Forest Management for Small Landowners

Glossary

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Acre: A measurement of area that contains 43,560 square feet. If square, an acre is 208.71 feet (of 208 feet, 9 inches) on a side. An acre is also 1 chain by 10 chains, with a chain being 66 feet in length.

Ad Valorem Tax: An annual assessment based on a percentage of the assessed property value, usually the fair market value or highest and best use value. Forest land in Washington used to be taxed under this system, but it led to a lot of forest land going back to the counties because the landowners couldn't pay the taxes when there was no income from the land. Forest land is now assessed for taxation based on its value for timber growing (*not as a home sites*) and the timber is taxed when it is harvested. (Also, s*ee Forest Excise Tax and B & O Tax*)

Angiosperms: * "The group of vascular flowering plants that produce seeds enclosed in an ovary, including hardwoods, bamboos, and palms but not softwoods." (*Also, see Gymnosperms, Conifers, Hardwoods and Softwoods*)

Backpack Sprayer: Generally, a 3.5-to-5.0-gallon sprayer with shoulder straps that is worn on your back. In forestry it is most commonly used for herbicide application.

Beams: Beams and stringers are primary longitudinal support members, usually rectangular pieces that are 5 inches or more in thickness with a depth more than 2 inches greater than the thickness. Beams are graded primarily for use with loads applied to the narrow face. They can be cut from a log or from veneer that is glued to create a beam".

Basal Spray: The spraying of a woody shrub or tree in the bottom 18 inches of the trunk. Basal sprays are almost always a straight oil-based chemical, or a water and oil mix.

Blaze: Early timber cruisers chopped the bark from a section of a tree trunk and wrote information (such as how far to a section corner) on the exposed wood. Also, early trappers and explorers chopped small sections out of tree bark to mark a trail.

B & O Tax: All businesses in Washington pay Business and Occupation tax, but at different rates. In forestry, the party receiving the gross revenue from a harvest operation pays the B & O tax. Small forest landowners are granted an exemption on the first $100,000 of revenue but pay the standard rate on everything above that. After the first harvest is done, the Department of Revenue will send quarterly or annual reminders asking if any harvesting has been done. (*See also Forest Excise Tax, and Ad Valorem Tax*)

Board Foot (BF): Measurement unit for lumber and tree volume. A board foot is 1 inch thick, 1 foot wide and 1 foot long.

Bole: The main trunk of a tree, also referred to as **stem** or **trunk**

Breaking Out": Term used to describe the step in the planting process of making a hole for the seedling to be inserted into.

Browsing: Deer and elk do not have front teeth that can cut or clip a branch or terminal growth. Instead, they browse it by grabbing it with their mouth and pulling and breaking it. (*Also see clipping*)

Buck: To cut ends off felled trees or logs or cut them into shorter lengths.

Bucking, long: See "long bucking"

Budbreak: * "The opening of buds and appearance of leaves or needles."

Caliper: Tree seedlings are measured and purchased from nurseries in millimeters (*mm)* of stem diameter, which is referred to as caliper. The term diameter is usually used when the tree is larger and its diameter is measured at breast height (*DBH*), or for a log at its small end (*SED*) or large end (*LED*).

Camp Run Price: A single price per MBF for everything shipped to a mill from a specific logging unit. When competition for logs is heavy, mills may offer this to encourage timber owners and loggers to sell to them. They know they will have to re-sort some of the wood and ship it to other markets. It is not efficient for the mill, but if they really want your wood, they have to do something like this to get it. There is no single "camp run" price as each harvest will have a different mix of product sorts. The benefit for the landowner to sell at a camp run price is that processing and loading will be speeded up because there are fewer sorting decisions to be made.

Cardinal Directions: North, South, East, and West

C&S Mill: A Chip & Saw sawmill which has machinery that is designed to chip the rounded portion off a small log leaving 4" x 4" or 6" x 6" cants that are then run through another machine that will cut 2" x 4" or 2" x 6" construction studs.

Chain: A unit of distance measure equal to 66 feet. Used by foresters and surveyors because an acre is 1 chain by 10 chains, which supposedly was the area a yoke of oxen could plow in one day. Originally the device used to measure the distance was a chain with 100 links, but now most are made of plastic.

Chemical Site Preparation: A hand, truck, tractor, or helicopter operation to apply forest chemicals, prior to, or just after the planting of tree seedlings.

Chilling Hours: Nurseries collect cumulative fall temperatures below 40˚ F. to indicate when the nursery seedlings are frost hardy. Hardiness cannot be assured until at least 400 chilling hours have been reached.

