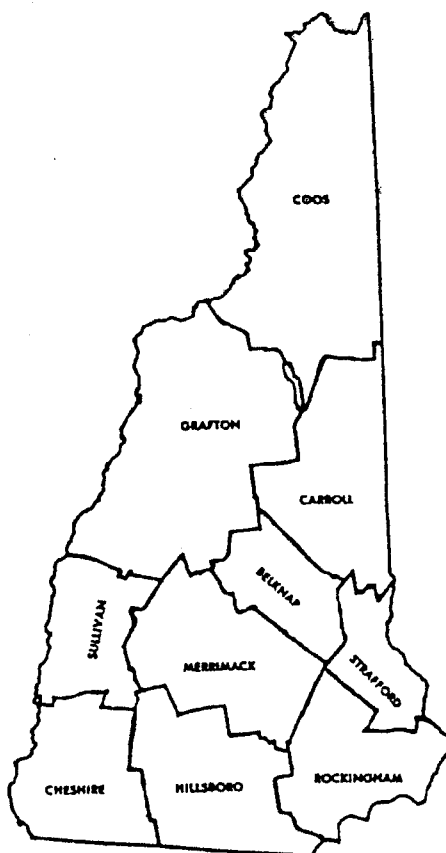# NEW HAMPSHIRE

FOREST MARKET REPORT

1994

UNIVERSITY OF
NEW HAMPSHIRE
COOPERATIVE EXTENSION
Helping You Put Knowledge And Research To Work

MAP OF NEW HAMPSHIRE

(Showing Counties)

COOS

GRAFTON

CARROLL

BELKNAP

SULLIVAN

MERRIMACK

STRAFFORD

CHESHIRE

HILLSBORO

ROCKINGHAM

By

Nicolas Engalichev

Extension Specialist, Forest Products
Marketing and Utilization

UNIVERSITY OF
NEW HAMPSHIRE

COOPERATIVE EXTENSION

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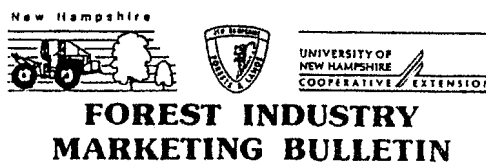Taylor Hall, University of New Hampshire
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INDEX

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, foresters, 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 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 1994

Housing construction has started a rebound in the last quarter of 1993, and is fulfilling its traditional role of pulling the economy back from recession. Housing provides the focal point of many wood products. Housing demand is driven principally by population growth (demographics) and credit market conditions.

The growth in population among younger adults has slowed within the past decade. As a result, the annual number of new households has been declining—from about 1.5 million in the 1970s to 1.0 million in the 1990s. For another decade, this trend will put a damper on housing demand. Nevertheless, in the near term, households who postponed buying a home in the eighties because of high costs are now buying housing. This back-logged demand has been estimated to be as high as three million units. Results from home builders' surveys also indicate a rise in housing recovery for 1994.

A key element in affordability is financing costs. A sharp rise in long-term interest rates would dampen housing prospects. Such an outcome is unlikely in 1994 because of low inflation, moderate and sustainable economic growth, and accommodative monetary policies.

Given the likelihood that many renters will take advantage of the opportunity to buy homes, the demand will continue for single-family houses. Vacancy rates in apartments are currently high and unlikely to fall in 1994, giving little reason for improvement in that sector. Overall housing starts are projected at 1.4 million units in 1994, including about 1.2 million single-family units.

OUTLOOK FOR WOOD PRODUCTS

Softwood Lumber

Most 1993 data point to a consumption level of slightly over 45 million board feet of softwood lumber, about the same as that in 1992. The economic and housing outlook is likely to support an increase of one to two billion board feet. How does softwood lumber supply measure against this robust demand?

The timber supply situation on the West Coast is well known, and its impact on wood products supply is evident in the data. For 1993, western lumber production is on a pace of 17.5 billion board feet, down 7% from 1992 and 8% from 1991. Underlying forces point to continued restrictions in the region:

- The backlog of uncut Federal timber under contract in Oregon and Washington is shrinking and has been reported at 3.1 billion board feet compared to 4.4 in 1992.

- Timber prices have risen, continuing a trend begun in 1991.

