



United States
Department of
Agriculture

Forest
Service

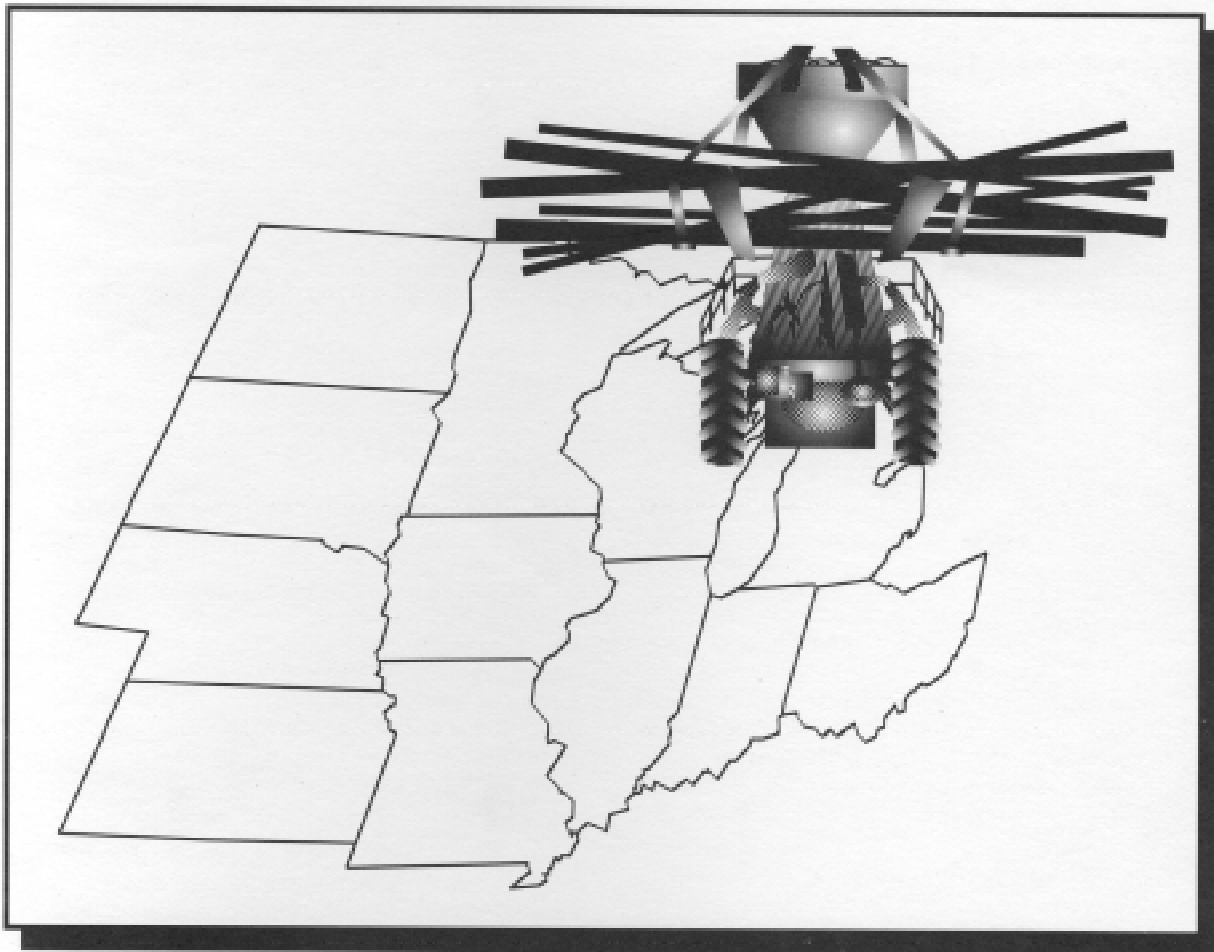
North Central
Research
Station

Resource Bulletin
NC - 195



Pulpwood Production in the North-Central Region, 1997

Ronald J. Piva



**North Central Research Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
Manuscript approved for publication September 20, 1999
1999**

CONTENTS

| | <i>Page</i> |
|------------------------------------|-------------|
| Lake States | 2 |
| Production | 2 |
| Receipts | 12 |
| Industry Trends and Analysis | 13 |
| Central States | 16 |
| Production | 16 |
| Receipts | 19 |
| Industry Trends and Analysis | 19 |
| Plains States | 19 |
| Production and Receipts | 19 |
| Appendix | 20 |

Pulpwood Production in the North-Central Region, 1997

Ronald J. Piva

NOTE: This report includes all primary products made from reconstituted wood fiber. In addition to wood pulp, this includes particleboard and engineered lumber products made from chips, shavings, wafers, flakes, strands, and sawdust. This report presents the production by county of the raw fiber material delivered to mills. Thus, these data report only that portion of the timber harvest used as raw material and do not necessarily reflect the volume of growing stock harvested.

Pulpwood constitutes more than half the industrial timber products harvested annually in the Lake States (Michigan, Minnesota, and Wisconsin) and is an important product in the Central States (Illinois, Indiana, Iowa, and Missouri) and the Plains States (Kansas, Nebraska, North Dakota, and South Dakota).

Current detailed information about pulpwood production¹ is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, forest industry development, and scientific studies.

Since 1979, we have included logs, bolts, and wood residue used in manufacturing flakeboard, waferboard, oriented strand board, and medium density fiberboard in this annual report. Engineered lumber was included in this report in 1992. Together, these products are called particleboards, and all mills manufacturing these boards will be called particleboard mills in this paper. Wood used at particleboard mills is identical or nearly identical to wood used at pulp mills; therefore,

including this wood in our study provides a more accurate estimate of demand for pulpwood-like material.

Particleboard mills were in their infancy before 1979 and used primarily aspen and wood residue. Therefore, data for these mills do not distort roundwood use trends for other species or preclude comparing 1997 survey results with those of 1978 and previous years.

Pulp and particleboard mills using North Central States timber in 1997 reported their pulpwood receipts² by species group and county of origin. This report presents the results of the survey, analyzes the data, compares results with those of 1996 or earlier years, and discusses trends in pulpwood production and use.

The Lake States, Central States, and Plains States are discussed separately because the timber types in each area are different, the flow of wood between the areas is nominal, and more detailed data on pulpwood production and receipts in the Central and Plains States might reveal the operations of individual mills. This is the 39th annual report of the pulpwood harvest in Lake States counties, the 38th annual report of the Central States harvest, and the 5th report of the pulpwood harvest in the Plains States.

Several mills purchase their pulpwood based on weight rather than volume. Conversion factors to convert green tons of pulpwood to standard cord equivalents are shown in the Appendix.

Ronald J. Piva, Forester, received a B.S. degree in forest management from the University of Missouri-Columbia. He joined the Forest Service in 1987, and has been working with the North Central Station's Forest Inventory and Analysis unit since.

¹*Pulpwood production, determined from mill receipts, is the annual volume of pulpwood cut, plus the annual wood residue volume produced by sawmills, veneer mills, etc. used for pulp, particleboard, waferboard, oriented strand board, medium density fiberboard, or engineered lumber.*

²*Pulpwood receipts are the volumes of wood received by mills in a specific State or region, regardless of the geographic source.*

LAKE STATES

PRODUCTION

- In 1997, pulpwood production as a whole remained at the 1996 level of 9.5 million cords³. Of each cord produced, 92 percent came from roundwood (including chips from roundwood) and 8 percent came from the residue⁴ of wood-using plants (fig. 1).
- Hardwoods constituted 78 percent of the total pulpwood production.
- Principal species of roundwood harvested in 1997 were aspen (4.1 million cords), jack pine (695 thousand cords), hard maple (768 thousand cords), soft maple (591 thousand cords), and white birch (506 thousand cords).
- Aspen remained the dominant species of pulpwood roundwood harvested—47 percent of the total.
- Softwood roundwood production decreased by 117 thousand cords, or 6 percent in 1997. Pulpwood production from softwood residue fell 54 thousand cords, a 24-percent decrease from the previous year (fig. 2).

- Whole-tree chip⁵ (WTC) production, which makes up 8 percent of the total pulpwood production in the Lake States, increased by 12 percent to 728 thousand cords in 1997. Hardwood WTC production increased by 13 percent and softwood WTC production increased by 5 percent (fig. 3).

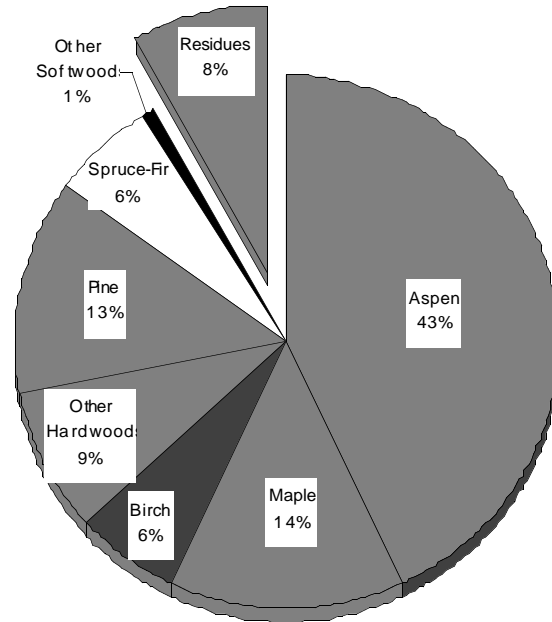


Figure 1.—Lake States pulpwood production by species group and residues, 1997.

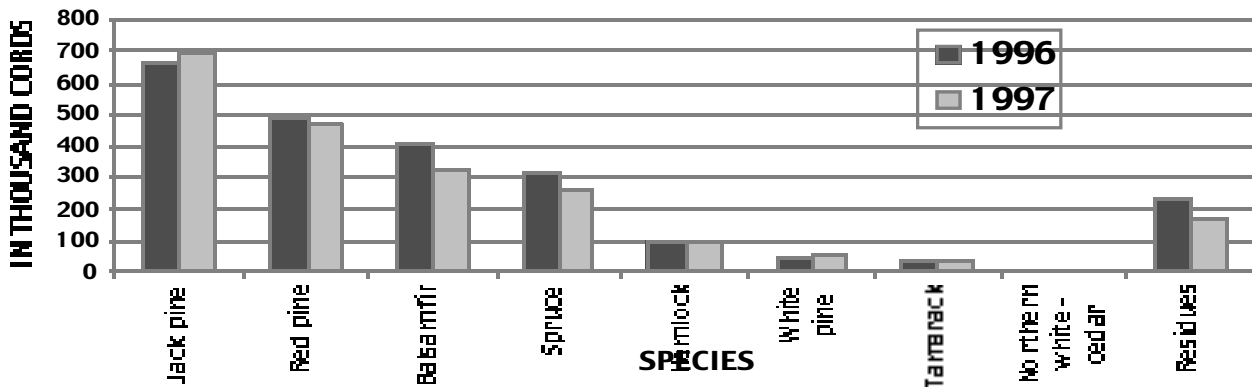


Figure 2.—Softwood pulpwood production in the Lake States, 1996-1997.

³All references to cords are in standard cords. A standard cord is 128 cubic feet of wood, bark, and air space.

⁴Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using mills that is used for pulping and particleboard. Residue

includes slabs, edgings, veneer cores, sawdust, fines, woodflour, and chips manufactured from slabs, edgings, and veneer cores.

⁵Pulpwood produced from chipping entire trees (all portions of the trees above ground, except the stumps).

Table 1.--Production and imports of pulpwood, Lake States, 1997 ¹

(In standard cords, unpeeled)

| Product form, species group, and destination | Production by State ² | | | Regional total | Imports | | | | Total imports | Total receipts |
|--|----------------------------------|-----------|-----------|-------------------|-------------------|------------------|----------------------------|--------|------------------|-------------------|
| | Michigan | Minnesota | Wisconsin | | Central States | Plains States | Other U.S. ³ | Canada | | |
| Roundwood | | | | | | | | | | |
| N. white-cedar | | | | | | | | | | |
| Michigan | 6,170 | -- | 462 | 6,632 | -- | -- | -- | 23 | 23 | 6,655 |
| Total | 6,170 | -- | 462 | 6,632 | -- | -- | -- | 23 | 23 | 6,655 |
| Balsam fir | | | | | | | | | | |
| Canada | 5,206 | -- | -- | 5,206 | -- | -- | -- | -- | -- | -- |
| Michigan | 37,570 | -- | 2,772 | 40,342 | -- | -- | -- | 140 | 140 | 40,482 |
| Minnesota | 1,042 | 190,063 | 7,151 | 198,255 | -- | -- | -- | 72 | 72 | 198,327 |
| Wisconsin | 8,072 | 4,778 | 67,631 | 80,481 | -- | -- | -- | -- | -- | 80,481 |
| Total | 51,889 | 194,841 | 77,555 | 324,285 | -- | -- | -- | 212 | 212 | 319,290 |
| Hemlock | | | | | | | | | | |
| Michigan | 67,734 | -- | 8,771 | 76,505 | -- | -- | -- | 183 | 183 | 76,688 |
| Wisconsin | 2,899 | -- | 17,140 | 20,039 | -- | -- | -- | -- | -- | 20,039 |
| Total | 70,633 | -- | 25,911 | 96,543 | -- | -- | -- | 183 | 183 | 96,727 |
| Jack pine | | | | | | | | | | |
| Michigan | 212,668 | -- | 9,817 | 222,485 | -- | -- | -- | 548 | 548 | 223,033 |
| Minnesota | -- | 44,906 | 2,221 | 47,127 | -- | -- | -- | -- | -- | 47,127 |
| Wisconsin | 59,943 | 40,722 | 324,873 | 425,539 | 24 | -- | -- | 1,057 | 1,081 | 426,620 |
| Total | 272,611 | 85,628 | 336,911 | 695,150 | 24 | -- | -- | 1,606 | 1,630 | 696,780 |
| Red pine | | | | | | | | | | |
| Michigan | 95,247 | -- | 6,467 | 101,714 | -- | -- | -- | 589 | 589 | 102,303 |
| Minnesota | -- | 27,802 | 853 | 28,655 | -- | -- | -- | -- | -- | 28,655 |
| Wisconsin | 15,812 | 11,265 | 317,538 | 344,615 | 914 | -- | -- | -- | 914 | 345,529 |
| Total | 111,059 | 39,067 | 324,858 | 474,984 | 914 | -- | -- | 589 | 1,502 | 476,487 |
| White pine | | | | | | | | | | |
| Michigan | 7,177 | -- | 482 | 7,659 | -- | -- | -- | 24 | 24 | 7,683 |
| Minnesota | -- | 1,207 | -- | 1,207 | -- | -- | -- | -- | -- | 1,207 |
| Wisconsin | 1,592 | 293 | 46,727 | 48,612 | 88 | -- | -- | -- | 88 | 48,699 |
| Total | 8,769 | 1,500 | 47,209 | 57,478 | 88 | -- | -- | 24 | 112 | 57,590 |
| Spruce | | | | | | | | | | |
| Canada | 7,588 | -- | -- | 7,588 | -- | -- | -- | -- | -- | -- |
| Michigan | 13,965 | -- | 1,157 | 15,122 | -- | -- | -- | 51 | 51 | 15,173 |
| Minnesota | -- | 111,681 | 1,426 | 113,108 | -- | -- | -- | 703 | 703 | 113,811 |
| Wisconsin | 24,755 | 56,790 | 41,700 | 123,246 | -- | -- | -- | 2,494 | 2,494 | 125,740 |
| Total | 46,308 | 168,472 | 44,284 | 259,064 | -- | -- | -- | 3,248 | 3,248 | 254,724 |
| Tamarack | | | | | | | | | | |
| Michigan | 3,968 | -- | 309 | 4,278 | -- | -- | -- | 15 | 15 | 4,293 |
| Minnesota | -- | 1,880 | -- | 1,880 | -- | -- | -- | -- | -- | 1,880 |
| Wisconsin | 1,454 | 19,257 | 7,803 | 28,513 | -- | -- | -- | -- | -- | 28,513 |
| Total | 5,422 | 21,137 | 8,112 | 34,671 | -- | -- | -- | 15 | 15 | 34,687 |
| Total softwood roundwood | | | | | | | | | | |
| Canada | 12,794 | -- | -- | 12,794 | -- | -- | -- | -- | -- | -- |
| Michigan | 444,498 | -- | 30,238 | 474,736 | -- | -- | -- | 1,575 | 1,575 | 476,311 |
| Minnesota | 1,042 | 377,539 | 11,651 | 390,232 | -- | -- | -- | 775 | 775 | 391,007 |
| Wisconsin | 114,528 | 133,105 | 823,412 | 1,071,045 | 1,025 | -- | -- | 3,551 | 4,576 | 1,075,621 |
| Total | 572,862 | 510,644 | 865,301 | 1,948,807 | 1,025 | -- | -- | 5,901 | 6,926 | 1,942,939 |
| Residues | | | | | | | | | | |
| Softwood | | | | | | | | | | |
| Canada | 4,960 | 19,137 | 960 | 25,057 | -- | -- | -- | -- | -- | -- |
| Michigan | 20,498 | -- | 9,619 | 30,117 | -- | -- | -- | 541 | 541 | 30,659 |
| Minnesota | -- | 18,656 | 1,619 | 20,275 | -- | -- | -- | 333 | 333 | 20,607 |
| Wisconsin | 13,176 | -- | 83,507 | 96,683 | 88 | 50,685 | 39,579 | 14,781 | 105,133 | 201,816 |
| Total | 38,634 | 37,792 | 95,705 | 172,132 | 88 | 50,685 | 39,579 | 15,655 | 106,007 | 253,082 |
| Total all softwood material | | | | | | | | | | |
| Canada | 17,754 | 19,137 | 960 | 37,851 | -- | -- | -- | -- | -- | -- |
| Michigan | 464,996 | -- | 39,857 | 504,853 | -- | -- | -- | 2,116 | 2,116 | 506,970 |
| Minnesota | 1,042 | 396,195 | 13,270 | 410,507 | -- | -- | -- | 1,108 | 1,108 | 411,614 |
| Wisconsin | 127,704 | 133,105 | 906,919 | 1,167,728 | 1,113 | 50,685 | 39,579 | 18,332 | 109,709 | 1,277,437 |
| Total | 611,496 | 548,437 | 961,006 | 2,120,939 | 1,113 | 50,685 | 39,579 | 21,556 | 112,933 | 2,196,021 |

(Table 1 continued on next page)

(Table 1 continued)

| Product form, species group, and destination | Production by State ² | | | | Regional total | Imports | | | | Total imports | Total receipts |
|--|----------------------------------|-----------|-----------|-----------|-------------------|-------------------|------------------|----------------------------|---------|------------------|-------------------|
| | Michigan | Minnesota | Wisconsin | | | Central States | Plains States | Other U.S. ³ | Canada | | |
| Roundwood | | | | | | | | | | | |
| Ash | | | | | | | | | | | |
| Michigan | 35,601 | -- | 2,049 | 37,650 | -- | -- | -- | 28 | 28 | 37,678 | |
| Minnesota | -- | 1,026 | -- | 1,026 | -- | -- | -- | -- | -- | 1,026 | |
| Wisconsin | 2,906 | 2,364 | 75,447 | 80,717 | 84 | -- | -- | -- | 84 | 80,801 | |
| Total | 38,507 | 3,390 | 77,496 | 119,393 | 84 | -- | -- | 28 | 112 | 119,505 | |
| Aspen | | | | | | | | | | | |
| Michigan | 988,370 | -- | 44,960 | 1,033,330 | -- | -- | -- | 32,614 | 32,614 | 1,065,944 | |
| Minnesota | -- | 2,019,832 | 22,820 | 2,042,651 | -- | 2,241 | -- | 75,860 | 78,101 | 2,120,752 | |
| Wisconsin | 52,883 | 88,384 | 912,432 | 1,053,700 | -- | -- | -- | 6,757 | 6,757 | 1,060,456 | |
| Total | 1,041,253 | 2,108,216 | 980,212 | 4,129,681 | -- | 2,241 | -- | 115,230 | 117,471 | 4,247,152 | |
| Balsam poplar | | | | | | | | | | | |
| Michigan | 40,287 | -- | 5,292 | 45,579 | -- | -- | -- | 1,163 | 1,163 | 46,743 | |
| Minnesota | -- | 111,004 | 111 | 111,115 | -- | 45 | -- | 17,186 | 17,231 | 128,346 | |
| Wisconsin | 12 | 1,141 | 1,064 | 2,217 | -- | -- | -- | -- | -- | 2,217 | |
| Total | 40,300 | 112,145 | 6,468 | 158,912 | -- | 45 | -- | 18,349 | 18,394 | 177,306 | |
| Basswood | | | | | | | | | | | |
| Michigan | 64,585 | -- | 5,144 | 69,728 | -- | -- | -- | 245 | 245 | 69,973 | |
| Minnesota | -- | 1,984 | -- | 1,984 | -- | -- | -- | -- | -- | 1,984 | |
| Wisconsin | 1,257 | 380 | 50,551 | 52,188 | 42 | -- | -- | -- | 42 | 52,230 | |
| Total | 65,842 | 2,364 | 55,694 | 123,900 | 42 | -- | -- | 245 | 287 | 124,187 | |
| Beech | | | | | | | | | | | |
| Michigan | 44,869 | -- | 4,759 | 49,628 | -- | -- | -- | 70 | 70 | 49,698 | |
| Wisconsin | 8 | -- | 1,048 | 1,056 | -- | -- | -- | -- | -- | 1,056 | |
| Total | 44,877 | -- | 5,807 | 50,684 | -- | -- | -- | 70 | 70 | 50,754 | |
| White birch | | | | | | | | | | | |
| Michigan | 138,763 | -- | 30,781 | 169,544 | -- | -- | -- | 852 | 852 | 170,396 | |
| Minnesota | -- | 79,725 | 3,459 | 83,184 | -- | -- | -- | 4 | 4 | 83,189 | |
| Wisconsin | 6,805 | 43,025 | 203,202 | 253,032 | 137 | -- | -- | 3,488 | 3,624 | 256,657 | |
| Total | 145,568 | 122,750 | 237,442 | 505,760 | 137 | -- | -- | 4,344 | 4,481 | 510,241 | |
| Yellow birch | | | | | | | | | | | |
| Michigan | 33,917 | -- | 3,163 | 37,081 | -- | -- | -- | 54 | 54 | 37,135 | |
| Wisconsin | 461 | -- | 16,175 | 16,636 | -- | -- | -- | -- | -- | 16,636 | |
| Total | 34,378 | -- | 19,338 | 53,716 | -- | -- | -- | 54 | 54 | 53,771 | |
| Cottonwood | | | | | | | | | | | |
| Wisconsin | 13 | 1 | 1,465 | 1,479 | -- | -- | -- | -- | -- | 1,479 | |
| Total | 13 | 1 | 1,465 | 1,479 | -- | -- | -- | -- | -- | 1,479 | |
| Elm | | | | | | | | | | | |
| Wisconsin | 420 | 37 | 35,163 | 35,621 | 6 | -- | -- | -- | 6 | 35,627 | |
| Total | 420 | 37 | 35,163 | 35,621 | 6 | -- | -- | -- | 6 | 35,627 | |
| Hickory | | | | | | | | | | | |
| Wisconsin | 81 | 34 | 1,080 | 1,195 | 6 | -- | -- | -- | 6 | 1,201 | |
| Total | 81 | 34 | 1,080 | 1,195 | 6 | -- | -- | -- | 6 | 1,201 | |
| Hard maple | | | | | | | | | | | |
| Michigan | 523,487 | -- | 51,765 | 575,252 | -- | -- | -- | 1,345 | 1,345 | 576,597 | |
| Minnesota | -- | 3,253 | 998 | 4,251 | -- | -- | -- | -- | -- | 4,251 | |
| Wisconsin | 6,753 | 4,901 | 177,174 | 188,829 | 129 | -- | -- | -- | 129 | 188,957 | |
| Total | 530,240 | 8,154 | 229,937 | 768,332 | 129 | -- | -- | 1,345 | 1,473 | 769,805 | |
| Soft maple | | | | | | | | | | | |
| Michigan | 405,386 | -- | 28,853 | 434,239 | -- | -- | -- | 525 | 525 | 434,764 | |
| Minnesota | -- | 4,260 | 1,126 | 5,386 | -- | -- | -- | -- | -- | 5,386 | |
| Wisconsin | 4,433 | 2,373 | 144,913 | 151,720 | 66 | -- | -- | -- | 66 | 151,786 | |
| Total | 409,819 | 6,634 | 174,892 | 591,345 | 66 | -- | -- | 525 | 591 | 591,936 | |
| Red oak | | | | | | | | | | | |
| Michigan | 72,787 | -- | 946 | 73,732 | -- | -- | -- | 13 | 13 | 73,746 | |
| Wisconsin | 2,706 | 899 | 87,274 | 90,879 | 140 | -- | -- | -- | 140 | 91,019 | |
| Total | 75,493 | 899 | 88,219 | 164,611 | 140 | -- | -- | 13 | 153 | 164,764 | |
| White oak | | | | | | | | | | | |
| Michigan | 71,288 | -- | -- | 71,288 | -- | -- | -- | -- | -- | 71,288 | |
| Wisconsin | 640 | 65 | 25,667 | 26,371 | 6 | -- | -- | -- | 6 | 26,377 | |
| Total | 71,928 | 65 | 25,667 | 97,660 | 6 | -- | -- | -- | 6 | 97,666 | |
| Other hardwoods | | | | | | | | | | | |
| Michigan | 26,970 | -- | 3,058 | 30,028 | -- | -- | -- | 52 | 52 | 30,080 | |
| Wisconsin | 240 | 89 | 3,689 | 4,019 | 15 | -- | -- | -- | 15 | 4,034 | |
| Total | 27,210 | 89 | 6,747 | 34,046 | 15 | -- | -- | 52 | 68 | 34,114 | |

