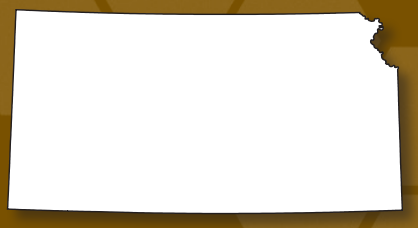
Kansas' Forests, 2010: Statistics, Methods, and Quality Assurance



USDA United States Department of Agriculture

Forest Service

Forest Inventory Methods

Strategic Model

The Forest Inventory and Analysis program of the Northern Research Station (NRS-FIA) is part of the national enhanced FIA program that focuses on a set of six strategic objectives (McRoberts 2005):

- A standard set of variables with nationally consistent meanings and measurements
- Field inventories of all forested lands
- Nationally consistent estimation
- Adherence to national precision standards
- Consistent reporting and data distribution
- Credibility with users and stakeholders

To ensure that these objectives are achieved, 10 strategic approaches have been prescribed:

- A national set of prescribed core variables with a national field manual that prescribes measurement procedures and protocols for each variable
- A nationally consistent plot configuration
- A nationally consistent sampling design
- Estimation using standardized formulas for sample-based estimators
- A national database of FIA data with core standards and user-friendly public access
- A national information management system
- A nationally consistent set of tables with estimates of prescribed core variables
- Publication of statewide tables with estimates with prescribed core variables at 5-year intervals
- Documentation of the technical aspects of the FIA program including procedures, protocols, and techniques
- Peer review and publication of the technical documentation for general access

The result of this approach is an inventory program with identifiably new features and a nationally consistent plot configuration, a nationally consistent sampling design for all lands, annual measurement of a proportion of plots in each state, nationally consistent estimation techniques and algorithms, and integration of the ground sampling components of the FIA inventory and the detection monitoring by the U.S. Forest Service's Forest Health Monitoring (FHM) program.

Forest Inventory

Historically, the Northern Research Station's Forest Inventory and Analysis (NRS-FIA) program conducted inventories of a state's forests on a periodic basis. In Kansas, periodic inventories were completed in 1936, 1965, 1981, and 1994 (Kansas State College 1939, Chase and Strickler 1968, Raile and Spencer 1984, Spencer et al. 1984, Leatherberry et al. 1999). Since the 1994 inventory, several changes in FIA methods have improved the quality of the inventory. The most significant change between inventories has been the shift from periodic to annual inventory. In the past, FIA inventoried each state on a cycle that averaged 12 years. However, the need for timely and consistent data across large geographical regions, along with national legislative mandates, resulted in FIA implementing an annual inventory program. The annual inventory was initiated in Kansas in 2001.

In the NRS-FIA annual inventory system, approximately one-fifth of all field plots are measured each year. The entire inventory is completed within 5 years. NRS-FIA reports and analyzes results using a moving 5-year average. For example, NRS-FIA generated inventory results for Kansas for 2001 through 2005 and for 2006 through 2010.

Other significant changes between inventories include implementing new remote-sensing technology, a new field-plot configuration and sample design, and gathering additional remotely sensed and field data. The new remote-sensing technology allows NRS-FIA to use classifications of Multi-Resolution Land Characterization

(MRLC) data and other remote-sensing products to stratify the total area of Kansas and to improve estimates.

New algorithms were used for the 2010 inventory to assign forest type and stand-size class to each condition observed on a plot. These algorithms are being used nationwide by FIA to provide consistency from state to state. As a result, changes in forest type and stand-size class now reflect actual changes in the forest and not changes due to differences between algorithms. The list of recognized forest types, groupings of these forest types for reporting purposes, models used to assign stocking values to individual trees, definition of nonstocked (stands with a stocking value of less than 10 percent for live trees), and names given to the forest types changed with the new algorithms. Consequently, comparisons between the published 2010 results and those published for earlier inventories may be invalid. Contact NRS-FIA for additional information on the algorithms used in both inventories.

Plot Configuration

The national FIA plot design consists of four 24-foot-radius subplots configured as a central subplot and three peripheral subplots (Fig. 98). Centers of the peripheral subplots are located 120 feet from the central subplot at azimuths of 0°, 120°, and 240° from the center of the central subplot. Each tree with a diameter at breast height (d.b.h.) of 5 inches or greater is measured on these subplots. Each subplot contains a 6.8-foot-radius microplot with center located 12 feet east of the subplot center on which each tree with d.b.h. between 1 and 5 inches is measured. Forest conditions that occur on any of the four subplots are identified and recorded. If the area of the condition is 1 acre or greater, the condition is mapped on the subplot. Factors that differentiate forest conditions include forest type, stand-size class, stand origin, land use, ownership, and density.

Sample Design

Historic sampling errors indicate that a sampling intensity of about one plot per 6,000 acres is required to satisfy national FIA precision guidelines. Therefore, FIA divided the area of the United States into nonoverlapping, 5,937-acre hexagons and established a plot in each hexagon as follows: (1) if an existing FHM plot was located in a hexagon, it was selected; (2) if no FHM plot existed in the hexagon, the existing FIA plot from the previous periodic inventory nearest the hexagon center was selected; and (3) if neither an FHM nor an FIA plot was located in the hexagon, a new FIA plot was established at a random location in the hexagon (Brand et al. 2000, McRoberts 1999). This array of field plots is designated the Federal base sample and is considered an equal probability sample; its measurement is funded by the Federal Government.

The Federal base sample was systematically divided into five interpenetrating, nonoverlapping panels or subsamples, each of which provides complete, systematic coverage of a state. Each year, the plots in a single panel are measured, and panels are selected on a 5-year, rotating basis (McRoberts 1999). For estimation purposes, the measurement of each panel of plots is considered an independent, equal probability sample of all lands in a state.

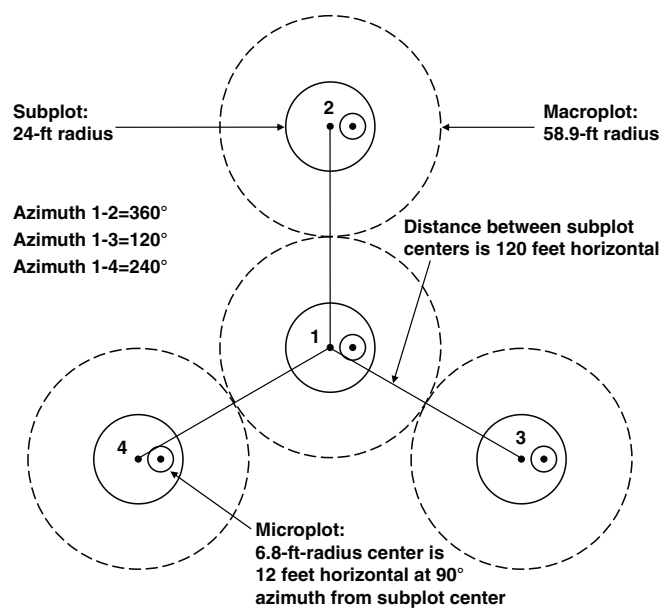


Figure 98.—National FIA plot design (adapted from Bechtold and Patterson 2005).

Three-Phase Inventory

FIA conducts inventories in three phases. Phase 1 (P1) uses remotely sensed data to obtain initial plot land cover observations and to stratify land area in the population of interest to increase the precision of estimates. In Phase 2 (P2), field crews visit the physical locations of permanent field plots to measure traditional inventory variables such as tree species, diameter, and height. In Phase 3 (P3), field crews visit a subset of P2 plots to obtain measurements for an additional suite of variables associated with forest and ecosystem health. The three phases of the enhanced FIA program are discussed in greater detail in the following sections.

Phase 1

Aerial photographs, digital orthoquads (DOQs: digitally scanned aerial photographs), and satellite imagery are used for initial plot measurement via remotely sensed data and stratification. P1 plot measurement consists of observations of conditions at the plot locations using aerial photographs or DOQs. Analysts determine a digitized geographic location for each field plot, and a human interpreter assigns the plot a land cover/use. Lands satisfying FIA's definition of forest land include commercial timberland, some pastured land with trees, forest plantations, unproductive forested land, and reserved, noncommercial forested land. In addition, forest land requires minimum stocking levels, a 1-acre minimum area, and a minimum bole-to-bole width of 120 feet with continuous canopy. Forest land excludes wooded strips, idle farmland with trees, and narrow windbreaks. All plot locations that could possibly contain accessible forest land are selected for further measurement during P2.

The combination of natural variability among plots and budgetary constraints prohibits measurement of a sufficient number of plots to satisfy national precision standards for most inventory variables unless the estimation process is enhanced using ancillary data. Thus, the land area is stratified by using remotely sensed data to facilitate stratified estimation. NRS-FIA uses canopy density classes to derive strata. Canopy density information was obtained from the 2001 National Land Cover Database (NLCD). The NLCD 2001 canopy density layer for the United States was produced through a cooperative project conducted by the Multi-Resolution Land Characteristics (MRLC) Consortium (http://www.mrlc.gov/). The layer characterizes subtle variations of forest canopy density as a percentage estimate of forest canopy cover (0 to 100) within every 30-m pixel over the United States. The method employed to map canopy density for NLCD 2001 is described in detail in Huang et al. (2001).

The current strata categorization was optimized for the entire NRS-FIA region. Using plot location information (center of the center subplot), we assigned a percent canopy density value to each plot. Plots were then aggregated into one of the five strata based on the center of the center subplot. The percent canopy cover stratification scheme consists of five groupings: (1) 0 to 5 percent, (2) 6 to 50 percent, (3) 51 to 65 percent, (4) 66 to 80 percent, and (5) 81 to 100 percent. These groupings were based on observed natural clumping of pixel values. If there were not enough plots in each of these classes to create strata, then collapsing rules were used to combine classes until sufficient sample sizes were obtained.

In addition to being classified into one of the five canopy strata, each pixel was assigned to an ownership stratum. In Kansas, ownership layers derived from the Protected Areas Database (PAD---http://www.protectedlands.net/) and U.S. Census Bureau TIGER data (http://www.census.gov/geo/www/tiger/) were used to classify pixels into three ownership classes: (1) inland census water, (2) public, and (3) private. Every pixel was also assigned to a county based on pixel center location.

Stratified estimation requires two tasks. First, each plot must be assigned to a single stratum. Next, the proportion of each detailed stratum must be calculated (TM land-cover classification, ownership, and county group delineation). The first task is done by assigning each plot to the stratum assigned to the pixel containing the center of the center subplot. The second task is done by calculating the proportion of pixels in each stratum.

The population estimate for a variable is calculated as the sum across all strata of the product of each stratum's observed proportion (from P1) and the variable's estimated mean per unit area for the stratum (from P2).

Phase 2

In P2, field crews record a variety of data for plot locations determined in P1 to include accessible forest land. Before visiting plot locations, field crews consult county land records to determine the ownership of plots and then seek permission from private landowners to measure plots on their lands. Field crews determine the location of the geographic center of the center subplot using geographic positioning system (GPS) receivers. They record subplot-level observations that include land cover, forest type, stand origin, stand age, stand-size class, site productivity class, forest disturbance history, slope, aspect, physiographic class, and ground land use conditions. For each tree, field crews record a variety of observations and measurements including species, live/dead status, lean, diameter, height, crown ratio (percent of tree height represented by crown), crown class (e.g., dominant, codominant, suppressed), damage, and decay status. Office staff use statistical models based on field crew measurements to calculate values for additional variables including individual tree volume, per unit area estimates of number of trees, volume, and biomass by subplot, by species groups, and by live/dead status.

Phase 3

The third phase of the enhanced FIA program focuses on forest health. P3 is administered cooperatively by the FIA program, other Forest Service programs, other Federal agencies, State natural resource agencies, and universities, and it is partially integrated with the Forest Health Monitoring (FHM) program. The FHM program consists of four interrelated and complementary activities: detection monitoring, evaluation monitoring, intensive site ecosystem monitoring, and research on monitoring techniques. Detection monitoring consists of systematic aerial and ground surveys designed to collect baseline information on the current condition of forest ecosystems and to detect changes from those baselines over time. Evaluation monitoring studies examine the extent, severity, and probable causes of changes in forest health identified through the detection monitoring surveys. The intensive site ecosystem monitoring program conducts research into regionally specific ecological processes at a network of sites located in representative forested ecosystems. Finally, research on monitoring techniques focuses on developing and refining indicator measurements to improve the efficiency and reliability of data collection and analysis at all levels of the program.

The ground survey portion of the FHM detection monitoring program was integrated into the FIA program as P3 in 1999. The P3 sample consists of a 1:16 subset of the P2 plots with one P3 plot for approximately every 96,000 acres. P3 measurements are obtained by field crews during the growing season and include an extended suite of ecological data: lichen diversity and abundance, soil quality (erosion, compaction, and chemistry), vegetation diversity and structure, and down woody material. The incidence and severity of ozone injury for selected bioindicator species also are monitored as part of an associated sampling scheme. All P2 measurements are made on each P3 plot at the same time as the P3 measurements.

P3 variables were selected to address specific criteria outlined by the Montreal Process working group (Montreal Process 1995) for the conservation and sustainable management of temperate and boreal forests and are based on the concept of indicator variables. Observations of an indicator variable represent an index of ecosystem functions that can be monitored over time to assess trends. Indicator variables are used in conjunction with each other, P2 data, data from FHM evaluation monitoring studies, and ancillary data to address ecological issues such as vegetation diversity, fuel loading, regional air quality gradients, and carbon storage. The P2 and P3 data of the enhanced FIA program serve as the Nation's environmental report card and are a primary source of reporting data for the Montreal Process Criteria and Indicators (for more information, see Woodall et al. 2011).

Estimation

Most of the estimates and analysis presented in this report (including all the estimate tables) are based on averages observed on 8,868 plots located across Kansas. These plots are located within 17 unique strata (Table A) defined by combinations of the five P1 canopy cover classes: (1) 0 to 5 percent, (2) 6 to 50 percent, (3) 51 to 65 percent, (4) 66 to 80 percent, and (5) 81 to 100 percent, a land ownership classification created from the Protected Areas Database, and county groups. Nationally consistent algorithms were used to assign forest type and stand-size class to each condition observed on a plot. For NRS-FIA, panels are measured on an annual basis so that five panel estimates are equivalent to 5-year moving average estimates. Field plot measurements are combined with P1 estimates in the compilation process and table production. Procedures described in Bechtold and Patterson (2005) for stratified estimation with observed stratum areas were used in conjunction with the strata presented in Table A to produce all estimates. Table A shows the total area and number of plots within each stratum.

Integration with Previous Inventories

In 2010, NRS-FIA completed measurement of the fifth panel of inventory plots in Kansas. The 2010 panel, along with those surveyed in 2006, 2007, 2008, and 2009, makes up the dataset for the fifth full inventory of Kansas' forests. For simplicity, the fifth inventory often is called the 2010 inventory of Kansas. Previous inventories of Kansas's forest resources were completed in 1936, 1965, 1981, 1994, and 2005 (Kansas State College 1939, Chase and Strickler 1968, Raile and Spencer 1984, Spencer et al. 1984, Leatherberry et al. 1999, Moser et al. 2008). Data from new inventories are often compared with data from earlier inventories to determine trends in forest resources. However, for the comparisons to be valid, the procedures used in the two inventories must be similar.

To improve the efficiency and reliability of the inventory, several changes in procedures and definitions have been made since the last Kansas inventory in 2005 (Moser et al. 2008). Although these changes will have little impact on statewide estimates of forest area, timber volume, and tree biomass, they may significantly impact plot classification variables such as forest type and stand-size class. For estimating growth, removals, and mortality, the 2005 inventory (Moser et al. 2008) was processed using estimation/summary routines for the 2010 inventory. Although these changes allow limited comparison of inventory estimates among separate inventories in this report, it is inappropriate to directly compare all portions of the 2006-2010 data with those published for earlier inventories.

For further information about the sample protocols and estimation procedures for the first two phases of the FIA program, see Bechtold and Patterson (2005). For more information on P3 indicator sampling protocols, see U.S. Forest Service (2005) and Woodall and Monleon (2008).

Quality of Estimates

The four primary sources of error common to all sample-based estimates are sampling, measurement, prediction, and nonresponse error. For each of these sources of error, a definition within the context of the FIA inventory is provided along with a discussion of methods used to quantify and reduce this error.

Sampling Error

The process of sampling (selecting a random subset of a population and calculating estimates from this subset) causes estimates to contain error they would not have if every member of the population had been observed and included in the estimate. The 2010 FIA inventory of Kansas is based on a sample of 8,868 plots located randomly across the State (a total area of 52,361,523 acres), a sampling rate of about one plot for every 5,905 acres.

The procedures for statistical estimation outlined in the previous section and described in detail in Bechtold and Patterson (2005) provide the estimates of the population totals and means presented in this report. Along with every estimate is an associated sampling error that is typically expressed as a percentage of the estimated value but that can also be expressed in the same units as the estimate or as a confidence interval (the estimated value plus or minus the sampling error). This sampling error is the primary measure of the reliability of an estimate. A sampling error can be interpreted to mean that had a 100-percent inventory been taken using these methods, the chances are two out of three that the results would have been within the limits indicated (i.e., 68-percent confidence interval).

The sampling errors for State-level estimates of the major attributes presented in this report are shown in Table B. Table KS-65 presents sampling errors for these estimates at the inventory unit and county group levels.

Estimates for classifications smaller than the State totals presented in Table B will have larger sampling errors. For example, Table KS-65 shows that the sampling error for timberland area in any county is higher than that for total timberland area in the State. To compute an approximate sampling error for an estimate that is smaller than a State total, use the following formula:

$$E = \frac{(SE)\sqrt{(\text{State total estimate})}}{\sqrt{(\text{Smaller estimate})}} \quad (1)$$

where:

E = approximate sampling error for smaller estimate
SE = sampling error for State total estimate

This approximation works well for estimates of area, volume, number of trees, and biomass. It is less effective for estimates of growth, removals, or mortality. Individuals seeking more accurate sampling errors should use Forest Inventory Data Online (FIDO), available at http://fiatools.fs.fed.us.

The estimators used by FIA are unbiased under the assumptions that the sample plots are a random sample of the total population and the observed value for any plot is the true value for that plot. Deviations from these basic assumptions are not reflected in the computation of sampling errors. The following sections on measurement, prediction, and nonresponse error address possible departures from these basic assumptions.

Measurement Error

Errors associated with the methods and instruments used to observe and record the sample attributes are called measurement errors. On FIA plots, attributes such as the diameter and height of a tree are measured with different instruments, and other attributes such as species and crown class are observed without the aid of an instrument. On a typical FIA plot, 30 to 70 trees are observed with 15 to 20 attributes recorded on each tree. In addition, many attributes that describe the plot and conditions on the plot are observed. Errors in any of these observations affect the quality of the estimates. If a measurement is biased (such as tree diameter consistently taken at an incorrect place on the tree), then the

estimates that use this observation (such as volume) will reflect this bias. Even if measurements are unbiased, high levels of random error in the measurements will add to the total random error of the estimation process.

To ensure that all FIA observations are made to the highest standards possible, a regular program of quality assurance and quality control is an integral part of all FIA data collection efforts. This program begins with the documentation of protocols and procedures used in the inventory followed by intensive crew training. To assess the quality of the data collected by these trained crews, a random sample of at least 4 percent of all plots are measured independently by a different expert crew. These independent measurements are referred to as blind checks. The purpose of these blind checks is to assess the quality of field measurements. The second measurement on these blind check plots is done by a Quality Assurance (QA) crew. In all cases, QA crews have as much or more experience and training in FIA field measurements than standard FIA crews.

The quality of field measurements is assessed nationally through a set of measurement quality objectives (MQOs) that are set for every data item we collect. Each MQO consists of two parts: a tolerance or acceptable level of measurement error, and an objective in terms of the percent of measurements within tolerance. The blind check measurements are used to observe how often individual field crews are meeting these objectives and to assess the overall compliance among all crews. Table C shows the compliance rates for various measurements used to compute the estimates included in this report and in other NRS-FIA reports. The columns labeled Kansas come from blind check measurements of plots used in this report, and the columns labeled All NRS-FIA states come from all measurements made by FIA crews within the entire 24-state area where the Northern Research Station implemented the FIA program over 2006-2010. Training and supervision of crews is a regional effort and crews often work in more than one state. Regional data quality observations reflect the overall measurement quality of all data collected by FIA in the NRS region.

In addition to the percent compliance to measurement quality objectives, the blind check observations were used to test for relative bias in the field crew measurements. Relative bias is defined here as a tendency for the standard field crew measurements to be higher or lower than those measurements taken by the QA crews. The estimated relative bias and limits of 95-percent confidence intervals (based on parametric bootstrap estimates) for the relative bias are presented in Table D.

The blind check measurements do not provide direct observations of true bias in field measurements (average difference between field measurements and true values) because they are paired observations of two field measurements. The QA crew in these blind checks typically has more training and experience with FIA field measurements than the first crew, but both crews use the same methods and instruments to obtain the measurements. These methods were the best available and were selected for use nationwide by FIA; they are commonly used by other similar natural resource inventories. A basic assumption is that the methods, when correctly applied, provide unbiased observations of the attribute they are designed to measure. Under this assumption, relative bias observations in Table D provide observations of bias due to the difference in experience and training between the field and QA crews. In most cases there is no significant bias.