- Timber price increases have had a predictable effect on supply from private non-industrial holdings. Recent harvests from this source have approximately doubled, but the size of this sector is too small to make up the shortfall from traditional Federal sources. Moreover, private industrial forest owners have evidently been unable to increase their supply significantly.

These trends suggest that western lumber mills will find it difficult to increase output in 1994, at least until the administration's "option nine" timber compromise proposal is put into effect. In this plan, the amount of timber harvested each year from Federal lands is set at 1.2 billion board feet. This amount falls 77% short of the 5.2 billion annual average cut from 1985 to 1989 and 65% short of the 3.6 billion cut from 1980 to 1984. However, the export of logs, primarily from the Pacific Northwest, has fallen by 1.5 bilion board feet since 1989, moderating the effect of the Federal timber loss. Nevertheless, it seems unlikely that western lumber mills will be able to increase lumber output. Therefore, the increase in demand will have to be met from other regions.

In the South, production is on a pace to slightly exceed the 1992 level of 14.1 billion board feet. Maximum capacity is estimated at 16 to 17 billion board feet, but such a level of output is likely only under optimum conditions. An increase in production of 1 billion board feet is considered attainable if prices for logs increase sufficiently to draw the needed timber on the market.

The remaining shortfall in supply would have to be obtained primarily from Canada, as indeed it has been in 1993. Canadian production through the first 8 months of 1993 rose by 6.7%, while exports to the United States are projected to be 9.7% higher than a year ago.

Prices for lumber have followed a roller coaster path in 1993; they doubled and reached new records in the first quarter, collapsed in the second, rose again through most of the summer and fall,

and are approaching earlier high levels as the end of the year approaches. This pattern is not new or unusual to the lumber market in an expanding, housing-led economic recovery. What is different is the extent, rapidity, and suddenness of the swings. Normally, such swings are experienced only during strikes and similar anomalies.

Annual figures offer a better perspective. Compared to 1992, the price of dimension lumber increase by about 40% in 1993. Given the likelihood of increased demand, we could expect a higher price in 1994. The rise could be aggravated by a doubling of the tariff on Canadian lumber imports, as recently recommended by the Department of Commerce.

Hardwod Lumber

Through the first 7 months of 1993, hardwood lumber consumption was slightly below consumption at the same time in 1992. However, for 1993 as a whole, consumption is expected to increase by about 2%, to about 10.7 billion board feet. Anticipated growth in the important hardwood markets, notably furniture and cabinetry, suggests that a rise in production and consumption is likely in 1994.

Structural Panels

For all of 1993, structural panel consumption is projected to rise by 3%. In 1994, 2% growth is anticipated. This change masks an important shift in regional shares of production. Western plywood production, which was 6.2 billion square feet as recently as 1990, is projected to be 3.2 billion square feet in 1994. Oriented strandboard production, on the other hand, is projected to rise from 7.2 billion square feet in 1993 to 8 billion square feet in 1994. This increase would have been greater except for the low profitability of the early nineties, which discouraged construction of new mills. The rise in oriented strandboard production will be boosted by the construction of three new mills in 1994 and another three mills in 1995. The mills are expected to add 2 billion square feet of capacity.

Nonstructural Panels

Problems affecting western plywood production have influenced and will continue to influence markets for nonstructural panels as well. Most of the lost plywood capacity will affect higher grade, sanded plywood that is slated for industrial and manufacturing uses. This loss has created opportunities for substitute products, such as particleboard and medium density fiberboard. Industries for both of these products have enjoyed a banner year in 1993, and 1994 is likely to follow suit. Plans to build new mills, which were shelved during the nineties, are being dusted off in light of the improved economics. The one flaw in the otherwise bright scenario is the shortage of fiber in the West. As a result of the reduction in lumber output, some mills have had difficulty procuring enough wood shavings. As a result, some mills have been operating on the basis of 5 days per week, and the western industry as a whole is reported to be functioning at 84% of capacity compared to 91% elsewhere in the country. Mills have resorted to innovative solutions to the shortage of wood fiber, including the use of straw (up to 8% of product content) and demolition debris (in mills located near cities).

Pulp and Paper

From the viewpoint of profitability, 1993 has been a year to forget for the pulp and paper sector. Despite modestly increasing demand for their products, most papermills have been reported to be operating at little better than break-even or even at loss as a result of their inability to raise prices in a soft market. The year has been marked by many mill shutdowns and downtime, but these have failed to turn the market.

