

April 1993

NEW HAMPSHIRE FOREST MARKET REPORT 1993

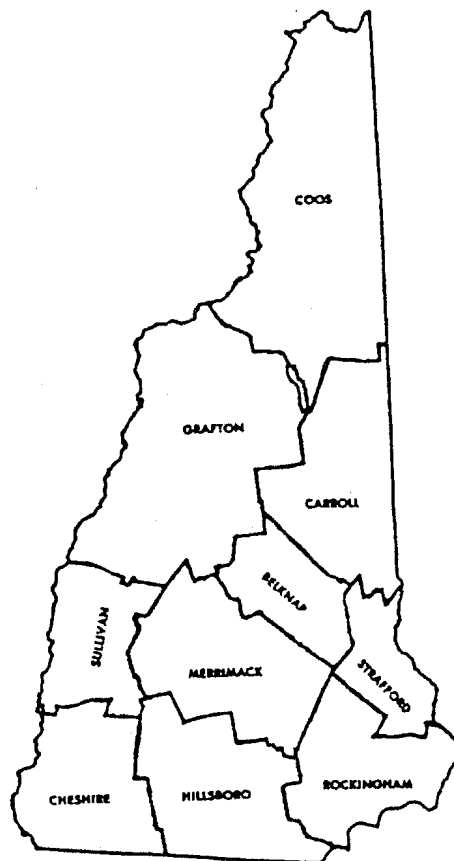


UNIVERSITY OF
NEW HAMPSHIRE

COOPERATIVE  EXTENSION

Helping You Put Knowledge And Research To Work

MAP OF NEW HAMPSHIRE
(Showing Counties)



By

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Marketing and Utilization

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NEW HAMPSHIRE'S EXTENSION FORESTRY PROGRAM

The UNH Cooperative Extension Forestry Program is conducted by County Extension educators in forestry and by Extension Specialists based at the University of New Hampshire at Durham. These educators provide technical information to woodland owners, woods workers, community officials, and processors of primary and secondary forest products.

County Extension educators in forestry and forestry specialists can provide on-site recommendations about the alternative of managing forest stands. This includes advice about planting or naturally regenerating forest land, pruning, pre-commercial weeding and thinning, wildlife habitat improvement, recreational uses, commercial harvesting of sawlogs, pulpwood, biomass or firewood, and marketing of a wide variety of forest products.

Utilization and marketing specialists can provide business management and technical information to timber harvesters, sawmills and other wood industry businesses. This includes recommendations on production control and yield studies, taxes and insurances, personnel, safety, wood processing, and lumber drying.

This is a cooperative program between the University of New Hampshire Cooperative Extension, the Division of Forests and Lands and Fish and Game of the Department of Resources and Economic Development, the U.S. Department of Agriculture, and the U.S. Fish and Wildlife Service.

For additional information or assistance, call UNH Cooperative Extension in Durham or the County Cooperative Extension offices listed on page 3.

The information in this bulletin covering prices and specifications was gathered by the New Hampshire County Extension Foresters and the Utilization and Marketing Specialists. The bulletin was prepared by:

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OUTLOOK FOR CONSTRUCTION IN 1993

Total contracting for new construction in the United States is expected to grow by 8 percent in 1993 to \$267.3 billion, according to F.W. Dodge, a division of McGraw-Hill's Construction Information Group. The recovery which was expected to take a firmer hold this year stalled early on, drawing out the initial state of recovery when compared to previous cyclical rebounds.

Single-family housing and public works—in particular, highways, roads and bridges—will again lead the nation's growth in construction, and while there will be some signs of life in the commercial sector, it will remain bridled by the lingering effects of overbuilding in the 1980s, not to mention scarce credit.

“Commercial building will remain the problem sector of the industry throughout much of next year (1993),” said Robert A. Murray, vice president of economic affairs for F.W. Dodge, in a forecast address to 500 of the nation's top building products executives.

As the nation continues to deal with the problems left in the wake of the 1980s, several limiting factors such as credit availability and demographic influences, indicate that 1993 will be a very different second year of recovery compared to other recoveries.

Housing will lead in 1993. This recovery is like no other because of the unprecedented conditions wrought by the commercial banking sector and the shifting demographics nationwide. Also, there will be little contribution for near-term expansion from non-residential building.

Dodge expects that some of the deferred demand from the 1990-1991 downturn, and now 1992's uneven rebound, will find its way to the construction site in 1993. Single-family housing is slated to grow to 1.05 million units, a 9 percent gain over 1992. The strongest regional gains will likely be in the South Central region, which has demonstrated consistent growth in recent years, and the South Atlantic spurred by rebuilding in the wake of Hurricane Andrew.

The commercial sector will be very weak and for income properties, the problem of excess space will be persistent and further complicated by demographic weakness.

Manufacturing building will remain stalled at its current weak level for another year. Adoption of industrial policy position could stimulate the category's revival beyond what would ordinarily occur.

A promising portion of the industry's growth, public works, should achieve nearly a double-digit gain in 1993. A moderately improved 1993 economy should allow some measure of relief for state governments by the time their next fiscal year begins. Rising employment will expand the tax base while alleviating income maintenance payments, making possible a return to pre-recession priorities.

Looking ahead, as the current recovery unfolds over the next several years, it will differ from previous economic recovery cycles, most notably in the time of turnaround with a slow and extended recovery.

U.S. FORESTS—WHERE DO WE STAND?

To European settlers of the 17th and 18th centuries, one of the most striking features of North America was the extensive forests covering more than 400 million hectares (1 billion acres) of what was to become the United States. Half of the country was forested. Today, the United States has nearly 300 million hectares (730 million acres) of forest, over 30 percent of its land area; this amounts to about 7 percent of world forests. The United States has about 13 percent of the world's temperate forests. By the simple measure of forest area per capita the United States, with only 5 percent of world population, remains well endowed with forests. However, little of the forest that existed in the 17th century remains; less than 10 percent of the U.S. forest area is undisturbed by recent human use or management.

