U.S. has plenty of hardwood, but much of it's not for sale

Massive inventories and growth far exceeding harvest do not accurately tell the story of availability

BY PHILIP ARAMAN and JOHN TANSEY

In much of the world, especially the tropics, hardwood timber harvesting for wood products is widely thought of as timber depletion. Whether true or false, what is the hardwood situation in the United States? Does the U.S. have abundant resources of hardwood sawtimber?

Yes! Despite growing domestic and export demands for hardwood sawtimber and sawtimber products, our annual harvest remains far below the annual growth. The eastern U. S., in particular, has large amounts of hardwood. This resource is increasing—not, as some claim, decreasing. U.S. inventories of select export species could increase enough so that they make up a greater percentage of the hardwood resource as a whole.

This makes it seem that the U.S. has, and will have, plenty of hardwood to meet both domestic and export demands. However, there are constraints on harvest of the hardwoods at this time in the Southeast. We estimate a little less than 40% of the timber is actually available for cutting. Many factors, including technology, stumpage prices and land-use policies, could change this picture.

The U.S. is a major player in world export markets for hardwood logs, lumber and veneer. Exports of these products have been growing for 15 years, and the future looks bright. Hardwoods most in demand on export markets are select red and white oaks, hard maple, black walnut, black cherry, ash and yellow birch—the select species.

Select oaks account for more than 60% of U.S. hardwood lumber exports. The other select species make up 20%. Because export demand is so highly concentrated on few species and domestic demand for the same woods is strong, questions about timber supplies arise.

Hardwoods dominate on a little more than half of the timberland in the United States. Land producing crops of commercial timber or capable of doing so covers 23% of the nation. Most hardwoods grow in the East, where 75% of the timberland is privately owned. Only 10% of America's hardwoods are in the West.

In the East, northern and southern regions have about the same amount of growing stock, but more of the South's hardwood is sawtimber size (377 billion bd ft, compared to 338.5 billion bd ft in the North, according to a 1987 U.S. Forest Service survey).

Forest Service figures show 226 billion bd ft (International ¼-in. rule) of select hardwood sawtimber species. As noted, 60% of this is select oaks; 18% is hard maple, 11% ash, 5% cherry, 4% yellow birch and 2% walnut. Select species are increasing slightly faster than the average for all commercial hardwood sawtimber inventories.

Heavier demands of the past few years maybe cutting into the oak inventory, however. And in recent years, slower growth rates have been reported among hardwoods. Inventory increases may slow.

While overall, the South has more hardwoods than the North, the North leads in select hardwood species. Many other hardwoods will become more important. including gums, yellow poplar, soft maple, hickory and cottonwood. Inventories of all of these species were greater in 1987 than in 1977.

Two grading systems are used for hardwood sawtimber. The Forest Service uses one method to define the quality of potential sawlogs in a standing tree. The top grade includes veneer logs. The National Hardwood Lumber Assn. de-

TABLE 1—Estimated quality of eastern U.S. select species sawtimber and potential output of sawn lumber by lumber grade

	Log grade			Lumber grade			
	1	2	3&4	FAS&Sel	1C	2C	Below 2C
	%						
All select hardwoods	15	24	61	12	23	27	38
Select oaks	15	24	61	12	24	27	37
Hard maple	12	23	65	11	21	26	42
Ash, walnut, cherry	15	25	60	19	25	29	27
Yellow birch	11	28	63	12	21	24	43

veloped the second one to grade lumber.

In general, top-grade FAS&Sel (Firsts-and-Seconds and Select) lumber goes to buyers of clear or almost-clear lumber, including export customers. Medium-quality lumber, graded lC and 2C (Nos. 1 and 2 Common), goes to dimension, furniture, cabinet, flooring and other manufacturers. Lumber graded at below 2C is used for railroad ties, mine timbers, pallet parts and flooring.

Data from states was used to develop estimates of the potential output of lumber by grade in the eastern U.S. (Table 1). Lumber grade results assumed production of lumber from the distribution of logs found in the woods. However, in actual practice many smaller or lower-grade logs never leave the forests. This means the quality of logs actually sawn is higher than the inventory tallies.

We estimate that eastern U.S. hardwoods would yield about 12% top-grade lumber (FAS&Sel), 50% in 1C/2C grades and 38% below 2C. The average sawmill's profits depend on adequate and profitable markets for 1C/2C lumber.