Prediction Error

Errors associated with using mathematical models (such as volume models) to provide observations of the attributes of interest based on sample attributes are referred to as prediction errors. Area, number of trees, volume, biomass, growth, removals, and mortality are the primary attributes of interest presented in this report. Area and number of trees estimates are based on direct observation and do not involve the use of prediction models; however, FIA estimates of volume, biomass, growth, removals, and mortality use model-based predictions in the estimation process. Models are used to predict volume and biomass estimates of individual tree volumes. Change estimates such as growth, mortality,

and removals are based on these model-based predictions of volume from both the current plot measurements and the measurements taken in the previous inventory.

In comparing FIA estimates to other data sources, users need to be aware of the prediction models used in both estimates. If both estimates are based on the same prediction models with matching fitted parameter values, then the prediction bias of one estimate should cancel out that of the other estimate. If the estimates are based on different prediction models, then the user should be aware of the prediction error of both models.

Nonresponse Error

Nonresponse error refers to the error caused by not being able to observe some of the elements in the sample. In FIA, nonresponse occurs when crews are unable to measure a plot (or a portion of a plot) at a selected location. Nonresponse falls into the following three classes:

Denied access – Entire plots or portions of plots where the field crew is unable to obtain permission from the landowner and is therefore unable to measure the trees on the plot.

Hazardous/inaccessible – Entire plots or portions of plots where the conditions present prevent a crew from safely getting to the plot or measuring the trees on the plot.

Other – Plots where the field crew is unable to obtain a valid measurement for a variety of reasons other than those stated above.

Nonresponse has two effects on the sample. First, it reduces the sample size. The reduced sample size is reflected in the sampling errors discussed in that section. Second, nonresponse can bias the estimates if the portion of the population not being sampled differs from the portion being sampled.

In FIA, unlike many survey samples, nonresponse rates are relatively low. In the 2010 Kansas inventory, a total of 8,868 sample plots were selected to be observed. Of these plots, 8,760 are in the sample used for the estimation of current resources. There were 107 plots where crews were unable to obtain owner permission to measure the plot and approximately 1 plot where hazardous conditions prevented the crew from measuring all or part of the plot. No plots were lost from the sample due to additional problems.

Even though an overall response rate of 99 percent is very high, it can cause considerable bias if not properly accounted for. The major source of nonresponse is denied access to plots. Denied access plots primarily occur on lands in private ownership. Also, the observations needed for plots on nonforest and water land classes do not usually require crews to physically enter the land and permission is not needed to obtain the observation because it can be obtained from aerial photos or other remotely sensed information sources.

The stratified estimation process used by FIA with strata defined by three ownership classes (inland census water, public, and private) and five canopy cover classes reduces the possible effects of bias caused by nonresponse. Under the stratified estimation process used by FIA, nonresponses are removed from the sample, and stratum estimates (means, totals, and sampling errors) are obtained from only those plots with valid observations. The net effect in the estimates of means and totals is that the average of the observed plots within the stratum (ownership class-forest cover class) becomes the estimate for all nonresponses within that stratum. The nonresponse rate in one stratum does not affect the estimate in other strata. The response rate within each stratum is presented in Table E for the Kansas 2010 inventory and for all FIA inventories conducted by the Northern Research Station over the same period.

The nonresponse plots in this inventory were not permanently removed from the FIA system of plots. In future inventories, we will again attempt to measure these plots. At that time we may be able to

obtain permission to access these plots, the hazardous conditions may have changed, or other circumstances that caused us to drop plots from a specific inventory cycle will probably be different.

Glossary

Accretion: The estimated net growth on trees that were measured during the previous inventory (divided by the number of growing seasons between surveys to produce average annual accretion). It does not include growth on trees cut during the period or those trees that died. This component uses the incremental change in volume between two inventories.

Average annual mortality of growing stock: The average annual change in cubic-foot volume of sound wood in growing-stock trees that died over a defined measurement cycle.

Average annual mortality of sawtimber: The average annual change in board-foot volume of sound wood in sawtimber trees that died over a defined measurement cycle.

Average annual net growth of growing stock: The average annual change in cubic-foot volume of sound wood in live growing-stock trees, and the total volume of trees entering diameter classes greater than 5.0 inches d.b.h., through ingrowth, less volume losses resulting from natural causes. Natural causes include mortality except that due to logging damage, timber stand improvement, or conversion to a nonforest land use.

Average annual net growth of sawtimber: The average annual change in the board-foot volume of live sawtimber trees, and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes. Natural causes include mortality except that due to logging damage, timber stand improvement, or conversion to a nonforest land use.

Average annual removals from growing stock: The average cubic-foot volume of wood in live growing-stock trees removed annually for roundwood forest products, in addition to the volume in logging residues or mortality due to logging damage (harvest removals). This component of change also includes the volumes of growing-stock trees removed due to land use changes (other removals).

Average annual removals from sawtimber: The average board-foot volume of wood in live sawtimber trees removed annually for roundwood forest products, in addition to the volume of logging residues or mortality due to logging damage (harvest removals). This component of change also includes the volumes of sawtimber trees removed due to land use changes (other removals).

Basal area: Tree area in square feet of the cross section at breast height of a single tree. When the basal areas of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Bioindicator species: A tree, woody shrub, or nonwoody herb species that responds to ambient levels of ozone pollution with distinct visible foliar symptoms that are easy to diagnose.

Board foot: A unit of lumber measuring 1 foot long, 1 foot wide, and 1 inch thick, or its equivalent. International ¼-inch rule is used as the U.S. Forest Service standard log rule in the eastern United States.

Bulk density: The mass of soil per unit of volume. A measure of the ratio of pore space to solid materials in a given soil. It is expressed in units of grams per cubic centimeter of oven-dry soil.

Census water: Lakes, reservoirs, ponds, and similar bodies of water 4.5 acres in size or larger; and rivers or canals more than 200 feet wide (U.S. Census definition).

Coarse woody debris (CWD): Dead branches, twigs, and wood splinters 3.0 inches in diameter and larger measured at the smallest end.

Commercial species: Tree species currently or prospectively suitable for industrial wood products; excludes species of typically small size, poor form, or inferior quality, e.g., hawthorn and sumac.

Compacted live crown ratio: The percent of the total length of the tree that supports a full, live crown. To determine compacted live crown ratio for trees that have uneven length crowns, lower branches are visually transferred to fill holes in the upper portions of the crown until a full, even crown is created.

Condition: A delineation of a land area based upon land use, forest type, stand size, regeneration status, reserved status, tree density, and owner class.

Corporate: An ownership class of private lands owned by corporations.

County and municipal: A class of public lands owned by counties or local public agencies, or lands leased by these governmental units for more than 50 years.

Cropland: Land under cultivation within the last 24 months, including cropland harvested, crop failures, cultivated summer fallow, idle cropland used only for pasture, orchards, active Christmas tree plantations indicated by annual shearing, nurseries, and land in soil improvement crops, but excluding land cultivated in developing improved pasture.

Crown: The part of a tree or woody plant bearing live branches or foliage.

Crown dieback: Recent mortality of branches with fine twigs, which begins at the terminal portion of a branch and proceeds toward the trunk. Dieback is considered only when it occurs in the upper and outer portions of the tree. When whole branches are dead in the upper crown, without obvious signs of damage such as breaks or animal injury, it is assumed the branches died from the terminal portion of the branch. Dead branches in the lower portion of the live crown are assumed to have died from competition and shading.

Cull decrement: The net volume of rough and rotten cull trees in the previous inventory that are classified as growing-stock trees in the current inventory (divided by the number of growing seasons between inventories to compute average annual cull decrement).

Cull increment: The net volume of growing-stock trees in the previous inventory that are classified as rough and rotten cull trees in the current inventory (divided by the number of growing seasons between inventories to compute average annual cull increment).

Cull tree: A live tree, 5.0 inches d.b.h. or larger, that is unmerchantable for saw logs now or prospectively because of rot, roughness, or species. (See definitions for rotten and rough trees.)

Decay class: Qualitative assessment of stage of decay (five classes) of coarse woody debris based on visual assessments of color of wood, presence/absence of twigs and branches, texture of rotten portions, and structural integrity.

Diameter at breast height (d.b.h.): The diameter outside bark of a standing tree measured 4.5 feet above the ground.

Diameter class: A classification of trees based on diameter outside bark measured at breast height (4.5 feet above ground). With 2-inch diameter classes, the 6-inch class, for example, includes trees 5.0 through 6.9 inches diameter at breast height (d.b.h).

Dry ton: A unit of measure of dry weight equivalent to 2,000 pounds or 907.1848 Kg.

Dry weight: The weight of wood and bark as it would be if it had been oven dried; usually expressed in pounds or tons.

Down woody material (DWM): Woody pieces of trees and shrubs that have been uprooted (no longer supporting growth) or severed from their root system, not self-supporting, and lying on the ground.

Duff: A soil layer dominated by organic material derived from the decomposition of plant and animal litter and deposited on either an organic or a mineral surface. This layer is distinguished from the litter layer in that the original organic material has undergone sufficient decomposition that the source of this material (e.g., individual plant parts) can no longer be identified.

Effective cation exchange capacity (ECEC): The sum of cations that a soil can adsorb in its natural pH. Expressed in units of centimoles of positive charge per kilogram of soil.

Federal: An ownership class of public lands owned by the U.S. Government.

Fiber products: Products derived from wood and bark residues, such as pulp, composition board products, and wood chips.

Fine materials: Wood residues not suitable for chipping, such as planer shavings and sawdust.

Fine woody debris (FWD): Dead branches, twigs, and wood splinters 0.1 to 2.9 inches in diameter.

Forest industry: An ownership class of private lands owned by companies or individuals operating wood-using plants.

Forest land: Land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10 percent stocked with forest trees and forest areas adjacent to urban and builtup lands. Also included are pinyon-juniper and chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of trees must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet wide.

Forest type: A classification of forest land based on the species presently forming a plurality of the live-tree stocking.

Forest-type group: A combination of forest types that share closely associated species or site requirements and are generally combined for brevity of reporting.

Major eastern forest-type groups:

White-red-jack pine: Forests in which eastern white pine, red pine, or jack pine, singly or in combination, comprise a plurality of the stocking. Common associates include hemlock, aspen, birch, and maple.

Oak-pine: Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking, but in which pine or eastern redcedar comprises 25 to 50 percent of the stocking. Common associates include gum, hickory, and yellow-poplar.

Oak-hickory: Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking except where pines comprise 25 to 50 percent, in which case the stand is classified as oak-pine. Common associates include yellow-poplar, elm, maple, and black walnut.

Oak-gum-cypress: Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking except where pines comprise 25 to 50 percent, in which case the stand is classified as oak-pine. Common associates include cottonwood, willow, ash, elm, hackberry, and maple.

Elm-ash-cottonwood: Forests in which elm, ash, or cottonwood, singly or in combination, comprise a plurality of the stocking. Common associates include willow, sycamore, beech, and maple.

Maple-beech-birch: Forests in which maple, beech, or yellow birch, singly or in combination, comprise a plurality of the stocking. Common associates include hemlock, elm, basswood, and white pine.

Aspen-birch: Forests in which aspen, balsam poplar, paper birch, or gray birch, singly or in combination, comprise a plurality of the stocking. Common associates include maple and balsam fir.

Gross growth: The sum of accretion and ingrowth.

Growing stock: A classification of timber inventory that includes live trees of commercial species meeting specified standards of quality or vigor. Cull trees are excluded. When associated with volume, this includes only trees 5.0 inches d.b.h. and larger.

Growing-stock volume: Net or gross volume in cubic feet of growing-stock trees 5.0 inches and larger d.b.h. measured from the 1-foot stump to a minimum 4.0-inch top diameter outside bark on the central stem, or to the point where the central stem splits into limbs. Net volume equals gross volume minus deduction for cull defects.

Hardwood: A dicotyledonous tree, usually broad-leaved and deciduous.

Soft hardwoods: A category of hardwood species with wood generally of low specific gravity (less than 0.5). Notable examples include red maple, paper birch, quaking aspen, and American elm.

Hard hardwoods: A category of hardwood species with wood generally of high specific gravity (greater than 0.5). Notable examples include sugar maple, yellow birch, black walnut, and oaks.

Industrial wood: All commercial roundwood products except fuelwood.

Ingrowth: The estimated net volume of trees that became 5.0 inches and larger d.b.h. during the period between inventories (divided by the number of growing seasons between surveys to produce average annual ingrowth). Also, the estimated net volume of trees 5.0 inches and larger d.b.h. that are growing on land that was reclassified from noncommercial forest land or nonforest land to timberland.

Introduction: The intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity. "Introduced" is not synonymous and should not be confused with the term "invasive" (USDA definition).

Invasive species: Those species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health. For the purpose of this policy only, a plant species is considered "invasive" only when it occurs on the Federal or State-specific noxious weed list or a list developed by the State-specific Department of Agriculture with their partners and approved by the State Technical Committee, which prohibits or cautions its use due to invasive qualities (USDA definition).

Land area: The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, estuaries, and canals less than 200 feet wide; and lakes, reservoirs, and ponds less than 4.5 acres in area.

Land use: A classification of land that indicates the primary use at the time of the inventory. Major categories are forest land and nonforest land.

Litter: Undecomposed or only partially decomposed organic material that can be readily identified (e.g., plant leaves, twigs).

Live aboveground biomass: The aboveground volume of live trees (including bark but excluding foliage) reported in dry tons (dry weight). Biomass has four components:

Bole: Biomass of a tree from 1 foot above the ground to a 4-inch top outside bark or to a point where the central stem breaks into limbs.

Tops and limbs: Total biomass of a tree from a 1-foot stump minus the bole.

Saplings: Total aboveground biomass of a tree from 1.0 to 4.9 inches d.b.h.

Stump: Biomass of a tree 5 inches d.b.h. and larger from the ground to a height of 1 foot.

Live cull: A classification that includes live, cull trees. When associated with volume, it is the net volume in live, cull trees that are 5.0 inches d.b.h. and larger.

Logging residues: The unused portions of growing-stock and non-growing-stock trees cut or killed by logging and left in the woods.

Merchantable: Refers to a pulpwood or saw log section that meets pulpwood or saw log specifications, respectively.

National Forest: An ownership class of Federal lands, designated by Executive order or statute as National Forests or purchase units, and other lands under the administration of the Forest Service including experimental areas.

Net cubic-foot volume: The gross volume in cubic feet less deductions for rot, roughness, and poor form. Volume is computed for the central stem from a 1-foot stump to a minimum 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs.

Net board-foot volume: The gross volume in board feet less the deductions for rot, roughness, and poor form. Volume is computed from the 1-foot stump to a minimum 7.0-inch diameter outside bark for softwoods and a minimum 9.0-inch outside bark for hardwoods on the central stem. This estimate includes all softwoods 9.0 inches d.b.h. and larger, and all hardwoods 11.0 inches d.b.h. and larger.

Noncensus water: Streams/rivers 120 to 200 feet wide and bodies of water 1 to 4.5 acres in size, where the U.S. Bureau of the Census (1990) classifies such water as land.

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

Nonforest land: Land that has never supported forests and lands formerly forested where use of timber management is precluded by development for other uses. (Note: Includes area 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 4.5-acre areas of water classified by the U.S. Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide, and clearings, etc., must be more than 1 acre in area to qualify as nonforest land.)

Nonindustrial private: An ownership class of private lands where the owner does not operate wood-using plants.

Nonnative species: Within a particular ecosystem, any species (including its seeds, eggs, spores, or other biological material capable of propagating that species) that is not native to that ecosystem (USDA definition).

Nonstocked areas: Timberland less than 10 percent stocked with all live trees.

Ownership unit: A classification of ownership encompassing all types of legal entities having an ownership interest in land, regardless of the number of people involved. A unit may be an individual; a combination of persons; a legal entity such as a corporation, partnership, club, or trust; or a public agency. An ownership unit has control of a parcel or group of parcels of land.

Owner class: A classification of land into categories of ownership.

Forest industry: Land owned by private companies that operate primary wood-using mills.

Nonindustrial private: Land owned by other corporate, individuals, or trusts (NGOs) and who do not operate primary wood-using mills.

Other corporate: Land owned by timber investment or real estate companies.

Public: Land owned by Federal, state, county, or municipal government.

Ozone: A regional, gaseous air pollutant produced primarily through sunlight-driven chemical reactions of nitrogen dioxide and hydrocarbons in the atmosphere and causing foliar injury to deciduous trees, conifers, shrubs, and herbaceous species.

Ozone bioindicator site: An open area used for ozone injury evaluations on ozone-sensitive species. The area must meet certain site selection guidelines on size, condition, and plant counts to be used for ozone injury evaluations in FIA.

Physiographic class: A measure of soil and water conditions that affect tree growth on a site. The physiographic classes are:

Xeric: Very dry soils where excessive drainage seriously limits both growth and species occurrence. These sites are usually on upland and upper half slopes.

Xeromesic: Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. These sites are usually on the lower half slopes.

Mesic: Deep, well-drained soils. Growth and species occurrence are limited only by climate. These include all cove sites and bottomlands along intermittent streams.

Hydromesic: Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent.

Hydric: Very wet sites where excess water seriously limits both growth and species occurrence.

Poletimber trees: Live trees at least 5.0 inches d.b.h. but smaller than sawtimber trees.

Primary wood-using mill: A mill that converts roundwood products into other wood products. Common examples are sawmills that convert saw logs into lumber and pulpmills that convert pulpwood into paper.

Productivity class: A classification of forest land in terms of potential annual cubic-foot volume growth per acre at culmination of mean annual increment in fully stocked natural stands.

Pulpwood: Roundwood, whole-tree chips, or wood residues used for the production of wood pulp.

Reserved forest land: Forest land withdrawn from timber utilization through statute, administrative regulation, or designation without regard to productive status. Examples include national forest wilderness areas, national parks, and national monuments.

Residues: Bark and woody materials that are generated in primary wood-using mills when roundwood products are converted to other products. Examples are slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and pulp screenings. Includes bark residues and wood residues (both coarse and fine materials) but excludes logging residues.

Rotten tree: A live tree of commercial species that does not contain a saw log now or prospectively primarily because of rot (that is, when rot accounts for more than 50 percent of the total cull volume).

Rough tree: (a) A live tree of commercial species that does not contain a saw log now or prospectively primarily because of roughness (that is, when sound cull due to such factors as poor form, splits, or cracks accounts for more than 50 percent of the total cull volume); or (b) a live tree of noncommercial species.

Roundwood products: Logs, bolts, and other round timber generated from harvesting trees for industrial or consumer use. Roundwood products include saw logs, veneer, cooperage logs, bolts, pulpwood logs, fuelwood, pilings, poles posts, ties, mine timbers, and various other round or split products.

Salvable dead tree: A downed or standing dead tree considered currently or potentially merchantable by regional standards.

Saplings: Live trees 1.0 inch through 4.9 inches d.b.h.

Saw log: A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods, or meeting other combinations of size and defect specified by regional standards.

Sawtimber tree: A live tree of commercial species 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. Hardwoods must be at least 11.0 inches diameter outside bark (d.o.b.).

Sawtimber volume: Net or gross volume in board feet (International ¼-inch rule) or cubic feet of the saw log portion of live sawtimber trees measured from the 1-foot stump to a minimum 7.0-inch top diameter outside bark (for softwoods) or a 9.0-inch top diameter outside bark (for hardwoods), on the central stem, or to the point where the central stem splits into smaller limbs. Net volume equals gross volume minus deduction for rough and rotten cull.

Seedling: Live tree smaller than 1.0 inch d.b.h./d.r.c. and at least 6.0 inches in height for softwoods and 12.0 inches in height for hardwoods.

Site index: An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Snag: A standing dead tree. In the current inventory, a snag must be 5.0 inches d.b.h./d.r.c. and 4.5 feet tall, and have a lean angle less than 45 degrees from vertical. A snag may be either self-supported by its roots or supported by another tree or snag.

Softwood: A coniferous tree, usually evergreen, having needles or scale-like leaves.

Sound dead: The net volume in salvable dead trees.

Species group: A combination of tree species that share closely associated understory plants or site requirements.

Stand: A group of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Standing dead tree: A standing dead tree must be at least 5 inches d.b.h. or larger, at least 4.5 feet in height, and have a lean of less than 45 degrees from the vertical. A snag should be self-supported or supported by another tree.

Stand-size class: A classification of forest land based on the size class of live trees in the area. The classes include:

> ***Nonstocked:*** Forest land stocked with less than 10 percent of full stocking with live trees. Examples are recently cutover areas or recently reverted agricultural fields.
>
> ***Sapling-seedling:*** Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in seedlings or saplings or both.
>
> ***Poletimber:*** Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in poletimber or sawtimber trees or both, and in which the stocking of poletimber exceeds that of sawtimber.

Sawtimber: Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in poletimber or sawtimber trees or both, and in which the stocking of sawtimber is at least equal to that of poletimber.

State: An ownership class of public lands owned by states or lands leased by states for more than 50 years.

