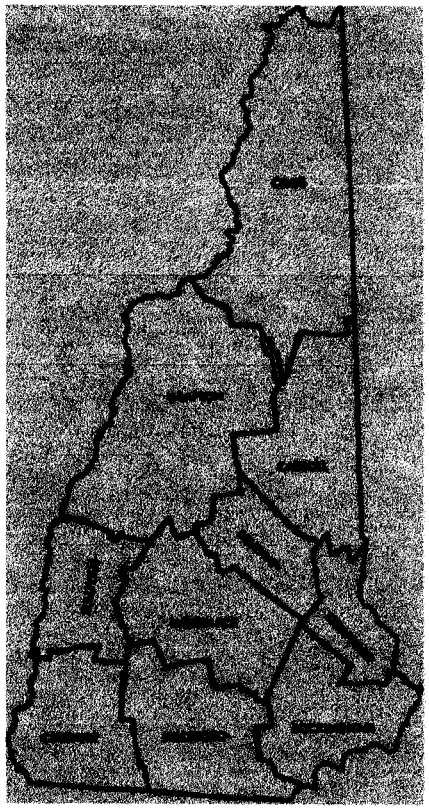
NEW HAMPSHIRE FOREST MARKET REPORT 1990

UNIVERSITY OF
NEW HAMPSHIRE
COOPERATIVE EXTENSION

MAP OF NEW HAMPSHIRE
(Showing Counties)



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UNIVERSITY OF
NEW HAMPSHIRE
COOPERATIVE EXTENSION

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N.H. Forest Market Report, 1990

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Mail this form to: Sarah Smith, Editor, Cooperative Extension, 108 Pettee Hall, University of New Hampshire, Durham, NH 03824, (603) 862-2647.

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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 alternatives 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 TIMBER PRODUCTS – 1989-1990

General Economic Trends

The gross national product, a measure of the Nation's total output of goods and services, and the most comprehensive indicator of total economic activity, averaged about $4,140 billion (1982 dollars), 2.9 percent above the average for 1988. Most economists also expect overall growth to continue at a slower pace in 1990, especially early in the year and forecasts range from less than 2 percent to more than 3 percent. A year-to-year growth rate of about 2.0 percent would mean a further rise to an average of $4,220 billion in 1990.

Major Timber Product Market Trends

Construction of new housing units, which generally accounts for more than a third of United States' annual consumption of softwood lumber and plywood and for substantial volumes of other softwood and hardwood products, has been trending downwards through much of 1989. Recent estimates of housing starts for 1989 fall between 1.38 and 1.44 million units - down 5 percent from the volume started in 1988. Analysts' forecasts for 1990 show a probable increase to about the 1.46 million level.

Single family units accounted for about 73 percent of total starts in 1989, about the same percentage as in 1988. A small increase in the relative proportion of single-family units is likely in 1990. Shipments of mobile homes, down about 6.6 percent from year-earlier levels totaled about 200,000 units in 1989 with a small increase probable in 1990.

Repair and remodeling of residential structures apparently has slowed somewhat in 1989. Most analysts agree that this segment of the construction market, though down slightly in 1989, will recover in 1990 and continue to grow in the years ahead.

Total non-residential construction activity has been slightly weaker in 1989 than in 1988. A slight improvement in expenditures is expected in 1990. The index of manufacturing production - an important indicator of the demand for pallet lumber, container board, and some grades of paper- dropped about 0.8 percent to a seasonally adjusted value of 147.6 (1977= 100) in October. Most analysts interpreted the overall situation as a continuation of the relatively fiat trend in evidence through most of the year. The indexes of production for the furniture and fixtures and paper and products industries have also shown little sustained growth in 1989.

Despite the lack of sustained growth during the year, average monthly manufacturing production was about 4 percent above the average for 1988. Furniture and fixtures manufacture was also up about 4 percent year-over-year, while the paper and products index indicated an increase of about 1 percent. Most economists currently feel that total manufacturing output and production in many industries will continue at a relatively slow but positive pace in the months ahead, in step with prospective economic growth.

In summary, U.S. economic activity in general and many of the principal U.S. timber products markets have shown declines or somewhat lower rates of growth in 1989 over 1988. In addition, prospective trends in several of the important indicators point to continued relatively slow growth in early 1990.

