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2001

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FOREWORD

This bulletin reports findings of a survey of all primary wood-using mills in Kansas in 1998 and details the industry's size and composition, its use of roundwood, and its generation and disposition of wood residues. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, forest industry development, and forest research.

Special thanks are given to primary wood-using firms that responded to the survey and to the Kansas Forest Service, Kansas State University, for canvassing the respondents. Their cooperation is greatly appreciated.

All volumes are reported in product-specific standard units and/or cubic feet. Volumes reported by mills in nonstandard units were converted to standard units using regional conversion factors. Reported trends and changes in the primary wood-using industry in Kansas are based on comparisons with previous surveys of the State's primary wood-using industry conducted in 1964, 1980, and 1993. Row and column data of tables may not sum due to rounding, but data in each table cell are accurately displayed.

Kansas Timber Industry—An Assessment of Timber Product Output and Use, 1998

William H. Reading, IV and Robert L. Atchison

This bulletin uses a variety of terms to describe the various raw materials, harvest residues, products, and byproducts common to the timber harvesting and wood products industry. "Growing stock" refers to the portion of a live tree of a commercial species that meets minimum standards of size and quality and is merchantable for processing into products such as lumber, plywood, or pulp. A "growing-stock tree" therefore refers to a tree that contains growing stock. That portion of a growing-stock tree not considered growing stock (small limbs, cull portions, etc.) and left in the forest is referred to as "logging slash." However, if this non-growing-stock material is removed from the forest for processing, it is called "industrial roundwood." Materials classified as growing stock that are left in the forest due to harvesting inefficiencies are termed "harvest residues." Once a tree has been harvested, that portion of the tree removed from the forest for processing at a primary wood-using mill is termed "industrial roundwood." A "saw log" is a subclass of industrial roundwood that can be sawn into lumber products. These logs must therefore meet high standards of size, straightness, and overall quality. A "sawtimber tree" is a growing-stock tree that contains at least one saw log that meets minimum size and quality standards. A veneer log is another subclass of industrial roundwood that must meet even higher standards of size, straightness, and overall quality than saw logs. Veneer logs may be processed into plywood, finished panels, or veneer sheets. These terms are all defined in the glossary.

HIGHLIGHTS

Primary Wood-Using Industry

- The number of mills processing more than 1 million board feet per year increased from three in 1993 to five in 1998 (table 1 and fig. 1).
- The volume of industrial roundwood received by mills in Kansas was 3,476 thousand cubic feet, 61 percent higher in 1998 than in 1993 (MCF=1,000 cubic feet) (table 2).
- Kansas forest lands provided three-fourths of the roundwood received in 1998, and while Missouri and Oklahoma provided the remainder (fig. 2). While Missouri provided about the same percentage of roundwood in 1998 as in 1993, the portion coming from Oklahoma was four times higher in 1998 than in 1993.

Industrial Roundwood Production

- In 1998 industrial roundwood production for saw logs and veneer totaled 3,244 thousand cubic feet, almost 50 percent higher than 1993 levels. Although total

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Robert L. Atchison, Rural Forestry Coordinator, Kansas Forest Service, Kansas State University, received a B.S. in forest management from the University of Missouri in 1981. He worked with the Arkansas Forestry Commission before joining the Kansas Forest Service in 1990.

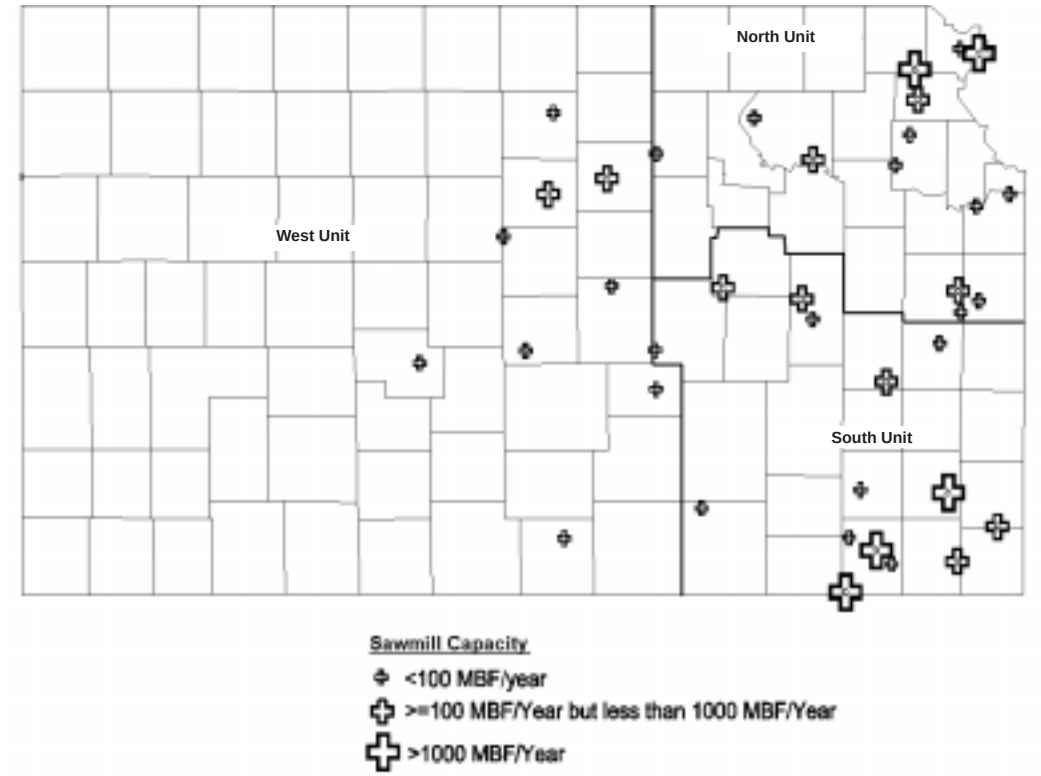

Figure 1.—*Active sawmills by Forest Survey Unit in Kansas, 1998.*

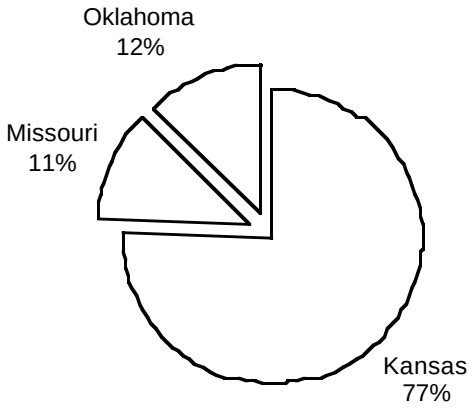

Figure 2.—*Industrial roundwood receipts by State of origin.*

production was up, the veneer log component of production was down, from 937 thousand board feet (MBF) in 1993 to 64 MBF in 1998 (table 3 and fig. 3). The low levels of overall production in 1993 were attributed to supply constrictions due to frequent rainfall and flooding.

- The relative importance of each species to the timber industry changed between surveys. In 1993, black walnut was the most important species, followed by cottonwood and white oak. But by 1998, black walnut production had dropped in rank from first to fifth. Cottonwood replaced black walnut, making up almost one-third of the industrial roundwood volume. White oak increased in rank from third to second. Another large change was in soft maple, which climbed from sixth in 1993 to third in 1998 (fig. 4).

- In 1998, 3.3 million cubic feet (table 8) of growing-stock volume were removed from Kansas forests. By comparison, the Fourth Kansas Resource Inventory (Leatherberry 1999), completed in 1994, estimated the total growing-stock volume to be 1,225 million cubic feet. The annual growth between inventories was estimated to be 29 million cubic feet—a growth to removals ratio of 8.8:1.0.

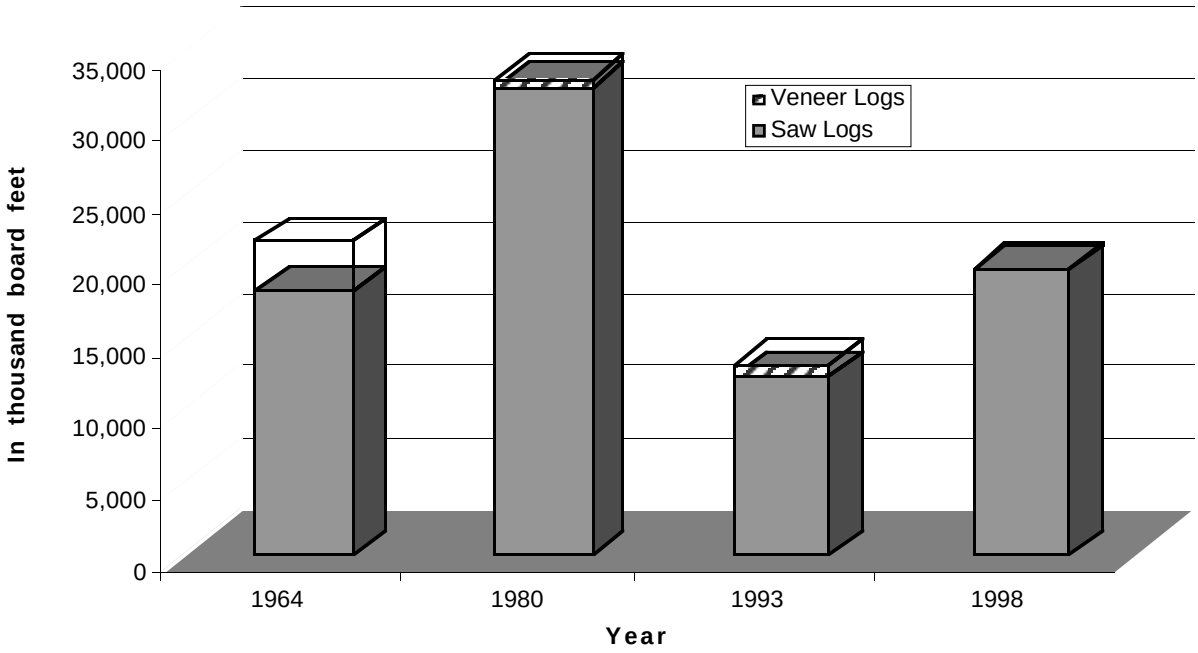

Figure 3.—*Industrial roundwood production for saw logs and veneer, Kansas, 1998.*

Saw Log Production

- Saw log production from Kansas forests totaled 19,819 MBF in 1998. Kansas mills processed a total of 21,716 MBF of saw logs.

- The Southeast Forest Survey Unit produced more saw logs (62 percent) than the Northeast and West units combined (fig. 5). This 1998 total is slightly less than in 1993 when the Southeast unit produced 69 percent of the harvest, but higher than in 1980 when the unit produced 53 percent of the harvest.

- Almost 40 percent of the saw log volume came from five Kansas counties: Lyon, Cherokee, Greenwood, Cowley, and Dickinson (table 5).