(Table 1 continued on next page)

(Table 1 continued)

| Product form, species group, and destination | Production by State ² | | | | Regional total | Imports | | | | Total imports | Total receipts |
|--|----------------------------------|-----------|-----------|--|-------------------|-------------------|------------------|----------------------------|---------|------------------|-------------------|
| | Michigan | Minnesota | Wisconsin | | | Central States | Plains States | Other U.S. ³ | Canada | | |
| Total hardwood roundwood | | | | | | | | | | | |
| Michigan | 2,446,311 | -- | 180,770 | | 2,627,080 | -- | -- | -- | 36,962 | 36,962 | 2,664,042 |
| Minnesota | -- | 2,221,084 | 28,514 | | 2,249,598 | -- | 2,286 | -- | 93,050 | 95,336 | 2,344,933 |
| Wisconsin | 79,619 | 143,694 | 1,736,345 | | 1,959,658 | 631 | -- | -- | 10,244 | 10,876 | 1,970,534 |
| Total | 2,525,930 | 2,364,778 | 1,945,628 | | 6,836,336 | 631 | 2,286 | -- | 140,256 | 143,173 | 6,979,509 |
| Residues | | | | | | | | | | | |
| Hardwood | | | | | | | | | | | |
| Canada | -- | 19,427 | -- | | 19,427 | -- | -- | -- | -- | -- | -- |
| Michigan | 192,693 | -- | 13,319 | | 206,012 | 15,529 | -- | -- | 1,987 | 17,516 | 223,528 |
| Minnesota | -- | 36,380 | 3,089 | | 39,469 | -- | -- | -- | 7,813 | 7,813 | 47,282 |
| Other ⁴ | -- | -- | 1,492 | | 1,492 | -- | -- | -- | -- | -- | -- |
| Wisconsin | 15,890 | 10,576 | 269,565 | | 296,031 | 2,661 | -- | -- | -- | 2,661 | 298,692 |
| Total | 208,583 | 66,383 | 287,464 | | 562,431 | 18,190 | -- | -- | 9,800 | 27,990 | 569,501 |
| Total all hardwood material | | | | | | | | | | | |
| Canada | -- | 19,427 | -- | | 19,427 | -- | -- | -- | -- | -- | -- |
| Michigan | 2,639,004 | -- | 194,088 | | 2,833,092 | 15,529 | -- | -- | 38,949 | 54,478 | 2,887,570 |
| Minnesota | -- | 2,257,464 | 31,603 | | 2,289,067 | -- | 2,286 | -- | 100,862 | 103,149 | 2,392,215 |
| Other ⁴ | -- | -- | 1,492 | | 1,492 | -- | -- | -- | -- | -- | -- |
| Wisconsin | 95,509 | 154,270 | 2,005,910 | | 2,255,689 | 3,292 | -- | -- | 10,244 | 13,536 | 2,269,225 |
| Total | 2,734,513 | 2,431,161 | 2,233,093 | | 7,398,767 | 18,821 | 2,286 | -- | 150,056 | 171,163 | 7,549,010 |
| Total all roundwood | | | | | | | | | | | |
| Canada | 12,794 | -- | -- | | 12,794 | -- | -- | -- | -- | -- | -- |
| Michigan | 2,890,809 | -- | 211,008 | | 3,101,816 | -- | -- | -- | 38,537 | 38,537 | 3,140,353 |
| Minnesota | 1,042 | 2,598,623 | 40,165 | | 2,639,830 | -- | 2,286 | -- | 93,825 | 96,111 | 2,735,940 |
| Wisconsin | 194,147 | 276,799 | 2,559,757 | | 3,030,703 | 1,656 | -- | -- | 13,795 | 15,452 | 3,046,155 |
| Total | 3,098,792 | 2,875,422 | 2,810,929 | | 8,785,143 | 1,656 | 2,286 | -- | 146,157 | 150,099 | 8,922,448 |
| Total all residues | | | | | | | | | | | |
| Canada | 4,960 | 38,564 | 960 | | 44,484 | -- | -- | -- | -- | -- | -- |
| Michigan | 213,191 | -- | 22,938 | | 236,129 | 15,529 | -- | -- | 2,529 | 18,058 | 254,187 |
| Minnesota | -- | 55,036 | 4,708 | | 59,744 | -- | -- | -- | 8,146 | 8,146 | 67,889 |
| Other ⁴ | -- | -- | 1,492 | | 1,492 | -- | -- | -- | -- | -- | -- |
| Wisconsin | 29,066 | 10,576 | 353,072 | | 392,714 | 2,749 | 50,685 | 39,579 | 14,781 | 107,794 | 500,508 |
| Total | 247,217 | 104,176 | 383,170 | | 734,563 | 18,278 | 50,685 | 39,579 | 25,456 | 133,997 | 822,584 |
| Total all wood material | | | | | | | | | | | |
| Canada | 17,754 | 38,564 | 960 | | 57,278 | -- | -- | -- | -- | -- | -- |
| Michigan | 3,104,000 | -- | 233,946 | | 3,337,945 | 15,529 | -- | -- | 41,065 | 56,594 | 3,394,539 |
| Minnesota | 1,042 | 2,653,659 | 44,873 | | 2,699,574 | -- | 2,286 | -- | 101,970 | 104,256 | 2,803,830 |
| Other ⁴ | -- | -- | 1,492 | | 1,492 | -- | -- | -- | -- | -- | -- |
| Wisconsin | 223,214 | 287,375 | 2,912,828 | | 3,423,417 | 4,405 | 50,685 | 39,579 | 28,577 | 123,246 | 3,546,663 |
| Total | 3,346,009 | 2,979,598 | 3,194,099 | | 9,519,706 | 19,934 | 52,971 | 39,579 | 171,612 | 284,096 | 9,745,032 |

¹ Table may not add due to rounding.² Vertical columns of figures under the box heading "Production by State" present the amount of roundwood cut or residue generated in each State.³ Mostly Western States.⁴ Pulpwood shipped to mills outside of region.

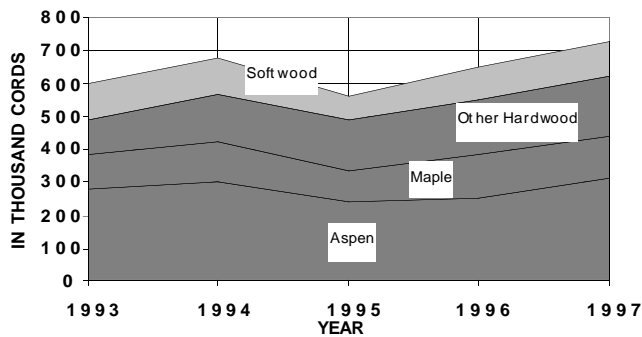


Figure 3.—Whole-tree chip production in the Lake States, 1993-1997.

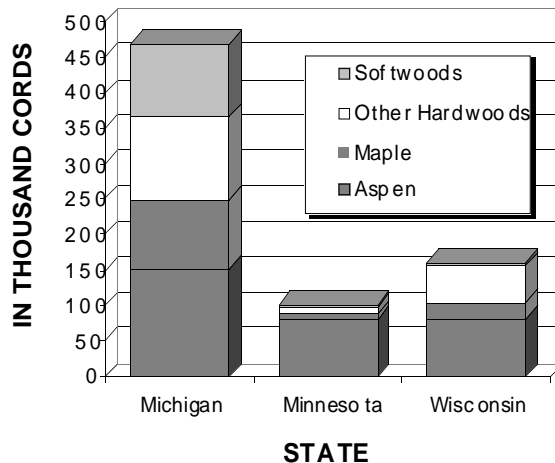


Figure 4.—Whole-tree chip production by State in the Lake States, 1997.

- Michigan was the major producer of WTC in the Lake States in 1997 with 467 thousand cords (64 percent of the WTC production) (fig. 4).
- Aspen was the predominant species used in WTC in 1997 with 312 thousand cords or 43 percent of the total WTC production.
- Jack pine was the predominant softwood species used in WTC in 1997, making up 92 percent of the softwood WTC production and 13 percent of the total WTC production.

Michigan

- Michigan pulpwood production rose to 3.3 million cords in 1997, an 8-percent increase over 1996 (fig. 5).
- In 1997, hardwoods accounted for 82 percent of Michigan's pulpwood production.
- Roundwood production for pulpwood in 1997 increased by 9 percent to 3.1 million cords (fig. 6).
- The Western Upper Peninsula was the top producing region in the State in 1997 with 38 percent of the roundwood harvested.

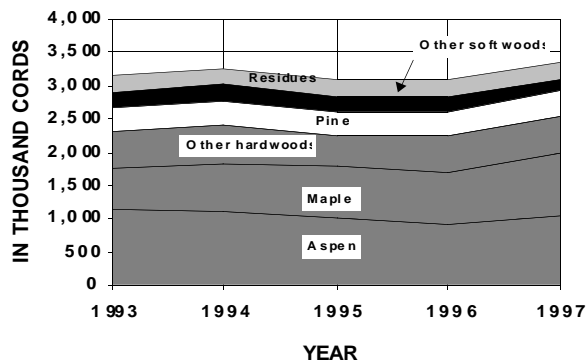


Figure 5.—Michigan pulpwood production by species group and residues, 1993-1997.

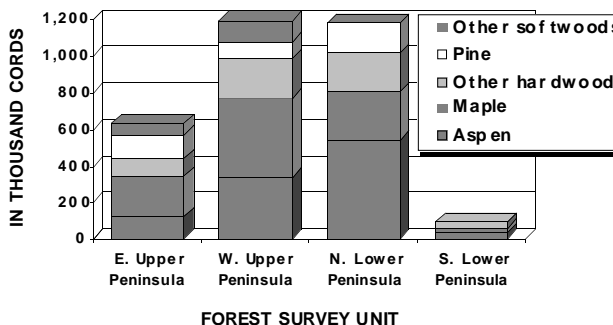


Figure 6.—Michigan roundwood pulpwood production by Forest Survey Unit and species groups, 1997.

- Marquette County in the Western Upper Peninsula was the top producer of roundwood in the State with 291 thousand cords.
- Roundwood pulpwood production in 1997 increased by 43 percent in the Southern Lower Peninsula, increased by 37 percent in the Northern Lower Peninsula, decreased by 12 percent in the Western Upper Peninsula, and decreased by 8 percent in the Eastern Upper Peninsula.
- The production of pulpwood from residues decreased by 11 percent in 1997, falling from 810 thousand cords in 1996 to 735 thousand cords in 1997.

Minnesota

- Pulpwood production decreased by 3 percent to 3.0 million cords in 1997 (fig. 7).
- Hardwoods accounted for 82 percent of the total pulpwood produced in 1997.
- Ninety-seven percent of the pulpwood produced came from roundwood.
- The Northern Pine and the Aspen-Birch Units were the top pulpwood-producing roundwood areas in the State in 1997 with 1.5 million cords and 1.0 million cords, respectively (fig. 8).
- St. Louis County, in the Aspen-Birch Unit, remained the top roundwood-producing county with 520 thousand cords, followed by Itasca County with 393 thousand cords.

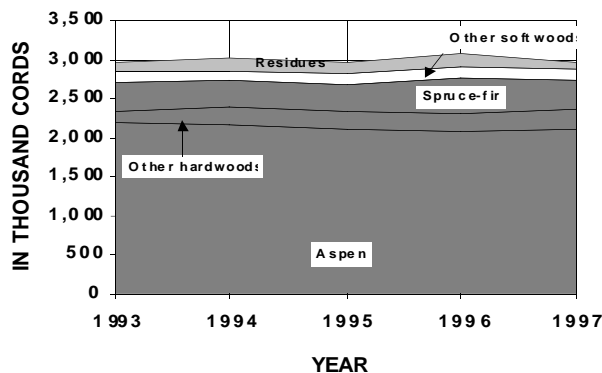


Figure 7.—Minnesota pulpwood production by species group and residues, 1993-1997.

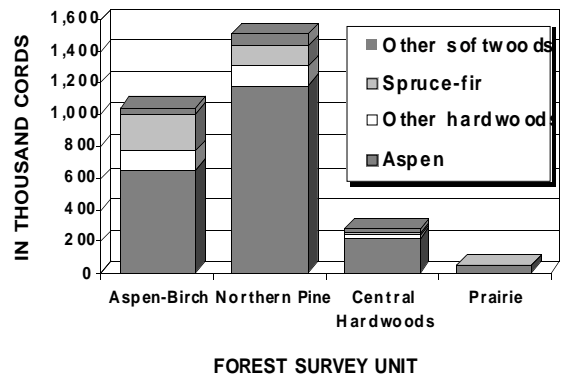


Figure 8.—Minnesota roundwood pulpwood production by Forest Survey Unit and species group, 1997.

- After falling for three straight years, aspen pulpwood production rose by 10 thousand cords in 1997. Aspen accounted for 73 percent of the roundwood harvested.
- Pulpwood production from hardwood residues decreased by 37 percent and softwood residue use decreased by 40 percent.

Wisconsin

- Pulpwood production in Wisconsin decreased by 3 percent in 1997 to 3.2 million cords (fig. 9).

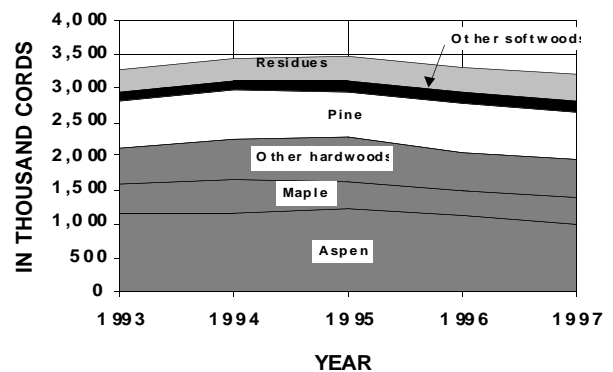
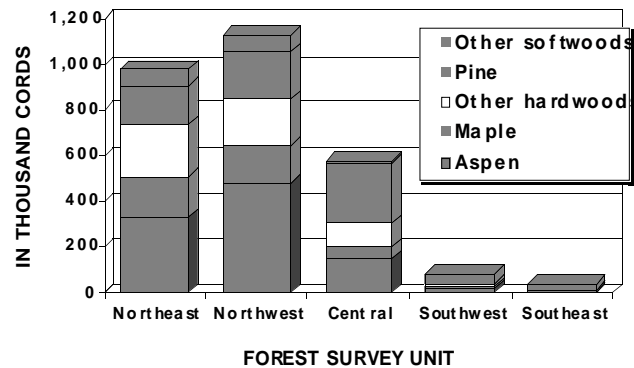


Figure 9.—Wisconsin pulpwood production by species group and residues, 1993-1997.

- Hardwoods accounted for 70 percent of the total pulpwood production in 1997.
- Roundwood harvested for pulpwood accounted for 88 percent of the pulpwood produced in 1997.

- The Northwest remained the top producer of roundwood for pulping in the State in 1997 with 1.1 million cords (fig. 10).
- Douglas County in the Northwest Unit remained the top pulpwood-producing county in the State with 185 thousand cords.
- Aspen harvests decreased by 12 percent to 980 thousand cords in 1997.
- The use of softwood residues for pulpwood increased by 28 percent while the use of hardwood residues decreased by just over a half percent.

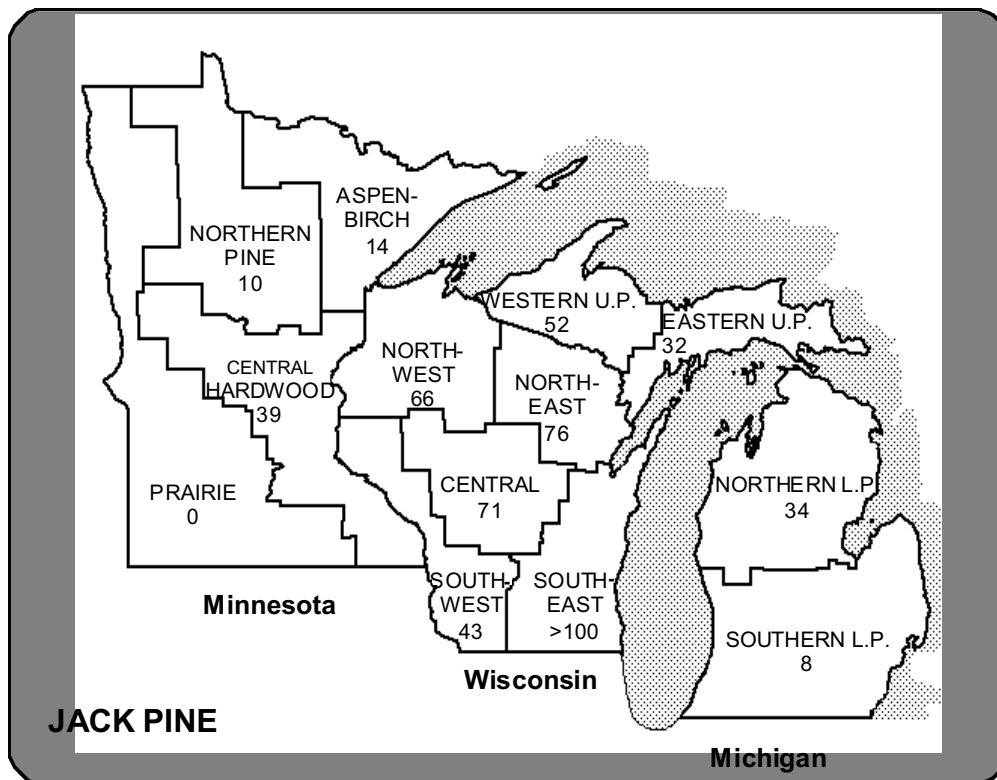
of pulpwood cut relative to the growing-stock volume in each of five major pulpwood species (fig. 11); and, second, the amount of pulpwood relative to commercial timberland area (fig. 12).



