 1948 test, seed coats were cracked and the seeds were stratified to induce prompt germination. Cracking of seed coats was abandoned in the later tests because it was found to be unnecessary. In 1949 and 1950, the seeds were stratified in moist sand for three months. At the end of the stratification periods, half of the seeds were exposed to room temperature until germination occurred. As soon as the radicles appeared through the seed coats, the seeds were returned to refrigeration to arrest further development until time for field planting.

The seeds were sown on scraped spots and covered with about three-eighths inch mineral soil. Ten seeds per spot were sown on sub-blocks receiving germinated seeds, and 20 seeds per spot were sown on sub-blocks receiving ungerminated seed. The seeds were sown as early as possible in the spring.

To follow germination and survival, spots were checked two weeks, one month, and two months after seeding. The proportion of spots on each sub-block that contained at least one established seedling was the measure of stocking used in the analysis.

Differences in stocking among sub-blocks were tested by the analysis of variance method to determine the effect of different treatments.

RESULTS

The experiment showed that sowing germinated seed did not eliminate the necessity for rodent control. The proportion of screened spots stocked with one or more seedlings two months after seeding was nearly seven times greater than of the unscreened spots (table 1). The increase in stocking due to screening was as great with germinated as with ungerminated seed. Inspection of the seed spots two days after the seeds were sown showed that 80 and 96 percent of the unprotected spots were molested by rodents in

1948 and 1949 respectively. Rodent population studies made at the time of sowing lee to the conclusion that the rodent population was representative of this kind of habitat in the white pine type. Hence, the great amount of rodent damage to the unscreened spots was not the result of an abnormally large rodent population.

In this experiment, no increase in stocking resulted from sowing germinated seed, Stocking varied considerably between plots and within plots, but the average stocking from germinated and ungerminated seed was practically the same.

Table 1. Proportion of seed spots containing one or more white pine seedlings two months after sowing with germinated and nongerminated seed. 1 /

Plot location and year of sowing	Nongerminated seed		Germinated seed		All treatments
	Unscreened	Screened	Unscreened	Screened	
	Percent	Percent	Percent	Percent	Percent
Blickensderfer Creek					
1948	5	12	4	23	13
1949	4	33	6	52	24
1950	8	81	6	59	38
Meadow Creek					
1950	15	54	9	53	33
Average 2/	7	46	6	46	26

1/ Basis: percent values given for Blickensderfer Creek are each based on 150 seed spots; for Meadow Creek, 100 seed spots.

2/ Weighted average of 11 subplots.

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