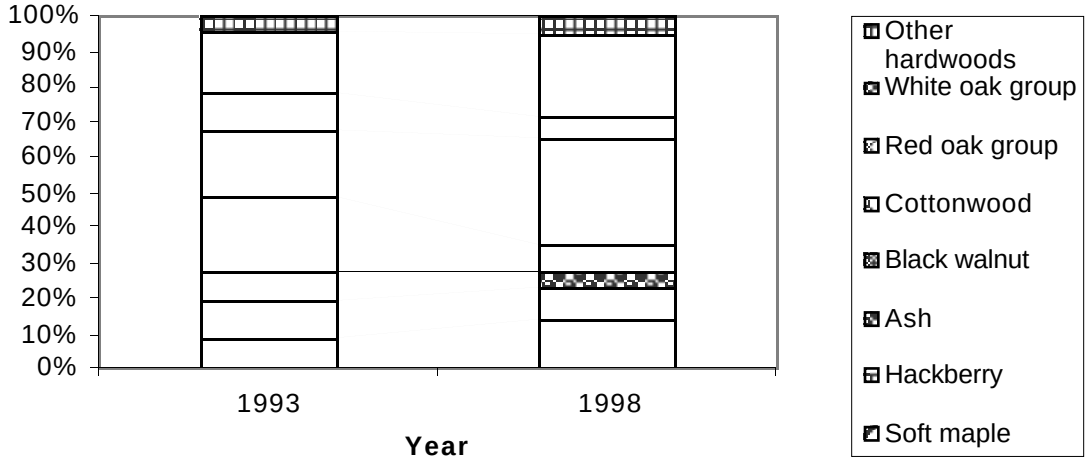

Figure 4.—*Species distribution of industrial roundwood production, Kansas, 1993 and 1998.*

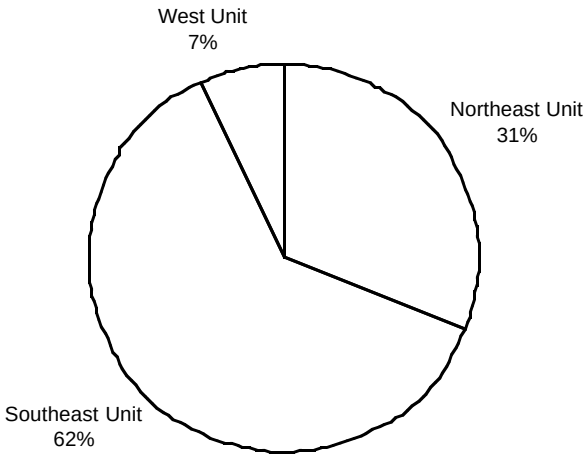

Figure 5.—*Saw log production by Forest Survey unit.*

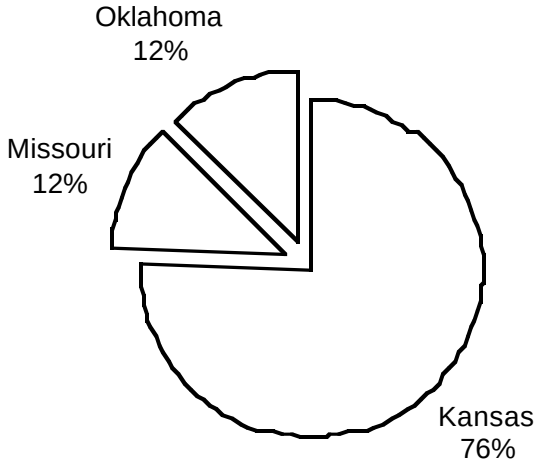

Figure 7.—*Sources of saw logs processed by Kansas mills, 1998.*

- Mills in Kansas processed the vast majority of saw logs harvested in Kansas (fig. 6).
- Missouri was the second largest market for saw logs harvested in Kansas (fig. 6).
- Of the saw logs processed by Kansas mills in 1998, 24 percent were imported from other States (fig. 7). Overall, Kansas imported 5,294 MBF and exported 3,397 MBF, for a net import of 1,897 MBF (tables 4 and 6).

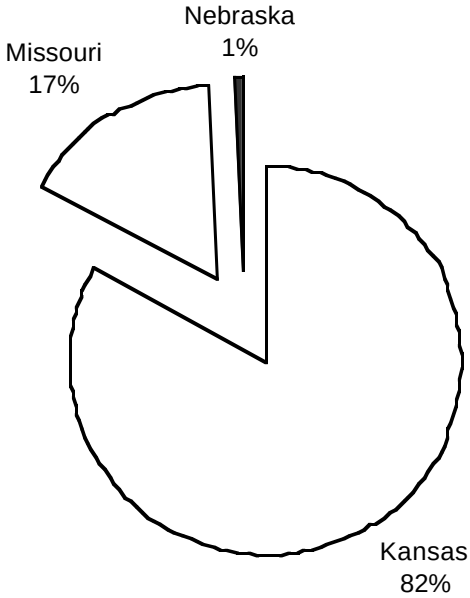

Figure 6.—*Destination of saw logs harvested in Kansas, 1998.*

Veneer Log Production

- Black walnut was the only species harvested for veneer in 1998. All of the veneer logs harvested were sent to out-of-State mills (table 7).
- Almost three-fourths of the black walnut harvested for veneer came from three Kansas counties: Miami, Bourbon, and Linn (table 7).

TREE UTILIZATION

- Tree utilization efficiency measures the amount of material harvested versus the amount that is processed at a primary mill. Among species, utilization efficiency ranged from 77 percent for black walnut to 60 percent for such species as pecan, hickory, and ash (fig. 8). The average utilization efficiency rate increased from 63 percent in 1993 to 70 percent in 1998.

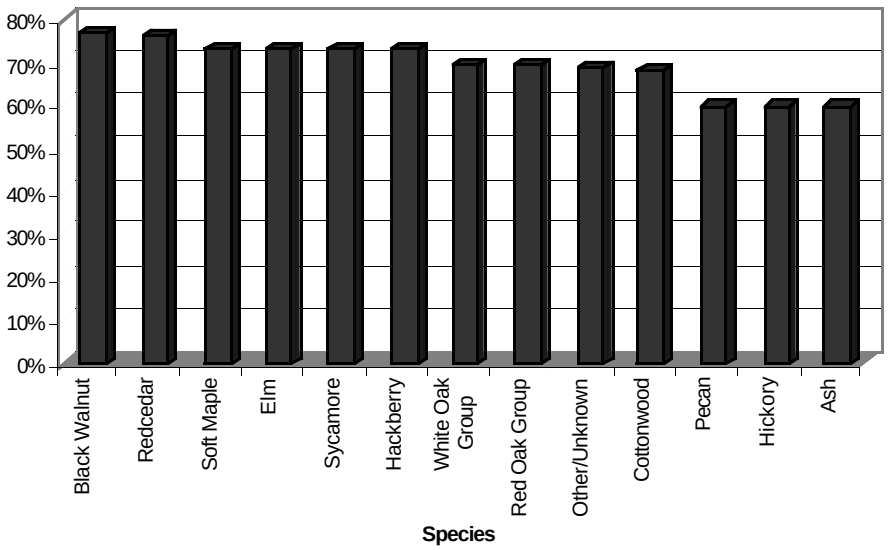

Figure 8.—*Total percentage of material harvested processed by mill.*

- In the harvesting of industrial roundwood in 1998, 4.6 million cubic feet of timber was cut. Of this amount, 3.3 million cubic feet came from growing stock and 1.3 million cubic feet came from non-growing stock. From the growing stock, 84 percent was utilized, and from the non-growing stock, 36 percent was utilized (fig. 9).

Primary Mill Residues

- During 1998, primary wood-using mills in the State generated approximately 29 thousand tons of coarse wood residues, 16 thousand tons of fine wood residues, and 12 thousand tons of bark (table 12 and fig. 10).

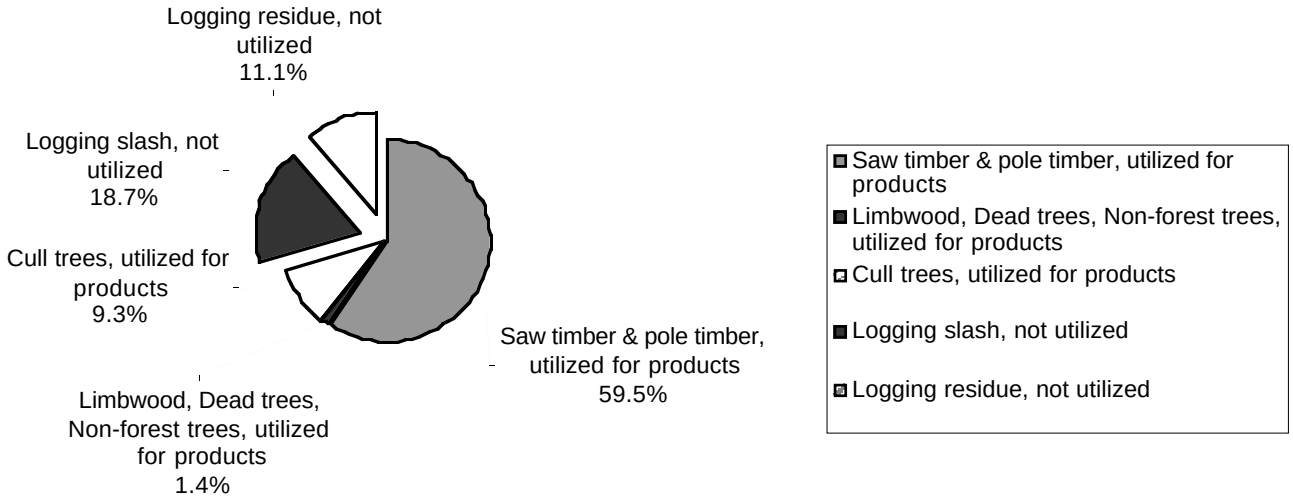

Figure 9.—*Distribution of timber removals for industrial roundwood by source of material, Kansas, 1998.*

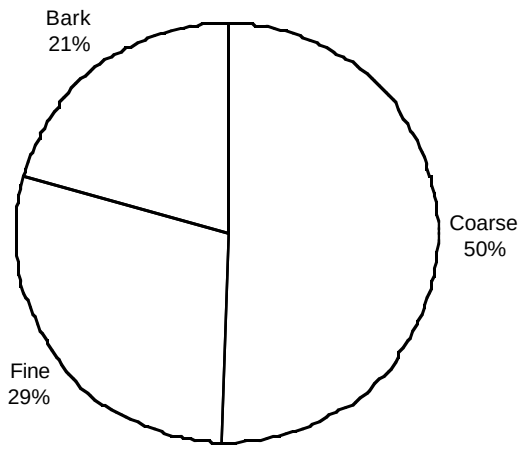

Figure 10.—*Distribution of residues generated by primary wood-using mills by type of residue, Kansas, 1998.*

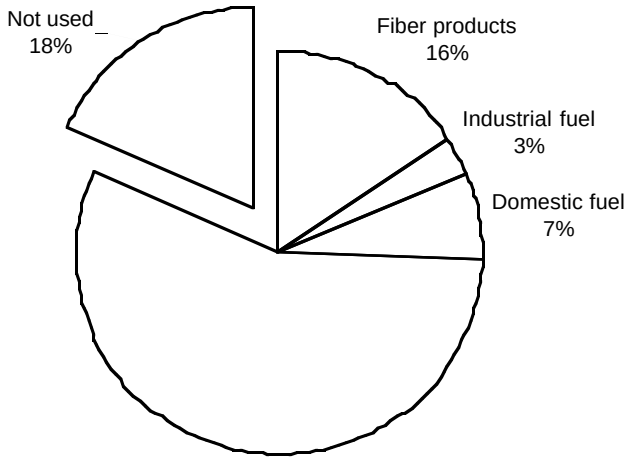

Figure 11.—*Distibution of residues generated by primary wood-using mills by method of disposal, Kansas, 1998.*

- Eighty-two percent of the residues generated at Kansas mills were utilized for byproducts (fig. 11).
- The portion of residues not used climbed from 11 percent in 1993 to 18 percent in 1998.
- Use of residues for industrial fuels fell from 17 percent in 1993 to just 3 percent in 1998. Use of residues for domestic fuels fell from 22 to 7 percent during that time.
- The "miscellaneous" disposition category doubled from 28 percent in 1993 to 56 percent in 1998. This category includes residues used for livestock bedding, mulch, small dimension lumber, and specialty items.