Stocking: The degree of occupancy of land by trees, measured by basal area or number of trees by size and spacing, or both, compared to a stocking standard; that is, the basal area or number of trees, or both, required to fully utilize the growth potential of the land.

Stocking class: At the tree level, stocking is the density expressed as a percent of total tree density required to fully utilize the growth potential of the land. At the stand level, it is expressed as the sum of the stocking values of all trees sampled. The classes include:

Overstocked: Forest stand with stocking ≥100 percent

Fully stocked: Forest stand that contains 60 to 99 percent of full stocking

Moderately stocked: Forest stand that contains 35 to 59 percent of full stocking

Poorly stocked: Forest stand that contains only 10 to 34 percent of full stocking

Nonstocked: Forest stand with less than 10 percent of full stocking.

Timberland: Forest land that is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. (Note: Areas qualifying as timberland are capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands. Currently inaccessible and inoperable areas are included.)

Timber products output: All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Tree: A woody plant usually having one or more erect perennial stems, a stem diameter at breast height of at least 3 inches, a more or less definitely formed crown of foliage, and a height of at least 15 feet at maturity.

Tree class: A classification of tree quality or condition of the tree for saw log production. Tree class for sawtimber-size trees is based on current conditions. Tree class for poletimber-size trees is based on the prospected determination or forecast of the potential tree quality when the tree reaches sawtimber size.

Tree size class: A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Tops: The wood of a tree above the merchantable height (or above the point on the stem 4.0 inches diameter outside bark (d.o.b.) or to the point where the central stem breaks into limbs). It includes the usable material in the uppermost stem.

Total live tree biomass: The total mass of live trees and associated saplings expressed in pounds or tons (dry weight) per unit area. The total tree and sapling biomass (excluding foliage) has five components:

Bole: Biomass of a tree from 1 foot above the ground to a 4-inch top outside bark or to a point where the central stem splits into smaller limbs. This includes protruding twigs from the central stem.

Tops and limbs: Total biomass of a tree from the 12-inch stump minus the bole. This does not include any twigs protruding from the central stem below the 4-inch top.

Sapling trees: Total biomass of a tree from 1 to 4.9 inches diameter measured at the root collar d.b.h. or d.r.c.

Stump: Total biomass of a tree 5 inches d.b.h. and larger from the ground to a height of 1 foot.

Belowground: Total biomass of the belowground portion of the stump and the coarse roots of all trees and saplings.

Urban forest land: Land that would otherwise meet the criteria for timberland but is in an urban-suburban area surrounded by commercial, industrial, or residential development and not likely to be managed for the production of industrial wood products on a continuing basis. Wood removed would be for land clearing, fuelwood, or esthetic purposes. Such forest land may be associated with industrial, commercial, residential subdivision, industrial parks, golf course perimeters, airport buffer strips, and public urban parks that qualify as forest land.

Unreserved forest land: Forest land not withdrawn from harvest by statute or administrative regulation. Includes forest lands that are not capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands.

Veneer log: A roundwood product from which veneer is sliced or sawn and that usually meets certain standards of minimum diameter and length and maximum defect.

Weight: The weight of wood and bark, oven-dry basis (approximately 12 percent moisture content).

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*All tables contain forest attribute estimates for Kansas for measurements taken from 2006 to 2010, except where indicated

**Gaps in enumeration of tables are placeholders for future tables such as forest health indicator population estimates (e.g., down woody material)

Table A.—Area and number of plots in each stratum used for stratification and estimation, Kansas, 2010

Unit	Estimation Unit	Stratum	Area	Selected	Nonforest office plots	Field check plots	Field check plots measured	Forest plots measured	Forest plots measured for change	Plots not measured
			area	*number of plots*						
1	Inland Census Water Unit 1	Canopy cover 0 - 100	110,638	16	13	3	2	2	1	1
1	Private Unit 1	Canopy cover 0 - 5	6,962,262	1,186	1,069	117	103	74	66	14
1	Private Unit 1	Canopy cover 51 - 65	190,564	34	6	28	26	24	23	2
1	Private Unit 1	Canopy cover 6 - 50	488,632	81	31	50	45	35	35	5
1	Private Unit 1	Canopy cover 66 - 80	197,876	28	2	26	23	22	21	3
1	Private Unit 1	Canopy cover 81 - 100	355,021	61	1	60	50	49	49	10
1	Public Unit 1	Canopy cover 0 - 5	160,729	21	18	3	3	3	3	0
1	Public Unit 1	Canopy cover 6 - 100	83,881	12	3	9	9	9	9	0
2	Inland Census Water Unit 2	Canopy cover 0 - 100	85,076	16	16	0	0	0	0	0
2	Private Unit 2	Canopy cover 0 - 5	8,495,648	1,426	1,313	113	98	80	80	15
2	Private Unit 2	Canopy cover 51 - 65	192,459	34	5	29	26	26	24	3
2	Private Unit 2	Canopy cover 6 - 50	482,130	87	36	51	43	34	30	8
2	Private Unit 2	Canopy cover 66 - 80	198,136	36	1	35	29	29	25	6
2	Private Unit 2	Canopy cover 81 - 100	300,490	46	3	43	36	35	33	7
2	Public Unit 2	Canopy cover 0 - 100	136,945	21	12	9	9	9	9	0
3	Cimarron NGL	Canopy cover 0 - 100	108,858	21	21	0	0	0	0	0
3	Inland Census Water Unit 3	Canopy cover 0 - 100	99,833	15	14	1	1	1	1	0
3	Private Unit 3	Canopy cover 0 - 5	32,849,078	5,508	5,429	79	66	46	44	13
3	Private Unit 3	Canopy cover 51 - 65	129,591	26	6	20	18	14	13	2
3	Private Unit 3	Canopy cover 6 - 50	635,026	125	63	62	50	36	33	12
3	Private Unit 3	Canopy cover 66 - 80	99,649	22	5	17	15	15	13	2
3	Private Unit 3	Canopy cover 81 - 100	107,614	13	0	13	11	11	9	2
3	Public Unit 3	Canopy cover 0 - 100	187,117	33	30	3	3	2	2	0
All units	All Ownerships	All strata	52,657,253	8,868	8,097	771	666	556	523	105

Table B.—State-level estimates of major forest resource attributes and their sampling errors, Kansas, 2010

Item	State total	Sampling error
Growing stock on timberland	*million cubic feet*	*percent*
Volume	1,446,604,403	6.91
Average annual net growth	36,561,127	10.90
Average annual removals	12,927,269	30.88
Average annual mortality	16,172,524	16.17
Sawtimber on timberland	*board feet*[a]	*percent*
Volume	5,405,812,288	8.55
Average annual net growth	146,183,383	12.76
Average annual removals	51,522,423	36.25
Average annual mortality	54,018,911	22.60
Area	*acres*	*percent*
Forest land	2,437,401	3.06
Timberland	2,326,128	3.15
Biomass (above-ground live trees)	*dry tons*	*percent*
Forest land	82,570,768	4.06
Timberland	79,727,805	4.20

[a]International ¼-inch rule.

Table C.—Compliance to measurement quality objectives (MQO) tolerances of variables based on blind check plots, Kansas, 2010

			Kansas		All NRS States	
Variable	Tolerance	Objective (%)	% of data within tolerance	Observations	% of data within tolerance	Observations
Plot Level						
National Variables						
Distance to Road	No Tolerance	90.0	89.7	29	82.3	2,010
Water on Plot	No Tolerance	90.0	65.5	29	85.7	2,010
Regional Variables						
Elevation	±50 feet	99.0	86.1	36	88.0	1,886
Latitude - decimal degrees	±0.0001 degree	99.0	100.0	36	100.0	1,888
Longitude - decimal degrees	±0.0001 degree	99.0	94.4	36	89.1	1,888
Latitude - distance	±140 feet		.	.	.	.
Longitude - distance	±140 feet		.	.	.	.
Number of plots				37		2,114
Condition Level						
National Variables						
Condition Status	No Tolerance	99.0	95.8	190	98.9	4,732
Reserve Status	No Tolerance	99.0	100.0	190	99.7	4,732
Owner Group	No Tolerance	99.0	78.0	41	97.8	2,348
Forest Type (Type)	No Tolerance	95.0	58.5	41	86.4	2,348
Forest Type (Group)	No Tolerance	99.0	68.3	41	92.5	2,348
Stand Size	No Tolerance	99.0	65.9	41	89.4	2,348
Regeneration Status	No Tolerance	99.0	100.0	41	98.0	2,348
Tree Density	No Tolerance	99.0	78.0	41	96.8	2,348
Owner Class	No Tolerance	99.0	75.6	41	94.3	2,348
Owner Status	No Tolerance	99.0	100.0	41	97.4	2,348
Regeneration Species	No Tolerance	99.0	100.0	41	98.1	2,348
Stand Age	±10 percent	95.0	61.0	41	82.9	2,348
Disturbance 1	No Tolerance	99.0	63.6	33	87.7	2,313
Disturbance Year 1	±1 year	99.0	50.0	4	83.2	119
Disturbance 2	No Tolerance	99.0	81.3	16	87.1	379
Disturbance Year 2	±1 year	99.0	100.0	1	72.7	11
Disturbance 3	No Tolerance	99.0	100.0	3	98.2	56

(Table C continued on next page)

(Table C continued)

Variable	Tolerance	Objective (%)	Kansas % of data within tolerance	Kansas Observations	All NRS States % of data within tolerance	All NRS States Observations
Disturbance Year 3	±1 year	99.0	.	.	50.0	2
Treatment 1	No Tolerance	99.0	100.0	33	97.4	2,313
Treatment Year 1	±1 year	99.0	.	.	94.2	156
Treatment 2	No Tolerance	99.0	.	.	80.2	212
Treatment Year 2	±1 year	99.0	.	.	95.8	24
Treatment 3	No Tolerance	99.0	.	.	93.7	63
Treatment Year 3	±1 year	99.0	.	.	66.7	3
Physiographic Class	No Tolerance	80.0	61.0	41	81.3	2,348
Present Nonforest Use	No Tolerance	99.0	73.2	190	88.0	4,732
Regional Variables						
NC Land Use	No Tolerance	99.0	97.3	147	97.5	3,660
Number of conditions				190		4,732
Boundary Level						
National Variables						
Boundary Change	No Tolerance	99.0	66.7	18	80.3	701
Constrasting Condition	No Tolerance	99.0	83.3	18	94.0	701
Left Azimuth	±10 degrees	90.0	72.2	18	85.7	701
Corner Mapped	No Tolerance	90.0	94.4	18	96.7	701
Corner Azimuth	±10 degrees	90.0	.	.	95.1	61
Corner Distance	±1 foot	90.0	.	.	90.2	61
Right Azimuth	±10 degrees	90.0	72.2	18	86.4	701
Number of boundaries				18		701
Subplot Level						
National Variables						
Subplot Center Condition	No Tolerance	99.0	90.3	144	97.9	8,235
Microplot Center Condition	No Tolerance	99.0	91.0	144	97.6	8,235
Slope	±10 percent	90.0	98.9	93	98.3	7,243
Aspect	±10 degrees	90.0	91.8	85	91.6	6,957
Snow/Water Depth	±0.5 foot		93.6	109	68.8	7,703
Number of subplots				144		8,235

(Table C continued on next page)

(Table C continued)

Variable	Tolerance	Objective (%)	Kansas % of data within tolerance	Kansas Observations	All NRS States % of data within tolerance	All NRS States Observations
Tree Level						
National Variables						
DBH	±0.1 inch per 20 inches	95.0	80.3	402	94.9	32,160
DRC	±0.1 inch per 20 inches	95.0	.	.	72.1	43
Azimuth	±10 degrees	90.0	99.3	434	99.3	35,316
Horizontal Distance	±0.2 foot per 1.0 foot	90.0	97.2	434	98.8	35,316
Species	No Tolerance	95.0	96.8	442	98.0	35,620
Tree Genus	No Tolerance	99.0	98.2	442	99.6	35,579
Tree Status	No Tolerance	95.0	96.2	442	98.9	35,620
Rotten/Missing Cull	±10 percent	90.0	95.7	328	98.2	22,817
Total Length	±10 percent	90.0	53.3	317	78.4	22,476
Actual Length	±10 percent	90.0	56.7	30	73.8	2,710
Compacted Crown Ratio	±10 percent	80.0	79.9	384	83.3	28,939
Uncompacted Crown Ratio (P3)	±10 percent	90.0	.	.	66.7	15
Crown Class	No Tolerance	85.0	68.0	384	81.2	28,939
Decay Class	±1 class	90.0	85.7	56	95.2	4,967
Cause of Death	No Tolerance	80.0	83.9	56	84.1	4,967
Condition	No Tolerance	99.0	93.9	442	98.1	35,620
Mortality Year	±1 year	70.0	75.0	4	92.8	527
Crown Position	No Tolerance		.	.	71.4	14
Crown Light Exposure	±1 class	85.0	.	.	73.3	15
Sapling Crown Vigor Class	No Tolerance	85.0	.	.	100.0	1
Crown Density	±10 percent	90.0	.	.	57.1	14
Crown Dieback	±10 percent	90.0	.	.	100.0	14
Transparency	±10 percent	90.0	.	.	71.4	14
Regional Variables						
NC Tree Class	No Tolerance	90.0	77.2	413	91.2	31,640
NC Damage Agent 1	No Tolerance	90.0	82.8	384	88.5	28,939
NC Damage Agent 2	No Tolerance	90.0	77.7	121	82.3	6,316
Missouri Damage Code	No Tolerance		.	.	.	.
Utilization	No Tolerance	99.0	.	.	100.0	1,140

(Table C continued on next page)

(Table C continued)

Variable	Tolerance	Objective (%)	Kansas % of data within tolerance	Kansas Observations	All NRS States % of data within tolerance	All NRS States Observations
NC Tree Grade	No Tolerance	90.0	7.7	13	66.5	752
DBH-Live & Trees with Decay Code 1 or 2	±0.1 inch per 20 inches	95.0	81.2	383	94.8	30,178
DBH-Trees with Decay Codes 3, 4 or 5	±1 inch per 20 inches	95.0	100.0	9	99.4	1,410
Total Length-trees 40 feet and greater	±10 percent	90.0	50.9	173	80.2	18,075
Total Length-trees less than 40 feet	±10 percent	90.0	56.3	144	71.0	4,401
Total Length-trees less than 5 inches DBH	±10 percent	90.0	100.0	3	60.4	260
Number of trees				442		35,620
Seedling Level						
National Variables						
Species	No Tolerance	85.0	82.4	74	91.7	6,746
Genus	No Tolerance	90.0	89.2	74	96.7	6,746
Seedling Count	±20 percent	90.0	64.9	74	65.5	6,746
Seedling Count (coded)	No Tolerance	90.0	70.3	74	70.1	6,746
Number of microplots				34		2,871
Site Tree Level						
National Variables						
Condition List	No Tolerance	99.0	83.0	47	92.9	2,765
Diameter	±0.1 inch per 20 inches	95.0	91.5	47	95.6	2,747
Species	No Tolerance	95.0	100.0	47	98.7	2,765
Genus	No Tolerance	99.0	100.0	47	99.9	2,765
Azimuth	±10 degrees	90.0	97.9	47	98.8	2,747
Distance	±5 feet	90.0	100.0	47	99.1	2,747
Total Length	±10 percent	90.0	93.6	47	95.7	2,747
Diameter Age	±5 years	95.0	95.7	47	96.8	2,747
Regional Variables						
Site Index Method	No Tolerance	99.0	100.0	47	99.9	2,765
Field Site Index	No Tolerance	99.0	100.0	47	100.0	2,765
Number of site trees				47		2,765

Table D.—Observed relative bias values (Average [Field crew – QA crew]) for measurement variables, blind check plots, Kansas, 2010

Variable	Unit of measure	Kansas				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Plot Level									
National Variables									
Distance to Road	code	-0.1	-0.3	0.0	29	0.0	-0.1	0.0	2,010
Water on Plot	code	0.4	-0.5	1.3	29	0.1	0.1	0.2	2,010
Regional Variables									
Elevation	foot	-11.3	-21.1	-0.8	36	318.1	105.6	575.7	1,886
Latitude - decimal degrees	degree	0.0	0.0	0.0	36	0.0	0.0	0.0	1,888
Longitude - decimal degrees	degree	0.0	0.0	0.0	36	0.0	0.0	0.0	1,888
Latitude - distance	foot				.				
Longitude - distance	foot				.				
Number of plots					37				2,114
Condition Level									
National Variables									
Condition Status	code	0.0	0.0	0.0	190	0.0	0.0	0.0	4,732
Reserve Status	code	0.0	0.0	0.0	190	0.0	0.0	0.0	4,732
Owner Group	code	0.2	-4.9	5.6	41	0.2	0.0	0.4	2,348
Forest Type (Type)	code	13.6	-67.9	95.5	41	5.6	1.5	9.3	2,348
Forest Type (Group)	code	14.6	-65.9	97.6	41	5.8	1.7	9.5	2,348
Stand Size	code	-0.1	-0.3	0.2	41	0.0	0.0	0.0	2,348
Regeneration Status	code	0.0	0.0	0.0	41	0.0	0.0	0.0	2,348
Tree Density	code	0.0	-0.1	0.2	41	0.0	0.0	0.0	2,348
Owner Class	code	0.1	-5.7	5.9	41	0.2	0.0	0.4	2,348
Owner Status	code	0.0	0.0	0.0	41	0.0	0.0	0.0	2,348
Regeneration Species	code	0.0	0.0	0.0	41	1.6	-0.5	3.9	2,348
Stand Age	year	-1.7	-5.7	1.8	41	-0.5	-1.4	0.1	2,348
Disturbance 1	code	15.3	8.2	21.8	33	0.5	0.0	1.0	2,313
Disturbance Year 1	year	3,994.5	0.0	7,989.0	4	873.1	369.4	1,410.5	119
Disturbance 2	code	4.0	0.0	8.9	16	-3.1	-4.8	-1.5	379

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Kansas Relative bias	Kansas 95% CI limits Lower	Kansas 95% CI limits Upper	Kansas Number of observations	All NRS States Relative bias	All NRS States 95% CI limits Lower	All NRS States 95% CI limits Upper	All NRS States Number of observations
Disturbance Year 2	year	0.0	0.0	0.0	1	726.9	0.0	2,180.0	11
Disturbance 3	code	0.0	0.0	0.0	3	0.4	0.0	1.1	56
Disturbance Year 3	year				.	1.0	0.0	2.0	2
Treatment 1	code	0.0	0.0	0.0	33	0.1	-0.1	0.2	2,313
Treatment Year 1	year				.	0.1	0.0	0.2	156
Treatment 2	code				.	2.8	0.7	5.3	212
Treatment Year 2	year				.	-0.1	-0.3	0.2	24
Treatment 3	code				.	-1.0	-3.0	0.5	63
Treatment Year 3	year				.	-0.7	-1.3	0.0	3
Physiographic Class	code	0.4	-2.8	3.7	41	0.1	0.0	0.3	2,348
Present Nonforest Use	code	-0.1	-0.9	0.6	190	0.1	0.0	0.2	4,732
Regional Variables									
NC Land Use	code	0.0	-0.2	0.2	147	-0.1	-0.1	0.0	3,660
Number of conditions					190				4,732
Boundary Level									
National Variables									
Boundary Change	code	0.3	-0.1	0.7	18	0.0	0.0	0.1	701
Constrasting Condition	cond	-0.1	-0.3	0.1	18	0.0	0.0	0.0	701
Left Azimuth	degree	-1.8	-52.5	39.9	18	2.6	-0.8	5.9	701
Corner Mapped	code	0.1	0.0	0.2	18	0.0	0.0	0.0	701
Corner Azimuth	degree				.	-0.6	-2.2	1.1	61
Corner Distance	foot				.	0.1	-0.2	0.4	61
Right Azimuth	degree	3.2	-37.3	56.5	18	-1.0	-4.3	2.5	701
Number of boundaries					18				701

