QUALITY INDEX TABLES
for Some Eastern Hardwood Species

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Another Use for Q. I.

EVER SINCE the quality-index (Q.I.) concept was introduced by A. M. Herrick in 1946, its importance as a measure of timber value has grown; and it has been used, not only in other research efforts, but also as a tool to be used by foresters and timber operators *(Herrick 1946)*.

We have recently employed the Q.I. concept in our rate-of-value-increase studies on nine tree species in the Northeast and recognized that, as a byproduct of this study, the log-quality indexes would be useful to timber operators.

This paper briefly reviews the quality-index concept, presents log-quality index tables for a selected group of eastern hardwood tree species, and explains how timber operators can use Q.I. for evaluating the lumber that can be sawed from logs and trees.

The Q.I. tables are based on two different lumber price reporting services and cover different geographic regions. Those species that occur in more than one region have a different Q.I. in each region.

What Q. I. Is

Quality index is a single number that expresses the relative value of a log as determined by the value of the different grades of 4/4 lumber (1-inch thick) that can be sawed from the log. In formula form *(Herrick 1956)* it appears as:

$$\text{Q.I.} = (\%\ \text{FAS} \times \text{P.R.}_{\text{FAS}}) + (\%\ \text{SEL} \times \text{P.R.}_{\text{SEL}}) + (\%\ \text{No. 1C} \times \text{P.R.}_{\text{No. 1C}}) + \text{------} (\%\ \text{No. 3A} + \text{P.R.}_{\text{3A}})$$

in which % FAS means the percentage of the total volume of lumber that could be sawed from the log that would grade First and Second, and P.R._{FAS} means the standard price relative for FAS lumber.

Thus two sets of data are necessary for developing Q.I.: (1) lumber grade yields by log grade, log diameter, and species; and (2) lumber price relatives, that is, price ratios with No. 1 Common as the base grade as derived from applicable regional price reports and averaged for a period of 5 years.

In this analysis, USDA Forest Service log grades for hardwood factory lumber logs of grades 1, 2, and 3 were used *(Ostrander et al. 1965)*.

Lumber-grade yield estimates were obtained from the USDA Forest Products Laboratory publication *Hardwood Log Grades for Standard Lumber (Vaughn et al. 1966)*. The erratic nature of the basic data, especially in the larger diameter classes, made it necessary to hand-curve the yield data to make them useful for developing the Q.I.'s.

Lumber price relatives used here were developed from prices derived from the *Hardwood Market Report (Lemsky 1964-1968)* and *The Commercial Bulletin* (Curtis Guild and Co. Publishers, Inc.) for the base period, 1964-1968. Prices were averaged over the 5-year period; and the price relatives, that is, the average price of the various grades relative to the average price of No. 1 Common lumber, were determined. The price relative (P.R.) for No. 1 Common is always 1.00, whereas the P.R.'s for hardwood lumber grades FAS and SEL are above 1.00 and the P.R.'s for No. 2 Common, No. 3A Common, and No. 3B Common are below 1.00 (table 1).

Table 1.—Lumber price relatives by grade and species

(Basis: 4/4 No. 1 COMMON, the reference grade)

Species	Lumber grade							
	FAS	SEL	SAPS	No. 1C	No. 2C No. 2A	No. 2B	No. 3A	No. 3B
White ash	1.63	1.56	...	1.00	0.53	...	0.44	0.39
Beech	1.25	1.18	...	1.00	.54	...	.42	.38
Black cherry	1.45	1.40	...	1.00	.46	...	.27	.25
Hard maple	1.53	1.47	...	1.00	.44	...	.38	.27
Soft maple	1.28	1.23	...	1.00	.47	...	.43	.30
Red oak	1.65	1.57	...	1.00	.64	...	.56	.37
White oak	1.82	1.74	...	1.00	.66	...	.58	.39
Yellow-poplar	1.42	1.36	1.29	1.00	.67	0.45	.23	.23

Based on 1964-68 prices from *Hardwood Market Report* for Appalachian hardwoods, f.o.b. mills, Johnson City, Tennessee area.

