TIMBER TRADING 89

TTJ's 6th International Commodity Conference

Royal Garden Hotel, London W8
Tuesday, 28 February, 1989

SUPPLY TRENDS AND PROSPECTS

North American Trading Outlook for Hardwood (with a review of the US hardwood resource situation)

Philip A. Araman
USDA Forest Service
Southeastern Forest Experiment Station
Brooks Forest Products Center
Virginia Tech University
Blacksburg, Virginia 24061-0503
USA

PRESENTED BY TIMBER TRADES JOURNAL
Benn Publications Limited Sovereign Way Tonbridge Kent TN9 1RW
Telephone (0732) 364422 Telex 95162
TTJ

SUPPLY TRENDS AND PROSPECTS

North American Trading Outlook for Hardwood

(with a review of the US hardwood resource situation)

Philip A. Araman

The United States has become a major player in the world market for hardwood logs, lumber, dimension stock, and veneer. For the last 10 years, US exports of these products have been growing, and the future looks bright. The major hardwood species demanded on the export market are the select red and white oaks, yellow birch, hard maple, black walnut, black cherry and the ashes. The select oaks make up about two-thirds of US hardwood

one–third of our hardwood exports.

In this review of the trading outlook for hardwoods we will briefly discuss:
(1) hardwood product market trends and prospects
(2) the US hardwood resource situation, and
(3) the overall trading outlook.

HARDWOOD PRODUCT MARKET TRENDS AND PROSPECTS

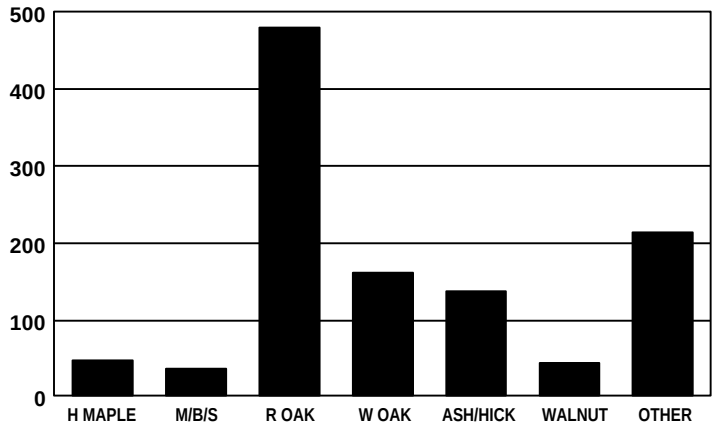
Recent trade overview

When we look at 1987, the most predominant product on the export market is hardwood lumber (64% on a value basis). Veneer (15%) and logs (16%) are also important products. Other further processed products such as plywood, flooring, mouldings and railroad ties make up the remaining 5%. Dimension stock exports can not be accurately determined because they are mixed in with the lumber and flooring statistics. Estimates for 1988 are for over

$1 billion or an overall increase of 44% in hardwood exports from 1987 levels. For 1988, 64% should be lumber, 15% logs, 14% veneer and 7% the 'other' export products.

When looking at the species being exported, United States producers may ship close to 500 million board feet of red oak lumber in 1988. The next species, of course, is white oak and then ash/hickory, then walnut, maple, beech and birch. In what we list as the 'other' category, there is a lot of black cherry, yellow poplar and red alder.

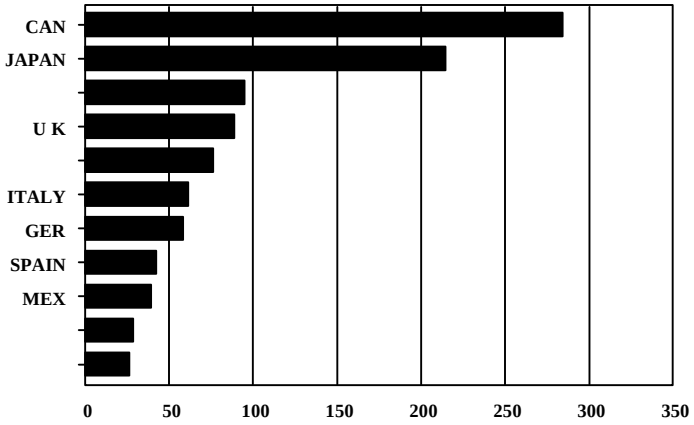
POSSIBLE 1988 HARDWOOD EXPORTS - (MILLION BD FT)