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Kansas Relative bias	Kansas 95% CI limits Lower	Kansas 95% CI limits Upper	Kansas Number of observations	All NRS States Relative bias	All NRS States 95% CI limits Lower	All NRS States 95% CI limits Upper	All NRS States Number of observations
Subplot Level									
National Variables									
Subplot Center Condition	code	0.0	0.0	0.1	144	0.0	0.0	0.0	8,235
Microplot Center Condition	code	0.0	0.0	0.1	144	0.0	0.0	0.0	8,235
Slope	percent	-0.6	-1.1	-0.1	93	0.0	-0.1	0.1	7,243
Aspect	degree	-6.9	-17.3	0.3	85	1.0	0.2	1.9	6,957
Snow/Water Depth	foot	-0.9	-2.0	-0.2	109	-0.1	-0.2	0.0	7,703
Number of subplots					144				8,235
Tree Level									
National Variables									
DBH	inch	-0.2	-0.3	-0.1	402	-0.1	-0.1	0.0	32,160
DRC	inch				.	0.0	-0.2	0.2	43
Azimuth	degree	0.9	0.4	1.8	434	0.0	-0.1	0.1	35,316
Horizontal Distance	foot	0.1	-0.1	0.3	434	0.0	0.0	0.0	35,316
Species	code	-0.2	-1.9	2.2	442	0.1	-0.2	0.3	35,620
Tree Genus	code	-0.1	-1.9	2.2	442	0.1	-0.2	0.3	35,579
Tree Status	code	0.0	-0.1	0.0	442	0.0	0.0	0.0	35,620
Rotten/Missing Cull	percent	0.4	-0.4	1.1	328	-0.1	-0.2	-0.1	22,817
Total Length	foot	2.3	0.5	4.1	317	0.2	0.0	0.4	22,476
Actual Length	foot	1.0	-3.6	5.2	30	-2.5	-4.1	-1.1	2,710
Compacted Crown Ratio	percent	-1.7	-3.0	-0.3	384	-0.1	-0.2	0.0	28,939
Uncompacted Crown Ratio (P3)	percent				.	6.3	-4.8	12.7	15
Crown Class	code	-0.1	-0.2	0.0	384	0.0	0.0	0.0	28,939
Decay Class	code	-0.1	-0.4	0.2	56	0.0	0.0	0.0	4,967
Cause of Death	code	-1.4	-7.0	3.0	56	2.3	1.9	2.7	4,967
Condition	code	0.0	0.0	0.0	442	0.0	0.0	0.0	35,620
Mortality Year	year	0.5	0.0	1.5	4	0.1	0.1	0.2	527
Crown Position	code				.	0.1	-0.3	0.4	14
Crown Light Exposure	code				.	-0.4	-1.1	0.2	15

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Kansas Relative bias	Kansas 95% CI limits Lower	Kansas 95% CI limits Upper	Kansas Number of observations	All NRS States Relative bias	All NRS States 95% CI limits Lower	All NRS States 95% CI limits Upper	All NRS States Number of observations
Sapling Crown Vigor Class	code				.	0.0	0.0	0.0	1
Crown Density	percent				.	-0.4	-9.1	7.9	14
Crown Dieback	percent				.	-1.4	-3.2	-0.4	14
Transparency	percent				.	-4.3	-8.8	0.4	14
Regional Variables									
NC Tree Class	code	-0.2	-0.5	0.2	413	0.0	-0.1	0.0	31,640
NC Damage Agent 1	code	7.2	-2.4	18.9	384	5.5	4.1	6.8	28,939
NC Damage Agent 2	code	23.1	-8.2	51.7	121	20.5	17.3	23.8	6,316
Missouri Damage Code	code				.				.
Utilization	code				.	0.0	0.0	0.0	1,140
NC Tree Grade	code	6.2	-103.5	137.3	13	-1.5	-10.2	7.3	752
DBH-Live & Trees with Decay Code 1 or 2	inch	-0.1	-0.2	0.0	383	0.0	0.0	0.0	30,178
DBH-Trees with Decay Codes 3, 4 or 5	inch	0.0	-0.1	0.1	9	0.0	0.0	0.0	1,410
Total Length-trees 40 feet and greater	foot	4.5	1.7	7.0	173	0.8	0.7	0.9	18,075
Total Length-trees less than 40 feet	foot	-0.4	-2.6	2.4	144	-2.2	-3.1	-1.5	4,401
Total Length-trees less than 5 inches DBH	foot	-0.9	-9.1	6.5	3	-0.7	-2.7	0.9	260
Number of trees					442				35,620
Seedling Level									
National Variables									
Species	code	0.0	-0.1	0.1	74	0.0	0.0	0.0	6,746
Genus	code	-0.1	-0.1	0.0	74	0.0	0.0	0.0	6,746
Seedling Count	number	0.7	-11.0	12.3	74	-15.9	-22.8	-11.8	6,746
Seedling Count (coded)	number	0.4	0.0	0.7	74	0.0	0.0	0.0	6,746
Number of microplots					34				2,871

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Kansas				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Site Tree Level									
National Variables									
Condition List	code	33.1	-25.2	106.4	47	-5.8	-13.6	2.1	2,765
Diameter	inch	-0.1	-0.4	0.0	47	0.0	0.0	0.0	2,747
Species	code	0.0	0.0	0.0	47	0.0	-0.1	0.0	2,765
Genus	code	0.0	0.0	0.0	47	0.0	-0.1	0.0	2,765
Azimuth	degree	2.2	0.0	7.5	47	0.1	-0.4	0.5	2,747
Distance	foot	0.0	0.0	0.0	47	0.0	-0.1	0.0	2,747
Total Length	foot	-1.1	-3.2	0.6	47	-0.3	-0.5	-0.1	2,747
Diameter Age	year	-0.6	-1.8	0.0	47	0.1	0.0	0.2	2,747
Regional Variables									
Site Index Method	code	0.0	0.0	0.0	47	0.0	0.0	0.0	2,765
Field Site Index	feet	0.0	0.0	0.0	47	0.0	0.0	0.0	2,765
Number of site trees					47				2,765

Table E.—FIA nonresponse by strata, Kansas, 2010

Owner and strata	plots selected	Observed	Denied access	Hazardous	Other	Response Rate (%)
	number of plots					
National grassland	21	21.00	0.00	0.00	0.00	100.0%
Inland water	47	46.00	1.00	0.00	0.00	97.9%
Private	8,713	8,605.85	106.10	1.05	0.00	98.8%
Other public	87	87.00	0.00	0.00	0.00	100.0%
Total	8,868	8,759.85	107.10	1.05	0.00	98.8%

Owner and strata	Plots selected	Observed	Denied Access	Hazardous	Other	Response rate
Cimarron NGL	21	21	0	0	0	100
Inland Census Water Unit 1	16	15	1	0	0	93.75
Inland Census Water Unit 2	16	16	0	0	0	100
Inland Census Water Unit 3	15	15	0	0	0	100
Private Unit 1	1186	1172	14	0	0	98.82
Private Unit 1	81	75	5.75	0.25	0	92.59
Private Unit 1	34	32	2	0	0	94.12
Private Unit 1	28	25	3	0	0	89.29
Private Unit 1	61	51	10	0	0	83.61
Private Unit 2	1426	1411	15	0	0	98.95
Private Unit 2	87	78.4	8.6	0	0	90.11
Private Unit 2	34	31	3	0	0	91.18
Private Unit 2	36	29.5	6.25	0.25	0	81.94
Private Unit 2	46	38.75	7.25	0	0	84.24
Private Unit 3	5508	5494.75	13	0.25	0	99.76
Private Unit 3	125	112.7	12	0.3	0	90.16
Private Unit 3	26	24	2	0	0	92.31
Private Unit 3	22	19.75	2.25	0	0	89.77
Private Unit 3	13	11	2	0	0	84.62
Public Unit 1	21	21	0	0	0	100
Public Unit 1	12	12	0	0	0	100
Public Unit 2	21	21	0	0	0	100
Public Unit 3	33	33	0	0	0	100

Table KS-1.—Percentage of area by land status, Kansas, 2010

Land status	Percentage of area
Accessible forest land	
Unreserved forest land	
Timberland	4.0
Unproductive	0.2
Total unreserved forest land	4.2
Reserved forest land	
Productive	- -
Unproductive	- -
Total reserved forest land	- -
All accessible forest land	4.2
Nonforest and other land	
Nonforest land	93.8
Water	
Census	0.4
Non-Census	0.3
All nonforest and other land	94.6
Nonsampled land	
Access denied	1.2
Hazardous conditions	0.0
Other	- -
All land	100.0
Total area (thousands of acres)	52,657

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the percentage rounds to less than 0.1 percent. Columns and rows may not add to their totals due to rounding.

Table KS-2.—Area of forest land, in thousand acres, by owner class and forest-land status, Kansas, 2010

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
Fish and Wildlife Service	1.6	- -	1.6	- -	- -	- -	1.6
Department of Defense or Energy	73.8	8.3	82.1	- -	- -	- -	82.1
Other Federal	30.5	1.6	32.2	- -	- -	- -	32.2
State and local government							
State	17.4	4.2	21.6	- -	- -	- -	21.6
Local (county, municipal, etc.)	13.2	- -	13.2	- -	- -	- -	13.2
Private							
Undifferentiated private	2,189.6	97.1	2,286.7	- -	- -	- -	2,286.7
All owners	2,326.1	111.3	2,437.4	- -	- -	- -	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-3.—Area of forest land, in thousand acres, by forest-type group and productivity class, Kansas, 2010

Forest-type group	Site-productivity class (cubic feet/acre/year)							All classes
	0-19	20-49	50-84	85-119	120-164	165-224	225+	
White / red / jack pine group	- -	- -	- -	- -	3.7	- -	- -	3.7
Other eastern softwoods group	7.0	85.3	11.6	- -	- -	- -	- -	103.9
Ponderosa pine group	- -	2.7	- -	- -	- -	- -	- -	2.7
Oak / pine group	4.0	59.9	9.3	- -	- -	- -	- -	73.2
Oak / hickory group	65.1	778.4	379.4	116.1	5.8	5.9	- -	1,350.7
Oak / gum / cypress group	- -	6.5	- -	7.7	- -	- -	- -	14.2
Elm / ash / cottonwood group	13.4	324.6	239.1	136.8	20.7	1.0	- -	735.8
Maple / beech / birch group	- -	- -	7.8	- -	7.8	- -	- -	15.5
Other hardwoods group	16.3	14.7	- -	- -	- -	- -	- -	31.0
Exotic hardwoods group	- -	41.1	- -	- -	- -	- -	- -	41.1
Nonstocked	5.5	47.8	4.6	7.8	- -	- -	- -	65.7
All forest-type groups	111.3	1,361.0	651.8	268.4	37.9	7.0	- -	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-4.—Area of forest land, in thousand acres, by forest-type group, ownership group, and forest-land status, Kansas, 2010

Forest-type group	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
White / red / jack pine group	- -	- -	3.7	- -	- -	- -	- -	- -	3.7
Other eastern softwoods group	- -	- -	- -	- -	- -	3.0	96.9	4.0	103.9
Ponderosa pine group	- -	- -	- -	- -	- -	- -	2.7	- -	2.7
Oak / pine group	- -	- -	5.2	1.3	- -	- -	64.0	2.7	73.2
Oak / hickory group	- -	- -	46.1	8.6	17.1	- -	1,222.4	56.4	1,350.7
Oak / gum / cypress group	- -	- -	- -	- -	- -	- -	14.2	- -	14.2
Elm / ash / cottonwood group	- -	- -	45.3	- -	13.5	1.2	663.6	12.2	735.8
Maple / beech / birch group	- -	- -	- -	- -	- -	- -	15.5	- -	15.5
Other hardwoods group	- -	- -	- -	- -	- -	- -	14.7	16.3	31.0
Exotic hardwoods group	- -	- -	- -	- -	- -	- -	41.1	- -	41.1
Nonstocked	- -	- -	5.6	- -	- -	- -	54.6	5.5	65.7
All forest-type groups	- -	- -	106.0	9.9	30.6	4.2	2,189.6	97.1	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-5.—Area of forest land, in thousand acres, by forest-type group and stand-size class, Kansas, 2010

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	3.7	- -	- -	- -	- -	3.7
Other eastern softwoods group	30.5	29.1	44.3	- -	- -	103.9
Ponderosa pine group	2.7	- -	- -	- -	- -	2.7
Oak / pine group	15.5	37.0	20.6	- -	- -	73.2
Oak / hickory group	561.5	524.7	264.5	- -	- -	1,350.7
Oak / gum / cypress group	1.5	6.2	6.5	- -	- -	14.2
Elm / ash / cottonwood group	509.0	163.7	63.0	- -	- -	735.8
Maple / beech / birch group	7.8	7.8	- -	- -	- -	15.5
Other hardwoods group	7.3	5.8	18.0	- -	- -	31.0
Exotic hardwoods group	19.2	9.8	12.1	- -	- -	41.1
Nonstocked	- -	- -	- -	- -	65.7	65.7
All forest-type groups	1,158.6	784.1	428.9	- -	65.7	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-6.—Area of forest land, in thousand acres, by forest-type group and stand-age class, Kansas, 2010

Forest-type group	Non stocked	Stand-age class (years)											All classes
		1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161-180	181-200	201+	
White / red / jack pine group	- -	- -	3.7	- -	- -	- -	- -	- -	- -	- -	- -	- -	3.7
Other eastern softwoods group	- -	28.6	45.8	24.3	- -	5.2	- -	- -	- -	- -	- -	- -	103.9
Ponderosa pine group	- -	- -	- -	- -	2.7	- -	- -	- -	- -	- -	- -	- -	2.7
Oak / pine group	- -	14.4	36.3	12.6	9.9	- -	- -	- -	- -	- -	- -	- -	73.2
Oak / hickory group	- -	146.4	475.5	477.4	182.6	65.2	3.7	- -	- -	- -	- -	- -	1,350.7
Oak / gum / cypress group	- -	6.5	1.5	- -	6.2	- -	- -	- -	- -	- -	- -	- -	14.2
Elm / ash / cottonwood group	- -	83.4	254.8	302.5	81.5	6.8	6.7	- -	- -	- -	- -	- -	735.8
Maple / beech / birch group	- -	- -	15.5	- -	- -	- -	- -	- -	- -	- -	- -	- -	15.5
Other hardwoods group	- -	6.0	16.3	1.4	7.3	- -	- -	- -	- -	- -	- -	- -	31.0
Exotic hardwoods group	- -	6.1	15.0	20.0	- -	- -	- -	- -	- -	- -	- -	- -	41.1
Nonstocked	65.7	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	65.7
All forest-type groups	65.7	291.3	864.4	838.2	290.1	77.2	10.4	- -	- -	- -	- -	- -	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-7.—Area of forest land, in thousand acres, by forest-type group and stand origin, Kansas, 2010

Forest-type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	- -	3.7	3.7
Other eastern softwoods group	100.4	3.5	103.9
Ponderosa pine group	- -	2.7	2.7
Oak / pine group	69.1	4.0	73.2
Oak / hickory group	1,327.2	23.5	1,350.7
Oak / gum / cypress group	14.2	- -	14.2
Elm / ash / cottonwood group	729.0	6.7	735.8
Maple / beech / birch group	15.5	- -	15.5
Other hardwoods group	25.2	5.8	31.0
Exotic hardwoods group	39.5	1.6	41.1
Nonstocked	65.7	- -	65.7
All forest-type groups	2,386.0	51.4	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-8.—Area of forest land, in thousand acres, by forest-type group and disturbance class, Kansas, 2010

Forest-type group	Disturbance class									All forest land
	None	Insects	Disease	Weather	Fire	Domestic animals	Wild animals	Human	Other	
White / red / jack pine group	- -	- -	- -	3.7	- -	- -	- -	- -	- -	3.7
Other eastern softwoods group	43.5	1.5	4.0	- -	4.5	40.3	- -	10.1	- -	103.9
Ponderosa pine group	- -	- -	- -	2.7	- -	- -	- -	- -	- -	2.7
Oak / pine group	41.5	- -	- -	- -	- -	30.3	- -	1.4	- -	73.2
Oak / hickory group	651.4	- -	4.9	34.4	96.3	496.0	5.7	62.1	- -	1,350.7
Oak / gum / cypress group	14.2	- -	- -	- -	- -	- -	- -	- -	- -	14.2
Elm / ash / cottonwood group	405.0	3.5	1.3	92.8	3.0	187.1	18.5	24.5	- -	735.8
Maple / beech / birch group	15.5	- -	- -	- -	- -	- -	- -	- -	- -	15.5
Other hardwoods group	19.2	- -	- -	- -	- -	11.8	- -	- -	- -	31.0
Exotic hardwoods group	11.0	- -	- -	13.7	- -	11.3	- -	5.0	- -	41.1
Nonstocked	26.9	- -	- -	7.0	- -	26.5	1.5	3.8	- -	65.7
All forest-type groups	1,228.2	5.0	10.2	154.3	103.8	803.3	25.7	106.9	- -	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-9.—Area of timberland, in thousand acres, by forest-type group and stand-size class, Kansas, 2010

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	3.7	- -	- -	- -	- -	3.7
Other eastern softwoods group	26.5	26.1	44.3	- -	- -	96.9
Ponderosa pine group	2.7	- -	- -	- -	- -	2.7
Oak / pine group	15.5	37.0	16.6	- -	- -	69.2
Oak / hickory group	552.3	492.5	240.9	- -	- -	1,285.7
Oak / gum / cypress group	1.5	6.2	6.5	- -	- -	14.2
Elm / ash / cottonwood group	498.8	160.6	63.0	- -	- -	722.3
Maple / beech / birch group	7.8	7.8	- -	- -	- -	15.5
Other hardwoods group	7.3	1.4	6.0	- -	- -	14.7
Exotic hardwoods group	19.2	9.8	12.1	- -	- -	41.1
Nonstocked	- -	- -	- -	- -	60.3	60.3
All forest-type groups	1,135.2	741.3	389.4	- -	60.3	2,326.1

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table KS-10.—Number of live trees (at least 1 inch d.b.h/d.r.c.), in thousand trees, on forest land by species group and diameter class, Kansas, 2010

Species group	Diameter class (inches)															All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups																
Eastern softwood species groups																
Loblolly and shortleaf pines	- -	- -	- -	- -	42	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	42
Eastern white and red pines	- -	- -	- -	- -	- -	- -	42	- -	42	- -	- -	- -	- -	- -	- -	84
Other eastern softwoods	35,483	13,468	9,807	5,503	2,717	1,247	840	317	64	- -	- -	- -	- -	- -	- -	69,447
All softwoods	35,483	13,468	9,807	5,503	2,759	1,247	882	317	106	- -	- -	- -	- -	- -	- -	69,574
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	13,288	4,555	2,437	1,968	1,921	1,172	744	558	560	619	565	506	209	73	- -	29,175
Select red oaks	1,989	2,160	702	463	424	215	501	213	332	241	403	149	- -	36	- -	7,830
Other white oaks	5,630	3,864	5,098	3,794	2,216	1,179	383	123	37	75	- -	36	- -	- -	- -	22,435
Other red oaks	5,292	2,830	1,761	1,401	893	925	433	289	194	171	75	37	- -	- -	- -	14,301
Hickory	22,367	5,715	4,661	2,912	1,212	1,016	933	459	94	123	120	72	- -	- -	- -	39,685
Hard maple	7,529	2,565	770	588	280	182	77	- -	47	40	- -	- -	- -	- -	- -	12,078
Soft maple	- -	- -	273	36	150	267	146	190	72	153	124	42	47	- -	- -	1,499
Ash	20,671	10,449	7,052	4,677	3,905	2,589	1,660	988	686	336	359	152	- -	- -	- -	53,523
Cottonwood and aspen	489	422	432	485	868	671	597	753	443	441	452	178	215	42	423	6,911
Basswood	1,637	522	158	224	- -	84	42	47	- -	42	- -	- -	- -	- -	- -	2,756
Black walnut	5,000	3,900	4,438	3,146	2,832	2,068	1,430	1,250	420	493	114	- -	- -	- -	- -	25,091
Other eastern soft hardwoods	121,313	62,788	33,969	21,151	12,439	8,145	5,272	3,543	2,697	817	944	520	266	123	48	274,033
Other eastern hard hardwoods	28,834	18,702	12,255	9,420	6,423	2,670	1,519	992	694	304	364	82	163	- -	- -	82,420
Eastern noncommercial hardwoods	85,927	35,067	18,987	10,185	5,661	2,960	1,304	543	334	211	153	109	37	- -	- -	161,479
All hardwoods	319,965	153,539	92,991	60,448	39,225	24,142	15,042	9,949	6,608	4,068	3,674	1,884	936	274	471	733,215
All species groups	355,448	167,007	102,799	65,951	41,984	25,390	15,924	10,266	6,714	4,068	3,674	1,884	936	274	471	802,788

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the number of trees rounds to less than 1 thousand trees. Columns and rows may not add to their totals due to rounding.

Table KS-11.—Number of growing-stock trees (at least 5 inches d.b.h/d.r.c.), in thousand trees, on timberland by species group and diameter class, Kansas, 2010

Species group	Diameter class (inches)													All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups														
Eastern softwood species groups														
Loblolly and shortleaf pines	- -	- -	42	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	42
Eastern white and red pines	- -	- -	- -	- -	42	- -	- -	- -	- -	- -	- -	- -	- -	42
Other eastern softwoods	4,276	2,415	811	183	177	143	- -	- -	- -	- -	- -	- -	- -	8,006
All softwoods	4,276	2,415	853	183	219	143	- -	- -	- -	- -	- -	- -	- -	8,090
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	1,250	475	700	616	425	226	172	281	202	255	42	37	- -	4,683
Select red oaks	492	424	382	173	464	213	295	128	290	113	- -	36	- -	3,011
Other white oaks	2,238	1,499	665	307	155	77	37	36	- -	- -	- -	- -	- -	5,014
Other red oaks	835	1,036	540	585	346	160	122	130	- -	37	- -	- -	- -	3,791
Hickory	3,559	2,354	712	756	507	298	94	36	37	- -	- -	- -	- -	8,353
Hard maple	283	269	93	42	77	- -	47	- -	- -	- -	- -	- -	- -	812
Soft maple	123	36	78	113	75	72	72	118	47	- -	- -	- -	- -	732
Ash	3,808	2,666	2,004	1,327	1,054	403	306	174	148	30	- -	- -	- -	11,922
Cottonwood and aspen	353	353	680	539	486	521	306	244	310	100	114	42	255	4,304
Basswood	73	47	- -	42	42	- -	- -	- -	- -	- -	- -	- -	- -	204
Black walnut	2,044	1,825	1,448	1,120	845	894	281	242	72	- -	- -	- -	- -	8,772
Other eastern soft hardwoods	14,957	9,049	5,736	3,202	2,581	1,891	1,206	262	583	224	78	123	48	39,941
Other eastern hard hardwoods	3,104	2,323	1,522	371	218	194	32	72	102	42	- -	- -	- -	7,980
All hardwoods	33,121	22,354	14,562	9,195	7,275	4,950	2,970	1,723	1,791	801	234	239	302	99,518
All species groups	37,396	24,770	15,415	9,378	7,494	5,093	2,970	1,723	1,791	801	234	239	302	107,608

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the number of trees rounds to less than 1 thousand trees. Columns and rows may not add to their totals due to rounding.