White ash	1.61	1.52	...	1.00	0.50	...	0.40	0.35
Beech	1.24	1.17	...	1.00	.53	...	.42	.38
Black cherry	1.44	1.38	...	1.00	.45	...	.26	.24
Hard maple	1.49	1.45	...	1.00	.46	...	.40	.29
Red oak	1.63	1.55	...	1.00	.62	...	.54	.35
White oak	1.80	1.73	...	1.00	.64	...	.56	.37
Yellow-poplar	1.41	1.34	1.29	1.00	.67	0.45	.23	.23

Based on 1964-68 prices from *The Commercial Bulletin,* Appalachian area. Prices included wholesale commission and are f.o.b. mill, rough and air-dried.

White ash	1.53	1.40	...	1.00	0.46	...	0.36	0.32
Beech	1.33	1.17	...	1.00	.56	...	.43	.39
Birch	1.70	1.60	...	1.00	.54	...	.46	.28
Hard maple	1.57	1.44	...	1.00	.60	...	.52	.41
Soft maple	1.33	1.23	...	1.00	.47	...	.39	.30
Oak	1.54	1.36	...	1.00	.77	...	.69	.50

Based on 1964-68 prices from *The Commercial Bulletin,* Northeastern area. Prices included wholesale commission and are f.o.b. mill, rough and air-dried.

Once the lumber grade yields and price relative are obtained, it is possible to calculate the Q.I.'s. For example, given a white ash log of 16-inch diameter inside bark, log grade No. 1, with lumber grade yields of 41.4 percent FAS, 11.0 percent SEL, 26.5 percent No. 1C, 12.3 percent No. 2C, 4.4 percent No. 3A, and 4.4 percent No. 3B, and the price relative as shown in table 1 for white ash, the Q.I. calculation appears as:

$$\text{Q.I.} = (.414 \times 1.63) + (.110 \times 1.56) + (.265 \times 1.00) + (.123 \times 0.53) + (.044 \times 0.44) + (.044 \times 0.39)$$
$$\text{Q.I.} = 1.21$$

Log Q.I.'s were computed for each species and diameter for log grades No. 1, No. 2, and No. 3 (tables 2 to 22). For log classes below these grades, lumber grade yields were not available; so log Q.I.'s were not calculated.

What Q.I. Does

Log-quality indexes are useful in estimating the value of lumber in a log. All that is needed to determine the lumber value are the Q.I. and the current price of 4/4 No. 1 Common lumber. For example, assume that a log buyer wants to know the value of standard lumber he can expect to saw from a 16-inch diameter, 16-foot long, grade No. 1 white ash log. Such a log has a volume of 180 board feet (International 1/4-inch log rule). Table 2 shows that the log Q.I. value is 1.21. The only additional information needed is the current selling price of 4/4 No. 1 Common white ash. The buyer can use the price his mill is receiving, or he can refer to one of the lumber price reports. If, for example, the current price for No. 1 Common white ash lumber is $230 per thousand board feet (quoted in the October 11, 1969, issue of the *Hardwood Market Report for Appalachian Hardwoods*), it is a simple matter to calculate the expected lumber value of the log by using the formula:

$$\text{Lumber product value} = (\text{Q.I.}) \times (\text{Price of 4/4 No. 1C}) \times \frac{\text{volume of log}}{1000}$$
$$= (1.21) \times (\$230) \times \frac{180}{1000}$$
$$= \$50.09$$

The buyer can expect to receive about $50 from the 4/4 standard lumber that could be sawed from this white ash log.

