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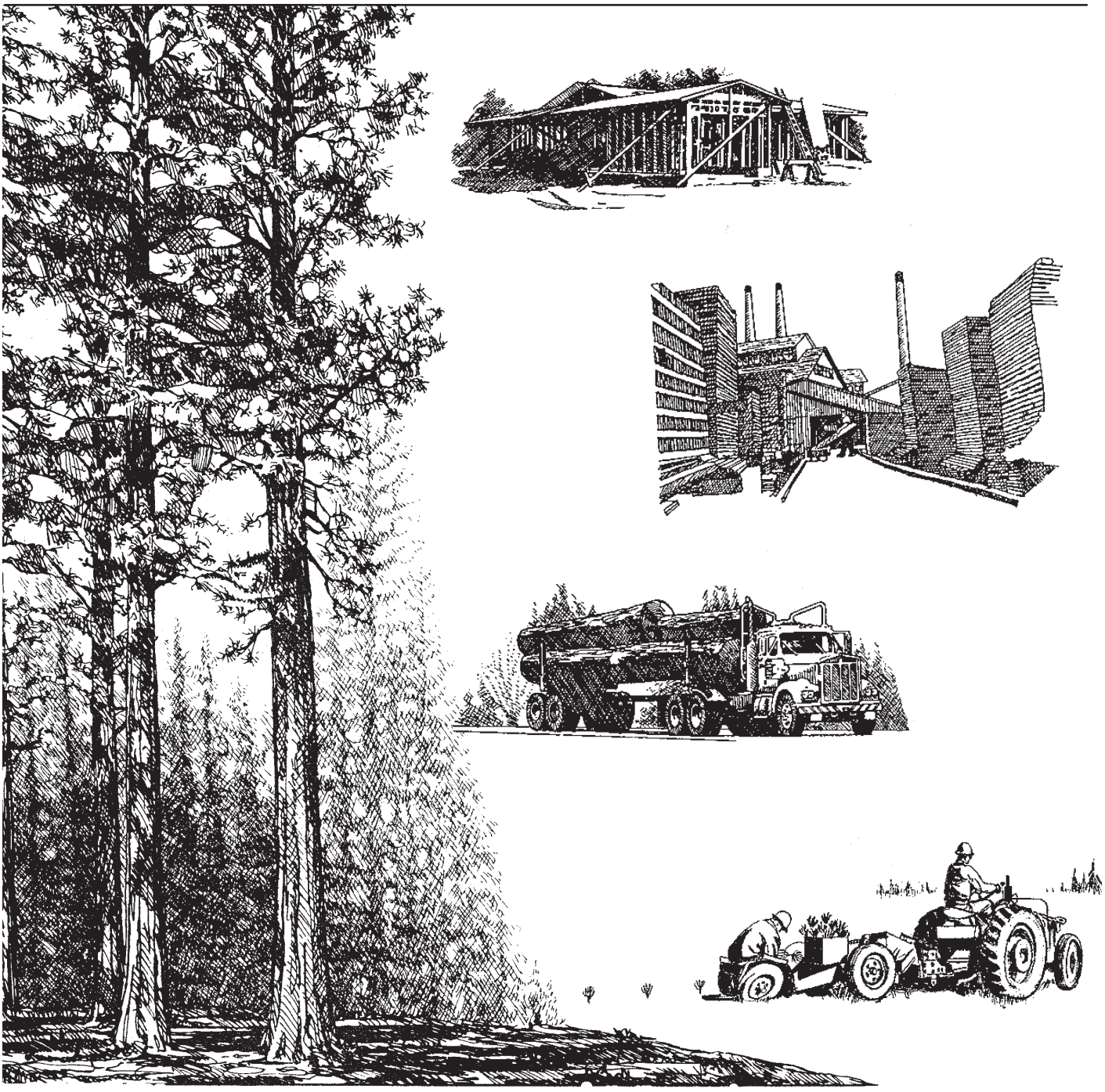
Virginia's Timber Industry—An Assessment of Timber Product Output and Use, 1999

James W. Bentley, Tony G. Johnson, and Charles W. Becker



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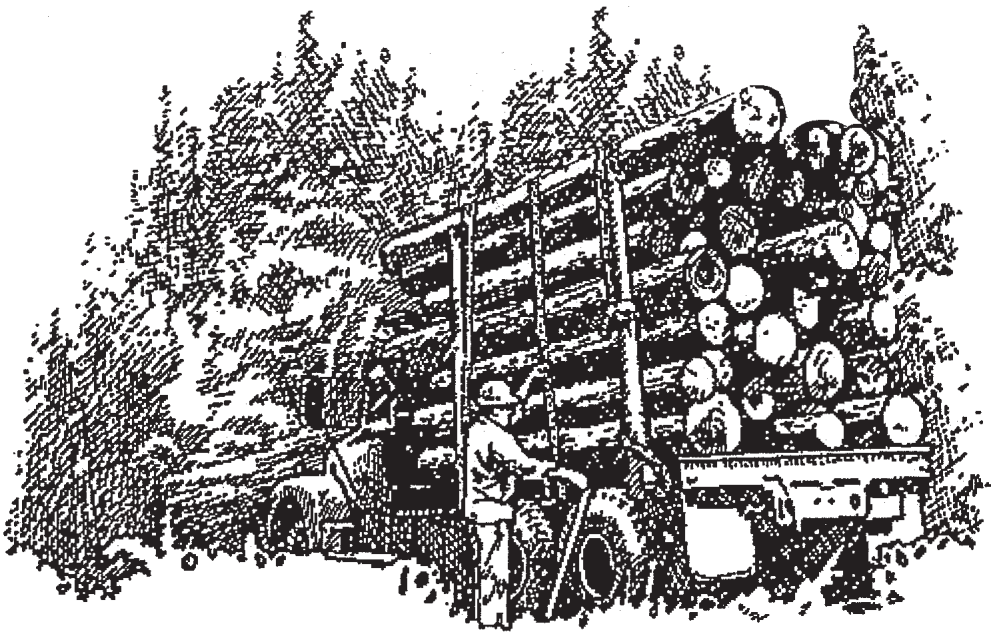

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Southern Research Station
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Foreword

This report contains the findings of a 1999 canvass of all primary wood-using plants in Virginia, and presents changes in product output and residue use since 1995. It complements the Forest Inventory and Analysis (FIA) periodic inventory of volume and removals from the State's timberland. The canvass was conducted to determine the amount and source of wood receipts and annual timber product drain, by county, in 1999 and to determine interstate and cross-regional movement of industrial roundwood. Only primary wood-using mills were canvassed. Primary mills are those that process roundwood in log or bolt form or as chipped roundwood. Examples of industrial roundwood products are saw logs, pulpwood, veneer logs, poles, and logs used for composite board products. Mills producing products from residues generated at primary and secondary processors were not canvassed. Trees chipped in the woods were included in the estimate of timber drain only if they were delivered to a primary domestic manufacturer.

A 100-percent canvass of all wood processors in Virginia was conducted in 2000 to obtain information for 1999. In addition, roundwood from out-of-State mills known to be using logs or bolts harvested from Virginia timberland was incorporated into Virginia production estimates. Each mill was canvassed by mail or through personal contact at plant locations. Telephone contacts followed mailed questionnaire responses when additional information or clarification of a response was necessary. In the event of a nonresponse, data collected in previous surveys were updated using current data collected for mills of similar size, product type, and location. Surveys for all timber products other than pulpwood began in 1965, and are currently conducted every 2 years.

Pulpwood production data were taken from an annual canvass of all southeastern pulpmills. Medium density fiberboard, insulating board, and hardboard plants were included in this survey.

Acknowledgments

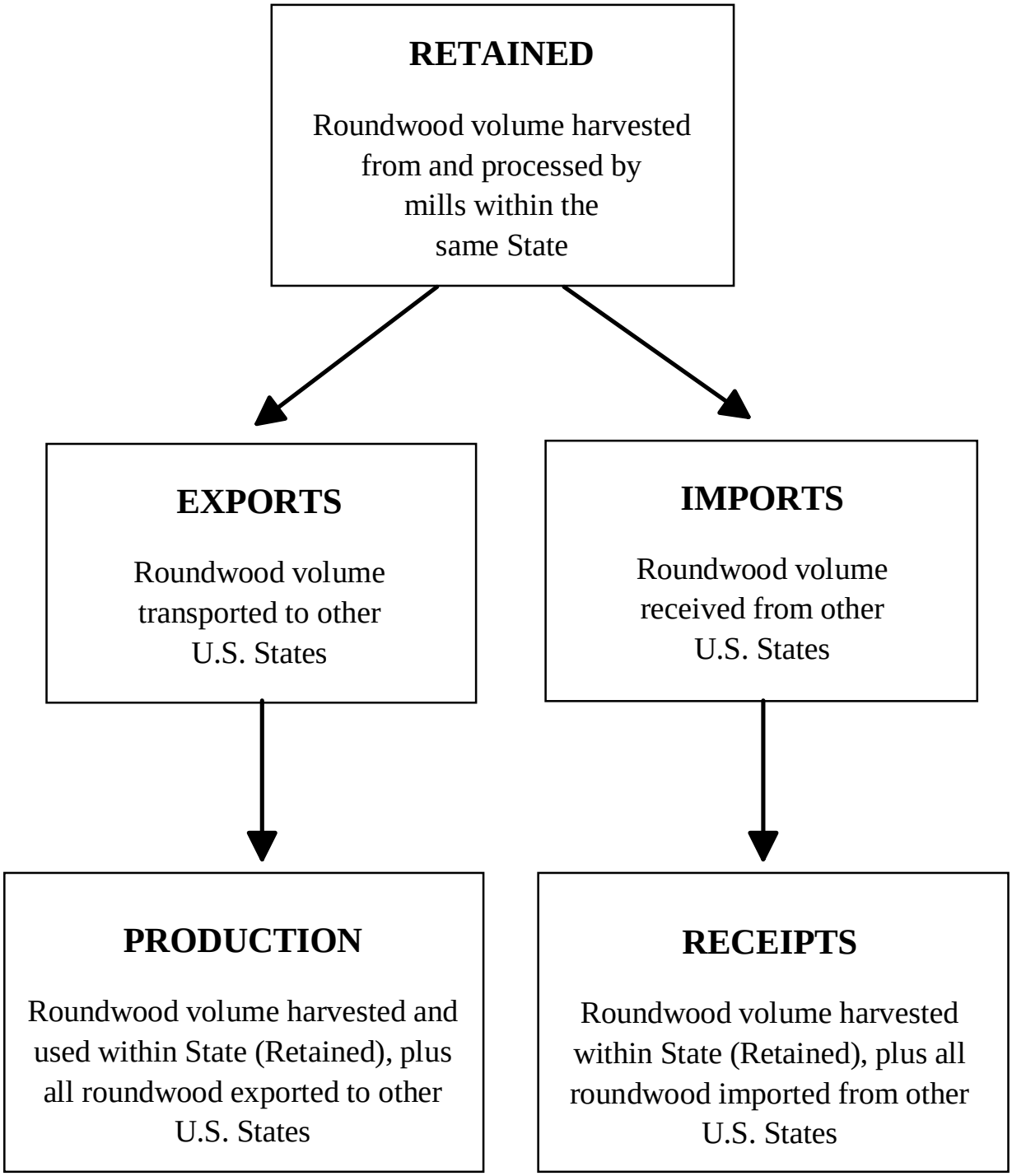
The authors thank John A. Scrivani for review and comments; Dale Gormanson from the North Central Research Station for the maps; Anne Jenkins, Susan Bowman, and Donna Burnett for tables, graphs, and statistical checking; and Paul Smith, Diana Corbin, and Louise Wilde for editorial review, styling, and publication of this report.

The Southern Research Station gratefully acknowledges the cooperation and assistance provided by the Virginia Department of Forestry in collecting mill data. Appreciation is also extended to forest industry and mill managers for providing timber products information.

Contents

[a] All tables in this report are available in Microsoft® Excel workbook files. Upon request, these files will be supplied on 3½-inch diskettes.

The use of trade or firm names in this publication is for reader information and does not imply endorsement by the U.S. Department of Agriculture of any product or service.



Production = Retained + Exports

Receipts = Retained + Imports

Figure 1—Movement of roundwood exports and imports within the United States.

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Output of Industrial Timber Products

Note: Certain terms used in this report—retained, export, import, production, and receipts—have specialized meanings and relationships unique to the Forest Inventory and Analysis Units across the country that deal with timber products output (fig. 1).