Table KS-12.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Kansas, 2010

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
Fish and Wildlife Service	0.7	- -	0.7	- -	- -	- -	0.7
Department of Defense or Energy	96.7	9.0	105.7	- -	- -	- -	105.7
Other Federal	10.8	1.4	12.2	- -	- -	- -	12.2
State and local government							
State	22.6	1.6	24.2	- -	- -	- -	24.2
Local (county, municipal, etc.)	27.6	- -	27.6	- -	- -	- -	27.6
Private							
Undifferentiated private	2,849.3	80.1	2,929.5	- -	- -	- -	2,929.5
All owners	3,007.8	92.1	3,099.9	- -	- -	- -	3,099.9

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-13.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Kansas, 2010

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	3.9	- -	- -	- -	- -	3.9
Other eastern softwoods group	21.1	18.2	3.3	- -	- -	42.5
Ponderosa pine group	5.0	- -	- -	- -	- -	5.0
Oak / pine group	27.0	18.9	4.7	- -	- -	50.6
Oak / hickory group	919.2	427.6	43.5	- -	- -	1,390.3
Oak / gum / cypress group	4.7	6.6	0.4	- -	- -	11.7
Elm / ash / cottonwood group	1,318.0	159.8	6.6	- -	- -	1,484.4
Maple / beech / birch group	17.7	7.7	- -	- -	- -	25.3
Other hardwoods group	19.2	5.0	2.6	- -	- -	26.9
Exotic hardwoods group	36.4	18.5	1.0	- -	- -	55.9
Nonstocked	- -	- -	- -	- -	3.4	3.4
All forest-type groups	2,372.1	662.2	62.2	- -	3.4	3,099.9

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-14.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	0.5	- -	- -	0.5
Eastern white and red pines	- -	2.6	- -	- -	2.6
Other eastern softwoods	- -	6.7	1.5	95.2	103.4
All softwoods	- -	9.8	1.5	95.2	106.4
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	6.1	3.3	245.0	254.4
Select red oaks	- -	3.8	3.4	97.3	104.5
Other white oaks	- -	0.7	6.9	65.0	72.6
Other red oaks	- -	0.3	5.6	65.9	71.8
Hickory	- -	2.5	2.0	109.4	114.0
Hard maple	- -	- -	1.0	15.2	16.2
Soft maple	- -	7.9	1.9	40.5	50.2
Ash	- -	14.7	- -	240.6	255.2
Cottonwood and aspen	- -	29.0	15.7	335.6	380.3
Basswood	- -	- -	- -	6.7	6.7
Black walnut	- -	4.7	- -	184.6	189.3
Other eastern soft hardwoods	- -	22.9	6.1	920.2	949.1
Other eastern hard hardwoods	- -	7.0	3.2	267.9	278.1
Eastern noncommercial hardwoods	- -	9.2	1.3	240.6	251.0
All hardwoods	- -	108.8	50.4	2,834.3	2,993.4
All species groups	- -	118.6	51.8	2,929.5	3,099.9

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-15.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and diameter class, Kansas, 2010

Species group	Diameter class (inches)													All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups														
Eastern softwood species groups														
Loblolly and shortleaf pines	- -	- -	0	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0
Eastern white and red pines	- -	- -	- -	- -	1	- -	2	- -	- -	- -	- -	- -	- -	3
Other eastern softwoods	20	24	20	15	15	8	2	- -	- -	- -	- -	- -	- -	103
All softwoods	20	24	20	15	15	8	4	- -	- -	- -	- -	- -	- -	106
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	5	9	17	16	15	16	22	30	37	49	26	12	- -	254
Select red oaks	2	2	4	3	11	6	13	12	29	17	- -	6	- -	104
Other white oaks	10	15	16	14	7	3	1	3	- -	3	- -	- -	- -	73
Other red oaks	4	7	8	12	9	7	7	9	5	4	- -	- -	- -	72
Hickory	10	14	11	16	21	15	4	7	9	6	- -	- -	- -	114
Hard maple	2	3	3	3	2	- -	2	1	- -	- -	- -	- -	- -	16
Soft maple	1	0	1	4	3	6	3	9	10	5	8	- -	- -	50
Ash	15	22	34	36	37	26	26	17	26	15	- -	- -	- -	255
Cottonwood and aspen	1	3	8	11	14	25	19	26	36	24	36	9	169	380
Basswood	0	1	- -	1	1	1	- -	2	- -	- -	- -	- -	- -	7
Black walnut	10	15	24	27	30	36	15	24	8	- -	- -	- -	- -	189
Other eastern soft hardwoods	69	95	101	107	107	102	105	40	70	61	37	30	25	949
Other eastern hard hardwoods	22	36	47	31	28	26	24	14	24	8	19	- -	- -	278
Eastern noncommercial hardwoods	35	41	44	38	26	16	13	12	10	12	5	- -	- -	251
All hardwoods	185	263	319	320	311	286	254	207	263	204	130	58	193	2,993
All species groups	205	287	339	335	326	293	259	207	263	204	130	58	193	3,100

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-16.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand origin, Kansas, 2010

Forest-type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	- -	3.9	3.9
Other eastern softwoods group	38.8	3.8	42.5
Ponderosa pine group	- -	5.0	5.0
Oak / pine group	44.4	6.2	50.6
Oak / hickory group	1,372.1	18.2	1,390.3
Oak / gum / cypress group	11.7	- -	11.7
Elm / ash / cottonwood group	1,478.6	5.8	1,484.4
Maple / beech / birch group	25.3	- -	25.3
Other hardwoods group	11.5	15.3	26.9
Exotic hardwoods group	47.2	8.7	55.9
Nonstocked	3.4	- -	3.4
All forest-type groups	3,033.0	66.8	3,099.9

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-17.—Net volume of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and diameter class, Kansas, 2010

	Diameter class (inches)													
Species group	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	All classes
Softwood species groups														
Eastern softwood species groups														
Loblolly and shortleaf pines	- -	- -	0	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0
Eastern white and red pines	- -	- -	- -	- -	1	- -	- -	- -	- -	- -	- -	- -	- -	1
Other eastern softwoods	9	10	6	2	3	4	- -	- -	- -	- -	- -	- -	- -	34
All softwoods	9	10	6	2	4	4	- -	- -	- -	- -	- -	- -	- -	35
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	3	2	6	9	9	6	7	14	15	27	6	7	- -	110
Select red oaks	1	2	4	2	10	6	12	7	22	13	- -	6	- -	85
Other white oaks	5	6	5	4	3	2	1	2	- -	- -	- -	- -	- -	27
Other red oaks	2	5	5	8	7	4	5	7	- -	4	- -	- -	- -	48
Hickory	8	12	7	12	12	10	4	2	3	- -	- -	- -	- -	71
Hard maple	1	1	1	1	2	- -	2	- -	- -	- -	- -	- -	- -	8
Soft maple	0	0	1	2	2	3	3	7	4	- -	- -	- -	- -	21
Ash	9	13	19	19	24	12	13	10	11	3	- -	- -	- -	134
Cottonwood and aspen	1	2	7	9	12	18	14	15	26	14	19	9	98	242
Basswood	0	0	- -	1	1	- -	- -	- -	- -	- -	- -	- -	- -	2
Black walnut	5	9	13	15	19	27	10	12	4	- -	- -	- -	- -	114
Other eastern soft hardwoods	31	42	48	44	55	59	50	14	48	30	12	30	25	487
Other eastern hard hardwoods	6	10	13	5	5	6	1	4	7	4	- -	- -	- -	61
All hardwoods	70	106	127	131	159	154	123	93	141	96	37	52	122	1,411
All species groups	79	116	134	133	164	157	123	93	141	96	37	52	122	1,447

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-18.—Net volume of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	0.5	- -	- -	0.5
Eastern white and red pines	- -	0.9	- -	- -	0.9
Other eastern softwoods	- -	2.8	0.2	30.8	33.8
All softwoods	- -	4.2	0.2	30.8	35.2
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	1.0	2.9	106.1	110.1
Select red oaks	- -	3.8	3.2	78.3	85.3
Other white oaks	- -	- -	3.8	23.6	27.4
Other red oaks	- -	0.3	2.2	45.6	48.1
Hickory	- -	0.7	2.0	67.9	70.6
Hard maple	- -	- -	1.0	7.3	8.3
Soft maple	- -	7.3	1.0	13.1	21.4
Ash	- -	10.3	- -	124.0	134.3
Cottonwood and aspen	- -	27.7	11.8	202.6	242.1
Basswood	- -	- -	- -	2.0	2.0
Black walnut	- -	3.3	- -	110.9	114.2
Other eastern soft hardwoods	- -	8.6	4.1	474.1	486.8
Other eastern hard hardwoods	- -	2.7	1.6	56.6	60.9
All hardwoods	- -	65.7	33.5	1,312.2	1,411.4
All species groups	- -	69.9	33.7	1,343.0	1,446.6

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-19.—Net volume of sawtimber trees, in million board feet (International ¼-inch rule), on timberland by species group and diameter class, Kansas, 2010

	Diameter class (inches)											
Species group	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	All classes
Softwood species groups												
Eastern softwood species groups												
Loblolly and shortleaf pines	2	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	2
Eastern white and red pines	- -	- -	4	- -	- -	- -	- -	- -	- -	- -	- -	4
Other eastern softwoods	31	11	15	17	- -	- -	- -	- -	- -	- -	- -	73
All softwoods	33	11	19	17	- -	- -	- -	- -	- -	- -	- -	79
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	- -	41	42	31	35	67	75	138	34	36	- -	500
Select red oaks	- -	11	49	30	59	34	117	68	- -	33	- -	401
Other white oaks	- -	17	13	10	6	9	- -	- -	- -	- -	- -	55
Other red oaks	- -	38	33	21	23	35	- -	23	- -	- -	- -	173
Hickory	- -	56	58	52	20	12	19	- -	- -	- -	- -	217
Hard maple	- -	4	9	- -	13	- -	- -	- -	- -	- -	- -	26
Soft maple	- -	8	7	11	14	34	19	- -	- -	- -	- -	92
Ash	- -	81	107	55	62	47	56	16	- -	- -	- -	424
Cottonwood and aspen	- -	38	54	84	67	77	134	74	100	46	451	1,126
Basswood	- -	4	4	- -	- -	- -	- -	- -	- -	- -	- -	8
Black walnut	- -	68	86	127	49	59	22	- -	- -	- -	- -	412
Other eastern soft hardwoods	- -	196	250	275	228	65	233	155	56	165	128	1,751
Other eastern hard hardwoods	- -	21	20	28	6	17	31	21	- -	- -	- -	143
All hardwoods	- -	583	732	723	582	456	706	495	189	281	578	5,327
All species groups	33	594	751	739	582	456	706	495	189	281	578	5,406

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 million board feet. Columns and rows may not add to their totals due to rounding.

Table KS-19a.—Net volume of sawtimber trees, in million board feet (Doyle rule) on timberland by species group and diameter class, Kansas, 2010

	Diameter class (inches)											
Species group	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	All classes
Softwood species groups												
Eastern softwood species groups												
Loblolly and shortleaf pines	1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1
Eastern white and red pines	- -	- -	2	- -	- -	- -	- -	- -	- -	- -	- -	2
Other eastern softwoods	11	5	9	11	- -	- -	- -	- -	- -	- -	- -	36
All softwoods	11	5	11	11	- -	- -	- -	- -	- -	- -	- -	39
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	- -	17	22	18	23	48	61	128	38	41	- -	396
Select red oaks	- -	5	25	17	39	24	95	63	- -	38	- -	306
Other white oaks	- -	7	7	6	4	6	- -	- -	- -	- -	- -	30
Other red oaks	- -	16	17	12	15	25	- -	22	- -	- -	- -	107
Hickory	- -	24	29	30	13	9	16	- -	- -	- -	- -	121
Hard maple	- -	2	4	- -	9	- -	- -	- -	- -	- -	- -	15
Soft maple	- -	3	4	7	9	24	16	- -	- -	- -	- -	62
Ash	- -	34	55	32	41	34	46	14	- -	- -	- -	255
Cottonwood and aspen	- -	16	28	49	44	55	107	68	113	53	512	1,046
Basswood	- -	1	2	- -	- -	- -	- -	- -	- -	- -	- -	4
Black walnut	- -	28	44	75	32	43	17	- -	- -	- -	- -	240
Other eastern soft hardwoods	- -	82	128	162	150	47	189	143	63	187	145	1,296
Other eastern hard hardwoods	- -	9	10	17	4	12	24	18	- -	- -	- -	94
All hardwoods	- -	243	375	425	383	328	572	456	215	319	657	3,971
All species groups	11	248	386	437	383	328	572	456	215	319	657	4,010

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 million board feet. Columns and rows may not add to their totals due to rounding.

Table KS-20.—Net volume of saw log portion of sawtimber trees, in million cubic feet, on timberland by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	0.4	- -	- -	0.4
Eastern white and red pines	- -	0.8	- -	- -	0.8
Other eastern softwoods	- -	1.7	- -	10.8	12.5
All softwoods	- -	3.0	- -	10.8	13.8
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	- -	2.2	87.9	90.1
Select red oaks	- -	3.4	2.9	65.9	72.2
Other white oaks	- -	- -	0.2	8.7	9.0
Other red oaks	- -	- -	1.5	29.1	30.6
Hickory	- -	0.4	0.4	35.6	36.4
Hard maple	- -	- -	0.6	3.7	4.4
Soft maple	- -	6.7	0.5	10.9	18.2
Ash	- -	5.3	- -	73.7	79.0
Cottonwood and aspen	- -	24.1	10.8	186.6	221.5
Basswood	- -	- -	- -	1.2	1.2
Black walnut	- -	1.7	- -	71.3	73.0
Other eastern soft hardwoods	- -	3.1	3.2	317.1	323.5
Other eastern hard hardwoods	- -	1.2	0.8	25.5	27.5
All hardwoods	- -	45.9	23.1	917.4	986.4
All species groups	- -	48.9	23.1	928.2	1,000.2

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-21.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Kansas, 2010

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
Fish and Wildlife Service	-1.0	- -	-1.0	- -	- -	- -	-1.0
Department of Defense or Energy	1.4	0.8	2.1	- -	- -	- -	2.1
Other Federal	2.4	- -	2.4	- -	- -	- -	2.4
State and local government							
State	-0.2	0.2	0.0	- -	- -	- -	0.0
Local (county, municipal, etc.)	0.0	- -	0.0	0.1	- -	0.1	0.1
Private							
Undifferentiated private	74.9	0.9	75.8	- -	- -	- -	75.8
All owners	77.4	1.9	79.3	0.1	- -	0.1	79.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-22.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Kansas, 2010

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Non stocked	
White / red / jack pine group	-0.6	- -	- -	- -	- -	-0.6
Other eastern softwoods group	0.7	1.2	0.5	- -	- -	2.3
Ponderosa pine group	- -	0.0	- -	- -	- -	0.0
Oak / pine group	1.0	0.7	1.1	- -	- -	2.8
Oak / hickory group	15.1	19.3	3.9	- -	- -	38.3
Oak / gum / cypress group	- -	0.0	0.1	- -	- -	0.1
Elm / ash / cottonwood group	20.4	12.3	0.9	- -	- -	33.5
Maple / beech / birch group	0.0	-0.3	- -	- -	- -	-0.3
Other hardwoods group	0.1	0.2	0.6	- -	- -	0.8
Exotic hardwoods group	1.7	0.2	0.0	- -	- -	1.9
Nonstocked	- -	- -	- -	- -	0.3	0.3
All forest-type groups	38.4	33.7	7.0	- -	0.3	79.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-23.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	0.0	- -	- -	0.0
Eastern white and red pines	- -	-0.2	- -	- -	-0.2
Other eastern softwoods	- -	-0.4	0.1	5.6	5.3
All softwoods	- -	-0.6	0.1	5.6	5.1
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	0.0	0.0	2.6	2.6
Select red oaks	- -	0.1	0.1	1.5	1.7
Other white oaks	- -	- -	-0.1	1.4	1.3
Other red oaks	- -	0.0	0.1	1.3	1.5
Hickory	- -	0.3	0.0	3.9	4.3
Hard maple	- -	- -	0.0	0.1	0.1
Soft maple	- -	0.1	0.1	0.7	0.9
Ash	- -	0.8	0.0	4.3	5.1
Cottonwood and aspen	- -	0.4	-0.6	4.2	4.0
Basswood	- -	- -	- -	0.2	0.2
Black walnut	- -	0.3	0.0	9.8	10.1
Other eastern soft hardwoods	- -	1.3	0.3	19.1	20.7
Other eastern hard hardwoods	- -	0.0	-0.2	8.9	8.7
Eastern noncommercial hardwoods	- -	0.8	0.1	12.2	13.1
All hardwoods	- -	4.1	-0.1	70.3	74.2
All species groups	- -	3.5	0.1	75.8	79.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-24.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	0.0	- -	- -	0.0
Eastern white and red pines	- -	-0.2	- -	- -	-0.2
Other eastern softwoods	- -	-0.3	0.0	1.5	1.2
All softwoods	- -	-0.5	0.0	1.5	1.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	0.1	0.0	1.7	1.8
Select red oaks	- -	0.1	0.1	1.4	1.6
Other white oaks	- -	- -	-0.1	0.5	0.4
Other red oaks	- -	0.0	0.1	1.4	1.5
Hickory	- -	0.0	0.0	2.1	2.1
Hard maple	- -	- -	0.0	-0.1	-0.1
Soft maple	- -	0.1	0.0	0.3	0.4
Ash	- -	0.5	0.0	2.3	2.8
Cottonwood and aspen	- -	0.3	-0.6	4.2	3.8
Basswood	- -	- -	- -	0.1	0.1
Black walnut	- -	0.1	- -	6.2	6.3
Other eastern soft hardwoods	- -	0.4	0.3	12.0	12.6
Other eastern hard hardwoods	- -	0.0	0.1	2.1	2.2
All hardwoods	- -	1.5	-0.1	34.1	35.6
All species groups	- -	1.0	0.0	35.6	36.6

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-25.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Kansas, 2010

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
Fish and Wildlife Service	1.1	- -	1.1	- -	- -	- -	1.1
Department of Defense or Energy	2.4	- -	2.4	- -	- -	- -	2.4
Other Federal	0.4	- -	0.4	- -	- -	- -	0.4
State and local government							
State	1.1	- -	1.1	- -	- -	- -	1.1
Local (county, municipal, etc.)	1.1	- -	1.1	- -	- -	- -	1.1
Private							
Undifferentiated private	40.0	1.3	41.3	- -	- -	- -	41.3
All owners	46.1	1.3	47.3	- -	- -	- -	47.3

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-26.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Kansas, 2010

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Non stocked	
White / red / jack pine group	0.8	- -	- -	- -	- -	0.8
Other eastern softwoods group	0.0	0.1	0.2	- -	- -	0.4
Ponderosa pine group	- -	0.2	- -	- -	- -	0.2
Oak / pine group	0.3	0.2	- -	- -	- -	0.5
Oak / hickory group	13.1	7.8	0.6	- -	- -	21.5
Oak / gum / cypress group	- -	0.5	- -	- -	- -	0.5
Elm / ash / cottonwood group	19.8	1.3	0.0	- -	- -	21.2
Maple / beech / birch group	0.1	0.4	- -	- -	- -	0.5
Other hardwoods group	0.1	0.0	0.1	- -	- -	0.2
Exotic hardwoods group	0.3	0.9	0.0	- -	- -	1.3
Nonstocked	- -	- -	- -	- -	0.2	0.2
All forest-type groups	34.7	11.5	1.0	- -	0.2	47.3