Harvesting Intensity

- In this report, we show the distribution of the harvest in two ways: first, the amount

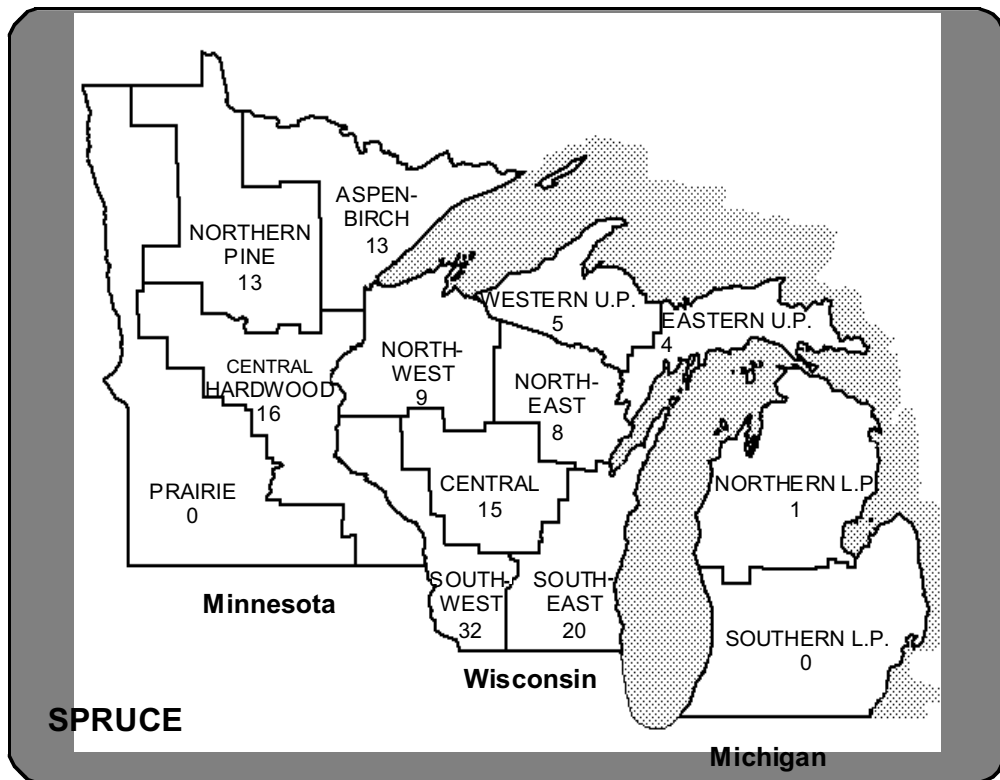
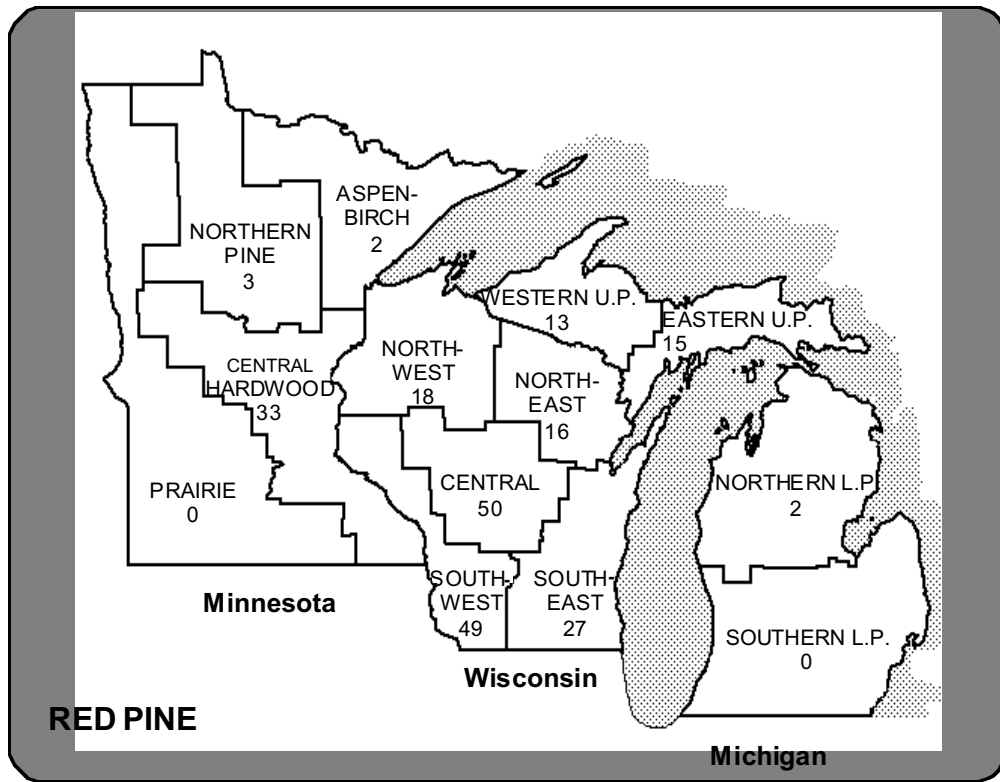
Figure 10.—Wisconsin roundwood pulpwood production by Forest Survey Unit and species group, 1997.



(Figure 11 continued on next page)

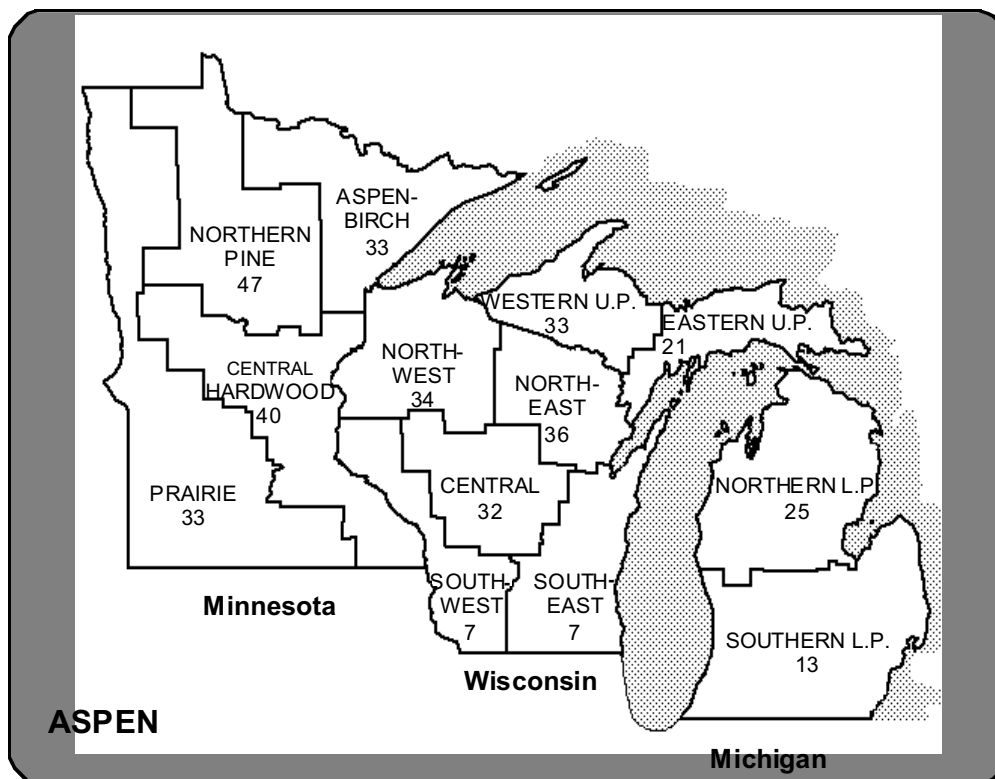
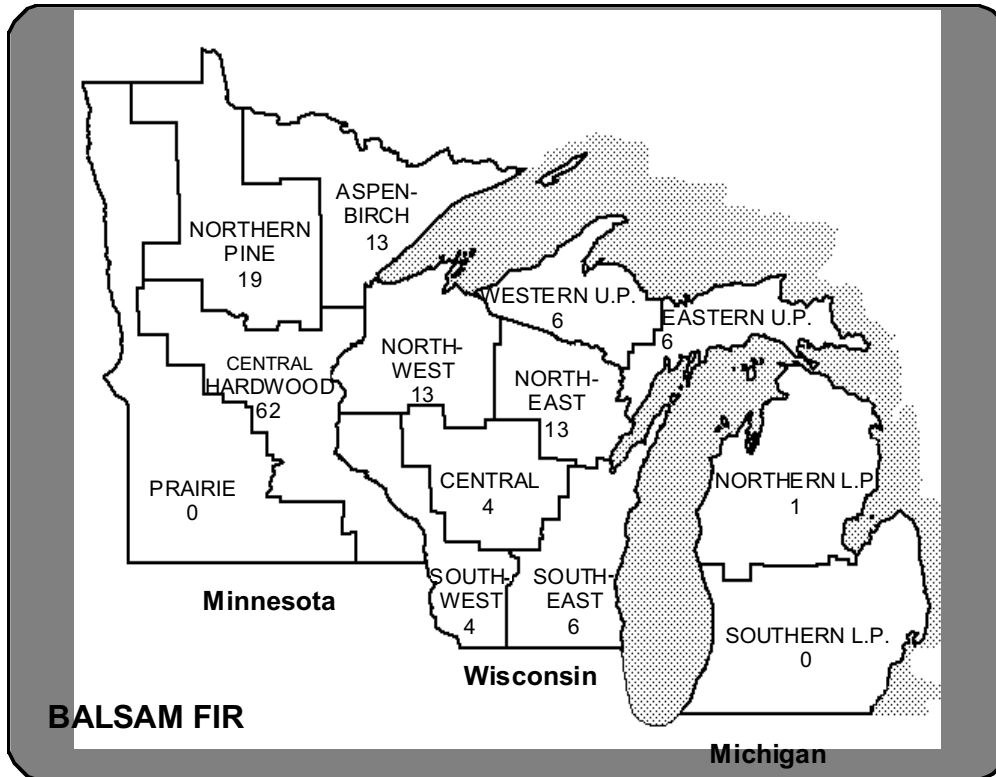
Figure 11.—Cords of roundwood pulpwood (including chips from roundwood) harvested per 1,000 cords of growing-stock volume for each of five principal pulpwood species by Forest Survey Unit, 1997. Growing-stock volume was determined during the last forest inventory for each State.

(Figure 11 continued)



(Figure 11 continued on next page)

(Figure 11 continued)



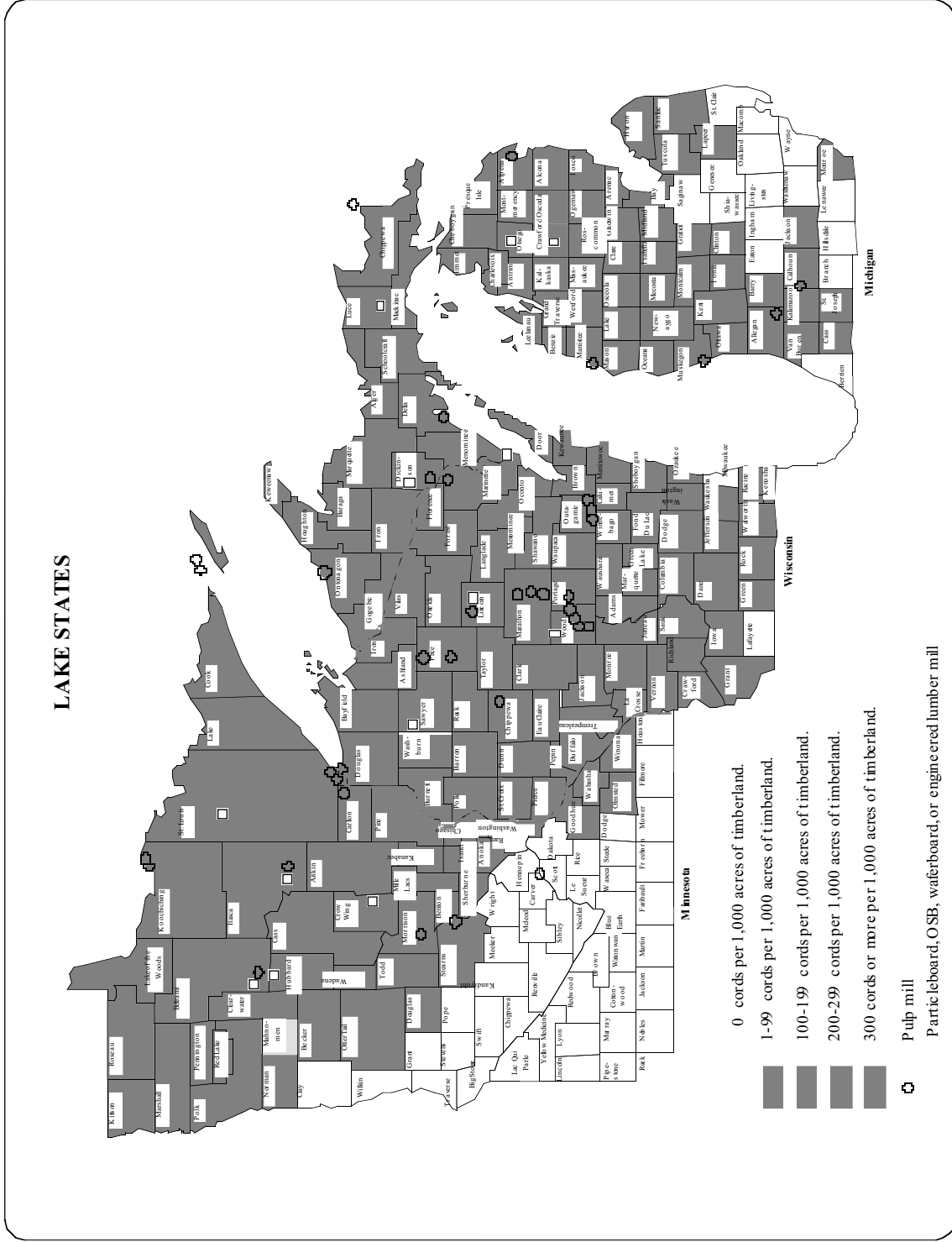


Figure 12.—Cords of pulpwood cut per 1,000 acres of timberland in principal pulpwood-producing counties, 1997. Acres of timberland (stocking of trees greater than 16.7 percent) were determined during the last inventory in each State. Locations of active pulp and particleboard mills are shown.

Pulpwood harvesting was most intensive in the following areas by species: (100,000 cords or more)

| Species | State | Survey Unit |
|-------------|------------------------------------|--|
| Jack pine | Michigan Wisconsin | N. Lower Peninsula Northwest, Central |
| Red pine | Wisconsin | Central |
| Spruce | Minnesota | Aspen-Birch |
| Balsam fir | Minnesota | Aspen-Birch |
| Aspen | Michigan Minnesota Wisconsin | N. Lower Peninsula, W. Upper Peninsula, E. Upper Peninsula Northern Pine, Aspen-Birch, Central Hardwood Northwest, Northeast, Central |
| White birch | Wisconsin | Northwest |
| Hard maple | Michigan Wisconsin | W. Upper Peninsula, E. Upper Peninsula, N. Lower Peninsula Northeast |
| Soft maple | Michigan | W. Upper Peninsula, N. Lower Peninsula |

RECEIPTS

- In 1997, 35 woodpulp and 14 particle-board mills in the Lake States acquired 9.7 million cords of pulpwood, less than 10 thousand cords lower than 1996 total receipts (fig. 13).
- In 1997, Wisconsin supplied wood to 33 mills, Michigan supplied 31 mills, and Minnesota supplied 27 mills.
- Total imports of roundwood decreased by 30 percent, with Canada supplying 98 percent of the total import volume.
- Hardwood residue imported into the Lake States increased by 91 percent in 1997 to 28 thousand cords. Softwood residue imported into the region remained at 106 thousand cords. The Plains and Western States supplied 68 percent of the total residues imported into the Lake States in 1997. The remainder of the residues came from Canada (19 percent) and the Central States (13 percent).
- Total imports of all wood material decreased to 284 thousand cords, a 15-percent decrease from 1996. Canada contributed 60 percent of the total import receipts.

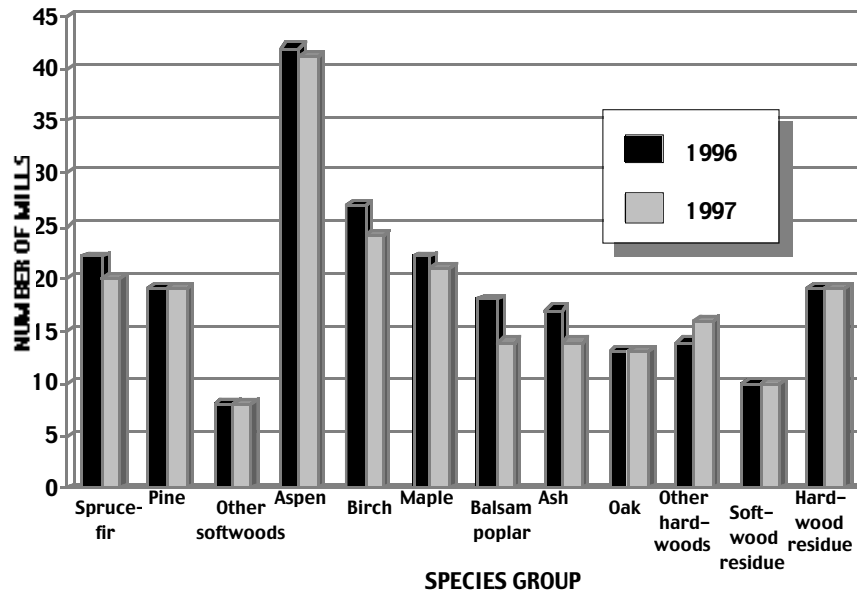


Figure 13.—Numbers of industrial plants in the Lake States using a particular species or residue for pulping and particleboard, 1996-1997.

Michigan

- Twelve Michigan mills consumed 3.4 million cords, up 9 percent from the previous year. Nine percent of the total consumption was imported from out of State, with Wisconsin supplying 81 percent of the imports.

Minnesota

- The 16 mills in Minnesota reported consuming an estimated 2.8 million cords in 1997, a decrease of 3 percent from 1996. Five percent of Minnesota's consumption for pulpwood came from out of State sources. Canada furnished 68 percent of the imported wood material.

Wisconsin

- The 21 mills in Wisconsin consumed 3.5 million cords in 1997, a decrease of 6 percent from 1996. Eighteen percent of the total receipts were imported from out of State. Imports from Minnesota and Michigan accounted for 45 percent and 35 percent of the total imports, respectively.

INDUSTRY TRENDS AND ANALYSIS

Pulp Mills

In this section pulp mills include wood fiber products such as paper, paperboard, hardboard, insulation board, and medium-density fiberboard. All of these products are manufactured from wood that has been reduced to individual fibers, small fiber bundles, or fiber parts that are subsequently formed into a mat.

- Of the 9.5 million cords of pulpwood produced in 1997, 7.0 million cords (74 percent) were used for woodpulp products. Of each cord used to produce pulp, 91

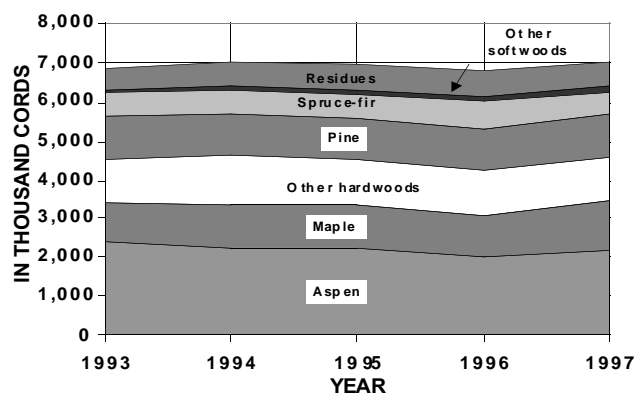


Figure 14.—Pulpwood production in the Lake States for pulp by species group and residues, 1993-1997.

percent was roundwood and 9 percent was residues.

- Principal species harvested for pulp were aspen (2,183 thousand cords), hard maple (748 thousand cords), jack pine (561 thousand cords), soft maple (512 thousand cords), and red pine (457 thousand cords) (fig. 14).
- In 1997, hardwoods were still the mainstays of the pulp mills in the region with hardwood roundwood contributing 65 percent of total production and hardwood residues supplying another 7 percent.
- The use of softwood roundwood by the pulp mills in the Lake States decreased by 6 percent in 1997. Softwood residue use, on the other hand, increased by 17 percent from the previous year.
- Average daily woodpulp production was 15.1 thousand tons in 1997—up from 14.3 thousand tons in 1996 (table 3).
- Lake States pulpwood production for pulp mills in 1993-1997 was:

| Product form and species group | Production | | | | |
|--------------------------------|-----------------------------|-------|-------|-------|-------|
| | 1993 | 1994 | 1995 | 1996 | 1997 |
| | ----- (Thousand cords)----- | | | | |
| Roundwood | | | | | |
| Softwoods | 1,780 | 1,790 | 1,776 | 1,920 | 1,788 |
| Aspen | 2,427 | 2,253 | 2,241 | 2,018 | 2,183 |
| Other hardwoods | 2,113 | 2,351 | 2,291 | 2,209 | 2,401 |
| Residue | 514 | 594 | 642 | 630 | 649 |
| Total | 6,834 | 6,989 | 6,949 | 6,778 | 7,021 |

Michigan

- Pulpwood production for woodpulp was 2.5 million cords in 1997, a 14-percent increase over 1996.
- Aspen was the major pulpwood species harvested in the State with 545 thousand cords, a 32-percent increase from 1996. Other major species were jack pine with 149 thousand cords and white birch with 121 thousand cords.
- Michigan mills imported 206 thousand cords of pulpwood for processing (186 thousand cords from Wisconsin and 20 thousand cords from Indiana and Canada combined). Michigan exported 227 thousand cords to Minnesota, Wisconsin, and Canada. Ninety percent of the wood imported was in the form of roundwood, and 80 percent of the exports were roundwood.
- Michigan mills used 2,150 thousand cords of hardwood material in 1997, an increase of 23 percent from 1996. The use of softwood material in 1997 decreased by 4 percent to 363 thousand cords.

Minnesota

- Pulpwood production for woodpulp totaled 1.7 million cords in 1997, a decline of 3 percent from 1996.
- Aspen was the predominant species harvested in the State with 988 thousand cords, 6 percent more than the previous year. Other major species were balsam fir with 195 thousand cords and spruce with 168 thousand cords.
- Mills in Minnesota imported 123 thousand cords for pulp products (77 thousand cords from Canada, 45 thousand cords from Wisconsin, and 1 thousand cords from Michigan). Minnesota exported 200 thousand cords to Wisconsin and 39 thousand cords to Canada. Roundwood made up 90 percent of the imports and 79 percent of the exports.
- In 1997, Minnesota mills had a 1-percent decrease in the use of hardwood material, from 1,223 thousand cords in 1996 to

1,209 thousand cords in 1997. The use of softwood material decreased by 10 percent to 403 thousand cords in 1997.

