

# Glossary

## A

**Abiotic disease.** A condition caused by nonliving, nonparasitic, or noninfectious agents.

**Abscisic acid (ABA).** Is considered a “stress hormone.” It is a signaling molecule that induces stomatal closure under drought or extreme temperature stress conditions.

**Abscission.** The dropping of leaves, flowers, or fruit by a plant. Can result from natural growth processes (e.g., fruit ripening) or from external factors such as temperature or chemicals.

**Abscission layer.** Specialized cells, usually at the base of a leaf stalk or fruit stem, that trigger both the separation of the leaf or fruit and the development of scar tissue to protect the plant.

**Absorption.** The intake of water and other materials through root or leaf cells.

**Accumulated heat units.** Number of heat units in a growing season. Usually calculated at temperatures above 50°F, but can be calculated at other temperatures, depending on the crop. A day’s heat units are calculated as: Max temp (°F) + Min temp (°F) divided by 2 - 50°F.

**Acid soil.** Soil with pH below 7 on a pH scale of 1 to 14. The lower the pH, the more acid the soil. (See also [pH](#).)

**Actinomycete.** A bacterium of an order of typically nonmotile filamentous form. They include the economically important streptomycetes, and were formerly regarded as fungi.

**Active ingredient.** The chemical in a pesticide formulation that actually kills the target pest.

**Additive.** A substance that, when added to a pesticide, reduces the surface tension between two unlike materials (e.g., spray droplets and a plant surface), thus improving adherence. Also called an adjuvant or surfactant.

**Adhesion.** The force of attraction that causes two different substances to join.

**Adjuvant.** See [Additive](#).

**Adventitious.** Growth not ordinarily expected, usually the result of stress or injury. A plant’s normal growth comes from meristematic tissue, but adventitious growth starts from nonmeristematic tissue.

**Adventitious bud.** A bud that develops in locations where buds usually do not occur. An example would be buds found on root pieces used for propagation; roots do not have buds.

**Adventitious root.** A root that forms at any place on the plant other than the primary root system.

**Aeration or aerification.** The practice involving removal of cores or turf plugs and soil with the purpose of reducing compaction and improving air flow.

**Aerial root.** An unusual type of root that develops on stems above ground.

**Aerobic.** Active in the presence of free oxygen.

**After-ripening.** The seed maturation process that must be completed before germination can occur.

**Aggregate.** Soil aggregates are groups of soil particles that bind to each other more strongly than to adjacent particles. The space between the aggregates provide pore space for retention and exchange of air and water.

**Aggregation.** The process by which individual particles of sand, silt, and clay cluster and bind together to form soil peds.

**Agriculture.** The science or practice of farming.

**Agronomy.** The science of land cultivation, soil management, and crop production.

**Air drainage.** The downward flow of air through the soil caused by gravity; also, as cold air is heavier than warm air, it flows downhill and often fills hollows which become frost pockets.

**Alkaline soil.** Soil with pH above 7 on a pH scale of 1 to 14. The higher the reading, the more alkaline the soil. (See also [pH](#).)

**Allée.** A walkway lined with trees or tall shrubs.

**Allelopathy.** The excretion by some plants' leaves and roots of compounds that inhibit the growth of other plants.

**Alternate leaf arrangement.** Leaves are attached at alternating points from one side of the stem to the other.

**Ammonium.** A plant-available form of nitrogen contained in many fertilizers and generated in the soil by the breakdown of organic matter. (See also [Nitrogen cycle](#).)

**Anaerobic.** Active in the absence of free oxygen.

**Analogous.** In landscaping, use of adjacent colors on the color wheel such as blue, violet, and red.

**Anatomy.** The study of plant structure.

**Angiosperm.** Flowering plants. Plants that have a highly evolved reproductive system. Seeds enclosed in an ovary such as a fruit, grain, or pod.

**Anion.** Negatively charged ion, for example, chloride.

**Anion exchange.** Anion exchange capacity (AEC). The sum total of exchangeable anions that a soil can absorb expressed in meq/100g (milliequivalents per 100 grams) soil.

**Annual.** Plants started from seed that grow, mature, flower, produce seed, and die in the same growing season.

**Anoplura.** A major order of insects that have two pairs of wings, or are wingless, and piercing-sucking mouthparts (sucking lice).

**Anther.** The pollen-bearing part of a flower's male sexual organ. The filament supports the anther; together they are referred to as the stamen.

**Anthracoze.** Plant disease characterized by black or brown dead areas on leaves, stems, or fruits.

**Anvil pruner.** A pruning tool that cuts a branch between one sharpened blade and a flat, anvil-shaped piece of metal. Has a tendency to crush rather than make a smooth cut.

**Apex.** The tip of a stem or root.

**Apical dominance.** The inhibition of lateral bud growth by the presence of the hormone auxin in a plant's terminal bud. Removing the growing tip removes auxin and promotes lateral bud break and subsequent branching, usually directly below the cut.

**Apical meristem.** Area of the plant shoot and root tips where cells actively divide to provide more cells that will expand and develop into the tissues and organs of the plant. Also called shoot meristem.

**Arboretum.** An area devoted to specimen plantings of trees and shrubs.

**Asexual propagation.** Reproduction of a plant using its own vegetative parts. (See also [Vegetative propagation](#).)

**Aspect.** Direction of exposure to sunlight.

**Assimilation.** Building of cell matter from inorganic (minerals) and organic (carbohydrates and sugars) materials.

**ATP (adenosine triphosphate).** A molecule that is used in a number of metabolic reactions in plant cells to carry out cellular work.

**Attractant.** A material that lures pests.

**Auricle.** A claw-like, or ear-like, appendage projecting from the collar of the leaf.

**Auxin.** One of the best known and most important plant hormones. Most abundantly produced in a plant's actively growing tips. Generally stimulates growth by cell division in the tip region and by cell elongation lower down the shoot. Growth of lateral buds is strongly inhibited by the normal concentration of auxin in the growing tip.

**Available water supply.** Soil water that is available for plant uptake. Excludes water bound tightly to soil particles.

**Axil.** The upper angle formed by a leaf stalk (petiole) and the internodes above it on a stem.

**Axillary bud.** An embryonic shoot which lies at the junction of the stem and petiole of a plant. As the [apical meristem](#) grows and forms leaves, it leaves behind a region of [meristematic cells](#) at the node between the stem and the leaf, an undeveloped shoot or flower at the node. Also called the lateral bud.

## B

**Bacillus thuringiensis.** A bacterium used as a biological control agent for many insects pests.

**Bacterium.** A single-celled, microscopic organism having a cell wall but no chlorophyll. Reproduces by cell division.

**Balled and burlapped.** A plant dug with soil. The root ball is enclosed with burlap or a synthetic material.

**Band.** To apply a pesticide or fertilizer in a strip over or along each crop row.

**Bare-root.** A plant with little or no soil around its roots; deciduous plants and small evergreens are commonly sold bare-root.

**Basal.** (1) At or near the base of a branch or trunk. (2) At or near a plant's crown.

**Basal break.** New growth that develops at the base of a branch or near a plant's crown.

**Beneficial fungi.** Fungi used in controlling organisms that attack desirable plants.

**Beneficial insect.** An insect that helps gardening efforts. May pollinate flowers, eat harmful insects or parasitize them, or break down plant material in the soil, thereby releasing its nutrients. Some insects are both harmful and beneficial. For example, butterflies can be pollinators in their adult form but destructive in their larval (caterpillar) form.

**Berm.** A mound or wall of earth.

**Berry.** The fleshy fruit of cane fruits, bush fruits, and strawberries.

**Biennial.** Plants that take two years, or a part of two years, to complete their life cycle.

**Biennial bearing.** Producing fruit in alternate years.

**Binomial.** A biological species name consisting of two names: the genus name and specific epithet.

**Biological insect control.** The use of beneficial organisms to control pest insect populations.

**Biosolids.** A by-product of wastewater treatment sometimes used as a fertilizer, also known as municipal sewage sludge.

**Blackleg.** Darkening at the base of a stem.

**Blade.** The flat portion of the grass leaf above the sheath. Also the flattened, green portion of a leaf.

**Blanch.** To exclude light from plants or parts of plants to render them white or tender. Often done to cauliflower, endive, celery, and leeks. Also used to promote adventitious root formation on stems.

**Blend, seed.** A combination of two or more cultivars of the same species, for example Rebel and Falcon tall fescue.

**Blight.** Rapid death of leaves and other plant parts.

**Blotch.** A blot or spot (usually superficial and irregular in shape) on leaves, shoots, or fruit.

**Bole.** See [Trunk](#).

**Bolting.** Producing seed or flowering prematurely, usually due to heat. For example, cool-weather crops such as lettuce bolt during summer; leaf crops are discouraged from bolting by removal of flower heads. (See also [Deadhead](#).)