Pulp prices have been mired at their cyclical lows throughout most of the year and only toward the end of the year have some increases been announced. At the same time, however, pulpwood prices have been steady to rising.

The outlook for 1994 is mixed. Some producers forecast an end to the industry's chronic profit weakness, but not until the end of the year or even into 1995, depending on the amount of economic growth.

A continuing development in the paper industry is continued user pressure on companies to supply products with higher recycled-fiber content. The administration issued an executive order in the fall that set targets for recycled-fiber content in government-purchased paper. According to the paper trade association, 38.5% of the nationwide paper consumption has been recovered for domestic recycling or export in 1993 to date. The association's 40% goal is expected to be met in 1994 and to climb to 42% in 1995.

Summary

In general, the prospect for the wood products industry looks favorable for 1994. The outlook for 1.4 million housing units appears conservative, and stronger housing production would guarantee a very robust year. The industry is faced with local probems of timber supply, but growth in capacity where timber is more freely available will ameliorate the supply outlook nationwide. Supplies of wood products should be adequate, although prices are likely to rise.

A strong economy will benefit most segments of the wood sector, but particularly those that own and grow timber.

SELLING TIMBER

When preparing to sell timber it is important to understand that the prices quoted in Table I reflect an average range of stumpage and mill prices for each county. Prices are quoted per thousand board feet (MBF). Stumpage prices are influenced by accessibility, volume, quality, market conditions, written contractual constraints, and competition among potential buyers. Despite some historically high stumpage prices, most woodlots do not have an abundance of high quality and high value timber.

Sellers of standing timber are advised to contact foresters and/or industry representatives for specific information and prices. Fact sheets on selling timber and timber sale agreements are available from county Extension offices.

1994 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')	$20-40	$90-115
	Medium	80-120	175-200
	High	100-150	220-300+
Red Pine		30-50	120-150
Hemlock		30-40	110-190+
Red Oak	Medium	200-400	350-600
	High	300-550	550-1150
White Ash	Medium to High	70-200	185-1000+
White Birch	Medium to High	70-500	160-650
Sugar Maple	Medium to High	80-250	175-800+
Red Maple	Sawlog	35-200	125-250+
Beech	Sawlog	35-200	125-250+
Pallet		20-40	75-140
Fuelwood (per cord)	Long	7-10	
Hardwood Pulp (per cord)	Long	3-8	45-47
Pine Pulp (per cord)		2.00-6.00	45-56
Hemlock Pulp (per cord)		3.00-12.00	50-55
Biomass Fuel Chips (per ton)		0-1.50	15-18
Oak Veneer	Veneer	475-1050	600-1450+
Tie Log	Sawlog	15-30	90-125
Red Spruce	Sawlog	30-95+	115-175+

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	190-330
Red Pine	Medium	20-35	80-100	100-120
	High	35-80	100-130	110-150
Hemlock	Medium	20-35	65-80	90-110
	High	35-50	80-100	110-170
Spruce	Medium	30-60	85-100	110-150
	High	60-75	100-160	175-200
Ash	Low	40-70	90-150	135-200
	Medium	70-150	210-300	250-400
	High	140-300	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	20-100	70-150	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	165-180	170-220
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	3-15	19-20	45-52
Fuelwood Chips		0-1.00/ton		

Cheshire County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Sawlog	$55-120	$90-215+	$120-250
Red Pine	Sawlog	40-75	85-120	100-165
Hemlock	Sawlog	25-50	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	65-110	120-175+
Red Oak	Low	150-250	210-275+	235-300+
	Medium	225-325	260-375+	275-400+
	High	300-500+	325-550	400-700+
Sugar Maple	Sawlog	60-150	90-200+	175-400+
White Ash	Sawlog	150-250	175-300+	200-400+
White Oak	Sawlog	100-160	125-225+	200-250+
White Birch	Sawlog	45-80	90-130	120-160+
	Boltwood	20-30/cord	40-60/cord	60-80/cord
Yellow & Black Birch	Sawlog	45-90	100-160	125-240
	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	$40-70	$160-180
	High	70-100	200-250
Red Pine	Sawlog	30-50	160-180
Spruce-Fir	Sawlog	60-100	200-280
Hemlock	Sawlog	25-35	125-165
Hard Maple	Sawlog	80-100	250-400
Soft (Red) Maple (Tie Logs)	Sawlog	35-40	120-160
White Birch	Sawlog	60-100	150-240
	Boltwood	55-80	100-160