Wisconsin

- Pulpwood production for woodpulp products remained at 2.8 million cords in 1997.
- Aspen was the main species harvested with 650 thousand cords, a 3-percent decrease from the previous year. Other major species were jack pine (334 thousand cords), red pine (323 thousand cords), white birch (235 thousand cords), hard maple (229 thousand cords), and soft maple (164 thousand cords).
- Wisconsin mills imported 525 thousand cords of pulpwood: 213 thousand cords from Michigan, 199 thousand cords from Minnesota, 95 thousand cords from other States, and 18 thousand cords from Canada. Wisconsin exported 186 thousand cords to Michigan, 45 thousand cords to Minnesota, and 1 thousand cords to other States. Roundwood accounted for 87 percent of the wood material exported and 74 percent of the wood material imported.
- The use of hardwood material in Wisconsin pulp mills decreased by 3 percent and the use of softwood material decreased by 4 percent.

Particleboard Mills

Particleboard is a generic term for a panel manufactured from lignocellulosic material—commonly wood—essentially in the form of particles (as distinct from fibers). These materials are bonded together with synthetic resin or other suitable binder under heat and pressure by a process wherein the interparticle bonds are created wholly by the added binder and to which other materials may have been added during manufacture to improve certain properties. The many types of particleboard differ greatly in regard to size and geometry of the particle, the amount of resin (adhesive) used, and the density to which the panel is pressed. The major types of particles used for particleboard are shavings, flakes, wafers, chips, sawdust, strands, slivers, and wood wool (excelsior). Most particleboard in the U.S. is made from residues (shavings, sawdust, or

chips), but some types require that roundwood (saw logs or pulpwood) be used. Waferboard is an example of a product requiring that the particles be cut from solid wood. A new product called engineered lumber was added to this generic term in 1992.

- The Lake States produced 2.5 million cords of pulpwood in 1997 for particleboard products, down 8 percent from 1996. For every cord of pulpwood used in particleboard manufacture, 97 percent came from roundwood and 3 percent was residues from wood-using plants (sawmills, veneer mills, etc.).
- Principal species harvested for particleboard products were aspen (1,946 thousand cords), jack pine (134 thousand cords), white birch (93 thousand cords), balsam poplar (81 thousand cords), and soft maple (79 thousand cords) (fig. 15).
- Total softwood roundwood received at Lake States particleboard mills increased from 146 thousand cords in 1996 to 161 thousand cords in 1997, an increase of 11 percent. Softwood residue use decreased by 80 percent, from 95 thousand cords in 1996 to 19 thousand cords in 1997.

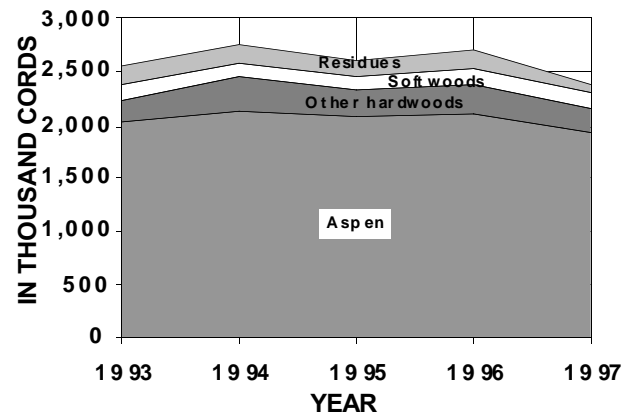


Figure 15.—Pulpwood production for particleboard in the Lake States, 1993-1997.

- In 1997, Lake States particleboard plants received 2,320 thousand cords of hardwood roundwood, a decrease of 6 percent from the 1996 total of 2,468 thousand cords. Hardwood residue use decreased by 20 percent—from 84 thousand cords in 1996 to 67 thousand cords in 1997.
- Lake States pulpwood production for particleboard mills in 1993-1997 was:

| Product form and species | Production | | | | |
|------------------------------|--------------|--------------|--------------|--------------|--------------|
| | 1993 | 1994 | 1995 | 1996 | 1997 |
| ----- (Thousand cords) ----- | | | | | |
| Roundwood | | | | | |
| Softwoods | 152 | 149 | 128 | 146 | 161 |
| Aspen | 2,028 | 2,146 | 2,079 | 2,102 | 1,946 |
| Other hardwoods | 204 | 303 | 245 | 281 | 306 |
| Residue | 175 | 161 | 163 | 179 | 86 |
| Total | 2,559 | 2,759 | 2,616 | 2,708 | 2,499 |

- National housing starts in 1997 remained at 1.5 million units. Even with stable or lower mortgage rates and a continuation of good economic reports, the increased costs of building materials contributed to the leveling off of housing starts.

Michigan

- Pulpwood harvested for particleboard products totaled 802 thousand cords in 1997, of which 143 thousand cords were softwoods and 659 thousand cords were hardwoods. Residues used for particleboard products added another 11 thousand cords.
- The particleboard mills in Michigan imported 48 thousand cords from Wisconsin and 36 thousand cords from Canada. Raw materials exported for particleboard production amounted to 15 thousand cords.

Minnesota

- Minnesota accounted for half of the wood material produced in the Lake States for particleboard plants. Timber logged for particleboard products totaled 1.3 million cords; aspen was the predominant species cut (1.2 million cords). Only 6 thousand cords of residues were produced in 1997.
- The particleboard mills in Minnesota imported 25 thousand cords from Canada and 2 thousand cords from the Plains States. In 1997, raw materials exported from the State for particleboard manufacturing totaled 89 thousand cords.

Wisconsin

- In 1997, Wisconsin produced 365 thousand cords of roundwood for particleboard manufacturing, of which 9 thousand cords were softwood and 356 thousand cords were hardwood. Wisconsin's wood processing mills provided an additional 69 thousand cords of plant byproducts to the particleboard industry.
- The mills in Wisconsin imported 109 thousand cords of wood for particleboard manufacturing: 88 thousand cords from

Minnesota, 10 thousand cords from Michigan, and 11 thousand cords from Canada. Wisconsin exported 49 thousand cords to Michigan, Minnesota, and Canadian particleboard mills in 1997.

New Mills, Expansions, and Closures

Major pulp mill expansion, new construction, and closures are as follows:

- Aspen Bay Pulp and Fibre is building the first bleached chemi-thermomechanical pulp mill in the U.S. in Menominee, MI. The 215,000 tpy mill should be finished in 2000.
- Badger Paper Mills, Inc., Peshtigo, WI, closed its pulp mill in June of 1996.
- G-P Flakeboard Limited completed construction of a medium density fiberboard (MDF) operation in Sault Ste. Marie, Ontario, Canada. The plant began operation in May of 1996.
- Potlatch Corp., Cloquet, MN, is rebuilding the bleached kraft pulp mill which will double its capacity by 2000.

CENTRAL STATES

PRODUCTION

- Pulpwood production in the Central States (Illinois, Indiana, Iowa, and Missouri) increased by 5 percent—from 393 thousand cords in 1996 to 412 thousand cords in 1997 (fig. 16). Illinois production fell 32 percent, Indiana rose 17 percent, Iowa rose 54 percent, and Missouri rose 5 percent above the 1996 production levels.
- Pulpwood production from roundwood decreased by 2 percent in 1997. A 68-percent decrease of exports to Northeastern States mills from the Central States accounted for the majority of this decrease.
- Roundwood made up 40 percent of the total wood material used for pulpwood production in the Central States in 1997.

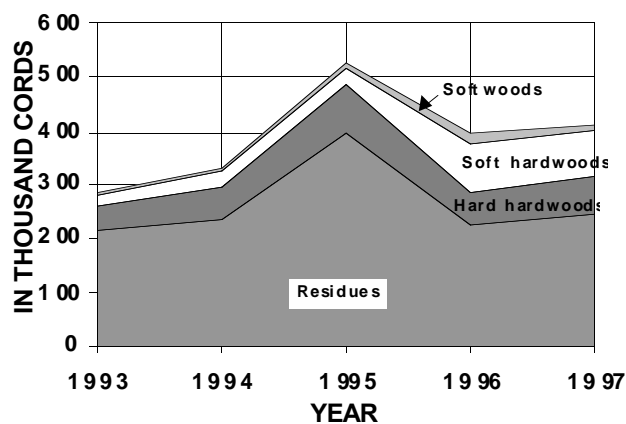


Figure 16.—Pulpwood production in the Central States, 1993-1997.

- Pulpwood production from soft hardwood⁷ roundwood fell slightly from 90 thousand cords in 1996 to 86 thousand cords in 1997. Hard hardwood⁸ production offset the loss in soft hardwood production by increasing from 61 thousand cords in 1996 to 67 thousand cords in 1997.
- Residue use for the production of pulpwood increased by 10 percent in 1997. The addition of another Iowa mill to this report accounts for the majority of this increase. Residue production for Iowa doubled from 1996 to 1997 with the addition of this mill.
- Hardwood residue from primary wood-using mills made up 92 percent or 230 thousand cords of the 249 thousand cords of total residue produced.
- Exports of roundwood and residues from the Central States in 1997 increased by 6 percent to 279 thousand cords. Central States pulpwood was shipped to Arkansas, Kentucky, Louisiana, Michigan, Ohio, Oklahoma, and Wisconsin mills.
- Loggers harvested pulpwood in 17 counties of Illinois, 17 counties in Indiana, 12 counties in Iowa, and 17 counties in Missouri (fig. 17).

⁷ Hardwood species with an average specific gravity of 0.50 or less.

⁸ Hardwood species with an average specific gravity greater than 0.50.

- Whole-tree chips made up 35 percent of the pulpwood produced from roundwood for the Central States in 1997. The 56 thousand cords of whole-tree chips were a 13-percent increase from the 1996 volume.

Illinois

- Illinois produced 70 thousand cords of pulpwood in 1997, down 26 percent from 1996. Illinois contributed 17 percent of the total production in the Central States in 1997 (fig. 18).
- Illinois does not have any primary woodpulp or particleboard mills; consequently, all pulpwood harvested is shipped to plants outside the State.

Indiana

- Pulpwood production in Indiana accounted for 42 percent of the total pulpwood produced in the Central States region in 1997, or 175 thousand cords, a 17-percent increase from 1996.
- Roundwood production decreased by 13 percent in 1997, while residue production increased by 38 percent.

Iowa

- Iowa's total pulpwood production in 1997 was 35 thousand cords, an increase of 54 percent. The State contributed 9 percent of the region's total.
- Softwood residues accounted for 43 percent of Iowa's pulpwood production in 1997 and hardwood residues accounted for another 28 percent.

Missouri

- Missouri remained the second largest producer of pulpwood in the Central States in 1997, with 32 percent of the region's total, or 133 thousand cords. Missouri pulpwood production increased by 5 percent from 1996.
- Missouri exported 122 thousand cords or 92 percent of the State's pulpwood production to mills in the Southern States.

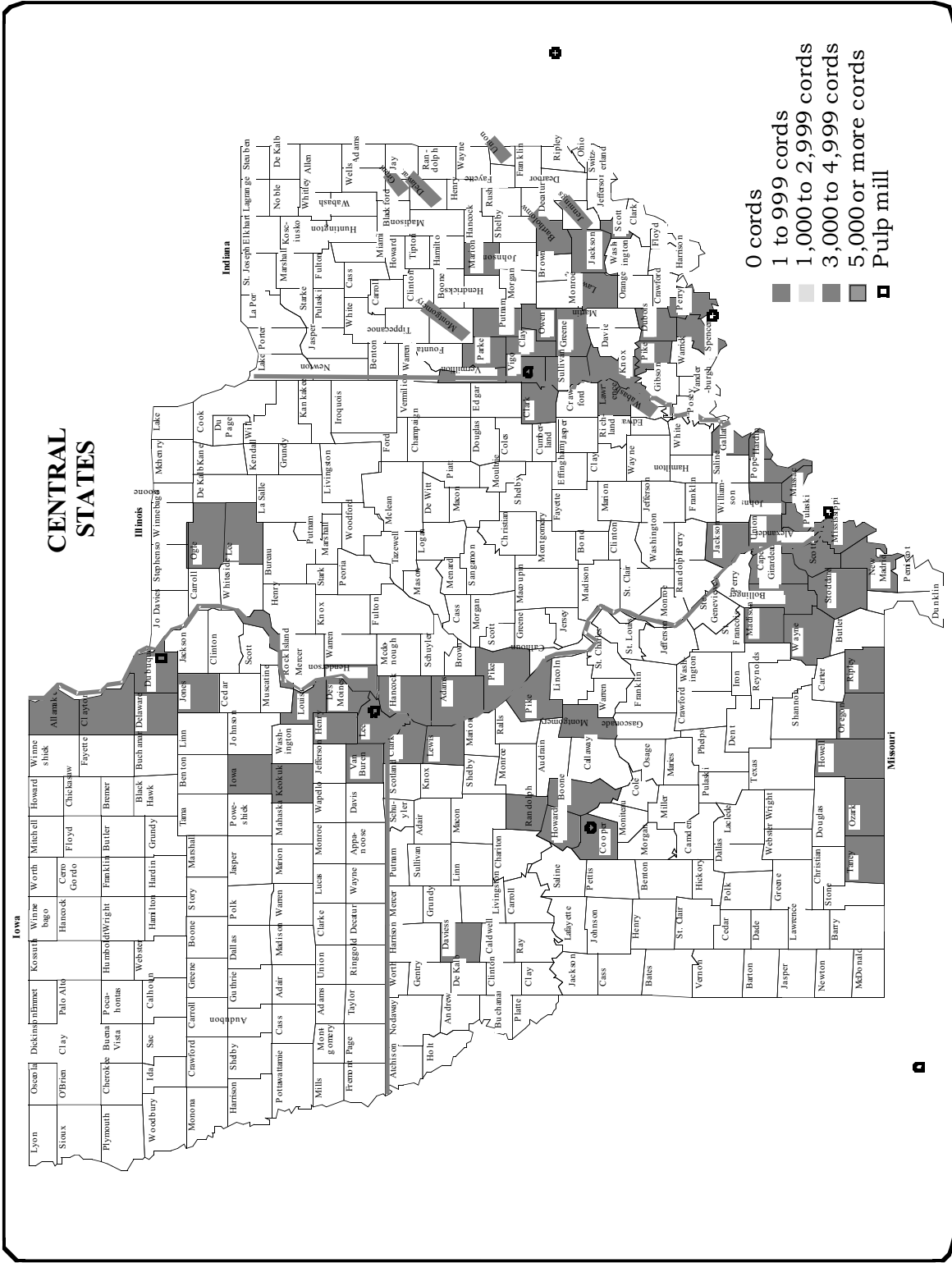


Figure 17.—Production of pulpwood from roundwood (including chips from roundwood) in the Central States by counties, in standard cords, 1997. Locations of Central States and nearby pulp and particleboard mills using Central States pulpwood are shown.

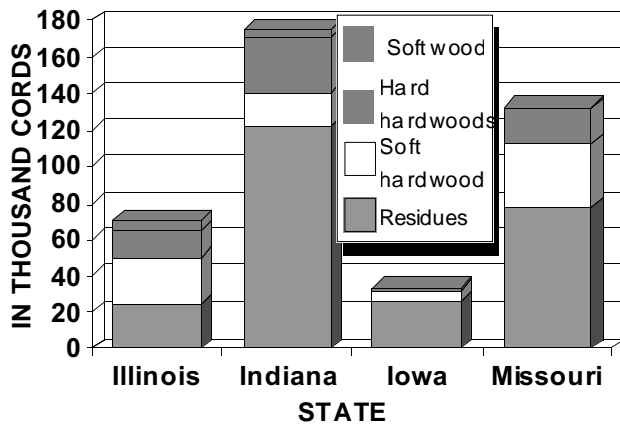


Figure 18.—Central States pulpwood production by species group and residues, 1997.

RECEIPTS

- Pulp and particleboard mills in three Central States received 142 thousand cords in 1997, up 7 percent from 1996.
- Residue receipts increased by 19 percent from 70 thousand cords in 1996 to 83 thousand cords in 1997.
- Softwood roundwood was not used for pulpwood in the Central States.

INDUSTRY TRENDS AND ANALYSIS

- Average daily woodpulp production increased by only 1 percent in 1997 to 843 tons (table 6).
- In 1997, only 36 percent of the roundwood and 30 percent of the residues produced for pulpwood in the Central States went to pulp or particleboard mills located in the Central States.
- Hardwood residue from sawmills continues to be the dominant form of wood material procured for Central States pulp and particleboard mills.

PLAINS STATES

PRODUCTION AND RECEIPTS

- Pulpwood production in the Plains States was 113 thousand cords in 1997, an increase of 3 percent from 1996. Production came from Kansas, North Dakota, and South Dakota (fig. 19).

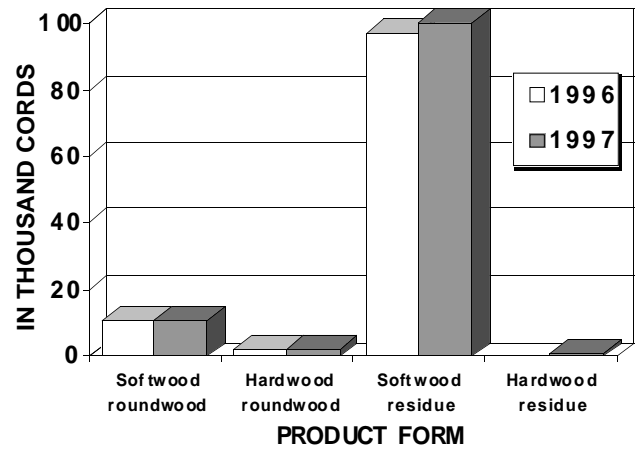


Figure 19.—Pulpwood production in the Plains States, 1996-1997.

- Softwood residues accounted for 88 percent of the pulpwood production for the Plains States in 1997, all of which came from South Dakota (fig. 20).
- Fifty-one thousand cords of softwood residue from the Plains States were exported to Wisconsin in 1997.

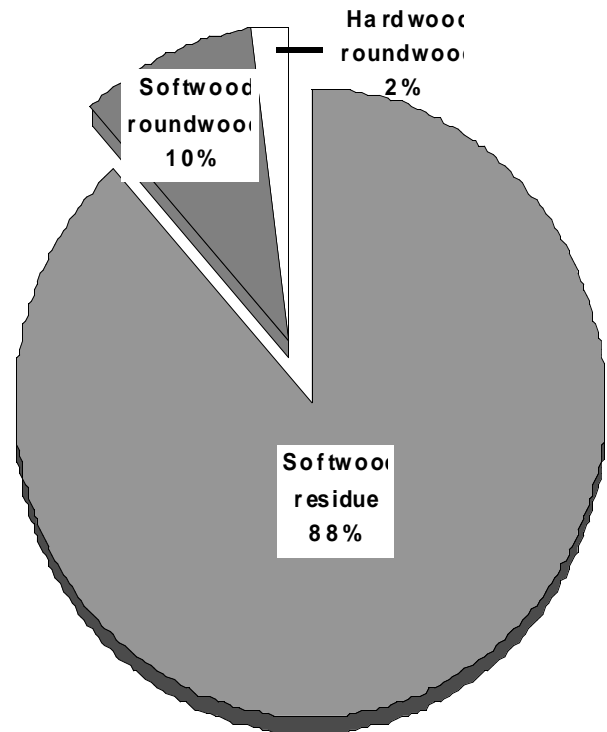


Figure 20.—Plains States pulpwood production, 1997.

- Two thousand cords of aspen and balsam poplar roundwood from the Plains States were exported to Minnesota in 1997.
- The Plains States imported 58 thousand cords of softwood residue from Wyoming in 1997.
- All of the pulpwood received in the Plains States was processed at Merillat Industries, Inc. (particleboard), in Rapid City, SD, which has an annual production capacity of 95 million square feet 3/4 basis.

APPENDIX

CONVERSION FACTORS USED IN THE NORTH-CENTRAL REGION

Standard cords of green roundwood per green ton:

| Species | Factor | Species | Factor |
|----------------------|---------------|-----------------|---------------|
| Softwoods | 0.4688 | White birch | 0.4018 |
| Northern white-cedar | .6329 | Yellow birch | .3723 |
| Balsam fir | .4688 | River birch | .3871 |
| Hemlock | .4150 | Sweetgum | .3669 |
| Jack pine | .4688 | Yellow-poplar | .4219 |
| Red pine | .4688 | Blackgum | .3779 |
| White pine | .4777 | Sycamore | .4083 |
| Shortleaf pine | .3956 | Cottonwood | .4291 |
| Spruce | .5014 | Elm | .4018 |
| Tamarack | .4291 | Hickory | .3701 |
| Hardwoods | .3939 | Hard maple | .3617 |
| Soft hardwoods | .4171 | Soft maple | .4083 |
| Hard hardwoods | .3708 | Black cherry | .4688 |
| Ash | .4330 | Red oak | .3444 |
| Aspen | .4291 | White oak | .3723 |
| Balsam poplar | .4083 | Black oak | .3444 |
| Basswood | .5167 | Other hardwoods | .4777 |
| Beech | .3956 | | |

Table 2.--Number of industrial pulp or particleboard plants in the Lake States
by product form, species group used, and State, 1997

| Product form and species group | Total Lake States | State | | |
|---|----------------------|----------|-----------|-----------|
| | | Michigan | Minnesota | Wisconsin |
| Roundwood | | | | |
| Softwoods | | | | |
| Northern white-cedar | 2 | 2 | -- | -- |
| Balsam fir | 16 | 3 | 5 | 8 |
| Hemlock | 6 | 1 | -- | 5 |
| Jack pine | 15 | 3 | 7 | 5 |
| Red pine | 17 | 3 | 8 | 6 |
| White pine | 9 | 2 | 2 | 5 |
| Spruce | 18 | 3 | 8 | 7 |
| Tamarack | 6 | 1 | 1 | 4 |
| Total plants using softwoods ¹ | 24 | 4 | 11 | 9 |
| Hardwoods | | | | |
| Ash | 14 | 6 | 1 | 7 |
| Aspen | 41 | 10 | 15 | 16 |
| Balsam poplar | 14 | 4 | 8 | 2 |
| Basswood | 15 | 9 | 1 | 5 |
| Beech | 7 | 6 | -- | 1 |
| White birch | 23 | 9 | 6 | 8 |
| Yellow birch | 9 | 6 | -- | 3 |
| Cottonwood | 2 | -- | -- | 2 |
| Elm | 4 | -- | -- | 4 |
| Hickory | 1 | -- | -- | 1 |
| Hard maple | 19 | 9 | 1 | 9 |
| Soft maple | 19 | 9 | 2 | 8 |
| Red oak | 13 | 7 | -- | 6 |
| White oak | 7 | 3 | -- | 4 |
| Other hardwoods | 6 | 4 | -- | 2 |
| Total plants using hardwoods ¹ | 46 | 11 | 15 | 20 |
| Total plants using roundwood ¹ | 48 | 12 | 16 | 20 |
| Residues | | | | |
| Softwood | 10 | 2 | 2 | 6 |
| Hardwood | 19 | 6 | 4 | 9 |
| Total plants using residues ¹ | 20 | 6 | 4 | 10 |
| Total plants ¹ | 49 | 12 | 16 | 21 |

¹ Some plants use more than one species, so numbers in columns are not additive.

