

| TREES PER ACRE BY BASAL AREA | | | | | | | | |
|------------------------------|-------------|------------|-----|-----|------|------|------|------|
| DBH | BA PER TREE | Basal Area | | | | | | |
| | | 40 | 60 | 80 | 100 | 120 | 140 | 160 |
| Trees Per Acre | | | | | | | | |
| 4 | 0 | 460 | 690 | 920 | 1150 | 1380 | 1610 | 1840 |
| 6 | 0 | 205 | 308 | 410 | 513 | 615 | 718 | 820 |
| 8 | 0 | 115 | 173 | 230 | 288 | 345 | 403 | 460 |
| 10 | 1 | 75 | 113 | 150 | 188 | 225 | 263 | 300 |
| 12 | 1 | 50 | 75 | 100 | 125 | 150 | 175 | 200 |
| 14 | 1 | 35 | 53 | 70 | 88 | 105 | 123 | 140 |
| 16 | 1 | 30 | 45 | 60 | 75 | 90 | 105 | 120 |
| 18 | 2 | 23 | 34 | 45 | 56 | 68 | 79 | 90 |
| 20 | 2 | 19 | 28 | 37 | 46 | 56 | 65 | 74 |

Cutting Cycle = Years to grow
2" diameter

| TREES PER ACRE (Plantations) BY AVG. ROW LAYOUT (Main Stand Trees) | | | | | | | | |
|--|------------------|------|------|-----|-----|-----|-----|-----|
| Feet Between Rows | Feet Within Rows | | | | | | | |
| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 6 | 1452 | 1210 | 1037 | 908 | 807 | 726 | 660 | 605 |
| 7 | 1245 | 1037 | 889 | 778 | 691 | 622 | 566 | 519 |
| 8 | 1089 | 908 | 778 | 681 | 605 | 545 | 495 | 454 |
| 9 | 968 | 807 | 691 | 605 | 538 | 484 | 440 | 403 |
| 10 | 871 | 726 | 622 | 545 | 484 | 436 | 396 | 363 |
| 11 | 792 | 660 | 566 | 495 | 440 | 396 | 360 | 330 |
| 12 | 726 | 605 | 519 | 454 | 403 | 363 | 330 | 303 |
| 13 | 670 | 558 | 479 | 419 | 372 | 335 | 305 | 279 |
| 14 | 622 | 519 | 444 | 389 | 346 | 311 | 283 | 259 |
| 15 | 581 | 484 | 415 | 363 | 323 | 290 | 264 | 242 |
| 16 | 544 | 454 | 389 | 340 | 303 | 272 | 248 | 227 |

| CONVERTING 25 YEAR BASIS SITE INDEX TO 50 YEAR | | | | |
|--|----------|--|----------|----------|
| 25 years | 50 years | | 25 years | 50 years |
| 35 | 50 | | 55 | 80 |
| 40 | 60 | | 60 | 90 |
| 50 | 70 | | 70 | 100 |

| PLOT DIMENSIONS | | |
|-----------------|------------------|--------------------|
| Plot Size | Radius of Circle | One Side of Square |
| 1/1000 | 3.7 | 6.6 |
| 1/100 | 11.8 | 20.9 |
| 1/50 | 16.7 | 29.5 |
| 1/20 | 26.3 | 46.7 |
| 1/10 | 37.2 | 66 |
| 1/5 | 52.7 | 93.3 |
| 1/2 | 83.3 | 147.6 |
| 1 | 117.8 | 208.7 |