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Coos County *(Continued)*

Species	Quality	Stumpage	Delivered
Beech	Sawlog	$25-35	$140-200
Yellow Birch	Sawlog	100-130	240-300
	Boltwood	30-70/cord	100-160
Red Oak	Sawlog	150-230	300-700
White Ash	Sawlog	80-100	200-300
Basswood	Sawlog	25-35	150
Mixed Hardwood (Pallet & Tie Stock)	Sawlogs	25-35	120-140
White Birch	Veneer	275-300	525-1200
Yellow Birch	Veneer	275-300	525-1200
Sugar Maple	Veneer	150-300	700
White Ash	Veneer	150-300	600-700
Red Oak	Veneer	300	900-1200

Grafton County

Species	Quality	Stumpage	Delivered
White Pine	Low (8'-10')	$50-60	$75-150
	Medium	70-95	140-250
	High	100-140	200-395
Hemlock	Sawlog	20-35	100-170
Spruce-Fir	Sawlog	65-90	115-250
Red Pine	Sawlog	25-50	115-175
Yellow Birch	Sawlog	75-150	175-350
Sugar Maple	Low	70-80	140-225
	Medium	120-150	230-450
	High	150-250	300-600
White Birch	Sawlog	70-115	175-260
Red Maple	Sawlog	20-40	100-350
White Ash	Sawlog	80-200	200-500
Beech	Sawlog	25-50	100-300
Red Oak	Low	90-120	140-200
	Medium	130-250	225-400
	High	250-400	300-800
Poplar	Sawlog	20-50	90-170
Pallet Mxd. & Tie Logs	Sawlog	15-35	75-130
White Birch	Veneer	150-300	300-650
Yellow Birch	Veneer	200-400	350-800
Sugar Maple	Veneer	200-450	500-900
White Ash	Veneer	200-400	500-700
Red Oak	Veneer	300-800	600-1450

• Basswood, Butternut, and Black Cherry: Call Grafton County Forester for referral to specialty markets.

Hillsborough County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$60-70	$85-100	$120-130
	Medium	80-90	100-115	140-180
	High	95-115	120-140	190-230
Hemlock	Low	30-35	70-75	90-110
	High	40-45	85-90	100-120
Red Oak and W. Ash	Low	85-125	140-185	175-230
	Medium	150-250	230-300	250-400
	High	300-400	350-500	500-750
Other Hardwoods				
Birch, Maple	Low	40-50	70-90	100-150
Mixed Hardwood	High	90-130	150-200	200-300
Pallet Stock	Logs	30-45	60-75	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	165-250
Hemlock	All	25-35	70-90	80-150
White Birch	Medium	30-50	80-110	100-160
	High	60-100	100-140	200+
Hard Maple	Medium	40-90	100-110	100-140
	High	90-200	110-160	175-300+
White Ash	Medium	50-175	140-200	100-250
	High	175-200	200-350	250-400+
Red Oak	Medium	150-300	200-350	225-400
	High	300-450	350-500	350-600+
Pallet Stock	Logs	25-40	75-100	80-125
White Pine	Tie Logs	20-30	70-90	100-110

Rockingham County

Species	Quality	Stumpage	Roadside	Delivered
White Pine	Low	$60	$110	$90
	Medium	90	120	140
	High	150+	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	100-145	140-200	185-300
Hemlock	Low to Medium	20-30	60-75	85-120
	High	35-40	75-85	100-120
Red Oak	Low to Medium	100-200	175-275	200-350
	High	200-450	275-600	375-900+
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	$50-80	$75-110	$100-150
	Medium	80-100	120-140	160-190
	High	90-120	135-175	185-240
Hemlock	Sawlog	30-60	85-110	125-150
Spruce	Sawlog	40-80	100-140	150-180
Yellow Birch and Black Birch White Birch	Sawlog	50-80	120-170	135-190
Sugar Maple	Sawlog	80-180	125-295	250-400
Red Oak	Sawlog	200-350	350-460	300-500
	Veneer	325-500+	750-1000	750-1100
White Ash	Sawlog	125-200	170-270	250-300
Red Maple	Sawlog	35-55	80-110	140-160
Pallet		20-30	80-100	110-125
Other Hardwoods		30-50	80-170	130-160

