



# Forestry Terms

## *For the Landowner*

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In discussing forest management concepts and practices with landowners, the professional forester often uses abbreviations and terminology which are unfamiliar to the landowner. The result can be confusion on the part of the landowner and a lack of communication of ideas and suggestions by the forester. And, many aspects of forest land management can only be explained or described in technical terms. It is important for forest landowners to become familiar with some of the basic forestry concepts, terms and abbreviations if they are to communicate with professional foresters and successfully manage their woodlands.

In addition, several federal and state agencies have programs in forestry whose separate functions and roles are often confusing to the forest landowner. To take full advantage of their services, it is necessary to understand their responsibilities.

Similarly, several different types of professional foresters work with private landowners. Some are employees of public agencies, others are self-employed or work for private forest-based industries.

The various types of foresters, the public agency or private organization for which they work and some of the terms used in suggesting forest management practices to landowners are described here.

It should help foresters and landowners understand one another and promote better management of our forest resources.

### Agencies Involved in Forestry

**ASCS (Agricultural Stabilization and Conservation Service)** — An agency of the U.S. Department of Agriculture (USDA), the ASCS is primarily responsible for administering the various landowner cost-sharing programs of the department. This includes partial payment (reimbursement) for the completion of certain approved forestry practices such as tree planting and thinning and other woodlot improve-

ment practices where a salable product is normally not produced. Specific ASCS program information is available from the local ASCS office located in the county seat.

**CES (Cooperative Extension Service)** — Often referred to as the educational arm of the USDA, this agency provides educational material and information to groups and individuals on a wide range of topics including forestry. Group meetings, demonstrations, tours and publications are typical educational activities of Cooperative Extension. Locally, the Extension Service is represented within each county by a county Extension director and his staff who are housed in the county Extension office in each county seat. Information on scheduled forestry meetings or tours, publications, technical advice or referrals to sources of specific technical forestry assistance may be obtained from the county Extension office. In Michigan, the Cooperative Extension Service is administered by Michigan State University in East Lansing.

**MDNR (Michigan Department of Natural Resources)** — The DNR, as it is more commonly referred to, is one of several state departments which are responsible for specific natural resources or programs. This department contains a number of divisions, one of which is Forestry. The Division of Forestry has several responsibilities including the administration of the state forest land, the operation of the state tree nurseries, providing assistance to private owners of forest land and coordinating forest fire protection for the forests of the state. Field level foresters who work in state forest "districts" (referred to as "areas" in the southern portion of the lower peninsula) are available to provide limited technical assistance to private landowners. Assistance might include providing help with tree planting recommendations, marketing advice, developing a total management plan for your forest property, etc. In addition, tree seedlings for reforestation, wildlife and erosion control may be purchased from the state nurseries at a very reasonable cost. The nearest DNR forester may be located from a MDNR directory, or by inquiring at a county Cooperative



Extension Office, County Soil Conservation District or County ASCS office.

**RC&D (Resource Conservation and Development)** — Technically, RC&D is not a public agency, but a project sponsored by local units of the Soil Conservation Service. Projects are organized to carry out regional (multi-county) programs aimed at improving local economic, social or environmental conditions. Use of local resources, including the forest, is the goal. In several areas of Michigan, a RC&D forester is associated with the RC&D project (see RC&D forester under types of foresters).

**SCS (Soil Conservation Service)** — This agency of the USDA is responsible for coordinating the soil conservation programs of some 2,700 local Soil and Water Conservation Districts (SWCD) located throughout the country. The SCS has no public land management responsibilities. Each local district has a district conservationist who is responsible for developing farm land use plans for soil and water conservation. Although the major part of the work of a district conservationist is with agricultural lands, advice and planning is also provided for forested lands. Coordination with the local DNR forester is sought in recommending and carrying out specific forest practices. An important service provided by the SCS through the local SWCD is making available at low cost, nursery-produced forest planting stock to local cooperators.

**USFS (United States Forest Service)** — The principal agency in the Department of Agriculture concerned with forestry, the Forest Service is organized to conduct forestry activities in three principal areas. These are: (1) the publicly owned National Forest System, (2) a country-wide forest research program, and (3) financial and program assistance through the state forestry organization to private forest landowners. Employees of the Forest Service are not available to work directly with private individuals, but work through other state or local forestry organizations.