**Bonsai.** One of the fine arts of horticulture; growing carefully trained, dwarfed plants in containers selected to harmonize with the plants. Branches are pruned and roots trimmed to create the desired effect.

**Botanical insecticide.** An insecticide, such as rotenone or pyrethrum, derived from a plant. Most botanicals biodegrade quickly. Most, but not all, have low toxicity to mammals.

**Botanical maturity.** In fruits, refers to a final stage of development when the fruit is still on the plant and cell enlargement and the accumulation of carbohydrates and other flavor constituents are complete.

**Botany.** The science that studies all phases of plant life and growth.

**Botrytis.** A fungal disease promoted by cool, moist weather. Also known as gray mold or fruit rot.

**Bract.** A modified leaf, usually small, but sometimes large and brightly colored, growing at the base of a flower or on its stalk. Clearly seen on dogwoods and poinsettias.

**Bramble.** A spiny cane bush with berry fruits (e.g., raspberries and blackberries).

**Branch.** A subsidiary stem arising from a plant's main stem or from another branch.

**Branch collar.** See [Collar](#).

**Break.** (1) Any new growth coming from a bud. (2) See [Bud break](#).

**Broadcast.** (1) To sow seed by scattering it over the soil surface. (2) To apply a pesticide or fertilizer uniformly to an entire, specific area by scattering or spraying it.

**Broadleaf evergreen.** A non-needled evergreen.

**Broadleaf plants.** Also written as "broad-leaved"; are dicot plants with leaves that have a flat, relatively broad surface as distinguished from plants with needle- or scale-like leaves. Broadleaf can be evergreen or deciduous.

**Brown rot.** Soft rot of fruit covered by gray to brown mold.

**Bryophytes.** Plant scientists recognize two kinds of land plants, bryophytes (nonvascular) and tracheophytes (vascular). Bryophytes are small, non-vascular plants, such as mosses, liverworts, and hornworts. They play a vital role in regulating ecosystems because they provide an important buffer system for other plants, which live alongside and benefit from the water and nutrients that bryophytes collect.

**BTU.** British thermal unit. Amount of heat required to raise the temperature of 1 pound of water 1°F.

**Bud.** A small protuberance on a stem or branch, sometimes enclosed in protective scales, containing an undeveloped shoot, leaf, or flower.

**Bud break.** The resumption of growth by resting buds.

**Bud head.** A swollen or enlarged area where a bud was grafted to a stock.

**Bud leaf.** First emerged leaf of a grass plant.

**Bud scale.** A modified leaf that forms a protective covering for a bud.

**Bud sport.** See [Mutation](#).

**Bud stick.** A shoot or twig used as a source of buds for budding.

**Bud union.** The suture line where a bud or scion was grafted to a stock. Sometimes called a graft union.

**Budding.** A method of asexual plant propagation that unites one bud (attached to a small piece of bark) from the scion to the rootstock.

**Buffer capacity.** The maximum amount of either strong acid or strong base that can be added before a change of one pH unit occurs.

**Bulb.** A below ground stem (e.g. a tulip) that is surrounded by fleshy scale-like leaves that contain stored food.

**Bulbil.** A small bulblike organ that sometimes forms on aerial plant parts.

**Bulblet.** (1) An underground bulb formed in the leaf axis on a stem. (2) A tiny bulb produced at the base of a mother bulb.

**Bunchgrass, bunch-type growth.** Plant development in the absence of rhizome and stolon production; a non-spreading grass.

## C

**Calcium carbonate.** A compound found in limestone, ashes, bones, and shells; the primary component of lime.

**Callus.** Tissue that forms over wounds.

**Calorie.** Amount of heat required to raise the temperature of 1 cubic centimeter of water 1°C.

**Calyx.** The entire set of sepals on a flower. The highly colored portions of the flower that protect the inner reproductive structures. Often attract insects with their color or may contain osmophores which are scent structures (both of which facilitate pollination).

**CAM or Crassulacean Acid Metabolism.** CAM allows plants to keep their stomata closed during the hot part of the day to prevent water loss. These plants can open their stomata at night and save the collected carbon dioxide for the next day when sunlight is available.

**Cambium.** A layer of meristematic tissue that produces new phloem on the outside, new xylem on the inside, and is the origin of all secondary growth in plants. The cambium layer forms the annual ring in wood.

**Candelabrum.** A strong, dominant rose cane with accelerated growth that originates from a bud union and explodes with many blooms.

**Candle.** On a pine tree, new terminal growth from which needles emerge.

**Cane.** The externally woody, internally pithy stem of a bramble or vine.

**Canker.** A plant lesion where part of the plant quits growing and the surrounding parts continue to grow. Sunken, discolored, dead areas on twigs or branches, usually starting from an injury, wound, or pathogen.

**Canopy.** (1) The top branches and foliage of a plant. (2) The shape-producing structure of a tree or shrub.

**Capillary action.** The force by which water molecules bind to the surfaces of soil particles and to each other, thus holding water in fine pores against the force of gravity.

**Capitulum.** (1) A dense, short, compact cluster of sessile flowers, as in composite plants or clover. (2) A very dense grouping of flower buds, as in broccoli.

**Causal organism.** The organism (pathogen) that produces a given disease.

**Caterpillar.** See [Larva](#).

**Catfacing.** Disfigurement or malformation of a fruit. Fruits typically affected include tomatoes and strawberries. Catfacing is caused by insects or adverse weather during fruit development, as well as other unknown factors.

**Cation.** Positively charged ion. Plant nutrient examples include calcium and potassium. (See also [Anion](#).)

**Cation exchange capacity (CEC).** A soil's capacity to hold cations as a storehouse of reserve nutrients.

**Cell.** A structural, functional unit of a plant.

**Central leader.** (1) A trunk or stem extending up through the axis of a tree or shrub and clearly emerging at the top. (2) A system of pruning that uses the central leader as a basic component. (See also [Leader](#).)

**Cercus (Cerci plural).** A threadlike or sometimes forceps-like tail near the tip of an insect's abdomen (usually a pair) which are used to help them sense and detect their environment.

**Chelate.** A complex organic substance that holds micronutrients, usually iron, in a form available for absorption by plants.

**Chemical insect control.** The use of chemicals, or insecticide, to control insect populations.

**Chilling injury.** A description of plant damage to tropical and sub-tropical species, caused by temperatures that are cold but not freezing, generally ranging from 33 to 59°F.

**Chimera.** A plant or plant part that is a genetic mixture of two or more genetically different types of cells.

**Chitinous.** Chitin is a tough, semitransparent substance that is the main component of the exoskeletons of arthropods, such as the shells of crustaceans and the outer coverings of insects. Chitin is also found in the cell walls of certain fungi and algae. Chemically, it is a nitrogenous polysaccharide (a carbohydrate).

**Chlorophyll.** The green pigment in plants responsible for trapping light energy for photosynthesis.

**Chloroplast.** A specialized component of certain cells. Contains chlorophyll and is responsible for photosynthesis.

**Chlorosis.** Yellowing or whitening of normally green tissue, due to a lack of chlorophyll.

**Cistern.** A reservoir, tank, or container for storing or holding water or other liquid.

**Clay.** The smallest type of soil particle (less than 0.002mm in diameter).

**Climber.** A plant that climbs on its own by twining or using gripping pads, tendrils, or some other method to attach itself to a structure or another plant. Plants that must be trained to a support are properly called trailing plants, not climbers.

**Cloche.** A plastic, glass, or Plexiglas plant cover used to warm the growing environment and protect plants from frost.

**Clone.** A plant group whose members have all been derived from a single individual through constant propagation by vegetative (asexual) means, e.g., by buds, bulbs, grafts, cuttings, or laboratory tissue culture.

**C:N ratio.** The ratio of carbon to nitrogen in organic materials. Materials with a high C:N ratio (high in carbon) are good bulking agents in compost piles, while those with a low C:N ratio (high in nitrogen) are good energy sources.

**Cohesion.** The sticking together of like molecules. Cohesion allows water to form drops.

**Cold composting.** A slow composting process that involves simply building a pile and leaving it until it decomposes. This process may take months or longer. Cold composting does not kill weed seeds or pathogens.

**Cold frame.** A plastic-, glass-, or Plexiglas-covered frame or box that relies on sunlight as a source of heat to warm the growing environment for tender plants.

**Cole crops.** A group of vegetables belonging to the cabbage family; plants of the genus *Brassica*, including cauliflower, broccoli, cabbage, turnips, and Brussels sprouts.

**Coleoptera.** A major order of insects that have two pairs of wings, or are wingless, and chewing mouthparts (beetles, weevils).

**Collar.** A swollen area at the base of a branch where it connects to a trunk. Contains special tissue that prevents decay from moving downward from the branch into the trunk. The place to make a proper pruning cut. (See also [Shoulder ring.](#))

**Collembola.** A major order of hexapods that are wingless and have chewing mouthparts (springtails).

**Compaction.** Pressure that squeezes soil into layers that resist root penetration and water movement. Often the result of foot or machine traffic.