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

Species	Stumpage	Roadside	Delivered Per ton	Per cord
Spruce and Fir	$8.00-16.00		$16.00-24.00	$35.00-53.00
Hemlock	5.00-20.00		16.00-36.00	41.00-90.00
Tamarack, Red Pine White Pine	3.00-5.00		20.00-26.00	44.00-57.00
Hardwood	4.00-9.00		16.50-22.50	43.00-58.00

*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	Delivered Per cord
Mixed Softwood Pulp	$5.00-10.00	$14.00-20.00	$35.00-44.00
Pine	2.00-5.00	14.00-17.00	33.00-40.00
Hemlock	5.00-10.00	15.00-34.00	80.00-85.00
Spruce and Fir	5.00-10.00	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	$0.00-1.50/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	1.00-5.00	15.00-30.00/cord	14.00-16.50/ton
Mixed Hardwood	6.00-10.00		14.00-20.00/ton
Biomass (mixed)	0.00-1.25/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	$0.00-2.00/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	$0.00-1.00/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
	Boltwood Per Cord[1]		
White Birch	$55.00-80.00	$95.00	$95.00 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	5"	10"	7' or Multiples	$1.75 ea.
White Pine				
Spruce				
Poles and Piling				
Red Pine	7"	17"	40'	$0.80-1.00/lin. ft.
Pitch Pine				

Railroad Crossties and Switch Ties

Product	Size	Oak Ties Per MBF	Mixed Hardwood Ties[1] Per MBF
Ties	(7"×9"×8'6")	$310.00	$340.00
Ties	(7"×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	} $7.00-15.00	$32.00-60.00	$60.00-125.00
4' Wood		60.00-80.00	80.00-130.00
12", 14", 16" Lengths		15.00-40.00	25.00-55.00
Slabs (Hardwood or Softwood)			95.00-150.00
Dry Fuelwood, 16 inches			
Tree length loads of Cordwood			
Southern N.H.	8.00-12.00	25.00-45.00	40.00-65.00
Northern N.H.	8.00-15.00	25.00-40.00	40.00-60.00

Table VI. Price Range of Sawdust and Shavings and Bark

Sawdust	$ 9.00-25.00 per cord green at sawmill or	$6.00-10.00/yard
	12.00-15.00 per ton	15.00+/cord (farm bedding)
Shavings	10.00-20.00 per cord green at sawmill or	10¢ per cu. ft.
Bagged Dry Shavings		2.00-2.50 per bag
Bark (mulch)	8.00-15.00 per yard (loaded) or	15.00-20.00/yard (processed)
	12.00-18.00 per ton	13.00-27.00 per ton (processed)

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

Sawlogs: Felling, Yarding, and Bucking	Softwood	Spruce/Fir	$65.-90. per MBF
		Pine/Hemlock	65.-80. per MBF
	Hardwood		70.-120. per MBF
	Veneer		100.-150.+ per MBF
Pulpwood and Cordwood: (with machine) stump to landing			
Random length			18.-28. per cord
Biomass			6.-8. per ton
Contract Chipping—roadside			8.-10. per ton

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

Sawlogs: Felling and Limbing		$15.-20. per MBF
Yarding and Bucking	(softwood)	40.-60. per MBF
	(hardwood)	50.-100. 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	Softwood	20.-30. per cord
	Hardwood	23.-35. per cord

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

Custom Sawing—	
Softwood	$125.-180. per MBF or 125.-180. per hour
Hardwood	175.-225. per MBF or 150.-200. per hour
Planing	45.-50. per MBF, 2 sides; 75.+ per MBF 4 sides; (patterns $20. extra).
Resawing	40.-50. 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	$25.00-55.00 per MBF
Distant deliveries	25.00-35.00 per MBF for the first 10 miles and 40¢ to 75¢ for each additional mile per MBF OR 40.00 to 60.00 per hour
Cordwood and Pulpwood:	11.50-30.00/cord
Chips: 3.00-6.00 per loaded mile	

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

NEW HAMPSHIRE CHRISTMAS TREE SITUATION—1993-1994

New Hampshire's Christmas tree growers report a good season for 1993 despite a continued national and regional tree surplus.