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Hackett, Ronald L.; Strickler, John K. 1996. **Kansas timber industry—an assessment of timber product output and use, 1993.** Resour. Bull. NC-176. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 35 p.

APPENDIX

STUDY METHODS

This study was a cooperative effort of the Kansas Forest Service (KFS) and the North Central Research Station (NCRS) of the USDA Forest Service. KFS used mail questionnaires supplied by NCRS that were designed to determine the size and composition of the State's primary wood-using mills, and followed up with additional mailings, telephone, and personal contacts until a 100-percent response was achieved. Completed questionnaires were sent to NCRS for editing and processing.

As part of data editing and processing, all industrial roundwood volumes reported on the questionnaires were converted to standard units of measure using regional conversion factors. Timber removals by source of material and harvest residues generated during logging were estimated from standard product volumes using factors developed from logging utilization studies previously conducted by NCRS. Finalized data on the State's industrial roundwood receipts were loaded into a regional timber removals database where they were supplemented with data on out-of-State uses of Kansas roundwood to provide a complete assessment of the State's timber product output.

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 volume equivalent).

Central stem.—The portion of a tree between a 1-foot stump and the minimum 4.0-inch top diameter outside bark or the point where the central stem breaks into limbs.

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam, Osage-orange, and redbud.)

Cull removals.—Net volume of rough and rotten trees, plus the net volume in sections of the central stem of growing-stock trees that do not meet regional merchantability standards, harvested for industrial roundwood products.

Dead removals.—Net volume of dead trees harvested for industrial roundwood products.

Diameter at breast height (d.b.h.).—The outside bark diameter at 4.5 feet above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest land.—Land at least 10 percent stocked. (Note: Historically, 16.7 percent was used based on full stocking equaling 100 percent) by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing.) The minimum area for classification of land as forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a width of at least 120 feet, measured across the tree crowns, to qualify as forest land. Unimproved roads and trails or clearings in forest areas shall be classed as forest if less than 120 feet wide. Streams and other bodies of water shall be classed as forest if less than 30 feet wide.

Growing-stock removals.—The growing-stock volume removed from the timberland inventory by harvesting industrial roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree.—A live timberland tree of commercial species that contains at least one 12-foot saw log or two 8-foot saw logs meeting minimum log/tree grade requirements, now or prospectively, and that meets

specified standards of size, quality, and merchantability. At least one-third of the gross board-foot volume must be merchantable material and at least 50 percent sound at any point. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Harvest residues.—The total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Industrial roundwood production.—The quantity of industrial roundwood harvested in a geographic area.

Industrial roundwood products.—Saw logs, pulpwood, veneer logs, poles, commercial posts, piling, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for fuel, pulp, or board products.

Industrial roundwood receipts.—The quantity of industrial roundwood received by commercial mills in a geographic area.

International 1/4-inch rule.—A log rule or formula for estimating the board-foot volume of logs, allowing 1/2-inch of taper for each 4-foot length. The rule appears in a number of forms that allow for kerf. In this form, 1/4-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Limbwood removals.—Net volume of all portions of a tree other than the central stem, (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

Logging residue.—Net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash.—Net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

Merchantable sections.—Sections of the central stem of growing-stock trees that meet either pulpwood or saw log specifications.

Net volume.—Gross volume less deductions for rot, sweep, or other defects affecting use for roundwood products.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial roundwood products. Classified in volume tables as rough trees.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 39.9-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, improved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.)

Nonforest land removals.—Net volume of trees on nonforest lands harvested for industrial roundwood products.

Poletimber.—A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Poletimber removals.—Net volume in the merchantable central stem of poletimber trees harvested for industrial roundwood products.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some byproduct.

Rotten tree.—A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree.—A tree that does not meet regional merchantability standards because of excessive sound cull. Includes noncommercial tree species.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling.—A live tree between 1.0 and 5.0 inches d.b.h.

Sapling removals.—Net volume in saplings harvested for industrial roundwood products.

Saw log.—A log meeting minimum standards of diameter, length and defect, sound and straight, and with a minimum diameter outside bark of 7 inches for softwoods and 9 inches for hardwoods, or other combinations of size and defect specified by regional standards.

Saw log portion.—That portion of the central stem of sawtimber trees between the stump and the saw log top.

Saw log top.—The point on the central stem of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7.0 inches diameter outside bark (d.o.b.) for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber removals.—As used in table 8, sawtimber removals refers to the net volume in the merchantable central stem of sawtimber trees harvested for industrial roundwood products. (Note: Includes the saw log and upper stem portions of sawtimber trees.) In the case of sawtimber volume removed from timberland inventory as in table 11, sawtimber removals refers to the net volume in the saw log portion of sawtimber trees harvested for roundwood products or left on the ground as harvest residue, and is usually expressed in thousands of board feet (International 1/4-inch rule).

Sawtimber tree.—A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Timberland.—Forest land that is capable of producing in excess of 20 cubic feet per acre per year of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development.

Timber product output.—The volume of roundwood products produced from an area's forests.

Timber removals.—The total net volume of trees removed for industrial roundwood products or left on the ground as harvest residues.

Tree.—A woody plant usually having one or more perennial stems, a more or less definitely formed crown of foliage, and a height of at least 12 feet at maturity.

Upper stem portion.—That portion of the central stem of sawtimber trees between the saw log top and the minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Veneer log.—Log to be used in the production of plywood, finished panels, or veneer sheets, both rotary cut and sliced.

TREE SPECIES GROUPS IN KANSAS (LITTLE 1981)

Note: Many additional tree species have been planted around homes, farm buildings, and in towns and cities. However, only those species encountered during the 1994 inventory of the forest resources of Kansas are listed here.

Softwoods

Eastern redcedar[1] ..... *Juniperus virginiana*

Hardwoods

Boxelder[1] ..... *Acer negundo*
Silver maple[1] ..... *A. saccharinum*
Sugar maple[2] ..... *A. saccharum*
River birch[1] ..... *Betula nigra*
Select hickories[2]
- Pecan ..... *Carya illinoensis*
- Shellbark hickory ..... *C. laciniosa*
- Shagbark hickory ..... *C. ovata*
- Mockernut hickory ..... *C. tomentosa*

Other hickories[2]
- Bitternut hickory ..... *C. cordiformis*
- Black hickory ..... *C. texana*

Sugarberry[1] ..... *Celtis laevigata*
Hackberry[1] ..... *C. occidentalis*
Ashes[2]
- White ash ..... *Fraxinus americana*
- Green ash ..... *F. pennsylvanica*

Kentucky coffeetree[1] ..... *Gymnocladus dioicus*
Black walnut[2] ..... *Juglans nigra*
Sycamore[1] ..... *Platanus occidentalis*
Eastern cottonwood[1] ..... *Populus deltoides*
Black cherry[1] ..... *Prunus serotina*
Select white oaks[2]
- White oak ..... *Quercus alba*
- Bur oak ..... *Q. macrocarpa*
- Chinkapin oak ..... *Q. muehlenbergii*

Other white oaks[2]
- Post oak ..... *Q. stellata*

Select red oaks[2]
- Northern red oak ..... *Q. rubra*
- Shumard oak ..... *Q. shumardii*

Other red oaks[2]
- Blackjack oak ..... *Q. marilandica*
- Shingle oak ..... *Q. imbricaria*
- Pin oak ..... *Q. palustris*
- Black oak ..... *Q. velutina*

American basswood[1] ..... *Tilia americana*
Black willow[1] ..... *Salix nigra*
Elm
- American elm[1] ..... *Ulmus americana*
- Siberian elm[1] ..... *U. pumila*
- Slippery elm[1] ..... *U. rubra*

Other hardwoods
- Buckeye[1] ..... *Aesculus* spp.
- Northern catalpa[1] ..... *Catalpa speciosa*
- Persimmon[2] ..... *Diospyros virginiana*
- Honeylocust[2] ..... *Gleditsia triacanthos*
- White mulberry[1] ..... *Morus alba*
- Red mulberry[1] ..... *M. rubra*
- Black locust[2] ..... *Robinia pseudoacacia*
- Sassafras[1] ..... *Sassafras albidum*

Noncommercial species
- Ailanthus ..... *Ailanthus altissima*
- Eastern redbud ..... *Cercis canadensis*
- Hawthorn ..... *Crataegus* spp.
- Osage-orange ..... *Maclura pomifera*
- Apple ..... *Malus* spp.
- Eastern hophornbeam ..... *Ostrya virginiana*
- Wild plum ..... *Prunus* spp.
- Soapberry ..... *Saponaria*

[1] *This species or species group is considered a soft hardwood, with an average specific gravity of less than 0.50.*

[2] *This species or species group is considered a hard hardwood, with an average specific gravity greater than or equal to 0.50.*

TABLE TITLES

Table 9.—Harvest residues generated by industrial roundwood harvesting by Forest Survey Unit, county, and species group, Kansas, 1998

Table 10.—Growing-stock removals for industrial roundwood, by Forest Survey Unit, county, and species group, Kansas, 1998

Table 11.—Sawtimber removals from timberland for industrial roundwood production by Forest Survey Unit, county, and species group, Kansas, 1998

Table 12.—Residues produced at primary wood-using mills by Forest Survey Unit, type of use, and type of material, Kansas, 1998

Table 1.--Number of active primary wood-using mills, Kansas, 1980, 1993, and 1998

Kind of mill	1980	1993	1998
Sawmills			
1,000 mbf+[1]	11	3	5
Less than 1,000 mbf [1]	48	33	34
Total	59	36	39

[1] Thousand board feet, International 1/4-inch rule.

Table 2.--Industrial roundwood receipts by species group and State of origin, Kansas, 1998

(Thousand cubic feet)

Species	Total	Kansas	Missouri	Oklahoma
SOFTWOODS				
Redcedar	13	13	--	--
Ponderosa pine	1	1	--	--
Total	15	15	--	--
HARDWOODS				
Soft maple	478	420	24	34
Hard maple	1	1	--	--
Hickory	4	4	--	--
Pecan	35	30	3	3
Hackberry	318	288	10	19
Ash	131	113	9	8
Black walnut	90	79	7	5
Osage-orange	3	3	--	--
Sycamore	191	115	51	24
Cottonwood	1,438	917	250	272
Black cherry	0	0	--	--
Red oak group	127	113	8	7
White oak group	548	489	31	28
Black locust	0	0	--	--
Willow	1	1	--	--
American basswood	1	1	--	--
Elm	96	70	2	25
Other hardwoods	1	1	--	--
Total	3,462	2,644	393	425
All species	3,476	2,659	393	425

Rows and columns may not sum due to rounding.