## Types of Foresters

**Area Forester** — A professional forester employed by the Division of Forestry of the Michigan DNR who is responsible for providing assistance to landowners within a 3- or 4-county area. In the northern part of the state, this individual is usually responsible for managing local state forest lands.

**Consulting Forester** — A professional forester who is self-employed. For a fee, he/she is available to assist private landowners with forest management practices. Some consultants provide assistance in a

general area while others may specialize in some particular aspect of forestry. The MDNR maintains a directory of consulting foresters active in the state.

**District Forester** — If an employee of the DNR, this is the same as an area forester. If employed by the federal government on a national forest, this individual is responsible for coordinating management operations for a specific unit of the forest. Federal district foresters are not available to provide personal assistance to private landowners.

**Extension Forester** — A professional forester with graduate training employed by Michigan State University who works with the Cooperative Extension Service in developing and providing technical information on forestry for state forestry interests. His/her primary responsibility is group education, including the preparation of materials and local and regional educational activities working through local Extension personnel and facilities.

**Forest Ranger** — The name often applied to a professional forester employed by the U.S. Forest Service who is in charge of part of a national forest referred to as a district. Forest rangers, or district rangers as they are more properly known, are responsible for supervising the management activities of their districts, including fire control, tree planting, recreational activities and thinning and harvesting operations. The responsibility of a district ranger does not include providing assistance to private landowners.

Occasionally, the term forest ranger is applied to anyone wearing an official-looking forester's uniform, particularly if they are wearing a broad-brimmed hat.

**Forest Supervisor** — An employee of the U.S. Forest Service, who has responsibility for coordinating all activities on a particular National Forest. A professional forester with several years of field experience, he/she is primarily concerned with supervision and administration of personnel and programs on the Forest.

**Industrial Forester** — A professionally trained forester employed by a forest-based industry. This individual may have responsibility for managing company-owned woodlands to produce forest products or to work with private landowners to purchase forest products for his employer. Some industrial foresters have primary responsibilities for working with individual landowners to provide advice and assistance in promoting approved forest management practices.

**RC&D Forester** — An employee of the DNR, this professional forester is responsible for promoting and encouraging landowners who reside within the



RC&D district to practice more intensive forest management. He/she often works with Extension personnel, area foresters and industrial foresters in jointly conducting educational meetings, tours and woodlot demonstration meetings. He/she also provides individual assistance on forestry matters to landowners within the RC&D district.

**Registered Forester** — A professional forester whose credentials have been evaluated by the State Board of Foresters and who has been issued a registration certificate and number by the State Department of Licensing and Registration. It is not a requirement that professional foresters be registered to practice forestry within the State of Michigan.

## Commonly Used Forestry Terms

**ACP** — (Agricultural Conservation Program) a federally sponsored cost-sharing program which will reimburse landowners for a portion of the cost of performing certain approved forestry practices such as tree planting, thinning, etc. Administered by the Agricultural Stabilization and Conservation Service.

**Acid Soils** — A term applied to soils with an acid reaction as indicated by soil pH values below 7.0. In practice, soils are considered strongly acid when the pH value is below 6.0. Some species, such as many of the conifers, grow well in moderately acid soils while others, including many of the hardwoods, do poorly in acid soils.

**Acre** — An area of land which contains 43,560 square feet.

**Afforestation** — Establishing a forest on an area which has not previously had trees growing on it.

**All-age Forest** — A forest stand in which trees of all ages and usually all sizes are present. This is in contrast to an "even-aged" forest.

**All-aged or Uneven-aged Forest Management** — Management of a forest involving the periodic removal of individual trees from the stand while preserving its natural appearance. In Michigan, this type of management is commonly used in hardwood forest types. See selection harvest and uneven-aged forest.

**Allowable Cut** — The volume of wood or the amount of product which can be cut, under a particular management plan, during a given period of time.