| AVERAGE SPACING AND TREES PER ACRE (D + X = ___') | | | | |
|---|-----------|----------|----------|----------|
| 3' = 4840 | 13' = 258 | 23' = 82 | 33' = 40 | 55' = 14 |
| 4' = 2723 | 14' = 222 | 24' = 76 | 34' = 38 | 60' = 12 |
| 5' = 1742 | 15' = 194 | 25' = 70 | 35' = 36 | 65' = 10 |
| 6' = 1210 | 16' = 170 | 26' = 64 | 36' = 34 | 70' = 9 |
| 7' = 889 | 17' = 151 | 27' = 60 | 37' = 32 | 75' = 8 |
| 8' = 681 | 18' = 134 | 28' = 56 | 38' = 30 | 80' = 7 |
| 9' = 538 | 19' = 121 | 29' = 52 | 39' = 29 | 85' = 6 |
| 10' = 436 | 20' = 109 | 30' = 48 | 40' = 27 | 90' = 5 |
| 11' = 360 | 21' = 99 | 31' = 45 | 45' = 22 | 95' = 5 |
| 12' = 303 | 22' = 90 | 32' = 43 | 50' = 17 | 100' = 4 |

| BASAL AREA (Sq. Ft.) PER ACRE BY AVERAGE DBH AND D+X SPACING | | | | | | | | | |
|--|-----|-----|-----|-----|------|------|------|------|------|
| DBH | D+2 | D+4 | D+6 | D+8 | D+10 | D+12 | D+14 | D+16 | D+18 |
| 4 | 106 | 59 | 38 | 26 | 19 | 15 | 12 | 10 | |
| 6 | 134 | 86 | 59 | 44 | 33 | 26 | 21 | 18 | 15 |
| 8 | 152 | 106 | 78 | 59 | 47 | 38 | 31 | 26 | 22 |
| 10 | 165 | 121 | 93 | 73 | 59 | 49 | 41 | 35 | 30 |
| 12 | 175 | 134 | 106 | 86 | 71 | 59 | 51 | 44 | 38 |
| 14 | 182 | 144 | 116 | 96 | 81 | 69 | 59 | 52 | 45 |
| 16 | 188 | 152 | 126 | 106 | 90 | 78 | 68 | 59 | 53 |
| 18 | 192 | 159 | 134 | 114 | 98 | 86 | 75 | 67 | 59 |
| 20 | 196 | 165 | 141 | 121 | 106 | 93 | 82 | 73 | 66 |

| Present DBH | % ANNUAL VOLUME GROWTH WHEN LAST INCH OF RADIUS = ____ YEARS | | | | | |
|---------------------|---|------|------|-----|-----|-----|
| | 5 | 7 | 9 | 11 | 13 | 15 |
| - Pulpwood - | | | | | | |
| 8 | 17.6 | 12.3 | 9.4 | 7.7 | 6.4 | 5.6 |
| 10 | 12.1 | 8.6 | 6.6 | 5.4 | 4.5 | 3.9 |
| 12 | 9.3 | 6.6 | 5.1 | 4.1 | 3.5 | 3.0 |
| - Sawlogs - | | | | | | |
| 12 | 23.1 | 16.0 | 12.2 | 9.9 | 8.3 | 7.2 |
| 14 | 11.8 | 8.3 | 6.4 | 5.2 | 4.4 | 3.8 |
| 16 | 12.1 | 8.5 | 6.6 | 5.3 | 4.5 | 3.9 |
| 18 | 7.6 | 5.4 | 4.2 | 3.4 | 2.9 | 2.5 |

| APPROXIMATE VOLUME BY BASAL AREA | | | | | | | |
|----------------------------------|-------------|-----|-----|-----|-----|-----|-----|
| | Average dbh | | | | | | |
| | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| Cords per Sq. Ft. | .20 | .26 | .29 | .32 | .34 | | |
| Board Feet per Sq. Ft. | | | 31 | 61 | 79 | 107 | 122 |

