PINE SEEDLINGS FROM ARTIFICIALLY SOWN SEED

Considerable interest and comment have been widely expressed in our effort to establish pine seedlings, artificially, on the Burgess Spring Experimental Range. This note has been prepared to explain the method used and the usually satisfactory results obtained. While these results would be far from satisfactory from a silvicultural standpoint; nevertheless, they were of value to us for the immediate needs of our grazing experiments which deal in part with the influence of live stock grazing on pine seedlings. Incidentally, the results have some additional value to both silviculturist and biologist in a fuller understanding of the rodent-tree-reproduction problem.

In their first year of growth,

The lack of natural seedlings and the uncertainty of how many years would elapse before a sufficient number would become established for our range experiments justified an attempt at artificial seeding - and it must be borne in mind that this planting was in no sense an experiment but merely an attempt to obtain seedlings to work with.

The detrimental effect of rodents, particularly mice and chipmunks, in the artificial establishment of seedlings has been pointed out many times in the past by experimenters concerned with the problem. This emphasis stimulated the formulation of a planting technique which combined a number of common planting practices and aimed to reduce the chances of rodents finding and eating planted seed before germination took place.

The technique used and the results obtained are outlined below. Three main points were emphasized:

1. Seeding if possible just ahead of heavy snows, at the beginning of the period when presumably the rodents would be relatively inactive and would have the least chance of taking the seed.

2. Planting the seed \( \frac{1}{2} \) to 1 inch deep in mineral soil and out of sight.

3. Avoidance of soil and surface evidences of planting. Such disturbances, indicated by Dunning's experiments as attractions to rodents, were minimised by (a) using a modified hand corn planter with narrowed snout and regulated to drop 1 or 2 seeds per spot, and (b) closing the soil crack by stepping on it.

In addition, to using a planting method as a means of decreasing rodent pressure on planted seed, reduction of the rodent population was tried through poisoning. With the cooperation of Horn and Fair, all of the seeds were coated with a plaster-of-paris mixture containing strychnine, and a block of about 60 acres was treated with poison grain. Both of these poisoning treatments proved to be not at all or only slightly effective. No special effort was made to destroy the odor in the seeds, although it is felt that rodents locate many seeds through scent.

Seventy-two spots were planted on 637 quadrats, which were 6.6 feet long, 3.3 feet wide and spaced 24 chains apart in a lattice pattern over the planting area of 537 acres. This large scale planting afforded the opportunity for
silvicultural as well as range studies, and forest management of the station carried half the burden of laying out the quadrats, planting the seed, and making examinations of the seedlings every two weeks throughout the season.

The results:

Examination of the quadrats early in the spring showed considerable seed removal by rodents. Some quadrats apparently were untouched. On others all of the seed had been dug up, but on most of the quadrats only part of the spots had been disturbed. Of the estimated 60,000 viable seeds planted, 5,600 or about 9 percent germinated. No natural seedlings germinated anywhere on the area.

These are the encouraging results. Admittedly they represent a low percent of germination, but more than was anticipated. Further tests of the methods used are of course necessary.

Whether any one or all of the practices used were instrumental in producing the results obtained is difficult to say and is open to discussion. For example, Horn has already suggested that a low rodent population on the Burgess Spring range, especially of mice, probably has more bearing on results than the planting method. Similarly, Forest Management...

Working out the real significance of the results and the possible value of the planting technique must be left for the future after Dunning and Horn have evaluated the many intermixed factors, in their rodent-silvicultural experiments.

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