Well over half of U.S. forests are privately owned, reflecting an important aspect of the U.S. approach to forest management. The United States accounts for about 40 percent of the world's private forests. Reliance on privately owned and managed forests is greater only in the Nordic countries—where the relative importance of the forest sector in national economies is considerably higher as well. Private ownership of forests is very small in Canada, although some public forests are privately managed on a long-term basis. About one half of the area of European forests, and 20 percent or less of the forest area of tropical countries is privately owned.

Relative to the rest of the world, a higher proportion of U.S. forests, both public and private, are managed; "managed" refers to some degree of control over forest use. Half of the closed forest area of the United States is managed; world-wide, one third of closed forests are managed. Nearly all of the closed forests of Europe are managed. The United States also reserves from exploitation a significant portion of its forests; about 10 percent are removed from timber production to provide other services such as conservation or recreation. The United States accounts for about one quarter of world forests in this category, and accounts for nearly half of protected, closed forests in the temperate zone.

In the last decade, the forest area of the United States declined by about 2 million hectares, less than 1 percent. Some land was removed from agricultural production and reforested, but this did not offset conversion of forests to urban uses. Loss of another 7 million hectares (3%) of forest is expected over the next two decades; nearly all forest conversion will be to uses other than agriculture, primarily to support urban development. The decline in forest area in the United States is quite small compared to total world deforestation. The United States accounted for about 1 percent of the net loss in forest area over the past decade. However, the decline in U.S. forest area contrasts sharply with trends in other developed, temperate zone countries. Over the past four decades, forest area increased in Europe (especially France, Germany, and the United Kingdom), and in Japan.

Globally, timber remains the primary product removed from forests. The U.S. share of world timber inventory is proportional to its share of world forest area, but the U.S. share of timber production is significantly higher. The United States produces one fourth of the industrial timber harvested in the world and sustains high rates of timber production across diverse forest types, at a scale greater than any other country, and in support of diverse forest industries. Sustained production on a national basis has depended, in part, on the ability of timber using industries to shift among regions within the United States. Nevertheless, measured in terms of harvest volume per hectare of exploitable forest, U.S. rates of production are equalled in some European countries, but are exceeded in few.

U.S. accomplishments in managing forests and producing forest products are overshadowed only by our appetite as consumers of forest products. On a per capita basis, the United States consumes timber at more than double the average for developed countries, and more than four times the average for developing countries. Relatively high rates of timber consumption reflect U.S. wealth—measured in terms of income and abundant forests—and patterns of social development. Like a few other heavily-forested, developed countries, and unlike many other developed and developing countries, the United States consumes timber in place of other materials in a wide variety of uses. The United States consumes nearly 30 percent of the world's production of industrial timber. The United States is a net importer of forest products, however, and is the world's leading importer of forest products. At the same time, we are also one of the leading exporters of forest products.

Finally, consider U.S. public spending on natural resource management, including forest management and protection. Annual federal and state expenditures are substantial, measured in billions of dollars. U.S. expenditures represent a significant proportion of world expenditures, perhaps as much as 40 percent. These data do not include any estimates of costs of managing private forests. The U.S. share of forestry research expenditures, public and private, is about 20 percent of the world total. Although these amounts and shares are substantial, U.S. expenditures are not the highest among developed countries in terms of share of Gross National Product, or expenditures per hectare of forest. Nevertheless, the scale of effort is an important contributor to U.S. accomplishments in terms of management, productivity, and conservation of forests.

1993 PRICE RANGE FOR FOREST PRODUCTS

**Table I. Price Range Standing Timber (Stumpage) and Sawlogs
Per Thousand Board Feet (MBF)**

Prices quoted are an average range for the county. Prices will vary depending on quantity, quality, access, and market conditions. More specific prices can be obtained by contacting Consulting Foresters or industry representatives.

Belknap County

Species	Quality	Stumpage	Delivered
White Pine	Low (8')	\$10-30	\$75-110
	Medium	65-85	150-180
	High	90-115	200-230
Red Pine		30-50	110-140
Hemlock		15-40	100-135
Red Oak	Medium	150-200	275-350
	High	225-450	450-850
White Ash	Medium to High	80-200	150-450
White Birch	Medium to High	60-100	150-275 +
Sugar Maple	Medium to High	80-140	210-550 +
Red Maple	Sawlog	25-50	115-175
Beech	Sawlog	25-50	120-175
Pallet		15-30	90-120
Fuelwood (per cord)	Long	7-10	
Hardwood Pulp (per cord)	Long	4-6	45-47
Pine Pulp (per cord)		1.00-3.00	45-56
Hemlock Pulp (per cord)		1.00-5.00	50-55
Biomass Fuel Chips		.25-1.25	15-18
Oak Veneer	Veneer	400-750	700-1000 +

Carroll County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$15-20	\$70-90	\$100-110
	Medium	70-100	120-150	150-190
	High	100-150	150-190	190-230
Red Pine	Medium	20-35	80-100	100-120
	High	35-50	100-130	110-150
Hemlock	Medium	20-35	65-80	90-110
	High	35-50	80-100	110-130
Spruce	Medium	30-60	85-100	110-150
	High	60-75	100-120	120-150
Ash	Low	40-70	90-150	135-200
	Medium	70-150	210-300	250-400
	High	140-230	300-400	400-500
Beech	Low	20	45	60
	Medium	25-30	50-80	65-80
	High	35-60	80-135	130-150
Beech Boltwood	High	20	30-35	70-90
Red Maple	Low to High	20-40	70-90	90-180
Sugar Maple	Low	25	60	90-130
	Medium	40	90	130-150
	High	70-100	110-175	175-300

Carroll County (Continued)