Putting Q.I. To Work

Quality index is a versatile tool. It permits a ready evaluation of a log or tree on the basis of the grade and amount of lumber that can be sawed from the log or tree. It has been widely used in research to develop economic guides for hardwood sawtimber management. However, its most basic application is in log or tree evaluation as done by practicing foresters and timber buyers. It can be used in timber appraisals where more than a cursory volume estimate is needed. Further, it can be employed with efficiency in the log yard.

Several factors should be recognized when using log-quality indexes.

1. Lumber price relatives are developed from the 5-year average price of various lumber grades, based on 4/4 No. 1 Common as the reference grade. Therefore, any fluctuations in standard lumber prices will affect the price relative values. Should there be any major price changes, especially between lumber grades, it might be well to develop price relatives by using prices based on the latest 5-year period.

2. When using the quality index one must recognize that the Q.I. evaluation is based on the assumption that the log is sawed into 4/4 lumber, in an adequate mill, by a sawyer skilled in cutting standard graded hardwood lumber. Few, if any, mills saw only 4/4 lumber, so the Q.I.'s are only a close approximation. However, a method for adjusting Q.I.'s has been developed (Research Paper NE-149, *Adjusting Quality Index Log Values to Represent Local and Regional Commercial Sawlog Product Values*). Such adjustments should result in Q.I.'s that will account for the inherent variances between the actual production of a specific mill and the assumed 4/4 lumber production of the so-called "adequate" mill.

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Appendix

Tables 2 to 9 are based on 1964-68 lumber prices from the *Hardwood Market Report, Appalachian Area,* tables 10 to 16 are based on 1964-68 lumber prices from *The Commercial Bulletin, Appalachian Area,* and tables 17 to 22 are based on 1964-68 lumber prices from *The Commercial Bulletin, Northeastern Area.*

Table 2.—Log-quality index for WHITE ASH by log grade or class and size class [1]

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.60
9	. . .	. . .	.61
10	. . .	0.84	.63
11	. . .	.87	.66
12	1.12	.89	.69
13	1.14	.92	.72
14	1.17	.95	.76
15	1.19	.97	.80
16	1.21	1.00	.84
17	1.23	1.02	.88
18	1.25	1.05	.92
19	1.27	1.08	.96
20	1.29	1.10	1.00
21	1.31	1.12	1.04
22	1.33	1.14	1.08
23	1.35	1.16	1.11
24	1.37	1.18	1.14

[1] Data in tables 2-9 were derived by hand-curving lumber grade yield data from USDA Forest Serv. Res. Paper FPL-63 and 1964-68 lumber prices from *Hardwood Market Report, Appalachian Area.*

Table 3.—Log-quality index for **BEECH** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.49
9	. . .	. . .	.50
10	. . .	0.64	.51
11	. . .	.65	.52
12	. . .	.67	.53
13	0.82	.68	.55
14	.84	.71	.56
15	.87	.73	.58
16	.88	.74	.60
17	.89	.75	.62
18	.90	.77	.63
19	.90	.78	.66
20	.91	.79	.68
21	.92	.80	.70
22	.92	.81	.73
23	.92	.82	.76
24	.92	.82	.79
25	.93	.83	.81

Table 4.—Log-quality index for **BLACK CHERRY** by log grade or class and class size

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.41
9	. . .	. . .	.47
10	. . .	0.74	.52
11	. . .	.77	.55
12	. . .	.80	.59
13	1.08	.83	.63
14	1.09	.86	.67
15	1.10	.89	.73
16	1.11	.91	.77
17	1.11	.94	.82
18	1.13	.96	.85
19	1.14	.98	.87
20	1.16	1.00	.89
21	1.18	1.02	.90
22	1.20	1.05	.91
23	1.22	1.08	.92
24	1.25	1.11	.93
25	1.27	1.14	.94