International Markets

The United States is the world's leading importer of timber products - chiefly softwood lumber, wood pulp, and paper and board from Canada, and veneer and plywood from southeast Asia. The total value of these imports in 1988 was $16.7 billion, about 3.8 percent of the value of all U.S. imports. In terms of roundwood equivalents, more than a fifth of our apparent consumption of timber products in recent years has been imported.

The United States is also a major timber products exporter. In 1988, the value of our timber products exports was $12.8 billion - about 4.2 percent of our export total. Although we ship a wide variety of timber products to many different countries, our principal export markets are Japan for softwood logs and lumber, pulp chips, wood pulp, and paper and board products, and western Europe for lumber, plywood, wood pulp, and paper and board. In recent years, China has also become an important market for softwood logs.

According to data of the Timber Committee of the Economic Commission for Europe, economic growth in most of our major European markets has remained relatively strong in 1989, though at slightly lower levels than in 1988. Despite these trends, investment in equipment and in construction

in several countries remained at high levels, although interest rate increases in the fall were expected to have some dampening effect late in the year. Exports of logs and lumber to Japan in 1989 are both sharply ahead of shipment in 1988, while there has been a large decline in logs to China.

Looking forward to 1990, The likelihood is for some slowing in the exports of most products. Industry analysts expect that shipments to our major Pacific Rim markets also will be smaller than they were this year. Imports, particularly of those products used in housing construction, should show some increase.

Timber Products Consumption, Trade, and Production

Softwood Lumber

Consumption for all of 1989 (based on data from the U.S. Bureau of the Census) is estimated at 46.5 billion board feet, 2.9 percent below consumption in 1988. Imports for 1989, nearly all from Canada, are about 14.0 billion board feet, up about I percent from the volume imported in 1988. Exports for 1989 totalled about 3.4 billion board feet. This is about 4 percent more than in 1988 and a record level.

Present expectations about housing and the other important markets indicate that probable increases in production, imports, and consumption are likely in 1990. Prices likely will not rise markedly until usage picks up in 1990.

Hardwood Lumber

Hardwood lumber consumption, based on Bureau of the Census data, has dropped to an estimated 6.3 billion board feet, about 7.2 percent below the 1988 total. Hardwood lumber imports for the year are estimated at 0.3 billion board feet. Total exports for the year are estimated to be 1.0 billion board feet, down from 1.3 billion in 1988. Anticipated growth in the important hardwood markets suggests that small increases in production and consumption are likely in 1990. Imports and exports also are expected to show small gains.

Softwood Plywood

New housing construction, traditionally the most important softwood plywood market, has remained below year-earlier levels. As a result, softwood plywood consumption in 1989 has dropped to about 20.4 billion square feet (⅜-inch basis), about 3.8 percent less than was used in 1988.

The total softwood plywood exports for 1989 were estimated to be about 1.4 billion square feel. Imports are estimated to amount to about 0.1 billion square feet.

With these levels of consumption and trade, softwood plywood production for 1989 declined to 21.7 billion square feet (⅜-inch basis), about 1.8 percent below output in 1988.

For 1990, with the prospective increase in new housing construction, and the relatively slow growth in other markets, total consumption is expected to increase about 3.4 percent to 21.1 billion square feet. Imports and exports also are likely to be near the volumes in 1989; and as a consequence, production should also rise. If demand increases in 1990 as outlined above, some additional rise in prices is likely.

Hardwood Plywood

Consumption of hardwood plywood in 1989 is estimated to be near 2.6 billion square feet (⅜-inch basis), about 8 percent above total use in 1988. Trade data through September indicate that imports are likely to increase 12.4 percent to 1.8 billion square feet. Exports are expected to remain relatively small at about 0.1 billion. With these trends in consumption and trade, production for 1989 will total 0.9 billion square feet, about the same volume as in 1988.

Much of the hardwood plywood consumed each year is used in residential construction as well as in the manufacturing sector. As a consequence, an increase in consumption and imports is likely in 1990. Exports are expected to remain close to 0.1 billion square feet.

Hardwood plywood prices, as indicated by the producer price index, have been very slowly increasing over the past few years.

Pulpwood

On the basis of industry trends, pulpwood consumption (roundwood and chips) in 1989 is estimated to total 98.7 million cords, up about 3.5 percent from the previous high recorded in 1988.