Species	Quality	Stumpage	Roadside	Delivered
Paper Birch	Low	\$60	\$80	\$110-140
	Medium	75	120	140-170
	High	90-100	165	170-200
Paper Birch Boltwood	Medium	30/cord	40-50/cord	70-100/cord
Yellow Birch	Medium	60-80	70-80	120-160
	High	80-100	140-190	160-225
Oak	Low	30-100	60-120	90-150
	Medium	100-250	120-350	150-400
	High	250-500	250-400	400-900
Mixed Hardwood	Pallet	25-45	70-95	110-120
Hardwood Pulp	per cord	6-10	30-35	47-50
Softwood Pulp	per cord	3-10	19-36	45-52
Fuelwood Chips		0-1.00/ton		

Cheshire County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	\$50-95	\$90-150	\$110-220
Red Pine	Sawlog	40-65	85-120	100-165
Hemlock	Sawlog	25-40	80-100	95-135
Spruce	Sawlog	40-65	90-135	115-175
Beech	Sawlog	30-50	85-110	110-165
Poplar	Sawlog	30-45	65-85	95-135
Red Maple	Sawlog	30-50	60-90	100-160 +
Red Oak	Low	125-200	210-260	200-225
	Medium	200-275	260-325	275-400
	High	275-425 +	325-500 +	400-600 +
Sugar Maple	Sawlog	60-95	90-185	135-225 +
White Ash	Sawlog	100-200 +	175-250 +	200-300 +
White Oak	Sawlog	100-175	125-200 +	200-250 +
White Birch	Sawlog	40-60	90-130	120-160
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Yellow & Black Birch	Sawlog	45-90	100-160	120-240
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Mixed Hardwood	Pallet	30-45	70-100	80-120
	Tie Log	25-40	65-100	95-130

Coos County

Species	Quality	Stumpage	Delivered
White Pine	Low to Medium	\$30-65	\$100-210
		65-115	230-330
Red Pine	Sawlog	40-65	150-215
Spruce-Fir	Sawlog	50-95	185-235
Hemlock	Sawlog	20-45	110-140
Hard Maple	Sawlog	60-125	220-400
Soft (Red) Maple (Tie Logs)	Sawlog	20-45	120-160
White Birch	Sawlog	60-100	180-240
	Boltwood	55-80	90-120

Coos County (Continued)

Species	Quality	Stumpage	Delivered
Beech	Sawlog	\$15-40	\$140-200
Yellow Birch	Sawlog	40-130	160-300
	Boltwood	30-70/cord	90-165
Red Oak	Sawlog	75-275	275-600
White Ash	Sawlog	60-150	175-350
Basswood	Sawlog	15-60	140-260
Mixed Hardwood (Pallet & Tie Stock)	Sawlogs	15-40	135-140
White Birch	Veneer	125-300	300-800
Yellow Birch	Veneer	125-400	300-1000
Sugar Maple	Veneer	125-250	700
White Ash	Veneer	200-250	600-700
Red Oak	Veneer	200-500	500-1200

Grafton County

Species	Quality	Stumpage	Delivered
White Pine	Low (8'-10')	\$50-60	\$75-125
	Medium	75-85	140-250
	High	100-120	200-300 +
Hemlock	Sawlog	20-30	100-130
Spruce-Fir	Sawlog	55-75	115-200
Red Pine	Sawlog	30-50	115-175
Yellow Birch	Sawlog	80-100	185-275 +
Sugar Maple	Low	80	160
	Medium	150	230-275
	High	200-250	275-400 +
White Birch	Sawlog	75-125	170-280
Red Maple	Sawlog	25-40	80-200
White Ash	Sawlog	85-150	150-350
Beech	Sawlog	20-40	80-200
Red Oak	Low	100	180-200
	Medium	150-275	225-275
	High	250-350	300-550
Poplar	Sawlog	25-40	90-170
Pallet Mxd. & Tie Logs	Sawlog	20-30	80-125
White Birch	Veneer	150-250	280-350 +
Yellow Birch	Veneer	200-250	300-500 +
Sugar Maple	Veneer	300-400	400-700 +
White Ash	Veneer	200-300	330-450 +
Red Oak	Veneer	400-600	700-950 +

Hillsborough County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$60-65	\$85-100	\$120-130
	Medium	75-85	100-115	130-165
	High	90-110	120-140	180-200
Hemlock	Low	30-35	70-75	90-110
	High	40-45	85-90	100-110
Red Oak and W. Ash	Low	85-125	140-185	175-230
	Medium	150-200	230-300	250-400
	High	250-350	325-400	500-700
	Veneer			600-850 +
Other Hardwoods				
Birch, Maple	Low	40-50	70-90	100-150
Mixed Hardwood	High	85-120	150-200	200-300
Pallet Stock	Logs	30-40	—	90-130

Merrimack County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$50-65	\$80-115	\$90-120
	Medium	70-90	100-110	120-160
	High	70-120	140-160	165-230
Hemlock	All	25-35	70-90	80-125
White Birch	Medium	30-50	80-110	100-160
	High	60-100	100-140	200 +
Hard Maple	Medium	40-60	100-110	120-140
	High	60-130	110-160	175-300
White Ash	Medium	40-175	140-200	100-250
	High	175-200	200-350	250-400
Red Oak	Medium	150-300	200-350	225-400
	High	300-400	350-500	350-600
Pallet Stock	Logs	25-40	75-100	80-125
White Pine	Tie Logs	15-30	70-90	100-110

Rockingham County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$60	\$110	\$90
	Medium	80	120	140
	High	130	140	200
Hemlock	Sawlogs	30-45	85	100-120
Red & White Oak	Medium	120-150	160-185	200 +
	High	300 +	310-350	400-800
White Ash	Medium	150	120	250
	High	200	150	400

Strafford County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low to Medium	\$35-80	\$80-150	\$90-185
	High	100-125	140-170	185-220
Hemlock	Low to Medium	20-30	60-75	85-110
	High	35-40	75-85	100-120
Red Oak	Low to Medium	100-200	175-275	200-350
	High	200-450	275-475	375-575 +
Other Hardwoods	Low to Medium	40-70	90-120	115-155
	High	100-125	150-175	205-230
Birch—Yellow, White, Black	High	100-120	150-200	200-350
White Ash	High	100-150	150-200	200-350
Biomass		1.00-1.25/ton		

