

COMMONLY USED ARBORIST TERMS AND DEFINITIONS

Abatement - Reduction in hazard, either by treatment of tree or removal of target.

Adventitious Root - Root tissue that develops from newly organized meristems, sometimes associated with fill and/or stem decay.

Adventitious Shoot - Vegetative tissue that develops from newly organized meristems rather than latent buds; frequently associated with pruning wounds.

Allelopathy- The inhibition of growth of one plant by another, usually through chemical compounds released into the soil environment.

ANSI A300- The American National Standards Institute standard for pruning trees and shrubs (corresponding secretariat: National Arborist Association, Manchester, New Hampshire).

Antagonism- Situation in which the activity of a combination of pesticides or other chemicals is less than the expected effect of each applied separately.

Apical Control - Relative superiority of the central leader to lateral branches; excurrent trees have strong apical control, as the central leader is superior in size to all other branches.

Air Spade – Common term used to refer to a method of removing soil from around tree roots by the use of air pressure to minimize root damage. Generally requires a compressor with the minimum capacity of 150 cubic feet per minute (cfm). Requires pre-wetting of the soil for best results.

Amendment (Soil) - Any substance other than fertilizers, such as lime, sulfur, gypsum and sawdust, used to alter the chemical or physical properties of a soil, generally to make it more productive.

Anthracnose- A fungal disease causing dead areas on leaves, buds, stems, or fruit; commonly caused by *Cryptocline*, *Disula*, *Clomerella*, and *Gnomonia* sp.

Angiosperm- Flowering plants having seeds enclosed in an ovary.

Arboriculture- The science and art of caring for trees, shrubs, and other woody plants in landscape settings.

Basal Flare - The rapid increase in diameter that occurs at the confluence of trunk and root crown, associated with both stem and root tissue.

Best Management Practices- The best available treatments, considering the benefits and drawbacks, based on current knowledge.

Bleeding - Flow of sap from wounds and/or other injuries.

Bole - The central stem of the tree.

Bow - The gradual curve of a branch or stem

Bracket - Fruiting or spore producing body of wood decay fungi, forming on the external surface of the stem or trunk.

Branch - A secondary shoot or stem arising from the main stem of trunk.

Branch Angle - The angle of attachment between two stems; also referred to as crotch.

Branch Attachment - The structural linkage of branch to stem.



Branch Bark Ridge - A ridge of bark in a branch crotch that marks where branch and trunk tissue meet and often extends down the trunk.

Branch Collar - Wood that forms around a branch attachment, frequently more pronounced below the branch. The branch collar is used to identify the correct location of all thinning cuts.

Branch Protection Zone- A thin zone of starch-rich tissue at the base of a branch into which chemicals are deposited to retard the spread of discoloration and decay.

Brash Wood - Type of reaction wood which is weaker than normal due to thin cell walls and decreased fiber content; presence increases the likelihood of failure.

Brown Rot - Form of decay where cellulose is digested. The result of brown rot is brittle wood with no tensile strength.

Buttress- Support branch, stem, or root; usually associated with exaggerated growth.

Caliper- Synonym for trunk diameter used to measure the size of nursery stock; by convention, measured 15 cm (6 in.) above the ground for stems less than or equal to 10 cm. (4 in.) and at 30 cm. (12 in.) above ground for stems greater than 10 cm. (4 in.) Contrast with diameter breast height.

Canopy- The part of the crown composed of leaves and small twigs.

Cavity- An open wound, characterized by the presence of decay and resulting in a hollow structure.

Callus - Undifferentiated tissue initially formed by the cambium around and over a wound.

Chlorotic – Foliage that has yellowed due to disease or mineral deficiency.

Circling Roots- Roots that grow around the trunk in a circular manner rather than laterally away from it.

Clay loam- A fine-textured solid that usually breaks into clods or lumps that are hard when dry. When the moist soil is pinched, it will break readily.

Cleaning- Selective pruning to remove dead, diseased and broken branches, and foreign objects.