Wholesale orders and prices remained steady with little, if any, price decrease despite "bargain" priced competition from some Canadian growers and mid-west plantations. Later than usual ordering and reluctance to increase numbers on the part of buyers is indicative of the surplus.

An above average number of trees remained unsold at the retail level as competition is keen.

Wholesale trees from first rotation plantations are finding their way to their local retail markets, helping to displace imported trees. Retailers often prefer this as they can order fewer trees at a time.

Competition amongst choose and cut operations is intense as more plantations continue to come on line. Innovative marketing techniques are often necessary in this arena to attract customers. Choose and cut selling remains strong with weather during the yule season a real factor. Prices remained steady with no increase, and perhaps slight decreases in areas with consumers always looking for a bargain.

A national oversupply, competition, the artificial tree, loss leader pricing of large national retail chains, and "dumping" of underpriced trees on the market is certainly having an impact on the industry as a whole.

Despite this, to the 300 or more Christmas tree producers in New Hampshire, prospects are positive and should provide little impact if aggressive, cooperative marketing efforts prevail and a quality tree at a competitive price is provided.

New establishment or plantation expansion is not in anyone's best interests at this time, even looking down the road the 8 to 10 years it takes to grow a tree to market.

Table VIII. Wholesale Price Range of Christmas Trees and Boughs

	Roadside 6-8′ Trees		Delivered
	Grade 1[a]	Grade 2	
Balsam Fir	$14.00-22.50	$8.00-14.00	Trees mostly
White Spruce	7.00-12.00		$12.00-25.00 ea.
Scotch Pine	8.00-10.00	5.00+	depending on
Blue Spruce	14.00-16.00	10.00+	species, quality,
White Pine	10.00-12.00	5.00	and quantity.
Fraser Fir	20.00-24.00	15.00-16.00	$1.00-2.00/tree or $2.50 per
BOUGHS (baled or tied)			loaded mile
Balsam Fir 50 lb. bundle	$7.00-8.00	$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	$2.75-4.00 ea.		
double faced	5.00-9.00 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

	(Select and cut your own)
White Pine	$15.00-40.00 per tree or
Scotch Pine	
Balsam Fir	$3.00-5.00 per lineal foot
White Spruce	
Douglas Fir	
Norway Spruce	
Blue Spruce	
Fraser Fir	

MAPLE SITUATION: 1994 MARKET REPORT

In 1993, the level of maple syrup production plummeted. U.S. production was down by 39 percent from the previous year, while Canadian production dropped 50 percent. Maple production was hampered by a number of weather factors: a late winter storm with deep snow, cold weather, and a shorter seaon.

The positive side of the poor season is that it helped to reduce the surplus of maple, particularly in Quebec. Earlier in the year, a non-profit entity, the Quebec Maple Products Marketing Group or "Regroupment," took control of the surplus and has reduced it from 27 million pounds to about 12 million, allowing the bulk price to slowly rise. Agriculture Canada provided funds to the International Maple Syrup Institute to conduct a Pure Maple Syrup Campaign in both the United States and Canada.

The 1994 season, particularly in Quebec, will greatly influence the market in the near future. Quebec has an in-place production capacity that could easily create another surplus.

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

% sugar	¢/gal.	% sugar	¢/gal.
1.5	8.6	3.6	37.4
1.6	11.3	3.7	38.7
1.7	13.0	3.8	40.0
1.8	14.5	3.9	41.2
1.9	15.9	4.0	42.5
2.0	17.3	4.1	43.7
2.1	18.5	4.2	45.0
2.2	19.8	4.3	46.3
2.3	21.1	4.4	47.5
2.4	22.3	4.5	48.8
2.5	23.6	4.6	50.0
2.6	24.8	4.7	51.3
2.7	26.1	4.8	52.6
2.8	27.4	4.9	53.8
2.9	28.6	5.0	55.1
3.0	29.9	5.1	56.3
3.1	31.1	5.2	57.6
3.2	32.4	5.3	58.9
3.3	33.7	5.4	60.1
3.4	34.9	5.5	61.4
3.5	36.2		

*Maple Syrup Digest, Feb. 1994. Prices paid by some buyers in New Hampshire and Vermont.

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

Volume	Maple Syrup Retail	Wholesale	Bulk Wholesale
1 gallon	$32.85	$26.00	**Grade "A" per 1 lb.**
½ gallon	18.65	13.80	light amber $1.55
1 quart	10.80	7.90	medium amber $1.45
1 pint	6.35	5.00	dark amber $1.25
½ pint	4.15	3.50	**Grades "B" and "C"** $1.00/lb.

