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RECENT VOLUME TABLES FOR SECOND-GROWTH LOBLOLLY PINE

IN THE MIDDLE ATLANTIC COASTAL REGION

By

A. L. MacKinney, Associate Silviculturist
and L. E. Chaiken, Assistant Forester

RECENT VOLUME TABLES FOR SECOND-GROWTH LOBLOLLY PINE
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	<u>Page</u>
Introduction	1
Basic Data	1
Methods of Table Construction	2
Limitations of the Tables	3
Table 1. Total cubic volume of peeled wood including stump and top.....	4
Table 2. Cubic volume of peeled wood per tree excluding stump and top above 3 inches outside bark.....	5
Table 3. Volume in peeled cords per tree excluding stump and top above 3 inches outside bark.....	6
Table 4. Number of trees necessary to make one cord of peeled wood, excluding stump and top above 3-inches outside bark.....	7
Table 5. Volume in rough (unpeeled) cords per tree excluding stump and top above 3-inches outside bark.....	8
Table 6. Number of trees necessary to make one cord of rough (unpeeled) wood, excluding stump and top above 3 inches outside bark.....	9
Table 7. Average number of five-foot pulpwood bolts which can be cut from trees of different sizes between a 0.7-foot stump and a top diameter of 3 inches outside bark.....	10
Table 8. Cubic volume of peeled wood per tree excluding stump and top above 4 inches outside bark.....	11
Table 9. Volume in peeled cords per tree excluding stump and top above 4 inches outside bark	12
Table 10. Number of trees necessary to make one cord of peeled wood, excluding stump and top above 4 inches outside bark	13

Table 11.	Volume in rough (unpeeled) cords per tree excluding stump and top above 4 inches out- side bark	14
Table 12.	Number of trees necessary to make one cord of rough (unpeeled) wood excluding stump and top above 4 inches outside bark	15
Table 13.	Average number of five-foot pulpwood bolts which can be cut from trees of different sizes between a 0.7 foot stump and a top diameter outside bark of 4 inches	16

Introduction

The attached loblolly pine volume tables are presented because they differ from existing tables. The data on which these tables are based were collected for the primary purpose of checking the applicability of the several existing loblolly pine volume tables to pulpwood stands in the Middle Atlantic Coastal Region. Checks indicated that the existing tables overestimated the volumes of most trees, both in cubic feet and cords.

Basic Data

The data were collected in several different localities in the Coastal Region of North Carolina and South Carolina. Measurements of 15 randomly selected trees were taken on each of 32 quarter-acre plots. These plots had not been burned over for at least 5 years and represented each 10-year age class from 10 to 50 years, each density of stocking ^{1/} class from 20 to 100 percent, and each 10-foot site index ^{2/} class from 50 to 110 feet. Fourteen of the stands sampled were of old field origin and the remaining 18 were of forest origin. The following table shows the distribution of plots by age, density, site index, and origin classes.

^{1/} MacKinney, A. L. and Chaiken, L. E. A method of Determining Density of Loblolly Pine Stands. Appalachian Forest Experiment Station Technical Note No. 15.

^{2/} The average height which the dominant and codominant trees have attained or will attain at 50 years is an index of site productivity.

Age of Plot (Years)	Density of Stocking (Percent)				Site Index (Feet) & Origin of Plot
	20 - 39	40 - 59	60- 79	80 & over	
10 - 19	<u>93</u> , <u>100</u>	<u>97</u> , <u>99</u>	<u>102</u> , <u>95</u>	<u>97</u> , <u>111</u>	
20 - 29	77, 81	70, 80	<u>85</u> , <u>101</u>	<u>79</u> , <u>89</u>	
30 - 39	66, 74	64, 70	60, <u>75</u>	82, <u>83</u>	
40 - 49	58, 73	<u>79</u> , 82	74, 78	76, 79	

^{1/}
Plots of old field origin are underlined.

The trees on which taper measurements were taken were felled for this specific purpose. Diameter measurements were taken inside and outside bark at heights of 1, 2, 3, and 4.5 feet above the ground on each tree and at intervals corresponding to each 10 percentile of total height. These diameter measurements were made with a diameter tape before and after removal of the bark at each measurement point.

Methods of Table Construction

Tree volumes were computed using Smalian's formula. Stumps were cubed as cylinders and the top sections were treated as parabaloids.

The table giving total cubic volumes inside bark for trees of different sizes was made by the logarithmic equation method outlined by Schumacher and Hall^{3/}. Tables giving total cubic volume, excluding stumps and tops above 3 and 4 inches outside bark, respectively, were constructed from converting curves derived by plotting partial volumes $\sqrt{\text{Actual total cubic volume -$

^{3/} Schumacher, F. X. and Hall, F. D.S. Logarithmic Expression of Timber Tree Volume. Jour. Agr. Research 47: 719-734. 1934

volume of stump and top) $\div$ (Actual total cubic volume) ^{4/} over total cubic volume determined from the total cubic volume equation. All tables expressed in cords were constructed by applying converting factors ^{4/} for trees of different diameters to the merchantable cubic volume values. These conversions were checked using the curves of cord converting factors over bolt diameter.