TOTAL=1,100

Who is buying the hardwood lumber? The following chart shows that Canada is followed closely by Japan, and then they are followed by Taiwan, the United Kingdom, Belgium, Italy, West Germany, Spain and other European countries along with Mexico and South Korea. Some of the US exports to Canada are processed and exported to Europe.

POSSIBLE 1988 HARDWOOD LUMBER EXPORTS - (MILLION BD FT)



TOTAL=1100

Exports are important to US primary processors. On a volume basis, we estimate that 10% of our lumber is being exported. On a value basis that translates to about 23% when you add in kiln drying and add in the higher prices for the high grade material being exported.

Total lumber production estimates for the-last 2 years ranged from 9 to 11 billion board feet, which includes an estimated 1 billion board feet increase in production in 1988 (Table 1). According to the latest information from the Food and Agricultural Organisation of the United Nations, the United States produces 13% of the sawn hardwoods in the world. That also makes the United States the number one producer in the world.

Exports have exceeded imports for the last several years. In 1988, we estimate that exports will be over three times greater than imports. The lumber imports are mostly mahogany from South America, Philippine mahogany (lauan) from Asia, and birch and maple from Canada.

Of the total hardwood lumber used in the United States, it is estimated that 50% goes into the pallet and container products and about 30% into the dimension, furniture and cabinet markets.

Table 1. Estimated hardwood lumber production, imports, exports and apparent consumption in the United States for 1987 and 1988

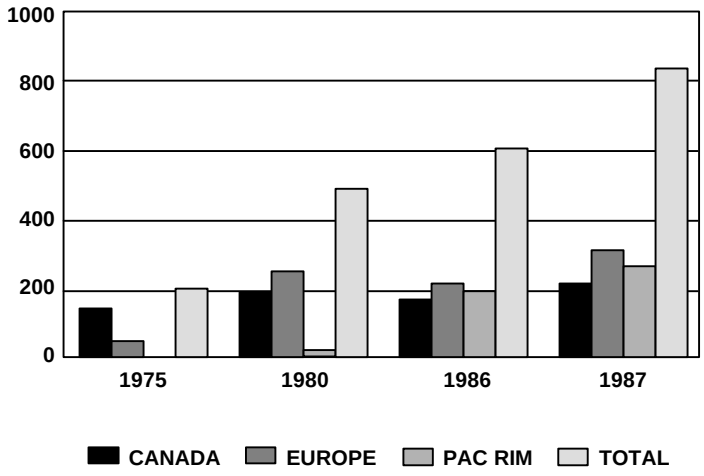
Year	Production	Imports	Exports	Apparent consumption
		(Billion Board Feet)		
1987	9.0-10.0	.5	.7	8.8-9.8
1988	10.0-11.0	.3	1.1	9.2-10.2

Trade has been growing and shifting

Back in 1975, total hardwood exports of logs, lumber and veneer amounted to about 200 million board feet. By 1980 it climbed to close to 500 million board feet. In 1986 it was over 600 million board feet and in 1987, over 800 million board feet. This year we are projecting about 1300 million board feet.

We have had market flow changes over the same period. The Canadian market has remained traditionally strong. The European market came on strong between 1975 and 1980 and has been increasing in the past couple of years. The Pacific Rim market, notably Japan, Taiwan and South Korea was relatively minor in the 70s and in the early 80s and started picking up during the rest of the 80s and accelerated even more in 1986 and 1987. In the US we now look at these three markets as being very equal in total demands. The markets and country demands, however, are quite different in product, species, and grade demands.

HARDWOOD (LOG, LUMBER & VENEER) EXPORTS (Million Board Feet)



Why the increased export?