All Products

- Between 1995 and 1999, the combined industrial timber products output (TPO) from roundwood and plant byproducts increased 6 percent from 622 to 658 million cubic feet.
- Timber products output from roundwood was up 36 million cubic feet, or 8 percent, to 492 million cubic feet, while output of plant byproducts remained stable at 167 million cubic feet.
- Output of softwood roundwood products increased 12 percent to 260 million cubic feet, while output of hardwood roundwood products increased 3 percent to more than 231 million cubic feet (fig. 2).
- Figures 3 and 4 display softwood and hardwood county-level intensity of roundwood production for all industrial products across Virginia. The data are depicted in cubic feet produced per acre of census land area. Counties with the highest production intensity are depicted in the darker shades. For softwoods the darkest shade represents more than 30 cubic feet of production per acre, while for hardwoods the darkest shade represents more than 18 cubic feet per acre.

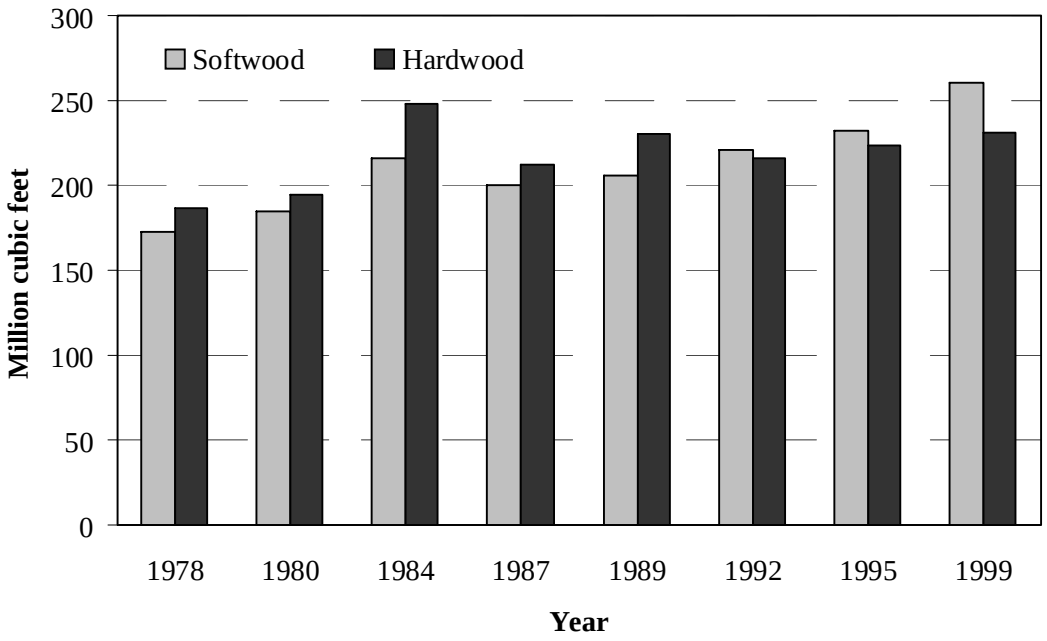


Figure 2—Roundwood production for all products by species group and year (see page 11 for references for individual years).

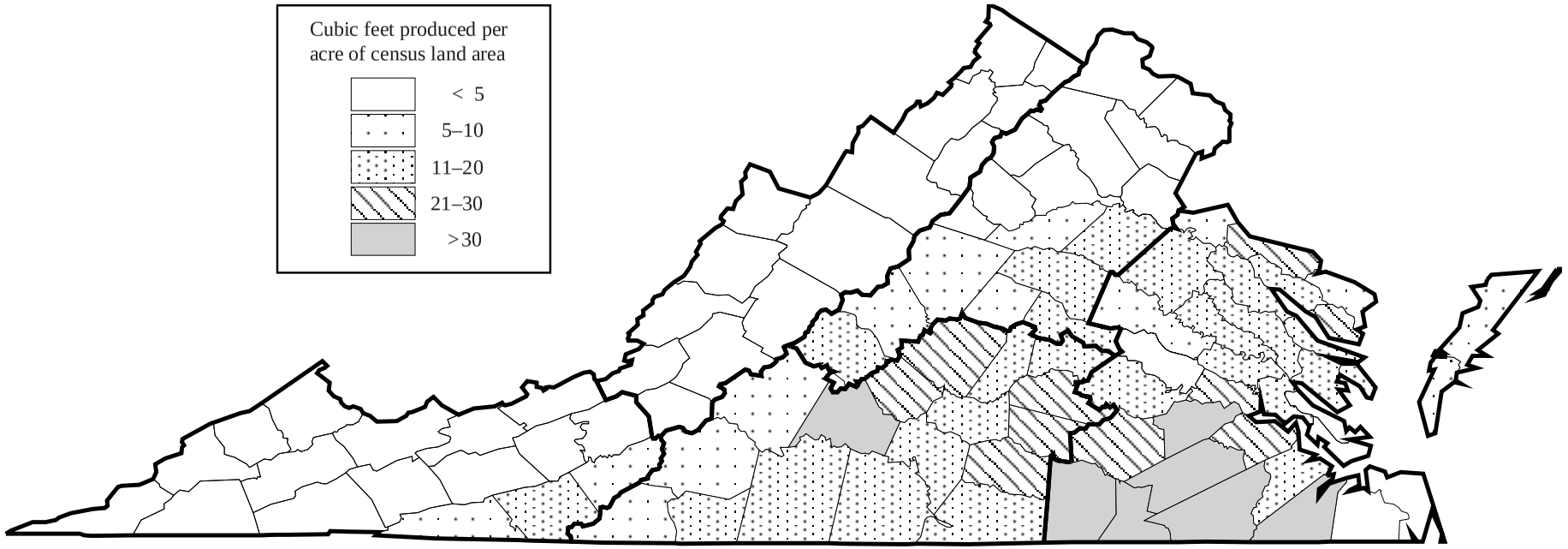


Figure 3—Intensity of roundwood softwood output for all industrial products in Virginia by county, 1999.

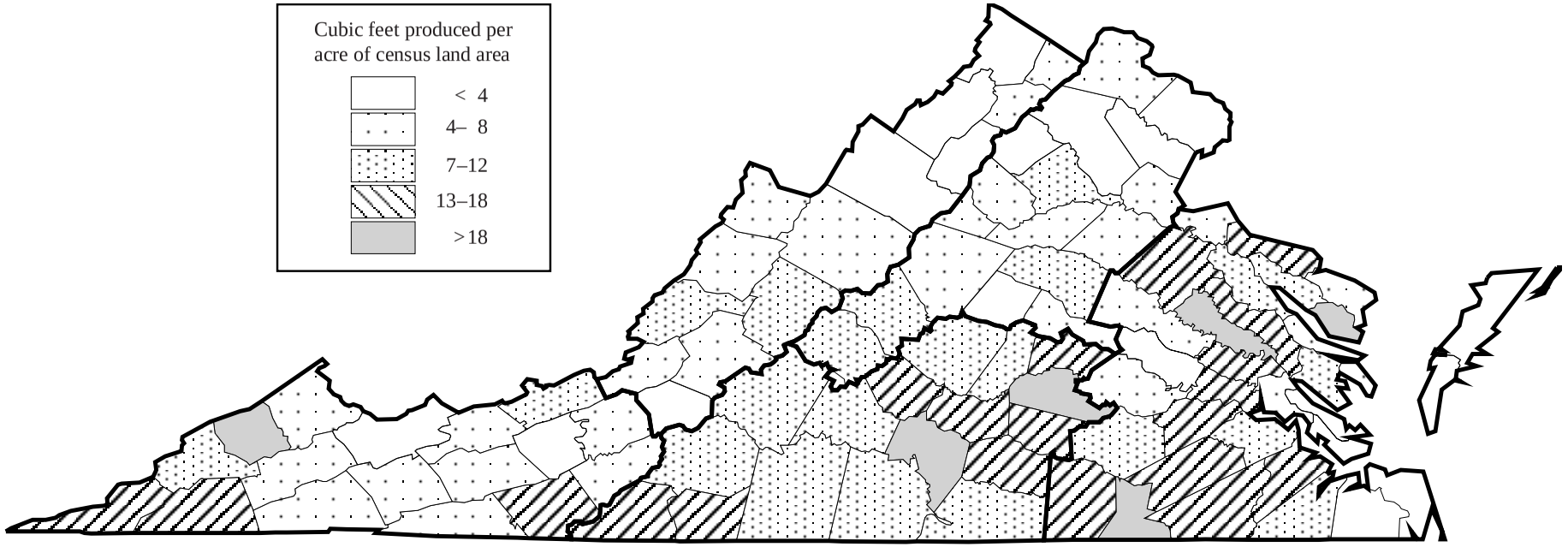


Figure 4—Intensity of roundwood hardwood output for all industrial products in Virginia by county, 1999.

- Saw logs and pulpwood were the principal roundwood products in 1999. Combined output of these two products totaled 421 million cubic feet and accounted for 86 percent of the State's total roundwood output (fig. 5).

- Total receipts at Virginia mills, which included roundwood harvested and retained in the State and roundwood imported from other States, increased 1 percent to 490 million cubic feet. At the same time, the number of primary roundwood-using plants in Virginia increased from 289 in 1995 to 290 in 1999.

Saw Logs

- Saw logs accounted for 50 percent of the State's total roundwood products. Output of softwood saw logs increased 23 percent to 115 million cubic feet (631 million board feet, International ¼-inch rule), while that of hardwood saw logs increased 10 percent to 131 million cubic feet (797 million board feet, International ¼-inch rule) (fig. 6).

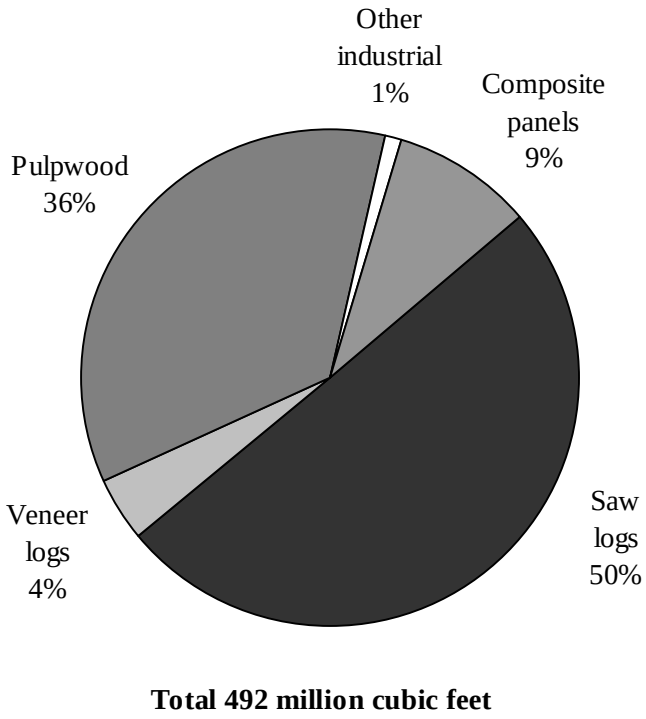


Figure 5—Roundwood production by type of product, 1999.

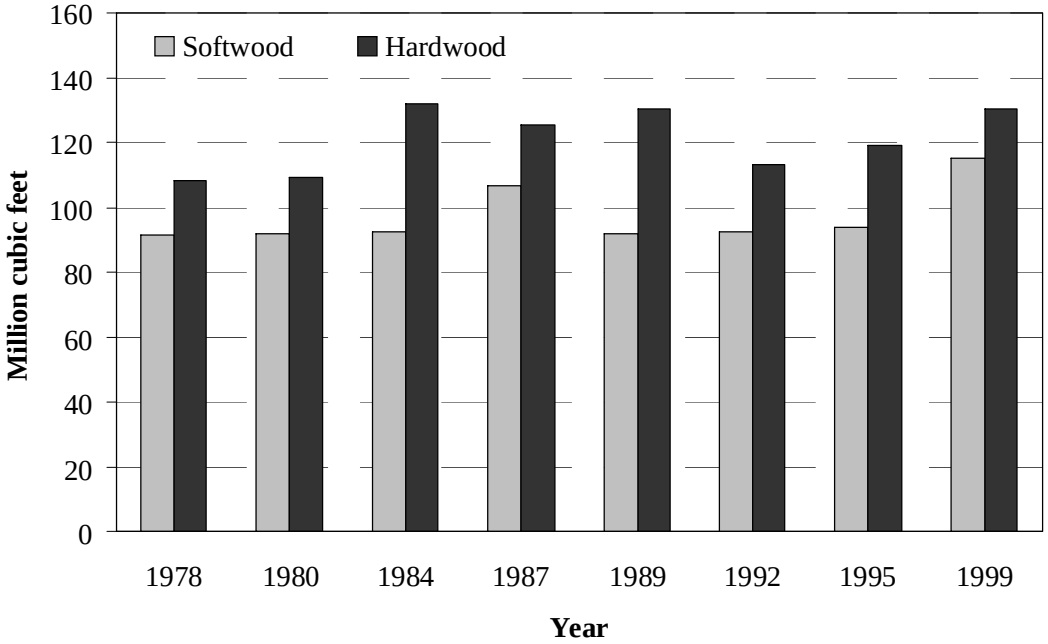


Figure 6—Roundwood saw-log production by species group and year (see page 11 for references for individual years).