**Companion planting.** The practice of growing two or more types of plants in combination to discourage disease and insect pests.

**Compatible.** Different varieties or species that set fruit when cross-pollinated or that make a successful graft union when intergrafted. (See also [Pollinizer.](#))

**Complementary.** In landscaping, use of opposite colors on the color wheel such as red and green, orange and blue, and yellow and violet.

**Complete fertilizer.** A fertilizer that contains all three macronutrients (N, P, K).

**Complete metamorphosis.** A type of insect development in which the insect passes through the stages of egg, larva, pupa, and adult. The larva usually is different in form from the adult. (See also [Simple metamorphosis.](#))

**Compost.** The product created by the breakdown of organic waste under conditions manipulated by humans. Used to improve both the texture and fertility of garden soil. (See also [Humus.](#))

**Compound bud.** More than one bud on the same side of a node. Usually, unless growth is extremely vigorous, only one of the buds develops, and its branch may have a very sharp angle of attachment. If it is removed, a wider angled shoot usually is formed from the second (accessory) bud. Ashes and walnuts are examples of plants that typically have compound buds.

**Conifer.** A cone-bearing tree or shrub, usually evergreen. Pine, spruce, fir, cedar, yew, and juniper are examples.

**Conk.** A fungal fruiting structure (e.g., shelf or bracket fungi) formed on rotting woody plants.

**Contact herbicide.** A chemical that will harm a plant when it comes into contact with green plant tissue.

**Cool-season grasses.** Turf species that have optimum growth at temperatures between 60 and 75°F.

**Cordon.** (1) A method of espaliering fruit trees, vines, etc., to horizontal, vertical, or angled wire or wooden supports so the maximum branch surface is exposed to the sun, resulting in maximum fruit production. (2) A branch attached to such a support.

**Coriaceous.** Leaf textures that are leather-like and tough.



**Coring.** See [Aerification](#).

**Cork cambium.** On woody plants, the layer of cells that produces bark, or cork, located just below the bark layers.

**Corm.** A below ground stem that is solid, swollen, and covered with reduced, scale-like leaves (for example, in crocus).

**Cormel.** A small, underdeveloped corm, usually attached to a larger corm.

**Cornicle.** A short, blunt horn or tube (sometimes button like) on the top and near the end of an aphid's abdomen. Emits a waxy liquid that helps protect against enemies.

**Corolla.** Part of a flower; all of the petals together.

**Cortex cells.** Found beneath the epidermis, these cells help move water from the epidermis and are active in food storage.

**Corymb.** A usually flat-topped flower cluster in which the individual flower stalks grow upward from various points on the main stem to approximately the same level.

**Cotyledon.** A seed leaf, the first leaf from a sprouting seed. Monocots have one cotyledon, dicots have two.

**Cover crop.** A crop planted to protect the soil from erosion, improve soil structure, and increase organic matter content.

**Crawler.** An early stage of insect development ([nymph](#)) that is mobile.

**Creeping growth habit.** Plant development at or near the soil surface that results in lateral spreading by rhizomes, stolons, or both.

**Crop rotation.** The practice of growing different types of crops in succession on the same land chiefly to preserve the productive capacity of the soil by easing insect, disease, and weed problems.

**Crop seed.** Any seed grown for profit, often including undesirable grassy weeds, such as orchard grass.

**Cross-pollination.** The fertilization of an ovary on one plant with pollen from another plant, producing an offspring with a genetic makeup distinctly different from that of either parent. (See also [Pollinizer](#).)

**Crotch angle.** The angle formed between a trunk and a main scaffold limb. The strongest angles are 45 to 60°.

**Crown.** (1) Collectively, the branches and foliage of a tree or shrub. (2) The thickened base of a plant's stem or trunk to which the roots are attached. (3) Compressed aboveground stems as occurs in grasses. The portion of a grass plant that includes the stem apex, un-elongated internodes, and lower nodes from which secondary roots begin.

**Crown gall.** A specific disease caused by the bacterium *Agrobacterium tumefaciens* that causes excessive, undifferentiated growth that may girdle roots, stems, or branches.

**Cultipack.** To firm and pulverize (a seedbed) with a corrugated roller.

**Cultivar.** A cultivated variety of a species. Propagation of cultivars results in little or no genetic change in the offspring, which preserves desirable characteristics.

**Cultivation.** In turf, the working of the soil without the destruction of the turf.

**Cultural insect control.** Controlling an insect population by maintaining good plant health and by crop rotation and/or companion crops.

**Curlytop.** Rolling and curling of leaves at the growing point. May indicate a viral infection.

**Cuticle.** (1) A waxy layer on the epidermis on a leaf. (2) The outer layer of an insect's body.

**Cutin.** (1) A waxy substance on plant surfaces that tends to make the surface waterproof and can protect leaves from dehydration and disease. (2) A waxy substance on an insect's cuticle that protects the insect from dehydration.

**Cutting.** One of several forms of asexual propagation.

**Cyme.** A flower stalk on which the florets start blooming from the top of the stem and progress toward the bottom.

**Cyst.** The swollen, egg-containing female body of certain nematodes. Can sometimes be seen on the outside of infected roots.

**Cytokinins.** A class of plant growth substances (phytohormones) that promote cell division, or cytokinesis, in plant roots and shoots, and promote the growth of buds.

## D

**Damping off.** Stem rot near the soil surface leading to either failed seed emergence or to the plant's falling over after emergence.

**Day-neutral plant.** A cultivar or species capable of flowering without regard to day length. (See also [Short-day plant](#), [Long-day plant](#).)

**Deadhead.** To remove individual, spent flowers from a plant for the purpose of preventing senescence and prolonging blooming. For effective results, the ovary behind the flower must be removed as well.

**Deciduous.** A plant that sheds all of its leaves annually.

**Decomposers.** The microorganisms and invertebrates that accomplish composting.

**Decomposition.** The breakdown of organic materials by microorganisms.

**Defoliation.** The unnatural loss of a plant's leaves, generally to the detriment of its health. Can be caused by several factors such as high wind, excessive heat, drought, frost, chemicals, insects, or disease.

**Dehorning.** A drastic method of pruning a neglected tree or shrub. Entails the removal of large branches, especially high in the crown, a few at a time over several seasons.

**Depredation.** Causing damage or loss.

**Dermaptera.** A major order of insects that have two pairs of wings, or are wingless, and have mouthparts (earwigs).

**Desiccation.** Excessive dryness or loss of moisture resulting in drying out the plant tissues.

**Determinate.** A plant growth habit in which stems stop growing at a certain height and produce a flower cluster at the tip. Determinate tomatoes, for example, are short, early fruiting, have concentrated fruit set, and may not require staking. (See also [Indeterminate](#).)

**Determinate inflorescence.** In determinate inflorescences, the youngest flowers are at the bottom of an elongated axis or on the outside of a truncated axis. A terminal bud forms a terminal flower and then dies out, stopping the growth of the axis. The other flowers then grow from lateral buds below it.

**Dethatch.** To remove thatch (a tightly intermingled layer of stems and roots, living and dead, that forms between the soil surface and green vegetation of grass).

**Devigorating.** The opposite of invigorating.

**Diatomaceous earth.** The fossilized remains of diatoms (a type of tiny algae) used to kill insect pests, snails, and slugs.

**Dichotomous key.** A tool that allows the user to determine the identity of items in the natural world, such as trees, wildflowers, mammals, reptiles, rocks, and fish. **Keys** consist of a series of choices that lead the user to the correct name of a given item.

**Dicot.** See [Dicotyledon](#).

**Dicotyledon.** Plants with two seed leaves. Also referred to as dicot.

**Dieback.** Progressive death of shoots, branches, or roots, generally starting at the tips.

**Differentiation.** A change in composition, structure, and function of cells and tissues during growth.

**Dioecious.** Plants that have male and female flowers occurring on separate plants (e.g., holly).

**Diptera.** A major order of insects that have one pair of wings and sucking or siphoning mouthparts as adults and chewing mouthparts as larvae (mosquitoes, flies, and gnats).

**Direct seeding (direct sowing).** Planting seeds into garden soil rather than using transplants.

**Disbud.** The selective removal of some flower buds so remaining buds receive more of the plant's energy and produce larger, showier flowers. Roses, chrysanthemums, and camellias often are disbudded.

**Distorted growth.** Twisted or misformed growth.

**Diurnal.** Active during the day.

**Division.** The breaking or cutting apart of a plant's crown for the purpose of producing additional plants, all genetically identical to the parent plant.

**DNA.** Deoxyribonucleic acid is the genetic information that dictates all cellular processes. DNA is organized into chromosomes and is responsible for all characteristics of the plant.

**Dormancy.** An annual period which causes the resting stage of a plant or ripe seeds during which nearly all manifestations of life come to an almost complete standstill.