Table 5.—Log-quality index for **HARD MAPLE** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.45
9	. . .	. . .	.45
10	. . .	0.63	.45
11	. . .	.65	.46
12	. . .	.67	.46
13	0.99	.68	.46
14	.99	.71	.47
15	.99	.73	.47
16	1.01	.75	.47
17	1.02	.78	.49
18	1.02	.79	.50
19	1.03	.81	.52
20	1.05	.83	.55
21	1.07	.86	.57
22	1.09	.88	.59
23	1.11	.91	.61
24	1.13	.93	.63
25	1.15	.96	.65
26	1.17	.98	.67

Table 6.—Log-quality index for **RED OAK** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.54
9	. . .	. . .	.55
10	. . .	0.77	.55
11	. . .	.78	.55
12	. . .	.79	.55
13	1.02	.80	.56
14	1.09	.81	.56
15	1.12	.82	.56
16	1.15	.83	.56
17	1.16	.83	.57
18	1.16	.83	.59
19	1.16	.83	.61
20	1.16	.83	.63
21	1.16	.83	.66
22	1.16	.84	.69
23	1.16	.84	.72
24	1.17	.84	.76
25	1.17	.85	.80
26	1.18	.85	.80
27	1.19	.85	.80
28	1.20	.85	.80
29	1.21	.86	.81
30	1.22	.86	.81

Table 7.—Log-quality index for **SOFT MAPLE** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.46
9	. . .	. . .	.48
10	. . .	0.71	.51
11	. . .	.72	.53
12	. . .	.74	.56
13	0.91	.76	.59
14	.94	.78	.62
15	.96	.80	.66
16	.98	.83	.69
17	.99	.85	.73
18	1.01	.88	.76
19	1.02	.90	.79
20	1.04	.93	.82
21	1.05	.95	.85
22	1.06	.97	.88
23	1.07	.99	.91

Table 8.—Log-quality index for **WHITE OAK** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.50
9	. . .	. . .	.52
10	. . .	0.69	.53
11	. . .	.71	.55
12	. . .	.74	.56
13	1.01	.75	.57
14	1.07	.77	.59
15	1.11	.79	.60
16	1.15	.80	.62
17	1.19	.83	.64
18	1.22	.84	.66
19	1.24	.86	.69
20	1.25	.87	.71
21	1.27	.89	.74
22	1.29	.91	.77
23	1.32	.93	.80
24	1.35	.95	.83
25	1.39	.97	.88

Table 9.—Log-quality index for **YELLOW-POPLAR** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.51
9	. . .	. . .	.52
10	. . .	0.73	.54
11	. . .	.73	.55
12	. . .	.74	.57
13	0.88	.74	.59
14	.90	.75	.60
15	.92	.76	.62
16	.93	.78	.63
17	.95	.78	.65
18	.97	.79	.66
19	.98	.80	.67
20	.99	.81	.68
21	1.00	.81	.69
22	1.01	.82	.70
23	1.02	.83	. . .
24	1.03	.83	. . .
25	1.04	.84	. . .
26	1.05	.85	. . .
27	1.06	.85	. . .
28	1.06	.86	. . .
29	1.06	.87	. . .
30	1.07	.87	. . .

Table 10.—Log-quality index for **WHITE ASH** by log grade or class and size class [1]

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.57
9	. . .	. . .	.59
10	. . .	0.82	.61
11	. . .	.84	.63
12	1.10	.87	.66
13	1.12	.90	.70
14	1.15	.93	.74
15	1.17	.95	.78
16	1.19	.98	.82
17	1.21	1.00	.86
18	1.24	1.03	.90
19	1.25	1.06	.94
20	1.27	1.08	.97
21	1.29	1.11	. . .
22	1.31	1.13	. . .
23	1.33	1.16	. . .
24	1.35	1.18	. . .