Table 3.--Average daily production of active woodpulp mills in the Lake States by State, company, location, and type of pulp produced, 1997

(in tons per 24 hours)

| State and company | Location | Average daily production | Type of pulp | | | | | |
|-------------------------------|---------------------|--------------------------|--------------|--------------|-----------------------|---------------|-----------------|-------------------|
| | | | Sulfite | Kraft | Groundwood/mechanical | Semi-chemical | Thermo-chemical | Thermo-mechanical |
| Michigan | | | | | | | | |
| ABT Co. | Alpena | 250 | -- | -- | 250 | -- | -- | -- |
| American Fibrit Inc. | Battle Creek | 4 | -- | -- | -- | -- | -- | 4 |
| Champion International Corp. | Quinnesec | 1,150 | -- | 1,150 | -- | -- | -- | -- |
| Mead Corp. | Escanaba | 1,500 | -- | 1,500 | -- | -- | -- | -- |
| Menasha Corp. | Otsego | 660 | -- | -- | -- | 660 | -- | -- |
| S. D. Warren Co. | Muskegon | 304 | -- | 304 | -- | -- | -- | -- |
| Stone Container Corp. | Ontonagon | 530 | -- | -- | -- | 530 | -- | -- |
| TENNECO Packaging | Manistee | 900 | -- | -- | -- | 900 | -- | -- |
| Total | 8 mills | 5,298 | -- | 2,954 | 250 | 2,090 | -- | 4 |
| Minnesota | | | | | | | | |
| Blandin Paper Co. | Grand Rapids | 500 | -- | -- | 500 | -- | -- | -- |
| Boise Cascade Corp. | International Falls | 976 | -- | 976 | -- | -- | -- | -- |
| Certain-Teed Corp. | Shakeepee | 242 | -- | -- | -- | -- | -- | 242 |
| Champion International Corp. | Sartell | 800 | -- | -- | 800 | -- | -- | -- |
| Consolidated Papers Inc. | Duluth | 331 | -- | -- | 331 | -- | -- | -- |
| Georgia-Pacific Corp. | Bemidji | 100 | -- | -- | 100 | -- | -- | -- |
| Georgia-Pacific Corp. | Duluth | 290 | -- | -- | -- | -- | 290 | -- |
| Hennepin Paper Co. | Little Falls | 100 | -- | -- | 100 | -- | -- | -- |
| International Bidrite, Inc. | International Falls | 110 | -- | -- | 110 | -- | -- | -- |
| Pottlatch Corp. | Cloquet | 520 | -- | 520 | -- | -- | -- | -- |
| Total | 10 mills | 3,969 | -- | 1,496 | 1,941 | -- | 290 | 242 |
| Wisconsin | | | | | | | | |
| Appleton Papers Inc. | Combined Locks | 100 | -- | -- | -- | 100 | -- | -- |
| Consolidated Papers Inc. | Biron | 208 | -- | -- | 208 | -- | -- | -- |
| Consolidated Papers Inc. | Niagara | 317 | -- | -- | 317 | -- | -- | -- |
| Consolidated Papers Inc. | Stevens Point | 187 | -- | -- | 187 | -- | -- | -- |
| Consolidated Papers Inc. | Wisconsin Rapids | 1,045 | -- | 1,045 | -- | -- | -- | -- |
| Fraser Papers Inc. | Park Falls | 170 | 170 | -- | -- | -- | -- | -- |
| Georgia-Pacific Corp. | Nekoosa | 390 | -- | 390 | -- | -- | -- | -- |
| Georgia-Pacific Corp. | Phillips | 75 | -- | -- | 75 | -- | -- | -- |
| Georgia-Pacific Corp. | Port Edwards | 230 | 230 | -- | -- | -- | -- | -- |
| Georgia-Pacific Corp. | Superior | 232 | -- | -- | 232 | -- | -- | -- |
| Globe Building Materials Inc. | Cornell | 230 | -- | -- | -- | -- | -- | 230 |
| Inter Lake Papers Inc. | Kimberly | 105 | -- | -- | 105 | -- | -- | -- |
| Mosinee Paper Corp. | Mosinee | 285 | -- | 285 | -- | -- | -- | -- |
| TENNECO Packaging | Tomahawk | 1,378 | -- | -- | -- | 1,378 | -- | -- |
| Thilmany Paper | Kaukauna | 425 | -- | 425 | -- | -- | -- | -- |
| Wausau-Mosinee Paper Corp. | Brokaw | 265 | 265 | -- | -- | -- | -- | -- |
| Weyerhaeuser Paper Co. | Rothschild | 150 | 150 | -- | -- | -- | -- | -- |
| Total | 17 mills | 5,792 | 815 | 2,145 | 1,124 | 1,478 | -- | 230 |
| Lake States total | 35 mills | 15,059 | 815 | 6,595 | 3,315 | 3,568 | 290 | 476 |

Table 4.--Annual production of active particleboard and panel mills in the Lake States
by State, company, location, and product produced, 1997

(In million square feet 3/4-inch basis)

| State and company | Location | Product produced | Annual production |
|--------------------------|--------------|-----------------------------|-------------------|
| Michigan | | | |
| Georgia-Pacific Corp. | Gaylord | Particleboard | 230 |
| Louisiana-Pacific Corp. | Newberry | Oriented strand board | 61 |
| Louisiana-Pacific Corp. | Sagola | Oriented strand board | 188 |
| Weyerhaeuser Co. | Grayling | Oriented strand board | 200 |
| Total | 4 mills | | 679 |
| Minnesota | | | |
| Louisiana-Pacific Corp. | Two Harbors | Oriented strand board | 61 |
| Northwood Panelboard Co. | Solway | Oriented strand board | 190 |
| Potlatch Corp. | Bemidi | Oriented strand board | 480 |
| Potlatch Corp. | Cook | Oriented strand board | 241 |
| Potlatch Corp. | Grand Rapids | Oriented strand board | 340 |
| Trus Joist MacMillan | Deerwood | Laminated structural lumber | n/a |
| Total | 6 mills | | 1,312 |
| Wisconsin | | | |
| Louisiana-Pacific Corp. | Hayward | Oriented strand board | 250 |
| Louisiana-Pacific Corp. | Tomahawk | Oriented strand board | 43 |
| Rodman Industries | Marinette | Particleboard | 15 |
| Weyerhaeuser Co. | Marshfield | Particleboard | 78 |
| Total | 4 mills | | 386 |
| Lake States total | 14 mills | | 2,377 |

Table 5.--Production and imports of pulpwood, Central States and Plain States, 1997 ¹

(In standard cords, unpeeled)

| Product form, species group, and destination | Production by State ² | | | | | Regional total | Imports | | Total imports | Total receipts |
|--|----------------------------------|----------------|---------------|----------------|-------------------------------|-------------------|----------------|---------------|------------------|-------------------|
| | Illinois | Indiana | Iowa | Missouri | Plains States ³ | | Lake States | Other U.S. | | |
| Roundwood | | | | | | | | | | |
| Softwoods | | | | | | | | | | |
| Lake States | 675 | -- | 350 | -- | -- | 1,025 | -- | -- | -- | -- |
| Northeastern States | -- | 3,953 | -- | -- | -- | 3,953 | -- | -- | -- | -- |
| Plain States | -- | -- | -- | -- | 10,800 | 10,800 | -- | -- | -- | 10,800 |
| Southern States | 3,949 | -- | -- | 1,342 | -- | 5,290 | -- | -- | -- | -- |
| Total | 4,624 | 3,953 | 350 | 1,342 | 10,800 | 21,069 | -- | -- | -- | 10,800 |
| Soft hardwoods ⁴ | | | | | | | | | | |
| Central States | 5,632 | 10,883 | 7,110 | 7,213 | -- | 30,838 | -- | -- | -- | 30,838 |
| Lake States | -- | -- | 252 | -- | 2,286 | 2,538 | -- | -- | -- | -- |
| Northeastern States | -- | 117 | -- | -- | -- | 117 | -- | -- | -- | -- |
| Southern States | 20,730 | 7,993 | -- | 26,383 | -- | 55,105 | -- | -- | -- | -- |
| Total | 26,361 | 18,993 | 7,362 | 33,596 | 2,286 | 88,597 | -- | -- | -- | 30,838 |
| Hard hardwoods ⁵ | | | | | | | | | | |
| Central States | 3,044 | 22,244 | 2,018 | 325 | -- | 27,631 | -- | -- | -- | 27,631 |
| Lake States | -- | -- | 380 | -- | -- | 380 | -- | -- | -- | -- |
| Northeastern States | -- | 53 | -- | -- | -- | 53 | -- | -- | -- | -- |
| Southern States | 11,652 | 7,343 | -- | 19,758 | -- | 38,753 | -- | -- | -- | -- |
| Total | 14,697 | 29,640 | 2,398 | 20,083 | -- | 66,817 | -- | -- | -- | 27,631 |
| Total roundwood | | | | | | | | | | |
| Central States | 8,676 | 33,126 | 9,128 | 7,538 | -- | 58,468 | -- | -- | -- | 58,468 |
| Lake States | 675 | -- | 981 | -- | 2,286 | 3,942 | -- | -- | -- | -- |
| Northeastern States | -- | 4,124 | -- | -- | -- | 4,124 | -- | -- | -- | -- |
| Plain States | -- | -- | -- | -- | 10,800 | 10,800 | -- | -- | -- | 10,800 |
| Southern States | 36,330 | 15,336 | -- | 47,482 | -- | 99,148 | -- | -- | -- | -- |
| Total | 45,681 | 52,586 | 10,109 | 55,020 | 13,086 | 176,483 | -- | -- | -- | 69,268 |
| Residues | | | | | | | | | | |
| Softwoods | | | | | | | | | | |
| Central States | -- | -- | 15,120 | -- | -- | 15,120 | -- | 6,480 | 6,480 | 21,600 |
| Lake States | -- | -- | 88 | -- | 50,685 | 50,773 | -- | -- | -- | -- |
| Plain States | -- | -- | -- | -- | 48,839 | 48,839 | -- | 58,000 | 58,000 | 106,839 |
| Southern States | -- | 249 | -- | 3,802 | -- | 4,052 | -- | -- | -- | -- |
| Total | -- | 249 | 15,208 | 3,802 | 99,524 | 118,784 | -- | 64,480 | 64,480 | 128,439 |
| Hardwoods | | | | | | | | | | |
| Central States | 12,618 | 36,872 | 7,359 | 3,091 | -- | 59,940 | 1,492 | -- | 1,492 | 61,432 |
| Lake States | -- | 15,529 | 2,661 | -- | -- | 18,190 | -- | -- | -- | -- |
| Northeastern States | -- | 1,503 | -- | -- | -- | 1,503 | -- | -- | -- | -- |
| Southern States | 11,685 | 67,767 | -- | 70,712 | 443 | 150,607 | -- | -- | -- | -- |
| Total | 24,303 | 121,670 | 10,020 | 73,803 | 443 | 230,239 | 1,492 | -- | 1,492 | 61,432 |
| Total residues | | | | | | | | | | |
| Central States | 12,618 | 36,872 | 22,479 | 3,091 | -- | 75,060 | 1,492 | 6,480 | 7,972 | 83,032 |
| Lake States | -- | 15,529 | 2,749 | -- | 50,685 | 68,963 | -- | -- | -- | -- |
| Northeastern States | -- | 1,503 | -- | -- | -- | 1,503 | -- | -- | -- | -- |
| Plain States | -- | -- | -- | -- | 48,839 | 48,839 | -- | 58,000 | 58,000 | 106,839 |
| Southern States | 11,685 | 68,016 | -- | 74,514 | 443 | 154,658 | -- | -- | -- | -- |
| Total | 24,303 | 121,920 | 25,228 | 77,605 | 99,967 | 349,023 | 1,492 | 64,480 | 65,972 | 189,871 |
| Total all wood material | | | | | | | | | | |
| Central States | 21,294 | 69,998 | 31,607 | 10,629 | -- | 133,529 | 1,492 | 6,480 | 7,972 | 141,500 |
| Lake States | 675 | 15,529 | 3,730 | -- | 52,971 | 72,905 | -- | -- | -- | -- |
| Northeastern States | -- | 5,626 | -- | -- | -- | 5,626 | -- | -- | -- | -- |
| Plain States | -- | -- | -- | -- | 59,639 | 59,639 | -- | 58,000 | 58,000 | 117,639 |
| Southern States | 48,015 | 83,352 | -- | 121,996 | 443 | 253,807 | -- | -- | -- | -- |
| Total | 69,984 | 174,506 | 35,337 | 132,625 | 113,054 | 525,506 | 1,492 | 64,480 | 65,972 | 259,140 |

¹ Table may not add due to rounding.² Vertical columns of figures under the box heading "Production by State" present the amount of roundwood cut or residue generated in each State.³ Includes Kansas, Nebraska, South Dakota, and North Dakota.⁴ Hardwood species with an average specific gravity of 0.50 or less.⁵ Hardwood species with an average specific gravity greater than 0.50.

Table 6. - Average daily production of active woodpulp mills in the Central States
by company, location, and type of pulp produced, 1997

(In tons per 24 hours)

| Company | Location | Average daily production | Type of pulp | |
|-------------------------------|----------------------|--------------------------------|---------------------------|-------------------|
| | | | Groundwood/ Mechanical | Semi- chemical |
| The Weston Paper and Mfg. Co. | Terre Haute, Indiana | 570 | -- | 570 |
| Four M Paper Corp. | Fort Madison, Iowa | 118 | -- | 118 |
| Jeld-Wen Fiber of Iowa | Dubuque, Iowa | 80 | 80 | -- |
| Huebert Fiberboard Co. | Boonville, Missouri | 75 | 75 | -- |
| Central States total | 4 mills | 843 | 155 | 688 |

Table 7.--Lake States pulpwood production by State of origin, year, and destination, 1993-1997

(In thousand standard cords, unpeeled) ¹

| MICHIGAN | | | | | |
|-----------------|------------------|-------------------------|-----------|-----------|--------------------|
| Year | Total production | Destination of pulpwood | | | |
| | | Michigan | Minnesota | Wisconsin | Other ² |
| 1993 | 3,154 | 2,859 | 11 | 272 | 13 |
| 1994 | 3,254 | 2,915 | 17 | 310 | 11 |
| 1995 | 3,112 | 2,733 | 18 | 346 | 16 |
| 1996 | 3,111 | 2,815 | 5 | 267 | 25 |
| 1997 | 3,346 | 3,104 | 1 | 223 | 18 |
| 5-year average | 3,195 | 2,885 | 10 | 284 | 17 |

| MINNESOTA | | | | | |
|------------------|------------------|-------------------------|-----------|-----------|--------------------|
| Year | Total production | Destination of pulpwood | | | |
| | | Michigan | Minnesota | Wisconsin | Other ² |
| 1993 | 2,969 | -- | 2,783 | 146 | 39 |
| 1994 | 3,029 | 11 | 2,812 | 164 | 41 |
| 1995 | 2,971 | 4 | 2,738 | 178 | 50 |
| 1996 | 3,065 | -- | 2,676 | 352 | 38 |
| 1997 | 2,980 | -- | 2,654 | 287 | 39 |
| 5-year average | 3,003 | 3 | 2,733 | 225 | 41 |

| WISCONSIN | | | | | |
|------------------|------------------|-------------------------|-----------|-----------|--------------------|
| Year | Total production | Destination of pulpwood | | | |
| | | Michigan | Minnesota | Wisconsin | Other ² |
| 1993 | 3,270 | 244 | 55 | 2,970 | 1 |
| 1994 | 3,465 | 241 | 55 | 3,167 | 2 |
| 1995 | 3,482 | 231 | 80 | 3,168 | 2 |
| 1996 | 3,309 | 218 | 68 | 3,020 | 3 |
| 1997 | 3,194 | 234 | 45 | 2,913 | 2 |
| 5-year average | 3,344 | 234 | 61 | 3,048 | 2 |

¹ Includes mill residues used for pulp.

² Includes Canada.

Table 8.--Lake States pulpwood production by State of origin, product form, Forest Survey Unit, and destination, 1997

(In thousand standard cords, unpeeled)

| MICHIGAN | | | | | | |
|-------------------------------------|------------------|-------------------------|-----------|-----------|--------------------|--------------------|
| Product form and Forest Survey Unit | Total production | Destination of pulpwood | | | | Other ¹ |
| | | Michigan | Minnesota | Wisconsin | Other ¹ | |
| Roundwood | | | | | | |
| Eastern Upper Peninsula | 633 | 590 | -- | 35 | 8 | |
| Western Upper Peninsula | 1,193 | 1,039 | 1 | 149 | 3 | |
| Northern Lower Peninsula | 1,178 | 1,167 | -- | 10 | 2 | |
| Southern Lower Peninsula | 95 | 95 | -- | -- | -- | |
| Total | 3,099 | 2,891 | 1 | 194 | 13 | |
| Residues | 247 | 213 | -- | 29 | 5 | |
| Total pulpwood | 3,346 | 3,104 | 1 | 223 | 18 | |
| MINNESOTA | | | | | | |
| Product form and Forest Survey Unit | Total production | Destination of pulpwood | | | | Other ¹ |
| | | Michigan | Minnesota | Wisconsin | Other ¹ | |
| Roundwood | | | | | | |
| Aspen-Birch | 1,046 | -- | 913 | 133 | -- | |
| Northern Pine | 1,501 | -- | 1,445 | 56 | -- | |
| Central Hardwood | 277 | -- | 189 | 88 | -- | |
| Prairie | 52 | -- | 52 | -- | -- | |
| Total | 2,875 | -- | 2,599 | 277 | -- | |
| Residues | 104 | -- | 55 | 11 | 39 | |
| Total pulpwood | 2,980 | -- | 2,654 | 287 | 39 | |
| WISCONSIN | | | | | | |
| Product form and Forest Survey Unit | Total production | Destination of pulpwood | | | | Other ¹ |
| | | Michigan | Minnesota | Wisconsin | Other ¹ | |
| Roundwood | | | | | | |
| Northeastern | 980 | 190 | * | 789 | -- | |
| Northwestern | 1,134 | 13 | 38 | 1,083 | -- | |
| Central | 577 | * | 1 | 576 | -- | |
| Southwestern | 80 | -- | 1 | 80 | -- | |
| Southeastern | 40 | 7 | -- | 32 | -- | |
| Total | 2,811 | 211 | 40 | 2,560 | -- | |
| Residues | 383 | 23 | 5 | 353 | 2 | |
| Total pulpwood | 3,194 | 234 | 45 | 2,913 | 2 | |

* Less than 500 standard cords, unpeeled.

¹ Includes Canada.