**Dormant.** Resting or not growing. A deciduous tree is dormant in the winter.

**Dormant bud.** A bud formed during a growing season that remains at rest during the following winter or dry season. If it does not expand during the following growing season, it is termed latent.

**Dormant oil.** An oil applied during the dormant season to control insect pests and diseases.

**Double, semidouble.** A flower with more than the normal number of petals, sepals, bracts, or florets. May be designated botanically by the terms flore pleno, plena, or pleniflora.

**Double worked.** Grafted twice, i.e., grafted to an intermediate stock.

**Downy.** Leaf textures that are covered with very short, weak, and soft hairs.

**Downy mildew.** Known best by its common name, downy mildew is caused by the oomycete. It is an obligate parasite of vascular plants, meaning that it cannot survive outside of a living host. It does not produce overwintering oospores, but survives from year to year on living plants. These organisms are distinctly different from the powdery mildews.

**Drainage.** The ability of soil to transmit water through the surface and subsoil.

**Drain tile system.** Tiles installed in the ground acts as a piping system to collect and redirect subsurface water that moves down into and through the soil.

**Dripline.** An imaginary line on the ground directly beneath the outermost tips of a plant's foliage. Rain tends to drip from leaves onto this line.

**Drip zone.** The area from the trunk of a tree or shrub to the edge of its canopy. Most, but not all, of a plant's feeder roots are located within this area.

**Drupe fruit.** See [Stone fruit](#).

**Dwarfed.** Restricted plant size without loss of health and vigor.

## E

**Ecology, plant.** The study of the complex relationships of plants in biological communities.

**Economic threshold.** The level at which pest damage justifies the cost of control. In home gardening, the threshold may be aesthetic rather than economic.

**Ecosystem services.** Provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on earth.

**Elytra.** Hardened opaque outer wings of a beetle.

**Emasculate.** To remove a flower's anthers.

**Embryo.** The tiny plant that is formed inside a seed during fertilization. It has two growing points, the radicle (a tiny root) and the plumule (a tiny shoot).

**Embryo dormancy.** Common in seed of woody perennial plants. A physiological condition in the embryo that prevents it from growing. This type of dormancy can be overcome by stratification.

**Enation.** Epidermal outgrowths on leaves or stems.

**Endemic.** Belonging exclusively or confined to a particular place.

**Endoskeleton.** The internal body support found in most animals outside of the insect kingdom.

**Endosperm.** The tissue surrounding the embryo of flowering plant seeds that provides nutrition to the developing embryo, or the food-storage area in a seed for the growing embryo.

**Enzyme.** A biological catalyst that aids in conversion of food and other chemical structures from one form to another.

**Epidemic.** A widespread and severe outbreak of a disease.

**Epidermis (leaf).** The outer cell layers on the top and bottom of the leaf.

**Epidermis (root).** The cells that protect the root surface. The epidermis contains the root hairs and is responsible for the absorption of water and minerals dissolved in water.

**Epidermis (stem).** In non-woody plants, the outer single layer of surface cells that protect the stem. As in leaves, this layer is usually cutinized, or waxy, and on young stems it has stomata.

**Epinasty.** An abnormal downward-curving growth or movement of a leaf, leaf part, or stem.

**Erect.** Caneberries that have arching, self-supporting canes.

**Espalier.** The training of tree or shrub to grow flat on a trellis or wall. Espalier patterns may be very precise and formal or more natural and informal.

**Ethylene.** Is the only hormone that is a gas. It speeds aging of tissues and enhances fruit ripening.

**Etiolation.** Long internodes and pale green color of plants growing under insufficient light or in complete darkness.

**Evergreen.** A plant that never loses all its foliage at the same time.

**Excise.** To remove or extract, as an embryo from a seed or ovule.

**Excurrent.** A tree form in which the main trunk remains dominant with small more or less horizontal branches. Fir and sweetgum are examples.

**Exfoliating.** Peeling off in shreds or thin layers, as in bark from a tree.

**Exoskeleton.** An insect's outer body support.

**Exotic.** Of foreign origin or character; not native; introduced from abroad, but not fully naturalized

## F

**Fallow.** To keep land unplanted during one or more growing seasons.

**Family.** A sub-order in the classification of plants.

**Fasciation.** Distortion of a plant that results in thin, flattened, and sometimes curved shoots.

**Fastigate.** (of a tree or shrub) having the branches sloping upward more or less parallel to the main stem

**Feeder roots.** Fine roots and root branches with a large absorbing area (root hairs.) Responsible for taking up the majority of a plant's water and nutrients from the soil.

**Fertility (soil).** The presence of minerals necessary for plant life.

**Fertilization.** (1) The fusion of male and female germ cells following pollination. (2) The addition of plant nutrients to the environment around a plant.

**Fertilizer.** Any substance added to the soil (or sprayed on plants) to supply those elements required in plant nutrition.

**Fertilizer analysis.** The amount of nitrogen, phosphorus (as  $P_2O_5$ ), and potassium (as  $K_2O$ ) in a fertilizer expressed as a percentage of total fertilizer weight. Nitrogen (N) is always listed first, phosphorus (P) second, and potassium (K) third.

**Fertilizer ratio.** The smallest whole number relationship among N,  $P_2O_5$ , and  $K_2O$ .

**Fibrous root.** A root system that branches in all directions, often directly from the plant's crown, rather than branching in a hierarchical fashion from a central root. (See also [Taproot](#).)

**Field capacity.** The amount of soil moisture or water content held in the soil after excess water has drained away and the rate of downward movement has decreased. This usually takes place 2–3 days after rain or irrigation in pervious soils of uniform structure and texture.

**Field signature.** The distribution pattern of the disease over all plants of the same species.

**Filament.** The stalk supporting a flower's anthers.

**Flag or Flagging.** Loss of turgor and drooping of plant parts, usually as a result of water stress. Can be seen as branch loss in a tree.

**Floating row covers.** Covers, usually of a cloth-like material, placed over growing plants and used to protect the plants growing beneath from undesirable pests and climate.

**Floricane.** Second-year growth of cane berries. Produces fruit on laterals.

**Flower bud.** A type of bud that produces one or more flowers.

**Foliar fertilization/feeding.** Fertilization of a plant by applying diluted soluble fertilizer, such as fish emulsion or kelp, directly to the leaves.

**Foot-candle.** A unit of measure of the intensity of light falling on a surface, equal to one lumen per square foot and originally defined with reference to a standardized candle burning at one foot from a given surface.

**Force.** To bring a plant into early growth, generally by raising the temperature or transplanting it to a warmer situation. Tulips and paper whites are examples of plants that often are forced.

**Form.** (1) A naturally occurring characteristic different from other plants in the same population. (2) The growth habit (shape) of a plant.

**Formal.** (1) A garden that is laid out in precise symmetrical patterns. (2) A flower, such as some camellias, that consists of layers of regularly overlapping petals.

**Frass.** The excrement of insect larvae.

**Fronde.** Specifically, the foliage of ferns, but often applied to any foliage that looks fernlike, such as palm leaves.

**Fruit.** The enlarged ovary that develops after fertilization occurs.

**Fruiting habit.** The location and manner in which fruit is borne on woody plants.

**Fumigation.** The application of a toxic gas or other volatile substance to disinfect soil or a container, such as a grain bin.

**Fungicide.** A compound toxic to fungi.

**Fungus (Fungi).** A plant organism that lacks chlorophyll, reproduces via spores, and usually has filamentous growth. Examples are molds, yeasts, and mushrooms.

## G

**Gall.** A growth on plant stems or leaves caused by abnormal cell growth stimulated by the feeding of some insects (e.g., aphids) or by viral, fungal, or bacterial infection or genetic abnormality.

**Genetically modified.** A plant or animal that has had genetic material introduced to its genome from other organisms through artificial means.

**Genus.** A subdivision of family in the classification of plants. Plants of the same genus share similarities mostly in flower characteristics and genetics. Plants in one genus usually cannot breed with plants of another genus.

**Geography, plant.** The study of the distribution of plants throughout the world.

**Geotropism.** The turning or curving of a plant's parts in response to gravity. A root growing downward is an example. Geotropism is controlled largely by the hormone auxin.

**Germination.** The processes that begin after planting a seed that lead to the growth of a new plant.

**Gibberellins (GAs).** Plant hormones that regulate growth and influence various developmental processes, including stem elongation, germination, dormancy, flowering, sex expression, enzyme induction, and leaf and fruit senescence.

**Girdled or girdling.** The damaging, cutting, removing, or clamping of cambium all the way around a trunk or branch. Sometimes, girdling is done deliberately to kill an unwanted tree, but often it results from feeding by insects or rodents. Wires and ties used to support a tree can cause girdling, as can string trimmers.

**Girdled roots.** A root system that has outgrown its pot to the extent that the roots are encircling the inside of the pot, restricting nutrient uptake.