[1] Data in tables 10-16 were derived by hand-curving lumber grade yield data from USDA Forest Serv. Res. Paper FPL-63 and 1964-68 lumber prices from *The Commercial Bulletin, Appalachian Area.*

Table 11.—Log-quality index for **BEECH** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.49
9	. . .	. . .	.50
10	. . .	0.64	.51
11	. . .	.65	.52
12	. . .	.67	.53
13	0.82	.68	.54
14	.84	.70	.56
15	.87	.73	.58
16	.88	.75	.59
17	.89	.75	.61
18	.90	.77	.63
19	.90	.78	.65
20	.90	.79	.68
21	.91	.80	.70
22	.91	.80	.73
23	.92	.81	.75
24	.92	.82	.79
25	.93	.82	. . .

Table 12.—Log-quality index for **CHERRY** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.40
9	. . .	. . .	.46
10	. . .	0.74	.51
11	. . .	.76	.54
12	. . .	.79	.58
13	1.07	.82	.62
14	1.08	.85	.66
15	1.08	.88	.72
16	1.09	.91	.77
17	1.10	.93	.81
18	1.12	.95	.84
19	1.13	.97	.87
20	1.15	.99	.88
21	1.16	1.02	.89
22	1.19	1.04	.90
23	1.21	1.07	. . .
24	1.24	1.09	. . .
25	1.26	1.12	. . .

Table 13.—Log-quality index for **HARD MAPLE** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
10	. . .	0.64	0.47
11	. . .	.66	.47
12	. . .	.67	.47
13	0.98	.69	.47
14	.99	.72	.47
15	.99	.74	.48
16	1.00	.76	.48
17	1.01	.78	.49
18	1.01	.80	.49
19	1.02	.82	.50
20	1.04	.84	.52
21	1.06	.86	.54
22	1.08	.88	.56
23	1.09	.91	.58
24	1.12	.93	. . .
25	1.14	.96	. . .
26	1.15	.98	. . .

Table 14.—Log-quality index for **RED OAK** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.52
9	. . .	. . .	.53
10	. . .	0.76	.53
11	. . .	.77	.53
12	. . .	.77	.54
13	1.00	.78	.54
14	1.08	.80	.54
15	1.11	.81	.54
16	1.13	.82	.55
17	1.14	.82	.56
18	1.15	.82	.57
19	1.15	.82	.59
20	1.15	.82	.62
21	1.15	.82	.64
22	1.15	.82	.67
23	1.15	.83	.71
24	1.15	.83	.75
25	1.16	. . .	.79
26	1.17	. . .	. . .
27	1.17	. . .	. . .
28	1.19	. . .	. . .
29	1.20	. . .	. . .
30	1.21	. . .	. . .

Table 15.—Log-quality index for **WHITE OAK** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.49
9	. . .	. . .	.50
10	. . .	0.68	.51
11	. . .	.70	.53
12	. . .	.72	.54
13	1.00	.73	.56
14	1.05	.75	.57
15	1.10	.77	.58
16	1.14	.79	.60
17	1.18	.81	.62
18	1.20	.83	.65
19	1.22	.84	.67
20	1.23	.86	.70
21	1.25	.88	.73
22	1.28	.90	.76
23	1.31	.92	.78
24	1.34	.94	.82
25	1.38	.96	.85
26	1.41	.98	.87
27	1.44	1.01	. . .
28	1.47	1.05	. . .

Table 16.—Log-quality index for **YELLOW-POPLAR** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.51
9	. . .	. . .	.52
10	. . .	0.73	.54
11	. . .	.73	.55
12	. . .	.74	.57
13	0.88	.74	.59
14	.90	.75	.60
15	.92	.76	.62
16	.93	.77	.63
17	.95	.78	.65
18	.96	.79	.66
19	.98	.80	.67
20	.99	.80	. . .
21	1.00	.81	. . .
22	1.01	.82	. . .
23	1.02	.83	. . .
24	1.03	.83	. . .
25	1.04	.84	. . .
26	1.05	.84	. . .
27	1.05	.85	. . .
28	1.06	.86	. . .
29	1.06	.87	. . .
30	1.06	.88	. . .