- In 1999, Virginia had 254 sawmills, the same as in 1995. The total number of sawmills does not include several one-man sawmills not picked up in this survey. The total saw-log receipts increased 25 million cubic feet to 244 million cubic feet. Softwood saw-log receipts increased 16 percent to 115 million cubic feet, while hardwoods increased 7 percent to 129 million cubic feet. Of the 254 mills operating in 1999, 26 percent had receipts of less than 1 million board feet, while 37 percent, or 93 mills, had receipts greater than 5 million board feet.

- Virginia retained 90 percent of its saw-log production for domestic manufacture, with saw-log exports exceeding imports by 2 million cubic feet in 1999.

Pulpwood

- Pulpwood production, including chipped roundwood, decreased 26 million cubic feet to 175 million cubic feet and accounted for 36 percent of the State's total roundwood TPO. Softwood output decreased 14 percent to 98 million cubic feet (1.3 million cords), while hardwood output declined 12 percent to 78 million cubic feet (1.0 million cords) (fig. 7).

- Nine pulpmill facilities were operating and receiving roundwood in Virginia in 1999, the same as in 1995. Total pulpwood receipts for these mills decreased 40 million cubic feet to 174 million cubic feet, accounting for 36 percent of total receipts for all mills.

- Eighty-four percent of roundwood cut for pulpwood was retained for processing at Virginia pulpmills. Roundwood pulpwood accounted for 43 percent of total known exports and 42 percent of total imports. Roundwood pulpwood exports amounted to 28 million cubic feet, while imports amounted to 26 million cubic feet, making the State a net exporter of roundwood pulpwood.

Veneer Logs

- Output of veneer logs in 1999 totaled 20 million cubic feet and accounted for 4 percent of the State's total roundwood TPO volume. Softwood veneer-log production increased 6 percent to 14 million cubic feet (86 million board feet, International ¼-inch rule), while output of hardwood veneer-log production increased 88 percent to 6 million cubic feet (37 million board feet, International ¼-inch rule) (fig. 8).

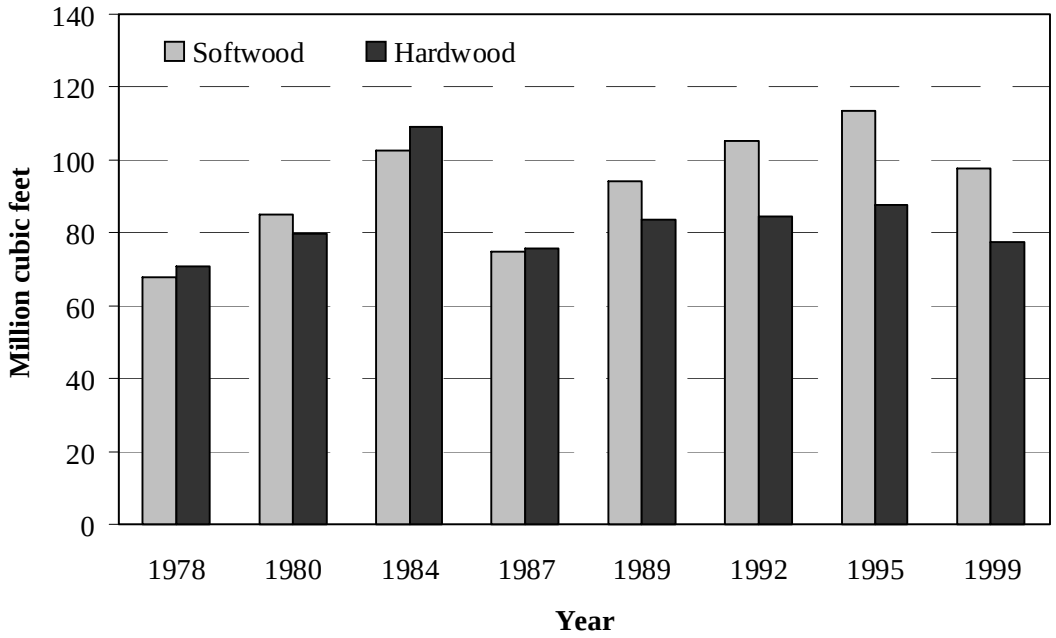


Figure 7—Roundwood pulpwood production by species group and year (see page 11 for references for individual years).

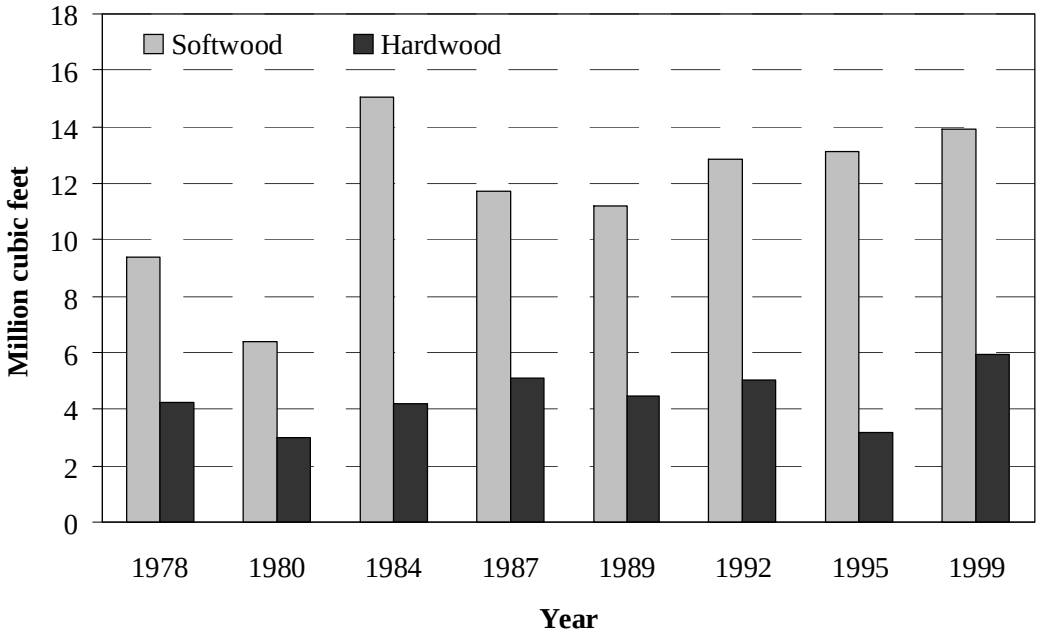


Figure 8—Roundwood veneer-log production by species group and year (see page 11 for references for individual years).

- The number of veneer mills operating in Virginia was down from eight to seven since 1995. Total receipts for veneer logs remained relatively stable at 19 million cubic feet.

- Virginia retained 73 percent of its veneer-log production for processing at domestic veneer mills. Imports amounted to 5 million cubic feet, while exports also totaled 5 million cubic feet.

Composite Panels

- Roundwood harvested from Virginia's forests for composite panels increased 113 percent and totaled 46 million cubic feet. Softwood output was up 208 percent to 31 million cubic feet (425 thousand cords), while hardwood production increased 28 percent to 15 million cubic feet (191 thousand cords) (fig. 9).

- The number of composite panel mills operating in Virginia increased from three to four. Total receipts for these mills were 47 million cubic feet, or about 10 percent of the State's total receipts.

- Eighty-nine percent of the roundwood production harvested for composite panels was retained for processing at Virginia's mills. Imports amounted to 6 million cubic feet, while exports totaled 5 million cubic feet, making the State a net importer of logs used for composite panels.

Other Industrial Products

- Roundwood harvested for other industrial uses such as poles, posts, mulch, firewood, logs for log homes, and all other industrial products totaled 5 million cubic feet and accounted for 1 percent of the State's total timber products output. Hardwood made up 51 percent of the other industrial product volume.

- The number of plants producing other industrial products increased from 15 to 16. Combined receipts of other industrial products from softwood and hardwood totaled 5 million cubic feet.

- Virginia was a net importer of roundwood used for other industrial products; all of the 651 thousand cubic feet imported was softwood.

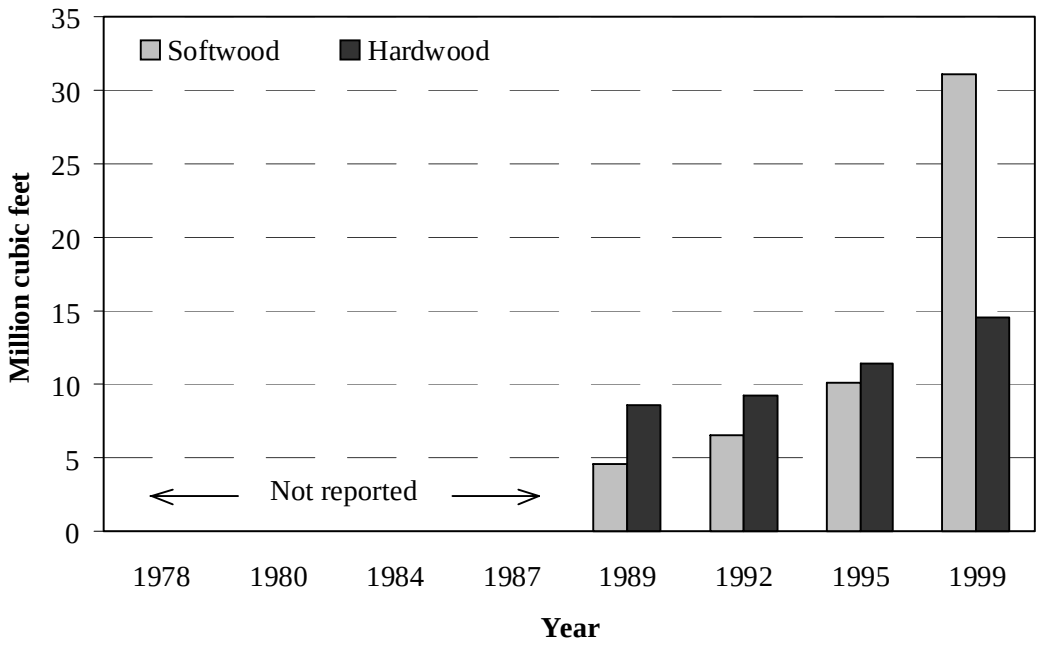


Figure 9—Roundwood production for composite panels by species group and year (see page 10 for references for individual years).

Plant Byproducts

- In 1999, processing of primary products in Virginia mills generated about 172 million cubic feet of wood and bark residues. Coarse residues from all primary products amounted to 71 million cubic feet, while bark volume totaled 43 million cubic feet. Collectively, sawdust and shavings made up 33 percent of total residues, or 57 million cubic feet (fig. 10).

- Virtually all the wood and bark residues were used for a product: about 3 percent were not used, while 37 percent of the residues were used for industrial fuel (fig. 11). Fifty-nine million cubic feet, or 82 percent, of the coarse residues were used for fiber products. Most of the bark was used for industrial fuel or other miscellaneous products, while 63 percent of the sawdust and shavings were used for industrial fuel.

- The processing of saw logs generated 139 million cubic feet of mill residues, accounting for 81 percent of the total residues produced (fig. 12).