Table 3.--Industrial roundwood production by species group, Forest Survey Unit, and type of product, Kansas, 1998[1]

All Units

Species group	Saw logs		Veneer logs		Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	MBF [2]	MCF [3]
SOFTWOODS						
Redcedar	61	13	--	--	1	14
Ponderosa pine	8	1	--	--	--	1
Total	70	15	--	--	1	16
HARDWOODS						
Soft maple	2,788	443	--	--	1	444
Hard maple	3	1	--	--	--	1
Hickory	98	17	--	--	--	17
Pecan	177	30	--	--	--	30
Hackberry	1,814	288	--	--	--	288
Ash	783	134	--	--	--	134
Black walnut	1,440	220	64	9	--	229
Osage-orange	18	3	--	--	--	3
Sycamore	775	123	--	--	--	123
Cottonwood	6,142	948	--	--	1	949
Black cherry	3	0	--	--	--	0
Red oak group	1,092	195	--	--	--	195
White oak group	4,148	740	--	--	--	740
Black locust	1	0	--	--	--	0
Willow	5	1	--	--	--	1
Basswood	23	4	--	--	1	5
Elm	438	70	--	--	--	70
Other hardwoods	2	0	--	--	--	0
Total	19,749	3,217	64	9	3	3,229.00
All species	19,819	3,231	64	9	4	3,244.00

Northeast Unit

Species group	Saw logs		Veneer logs		Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	MBF [2]	MCF [3]
SOFTWOODS						
Redcedar	19	4	--	--	1	5
Ponderosa pine	7	1	--	--	--	1
Total	26	5	--	--	1	6
HARDWOODS						
Soft maple	1,060	168	--	--	1	169
Hard maple	3	0	--	--	--	0
Hickory	46	8	--	--	--	8
Pecan	49	8	--	--	--	8
Hackberry	387	61	--	--	--	61
Ash	256	44	--	--	--	44
Black walnut	514	79	19	3	--	81
Osage-orange	9	2	--	--	--	2
Sycamore	182	29	--	--	--	29
Cottonwood	1,983	306	--	--	1	307
Black cherry	3	0	--	--	--	0
Red oak group	629	112	--	--	--	112
White oak group	1,494	267	--	--	--	267
Willow	1	0	--	--	--	0
Basswood	22	4	--	--	1	5
Elm	32	5	--	--	--	5
Total	6,670	1,094	19	3	3	1,099
All species	6,695	1,099	19	3	4	1,106

(Table 3 continued)

Southeast Unit

Species group	Saw logs		Veneer logs		Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	MBF [2]	MCF [3]
SOFTWOODS						
Redcedar	17	4	--	--	--	4
Total	17	4	--	--	--	4
HARDWOODS						
Soft maple	1,561	248	--	--	--	248
Hard maple	1	0	--	--	--	0
Hickory	52	9	--	--	--	9
Pecan	109	19	--	--	--	19
Hackberry	1,291	205	--	--	--	205
Ash	434	74	--	--	--	74
Black walnut	812	124	45	6	--	131
Osage-orange	5	1	--	--	--	1
Sycamore	567	90	--	--	--	90
Cottonwood	4,049	625	--	--	--	625
Black cherry	414	74	--	--	--	74
Red oak group	2,265	404	--	--	--	404
White oak group	4	1	--	--	--	1
Willow	1	0	--	--	--	0
Basswood	388	62	--	--	--	62
Elm	1	0	--	--	--	0
Total	11,953	1,935	45	6	--	1,942
All species	11,970	1,939	45	6	--	1,945

West Unit

Species group	Saw logs		Veneer logs		Other Products	All Products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	MBF [2]	MCF [3]
SOFTWOODS						
Redcedar	26	6	--	--	--	6
Ponderosa pine	2	0				0
Total	27	6	--	--	--	6
HARDWOODS						
Soft maple	167	26	--	--	--	26
Pecan	18	3	--	--	--	3
Hackberry	136	22	--	--	--	22
Ash	93	16	--	--	--	16
Black walnut	115	18	--	--	--	18
Osage-orange	4	1	--	--	--	1
Sycamore	100	4	--	--	--	4
Cottonwood	106	17	--	--	--	17
Red oak group	112	9	--	--	--	9
White oak group	118	69	--	--	--	69
Black locust	124	0	--	--	--	0
Elm	130	3	--	--	--	3
Other hardwoods	136	0	--	--	--	0
Total	1127	188	--	--	--	188
All species	1154	194	--	--	--	194

[1] Based on utiization studies in the region.
[2] Thousand board feet, International 1/4-inch rule.
[3] Thousand cubic feet.
Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

Table 4.--Saw log production by Forest Survey Unit, species group, and State of destination, Kansas, 1998

(*Thousand board feet* [1])

All Units

Species group	Total	Destination		
		Kansas	Missouri	Nebraska
SOFTWOODS				
Redcedar	61	61	--	--
Ponderosa pine	8	8	--	--
Total	70	70	--	--
HARDWOODS				
Soft maple	2,788	2,647	140	--
Hard maple	3	3	--	--
Hickory	98	22	76	--
Pecan	177	177	--	--
Hackberry	1,814	1,814	--	--
Ash	783	664	119	--
Black walnut	1,440	513	927	--
Osage-orange	18	18	--	--
Sycamore	775	727	48	--
Cottonwood	6,142	5,942	131	69
Black cherry	3	3	--	--
Red oak group	1,092	632	432	28
White oak group	4,148	2,737	1,383	28
Black locust	1	1	--	--
Willow	5	5	--	--
Basswood	23	6	17	--
Elm	438	438	--	--
Other hardwoods	2	2	--	--
Total	19,749	16,352	3,273	124
All species	19,819	16,422	3,273	124

Northeast Unit

Species group	Total	Destination		
		Kansas	Missouri	Nebraska
SOFTWOODS				
Redcedar	19	19	--	--
Ponderosa pine	7	7	--	--
Total	26	26	--	--
HARDWOODS				
Soft maple	1,060	1,043	17	--
Hard maple	3	3	--	--
Hickory	46	10	37	--
Pecan	49	49	--	--
Hackberry	387	387	--	--
Ash	256	246	10	--
Black walnut	514	189	324	--
Osage-orange	9	9	--	--
Sycamore	182	182	--	--
Cottonwood	1,983	1,903	11	69
Black cherry	3	3	--	--
Red oak group	629	214	388	28
White oak group	1,494	789	678	28
Willow	1	1	--	--
Basswood	22	6	17	--
Elm	32	32	--	--
Total	6,670	5,065	1,480	124
All species	6,695	5,091	1,480	124

(Table 4 continued)

Southeast Unit

Species group	Total	Destination		
		Kansas	Missouri	Nebraska
SOFTWOODS				
Redcedar	17	17	–	–
Total	17	17	–	–
HARDWOODS				
Soft maple	1,561	1,438	124	–
Hard maple	1	1	–	–
Hickory	52	12	40	–
Pecan	109	109	–	–
Hackberry	1,291	1,291	–	–
Ash	434	325	110	–
Black walnut	812	209	603	–
Osage-orange	5	5	–	–
Sycamore	567	519	48	–
Cottonwood	4,049	3,929	120	–
Red oak group	414	370	45	–
White oak group	2,265	1,560	705	–
Willow	4	4	–	–
Basswood	1	1	–	–
Elm	388	388	–	–
Other hardwoods	1	1	–	–
Total	11,953	10,160	1,793	–
All species	11,970	10,177	1,793	–

West Unit

Species group	Total	Destination		
		Kansas	Missouri	Nebraska
SOFTWOODS				
Redcedar	26	26	–	–
Ponderosa pine	2	2	–	–
Total	27	27	–	–
HARDWOODS				
Soft maple	167	167	–	–
Pecan	18	18	–	–
Hackberry	136	136	–	–
Ash	93	93	–	–
Black walnut	115	115	–	–
Osage-orange	4	4	–	–
Sycamore	26	26	–	–
Cottonwood	110	110	–	–
Red oak group	48	48	–	–
White oak group	389	389	–	–
Black locust	1	1	–	–
Elm	18	18	–	–
Other hardwoods	1	1	–	–
Total	1,127	1,127	–	–
All species	1,154	1,154	–	–

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 5. --Saw log production from roundwood by Forest Survey Unit, county, and species group, Kansas, 1998
(*Thousand board feet* [1])