**Glabrous.** Leaf textures that are hairless, smooth.

**Glaucous.** Covered with a grayish, bluish, or whitish waxy coating that is easily rubbed off. Blue spruce needles are an example of glaucous leaves.

**Gradual metamorphosis.** See [Simple metamorphosis](#).

**Graft union.** See [Bud union](#).

**Grafting.** A method of asexual plant propagation that joins plant parts so they will grow as one plant.

**Gravitational water.** Water in excess of a soil's capacity. Drains downward to groundwater.

**Green cone.** An enclosed composting unit often used for composting food waste.

**Green manure.** An herbaceous crop plowed under while green to enrich the soil.

**Ground color.** The color of a fruit before it ripens.

**Groundcover.** Plants used for holding soil, controlling weeds, and providing leaf texture.

**Growing season.** The period between the beginning of growth in the spring and the cessation of growth in the fall.

**Growth regulator.** A compound applied to a plant to alter its growth in a specific way. May be a natural or synthetic substance. (See also [Hormone](#).)

**Guard cells.** A pair of specialized parenchyma cells that border the pore, responsible for regulating the size of the opening. They swell to open the stoma and shrink to close it.

**Gymnosperm.** Plants that have seed not enclosed in an ovary (e.g., conifers).

**Gynoecium.** The female portion of the flower, the pistil is also referred to as the *gynoecium* or "female house." The *gynoecium* is the innermost whorl of (one or more) pistils in a flower and is typically surrounded by the pollen-producing reproductive organs, the stamens, collectively called the androecium.

## H

**Habit.** The growth, shape, and form of a plant.

**Half-hardy.** Plants able to withstand some cold, damp weather but will be damaged by frost.

**Halteres.** Modified hind wings that are reduced in size and used for stabilization during flight.

**Hardening off.** (1) The process of gradually exposing seedlings started indoors to outdoor conditions before transplanting. (2) The process of gradual preparation for winter weather.

**Hardpan.** An impervious layer of soil or rock that prevents root growth and downward drainage of water.

**Hardy.** Frost or freeze tolerant. In horticulture, this term does not mean tough or resistant to insect pests or disease.

**Harrow.** An implement consisting of a heavy frame set with teeth or tines that is dragged over plowed land to break up clods, remove weeds, and cover seed.

**Haustrorium.** A modified hyphal branch of a parasitic plant. Grows into a host plant's cell to absorb food and water.

**Head.** (1) To cut off part of a shoot or limb rather than remove it completely at a branch point. (2) The part of a tree from which the main scaffold limbs originate.

**Heartwood.** The central cylinder, often dark colored, of xylem tissue in a woody stem.

**Heeling in.** The temporary burying of a newly dug plant's roots to prevent their drying until a new planting site is prepared. Nurseries heel in bareroot berries, trees, and shrubs.

**Hemiptera.** A major order of insects that have two pairs of wings and piercing-sucking mouthparts (bed bugs, stink bugs, cinch bugs).

**Herbaceous.** A soft, pliable, usually barkless shoot or plant. Distinct from stiff, woody growth.

**Herbaceous perennial.** A plant that dies back in the winter and regrows from the crown in spring.

**Herbicide.** A chemical used to kill undesirable plants.

**Herbicide, contact.** Herbicide that injures only those portions of a plant with which it comes into contact.

**Herbicide, nonselective.** Herbicide that kills or injures all plants. Some plant species may exhibit more tolerance than others. Examples include glyphosate, and glufosinate.

**Herbicide, postemergence.** Herbicide that needs to be applied after weeds emerge to be effective.



**Herbicide, pre-emergence.** Herbicide that needs to be applied before weeds emerge to be effective. Can be applied before or after turf establishment. Rainfall or irrigation is often needed to move the chemical into the top few inches of the soil for best activity.

**Herbicide, selective.** Herbicide that kills or injures some plants without harming others.

**Herbicide, systemic.** Herbicide that is taken up through contact with the leaves or through the soil (via contact with the roots) and is moved throughout the plant to kill the whole plant.

**Heterozygous.** Having mixed hereditary factors, not a pure line.

**Homoptera.** A major order of insects that have two pairs of wings, or are wingless, and piercing-sucking mouthparts (aphids, leafhoppers, scales, mealybugs).

**Homozygous.** Pure for a trait; breeds true.

**Hirsute.** Leaf textures that are pubescent with coarse, stiff hairs.

**Hispid.** Leaf textures that are rough with bristles, stiff hairs, or minute prickles.

**Honeydew.** A sticky substance excreted by aphids and some other insects.

**Hormone.** A naturally occurring compound that alters plant growth in a specific manner. (See also [Growth regulator](#).)

**Horticultural oil.** An oil made from petroleum products, vegetable oil, or fish oil used to control insect pests and diseases. Oils work by smothering insects and their eggs and by protectively coating buds against pathogen entry.

**Horticulture.** The science of growing fruits, vegetables, flowers, and other ornamental plants.

**Host.** A plant on which an insect or disease completes all or part of its life cycle.

**Host plant.** A plant that is invaded by a parasite.

**Host range.** The various plants that may be attacked by a parasite.

**Hotbed.** An enclosed bed for propagating or protecting plants. Has a source of heat to supplement solar energy.

**Hot composting.** A fast composting process that produces finished compost in 4 to 8 weeks. High temperatures are maintained by mixing balanced volumes of energy materials and bulking agents, by keeping the pile moist, and by turning it frequently to keep it aerated.

**Humus.** The end product of decomposing animal or vegetable matter. (See also [Compost](#).)

**Hybrid.** The results of a cross between two different species or well-marked varieties within a species. Hybrids grown in a garden situation will not breed true to form from their own seed.

**Hydathode.** A modified pore, especially on a leaf, that exudes drops of water.

**Hydrophobic.** Having little or no affinity for water.

**Hydroponics.** A method of growing plants without soil. Plants usually are suspended in water or polymers, and plant nutrients are supplied in dilute solutions.

**Hymenoptera.** A major order of insects that have two pairs of wings, or are wingless, and chewing mouthparts (wasps, bees, ants, sawflies).

**Hypha (or hyphae).** A single filament of a fungus.

**Hypocotyl.** The seedling stem that develops below the cotyledons.

# I

**Imbibition.** The portion of the germination process that involves the absorption of water, causing the seed to swell, and that triggers cell enzyme activity, growth, and the bursting of the seed coat.

**Imbricate.** A type of true bulb that does not have the tunic (papery covering) to protect the fleshy scales; a flower bud in petals and sepals overlap each other.

**Immobilization.** The process by which soil microorganisms use available nitrogen as they break down materials with a high C:N ratio, thus reducing the amount of nitrogen available to plants.

**Immune.** A plant that does not become diseased by a specific pathogen. (See also [Resistance](#), [Tolerant](#).)

**Imperfect flower.** Flowers lacking one or more of the sexual parts.

**Included bark.** "Ingrown" bark tissues which often develop where two or more stems grow closely together, causing weak, under-supported branch angles.

**Incompatible.** Kinds or varieties of a species that do not successfully cross pollinate or intergraft.

**Incomplete flower.** Structurally, *flowers* consist of four main parts: sepals, petals, stamens, and pistils. Any *flower* that does not have one or more of these parts is considered to be an *incomplete flower*.

**Incomplete metamorphosis.** See [Simple metamorphosis](#).

**Incubation.** A period of development during which a pathogen changes to a form that can penetrate or infect a new host plant.

**Indeterminate.** A plant growth habit in which stems keep growing in length indefinitely. For example, indeterminate tomatoes are tall, late-fruiting, and require staking for improved yield. (See also [Determinate](#).)

**Indeterminate inflorescence.** An *indeterminate inflorescence* may be a raceme, panicle, spike, catkin, corymb, umbel, spadix, or head. In a raceme, a flower develops at the upper angle (axil) between the stem and branch of each leaf along a long, unbranched axis. Each flower is borne on a short stalk, called a pedicel.

**Indigenous.** see [Native plant](#)

**Infection.** The condition reached when a pathogen has invaded plant tissue and established a parasitic relationship between itself and its host.

**Infiltration.** The movement of water into soil.

**Inflorescence.** The flowering portion of a plant. The arrangement of flowers on an axis or stem or a flower cluster.

**Inflorescence collective.** A group of individual flowers. The grouping can take many forms, such as a spike (flowers closely packed along a vertical stem, e.g., snapdragons), an umbel or corymb (flowers forming a flattened dome, e.g., yarrow), a panicle (a complex hierarchical arrangement of flowers, e.g., hydrangeas), or a capitulum (tightly packed disc flowers, e.g., the center of a daisy).

**Inoculation.** The introduction of a pathogen to a host plant's tissue.

**Inoculum.** Any part of the pathogen that can cause infection.

**Inorganic.** Being or composed of matter other than plant or animal.

**Insectary plant.** A plant that attracts beneficial insects.

**Insecticidal soap.** A specially formulated soap that is only minimally damaging to plants, but kills insects. Usually works by causing an insect's outer shell to crack, resulting in its interior organs drying out.

