



STATION NOTE

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CENTRAL STATES FOREST EXPERIMENT STATION
Columbus, Ohio W. G. McGinnies, Director
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YELLOW-POPLAR SEEDFALL PATTERN

Knowing the pattern of seedfall can be helpful when trying to regenerate yellow-poplar. This is especially true if the stand contains only scattered yellow-poplar seed trees. Information obtained from seed collections in Indiana shows that most of the seed falls north and northeast of seed trees.

The study was conducted in a mixed hardwood sawtimber stand located in the unglaciated hill country of southern Indiana. The most numerous species were sugar maple, hickories, white ash, white oak, and red elm. Yellow-poplar trees were scattered throughout the stand. A few dominant ones were spaced far enough apart for distribution patterns to be studied.

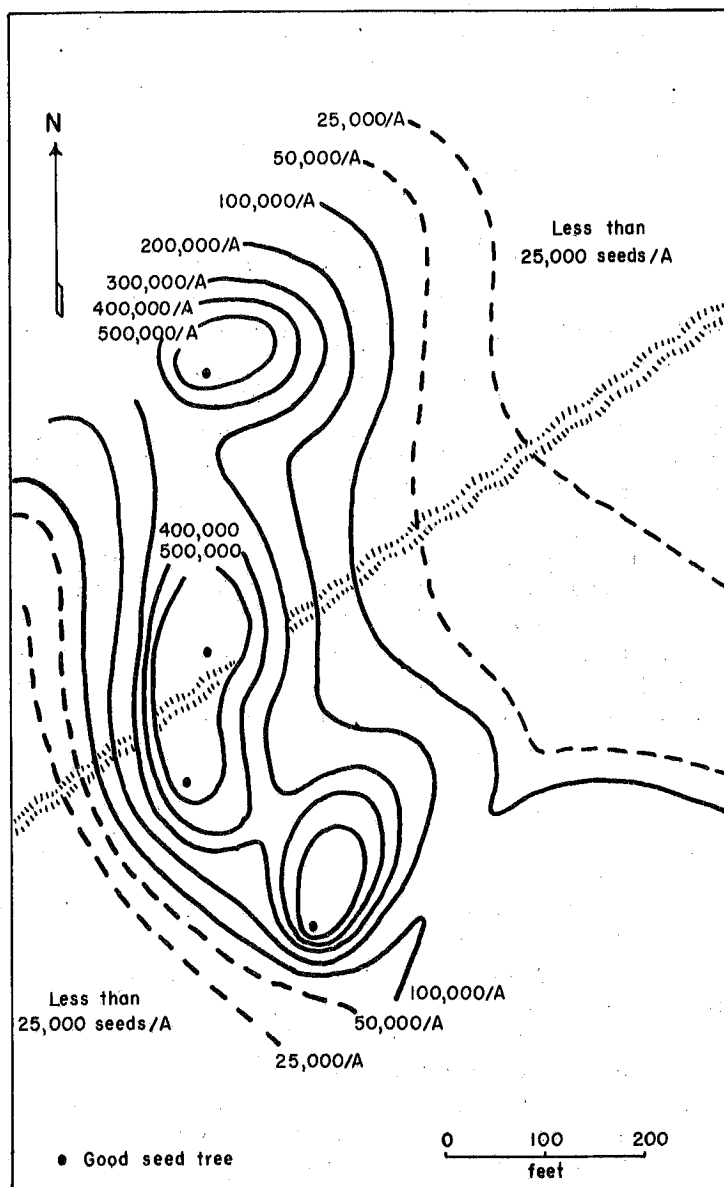
Seeds were collected in 220 seed traps on 11 acres of plots through the fall and winter of 1958-59 and 1959-60. Each year the seed count for each trap was plotted on a map of the study area. After the data were plotted all yellow-poplar seed trees were located on the map and lines of uniform seeding density were drawn. Seeding patterns for the two seasons were nearly identical, so the data were combined.

The seedfall from each tree was distributed in an oval pattern, the long axis of the oval running generally north and south and the center lying north of the seed tree (fig. 1). Over 1/4 million seeds per acre fell on about 1/3 to 1/2 acre beneath and to the north of a good seed tree, but seedfall density decreased rapidly with increasing distance from this area. Density was less than 50,000 per acre beyond about 150 feet south and southwest of a good seed tree and about 350 feet north and northeast of the tree. But occasional seeds were found over 600 feet from a tree in the latter direction. Seedling counts made in the fall of 1959 indicated that a seed density of 50,000 per acre was enough for adequate yellow-poplar stocking even though seed viability was only about 7 percent.

The seeding pattern can be explained by prevailing weather conditions. In a study in North Carolina¹ it was found that the rate of seedfall was highest during periods of high temperature or low rainfall in the late autumn. In Indiana, south to southwest winds prevail at such times. The rate of seedfall is reduced during periods of cool, wet weather when the winds are usually out of the north and northeast. However, abnormal winds may cause a different pattern of seedfall in any one year. Local topography can also modify the effects of the wind in any particular area.

¹/ Carvell, Kenneth L. and Korstian, C. F. Production and dissemination of yellow-poplar seed. Jour. Forestry 53: 169-170, illus. 1955.

Figure 1.--Pat-
tern of annual
yellow-poplar
seedfall on
part of the
study area
showing lines
of equal seed-
ing density.



It appears then that in stands with scattered yellow-poplar trees, group or patch cutting should usually be done north and northeast of a seed tree to obtain maximum yellow-poplar reproduction. No special supplementary measures are needed near the seed tree. In the intervening areas of light seedfall, however, extra ground scarification would help boost seedling establishment. Knowledge of the seeding pattern can thus be used to increase the amount of yellow-poplar in the new stand.

LaMont G. Engle, research forester
Bedford, Indiana