Table 17.—Log-quality index for **ASH** by log-grade or class and size class [1]

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.55
9	. . .	. . .	.56
10	. . .	0.78	.58
11	. . .	.81	.60
12	1.05	.83	.63
13	1.07	.86	.66
14	1.10	.88	.70
15	1.12	.91	.74
16	1.14	.94	.78
17	1.16	.96	.82
18	1.18	.99	.85
19	1.20	1.02	.89
20	1.21	1.04	.93
21	1.23	1.06	.97
22	1.25	1.08	1.00
23	1.27	1.10	1.03
24	1.28	1.12	1.06

[1] Data in tables 17-22 were derived by hand-curving lumber grade yield data from USDA Forest Serv. Res. Paper FPL-63 and 1964-68 lumber prices from *The Commercial Bulletin, Northeastern Area.*

Table 18.—Log-quality index for **BEECH** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.50
9	. . .	. . .	.51
10	. . .	0.65	.52
11	. . .	.67	.53
12	. . .	.68	.54
13	0.83	.69	.56
14	.87	.72	.58
15	.89	.74	.59
16	.90	.75	.61
17	.92	.77	.63
18	.93	.78	.65
19	.93	.79	.67
20	.93	.80	.69
21	.95	.81	.71
22	.95	.82	.73
23	.95	.83	.75
24	.95	.83	.77
25	.96	.84	.79

Table 19.—Log-quality index for **BIRCH** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.46
9	. . .	. . .	.46
10	. . .	0.66	.46
11	. . .	.68	.46
12	. . .	.70	.46
13	0.95	.72	.46
14	.98	.74	.46
15	1.01	.76	.47
16	1.05	.78	.47
17	1.12	.81	.48
18	1.17	.83	.49
19	1.22	.85	. . .
20	1.27	.87	. . .
21	1.30	.90	. . .
22	1.34	.93	. . .
23	1.37	.95	. . .
24	1.38	.98	. . .

Table 20.—Log-quality index for **HARD MAPLE** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.57
9	. . .	. . .	.57
10	. . .	0.72	.57
11	. . .	.74	.58
12	. . .	.75	.58
13	1.04	.77	.58
14	1.05	.79	.59
15	1.05	.81	.59
16	1.06	.83	.60
17	1.07	.85	.61
18	1.07	.87	.62
19	1.08	.89	.64
20	1.10	.90	.66
21	1.12	.92	.68
22	1.13	.95	.70
23	1.15	.97	.72
24	1.17	.99	.74
25	1.20	1.01	.76
26	1.21	1.03	.78

Table 21.—Log-quality index for **SOFT MAPLE** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.48
9	. . .	. . .	.50
10	. . .	0.72	.52
11	. . .	.73	.55
12	. . .	.75	.57
13	0.93	.77	.61
14	.96	.79	.63
15	.98	.81	.63
16	1.00	.84	.69
17	1.01	.86	.73
18	1.03	.89	.77
19	1.04	.91	.80
20	1.06	.94	.83
21	1.07	.97	.86
22	1.09	1.00	.89
23	1.10	1.03	. . .

Table 22.—Log-quality index for **OAK** by log grade or class and size class

Log diameter inside bark (inches)	Quality index		
	Log grade No. 1	Log grade No. 2	Log grade No. 3
8	. . .	. . .	0.65
9	. . .	. . .	.66
10	. . .	0.83	.66
11	. . .	.84	.66
12	. . .	.84	.67
13	1.02	.85	.67
14	1.08	.86	.67
15	1.10	.87	.67
16	1.12	.88	.67
17	1.13	.88	.68
18	1.14	.88	.69
19	1.14	.88	.70
20	1.14	.89	.72
21	1.14	.89	.75
22	1.14	.89	.77
23	1.14	.89	.80
24	1.14	.89	.83
25	1.15	.90	.86
26	1.15	.90	. . .
27	1.16	.90	. . .
28	1.17	.91	. . .
29	1.18	.91	. . .
30	1.19	.91	. . .

■

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