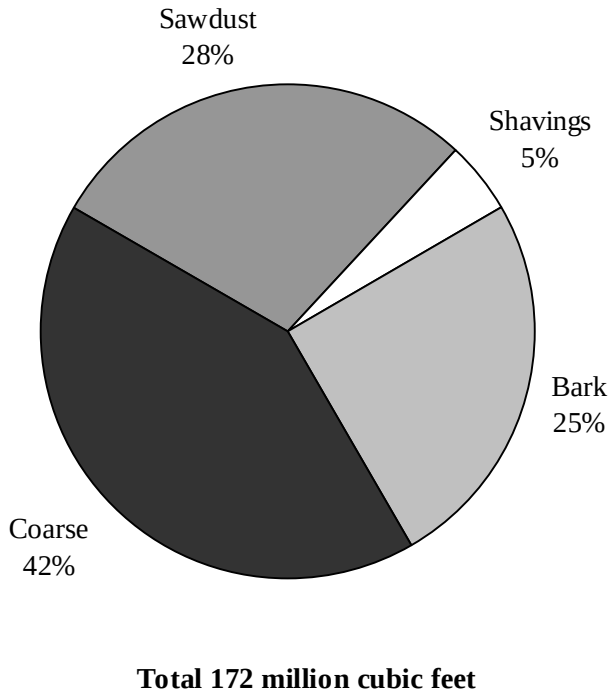
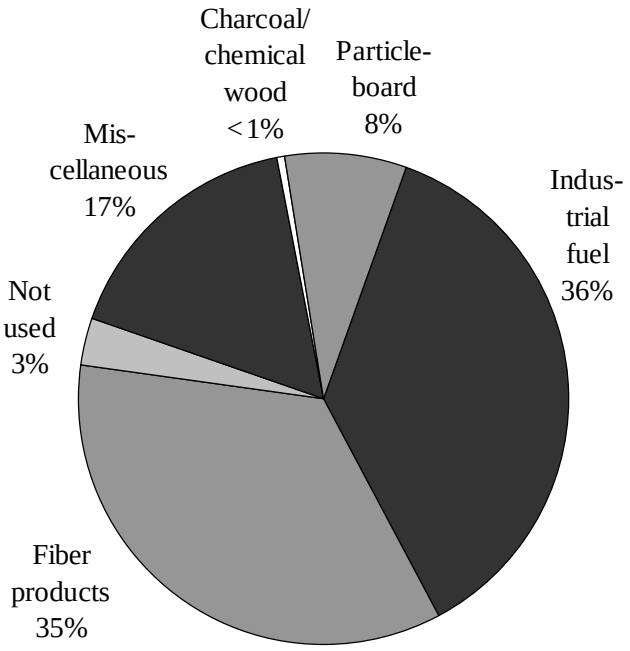
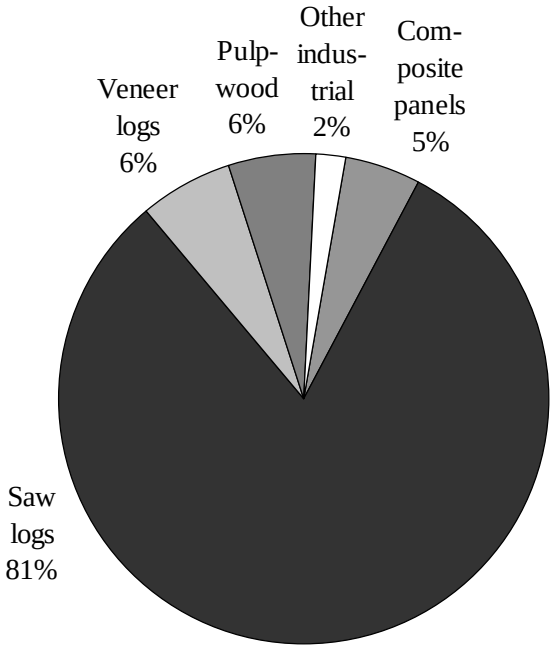


Figure 10—Primary mill residue by residue type, 1999.



Total 172 million cubic feet

Figure 11—Disposal of residue by product, 1999.



Total 172 million cubic feet

Figure 12—Primary mill residue produced by roundwood type, 1999.

Regional Trends

- Output of industrial roundwood products increased in all regions; the Southern Mountain and Southern Piedmont regions had the largest increases at 17 and 14 percent, respectively.

Coastal Plain Region

- Roundwood output from the Coastal Plain region totaled 196 million cubic feet, up 3 percent since 1995.

- Pulpwood accounted for 35 percent of the region's TPO and 40 percent of the State's roundwood pulpwood output. The 95 million cubic feet of saw logs accounted for 49 percent of the total roundwood output for the region.

- In the Coastal Plain region, 61 primary wood-using plants were operating during 1999, 1 more than in 1995: 47 sawmills, 5 pulpmills, 2 veneer or plywood mills, 1 composite panel mill, and 6 other miscellaneous mills. These mills processed 40 percent of the State's total roundwood output.

Southern Piedmont Region

- Roundwood output from the Southern Piedmont region totaled 163 million cubic feet, an increase of 14 percent.

- Saw-log production of 70 million cubic feet accounted for 43 percent of the region's total roundwood output. Production of pulpwood dropped to 68 million cubic feet and accounted for 42 percent of the region's total roundwood output.

- The 96 mills operating in the Southern Piedmont region in 1999 included 87 sawmills, 4 veneer or plywood mills, 2 pulpmills, 2 composite panel mills, and 1 other miscellaneous mill.

Northern Piedmont Region

- Roundwood output from the Northern Piedmont region totaled more than 50 million cubic feet, up 4 percent. Roundwood production from this region accounted for 10 percent of the total roundwood TPO for the State.

- Pulpwood production declined by 4 percent to 21 million cubic feet, accounting for 42 percent of the region's total TPO. Saw-log production of 26 million cubic feet accounted for another 51 percent of the region's total roundwood output.

- The 45 primary wood-using plants operating in the Northern Piedmont region included 38 sawmills, 1 pulpmill, and 6 other miscellaneous mills.

Northern Mountain Region

- Roundwood output from the Northern Mountain region totaled 28 million cubic feet, about the same as in 1995.

- Saw-log production remained stable at 16 million cubic feet, accounting for 59 percent of the region's total roundwood output. Production of pulpwood remained stable at 11 million cubic feet and accounted for 39 percent of the region's total roundwood output.

- In the Northern Mountain region, 36 primary wood-using plants were operating during 1999: 31 sawmills, 1 veneer mill, 1 pulpmill, and 3 other miscellaneous mills.

Southern Mountain Region

- Roundwood output from the Southern Mountain region totaled 54 million cubic feet, an increase of 17 percent.

- Saw-log production increased 27 percent to 39 million cubic feet and accounted for 72 percent of the region's total roundwood output. Pulpwood production was down 34 percent and accounted for 11 percent of the region's total TPO.

- In the Southern Mountain region, 52 primary wood-using plants were operating during 1999: 51 sawmills and 1 composite panel mill.

Total Roundwood Output

Using the most recent inventory data for Virginia, product output by source, ownership, and detailed species group was estimated.

Source

- In addition to the 492 million cubic feet of roundwood output for industrial roundwood, an estimated 54 million cubic feet was harvested for domestic fuelwood, bringing Virginia's total roundwood output to 546 million cubic feet.

- An estimated 93 percent of total roundwood output was considered growing-stock volume (sawtimber and poletimber) from timberland sources. Other sources (such as saplings; stumps, tops, and limbs of trees on timberland; and trees on nonforest land) contributed an estimated 41 million cubic feet, or 7 percent of total roundwood output (fig. 13).

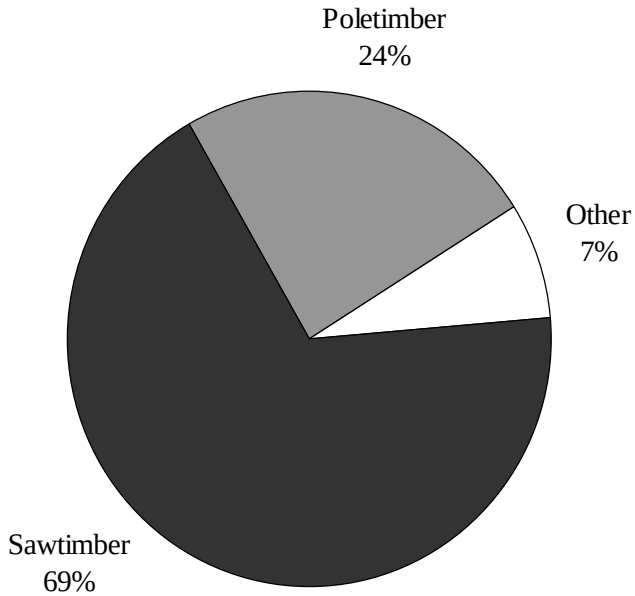


Figure 13—Roundwood output by source, 1999.

Ownership

- An estimated 394 million cubic feet, or 72 percent, of the total roundwood output came from nonindustrial private forest (NIPF) lands. Forest industry lands contributed 119 million cubic feet, or 22 percent of the output. Public lands made up the remaining 6 percent, or 32 million cubic feet (fig. 14).

Species

- The loblolly and shortleaf pine group provided the most volume of any softwood species group, accounting for 68 percent of the total softwood output. The other yellow pine types accounted for 27 percent of the softwood output (fig. 15). In hardwoods, the red oak and white oak groups combined accounted for 132 million cubic feet, or 47 percent of total hardwood output (fig. 16).

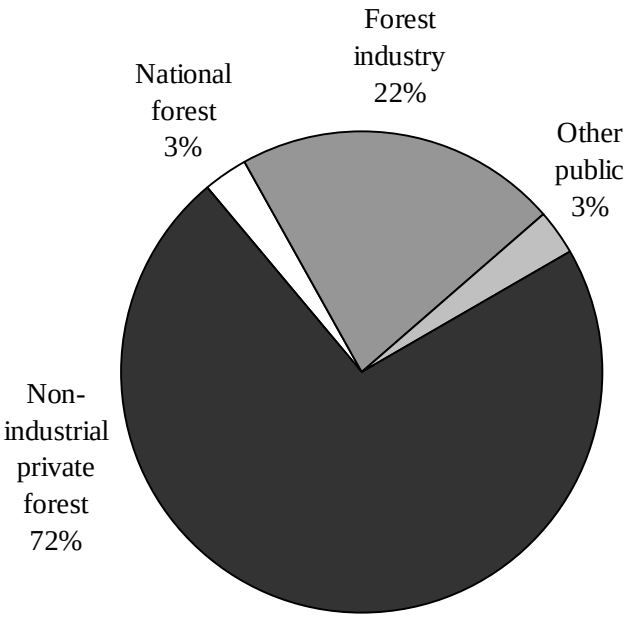


Figure 14—Roundwood output by ownership, 1999.

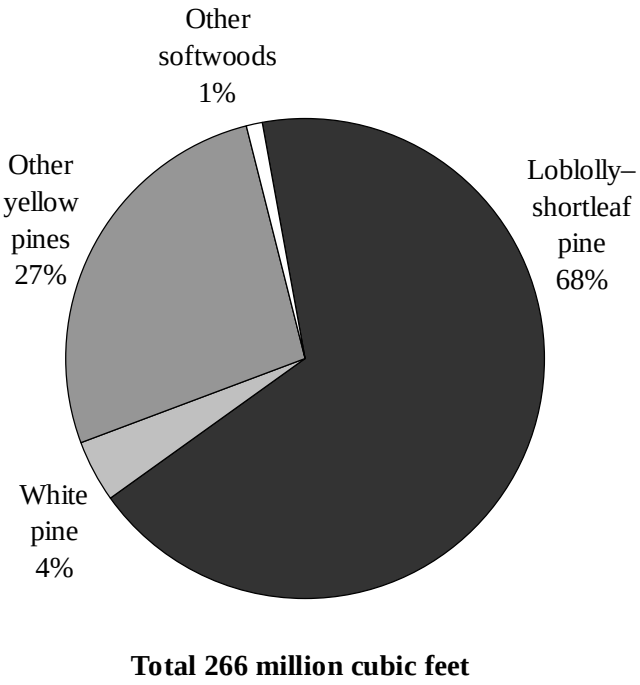


Figure 15—Roundwood output by softwood species group, 1999.

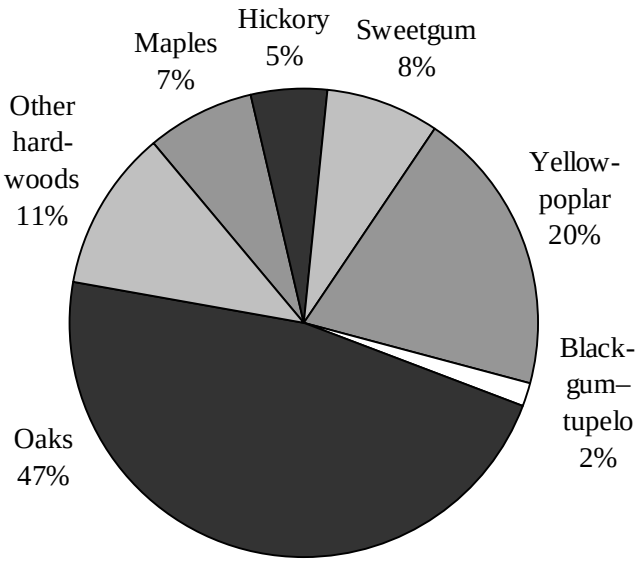


Figure 16—Roundwood output by hardwood species group, 1999.

References

Hutchins, Cecil C., Jr. 1992. Changes in output of industrial timber products in Virginia, 1987-1989. Resour. Bull. SE-129. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 18 p. [1987, 1989].

Johnson, Tony G. 1994. Virginia's timber industry—an assessment of timber product output and use, 1992. Resour. Bull. SE-145. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 32 p. [1992].

Johnson, Tony G.; Jenkins, Anne; Scrivani, John A.: Foreman, J. Michael. 1997. Virginia's timber industry—an assessment of timber product output and use, 1995. Resour. Bull. SRS-19. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 37 p. [1995].

U.S. Department of Agriculture, Forest Service. Product drain by county, product, and species. 6 p. Unpublished data. On file with: Southern Research Station, USDA Forest Service, Forest Inventory and Analysis Research Work Unit, 4700 Old Kingston Pike, Knoxville, TN 37919. [1980, 1984].