**Insecticide.** A chemical used to control, repel, suppress, or kill insects.

**Insectivore.** An animal or plant that feeds mainly on insects. Any of various small, usually nocturnal mammals of the order Insectivora that feed on insects and other invertebrates.

**Instar.** The stage of an insect's life between molts.

**Integrated control.** An approach that attempts to use several or all available methods for control of a pest or disease.

**Integrated insect control.** The use of a variety of insect control methods, beginning with simpler.

**Integrated pest management.** A method of managing pests that combines cultural, biological, mechanical, and chemical controls, while taking into account the impact of control methods on the environment.

**Intensive gardening.** The practice of maximizing use of garden space, for example, by using trellises, intercropping, succession planting, and raised beds.

**Intercalary meristem.** Found mostly in monocots, these cells divide and provide the growth of the leaf from the base of the plant.

**Intercropping/Interplanting.** The practice of mixing plants to break up pure stands of a single crop.

**Interiorscape.** An interior planting, usually referring to professional designs installed in commercial buildings.

**Internode.** The area of the stem that is between the nodes.

**Interstem/interstock.** The middle piece of a graft combination made up of more than two parts, i.e., the piece between the scion and the rootstock. Often has a dwarfing effect.

**Invasive.** Growing vigorously and outcompeting other plants in the same area; difficult to control.

**Ion.** An electrically charged particle. In soils, an ion refers to an electrically charged element or combination of elements resulting from the breaking up of an electrolyte in solution.

**Isolation.** The separation of a pathogen from its host by culturing on a nutrient medium or on an indicator plant.

**Isoptera.** A major order of insects that have two pairs of wings, or are wingless, and chewing mouthparts (termites).

## J

**Joint.** A node; the place on a stem where a bud, leaf, or branch forms.

**Juvenile stage.** (1) The early or vegetative phase of plant growth characterized by the inability to flower. (2) The first stage of an insect's life cycle after the egg, either a larva or a nymph. (3) The immature stage of an organism.

## K

**K.** See [Potassium](#).

**Key, dichotomous.** A tool for plant or animal classification and identification. Consists of a series of paired statements that move from general to specific descriptions.

**Knot garden.** A formal garden in which two or more kinds of plants with different-colored foliage, often herbs, are planted and pruned so they interweave and form a knot pattern.

## L

**Labellum.** The spongy tip on sponging mouth parts found in houseflies, flesh flies, and blow flies, used to suck up liquids or readily soluble food.

**Larva.** (larvae is plural) The immature form of an insect that undergoes complete metamorphosis. Different from the adult in form, a caterpillar for example. The newly hatched, wingless, often wormlike form of many insects before metamorphosis.

**Latent bud.** Buds that do not grow for long periods of time and can become embedded in the enlarging stem tissue. These buds grow only when conditions necessary for their growth occur, such as drastic pruning. Not all plants have latent buds.

**Lateral.** A branch attached to and subordinate to another branch or trunk.

**Lateral bud.** An undeveloped shoot or flower that is found at the node. Also called the axillary bud.

**Lateral meristem.** Cylinders of actively dividing cells that start just below the apical meristem and are located up and down the plant. Includes the vascular cambium and the cork cambium.

**Layering.** A method of stimulating adventitious roots to form on a stem. There are two primary methods of layering. In ground layering, a low-growing branch is bent to the ground and covered by soil. In air layering, moist rooting medium is wrapped around a node on an above-ground stem.

**Leachate.** A liquid that has passed through unprocessed organic material. May contain pathogens, phytotoxins, and anaerobic microorganisms that could be harmful to plants.

**Leaching.** Movement of water and soluble nutrients down through the soil profile.

**Leader.** A developing stem or trunk that is longer and more vigorous than the laterals. (See also [Central leader](#).)

**Leaf-axil.** The area between the leaf or petiole and the stem.

**Leaf curl.** Rolling and curling of leaves.

**Leaflet.** A single division of a compound leaf

**Leaf scar.** A visible, thickened crescent or line on a stem where a leaf was attached.

**Leaf scorch.** Damage to a leaf, due to adverse environmental conditions such as high temperatures, that causes rapid water loss resulting in dead tissue.

**Lenticel.** A small opening on the surface of fruits, stems, and roots that allows exchange of gases between internal tissues and the atmosphere.

**Lepidoptera.** A major order of insects that have two pairs of wings and sucking or siphoning mouthparts as adults and chewing mouthparts as larvae (moths, butterflies).

**Lesion.** A localized area of discolored or dead tissue.

**Life cycle.** The successive stages of growth and development of an organism.

**Lignin.** A complex organic substance in cell walls that makes them firm and rigid.

**Ligule.** A thin projection from the top of the leaf sheath in grasses; it may be a fringe of hairs, membranous, or absent.

**Lime.** A rock powder consisting primarily of calcium carbonate. Used to raise soil pH (decrease acidity).

**Living mulches.** Any plant that is used to cover an area of soil and add nutrients, enhance soil porosity, decrease weeds, and prevent soil erosion.

**Loam.** A soil with roughly equal proportions of sand, silt, and clay particles.

**Lodge.** To fall over, usually due to rain or wind. Corn and tall grasses are examples of plants susceptible to lodging.

**Long-day plant.** A plant requiring more than 12 hours of continuous daylight to stimulate a change in growth, e.g., a shift from the vegetative to reproductive phase. (See also [Short-day plant](#), [Day-neutral plant](#).)

## M

**Macronutrient.** Collectively, primary and secondary nutrients.

**Macropore.** A large soil pore. Macropores include earthworm and root channels and control a soil's permeability and aeration. . In a substrate, the larger spaces (or pores) that lies between component particles that hold air.

**Mallophaga.** A major order of insects that are wingless and have chewing mouthparts (chewing lice).

**Mandible.** The first pair of jaws on insects: stout and tooth-like in chewing insects, needle or sword-shaped in sucking insects. The lateral (left and right) upper jaws of biting insects.

**Maturity.** (1) In fruit, ripeness, usually the state of development that results in maximum quality. (2) The flowering phase of plant growth.

**Mechanical insect control.** Manual removal of insects and eggs from infested plants

**Meristem.** Plant tissue in the process of formation; vegetative cells in a state of active division and growth, e.g., those at the apex of growing stems and roots and responsible for enlarging stem diameter.

**Mesophyll.** In between the epidermis layers, where photosynthesis occurs.

**Metamorphosis.** The process by which an insect develops. The term is a combination of two Greek words: *meta* meaning "change" and *morphe* meaning "form." Metamorphosis is a marked or

abrupt change in form or structure, like a caterpillar turning into a butterfly. (See also [Complete metamorphosis](#), [Simple metamorphosis](#).)

**Microclimate.** Climate affected by landscape, structures, or other unique factors in a particular immediate area.

**Micronutrient.** A nutrient, usually in the parts per million range, used by plants in small amounts, less than 1 part per million (boron, chlorine, copper, iron, manganese, molybdenum, zinc, and nickel).

**Micropore.** A fine soil pore, typically a fraction of a millimeter in diameter. Micropores are responsible for a soil's ability to hold water. In a substrate, the smaller spaces (or pores) between component particles that are occupied by water or air.

**Microscopic.** Organisms so small that they can be seen only with the aid of a microscope.

**Mixed buds.** Buds that produce both shoots and flowers.

**Mixed fertilizer.** A fertilizer that contains at least two of the three macronutrients (N, P, K).

**Mixture, seed.** A combination of seeds of two or more species, for example Kentucky bluegrass and perennial ryegrass.

**Modified central leader.** A system of pruning used primarily on fruit trees. The central leader is encouraged for the first few years, then suppressed. This system allows for well-placed scaffolds and strong crotches, but keeps the tree's crown relatively close to the ground for easy harvesting.

**Molt.** The shedding of exoskeleton during insect growth. The form assumed between molts is called an instar.

**Monochromatic.** In landscaping, use of the various tints, shades, and hues of only one color.

**Monocot.** See [Monocotyledon](#).

**Monocotyledon.** Plants with one seed leaf. Also referred to as monocot.

**Monoecious.** Plants that have imperfect flowers (male and female) occurring on the same plant (e.g., corn).

**Morphology.** The study of the origin and function of plant parts.

**Mosaic.** Non-uniform foliage coloration with a more or less distinct intermingling of normal green and light green or yellowish patches.

**Mottle.** An irregular pattern of light and dark areas.

**Mulch.** Any material placed on the soil surface to conserve soil moisture, moderate soil temperature, and/or control weeds. Wood chips, bark chips, and shredded leaves are mulches that eventually add organic matter to the soil; inorganic materials such as rocks are also used.

**Mutation.** A genetic change within an organism or its parts that changes its characteristics. Also called a bud sport or sport.