Chlorosis: * “An abnormal yellowing of the foliage.” It often is a symptom of a mineral deficiency, virus infection, or mechanical damage. Very young plantations often will exhibit chlorosis and will grow out of it in a few years (*personal experience*).

Clearcut: * “A stand in which essentially all trees have been removed in one operation.” Harvesting regulations require that a minimum number of trees be left in every harvest unit, plus riparian areas are left unharvested. If the area outside of these leave areas is logged, then it is referred to as a clearcut operation. *(Also, see Leave Trees)*

Climax Forest: * “An ecological community that represents the culminating stage of natural forest succession for its locality.” In western Washington, a climax forest will have few Douglas-fir. Most trees will be shade-tolerant western hemlock, western redcedar, and true fir (*Abies*), which can develop under a canopy of dense shade. As one large overstory tree dies, another is waiting underneath to out fight its neighbors for that crown position.

Clipping: Damage to trees done by mice, voles and rabbits which clip branches and stems with their incisor teeth. (*Also, see Browsing*)

Coastal Fog Belt: A narrow band along much of the Pacific Coast of the United States and Canada, generally assumed to extend 10 miles inland.

Commercial Thinning (CT): * “Any type of thinning producing merchantable material at least equal to the value of the direct cost of harvesting.” The silvicultural intent of a commercial thinning is to remove trees that would die in a few years and to improve the wood quality of the stand by removal of the lower quality trees.

Conifers: A cone bearing tree. Sometimes also referred to as softwood, but more technically a member of the gymnosperms (Also, s*ee Hardwoods, Softwoods, Gymnosperms and Angiosperms*)

Consultant Forester (or Forestry Consultant): A self-employed forester or one working for a forestry consulting firm who works directly for the forest landowner and are often employed to represent the landowner. Forestry consultants are paid for their professional skill and knowledge to help forest landowners with issues they are not prepared to handle or don’t want to handle themselves.

Compound Interest: It is the addition of interest to the principal sum of a loan or deposit and grown over a period of time. Compounding is the phenomenon that allows seemingly small amounts of money to grow into large amounts over time.

Cord: * “A stack of firewood that measures 4 x 4 x 8 feet or 128 cubic feet, including wood, bark, and empty space within the stack”.

Crown: The live branches and foliage of the tree make up the crown. It can be described as a percentage of total tree height, or in its maximum diameter width in feet.

Crown Closure: The point at which the lateral branches have overlapped branches from adjacent trees and thus restricted light to the forest floor.

Cruise, Cruising: The process of estimating the quantity of timber on a given area by measuring tree height and diameter of sample trees and calculating the volume of the trees with mathematical formulas. Also, a "cruise" is used as a noun for the estimate obtained from the process.

Cut-To-Length Processor: A machine with a boom that drives through a stand, cuts, semi-directionally falls, de-limbs and bucks the logs into short lengths, and stacks them along its path. Originally designed and built in Scandinavia, they now are used extensively in the United States and Canada on commercial thinning operations.

Cut-To-Length Thinning (CTL): The process of thinning using a cut-to-length processor to merchandize the wood, followed by a forwarder *(an articulated machine with a grapple)* that loads the logs into a log bunk and hauls them to the roadside landing.

Dangle Head Processor: A device that hangs from a logging shovel boom and de-limbs (*removes limbs*), bucks ends, and cuts logs into various lengths. Generally, it is used with mature timber rather than with the smaller logs of a commercial thinning operation.

Declination: The angle of difference between magnetic north and true north, which is used to correct a compass, so you know the direction to true north.

Density Management Diagram: A diagram used for calculating future stand entries such as pre-commercial thinning, thinning and final harvest.

Diameter at Breast Height (DBH): The diameter of a tree at 4½ feet above ground level, or from the uphill side on sloping ground. 4½ feet is generally at the sternum of most men, thus it is called diameter at breast height. A butt log often flares near the ground line, thus measuring 4½ feet off the ground gives a more accurate measurement of tree diameter. When DBH and tree height are known, mathematical formulas can be used to estimate tree volume.

Dimensional Lumber: The larger-width planks and large beams that come from a #2 saw log.

Discounting: If you start with a value at some future date and arrive with a value today, the difference is called discounting.

Distress Cone Crop: A heavy cone crop (*but often with smaller than normal cones*) from a tree that is not healthy or is dying.

DNR: Washington State Department of Natural Resources, the agency charged with managing forest land owned by the state and also with enforcing the Forest Practice Rules and Regulations on all forest land.

