SUPPLYING THE PACIFIC RIM WITH U.S. HARDWOODS[1]

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ABSTRACT: The U.S. grows much more hardwood timber each year than is used for domestic and export markets. However, we do have some problems. We present a quick look at our Eastern hardwood resource situation (species, quality, availability), and suggest necessary cooperation by our export customers in the Pacific Rim to help assure adequate supplies of hardwood products. Resources and exports by species will be compared to make some necessary points.

I'd like to start with a wish statement that, if true, would take care of problems in supplying both our domestic and foreign hardwood markets. It also would make our timber owners (private, industrial and government), saw-millers, and loggers very happy. The wish is that we were just regenerating select red and white oaks, ash, walnut, cherry, yellow birch, and hard maple. And that the trees appear to be slowly grown (at least eight growth rings per inch per year), and are ready to harvest in 20-25 years as 20x20-inch square trees without branches for about 40-feet. That could help us adequately supply any market with fewer trees, and profits for all. Sorry, that is not the present situation. Therefore, I would like to describe the situation for U.S. hardwoods as related to supplying the Pacific Rim area with hardwood products.

THE EXPORT SITUATION

The United States has become a major player in world export markets for hardwood logs, lumber, veneer, and other processed products. Exports of these products have been g-rowing for 15 years, and the future looks bright. Hardwoods most in demand on the export markets are select red and white oaks, hard maple, black walnut, black cherry, ash, and yellow birch -- the select species.

The oaks account for more than 60% of U.S. hardwood exports. The other select species account for an additional 15-20% of hardwood exports. Domestic demands are also highly concentrated on these same species.

Product grade requirements are very high for hardwood export products. For logs, purchasers buy veneer logs and high grade sawlogs. Although medium grade lumber is exported, most customers demand high grade, almost clear, kiln dried lumber. Veneer purchasers require high grade veneer in thinner thicknesses and clipped with straight edges.

WHY ARE THEY BUYING OUR HARDWOODS?

Pacific Rim purchasers are buying our hardwoods for many reasons. These are some of the major reasons:

- We have the right species for their needs.
- Purchasers substitute our wood for material in limited supplies.
- We can generally supply the grades of materials needed.
- We are the #l producer of hardwoods in the world and # 3 or 4 in hardwood exports.
- Our export industry is mature and supplies usually what we promise.
- The U.S. has a large coordinated overseas promotion program making people aware of our products.

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HARDWOODS ARE ABUNDANT

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

As shown in Table 1, 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. The South has 377 billion bd. ft. of hardwood sawtimber compared to 338.5 billion bd. ft. in the North, according to a 1987 U.S. Forest Service report (Waddell et al. 1989).

Forest Service figures show 226 billion bd. ft. (International l/4-in. rule) of select hardwood sawtimber species. As noted, 60% of this is select oaks; 18% 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 may be cutting into the oak inventory, however. And in recent years, slower growth rates have been reported among hardwoods. Inventory increases may slow.

While 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. There are enough of these species to support additional harvesting: inventories of all of them were greater in 1987 than in 1977.

WHAT ABOUT QUALITY?

Two grading systems were used to estimate the overall quality of our hardwood timber. The Forest Service uses a method to define the quality of potential sawlogs in a standing tree. The top grade includes veneer logs. The National Hardwood Lumber Assn. developed the second one to grade lumber.

In general, top-grade FAS&Sel (First-and-Second 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 or below 2C is used for railroad ties, mine timbers, pallet parts and flooring.

Data from states was used to generate estimates of the potential output of lumber by grade in the eastern U.S. (Table 2). Lumber grade results assumed production of lumber from the distribution of logs found in the woods. However, in actual practice many smaller and 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 lC/2C grades and 38% below 2C. The average sawmill's profits depend on adequate and profitable markets for 1C/2C lumber.

OAK EXPORT AND RESOURCE PERCENTAGES ARE NOT EQUAL

Export markets demand select oaks above all other species (Table 3). These oaks account for about 60% of U.S. hardwood lumber exports, but only are 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 more rigid wood standards of select oaks.

Ash, red alder, cherry, and black walnut are also in higher relative demand than we have in our forests. Underused species are yellow poplar, hard maple, soft maple, beech, yellow birch, hickory, and others as the gums, cottonwood and aspen.

