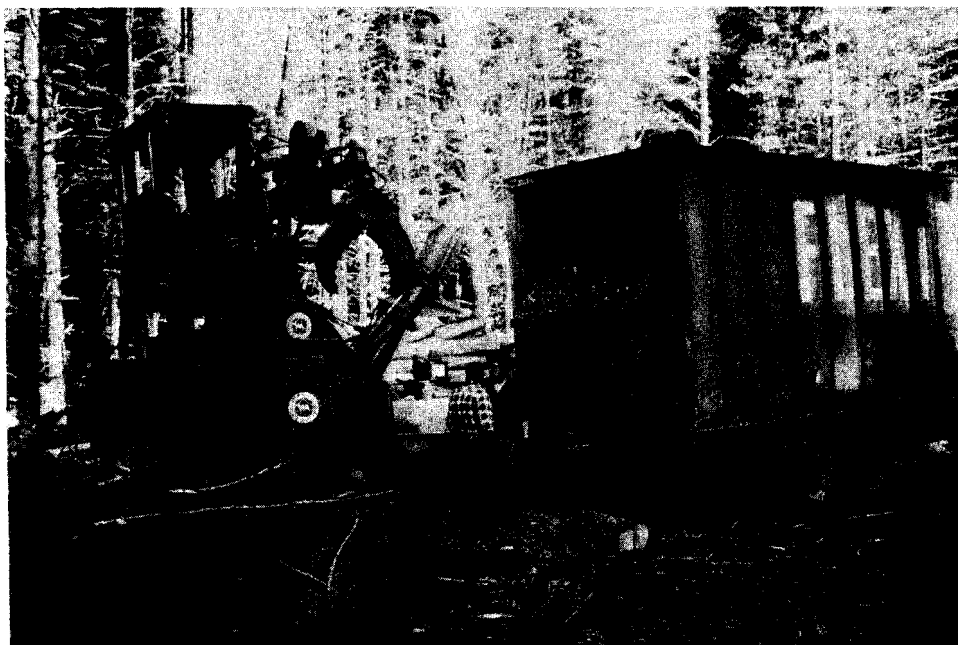


NEW HAMPSHIRE FOREST MARKET REPORT

1985

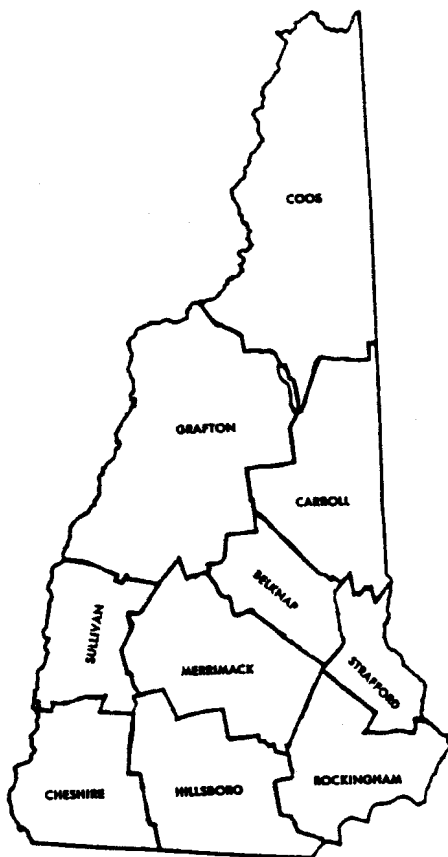


COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF NEW HAMPSHIRE

with the

NEW HAMPSHIRE DEPARTMENT OF RESOURCES
AND ECONOMIC DEVELOPMENT COOPERATING

MAP OF NEW HAMPSHIRE
(Showing Counties)



By

Nicolas Engalichev, *Extension Specialist*
Forest Products Marketing and Utilization



Cooperative Extension Service
University of New Hampshire

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N.H. Forest Market Report, 1985