Imports of pulpwood, mostly pulpwood chips from Canada, has remained near year-earlier levels and are estimated to total 0.7 million cords. Exports are estimated at 3.7 million cords, about 35 percent above exports in 1988. Most of the increase in exports is in the form of pulpwood chips shipments to Japan.

Pulpwood production in 1989 is estimated to be about 101.7 million cords, 4.3 percent more than in 1988, and also a new record. The prospective increase in overall economic activity suggests that the upward trend will continue in 1990, though at a somewhat slower pace than in the past few years.

Softwood Log Trade

Exports were up to many of our major offshore markets; however, shipments to China were only a little more than a third above the year-earlier volume. As a result, exports for all of 1989 have been estimated at 4.4 billion board feet, 4 percent below shipments in 1988. Industry sources indicate that the outlook for 1990 is for a continued decline to about 4.2 billion board feet. Softwood log imports were down sharply and are estimated to total about 25 million board feet, roughly half of the volume imported in 1988.

Hardwood Log Trade

Hardwood log exports for 1989 are estimated at 0.2 billion board feet. Although the volume is relatively small, most of the logs exported in 1989 and in recent years have been high quality oak, walnut, and other preferred species that are in short supply in the United States. Thus, these exports have been a contributing factor to the increases in stumpage and log prices for some species.

Hardwood log imports in 1989 are expected to be close to 20 million board feet, about double the volume imported in 1988.

Industrial Roundwood Summary

Given the trends in consumption, trade, and production in 1989, total consumption of all industrial roundwood products is estimated to be about 15.6 billion cubic feet, 3.1 percent below use in 1988. Consumption, imports, and production will all increase in 1990 if the major markets follow the trends.

1990 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 the County Forester, Consulting Foresters, or industry representatives.

Belknap County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$30-50	$80-110	$95-130
	Medium	70-100	130-160	150-185
	High	110-140	170-200	190-225
Red Pine		25-55	70-115	100-140
Hemlock		20-40	60-85	90-130
Red Oak	Medium	135-250	200-340	250-350
	High	335-500	400-550	450-700+
White Ash	Medium	130-200	200-340	250-350
	High	300-450	400-550	450-600+
White Birch	Medium	35-65	90-120	130-160
Sugar Maple	Medium	65-115	130-180	150-200
	High	140-180	200-280	230-300
Red Maple		30-60	90-125	iOO-135
Beech		30-50	80-110	100-130
Pallet		25-35	80-100	90-110
Fuelwood (per cord)		6-10	30-40	
Hardwood Pulp (per cord)		5-7	25-35	45-55
Softwood Pulp (per cord)		0-4	20-30	40-45
Biomass Fuel Chips		0-1.50		16-19

Carroll County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$60	$90-120	$120-150
	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	400-700
Mixed Hardwood	Pallet	25-45	70-95	110-120
Hardwood Pulp	per cord	6-10	30-35	47-50
Softwood Pulp	per cord	3-7	19-36	45-52
Fuelwood Chips		0-1.00/ton		

Cheshire County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	$50-90	$100-165	$110-200+
Red Pine	Sawlog	30-45	85-120	100-150
Hemlock	Sawlog	30-45	65-110	95-130
Spruce	Sawlog	35-45	65-100	90-115
Beech	Sawlog	30-45	50-85	90-125
Poplar	Sawlog	30-45	65-85	90-110
Red Maple	Sawlog	30-45	60-90	90-135
Red Oak	Low	125-200	210-260	200-275
	Medium	200-250	260-300	275-375
	High	250-325+	325-450+	375-600+
Sugar Maple	Sawlog	60-100	90-160	130-200+
White Ash	Sawlog	100-250+	175-300+	200-400+
WhiteOak	Sawlog	100-150	125-200	150-300 +
White Birch	Sawlog	45-70	90-130	125-160
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Yellow & Black Birch	Sawlog	50-100	100-160	120-240
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Mixed Hardwood	Pallet	25-40	70-100	100-125
	Tie Log	30-45	65-100	95-130