There are many reasons for the increased demands for US hardwood products here in Europe and in the Pacific Rim market. European demands and those of Japan have keen quite similar. Hardwood users have switched toward the use of more temperate hardwoods. The temperate hardwoods in the US were similar and we have been bullish about filling supply gaps. Taiwanese and Korean demands have been for raw materials to make furniture that they could sell in the US, Canada, Japan and in Europe. They needed species that were popular and looked to US suppliers.

Adding to these reasons why US hardwood exports have increased are the facts that:

- the US is the No.1 producer of sawn hardwoods in the world;
- production capacity has been increasing;
- dry kiln capacity has been increasing at mills and yards;
- suppliers have been attacking exports markets;
- promotional efforts have steadily increased through the 80s; and
- the US has plentiful hardwood resources.

Exports to the United Kingdom

Hardwood exports to the United Kingdom have been increasing for both hardwood lumber and veneer. Exports of US logs to the UK are minor. Total UK demands in 1988 versus 1987 may actually have doubled for lumber and increased by 31% forveneer (Table 2).

Red oak, white oak, and ash are the most popular lumber species demanded. For veneer, white oak by far is the most preferred. Red oak, walnut and possibly black cherry in our 'other' category were also purchased in large quantities.

Table 2. US lumber, and veneer exports to the United Kingdom in 1987 and estimates for 1988.

Species	Lumber		Veneer	
	1987	1988	1987	1988
	(M board feet)		(M Sq ft)	
Maple & Birch	1,666	2,404	1,909	1,192
Red Oak	21,207	43,278	15,636	17,777
White Oak	12,063	20,515	42,775	75,893
Ash/Hickory	7,103	18,477	in 'other'	
Walnut	1,271	3,709	3,591	7,436
Other	4,366	6,877	21,563	8,729
Total	47,676	95,260	85,474	111,747

Future export projections for hardwood

Looking at just the previous trends of major increases in exports and the continued weak dollar, we expect increasing high levels of hardwood exports in the near future. For example, for lumber, we look for around 1,200 million board feet in 1989 and possibly around 1,500 million board feet in the 90s.

How will we meet these increased demands?

The increased demands will be attained by:

- exporting more species in high volumes;
- exporting more upgraded lumber;
- exporting more dimension (rough, semi, and finished);
- exporting more character marked lumber, dimension and veneer; and
- improved processing and utilization of our hardwood resources.

HARDWOOD RESOURCES - WHAT IS THE US SITUATION?

Who owns the forests?

Hardwood timber is predominant on 109 of the 209 million hectares of timberland in the United States (Bones, 1987). Eastern forests which includes the Southern (49%) and the Northern (45%) regions contain most of the hardwood timber. Most of the timberland is owned by farmers and other private ownership (73%). Public ownership is 15.6% and forest industry owns 11.4% of the timberland base.

Where is the hardwood sawtimber?

Bones (1987) reported that in 1987 the total volume of sawtimber-size material in the United States was 1.9 billion m^3. The bulk of the sawtimber is in the North and the South. The West has about 10% of the hardwood sawtimber resources.

The most important species

The major hardwood species highly demanded on the domestic and export markets are the select red and white oaks, yellow birch, hard maple, black walnut, black cherry, and the ashes. This group will be referred to as the select species.

Because US hardwood experts are centred around this group of species and the domestic market for these species is strong, several questions arise that need answers. For instance, if recent wood use trends continue, can the United States continue to supply the export market - can US exports increase? Are US select species resources being depleted? How much secondary-quality material will be produced in the future while generating the needed top-quality clear, or almost clear, export material? (The words quality and grade are synonymous in this paper.)

To answer these questions, we will take a look at the estimated 1985 sawtimber volumes, and percent compound annual resource inventory changes

for the Eastern United States and for the Northern and Southern regions. Next, we will look at the log grade distribution in US commercial sawtimber resources and translate these data into estimated for top-, secondary-, and lower-grade lumber output.