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INDEX

County Extension Foresters and Assistants	3
Market Situation — 1985	4
Table I. Price Range Standing Timber (Stumpage) and Sawlogs Per MBF	7
Belknap County	7
Carroll County	7
Cheshire County	8
Coos County	9
Grafton County	9
Hillsborough County	10
Merrimack County	10
Rockingham County	10
Strafford County	11
Sullivan County	11
Table II. Prices of Pulpwood Per Cord — Northern New Hampshire	12
Prices of Pulpwood Per Cord — Central New Hampshire	12
Prices of Pulpwood Per Cord — Southern New Hampshire	12
Table III. Price of Debarked Slabs and Edgings Per Green Ton Strapped	12
Price of Pulp Chips	12
Average Price of Total Tree Chips and Fuel Chips	12
Table IV. Price Range Boltwood, Posts, Railroad Cross Ties, and Switch Ties	13
Table V. Price Range of Hardwood Fuelwood Per Cord	14
Table VI. Price Range of Sawdust and Shavings and Bark	14
Table VIIA. Representative Operating Costs (Contract Prices) Northern N.H.	14
Table VIIB. Representative Operating Costs (Contract Prices) Southern N.H.	14
Table VIIC. Representative Processing Costs (Contract Prices) Average for N.H.	14
Table VIID. Representative Kiln Drying Costs (Custom)	15
Table VIIE. Representative Trucking Costs (Trucks with Loaders)	15
Christmas Tree Situation	15
Table VIII. Wholesale Price Range of Christmas Trees and Boughs	15
Table IX. Retail Price Range of Single Christmas Trees	16
Maple Products Situation	16
Table X. Average Maple Sap Prices at Sugar House in New Hampshire	16
Table XI. Prices for Table Grade Maple Syrup and Products at Producers	17
Rent Price Per Tap Hole	17
Forest Products Laboratory Publication Lists	17
Conversion Factors and Units of Measurement For Products	19
Tree Scale	19
Log Rule	20
Pulpwood	20
Solid Wood Content of a Cord	21
Cordwood	21

Approximate Volume of a Cord of Cut and Split Wood	22
Approximate Weight and Heating Value per Cord of Different Woods	22
Variation of Heating Values of Wood Due to Moisture	22
Approximate Number of Trees Per Cord for Peeled Pulpwood and Cordwood	23
Calculated Sawdust Weights in Pounds Per Cubic Foot	23
Railroad Tie Volume Table	23
Lumber (Square Edge)	24
Lumber Size Table	25
Computing of Lumber Volume in Board Feet	26

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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MARKET SITUATION — 1985

Few timber products are consumed by individuals in the form in which they are initially manufactured. Instead, most move to various major markets where they are remanufactured or made a part of a product that is ultimately used by individual consumers. Thus, although consumer demand is the underlying force, direct demand for timber products is largely determined by the levels of activity in their primary end-use markets.

Activity in the major timber products markets in the United States, up fairly sharply from 1983 levels early in 1984, continued moderately strong through the first half of the year. However, in the third and early in the fourth quarters, trends in most of the major economic indicators, including a sharp deceleration in overall economic growth, suggest that demand in many markets is slowing late in the year and will likely continue somewhat lower in early 1985.

Trends in new construction, the most important domestic wood products market, vary with the type of construction. New housing units, which typically account for more than 40 percent of United States consumption of lumber and plywood and for substantial volumes of other timber products, were started at an annual rate of nearly 2.0 million units through the first four months of 1984. Since April, however, the number of units started, though characterized by sharp month-to-month fluctuations, has shown an overall downward trend. In October starts dropped almost 10 percent to a seasonally adjusted annual rate of 1,515,000 units. The October rate was about 9 percent below the year-earlier rate and represented the lowest level of new housing activity since December 1982. Despite the October decline, the seasonally adjusted annual rate for the first 10 months of 1984 was 1,809,000, about 4.5 percent above the rate for the similar period in 1983.

Housing industry observers have not been surprised by the declines in housing activity, since it was widely felt that the start levels reached early in the year could not be sustained because of persistently high mortgage interest rates. Most analysts now expect starts to continue at about the October rate in the last weeks of 1984 and in early 1985. Their estimates are based on the expectation that interest rates — currently down somewhat from those in effect at mid-year — will not turn up appreciably in the near term. With these various factors in mind, recent estimates of housing starts for 1984 range from 1,720,000 to 1,780,000 units with the current consensus at about 1,750,000, a little more than 2 percent above the 1,712,000 total started in 1983. At that level, 1984 will be the best year for housing since 1979.

Most economists currently feel that new home construction and sales will likely continue to be constrained by interest rates in 1985, particularly in the second half, and that the total number of units started during the year will drop to the 1,500,000 to 1,550,000 level. Mobile home shipments for 1984 and in 1985 are expected to follow the same general trends shown by housing starts.

Many economists feel that production most industries over the next few months will continue at a somewhat slower pace than in the first three quarters of 1984, because of the expected slower growth in the overall economy. Most also expect somewhat higher levels of industrial output in the second half of 1985 than in the first two quarters of the year.

In summation, trends in the domestic markets for most timber products have kept consumption and production at higher levels in 1984 than in 1983. However, slower growth in the last weeks of this year and in 1985 is likely.

International Markets

The outlook for international trade appears somewhat improved for most products in 1985, however exports to many countries will likely be only marginally above 1984. The present strength of the U.S. dollar against other currencies is likely to be maintained, at least in the short run, bringing with it improved export possibilities for our major world trade competitors, but continuing to contribute to a weakened position for U.S. timber products exporters.