**Artificial Reproduction** (or Artificial Regeneration) — See reproduction.

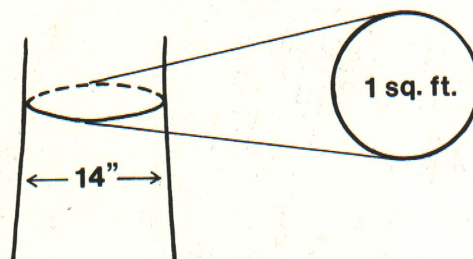
**Aspect** — The compass direction towards which a slope faces.

### Basal Area

(a) Of a tree: the cross-sectional area (in square feet) of the trunk at breast height (4½ feet above the ground). For example, the basal area of a tree 14 inches DBH is approximately 1 square foot.

(b) Of an acre of forest: the sum of basal areas of the individual trees on the acre. For example, a well

stocked northern hardwood stand might contain 80 to 100 square feet of basal area.



**Board Foot** — A unit for measuring wood volumes equalling 144 cubic inches which is commonly used to measure and express the amount of wood in a tree, sawlog, veneer log or individual piece of lumber. For example, a piece of wood 1 foot × 1 foot × 1 inch or one measuring 1 foot × 3 inches × 4 inches both contain 1 board foot of wood.

**Bole** — The main trunk of a tree.

**Bolt** — A short log or a squared timber cut from a log.



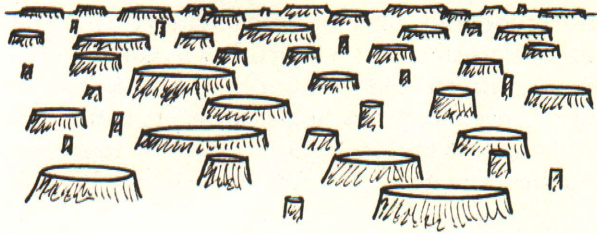
**Breast Height** — See DBH.

**Canopy** — The layer of covering in a forest made up of the tree crowns.

**Cleaning** — See release cutting.

**Clearcut** — A harvesting technique which removes all the trees (regardless of size) on an area in one operation. Clearcutting is most often used with species like aspen which require full sunlight to





reproduce and grow well. Produces an even-aged forest stand.

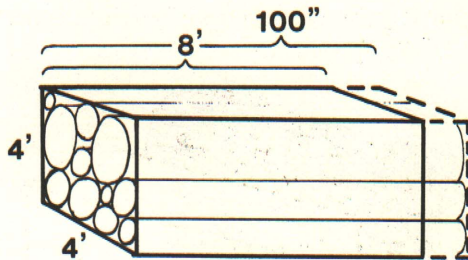
**Climax Ecosystem** — The final stage of succession which continues to occupy an area unless there are significant changes in the environment.

**Commercial Cut** — A cut which yields a net income (receipts for the sale of products exceed the cost of the cutting).

**Conifer** — A tree belonging to the order Coniferales which is usually evergreen, cone bearing and with needles, awl or scalelike leaves such as pine, spruces, firs and cedars; often referred to as "softwoods."

**Conservation** — The protection, improvement and wise use of natural resources to assure the attainment of their highest economic and/or social values.

**Cord** — A stack of logs containing 128 cubic feet. Normal dimensions of a standard cord are 4 feet × 4 feet × 8 feet. In Michigan, pulpwood cords are 4 feet × 4 feet × 100 inches to take advantage of truck width.



**Crop Tree** — A tree identified to be grown to maturity and which is not removed from the forest before the final harvest cut. Usually selected on the basis of its location with respect to other trees and its quality.

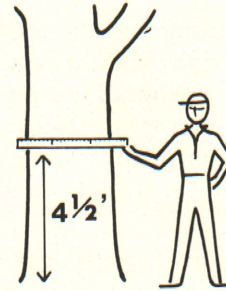
**Crown** — The leaves and branches of a tree.

**Cubic Foot** — A wood volume measurement containing 1,728 cubic inches, such as a piece of wood measuring 1 foot on a side. A cubic foot of wood contains approximately 6 to 10 *usable* board feet of wood.

**Cull** — A tree or log of merchantable size but no market value.

**Cutting Cycle** — The planned time interval between major harvesting operations in the same stand. The term is usually applied to uneven-aged stands. For example, a cutting cycle of 10 years in a northern hardwood stand means that every 10 years a harvest would be carried out in the stand.