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-27.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Eastern white and red pines	- -	0.3	- -	- -	0.3
Other eastern softwoods	- -	0.6	- -	0.2	0.9
All softwoods	- -	0.9	- -	0.2	1.2
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	0.0	0.1	1.4	1.5
Select red oaks	- -	- -	- -	0.8	0.8
Other white oaks	- -	- -	0.2	0.1	0.4
Other red oaks	- -	- -	0.0	1.6	1.6
Hickory	- -	- -	0.0	0.6	0.6
Hard maple	- -	- -	- -	0.1	0.1
Soft maple	- -	- -	0.0	0.4	0.4
Ash	- -	0.1	- -	4.6	4.7
Cottonwood and aspen	- -	1.1	1.2	7.6	9.9
Black walnut	- -	- -	- -	1.0	1.0
Other eastern soft hardwoods	- -	1.0	0.2	17.3	18.4
Other eastern hard hardwoods	- -	0.7	0.5	4.2	5.4
Eastern noncommercial hardwoods	- -	- -	0.0	1.3	1.3
All hardwoods	- -	3.0	2.2	41.0	46.2
All species groups	- -	3.9	2.2	41.3	47.3

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-28.—Average annual mortality of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Eastern white and red pines	- -	0.3	- -	- -	0.3
Other eastern softwoods	- -	0.4	- -	0.1	0.5
All softwoods	- -	0.7	- -	0.1	0.8
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	- -	- -	0.5	0.5
Select red oaks	- -	- -	- -	0.6	0.6
Other white oaks	- -	- -	0.2	0.1	0.2
Other red oaks	- -	- -	- -	0.4	0.4
Hickory	- -	- -	0.0	0.5	0.5
Hard maple	- -	- -	- -	0.1	0.1
Soft maple	- -	- -	0.0	0.1	0.2
Ash	- -	0.1	- -	2.0	2.1
Cottonwood and aspen	- -	1.1	1.2	2.7	5.0
Black walnut	- -	- -	- -	0.3	0.3
Other eastern soft hardwoods	- -	0.7	- -	3.9	4.6
Other eastern hard hardwoods	- -	0.3	- -	0.6	0.9
All hardwoods	- -	2.2	1.3	11.9	15.4
All species groups	- -	2.9	1.3	12.0	16.2

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-29.—Average annual removals of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Other eastern softwoods	- -	- -	- -	0.2	0.2
All softwoods	- -	- -	- -	0.2	0.2
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	- -	- -	2.2	2.2
Select red oaks	- -	- -	- -	1.1	1.1
Other red oaks	- -	- -	- -	0.9	0.9
Hickory	- -	- -	- -	1.4	1.4
Ash	- -	- -	- -	0.2	0.2
Black walnut	- -	- -	- -	4.6	4.6
Other eastern soft hardwoods	- -	0.1	- -	3.4	3.5
Other eastern hard hardwoods	- -	- -	- -	2.0	2.0
Eastern noncommercial hardwoods	- -	- -	- -	3.6	3.6
All hardwoods	- -	0.1	- -	19.4	19.5
All species groups	- -	0.1	- -	19.7	19.7

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-30.—Average annual removals of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and ownership group, Kansas, 2010

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Other eastern softwoods	- -	- -	- -	0.2	0.2
All softwoods	- -	- -	- -	0.2	0.2
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	0.6	- -	0.8	1.4
Select red oaks	- -	- -	- -	1.1	1.1
Other white oaks	- -	- -	- -	0.1	0.1
Other red oaks	- -	- -	- -	0.3	0.3
Hickory	- -	- -	- -	0.8	0.8
Ash	- -	- -	- -	0.1	0.1
Cottonwood and aspen	- -	- -	- -	2.5	2.5
Black walnut	- -	- -	- -	4.4	4.4
Other eastern soft hardwoods	- -	- -	- -	1.8	1.8
Other eastern hard hardwoods	- -	- -	- -	0.3	0.3
All hardwoods	- -	0.6	- -	12.1	12.7
All species groups	- -	0.6	- -	12.3	12.9

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic feet. Columns and rows may not add to their totals due to rounding.

Table KS-31.—Aboveground dry weight of live trees (at least 1 inch d.b.h/d.r.c.), in thousand dry short tons, by owner class and forest-land status, Kansas, 2010

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
Fish and Wildlife Service	14	- -	14	- -	- -	- -	14
Department of Defense or Energy	2,390	267	2,657	- -	- -	- -	2,657
Other Federal	298	46	344	- -	- -	- -	344
State and local government							
State	667	43	710	- -	- -	- -	710
Local (county, municipal, etc.)	614	- -	614	- -	- -	- -	614
Private							
Undifferentiated private	75,745	2,486	78,232	- -	- -	- -	78,232
All owners	79,728	2,843	82,571	- -	- -	- -	82,571

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the aboveground tree biomass rounds to less than 1 thousand dry tons. Columns and rows may not add to their totals due to rounding.

Table KS-32.—Aboveground dry weight of live trees (at least 1 inch d.b.h/d.r.c.), in thousand dry short tons, on forest land by species group and diameter class, Kansas, 2010

Species group	Diameter class (inches)															All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
Softwood species groups																
Eastern softwood species groups																
Loblolly and shortleaf pines	- -	- -	- -	- -	10	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	10
Eastern white and red pines	- -	- -	- -	- -	- -	- -	15	- -	27	- -	- -	- -	- -	- -	- -	41
Other eastern softwoods	105	213	401	457	380	292	273	142	46	- -	- -	- -	- -	- -	- -	2,309
All softwoods	105	213	401	457	390	292	288	142	72	- -	- -	- -	- -	- -	- -	2,360
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	79	131	180	281	496	471	432	429	592	813	509	485	295	1,001	1,000	7,194
Select red oaks	8	72	53	72	120	87	308	169	363	342	425	374	217	234	168	3,012
Other white oaks	32	95	345	492	504	415	194	92	35	97	- -	- -	80	- -	- -	2,382
Other red oaks	43	101	128	214	238	356	247	215	193	252	49	93	- -	123	- -	2,250
Hickory	102	140	350	461	358	480	640	449	112	202	81	167	188	- -	- -	3,732
Hard maple	42	77	55	89	83	80	47	- -	62	41	- -	- -	- -	- -	- -	578
Soft maple	- -	- -	17	5	30	89	64	119	60	179	48	156	- -	99	157	1,024
Ash	67	238	470	632	928	954	939	672	653	420	231	402	231	122	- -	6,958
Cottonwood and aspen	1	5	23	55	160	195	259	450	336	457	463	164	72	336	3,685	6,663
Basswood	5	11	6	20	- -	20	13	23	- -	26	- -	- -	- -	- -	- -	124
Black walnut	18	88	266	384	582	648	685	822	341	545	96	70	- -	- -	- -	4,546
Other eastern soft hardwoods	479	1,327	1,799	2,300	2,363	2,411	2,393	2,249	2,255	885	720	774	293	956	1,818	23,022
Other eastern hard hardwoods	118	477	719	1,135	1,389	882	777	704	665	380	576	66	103	102	502	8,594
Eastern noncommercial hardwoods	305	744	1,413	1,575	1,637	1,375	893	522	409	397	304	- -	105	286	169	10,133
All hardwoods	1,299	3,506	5,825	7,715	8,888	8,463	7,891	6,916	6,077	5,036	3,503	2,751	1,583	3,258	7,500	80,211
All species groups	1,404	3,718	6,226	8,172	9,277	8,756	8,179	7,058	6,149	5,036	3,503	2,751	1,583	3,258	7,500	82,571

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the aboveground tree biomass rounds to less than 1 thousand dry tons. Columns and rows may not add to their totals due to rounding.

Table KS-54.—Area of forest land, in thousand acres, by inventory unit, county, and forest-land status, Kansas, 2010

Inventory unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Northeastern							
Atchison	21.8	- -	21.8	- -	- -	- -	21.8
Clay Center	68.0	- -	68.0	- -	- -	- -	68.0
Doniphan	48.0	- -	48.0	- -	- -	- -	48.0
Douglas	54.5	- -	54.5	- -	- -	- -	54.5
Franklin	44.3	2.0	46.3	- -	- -	- -	46.3
Jackson	34.8	5.2	40.0	- -	- -	- -	40.0
Jefferson	57.8	- -	57.8	- -	- -	- -	57.8
Johnson-Wyandotte	40.2	- -	40.2	- -	- -	- -	40.2
Leavenworth	64.7	1.7	66.5	- -	- -	- -	66.5
Marshall	59.4	- -	59.4	- -	- -	- -	59.4
Miami	63.1	1.3	64.4	- -	- -	- -	64.4
Nemaha-Brown	41.2	- -	41.2	- -	- -	- -	41.2
Osage	63.4	- -	63.4	- -	- -	- -	63.4
Pottawatomie	83.6	1.5	85.1	- -	- -	- -	85.1
Riley-Geary	96.3	18.9	115.2	- -	- -	- -	115.2
Shawnee	38.8	- -	38.8	- -	- -	- -	38.8
Wabaunsee	39.8	- -	39.8	- -	- -	- -	39.8
Total	919.7	30.5	950.3	- -	- -	- -	950.3
Southeastern							
Anderson	25.4	1.5	26.9	- -	- -	- -	26.9
Bourbon	84.0	- -	84.0	- -	- -	- -	84.0
Butler	54.2	- -	54.2	- -	- -	- -	54.2
Chautauqua	71.4	24.6	95.9	- -	- -	- -	95.9
Cherokee	44.4	- -	44.4	- -	- -	- -	44.4
Coffey	48.9	- -	48.9	- -	- -	- -	48.9
Cowley	32.0	- -	32.0	- -	- -	- -	32.0
Crawford	54.5	- -	54.5	- -	- -	- -	54.5
Elk	26.0	- -	26.0	- -	- -	- -	26.0
Emporia	80.0	6.2	86.2	- -	- -	- -	86.2
Greenwood	59.3	6.0	65.3	- -	- -	- -	65.3
Labette	37.1	6.0	43.1	- -	- -	- -	43.1
Linn	93.6	- -	93.6	- -	- -	- -	93.6
Montgomery	72.6	7.7	80.3	- -	- -	- -	80.3
Neosho	39.0	- -	39.0	- -	- -	- -	39.0
Wilson	61.5	6.1	67.6	- -	- -	- -	67.6
Woodson-Allen	55.8	- -	55.8	- -	- -	- -	55.8
Total	939.7	58.2	997.9	- -	- -	- -	997.9

(Table KS-54 continued on next page)

(Table KS-54 continued)

Inventory unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Western							
Colby-Garden City-Dodge City	29.9	7.0	36.8	- -	- -	- -	36.8
Great Bend-Hutchinson	131.5	6.0	137.4	- -	- -	- -	137.4
Hays	73.7	2.5	76.2	- -	- -	- -	76.2
Jewell-Mitchell	30.5	- -	30.5	- -	- -	- -	30.5
Republic-Cloud	68.0	- -	68.0	- -	- -	- -	68.0
Salina	52.2	- -	52.2	- -	- -	- -	52.2
Wichita	80.9	7.0	87.9	- -	- -	- -	87.9
Total	466.7	22.5	489.2	- -	- -	- -	489.2
All counties	2,326.1	111.3	2,437.4	- -	- -	- -	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-55.—Area of forest land, in thousand acres, by inventory unit, county, ownership group, and forest-land status, Kansas, 2010

Inventory unit and river basin area	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
Eastern									
Belle Fourche-Grand-Moreau	- -	- -	- -	- -	- -	- -	28.3	5.7	34.0
Cheyenne	- -	- -	- -	- -	- -	- -	6.7	- -	6.7
White-Niobrara	- -	- -	- -	- -	- -	- -	143.6	25.6	169.2
Bad-Missouri-Coteau-James	- -	- -	- -	- -	7.8	- -	127.2	29.2	164.2
Minnesota-Big Sioux-Coteau	- -	- -	- -	- -	7.8	- -	51.8	7.4	67.1
Total	- -	- -	- -	- -	15.6	- -	357.6	68.0	441.2
Western									
Belle Fourche-Grand-Moreau	274.5	- -	10.7	- -	22.8	- -	78.3	8.8	395.1
Cheyenne	717.7	25.5	4.1	16.1	41.1	- -	186.5	- -	991.1
White-Niobrara	- -	- -	- -	- -	- -	- -	55.6	- -	55.6
Total	992.2	25.5	14.8	16.1	63.9	- -	320.5	8.8	1,441.8
All counties	992.2	25.5	14.8	16.1	79.5	- -	678.1	76.8	1,883.0

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Bad-Missouri-Coteau-James = Aurora, Beadle, Bon Homme, Brown, Brule, Buffalo, Campbell, Charles Mix, Davison, Douglas, Edmunds, Faulk, Gregory, Hand, Hanson, Hughes, Hutchinson, Hyde, Jerauld, Jones, Lyman, McPherson, Miner, Potter, Sanborn, Spink, Stanley, Sully, Walworth, and Yankton counties

Belle Fourche-Grand-Moreau = Butte, Corson, Dewey, Harding, Lawrence, and Perkins counties

Cheyenne = Custer, Fall River, Haakon, Meade, Pennington, and Ziebach counties

Minnesota-Big-sioux-Coteau = Brookings, Clark, Clay, Codington, Day, Deuel, Grant, Hamlin, Kingsbury, Lake, Lincoln, McCook, Marshall, Minnehaha, Moody, Roberts, Turner, and Union counties

White-Niobrara = Bennett, Jackson, Mellette, Shannon, Todd, and Tripp counties

(Table KS-55 continued on next page)

(Table KS-55 continued)

Inventory unit and county	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
Southeastern									
Anderson	- -	- -	- -	- -	- -	1.5	25.4	- -	26.9
Bourbon	- -	- -	- -	- -	- -	- -	84.0	- -	84.0
Butler	- -	- -	- -	- -	- -	- -	54.2	- -	54.2
Chautauqua	- -	- -	- -	- -	- -	- -	71.4	24.6	95.9
Cherokee	- -	- -	- -	- -	6.5	- -	37.9	- -	44.4
Coffey	- -	- -	1.6	- -	- -	- -	47.3	- -	48.9
Cowley	- -	- -	- -	- -	- -	- -	32.0	- -	32.0
Crawford	- -	- -	- -	- -	- -	- -	54.5	- -	54.5
Elk	- -	- -	- -	- -	- -	- -	26.0	- -	26.0
Emporia	- -	- -	3.3	- -	- -	- -	76.8	6.2	86.2
Greenwood	- -	- -	14.9	1.6	- -	- -	44.4	4.4	65.3
Labette	- -	- -	6.5	- -	- -	- -	30.6	6.0	43.1
Linn	- -	- -	- -	- -	6.1	- -	87.4	- -	93.6
Montgomery	- -	- -	6.5	- -	- -	1.5	66.0	6.2	80.3
Neosho	- -	- -	- -	- -	- -	- -	39.0	- -	39.0
Wilson	- -	- -	- -	- -	- -	- -	61.5	6.1	67.6
Woodson-Allen	- -	- -	- -	- -	6.5	- -	49.3	- -	55.8
Total	- -	- -	32.9	1.6	19.2	3.0	887.7	53.6	997.9
Western									
Colby-Garden City-Dodge City	- -	- -	- -	- -	- -	- -	29.9	7.0	36.8
Great Bend-Hutchinson	- -	- -	- -	- -	- -	- -	131.5	6.0	137.4
Hays	- -	- -	- -	- -	- -	- -	73.7	2.5	76.2
Jewell-Mitchell	- -	- -	3.8	- -	- -	- -	26.8	- -	30.5
Republic-Cloud	- -	- -	- -	- -	- -	- -	68.0	- -	68.0
Salina	- -	- -	7.1	- -	- -	- -	45.1	- -	52.2
Wichita	- -	- -	- -	- -	- -	1.2	80.9	5.8	87.9
Total	- -	- -	10.9	- -	- -	1.2	455.8	21.3	489.2
All counties	- -	- -	106.0	9.9	30.6	4.2	2,189.6	97.1	2,437.4

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-56.—Area of forest land, in thousand acres, by inventory unit, county, and forest-type group, Kansas, 2010

Inventory unit and county	Forest-type group											All groups
	White-red-jack pine	Other E. softwoods	Ponderosa pine	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch	Other hardwoods	Exotic hardwoods	Non-stocked	
Northeastern												
Atchison	- -	5.3	- -	- -	10.8	- -	5.7	- -	- -	- -	- -	21.8
Clay Center	- -	- -	- -	- -	24.7	- -	36.7	- -	- -	- -	6.5	68.0
Doniphan	- -	- -	- -	- -	48.0	- -	- -	- -	- -	- -	- -	48.0
Douglas	- -	- -	- -	- -	37.1	- -	17.4	- -	- -	- -	- -	54.5
Franklin	- -	4.0	- -	- -	19.2	- -	17.2	- -	- -	- -	5.9	46.3
Jackson	- -	10.3	- -	2.7	25.6	- -	1.5	- -	- -	- -	- -	40.0
Jefferson	- -	- -	- -	- -	47.3	- -	8.6	- -	- -	- -	1.8	57.8
Johnson-Wyandotte	- -	6.0	- -	- -	33.7	- -	0.5	- -	- -	- -	- -	40.2
Leavenworth	- -	4.0	- -	7.0	48.2	- -	7.4	- -	- -	- -	- -	66.5
Marshall	- -	- -	- -	8.8	13.8	- -	28.7	- -	- -	- -	8.1	59.4
Miami	- -	- -	- -	2.8	43.5	- -	18.1	- -	- -	- -	- -	64.4
Nemaha-Brown	- -	0.9	- -	- -	29.8	- -	10.4	- -	- -	- -	- -	41.2
Osage	- -	- -	- -	1.4	55.1	- -	7.0	- -	- -	- -	- -	63.4
Pottawatomie	- -	3.1	- -	1.5	59.2	- -	16.4	- -	- -	- -	4.9	85.1
Riley-Geary	3.7	12.0	- -	9.7	62.5	- -	27.5	- -	- -	- -	- -	115.2
Shawnee	- -	- -	- -	1.6	32.0	- -	5.2	- -	- -	- -	- -	38.8
Wabaunsee	- -	- -	- -	- -	25.4	- -	14.4	- -	- -	- -	- -	39.8
Total	3.7	45.4	- -	35.3	616.0	- -	222.6	- -	- -	- -	27.3	950.3
Southeastern												
Anderson	- -	3.1	- -	3.0	12.7	- -	8.1	- -	- -	- -	- -	26.9
Bourbon	- -	- -	- -	3.9	45.8	6.5	26.2	- -	- -	- -	1.6	84.0
Butler	- -	- -	- -	1.2	29.3	- -	22.2	- -	- -	- -	1.5	54.2
Chautauqua	- -	- -	- -	- -	81.6	- -	5.2	- -	6.0	- -	3.1	95.9
Cherokee	- -	- -	- -	- -	18.0	- -	26.3	- -	- -	- -	- -	44.4
Coffey	- -	- -	- -	- -	25.0	- -	23.9	- -	- -	- -	- -	48.9
Cowley	- -	- -	- -	- -	18.2	- -	13.9	- -	- -	- -	- -	32.0
Crawford	- -	- -	- -	- -	30.2	- -	19.7	- -	- -	- -	4.6	54.5
Elk	- -	- -	- -	- -	14.6	- -	9.9	- -	- -	- -	1.5	26.0
Emporia	- -	6.7	- -	- -	44.7	- -	28.6	- -	- -	4.6	1.6	86.2
Greenwood	- -	6.0	- -	0.0	31.6	- -	21.9	- -	5.8	- -	- -	65.3
Labette	- -	- -	- -	- -	21.7	1.5	20.0	- -	- -	- -	- -	43.1
Linn	- -	1.5	- -	5.8	55.7	- -	13.1	15.5	- -	- -	1.9	93.6
Montgomery	- -	1.5	- -	5.8	55.2	- -	17.7	- -	- -	- -	- -	80.3
Neosho	- -	6.1	- -	4.5	12.4	- -	15.9	- -	- -	- -	- -	39.0
Wilson	- -	- -	- -	- -	44.7	6.2	16.7	- -	- -	- -	- -	67.6
Woodson-Allen	- -	10.7	- -	- -	30.3	- -	14.9	- -	- -	- -	- -	55.8
Total	- -	35.7	- -	24.3	571.9	14.2	304.2	15.5	11.8	4.6	15.7	997.9

(Table KS-56 continued on next page)

(Table KS-56 continued)

Inventory unit and county	Forest-type group											All groups
	White-red-jack pine	Other E. softwoods	Ponderosa pine	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch	Other hardwoods	Exotic hardwoods	Non-stocked	
Western												
Colby-Garden City-Dodge City	- -	- -	- -	4.0	7.1	- -	12.9	- -	- -	7.3	5.5	36.8
Great Bend-Hutchinson	- -	8.0	2.7	9.5	37.1	- -	54.6	- -	6.0	13.7	5.8	137.4
Hays	- -	2.1	- -	- -	25.5	- -	44.9	- -	- -	- -	3.7	76.2
Jewell-Mitchell	- -	- -	- -	- -	5.6	- -	21.1	- -	- -	- -	3.8	30.5
Republic-Cloud	- -	9.9	- -	- -	40.3	- -	13.9	- -	- -	- -	3.9	68.0
Salina	- -	- -	- -	- -	28.9	- -	18.2	- -	- -	5.0	- -	52.2
Wichita	- -	2.8	- -	- -	18.2	- -	43.3	- -	13.2	10.4	- -	87.9
Total	- -	22.8	2.7	13.6	162.9	- -	208.9	- -	19.2	36.5	22.7	489.2
All counties	3.7	103.9	2.7	73.2	1,350.7	14.2	735.8	15.5	31.0	41.1	65.7	2,437.4