Limitations of the Tables

The volume tables here presented are directly applicable in second-growth loblolly pine stands in the Middle Atlantic Region. Generally, trees over 60 years of age will have less taper and, accordingly, more volume than the trees upon which these tables were based. Similarly, application of these tables to scattered individual trees left in earlier logging may result in errors.

Within these limitations, except in cases where minor changes are found necessary for specific local application, these tables are considered applicable regardless of such factors as site, general locality, stand composition and density. A careful study indicates that these factors may influence tree form and hence volume to some extent, but such influences are relatively weak and need not be considered for all practical purposes. In cases where it is desired to check the applicability of these volume tables in any locality or stand, the general method outlined in Technical Note No. 10 ^{5/} of the Appalachian Forest Experiment Station may be used.

^{4/} MacKinney, A. L. and Chaiken, L. E. Converting Factors for Loblolly Pine Pulpwood. Appalachian Forest Experiment Station Technical Note No. 20

^{5/} Barrett, L. I. Computations of National Forest Timber Survey Data - Curve Fitting and Volume Table Checks and Revisions. Appalachian Forest Experiment Station Technical Note No. 10.

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 1. Total Volume in Cubic Feet

(Peeled Wood)

Diameter:	Total Height in Feet										Basis
breast :											No.
high, :	:	:	:	:	:	:	:	:	:	:	of
outside :	10 :	20 :	30 :	40 :	50 :	60 :	70 :	80 :	90 :	100 :	trees
bark. :											
(inches):	Volume in Cubic Feet										
2	.0730:	.1567:	.2445:	.3353:	.428:	.....	.....	.....	.....	.....	-
3	.1619	.3464:	.5404:	.7400:	.946:	1.156:	.....	.....	.....	.....	9
4	.2842	.6079:	.9486:	1.301	1.661:	2.030:	2.403:	.....	.....	.....	14
5	.4397	.9406:	1.468 :	2.012 :	2.571:	3.140	3.718:	4.30:	.....	.....	42
6	.6281:	1.343	2.096 :	2.874 :	3.671:	4.485	5.311:	6.15:	.....	.....	26
7	:	1.816	2.834 :	3.835 :	4.963:	6.063:	7.180	8.31:	9.46:	.....	42
8	:	2.358	3.680 :	5.045 :	6.444:	7.872:	9.322:	10.79	12.28:	.....	52
9	:	2.969 :	4.633	6.352 :	8.114:	9.911:	11.74 :	13.59	15.46:	.....	76
10	:	:	5.693	7.806 :	9.971:	12.18 :	14.42 :	16.70	19.00:	.....	59
11	:	:	6.859	9.405 :	12.01 :	14.67 :	17.38 :	20.12	22.90:	25.70:	41
12	:	:	8.132	11.15 :	14.24 :	17.40 :	20.60 :	23.85	27.14:	30.47:	31
13	:	:	9.510	13.04 :	16.65 :	20.34 :	24.09 :	27.89	31.74:	35.63:	33
14	:	:	11.00	15.07 :	19.25 :	23.51 :	27.85 :	32.24	36.69:	41.19:	21
15	:	:	:	17.25	22.03 :	26.92 :	31.87 :	36.90	41.99:	47.14:	18
16	:	:	:	19.57	25.00 :	30.53 :	36.16 :	41.86	47.64:	53.48:	12
17	:	:	:	22.03	28.15 :	34.37 :	40.71 :	47.14	53.64:	60.21:	2
18	:	:	:	:	31.47	38.45 :	45.53 :	52.71	59.98:	67.33:	2
19	:	:	:	:	34.98	42.73 :	50.60 :	58.59:	66.67:	74.84:	-
20	:	:	:	:	38.68	47.24 :	55.94 :	64.77:	73.70:	82.74:	-
21	:	:	:	:	:	51.97 :	61.55 :	71.26:	81.09:	91.02:	-
22	:	:	:	:	:	56.92 :	67.41 :	78.04:	88.81:	99.69:	-
23	:	:	:	:	:	62.09 :	73.53 :	85.14:	96.88:	108.7 :	-
24	:	:	:	:	:	79.91 :	92.52:	105.6 :	118.2 :	.....	-
25	:	:	:	:	:	86.55 :	100.20:	114.0 :	128.0 :	.....	-
Basis :	- :	7 :	54 :	71 :	103 :	113 :	80 :	52 :	- :	- :	480

Basis: 480 trees, Coastal Plain of North Carolina and South Carolina.

Volume includes peeled stump, stem and top.

Stump 0.7 ft. high, measured as a cylinder.

Volumes computed through Smalian's formula.

Tabular values computed from logarithmic-multiple regression equation:

Logarithm (Total Volume i.b.) = 1.9557 Logarithm (D.B.H.o.b.) +

1.0971 Logarithm (Total Height) - 2.82092

Standard error of estimate = 10.02%

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 2. Merchantable Volume in Cubic Feet

Utilization to a 3-inch top outside bark.