Softwood Lumber

Based on estimates of production, imports, and exports, apparent consumption (i.e., production plus imports minus exports) in 1984 is estimated at 38.5 billion board feet — about 6 percent above 1983 and the largest volume consumed in U.S. domestic markets since 1979.

Present expectations about housing and other important markets indicate that a decline in production, imports, and consumption is likely in 1985. Exports are likely to show a small rise.

On the strength of rising demand, softwood lumber prices increased rapidly early in 1984, however at the end of the first quarter prices peaked and have been declining over the past 7 months. The producer price index of softwood lumber in October stood at an index level of 333.9 (1967 = 100). This was about 13 percent below the high for the year reached in March, and 10 percent under the average for all of 1983. In mid-November, prices for some grades and species appeared to have stabilized, however no appreciable rise is likely if housing construction continues at relatively lower levels in the last weeks of the year and early in 1985.

Hardwood Lumber

Because of the increased activity in its major markets, hardwood lumber production, orders, and shipments during the first three quarters of 1984 were above 1983 levels during the same period. Output for the year, based on the probability that there will be some slowing in the last few weeks, is estimated at 6.7 billion board feet — 10 percent larger than production in 1983.

Apparent hardwood lumber consumption in 1984, based on estimates of production and trade, is estimated at 6.5 billion board feet, 10 percent above 1983. Anticipated growth in the important hardwood markets suggests some additional, though small, increase in production and consumption is likely in 1985. Imports and exports are also expected to show a small rise.

In contrast to softwoods, hardwood lumber prices, as measured by the producer price index, trended steadily upwards through midsummer, before showing a decline in the early fall. Prices in October (index value 319.4, (1967=100) were about 3 percent below the July high, but remained almost 13 percent above the average for 1983. Prices for hardwood lumber can be expected to be relatively more stable than those for softwoods because of their market structure.

Pulpwood

Apparent pulpwood consumption in 1984 is expected to increase to about 89.8 million cords, 3.5 percent more than in 1983, and a record high in a trend that has been rising fairly steadily for decades. Prospective increases in economic activity suggest that the upward trend will continue in 1985, though at a somewhat slower pace than in 1984.

Softwood Log Trade

Softwood log exports during the first 9 months of 1984 were up about 3 percent from the total attained in the same period in 1983, as declines in shipments to Japan and Korea were more than offset by increases in shipments to the People's Republic of China, Canada, and several European countries. Reports indicate that a small overall increase is possible during the remainder of 1984, but that volumes will show no strong upward trend. Therefore, exports for the year have been estimated at 3.3 billion board feet, 3 percent above shipments in 1983. The outlook for 1985 is also for a small rise.

Hardwood Log Trade

Hardwood log exports for 1984 are estimated at 0.1 billion board feet. Although the volume is small, most of the hardwood logs exported in 1984 and in recent years have been composed of high quality oak, walnut, and other preferred species that are in short supply in the United States. Thus, these exports have been an important contributing factor to the large increases in stumpage prices for some domestic species.

Fuelwood

Current estimates indicate that fuelwood consumed for domestic heating and cooking has risen to more than 47 million cords. Various surveys of the forest products industries indicate that there also have been large increases in the consumption of fuelwood for industrial heat and power generation in the last few years.

Industrial Roundwood Summary

Given the trends in consumption, trade, and production for the various products in 1984 discussed earlier, U.S. total production and consumption of all industrial roundwood products (i.e., all roundwood products except fuelwood) is expected to be above 1983 levels. Total imports, including the pulpwood equivalent of pulp, paper, and board will also be up. Total exports will probably show little change. Some decline in total consumption and imports is likely in 1985, while total production remains about the same and exports show a small rise.

1985 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 from those quoted depending on 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	\$35-45	(1) (2)	\$85-100
	Medium	65-75		110-140
	High	80-100		160-200+
Hemlock & Red Pine	All grades	25-45		85-130
Red Oak	Low	30-50		90-140
	Medium	80-150		170-320
	High	170-220		350-600
White Birch	Sawlogs	60-90		140-200
Sugar Maple	Sawlogs	50-85		130-180
Beech	All grades	25-60		90-120
White Ash	All grades	40-150		90-400
Pallet (Mixed Hardwood)	All grades	25-35		90-125
Firewood (Hardwood); pulp	per cord	5-12		
Softwood pulp	per ton	\$2.00-\$5.00		
Biomass	per ton	\$0.75		

(1) Trucking charges per MBF are approximately \$18 for the first 10 miles + 40¢ for additional miles.

(2) Logging costs for softwoods are \$35 to \$55 per MBF and \$45 to \$65 per MBF for hardwoods.