Dormancy: * "The suspension of growth in plants." It may be caused by shortening daylight hours in the fall, drought, heat, or cold weather conditions.

Dose: The amount of chemical applied per unit acre or unit area. If the recommended rate of a chemical is 2 oz. per acre, then 2 oz. is the dose.

Early Commercial Thinning (ECT): A partial harvest done when the stand is in its early 20s.

Earlywood: * "The lighter-colored part of the annual growth ring that is less dense and composed of large-diameter, thin-walled cells that were laid down early in the growing season" (*see Latewood*)

ECT: See Early Commercial Thinning.

Efficacy: The ability to produce a desired or intended result. For example, in forestry chemical use, the terms are used in the following ways: (a) Chemical #1 had a better efficacy at 1 oz. per acre than chemical #2 at 3 oz. per acre. (b) The application of a wetting agent improved the chemical efficacy to control the plant competition.

Eurasia: The largest continental area on earth consisting of Europe and Asia.

Even-aged Stands: With the exception of the required leave trees, all the trees in the stand are the same age. (*see Uneven-aged stands*)

Feller-buncher: A machine used in logging to fell the tree with a controlled or semi-controlled falling speed to minimize log damage. It will also position the tree during falling so that multiple trees are bunched together.

Foliar Spray: Spraying applied to the foliage of the plants from early spring to early fall when the plants have their leaves or needles and are photosynthetically active.

Forcing Hours: The accumulation of warm temperate hours in the spring which with Chilling hours will help initiate cell expansion and division.

Forest Excise Tax: The Washington Department of Revenue collects a 5% harvest tax on the stumpage value of the timber sold (*gross revenue minus some allowed costs*). The party receiving the log sale checks pays the tax. (Also, *see B & O Tax and Ad-Valorem tax*)

Forest Practice Application (FPA): An application process a forest landowner must complete and have approved prior to implementation of many forest practices, such as road building, logging and spraying.

Free-to-Grow: The point in plantation development that the new stand of trees is capable of outgrowing the competition.

Frost Heave: * "The upward displacement of normal soil levels due to ice expansion in frozen soil." In nurseries or plantations, it may cause the partial or total extrusion or lifting out of the soil of seedlings or other small plants, thus exposing their roots and potentially killing them.

Fungus: (*plural fungi*) * "A nonvascular plant lacking chlorophyll (*and therefore does not photosynthesize)*, having cell walls with both cellulose and chitin, having a vegetative body called a thallus composed of hyphae and reproducing by spores."

Genotypes: * "A plant or individual's hereditary (genetic) constitution."

GLO (*General Land Office*): The General Land Office keeps records of government surveys for what was called the Public Land States. These are the states where the land was claimed and surveyed by the government prior to settlement, as compared to the original settled colonies. The records today include land patents, survey plats and field notes, land status records, and tract books (*often referred to as GLO Notes*).

Gross Board Feet: Total measurement of logs without deduction for defects.

Gymnosperms: * "The group of vascular flowering plants that produce seeds not enclosed in an ovary (*naked seeds*). This group contains most of the conifers." (*Also, see Angiosperms, Conifers, Hardwoods and Softwoods*)

Hand Spray: Spraying with a backpack sprayer as compared to a tractor or aircraft spraying.

Hardwoods: * "A member of the angiosperm group of plants that produce seeds enclosed in an ovary (*not naked seeds*)." A non-scientific term used to describe trees that generally lose their leaves in the fall, and the wood is most typically of a hard nature. (Also, *see Softwoods, Angiosperms, Gymnosperms and Conifers)*

Horizon, Soil: A layer of soil that lies parallel to the soil surface which differs from adjacent layers in physical, chemical and biological properties or characteristics.

Intolerant: A plant that needs full sunlight for best growth. Intolerant plants cannot compete well with tolerant plants under shade. Douglas-fir is an intolerant species. (*See Tolerant)*

Jill Poke: [+] (1) A pole used in shoving rail cars out of a siding; (2) A loosely balanced timber on a plank road which may fly up and spear a car passing over it; (3) A cat (*dozer*) radiator or cab punctured by a sharp stick or branch, To be struck or caught foul, or hung up on any kind of job. Currently used as, when "jill-poked' with a stick.

Juvenile Wood: * "The wood formed in the first 10 to 15 rings nearest to the pith, that is strongly controlled by growth regulators from the crown, and which in softwoods, has lower specific gravity." (Also, *see Mature Wood*)

Knot: [#] That portion of a branch or limb that has been surrounded by subsequent growth of the stem. The shape of the knot as it appears on a cut surface depends on the angle of the cut relative to the long axis of the knot."