(Peeled Wood)

Diameter:												:
breast	Total Height in Feet											:Basis
high,	:	:	:	:	:	:	:	:	:	:	:	:No.
outside	10	20	30	40	50	60	70	80	90	100	:of	
bark.												:trees
(inches):	Volume in Cubic Feet											:
4	.....	.383	.655	.969	1.329	1.685	2.035	.....	.....	.....	.....	14
5	.....	.647	1.145	1.662	2.198	2.748	3.311	3.874	.....	.....	.....	42
6	.....	1.008	1.740	2.492	3.256	4.045	4.860	5.676	.....	.....	.....	26
7	.....	1.480	2.451	3.466	4.517	5.589	6.684	7.772	8.891	.....	.....	42
8	.....	1.992	3.264	4.592	5.974	7.353	8.763	10.21	11.65	.....	.....	52
9	.....	2.583	4.193	5.876	7.586	9.336	11.13	12.94	14.76	.....	.....	76
10	.....	.....	5.226	7.299	9.393	11.56	13.74	15.96	18.18	.....	.....	59
11	.....	.....	6.379	8.842	11.38	13.98	16.63	19.27	21.98	24.75	.....	41
12	.....	.....	7.603	10.66	13.56	16.63	19.78	22.92	26.16	29.40	.....	31
13	.....	.....	8.939	12.39	15.93	19.43	23.15	26.90	30.63	34.38	.....	33
14	.....	.....	10.41	14.39	18.44	22.58	26.85	31.11	35.42	39.76	.....	21
15	.....	.....	.....	16.49	21.15	25.92	30.75	35.61	40.93	45.96	.....	18
16	.....	.....	.....	18.73	24.05	29.47	34.89	40.82	46.46	52.96	.....	12
17	.....	.....	.....	21.15	27.14	33.18	39.28	45.96	53.10	59.62	.....	2
18	.....	.....	.....	.....	30.37	37.09	44.39	52.18	59.38	66.66	.....	2
19	.....	.....	.....	.....	33.76	41.66	49.50	58.01	65.99	74.09	.....	-
20	.....	.....	.....	.....	37.33	46.06	55.39	64.13	72.97	81.91	.....	-
Basis	:	3	9	71	103	113	80	52	-	-	:	471

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 3. Merchantable Volume in Cords

Utilization to a 3-inch top outside bark.

(Peeled Cords)

Diameter:											
breast	Total Height in Feet										Basis
high,											No.
outside	10	20	30	40	50	60	70	80	90	100	of
bark											trees
(inches):	Number of Cords Per Tree										
4	.....	.0043	.0073	.011	.015	.019	.022	.....	.....	.....	14
5	.....	.0071	.012	.018	.024	.030	.036	.042	.....	.....	42
6	.....	.011	.018	.026	.035	.043	.052	.061	.....	.....	26
7	.....	.016	.026	.036	.047	.059	.070	.082	.093	.....	42
8	.....	.021	.034	.048	.061	.076	.091	.106	.120	.....	52
9	.....	.026	.043	.060	.078	.095	.114	.132	.151	.....	76
10	.....	.....	.053	.074	.095	.117	.139	.161	.184	.....	59
11	.....	.....	.064	.088	.114	.140	.166	.193	.220	.248	41
12	.....	.....	.076	.106	.134	.165	.196	.228	.260	.292	31
13	.....	.....	.088	.122	.157	.192	.228	.265	.302	.339	33
14	.....	.....	.102	.141	.181	.221	.263	.305	.347	.390	21
15	.....	.....	.....	.161	.207	.253	.300	.347	.400	.448	18
16	.....	.....	.....	.182	.234	.287	.340	.397	.452	.515	12
17	.....	.....	.....	.206	.264	.322	.382	.446	.515	.581	2
18	.....	.....	.....	.....	.296	.361	.431	.508	.578	.649	2
19	.....	.....	.....	.....	.329	.405	.478	.565	.641	.719	-
20	.....	.....	.....	.....	.364	.448	.538	.625	.709	.794	-
Basis		3	49	71	103	113	80	52	-	-	471

Basis: 471 trees, Coastal Plain of North Carolina and South Carolina.

Volume includes peeled stems above a 0.7 foot stump to a top diameter, outside bark, of 3 inches.

Conversion based on 128 cu. ft. cords of freshly stacked, peeled wood, cut in bolts 5 feet long.

For 160 cu. ft. cords, multiply values by .80

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 4. Number of trees per cord

Utilization to a 3-inch top, outside bark.