All table cells without observations in the inventory sample are indicated by –. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-57.—Area of timberland, in thousand acres, by inventory unit, county, and stand-size class, Kansas, 2010

Inventory unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
Northeastern						
Atchison	10.0	6.5	5.3	- -	- -	21.8
Clay Center	46.4	13.1	2.0	- -	6.5	68.0
Doniphan	30.4	11.7	5.9	- -	- -	48.0
Douglas	43.2	11.3	- -	- -	- -	54.5
Franklin	- -	38.4	- -	- -	5.9	44.3
Jackson	24.8	5.6	4.4	- -	- -	34.8
Jefferson	24.5	24.7	6.7	- -	1.8	57.8
Johnson-Wyandotte	25.5	14.7	- -	- -	- -	40.2
Leavenworth	29.6	19.8	15.4	- -	- -	64.7
Marshall	23.7	25.9	1.6	- -	8.1	59.4
Miami	34.8	10.9	17.4	- -	- -	63.1
Nemaha-Brown	17.6	14.9	8.8	- -	- -	41.2
Osage	29.3	20.1	14.0	- -	- -	63.4
Pottawatomie	39.6	29.8	9.4	- -	4.9	83.6
Riley-Geary	33.4	25.3	37.6	- -	- -	96.3
Shawnee	16.2	16.8	5.8	- -	- -	38.8
Wabaunsee	16.7	19.6	3.5	- -	- -	39.8
Total	445.8	308.8	137.8	- -	27.3	919.7
Southeastern						
Anderson	8.1	12.9	4.3	- -	- -	25.4
Bourbon	33.5	14.3	34.7	- -	1.6	84.0
Butler	15.4	25.5	11.8	- -	1.5	54.2
Chautauqua	11.8	33.4	23.0	- -	3.1	71.4
Cherokee	40.9	0.2	3.4	- -	- -	44.4
Coffey	25.4	23.5	- -	- -	- -	48.9
Cowley	25.9	- -	6.1	- -	- -	32.0
Crawford	11.9	32.1	6.0	- -	4.6	54.5
Elk	5.1	15.0	4.4	- -	1.5	26.0
Emporia	45.1	22.9	10.5	- -	1.6	80.0
Greenwood	26.5	17.0	15.8	- -	- -	59.3
Labette	30.6	6.5	- -	- -	- -	37.1
Linn	42.1	43.9	5.6	- -	1.9	93.6
Montgomery	38.9	16.7	16.9	- -	- -	72.6
Neosho	16.4	16.4	6.1	- -	- -	39.0
Wilson	9.1	22.5	29.9	- -	- -	61.5
Woodson-Allen	24.6	17.7	13.5	- -	- -	55.8
Total	411.4	320.5	192.0	- -	15.7	939.7

(Table KS-57 continued on next page)

(Table KS-57 continued)

Inventory unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
Western						
Colby-Garden City-Dodge City	19.8	1.5	8.6	- -	- -	29.9
Great Bend-Hutchinson	63.2	48.5	14.0	- -	5.8	131.5
Hays	44.4	17.3	8.3	- -	3.7	73.7
Jewell-Mitchell	26.8	- -	- -	- -	3.8	30.5
Republic-Cloud	44.1	8.6	11.5	- -	3.9	68.0
Salina	34.9	12.1	5.2	- -	- -	52.2
Wichita	44.8	24.1	12.0	- -	- -	80.9
Total	277.9	112.0	59.6	- -	17.2	466.7
All counties	1,135.2	741.3	389.4	- -	60.3	2,326.1

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-58.—Area of timberland, in thousand acres, by inventory unit, county, and stocking class, Kansas, 2010

Inventory unit and county	Stocking class of growing-stock trees					All classes
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	
Northeastern						
Atchison	7.4	9.0	4.8	- -	0.5	21.8
Clay Center	24.5	23.7	11.6	8.2	- -	68.0
Doniphan	1.1	44.0	3.0	- -	- -	48.0
Douglas	10.4	13.6	18.5	11.9	- -	54.5
Franklin	11.9	22.0	7.0	3.5	- -	44.3
Jackson	6.7	14.6	8.6	4.9	- -	34.8
Jefferson	2.2	21.0	26.6	7.9	- -	57.8
Johnson-Wyandotte	6.0	17.7	9.5	7.0	- -	40.2
Leavenworth	13.1	25.3	19.4	3.5	3.5	64.7
Marshall	20.2	29.0	1.6	7.0	1.6	59.4
Miami	3.0	32.0	7.7	20.3	- -	63.1
Nemaha-Brown	16.4	17.7	6.5	0.5	- -	41.2
Osage	5.3	48.6	6.3	1.5	1.7	63.4
Pottawatomie	42.1	28.5	4.5	8.6	- -	83.6
Riley-Geary	8.3	39.8	26.5	17.9	3.8	96.3
Shawnee	1.6	20.6	10.8	4.5	1.4	38.8
Wabaunsee	6.5	15.3	13.4	3.2	1.5	39.8
Total	186.5	422.5	186.4	110.3	14.1	919.7
Southeastern						
Anderson	10.0	7.4	8.0	- -	- -	25.4
Bourbon	24.5	43.3	8.2	8.0	- -	84.0
Butler	3.9	33.9	13.7	1.5	1.2	54.2
Chautauqua	14.6	39.2	15.6	- -	1.9	71.4
Cherokee	13.4	3.9	14.7	12.4	- -	44.4
Coffey	9.1	20.2	7.3	12.4	- -	48.9
Cowley	15.4	16.6	- -	- -	- -	32.0
Crawford	16.6	25.8	4.8	7.3	- -	54.5
Elk	16.9	3.3	- -	5.9	- -	26.0
Emporia	37.0	12.4	18.0	10.8	1.8	80.0
Greenwood	12.9	20.2	15.1	11.1	- -	59.3
Labette	15.6	16.7	- -	4.8	- -	37.1
Linn	18.4	30.4	39.2	- -	5.6	93.6
Montgomery	22.3	23.3	17.6	9.4	- -	72.6
Neosho	6.5	20.5	5.8	6.1	- -	39.0
Wilson	6.8	25.8	16.1	12.6	0.2	61.5
Woodson-Allen	17.6	12.9	25.4	- -	- -	55.8
Total	261.4	355.8	209.5	102.4	10.7	939.7

(Table KS-58 continued on next page)

(Table KS-58 continued)

Inventory unit and county	Stocking class of growing-stock trees					All classes
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	
Western						
Colby-Garden City-Dodge City	19.3	7.8	2.8	- -	- -	29.9
Great Bend-Hutchinson	40.8	51.0	31.7	8.0	- -	131.5
Hays	33.4	29.4	2.3	7.8	0.8	73.7
Jewell-Mitchell	9.4	11.7	5.3	4.0	- -	30.5
Republic-Cloud	27.5	32.7	7.4	- -	0.4	68.0
Salina	26.4	16.9	7.6	- -	1.3	52.2
Wichita	41.6	24.4	11.9	0.5	2.4	80.9
Total	198.4	173.8	69.1	20.4	4.9	466.7
All counties	646.3	952.1	465.0	233.1	29.7	2,326.1

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-59.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees, in million board feet (International ¼-inch rule) on timberland by inventory unit, county, and major species group, Kansas, 2010

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Northeastern										
Atchison	- -	- -	- -	8.4	8.4	- -	- -	- -	33.4	33.4
Clay Center	- -	0.5	39.4	9.3	49.3	- -	- -	158.6	36.7	195.4
Doniphan	- -	0.1	7.1	24.9	32.1	- -	- -	21.6	92.6	114.1
Douglas	- -	0.2	32.7	16.3	49.2	- -	- -	131.0	57.6	188.6
Franklin	- -	3.2	3.2	12.4	18.9	- -	3.3	6.7	33.1	43.1
Jackson	- -	6.0	5.7	11.4	23.1	- -	27.4	19.4	49.5	96.4
Jefferson	- -	- -	24.7	23.4	48.1	- -	- -	96.2	73.2	169.4
Johnson-Wyandotte	- -	- -	1.4	40.0	41.5	- -	- -	- -	171.8	171.8
Leavenworth	- -	0.2	20.4	23.3	43.8	- -	- -	89.8	81.6	171.4
Marshall	- -	0.9	21.9	19.3	42.1	- -	- -	93.2	82.0	175.2
Miami	- -	0.3	35.8	29.5	65.7	- -	- -	161.3	108.3	269.6
Nemaha-Brown	- -	- -	6.6	4.9	11.5	- -	- -	16.9	13.1	30.0
Osage	0.2	0.1	10.6	11.4	22.3	- -	- -	36.6	33.4	70.0
Pottawatomie	- -	0.9	8.3	16.1	25.3	- -	- -	26.3	54.7	81.0
Riley-Geary	2.2	4.5	27.5	20.2	54.3	6.4	12.6	93.3	78.6	190.9
Shawnee	- -	1.0	11.9	8.8	21.7	- -	1.9	41.9	27.5	71.4
Wabaunsee	- -	- -	38.9	13.9	52.8	- -	- -	173.9	48.5	222.4
Total	2.4	17.9	296.2	293.5	610.0	6.4	45.3	1,166.8	1,075.6	2,294.0

(Table KS-59 continued on next page)

(Table KS-59 continued)

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Southeastern										
Anderson	- -	2.0	38.7	3.0	43.7	- -	2.8	194.0	6.3	203.0
Bourbon	- -	0.6	6.3	23.2	30.0	- -	2.2	11.6	96.6	110.4
Butler	- -	0.2	8.0	13.2	21.4	- -	- -	16.7	49.8	66.5
Chautauqua	- -	- -	2.4	18.6	21.0	- -	- -	- -	51.6	51.6
Cherokee	- -	- -	24.8	24.7	49.5	- -	- -	107.9	102.6	210.5
Coffey	- -	0.4	18.2	30.8	49.4	- -	- -	64.3	125.5	189.7
Cowley	- -	0.1	2.2	1.2	3.6	- -	- -	7.3	- -	7.3
Crawford	- -	- -	3.9	13.6	17.5	- -	- -	10.2	40.4	50.6
Elk	- -	0.1	2.4	3.1	5.6	- -	- -	3.6	11.4	15.0
Emporia	- -	1.1	48.1	21.0	70.1	- -	- -	207.3	82.9	290.2
Greenwood	- -	0.1	30.9	12.1	43.0	- -	- -	128.7	43.6	172.3
Labette	- -	0.6	8.9	10.8	20.3	- -	1.7	31.3	33.5	66.5
Linn	- -	2.0	13.1	49.8	64.9	- -	1.9	46.6	155.2	203.6
Montgomery	- -	- -	9.6	25.4	35.0	- -	- -	25.9	88.1	114.0
Neosho	- -	0.3	8.4	11.3	20.0	- -	- -	15.0	47.1	62.1
Wilson	- -	0.2	18.8	17.9	37.0	- -	- -	85.3	60.5	145.8
Woodson-Allen	- -	1.4	13.2	16.0	30.5	- -	2.1	49.1	45.5	96.7
Total	- -	9.1	257.9	295.6	562.6	- -	10.6	1,004.8	1,040.4	2,055.7
Western										
Colby-Garden City-Dodge City	- -	2.0	10.7	1.7	14.4	- -	9.4	49.1	4.1	62.7
Great Bend-Hutchinson	0.9	2.5	86.9	20.7	111.0	3.1	4.0	359.0	64.2	430.4
Hays	- -	0.1	24.7	10.4	35.1	- -	- -	109.7	35.0	144.6
Jewell-Mitchell	- -	- -	15.0	12.4	27.3	- -	- -	50.8	55.9	106.7
Republic-Cloud	- -	- -	11.8	13.5	25.3	- -	- -	44.7	50.6	95.3
Salina	- -	- -	10.8	6.5	17.3	- -	- -	40.3	15.7	56.0
Wichita	- -	0.3	38.2	5.1	43.6	- -	- -	151.3	9.1	160.4
Total	0.9	4.9	198.1	70.1	274.0	3.1	13.4	805.0	234.5	1,056.1
All counties	3.3	31.9	752.2	659.2	1,446.6	9.5	69.3	2,976.6	2,350.4	5,405.8

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-59a.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees, in million board feet (Doyle rule), on timberland by inventory unit, county, and major species group, Kansas, 2010

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Northeastern										
Atchison	- -	- -	- -	8.4	8.4	- -	- -	- -	19.3	19.3
Clay Center	- -	0.5	39.4	9.3	49.3	- -	- -	109.9	29.9	139.8
Doniphan	- -	0.1	7.1	24.9	32.1	- -	- -	14.5	61.5	76.0
Douglas	- -	0.2	32.7	16.3	49.2	- -	- -	101.2	37.4	138.6
Franklin	- -	3.2	3.2	12.4	18.9	- -	1.1	3.4	15.5	20.1
Jackson	- -	6.0	5.7	11.4	23.1	- -	14.3	11.0	28.5	53.7
Jefferson	- -	- -	24.7	23.4	48.1	- -	- -	78.7	52.2	130.9
Johnson-Wyandotte	- -	- -	1.4	40.0	41.5	- -	- -	- -	127.4	127.4
Leavenworth	- -	0.2	20.4	23.3	43.8	- -	- -	95.1	60.3	155.4
Marshall	- -	0.9	21.9	19.3	42.1	- -	- -	90.8	70.4	161.1
Miami	- -	0.3	35.8	29.5	65.7	- -	- -	164.1	65.2	229.3
Nemaha-Brown	- -	- -	6.6	4.9	11.5	- -	- -	7.4	8.8	16.2
Osage	0.2	0.1	10.6	11.4	22.3	- -	- -	20.6	17.1	37.7
Pottawatomie	- -	0.9	8.3	16.1	25.3	- -	- -	15.1	30.2	45.3
Riley-Geary	2.2	4.5	27.5	20.2	54.3	3.2	6.5	55.9	51.4	117.0
Shawnee	- -	1.0	11.9	8.8	21.7	- -	0.7	27.5	17.7	45.9
Wabaunsee	- -	- -	38.9	13.9	52.8	- -	- -	183.1	32.8	215.8
Total	2.4	17.9	296.2	293.5	610.0	3.2	22.6	978.2	725.6	1,729.6

(Table KS-57 continued on next page)

Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

(Table KS-59a continued)

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Southeastern										
Anderson	- -	2.0	38.7	3.0	43.7	- -	1.0	183.4	3.2	187.6
Bourbon	- -	0.6	6.3	23.2	30.0	- -	1.0	6.1	75.8	82.9
Butler	- -	0.2	8.0	13.2	21.4	- -	- -	7.6	48.0	55.5
Chautauqua	- -	- -	2.4	18.6	21.0	- -	- -	- -	37.2	37.2
Cherokee	- -	- -	24.8	24.7	49.5	- -	- -	74.3	68.6	142.9
Coffey	- -	0.4	18.2	30.8	49.4	- -	- -	51.7	90.5	142.2
Cowley	- -	0.1	2.2	1.2	3.6	- -	- -	4.8	- -	4.8
Crawford	- -	- -	3.9	13.6	17.5	- -	- -	4.7	24.0	28.7
Elk	- -	0.1	2.4	3.1	5.6	- -	- -	1.8	5.2	7.0
Emporia	- -	1.1	48.1	21.0	70.1	- -	- -	204.4	53.6	258.0
Greenwood	- -	0.1	30.9	12.1	43.0	- -	- -	79.7	24.2	103.9
Labette	- -	0.6	8.9	10.8	20.3	- -	0.6	18.5	18.2	37.3
Linn	- -	2.0	13.1	49.8	64.9	- -	0.6	39.8	94.5	135.0
Montgomery	- -	- -	9.6	25.4	35.0	- -	- -	14.1	50.9	65.0
Neosho	- -	0.3	8.4	11.3	20.0	- -	- -	7.7	32.4	40.2
Wilson	- -	0.2	18.8	17.9	37.0	- -	- -	79.5	37.1	116.6
Woodson-Allen	- -	1.4	13.2	16.0	30.5	- -	0.7	28.5	24.5	53.7
Total	- -	9.1	257.9	295.6	562.6	- -	4.0	806.7	687.9	1,498.5
Western										
Colby-Garden City-Dodge City	- -	2.0	10.7	1.7	14.4	- -	6.2	38.0	2.4	46.6
Great Bend-Hutchinson	0.9	2.5	86.9	20.7	111.0	1.9	1.4	321.9	36.5	361.7
Hays	- -	0.1	24.7	10.4	35.1	- -	- -	73.9	19.0	92.8
Jewell-Mitchell	- -	- -	15.0	12.4	27.3	- -	- -	30.2	39.7	70.0
Republic-Cloud	- -	- -	11.8	13.5	25.3	- -	- -	31.1	36.2	67.3
Salina	- -	- -	10.8	6.5	17.3	- -	- -	28.2	10.6	38.8
Wichita	- -	0.3	38.2	5.1	43.6	- -	- -	99.6	5.5	105.1
Total	0.9	4.9	198.1	70.1	274.0	1.9	7.5	622.8	150.0	782.2
All counties	3.3	31.9	752.2	659.2	1,446.6	5.1	34.1	2,407.7	1,563.4	4,010.3

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

Table KS-60.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees, in million board feet (International ¼-inch rule) on timberland by inventory unit, county, and major species group, Kansas, 2010

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Northeastern										
Atchison	- -	- -	- -	0.2	0.2	- -	- -	- -	1.4	1.4
Clay Center	- -	0.0	0.4	0.2	0.7	- -	- -	2.7	0.2	2.9
Doniphan	- -	0.0	0.1	0.8	0.9	- -	- -	0.6	3.2	3.8
Douglas	- -	0.0	0.0	0.3	0.3	- -	- -	0.1	1.1	1.1
Franklin	- -	0.2	0.2	0.6	1.0	- -	0.8	0.2	2.1	3.1
Jackson	- -	0.1	0.2	0.5	0.7	- -	0.8	0.7	2.1	3.6
Jefferson	- -	0.0	0.9	0.5	1.5	- -	- -	4.5	2.3	6.8
Johnson-Wyandotte	- -	- -	0.1	0.6	0.7	- -	- -	- -	2.4	2.4
Leavenworth	- -	0.0	0.3	0.9	1.2	- -	- -	2.3	4.2	6.5
Marshall	- -	0.0	0.2	0.5	0.7	- -	- -	-0.7	2.2	1.6
Miami	- -	- -	0.3	0.6	0.9	- -	- -	1.4	3.2	4.5
Nemaha-Brown	- -	- -	0.5	0.2	0.7	- -	- -	1.7	0.7	2.5
Osage	-0.1	0.0	0.5	0.5	0.8	- -	- -	1.1	2.7	3.7
Pottawatomie	- -	0.1	0.5	0.6	1.3	- -	- -	1.6	1.6	3.2
Riley-Geary	-0.4	0.2	1.0	0.5	1.2	-1.8	0.9	5.0	1.7	5.7
Shawnee	- -	0.1	-0.9	0.2	-0.6	- -	0.3	-4.8	0.6	-4.0
Wabaunsee	- -	- -	0.5	0.3	0.8	- -	- -	2.1	1.3	3.4
Total	-0.6	0.8	4.5	8.1	12.9	-1.8	2.8	18.3	33.0	52.3

(Table KS-60 continued on next page)

(Table KS-60 continued)

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Southeastern										
Anderson	- -	0.2	0.7	0.1	1.0	- -	0.4	3.3	0.1	3.9
Bourbon	- -	0.0	0.0	0.5	0.5	- -	0.1	-1.1	2.6	1.6
Butler	- -	0.0	0.5	0.5	1.0	- -	- -	1.7	0.9	2.6
Chautauqua	- -	- -	0.4	0.5	0.9	- -	- -	- -	1.9	1.9
Cherokee	- -	- -	0.7	0.8	1.5	- -	- -	3.6	4.6	8.2
Coffey	- -	0.0	-0.7	0.8	0.1	- -	- -	-3.7	4.1	0.4
Cowley	- -	0.0	0.3	0.2	0.5	- -	- -	1.5	- -	1.5
Crawford	- -	- -	0.3	0.6	0.9	- -	- -	1.5	2.2	3.7
Elk	- -	0.0	0.1	0.0	0.1	- -	- -	0.1	0.2	0.2
Emporia	- -	0.0	0.5	0.7	1.3	- -	- -	1.6	2.4	4.0
Greenwood	- -	0.0	1.2	0.5	1.7	- -	- -	7.0	2.9	9.9
Labette	- -	0.0	0.2	0.4	0.7	- -	0.0	1.2	2.2	3.5
Linn	- -	0.1	0.3	2.5	2.8	- -	0.0	0.3	10.5	10.9
Montgomery	- -	- -	0.5	1.0	1.5	- -	- -	1.2	3.5	4.7
Neosho	- -	0.0	0.3	0.5	0.9	- -	- -	0.5	1.7	2.1
Wilson	- -	0.0	0.4	0.0	0.4	- -	- -	2.4	0.2	2.6
Woodson-Allen	- -	0.1	0.6	0.2	0.9	- -	0.4	2.5	2.0	4.9
Total	- -	0.6	6.2	9.8	16.7	- -	1.0	23.6	41.9	66.6
Western										
Colby-Garden City-Dodge City	- -	0.0	0.0	0.0	0.1	- -	0.2	0.0	0.1	0.2
Great Bend-Hutchinson	0.1	0.0	2.0	0.5	2.6	0.3	0.0	7.7	2.2	10.2
Hays	- -	0.0	0.0	0.0	0.0	- -	- -	0.6	-0.4	0.3
Jewell-Mitchell	- -	- -	0.3	0.1	0.4	- -	- -	0.9	0.8	1.7
Republic-Cloud	- -	- -	0.7	-0.3	0.4	- -	- -	3.0	-0.7	2.3
Salina	- -	- -	0.3	0.1	0.4	- -	- -	0.6	0.2	0.9
Wichita	- -	0.0	2.7	0.2	3.0	- -	- -	11.6	0.2	11.9
Total	0.1	0.1	6.1	0.7	7.0	0.3	0.2	24.4	2.4	27.3
All counties	-0.5	1.5	16.9	18.6	36.6	-1.5	4.0	66.4	77.3	146.2