Welch, Richard L.; Bellamy, Thomas R. 1980. Changes in output of industrial timber products in Virginia, 1976-1978. Resour. Bull. SE-54. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 21 p. [1978].

Definition of Terms

Board foot. Unit of measure applied to roundwood. It relates to lumber that is 1-foot long, 1-foot wide, and 1-inch thick (or its equivalent).

Byproducts. Primary wood products, e.g., pulp chips, animal bedding, fuelwood, recycled from mill residues**.**

Composite products. Roundwood products manufactured into chips, wafers, strands, flakes, shavings, or sawdust and then reconstituted into a variety of panel and engineered lumber products.

Consumption. The quantity of a commodity, such as pulpwood, utilized by a particular mill or group of mills.

Drain. The volume of roundwood removed from any geographic area where timber is grown.

Exports. The volume of roundwood utilized by mills outside the State where timber was cut.

Fiber products. Byproducts used in the manufacture of pulp, paper, paperboard, and composite products, such as waferboard or chipboard.

Fuelwood production. The volume of roundwood harvested to produce some form of energy, e.g., heat, steam, in residential, industrial, or institutional settings.

Growing-stock removals. The growing-stock volume removed from poletimber and sawtimber trees in the timberland inventory. (Note: Includes volume removed for roundwood products, logging residues, and other removals.)

Growing-stock trees. Living trees of commercial species classified as sawtimber, poletimber, saplings, and seedlings. Growing-stock trees must contain at least one 12-foot or two 8-foot logs in the saw-log portion, currently or potentially (if too small to qualify). The log(s) must meet dimension and merchantability standards and have, currently or potentially, one-third of the gross board-foot volume in sound wood.

Growing-stock volume. The cubic-foot volume of sound wood in growing-stock trees at least 5.0 inches d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem.

Hardwoods. Dicotyledonous trees, usually broadleaf and deciduous.

Soft hardwoods. Hardwood species with an average specific gravity of 0.50 or less, such as gums, yellow-poplar, cottonwoods, red maple, basswoods, and willows.

Hard hardwoods. Hardwood species with an average specific gravity greater than 0.50, such as oaks, hard maples, hickories, and beech.

Imports. The volume of roundwood delivered to a mill or group of mills in a specific State but harvested outside that State.

Industrial fuelwood. A roundwood product, with or without bark, used to generate energy at a manufacturing facility such as a wood-using mill.

Industrial roundwood products. Any primary use of the main stem of a tree, such as saw logs, pulpwood, veneer logs, intended to be processed into primary wood products such as lumber, wood pulp, sheathing, at primary wood-using mills.

International ¼-inch rule. A log rule or formula for estimating the board-foot volume of logs, allowing ½-inch of taper for each 4-foot length. The rule appears in a number of forms that allow for kerf. In the form used by FIA, a ¼-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Log. A primary forest product harvested in long, primarily 8-, 12-, and 16-foot lengths.

Logging residues. The unused merchantable portion of growing-stock trees cut or destroyed during logging operations.

Merchantable portion. That portion of live trees 5.0 inches d.b.h. and larger between a 1-foot stump and a minimum 4.0-inch top d.o.b. on the central stem. That portion of primary forks from the point of occurrence to a minimum 4.0-inch top d.o.b. is included.

Merchantable volume. Solid-wood volume in the merchantable portion of live trees.

Noncommercial species. Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Nonforest land. Land that has never supported forests and land formerly forested where timber production is precluded by development for other uses.

Nongrowing-stock sources. The net volume removed from the nongrowing-stock portions of poletimber and sawtimber trees (stumps, tops, limbs, cull sections of central stem) and from any portion of a rough, rotten, sapling, dead, or nonforest tree.

Other forest land. Forest land other than timberland and productive reserved forest land. It includes available and reserved forest land that is incapable of producing annually 20 cubic feet per acre of industrial wood under natural conditions because of adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness.

Other products. A miscellaneous category of roundwood products, e.g., cooperage, excelsior, shingles, and mill residue byproducts (charcoal, bedding, mulch, etc.).

Other removals. The growing-stock volume of trees removed from the inventory by cultural operations such as timber stand improvement, land clearing, and other changes in land use, resulting in the removal of the trees from timberland.

Other sources. (see: Nongrowing-stock sources.)

Ownership. The property owned by one ownership unit, including all parcels of land in the United States.

National forest land. Federal land that has been legally designated as national forests or purchase units, and other land under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III land.

Forest industry land. Land owned by companies or individuals operating primary wood-using plants.

Nonindustrial private forest (NIPF) land. Privately owned land excluding forest industry land.

Corporate. Owned by corporations, including incorporated farm ownerships.

Individual. All lands owned by individuals, including farm operators.

Other public. An ownership class that includes all public lands except national forests.

Miscellaneous Federal land. Federal land other than national forests.

State, county, and municipal land. Land owned by States, counties, and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Plant residues. Wood material generated in the production of timber products at primary manufacturing plants.

Coarse residues. Material, such as slabs, edgings, trim, veneer cores and ends, which is suitable for chipping.

Fine residues. Material, such as sawdust, shavings, and veneer chippings, which is not suitable for chipping.

Plant byproducts. Residues (coarse or fine) used in the further manufacture of industrial products for consumer use or as fuel.

Unused plant residues. Residues (coarse or fine) that are not used for any product, including fuel.

Posts, poles, and pilings. Roundwood products milled (cut or peeled) into standard sizes (lengths and circumferences) to be put in the ground to provide vertical and lateral support in buildings, foundations, utility lines, and fences. May also include nonindustrial (unmilled) products.

Poletimber-size trees. Softwoods 5.0 to 8.9 inches d.b.h. and hardwoods 5.0 to 10.9 inches d.b.h.

Primary wood-using plants. Industries that convert roundwood products (saw logs, veneer logs, pulpwood, etc.) into primary wood products, such as lumber, veneer or sheathing, wood pulp.

Production. The total volume of roundwood harvested from land within a State, regardless of where it is consumed. Production is the sum of timber harvested and used within a State, and all roundwood exported to other States.

Pulpwood. A roundwood product that will be reduced to individual wood fibers by chemical or mechanical means. The fibers are used to make a broad generic group of pulp products that includes paper products, as well as chipboard, fiberboard, insulating board, and paperboard.

Receipts. The quantity or volume of industrial roundwood received at a mill or by a group of mills in a State, regardless of the geographic source. Volume of roundwood receipts is equal to the volume of roundwood retained in a State plus roundwood imported from other States.

Retained. Roundwood volume harvested from and processed by mills within the same State.

Rotten trees. Live trees of commercial species not containing at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross board-foot tree volume in sound material.

Rough trees. Live trees of commercial species not containing at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross board-foot tree volume in sound material; and live trees of noncommercial species.

Roundwood (roundwood logs). Logs, bolts, or other round sections cut from trees for industrial manufacture or consumer uses.

Roundwood chipped. Any timber cut primarily for industrial manufacture, delivered to nonpulpmills, chipped, and then sold to pulpmills for use as fiber. Includes tops, jump sections, whole trees, and pulpwood sticks.

Roundwood products. Any primary product, such as lumber, poles, pilings, pulp, or fuelwood that is produced from roundwood.

Roundwood product drain. That portion of total drain used for a product.

Salvable dead trees. Standing or downed dead trees that were formerly growing stock and considered merchantable. Trees must be at least 5.0 inches d.b.h. to qualify.

Saplings. Live trees 1.0 to 5.0 inches d.b.h.

Saw log. A roundwood product, usually 8 feet in length or longer, processed into a variety of sawn products such as lumber, cants, pallets, railroad ties, and timbers.

Saw-log portion. The part of the bole of sawtimber trees between a 1-foot stump and the saw-log top.

Saw-log top. The point on the bole of sawtimber trees above which a conventional saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber-size trees. Softwoods 9.0 inches d.b.h. and larger and hardwoods 11.0 inches d.b.h. and larger.

Sawtimber volume. Growing-stock volume in the saw-log portion of sawtimber-sized trees in board feet (International ¼-inch rule).

Seedlings. Trees less than 1.0 inch d.b.h. and greater than 1 foot tall for hardwoods, greater than 6 inches tall for softwood, and greater than 0.5 inch in diameter at ground level for longleaf pine.

Select red oaks. A group of several red oak species composed of cherrybark, Shumard, and northern red oaks. Other red oak species are included in the other red oaks group.

Select white oaks. A group of several white oak species composed of white, swamp chestnut, swamp white, chinkapin, Durand, and bur oaks. Other white oak species are included in the other white oaks group.

Softwoods. Coniferous trees, usually evergreen, having leaves that are needles or scalelike.

Standard cord. A unit of measure applied to roundwood, usually bolts or split wood. It is a stack of wood 4 feet high, 4 feet wide, and 8 feet long encompassing 128 cubic feet of wood, bark, and air space. This usually translates to approximately 75.0 to 81.0 cubic feet of solid wood for pulpwood, because pulpwood is more uniform.

Standard unit. A unit measure applied to roundwood timber products. Board feet (International ¼ rule) is the standard unit used for saw logs and veneer; cords are used for pulpwood, composite panel, and fuelwood; hundred pieces for poles; thousand pieces for posts; and thousand cubic feet for all other miscellaneous forest products.

Timberland. Forest land capable of producing 20 cubic feet of industrial wood per acre per year and not withdrawn from timber utilization.

Timber products. Roundwood products and byproducts.

Timber products output. The total volume of roundwood products from all sources plus the volume of byproducts

recovered from mill residues (equals roundwood product drain).

Timber removals. The total volume of trees removed from the timberland inventory by harvesting, cultural operations such as stand improvement, land clearing, or changes in land use. (Note: Includes roundwood products, logging residues, and other removals.)

Tree. Woody plants having one erect perennial stem or trunk at least 3 inches d.b.h., a more or less definitely formed crown of foliage, and a height of at least 13 feet (at maturity).

Upper-stem portion. The part of the main stem of sawtimber trees above the saw-log top and the minimum top diameter of 4.0 inches outside bark, or to the point where the main stem breaks into limbs.

Utilization studies. Studies conducted on active logging operations to develop factors for merchantable portions of trees left in the woods (logging residues), logging damage, and utilization of the unmerchantable portion of growing-stock trees and nongrowing stock trees.

Veneer log. A roundwood product either rotary cut, sliced, stamped, or sawn into a variety of veneer products such as plywood, finished panels, veneer sheets, or sheathing.

Weight. A unit of measure for mill residues, expressed as oven-dry tons (2,000 oven-dry pounds).

Conversion Factors[a]

Saw logs	
Softwood	0.18282 cubic foot = 1 board foot 5.47 board feet = 1 cubic foot
Hardwood	0.16393 cubic foot = 1 board foot 6.10 board feet = 1 cubic foot
Veneer logs	
Softwood	0.16129 cubic foot = 1 board foot 6.20 board feet = 1 cubic foot
Hardwood	0.16000 cubic foot = 1 board foot 6.25 board feet = 1 cubic foot
Pulpwood[b]	
Softwood	73.3 cubic feet per cord
Hardwood	76.1 cubic feet per cord

[a] Conversion factors vary with stem size (d.b.h.) and species. The factors shown are for trees of average diameters removed in Virginia during the most recent survey period.

[b] Cubic feet of solid wood per cord.

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Table 1—Output of industrial products by product and species group, Virginia, 1995 and 1999

Product and species group	Year 1995	Year 1999	Change	Percent change
	Thousand cubic feet			
Saw logs				
Softwood	93,769	115,299	21,530	23.0
Hardwood	119,000	130,578	11,578	9.7
Total	212,769	245,877	33,108	15.6
Veneer logs				
Softwood	13,134	13,947	813	6.2
Hardwood	3,163	5,947	2,784	88.0
Total	16,297	19,894	3,597	22.1
Pulpwood[a]				
Softwood	113,741	97,664	-16,077	-14.1
Hardwood	87,624	77,536	-10,088	-11.5
Total	201,365	175,200	-26,165	-13.0
Composite panels				
Softwood	10,089	31,106	21,017	208.3
Hardwood	11,373	14,552	3,179	28.0
Total	21,462	45,658	24,196	112.7
Other industrial				
Softwood	1,229	2,411	1,182	96.2
Hardwood	2,498	2,521	23	0.9
Total	3,727	4,932	1,205	32.3
All industrial				
Softwood	231,962	260,427	28,465	12.3
Hardwood	223,658	231,134	7,476	3.3
Total	455,620	491,561	35,941	7.9
Byproduct output				
Softwood	79,284	83,392	4,108	5.2
Hardwood	87,420	83,132	-4,288	-4.9
Total	166,704	166,524	-180	-0.1
Total output				
Softwood	311,246	343,819	32,573	10.5
Hardwood	311,078	314,266	3,188	1.0
Total	622,324	658,085	35,761	5.7

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (4,476,000 cubic feet in 1995 and 3,693,000 cubic feet in 1999).