Carroll County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$40	\$80-90	\$100-120
	Medium	70-85	90-110	102-150
	High	80-110	110-140	150-195
Red Pine	Medium	20-35	70-85	90-110
	High	35-50	85-100	110-130
Hemlock	Medium	20-35	50-80	90-110
	High	35-45	80-100	110-130
Spruce	Medium	30-60	85-100	110-120
	High	60-75	100-120	120-150
Ash	Medium	40-70	90-150	135-200
	High	70-110	150-230	250-460
Basswood	Medium	25-50	50-80	85-150
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	100-130
	Medium	40	90	130-150
	High	70-90	110-130	150-260

Carroll County (Continued)

Species	Quality	Stumpage	Roadside	Delivered
Sugar Maple Boltwood				\$60/cord
Paper Birch	Low	\$60	\$85	120-140
	Medium	75	120	140-170
	High	90-100	140	170-190
Paper Birch Boltwood	Medium	30/cord	40-50/cord	70-100/cord
Yellow Birch	Medium	60	70-80	120-160
	High	90	90-140	160-200
Oak	Low	30-80	60-120	90-130
	Medium	80-120	120-200	130-250
	High	120-250	200-300	250-500

Cheshire County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	\$55-90	\$80-125	\$110-155+
Red Pine	Sawlog	40-50	85-100	100-150
Hemlock	Sawlog	30-45	60-90	90-120
Spruce	Sawlog	35-45	67-85	90-115
Beech	Sawlog	30-50	50-85	90-130
Poplar	Sawlog	30-50	65-85	90-115
Red Maple	Sawlog	30-50	60-85	90-135
Red Oak	Sawlog	160-250+	190-275+	210-450+
Sugar Maple	Sawlog	60-120	90-160	100-225
White Ash	Sawlog	80-160	95-200	125-325+
White Oak	Sawlog	60-120	100-170	120-200+
White Birch	Sawlog	50-85	100-160	125-180
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Yellow & Black Birch	Sawlog	50-120	90-160	100-120+
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Mixed Hardwood	Pallet	25-45	50-70	90-120
	Tie Log	30-50	50-70	95-120

Coos County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	\$55-80	\$110-130	\$160-180
Spruce-Fir	Sawlog	40-55	110-125	155-175
Hemlock	Sawlog	20-30	70-85	120-130
Hard Maple	Sawlog	45-75	115-170	150-210
Cherry	Sawlog	70-100	170-190	220-250

Coos County (Continued)

Species	Quality	Stumpage	Roadside	Delivered
Soft (Red) Maple	Sawlog	\$20-40	\$60-90	\$120-140
Poplar	Sawlog	20-30	70-90	120-125
White Birch	Sawlog	60-90	110-170	180-250
	Boltwood	30-40/cord	65-85	100-115
Beech	Sawlog	20-30	70-90	120-125
Yellow Birch	Sawlog	70-100	125-180	180-250
	Boltwood	20-30/cord	50-70	100-160
White Ash	Sawlog	70-115	125-200	240-400
Red Oak	Sawlog	80-140	140-240	190-300
Basswood	Sawlog	30-50	85-110	120-160
Mixed Hardwood (Pallet & Tie Stock)	Sawlogs	20-30	70-90	120-125

Note: Veneer grade and high quality sawlogs have significantly higher values.

Grafton County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	\$65-90	\$110-135	\$90-220
Hemlock	Sawlog	22-45	70-90	85-140
Spruce-Fir	Sawlog	30-50	75-95	105-145
Yellow Birch	Sawlog	60-95	125-160	150-200
Sugar Maple	Sawlog	60-85	125-150	125-200
White Birch	Sawlog	55-80	120-145	125-230
Red Maple	Sawlog	20-40	85-105	110-160
White Ash	Sawlog	110-170	175-235	170-350+
Beech	Sawlog	25-35	90-100	100-130
Red Oak	Sawlog	140-225	205-290	140-525
Red Pine	Sawlog	30-40	75-85	85-135
Poplar	Sawlog	20-30	75	90-120
Pallet Mxd.	Sawlog	20-35	85-100	80-110

Hillsborough County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$50-60	\$80-90	\$110-120
	Medium	60-70	100-110	130-140
	High	75-90	115-120	150-175
Hemlock	Low	30-35	70-75	80-90
	High	40-45	85-90	100-110
Red Oak and W. Ash	Low	70-90	90-100	140-180
	Medium	100-115	140-160	200-275
	High	175-225	200-250	300-400
Other Hardwoods				
Birch, Maple, Ash	Low	35-45	70-90	100-130
Mixed Hardwood	High	85-100	150-200	200+
Pallet Stock	Logs	30-40	—	90-130