**DBH** — The diameter of the tree at breast height (defined as 4½ feet above the ground).



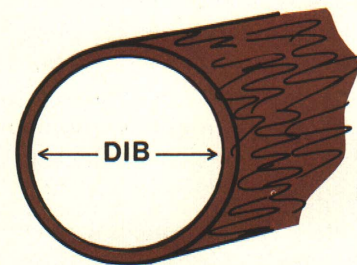
**Deciduous Tree** — A tree which loses all of its leaves at some time during the year (in Michigan, during the winter season).

**Defect** — That portion of a tree or log which is unusable for the intended product and, therefore, not measured. Defects include such things as rot, crookedness, cavities, excessive liminess, etc.

**Dendrology** — The study of the identification, habits and distribution of trees.

**Diameter** — Tree diameter is usually measured 4½ feet above ground level (see DBH).

**DIB (or d.i.b.)** — Diameter inside the bark.



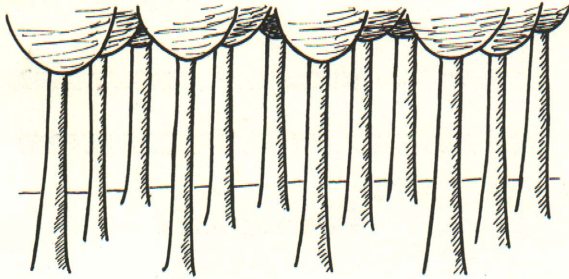
**Ecosystem** — An interacting system of living organisms (plants and/or animals), soil and climatic factors. Foresters consider a forest an ecosystem. An example of this interaction is the movement of nutrients from the soil through the roots into the tree; the manufacture of leaf material from some of these nutrients; the leaves dropping and decomposing, and the nutrients returning to the soil.

**Environment** — The prevailing conditions which reflect the combined influence of climate, soil, topography and biology (other plants and animals) factors present in an area. Environmental factors



are extremely important in determining how well a particular species will grow in a given area.

**Even-aged Forest** — A forest in which all of the trees present are essentially the same age (within 10 to 20 years).



**Even-aged Forest Management** — Management of a forest involving the periodic harvest of all of the trees on part of the forest at one time or in several cuttings over a short period of time to produce stands containing trees all the same or nearly the same age. In Michigan, this type of management is commonly applied to conifers and aspen.

**Evergreen Tree** — A tree which retains some or all of its leaves throughout the entire year.

**F.I.P. (Forest Incentives Program)** — A federal cost sharing program which reimburses a landowner for the completion of certain approved forest management practices, such as tree planting and thinning. Administered by the Agricultural Stabilization and Conservation Service.

**Forest** — A plant community in which the dominant vegetation is trees and other woody plants.

**Forest Management**

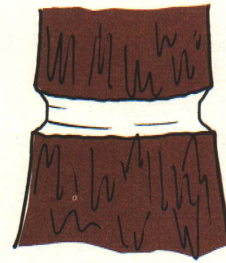
- (a) Giving the forest the proper care so that it remains healthy and vigorous and provides the products and amenities the landowner desires.
- (b) Technical Definition: The application of technical forestry principles and practices and business techniques (such as accounting, benefit-cost analysis, etc.) to the management of a forest.

**Forest Type** — A group of tree species which, because of their environmental requirements and tolerances, are repeatedly found growing together. Three examples of forest types are the beech-sugar maple type, the jack pine type, and the aspen-paper birch type.

**Forestry** — The science, art and practice of managing for human benefit trees and forests and their associated resources.

**Forty** — A tract of land 40 acres in size.

**Girdling** — Completely encircling the trunk of a tree with a cut that severs the bark and cambium (active growing layer of cells) and usually penetrates into



the sapwood to kill the tree by preventing the conduction of nutrients.