Table 9.--Lake States annual pulpwood production from roundwood by State, Forest Survey Unit, and species group, 1993-1997

(In thousand standard cords, unpeeled)

| Forest Survey Unit | MICHIGAN | | | | | | | | | | | | | | |
|--------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|------|------|------|
| | All species | | | | | Pine | | | | | Spruce | | | | |
| | 1993 | 1994 | 1995 | 1996 | 1997 | 1993 | 1994 | 1995 | 1996 | 1997 | 1993 | 1994 | 1995 | 1996 | 1997 |
| Total | 2,909 | 3,013 | 2,834 | 2,834 | 3,099 | 380 | 344 | 355 | 373 | 392 | 67 | 62 | 66 | 78 | 46 |
| Eastern Upper Peninsula | 778 | 773 | 774 | 689 | 633 | 149 | 111 | 147 | 126 | 131 | 27 | 23 | 27 | 27 | 18 |
| Western Upper Peninsula | 1,051 | 1,140 | 1,149 | 1,217 | 1,193 | 115 | 101 | 99 | 106 | 97 | 39 | 38 | 39 | 50 | 27 |
| Northern Lower Peninsula | 1 | 1,035 | 845 | 861 | 1,178 | 116 | 132 | 108 | 141 | 163 | 2 | 1 | 1 | 1 | 1 |
| Southern Lower Peninsula | 64 | 65 | 66 | 67 | 95 | * | * | * | * | 2 | -- | -- | -- | * | -- |
| Total | 2,909 | 3,013 | 2,834 | 2,834 | 3,099 | 380 | 344 | 355 | 373 | 392 | 67 | 62 | 66 | 78 | 46 |
| MINNESOTA | | | | | | | | | | | | | | | |
| Aspen-Birch | 1,330 | 1,318 | 1,263 | 1,321 | 1,046 | 56 | 46 | 40 | 38 | 35 | 125 | 137 | 118 | 158 | 123 |
| Northern Pine | 1,341 | 1,283 | 1,263 | 1,232 | 1,501 | 81 | 60 | 65 | 51 | 66 | 33 | 29 | 31 | 44 | 43 |
| Central Hardwood | 163 | 222 | 242 | 296 | 277 | 20 | 14 | 17 | 29 | 26 | 1 | 1 | 1 | 3 | 3 |
| Prairie | 23 | 35 | 43 | 48 | 52 | * | -- | -- | -- | -- | -- | -- | -- | * | -- |
| Total | 2,857 | 2,858 | 2,810 | 2,897 | 2,875 | 156 | 120 | 122 | 119 | 126 | 158 | 165 | 150 | 204 | 168 |
| WISCONSIN | | | | | | | | | | | | | | | |
| Northeast | 1,054 | 1,066 | 1,020 | 1,003 | 980 | 141 | 135 | 132 | 158 | 173 | 13 | 12 | 16 | 16 | 18 |
| Northwest | 1,221 | 1,312 | 1,334 | 1,210 | 1,134 | 225 | 242 | 228 | 231 | 205 | 19 | 16 | 19 | 18 | 22 |
| Central | 575 | 640 | 661 | 618 | 577 | 277 | 307 | 285 | 264 | 270 | 1 | 1 | 3 | 1 | 2 |
| Southwest | 58 | 65 | 65 | 75 | 80 | 34 | 38 | 33 | 39 | 39 | 1 | 1 | 2 | 1 | 1 |
| Southeast | 30 | 38 | 35 | 40 | 40 | 15 | 15 | 17 | 20 | 23 | * | 1 | 1 | 1 | 1 |
| Total | 2,937 | 3,121 | 3,115 | 2,945 | 2,811 | 692 | 738 | 695 | 712 | 709 | 34 | 31 | 40 | 34 | 44 |
| Total Lake States | 8,703 | 8,992 | 8,759 | 8,676 | 8,785 | 1,228 | 1,201 | 1,172 | 1,203 | 1,228 | 259 | 258 | 256 | 318 | 259 |

(Table 9 continued on next page)

(Table 9 continued)

| Forest Survey Unit | Balsam fir | | | | | Other softwoods | | | | | Aspen | | | | |
|--------------------------|------------|------|------|------|------|-----------------|------|------|------|------|-------|-------|-------|-------|-------|
| | 1993 | 1994 | 1995 | 1996 | 1997 | 1993 | 1994 | 1995 | 1996 | 1997 | 1993 | 1994 | 1995 | 1996 | 1997 |
| MICHIGAN | | | | | | | | | | | | | | | |
| Eastern Upper Peninsula | 55 | 55 | 34 | 25 | 20 | 25 | 43 | 30 | 32 | 24 | 211 | 181 | 192 | 152 | 125 |
| Western Upper Peninsula | 44 | 45 | 43 | 38 | 29 | 24 | 41 | 46 | 53 | 57 | 373 | 360 | 368 | 334 | 339 |
| Northern Lower Peninsula | 3 | 2 | 2 | 2 | 2 | * | * | * | * | * | 545 | 527 | 429 | 406 | 540 |
| Southern Lower Peninsula | -- | -- | -- | * | -- | -- | * | -- | * | -- | 13 | 16 | 13 | 22 | 38 |
| Total | 101 | 103 | 79 | 65 | 52 | 49 | 84 | 76 | 85 | 82 | 1,142 | 1,084 | 1,003 | 913 | 1,041 |
| MINNESOTA | | | | | | | | | | | | | | | |
| Aspen-Birch | 114 | 114 | 119 | 171 | 106 | 2 | 2 | 11 | 11 | 12 | 925 | 862 | 831 | 816 | 649 |
| Northern Pine | 84 | 70 | 76 | 75 | 79 | 1 | 1 | 2 | 2 | 8 | 1,105 | 1,061 | 1,021 | 988 | 1,187 |
| Central Hardwood | 2 | 1 | 2 | 6 | 10 | -- | -- | * | -- | 1 | 131 | 197 | 209 | 247 | 222 |
| Prairie | 11 | -- | -- | * | -- | -- | -- | * | -- | -- | 23 | 35 | 43 | 47 | 50 |
| Total | 199 | 185 | 198 | 252 | 195 | 3 | 3 | 12 | 13 | 21 | 2,185 | 2,155 | 2,103 | 2,098 | 2,108 |
| WISCONSIN | | | | | | | | | | | | | | | |
| Northeast | 30 | 31 | 30 | 41 | 32 | 20 | 32 | 27 | 26 | 24 | 405 | 393 | 397 | 367 | 328 |
| Northwest | 31 | 31 | 41 | 50 | 44 | 9 | 9 | 7 | 7 | 8 | 544 | 573 | 614 | 539 | 481 |
| Central | 1 | * | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 152 | 163 | 179 | 170 | 149 |
| Southwest | * | * | * | * | * | * | -- | * | * | * | 18 | 17 | 17 | 24 | 17 |
| Southeast | * | * | 1 | * | * | * | * | * | * | * | 10 | 13 | 8 | 11 | 5 |
| Total | 61 | 63 | 73 | 92 | 78 | 31 | 42 | 37 | 36 | 34 | 1,129 | 1,159 | 1,214 | 1,109 | 980 |
| Total Lake States | 361 | 351 | 350 | 410 | 324 | 83 | 129 | 125 | 135 | 138 | 4,455 | 4,399 | 4,320 | 4,121 | 4,130 |

(Table 9 continued on next page)

(Table 9 continued)

| Forest Survey Unit | MICHIGAN | | | | | | | | | | | | | | |
|--------------------------|------------------|------|------|------|-------|-------|-------|-------|-----------------|-------|------|------|------|------|------|
| | Birch | | | | Maple | | | | Other hardwoods | | | | | | |
| | 1993 | 1994 | 1995 | 1996 | 1997 | 1993 | 1994 | 1995 | 1996 | 1997 | 1993 | 1994 | 1995 | 1996 | 1997 |
| Eastern Upper Peninsula | 64 | 75 | 51 | 77 | 51 | 193 | 215 | 237 | 203 | 221 | 55 | 71 | 57 | 48 | 42 |
| Western Upper Peninsula | 81 | 87 | 84 | 144 | 87 | 280 | 351 | 375 | 370 | 430 | 95 | 117 | 94 | 122 | 126 |
| Northern Lower Peninsula | 51 | 50 | 42 | 35 | 40 | 143 | 163 | 156 | 188 | 266 | 156 | 160 | 106 | 88 | 165 |
| Southern Lower Peninsula | 2 | 1 | * | * | 1 | 14 | 8 | 11 | 16 | 23 | 36 | 40 | 42 | 28 | 32 |
| Total | 197 | 213 | 177 | 256 | 180 | 630 | 736 | 779 | 777 | 940 | 342 | 387 | 299 | 287 | 365 |
| | MINNESOTA | | | | | | | | | | | | | | |
| Aspen-Birch | 27 | 44 | 65 | 58 | 60 | 11 | 10 | 9 | 5 | 9 | 72 | 103 | 70 | 65 | 51 |
| Northern Pine | 11 | 30 | 38 | 45 | 55 | 7 | 10 | 4 | 1 | 1 | 20 | 23 | 27 | 26 | 63 |
| Central Hardwood | 3 | 1 | 8 | 7 | 8 | 4 | 6 | 4 | 4 | 5 | 2 | 2 | * | 1 | 3 |
| Prairie | -- | -- | * | * | * | -- | -- | -- | -- | -- | * | -- | 1 | * | 2 |
| Total | 42 | 75 | 111 | 109 | 123 | 21 | 26 | 17 | 9 | 15 | 94 | 128 | 97 | 92 | 119 |
| | WISCONSIN | | | | | | | | | | | | | | |
| Northeast | 129 | 116 | 123 | 120 | 106 | 209 | 226 | 194 | 152 | 178 | 107 | 121 | 101 | 124 | 122 |
| Northwest | 114 | 126 | 152 | 123 | 119 | 170 | 205 | 172 | 158 | 165 | 108 | 110 | 101 | 83 | 89 |
| Central | 17 | 18 | 28 | 27 | 24 | 49 | 60 | 59 | 64 | 51 | 77 | 89 | 104 | 90 | 77 |
| Southwest | 1 | 1 | 3 | 3 | 5 | 2 | 4 | 5 | 4 | 7 | 2 | 5 | 6 | 5 | 11 |
| Southeast | * | 1 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 4 | 3 | 5 | 3 | 3 | 4 |
| Total | 261 | 263 | 309 | 275 | 257 | 431 | 496 | 433 | 379 | 405 | 298 | 329 | 315 | 306 | 304 |
| Total Lake States | 500 | 550 | 596 | 641 | 559 | 1,083 | 1,259 | 1,229 | 1,165 | 1,360 | 734 | 845 | 711 | 684 | 788 |

* Less than 500 standard cords.

Table 10.--Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1997

(In standard cords, unpeeled)

| Forest Survey Unit and county ¹ | All species | Species group | | | | | | | | | | Balsam poplar |
|---|------------------|--------------------|---------------|---------------|----------------|----------------|---------------|---------------|--------------|---------------|------------------|------------------|
| | | N. white- cedar | Balsam fir | Hemlock | Jack pine | Red pine | White pine | Spruce | Tamarack | Ash | Aspen | |
| Eastern Upper Peninsula | | | | | | | | | | | | |
| Alger | 111,445 | 530 | 3,255 | 2,783 | 8,204 | 4,151 | 605 | 1,553 | 355 | 1,305 | 12,638 | 1,301 |
| Chippewa | 95,528 | 577 | 4,008 | 2,686 | 17,621 | 11,578 | 606 | 2,713 | 369 | 375 | 24,259 | 549 |
| Delta | 91,489 | 602 | 3,876 | 3,584 | 11,075 | 6,733 | 675 | 2,020 | 403 | 484 | 22,836 | 2,091 |
| Luce | 69,239 | 94 | 1,013 | 5,187 | 9,853 | 6,772 | 98 | 1,355 | 63 | 625 | 6,247 | 563 |
| Mackinac | 89,355 | 296 | 3,196 | 2,153 | 5,614 | 4,393 | 251 | 2,379 | 160 | 510 | 28,547 | 1,188 |
| Menominee | 65,059 | 157 | 1,457 | 728 | 984 | 1,143 | 278 | 3,060 | 105 | 702 | 16,021 | 1,848 |
| Schoolcraft | 110,878 | 482 | 3,442 | 2,784 | 21,674 | 18,151 | 503 | 4,694 | 323 | 571 | 14,206 | 1,544 |
| Total | 632,994 | 2,739 | 20,246 | 19,905 | 75,024 | 52,921 | 3,017 | 17,774 | 1,777 | 4,572 | 124,753 | 9,083 |
| Western Upper Peninsula | | | | | | | | | | | | |
| Baraga | 125,184 | 345 | 3,222 | 10,149 | 11,794 | 2,081 | 547 | 3,375 | 287 | 1,592 | 20,228 | 2,933 |
| Dickinson | 113,541 | 451 | 2,915 | 2,430 | 7,254 | 2,139 | 523 | 3,375 | 368 | 726 | 53,963 | 5,036 |
| Gogebic | 92,087 | 4 | 1,120 | 4,768 | 208 | 306 | 88 | 805 | 70 | 2,188 | 16,019 | 1,336 |
| Houghton | 186,406 | 132 | 2,785 | 4,207 | 4,344 | 2,900 | 478 | 3,577 | 269 | 5,820 | 51,343 | 4,456 |
| Iron | 175,001 | 758 | 8,526 | 4,207 | 8,877 | 6,824 | 1,281 | 6,900 | 972 | 1,500 | 53,591 | 5,718 |
| Keweenaw | 47,494 | 65 | 390 | 1,975 | 345 | 242 | 68 | 143 | 43 | 923 | 6,353 | 529 |
| Marquette | 290,741 | 1,469 | 9,254 | 20,875 | 32,979 | 9,565 | 1,532 | 7,564 | 1,561 | 1,666 | 67,705 | 7,588 |
| Ontonagon | 162,049 | 18 | 1,091 | 1,938 | 837 | 1,606 | 161 | 1,495 | 51 | 4,558 | 69,935 | 3,294 |
| Total | 1,192,502 | 3,241 | 29,303 | 50,550 | 66,638 | 25,663 | 4,677 | 27,232 | 3,622 | 18,972 | 339,138 | 30,889 |
| Northern Lower Peninsula | | | | | | | | | | | | |
| Alcona | 30,868 | -- | -- | -- | 3,124 | 165 | 31 | -- | -- | 222 | 16,365 | -- |
| Alpena | 14,712 | -- | 124 | -- | 179 | 73 | -- | 164 | -- | 13 | 9,244 | -- |
| Antrim | 13,051 | -- | -- | -- | 633 | 398 | 6 | -- | -- | 315 | 4,749 | 6 |
| Arenac | 5,071 | -- | -- | -- | 302 | -- | -- | -- | -- | 1 | 3,874 | -- |
| Bay | 2,641 | -- | -- | -- | -- | 8 | -- | -- | -- | -- | 2,124 | -- |
| Benzie | 31,381 | -- | -- | -- | 2,041 | 273 | 14 | -- | -- | 1,282 | 9,008 | 37 |
| Charlevoix | 4,751 | -- | -- | -- | 748 | 48 | 8 | -- | -- | 135 | 1,744 | 2 |
| Cheboygan | 43,144 | 39 | 591 | -- | 7,924 | 1,354 | 69 | 281 | -- | 54 | 20,812 | -- |
| Clare | 54,969 | -- | -- | -- | 3,373 | 525 | 10 | -- | -- | 515 | 26,821 | 11 |
| Crawford | 48,748 | -- | -- | -- | 18,527 | 5,716 | 238 | -- | -- | 75 | 16,631 | 1 |
| Emmet | 31,366 | 7 | 54 | -- | 2,590 | 428 | 25 | 13 | -- | 106 | 10,375 | -- |
| Gladwin | 52,281 | -- | -- | -- | 2,579 | 547 | 9 | -- | -- | 666 | 24,721 | -- |
| Grand Traverse | 22,922 | -- | -- | -- | 4,079 | 1,208 | 27 | -- | -- | 479 | 9,082 | 25 |
| Iosco | 17,615 | -- | -- | -- | 8,272 | 1,328 | 78 | -- | -- | 37 | 5,414 | -- |
| Isabella | 28,729 | -- | -- | -- | 252 | 32 | -- | -- | -- | 519 | 15,946 | -- |
| Kalkaska | 54,277 | 34 | 206 | 178 | 9,452 | 7,639 | 51 | 76 | 23 | 732 | 19,283 | 20 |
| Lake | 70,112 | -- | -- | -- | 1,472 | 435 | -- | -- | -- | 905 | 27,046 | 26 |
| Leelanau | 1,893 | -- | -- | -- | 464 | 38 | 2 | -- | -- | 88 | 303 | -- |
| Manistee | 46,035 | -- | -- | -- | 1,269 | 473 | -- | -- | -- | 921 | 18,585 | 47 |
| Mason | 13,889 | -- | -- | -- | -- | -- | -- | -- | -- | 526 | 5,198 | 17 |
| Mecosta | 54,309 | -- | -- | -- | 1,005 | 684 | -- | -- | -- | 962 | 33,834 | 1 |
| Midland | 23,390 | -- | -- | -- | 41 | -- | -- | -- | -- | 506 | 9,795 | 21 |
| Missaukee | 48,985 | -- | -- | -- | 2,841 | 2,428 | -- | -- | -- | 720 | 21,810 | 15 |
| Montmorency | 48,338 | 34 | 371 | -- | 7,764 | 704 | 75 | 196 | -- | 86 | 27,210 | -- |
| Newaygo | 66,093 | -- | -- | -- | 62 | 100 | -- | -- | -- | 1,099 | 33,275 | 18 |
| Oceana | 18,392 | -- | -- | -- | -- | -- | -- | -- | -- | 308 | 9,583 | 2 |
| Ogemaw | 20,279 | -- | -- | -- | 6,536 | 782 | 29 | -- | -- | 66 | 6,539 | 2 |
| Osceola | 80,730 | -- | -- | -- | 272 | 635 | -- | -- | -- | 1,671 | 48,583 | 42 |
| Oscoda | 30,321 | -- | -- | -- | 7,848 | 177 | 63 | -- | -- | 9 | 15,409 | -- |
| Otsego | 67,939 | -- | -- | -- | 20,972 | 1,868 | 214 | -- | -- | 176 | 25,420 | -- |
| Presque Isle | 43,043 | 7 | 441 | -- | 3,456 | 978 | 38 | 440 | -- | 45 | 20,194 | 1 |
| Roscommon | 47,652 | 69 | 553 | -- | 10,045 | 410 | 82 | 132 | -- | 197 | 22,781 | 2 |
| Wexford | 39,963 | -- | -- | -- | 1,388 | 2,854 | -- | -- | -- | 728 | 17,978 | 30 |
| Total | 1,177,890 | 190 | 2,341 | 178 | 129,511 | 32,307 | 1,066 | 1,302 | 23 | 14,166 | 539,736 | 327 |
| Southern Lower Peninsula | | | | | | | | | | | | |
| Allegan | 15,945 | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 3,955 | -- |
| Barry | 3,920 | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 1,304 | -- |
| Calhoun | 1,649 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 370 | -- |
| Cass | 2,271 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 509 | -- |
| Clinton | 1,073 | -- | -- | -- | 865 | 4 | 9 | -- | -- | 1 | 100 | -- |
| Gratiot | 8,412 | -- | -- | -- | -- | -- | -- | -- | -- | 160 | 4,808 | -- |
| Huron | 1,647 | -- | -- | -- | -- | -- | -- | -- | -- | 32 | 935 | -- |
| Ionia | 641 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 144 | -- |
| Jackson | 1,100 | -- | -- | -- | -- | -- | -- | -- | -- | 7 | 442 | -- |
| Kalamazoo | 1,223 | -- | -- | -- | -- | -- | -- | -- | -- | 1 | 291 | -- |
| Kent | 14,241 | -- | -- | -- | -- | -- | -- | -- | -- | 85 | 3,949 | -- |
| Lapeer | 100 | -- | -- | -- | 22 | -- | -- | -- | -- | -- | 78 | -- |
| Monroe | 922 | -- | -- | -- | -- | -- | -- | -- | -- | 18 | 323 | -- |
| Montcalm | 16,205 | -- | -- | -- | -- | -- | -- | -- | -- | 294 | 9,122 | -- |
| Muskegon | 14,353 | -- | -- | -- | -- | -- | -- | -- | -- | 134 | 5,985 | -- |
| Ottawa | 5,611 | -- | -- | -- | -- | -- | -- | -- | -- | 43 | 2,932 | -- |
| Sanilac | 1,563 | -- | -- | -- | -- | 165 | -- | -- | -- | -- | 692 | -- |
| St. Joseph | 1,404 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 315 | -- |
| Tuscola | 1,585 | -- | -- | -- | 550 | -- | -- | -- | -- | -- | 1,025 | -- |
| Van Buren | 1,541 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 346 | -- |
| Total | 95,405 | -- | -- | -- | 1,437 | 169 | 9 | -- | -- | 797 | 37,626 | -- |
| State total | 3,098,792 | 6,170 | 51,889 | 70,633 | 272,611 | 111,059 | 8,769 | 46,308 | 5,422 | 38,507 | 1,041,253 | 40,300 |

(Table 10 continued on next page)