Merrimack County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$40-50	\$80-90	\$90-110
	Medium	60-70	100-110	120-140
	High	80-110	140-160	165-225
Hemlock	Low	20-25	60-65	80-85
	High	25-40	65-75	85-95
White Birch	Medium	40-50	90-100	100-140
	High	50-60	120-130	160-170
Hard Maple	Medium	50-60	90-100	105-115
	High	60-70	100-110	115-125
White Ash	Medium	60-90	100-130	115-150
	High	90-125	130-165	165-275
Red Oak	Medium	125-150	225-250	275-325
	High	175-225	250-325	350-450
Pallet Stock	Logs	25-40	75-85	95-125
Mixed Hardwood				
Pulp Logs				\$12-18/ton
Hemlock Logs				16-18/ton
Spruce Pulp				18-29/ton

Rockingham County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$50	\$90	\$110
	Medium	70	110	130
	High	90+	120+	150+
Hemlock	Low	35	80	90
	High	50	95	120
Red & White Oak	Medium	100	150	180
	High	250+	310	450
Pallet	Log	40-50	—	110

Strafford County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low to Medium	\$50-65	\$90-110	\$130-150
	High	60-95	110-125	140-160
Hemlock	Low to Medium	25-40	60-75	110-120
	High	40-50	75-85	115-130
Red Oak	Low to Medium	75-100	110-140	150-180
	High	150-300	195-345	250-400
Other Hardwoods	Low to Medium	40-70	95-115	125-145
	High	100-125	145-160	180-195

Sullivan County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	\$55-60	\$65-100	\$125-130
	Medium	70-75	115-125	145-160
	High	75-90	125-145	160-185
Hemlock	Medium	30-35	70-80	100-110
	High	40-45	80-90	120-130
Spruce	Medium	30-35	70-80	100-110
	High	40-45	80-90	110-120
Yellow Birch & Black Birch	Medium	60-65	120-125	150-155
	High	65-75	125-135	155-165
White Birch	Medium	40-60	100-110	130-140
	High	50-60	110-120	140-150
Sugar Maple	Medium	50-60	110-120	140-150
	High	65-75	120-135	150-165
Red Oak	Medium	75-150	185-210	215-240
	High	150-200	260-310	240-290+
White Ash	Medium	125-150	185-210	215-240+
	High	150-200	210-260	240-290+
Red Maple	Medium	25-30	80-85	105-110
	High	30-40	85-95	110-120
Pallet		20-30	70-80	95-120
Other Hardwoods		15-30	65-80	90-105

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

Species	Stumpage	Roadside	Mill Yard
Spruce and Fir	\$7.00-11.00	\$35.00-40.00	\$47.00-51.00
Hemlock, White Pine	3.00-5.00	25.00-30.00	40.00-43.00
Tamarack, Red Pine	3.00-5.00	27.00-33.00	40.00-43.00
Hardwood	5.00-9.00	24.00-30.00	46.00-47.00
Fuelwood (residential)	10.00		

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

Prices of Pulpwood Per Cord – Central New Hampshire²

Species	Stumpage		Delivered
Softwood Pulp Random Length			
Pine	\$2.00-6.00	\$14.35-17.00/Ton or	\$31.00-36.00/cord
Hemlock	4.00-8.00	15.83-16.31/Ton or	36.00-39.00/cord
Spruce and Fir	4.00-8.00	16.63-17.62/Ton or	36.00-37.00/cord
Hardwood Pulp Random Length			
Mixed Hardwood	5.00-8.00	16.00-17.00/Ton or	43.00-44.00/cord
Poplar	5.00-10.00		

Prices of Pulpwood Per Cord – Southern New Hampshire²

Species	Stumpage	Roadside	Delivered at Mill
Softwood Pulp	\$1.00-1.50/Ton	\$12.00-26.00/Ton	\$17.00-31.00/Ton
	2.25-4.00/Cord	35.00-55.00/Cord	48.00-70.00/Cord
Random Length Softwood	3.00-5.00		10.00-16.50/Ton
8' Long Pulpwood - Softwood			19.00/Ton

Table III. Price of Debarked Slabs and Edgings Per Green Ton Strapped

	Delivered to Chipping Plant
Softwood ¹ (mixed)	\$6.50-7.00
Hardwood (mixed)	6.00-7.00

¹Special prices are paid for slabs and edgings sorted by species (spruce and fir).

²Contact buyers for exact prices and mileage allowances.

Price of Pulp Chips^{1, 2}

	Produced from Slabs and Edgings		
	F.O.B. Sawmill Per Green Ton	Delivered to Pulp Mill Per Green Ton	Average
Pine and Hemlock	\$12.50	\$19.00-27.00	\$22.00-23.00
Spruce and Fir	12.00-14.50	23.00-30.00	26.00-27.00
Hardwood (mixed)	10.50-13.50	18.50-25.00	22.00-23.00

¹Chips are bought by weight or by volume.