Hardwood sawtimber quantity

The base resource data were compiled from US Forest Service state resource evaluation reports. Data were compiled on all hardwood sawtimber and on the group of select species. The adjusted data to estimated 1985 levels are shown in Table 3.

Table 3. Estimated Eastern sawtimber volumes for 1985 and percent compound annual inventory changes, million m^3 (International 1/4 inch rule).

Saw-timber volumes	All commercial hardwoods	All select hardwoods	Select oaks	Hard maple	Ash , walnut, cherry	Yellow birch
1985 est.	1718	550	323	102	104	21
% change	2.2	2.4	1.8	3.2	3.0	1.5

The Eastern results show that 32% or 550 million m^3 (International 1/4 inch rule), of the 1985 estimated sawtimber inventories are in the select sawtimber species. Of that total, 59% are select oaks; 18% hard maple; 19% ashes, walnut and cherry; and 4% yellow birch. The hard maple and the combined ash, walnut and cherry resources have increased much faster than the select oaks and yellow birch inventories. The select oaks increases may be decreasing due to heavier demands of the last few years. Furthermore, most of the percent compound annual inventory increases presented in Table 3, may start declining due to reported slower growth rates in hardwood growing stock. The slower growth however, will translate into finer textured wood.

Assuming the continuation of past resource-use trends, by the year 2000, the Eastern select species sawtimber resources may have increased by 42% to around 780 million m^3.

Another more complete list of the major hardwood sawtimber by species and region is shown in Table 4 (Bones 1987). The United States has many species that should and will be more important in the future such as the gums, yellow poplar (American tulipwood) soft maple, hichory, and cottonwood. There are sufficient quantities of these species to support increased harvests. All species show positive changes in sawtimber volumes from 1977-1987.

Table 4. Percentage of hardwood sawtimber on timberlands of the United States, by species and region, 1987 (Bones, 1987)

Species	North	South	Region West	All Regions	% Change 1977-87
			(%)		
Select oaks	21.1	16.9		17.0	
Other oaks	13.3	29.7		22.1	
(All oaks)	(34.4)	(46.6)	23.2	(39.1)	(+35)
Hickory	3.8	7.4	–	5.1	+22
Yellow birch	2.4	–	–	1.1	+11
Hard maple	11.1	0.8	–	5.0	+38
Soft maple	10.2	3.5	–	6.0	+66
Beech	4.1	1.9	–	2.6	+23
Sweetgum	0.5	10.1	–	5.0	+22
Tupelo and blackgum	0.4	7.9	–	3.9	+14
Ash	4.7	2.7	–	3.2	+43
Basswood	2.9	0.4	–	1.5	+42
Yellow-poplar	3.8	10.7	–	6.7	+54
Cottonwood and aspen	8.7	0.8	23.7	6.5	+46
Black walnut	0.8	0.3	–	0.4	+60
Black cherry	3.4	0.1	–	1.5	+75
Red alder	–	–	32.0	3.3	+18
Other species	8.8	6.8	21.1	9.1	+11
All species	100.0	100.0	100.0	100.0	+33

Hardwood sawtimber quality

TWO grading systems are used to present information on the quality of the eastern United States standing sawtimber hardwood resources. The first is a log grading system described by Rast et al, (1979) that is used by US Forest Service inventory analysts to define the quality of potential sawlogs in a standing tree. The top grade of logs include veneer logs. The second is a lumber grading system for hardwood lumber that was developed by the National Hardwood Lumber Association (1986 latest issue). In general top grade FAS&Sel (Firsts-and-Seconds and Select) lumber is used for mouldings, millwork, export, and other market demanders of clear or almost clear lumber. Secondary-quality lumber, graded IC (No. 1 Common) and 2C (No. 2 Common) is used by dimension, furniture, cabinet, flooring, and other manufacturers. Material in the below 2C grade area is used as sleepers (ties) and mine timbers, or for the production of pallet parts and flooring.