Lammas Growth: * "Abnormal late-season growth from a previously dormant bud, commonly caused by excess moisture." This growth can be recognized in the late summer and fall by the 6- to 12-inch terminal and lateral branches at the top of the tree. These developed after the first flush of vegetative growth. (*Lammas growth is sometimes called second flush.*)

Landing: A cleared area in the logging unit where logs are brought to be merchandized, stacked into different sort piles, and loaded on trucks.

Latewood: * "The portion of the annual growth ring formed late in the growing season and having cells that are relatively small in diameter, thick walled, harder, denser, and darker than those formed earlier." (Also, *see Earlywood*)

Leave Trees: Washington State Forest Practice laws require forest landowners to leave for each acre harvested 3 wildlife reserve trees, two green recruitment trees, and two downed logs. Each of these has size and length requirements.

LED: When used with log diameters it means "large-end diameter" of the log, as compared to "small end diameter" (*SED*).

Lidar: Lidar stands for Light Detection and Ranging. It is a remote sensing method that uses light from a pulsed laser to do many things such as:

- Map individual trees to determine forest health and seedling survival.
- Cruise timber (*not yet perfected*).
- Cut through the forest canopy to show ground topography as if there was absolutely no vegetation, making features such as former or current railroad grades and landslides very easy to see.

Line Trees: Trees that straddle a property line.

Logging Shovel: See Shovel Logging

Log Grade: * "An established quality or use classification of lumber, trees, or other forest products." In the second growth stands in the Pacific Northwest, the log grades are generally #2, #3, and #4 sawlogs and pulp. When larger logs were being harvested, grades of number #1, #2 and #3 peeler and #1 sawmill (*16" SED, 90% surface clear of knots and defects, and 8 rings per inch*) were used. With a few exceptions, the grades used today are:

#2 Saw log:	12 in. min. SED	12 feet min. length	sound tight knots, 2½" dia. or less
#3 Saw log:	6 in. min. SED	12 feet min. length	sound tight knots, 3" dia. or less
#4 Saw log:	4 in. min. SED	12 feet min. length	min. 33% merchantable volume

Long Bucking: Cutting an unusually long piece off the first log because it has a major defect (*rot, highly visible scar, etc.*). Usually, the short piece is not merchantable. The older term for this practice is "long butt.

Map Scale: * "A statement of measure on a map and the equivalent measure on the earth's surface." The DNR wants you to use their map at 1:1000 (*1 inch = 1,000 feet*) scale when an FPA is submitted. However, for general purposes, a map with 1:400 scale (*1 inch = 400 feet*) will be much more useful to you.

Market, Export: Logs or finished products that are shipped overseas.

Market, Domestic: Logs that are milled locally, within the United States.

Mature Wood: Wood laid down after the juvenile stage of tree growth which is of a higher specific gravity content (*higher density*) so it makes a higher-quality construction wood. (*Also, see Juvenile Wood*)

MBF: Thousand Board Feet. In the forestry field "M" equals thousands. (Also, s*ee Board Foot*)

Mechanical Site Preparation: Using large equipment to create planting sites after logging. Usually, it involves piling or scattering of logging debris, but other techniques such as mounding and ripping are used in other parts of the world.

Mensuration: * "(1) A branch of mathematics dealing with the measurement of lengths of lines, area of surface, and volumes of solids. (2) Forestry, the determination of dimensions, form, weight, growth, volume, and age of trees."

Mensurationists: A forest mathematician who deals with measurement of forests, often by developing growth and yield tables and models of different species of timber.

Merchandizing: In the harvest operation it means to trim branches on logs flush with the bole, buck the ends of the logs clean, and cut the logs into desired lengths for the mill or export facility.

Mycelium: (*plural mycelia*) * “The vegetative part of a fungus, composed of hyphae and forming a thallus.”

Net Board Feet: The amount of wood that the mill or exporter pays the landowner or logger for, after deductions for defects. *(Also, see Gross Board Feet)*

Net Present Value: Is the value of all future and present cash flows (*positive and negative*) over the entire life of an investment discounted to the present time

North Slope: The side of a hill that is facing north. North slopes are cooler than south slopes because of the hillside angle away from the sun. *(Also, see South Slope)*

Nursery Bed: * “A specially prepared plot in a nursery where seed is sown, or into which transplants or cuttings are put.” Often refers to an area of the nursery where a specific seed zone or stock type is being grown.