²Contact buyers for exact prices and mileage allowances.

Average Price of Total Tree Chips and Fuel Chips

	Spout Prices (including stumpage)	Delivered	Average
Pulp quality: Hardwood	\$16.00-21.00	Depending on distance	
Softwood	13.00-15.00		
Fuel quality: Mixed Species (Biomass)	\$12.00-14.00	\$15.00-25.00	0.35-1.00/ton
Biomass stumpage		New England markets	

Table IV. Price Range Boltwood, Posts, Railroad 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	\$110.00-115.00 per cord
Beech	20.00-25.00	40.00-45.00	70.00-90.00 per cord
Sugar Maple and Ash	25.00-30.00		80.00-100.00 per cord
Yellow Birch	25.00-30.00	50.00-70.00	80.00-100.00 per cord

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

Guardrail Posts

Species	Min. Small End Diameter	Max. Large End Diameter	Length	Delivered
Red Pine Pitch Pine White Pine Spruce	5"	10"	7' or Multiples	\$1.00-1.35 ea.

Railroad Crossies

Grade	Size	Green Mixed Hardwood Ties ¹
		F.O.B. Mill
		per MBF
3	(6" x 8" x 8'6")	\$240 - 250
4	(7" x 8" x 8'6")	240 - 250
5	(7" x 9" x 8'6")	240 - 250

Switch Ties (mixed hardwood)¹

(7" x 9")	9'-12' long	\$240 per MBF +
(7" x 9")	13'-16' long	260 per MBF +

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

Table V. Price Range of Hardwood Fuelwood Per Cord

Species	Stumpage	Roadside	Delivered Buyers Premises
Hardwood	} \$7.00-15.00		
4' Wood		\$40.00-65.00	\$60.00-85.00+
12", 14", 16" Lengths		60.00-80.00	75.00-110.00
Slabs (Hardwood or Softwood)		20.00-25.00	25.00-55.00
Dry fuelwood, 16 inches			100.00-125.00
Tree length loads of cordwood			
Southern N.H.	7.00-15.00	37.00-40.00	50.00-55.00
Northern N.H.	6.00-10.00	32.00-35.00	50.00+

Table VI. Price Range of Sawdust and Shavings and Bark

	Per-Cord Green at Sawmill	Per Bag - Dry
Sawdust	\$10.00-18.00 or 7.50-18.00 per Ton	
Shavings	15.00-40.00	\$2.00-2.50
Bagged Dry Shavings		2.00-2.50
Bark	6.00-12.00 per yard (loaded) or 12.00 to 14.50 per Ton	

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

Sawlogs: Felling and Limbing	\$15 and up per MBF
Yarding and Bucking (softwood)	30-35 per MBF
(hardwood)	35-40 per MBF
Felling, Yarding and Bucking (softwood)	45-50 per MBF
(hardwood)	60-70 per MBF
Pulpwood and Cordwood: (with machine) stump to roadside	
Random length	25-30 per cord

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

Sawlogs: Felling and Limbing	\$10-15 per MBF
Yarding and Bucking (softwood)	30-35 per MBF
(hardwood)	35-40 per MBF
Felling, Yarding and Bucking (softwood)	45-50 per MBF
(hardwood)	45-60 per MBF
Pulpwood and Cordwood: (with machine) stump to roadside	
Random length	30-35 per cord

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

Custom Sawing —	
Softwood	\$100.00-120.00 per MBF or 100.00-150.00 per hour
Hardwood	125.00-150.00 per MBF or 100.00-150.00 per hour
Planing	35.00+ per MBF, 2 sides; 50.00 per MBF 4 sides; patterns extra.
Resawing	30.00-40.00 per MBF

Table VIID. Representative Kiln Drying Costs (Custom)

4/4 Pine (Yard)	12-14% MC	0010\$70.00-75.00
4/4 Pine - Furniture	6-8% MC	80.00-90.00
4/4 Oak - Furniture	6-8% MC	140.00-150.00
4/4 Maple - Furniture	6-8% MC	90.00-95.00

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

Sawlogs: Local deliveries	\$18.00-20.00 per MBF
Distant deliveries	18.00-20.00 for the first 10 miles and 40¢ for each additional mile.
	OR
	35.00 per hour
Cordwood and Pulpwood:	100.00 per load.
Lumber and Chips:	1.80-2.00 per loaded mile.

*For short hauls or partial loads minimum charges may apply

CHRISTMAS TREE SITUATION

The multi-million dollar Christmas tree industry in New Hampshire continues to enjoy success with demand having exceeded supply for more than a decade.