Sullivan County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$15-60	\$75-110	\$90-160
	Medium	55-90	120-140	150-180
	High	70-110	135-175	175-220
Hemlock	Sawlog	20-35	85-110	125-140
Spruce	Sawlog	25-70	100-140	135-180
Yellow Birch and Black Birch White Birch	Sawlog	50-85	120-170	150-230
Sugar Maple				130-280
Red Oak	Sawlog	80-150	125-295	175-325
	Sawlog	225-375	350-460	400-600
	Veneer	325-500	750-1000	750-1100
White Ash	Sawlog	100-200	170-270	250-400
Red Maple	Sawlog	25-50	80-110	120-140
Pallet		15-30	80-100	100-125
Other Hardwoods		25-60	80-170	120-200

Table II. Prices Pulpwood Per Cord*—Northern New Hampshire

Species	Stumpage	Roadside	Delivered	
			Per ton	Per cord
Spruce and Fir	\$14.00-19.00		\$23.26-37.20	\$50.00-80.00
Hemlock	3.00-9.00		19.77-25.29	43.00-55.00
Tamarack, Red Pine White Pine	3.00-6.00		19.77-25.29	43.00-55.00
Hardwood				
	4.00-8.00		18.10-20.50	47.00-52.00

*Pulpwood is weight scaled at the mills in green ton equivalents. Converting factors to cords vary according to species.

**Table II. (Cont'd.)
Prices Pulpwood Per Cord—Central New Hampshire**

Species	Stumpage	Delivered	
		Per ton	Per cord
Mixed Softwood Pulp	\$5.00-10.00	\$14.00-20.00	\$35.00-44.00
Pine	2.00-5.00	15.50-17.00	33.00-40.00
Hemlock	5.00-10.00	15.00-30.00	35.00-75.00
Spruce and Fir	6.00-10.00	14.00-26.00	40.00-55.00
Mixed Hardwood	5.00-8.00	15.00-22.00	45.00-55.00
Random Length Hardwood	—	15.00-20.00	44.00-50.00
Mixed Hardwood including Poplar	—	15.00-22.00	40.00-45.00

Prices of Pulpwood Per Cord—Southern New Hampshire

Species	Stumpage	Roadside	Delivered
Softwood Pulp	\$0.50-1.50/ton	\$12.00-26.00/ton	\$15.00-31.00/ton
	1.00-5.00/cord	20.00-35.00/cord	40.00-55.00/cord
Random Length			
Mixed Softwood	3.00-5.00	15.00-30.00/cord	14.00-16.50/ton
Mixed Hardwood	6.00-10.00		14.00-20.00/ton
Biomass (mixed)	1.00-1.25/ton		12.00-18.00/ton

Table III. Price of Debarked and Chipped Stemwood Per Green Ton

	Delivered
Pine, Hemlock, Tamarack	\$32.00-38.00/ton
Hardwood (mixed)	32.00-38.00/ton

Price of Pulp Chips (Paid in New Hampshire)

	Produced from Slabs and Edgings (Clean, Screened, Bark free)	
	F.O.B. Sawmill Per Green Ton	Delivered to Pulp Mill Per Green Ton
Pine and Hemlock	\$12.00-16.00	\$20.00-26.00
Spruce and Fir	14.00-18.00	20.00-40.00
Hardwood (mixed)	12.00-15.00	18.00-25.00

Average Price of Total Tree and Fuel Chips

	Spout Prices (including stumpage)	Delivered	Stumpage
Biomass Fuel: Mixed Species	\$12.00-15.00/ton	\$15.00-19.25/ton	\$1.00-2.00/ton
Sawdust		\$10.00-13.00/ton	Tops for Biomass
Sawdust and Bark Combination	\$0.15-0.18/cu. ft.	11.00-15.00/ton	\$0.50/ton
Bark Fuel (Processed)		11.00-18.00/ton	

Table IV. Price Range Boltwood, Posts, Poles, Piling, Cross Ties, and Switch Ties

Species	Stumpage	Roadside	Delivered at Mill
White Birch	Boltwood Per Cord ¹		
	\$55.00-80.00	\$95.00	\$90.00-120.00 per cord

1. Price per cord varies according to diameter and length of bolt. Some mills prefer to buy by the MBF.

Guardrail Posts, Utility Poles and Piling

Species	Min. Small End Diameter	Max. Large End Diameter	Length	Delivered
Posts				
Red Pine Pitch Pine White Pine Spruce	5"	10"	7' or Multiples	\$1.75 ea.
Poles and Piling				
Red Pine Pitch Pine	7"	17"	40'	\$0.80-1.00/lin. ft.

Railroad Crossties and Switch Ties

Product	Size	Oak Ties Per MBF	Mixed Hardwood Ties ¹ Per MBF
Ties	(7" x 9" x 8'6")	\$310.00	\$340.00
Ties	(7" x 9") (Oak only)—12'-16' long	\$330.00-375.00 +	

1. Beech, Birch, Maple, Cherry, Ash, Hickory

Table V. Price Range of Hardwood Fuelwood Per Cord

Species	Stumpage	Roadside	Delivered Buyers Premises
Hardwood 4' Wood 12", 14", 16" Lengths Slabs (Hardwood or Softwood) Dry Fuelwood, 16 inches Tree length loads of Cordwood Southern N.H. Northern N.H.	} \$5.00-12.00 5.00-10.00 6.00-10.00	\$32.00-60.00 60.00-80.00 15.00-40.00 25.00-45.00 25.00-40.00	\$50.00-100.00 75.00-130.00 25.00-55.00 120.00-150.00 40.00-60.00 40.00-60.00

Table VIII. Representative Trucking Costs* (Trucks with Loaders)

Sawlogs: Local deliveries		\$35.00-55.00 per MBF
Distant deliveries		30.00-35.00 per MBF for the first 10 miles and 40¢ to 75¢ for each additional mile per MBF
		OR
Cordwood and Pulpwood:		35.00 to 50.00 per hour
Lumber and Chips:		11.00-29.00/cord 2.00-2.50 per loaded mile

*For short hauls or partial loads minimum charges may apply.