**Mushroom.** The fruiting structure of certain families of fungi characterized by gills.

**Mycelia.** Masses of fungal threads (hyphae) that make up the vegetative body of a fungus.

**Mycology.** The study of fungi.

**Mycoplasma.** See [Phytoplasm](#).

**Mycorrhizae.** Beneficial fungi that infect plant roots and increase their ability to take up nutrients from the soil.

## N

**N.** See [Nitrogen](#).

**Nativar.** A plant that is a cultivar of a native plant.

**Native plant.** A plant indigenous to a specific habitat or area.

**Naturalize.** (1) To design a garden with the aim of creating a natural scene. Planting generally is done randomly, and space is left for plants to spread at will. (2) The process whereby plants spread and fill in naturally.

**Necrosis or necrotic tissue.** Death of cells resulting in necrotic or dead tissue.

**Nectar.** A sweet liquid secreted by plants to attract pollinators.

**Nectaries.** Cells of the petal of a flower that secrete nectar.

**Nematicide.** A material that kills or protects against nematodes.

**Nematode.** Microscopic roundworms that live in soil and living tissue, as well as water, and survive as eggs or cysts.

**Netted veins.** Having branched **veins** that form a network, as the leaves of most dicotyledonous plants.

**Nitrate.** A plant-available form of nitrogen contained in many fertilizers and generated in the soil by the breakdown of organic matter. Excess nitrate in soil can leach to groundwater. (See also [Nitrogen cycle](#).)

**Nitrifier.** A microbe that converts ammonium to nitrate.

**Nitrogen.** A primary plant nutrient, especially important for foliage and stem growth.

**Nitrogen cycle.** The sequence of biochemical changes undergone by nitrogen as it moves from living organisms, to decomposing organic matter, to inorganic forms, and back to living organisms.

**Nitrogen fixation.** The conversion of atmospheric nitrogen into plant-available forms by rhizobia bacteria living on the roots of legumes.

**Nitrogen, quick release.** Readily available sources of nitrogen that exhibit fast turf greening, short residual, and high burn potential, such as ammonium nitrate.

**Nitrogen, slow release.** Slowly available sources of nitrogen that exhibit slow turf green-up, long residual, and low burn potential, such as IBDU, urea formaldehyde.

**Nocturnal.** Active at night.

**Node.** The area of the stem that bears a leaf or a branch. A joint where leaves, roots, branches, or stems arise.

**Nomenclature.** The assigning of names in the classification of plants.

**Nonpoint source.** A relatively small, nonspecific source of pollutants that, when added to other sources, may pose a significant threat to the environment. (See also [Point source](#).)

**Nonselective pesticide.** A pesticide that kills most plants or animals.

**Nonviable.** Not alive; nonviable seeds may look normal but will not grow.

**Noxious weed.** (1) Weeds that have been declared by law to be a species having the potential to cause injury to public health, crops, livestock, land, or other property. (2) A very invasive, difficult to control plant.

**N-P-K.** Acronym for the three major plant nutrients contained in manure, compost, and fertilizers. N stand for nitrogen, P for phosphorus, and K for potassium.

**Nucleus.** The organelle within a cell that contains chromosomes and thus controls various cellular processes, including division into new cells.

**Nutrient.** Any substance, especially in the soil, that is essential for and promotes plant growth. (See also [Macronutrient](#), [Micronutrient](#).)

**Nymph.** The immature form of those insects that do not pass through a pupal stage. **Nymphs** usually resemble the adults, but are smaller, lack fully developed wings, and are sexually immature but eat the same food, and reside in the same environment.

## O

**Ocelli.** There are two types of insect eyes: simple and compound. Simple eyes (called ocelli) have one lens that perceives light intensity but does not produce an image.

**Offset.** A new shoot that forms at the base of a plant or in a leaf axil.

**Oil.** See [Horticultural oil](#).

**Ooze.** A mixture of host fluids, bacteria, yeast, and/or fungi.

**Open-pollinated seed.** Seed produced from natural, random pollination so that the resulting plants are varied.

**Opposite leaf arrangement.** Two leaves are attached at the same point on the stem, but on opposite sides.

**Organelle.** A structure within a cell, such as a chloroplast, or mitochondria that performs a specific function.

**Organic.** (1) Relating to, derived from, or involving the use of food produced with the use of feed or fertilizer of plant or animal origin without employment of synthetically formulated fertilizers, growth stimulants, antibiotics, or pesticides. (2) Being or composed of plant or animal matter. (3) A labeling term that refers to an agricultural product produced in accordance with government standards.

**Organic fertilizer.** A natural fertilizer material that has undergone little or no processing. Can include plant, animal, and/or mineral materials.

**Organic matter.** Any material originating from a living organism (peat moss, plant residue, compost, ground bark, manure, etc.).

**Organic pesticide.** Pesticides derived from plant or animal sources.

**Organic production.** The production of food using accepted naturally occurring materials.

**Organism.** A living being.



**Ornamental plant.** A plant grown for beautification, screening, accent, specimen, color, or other aesthetic reasons.

**Orthoptera.** A major order of insects that have two pairs of wings, or are wingless, and chewing mouthparts (grasshoppers, crickets, and cockroaches).

**Osmosis.** Passage of materials through a membrane from an area of high concentration to an area of lower concentration.

**Outer seed coat.** The protective outer shell for the seed.

**Ovary.** The part of a flower containing ovules that will develop into seeds upon fertilization. Along with the style and stigma, it makes up the pistil (female sexual organ).

**Ovipositor.** Egg-laying organ.

**Ovule.** Within the ovary, a tissue/structure that will develop into a seed after fertilization.

**Oxidative respiration.** The chemical process by which sugars and starches are converted to energy. In plants, known as respiration.

## P

P. See [Phosphorus](#).

**Palisade mesophyll.** The cells just beneath a leaf's upper epidermis that contain most of the leaf's photosynthesis.

**Palmate or palmately compound.** (1) A leaf whose veins radiate outward from a single point somewhat like the fingers of a hand. (2) A form of espalier training.

**Panicle.** A panicle is a much-branched inflorescence. In an *indeterminate inflorescence* a panicle is a branched raceme in which the branches are themselves racemes (e.g., [Yucca recurvifolia](#)). A panicle can also be a compound indeterminate inflorescence, a branched raceme in which each branch has more than one flower, as in the astilbe ([Astilbe x. arendesii](#)).

**Parasite.** An organism that lives in or on another organism (host) and derives its food from the latter.

**Parasitic seed plant.** A plant that lives parasitically on other seed plants. An example is mistletoe.

**Parent material.** The underlying geological material (generally bedrock or a superficial or drift deposit) in which soil horizons form.

**Parterre.** A formal garden in which shrubs, flowers, and paths form a geometric pattern of matched pairs.

**Parthenocarpic.** Development of fruit without fertilization.

**Pathogen.** Any organism that can cause a disease.

**Pathology.** The study of plant diseases.

**Ped.** A cluster of individual soil particles.

**Pedicel.** The stem of an individual flower.

**Peduncle.** The main stem supporting a cluster of flowers (as opposed to a pedicel, which is the stem of an individual flower).

**Pendulous.** Hanging loosely; suspended so as to swing or sway.

**Perennial.** A plant that lives more than two years and produces new foliage, flowers, and seeds each growing season.

**Perfect flower.** A type of flower with both stamens and pistils.

**Perianth.** Collectively, sepals and petals form the perianth.

**Permanent wilting point.** The point at which a wilted plant can no longer recover.

**Permeability.** The rate at which water moves through a soil.

**Persistent.** (1) Adhering to a position instead of falling, whether dead or alive, e.g., flowers or leaves. (2) A pesticide that retains its chemical properties in the soil for a long time.

**Petals.** Highly colored portions of the flower, inside the sepals, that protect the inner reproductive structures. Often attract insects with their color or may contain osmophores which are scent structures both of which facilitate pollination..

**Petiole.** The stalk that joins a leaf to a stem; leafstalk.

**pH.** The acidity or alkalinity of a solution on a scale of 0-14, with a value of 7 signifying neutral, values below 7 signifying acidic, and values above 7 signifying alkaline. Relates to the concentrations of hydrogen (H<sup>+</sup>) ions in the soil. pH values are logarithmic.

**Phenological stage.** Crop development stage.

**Phenoxy.** Herbicides work to mimic IAA or auxin in broadleaf plants causing uncontrolled growth and eventual death.

**Pheromone.** A vapor or liquid emitted by an insect that causes a specific response from a receiving insect. Some pheromones are used to find a mate. Synthetic pheromones are used as attractants in insect traps.

**Phloem.** The principle nutrient-conducting structure of vascular plants.

**Phosphate.** The form of phosphorus listed in most fertilizer analyses.

**Phosphorus (P).** A primary plant nutrient, especially important for flower production. In fertilizer, usually expressed as phosphate.