Old-Growth Forest: * “The late successional stage of forest development, usually defined by structural characteristics.” In recent years, this term has become politicized, and some people and organizations now use the term for any stand over 50 years of age, although realistically a stand should probably be over 200 to be considered old growth.

Open Grown: In the context of these papers, it means a single tree that has grown and developed with no competition for light. It is usually characterized as a tree growing in a field with branches all the way to the ground.

PCT: See Pre-Commercial Thinning

Phenology: The study of reoccurring biological events like budburst, bud set, flowering, resumption and cessation of diameter growth.

Phototropic and Phototropism: * “The growth of an organism in response to a light stimulus.” The most common example in the Pacific Northwest is red alder, which often bends toward the light along road edges.

Physiology: * “The science dealing with the life processes and functions of organisms, their cells, tissues, and organs.”

Plank: # “A broad board, usually more than 1 inch thick, laid with its wide dimension horizontal and used as a bearing surface.

Planimetric Map: Shows roads, creeks, structures, and unit boundaries but no elevations. A topographic map shows elevation by means of contour lines.

Plantation: A stand of seedlings or trees composed of planted trees, as compared with those that naturally seed in from nearby timber.

PLS: An abbreviation for Professional Land Surveyor, a qualification that a person can acquire by passing a test and acquiring a certain level of experience.

Pre-Commercial Thinning (PCT) A process of entering a stand at a young age and removing (*thinning*) overstocked trees and trees of poor quality. The trees are too small to have any commercial value.

Primordia: An organ, structure, or tissue, in the earliest stages of development. *Courtesy Gary A. Ritchie*

Processor: (1) A carriage that holds the log to be processed, or a machine that hangs from a logging shovel or thinning processor that limbs and buck's trees into log lengths. (2) Sometimes referred to as "the logger processes your logs".

Progeny: In forestry it is the offspring of a particular tree.

Ramicorn Branch: * "A large high angled branch that often results when one member of a fork is partly suppressed by the more dominant member." It can also result from lammas development in the mid- to late summer when the lateral branches do not get enough growth to express dominance and all fight for the terminal position.

Relative Density Index (RDI): On the Density Management Diagram, a relative density index of 1 equals a maximum size-density relationship or maximum growth possible per area or per acre. A relative density index of 0.55 is equal to the zone of imminent mortality, where major loss in stocking will occur due to a height and diameter relationship causing stand mortality. A relative density index of 0.15 is the approximate zone of crown closure, where the lower branches will have begun to close off light to the forest floor and reduce understory growth. These examples represent a size-density relationship that allows forest landowners to use the Density Management Diagram to aid in stand management decisions.

Regeneration Method: * "A cutting procedure by which a new age class is created." The major methods are:

- **Clearcut**: Removal of all trees other than those required by Washington State law. It is most often used when the desired regeneration is a shade intolerant species such as Douglas-fir.
- **Seed Tree**: Leaving a small number of trees to provide seed to regenerate the land naturally. This is an old process rarely used in the Pacific Northwest, mostly due to poor plantation survival from competing vegetation.
- **Shelterwood**: Cutting most trees but leaving enough to provide shade and a growing environment for the natural seedlings that will regenerate a new stand.
- **Selection**: Regenerating and maintaining a multi-aged stand structure by removing some trees in all size classes either singly, in small groups, or in strips. Suitable with shade tolerant tree species.

- **Coppice**: Allowing the cut tree to sprout back from a stump or root suckers. It is not used in the Pacific Northwest because Douglas-fir does not sprout.

Release Spray: A herbicide treatment that releases a young plantation from vegetative competition. Chemical rates are as low as possible to control the vegetative competition, yet not damage the crop seedlings. *(Also, see Site Preparation Spray and Spot Spray*)

Re-Manufacture: When a log is delivered to a mill or export facility that they cannot use, it needs to be re-cut to fit their facility requirements. For example, if a mill cannot handle a 20-foot log, they will buck two feet off and use an 18 foot log.

Ring Count: A term used in determining if high quality logs will make an export grade. It may be expressed as 8 rings per inch or 12 rings per inch, for example.

Riparian Areas: * "A terrestrial area of variable width adjacent to and influenced by a pond or stream." Washington State Forest Practice rules require forest landowners to leave riparian areas (zones) of varying width along fish-bearing streams or streams that have fish-bearing characteristics.