The base data were developed from the same US Forest Service state resource reports used in the resource quantities section. The results are in Table 5. Potential lumber grade output assumed the production of lumber from the distribution of logs found in the woods. In actual practice, many of the small diameter, low-grade logs and many other larger, low-grade logs are never removed from the forests. Consequently, the quality of logs removed from the winds is actually better than that which is found in the woods. This improves the distribution of sawn lumber produced over the numbers shown in Table 5.

Table 5. Estimated quality of Eastern United States select species sawtimber by log grade and potential output of sawn lumber by lumber grade.

Species	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	26	63	12	21	24	43

The Eastern results show that 15% of the select species are in log grade 1, 24% in log grade 2, and the remaining 61% in log grades 3 and 4. Potential output of sawn lumber by lumber grade for the Eastern United States is 12% in top grade (FAS&Sel), 50% in the lC/2C grades, and 38% in the below 2C grades. The hard maple and yellow birch results are slightly lower and the combined ash, walnut, and cherry (based only on cherry yields) results are slightly higher than the overall percentages.

Generally, the markets for the top grade lumber (FAS&Sel) are the most profitable though output in these grades is limited. On the other hand, sawmillers are satisfied to cover their costs in the sale of below 2C material. Therefore, the lC/2C lumber, which can account for about half of a sawmiller's total production, must have adequate and profitable outlets if the sawmiller's overall profit picture is to be positive.

Summary and the future

The United States 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 substantial quantities of select species, and these resources are increasing and not decreasing as some fear. By the year 2000, US inventories of select export species sawtimber could increase by 42% to 780 million m^3 (International 1/4 inch rule). Thus, it would appear 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.

When considering the quality of the standing sawtimber and the potential output by lumber grade, about 50% of the output is secondary-quality (1C/2C) material. The vitality of the markets for the secondary-quality material dictates the overall economic performance of a sawmill and, therefore, is very important. Improvements in present and potential markets and development of new uses for this quality range of material, such as value-added export dimension, need to be constant goals for US producers and potential products by importing customers.

When considering the hardwood species mix, opportunities for expanded use of species not considered to be select species are great. Some of these species such as yellow poplar (sometimes referred to as American tulipwood) are starting to be used more in the United States and by export customers and this trend needs to be continued.

TRADING OUTLOOK

The future looks good. We have improving production facilities with increasing kiln capacity. We have an increasing sawtimber resource base to draw raw materials from. We have strong domestic and overseas markets. We have increasing demands on our export markets.

The future does look good, but to meet increasing demands in the future we need more demand for some of our abundant 'other' species. We need more demand for upgraded lumber, and high grade dimension

products that we can manufacture from our abundant medium – and low-grade resources. We also need more demand for products that allow minor defects or character marks.

On our side we will continue our efforts to develop improved processing technology for modernisation and better utilisation of our resources.

REFERENCES

Araman, Philip A. 1988. New patterns of world trade in hardwood timber products. Proceedings, Outlook '88, 64th Agricultural Outlook Conference. United States Department of Agriculture, Washington, DC pp 391-401.

Bones, James T. 1987. Hardwood Forest Resources of the United States. Proceedings, Seminar on the valorization of secondary-quality temperate-zone hardwoods, Economic Comission for Europe Food and Agricultural Organization - Timber Committee and the European Forestry Commission, Nancy, France. 11P.

Hanks, Leland F., Glenn L. Gammon, Robert L. Brisbin, and Everette D. Rast. 1980. Hardwood log grades, and lumber grade yields for factory lumber logs. USDA For. Serv. Res. Pap. NE-468. 92p.

Rast, Everette D., David L. Sunderman, and Glen L. Gammon. 1979. A guide to hardwood log grading (revised). USDA For. Serv. Gen. Tech. Rep. NE-1. 32p.

National Hardwood Lumber Association. 1986. Rules for the measurement and inspection of hardwood and cypress. Nat. Hardwood Lumber Assoc., PO Box 34518, Memphis, TN.

Information will also be provided at the conference on panelboard and softwood products trends as follows:

– Production, exports, imports, and consumption
- Plywood portion, Waferboard/OSB portion
- Canadian Waferboard/OSB information
- Particleboard and MDF
- Softwood