

Planted Forests and Plantations Ray Sheffield

Forests established through planting of tree species are becoming more prevalent in the United States. These forests make up more than 63 million acres, or 8 percent of all forests (see appendix C, table 8). This total includes those stands where planting was undertaken to augment existing stocking; this practice occurred primarily in the Western United States. Nearly all planted stands are established with native species. Because most (99 percent) planted forests are classed as timber land (see appendix C, table 1), the following discussion of plantation forests focuses on timber land.

Planted Timberland Area and Distribution

Concentrations of planted timber land are highest in the South region, followed by the Pacific Coast region and the North and Rocky Mountain regions (fig. 5d.1). Planted stands total 45 million acres in the South region, which is 22 percent of the timber land in that region. In the Pacific Coast region, planted timberland area exceeds 11 million acres, which is about 15 percent of the timberland total in that region. Less than 4 percent of the timber land in the North region is planted; planted area there totals nearly 6 million acres. Less than 1 percent of the timber land in the Rocky Mountain region originated through planting.

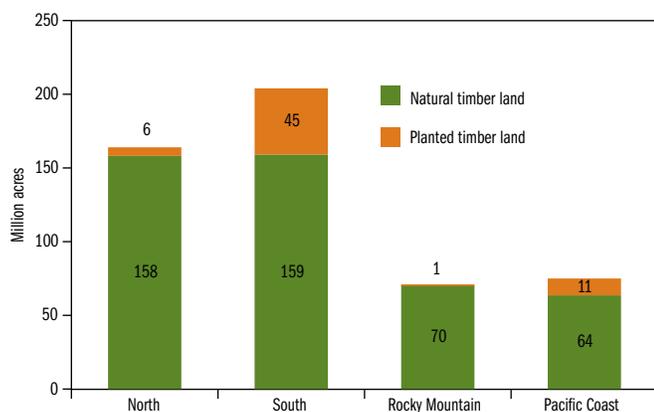


Figure 5 d.1. Area of natural and planted timber land by region, 2007.

Because the trees actually planted are usually softwood species, it is informative to describe plantation frequency based on softwood forest types rather than on all timber land. The forest-type groups with the highest concentrations of planting include loblolly-shortleaf pine (30 million acres), longleaf-slash pine (8 million acres), Douglas-fir (7 million acres), and white-red-jack pine (3 million acres) (fig. 5d.2). Planting accounts for 54 percent of all loblolly-shortleaf pine timber land, 59 percent of all longleaf-slash pine, 18 percent of all Douglas-fir, and 28 percent of all white-red-jack pine stands. The forest-type groups, listed in appendix C, table 8, reflect the plurality of stocking for all trees in the stand, not just the planted species. Therefore, a substantial number of planted stands will show up under a forest-type group not reflective of the species planted on the site. For example, in the East, oak-hickory forests account for 3 million planted acres; most of these stands were planted with pine trees, but hardwood species dominate the stocking.

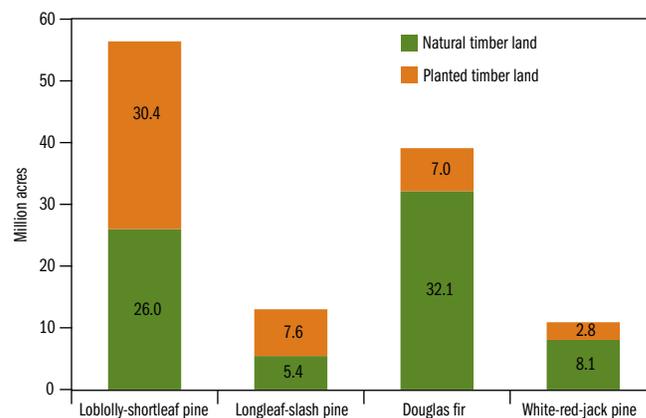


Figure 5d.2. Area of natural and planted timber land by forest-type group, 2007.