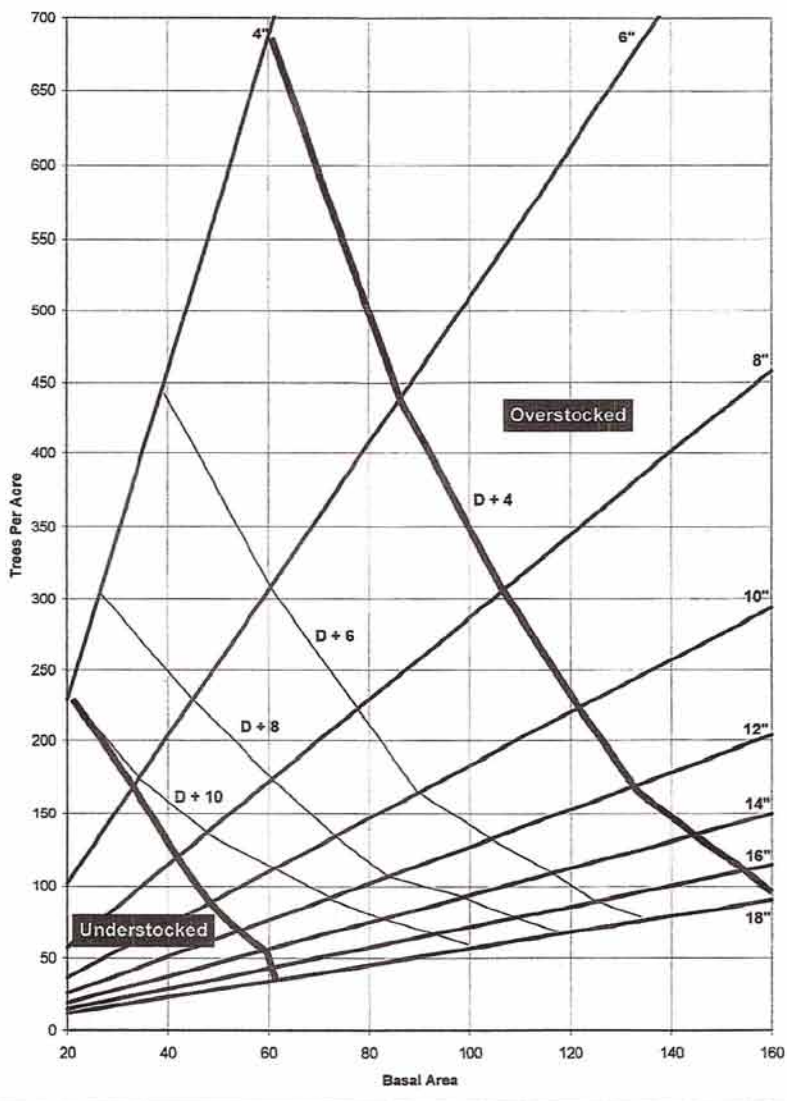
Board Feet – Form Class 78 (Doyle Rule)

Minimum stocking levels for upland hardwood stands to be understocked, fully stocked or overstocked.

| Stocking Level | Average Diameter | Trees Per Acre | Basal Area | Stocking Percent |
|----------------------|------------------|----------------|------------|------------------|
| Understocked | | | | |
| | 8 | 130* | 46 | 40% |
| | 10 | 95* | 52 | 40% |
| | 14 | 58* | 62 | 40% |
| Fully Stocked | | | | |
| | 8 | 177 | 62 | 60% |
| | 10 | 125 | 68 | 60% |
| | 14 | 70 | 75 | 60% |
| Overstocked | | | | |
| | 8 | 305 | 106 | 100% |
| | 10 | 215 | 117 | 100% |
| | 14 | 118 | 126 | 100% |