Codominant - A situation where a tree has two or more stems which are of equal diameter and relative amounts of leaf area. Trees with codominant primary scaffolding stems are inherently weaker than stems, which are of unequal diameter and size.

Compartmentalization- The boundary-setting process that resists loss of normal wood function and resists the spread of discoloration and decay; a process that separates injured or decayed tissue from healthy tissue.

Compression Wood- Type of reaction wood that develops on the underside of branches and leaning trunks in coniferous trees; tends to maintain branch angle of growth or straighten the trunk.

Conk- Fruiting or spore producing body of wood decay fungi, forming on the external surface of branches and trunks.

Crotch Angle - The angle formed at the attachment between two stems.

Crown – The portion of the tree that bears foliage.



Cultivar- A cultivated variety of a plant. A named plant selection from which identical or near-identical plants can be produced, usually by vegetative reproduction or cloning.

Diameter Breast Height (DBH) - Diameter at Breast Height (measured at 4 1/2 feet above soil grade). DBH is required for determining tree value. Multi stemmed trees require diameters for each stem. In addition, the stem diameter must be factored by the relative crown ratio of the stem.

Decay- The process of degradation of woody tissues by fungi and bacteria through decomposition of cellulose and lignin.

Deciduous- A Perennial plant that loses all its leaves at one time during the year.

Decurrent - Round-headed or spreading plant with no main leader to the top of the plant.

Defect – A fault or weakness in a tree support system.

Dominant Leader/Trunk/Stem- The stem that grows much larger than all other stems and branches.

Dripline- The width of the crown, as measured by the lateral extent of the foliage.

Drop-Crotch Pruning Cut - A thinning cut, which removes the terminal portion of a large branch or leader back to a lateral large enough to assume the terminal role.

Epicormic Shoot- Shoot that arises from latent or adventitious buds that occur on stems and branches and on suckers produced from the base of trees.

Evapotranspiration (ET) – Water loss from the soil resulting from water uptake by roots and water evaporation from the soil. Standard ET data for different areas during each month are available. Adjustment in actual water requirements vary depending upon the crop and the soil type.

Excurrent - Tree with cone-shaped crown with a central leader that outgrows and subdues lateral branches.

Embedded Bark- Pattern of development of branch junctions where bark is turned inward rather than pushed out. See Included Bark.

Fiber Buckling - Visible enlargement of tissue on the down side of a tree stem. Represents the reaction of a stem to a heavy loading. It is normally safe except when coupled with bark defoliation from the top (tensile) part of the loaded stem.

Flush Cuts – Flush cuts are injurious because they remove the tree's protection boundary that forms within the branch collar. Flush cuts not only destroy a tree's major defense process by removing the tissues that produce the branch protection zone, but the flush cut leads to a reduction of energy reserves in the tissues about the wound (Shigo, Alex L. *Modern Arboriculture*. New Hampshire: Shigo and Trees, Associates, 1991. Print).

Fibrous Root System- System composed of profusely branched roots with many lateral rootlets, and often with no main taproot development.

Field Capacity (FC) - The percentage of water remaining in a soil 2 or 3 days after having been saturated and after free drainage has practically ceased.

Fill - In construction, adding soil to raise existing grade. Raising the soil grade around trees reduces the amount of gas exchange and results in reduced soil oxygen levels.



Fungi- Simple plants that lack a photosynthetic pigment. The individual cells have a nucleus surrounded by a membrane, and they may be linked together in long filaments called hyphae.

Fungicide- A chemical that kills fungi

Flush Cut - A pruning cut made inside the branch collar and branch bark ridge.

Frass – Chewed bark and wood resulting from beetle infestations.

Gall - A localized swelling of branch or stem generally caused by fungi, bacteria, insects or a physiological disorder.

Gas Exchange- Represents the amount of air exchanged within the soil volume. It is inhibited by high compaction and fine textured soils.