The age structure of planted stands is markedly skewed toward the youngest age class (fig. 5d.3). In the South region, the 1-to-20-year class accounts for almost three-fourths of all planted stands, with only 3 percent in age classes greater than 40 years. In the West, planted stands are also relatively young, with more than one-half residing in the 1-to-20-year class; only 6 percent are greater than 60 years of age. Natural forests are much older on average, a characteristic reflected in the age profile for all timber land in the West.

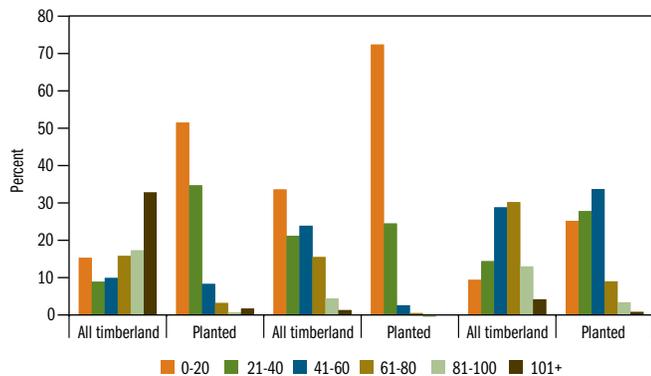


Figure 5d.3. Age class distribution of planted stands and all timber land by region, 2007.

The distribution of planted stands varies by ownership class (fig. 5d.4). Planting is less prevalent on public timber land, with national forests accounting for 5 million acres and other public ownerships 4 million acres. Planted acreage totals 22 million acres on private noncorporate holdings; this total represents about 9 percent of all timber land in this owner class. For several decades, forest planting activity was concentrated on corporate ownerships in the South and Pacific Coast regions. Private corporate owners currently account for 31 million acres of plantations, which is 23 percent of all timber land held by these owners.

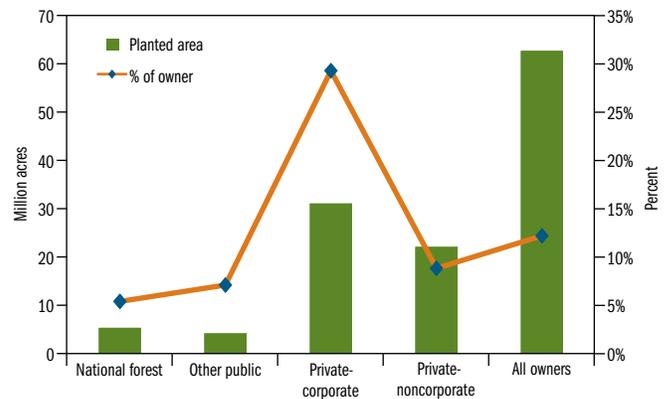


Figure 5d.4. Area and proportion of planted timber land by ownership class, 2007.

Volume, Productivity, and Utilization

Nationwide, about 75 billion cubic feet of growing-stock inventory are contained in planted stands, about 8 percent of total growing-stock inventory (fig. 5d.5; see also appendix C, table 32). This seemingly low contribution to inventory relative to percentage of all timber land planted (12 percent) is due to the young age-class structure of the planted resource as noted earlier. Because most stands are planted with a softwood species, a more revealing metric is found in the contribution of planted stands to total inventory of longleaf-slash pine, loblolly-shortleaf pine, and Douglas-fir forest types. Planted stands account for only 13 percent of the growing-stock inventory of Douglas-fir timber land but contribute 46 percent of the inventory of longleaf-slash and 43 percent of the loblolly-shortleaf inventory. These statistics indicate that planted stands are making significant contributions to timber inventory volumes in the South region, even with a very young age-class structure.