Road Maintenance and Abandonment Plan (RMAP): Washington forest practices rules require a road maintenance and abandonment plan to prevent sediment and hydrology-related impacts to public resources such as fish and water quality. Large forest landowners were required to develop an RMAP for their entire ownership, but small forest landowners have the option to submit a short checklist RMAP with each forest practices application rather than their entire ownership.

Rogue: To cut out or remove a tree from a seed orchard or plantation.

Root Pruning: In a bareroot nursery, a tractor with a large draw knife blade cuts the seedling roots at a depth equal to the desired final length. *(Also, see Wrenching for the other half of the root pruning process)*

Rosette: A compact cluster of leaves arranged in a basal circle. Some plants, like tansy ragwort, are biennial and grow to the rosette stage in the first year, with leaves that are slightly different from the mature plant. In the second season it flowers and develops seeds.

Sawlog: * (1) "A log that meets minimum standards of diameter, length, and defect, intended for sawing." (2) A section of a standing tree that is large enough to saw into lumber, compared to being used for pulp.

Saw Log Classification: (*See Log Grade)*
Scaling: The measurement or weight of the quantity or quality of logs. Trees are cruised and logs are scaled. In the Pacific Northwest both are measured in MBF.

Scaler: The person doing the scaling, who generally is employed by a third-party scaling company.

Scarification: (1) Mechanical removal of debris after logging, usually using a dozer or logging shovel to make piles which are burned in the fall. *(2) “Chemical, mechanical, heat or moisture treatment of seeds to make the seed coat permeable and improve germination.”

Schoolmarm: + “A log or tree with two main branches in place of a single stem”.

Second Growth: Most often referred to as any plantation or stand of trees that is not the original forest. In some cases, they may be referred to as 3rd or 4th growth, but generally just lumped into second growth.

Seedling: A young tree grown in a nursery, greenhouse or in the wild. Nursery and greenhouse seedlings come in a variety of ages and sizes.

SED: Stands for “small end diameter” of a log, as compared to “large end diameter” (LED).

Senescence: * “The life phase of an organism or a part of the organism that precedes natural death, usually involving a decreased ability to repair damage and degradation.”

Shade Intolerant Tree: Tree species *(such as Douglas-fir)* that need sunlight to grow well.

Shade Tolerant Tree: Tree species *(such as western hemlock)* that can grow well in the shade and competition of other trees.

Shake: * “(1) A fissure or crack in a log, or stem that follows a growth ring for some distance. (2) A longitudinal fissure or crack in lumber resulting from stresses that caused the wood fibers to separate along the grain. (3) A thin section usually split from cedar used for roofing or weatherboarding.”

Shoot Root Ratio: The ratio of the main stem of a tree seedling (*shoot*) to the roots. The nurseries play a balancing act of keeping the stem height and limb development in proportion to how many roots are produced. *(Also, see Root Pruning and Wrenching)*

Shovel (*logging*): A large excavator with grapples instead of a bucket that grips the ends of the logs. Many of the shovels sold today are designed specifically for logging, with wider tracks (*less ground pressure*), built lower to the ground, and built with self-leveling cabs for use on uneven or sloped ground.

Silviculture: * “The art and science of controlling the establishment, growth, composition, health, quality of the forest and woodland to meet the diverse needs and values of landowners and society on a sustainable basis.”

Sinuosity: A wavy growth on a tree terminal leader or lateral branches. Generally, it is caused by excess moisture tricking the tree into thickening the cell walls in different locations of the terminal or lateral growth, instead of starting at the base and working to the tip of the branch.

Site Class: A method of classifying the timber growing potential of the soil. Site classes of I; II; & III are generally considered to be high, site IV medium, site V low. It is common for laymen to refer to land as "high site" or "low site" or "site class 2". (*Also, see Site Index, Site Index Curve, and Chapter 3, Soils for more details.)*
Site Index: A species-specific measure of the quality of the soil based on the height of dominant trees at a specific age. In the Pacific Northwest, most landowners use the Douglas-fir 50-year site index based on growth and time expressed on site index curves. It is common to describe the productivity of a site by its site index, i.e. Site Index 150 is a high site that can be expected to grow a 150 feet tall tree in 50 years.

Site Index Curve: A curve showing the expected height growth pattern over time for a specific species. Tree height is shown on the left axis and age at breast height (4.5 feet) in years on the bottom axis. The curves are generally shown in feet and expressed at 50 years or 100 years. The site indexes shown by the curves are divided into site classes I through V. *(See Chapter 3, Soils, for the 50-year site index curves for Douglas-fir that are commonly used in western Washington.)*

Site Quality: A general term for the productivity of a piece of land, which may be expressed as the site class or the site index (such as site I, high site, low site, site index 140, etc.).