(Peeled Cords)

Diameter:												:
breast :												: Basis
high, :												: No.
outside :												: of
bark. :												: trees
(inches):												:
Number of Trees Per Cord												:
4	.....	232.6	136.9	90.9	66.7	52.6	45.5	.....	.....	.....	.....	14
5	.....	141.3	79.9	55.0	41.6	33.3	27.6	23.6	.....	.....	.....	42
6	.....	90.9	53.8	37.6	28.7	23.1	19.2	16.5	.....	.....	.....	26
7	.....	62.5	38.8	27.5	21.1	17.0	14.2	12.2	10.7	.....	.....	42
8	.....	47.6	29.6	21.0	16.2	13.1	11.0	9.46	8.30	.....	.....	52
9	.....	38.5	23.3	16.6	12.9	10.5	8.79	7.56	6.63	.....	.....	76
10	.....	.....	18.9	13.6	10.5	8.56	7.20	6.20	5.44	.....	.....	59
11	.....	.....	15.7	11.3	8.78	7.15	6.01	5.18	4.54	4.04	.....	41
12	.....	.....	13.2	9.45	7.43	6.06	5.09	4.39	3.85	3.42	.....	31
13	.....	.....	11.3	8.19	6.36	5.21	4.38	3.77	3.31	2.95	.....	33
14	.....	.....	9.80	7.09	5.53	4.52	3.80	3.28	2.88	2.56	.....	21
15	.....	.....	.....	6.21	4.84	3.95	3.33	2.88	2.50	2.23	.....	18
16	.....	.....	.....	5.48	4.27	3.48	2.94	2.52	2.21	1.94	.....	12
17	.....	.....	.....	4.86	3.79	3.10	2.62	2.24	1.94	1.72	.....	2
18	.....	.....	.....	.....	3.38	2.77	2.32	1.97	1.73	1.54	.....	2
19	.....	.....	.....	.....	3.04	2.47	2.08	1.77	1.56	1.39	.....	-
20	.....	.....	.....	.....	2.75	2.23	1.86	1.60	1.41	1.26	.....	-
Basis	:	:	3	49	71	103	113	80	52	-	-	471

Basis: 471 trees, Coastal Plain of North Carolina and South Carolina.

Number of peeled stems above a 0.7 foot stump to a top diameter, outside bark, of 3.0 inches.

Conversion based on 128 cu. ft. cords of freshly stacked, peeled wood, cut in bolts 5 ft. long.

For 160 cu. ft. cords, multiply by 1.25

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 5. Volume in Cords

Utilization to a 3-inch top outside bark

(Rough Cords)

Diameter:												
breast :												Basis
Total Height in Feet												No.
high, :												of
outside :												trees
bark. :												
(inches):												
Number of Cords Per Tree												
4	.....	.0052	.0088	.013	.018	.023	.027	.....	.....	.....	.....	14
5	.....	.0086	.015	.022	.029	.036	.044	.051	.....	.....	.....	42
6	.....	.013	.022	.032	.042	.052	.063	.074	.....	.....	.....	26
7	.....	.019	.031	.044	.056	.070	.083	.097	.111	.....	.....	42
8	.....	.025	.041	.057	.074	.092	.108	.127	.145	.....	.....	52
9	.....	.032	.051	.072	.092	.114	.136	.158	.180	.....	.....	76
10	.....	.....	.063	.088	.113	.140	.165	.192	.220	.....	.....	59
11	.....	.....	.076	.106	.136	.167	.198	.230	.262	.296	.....	41
12	.....	.....	.089	.126	.160	.197	.234	.271	.310	.347	.....	31
13	.....	.....	.104	.145	.186	.228	.271	.314	.358	.403	.....	33
14	.....	.....	.121	.167	.214	.262	.312	.362	.412	.463	.....	21
15	.....	.....	.....	.190	.244	.299	.356	.412	.471	.532	.....	18
16	.....	.....	.....	.215	.276	.339	.402	.469	.535	.610	.....	13
17	.....	.....	.....	.242	.310	.360	.450	.526	.610	.685	.....	2
18	.....	.....	.....	.....	.347	.424	.508	.595	.676	.763	.....	2
19	.....	.....	.....	.....	.386	.476	.565	.662	.752	.847	.....	-
20	.....	.....	.....	.....	.426	.526	.633	.735	.833	.934	.....	-
Basis :	-	3	49	71	103	113	80	52	-	-	471	

Basis: 471 trees, Coastal Plain of North Carolina and South Carolina.

Volume includes unpeeled stems above a 0.7 foot stump to a top diameter outside bark of 3.0 inches.

Conversion based on 128 cu. ft. cords of stacked rough wood, cut in bolts 5 feet long.

For 160 cu. ft. cords, multiply values by .8

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 6. Number of Trees Per Cord.

Utilization to a 3-inch top outside bark.

(Rough Cords)