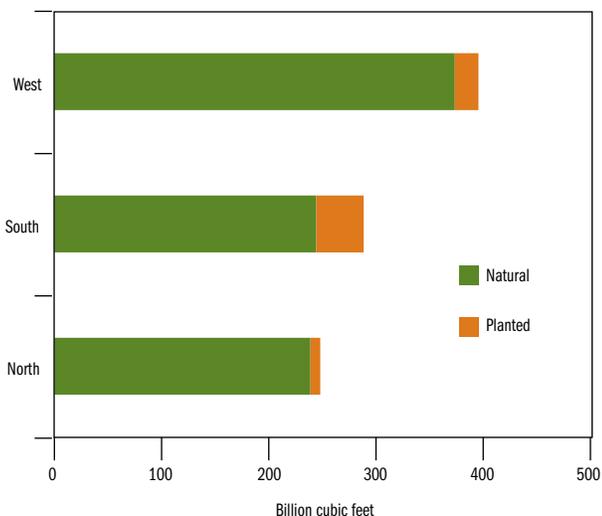


Figure 5d.5. Volume of natural and planted growing stock by region, 2007.

Reasons for establishing forest plantations in a timber management regime include control of species composition, stocking, and genetic improvement for various traits. Therefore, it is useful to evaluate the overall impact of planted stands on forest productivity. Due to lack of remeasurement information, an evaluation of productivity for planted stands is possible only for the South region in this assessment—more complete data will be available in subsequent national assessments. In the South region, 57 percent of the net annual growth of softwood species is accruing in planted stands based on recent remeasurement data (fig. 5d.6).

Planted stands are also supplying an increasing amount of the Nation’s timber supplies. As noted above, remeasurement data needed to evaluate timber removals from plantation forests are currently available only for the South region. In that region, planted stands are providing 43 percent of the softwood removals—a percentage that will rise as the relatively young stands increase in age. A previous Forest

Service assessment of the South region’s forests (Forest Service 1988) predicted that plantations in the region would supply more than one-half of the softwood removals coming from all forests there by 2010, a forecast that appears to be on track.

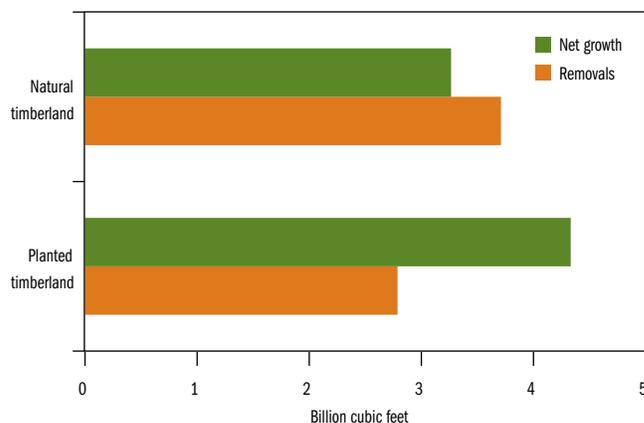


Figure 5d.6. Net growth and removals of softwood growing stock by planted and natural stand origin in the South region, 2007.

Future Changes in Planted Forests

The rate at which forest plantation acreage has increased over the past several decades is not likely to continue. Although some increases will probably occur, the rate of increase will moderate for two reasons. First, the number of acres planted in the past decade has dropped compared with planting rates for the 1980s and early 1990s. Rates of planting in the South region during this earlier period were elevated due to incentive programs that encouraged the planting of certain agricultural lands with trees. Changes in ownership of forests are another possible factor in reduced planting rates. The second reason for moderation in the rate of increase in forest plantations is that an increasing number of planted stands are being harvested as they mature. A high percentage of these stands may be reestablished as a plantation with no impact on net area in plantations.

Literature Cited

Birch, T.W. 1996. Private forest-landowners of the United States, (1994.). U.S. Department of Agriculture, Forest Service, North-eastern Forest Experiment Station, Research Bulletin NE-134.

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