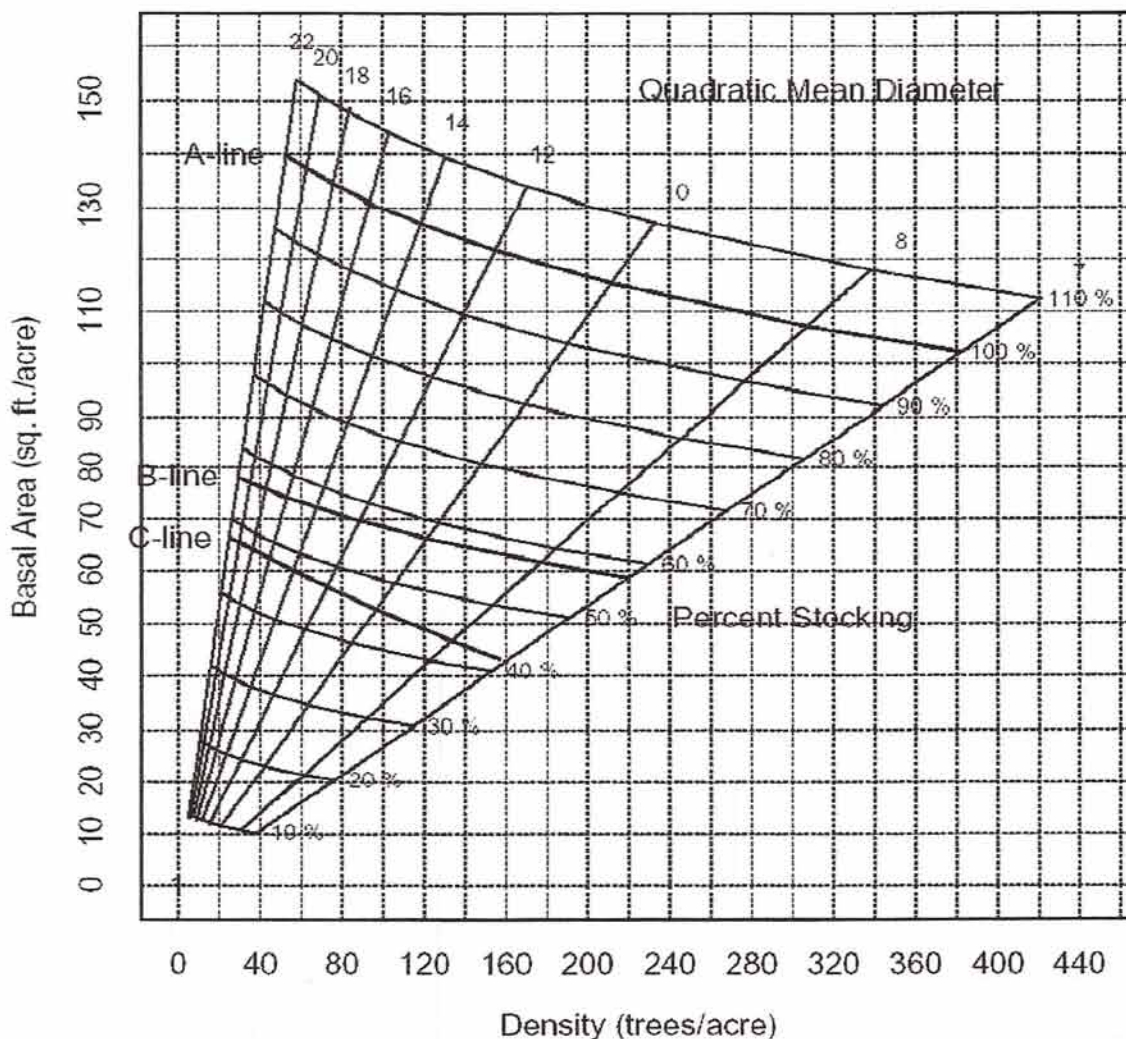
*Minimum number of manageable trees TPA for timber production

Pine Stocking Curve By Average DBH



UPLAND HARDWOOD FORESTS

Relation of basal area, number of trees, and average tree diameter to stocking percent



The diagram illustrates the relationship between basal area per acre, density (trees per acres), and the diameter of the tree of average basal area:

- The A-line is based on a fully stocked stand that has never been thinned. Trees in stands above 100% are considered crowded, too slow growing for normal forest management, and overstocked.

- The B-line is the point of full site occupancy with trees of maximum tree area. A stand on the B-line is thought to have trees with no competition, yet no space wasted. The area between the A-line and the B-line indicates the range of stocking where trees can fully utilize the site and should be considered fully stocked. Typically, the 80% stocking level is a good midpoint to choose for adjusting an overstocked stand to a fully stocked stand. This is because opening the stand too much (down to the B-line) could cause windfall or adverse effects.

The C-line is an estimate based on normal yield table of the lowest stocking that will grow to the B-line within ten years. This area of the chart is considered understocked.