**Grading** — Evaluating and sorting trees or logs according to quality.

**Habitat** — The local environment in which a plant or animal lives.

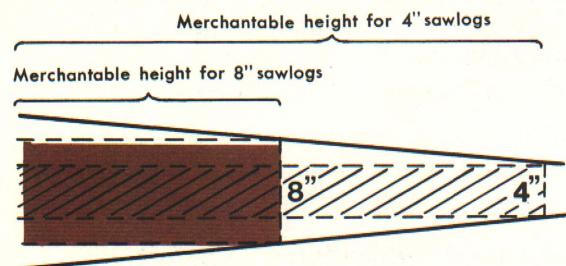
**Harvest**

- (a) In general use, the removal of all or portions of the trees on an area.
- (b) Technical Definition: A harvest cut is the removal of trees on an area to 1) obtain income, 2) develop the environment necessary to regenerate the forest, and on occasions, 3) to achieve some special objectives such as the development of special wildlife habitat needs (contrast with intermediate cuttings).

**Hardwood** — A term used to describe broadleaf, usually deciduous, trees such as oaks, maples, ashes, elms, etc. It does not necessarily refer to the hardness of the wood.

**Height, Breast** — See diameter.

**Height, Merchantable** — The height of a tree (or length of its trunk) up to which a particular product may be obtained. For example, if the minimum usable diameter of pulpwood sticks is 4 inches, the merchantable height of a straight pine tree would be its height up to a trunk diameter of 4 inches. If 8-inch minimum diameter sawlogs were being cut from the same tree, its merchantable height for sawlogs would be its height up to a trunk diameter of 8 inches. Note, one must know the product being cut to estimate merchantable height.



**Height, Total** — The height of the tree from the ground level to its very top.



**Herb** — A non-woody plant.

**Herbicide** — Chemicals which kill herbaceous (non-woody) plants. In common usage, however, often used interchangeably with the word phytocide (plant killer).

**Increment Borer** — A hollow auger-like instrument used to bore into the trunk of a tree to remove a cylinder of wood containing a cross section of the tree's growth rings.

**Intermediate Cut** — The removal of immature trees from the forest sometime between establishment and major harvest with the primary objective of improving the quality of the remaining forest stand. Contrast with harvest cut. An intermediate cut may generate income (commercial cutting) or, in some cases, may actually cost the forest landowners (a non-commercial cutting).

**Liberation Cutting** — See release cutting.

### Log

- (a) A piece of the woody stem of a tree.
- (b) The trunk portion of a tree.
- (c) A unit of measurement of a tree stem section exactly 16 feet in length.

**Logger** — An individual whose profession is cutting timber.

**Lump-sum Sale** — A technique of selling timber in which a single sum of money is paid for all of the timber that is for sale. Distinguished from a scale or unit sale in which payment is based on the amount harvested (e.g. so much per cord or thousand board feet).

**Log Rule** — A device, usually presented in tabular form, which expresses log volume content based on log diameter (inside the back of the small end) and length.

**Management** — See forest management.

**Mature Tree** — A tree that has reached the desired size or age for its intended use. Size or age will vary considerably depending on the species and intended use.

**Mensuration** — Traditionally, that phase of forestry which deals with the measurement of present and future volume, growth and development of individual trees and stand and their timber products.

**Multiple Use** — The management of forest land (or any other land) for more than one purpose.

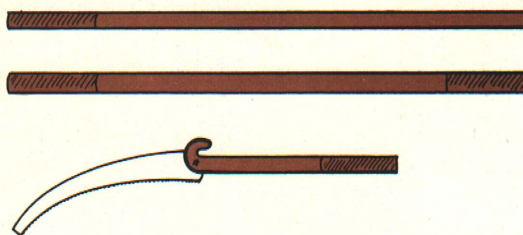
**Natural Forest Stand** — See plantation.

**Non-Commercial Cutting** — A cutting which does not yield a net income, usually because the trees cut are too small, poor quality or not marketable.

**Phytocides** — Chemicals which kill plants.

**Plantation** — An artificially reforested area established by planting or direct seeding. Contrast with a natural forest stand which is established naturally.