Coos County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	$60-95	$110-145	$170-200
Red Pine	Sawlog	50-60	90-100	150-170
Spruce-Fir	Sawlog &	60-75	115-150	190-200
Hemlock	Sawlog	20-35	70-90	120-145
Hard Maple	Sawlog	75-100	125-195	180-245
Soft (Red) Maple (Tie	Sawlog	30-40	75-110	125-170
Poplar	Sawlog	20-35	70-95	120-140
White Birch	Sawlog	65-90	120-170	175-230
	Boltwood	30-40/cord	75-90	155
Beech	Sawlog	25-40	85-110	125-165
Yellow Birch	Sawlog	70-120	140-200	175-260
	Boltwood	30-40/cord	60-70	155-160
Red Oak	Sawlog	150-250	190-350+	350-465
White Ash	Sawlog	100-200	140-280	170-415
Basswood	Sawlog	30-50	85-110	120-160
Mixed Hardwood (Pallet & Tie Stock)	Sawlogs	25-40	70-105	130-160
Poplar-Veneer				175

Grafton County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$10-60	$30-70	$50-85
	Medium	60-85	$100-150	$145-185
	High	80-100	130-175	190-300
Hemlock	Sawlog	20-35	70-90	90-140
Spruce-Fir	Sawlog	40-70	90-135	100-200
Yellow Birch	Sawlog	70-90	130-175	130-245
Sugar Maple	Sawlog	65-95	125-175	130-305
White Birch	Sawlog	60-85	120-160	130-225
Red Maple	Sawlog	20-40	90-120	120-150
White Ash	Sawlog	110-170	150-200	180-275
Beech	Sawlog	20-25	75-85	90-120
Red Oak	Sawlog	150-250	190-250 +	200-550
Red Pine	Sawlog	30-50	85-110	100-150
Poplar	Sawlog	20-35	70-95	100-140
Pallet Mxd. & Tie Logs	Sawlog	20-35	70-100	100-140
White Birch	Veneer	80+		235+
Yellow Birch	Veneer	95+		270-300+
Sugar Maple	Veneer	100-150		325-370
White Ash	Veneer	180-240+		400-650+
Red Oak	Veneer	240-500+		575-1000

Hillsborough County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$60-65	$85-100	$120-130
	Medium	70-85	100-115	130-165
	High	90-100	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	85-100	120-140	175-230
	Medium	125-175	170-240	250-400
	High	200-350	275-325	500-700
	Veneer			600-850 +
Other Hardwoods				
Birch, Maple	Low	40-50	70-90	100-130
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	$80-100	$90-120
	Medium	70-90	100-110	120-140
	High	70-130	140-160	165-220
Hemlock	All	25-45	70-90	90-125
White Birch	Medium	40-50	90-100	110-160
	High	60-100	100-140	200+
Hard Maple	Medium	40-60	100-110	120-140
	High	60-130	110-140	175-300
White Ash	Medium	80-175	140-200	120-265
	High	175-300	200-350	350-500
Red Oak	Medium	200-300	225-350	225-400
	High	300-400	275-500	400-700
Pallet Stock	Logs	25-40	75-85	95-130

Rockingham County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$60	$110	$110-120
	Medium	80	120	130-140
	High	110+	140+	150-180
Hemlock	Sawlogs	30-50	85	100-120
Red & White Oak	Medium	120-150	160-185	200+
	High	300+	310-350	400-525
Pallet	Log	20-40		95-120

Strafford County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low to Medium	$60-90	$120-150	$145-185
	High	100-140	160-200	185-235
Hemlock	Low to Medium	25-40	60-75	85-110
	High	40-45	75-85	100-120
Red Oak	Low to Medium	100-200	175-275	200-310
	High	200-400	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	100-150	150-200	200-350
White Ash	High	100-150	150-200	200-350

Sullivan County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$60-65	$80-155	$120-175
	Medium	70-85	120-140	160-190
	High	75-110	140-175	180-200
Hemlock	Medium	20-35	60-80	100-120
	High	35-50	70-95	100-120
Spruce	Medium	20-40	60-100	100-120
	High	35-60	100-120	135-140
Yellow Birch and Black Birch and White Birch	Medium	30-60	70-100	110-140
	High	35-85	110-120	150-160
Sugar Maple	Medium	50-65	150-160	180-200
	High	80-100	180-210	220-250
Red Oak	Medium	225-250	250-260	280-300
	High	320-350	365-385	350-550
White Ash	Medium	150-175	200-210	250-285
	High	175-225	340-360	305-400
Red Maple	All	20-35	60-80	120-150
Pallet		20-30	50-60	100-130
Other Hardwoods		20-40	95-110	125-140