Export markets demand select oaks above all other species. These oaks account for more than 60% of U.S. hardwood lumber exports, but are only 17% of sawtimber inventory. Adding non-select oaks to the inventory raises it to around 40%. "Non-select" oaks could be substituted for uses not needing the most rigid wood standards.

TABLE 2-Volumes of hardwood sawtimber on timberlands of the U.S. by species and region, 1987 (billion bd ft*)

Species	Region			All regions	% change 1977-1987
	North	South	West		
Select red oaks	39.8	23.7	—	63.5	—
white oaks	31.5	40.1	—	71.6	—
Other red oaks	30.7	78.9	—	109.6	—
white oaks	13.8	33.3	—	47.1	—
(All oaks)	(115.8)	(166.2)	18.6	(310.4)	(+35)
Hickory	12.7	27.9	—	40.6	+22
Yellow birch	8.6	.1	—	8.7	+11
Hard maple	38.4	2.9	—	41.3	+38
Soft maple	34.5	13.3	—	47.8	+66
Beech	14.2	7.0	—	21.2	+23
Sweetgum	1.6	38.0	—	39.6	+22
Tupelo & blackgum	1.2	29.7	—	30.9	+14
Ash	16.1	10.0	—	26.1	+43
Basswood	10.1	1.6	—	11.7	+42
Yellow poplar	12.6	40.3	—	52.9	+54
Cottonwood & aspen	29.5	3.1	19.6	52.2	+46
Black walnut	2.5	1.0	—	3.5	+60
Black cherry	11.2	.3	—	11.5	+75
Red alder	—	—	26.5	26.5	+18
Other species	29.5	25.6	17.4	72.5	+11
All species	**338.5**	**311.0**	**82.2**	**797.2**	**+33**

*International ¼-in. rule.

Ash, red alder and black walnut are also in higher relative demand than we have in our forests. Black cherry demand is proportional to potential supply. Underused species are yellow poplar, hard maple, soft maple, beech, yellow birch, hickory and others such as the gums, cottonwood and aspen (Table 2).

Availability of timber can be quite dynamic, based on changes in technology, economics and public opinion. Availability must be seriously considered along with forest inventories. This article focuses on the Southeast.

This region has abundant hardwoods—nearly 190 billion bd ft of sawtimber. Oaks account for 42%; yellow poplar makes up 15%. From bottomland forests to upland coves, the net annual growth of hardwood sawtimber exceeds removals. In the mountains, growth exceeds annual cut by more than 300%. Growth in the piedmont exceeds harvest by 89%, and by 67% in the coastal plain.

These increases in hardwood inventories have been going on for some time, according to periodic remeasurement of 28,000 sample locations scattered across the region. However, many mills find it hard to get enough sawtimber. This suggests possible physical, economic and societaI barriers that limit availability.

Some physical barriers are obvious: steep, rugged terrain in the mountains and year-round swamps near the coast. Some stands are too far from existing, usable roads. Hardwoods growing in primarily softwood stands maybe uneconomical to log. Timber in built-up areas, along streams or lakes and near major highways is often off-limits to loggers. Public forests frequently are not managed for timber production.

Land-use conflicts, landowner attitudes and public opinion all heavily influence timber management. Land ownership is diverse in the Southeast, but much of the timberland is owned bv individuals and corporations not involved with forest products. All of these-restraints require the true timber inventory to be discounted.

In the mountains, discounting reduces the amount of hardwood sawtimber potentially available to 11.5 billion bd ft—just 25% of the inventory. In the piedmont, discounting reduces the 63-billion-bd-ft inventory to 31.3 billion, or slightly less than half. Similarly, eliminating unharvestable stands in the coastal plain reduces an inventory of 80.2 billion bd ft to 31.7 billion.

Thus, in the Southeast as a whole only about 74 billion bd ft of hardwood sawtimber appears to be available. This is not the actual hardwood sawtimber volume available, however. The criteria applied in the discounts were rigorous and extensive. Demand for timber products and for specific species, available harvesting techniques and equipment and land-use policies can change rapidly.

Demands on the hardwood forests are predicted to increase. Pulpwood and, to a lesser degree, fuelwood harvests could rise substantially, primarily in low-grade and small-diameter stands. Demand for sawlogs, veneer logs and others will also increase.

At both federal and state levels, work continues in three areas to respond to rising demand and increasing environmental concerns: improving forest management techniques, raising timber utilization standards and developing new products or improved markets for low-grade trees and non-select species. ■

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