(Table 10 continued)

| Forest Survey Unit and county ¹ | Species group | | | | | | | | | | | |
|---|---------------|--------|----------------|-----------------|-----------------|-----|---------|---------------|---------------|------------|--------------|--------------------|
| | Bass- wood | Beech | White birch | Yellow birch | Cotton- wood | Elm | Hickory | Hard maple | Soft maple | Red oak | White oak | Other hardwoods |
| Eastern Upper Peninsula | | | | | | | | | | | | |
| Alger | 1,634 | 3,222 | 7,430 | 2,363 | 1 | 1 | -- | 36,286 | 20,934 | 608 | 4 | 2,283 |
| Chippewa | 726 | 870 | 5,208 | 689 | -- | -- | -- | 10,183 | 11,759 | 112 | 1 | 639 |
| Delta | 1,028 | 1,187 | 5,444 | 1,282 | 1 | -- | -- | 16,285 | 10,521 | 182 | 2 | 1,178 |
| Luce | 737 | 1,559 | 3,515 | 1,211 | -- | -- | -- | 18,055 | 10,848 | 284 | -- | 1,160 |
| Mackinac | 918 | 1,235 | 8,118 | 1,154 | -- | -- | -- | 15,550 | 12,451 | 174 | -- | 1,069 |
| Menominee | 1,091 | 1,392 | 7,276 | 1,109 | -- | 9 | 2 | 16,444 | 9,815 | 357 | 40 | 1,044 |
| Schoolcraft | 867 | 1,382 | 5,004 | 1,589 | -- | 1 | -- | 19,247 | 12,756 | 203 | 5 | 1,448 |
| Total | 7,002 | 10,846 | 41,995 | 9,396 | 3 | 11 | 2 | 132,049 | 89,084 | 1,920 | 52 | 8,821 |
| Western Upper Peninsula | | | | | | | | | | | | |
| Baraga | 2,129 | 2,231 | 10,397 | 2,282 | -- | 26 | -- | 30,193 | 18,676 | 611 | 147 | 1,940 |
| Dickinson | 1,986 | 1,073 | 7,582 | 877 | -- | 254 | 10 | 13,024 | 8,196 | 497 | 48 | 814 |
| Gogebic | 2,215 | 2,875 | 4,762 | 1,802 | 6 | 75 | 54 | 31,947 | 17,451 | 1,965 | 145 | 1,879 |
| Houghton | 10,399 | 2,944 | 7,131 | 4,099 | 1 | 8 | -- | 52,243 | 25,909 | 1,249 | 44 | 2,069 |
| Iron | 2,785 | 2,748 | 9,810 | 2,396 | 1 | 24 | 4 | 34,017 | 21,007 | 731 | 118 | 2,209 |
| Keweenaw | 1,212 | 1,549 | 4,251 | 1,087 | -- | 3 | -- | 17,545 | 9,424 | 366 | 19 | 961 |
| Marquette | 3,474 | 4,034 | 19,752 | 4,524 | -- | 3 | -- | 55,553 | 36,879 | 608 | 17 | 4,137 |
| Ontonagon | 7,990 | 2,305 | 3,278 | 2,918 | 2 | 18 | 10 | 39,075 | 18,738 | 1,222 | 49 | 1,460 |
| Total | 32,190 | 19,757 | 66,964 | 19,985 | 10 | 410 | 78 | 273,596 | 156,281 | 7,249 | 587 | 15,469 |
| Northern Lower Peninsula | | | | | | | | | | | | |
| Alcona | 1,108 | 333 | 2,478 | 222 | -- | -- | -- | 4,304 | 2,401 | 116 | -- | -- |
| Alpena | 66 | 19 | 1,035 | 13 | -- | -- | -- | 3,244 | 539 | -- | -- | -- |
| Antrim | 1,114 | 106 | 6,78 | 28 | -- | -- | -- | 1,803 | 2,057 | 612 | 506 | 39 |
| Arenac | 5 | 2 | 378 | 1 | -- | -- | -- | 40 | 468 | -- | -- | -- |
| Bay | 1 | -- | 82 | -- | -- | -- | -- | 4 | 421 | -- | -- | -- |
| Benzie | 1,675 | 661 | 715 | 99 | -- | -- | -- | 4,614 | 4,521 | 2,860 | 3,108 | 475 |
| Charlevoix | 227 | 78 | 140 | 20 | -- | -- | -- | 441 | 490 | 321 | 326 | 22 |
| Cheboygan | 421 | 99 | 1,665 | -- | -- | -- | -- | 6,387 | 3,228 | 219 | -- | -- |
| Clare | 1,243 | 695 | 1,602 | 227 | -- | -- | -- | 4,779 | 6,540 | 4,344 | 4,244 | 40 |
| Crawford | 480 | 117 | 578 | 31 | -- | -- | -- | 1,678 | 3,346 | 1,332 | -- | -- |
| Emmet | 463 | 154 | 2,140 | 5 | -- | -- | -- | 9,783 | 5,091 | 81 | 44 | 4 |
| Gladwin | 1,556 | 926 | 2,800 | 297 | -- | -- | -- | 5,340 | 7,264 | 2,718 | 2,822 | 35 |
| Grand Traverse | 817 | 263 | 495 | 78 | -- | -- | -- | 1,718 | 2,209 | 1,152 | 1,187 | 104 |
| Iosco | 225 | 55 | 787 | 37 | -- | -- | -- | 518 | 734 | 131 | -- | -- |
| Isabella | 1,060 | 620 | 1,078 | 180 | -- | -- | -- | 4,182 | 3,749 | 309 | 722 | 79 |
| Kalkaska | 1,326 | 648 | 1,308 | 147 | -- | -- | -- | 4,435 | 7,359 | 589 | 545 | 225 |
| Lake | 1,403 | 975 | 954 | 382 | -- | -- | -- | 5,493 | 9,412 | 8,375 | 12,966 | 266 |
| Leelanau | 141 | 47 | 32 | 6 | -- | -- | -- | 411 | 333 | -- | -- | 27 |
| Manistee | 1,152 | 778 | 1,062 | 250 | -- | -- | -- | 4,692 | 7,295 | 4,181 | 4,978 | 353 |
| Mason | 586 | 353 | 271 | 76 | -- | -- | -- | 2,228 | 2,821 | 615 | 966 | 232 |
| Mecosta | 548 | 948 | 503 | 469 | -- | -- | -- | 5,019 | 8,951 | 473 | 899 | 13 |
| Midland | 698 | 367 | 902 | 83 | -- | -- | -- | 2,245 | 3,355 | 2,576 | 2,618 | 183 |
| Missaukee | 1,509 | 760 | 1,387 | 215 | -- | -- | -- | 4,987 | 7,990 | 2,093 | 2,078 | 152 |
| Montmorency | 1,542 | 133 | 1,457 | 74 | -- | -- | -- | 3,626 | 2,909 | 2,158 | -- | -- |
| Newaygo | 659 | 989 | 605 | 458 | -- | -- | -- | 5,183 | 10,967 | 5,657 | 6,914 | 107 |
| Oceana | 171 | 290 | 165 | 139 | -- | -- | -- | 1,491 | 2,965 | 1,250 | 2,010 | 18 |
| Ogemaw | 173 | 47 | 262 | 17 | -- | -- | -- | 503 | 2,118 | 1,593 | 1,588 | 24 |
| Osceola | 1,071 | 1,433 | 1,091 | 643 | -- | -- | -- | 7,735 | 12,928 | 1,948 | 2,445 | 233 |
| Oscoda | 528 | 16 | 1,383 | 1 | -- | -- | -- | 1,604 | 2,127 | 1,157 | -- | -- |
| Otsego | 2,274 | 291 | 3,095 | 46 | -- | -- | -- | 3,914 | 7,320 | 1,015 | 1,334 | -- |
| Presque Isle | 378 | 83 | 2,571 | 1 | -- | -- | -- | 10,941 | 2,999 | 470 | -- | -- |
| Roscommon | 452 | 258 | 1,121 | 67 | -- | -- | -- | 1,431 | 6,253 | 3,176 | 603 | 20 |
| Wexford | 977 | 629 | 769 | 211 | -- | -- | -- | 4,248 | 6,258 | 1,768 | 1,859 | 267 |
| Total | 26,050 | 13,172 | 35,588 | 4,524 | -- | -- | -- | 119,020 | 147,419 | 53,287 | 54,764 | 2,920 |
| Southern Lower Peninsula | | | | | | | | | | | | |
| Allegan | 11 | 56 | 11 | 11 | -- | -- | -- | 169 | 3,279 | 4,011 | 4,431 | -- |
| Barry | 11 | 55 | 11 | 11 | -- | -- | -- | 165 | 767 | 761 | 823 | -- |
| Calhoun | -- | -- | -- | -- | -- | -- | -- | -- | 352 | 445 | 481 | -- |
| Cass | -- | -- | -- | -- | -- | -- | -- | -- | 485 | 614 | 663 | -- |
| Clinton | 4 | 2 | 24 | -- | -- | -- | -- | 13 | 51 | -- | -- | -- |
| Gratiot | 80 | 160 | 160 | 80 | -- | -- | -- | 1,042 | 1,522 | 120 | 280 | -- |
| Huron | 79 | 32 | 158 | 47 | -- | -- | -- | 158 | 206 | -- | -- | -- |
| Ionia | -- | -- | -- | -- | -- | -- | -- | -- | 137 | 173 | 188 | -- |
| Jackson | 7 | 36 | 7 | 7 | -- | -- | -- | 109 | 109 | 113 | 263 | -- |
| Kalamazoo | 3 | 2 | 3 | 1 | -- | -- | -- | 12 | 257 | 313 | 339 | -- |
| Kent | 42 | 85 | 42 | 42 | -- | -- | -- | 424 | 1,898 | 2,841 | 4,834 | -- |
| Lapeer | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Monroe | 92 | 28 | 92 | 18 | -- | -- | -- | 231 | 120 | -- | -- | -- |
| Montcalm | 147 | 294 | 294 | 147 | -- | -- | -- | 1,910 | 3,021 | 380 | 596 | -- |
| Muskegon | 68 | 134 | 73 | 67 | -- | -- | -- | 673 | 2,698 | 2,126 | 2,394 | -- |
| Ottawa | 43 | 217 | 43 | 43 | -- | -- | -- | 651 | 923 | 344 | 372 | -- |
| Sanilac | 12 | -- | 103 | -- | -- | -- | -- | 8 | 583 | -- | -- | -- |
| St. Joseph | -- | -- | -- | -- | -- | -- | -- | -- | 300 | 380 | 410 | -- |
| Tuscola | -- | -- | -- | -- | -- | -- | -- | 10 | -- | -- | -- | -- |
| Van Buren | -- | -- | -- | -- | -- | -- | -- | -- | 329 | 416 | 450 | -- |
| Total | 599 | 1,101 | 1,021 | 474 | -- | -- | -- | 5,575 | 17,035 | 13,037 | 16,525 | -- |
| State total | 65,842 | 44,877 | 145,568 | 34,378 | 13 | 420 | 81 | 530,240 | 409,819 | 75,493 | 71,928 | 27,210 |

¹ Includes only those counties that supplied pulpwood in 1997.

Table 1.1.--Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997
(In standard cords, unpeeled)

| Forest Survey Unit and county ¹ | All species | Species group | | | | | | | | | | | | | | | | |
|--|-------------|----------------|------------|---------|-----------|----------|------------|---------|----------|-------|-----------|---------------|----|--|--|--|--|--|
| | | N. white-cedar | Balsam fir | Hemlock | Jack pine | Red pine | White pine | Spruce | Tamarack | Ash | Aspen | Balsam poplar | | | | | | |
| Aspen-Birch | | | | | | | | | | | | | | | | | | |
| Carlton | 42,186 | -- | 1,122 | -- | 817 | 821 | -- | 2,376 | 32 | 296 | 26,292 | 738 | -- | | | | | |
| Cook | 53,414 | -- | 2,492 | -- | 2,524 | 492 | 21 | 6,490 | 319 | -- | 39,034 | -- | -- | | | | | |
| Koochiching | 337,022 | -- | 31,276 | -- | 8,221 | 178 | -- | 41,294 | 5,713 | 78 | 221,850 | 25,352 | -- | | | | | |
| Lake | 93,158 | -- | 11,589 | -- | 3,405 | 835 | 11 | 18,219 | 990 | 1,044 | 34,641 | 8,799 | -- | | | | | |
| St. Louis | 520,144 | -- | 59,406 | -- | 14,619 | 2,446 | 254 | 54,491 | 5,296 | 361 | 327,578 | 14,284 | -- | | | | | |
| Total | 1,045,923 | -- | 105,885 | -- | 29,586 | 4,772 | 286 | 122,869 | 12,350 | 1,779 | 649,397 | 49,172 | -- | | | | | |
| Northern Pine | | | | | | | | | | | | | | | | | | |
| Aitkin | 98,683 | -- | 4,874 | -- | 1,226 | 1,073 | 24 | 2,239 | 1,266 | -- | 81,099 | 980 | -- | | | | | |
| Becker | 82,974 | -- | 730 | -- | 382 | 22 | -- | 9 | -- | -- | 78,682 | 996 | -- | | | | | |
| Beltrami | 209,566 | -- | 5,053 | -- | 3,094 | 2,471 | -- | 3,721 | 1,076 | 844 | 164,648 | 17,323 | -- | | | | | |
| Cass | 212,375 | -- | 6,019 | -- | 9,388 | 4,913 | 779 | 3,294 | 1,183 | -- | 171,118 | 4,864 | -- | | | | | |
| Cleanwater | 92,017 | -- | 2,121 | -- | 1,270 | 26 | -- | 1,405 | 56 | 103 | 79,275 | 4,189 | -- | | | | | |
| Crow Wing | 90,740 | -- | 871 | -- | 7,015 | 2,851 | 41 | 848 | 50 | -- | 74,661 | 1,070 | -- | | | | | |
| Hubbard | 143,903 | -- | 567 | -- | 2,863 | 418 | 407 | 120 | 120 | 79 | 129,220 | 3,083 | -- | | | | | |
| Itasca | 393,028 | -- | 54,440 | -- | 9,126 | 3,012 | 35 | 21,364 | 1,689 | 118 | 273,602 | 16,601 | -- | | | | | |
| Lake of the Woods | 114,396 | -- | 3,608 | -- | 6,032 | 28 | -- | 7,409 | 1,217 | -- | 87,937 | 8,131 | -- | | | | | |
| Mahnomen | 13,789 | -- | -- | -- | -- | -- | -- | 60 | -- | -- | 13,646 | 69 | -- | | | | | |
| Roseau | 25,181 | -- | 336 | -- | 2,816 | -- | -- | 2,146 | 1,371 | -- | 15,850 | 2,663 | -- | | | | | |
| Wadena | 24,410 | -- | -- | -- | 6,017 | 1,030 | -- | 29 | 29 | -- | 17,168 | 71 | -- | | | | | |
| Total | 1,501,063 | -- | 78,621 | -- | 49,229 | 15,844 | 878 | 42,902 | 8,056 | 1,144 | 1,186,905 | 60,029 | -- | | | | | |
| Central Hardwood | | | | | | | | | | | | | | | | | | |
| Anoka | 5,590 | -- | -- | -- | 2,100 | 1,758 | 29 | 104 | -- | 50 | 1,079 | -- | -- | | | | | |
| Benton | 7,420 | -- | 7,231 | -- | -- | 73 | -- | -- | -- | -- | 116 | -- | -- | | | | | |
| Chicago | 3,571 | -- | -- | -- | 111 | 1,833 | 52 | 159 | -- | 181 | 64 | -- | -- | | | | | |
| Douglas | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10 | -- | -- | | | | | |
| Goodhue | 531 | -- | -- | -- | -- | 334 | 122 | -- | -- | -- | 75 | -- | -- | | | | | |
| Isanti | 6,015 | -- | -- | -- | 30 | 5,110 | 20 | 219 | -- | -- | 623 | -- | -- | | | | | |
| Kanabec | 15,674 | -- | -- | -- | -- | 695 | -- | -- | -- | 1 | 14,646 | 12 | -- | | | | | |
| Millie Lacs | 56,402 | -- | -- | -- | 394 | 470 | 4 | 11 | -- | -- | 55,421 | 2 | -- | | | | | |
| Morrison | 24,154 | -- | -- | -- | 1,682 | 2,229 | -- | 682 | 731 | -- | 18,659 | 45 | -- | | | | | |
| Olmsted | 151 | -- | -- | -- | -- | 151 | -- | -- | -- | -- | -- | -- | -- | | | | | |
| Otter Tail | 28,369 | -- | -- | -- | -- | 25 | -- | -- | -- | -- | 27,831 | 429 | -- | | | | | |
| Pine | 119,939 | -- | 2,692 | -- | 1,853 | 3,694 | 43 | 1,333 | -- | 202 | 98,269 | 732 | -- | | | | | |
| Sherburne | 1,653 | -- | 411 | -- | 57 | 973 | 17 | 50 | -- | 6 | 101 | -- | -- | | | | | |
| Stearns | 1,470 | -- | -- | -- | 29 | 39 | -- | -- | -- | -- | 1,470 | -- | -- | | | | | |
| Todd | 3,224 | -- | -- | -- | 141 | 446 | 34 | -- | -- | -- | 339 | 24 | -- | | | | | |
| Wabasha | 960 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | | | |
| Washington | 265 | -- | -- | -- | -- | -- | -- | -- | -- | 21 | -- | -- | -- | | | | | |
| Winona | 1,243 | -- | -- | -- | 415 | 620 | 15 | 142 | -- | 5 | 13 | -- | -- | | | | | |
| Total | 276,641 | -- | 10,335 | -- | 6,812 | 18,451 | 336 | 2,701 | 731 | 467 | 221,847 | 1,244 | -- | | | | | |
| Prairie | | | | | | | | | | | | | | | | | | |
| Kittson | 9,794 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9,619 | 175 | -- | | | | | |
| Marshall | 17,371 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 16,128 | 1,242 | -- | | | | | |
| Norman | 8,644 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8,639 | 5 | -- | | | | | |
| Pennington | 5,361 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5,277 | 84 | -- | | | | | |
| Polk | 7,191 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7,012 | 179 | -- | | | | | |
| Red Lake | 3,434 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3,392 | 15 | -- | | | | | |
| Total | 51,796 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 50,067 | 1,699 | -- | | | | | |
| State total | 2,875,422 | -- | 194,841 | -- | 85,628 | 39,067 | 1,500 | 168,472 | 21,137 | 3,390 | 2,108,216 | 112,145 | -- | | | | | |

(Table 11 continued on next page)

(Table 11 continued)

| Forest Survey Unit and county ¹ | Species group | | | | | | | | | | | |
|---|---------------|-------|----------------|-----------------|-----------------|-----|---------|---------------|---------------|------------|--------------|--------------------|
| | Bass- wood | Beech | White birch | Yellow birch | Cotton- wood | Elm | Hickory | Hard maple | Soft maple | Red oak | White oak | Other hardwoods |
| Aspen-Birch | | | | | | | | | | | | |
| Carlton | 88 | -- | 7,953 | -- | -- | 12 | 11 | 608 | 711 | 264 | 12 | 30 |
| Cook | -- | -- | 2,043 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Koochiching | -- | -- | 2,904 | -- | -- | -- | -- | 26 | 130 | -- | -- | -- |
| Lake | -- | -- | 12,219 | -- | -- | -- | -- | 1,405 | -- | -- | -- | -- |
| St. Louis | -- | -- | 35,181 | -- | -- | -- | -- | 4,026 | 2,192 | 10 | -- | -- |
| Total | 88 | -- | 60,299 | -- | -- | 12 | 11 | 6,065 | 3,034 | 275 | 12 | 30 |
| Northern Pine | | | | | | | | | | | | |
| Aitkin | -- | -- | 5,794 | -- | -- | -- | -- | 108 | -- | -- | -- | -- |
| Becker | -- | -- | 2,154 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Beltrami | 1,135 | -- | 9,661 | -- | -- | -- | -- | -- | 540 | -- | -- | -- |
| Cass | 63 | -- | 10,753 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Clearwater | 786 | -- | 2,786 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Crow Wing | -- | -- | 3,334 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Hubbard | -- | -- | 7,099 | -- | -- | -- | -- | -- | 48 | -- | -- | -- |
| Itasca | -- | -- | 12,808 | -- | -- | -- | -- | 40 | 196 | -- | -- | -- |
| Lake of the Woods | -- | -- | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mahnomen | -- | -- | 14 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Roseau | -- | -- | 8 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Wadena | -- | -- | 95 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | 1,984 | -- | 54,539 | -- | -- | -- | -- | 148 | 784 | -- | -- | -- |
| Central Hardwood | | | | | | | | | | | | |
| Anoka | -- | -- | 259 | -- | -- | -- | -- | 19 | 83 | 82 | 27 | -- |
| Benton | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chicago | 88 | -- | 338 | -- | -- | 12 | 11 | 252 | 162 | 264 | 12 | 30 |
| Douglas | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Goodhue | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Isanti | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10 | 3 | -- |
| Kanabec | -- | -- | 276 | -- | -- | -- | -- | -- | 44 | -- | -- | -- |
| Millie Lacs | -- | -- | 17 | -- | -- | -- | -- | -- | 82 | -- | -- | -- |
| Morrison | -- | -- | 125 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Olmsted | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Otter Tail | -- | -- | 84 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pine | 204 | -- | 6,544 | -- | -- | 12 | 11 | 1,653 | 2,386 | 267 | 12 | 30 |
| Sherburne | -- | -- | 24 | -- | -- | -- | -- | 2 | 11 | -- | -- | -- |
| Stearns | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Todd | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Wabasha | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Washington | -- | -- | 202 | -- | -- | -- | -- | 7 | 34 | -- | -- | -- |
| Winona | -- | -- | 14 | -- | -- | -- | -- | 8 | 13 | -- | -- | -- |
| Total | 292 | -- | 7,983 | -- | -- | 25 | 23 | 1,941 | 2,816 | 624 | 53 | 59 |
| Prairie | | | | | | | | | | | | |
| Kittson | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Marshall | -- | -- | 2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Norman | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pennington | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Polk | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Red Lake | -- | -- | 28 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | -- | -- | 30 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| State total | 2,364 | -- | 122,750 | -- | 1 | 37 | 34 | 8,154 | 6,634 | 899 | 65 | 89 |

¹ Includes only those counties that supplied pulpwood in 1997.