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

Species	Stumpage	Roadside	Delivered	
			Per ton	Per cord
Spruce and Fir	$10.00-15.00	$25.00-45.00	$25.00-28.00	$53.50-60.00
Hemlock	5.00-7.00	24.00-30.00	20.00-23.00	45.00-52.00
Tamarack, Red Pine and White Pine	5.00-7.00	24.00-30.00	20.00-23.00	45.00-50.00
Hardwood	6.00-10.00	20.00-30.00	18.00-21.00	47.00-54.50

*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	$5.00-10.00	$16.00-20.00	$35.00-44.00
Pulp Pine	2.00-10.00	16.50-22.00	35.00-50.00
Hemlock	5.00-10.00	16.50-22.00	35.00-50.00
Spruce and Fir	5.00-10.00	17.50-26.00	40.00-55.00
Mixed Hardwood	6.00-10.00	18.00-20.00	45.00-55.00
Random Length Hardwood	6.00-10.00	18.00-20.00	44.00-50.00
Mixed Hardwood including Poplar	4.00-8.00	16.00-20.00	40.00-45.00

Prices Pulpwood Per Cord* - Southern New Hampshire

Species	Stumpage	Roadside	Delivered
Softwood Pulp	$0.75-1.50/ton	$12.00-26.00/ton	$15.00-31.00/ton
	2.25-4.00/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)	0.00-1.00/ton		15.00-18.00/ton

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

	Stumpage	Delivered
Softwood (mixed)	$0.50-2.50	$25.00-35.00/ton
Hardwood (mixed)	0.50-2.50	25.00-35.00/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	$12.00-18.00	$23.00-26.00
Spruce and Fir	14.00-22.00	27.00-30.00
Hardwood (mixed)	12.00-16.00	20.50-23.00

Average Price of Total Tree and Fuel Chips

	Spout Prices (including stumpage)	Delivered	Stumpage
Pulp quality: Hardwood (barky)	$16.00-21.00/ton	$20.00-25.00/ton	$0.50-2.00/ton
Softwood (barky)	12.00-17.00/ton		0.50-2.00/ton
Fuel quality: Mixed Species	$12.00-16.00/ton	$16.00-19.25/ton	0.00-1.60/ton
Sawdust		$10.00-13.00/ton	Tops for Biomass
Sawdust and Bark Combination		12.00-15.00/ton	$0.50/ton
Bark Fuel (Processed)		14.00/ton	

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

Species	Stumpage	Roadside	Delivered at Mill
	Boltwood Per Cord[1]		
White Birch	$30.00-40.00	$65.00-85.00	$150.00-160.00 per cord
Yellow Birch	25.00-30.00	50.00-70.00	150.00-160.00 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/lin. ft.

Railroad Crossties and Switch Ties

Grade	Size	Oak Ties F.O.B. Mill		Mixed Hardwood Ties[1] F.O.B. Mill	
		Each	Per MBF	Each	Per MBF
3	(6″x8″x8′6″)	$ 8.65	$254.00	$ 8.15	$240.00
4	(7″x8″x8′6″)	11.50	290.00	10.50	265.00
5	(7″x9″x8′6″)	12.50	280.00	11.50	258.00

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

Switch Ties (Oak only)

(7″x9″)	12′-16′ long	$330.00-375.00 per MBF+

Table V. Price Range of Hardwood Fuelwood Per Cord

Species	Stumpage	Roadside	Delivered Buyers Premises
Hardwood			
4′ Wood	$5.00-10.00	$35.00-60.00	$60.00-100.00 +
12″, 14″, 16″ Lengths		60.00-80.00	80.00-130.00
Slabs (Hardwood or Softwood)		15.00-40.00	25.00-55.00
Dry Fuelwood, 16 inches			120.00-150.00
Tree length loads of Cordwood			
Southern N.H.	5.00-10.00	25.00-55.00	40.00-60.00
Northern N.H.	6.00-10.00	25.00-40.00	40.00-60.00

Table VI. Price Range of Sawdust and Shavings and Bark

Sawdust	$ 8.00-20.00 per cord green at sawmill or 7.50-18.00 per ton	$22.00 + /ton (dry)
Shavings	10.00-20.00 per cord green at sawmill	
Bagged Dry Shavings		2.00-2.50 per bag
Bark	6.00-12.00 per yard (loaded) or 12.00-15.00 per ton	27.00 per ton processed
Bark or Fuel	12.00-14.00 per ton	

Table VIIA. Representative Operating Costs (Contract prices) Northern N.H.