Demands for hardwood lumber by the big three importers in the Pacific Rim area are shown in Table 3. The demands are very different. Taiwan demands mostly oak lumber (69% in 1989). Top species demanded in Japan are red alder, ash, yellow poplar, and the oaks. Major species imported from the U.S. by Korea are hard maple and white oak.

RESOURCE AVAILABILITY: QUITE DYNAMIC

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. We focus on the Southeast to illustrate our points.

This region has an abundant hardwoods--nearly 190 billion bd. ft. of sawtimber. Oaks account for 42%; yellow poplar makes up 15%. From bottomland forests in the lower Atlantic Coastal Plain to upland coves in the Blue Ridge Mountains, 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 social barriers that limit the availability of hardwood sawtimber.

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 by individuals and corporations not involved with forest products. All of these restraints require the true timber inventory to be discounted.

WHAT'S LEFT?

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, or about 40% of the total.

Thus, in the Southeast, 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.

HARDWOODS AND EXPORTS TO THE PACIFIC RIM -- THE FUTURE

The United Stales has substantial quantities of hardwood timber resources. The demands for this timber have been far below the annual growth in our forests. The Eastern United States has vast quantities of select species, and these resources are increasing and not decreasing as some fear. By the year 2000, U.S. inventories of select export species sawtimber could increase by 42 percent to 781 million cubic meters (International l/4-inch rule). Thus, it appears that the United States has and will have the resources necessary to continue to supply domestic markets; to continue as a major player in the world hardwood market for log, lumber, and veneer products; and to increase exports of further processed hardwood products.

The quality of our standing sawtimber could be better. Potential output by lumber grade is only 10-20% top-grade lumber and about 5070 of the output is medium-grade (lC/2C) material. The vitality of the markets for the medium-quality material dictates the overall economic performance of a sawmill and, therefore, is very important. Improvements in present and potential export markets and development of new uses for this quality range of material, such as value-added export dimension, need to be constant goals. Standard-size dimension and edge glued panels, strip stock, and finger jointed edge glued panels as well as further processed dimension are all growing export products to the Pacific Rim market. These value added products can all be made from medium- and low-grade materials.

When considering the hardwood species mix and the Pacific Rim market, opportunities for expanded use of species not considered select species are great. Some of these species such as yellow poplar (sometimes called American tulipwood) are being used more by export customers.

In closing, demands on the hardwood forests are predicted to increase in the future. Pulpwood and to a lesser degree fuelwood harvests could increase substantially. These demands will be filled primarily with low grade and small diameter hardwoods. Domestic and export demands for logs, lumber, veneer, and other hardwood products also will increase,

Efforts have been and are continuing to be made at the Federal, and State levels to respond to the predicted rising demands by: (1) developing improved management techniques in our various forest types; (2) developing improved techniques and systems to more fully use each tree harvested; and (3) developing new products or improved markets for low-grade trees and non-select species.

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Table 1. Volumes of hardwood sawtimber on timberlands of the United States by species and region, 1987 (Waddell and others, 1989 and Bones, 1987).

Species	Region				Percent Change
	North	South	West	All Regions	1977-1987
	(Billion Board Feet, International 1/4-inch rule)				Percent
Select red oaks	39.8	23.7		63.5	
Select white oaks	31.5	40.1		71.6	
Other red oaks	30.7	78.9		109.6	
Other 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 and 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 and 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	377.0	82.2	797.7	+33

Table 2. Estimated quality of Eastern United States select species sawtimber and potential output of sawn lumber by lumber grade.

Species	Log Grade			Lumber Grade			
	1	2	3&4	FAS & Sel	1C	2C	Below 2C
	percent						
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	26	63	12	21	24	43

Table 3. U.S. hardwood sawtimber resources, 1987 and lumber exports by species, 1989 (Waddell and others, 1989 and Luppold and Thomas, 1991).

Species	U.S. Hardwood Resources	Lumber Exports			
		Japan	Taiwan	Korea	All Nations
	percent				
Red oak	21.7	6	57	3	32
White oaks	14.9	9	12	19	28
Hard maple	5.2	2	6	23	4
Black cherry	1.5	0	0	1	3
Black walnut	.4	1	1	7	1
Ash	3.3	14	5	1	7
Yellow poplar	6.6	11	1	5	6