Forest Survey Unit and county	Red-cedar	Ponderosa pine	Total softwoods	Soft maple	Hard maple	Hickory	Pecan	Hack-berry	Ash	Black-walnut	Osage-orange	Sycamore	Cotton-wood	Black cherry	Red oak group	White oak group	Black locust	Willow	Bass-wood	Elm	Other hwds.	Total hwds.	All species
NORTHEAST																							
Atchison	–	–	–	69	–	–	–	–	14	14	–	14	858	–	4	186	–	–	–	–	–	1,159	1,159
Brown	–	–	–	–	–	–	–	–	–	–	–	–	173	–	14	14	–	–	–	–	–	200	200
Clay	1	–	1	27	–	–	4	11	11	23	1	4	5	–	8	30	–	–	–	2	–	127	128
Dickinson	–	–	–	44	–	11	3	24	10	172	–	4	15	–	339	716	–	–	17	2	–	1,357	1,357
Doniphan	–	7	7	–	3	4	–	–	–	2	1	14	28	3	33	1	–	–	–	–	–	88	95
Douglas	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Franklin	9	–	9	587	–	6	6	158	73	49	5	16	22	–	59	116	–	1	6	4	–	1,108	1,117
Geary	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Jefferson	–	–	–	27	–	–	3	13	10	6	–	39	96	–	8	52	–	–	–	2	–	257	257
Johnson	2	–	2	27	–	–	3	10	13	17	–	7	7	–	12	43	–	–	–	5	–	145	147
Leavenworth	–	–	–	27	–	0	3	10	10	6	–	18	87	–	8	35	–	–	–	2	–	206	206
Miami	–	–	–	29	–	26	3	10	20	165	–	4	4	–	65	42	–	–	0	2	–	370	370
Nemaha	–	–	–	–	–	–	–	–	–	–	–	–	35	–	14	14	–	–	–	–	–	62	62
Osage	–	–	–	27	–	–	3	10	10	7	–	4	5	–	8	27	–	–	–	2	–	103	103
Pottawatomie	5	–	5	30	–	–	3	11	10	13	1	4	211	–	8	57	–	–	–	3	–	350	355
Riley	2	–	2	27	–	–	3	79	24	8	–	4	4	–	8	28	–	–	–	2	–	187	189
Shawnee	–	–	–	27	–	–	3	10	10	6	–	32	418	–	8	26	–	–	–	2	–	543	543
Wabaunsee	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Wyandotte	1	–	1	27	–	–	3	10	10	8	–	4	4	–	8	28	–	–	–	2	–	104	105
Total	19	7	26	1,060	3	46	49	378	256	514	9	182	1,983	3	629	1,494	–	1	22	32	–	6,670	6,695
SOUTHEAST																							
Allen	0	–	0	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Anderson	3	–	3	29	1	1	3	11	11	7	–	6	4	0	9	30	–	–	1	3	1	115	118
Bourbon	–	–	–	39	–	16	3	10	10	134	–	5	4	–	13	71	–	–	–	2	–	307	307
Butler	–	–	–	27	–	–	3	10	10	9	–	4	55	–	8	30	–	–	–	2	–	159	159
Chase	–	–	–	27	–	–	3	38	38	6	–	4	4	–	8	81	–	–	–	2	–	184	184
Chautauqua	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Cherokee	1	–	1	144	–	3	6	16	16	340	–	47	210	–	14	695	–	–	–	17	–	1,602	1,604
Coffey	1	–	1	165	–	–	3	51	51	7	–	4	73	–	22	56	–	–	–	2	–	423	424
Cowley	–	–	–	110	–	–	3	93	93	6	–	73	843	–	8	164	–	–	–	98	–	1,409	1,409
Crawford	1	–	1	27	–	3	4	29	29	14	–	46	47	–	20	32	–	–	–	16	–	248	250
Elk	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Greenwood	–	–	–	96	–	–	3	85	85	6	–	101	970	–	8	137	–	–	–	109	–	1,525	1,525
Labette	3	–	3	31	–	6	7	43	43	25	–	8	25	–	32	40	–	4	–	17	–	265	568
Linn	4	–	4	40	–	23	4	10	10	156	–	11	4	–	49	27	–	–	–	2	–	346	350
Lyon	–	–	–	165	–	–	3	154	154	28	–	115	937	–	8	357	–	–	–	57	–	1,834	1,834
Marion	1	–	1	27	–	–	3	10	10	7	–	4	5	–	8	26	–	–	–	2	–	103	104
Montgomery	3	–	3	359	–	–	36	291	291	7	–	62	4	–	151	238	–	–	–	29	–	1,229	1,232
Morris	–	–	–	27	–	–	3	293	293	20	–	4	4	–	8	40	–	–	–	2	–	411	411
Neosho	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Wilson	–	–	–	27	–	–	7	14	14	7	–	8	12	–	8	35	–	–	–	6	–	135	135
Woodson	–	–	–	110	–	–	3	93	10	6	–	46	832	–	8	101	–	–	–	43	–	1,252	1,252
Total	17	–	17	1,561	1	52	109	1,291	434	812	–	602	4,049	0	414	2,265	–	4	1	388	1	11,953	11,970
WEST																							
Barton	1	–	1	–	–	–	–	0	1	8	–	–	1	–	–	0	–	–	–	1	–	10	11
Ellsworth	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	–	2	2
Harper	1	1	2	–	–	–	–	–	1	1	–	–	–	–	–	2	–	–	–	–	–	4	5
Harvey	2	–	2	27	–	–	3	10	11	8	1	4	5	–	8	26	1	–	–	2	1	107	109
Lincoln	–	–	–	–	–	–	–	4	4	4	–	–	–	–	–	127	–	–	–	–	–	140	140
McPherson	15	1	16	29	–	–	3	20	15	31	3	4	14	–	8	26	–	–	–	4	–	158	174
Mitchell	1	–	1	–	–	–	–	5	5	5	–	–	1	–	–	18	–	–	–	3	–	37	38
Ottawa	–	–	–	27	–	–	3	65	24	17	–	4	73	–	8	109	–	–	–	2	–	333	333
Pawnee	1	–	1	–	–	–	–	0	1	8	–	–	1	–	–	1	–	–	–	1	–	12	13
Reno	2	–	2	0	–	–	0	0	0	2	0	–	0	–	–	0	–	–	–	0	–	4	6
Rice	3	–	3	0	–	–	–	0	0	1	0	0	1	–	–	1	–	–	–	0	–	4	8
Saline	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Sedgwick	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Stafford	1	–	1	–	–	–	–	1	1	10	–	–	1	–	–	0	–	–	–	1	–	13	14
Sumner	–	–	–	27	–	–	3	10	10	6	–	4	4	–	8	26	–	–	–	2	–	101	101
Total	26	2	27	167	–	–	18	136	93	115	4	26	110	–	48	404	1	–	–	18	1	1,127	1,154
State total	61	8	70	2,788	3	98	177	1,814	783	1,440	18	775	6,142	3	1,092	4,148	1	5	23	438	2	19,749	19,819

[1] International 1/4-inch rule.

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 6.--Saw log receipts by Forest Survey Unit, species group, and State of origin, Kansas, 1998
(*Thousand board feet* [1])

All Units

Species	Total	Iowa	Kansas	Missouri	Nebraska	Oklahoma
SOFTWOODS						
Redcedar	61	--	61	--	--	--
Ponderosa pine	8	--	8	--	--	--
Total	70	--	70	--	--	--
HARDWOODS						
Soft maple	3,008	--	2,647	143	--	218
Hard maple	3	--	3	--	--	--
Hickory	22	--	22	--	--	--
Pecan	208	--	177	16	--	16
Hackberry	1,999	--	1,814	63	--	122
Ash	770	--	664	53	--	53
Black walnut	576	--	513	32	--	32
Osage-orange	18	--	18	--	--	--
Sycamore	1,190	--	727	311	--	152
Cottonwood	9,426	--	5,942	1,765	--	1,719
Black cherry	3	--	3	--	--	--
Red oak group	717	--	632	42	--	42
White oak group	3,089	--	2,737	172	--	179
Black locust	1	--	1	--	--	--
Willow	5	--	5	--	--	--
Basswood	6	--	6	--	--	--
Elm	603	--	438	10	--	156
Other hardwoods	2	--	2	--	--	--
Total	21,646	--	16,352	2,607	--	2,688
All species	21,716	--	16,422	2,607	--	2,688

Northeast Unit

Species	Total	Iowa	Kansas	Missouri	Nebraska	Oklahoma
SOFTWOODS						
Redcedar	18	--	18	--	--	--
Ponderosa pine	7	--	7	--	--	--
Total	25	--	25	--	--	--
HARDWOODS						
Soft maple	632	--	632	--	--	--
Hard maple	3	--	3	--	--	--
Hickory	10	--	10	--	--	--
Pecan	3	--	3	--	--	--
Hackberry	508	--	498	10	--	--
Ash	95	--	95	--	--	--
Black walnut	110	--	110	--	--	--
Osage-orange	9	--	9	--	--	--
Sycamore	406	--	118	288	--	--
Cottonwood	3,586	--	1,842	1,744	--	--
Black cherry	3	--	3	--	--	--
Red oak group	93	--	93	--	--	--
White oak group	397	--	363	35	--	--
Willow	1	--	1	--	--	--
Basswood	6	--	6	--	--	--
Elm	5	--	5	--	--	--
Total	5,867	--	3,791	2,077	--	--
All species	5,893	--	3,816	2,077	--	--

(Table 6 continued)

Southeast Unit

Species	Total	Iowa	Kansas	Missouri	Nebraska	Oklahoma
SOFTWOODS						
Redcedar	17	--	17	--	--	--
Total	17	--	17	--	--	--
HARDWOODS						
Soft maple	2,373	--	2,013	143	--	218
Hard maple	1	--	1	--	--	--
Hickory	12	--	12	--	--	--
Pecan	205	--	173	16	--	16
Hackberry	1,416	--	1,241	53	--	122
Ash	642	--	536	53	--	53
Black walnut	388	--	324	32	--	32
Osage-orange	5	--	5	--	--	--
Sycamore	783	--	609	22	--	152
Cottonwood	5,753	--	4,013	21	--	1,719
Red oak group	642	--	539	42	--	42
White oak group	2,460	--	2,143	138	--	179
Willow	4	--	4	--	--	--
Basswood	1	--	1	--	--	--
Elm	591	--	425	10	--	156
Other hardwoods	1	--	1	--	--	--
Total	15,258	--	12,040	530	--	2,688
All species	15,275	--	12,057	530	--	2,688

West Unit

Species	Total	Iowa	Kansas	Missouri	Nebraska	Oklahoma
SOFTWOODS						
Redcedar	26	--	26	--	--	--
Ponderosa pine	2	--	2	--	--	--
Total	27	--	27	--	--	--
HARDWOODS						
Soft maple	3	--	3	--	--	--
Pecan	0	--	0	--	--	--
Hackberry	76	--	76	--	--	--
Ash	33	--	33	--	--	--
Black walnut	78	--	78	--	--	--
Osage-orange	4	--	4	--	--	--
Sycamore	0	--	0	--	--	--
Cottonwood	86	--	86	--	--	--
White oak group	232	--	232	--	--	--
Black locust	1	--	1	--	--	--
Elm	7	--	7	--	--	--
Other hardwoods	1	--	1	--	--	--
Total	521	--	521	--	--	--
All species	548	--	548	--	--	--

[1] International 1/4-inch rule.
Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

Table 7. --Veneer log production by Forest Survey Unit, county, and species group, Kansas, 1998
(*Thousand board feet* [1])

Forest Survey Unit and county	Black walnut
Northeast	
Franklin	2
Johnson	1
Miami	16
Unit total	19
Southeast	
Allen	2
Anderson	1
Bourbon	15
Crawford	2
Linn	16
Lyon	2
Neosho	3
Wilson	3
Woodson	1
Unit total	45
State total	64

[1] International 1/4-inch rule.

Table 8.--Wood material harvested for industrial roundwood by source of material and species group, Kansas,1998[1]
(*Thousand cubic feet*)

All Units

Species group	Growing stock				Non-growing stock							Total material used for products	Total material not used	Total material harvested
	Used for products		Not used		Used for products					Not used				
	Sawtimber	Pole-timber	Logging residue	Total	Limbwood	Saplings	Cull trees	Dead trees	Nonforest trees	Logging slash	Total			
SOFTWOODS														
Redcedar	14.0	0.1	0.2	14.3	--	--	0.1	--	--	4.2	4.3	14.2	4.4	18.6
Ponderosa pine	1.5	--	0.2	1.6	--	–	0.0	--	--	0.4	0.4	1.5	0.6	2.1
Total	15.5	0.1	0.3	15.9	--	--	0.1	--	--	4.7	4.7	15.7	5.0	20.7
HARDWOODS														
Soft maple	383.1	0.1	42.5	425.7	--	–	47.9	12.5	–	117.4	177.9	443.7	159.8	603.6
Hard maple	0.5	--	0.2	0.7	0.0	–	0.0	--	--	0.2	0.2	0.6	0.4	1.0
Hickory	15.2	--	6.3	21.4	0.4	–	1.2	–	–	5.0	6.6	16.8	11.3	28.1
Pecan	27.3	--	11.3	38.6	0.8	--	2.1	--	--	9.0	11.9	30.2	20.3	50.5
Hackberry	248.8	--	27.6	276.3	--	--	31.2	8.2	--	76.4	115.8	288.1	104.0	392.1
Ash	121.0	--	50.0	171.0	3.4	–	9.4	–	–	40.1	52.9	133.8	90.1	223.9
Black walnut	191.9	--	18.2	210.0	4.0	--	5.9	--	27.6	50.9	88.5	229.4	69.1	298.5
Osage-orange	--	--	–	--	0.1	–	3.0	--	--	2.0	5.1	3.1	2.0	5.1
Sycamore	106.3	--	11.8	118.0	--	--	13.3	3.5	--	32.6	49.5	123.1	44.4	167.5
Cottonwood	948.7	0.1	143.2	1,092.0	--	--	--	--	--	293.6	293.6	948.8	436.8	1,385.6
Black cherry	0.4	--	0.0	0.4	--	–	0.0	0.0	--	0.1	0.2	0.4	0.2	0.6
Red oak group	123.7	6.8	40.1	170.6	0.1	–	64.3	–	–	44.2	108.6	194.9	84.3	279.2
White oak group	469.9	25.7	152.2	647.9	0.4	--	244.3	--	–	168.0	412.7	740.3	320.2	1,060.5
Black locust	0.1	--	0.0	0.2	0.0	–	0.0	--	--	0.0	0.0	0.1	0.1	0.2
Willow	0.7	--	0.1	0.8	--	–	0.1	0.0	--	0.2	0.3	0.8	0.3	1.1
Basswood	4.2	0.1	0.4	4.7	--	–	0.4	0.1	--	1.0	1.5	4.8	1.4	6.2
Elm	60.1	--	6.7	66.7	--	–	7.5	2.0	–	18.4	27.9	69.6	25.1	94.7
Other hardwoods	0.3	--	0.1	0.3	0.0	–	0.0	0.0	--	0.1	0.1	0.3	0.2	0.4
Total	2,701.9	32.8	510.7	3,245.3	9.3	--	430.8	26.3	27.6	859.4	1,353.5	3,228.8	1,370.0	4,598.8
All species	2,717.4	32.9	511.0	3,261.3	9.3	--	430.9	26.3	27.6	864.0	1,358.2	3,244.5	1,375.0	4,619.5