NEW HAMPSHIRE CHRISTMAS TREE SITUATION—1992-1993

Overall, the 300 or more New Hampshire Christmas tree producers experienced a good season in 1992. While a national and regional tree surplus exists, some producers report a slight increase in demand for their trees.

Prices remained steady with very little if any price reduction by some producers to attract wholesale orders. Retail reports indicate strong sales and steady pricing with few trees left unsold.

Choose and cut operations continue to report good sales and some increases over last year. As predicted, some choose and cut producers are also starting to wholesale trees to local markets. Retailers often find they can order fewer trees at a time locally through this type of arrangement. As more first rotation trees come on the market from smaller part-time plantations, this trend is expected to continue.

New choose and cut plantations continue to come into the marketplace. While some may not be for the long-term, they are providing keen competition amongst each other. Increased and innovative advertising and auxiliary activities (hay rides, santa, etc.) are quite evident.

Some displacement of imported trees (Canada, mid-west and southern states) is occurring, but it appears that most of trees available at the retail level are still from non-New Hampshire plantations. Imported trees are necessary to meet in-state consumption of real trees.

Over 50% of the trees in the country used for yule celebrations are artificial, a trend that is causing a concern nation-wide. Coupled with large mid- and northwest wholesale producers "dumping" trees at below production prices in some areas of the country, it appears that a less than vigorous industry strength or growth is four or five years away.

Despite the national picture, New England and particularly New Hampshire isn't experiencing some of the oversupply problems as critically as other regions.

While the outlook for New Hampshire's Christmas tree industry remains positive, aggressive, cooperative marketing efforts, providing a quality tree at a competitive price, are needed to keep the industry strong. Maintenance of existing plantations is encouraged to market business, while expansion or new establishment in the industry is not recommended in this 8-10 year period.

Table VIII. Wholesale Price Range of Christmas Trees and Boughs

	Roadside 6-8' Trees		Delivered
	Grade 1 ^(a)	Grade 2	
Balsam Fir	\$14.00-20.00	\$7.00-14.00	Trees mostly \$12.00-25.00 ea. depending on species, quality, and quantity. \$1.00-2.00/tree or \$2.50 per loaded mile
White Spruce	7.00-12.00		
Scotch Pine	8.00-10.00	5.00 +	
Blue Spruce	14.00-16.00	10.00 +	
White Pine	10.00-12.00	5.00	
Fraser Fir	15.00-24.00	12.00-17.00	
BOUGHS (baled or tied)			
Balsam Fir 50 lb. bundle	\$5.50-10.00	\$220.-340./ton	
Pine 50 lb. bundle	5.50-7.50	220.-300./ton	
Wreaths—Size 12" to 14"	(Ring Size)		
Balsam Fir—single faced	\$2.75-3.50 ea.		
double faced	3.50-5.00 ea.		

(a) No uniform grading system is in use statewide. Grades based on foliage density and symmetry.

Table IX. Retail Price Range of Single Christmas Trees

White Pine Scotch Pine Balsam Fir White Spruce	(Select and cut your own) \$15.00-35.00 per tree or \$3.00-5.00 per lineal foot	
Douglas Fir Norway Spruce Blue Spruce Fraser Fir		

MAPLE SITUATION: 1993 MARKET REPORT

In 1992, the maple syrup production level continued its upward trend. For New England, the region experienced a 28 percent increase over 1991, a year which saw an increase of 18 percent over the previous year.

Outside New England, throughout the maple region extending to Wisconsin and Canada, maple production levels also rose. New York State had its best year in 25 years. The net effect on this trend of increased production has resulted in the supply exceeding demand with an obvious need to expand/develop markets for maple products. Prives for maple have been decreasing.

In New Hampshire, the 1992 level of production increased by 16 percent to 94,000 gallons. The 1991 production level was 81,000 gallons, an output increase of 25 percent over the previous year. While prices have dropped as much as 10 percent in the other New England states, most dramatically in Vermont and Maine, prices in New Hampshire are relatively stable but are expected to drop in response to the over supply situation.

New Hampshire producers marketed their syrup as follows: retail sales—55%, wholesale—30%, and bulk—15%. The drop in bulk prices has prompted producers to expand wholesale markets, with a slight drop in the retail sales method.

Since N.H. does not produce enough syrup for the market demand, maple syrup is imported, and marketed lower than producer prices. This is starting to have a dramatic influence on producer generated sales/prices—the full ramifications are unknown, largely dependent upon the 1993 crop.

The international maple industry continues to be fragmented in its efforts to increase demand—generic promotion, marketing, and consumer education. Several initiatives are being explored, but none appear imminent. Obstacles include parochial attitudes of the individual states and Canada. Canadian production levels (infrastructure capacity) may be reduced by about 15 percent due to the curtailed use of the paraformaldehyde pellet—now illegal in both the U.S. and Canada.

Table X. Average Maple Sap Prices at Sugar House in New Hampshire*

% sugar	¢/gal.	% sugar	¢/gal.
1.5	8.6	3.6	33.6
1.6	10.1	3.7	34.8
1.7	11.7	3.8	36.0
1.8	13.0	3.9	37.0
1.9	14.3	4.0	38.2
2.0	15.5	4.1	39.3
2.1	16.6	4.2	40.5
2.2	17.8	4.3	41.6
2.3	18.9	4.4	42.7
2.4	20.0	4.5	43.9
2.5	21.2	4.6	45.0
2.6	22.3	4.7	46.1
2.7	23.4	4.8	47.3
2.8	24.6	4.9	48.4
2.9	25.7	5.0	49.5
3.0	26.9	5.1	50.6
3.1	27.9	5.2	51.8
3.2	29.1	5.3	53.0
3.3	30.3	5.4	54.0
3.4	31.4	5.5	55.2
3.5	32.5		