A national prediction of excess supply within 10 years or so will apparently hold true for New Hampshire also as increased numbers of landowners are planting Christmas tree stock each year. Innovative marketing and a high quality product will appear to abate the impact of a glut in New Hampshire. The fact that very few of the 200 or more growers in New Hampshire depend solely on Christmas trees for a living might help ease any economic impact of a surplus.

Balsam fir continues to be the backbone of New Hampshire's Christmas tree industry while Scotch pine and the pines remain strong also. Planting stock for all species is often in short supply.

Large-scale wholesale producers continue to enjoy "sold out" status by late summer and cut-your-own operations are still unable to meet the demand.

Planned market strategies should help offset any tree surplus that New Hampshire growers may experience in the future.

Pest problems such as balsam twig aphid, gall midge, needle casts, rusts and the like are continued concerns as out-planted Christmas tree stock increases.

Brush and wreath demand remains high with continued opportunities for expansion.

Currently the New Hampshire Christmas tree industry is strong and viable and should remain so for some time to come.

Table VIII. Wholesale Price Range¹ of Christmas Trees and Boughs²

	Stumpage Single	Roadside Single	Roadside Bundle
Pasture Run (unimproved)			
Balsam Fir	\$1.50-4.00	\$3.25-4.25	\$5.25-8.00
Spruce	2.00-3.00	3.00-3.75	4.00-7.00
Improved (but not sheared)			
Balsam	4.00-6.00	5.50-8.00	
Spruce	3.00-4.50	4.50-7.00	
Sheared			
Balsam	7.00-10.00	8.50-14.00	to \$2.00 per foot
Spruce	4.50-7.00	7.00-11.00	
Scotch Pine	5.50-7.50	8.50-12.00	
		Roadside	
Boughs (baled or tied)	Per Bundle ³	Per Ton	
Balsam Fir	\$3.50-6.00	\$135.00-250.00	
Spruce	2.75-5.00	110.00-200.00	
Pine	3.00-5.00	120.00-200.00	
Wreaths - Size 12" to 14"			
Balsam Fir - single face	\$2.25-2.75		
double face	2.75-3.50		

¹Prices vary according to size of order, quality, grade and tree size.

²Producers should contact buyers well in advance of cutting and arrange for deposits and specific prices, and use a written contract.

³Price based on 50 lb. bundle. Prices vary with quality and quantity.

Table IX. Retail Price Range of Single Christmas Trees

(Select and cut your own)	
Scotch Pine	
Balsam Fir	
White Spruce	\$10.00-20.00 or \$2.00-3.00 per lineal foot
Douglas Fir	
Norway Spruce	
Blue Spruce	

MAPLE PRODUCTS SITUATION

The maple products industry is entering the 1985 production season with inventories down, both in New England and Canada. Bulk syrup prices have been moderately higher i.e. 10¢ per lb. at the wholesale level. Maple products processing equipment sales are up indicating investment in updated equipment to improve the productive capacity and efficiency of the industry. Sap prices show a good improvement over previous years.

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

% Sugar	¢/gal.	% sugar	¢/gal.
0-1.1	0.5	3.4	25.6
1.2	2.0	3.5	26.4
1.3	3.5	3.6	27.2
1.4	5.0	3.7	28.0
1.5	6.5	3.8	28.8
1.6	8.0	3.9	29.6
1.7	9.5	4.0	30.4
1.8	11.0	4.1	31.2
1.9	12.5	4.2	32.0
2.0	14.0	4.3	32.8
2.1	14.7	4.4	33.6
2.2	15.4	4.5	34.4
2.3	16.1	4.6	35.2
2.4	17.8	4.7	40.1
2.5	18.5	4.8	40.8
2.6	19.2	4.9	41.6
2.7	20.0	5.0	42.4
2.8	20.8	5.1	43.2
2.9	21.6	5.2	44.0
3.0	22.4	5.3	44.8
3.1	23.2	5.4	45.6
3.2	24.0	5.5	46.4
3.3	24.8		

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

	<u>Maple Syrup</u> Retail		<u>Maple Products</u> Retail
1 gallon	\$18.00-24.00	Sugar	1 lb. \$5.00-6.00
½ gallon	11.00-13.00	Creme	8 oz. 3.00-4.00
1 quart	6.50-7.50	Candy	½ lb. 4.00-4.50
1 pint	4.50-5.25		
½ pint	2.50-3.25		
Store Prices			
1 gallon	\$19.00-25.00		

Rent Price Per Tap Hole

15-25 cents for sugar maples in the woods and not too easy to get to;
up to 25 cents for easily accessible trees and trees along roadsides.