Girdling Roots- Roots that grow around the trunk in a circular manner, constricting other roots or restricting trunk growth.

Good Structure/Architecture/Form- Branch and trunk architecture resulting in a canopy form that resists failure.

Guy- Hardware used to provide support to the tree following transplanting. Installed from the trunk or a lateral branch to an anchor placed below ground.

Gypsum- A mineral composed of hydrated calcium sulfate used as a building material and as a soil conditioner

Hardscape- The pavement, irrigation system, and other structural elements of a landscape.

Heading Cut - Pruning a currently growing one-year shoot back to a bud, or cutting an older branch or stem back to a stub or lateral branch not sufficiently large enough to assume the terminal role.

Heart Rot – Decay present in the heartwood (center) of a tree.

Heartwood- Darker-colored wood toward the center of a stem or root that has become physiologically inactive. It no longer functions for the transport of water and nutrients, but may be a site for storage.

Herbicide- A chemical that kills plants or inhibits their growth, intended for weed control.

Host – A tree that harbors an insect or disease.

Hydraulic Soil Evacuation – A process by which high pressure and high volume water stream is used to dislodge soil around roots and a large truck-mounted vacuum unit is used to remove the slurry.

Included Bark or Embedded Bark (EB) - Included bark occurs when bark is included into the attachment between two stems, preventing the joining of wood tissue in the area between the stems. Included bark attachments always have an extremely narrow angle between the stems, resembling the letter “V” (rather than the letter “U” or “L” typical in strong attachments). As stems having included bark increase in size, pressure is exerted from the stem expansion and a crack often develops in the crotch between the stems. Included bark attachments have a higher potential for failure in later years.

Infiltration Rate- A soil characteristic determining or describing the maximum rate at which water can enter the soil under specified conditions, including the presence of an excess of water.

Interface (Soil) - Zone between two different textures on modified and unmodified portions of a soil.

Interior Foliage- Typically small-diameter (less than 3 inches) branches with foliage on the interior or inner portion of the crown



Lateral - A branch or twig growing from a parent branch or stem in a horizontal direction from the parent stem.

Leader- A dominant upright stem, usually the main trunk.

Lean- Departure from vertical of the stem, beginning at or near the base of the trunk.

Limb - Same as branch, but usually larger and more prominent.

Lion Tailing- The improper practice of removing all or most secondary and tertiary branches from the interior portion of the crown, leaving most live foliage at the edge of the canopy.

Live Crown Ratio- The relative proportion of green crown to overall tree height. Live crown ratio is the ratio of percentage of foliage compared to a tree of the same species with a full crown.

Loam- A soil texture classification having less than half as much clay as sand or silt and that combines the desirable attributes of each particle size; considered the ideal soil texture for most plants.

Macronutrient- A chemical element necessary in large amounts (usually 50 mg/kg in the plant) for the growth of plants. Includes C, H, O, N, P, K, Ca, Mg and S. Contrast with micronutrient.

Mature Trees- Trees that have reached at least 75% of their typical final height and spread.

Meristem - Embryonic or undifferentiated tissue, capable of active cell division and differentiation into specialized tissues.

Micro-nutrient- A chemical element necessary in only extremely small amounts (less than 50mg/kg in the plant) for the growth of plants. Examples include B, Cl, Cu, Fe, Mn, Zn and Ni. Contrast with macronutrient.

Mulch- Any material such as straw, sawdust, leaves, plastic film,, and loose soil that is spread on the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing, and evaporation

Mycorrhizae – Beneficial fungi that provide water and nutrients to roots and receive carbohydrates from roots.

Notch-Stress – Location along a tree stem where the uniform force flow is interrupted. The result is localized, high stress areas with a greater potential for failure.

Nutrients- The substances, such as mineral elements and compounds, including water and air,, that a plant synthesizes into the complex compounds of tissue.

Parent Branch or Stem - The tree trunk or the larger limb from which lateral branches are growing.