*Maple Syrup Digest, Feb. 1993

Table XI. Prices for Table Grade Maple Syrup and Products at Producers

Volume	Maple Syrup Retail	Wholesale		Bulk Wholesale			
1 gallon	\$31.40	\$21.70		Grade "A" per 1 lb.			
gallon	18.00	12.30		light amber	\$1.25		
1 quart	10.80	6.85		medium amber	\$1.15		
1 pint	6.30	4.10		dark amber	\$1.10		
pint	3.70	2.90		Grades "B" and "C"			
				\$1.00/lb.			
Maple Products—Retail		Sugar	1 lb.	\$7.00	Candy	lb.	\$4.50-7.00
		Cream	1 lb.	7.00			

Rent Price Per Tap Hole

Tap hole rentals: 20 to 30 cents per tap with average being 25 cents. Sugar Maples in the woods, which are not too easy to get to, average 20 cents per tap; while easily accessible trees and roadside trees average 30 cents per tap.

FOREST PRODUCTS LABORATORY PUBLICATION LISTS

LISTS OF PUBLICATIONS dealing with research projects of the U.S. Forest Products Laboratory or relating to special interest groups are available from the Director, Forest Products Laboratory, P.O. Box 5130, Madison, Wis. 53705. Separate lists have been compiled for each of the following subjects: Box, Crate, and Packaging Data; Drying of Wood; Fire Protection; Glue and Plywood; Growth, Structure, and Identification of Wood; Furniture Manufacture; Logging, Milling, and Utilization of Timber Products; Mechanical Properties of Timber; Structural Sandwich; Plastic Laminates and Wood-Base Components; Thermal Properties of Wood; Wood Finishing Subjects; Wood Preservation; Architects, Builders, and Engineers.

METRIC EQUIVALENTS—LUMBER AND PULPWOOD

(Source: Anthony Binek, 1973)

Lumber						
X	1 MBF	=	2.36 m ³	=	83.33 cu. ft.	X
	1 m ³	=	423 bd. ft.	=	35.31 cu. ft.	
Pulpwood						
X	1 m ³ = 35.31 cu. ft. Solid wood content of a cord may vary between 75 and 90 cubic feet or 2.12 m ³ and 2.55 m ³ . (Example: 1 cord = 85 cu. ft. = 2.40 m ³)				X	

CONVERSION FACTORS AND UNITS OF MEASUREMENT FOR FOREST PRODUCTS

A knowledge of the common units of measure for the various forest products is of importance to persons involved in the marketing process. These units of measure form a basis for common understanding between buyer and seller. Familiarity with these units can mean a greater financial return and a reduction of the chances of misunderstanding of the terms of forest products sale agreements.

The Blodgett rule is the official standard in New Hampshire. Several other rules are also in use by mutual agreement between buyer and seller. However, the International Rule, $\frac{1}{4}$ " kerf, is most commonly accepted.

The volume of a standing tree or log is determined using tree and log rules. These rules simply give the approximate number of board feet of sawed lumber that may be manufactured after allowed for milling losses in slabs, edging and sawdust.

Tree Scale (Tree Volume Measurement)

To determine the board foot content of standing trees, tally the trees by:

- 1) D.B.H. (Diameter Breast Height = measurement of diameter of tree $4\frac{1}{2}$ ft. above ground)
- 2) Estimate the number of 16 foot logs to 6 inch top diameter
- 3) Apply the scale given in Table below

Tree Scale—International Rule

D.B.H. Inches	Number of 16 foot logs—to 6" top						
	1	1½	2	2½	3	3½	4
6	10	15					
8	20	35	50				
10	40	55	70	85	95		
12	60	75	95	110	125	145	165
14	85	110	135	150	165	190	215
16	110	150	190	215	240	260	285
18	140	195	245	285	320	345	370
20	180	245	310	355	400	435	465
22	220	300	380	445	505	545	585
24	270	365	460	540	615	670	730
26	320	435	550	645	735	805	875
28	370	515	655	760	870	950	1035
30	430	595	760	885	1010	1110	1205

Log Rule

To determine the board foot content of sawlogs, tally the logs by:

- 1) Average Diameters at the small end and inside the bark and by lengths
- 2) Apply volumes from the table given in Table below and total

The International Log Rule

¼-inch Saw Kerf

Diameter (Small end inside bark) Inches	Length of Log in Feet						
	8	10	12	14	16	18	20
4		5	5	5	5	5	10
5	5	5	10	10	10	15	15
6	10	10	15	15	20	25	25
7	10	15	20	25	30	35	40
8	15	20	25	35	40	45	50
9	20	30	35	45	50	60	70
10	30	35	45	55	65	75	85
11	35	45	55	70	80	95	105
12	45	55	70	85	95	110	125
13	55	70	85	100	115	135	150
14	65	80	100	115	135	155	175
15	75	95	115	135	160	180	205
16	85	110	130	155	180	205	235
17	95	125	150	180	205	235	265
18	110	140	170	200	230	265	300
19	125	155	190	225	260	300	335
20	135	175	210	250	290	300	370
21	155	195	235	285	320	365	410
22	170	215	260	305	355	405	455
23	185	235	285	335	390	445	495
24	205	255	310	370	425	485	545
25	220	280	340	400	460	525	590
26	240	305	370	435	500	570	640
27	260	330	400	470	540	615	690
28	280	355	430	510	585	665	745
29	305	385	465	545	630	715	800
30	325	410	495	585	675	765	860

Pulpwood

Pulpwood is generally sold by the cord or on the weight basis.

The Cord: A standard cord is generally accepted as equivalent to a pile of closely stacked wood 4 feet high, 4 feet deep and 8 feet long containing a gross volume of 128 cu. ft.

Solid Wood Content of a Cord of Pulpwood

The solid wood content of a cord of pulpwood is dependent on many factors such as:

- 1) The average diameter of the bolts
- 2) Tightness of piling
- 3) Limbing practice and knottiness
- 4) Taper and straightness of individual bolts
- 5) Amount of bark rubbed off prior to scaling
- 6) Period of time between piling and scaling (shrinkage and compaction during transportation)

The volume given in the Table below are *averages* and are commonly used as conversion factors.