**Pole Saw** — A saw attached to a long pole so that pruning can be done on the tree's trunk without using a ladder.



**Pole Stand** — A stand of trees whose diameters range from 4 inches to approximately 8-12 inches.

### Preservation

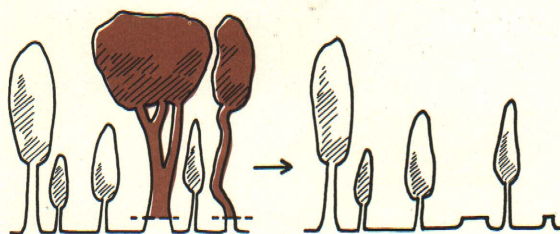
- (a) As applied to wood, the treatment of wood products to prevent damage by insects or decay organisms.
- (b) With respect to land, the practice of attempting to maintain a natural environment undisturbed by the influence or activities of man.

**Pruning** — The removal of live or dead branches from standing trees. With forest trees, pruning is generally done along the trunk to remove the side branches (which cause knots in the wood) to produce a higher quality wood (knot-free).

**Pulpwood** — Wood cut primarily to be converted into wood pulp for the manufacture of paper, fiberboard or other wood fiber products.

**Reforestation** — Re-establishing a forest on an area where forest vegetation has been removed.

**Release Cutting** — A cutting operation carried out to release young trees (seedlings or saplings) from competition with other trees of the same size (termed a *cleaning*) or larger and overtopping trees (termed a *liberation cut*).



### Reproduction

- (a) Young trees which will grow to become the older trees in the future forest.
- (b) The process by which the forest is replaced or renewed. This may be —

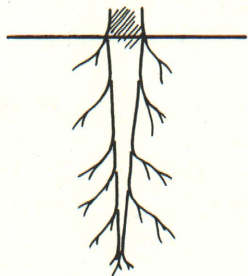


**Artificial Reproduction** — by means of seeding or planting.

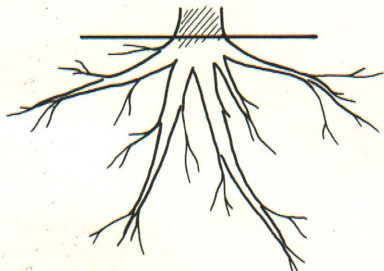
**Natural Reproduction** — from natural seeding or sprouting.

**Roots** — That portion of the tree which is generally underground and which functions in nutrient absorption, anchorage and storage of food and waste products. There are several general types of roots including —

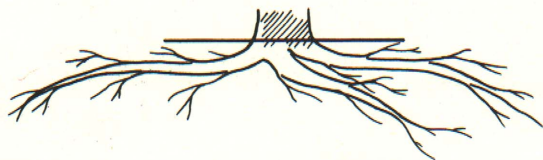
**Tap Root** — A strong central descending root with lateral roots branching off horizontally. Typical of species such as black walnut, white oak and some pines.



**Heart-shaped Root** — Consists of several large roots descending at various angles into the soil with smaller roots branching from these. Produces heart-shaped root mass which is broadest near the soil surface but which penetrates a considerable distance into the soil. Typical of species such as beech and maple.



**Flat Root** — Consists of several large roots which extend out nearly horizontally with smaller roots branching from these. Produces broad, flat, shallow root systems. Typical of spruce, hemlock and trees growing in poorly drained soils or soils where the water table is close to the soil surface.



**Rotation** — The number of years required to establish and grow trees to a specified size, product or condition of maturity.

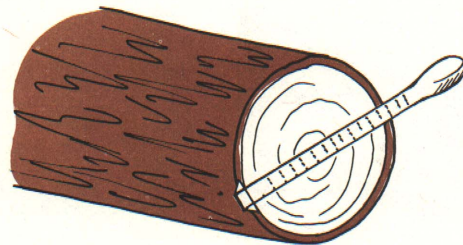
**Salvage Cut** — The harvesting of trees that have been killed or are in danger of being killed (by insect, disease or the environment) to save their economic value.

**Sanitation Cut** — The harvesting or destruction of trees infected or highly susceptible to insects or diseases to protect the rest of the forest stand.

**Sapling** — A small tree, usually defined as being between 2 and 4 inches DBH.

**Sawlog** — A log large enough to produce a sawn product — usually at least 10 to 12 inches in diameter.

**Scale Stick** — A flat stick, similar to a yardstick, which is calibrated so log volumes can be read directly when the stick is placed on the small end of the log of known length.