Diameter:		Total Height in Feet										Basis
breast	:											No.
high,	:	10	20	30	40	50	60	70	80	90	100	of
outside	:											trees
bark.	:											
(inches):	:	Number of Trees Per Cord										
4	:	192.3	113.6	76.9	55.6	43.5	37.0	:	:	:	:	14
5	:	116.6	65.9	45.4	34.3	27.4	22.8	19.5	:	:	:	42
6	:	76.9	44.4	31.0	23.8	19.1	15.9	13.6	:	:	:	26
7	:	52.6	32.6	23.0	17.7	14.3	12.0	10.3	8.99	:	:	42
8	:	40.0	24.6	17.5	13.5	10.9	9.18	7.88	6.91	:	:	52
9	:	31.0	19.5	13.9	10.8	8.76	7.34	6.32	5.54	:	:	76
10	:	:	15.8	11.3	8.82	7.16	6.03	5.19	4.55	:	:	59
11	:	:	13.1	9.47	7.36	5.99	5.04	4.35	3.81	3.38	:	41
12	:	:	:	7.93	6.24	5.08	4.28	3.69	3.23	2.88	:	31
13	:	:	:	6.90	5.36	4.39	3.69	3.18	2.79	2.48	:	33
14	:	:	:	5.98	4.66	3.81	3.20	2.76	2.43	2.16	:	21
15	:	:	:	5.25	4.09	3.34	2.81	2.43	2.12	1.88	:	18
16	:	:	:	4.65	3.62	2.95	2.49	2.13	1.87	1.64	:	12
17	:	:	:	:	3.22	2.63	2.22	1.90	1.64	1.46	:	2
18	:	:	:	:	2.88	2.36	1.97	1.68	1.48	1.31	:	2
19	:	:	:	:	2.59	2.10	1.77	1.51	1.33	1.18	:	-
20	:	:	:	:	2.35	1.90	1.58	1.36	1.20	1.07	:	-
Basis	:	-	3	49	71	103	113	80	52	-	-	471

Basis: 471 trees, Coastal Plain of North Carolina and South Carolina.

Number of unpeeled stems above a 0.7 foot stump to a top diameter, outside bark, of 3.0 inches.

Conversion based on 128 cu. ft. cords of stacked rough wood, cut in bolts 5 feet long.

For 160 cu. ft. cords, multiply by 1.25

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Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 7. Average Number of Five-Foot Bolts Per Tree

Utilization to a 3-inch top outside bark

Diameter:												:
breast	Total Height in Feet											:Basis
high,	:	:	:	:	:	:	:	:	:	:	:	:No.
outside	10	20	30	40	50	60	70	80	90	100	:	:of
bark.												:trees
(inches):	Number of 5-foot Bolts Per Tree											:
4		1.3	2.4	3.7	4.5	5.4	6.3	.....	.....	.....	.....	14
5		2.0	3.2	4.5	5.5	6.5	7.7	8.6	.....	.....	.....	42
6		2.4	3.8	5.1	6.4	7.6	9.1	9.9	.....	.....	.....	26
7		2.6	4.1	5.5	7.0	8.5	10.3	11.3	12.3	.....	.....	42
8		2.7	4.3	5.8	7.4	9.1	11.0	12.0	13.0	.....	.....	52
9			4.5	6.1	7.7	9.5	11.5	12.6	13.6	.....	.....	76
10			4.6	6.3	7.9	9.8	11.8	12.8	13.9	.....	.....	59
11			4.7	6.4	8.1	10.0	12.1	13.0	14.0	15.0	.....	41
12			4.7	6.5	8.2	10.1	12.2	13.2	14.1	15.2	.....	31
13			4.8	6.5	8.3	10.2	12.3	13.3	14.2	15.4	.....	33
14			4.8	6.6	8.3	10.2	12.4	13.4	14.3	15.5	.....	21
15				6.6	8.3	10.3	12.5	13.5	14.4	15.6	.....	18
16				6.6	8.4	10.3	12.5	13.6	14.5	15.6	.....	12
17				6.7	8.4	10.3	12.5	13.7	14.5	15.6	.....	2
18					8.4	10.4	12.6	13.7	14.6	15.7	.....	2
19					8.5	10.4	12.6	13.8	14.6	15.7	.....	-
20					8.5	10.4	12.6	13.8	14.7	15.7	.....	-
Basis	-	3	49	71	103	113	80	52	-	-	-	471

Basis: 471 trees, Coastal Plain of North Carolina and South Carolina.

Average number of 5-foot bolts above a 0.7 foot stump to a top diameter of 3.0 inches, outside bark.