Northeast Unit

Species group	Growing stock				Non-growing stock							Total material used for products	Total material not used	Total material harvested
	Used for products		Not used		Used for products					Not used				
	Sawtimber	Pole-timber	Logging residue	Total	Limbwood	Saplings	Cull trees	Dead trees	Nonforest trees	Logging slash	Total			
SOFTWOODS														
Redcedar	4.9	0.1	0.1	5.2	--	–	0.0	–	–	1.3	1.3	5.1	1.4	6.5
Ponderosa pine	1.2	--	0.1	1.3	--	–	0.0	--	--	0.4	0.4	1.2	0.5	1.7
Total	6.1	0.1	0.3	6.5	--	–	0.0	–	--	1.7	1.7	6.3	1.9	8.2
HARDWOODS														
Soft maple	146.2	0.1	16.2	162.5	--	--	18.2	4.8	--	44.6	67.6	169.3	60.8	230.2
Hard maple	0.4	--	0.2	0.6	0.0	–	0.0	--	--	0.1	0.2	0.5	0.3	0.8
Hickory	7.2	--	3.0	10.1	0.2	–	0.6	--	--	2.4	3.1	7.9	5.3	13.3
Pecan	7.5	--	3.1	10.7	0.2	–	0.6	--	--	2.5	3.3	8.3	5.6	14.0
Hackberry	53.0	--	539.0	58.9	--	--	6.7	1.7	--	16.3	24.7	61.4	22.2	83.6
Ash	39.5	--	16.3	55.8	1.1	–	3.1	–	–	13.1	17.3	43.7	29.4	73.1
Black walnut	68.0	--	6.5	74.5	1.4	–	2.1	–	9.8	18.0	31.4	81.4	24.5	105.9
Osage-orange	--	--	–	--	0.0	–	1.5	--	--	1.0	2.5	1.5	1.0	2.5
Sycamore	25.0	--	2.8	27.7	--	–	3.1	0.8	–	7.7	11.6	28.9	10.4	39.4
Cottonwood	306.0	0.1	46.3	353.3	--	–	--	--	--	94.8	94.8	307.0	141.1	448.1
Black cherry	0.4	--	0.1	0.4	--	–	0.0	0.0	--	0.1	0.2	0.4	0.0	0.6
Red oak group	71.3	3.9	23.1	98.3	0.1	--	3,731.0	--	--	2,535.0	62.6	112.3	48.6	160.9
White oak group	169.3	9.3	54.8	233.4	0.1	–	88.0	–	–	60.5	148.7	266.7	115.3	382.1
Willow	0.1	--	0.0	0.2	--	–	0.0	0.0	--	0.0	0.1	0.2	0.1	0.2
Basswood	4.0	0.1	0.4	4.6	--	–	0.4	0.1	--	1.0	1.4	4.6	1.4	6.0
Elm	4.4	--	0.5	4.9	--	–	0.6	0.1	--	1.4	2.1	5.1	1.9	7.0
Total	903.4	13.5	179.1	1,096.0	3.2	–	161.9	7.6	9.8	289.0	471.6	1,099.4	468.1	1,567.5
All species	909.6	13.6	179.4	1,102.5	3.2	–	161.9	7.6	9.8	290.7	473.3	1,105.7	470.0	1,575.7

(Table 8 continued)

Southeast Unit

Species group	Growing stock				Non-growing stock							Total material used for products	Total material not used	Total material harvested
	Used for products		Not used		Used for products					Not used				
	Sawtimber	Pole-timber	Logging residue	Total	Limbwood	Saplings	Cull trees	Dead trees	Nonforest trees	Logging slash	Total			
SOFTWOODS														
Redcedar	3.6	–	0.1	3.6	–	–	0.0	–	–	1.2	1.2	3.6	1.2	4.8
Total	3.6	–	0.1	3.6	–	–	0.0	–	–	1.2	1.2	3.6	1.2	4.8
HARDWOODS														
Soft maple	214.0	–	23.7	237.8	–	–	26.9	7.0	–	65.7	99.6	247.9	89.5	337.4
Hard maple	0.1	–	0.0	0.1	0.0	–	0.0	–	–	0.0	0.0	0.1	0.1	0.2
Hickory	8.0	–	3.3	11.3	0.2	–	0.6	–	–	2.6	3.5	8.8	5.9	14.8
Pecan	16.9	–	7.0	23.9	0.5	–	1.3	–	–	5.6	7.4	18.7	12.6	31.3
Hackberry	177.0	–	19.6	196.6	–	–	22.2	5.8	–	54.4	82.4	205.0	74.0	279.0
Ash	67.1	–	27.7	64.8	1.9	–	5.2	–	–	22.2	29.4	74.2	50.0	124.2
Black walnut	109.2	–	10.3	119.5	2.3	–	3.3	–	15.7	29.0	50.3	130.5	39.3	169.8
Osage-orange	–	–	–	–	0.0	–	0.8	–	–	0.6	1.4	0.8	0.6	1.4
Sycamore	77.8	–	8.6	86.4	–	–	9.8	2.6	–	23.9	36.2	90.1	32.5	122.6
Cottonwood	624.7	–	64.3	719.0	–	–	–	–	–	193.5	193.5	624.7	287.9	912.6
Red oak group	46.9	2.6	15.2	64.7	0.0	–	24.4	–	–	16.8	41.2	73.9	32.0	105.9
White oak group	256.6	14.0	83.1	353.7	0.2	–	133.4	–	–	91.7	225.3	404.2	174.8	579.0
Willow	0.6	–	0.1	0.6	–	–	0.1	0.0	–	0.2	0.3	0.7	0.2	0.9
Basswood	0.1	–	0.0	0.1	–	–	0.0	0.0	–	0.0	0.1	0.1	0.0	0.2
Elm	53.1	–	5.9	59.0	–	–	6.7	1.7	–	16.3	24.7	61.6	22.2	83.8
Other hardwoods	0.1			0.2						0.0	0.0	0.1	0.1	0.2
Total	1,652.2	16.6	299.0	1,967.9	0.0	–	234.7	17.2	15.7	522.6	795.3	1,941.5	821.6	2,763.2
All species	1,655.8	16.6	299.1	1,971.5	5.2	–	234.7	17.2	15.7	523.7	796.5	1,945.2	1,392.2	2,768.0

West Unit

Species group	Growing stock				Non-growing stock							Total material used for products	Total material not used	Total material harvested
	Used for products		Not used		Used for products					Not used				
	Sawtimber	Pole-timber	Logging residue	Total	Limbwood	Saplings	Cull trees	Dead trees	Nonforest trees	Logging slash	Total			
SOFTWOODS														
Redcedar	5.5	–	0.0	5.5	–	–	0.0	–	–	1.8	1.8	5.5	1.8	7.3
Ponderosa pine	0.3	–	0.0	0.3	–	–	0.0	–	–	0.1	0.1	0.3	0.1	0.4
Total	5.7	–	0.1	5.8	–	–	0.0	–	–	1.8	1.9	5.8	1.9	7.7
HARDWOODS														
Soft maple	22.8	–	2.5	25.4	–	–	2.9	0.7	–	7.0	10.6	26.5	9.5	36.0
Pecan	2.8	–	1.2	4.0	0.1	–	0.2	–	–	0.9	1.2	3.1	2.1	5.2
Hackberry	18.7	–	2.1	20.8	–	–	2.3	0.6	–	5.7	8.7	21.7	7.8	29.5
Ash	14.4	–	6.0	20.4	0.4	–	1.1	–	–	4.8	6.3	15.9	10.7	26.7
Black walnut	14.6	–	1.4	16.0	0.3	–	0.5	–	2.1	3.9	6.8	17.5	5.3	22.8
Osage-orange	–	–	–	–	0.0	–	0.7	–	–	0.5	1.2	0.7	0.5	1.2
Sycamore	3.5	–	0.4	3.9	–	–	0.4	0.1	–	1.1	1.6	4.1	1.5	5.6
Cottonwood	17.0	–	2.6	19.6	–	–	–	–	–	5.3	5.3	17.0	7.9	24.9
Red oak group	5.5	0.3	1.8	7.6	0.0	–	2.9	–	–	2.0	4.8	8.6	3.7	12.4
White oak group	44.1	2.4	14.3	60.8	0.0	–	22.9	–	–	15.8	38.7	69.4	30.0	99.5
Black locust	0.1	–	0.0	0.2	0.0	–	0.0	–	–	0.0	0.0	0.1	0.1	0.2
Elm	2.5	–	0.3	2.7	–	–	0.3	0.1	–	0.8	1.2	2.9	1.0	3.9
Other hardwoods	0.1	–	0.0	0.2	0.0	–	0.0	0.0	–	0.0	0.1	0.2	0.1	0.2
Total	146.3	2.7	32.5	181.5	0.9	–	34.3	1.6	2.1	47.7	86.6	187.8	80.2	268.1
All species	152.0	2.7	32.6	187.3	0.9	–	34.3	1.6	2.1	49.6	88.4	193.6	82.1	275.7

Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

Table 9.--Harvest residues generated by industrial roundwood harvesting by Forest Survey Unit, county, and species group, Kansas, 1998