Sawlogs: Felling and Limbing	$15-20. per MBF
Yarding and Bucking (softwood)	35-45 per MBF
(hardwood)	35-50 per MBF
Felling, Yarding, and Bucking (softwood)	55-75 per MBF
(hardwood)	60-90 per MBF
(veneer)	100-125 per MBF
Pulpwood and Cordwood: (with machine) stump to landing	
Random length	18-28 per cord
Biomass	4-10 per ton
Contract Chipping – roadside	4.00-10.00 per ton

Table VIIB. Representative Operating Costs (Contract prices) Southern N.H

Sawlogs: Felling and Limbing	$15 per MBF
Yarding and Bucking (softwood)	40-45 per MBF
(hardwood)	40-65 per MBF
Felling, Yarding, and Bucking (softwood)	50-75 per MBF
(hardwood)	60-125 per MBF
Pulpwood and Cordwood: (with machine) stump to landing	
Random length	25-35 per cord
4′ length	35 per cord

Table VIIC. Representative Processing Costs (Contract Prices) Average for N.H.

Custom Sawing –	
Softwood	$ 95.00-150.00 per MBF or 125.00-175.00 per hour
Hardwood	125.00-225.00 per MBF or 120.00-175.00 per hour
Planing	40.00-50.00 per MBF, 2 sides; 50.00 + per MBF 4 sides; (patterns extra).
Resawing	40.00-50.00 per MBF

Table VIID. Representative Kiln Drying Costs (Custom)

4/4 Pine (Yard)	12-14% MC	$75.00-85.00
4/4 Pine-Furniture	6-8%MC	90.00-100.00
4/4 Oak-Furniture	6-8% MC	140.00-160.00
4/4 Maple-Furniture	6-8% MC	90.00-100.00
8/4 Oak	6-8% MC	375.00-390.00

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

Sawlogs: Local deliveries	$20.00-40.00 per MBF
Distant deliveries	20.00-30.00 for the first 10 miles and 40¢ to 50¢ for each additional mile per MBF
	OR
	40.00 to 50.00 per hour
Cordwood and Pulpwood:	12.00-25.00/cord
Lumber and Chips:	1.75-2.00 per loaded mile

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

CHRISTMAS TREE SITUATION – 1990

First rotation plantations continue to come into the marketplace. Trees from these first time sellers are mostly from smaller plantations of less than 5 acres with the majority available on a cut-your-own basis.

A recent Cooperative Extension survey shows that there are over 400 growers in New Hampshire, more than 200 of which have not yet sold a tree. These growers will be entering the market in the next5 to 7 years.

There are ample opportunities for New Hampshire Christmas trees, including those yet to come to market.

While cut-your-own currently seems to have unlimited potential, wholesalers also have excellent opportunities. A key seems to be targeting in-state wholesale markets.

An Extension retail market study done in '88 and '89 shows that less than 10% of the trees at retail stands in New Hampshire are from New Hampshire, about 100!6 from other New England states, 800!6 from Canada, with some from as far away as Oregon and North Carolina.

About 100,000 trees are sold from New Hampshire plantations with annual potential of perhaps 300,000 based on current plantation inventories.

Balsam fir continues to be the staple of the industry, with fraser fir, white spruce, scotch pine, douglas fir, blue spruce, and white pine rounding out the market.

Nineteen eighty-nine was successful for most, although late wholesale ordering made some growers very nervous going into the season. The 1990 season should see prices stabilize with little or no increases, despite rising management costs.

New Hampshire's multi-million dollar Christmas tree industry remains strong and will continue to provide employment and economic opportunity for the hundreds involved in growing, processing, trucking, and selling this renewable resource.

Table VIII. Wholesale Price range of Christmas Trees and Boughs

	Roadside 6-8' Trees Grade 1[a]	Grade 2[b]	Delivered
Balsam Fir	$14.00-19.00	$10.00-13.00	Trees mostly $12.00-25.00 ea. depending on species, quality, and quantity.
White Spruce	12.00-14.00	8.00-10.00	
Scotch Pine	12.00-18.00	8.00-10.00	
Blue Spruce	15.00-20.00		
White Pine	10.00-15.00		
Fraser Fir	15.00-18.00		
BOUGHS (baled or tied)			
Balsam Fir 50 lb. bundle	$6.50-9.00	$225-350/ton	
Pine 50 lb. bundle	5.00-7.00	200-280/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.
(b) Consult county forester for local market information for pasture run balsam fir Christmas trees.