Table 12.--Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Wisconsin, 1997

(In standard cords, unpeeled)

| Forest Survey Unit and county ¹ | All species | Species group | | | | | | | | | | |
|---|----------------|--------------------|---------------|---------|--------------|-------------|---------------|--------|----------|--------|---------|------------------|
| | | N. white- cedar | Balsam fir | Hemlock | Jack pine | Red pine | White pine | Spruce | Tamarack | Ash | Aspen | Balsam poplar |
| Northeastern | | | | | | | | | | | | |
| Florence | 51,793 | 14 | 1,084 | 5,209 | 2,426 | 4,904 | 273 | 797 | 114 | 787 | 16,705 | 809 |
| Forest | 121,110 | -- | 4,153 | 1,714 | 980 | 4,357 | 519 | 2,948 | 85 | 5,362 | 35,111 | 1,250 |
| Langlade | 126,500 | -- | 7,333 | 994 | 190 | 3,667 | 267 | 2,529 | 582 | 5,688 | 44,303 | 250 |
| Lincoln | 125,302 | -- | 2,992 | 758 | 2,751 | 6,073 | 447 | 1,008 | 232 | 5,089 | 53,574 | 179 |
| Marinette | 102,599 | -- | 1,414 | 232 | 21,973 | 17,505 | 1,573 | 468 | 387 | 1,323 | 32,160 | 1,278 |
| Menominee | 75,860 | 448 | 2,799 | 9,071 | 4,246 | 8,106 | 2,573 | 1,127 | 300 | 3,710 | 23,888 | 476 |
| Oconto | 59,718 | -- | 1,550 | 282 | 2,418 | 7,918 | 516 | 2,536 | 12 | 610 | 29,515 | 734 |
| Oneida | 133,914 | -- | 6,310 | 375 | 8,119 | 11,603 | 2,493 | 4,727 | 609 | 4,483 | 42,787 | 247 |
| Shawano | 23,687 | -- | 106 | 983 | 71 | 3,279 | 156 | 61 | 82 | 1,187 | 13,291 | 2 |
| Vilas | 159,890 | -- | 4,517 | 752 | 39,956 | 11,018 | 2,256 | 1,629 | 343 | 4,819 | 36,233 | 339 |
| Total | 980,373 | 462 | 32,257 | 20,369 | 83,131 | 78,429 | 11,072 | 17,832 | 2,746 | 33,058 | 327,569 | 5,563 |
| Northwestern | | | | | | | | | | | | |
| Ashland | 72,784 | -- | 5,177 | 218 | 210 | 2,182 | 664 | 7,334 | 433 | 2,452 | 31,642 | 4 |
| Barron | 16,812 | -- | 11 | 71 | 55 | 1,326 | 229 | 53 | 26 | 397 | 9,907 | 2 |
| Bayfield | 177,236 | -- | 4,927 | 82 | 42,651 | 8,421 | 888 | 2,403 | 559 | 2,817 | 76,121 | 145 |
| Burnett | 64,324 | -- | 259 | 27 | 24,240 | 7,183 | 232 | 303 | 11 | 394 | 25,217 | 2 |
| Douglas | 185,356 | -- | 12,514 | 14 | 39,975 | 21,626 | 217 | 2,893 | 104 | 2,035 | 67,814 | 208 |
| Iron | 108,616 | -- | 4,071 | 391 | 561 | 1,286 | 306 | 1,975 | 168 | 3,000 | 59,458 | 12 |
| Polk | 24,861 | -- | 66 | -- | 6,149 | 1,740 | 132 | 159 | -- | 304 | 11,770 | 5 |
| Price | 116,409 | -- | 7,338 | 978 | 6,064 | 3,762 | 716 | 1,725 | 2,416 | 5,195 | 37,819 | 72 |
| Rusk | 71,432 | -- | 644 | 73 | 256 | 1,059 | 45 | 527 | 360 | 2,624 | 36,933 | 32 |
| Sawyer | 157,092 | -- | 5,815 | 384 | 1,849 | 5,427 | 1,079 | 4,012 | 528 | 6,761 | 60,356 | 12 |
| Taylor | 64,411 | -- | 2,520 | 885 | 20 | 1,377 | 117 | 513 | 503 | 3,211 | 24,831 | 12 |
| Washburn | 74,653 | -- | 1,142 | -- | 12,059 | 10,560 | 391 | 194 | 36 | 688 | 38,972 | 5 |
| Total | 1,133,985 | -- | 44,484 | 3,124 | 134,091 | 65,950 | 5,016 | 22,090 | 5,145 | 29,879 | 480,840 | 512 |
| Central | | | | | | | | | | | | |
| Adams | 69,881 | -- | 11 | -- | 30,909 | 21,993 | 2,892 | 100 | 79 | 575 | 5,239 | -- |
| Chippewa | 25,690 | -- | 22 | 89 | 136 | 2,677 | 113 | 58 | -- | 538 | 14,783 | 4 |
| Clark | 92,225 | -- | -- | -- | 4,037 | 4,877 | 1,853 | 119 | 16 | 2,694 | 45,940 | 4 |
| Eau Claire | 27,899 | -- | -- | -- | 5,585 | 7,244 | 381 | 47 | 17 | 557 | 6,957 | 1 |
| Jackson | 66,750 | -- | 23 | 28 | 14,766 | 11,111 | 2,266 | 145 | 15 | 1,439 | 15,035 | 1 |
| Juneau | 63,938 | -- | -- | -- | 30,922 | 13,177 | 1,214 | -- | -- | 426 | 2,611 | -- |
| Marathon | 55,617 | -- | 235 | 1,840 | 1,611 | 5,284 | 1,001 | 957 | 11 | 2,578 | 21,711 | 13 |
| Marquette | 17,958 | -- | -- | -- | 1,944 | 12,451 | 1,036 | 10 | 22 | 145 | 310 | 1 |
| Monroe | 30,237 | -- | -- | -- | 10,651 | 6,400 | 1,207 | -- | 39 | 539 | 3,897 | 1 |
| Portage | 36,342 | -- | 261 | 221 | 4,810 | 16,533 | 1,868 | 69 | 23 | 452 | 7,393 | 5 |
| Waupaca | 18,447 | -- | -- | 11 | 74 | 5,169 | 1,103 | 125 | -- | 981 | 4,955 | 1 |
| Waushara | 27,498 | -- | -- | 11 | 1,070 | 22,009 | 2,569 | 73 | -- | 119 | 582 | -- |
| Wood | 44,181 | -- | 28 | 149 | 5,078 | 8,658 | 2,846 | 777 | -- | 476 | 19,481 | 1 |
| Total | 576,664 | -- | 581 | 2,348 | 111,593 | 137,582 | 20,348 | 2,481 | 221 | 11,518 | 148,895 | 33 |
| Southwestern | | | | | | | | | | | | |
| Buffalo | 5,499 | -- | -- | -- | 126 | 814 | 101 | -- | -- | 80 | 3,746 | -- |
| Crawford | 175 | -- | -- | -- | -- | -- | -- | -- | -- | 3 | 8 | -- |
| Dunn | 16,057 | -- | 14 | -- | 2,027 | 6,969 | 446 | 76 | -- | 240 | 3,390 | 1 |
| Grant | 7,836 | -- | 11 | -- | 729 | 5,235 | 1,445 | 378 | -- | 3 | -- | -- |
| Iowa | 18,099 | -- | -- | -- | 118 | 2,336 | 828 | 16 | -- | 1,461 | 2,541 | 31 |
| La Crosse | 2,421 | -- | -- | -- | 261 | 1,293 | 256 | 9 | -- | 19 | 398 | -- |
| Pepin | 1,018 | -- | -- | -- | 9 | 102 | 11 | -- | -- | 19 | 577 | 3 |
| Pierce | 546 | -- | -- | -- | -- | 268 | 106 | 38 | -- | 7 | 52 | -- |
| Richland | 1,574 | -- | -- | -- | 80 | 184 | 607 | 3 | -- | 22 | 270 | 3 |
| Sauk | 6,905 | -- | 14 | 7 | 1,563 | 3,532 | 628 | -- | -- | 44 | 277 | 2 |
| St. Croix | 9,166 | -- | 69 | 9 | 413 | 2,613 | 314 | 282 | -- | 209 | 2,756 | -- |
| Trempealeau | 9,903 | -- | -- | -- | 86 | 3,767 | 1,066 | 196 | -- | 170 | 3,195 | 2 |
| Vernon | 1,140 | -- | -- | -- | 6 | 553 | 46 | 63 | -- | 13 | 239 | 3 |
| Total | 80,340 | -- | 107 | 17 | 5,420 | 27,665 | 5,854 | 1,060 | -- | 2,290 | 17,448 | 44 |
| Southeastern | | | | | | | | | | | | |
| Brown | 1,529 | -- | 14 | -- | 24 | 1,204 | -- | -- | -- | -- | 243 | 23 |
| Calumet | 9 | -- | -- | -- | -- | -- | -- | -- | -- | 1 | -- | -- |
| Columbia | 11,433 | -- | -- | -- | 2,197 | 5,459 | 1,221 | 116 | -- | 59 | 676 | -- |
| Dane | 1,485 | -- | -- | -- | 28 | 347 | 354 | 13 | -- | 72 | 52 | -- |
| Dodge | 39 | -- | -- | 11 | -- | -- | -- | -- | -- | -- | 9 | -- |
| Door | 6,572 | -- | -- | 15 | 15 | 132 | 135 | 97 | -- | 151 | 2,519 | 281 |
| Fond Du Lac | 1,106 | -- | -- | -- | -- | 110 | 292 | 68 | -- | 14 | 282 | 3 |
| Green | 198 | -- | -- | -- | -- | 198 | -- | -- | -- | -- | -- | -- |
| Green Lake | 1,497 | -- | -- | -- | 15 | 690 | 175 | -- | -- | 37 | 289 | 3 |
| Jefferson | 1,947 | -- | 80 | 14 | -- | 775 | 369 | 61 | -- | 33 | 239 | 3 |
| Kenosha | 14 | -- | -- | 14 | -- | -- | -- | -- | -- | -- | -- | -- |
| Kewaunee | 375 | -- | -- | -- | -- | 154 | 29 | -- | -- | 14 | 158 | -- |
| Manitowoc | 2,392 | -- | 17 | -- | -- | 187 | 178 | -- | -- | 161 | 232 | -- |
| Outagamie | 1,470 | -- | -- | -- | 13 | 339 | 48 | -- | -- | 159 | 507 | -- |
| Ozaukee | 43 | -- | -- | -- | -- | 11 | 22 | -- | -- | 4 | -- | -- |
| Racine | 188 | -- | -- | -- | -- | 13 | 100 | 75 | -- | -- | -- | -- |
| Rock | 521 | -- | -- | -- | -- | 480 | 21 | -- | -- | 2 | -- | -- |
| Sheboygan | 483 | -- | -- | -- | -- | 370 | 23 | 60 | -- | 1 | 14 | -- |
| Walworth | 2,630 | -- | -- | -- | -- | 1,429 | 698 | 32 | -- | 17 | 239 | 3 |
| Washington | 1,900 | -- | -- | -- | 76 | 673 | 985 | 96 | -- | 11 | -- | -- |
| Waukesha | 3,304 | -- | 15 | -- | 308 | 2,263 | 240 | 202 | -- | 12 | -- | -- |
| Winnebago | 434 | -- | -- | -- | -- | 398 | 26 | -- | -- | 4 | -- | -- |
| Total | 39,567 | -- | 125 | 53 | 2,676 | 15,232 | 4,918 | 820 | -- | 751 | 5,459 | 316 |
| State total | 2,810,929 | 462 | 77,555 | 25,911 | 336,911 | 324,858 | 47,209 | 44,284 | 8,112 | 77,496 | 980,212 | 6,468 |

(Table 12 continued on next page)

(Table 12 continued)

| Forest Survey Unit and county ¹ | Species group | | | | | | | | | | | |
|--|---------------|-------|-------------|--------------|-------------|--------|---------|------------|------------|---------|-----------|-----------------|
| | Bass-wood | Beech | White birch | Yellow birch | Cotton-wood | Elm | Hickory | Hard maple | Soft maple | Red oak | White oak | Other hardwoods |
| Northeastern | | | | | | | | | | | | |
| Florence | 922 | 530 | 4,352 | 488 | 5 | 409 | -- | 6,979 | 4,180 | 336 | 151 | 322 |
| Forest | 2,095 | 1,162 | 12,266 | 2,192 | 15 | 4,284 | -- | 23,112 | 15,740 | 1,972 | 1,108 | 683 |
| Langlade | 2,720 | 646 | 17,619 | 1,838 | 48 | 3,198 | 26 | 18,156 | 12,574 | 2,319 | 1,084 | 469 |
| Lincoln | 8,203 | 145 | 11,785 | 1,062 | 188 | 3,977 | 134 | 12,167 | 9,290 | 4,099 | 712 | 436 |
| Marinette | 1,176 | 647 | 6,791 | 651 | 2 | 86 | 1 | 8,180 | 4,754 | 998 | 597 | 403 |
| Menominee | 356 | 304 | 4,123 | 1,340 | 3 | 1,195 | 3 | 6,070 | 4,804 | 347 | 213 | 358 |
| Oconto | 1,033 | 364 | 3,601 | 363 | 12 | 405 | -- | 4,590 | 2,788 | 185 | 65 | 221 |
| Oneida | 11,185 | 154 | 16,411 | 607 | 260 | 376 | 168 | 10,530 | 6,355 | 4,752 | 743 | 619 |
| Shawano | 108 | 39 | 1,446 | 310 | 2 | 203 | 1 | 1,217 | 912 | 138 | 67 | 26 |
| Vilas | 4,460 | 533 | 17,698 | 1,307 | 82 | 3,138 | 104 | 15,288 | 10,327 | 3,664 | 837 | 590 |
| Total | 32,258 | 4,524 | 96,093 | 10,158 | 617 | 17,271 | 439 | 106,287 | 71,724 | 18,808 | 5,578 | 4,127 |
| Northwestern | | | | | | | | | | | | |
| Ashland | 602 | 36 | 5,625 | 572 | 5 | 1,169 | 4 | 7,051 | 5,981 | 859 | 518 | 43 |
| Barron | 177 | 2 | 1,772 | 79 | 3 | 79 | 6 | 1,045 | 1,082 | 345 | 123 | 21 |
| Bayfield | 3,115 | 1 | 16,248 | 421 | 64 | 183 | 56 | 7,349 | 5,978 | 3,528 | 1,088 | 192 |
| Burnett | 269 | -- | 2,594 | 59 | 3 | 22 | 8 | 1,040 | 1,417 | 772 | 245 | 25 |
| Douglas | 780 | 1 | 22,005 | 303 | 7 | 118 | 10 | 5,258 | 8,214 | 804 | 406 | 51 |
| Iron | 632 | 661 | 6,715 | 1,297 | -- | 3,040 | -- | 13,764 | 9,331 | 1,021 | 556 | 370 |
| Polk | 398 | -- | 1,206 | 73 | 5 | 17 | -- | 857 | 951 | 730 | 290 | 8 |
| Price | 4,341 | 36 | 14,479 | 701 | 76 | 1,361 | 158 | 14,129 | 9,024 | 4,704 | 849 | 467 |
| Rusk | 2,568 | 27 | 7,707 | 488 | 325 | 1,194 | 30 | 8,061 | 6,152 | 1,635 | 580 | 111 |
| Sawyer | 1,828 | 50 | 24,534 | 1,541 | 12 | 1,246 | 27 | 19,286 | 17,111 | 3,209 | 1,834 | 189 |
| Taylor | 964 | 132 | 5,794 | 970 | 66 | 4,110 | 27 | 9,004 | 7,469 | 1,352 | 436 | 98 |
| Washburn | 571 | 1 | 3,828 | 110 | 5 | 53 | 10 | 1,876 | 3,464 | 483 | 167 | 35 |
| Total | 16,248 | 946 | 112,507 | 6,613 | 570 | 12,592 | 336 | 88,722 | 76,174 | 19,443 | 7,092 | 1,609 |
| Central | | | | | | | | | | | | |
| Adams | 68 | -- | 707 | 25 | -- | 11 | 7 | 1,770 | 1,652 | 2,897 | 923 | 20 |
| Chippewa | 776 | 1 | 2,178 | 100 | 163 | 207 | 10 | 1,748 | 1,377 | 506 | 167 | 35 |
| Clark | 526 | 18 | 6,922 | 543 | 31 | 691 | 13 | 7,961 | 6,300 | 7,118 | 2,493 | 70 |
| Eau Claire | 166 | -- | 1,422 | 85 | 1 | 45 | 13 | 1,379 | 951 | 2,279 | 728 | 41 |
| Jackson | 460 | -- | 2,737 | 132 | 1 | 87 | 52 | 3,331 | 2,320 | 10,241 | 2,416 | 145 |
| Juneau | 112 | -- | 720 | 31 | -- | 20 | 12 | 1,157 | 927 | 10,208 | 2,369 | 33 |
| Marathon | 751 | 98 | 3,275 | 734 | 14 | 2,796 | 21 | 5,690 | 5,008 | 1,487 | 428 | 72 |
| Marquette | 63 | -- | 256 | 21 | 1 | 11 | 4 | 293 | 210 | 889 | 280 | 11 |
| Monroe | 182 | 7 | 766 | 54 | 1 | 233 | 20 | 1,269 | 997 | 3,308 | 615 | 53 |
| Portage | 238 | 5 | 786 | 111 | 5 | 169 | 1 | 1,033 | 811 | 1,167 | 370 | 9 |
| Waupaca | 129 | 24 | 1,090 | 260 | 1 | 739 | 10 | 1,161 | 1,019 | 1,187 | 380 | 28 |
| Waushara | 21 | -- | 139 | 24 | -- | 5 | 1 | 73 | 48 | 549 | 200 | 4 |
| Wood | 88 | 3 | 1,017 | 99 | 1 | 97 | 1 | 1,413 | 1,097 | 2,232 | 629 | 10 |
| Total | 3,582 | 156 | 22,015 | 2,220 | 220 | 5,112 | 167 | 28,278 | 22,717 | 44,068 | 11,998 | 530 |
| Southwestern | | | | | | | | | | | | |
| Buffalo | 32 | -- | 175 | 13 | -- | 6 | 2 | 186 | 120 | 74 | 18 | 7 |
| Crawford | 4 | -- | 9 | 1 | -- | -- | -- | 9 | 6 | 100 | 33 | -- |
| Dunn | 171 | -- | 767 | 40 | -- | 13 | 3 | 668 | 707 | 402 | 111 | 12 |
| Grant | -- | -- | 6 | 2 | -- | 4 | -- | 11 | 9 | 1 | 1 | -- |
| Iowa | 1,948 | -- | 2,377 | 1 | 33 | 113 | 104 | 2,244 | 1,154 | 2,413 | 106 | 275 |
| La Crosse | 9 | -- | 33 | -- | -- | 2 | 1 | 31 | 16 | 72 | 15 | 4 |
| Pepin | 122 | -- | 70 | 2 | 3 | 5 | 1 | 40 | 26 | 22 | 3 | 2 |
| Pierce | 8 | -- | 36 | -- | -- | -- | -- | 12 | 7 | 11 | -- | 1 |
| Richland | 121 | -- | 46 | 3 | 3 | 2 | 1 | 48 | 30 | 113 | 34 | 2 |
| Sauk | 83 | -- | 84 | 3 | 2 | 3 | 2 | 85 | 50 | 406 | 114 | 6 |
| St. Croix | 48 | -- | 1,137 | 43 | -- | 13 | 3 | 543 | 486 | 157 | 62 | 11 |
| Trempealeau | 142 | -- | 289 | 4 | 2 | 13 | 11 | 291 | 166 | 409 | 67 | 28 |
| Vernon | 120 | -- | 19 | 1 | 3 | 5 | 1 | 22 | 13 | 28 | 4 | 2 |
| Total | 2,810 | -- | 5,048 | 112 | 45 | 177 | 129 | 4,192 | 2,791 | 4,209 | 569 | 351 |
| Southeastern | | | | | | | | | | | | |
| Brown | 17 | -- | 1 | -- | -- | -- | -- | 1 | 2 | -- | -- | -- |
| Calumet | 1 | -- | 2 | -- | -- | -- | -- | 2 | 1 | 2 | -- | -- |
| Columbia | 18 | -- | 121 | 7 | -- | 4 | 2 | 126 | 79 | 1,030 | 312 | 7 |
| Dane | -- | -- | 69 | 9 | -- | -- | -- | 151 | 150 | 217 | 24 | -- |
| Dodge | 5 | -- | -- | -- | -- | -- | -- | -- | -- | 10 | 3 | -- |
| Door | 214 | 114 | 774 | 94 | -- | -- | -- | 1,200 | 674 | 55 | 34 | 69 |
| Fond Du Lac | 122 | 4 | 88 | 2 | 3 | 1 | 1 | 59 | 31 | 20 | 1 | 4 |
| Green | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Green Lake | 120 | -- | 46 | 7 | 3 | 1 | 1 | 28 | 17 | 42 | 20 | 2 |
| Jefferson | 122 | -- | 60 | 3 | 3 | 2 | 1 | 85 | 66 | 26 | 5 | 2 |
| Kenosha | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Kewaunee | -- | -- | 13 | 3 | -- | -- | -- | 2 | 2 | -- | -- | -- |
| Manitowoc | 25 | 63 | 372 | 70 | -- | -- | -- | 671 | 367 | 13 | -- | 38 |
| Outagamie | 25 | -- | 169 | 31 | -- | 2 | 2 | 63 | 39 | 56 | 9 | 6 |
| Ozaukee | -- | -- | 4 | 1 | -- | -- | -- | -- | -- | -- | -- | -- |
| Racine | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Rock | -- | -- | 5 | -- | -- | -- | -- | 6 | 4 | 1 | 1 | -- |
| Sheboygan | 7 | -- | 2 | -- | -- | -- | -- | 2 | 1 | 2 | -- | -- |
| Walworth | 120 | -- | 27 | 1 | 3 | 1 | 1 | 23 | 13 | 20 | 1 | 2 |
| Washington | 1 | -- | 12 | 2 | -- | -- | -- | 8 | 8 | 25 | 2 | -- |
| Waukesha | -- | -- | 12 | 1 | -- | -- | -- | 31 | 31 | 171 | 19 | -- |
| Winnebago | -- | -- | 4 | 1 | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | 797 | 180 | 1,779 | 234 | 12 | 11 | 7 | 2,458 | 1,487 | 1,691 | 430 | 130 |
| State total | 55,694 | 5,807 | 237,442 | 19,338 | 1,465 | 35,163 | 1,080 | 229,937 | 174,892 | 88,219 | 25,667 | 6,747 |

¹ Includes only those counties that supplied pulpwood in 1997.

Table 13.--Central States pulpwood production by State and destination, 1993-1997
(In thousand standard cords, unpeeled)

| Year | Illinois | | | Indiana | | | Iowa | | | Missouri | | |
|------|-------------|----------------|--------------|-------------|----------------|--------------|-------------|----------------|--------------|-------------|----------------|--------------|
| | Destination | | | Destination | | | Destination | | | Destination | | |
| | Total | Central States | Other States | Total | Central States | Other States | Total | Central States | Other States | Total | Central States | Other States |
| 1993 | 55 | 25 | 30 | 143 | 47 | 96 | 13 | 13 | -- | 78 | 13 | 65 |
| 1994 | 76 | 33 | 43 | 147 | 51 | 96 | 22 | 22 | * | 88 | 19 | 69 |
| 1995 | 81 | 33 | 48 | 310 | 212 | 98 | 23 | 22 | 2 | 113 | 12 | 101 |
| 1996 | 95 | 53 | 41 | 149 | 44 | 105 | 23 | 22 | 1 | 126 | 11 | 115 |
| 1997 | 70 | 21 | 49 | 175 | 70 | 105 | 35 | 31 | 4 | 133 | 11 | 122 |

* Less than 500 standard cords.

ble 14.--Trends in receipts of roundwood and residue as pulpwood, Central States, 1993-199

(In thousand standard cords, unpeeled)

| Product form and State | 1993 | 1994 | 1995 | 1996 | 1997 |
|-------------------------|------|------|------|------|------|
| Roundwood | | | | | |
| Indiana, Iowa, Missouri | 28 | 42 | 54 | 62 | 58 |
| Residue | | | | | |
| Indiana, Iowa, Missouri | 71 | 86 | 243 | 70 | 83 |
| All wood material | 99 | 127 | 297 | 132 | 142 |

Piva, Ronald J.

1999. **Pulpwood production in the North-Central Region, 1997.** Resour. Bull. NC-195. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 37 p.

Discusses 1997 production and receipts and recent production for other years in the Lake, Central, and Plains States. Shows Michigan, Minnesota, and Wisconsin production by species for each county and compares production by Forest Survey Unit with that of previous years. Presents 1997 production and receipt data for Illinois, Indiana, Iowa, and Missouri, and shows five production classes by county. Includes the 1997 production and receipts for the Plains States by species group and kind of material.

KEY WORDS: Roundwood, whole-tree chips, residue, pulpwood, particle-board, Michigan, Minnesota, Wisconsin, Illinois, Indiana, Iowa, Missouri, Plains States.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410, or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.



Printed on recyclable paper.