Table 2—Roundwood receipts by product and species group, Virginia, 1995 and 1999

Product and species group	Year 1995	Year 1999	Change	Percent change
	Thousand cubic feet			
Saw logs				
Softwood	99,785	115,492	15,707	15.7
Hardwood	119,993	128,833	8,840	7.4
Total	219,778	244,325	24,547	11.2
Veneer logs				
Softwood	16,567	17,294	727	4.4
Hardwood	2,260	2,054	-206	-9.1
Total	18,827	19,348	521	2.8
Pulpwood[a]				
Softwood	106,437	86,628	-19,809	-18.6
Hardwood	107,753	87,311	-20,442	-19.0
Total	214,190	173,939	-40,251	-18.8
Composite panels				
Softwood	12,274	32,569	20,295	165.3
Hardwood	15,139	14,078	-1,061	-7.0
Total	27,413	46,647	19,234	70.2
Other industrial				
Softwood	1,851	2,940	1,089	58.8
Hardwood	2,498	2,521	23	0.9
Total	4,349	5,461	1,112	25.6
Total output				
Softwood	236,914	254,923	18,009	7.6
Hardwood	247,643	234,797	-12,846	-5.2
Total	484,557	489,720	5,163	1.1

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (4,629,000 cubic feet in 1995 and 4,283,000 cubic feet in 1999).

Table 3—Number of primary wood-using plants by industry, Virginia, 1976–1999

Industry	Year								
	1976	1978	1980	1984	1987	1989	1992	1995	1999
Sawmills	451	324	392	419	355	323	276	254	254
Veneer or plywood mills	10	12	12	12	10	10	9	8	7
Pulpmills	9	8	9	9	9	9	9	9	9
Composite panel mills	0	0	0	0	1	3	3	3	4
Other mills	15	18	24	22	19	24	14	15	16
All plants	485	362	437	462	394	369	311	289	290

Table 4—Roundwood receipts by sawmill size, Virginia, 1995 and 1999

Sawmill size class[a]	1995			1999		
	Number of mills	Thousand board feet	Percent of volume	Number of mills	Thousand board feet	Percent of volume
Million board feet						
< 1.0	64	22,357	2	67	22,697	2
1.0 - 4.99	106	295,647	23	94	265,231	19
5.0 - 9.99	57	393,473	31	55	369,991	26
> 10	27	565,493	44	38	758,791	53
Total	254	1,276,970	100	254	1,416,710	100

[a] Based on volume received as opposed to actual capacity.

Table 5—Roundwood receipts by species and type of mill, Virginia, 1999

Species	All mills	Type of mill					
			Veneer mills		OSB[a] and panels	Pulpmills[b]	Other mills
		Sawmills	Pine plywood	Other veneer			
	Thousand cubic feet						
Softwood							
Yellow pine	155,248	102,635	17,079	212	32,382	NA	2,940
White pine	9,105	8,918	0	0	187	NA	0
Cedar	3	0	0	3	0	NA	0
Cypress	405	405	0	0	0	NA	0
Other softwood	3,534	3,534	0	0	0	NA	0
Unclassified	86,628	0	0	0	0	86,628	0
Total softwoods	254,923	115,492	17,079	215	32,569	86,628	2,940
Hardwood							
Blackgum and tupelo	855	670	0	3	182	NA	0
Soft maple	4,191	3,420	0	3	768	NA	0
Sweetgum	3,233	3,077	0	0	156	NA	0
Yellow-poplar	40,606	35,189	0	668	4,749	NA	0
Other soft hardwood	19,400	11,177	0	0	8,223	NA	0
Hickory	3,095	3,080	0	14	0	NA	1
Red oak	35,722	35,373	0	303	0	NA	46
White oak	21,508	21,152	0	316	0	NA	40
Other hard hardwood	18,876	15,695	0	747	0	NA	2,434
Unclassified	87,311	0	0	0	0	87,311	0
Total hardwoods	234,797	128,833	0	2,054	14,078	87,311	2,521
All species	489,720	244,325	17,079	2,269	46,647	173,939	5,461

NA = not applicable.

[a] OSB = oriented strand board.

[b] Collected only by softwood and hardwood and includes roundwood chipped.

Table 6—Industrial roundwood movement by year and species group, Virginia, 1995 and 1999

Year	Production	Exported to other States	Retained	Imported from other States	Receipts
	Thousand cubic feet				
			Softwood		
1995	231,962	31,340	200,622	36,292	236,914
1999	260,427	34,992	225,435	29,488	254,923
			Hardwood		
1995	223,658	26,963	196,695	50,948	247,643
1999	231,134	29,210	201,924	32,873	234,797
			All species		
1995	455,620	58,303	397,317	87,240	484,557
1999	491,561	64,202	427,359	62,361	489,720

Table 7—Industrial roundwood movement by product and species group, Virginia, 1999

Product and species group	Production	Exported to other States	Retained	Imported from other States	Receipts
			Thousand cubic feet		
Saw logs					
Softwood	115,299	14,360	100,939	14,553	115,492
Hardwood	130,578	11,287	119,291	9,542	128,833
Total	245,877	25,647	220,230	24,095	244,325
Veneer logs					
Softwood	13,947	287	13,660	3,634	17,294
Hardwood	5,947	5,155	792	1,262	2,054
Total	19,894	5,442	14,452	4,896	19,348
Pulpwood[a]					
Softwood	97,664	17,491	80,173	6,455	86,628
Hardwood	77,536	10,255	67,281	20,030	87,311
Total	175,200	27,746	147,454	26,485	173,939
Composite panels					
Softwood	31,106	2,732	28,374	4,195	32,569
Hardwood	14,552	2,513	12,039	2,039	14,078
Total	45,658	5,245	40,413	6,234	46,647
Other industrial					
Softwood	2,411	122	2,289	651	2,940
Hardwood	2,521	0	2,521	0	2,521
Total	4,932	122	4,810	651	5,461
All products					
Softwood	260,427	34,992	225,435	29,488	254,923
Hardwood	231,134	29,210	201,924	32,873	234,797
Total	491,561	64,202	427,359	62,361	489,720

[a] Includes roundwood chipped.

Table 8—Saw-log volume by destination, source, and species group, Virginia, 1999

Destination and source	All species	Species group	
		Softwood	Hardwood
	Thousand cubic feet		
Virginia (retained)	220,230	100,939	119,291
Exports to:			
Kentucky	138	0	138
North Carolina	19,506	13,482	6,024
Tennessee	4,503	779	3,724
West Virginia	1,500	99	1,401
Total	25,647	14,360	11,287
Imports from:			
Kentucky	587	0	587
Maryland	369	13	356
North Carolina	20,279	14,514	5,765
Pennsylvania	40	16	24
Tennessee	1,104	1	1,103
West Virginia	1,716	9	1,707
Total	24,095	14,553	9,542

Table 9—Veneer volume by destination, source, and species group, Virginia, 1999

Destination and source	All species	Species group	
		Softwood	Hardwood
	Thousand cubic feet		
Virginia (retained)	14,452	13,660	792
Exports to:			
Georgia	1,862	84	1,778
Kentucky	275	0	275
North Carolina	3,000	203	2,797
South Carolina	34	0	34
West Virginia	271	0	271
Total	5,442	287	5,155
Imports from:			
Foreign	2	0	2
Indiana	104	2	102
Kentucky	150	0	150
Maine	48	0	48
Maryland	8	0	8
Michigan	41	0	41
New Hampshire	19	0	19
New York	21	0	21
North Carolina	3,648	3,626	22
Ohio	83	0	83
Pennsylvania	304	0	304
South Carolina	9	6	3
Tennessee	231	0	231
West Virginia	223	0	223
Wisconsin	5	0	5
Total	4,896	3,634	1,262

Table 10—Pulpwood volume by destination, source, and species group, Virginia, 1999[a]

Destination and source	All species	Species group	
		Softwood	Hardwood
	Thousand cubic feet		
Virginia (retained)	147,454	80,173	67,281
Exports to:			
Florida	5	5	0
Kentucky	1,136	0	1,136
Maryland	5,024	3,375	1,649
North Carolina	16,030	11,562	4,468
Pennsylvania	3,346	2,537	809
South Carolina	344	0	344
Tennessee	1,861	12	1,849
Total	27,746	17,491	10,255
Imports from:			
Delaware	344	242	102
Georgia	9	1	8
Maryland	5,180	3,629	1,551
North Carolina	9,516	2,213	7,303
West Virginia	11,436	370	11,066
Total	26,485	6,455	20,030

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills.

Table 11—Composite panel volume by destination, source, and species group, Virginia, 1999

Destination and source	All species	Species group	
		Softwood	Hardwood
	Thousand cubic feet		
Virginia (retained)	40,413	28,374	12,039
Exports to:			
North Carolina	5,245	2,732	2,513
Total	5,245	2,732	2,513
Imports from:			
Kentucky	1,043	71	972
North Carolina	4,604	4,084	520
Tennessee	587	40	547
Total	6,234	4,195	2,039

Table 12—Other industrial volume by destination, source, and species group, Virginia, 1999[a]

Destination and source	All species	Species group	
		Softwood	Hardwood
	Thousand cubic feet		
Virginia (retained)	4,810	2,289	2,521
Exports to:			
Kentucky	87	87	0
West Virginia	35	35	0
Total	122	122	0
Imports from:			
Alabama	144	144	0
Georgia	72	72	0
North Carolina	435	435	0
Total	651	651	0

[a] Includes poles, posts, mulch, firewood, log homes, charcoal, and all other industrial mills.

Table 13—Primary mill residue volume by roundwood type, species group, and residue type, Virginia, 1999

Roundwood type and species group	All types	Residue type			
		Bark	Coarse	Sawdust	Shavings
		Thousand cubic feet			
Saw logs					
Softwood	63,377	7,701	27,530	20,343	7,803
Hardwood	75,927	13,426	36,101	25,980	420
Total	139,304	21,127	63,631	46,323	8,223
Veneer logs					
Softwood	9,754	1,310	6,273	2,171	0
Hardwood	755	219	354	182	0
Total	10,509	1,529	6,627	2,353	0
Pulpwood					
Softwood	4,463	4,463	0	0	0
Hardwood	5,517	5,517	0	0	0
Total	9,980	9,980	0	0	0
Composite panels					
Softwood	5,348	5,348	0	0	0
Hardwood	3,162	3,162	0	0	0
Total	8,510	8,510	0	0	0
Other industrial[a]					
Softwood	1,956	1,651	305	0	0
Hardwood	1,511	376	830	305	0
Total	3,467	2,027	1,135	305	0
Total					
Softwood	84,898	20,473	34,108	22,514	7,803
Hardwood	86,872	22,700	37,285	26,467	420
Total	171,770	43,173	71,393	48,981	8,223

[a] Includes poles, pilings, posts, and other industrial products.

Table 14—Disposal of residue at primary wood-using plants by product, species group, and type of residue, Virginia, 1995 and 1999

Product and species group	All types		Bark		Coarse		Sawdust		Shavings	
	1995	1999	1995	1999	1995	1999	1995	1999	1995	1999
	Thousand cubic feet									
Fiber products										
Softwood	29,240	31,532	0	0	29,228	31,028	12	12	0	492
Hardwood	27,887	28,460	0	0	27,162	27,810	725	650	0	0
Total	57,127	59,992	0	0	56,390	58,838	737	662	0	492
Particleboard										
Softwood	8,759	9,523	0	0	747	442	4,487	5,154	3,525	3,927
Hardwood	2,688	4,376	0	0	1,593	3,284	1,016	1,036	79	56
Total	11,447	13,899	0	0	2,340	3,726	5,503	6,190	3,604	3,983
Charcoal/chemical wood										
Softwood	141	70	0	0	41	0	94	70	6	0
Hardwood	618	722	27	27	534	396	49	299	8	0
Total	759	792	27	27	575	396	143	369	14	0
Sawn products										
Softwood	0	0	0	0	0	0	0	0	0	0
Hardwood	4	0	0	0	4	0	0	0	0	0
Total	4	0	0	0	4	0	0	0	0	0
Fuel										
Softwood	29,529	31,375	13,005	13,179	2,200	1,949	13,318	14,726	1,006	1,521
Hardwood	39,645	31,768	16,976	9,497	4,632	2,506	17,815	19,525	222	240
Total	69,174	63,143	29,981	22,676	6,832	4,455	31,133	34,251	1,228	1,761
Miscellaneous										
Softwood	11,615	10,892	8,527	6,322	72	381	1,420	2,326	1,596	1,863
Hardwood	16,578	17,806	11,986	11,915	1,247	2,474	3,217	3,293	128	124
Total	28,193	28,698	20,513	18,237	1,319	2,855	4,637	5,619	1,724	1,987
Not used										
Softwood	1,108	1,506	387	972	326	308	326	226	69	0
Hardwood	3,704	3,740	854	1,261	948	815	1,873	1,664	29	0
Total	4,812	5,246	1,241	2,233	1,274	1,123	2,199	1,890	98	0
All products										
Softwood	80,392	84,898	21,919	20,473	32,614	34,108	19,657	22,514	6,202	7,803
Hardwood	91,124	86,872	29,843	22,700	36,120	37,285	24,695	26,467	466	420
Total	171,516	171,770	51,762	43,173	68,734	71,393	44,352	48,981	6,668	8,223

Table 15—Roundwood timber products output by product and species group, Coastal Plain of Virginia, 1995 and 1999

Product and species group	Year 1995	Year 1999	Change	Percent change
	Thousand cubic feet			
Saw logs				
Softwood	49,350	62,254	12,904	26.1
Hardwood	33,044	32,890	-154	-0.5
Total	82,394	95,144	12,750	15.5
Veneer logs				
Softwood	9,780	10,378	598	6.1
Hardwood	490	361	-129	-26.3
Total	10,270	10,739	469	4.6
Pulpwood[a]				
Softwood	57,416	44,784	-12,632	-22.0
Hardwood	31,473	24,693	-6,780	-21.5
Total	88,889	69,477	-19,412	-21.8
Composite panels				
Softwood	3,753	11,885	8,132	216.7
Hardwood	3,632	7,245	3,613	99.5
Total	7,385	19,130	11,745	159.0
Other industrial				
Softwood	410	878	468	114.1
Hardwood	728	728	0	--
Total	1,138	1,606	468	41.1
All industrial				
Softwood	120,709	130,179	9,470	7.8
Hardwood	69,367	65,917	-3,450	-5.0
Total	190,076	196,096	6,020	3.2

-- = negligible.