Site Preparation: * "Hand or mechanized manipulation of a site, designed to enhance the success of regeneration." Treatments may include bedding, burning, chemical spraying, chopping, disking, drainage, raking and scarifying, and are designed to modify the soil, litter, or vegetation and create microclimate conditions conducive to the establishment and growth of desired species.

Site Preparation Spray: Aerial or hand backpack spray done after logging and generally before the site is planted, in an attempt to control potential weeds or competition before they can develop. Higher chemical rates are used because no seedlings have been planted yet. (*Also, see Release Spray and Spot Spray*)

Snipe: + In the context of these articles, to snipe a stump refers to slabbing off of sharp stump edges. This is done so when another tree is felled, if it should hit the stump the sniped edges will lessen the damage to the falling tree. Old time fallers would use the sniped stump edge to force the falling tree into a desired pre-prepared bed of boughs and other debris to lessen the impact.

Softwoods: A member of the gymnosperm group of plants that produce seeds not enclosed in an ovary (*naked seeds*). A non-scientific term used to describe trees that generally do not lose their needles in the fall and the wood is most typically of a soft nature. (Also, *see Conifers, Gymnosperms, Angiosperms and Hardwoods*)

Soil Compaction: Repeated passes over the same ground with logging equipment can pack the soil, rearranging the soil particles so they are denser and do not drain the water like undamaged soil. The compacted soil can also limit root development. Rain and freezing weather can minimize and even eliminate the damage over a long time period.

Soil Disturbance: The yarding process of bringing logs from the field site to the landing will often disturb the soil. This involves a brushing away of the limbs and organic material and has no bearing on soil compaction.

Soil Horizon: See Horizon, Soil

South Slope: The side of a hill facing south. South slopes will be warmer than north slopes because the hillside angle faces towards the sun more than north slopes. *(Also, see North Slope*)

Sort: A pile of logs next to a landing that all go to one purchaser (*mill, exporter, or sort yard*). If a mill wants a particular log size and log length, then it would also be considered a “sort” and piled in its own pile adjacent to the landing.

Sort Yard: A general term used to refer to the delivery location of logs. Each mill will have an area where the logs are delivered to be scaled or weighed and loaded onto conveyer belts to be sent through the mill.

Sorting: In a delivery yard, the log stackers will pile the logs by log lengths, diameters, and quality, which is called sorting.

Spencer Tape: A 50-, 75-, or 100-foot tape with a clip to hang on a pants belt loop that is spring wound to automatically wind up when released. They can be purchased in feet & inches, or feet & tenths of an inch. They also can have a diameter tape on the back side. Loggers use them to measure log lengths to mark and cut, while foresters use them to install plots and measure tree diameters.

Spike Knot: A knot formed from a ramicorn branch. When cut into lumber the cross section appears to be oblique or elongated in shape.

Splinter: When falling a tree, if the undercut and the back cut are not placed correctly, the stump will retain long splinters that are pulled out of the falling tree. The voids in the butt of the log will be the length of the splinters left on the stump. If the butt is not bucked clean, the log will end up with a deductible defect.

Spot Spray: Use of a backpack sprayer to spray in localized areas, such as around a seedling, or on a clump of competition. (*Also, see Release Spray and Site Preparation Spray*)

Spray Window: The time in days that a herbicide spray can be applied on the competitors without damaging the conifer seedlings.

Stand: In this series of articles, it is used to mean a definable unit of trees.

Station: A station is equal to 100 feet. In road building or location identification 10+45 would be 1045 feet.

Stocking: * "The amount of anything on a given area, particularly in relation to what is considered optimum." Common indices of stocking are based on trees per acre (TPA), percent occupancy, basal area, relative density, stand density index and crown competition factors.

Styro 15 (*Styroblock 15*): Styrofoam blocks with a group of 15-cubic-inch holes used to raise seedlings in a greenhouse.

Taproot: Many of the tree species grown on the east coast have a main central root that is an extension of the tree trunk. These can go very deep and act as an anchor in high wind events. All the conifers and many of the hardwoods in the Pacific Northwest do not have taproots, but rather a wide, spread out and shallow root system.

Terminal Bud: The largest bud at the highest point of a tree's growth that will produce the vertical growth of a conifer tree. Terminal buds also exist on lateral branches, but they continue to grow outward and away from the tree trunk. All other buds are lateral buds.

