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PUBLICATIONS
Management of Ponderosa Pine

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A B S T R A C T

*MANAGEMENT OF PONDEROSA PINE AS DEVELOPED BY RESEARCH AND EXPERIMENTAL PRACTICE IN THE SOUTHWEST, by G. A. Pearson. (Manuscript proposed for Miscellaneous Publication series. 445 pp. 80 illustrations.)

Six experiment stations in the ponderosa pine region have a research history of nearly 40 years. This treatise deals particularly with the findings in the Southwest because here, more than in other regions, research effort has centered on ponderosa pine as distinguished from other species. The findings here presented are derived not only from academic studies and small plot records but also from experimental practice and record on areas sufficiently large to lend themselves to administrative procedure.

The story of experimental management in the Southwest depicts failure as well as success. From the entire experience, it has been possible to abstract guiding principles of what to do and not to do in ponderosa pine silviculture. These principles are here briefly outlined.

1. Harvest cuttings. Logging should aim to accomplish more than salvaging the mature or declining elements of the stand; making way for future crops by encouraging younger age classes is of equal if not greater importance. Frequent cutting is necessary in order to maintain vigorous growth. Cutting cycles of 20 years or less make it possible both to salvage declining trees and to prevent stagnation in groups.
2. Development of Immature Trees. It is possible by improvement cutting to transfer the potential increment of the entire stand to a smaller number of selected stems. In groups of blackjack and intermediate age classes as commonly found in the Southwest, removal of 40 to 50 percent of the volume in the form of large and inferior stems usually results in a substantial rise of net increment. The net effect is to replace low-value increment with high-value increment, at the same time increasing the total yield of the group. It is not uncommon for released, clean-boled, short-crowned trees 20 inches d.b.h. to grow to 2 to 3 inches per decade.
3. Training Young Stands. Correct stocking wins three-fourths of the battle of stand improvement. Spacing close enough to encourage natural pruning in the pole stage results in slow diameter growth but produces tall, straight boles with little taper. If the stand is opened up in the advanced pole stage, or as soon as a few stems are large enough to yield a commercial product, and periodically thereafter, diameter growth can be accelerated and maintained to maturity.

(Over)

4. Regeneration. Good reproduction, in most regions, is dependent on better-than-average climatic conditions which occur only at long and irregular intervals. Aside from providing adequate seed trees, a suitable seedbed, and protection, there is little man can do to favor regeneration. Attention to all three of these measures will be rewarded with success at intervals of 10 to 50 years; neglect of any one of them will result in failure.

5. Control of Forest Enemies. Destructive or deteriorating agents, wholly or partly subject to control, account for a loss of 50 to 60 percent of the potential increment of ponderosa pine in the Southwest. No less than 12 agents take tolls ranging from 1 to 15 percent annually. Varying with localities, they are, in approximate order of magnitude: mistletoe, lightning, squirrels, browsing by domestic livestock and deer, wind, fire, heart rot, bark beetles, porcupines, small rodents, twig rust, and root rot.

(If you care to review and comment on this manuscript prior to publication please address your request to the attention of L. I. Barrett, Division of Forest Management Research.)