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (2,319,000 cubic feet in 1995 and 1,599,000 cubic feet in 1999).

Table 16—Roundwood timber products output by county, product, and species group, Coastal Plain of Virginia, 1999

County	All products		Saw logs		Veneer logs		Pulpwood[a]		Composite panels		Other industrial	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	Thousand cubic feet											
Accomack	2,614	475	1,447	144	0	0	1,042	331	0	0	125	0
Brunswick	20,656	5,975	6,906	3,051	1,366	136	11,523	1,964	832	507	29	317
Caroline	5,741	4,110	4,081	2,687	0	20	1,632	1,385	0	0	28	18
Charles City	3,004	1,678	940	567	1	0	2,021	1,090	0	0	42	21
Chesapeake	498	687	386	123	0	0	112	564	0	0	0	0
Chesterfield	4,362	1,824	1,656	1,167	853	16	1,853	641	0	0	0	0
Dinwiddie	8,195	3,862	4,015	2,230	853	4	2,376	732	951	579	0	317
Essex	2,273	1,856	1,324	862	0	0	915	987	0	0	34	7
Gloucester	1,472	1,326	763	805	0	0	706	514	0	0	3	7
Greensville	7,669	3,912	2,435	1,198	1,366	17	868	885	2,971	1,812	29	0
Hampton	73	0	65	0	0	0	8	0	0	0	0	0
Hanover	2,273	1,315	979	844	0	16	1,253	447	0	0	41	8
Henrico	756	584	256	214	0	4	500	364	0	0	0	2
Isle Of Wight	3,980	3,142	1,483	1,065	853	0	207	1,208	1,426	869	11	0
James City	1,222	612	612	211	0	16	610	383	0	0	0	2
King and Queen	3,997	2,501	1,890	1,448	0	62	2,029	991	0	0	78	0
King George	907	808	699	716	0	4	208	88	0	0	0	0
King William	1,982	3,766	901	2,722	0	29	997	1,015	0	0	84	0
Lancaster	1,753	1,738	829	567	0	0	913	1,171	0	0	11	0
Mathews	950	389	645	228	0	4	305	157	0	0	0	0
Middlesex	1,135	540	674	247	1	0	410	286	0	0	50	7
New Kent	1,799	1,627	575	1,125	0	8	1,186	477	0	0	38	17
Newport News	121	100	76	62	0	0	45	38	0	0	0	0
Northampton	726	265	482	230	131	13	60	22	0	0	53	0
Northumberland	1,037	840	851	630	0	0	158	210	0	0	28	0
Prince George	6,589	3,348	2,527	2,247	853	4	3,180	1,094	0	0	29	3
Richmond	2,010	1,141	651	417	0	0	1,287	724	0	0	72	0
Southampton	14,554	6,219	7,840	2,455	1,366	0	3,541	2,677	1,783	1,087	24	0
Suffolk	7,740	2,723	3,380	331	853	0	881	798	2,615	1,594	11	0
Surry	5,192	1,770	2,502	1,093	853	0	1,813	677	0	0	24	0
Sussex	11,572	3,908	7,669	1,154	1,029	4	1,567	1,953	1,307	797	0	0
Virginia Beach	124	493	0	13	0	0	124	480	0	0	0	0
Westmoreland	3,105	2,291	2,640	2,001	0	0	431	290	0	0	34	0
York	98	92	75	36	0	4	23	50	0	0	0	2
All counties	130,179	65,917	62,254	32,890	10,378	361	44,784	24,693	11,885	7,245	878	728

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (1,599,000 cubic feet in 1999).

Table 17—Roundwood timber products output by product and species group, Southern Piedmont of Virginia, 1995 and 1999

Product and species group	Year 1995	Year 1999	Change	Percent change
	Thousand cubic feet			
Saw logs				
Softwood	23,617	31,962	8,345	35.3
Hardwood	34,051	37,673	3,622	10.6
Total	57,668	69,635	11,967	20.8
Veneer logs				
Softwood	3,354	3,485	131	3.9
Hardwood	423	900	477	112.8
Total	3,777	4,385	608	16.1
Pulpwood[a]				
Softwood	38,583	38,303	-280	-0.7
Hardwood	32,567	29,847	-2,720	-8.4
Total	71,150	68,150	-3,000	-4.2
Composite panels				
Softwood	5,261	16,764	11,503	218.6
Hardwood	3,154	2,224	-930	-29.5
Total	8,415	18,988	10,573	125.6
Other industrial				
Softwood	336	394	58	17.3
Hardwood	1,502	1,502	0	--
Total	1,838	1,896	58	3.2
All industrial				
Softwood	71,151	90,908	19,757	27.8
Hardwood	71,697	72,146	449	0.6
Total	142,848	163,054	20,206	14.1

-- = negligible.

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (1,731,000 cubic feet in 1995 and 1,768,000 cubic feet in 1999).

Table 18—Roundwood timber products output by county, product, and species group, Southern Piedmont of Virginia, 1999

County	All products		Saw logs		Veneer logs		Pulpwood[a]		Composite panels		Other industrial	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	Thousand cubic feet											
Amelia	5,747	4,302	2,889	2,260	853	0	1,984	2,042	0	0	21	0
Appomattox	5,738	3,452	700	1,595	0	5	3,300	1,852	1,722	0	16	0
Bedford	3,330	5,192	781	3,270	0	3	827	1,919	1,722	0	0	0
Buckingham	10,256	3,248	3,907	781	0	0	6,328	2,467	0	0	21	0
Campbell	10,103	3,072	2,074	1,071	0	40	6,296	1,961	1,722	0	11	0
Charlotte	5,512	7,930	1,617	4,154	0	0	2,022	3,730	1,873	39	0	7
Cumberland	2,398	1,941	813	653	1	0	1,320	1,277	0	0	264	11
Franklin	3,810	5,211	819	4,175	0	16	1,269	1,020	1,722	0	0	0
Halifax	8,316	4,710	3,986	2,395	0	177	1,535	1,864	2,779	274	16	0
Henry	4,292	4,448	1,635	2,025	0	18	1,564	1,544	1,093	861	0	0
Lunenburg	5,553	4,598	1,684	1,900	853	4	2,095	2,037	905	235	16	422
Mecklenburg	4,425	4,535	1,539	2,818	853	232	1,854	813	150	39	29	633
Nottoway	4,883	2,662	2,711	1,137	853	13	1,319	1,090	0	0	0	422
Patrick	2,142	5,242	892	4,112	0	0	47	393	1,203	737	0	0
Pittsylvania	9,861	6,037	5,271	2,527	71	322	2,646	3,149	1,873	39	0	0
Powhatan	1,733	2,019	377	1,086	1	66	1,355	860	0	0	0	7
Prince Edward	2,809	3,547	267	1,714	0	4	2,542	1,829	0	0	0	0
All counties	90,908	72,146	31,962	37,673	3,485	900	38,303	29,847	16,764	2,224	394	1,502

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (1,768,000 cubic feet in 1999).

Table 19—Roundwood timber products output by product and species group, Northern Piedmont of Virginia, 1995 and 1999

Product and species group	Year		Change	Percent change
	1995	1999		
	Thousand cubic feet			
Saw logs				
Softwood	9,899	9,616	-283	-2.9
Hardwood	15,880	16,116	236	1.5
Total	25,779	25,732	-47	-0.2
Veneer logs				
Softwood	0	0	0	--
Hardwood	289	802	513	177.5
Total	289	802	513	177.5
Pulpwood[a]				
Softwood	14,058	11,780	-2,278	-16.2
Hardwood	7,662	9,146	1,484	19.4
Total	21,720	20,926	-794	-3.7
Composite panels				
Softwood	278	1,722	1,444	519.4
Hardwood	39	69	30	76.9
Total	317	1,791	1,474	465.0
Other industrial				
Softwood	369	937	568	153.9
Hardwood	211	234	23	10.9
Total	580	1,171	591	101.9
All industrial				
Softwood	24,604	24,055	-549	-2.2
Hardwood	24,081	26,367	2,286	9.5
Total	48,685	50,422	1,737	3.6

-- = negligible.

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (340,000 cubic feet in 1995 and 246,000 cubic feet in 1999).

Table 20—Roundwood timber products output by county, product, and species group, Northern Piedmont of Virginia, 1999

County	All products		Saw logs		Veneer logs		Pulpwood[a]		Composite panels		Other industrial	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	Thousand cubic feet											
Albemarle	3,756	2,894	2,318	2,116	0	8	1,378	756	0	0	60	14
Amherst	3,415	3,529	621	2,268	0	0	1,020	1,261	1,722	0	52	0
Culpeper	929	2,082	150	1,151	0	9	730	827	0	0	49	95
Fairfax	265	222	0	80	0	5	265	137	0	0	0	0
Fauquier	469	863	176	601	0	7	293	255	0	0	0	0
Fluvanna	1,114	714	788	55	0	56	311	603	0	0	15	0
Goochland	1,842	896	411	359	0	16	1,431	521	0	0	0	0
Greene	151	494	5	452	0	0	42	42	0	0	104	0
Loudoun	31	2,349	7	916	0	530	24	903	0	0	0	0
Louisa	4,234	2,908	2,135	1,851	0	12	1,641	999	0	0	458	46
Madison	311	930	120	865	0	8	85	48	0	0	106	9
Nelson	1,676	3,609	258	2,344	0	37	1,418	1,159	0	69	0	0
Orange	1,763	1,331	903	844	0	52	767	397	0	0	93	38
Prince William	217	245	65	146	0	4	152	95	0	0	0	0
Rappahannock	110	495	0	468	0	13	110	14	0	0	0	0
Spotsylvania	2,993	1,790	1,321	809	0	16	1,672	933	0	0	0	32
Stafford	779	1,016	338	791	0	29	441	196	0	0	0	0
All counties	24,055	26,367	9,616	16,116	0	802	11,780	9,146	1,722	69	937	234

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (246,000 cubic feet in 1999).

Table 21—Roundwood timber products output by product and species group, Northern Mountains of Virginia, 1995 and 1999

Product and species group	Year 1995	Year 1999	Change	Percent change
	Thousand cubic feet			
Saw logs				
Softwood	2,205	1,261	-944	-42.8
Hardwood	13,974	15,142	1,168	8.4
Total	16,179	16,403	224	1.4
Veneer logs				
Softwood	0	0	0	--
Hardwood	370	327	-43	-11.6
Total	370	327	-43	-11.6
Pulpwood[a]				
Softwood	3,129	2,595	-534	-17.1
Hardwood	7,722	8,284	562	7.3
Total	10,851	10,879	28	0.3
Composite panels				
Softwood	0	0	0	--
Hardwood	0	0	0	--
Total	0	0	0	--
Other industrial				
Softwood	114	114	0	--
Hardwood	57	57	0	--
Total	171	171	0	--
All industrial				
Softwood	5,448	3,970	-1,478	-27.1
Hardwood	22,123	23,810	1,687	7.6
Total	27,571	27,780	209	0.8

-- = negligible.

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (13,000 cubic feet in 1995 and 13,000 cubic feet in 1999).