Solid Wood Content of a Standard Cord

1 standard cord (4' × 4' × 8')	=	128 cubic feet of wood, bark, and air spaces
1 standard cord of pulpwood, rough	=	85 cubic feet of solid wood (softwood)
1 standard cord of pulpwood, peeled	=	95 cubic feet of solid wood (softwood)
1 standard cord of pulpwood, rough	=	85 cubic feet of solid wood (hardwood)
1 standard cord of pulpwood, peeled	=	95 cubic feet of solid wood (hardwood)
1.7 to 2.0 cord	=	1000 board feet

When green rough pulpwood is purchased by weight, the following weight-volume equivalents are generally accepted:

- 5600 – 5700 pounds = 1 cord (hardwood)
- 4300 – 4700 pounds = 1 cord (softwood)

Cordwood

New Law—State of New Hampshire

The change in RSA 438:20 is: "All nomenclature, procedure, and methods of sale of commodities in this state shall comply with the National Institute of Standards and Technology Handbook 130 and all amendments to such handbook, unless otherwise provided in this chapter."

A Cord is 128 cubic feet "ranked and well stowed"—Pieces of wood are placed in a line or row, with individual pieces touching and parallel to each other, and stacked in a compact manner.

Except for small packages less than 4 cubic feet and logs, firewood shall be advertised, offered for sale, and sold only by measure, using the term "cord" and fractional parts of a cord, or the cubic meter.

Except as noted above, firewood shall be sold by the cord and a cord is 128 cubic feet.

**Stacked Volume of a Cord of Wood,
Cut and Split (New Law 1989)**

Length	Approximate Cu. Ft.
48"	128
24"	128
16"	128
12"	128

**Approximate Weight and Heating Value Per Cord (128 cut. ft.) of Cordwood
of Different Woods, Green and Air Dry (Approximately 20% Moisture Content)**

Woods	Weight, lb. per cu. ft.	Weight, lb.	Available Heat, Million BTU ¹	Equivalent in Gallons of Fuel Oil ²
	Green	Air Dry	Air Dry	
Ash	48	4,300	25.0	255
Aspen	43	2,700	15.6	160
Beech, American	54	4,700	27.2	277
Birch, yellow	57	4,600	26.1	271
Elm, American	54	3,625	21.5	220
Hickory, shagbark	63	5,300	30.7	314
Maple, red	50	4,000	23.2	238
Maple, sugar	56	4,600	26.6	271
Oak, red	64	4,600	26.6	271
Oak, white	63	4,900	28.4	290
Pine, eastern white	36	2,600	15.0	154

1. 50 to 60% efficiency of burning unit.
2. 70% efficiency of furnace.

Variation of Heating Values of Wood Due to Moisture

—Percent of Moisture—	—Percent of Usable Heat—
0 (oven dry)	103.4
4	102.7
20 Air dried Hardwood	100.00 7,250 BTU*
40	96.5
80	89.7
100 (Green Hardwood)	85.0

*BTU is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.

**Approximate Number of Trees per Cord
for Peeled Pulpwood and Cordwood**

Tree Diameter at 4½ Feet	Number of Trees
5"	50
6"	25
7"	16
8"	12
9"	10
10"	8
11"	6
12"	5
14"	3
16"	2.5
18"	2
22"	1

**Calculated Sawdust Weights in Pounds Per Cubic Foot
at Selected Moisture Contents¹**

Moisture Content Level		Species and Compaction Classes							
		White Pine			Red Oak			Red Maple	
Percent	Percent	Light	Shaken	Packed	Light	Shaken	Packed	Light	Shaken
Oven-	Green								
dry	Basis	7.7	9.7	13.2	11.0	13.9	16.8	8.9	12.2
5	4.8	8.1	10.2	13.7	11.5	14.6	17.3	9.3	12.8
10	9.1	8.5	10.7	14.0	12.1	15.3	17.7	9.8	13.4
15	13.0	8.8	11.1	14.5	12.6	16.0	18.3	10.2	14.0
20	16.6	9.2	11.6	14.9	13.2	16.7	18.9	10.7	14.6
25	20.0	9.6	12.1	15.2	13.7	17.4	19.5	11.1	15.2
30	23.1	10.0	12.6	15.5	14.3	18.1	20.0	11.6	15.9
50	33.3	11.5	14.5	17.3	16.5	20.8	22.8	13.3	18.3
75	42.8	13.5	17.0	19.5	19.2	24.3	26.2	15.6	21.3
100	50.0	15.4	19.4	22.0	22.0	27.8	31.0	17.8	24.4
125	55.5	17.3	21.8	25.0	24.7	31.3	36.0	20.0	27.4
140	58.3	18.5	23.3	27.1	26.4	33.3	40.0	21.4	29.3

1. Weights by each compaction class are mean values calculated to be within $\pm \frac{1}{2}$ pound of the true mean value at the 95 percent confidence level.

Railroad Tie Volume Table

Grade	Dimensions	Bd. ft. volume per tie	No. of Pcs. per MBF
1	6" × 7" × 8'6"	29.7	33.7
2	6" × 7" × 8'6"	29.7	33.7
3	6" × 8" × 8'6"	34.0	29.4
4	7" × 8" × 8'6"	39.6	25.2
5	7" × 9" × 8'6"	44.6	22.4

Lumber (Square Edge)

The standard unit of measure for lumber is the board foot. It is equivalent to $\frac{1}{12}$ of a cubic foot such as a board 12 inches by 12 inches and 1 inch thick.

Board foot measurements refer to rough lumber. Surfaced lumber is tallied on the basis of width and thickness before surfacing.

To calculate the board footage of lumber, for each piece multiply the width in inches by the thickness by the length in feet and divide by 12.