1942

		1941		1940		1939		1938		1937		1936		1935		1934		1933		1932		1931		1930		1929		1928		1927		1926		1925		1924		1923		1922		1921		1920		1919		1918		1917		1916		1915		1914		1913		1912		1911		1910		1909		1908		1907		1906		1905		1904		1903		1902		1901		1900		1899		1898		1897		1896		1895		1894		1893		1892		1891		1890		1889		1888		1887		1886		1885		1884		1883		1882		1881		1880		1879		1878		1877		1876		1875		1874		1873		1872		1871		1870		1869		1868		1867		1866		1865		1864		1863		1862		1861		1860		1859		1858		1857		1856		1855		1854		1853		1852		1851		1850		1849		1848		1847		1846		1845		1844		1843		1842		1841		1840		1839		1838		1837		1836		1835		1834		1833		1832		1831		1830		1829		1828		1827		1826		1825		1824		1823		1822		1821		1820		1819		1818		1817		1816		1815		1814		1813		1812		1811		1810		1809		1808		1807		1806		1805		1804		1803		1802		1801		1800		1799		1798		1797		1796		1795		1794		1793		1792		1791		1790		1789		1788		1787		1786		1785		1784		1783		1782		1781		1780		1779		1778		1777		1776		1775		1774		1773		1772		1771		1770		1769		1768		1767		1766		1765		1764		1763		1762		1761		1760		1759		1758		1757		1756		1755		1754		1753		1752		1751		1750		1749		1748		1747		1746		1745		1744		1743		1742		1741		1740		1739		1738		1737		1736		1735		1734		1733		1732		1731		1730		1729		1728		1727		1726		1725		1724		1723		1722		1721		1720		1719		1718		1717		1716		1715		1714		1713		1712		1711		1710		1709		1708		1707		1706		1705		1704		1703		1702		1701		1700		1699		1698		1697		1696		1695		1694		1693		1692		1691		1690		1689		1688		1687		1686		1685		1684		1683		1682		1681		1680		1679		1678		1677		1676		1675		1674		1673		1672		1671		1670		1669		1668		1667		1666		1665		1664		1663		1662		1661		1660		1659		1658		1657		1656		1655		1654		1653		1652		1651		1650		1649		1648		1647		1646		1645		1644		1643		1642		1641		1640		1639		1638		1637		1636		1635		1634		1633		1632		1631		1630		1629		1628		1627		1626		1625		1624		1623		1622		1621		1620		1619		1618		1617		1616		1615		1614		1613		1612		1611		1610		1609		1608		1607		1606		1605		1604		1603		1602		1601		1600		1599		1598		1597		1596		1595		1594		1593		1592		1591		1590		1589		1588		1587		1586		1585		1584		1583		1582		1581		1580		1579		1578		1577		1576		1575		1574		1573		1572		1571		1570		1569		1568		1567		1566		1565		1564		1563		1562		1561		1560		1559		1558		1557		1556		1555		1554		1553		1552		1551		1550		1549		1548		1547		1546		1545		1544		1543		1542		1541		1540		1539		1538		1537		1536		1535		1534		1533		1532		1531		1530		1529		1528		1527		1526		1525		1524		1523		1522		1521		1520		1519		1518		1517		1516		1515		1514		1513		1512		1511		1510		1509		1508		1507		1506		1505		1504		1503		1502		1501		1500		1499		1498		1497		1496		1495		1494		1493		1492		1491		1490		1489		1488		1487	
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Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 8. Merchantable Volume in Cubic Feet

Utilization to a 4-inch top outside bark.

(Peeled Wood)

Diameter:												:
breast :												: Basis
high, :												: No.
outside :												: of
bark. :												: trees
(inches):												:
Total Height in Feet												:
Volume in Cubic Feet												:
5	:	:	:	:	:	:	:	:	:	:	:	42
6	:	:	:	:	:	:	:	:	:	:	:	26
7	:	:	:	:	:	:	:	:	:	:	:	42
8	:	:	:	:	:	:	:	:	:	:	:	52
9	:	:	:	:	:	:	:	:	:	:	:	76
10	:	:	:	:	:	:	:	:	:	:	:	59
11	:	:	:	:	:	:	:	:	:	:	:	41
12	:	:	:	:	:	:	:	:	:	:	:	31
13	:	:	:	:	:	:	:	:	:	:	:	33
14	:	:	:	:	:	:	:	:	:	:	:	21
15	:	:	:	:	:	:	:	:	:	:	:	18
16	:	:	:	:	:	:	:	:	:	:	:	12
17	:	:	:	:	:	:	:	:	:	:	:	2
18	:	:	:	:	:	:	:	:	:	:	:	2
19	:	:	:	:	:	:	:	:	:	:	:	--
20	:	:	:	:	:	:	:	:	:	:	:	--
Basis :												457

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 9. Merchantable Volume in Cords

Utilization to a 4-inch top outside bark.

(Peeled Cords)

Diameter:												:
breast :	Total Height in Feet											:Basis
high, :	:	:	:	:	:	:	:	:	:	:	:	:No.
outside :	10 :	20 :	30 :	40 :	50 :	60 :	70 :	80 :	90 :	100 :		:of
bark. :												:trees
(inches):	Number of Cords Per Tree											:
5	.....	.0050:	.0087 :	.014 :	.019 :	.026 :	.033 :	.039 :	.....	.....	.....	42
6	.....	.0079:	.014 :	.022 :	.032 :	.040 :	.048 :	.057 :	.....	.....	.....	26
7	.....	.0112:	.022 :	.033 :	.044 :	.056 :	.067 :	.079 :	.091:	.....	.....	42
8	.....	.016 :	.031 :	.044 :	.058 :	.073 :	.088 :	.103 :	.118 :	.....	.....	52
9	.....	.022 :	.040 :	.057 :	.075 :	.092 :	.111 :	.130 :	.148 :	.....	.....	76
10	.....	.....	.050 :	.070 :	.092 :	.114 :	.137 :	.159 :	.181 :	.....	.....	59
11	.....	.....	.061 :	.085 :	.111 :	.138 :	.164 :	.191 :	.218 :	.246 :	.....	41
12	.....	.....	.072 :	.103 :	.132 :	.163 :	.194 :	.226 :	.258 :	.291 :	.....	31
13	.....	.....	.085 :	.120 :	.155 :	.190 :	.227 :	.264 :	.301 :	.338 :	.....	33
14	.....	.....	.099 :	.139 :	.178 :	.220 :	.262 :	.304 :	.346 :	.389 :	.....	21
15	.....	.....	.....	.159 :	.204 :	.252 :	.299 :	.346 :	.398 :	.448 :	.....	18
16	.....	.....	.....	.180 :	.232 :	.286 :	.339 :	.397 :	.450 :	.515 :	.....	12
17	.....	.....	.....	.204 :	.262 :	.320 :	.380 :	.446 :	.515 :	.581 :	.....	2
18	.....	.....	.....	.....	.294 :	.360 :	.431 :	.508 :	.578 :	.649 :	.....	2
19	.....	.....	.....	.....	.327 :	.405 :	.478 :	.565 :	.641 :	.719 :	.....	--
20	.....	.....	.....	.....	.361 :	.448 :	.538 :	.625 :	.709 :	.794 :	.....	--
Basis :	- :	1 :	40 :	68 :	103 :	113 :	80 :	52 :	-- :	-- :	457 :	