Table IX. Retail Price Range of Single Christmas Trees

White Pine Scotch Pine Balsam Fir White Spruce Douglas Fir Norway Spruce Blue Spruce Fraser Fir	**(Select and cut your own)** $12.00-30.00 per tree or $2.00-4.00 per lineal foot

MAPLE SITUATION – 1990

Despite a decrease in production in New Hampshire and most of southern New England last year, there was a substantial increase in northern Vermont, Maine, and Quebec. This resulted in a net surplus which lowered prices by as much as 25%, especially at the retail store level.

Bulk prices for table grade syrup have dropped from $2.40/lb. to nearly $2.00/lb.

The continued surplus production from northern areas and the establishment of yet another maple pest, the pear thrips, makes it even more imperative for maple producers not only to properly manage their sugarbushes, but to perfect their marketing skills as well, in order to make a reasonable profit.

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

% sugar	¢/gal.	% sugar	¢/gal.
0-1.1	1.1	3.4	38.8
1.2	4.4	3.5	40.2
1.3	6.6	3.6	41.6
1.4	8.7	3.7	43.0
1.5	10.7	3.8	44.4
1.6	12.6	3.9	45.8
1.7	14.4	4.0	47.2
1.8	16.1	4.1	48.6
1.9	17.7	4.2	50.0
2.0	19.2	4.3	51.4
2.1	20.6	4.4	52.8
2.2	22.0	4.5	54.2
2.3	23.4	4.6	55.6
2.4	24.8	4.7	57.0
2.5	26.2	4.8	58.4
2.6	27.6	4.9	59.8
2.7	29.0	5.0	61.2
2.8	30.4	5.1	62.6
2.9	31.8	5.2	64.0
3.0	33.2	5.3	65.4
3.1	34.6	5.4	66.8
3.2	36.0	5.5	68.2
3.3	37.4		

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

Maple Syrup Retail at Farm		Maple Syrup Retail at Store	Maple Products Retail		
1 gallon	$30.00-36.00	$36.00-40.00	Sugar	1 lb.	$8.50-9.50
½ gallon	19.00-22.00	20.00-25.00	Cream	½ lb.	4.00-5.00
1 quart	9.00-12.50	10.00-13.50	Candy	½ lb.	4.50-7.00
1 pint	6.00-7.50	5.25-7.50			
½ pint	3.25-4.00	3.00-4.00			

Rent Price Per Tap Hole

Tap hole rentals: 20-30 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.

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, ¼" 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, edgings and sawdust.

Tree Scale (Tree Volume Measurement)

1) D.B.H. (Diameter Breast Height = measurement of diameter of tree 4½ 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	Number of 16 foot logs - to 6" top						
Inches	1	1 ½	2	2 ½	3	3 ½	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' X 4' X 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)
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. Green	Weight, lb Air Dry	Available heat, million BTU[1] Air Dry	Equivalent in Gallons of Fuel Oil[2]
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, eastem 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 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	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 4 ½ 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 Contents.[1]

Moisture Content Level		Species and Compaction Classes							
		White Pine			Red Oak			Red Maple	
Percent	Percent	Light	Shaken	Packed	Light	Shaken	Packed	Light	Shaken
Oven-dry	Green 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 ± ½ 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″x7″x8'6″	29.7	33.7
2	6″x7″x8'6″	29.7	33.7
3	6″x8″x8'6″	34.0	29.4
4	7″x8″x8'6″	39.6	25.2
5	7″x9″x8'6″	44.6	22.4

Lumber (Square Edge)