Example:

$$\frac{6'' \text{ wide} \times 2'' \text{ thick} \times 16' \text{ long}}{12} = 16 \text{ board feet}$$

Board Foot Measure Contained in Lumber

Thickness and Width Inches	Board foot content Board Length in feet					
	6	8	10	12	14	16
1×2	1	1½	1¾	2	2½	2¾
1×3	1½	2	2½	3	3½	4
1×4	2	2¾	3½	4	4¾	5½
1×5	2½	3¾	4½	5	5¾	5¾
1×6	3	4	5	6	7	8
1×7	3½	4¾	5¾	7	8¾	9¾
1×8	4	5½	6¾	8	9¾	10¾
1×10	5	6¾	8¾	10	11¾	13¾
1×12	6	8	10	12	14	16
1¼×4	2½	3¾	4½	5	5¾	6¾
1¼×6	3¾	5	6¾	7½	8¾	10
1¼×8	5	6¾	8¾	10	11¾	13¾
1½×4	3	4	5	6	7	8
1½×6	4½	6	7½	9	10½	12
1½×8	6	8	10	12	14	16
2×4	4	5½	6¾	8	9¾	10¾
2×6	6	8	10	12	14	16
2×8	8	10¾	11¾	16	18¾	21¾
2×10	10	13¾	16¾	20	23¾	26¾
2×12	12	16	20	24	28	32
2½×12	15	20	25	30	35	40
3×6	9	12	15	18	21	24
3×8	12	16	20	24	28	32
3×10	15	20	25	30	35	40
3×12	18	24	30	36	42	48
4×4	8	10¾	13¾	16	18¾	21½
6×6	18	24	30	36	42	48

LUMBER SIZE TABLE

Nominal and Minimum-dressed Sizes of Boards, Dimensions and Timbers

(All Figures in Inches)

ITEM	THICKNESS			FACE WIDTHS						
	Nominal	Minimum Dressed		Nominal	Minimum Dressed					
		Dry	Green		Dry	Green				
Boards*	1	¾	25/32	2	1½	1¼				
				3	2½	2¼				
				4	3½	3¼				
				5	4½	4⅝				
				6	5½	5⅝				
				7	6½	6⅝				
				8	7¼	7½				
				9	8¼	8½				
				10	9¼	9½				
				11	10¼	10½				
				12	11¼	11½				
				14	12¼	13¼				
				16	15¼	15½				
Dimension	2	1½	1¼	2	1½	1¼				
				3	2½	2¼				
				4	3½	3¼				
				5	4½	4⅝				
				6	5½	5⅝				
				8	7¼	7½				
				10	9¼	9½				
				12	11¼	11½				
				14	13¼	13½				
				16	15¼	15½				
				Dimension	4	3½	3¼	2	1½	1¼
								3	2½	2¼
								4	3½	3¼
5	4½	4⅝								
6	5½	5⅝								
8	7¼	7½								
10	9¼	9½								
12	11¼	11½								
14	13¼	13½								
16	15¼	15½								
Timbers	5 and Thicker	½ Off						5 and Wider	½ Off	

*Boards less than the minimum thickness for 1 inch nominal but ¾ inch or greater thickness dry (1¼ inch green) may be regarded as American Standard Lumber, but such boards shall be marked to show the size and condition of seasoning at the time of dressing. They shall also be distinguished from 1-inch boards on invoices and certificates.

Dry Sizes apply to lumber which has been seasoned or dried to a moisture content of 19 percent or less.
Green Sizes apply to lumber having a moisture content in excess of 19 percent.

Computing of Lumber Volume in Board Feet

Take the Lineal Feet and Multiply by the Contents of One Lineal Foot.

Size of Piece	Part of Foot per Lin. Ft.	Size of Piece	Part of Foot per Lin. Ft.
1×1	$\frac{1}{12}$	4×4	$1\frac{1}{3}$
1×2	$\frac{1}{6}$	4×5	$1\frac{2}{3}$
1×3	$\frac{1}{4}$	4×6	2
1×4	$\frac{1}{3}$	4×7	$2\frac{1}{3}$
1×6	$\frac{1}{2}$	4×8	$2\frac{2}{3}$
1×8	$\frac{2}{3}$	4×9	3
1×10	$\frac{5}{6}$	4×10	$3\frac{1}{3}$
1×12	1	4×12	4
2×2	$\frac{1}{3}$	5×5	$2\frac{1}{12}$
2×3	$\frac{1}{2}$	6×6	3
2×4	$\frac{2}{3}$	7×7	$4\frac{1}{12}$
2×5	$\frac{5}{6}$	8×8	$5\frac{1}{3}$
2×6	1	9×9	$6\frac{3}{4}$
2×7	$1\frac{1}{6}$	10×10	$8\frac{1}{3}$
2×8	$1\frac{1}{3}$	11×11	$10\frac{1}{12}$
2×9	$1\frac{1}{2}$	12×12	12
2×10	$1\frac{2}{3}$	14×14	$16\frac{1}{3}$
2×11	$1\frac{5}{6}$	15×15	$18\frac{3}{4}$
2×12	2	16×16	$21\frac{1}{3}$
2×13	$2\frac{1}{6}$	17×17	$24\frac{1}{12}$
2×14	$2\frac{1}{3}$	18×18	27
2×15	$2\frac{1}{2}$	19×19	30
2×16	$2\frac{2}{3}$	20×20	$33\frac{1}{3}$
3×3	$\frac{3}{4}$	22×22	$40\frac{1}{3}$
3×4	1	22×24	44
3×5	$1\frac{1}{4}$	24×24	48
3×6	$1\frac{1}{2}$	26×26	$56\frac{1}{3}$
3×7	$1\frac{3}{4}$	28×28	$65\frac{1}{3}$
3×8	2	30×30	75
3×9	$2\frac{1}{4}$	32×32	$85\frac{1}{3}$
3×10	$2\frac{1}{2}$	34×34	$96\frac{1}{3}$
3×11	$2\frac{3}{4}$	36×36	108
3×12	3		