Basis: 457 trees, Coastal Plain of North Carolina and South Carolina.

Volume includes peeled stems above a 0.7 foot stump to a top diameter, outside bark, of 4.0 inches.

Conversion based on 128 cu. ft. cords of freshly stacked peeled wood, cut in bolts 5 feet long.

For 160 cu. ft. cords, multiply values by .8

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 10. Number of Trees Per Cord

Utilization to a 4-inch top, outside bark

(Peeled Cords)

Diameter:	Total Height in Feet										Basis
breast :											No.
high, :	10	20	30	40	50	60	70	80	90	100	of
outside :											trees
bark. :											
(inches):	Number of Trees Per Cord										
5	199.6	114.3	71.2	51.5	38.8	30.3	25.5	.....	.....	.....	42
6	127.2	70.8	44.9	31.7	24.9	20.6	17.4	.....	.....	.....	26
7	89.0	46.3	30.0	22.6	18.0	14.9	12.7	11.0	.....	.....	42
8	61.7	32.6	22.5	17.1	13.7	11.4	9.72	8.47	.....	.....	52
9	44.6	25.0	17.6	13.4	10.8	9.00	7.69	6.73	.....	.....	76
10	.....	20.1	14.2	10.8	8.76	7.32	6.29	5.51	.....	.....	59
11	.....	16.5	11.7	8.98	7.26	6.08	5.24	4.58	4.07	.....	41
12	.....	13.8	9.67	7.55	6.13	5.15	4.43	3.88	3.44	.....	31
13	.....	11.7	8.34	6.45	5.26	4.41	3.79	3.32	2.96	.....	33
14	.....	10.1	7.20	5.60	4.55	3.82	3.29	2.89	2.57	.....	21
15	.....	.....	6.28	4.89	3.97	3.34	2.89	2.51	2.23	.....	18
16	.....	.....	5.54	4.30	3.50	2.95	2.52	2.22	1.94	.....	12
17	.....	.....	4.91	3.81	3.12	2.63	2.24	1.94	1.72	.....	2
18	.....	.....	.....	3.40	2.78	2.32	1.97	1.73	1.54	.....	2
19	.....	.....	.....	3.06	2.47	2.08	1.77	1.56	1.39	.....	--
20	.....	.....	.....	2.77	2.23	1.86	1.60	1.41	1.26	.....	--
Basis	-	1	40	68	103	113	80	52	--	--	457

Basis: 457 trees, Coastal Plain of North Carolina and South Carolina.

Number of peeled stems above a 0.7 foot stump to a top diameter, outside bark, of 4.0 inches.

Conversion based on 128 cu.ft. cords of freshly stacked, peeled wood, cut in bolts 5 feet long.

For 160 cu.ft. cords, multiply values by 1.25

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 11. Volume in Cords.

Utilization to a 4-inch top outside bark

(Rough Cords)

Diameter: breast high, outside bark. (inches):	Total Height in Feet										Basis No. of Trees
	10	20	30	40	50	60	70	80	90	100	
	Number of Cords Per Tree										
5	.0061	.011	.017	.024	.031	.040	.048				42
6	.0095	.017	.027	.038	.048	.059	.069				26
7	.014	.026	.040	.053	.066	.080	.093	.107			42
8	.019	.037	.054	.070	.088	.106	.123	.142			52
9	.027	.048	.068	.089	.111	.133	.155	.178			76
10		.060	.084	.110	.137	.163	.190	.217			59
11		.072	.102	.133	.164	.196	.228	.260	.293		41
12			.123	.158	.194	.231	.269	.307	.346		31
13			.142	.184	.226	.269	.312	.357	.400		33
14			.165	.212	.260	.310	.360	.410	.461		21
15			.188	.242	.298	.353	.410	.467	.529		18
16			.213	.275	.337	.398	.467	.532	.610		12
17				.309	.377	.446	.526	.610	.685		2
18				.345	.422	.505	.595	.676	.763		2
19				.383	.474	.562	.662	.752	.847	--	--
20				.424	.524	.633	.735	.833	.934	--	--
Basis	--	1	40	68	103	113	80	52	--	--	457

Basis: 457 trees, Coastal Plain of North Carolina and South Carolina.