Photosynthesis- The transformation, in the presence of chlorophyll and light, of carbon dioxide (from air) and water (primarily from soil) into a simple carbohydrate and oxygen.

Permanent Branches (Permanent Limbs)- Branches that will remain on the tree for many years, perhaps throughout their lives.

Permanent Wilting Point (PWP) - Amount of water in the soil when a plant wilts and will not recover unless water is added. Contrast with wilting point.

Photosynthesis- The process that converts light energy, carbon dioxide and water into chemical energy and oxygen in green plants.

Phytotoxic- Poisonous to plants



Pollard- Pruning technique by which young trees or branches are initially headed and then reheaded on an annual basis without disturbing the callus knob.

Primary Root Plate –A radial distance from the base of the tree equal to three times the tree diameter (*DBH*). This represents the critical area where root cutting will compromise the structural stability of the tree. Whenever healthy trees fail due to extreme soil saturation and/or high gusting winds, the root plate is generally visible rootball, where the roots fail.

Radial Trenching – A method used to mitigate and replace soil inside the tree root protection zone. Soil is removed from trenches that are 8-12 inches wide and 18-36 inches deep. Trenches are excavated in direct lines toward the base of the tree using air spade, hydraulic excavation or hand careful hand excavation. Backfill can be amended soil, structural soil, a mix of sand and compost, or any combination deemed to be appropriate for the situation.

Raising- Selective pruning to provide vertical clearance; also known as lifting.

Reducing- Pruning to decrease height or spread on entire tree or one section; also referred to as reduction or reduced pruning.

Reaction Wood- Specialized secondary xylem that develops in response to lean or similar mechanical stress, to restore the stem to the vertical. Occurs as compression wood in conifers and tension wood in angiosperms.

Reduction Cut (Drop-Crotch Cut, Lateral Cut)- Reduces the length of a branch or stem back to a live lateral branch large enough to assume the apical dominance- typically at least one-third the diameter of the cut stems.

Restoring- The process of improving the structure of a tree that was preciously topped, damaged, vandalized, lion tailed or overthinned.

Resistograph – A tool which uses a small, pressure sensitive bit to penetrate a tree from the outside to determine the thickness of sound wood surrounding a suspected decay deposit.

Root - An organ of a tree that serves to maintain mechanical support, to provide water and essential elements from the soil through absorption, and to store energy reserves.

Root Ball- Refers to the root system of a container or balled-in-burlap nursery sack.

Root Collar - The junction between the root of a plant and its stem, often indicated by the trunk flare.

Root Crown - Same as Root Collar.

Root Hairs- A hairlike tubular outgrowth, from near the tip of a rootlet, performing the work of absorption.

Sandy Loam- A soil containing much sand, but which has enough silt and clay to make it somewhat coherent. The individual sand grains can be readily seen and felt.

Sapwood – The outer portion of the wood that has living cells and transports water and nutrients and stores carbohydrates.

Saturation- In soil moisture, the condition in which both macro- and micropores are filled with water.

Scaffold - A large limb that is or will be part of the permanent branch structure of a tree.

Scarified- Soil that has been loosened or mechanically disturbed.



Silt Loam- A soil having a moderate amount of the fine fractions of sand and only a small amount of clay, over half of the particles being of silt size.

Sinker Roots- Roots that grow vertically from horizontal roots, adding stability to the tree and increasing the volume of deeper soil exploited by the roots.

Species- A group of plants that resemble each other closely and that interbreed freely.

Spiral of Decline -

Starch- A chain of sugars linked together that stores energy for later use by the plant.

Stem- A woody structure bearing foliage and buds that gives rise to other stems.

Stomata- Minute opening in the leaves through which gas exchange, including water vapor and carbon dioxide, occurs.

Stress and Strain - Stress is a potentially injurious, reversible condition, caused by energy drain, disruption, or blockage, or by life processes operating near the limits for which they were genetically programmed. When stress goes to strain, the tree dies; Generally attributed to over-pruning and root loss due to construction activity.