Terpenes: Aromatic compounds found in many plants that create the characteristic scents, such as pine, lavender, fresh orange peel. They may repel predators, attract pollinators, or keep away infectious germs.

Thinline: A process of delivering a chemical mix in a small straight-line application (*thinline*). The chemical is directed to the woody bark 2-3 feet above the ground line. Three to four applications are made at the same height on the stems and from different directions. It then encircles the stem and runs down the stem 12-18 inches. The chemical will either be oil based to allow easy entry through the waxy bark or will have the oil added as a solution or an emulsion.

Thinning: A partial or selective harvest of a stand from around age 15 to 40 or more years. (*See also Commercial Thinning, Early Commercial Thinning, Pre-commercial Thinning.)*

Thinning from above: * "Removal of trees from the dominant and codominant crown classes in order to favor the best trees of those same crown classes." In the past this method was often misused to be selecting the best for today and leaving the rest for the next entry. It should not be "high grading" but it often is.

Thinning from below: * "Removal of trees from the lower crown classes to favor those in the upper crown classes." The trees that are removed are competing or interfering with the growth of the dominant and codominant trees. Usually this is the preferred silvicultural choice because small diameter trees with poor future wood quality are removed, leaving the with the very best trees to continue growing.

Thousand Board Feet (MBF): 1 MBF = one thousand board feet. Logs are commonly purchased by the mill or export facility by the thousand board feet or by the ton.

Timber tax: Prior to the 1970s Washington had an ad valorem tax on forest land, an annual assessment at highest and best use. Due to high taxes, people would log their land then let it go back to the counties rather than pay taxes. Since the 1970s, forest land has been assessed at forest land values and at the time of harvest, the timber owner pays a 5% excise tax on the stumpage (*value after logging costs are removed*).

Timbers: "Lumber that is nominally 5 inches or more in its least dimension. Timbers may be used as beams, stringers, posts, caps, sills, girders, or purlins."

Tolerant: A plant that can live in shade or partial shade. Western hemlock is a shade tolerant species. (*see Intolerant*)

Traverse: A process of measuring the perimeter of an area to collect data which is then used to mathematically calculate the acreage within the area. Originally a compass and notepad were used to record bearings and distances. Today almost all of this is done using GPS.

Tree farmer: The term was first used in 1941, at the dedication of the first Tree Farm, Weyerhaeuser Company's Clemons Tree Farm, near Montesano, WA. Today, a certified Tree Farmer manages their lands according to standards set by the American Tree Farm System. However, "tree farm" and "tree farmer" are used as general descriptions of managed forests and their owners, especially small forest landowners.

Trees per acre (TPA): A descriptive term to indicate how many trees are standing on an acre of ground. An acre is 208.71 feet by 208.71 feet totaling 43,560 square feet. If trees are 10 feet apart then, 10 X 10 = 100 square feet. 43,560 square feet in an acre divided by 100 square feet = 435.6 trees per acre.

Uneven-aged stands: Stand of trees of multiple ages and generally multi-layered canopies.

Vegetative competition: Woody and herbaceous vegetative plants that are competing with the tree seedlings. Some of the major woody plant competitors are Scotch broom, evergreen and Himalayan blackberries, cascara, and bigleaf maple sprouts. Herbaceous plants are smaller and close to the ground, such as grass and ferns, and many of these die back every year.

Vexar tube: A rigid plastic mesh seedling protection tube used to protect seedlings from deer or elk browse. For forestry use, the most common sizes are 4- to 6-inches in diameter and 1- to 4-foot lengths. They can purchased from forestry supply companies.

Viability: The capacity of a seed, spore, or pollen grain to germinate and develop under given conditions.

Viable seed: A seed that is mature enough to germinate and generate a new seedling, compared to a non-viable seed that is too immature to germinate.

Waving wand: A broadcast spray delivery process used by landowners or labor crew doing hand spraying.

Weed: * "(1) A valueless, troublesome, or noxious plant, often exotic, growing wild, especially one growing profusely. (2) A plant growing where it is not wanted.

Well stocked: A plantation that is uniformly planted and has good survival. An example is a stand with a uniform stocking of 450 TPA as compared to a stand with 200 TPA that are randomly spaced due to planting errors or poor survival.

Wrenching: A bareroot nursery practice where a tractor cutting blade is drawn under the nursery bed seeedlings, lifting and shaking to disturb the plants so they will develop more fibrous roots. (Also, s*ee Root Pruning and Shoot Root Ratios)*

Zone of Imminent Mortality: The point in the life of a stand of trees that mortality begins to take place on the Stand Density Table.

Sources

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