**Seed-tree Harvest Cutting** — A harvest cutting in which all of the trees are removed from the harvest area at one time except for a few scattered trees which are left to provide seed to establish a new forest stand.

**Seedling** — A tree, usually defined as less than 2 inches in DBH, which has grown from a seed (in contrast to a sprout).

**Selection** — A procedure for harvesting timber in which individual trees or small groups of trees are harvested at periodic intervals (usually 8-15 years) based on their physical condition or degree of maturity. Produces an uneven-aged stand.

**Shelterwood Harvest Cutting** — A harvest cutting in which the trees on the harvest area are removed in a series of two or more cuttings to allow the establishment and early growth of the new seedlings under the partial shade and protection of the older trees. Produces an even-aged forest.

**Shrub** — A low-growing perennial plant with a persistent woody stem and low branching habit.

**Silvicides** — Chemicals which kill woody plants.

**Silviculture** — The art, science and practice of establishing, tending and reproducing forest stands of



desired characteristics based on knowledge of species characteristics and environmental requirements.

**Site**

- (a) Reference to a specific location.
- (b) An area evaluated as to its capacity to produce a particular forest or other vegetation based on the combination of biological, climatic and soil factors present.

**Site Index** — An expression of forest site quality based on the height of the dominant trees at a specified age (usually 50 years in the eastern United States).

**Site Preparation** — Preparing an area of land for forest establishment, including clearing, chemical vegetation control, burning, etc.

**Slash** — Residue left on the ground after logging, pruning or other forest operations including tree tops, branches, bark, etc.



**Softwoods** — See conifer.

**Soil Texture** — The feel or composition of a soil based on the proportion of sand, silt and clay in the soil.

**Sprout** — A tree that has grown from the base, stump or root of another tree.

**Stand** — A grouping of trees occupying a given area and sufficiently uniform in composition, age and condition so as to be distinguishable from the forest on adjoining areas. A forest stand is said to be *pure* if 80 percent or more of the trees present are of the same species. If less than 80 percent of all trees present are of the same species, the stand is said to be *mixed*.

**Stocking** — An indication of the number of trees present in a forest stand. Often, stocking level is compared to the desirable number of trees for best growth and management, such as partially-stocked, well-stocked or over-stocked.

**Stumpage** — The value of a tree or group of trees as they stand in the woods uncut (on-the-stump).

**Succession** — The replacement of one plant com-

munity by another until ecological stability is achieved.

**Sucker** — Synonymous with sprout.

**Sustained Yield** — Management of forest land to produce a relatively constant amount of timber and/or revenue.

**TSI — Timber Stand Improvement** — A practice in which the quality of residual forest stand is improved by removing the less desirable trees, vines and, occasionally, large shrubs to achieve the desired stocking of the best quality trees.

**Thinning** — Cutting in an immature forest stand to reduce the tree density and concentrate the site productivity on fewer, higher quality trees resulting in increased growth and larger trees.

**Tolerance** — The capacity of a tree to develop and grow in the shade of, and in competition with, other trees.

**Transplant** — A seedling which has been transplanted at least once in the nursery.

**Tree** — A woody plant having a well-defined stem, more or less definitely formed crown and usually attaining a height of at least 10 feet.

**Tree Farm** — A privately owned forest (woodland) dedicated to the production of timber crops. Additionally, it may be recognized as a "Tree Farm" by the Tree Farm Program, an organization sponsored by the American Forest Institute.

**Tree Injectors** — Equipment specially designed to inject chemicals, usually phytocides, into the trunk of a tree.

**Uneven-aged Forest** — A forest in which there are many ages of trees present (technically, more than 2 age classes) and in which there are considerable differences in the ages of the trees present.

**Uneven-aged Forest Management** — See all-aged forest management.

**Volume Table** — A table which estimates the volume of wood contained in a standing tree based on measurements of the tree, most commonly DBH and merchantable height.

**Wolf Tree** — A tree which occupies more space in the forest than its value justifies. Usually a tree which is older, larger or more branchy than other trees in the stand.

**Wood Pulp** — Mechanically ground or chemically digested wood (composed primarily of wood fiber) which is used in the manufacture of paper, fiberboard, etc.

**Woodland Management** — See forest management.

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