Unit and county	Red cedar	Total swds.	Soft maple	Hard maple	Hickory	Pecan	Hack-berry	Ash	Black walnut	Osage-orange	Sycamore	Cotton-wood	Black cherry	Red oak group	White oak group	Black-locust	Willow	Bass-wood	Elm	Other hwds	Total hwds.	All species
NORTHEAST																						
Atchison	–	–	–	4	–	–	--	2	1	–	1	61	–	0	14	–	–	--	–	–	83	83
Brown	–	–	–	–	–	–	–	–	–	–	--	12	–	1	1	–	–	–	–	–	14	14
Clay	0	–	0	2	–	0	1	1	1	0	0	0	–	1	2	–	–	–	0	–	9	9
Dickinson	–	–	–	3	1	0	1	1	8	–	0	1	–	26	55	–	–	1	0	–	98	98
Doniphan	–	0	0	–	0	–	–	–	0	0	1	2	0	3	0	–	–	–	–	–	7	7
Douglas	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Franklin	1	–	1	34	1	1	9	8	2	1	1	2	–	5	9	–	0	0	0	–	72	73
Geary	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Jefferson	–	–	–	2	–	0	1	1	0	–	2	7	–	1	4	–	–	–	0	–	18	18
Johnson	0	–	0	2	–	0	1	1	1	–	0	1	–	1	3	–	–	0	0	–	11	11
Leavenworth	–	–	–	2	–	0	1	1	0	–	1	6	–	1	3	–	–	–	0	–	15	15
Miami	–	–	–	2	3	0	1	2	8	–	0	0	–	5	3	–	–	0	0	–	25	25
Nemaha	–	–	–	–	–	–	–	–	–	–	–	2	–	1	1	–	–	–	–	–	5	5
Osage	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Pottawatomie	0	–	0	2	–	0	1	1	1	0	0	15	–	1	4	–	–	–	0	–	25	25
Riley	0	–	0	2	–	0	5	3	0	–	0	0	–	1	2	–	–	–	0	–	13	13
Shawnee	–	–	–	2	–	0	1	1	0	–	2	30	–	1	2	–	–	–	0	–	38	38
Wabaunsee	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Wyandotte	0	–	0	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Total	1	0	2	61	5	6	22	29	24	1	10	141	0	49	115	–	0	1	2	–	468	470
SOUTHEAST																						
Allen	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Anderson	0	–	0	2	0	0	1	1	0	–	0	0	–	1	2	–	–	0	0	0	8	9
Bourbon	–	–	–	2	2	0	1	1	7	–	0	0	–	1	5	–	–	–	0	–	20	20
Butler	–	–	–	2	–	0	1	1	0	–	0	4	–	1	2	–	–	–	0	–	11	11
Chase	–	–	–	2	–	0	2	1	0	–	0	0	–	1	6	–	–	–	0	–	13	13
Chautauqua	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Cherokee	0	–	0	8	0	1	1	13	16	0	3	15	–	1	54	–	–	–	1	–	112	112
Coffey	0	–	0	9	–	0	3	4	0	0	0	5	–	2	4	–	–	–	0	–	29	29
Cowley	–	–	–	6	–	0	5	1	0	–	4	60	–	1	13	–	–	–	6	–	96	96
Crawford	0	–	0	2	0	1	2	1	1	–	3	3	–	2	2	–	–	–	1	–	17	17
Elk	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Greenwood	–	–	–	6	–	0	5	1	0	–	6	69	–	1	11	–	–	–	6	–	104	104
Labette	0	–	0	2	1	1	2	3	1	0	0	2	–	2	3	–	0	–	1	–	19	19
Linn	0	–	0	2	3	0	1	2	8	–	1	0	–	4	2	–	–	–	0	–	23	23
Lyon	–	–	–	9	–	0	9	1	1	–	7	67	–	1	28	–	–	–	3	–	126	126
Marion	0	–	0	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Montgomery	0	–	0	21	–	4	17	9	0	–	4	0	–	12	18	–	–	–	0	–	85	85
Morris	–	–	–	2	–	0	17	1	1	–	0	0	–	1	3	–	–	--	0	–	25	25
Neosho	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Wilson	–	–	–	2	–	1	1	1	0	–	0	1	–	1	3	–	–	–	0	–	10	10
Woodson	–	–	–	6	–	0	5	1	0	–	3	59	–	1	8	–	–	–	2	–	86	86
Total	1	–	1	89	6	13	74	50	39	1	32	288	–	32	175	–	0	0	22	0	822	823
WEST																						
Barton	0	–	0	–	–	–	0	0	0	–	–	0	–	–	0	–	–	–	0	–	1	1
Ellsworth	–	–	–	–	–	–	--	–	0	–	--	0	–	–	–	–	–	--	–	–	0	0
Harper	0	0	0	–	–	–	–	0	0	–	–	–	–	–	0	–	–	–	–	–	0	0
Harvey	0	–	0	2	–	0	1	1	0	0	0	0	–	1	2	0	–	–	0	0	8	8
Lincoln	–	–	–	–	–	–	0	0	0	–	–	–	–	–	10	–	–	–	–	–	11	11
McPherson	1	0	1	2	–	0	1	2	1	0	0	1	–	1	2	–	–	–	0	–	11	12
Mitchell	0	–	0	–	–	–	0	1	0	–	–	0	–	–	1	–	–	–	0	–	3	3
Ottawa	–	–	–	2	–	0	4	3	1	–	0	5	–	1	8	–	–	–	0	–	24	24
Pawnee	0	–	0	–	–	–	0	0	0	–	–	0	–	–	0	–	–	–	0	–	1	1
Reno	0	–	0	0	–	0	0	0	0	0	–	0	–	–	0	–	–	–	0	–	0	0
Rice	0	–	0	0	–	–	0	0	0	0	0	0	–	–	0	–	–	–	0	–	0	1
Saline	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Sedgwick	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Stafford	0	–	0	–	–	–	0	0	0	–	–	0	–	–	0	–	–	–	0	–	1	1
Sumner	–	–	–	2	–	0	1	1	0	–	0	0	–	1	2	–	–	–	0	–	7	7
Total	2	0	2	10	–	2	8	11	5	0	1	8	–	4	30	0	–	–	1	0	80	82
State total	4	1	5	160	11	20	104	90	69	2	44	437	0	84	320	0	0	1	25	0	1,370	1,375

Units in thousands of cubic feet.
Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

Table 10.--Growing-stock removals for industrial roundwood, by Forest Survey Unit, county, and species group, Kansas, 1998
(*Thousand cubic feet*)

Unit and county	Red-cedar	Ponderosa pine	Total swds	Soft maple	Hard maple	Hickory	Pecan	Hackberry	Ash	Black walnut	Sycamore	Cotton-wood	Black cherry	Red oak group	White oak	Black-locust	Willow	Bass-wood	Elm	Other hwds.	Total hwds.	All species
NORTHEAST UNIT																						
Atchison	--	--	--	11	--	--	--	--	3	2	2	152	--	1	29	-	--	--	--	--	200	200
Brown	--	--	--	--	--	--	--	--	-	--	--	31	--	2	2	-	--	--	--	--	35	35
Clay	0	--	0	4	--	--	1	2	3	3	1	1	--	1	5	-	--	--	0	--	20	20
Dickinson	--	--	-	7	--	2	1	4	2	24	1	3	--	53	112	-	--	3	0	--	211	211
Doniphan	--	1	1	-	1	1	--	--	--	0	2	5	0	5	0	-	--	--	--	--	15	16
Douglas	--	--	-	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Franklin	2	--	2	89	--	1	1	24	16	7	2	4	--	9	18	-	0	1	1	--	174	176
Geary	--	--	-	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Jefferson	--	--	--	4	--	--	1	2	2	1	6	17	--	1	8	-	--	--	0	--	43	43
Johnson	2	--	2	5	--	--	1	2	3	3	1	2	--	2	7	-	--	1	1	--	27	29
Leavenworth	--	--	--	4	--	--	1	2	2	1	3	15	--	1	5	-	--	--	0	--	35	35
Miami	--	--	--	4	--	6	1	2	4	25	1	1	--	10	7	-	--	0	0	--	60	60
Nemaha	--	--	-	--	--	--	--	--	--	--	--	6	--	2	2	-	--	--	--	--	10	10
Osage	--	--	--	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	17	17
Pottawatomie	1	--	1	5	--	--	1	2	2	2	1	37	--	1	9	-	--	--	0	--	59	60
Riley	0	--	0	4	--	--	1	12	5	1	1	1	--	1	4	-	--	--	0	--	30	31
Shawnee	--	--	--	4	--	--	1	2	2	1	5	74	--	1	4	-	--	--	0	--	94	94
Wabaunsee	--	--	-	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Wyandotte	0	--	0	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	17	17
Total	5	1	6	163	1	10	11	59	56	74	28	353	0	98	233	--	0	5	5	--	1,096	1,102
SOUTHEAST UNIT																						
Allen	--	--	-	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	17	17
Anderson	1	--	1	4	0	0	1	2	2	1	1	1	--	1	5	-	--	0	0	0	19	20
Bourbon	--	--	--	6	--	4	1	2	2	21	1	1	--	2	11	-	--	--	0	--	49	49
Butler	--	--	--	4	--	--	1	2	2	1	1	10	--	1	5	-	--	--	0	--	27	27
Chase	--	--	--	4	--	--	1	6	2	1	1	1	--	1	13	-	--	--	0	--	29	29
Chautauqua	--	--	--	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Cherokee	0	--	0	22	--	1	1	2	24	48	7	37	--	2	108	-	--	--	3	--	256	256
Coffey	0	--	0	25	--	--	1	8	8	1	1	13	--	3	9	-	--	--	0	--	69	69
Cowley	--	--	--	17	--	--	1	14	2	1	11	150	--	1	26	-	--	--	15	--	237	237
Crawford	0	--	0	4	--	1	1	4	2	2	7	8	--	3	5	-	--	--	2	--	40	41
Elk	--	--	--	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Greenwood	--	--	--	15	--	--	1	13	2	1	15	172	--	1	21	-	--	--	17	--	258	258
Labette	1	--	1	5	--	1	2	7	5	4	1	4	--	5	6	-	1	--	3	--	43	44
Linn	1	--	1	6	--	5	1	2	4	24	2	1	--	8	4	-	--	--	0	--	56	57
Lyon	--	--	--	25	--	--	1	23	2	4	17	66	--	1	56	-	--	--	9	--	305	305
Marion	0	--	0	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	17	17
Montgomery	1	--	1	55	--	--	8	44	17	1	9	1	--	24	37	-	--	--	0	--	196	197
Morris	--	--	--	4	--	--	1	45	2	3	1	1	--	1	6	-	--	--	0	--	64	64
Neosho	--	--	--	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	17	17
Wilson	--	--	--	4	--	--	2	2	2	1	1	2	--	1	5	-	--	--	1	--	23	23
Woodson	--	--	-	17	--	--	1	14	2	1	7	148	--	1	16	--	--	--	7	--	213	213
Total	4	--	4	238	0	11	24	197	95	120	86	719	--	65	354	--	1	0	59	0	1,968	1,971
WEST UNIT																						
Barton	0	--	0	--	--	--	--	0	0	1	--	0	--	--	0	-	--	--	0	--	2	2
Ellsworth	--	--	--	--	--	--	--	--	-	0	--	0	--	--	--	-	--	--	--	--	0	0
Harper	0	0	0	--	--	--	--	--	0	0	--	--	--	--	0	-	--	--	--	--	1	1
Harvey	0	--	0	4	--	--	1	2	2	1	1	1	--	1	4	0	--	--	0	0	17	18
Lincoln	--	--	-	--	--	--	--	1	1	1	--	--	--	--	20	-	--	--	--	--	22	22
McPherson	3	0	3	4	--	--	1	3	3	4	1	2	--	1	4	-	--	--	1	--	25	28
Mitchell	0	--	0	--	--	--	--	1	1	1	--	0	--	--	3	-	--	--	0	--	6	6
Ottawa	--	--	--	4	--	--	1	10	5	2	1	13	--	1	17	-	--	--	0	--	55	55
Pawnee	0	--	0	--	--	--	--	0	0	1	--	0	--	--	0	-	--	--	0	--	2	2
Reno	0	--	0	0	--	--	0	0	0	0	0	0	--	--	0	-	--	--	0	--	1	1
Rice	1	--	1	0	--	--	--	0	0	0	0	0	--	--	0	-	--	--	0	--	1	1
Saline	--	--	-	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Sedgwick	--	--	-	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Stafford	0	--	0	--	--	--	--	0	0	1	--	0	--	--	0	-	--	--	0	--	2	2
Sumner	--	--	--	4	--	--	1	2	2	1	1	1	--	1	4	-	--	--	0	--	16	16
Total	5	0	6	25	--	--	4	21	20	16	4	20	--	8	61	0	--	--	3	0	182	187
State total	14	2	16	426	1	21	39	276	171	210	118	1,092	0	171	648	0	1	5	67	0	3,245	3,261

Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

Table 11.--Sawtimber removals from timberland for industrial roundwood production by Forest Survey Unit, county, and species group, Kansas, 1998.