Maple Products—Retail	Sugar	1 lb.	$7.10	Candy	½ lb.	$4.85-7.50
	Cream	1 lb.	7.60			

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

1 MBF	=	2.36 m³	=	83.33 cu. ft.
1 m³	=	423 bd. ft.	=	35.31 cu. ft.

Pulpwood

1 m³ = 35.31 cu. ft. Solid wood content of a cord may vary
between 75 and 90 cubic feet or 2.12 m³ and 2.55 m³.
(Example: 1 cord = 85 cu. ft. = 2.40 m³)

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, 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 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 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. 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, 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 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"×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 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
1×2	1	1⅓	1⅔	2	2⅓	2⅔
1×3	1½	2	2½	3	3½	4
1×4	2	2⅔	3½	4	4⅔	5⅓
1×5	2½	3⅓	4⅙	5	5⅚	5⅔
1×6	3	4	5	6	7	8
1×7	3½	4⅔	5⅚	7	8⅙	9⅓
1×8	4	5⅓	6⅔	8	9⅓	10⅔
1×10	5	6⅔	8⅓	10	11⅔	13⅓
1×12	6	8	10	12	14	16
1¼×4	2½	3⅓	4⅙	5	5⅚	6⅔
1¼×6	3¾	5	6¼	7½	8¾	10
1¼×8	5	6⅔	8⅓	10	11⅔	13⅓
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	5⅓	6⅔	8	9⅓	10⅔
2×6	6	8	10	12	14	16
2×8	8	10⅔	11⅓	16	18⅔	21⅓
2×10	10	13⅓	16⅔	20	23⅓	26⅔
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	10⅔	13⅓	16	18⅔	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	1%6
				3	2½	2%6
				4	3½	3%6
				5	4½	4⅝
	1	¾	25⁄32	6	5½	5⅝
				7	6½	6⅝
	1¼	1	1⅟32	8	7¼	7½
				9	8¼	8½
	1½	1¼	1%2	10	9¼	9½
				11	10¼	10½
				12	11¼	11½
				14	12¼	13½
				16	15¼	15½
Dimension				2	1½	1%6
				3	2½	2%6
				4	3½	3%6
	2	1½	1%6	5	4½	4⅝
	2½	2	2%6	6	5½	5⅝
	3	2½	2%6	8	7¼	7½
	3½	3	3%6	10	9¼	9½
				12	11¼	11½
				14	13¼	13½
				16	15¼	15½
Dimension				2	1½	1%6
				3	2½	2%6
				4	3½	3%6
				5	4½	4⅝
	4	3½	3%6	6	5½	5⅝
	4½	4	4%6	8	7¼	7½
				10	9¼	9½
				12	11¼	11½
				14		13½
				16		15½
Timbers	5 and Thicker	½ Off		5 and Wider	½ Off	

*Boards less than the minimum thickness for 1 inch nominal but ⅝ inch or greater thickness dry (1⅟₆ 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	1⅓
1×2	⅙	4×5	1⅔
1×3	¼	4×6	2
1×4	⅓	4×7	2⅓
1×6	½	4×8	2⅔
1×8	⅔	4×9	3
1×10	⅚	4×10	3⅓
1×12	1	4×12	4
2×2	⅓	5×5	2 1/12
2×3	½	6×6	3
2×4	⅔	7×7	4 1/12
2×5	⅚	8×8	5⅓
2×6	1	9×9	6¾
2×7	1⅙	10×10	8⅓
2×8	1⅓	11×11	10 1/12
2×9	1½	12×12	12
2×10	1⅔	14×14	16⅓
2×11	1⅚	15×15	18¾
2×12	2	16×16	21⅓
2×13	2⅙	17×17	24 1/12
2×14	2⅓	18×18	27
2×15	2½	19×19	30
2×16	2⅔	20×20	33⅓
3×3	¾	22×22	40⅓
3×4	1	22×24	44
3×5	1¼	24×24	48
3×6	1½	26×26	56⅓
3×7	1¾	28×28	65⅓
3×8	2	30×30	75
3×9	2¼	32×32	85⅓
3×10	2½	34×34	96⅓
3×11	2¾	36×36	108
3×12	3		