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 PRODUCTS 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, 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, edgings 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 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. 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

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'x4'x8')	=	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

Wood fuel is generally sold by the standard cord which is a pile of wood 8 feet long, 4 feet high and 4 feet wide containing a gross volume of 128 cubic feet.

A standard cord of fuelwood consisting of round 4 foot sticks fitting into a 4'x4'x8' space, when cut into 16 inch lengths, split and piled, will generally stack to occupy 100 to 105 cubic feet. A "thrown in" cord of 16" cut and split wood will generally occupy a volume of 150 to 160 cubic feet.

**Approximate Stacked Volume of a Cord
of Wood, Cut and Split**

Length	Approximate Cu. Ft.	Approximate Percent Shrinkage from 128 Cu. Ft.
48"	128	0
24"	110-113	12
16"	103-107	16
12"	100-103	20

**Approximate Weight and Heating Value Per Cord (80 cu. ft.) 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	3,440	20.0	204
Aspen	43	2,160	12.5	128
Beech, American	54	3,760	21.8	222
Birch, yellow	57	3,680	21.3	217
Elm, American	54	2,900	17.2	176
Hickory, shagbark	63	4,240	24.6	251
Maple, red	50	3,200	18.6	190
Maple, sugar	56	3,680	21.3	217
Oak, red	64	3,680	21.3	217
Oak, white	63	3,920	22.7	232
Pine, eastern white	36	2,080	12.0	123

¹50 to 60% efficiency of burning unit.

²70% 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 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-	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

¹Weights 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"×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 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	1-1/3	1-2/3	2	2-1/3	2-2/3
1 × 3	1-1/2	2	2-1/2	3	3-1/2	4
1 × 4	2	2-2/3	3-1/2	4	4-2/3	5-1/3
1 × 5	2-1/2	3-1/3	4-1/6	5	5-5/6	5-2/3
1 × 6	3	4	5	6	7	8
1 × 7	3-1/2	4-2/3	5-5/6	7	8-1/6	9-1/3
1 × 8	4	5-1/3	6-2/3	8	9-1/3	10-2/3
1 × 10	5	6-2/3	8-1/3	10	11-2/3	13-1/3
1 × 12	6	8	10	12	14	16
1¼ × 4	2-1/2	3-1/3	4-1/6	5	5-5/6	6-2/3
1¼ × 6	3-3/4	5	6-1/4	7-1/2	8-3/4	10
1¼ × 8	5	6-2/3	8-1/3	10	11-2/3	13-1/3
1½ × 4	3	4	5	6	7	8
1½ × 6	4-1/2	6	7-1/2	9	10-1/2	12
1½ × 8	6	8	10	12	14	16
2 × 4	4	5-1/3	6-2/3	8	9-1/3	10-2/3
2 × 6	6	8	10	12	14	16
2 × 8	8	10-2/3	11-1/3	16	18-2/3	21-1/3
2 × 10	10	13-1/3	16-2/3	20	23-1/3	26-2/3
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	10-2/3	13-1/3	16	18-2/3	21-1/2
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	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
				8	7-1/4	7-1/2
				9	8-1/4	8-1/2
				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
				5	4-1/2	4-5/8
				6	5-1/2	5-5/8
				8	7-1/4	7-1/2
				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	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				
8	7-1/4	7-1/2				
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				
Timbers	5 & Thicker	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 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	1/12	4×4	1-1/3
1×2	1/6	4×5	1-2/3
1×3	1/4	4×6	2
1×4	1/3	4×7	2-1/3
1×6	1/2	4×8	2-2/3
1×8	2/3	4×9	3
1×10	5/6	4×10	3-1/3
1×12	1	4×12	4
2×2	1/3	5×5	2-1/12
2×3	1/2	6×6	3
2×4	2/3	7×7	4-1/12
2×5	5/6	8×8	5-1/3
2×6	1	9×9	6-3/4
2×7	1-1/6	10×10	8-1/3
2×8	1-1/3	11×11	10-1/12
2×9	1-1/2	12×12	12
2×10	1-2/3	14×14	16-1/3
2×11	1-5/6	15×15	18-3/4
2×12	2	16×16	21-1/3
2×13	2-1/6	17×17	24-1/12
2×14	2-1/3	18×18	27
2×15	2-1/2	19×19	30
2×16	2-2/3	20×20	33-1/3
3×3	3/4	22×22	40-1/3
3×4	1	22×24	44
3×5	1-1/4	24×24	48
3×6	1-1/2	26×26	56-1/3
3×7	1-3/4	28×28	65-1/3
3×8	2	30×30	75
3×9	2-1/4	32×32	85-1/3
3×10	2-1/2	34×34	96-1/3
3×11	2-3/4	36×36	108
3×12	3		