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-60a.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber, in million board feet (Doyle rule), on timberland by inventory unit, county, and major species group, Kansas, 2010

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Northeastern										
Atchison	- -	- -	- -	0.2	0.2	- -	- -	- -	0.9	0.9
Clay Center	- -	0.0	0.4	0.2	0.7	- -	- -	2.0	0.2	2.2
Doniphan	- -	0.0	0.1	0.8	0.9	- -	- -	0.3	1.8	2.1
Douglas	- -	0.0	0.0	0.3	0.3	- -	- -	-0.9	0.6	-0.3
Franklin	- -	0.2	0.2	0.6	1.0	- -	0.3	0.1	0.9	1.3
Jackson	- -	0.1	0.2	0.5	0.7	- -	0.3	0.4	1.1	1.8
Jefferson	- -	0.0	0.9	0.5	1.5	- -	- -	2.9	1.3	4.2
Johnson-Wyandotte	- -	- -	0.1	0.6	0.7	- -	- -	- -	2.1	2.1
Leavenworth	- -	0.0	0.3	0.9	1.2	- -	- -	1.7	2.3	4.0
Marshall	- -	0.0	0.2	0.5	0.7	- -	- -	-0.7	1.5	0.8
Miami	- -	- -	0.3	0.6	0.9	- -	- -	1.0	1.9	2.9
Nemaha-Brown	- -	- -	0.5	0.2	0.7	- -	- -	0.7	0.4	1.2
Osage	-0.1	0.0	0.5	0.5	0.8	- -	- -	0.6	1.3	1.9
Pottawatomie	- -	0.1	0.5	0.6	1.3	- -	- -	0.9	0.8	1.7
Riley-Geary	-0.4	0.2	1.0	0.5	1.2	-1.2	0.4	2.5	1.1	2.8
Shawnee	- -	0.1	-0.9	0.2	-0.6	- -	0.1	-3.9	0.4	-3.4
Wabaunsee	- -	- -	0.5	0.3	0.8	- -	- -	1.8	0.7	2.4
Total	-0.6	0.8	4.5	8.1	12.9	-1.2	1.1	9.4	19.3	28.6

(Table KS-60a continued on next page)

(Table KS-60a continued)

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Southeastern										
Anderson	- -	0.2	0.7	0.1	1.0	- -	0.2	3.3	0.0	3.5
Bourbon	- -	0.0	0.0	0.5	0.5	- -	0.1	-0.8	1.7	0.9
Butler	- -	0.0	0.5	0.5	1.0	- -	- -	0.8	0.8	1.5
Chautauqua	- -	- -	0.4	0.5	0.9	- -	- -	- -	1.2	1.2
Cherokee	- -	- -	0.7	0.8	1.5	- -	- -	2.4	2.5	4.9
Coffey	- -	0.0	-0.7	0.8	0.1	- -	- -	-2.3	2.5	0.2
Cowley	- -	0.0	0.3	0.2	0.5	- -	- -	1.0	- -	1.0
Crawford	- -	- -	0.3	0.6	0.9	- -	- -	0.7	1.2	1.8
Elk	- -	0.0	0.1	0.0	0.1	- -	- -	0.0	0.1	0.1
Emporia	- -	0.0	0.5	0.7	1.3	- -	- -	1.2	1.6	2.8
Greenwood	- -	0.0	1.2	0.5	1.7	- -	- -	4.0	1.4	5.4
Labette	- -	0.0	0.2	0.4	0.7	- -	0.0	0.6	1.0	1.7
Linn	- -	0.1	0.3	2.5	2.8	- -	0.0	0.2	6.7	6.9
Montgomery	- -	- -	0.5	1.0	1.5	- -	- -	0.6	1.8	2.4
Neosho	- -	0.0	0.3	0.5	0.9	- -	- -	0.2	1.1	1.4
Wilson	- -	0.0	0.4	0.0	0.4	- -	- -	1.8	-0.1	1.7
Woodson-Allen	- -	0.1	0.6	0.2	0.9	- -	0.1	1.3	1.0	2.5
Total	- -	0.6	6.2	9.8	16.7	- -	0.4	15.0	24.6	40.1
Western										
Colby-Garden City-Dodge City	- -	0.0	0.0	0.0	0.1	- -	0.1	0.4	0.1	0.6
Great Bend-Hutchinson	0.1	0.0	2.0	0.5	2.6	0.2	0.0	5.6	1.2	7.0
Hays	- -	0.0	0.0	0.0	0.0	- -	- -	0.5	-0.7	-0.2
Jewell-Mitchell	- -	- -	0.3	0.1	0.4	- -	- -	0.5	0.4	1.0
Republic-Cloud	- -	- -	0.7	-0.3	0.4	- -	- -	2.1	-0.8	1.3
Salina	- -	- -	0.3	0.1	0.4	- -	- -	0.4	0.2	0.6
Wichita	- -	0.0	2.7	0.2	3.0	- -	- -	6.6	0.1	6.7
Total	0.1	0.1	6.1	0.7	7.0	0.2	0.1	16.1	0.6	17.0
All counties	-0.5	1.5	16.9	18.6	36.6	-1.0	1.6	40.6	44.5	85.6

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-61.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees, in million board feet (International ¼-rule), on timberland by inventory unit, county, and major species group, Kansas, 2010

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Northeastern										
Atchison	- -	- -	- -	0.4	0.4	- -	- -	- -	1.9	1.9
Clay Center	- -	- -	0.3	0.0	0.3	- -	- -	1.0	- -	1.0
Doniphan	- -	- -	0.2	0.0	0.2	- -	- -	1.1	- -	1.1
Douglas	- -	0.0	- -	0.1	0.1	- -	- -	- -	- -	- -
Franklin	- -	- -	0.2	0.1	0.2	- -	- -	0.5	- -	0.5
Jackson	- -	- -	0.1	0.1	0.2	- -	- -	- -	- -	- -
Jefferson	- -	0.0	0.0	- -	0.1	- -	- -	- -	- -	- -
Leavenworth	- -	- -	0.2	1.2	1.4	- -	- -	0.9	4.5	5.4
Marshall	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Miami	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Pottawatomie	- -	- -	- -	0.1	0.1	- -	- -	- -	- -	- -
Riley-Geary	- -	0.1	- -	0.6	0.7	- -	- -	- -	2.5	2.5
Wabaunsee	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Total	- -	0.1	1.1	2.6	3.8	- -	- -	3.4	8.9	12.3
Southeastern										
Anderson	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Bourbon	- -	0.0	- -	- -	0.0	- -	- -	- -	- -	- -
Chautauqua	- -	- -	- -	0.3	0.3	- -	- -	- -	1.4	1.4
Cherokee	- -	- -	- -	1.5	1.5	- -	- -	- -	7.3	7.3
Coffey	- -	- -	0.1	- -	0.1	- -	- -	- -	- -	- -
Emporia	- -	- -	0.1	0.6	0.7	- -	- -	- -	3.0	3.0
Greenwood	- -	0.0	0.0	0.2	0.3	- -	- -	- -	- -	- -
Labette	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Linn	- -	- -	- -	3.0	3.0	- -	- -	- -	14.8	14.8
Montgomery	- -	- -	- -	0.1	0.1	- -	- -	- -	- -	- -
Neosho	- -	- -	0.5	0.0	0.6	- -	- -	1.2	- -	1.2
Total	- -	0.0	0.7	5.8	6.5	- -	- -	1.2	26.4	27.6
Western										
Hays	- -	0.0	2.5	- -	2.5	- -	- -	11.6	- -	11.6
Total	- -	0.0	2.5	- -	2.5	- -	- -	11.6	- -	11.6
All counties	- -	0.2	4.4	8.4	12.9	- -	- -	16.2	35.3	51.5

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

(Table KS-61 continued on next page)

(Table KS-61 continued)

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				

Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-61a.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.) in million cubic feet, and sawtimber trees, in million board feet (Doyle rule), on timberland by inventory unit, county, and major species group, Kansas, 2010

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				
Northeastern										
Atchison	- -	- -	- -	0.4	0.4	- -	- -	- -	1.4	1.4
Clay Center	- -	- -	0.3	0.0	0.3	- -	- -	0.5	- -	0.5
Doniphan	- -	- -	0.2	0.0	0.2	- -	- -	0.5	- -	0.5
Douglas	- -	0.0	- -	0.1	0.1	- -	- -	- -	- -	- -
Franklin	- -	- -	0.2	0.1	0.2	- -	- -	0.2	- -	0.2
Jackson	- -	- -	0.1	0.1	0.2	- -	- -	- -	- -	- -
Jefferson	- -	0.0	0.0	- -	0.1	- -	- -	- -	- -	- -
Leavenworth	- -	- -	0.2	1.2	1.4	- -	- -	0.5	2.1	2.6
Marshall	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Miami	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Pottawatomie	- -	- -	- -	0.1	0.1	- -	- -	- -	- -	- -
Riley-Geary	- -	0.1	- -	0.6	0.7	- -	- -	- -	1.4	1.4
Wabaunsee	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Total	- -	0.1	1.1	2.6	3.8	- -	- -	1.7	5.0	6.6
Southeastern										
Anderson	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Bourbon	- -	0.0	- -	- -	0.0	- -	- -	- -	- -	- -
Chautauqua	- -	- -	- -	0.3	0.3	- -	- -	- -	0.6	0.6
Cherokee	- -	- -	- -	1.5	1.5	- -	- -	- -	4.5	4.5
Coffey	- -	- -	0.1	- -	0.1	- -	- -	- -	- -	- -
Emporia	- -	- -	0.1	0.6	0.7	- -	- -	- -	1.9	1.9
Greenwood	- -	0.0	0.0	0.2	0.3	- -	- -	- -	- -	- -
Labette	- -	- -	0.0	- -	0.0	- -	- -	- -	- -	- -
Linn	- -	- -	- -	3.0	3.0	- -	- -	- -	10.4	10.4
Montgomery	- -	- -	- -	0.1	0.1	- -	- -	- -	- -	- -
Neosho	- -	- -	0.5	0.0	0.6	- -	- -	0.5	- -	0.5
Total	- -	0.0	0.7	5.8	6.5	- -	- -	0.5	17.5	18.0
Western										
Hays	- -	0.0	2.5	- -	2.5	- -	- -	9.1	- -	9.1
Total	- -	0.0	2.5	- -	2.5	- -	- -	9.1	- -	9.1
All counties	- -	0.2	4.4	8.4	12.9	- -	- -	11.3	22.4	33.7

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

(Table KS-61a continued on next page)

(Table KS-61a continued)

Inventory unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)				

Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Table KS-65.—Sampling errors, in percent, for net volume, average annual net growth, average annual removals, and average annual mortality on timberland, and forest and timberland area by inventory unit and county, Kansas, 2010

Inventory unit and county	Forest area	Timberland area	Growing stock				Sawtimber			
			Volume	Average annual net growth	Average annual removals	Average annual mortality	Volume	Average annual net growth	Average annual removals	Average annual mortality
Northeastern										
Atchison	46.68	46.68	72.03	81.10	100.00	86.85	69.91	66.33	100.00	- -
Clay Center	24.40	24.40	53.64	70.58	78.40	63.56	57.25	71.09	100.00	60.50
Doniphan	32.01	32.01	39.25	81.24	82.02	98.04	39.55	56.47	86.85	100.00
Douglas	29.26	29.26	47.59	100.00	93.90	75.27	53.38	100.00	- -	76.76
Franklin	31.40	31.49	54.08	48.50	86.85	74.45	69.86	67.10	86.85	- -
Jackson	33.55	35.05	52.13	60.53	96.84	58.65	53.24	51.55	- -	- -
Jefferson	27.65	27.65	42.39	39.37	73.75	64.00	51.35	42.51	- -	- -
Johnson-Wyandotte	34.92	34.92	47.32	100.00	- -	65.99	49.60	100.00	- -	71.39
Leavenworth	28.38	28.43	43.79	40.58	81.38	47.62	50.04	42.25	85.24	96.20
Marshall	28.34	28.34	54.96	100.00	100.00	92.93	65.43	100.00	- -	93.90
Miami	26.90	27.40	46.41	44.47	100.00	49.64	52.45	52.90	- -	76.86
Nemaha-Brown	33.37	33.37	65.69	53.45	- -	68.87	89.00	76.71	- -	- -
Osage	29.42	29.42	44.76	56.55	- -	96.20	50.53	52.15	- -	- -
Pottawatomie	23.57	23.92	41.18	49.04	100.00	71.62	47.51	76.55	- -	71.98
Riley-Geary	20.63	22.46	36.76	48.03	79.01	59.55	39.34	56.30	96.20	69.56
Shawnee	35.57	35.57	49.78	100.00	- -	91.96	58.48	100.00	- -	93.90
Wabaunsee	35.27	35.27	52.09	52.15	100.00	86.85	54.46	51.18	- -	- -
Total	4.54	4.69	10.26	16.79	42.59	22.80	12.62	19.29	51.60	31.20

(Table KS-65 continued on next page)

(Table KS-65 continued)

Inventory unit and county	Forest area	Timberland area	Growing stock				Sawtimber			
			Volume	Average annual net growth	Average annual removals	Average annual mortality	Volume	Average annual net growth	Average annual removals	Average annual mortality
Southeastern										
Anderson	36.12	37.81	85.15	71.96	100.00	100.00	88.46	81.18	- -	- -
Bourbon	24.27	24.27	40.57	100.00	96.85	87.40	47.54	100.00	- -	90.34
Butler	29.32	29.32	47.13	34.64	- -	- -	64.79	53.95	- -	- -
Chautauqua	24.27	27.86	43.59	37.07	87.07	70.61	66.21	49.21	87.07	- -
Cherokee	32.19	32.19	42.43	43.94	87.07	87.54	43.52	43.30	87.07	98.30
Coffey	31.95	31.95	50.28	72.95	87.07	89.58	55.01	91.48	- -	98.30
Cowley	37.86	37.86	53.53	72.56	- -	87.07	96.82	90.34	- -	- -
Crawford	29.87	29.87	43.91	41.65	- -	47.36	49.20	41.84	- -	- -
Elk	42.02	42.02	66.28	60.77	- -	- -	71.30	70.91	- -	- -
Emporia	22.98	23.54	52.70	51.68	87.07	90.34	52.60	53.60	87.07	- -
Greenwood	28.61	29.93	50.69	58.43	98.30	74.82	53.40	65.95	- -	- -
Labette	33.59	35.52	40.22	40.16	100.00	75.12	51.63	54.99	- -	- -
Linn	23.50	23.50	33.32	43.00	87.07	71.21	39.69	55.35	87.07	- -
Montgomery	25.54	27.07	47.44	52.00	90.34	57.62	53.62	46.54	- -	- -
Neosho	35.63	35.63	52.07	43.20	56.25	60.20	61.48	63.54	65.01	- -
Wilson	28.77	30.08	52.83	100.00	- -	86.33	66.65	100.00	- -	96.85
Woodson-Allen	29.53	29.53	47.04	47.39	- -	60.52	55.03	43.31	- -	- -
Total	4.72	4.90	12.20	13.50	46.33	26.54	15.23	17.60	52.67	49.65
Western										
Colby-Garden City-Dodge City	32.38	35.01	68.94	94.63	- -	72.56	77.41	100.00	- -	72.54
Great Bend-Hutchinson	17.96	18.21	39.82	42.95	- -	61.01	46.40	42.43	- -	66.06
Hays	24.04	24.65	57.55	100.00	89.95	53.51	63.24	100.00	89.95	57.82
Jewell-Mitchell	39.44	39.44	56.41	60.66	- -	57.95	64.28	75.60	- -	- -
Republic-Cloud	25.45	25.45	50.97	100.00	- -	74.96	60.39	100.00	- -	82.31
Salina	29.84	29.84	58.47	59.64	- -	- -	69.28	68.56	- -	- -
Wichita	22.66	23.93	53.13	59.33	- -	67.61	60.66	62.29	- -	100.00
Total	7.63	7.80	20.78	30.35	89.95	30.28	24.32	33.98	89.95	35.08
All counties	3.04	3.13	7.48	10.11	31.60	15.58	9.15	12.23	36.88	21.92

Sampling errors that exceed 100% are reported as 100%.
Clay Center = Clay, Dickinson, and Washington counties
Colby-Garden City-Dodge City = Cheyenne, Clark, Comanche, Decatur, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Kiowa, Lane, Logan, Meade, Morton, Ness, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita counties
Emporia = Chase, Lyon, Marion, and Morris counties
Great Bend-Hutchinson = Barton, Edwards, Harvey, McPherson, Pawnee, Reno, Rice, Rush, and Stafford counties
Hays = Ellis, Graham, Norton, Osborne, Phillips, Rooks, Russell, Smith, and Trego counties
Salina = Ellsworth, Lincoln, Ottawa, and Saline counties
Wichita = Barber, Harper, Kingman, Pratt, Sedgwick, and Sumner counties

Appendix A. Tree Species in Kansas

Tree species measured on field plots in Kansas' 2010 inventory.

Common Name	Species
boxelder	*Acer negundo*
silver maple	*Acer saccharinum*
sugar maple	*Acer saccharum*
Ohio buckeye	*Aesculus glabra*
Texas buckeye	*Aesculus glabra*
ailanthus	*Ailanthus altissima*
serviceberry spp.	*Amelanchier* spp.
pawpaw	*Asimina triloba*
mockernut hickory	*Carya alba*
bitternut hickory	*Carya cordiformis*
pecan	*Carya illinoinensis*
shellbark hickory	*Carya laciniosa*
shagbark hickory	*Carya ovata*
black hickory	*Carya texana*
southern catalpa	*Catalpa bignonioides*
northern catalpa	*Catalpa speciosa*
sugarberry	*Celtis laevigata*
hackberry	*Celtis occidentalis*
eastern redbud	*Cercis canadensis*
downy hawthorn	*Crataegus mollis*
hawthorn spp.	*Crataegus* spp.
common persimmon	*Diospyros virginiana*
Russian-olive	*Elaeagnus angustifolia*
white ash	*Fraxinus americana*
green ash	*Fraxinus pennsylvanica*
blue ash	*Fraxinus quadrangulata*
honeylocust spp.	*Gleditsia* spp.
honeylocust	*Gleditsia triacanthos*
Kentucky coffeetree	*Gymnocladus dioicus*
black walnut	*Juglans nigra*
eastern redcedar	*Juniperus virginiana*
Osage-orange	*Maclura pomifera*
prairie crab apple	*Malus ioensis*
apple spp.	*Malus* spp.
white mulberry	*Morus alba*
red mulberry	*Morus rubra*
mulberry spp.	*Morus* spp.

Common Name	Species
eastern hophornbeam	*Ostrya virginiana*
shortleaf pine	*Pinus echinata*
Austrian pine	*Pinus nigra*
ponderosa pine	*Pinus ponderosa*
eastern white pine	*Pinus strobus*
American sycamore	*Platanus occidentalis*
eastern cottonwood	*Populus deltoides*
plains cottonwood	*Populus deltoides*
American plum	*Prunus americana*
Chickasaw plum	*Prunus angustifolia*
black cherry	*Prunus serotina*
cherry and plum spp.	*Prunus* spp.
chokecherry	*Prunus virginiana*
white oak	*Quercus alba*
swamp white oak	*Quercus bicolor*
shingle oak	*Quercus imbricaria*
bur oak	*Quercus macrocarpa*
blackjack oak	*Quercus marilandica*
chinkapin oak	*Quercus muehlenbergii*
pin oak	*Quercus palustris*
northern red oak	*Quercus rubra*
Shumard oak	*Quercus shumardii*
post oak	*Quercus stellata*
black oak	*Quercus velutina*
black locust	*Robinia pseudoacacia*
peachleaf willow	*Salix amygdaloides*
black willow	*Salix nigra*
willow spp.	*Salix* spp.
western soapberry	*Sapindus saponaria*
chittamwood, gum bumelia	*Sideroxylon lanuginosum*
saltcedar	*Tamarix* spp.
American basswood	*Tilia americana*
American elm	*Ulmus americana*
Siberian elm	*Ulmus pumila*
slippery elm	*Ulmus rubra*
rock elm	*Ulmus thomasii*

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