The Ced Guise Hardwood Grove -- Thinning Plots

The thinning plots in the Ced Guise Hardwood Grove were made in 1950 as a demonstration of forest management for the public. The thinning plots and the information gained from them and elsewhere on the Arnot Forest illustrate several important points as follows:

1. Hardwoods obviously differ from conifers -- but how important is this? From the forester's and logger's standpoints, hardwoods produce far less volume per acre per year than conifers; they also are much more subject to rot, crook, and other forms of cull. On the other hand good hardwood logs, as are being grown here, are worth much more than logs from conifers. The most valued species, black cherry, black walnut, and yellow birch may be worth ten times as much as pine. Basswood and white ash, predominant here, are worth three to five times more than pine. Also most hardwoods regenerate plentifully by natural seeding; therefore reproduction cost is normally less than for planted conifers.

2. Measurements on trees in the thinning plots show that red oak is a fast grower -- 2 inches in diameter per decade. White ash has grown 1.5 inches per decade on the thinned plot; only 1 inch on the unthinned plot. Basswood is the slowest grower and did not respond to thinning. Similar results in McGowan Woodlot suggest that basswood's tolerance to shade has been overrated and that the species may need early heavy thinning to develop the large crown needed for good growth.

Results of these measurements are not overly impressive. There are two reasons for this: First, trees grow in diameter, height, and form -- only the first of these is easily measured in trees of this size. Thus diameter measurements show only a fraction of the tree growth. Second, trees like all other living organisms, grow best in youth. Ced Guise is one who has published on growth rates of young hardwoods. His 1930 publication (J. Forestry 28: 16-22, 1930) showed growth of 1.5 inches per decade in 30-year-old unthinned hardwoods and up to 2.5 inches per decade for the thinned trees. This should emphasize the importance of early thinnings when growth potential is highest in order to develop large stems and veneer logs in shorter periods of time.

3. Hardwoods grow under a wide variety of conditions, but to grow well in volume and quality they need a good site, as represented by this Grove. One has only to travel over the Arnot Forest to see the extreme variations in elevation, soil moisture, exposure, and fertility -- yet the Forest is nearly covered with hardwoods. But much of the Forest is too exposed and the shallow soils don't hold enough moisture for good growth; consequently only about ten percent of the Forest has good hardwood stands.

Hardwoods grow best in protected areas with fairly deep soil such as the cove in which the Grove is located. Here there is protection from drying winds and the hot sun -- so that transpiration is greatly reduced. Also there is deeper soil because of gradual accumulation from upper slopes, and, even more important, accumulation of moisture from upper levels. These factors all tend to increase the ratio of available moisture and nutrients to evapo-transpiration, which is one of the best indicators of plant growth potential.

If one extends his thinking from the Arnot Forest to all of New York State, which is nearly half covered with hardwood forests, or to much of Northeastern United States, he can understand why much of the forest land is poor and unmanaged. Yet a recent study showed that the best opportunity for high returns from investments in timber management is in thinning young hardwood stands on sites such as this. One of the challenges to good forestry is to seek out such sites and concentrate our management efforts on them.

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