Table 22—Roundwood timber products output by county, product, and species group, Northern Mountains of Virginia, 1999

County	All products		Saw logs		Veneer logs		Pulpwood[a]		Composite panels		Other industrial	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	Thousand cubic feet											
Alleghany	740	3,128	379	1,746	0	57	361	1,325	0	0	0	0
Augusta	657	2,757	362	2,009	0	0	295	729	0	0	0	19
Bath	221	1,801	72	915	0	54	114	832	0	0	35	0
Botetourt	544	2,606	92	1,121	0	56	452	1,429	0	0	0	0
Clarke	26	677	3	667	0	8	23	2	0	0	0	0
Craig	355	895	100	115	0	54	255	726	0	0	0	0
Frederick	250	1,064	9	993	0	14	241	57	0	0	0	0
Highland	46	1,714	7	828	0	54	39	832	0	0	0	0
Page	31	241	6	172	0	0	25	69	0	0	0	0
Roanoke	55	267	14	150	0	0	41	117	0	0	0	0
Rockbridge	652	4,415	131	3,053	0	16	442	1,327	0	0	79	19
Rockingham	213	2,152	66	1,447	0	0	147	686	0	0	0	19
Shenandoah	153	1,068	18	929	0	6	135	133	0	0	0	0
Warren	27	1,025	2	997	0	8	25	20	0	0	0	0
All counties	3,970	23,810	1,261	15,142	0	327	2,595	8,284	0	0	114	57

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (13,000 cubic feet in 1999).

Table 23—Roundwood timber products output by product and species group, Southern Mountains of Virginia, 1995 and 1999

Product and species group	Year 1995	Year 1999	Change	Percent change
	Thousand cubic feet			
Saw logs				
Softwood	8,698	10,206	1,508	17.3
Hardwood	22,051	28,757	6,706	30.4
Total	30,749	38,963	8,214	26.7
Veneer logs				
Softwood	0	84	84	--
Hardwood	1,591	3,557	1,966	123.6
Total	1,591	3,641	2,050	128.8
Pulpwood[a]				
Softwood	555	202	-353	-63.6
Hardwood	8,200	5,566	-2,634	-32.1
Total	8,755	5,768	-2,987	-34.1
Composite panels				
Softwood	797	735	-62	-7.8
Hardwood	4,548	5,014	466	10.2
Total	5,345	5,749	404	7.6
Other industrial				
Softwood	0	88	88	--
Hardwood	0	0	0	--
Total	0	88	88	--
All industrial				
Softwood	10,050	11,315	1,265	12.6
Hardwood	36,390	42,894	6,504	17.9
Total	46,440	54,209	7,769	16.7

-- = negligible.

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (73,000 cubic feet in 1995 and 67,000 cubic feet in 1999).

Table 24—Roundwood timber products output by county, product, and species group, Southern Mountains of Virginia, 1999

County	All products		Saw logs		Veneer logs		Pulpwood[a]		Composite panels		Other industrial	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	Thousand cubic feet											
Bland	457	1,721	348	1,645	0	0	0	76	109	0	0	0
Buchanan	88	2,291	58	1,867	0	0	0	1	30	423	0	0
Carroll	5,260	4,283	4,993	3,072	0	504	49	261	218	446	0	0
Dickenson	145	5,353	0	2,350	0	0	0	2,217	57	786	88	0
Floyd	1,467	1,888	1,351	1,539	0	12	7	240	109	97	0	0
Giles	224	2,725	212	2,445	0	0	12	280	0	0	0	0
Grayson	1,925	2,114	1,925	1,149	0	504	0	388	0	73	0	0
Lee	117	3,851	5	2,029	84	1,326	11	254	17	242	0	0
Montgomery	122	1,429	93	852	0	0	29	541	0	36	0	0
Pulaski	70	600	23	430	0	0	47	112	0	58	0	0
Russell	59	1,583	51	1,398	0	0	0	65	8	120	0	0
Scott	485	5,842	415	4,124	0	504	0	247	70	967	0	0
Smyth	96	1,191	92	750	0	0	0	301	4	140	0	0
Tazewell	22	1,040	13	752	0	0	1	168	8	120	0	0
Washington	343	2,456	262	1,244	0	504	46	225	35	483	0	0
Wise	70	2,495	0	1,273	0	203	0	52	70	967	0	0
Wythe	365	2,032	365	1,838	0	0	0	138	0	56	0	0
All counties	11,315	42,894	10,206	28,757	84	3,557	202	5,566	735	5,014	88	0

[a] Includes roundwood delivered to nonpulpmills, then chipped and sold to pulpmills (67,000 cubic feet in 1999).

Table 25—Total roundwood output by product, species group, and source of material, Virginia, 1999

Product and species group	All sources	Growing-stock trees			Other sources
		Total	Sawtimber	Poletimber	
	Thousand cubic feet				
Saw logs					
Softwood	115,299	112,562	108,074	4,488	2,737
Hardwood	130,578	122,443	115,990	6,453	8,135
Total	245,877	235,005	224,063	10,941	10,872
Veneer logs and bolts					
Softwood	13,947	13,782	13,506	276	165
Hardwood	5,947	5,896	5,654	242	51
Total	19,894	19,678	19,160	518	216
Pulpwood					
Softwood	97,664	87,664	40,325	47,339	10,000
Hardwood	77,536	68,887	30,999	37,888	8,649
Total	175,200	156,551	71,324	85,227	18,649
Composite panels					
Softwood	31,106	27,921	12,844	15,077	3,185
Hardwood	14,552	12,929	5,818	7,111	1,623
Total	45,658	40,850	18,662	22,188	4,808
Poles and posts					
Softwood	2,288	1,879	1,716	162	409
Hardwood	69	58	42	16	11
Total	2,357	1,937	1,759	178	420
Other miscellaneous					
Softwood	123	123	88	35	0
Hardwood	2,452	2,231	1,593	638	221
Total	2,575	2,354	1,681	673	221
Total industrial products					
Softwood	260,427	243,931	176,553	67,378	16,496
Hardwood	231,134	212,444	160,096	52,348	18,690
Total	491,561	456,375	336,649	119,726	35,186
Fuelwood					
Softwood	5,433	4,944	3,561	1,383	489
Hardwood	48,731	43,811	31,565	12,246	4,920
Total	54,164	48,755	35,126	13,628	5,409
All products					
Softwood	265,860	248,875	180,114	68,761	16,985
Hardwood	279,865	256,254	191,661	64,593	23,611
Total	545,725	505,129	371,775	133,354	40,596

Numbers in rows and columns may not sum to totals due to rounding.

Table 26—Total roundwood output by species group, survey region, and ownership class, Virginia, 1999

Species group and survey region	Total	Ownership class			
		National forest	Other public	Forest industry	Nonindustrial private
		Thousand cubic feet			
Softwoods					
Coastal Plain	132,896	0	9,243	51,823	71,830
Southern Piedmont	92,805	0	3,639	25,577	63,588
Northern Piedmont	24,555	0	0	6,017	18,538
Northern Mountains	4,053	308	0	136	3,610
Southern Mountains	11,551	98	148	0	11,305
Total softwoods	265,860	406	13,030	83,553	168,872
Hardwoods					
Coastal Plain	79,892	0	702	18,547	60,643
Southern Piedmont	87,337	0	350	15,178	71,808
Northern Piedmont	31,916	1,222	492	979	29,223
Northern Mountains	28,820	11,379	959	713	15,768
Southern Mountains	51,900	3,151	726	527	47,497
Total hardwoods	279,865	15,753	3,230	35,943	224,940
All species	545,725	16,158	16,259	119,496	393,812

Numbers in rows and columns may not sum to totals due to rounding.

Table 27—Total roundwood output by species group, detailed species group, and product, Virginia, 1999

Species group and detailed species group	Total	Product						
		Saw log	Veneer	Pulpwood	Composite panel	Poles and posts	Other miscellaneous	Fuelwood
		Thousand cubic feet						
Softwood								
Cedar	1,122	208	30	614	150	9	88	23
White pine	10,726	7,373	0	1,013	2,116	5	0	219
Loblolly-shortleaf pine	180,186	78,411	13,331	65,157	18,117	1,453	35	3,682
Other yellow pines	71,676	27,389	572	30,825	10,603	821	0	1,465
Cypress	150	79	14	36	18	0	0	3
Hemlock	2,000	1,839	0	19	102	0	0	41
Total softwoods	265,860	115,299	13,947	97,664	31,106	2,288	123	5,433
Hardwood								
Soft maple	19,161	8,574	812	5,054	1,214	4	166	3,338
Hard maple	1,957	939	23	376	273	0	4	340
Other birch	2,725	1,222	33	950	45	1	0	474
Hickory	14,817	6,848	505	4,205	424	4	253	2,577
Beech	3,879	1,723	71	990	411	0	9	675
Ash	3,431	1,425	175	993	216	0	25	597
Black walnut	2,114	1,100	37	520	87	0	2	368
Sweetgum	21,281	8,381	195	6,950	1,759	10	274	3,713
Yellow-poplar	55,165	25,964	1,130	15,315	2,886	18	261	9,593
Blackgum-tupelo	4,918	1,989	76	1,569	388	1	35	861
Sycamore	3,405	1,314	103	1,081	253	1	61	592
Cottonwood	475	233	6	121	32	0	0	83
Black cherry	716	357	3	228	2	0	1	125
Select white oaks	45,261	19,696	684	14,160	2,233	12	576	7,899
Other white oaks	19,422	9,776	339	5,393	505	0	36	3,373
Select red oaks	18,415	9,018	561	4,644	917	2	70	3,201
Other red oaks	48,457	24,220	812	12,351	2,024	15	595	8,441
Basswood	1,566	793	14	360	123	0	4	272
Elm	1,145	500	8	339	73	0	25	199
Other Eastern hardwoods	11,557	6,504	361	1,938	687	1	54	2,011
Total hardwoods	279,865	130,578	5,947	77,536	14,552	69	2,452	48,731
All species	545,725	245,877	19,894	175,200	45,658	2,357	2,575	54,164

Numbers in rows and columns may not sum to totals due to rounding.

Table 28—Total roundwood output by species group, detailed species group and ownership class, Virginia, 1999

Species group and detailed species group	Total	Ownership class			
		National forest	Other public	Forest industry	Nonindustrial private
		Thousand cubic feet			
Softwood					
Cedar	1,122	0	34	282	806
White pine	10,726	0	136	235	10,356
Loblolly-shortleaf pine	180,186	0	9,643	68,534	102,009
Other yellow pines	71,676	406	3,217	14,418	53,635
Cypress	150	0	0	84	67
Hemlock	2,000	0	0	0	2,000
Total softwoods	265,860	406	13,030	83,553	168,872
Hardwood					
Soft maple	19,161	1,734	123	2,572	14,732
Hard maple	1,957	9	0	49	1,899
Other birch	2,725	81	9	737	1,898
Hickory	14,817	573	115	1,421	12,707
Beech	3,879	0	3	364	3,512
Ash	3,431	41	6	403	2,981
Black walnut	2,114	195	31	183	1,705
Sweetgum	21,281	0	112	4,134	17,035
Yellow-poplar	55,165	1,441	468	8,457	44,800
Blackgum-tupelo	4,918	150	13	740	4,015
Sycamore	3,405	42	0	906	2,456
Cottonwood	475	0	0	59	416
Black cherry	716	87	38	54	537
Select white oaks	45,261	1,403	561	7,014	36,283
Other white oaks	19,422	3,539	414	1,155	14,314
Select red oaks	18,415	2,740	242	1,477	13,955
Other red oaks	48,457	2,833	981	5,177	39,466
Basswood	1,566	423	21	0	1,122
Elm	1,145	0	9	259	877
Other Eastern hardwoods	11,557	462	84	780	10,231
Total hardwoods	279,865	15,753	3,230	35,943	224,940
All species	545,725	16,158	16,259	119,496	393,812

Numbers in rows and columns may not sum to totals due to rounding.

The Forest Service, U.S. Department of Agriculture, is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

Bentley, James W.; Johnson, Tony G.; Becker, Charles W. 2002. Virginia's timber industry—an assessment of timber product output and use, 1999. Resour. Bull. SRS–74. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 41p.

In 1999, roundwood output from Virginia's forests totaled 492 million cubic feet, 8 percent more than in 1995. Mill byproducts generated from primary manufacturers remained stable at 167 million cubic feet. Almost 72 percent of the plant residues were used primarily for fuel and fiber products. Saw logs were the leading roundwood product at 246 million cubic feet; pulpwood ranked second at 175 million cubic feet; composite panels were third at 46 million cubic feet. The number of primary processing plants increased from 289 in 1995 to 290 in 1999. Total receipts increased 1 percent to almost 490 million cubic feet.

Keywords: Pulpwood, residues, roundwood, saw logs, veneer logs, wood movement.

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