Volume includes unpeeled stems above a 0.7 foot stump to a top diameter, outside bark, of 4.0 inches.

Conversion based on 128 cu.ft. cords of freshly stacked rough wood, cut in bolts 5 feet long.

For 160 cu.ft. cords, multiply values by .8

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 12. Number of Trees Per Cord.

Utilization to a 4-inch top, outside bark

(Rough Cords)

Diameter:												:
breast :												: Basis
high, :												: No.
outside :												: of
bark. :												: trees
(inches):												:
Number of Trees Per Cord												:
5	164.9	94.3	58.7	42.5	32.0	25.0	21.0					42
6	104.9	58.6	37.1	26.2	20.6	17.0	14.4					26
7	73.6	38.9	25.2	18.9	15.1	12.5	10.7	9.26				42
8	51.3	27.2	18.7	14.2	11.4	9.48	8.10	7.06				52
9	37.0	20.9	14.7	11.2	9.02	7.53	6.43	5.63				76
10		16.8	11.9	9.08	7.33	6.13	5.26	4.61				59
11		13.8	9.79	7.52	6.09	5.10	4.39	3.84	3.41			41
12			8.12	6.34	5.15	4.32	3.72	3.26	2.89			31
13			7.03	5.44	4.43	3.72	3.20	2.80	2.50			33
14			6.07	4.72	3.84	3.23	2.78	2.44	2.17			21
15			5.32	4.14	3.36	2.83	2.44	2.14	1.89			18
16			4.70	3.64	2.97	2.51	2.14	1.88	1.64			12
17				3.24	2.65	2.24	1.90	1.64	1.46			2
18				2.90	2.37	1.98	1.68	1.48	1.31			2
19				2.61	2.11	1.78	1.51	1.33	1.18			--
20				2.36	1.91	1.58	1.36	1.20	1.07			--
Basis	-	1	40	68	103	113	80	52	--	--		457

Basis: 457 trees, Coastal Plain of North Carolina and South Carolina,

Number of unpeeled stems above a 0.7 foot stump to a top diameter, outside bark, of 4.0 inches.

Conversion based on 128 cu.ft. cords of freshly stacked rough wood, cut in bolts 5-feet long.

For 160 cu.ft. cords, multiply values by 1.25

1990

This image shows a single sheet of white dot grid paper. The top portion of the page features a header area with several horizontal lines and some very faint, blurry text that appears to be bleed-through from another document. Below the header, the majority of the page is covered by a uniform grid of small dots. The paper is oriented vertically and shows signs of being handled, such as slight creases and shadows along the edges.

Appalachian Forest Experiment Station

Technical Note No. 21

SECOND-GROWTH LOBLOLLY PINE

Table 13. Average Number of Five-Foot Bolts Per Tree

Utilization to a 4-inch top, outside bark

Diameter:												:
breast	Total Height in Feet											:Basis
high,	:	:	:	:	:	:	:	:	:	:	:	:No.
outside	10	20	30	40	50	60	70	80	90	100	:of	
bark.												:trees
(inches):	Number of 5-Foot Bolts Per Tree											:
5	.....	1.5	2.1	2.9	3.5	4.2	4.9	5.8	.....	.....	42	
6	.....	2.0	2.9	3.9	4.6	5.6	6.6	7.5	.....	.....	26	
7	.....	2.2	3.4	4.5	5.6	6.9	8.5	9.4	10.3	.....	42	
8	.....	2.3	3.8	5.0	6.4	7.7	9.6	10.7	11.6	.....	52	
9	.....	2.3	4.1	5.3	6.9	8.3	10.4	11.6	12.3	.....	76	
10	.....	.....	4.3	5.5	7.2	8.8	10.9	12.3	12.8	.....	59	
11	.....	.....	4.4	5.7	7.4	9.2	11.3	12.6	13.2	14.4	41	
12	.....	.....	4.5	5.9	7.6	9.5	11.6	12.9	13.5	14.7	31	
13	.....	.....	4.5	6.0	7.6	9.7	11.8	13.1	13.8	15.0	33	
14	.....	.....	4.5	6.1	7.7	9.8	11.9	13.3	14.0	15.3	21	
15	.....	.....	.....	6.2	7.7	9.9	12.0	13.4	14.2	15.5	18	
16	.....	.....	.....	6.2	7.8	9.9	12.0	13.5	14.4	15.6	12	
17	.....	.....	.....	6.3	7.8	10.0	12.1	13.6	14.5	15.6	2	
18	.....	.....	.....	.....	7.8	10.0	12.1	13.7	14.6	15.7	2	
19	.....	.....	.....	.....	7.9	10.0	12.2	13.8	14.6	15.7	--	
20	.....	.....	.....	.....	7.9	10.1	12.2	13.8	14.7	15.7	--	
	:	:	:	:	:	:	:	:	:	:	:	
Basis	-	1	40	68	103	113	80	52	--	--	457	

Basis: 457 trees, Coastal Plain of North Carolina and South Carolina.

Average number of five-foot bolts above a 0.7 foot stump to a merchantable top diameter of 4.0 inches, outside bark.

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