Structural Pruning- Pruning that influences the orientation, spacing, growth rate, strength of attachment, and ultimate size of branches and stems.

Structural Soil – Also known as “gap graded soil”. A mix of rock and soil that is used to provide surface support for hardscape without eliminating soil gas exchange.

Suckers- Adventitious stems arising from the lower trunk or roots.

Symbiotic- The relationship of two dissimilar organisms living together to the mutual benefit of each other.

Target - People or property potentially affected by a tree failure.

Taper- The change in diameter over length of trunks and branches; Important to mechanical strength.

Tension Wood- Type of reaction wood in angiosperms that forms on the upper side of branch and stems, acting to pull the member back to a vertical orientation or a genetically programmed angle of growth.

Texture- The relative proportions of the various soil particles (sand, silt, clay) in a soil.

Thinning Cut - The removal of a branch at its origin or cutting it or the leader to a lateral large enough to assume the terminal role.

Topping- Pruning technique to reduce height by heading of large branches. Generally considered poor practice.

Transpiration- The loss (emission) of water vapor from the aerial parts of a plant chiefly through leaf stomata.

Transplant Shock- Reduction in growth and vigor that may occur following relocation of a plant from one site to another.



Tree Root Protection Zone (RPZ) - The tree protection zone designates an area surrounding a tree or grouping of trees that is to be fenced off from all access until designated by a certified arborist. The RPZ is commonly defined as one (1) foot radial distance for every one (1) inch in tree diameter (DBH). Example: A single stem tree measuring 30 inches in diameter, (measured at 54 inches or 4.5 feet above grade) would have a critical root zone with a radius of 30 feet. This is roughly equivalent to the area commonly referred to as the “drip zone.”

It should be understood that tree roots often extend out from the base to more than three times the distance defined by the critical root zone. An arborist should monitor all grading and trenching activity that is within twice the distance of the RPZ. The larger the protection zone that is provided, the greater the likelihood of long-term tree survival.

Vector Truck – A truck equipped with a large tank and vacuum unit able to remove loose soil or soil-water slurry. Used with water or air pressure to remove soil around tree roots. This equipment is used to remove soil or soil slurry when excavating around tree roots.

VTA (visual tree assessment)- Method of evaluating structural defects and stability in trees.

Vertical Core Venting – A that procedure that creates vertical holes, usually about 2-inches in diameter, that extend down through compacted soil. The holes can be from 18-inches to over 3-feet deep. Holes are spaced from 6-inches to 2-feet depending upon the site soil conditions. Holes are crated with an augur, water jet or using an air spade.

Vigor- Overall health; the capacity to grow and resist physiological stress.

Union (Crotch) - The junction between stem and branch or between stems.

Water Jet - A procedure that uses high-pressure water and a probe to create air passages in the soil. Primary reason for use is mitigation for compacted soil. Water Jet can be used in conjunction with liquid fertilization only when soil and leaf tissue analysis indicate nutrient limitation.

Watersprout- Vigorous, upright shoot that arises from a latent or an adventitious bud above the ground or graft union on older wood.

Wetwood - Wood altered to a higher state of protection against mechanical disruption or decay by pathogens that make the wood so high in moisture, pH, and microelements that decay-causing pathogens are not able to infect. A disease of wood caused mostly by bacteria.

Wilting Point- That level of soil moisture at which wilted plants are able to recover following addition of water. Contrast with permanent wilting point.

Wound - An opening that is created when the tree’s protective bark covering is penetrated, cut, or removed, injuring or destroying tissue. Pruning a live branch creates a wound, even when the cut is properly made.

Woundwood - Differentiated woody tissue that forms after initial callus has formed around margins of a wound. Wounds are closed primarily by woundwood.

Xylem- Tissue produced by the activity of the cambium and composed of tracheids, wood fibers, and parenchyma cells, which function to transport and store water and mineral elements as well as to provide mechanical support.

End List