(*Thousand board feet* [1])

Unit and county	Red cedar	Ponderosa pine	Total swds.	Soft maple	Hard maple	Hickory	Pecan	Hack-berry	Ash	Black walnut	Sycamore	Cotton-wood	Black cherry	Red oak group	White oak	Black-locust	Willow	Bass-wood	Elm	Other hwds.	Total hwds.	All species
NORTHEAST																						
Atchison	–	–	–	61	–	–	–	–	15	12	12	899	–	2	111	–	–	–	–	–	1,113	1,113
Brown	–	–	–	–	–	–	–	–	–	–	–	181	–	8	8	–	–	–	–	–	197	197
Clay	1	–	1	24	–	–	4	10	12	20	4	5	–	5	18	–	–	–	2	–	103	105
Dickinson	–	–	–	39	–	12	3	21	11	151	4	16	–	202	427	–	–	15	2	–	901	901
Doniphan	–	7	7	–	3	4	–	–	–	2	12	29	2	20	1	–	–	–	–	–	73	80
Douglas	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Franklin	8	–	8	522	–	6	6	141	77	45	14	23	–	35	69	–	1	5	4	–	948	957
Geary	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Jefferson	–	–	–	24	–	–	3	11	11	5	35	101	–	5	31	–	–	–	2	–	228	228
Johnson	8	–	8	30	–	–	3	9	14	16	6	14	–	7	26	–	–	6	4	–	136	144
Leavenworth	–	–	–	24	–	–	3	9	11	5	16	91	–	5	21	–	–	–	2	–	186	186
Miami	–	–	–	26	–	27	3	9	21	159	4	4	–	39	25	–	–	0	2	–	319	319
Nemaha	–	–	–	–	–	–	–	–	–	–	–	36	–	8	8	–	–	–	–	–	53	53
Osage	–	–	–	24	–	–	3	9	11	6	4	5	–	5	16	–	–	–	2	–	84	84
Pottawatomie	4	–	4	27	–	–	3	9	11	11	4	221	–	5	34	–	–	–	2	–	327	331
Riley	2	–	2	24	–	–	3	70	25	7	4	4	–	5	17	–	–	–	2	–	161	162
Shawnee	–	–	–	24	–	–	3	9	11	5	28	438	–	5	16	–	–	–	2	–	541	541
Wabaunsee	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Wyandotte	1	–	1	24	–	–	3	9	11	7	4	4	–	5	16	–	–	–	2	–	85	86
Total	24	7	31	949	3	49	52	344	270	468	162	2,084	2	375	891	–	1	26	29	–	5,704	5,735
SOUTHEAST																						
Allen	–	–	–	24	–	–	3	9	11	7	4	4	–	5	16	–	–	–	2	–	84	84
Anderson	3	–	3	25	1	1	3	10	11	7	5	5	–	5	18	–	–	1	2	1	95	98
Bourbon	–	–	–	34	–	17	3	9	11	132	5	4	–	7	42	–	–	–	2	–	266	266
Butler	–	–	–	24	–	–	3	9	11	8	4	58	–	5	18	–	–	–	2	–	141	141
Chase	–	–	–	24	–	–	3	34	11	5	4	4	–	5	49	–	–	–	2	–	140	140
Chautauqua	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Cherokee	1	–	1	128	–	3	6	14	118	298	42	220	–	8	414	–	–	–	15	–	1,265	1,266
Coffey	1	–	1	147	–	–	3	46	40	6	4	76	–	13	33	–	–	–	2	–	371	372
Cowley	–	–	–	98	–	–	3	83	11	5	65	883	–	5	98	–	–	–	88	–	1,338	1,338
Crawford	1	–	1	24	–	3	5	26	11	14	41	49	–	12	19	–	–	–	14	–	217	219
Elk	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Greenwood	–	–	–	86	–	–	3	75	11	5	90	1,016	–	5	81	–	–	–	97	–	1,470	1,470
Labette	3	–	3	28	–	6	8	38	25	22	7	26	–	19	24	–	4	–	15	–	222	225
Linn	4	–	4	35	–	25	4	9	21	152	10	4	–	29	16	–	–	–	2	–	306	310
Lyon	–	–	–	147	–	–	3	137	11	26	102	982	–	5	213	–	–	–	51	–	1,676	1,676
Marion	1	–	1	24	–	–	3	9	11	6	4	5	–	5	16	–	–	–	2	–	84	85
Montgomery	3	–	3	319	–	–	38	259	83	7	55	4	–	90	142	–	–	–	2	–	999	1,001
Morris	–	–	–	24	–	–	3	261	11	17	4	4	–	5	24	–	–	–	2	–	355	355
Neosho	–	–	–	24	–	–	3	9	11	8	4	4	–	5	16	–	–	–	2	–	85	85
Wilson	–	–	–	24	–	–	8	13	11	9	7	13	–	5	21	–	–	–	5	–	115	115
Woodson	–	–	–	98	–	–	3	83	11	7	41	872	–	5	60	–	–	–	38	–	1,217	1,217
Total	16	–	16	1,389	1	54	115	1,149	458	752	505	4,242	–	247	1,350	–	4	1	345	1	10,612	10,628
WEST																						
Barton	1	–	1	–	–	–	–	0	1	7	–	1	–	–	0	–	–	–	0	–	9	10
Ellsworth	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	2	2
Harper	1	1	1	–	–	–	–	–	1	0	–	–	–	–	1	–	–	–	–	–	3	4
Harvey	2	–	2	24	–	–	3	9	12	7	4	5	–	5	16	1	–	–	2	1	88	90
Lincoln	–	–	–	–	–	–	–	4	4	4	–	–	–	–	76	–	–	–	–	–	87	87
McPherson	14	1	15	26	–	–	3	18	16	27	4	15	–	5	16	–	–	–	3	–	133	148
Mitchell	1	–	1	–	–	–	–	5	6	5	–	1	–	–	11	–	–	–	3	–	29	30
Ottawa	–	–	–	24	–	–	3	58	25	15	4	76	–	5	65	–	–	–	2	–	277	277
Pawnee	1	–	1	–	–	–	–	0	1	7	–	1	–	–	0	–	–	–	1	–	11	11
Reno	2	–	2	0	–	–	0	0	0	2	–	0	–	–	0	–	–	–	0	–	3	5
Rice	3	–	3	0	–	–	–	0	0	1	0	1	–	–	0	–	–	–	0	–	4	7
Saline	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Sedgwick	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Stafford	1	–	1	–	–	–	–	0	1	8	–	1	–	–	0	–	–	–	1	–	12	12
Sumner	–	–	–	24	–	–	3	9	11	5	4	4	–	5	16	–	–	–	2	–	82	82
Total	25	2	26	148	–	–	19	121	98	100	23	116	–	29	232	1	–	–	16	1	905	931
State total	65	9	74	2,486	4	104	186	1,615	826	1,321	690	6,441	2	651	2,472	1	5	27	390	2	17,221	17,295

[1] International 1/4-inch rule.

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 12.--Residues produced at primary wood-using mills by Forest Survey Unit, type of use, and type of material, Kansas, 1998
(*Thousands of tons, green weight*)

Forest Survey Unit and type of use	Wood residues							
	Total		Coarse [1]		Fine [2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
NORTHEAST								
Industrial fuel-mill	–	1.17	–	0.74	–	0.43	–	0.30
Domestic fuel	0.02	0.98	0.02	0.91	0.00	0.07	0.00	0.34
Miscellaneous [3]	0.03	2.52	0.02	1.50	0.01	1.01	0.01	0.63
Not used	0.00	7.56	0.00	4.72	0.00	2.85	0.00	1.99
Total	0.05	12.22	0.03	7.86	0.01	4.36	0.01	3.25
SOUTHEAST								
Fiber products	–	7.10	--	7.10	–	–	–	–
Charcoal or Chemical	0.01	0.13	0.01	0.13	–	–	0.00	0.06
Industrial fuel-sold	–	0.16	–	0.16	–	–	–	0.07
Domestic fuel	0.01	2.08	0.01	2.07	–	0.01	0.00	0.86
Miscellaneous [3]	0.01	22.36	–	10.86	0.01	11.51	--	7.48
Not used	0.01	0.44	0.01	0.13	0.00	0.31	0.00	0.05
Total	0.03	32.27	0.02	20.45	0.01	11.83	0.01	8.52
WEST								
Domestic fuel	0.02	0.13	0.02	0.13	–	–	0.00	0.01
Miscellaneous [3]	0.02	0.46	0.01	0.28	0.01	0.18	0.00	0.12
Not used	0.01	0.39	0.00	0.29	0.00	0.11	0.01	0.17
Total	0.05	0.99	0.04	0.70	0.01	0.29	0.01	0.30
STATE TOTAL								
Fiber products	–	7.10	--	7.10	–	–	–	–
Charcoal or Chemical	0.01	0.13	0.01	0.13	–	–	0.00	0.06
Industrial fuel-mill	–	1.17	–	0.74	–	0.43	–	0.30
Industrial fuel-sold	–	0.16	–	0.16	–	–	–	0.07
Domestic fuel	0.05	3.19	0.05	3.11	0.00	0.08	0.01	1.20
Miscellaneous [3]	0.05	25.34	0.02	12.64	0.03	12.70	0.01	8.23
Not used	0.02	8.39	0.01	5.13	0.01	3.26	0.01	2.21
Total	0.13	45.48	0.09	29.01	0.04	16.48	0.03	12.06

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.
[2] Not suitable for chipping such as sawdust, veneer clippings, etc.
[3] Livestock bedding, mulch, small dimension, and specialty items.
Value of "0" indicates value greater than 0 but less than 10 tons.
Rows and columns may not sum due to rounding.

Reading, William H.; Atchison, Robert L. 2001. **Kansas timber industry—an assessment of timber product output and use, 1998.** Resour. Bull. NC-200. St. Paul, MN: U.S. Department of Agrticulture, Forest Service, North Central Research Station. 26 p.

Discusses recent Kansas forest industry trends; reports production and receipts of industrial roundwood by product, species, and county in 1998. Also reports on logging residue, on wood and bark residue generated at primary wood-using mills, and on disposition of mill residues.

KEY WORDS: Industrial roundwood, production residues, saw logs, veneer logs.