The standard unit of measure for lumber is the board foot. It is equivalent to $^1/_{12}$ 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 if 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 x 2	1	1-1/3	1-2/3	2	2-1/3	2-2/3
1 x 3	1-1/2	2	2-1/2	3	3-1/2	4
1 x 4	2	2-2/3	3-1/2	4	4-2/3	5-1/3
1 x 5	2-1/2	3⅓	4-1/6	5	5-5/6	5-2/3
1 x 6	3	4	5	6	7	8
1 x 7	3-1/2	4-2/3	5-5/6	7	8-1/6	9-1/3
1 x 8	4	5-1/3	6-2/3	8	9-1/3	10-2/3
1 x 10	5	6-2/3	8-1/3	10	11-2/3	13-1/3
1 x 12	6	8	10	12	14	16
1¼ x 4	2-1/2	3-1/3	4-1/6	5	5-5/6	6-2/3
1¼ x 6	3-3/4	5	6-1/4	7-1/2	8-3/4	10
1¼ x 8	5	6-2/3	8-1/3	10	11-2/3	13-1/3
1½ x 4	3	4	5	6	7	8
1½ x 6	4-1/2	6	7-1/2	9	10-1/2	12
1½ x 8	6	8	10	12	14	16
2 x 4	4	5-1/3	6-2/3	8	9-1/3	10-2/3
2 x 6	6	8	10	12	14	16
2 x 8	8	10-2/3	11-1/3	16	18-2/3	21⅓
2 x 10	10	13⅓	16-2/3	20	23-1/3	26-2/3
2 x 12	12	16	20	24	28	32
2½ x 12	15	20	25	30	35	40
3 x 6	9	12	15	18	21	24
3 x 8	12	16	20	24	28	32
3 x 10	15	20	25	30	35	40
3 x 12	18	24	30	36	42	48
4 x 4	8	10-2/3	13-1/3	16	18-2/3	21-1/2
6 x 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	3/4	25/32	2	1-1/2	1-9/16
				3	2-1/2	1-9/16
				4	3-1/2	3-9/16
				5	4-1/2	4-5/8
				6	5-1/2	5-5/8
				7	6-1/2	6-5/8
	1-1/4	1	1-1/32	8	7-1/4	7-1/2
				9	8-1/4	8-1/2
	1-1/2	1-1/4	1-9/32	10	9-1/4	9-1/2
				11	10-1/4	10-1/2
				12	11-1/4	11-1/2
				14	12-1/4	13-1/2
				16	15-1/4	15-1/2
Dimension	2	1-1/2	1-9/16	2	1-1/2	1-9/16
				3	2-1/2	2-9/16
				4	3-1/2	3-9/16
	2-1/2	2	2-1/16	5	4-1/2	4-5/8
	3	2-1/2	2-9/16	6	5-1/2	5-5/8
				8	7-1/4	7-1/2
	3-1/2	3	3-1/16	10	9-1/4	9-1/2
				12	11-1/4	11-1/2
				14	13-1/4	13-1/2
				16	15-1/4	15-1/2
Dimension	4	3-1/2	3-9/16	2	1-1/2	1-9/16
				3	2-1/2	2-9/16
				4	3-1/2	3-9/16
				5	4-1/2	4-5/8
				6	5-1/2	5-5/8
	4-1/2	4	4-1/16	8	7-1/4	7-1/2
				10	9-1/4	9-1/2
				12	11-1/4	11-1/2
				14		13-1/2
				16		15-1/2
Timbers	5& Thicker		1/2 Off	5& Wider		1/2 Off

*Boards less than the minimum thickness for 1 inch nominal but 5/8 inch or greater thickness dry (11/16 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 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.
1x1	1/12	4x4	1-1/3
1x2	1/6	4x5	1-2/3
1x3	1/4	4x6	2
1x4	1/3	4x7	2-1/3
1x6	1/2	4x8	2-213
1x8	2/3	4x9	3
1x10	5/6	4x10	3-1/3
1x12	1	4x12	4
2x2	1/3	5x5	2-1/12
2x3	1/2	6x6	3
2x4	2/3	7x7	4-1/12
2x5	5/6	8x8	5-1/3
2x6	1	9x9	6-3/4
2x7	1-1/6	10x10	8-1/3
2x8	1-1/3	11x11	10-1/12
2x9	1-1/2	12x12	12
2x10	1-2/3	14x14	16-1/3
2x11	1-5/6	15x15	18-3/4
2x12	2	16x16	21-1/3
2x13	2-1/6	17x17	24-1/12
2x14	2-1/3	18x18	27
2x15	2·1/2	19x19	30
2x16	2-2/3	20x20	33-1/3
3x3	3/4	22x22	40-1/3
3x4	1	22x24	44
3x5	1-1/4	24x24	48
3x6	1-1/2	26x26	56-1/3
3x7	1-3/4	28x28	65-1/3
3x8	2	30x30	75
3x9	2-1/4	32x32	85-1/3
3x10	2-1/2	34x34	96-1/3
3x11	2-3/4	36x36	108
3x12	3		