**Photoperiod.** The amount of time a plant is exposed to light.

**Photoperiodism.** Plant responses to light and dark periods that induce certain physiological reactions.

**Photosynthate.** A food product (sugar or starch) created through photosynthesis.

**Photosynthesis.** (1) The process in which green plants convert light energy from the sun into chemical energy in order to produce carbohydrates. (2) Formation of carbohydrates from carbon dioxide and a source of hydrogen (as water) in the chlorophyll-containing tissues of plants exposed to light.

**Phototropism.** The phenomenon of plants growing toward the direction of a light source.

**Physiographic.** The geological terrain that defines the range in which some plants occur, such as alpine plants that occur only in decomposed granite high on the slopes of mountains and survive extreme cold and winds, or desert plants which grow in sand and live on less than 10 inches of rain a year and survive temperatures over 100 degrees.

**Physiology.** The study dealing with the functioning of plants, their mechanisms of response, and their physical and biochemical processes.

**Phytoplasm.** Microscopic, single-celled organisms that lack distinct cell walls and that cause destructive diseases in plants.

**Phytotoxic.** Toxic to a plant.

**Picotee.** A pattern of flower petal coloration in which the edges of the petal are in a color that contrasts with the flower body.

**Pinch.** To remove a growing tip from a stem, thus causing axillary shoots or buds to develop. (See also [Deadhead](#), [Shear](#).)

**Pine fines.** Finely ground pine mulch also sold as a soil conditioner. A byproduct of the bark mulch industry, pine fines are too small to be sold as bark mulch, but make an excellent mulch for flower beds and container plantings (direct-seeded annual flowers can still push up through) and an excellent soil amendment to introduce organic matter into heavy clay soil.

**Pinnately compound.** An arrangement of leaflets attached laterally along the rachis of a compound leaf.

**Pinnatifid.** A leaf shape cleft nearly to the midrib in broad divisions not separated into distinct leaflets.

**Pistil.** The female component of the flower. It is in the center of the flower and has three parts, the stigma, the style, and the ovary.

**Pistillate.** Female flowers; flowers with no stamens (pistils only), also called imperfect because they lack the stamen.

**Plant classification.** The scientific grouping and naming of plants by characteristics.

**Plant disease.** Any lasting change in a plant's normal structure or function that deviates from its healthy state.

**Plant growth regulator.** See [Growth regulator](#).

**Plant nutrition.** A plant's need for and use of basic chemical elements. (See also [Macronutrient](#), [Micronutrient](#).)

**Plant pathology.** The study of diseases in plants: what causes them, what factors influence their development and spread, and how to prevent or control them.

**Plant tissue culture.** Plant material grown *in vitro* under sterile conditions in an artificial medium. A primary means of rapidly increasing the number of plants from a single mother plant.

**Pleach.** To intertwine branches of trees, vines, or shrubs to form an arbor or hedge.

**Pleniflora.** A term used in botanical names to indicate a double-flowered cultivar. (See also [Double](#).)

**Plug.** 2- to-4-inch chunks of **sod**, either round or square, with soil around their roots.

**Plumule.** The shoot portion of an embryo.

**Point source.** A single, identifiable source of pollutants such as a factory or municipal sewage system. (See also [Nonpoint source](#).)

**Pollard.** A method of tree pruning that involves heading back severely to main branches each year so as to produce a thick, close growth of young branches.

**Pollen.** A plant's male sex cells, which are held on the anther for transfer to a stigma by insects, wind, or some other mechanism.

**Pollen tube.** A slender tube growing from the pollen grain that carries the male gametes and delivers them to the ovary.

**Pollination.** The first step in fertilization; the transfer of pollen from anther to a stigma.

**Pollinator.** An agent such as an insect that transfers pollen from a male anther to a female stigma.

**Pollinizer.** A plant whose pollen sets fruit on another plant. (See also [Cross-pollination](#).)

**Polychromatic.** In landscaping, use of all the colors and their tints, shades, and tones.

**Pome fruit.** A fruit having a core, such as an apple, pear, or quince.

**Pomology.** The science of fruits and the art of fruit culture, especially tree fruits.

**Porespace.** The spaces within a rock body or soil that are unoccupied by solid material.

**Postemergent.** A product applied after crops or weeds emerge from the soil.

**Potash.** The form of potassium listed in most fertilizer analyses.

**Potassium (K).** A primary plant nutrient, especially important for developing strong roots and stems. In fertilizers, usually expressed as potash.

**Powdery mildew.** Fine, white to gray, powdery fungal coating on leaves, stems, and flowers.

**Power raking.** Using fixed knife-type blades that slice thatch as opposed to ripping it out.

**Predator.** An animal that eats another animal.

**Preemergence.** A product applied before crops or weeds emerge from the soil.

**Preharvest interval.** The amount of time that must elapse (legally) after application of a pesticide before harvest takes place.

**Preplant.** A product applied before a crop is planted.

**Prickle.** A rigid, straight, or hooked outgrowth of bark or stems. Often called a thorn, but technically different. Roses are examples of plants with prickles. (See also [Thorn](#).)

**Primary growth.** Growth that occurs via cell division at the tips of stems and roots.

**Primary nutrient.** A nutrient required by plants in a relatively large amount (nitrogen, phosphorus, and potassium).

**Primocane.** First-year growth, usually vegetative, on cane berries. Only fall-bearing raspberries produce fruit on primocanes in late summer.

**Processed fertilizer.** A fertilizer that is manufactured or refined from natural ingredients to be more concentrated and more available to plants.

**Production.** Nursery or greenhouse growing area used before plants are put up for retail sales.

**Prolegs.** Are plump, fleshy, and often hooked to allow the caterpillar to hold onto a plant

**Propagate.** To start new plants by seeding, budding, grafting, dividing, etc.

**Propagule.** Any structure capable of being propagated or acting as an agent of reproduction.

**Protozoa.** Any of a diverse group of eukaryotes, of the kingdom Protista, that are primarily unicellular, existing singly or aggregating into colonies.

**Provenance.** An area within a plant's native range that seed or propagation materials such as cuttings were collected.

**Prune.** To remove plant parts to improve a plant's health, appearance, or productivity.

**Pseudobulb.** A thickened, aboveground, modified stem that serves as a storage organ. Found in some orchids.

**Psocoptera.** A major order of insects that have two pairs of wings, or are wingless, and chewing mouthparts (barklice, booklice).

**Pubescent.** Leaf textures that are hairy.

**Pupa.** The stage between larva and adult in insects that go through complete metamorphosis.

**Pupae.** An insect in the non-feeding stage between the larva and adult, during which it typically undergoes complete transformation within a protective cocoon or hardened case. Only insects that undergo complete metamorphosis have pupal stages.

## Q

**Quarantine.** A regulation forbidding sale or shipment of plants or plant parts, usually to prevent disease, insect, nematode, or weed invasion in an area.

**Quick-release fertilizer.** A fertilizer that contains nutrients in plant-available forms such as ammonium and nitrate. Fertilizer is readily soluble in water.

**Quiescent.** In a state or period of inactivity or dormancy.

## R

**Raceme.** A flower stalk on which the florets start blooming from the bottom of the stem and progress toward the top.

**Rachis.** The rachis is the midrib of a leaf. It is usually continuous with the petiole and is often raised above the lamina or leaf blade. On a compound leaf, the rachis extends from the first set of leaflets (where the petiole ends) to the end of the leaf. The stem of a plant, especially a grass, bearing flower stalks at short intervals.

**Radial spacing.** The horizontal spacing of branches around a trunk.

**Radicle.** The root portion of an embryo.

**Raking, power.** Removal of debris with rapidly rotating vertical tines or brush.

**Ray flowers.** In a composite flower head of the daisy family any of a number of strap-shaped and typically sterile florets that form the ray. In plants such as dandelions, the flower head is composed entirely of ray flowers (also called florets).

**Receptacle.** The base of the flower stalk that holds the sexual organs of a flower.

**Region of maturation.** The area of the root where the enlarged root cells turn into the various root tissues.

**Regulatory insect.** Term used to describe insects that have an unknown impact in a new environment to which they may be moved.

**Relative humidity.** The percentage of moisture saturating the air at a given temperature. The ratio of water vapor in the air to the amount of water the air could hold at the current temperature and pressure.

**Repotting (or “transplanting”).** The process of moving previously potted plants into new containers, usually of larger size.

**Resistance.** The ability of a host plant to prevent or reduce disease development by retarding multiplication of the pathogen within the host.

**Respiration.** The process of burning sugars to use as energy for plant growth. The process by which carbohydrates are converted into energy. This energy builds new tissues, maintains the chemical processes, and allows growth within the plant.

**Reversion growth.** A stem that originates from and has the characteristics of the plant’s rootstock. (See also [Sucker](#).)

**Rhizobia bacteria.** Bacteria that live in association with roots of legumes and convert atmospheric nitrogen to plant-available forms, a process known as nitrogen fixation.

**Rhizome.** A stem that forms the main axis of the plant. An underground creeping stem that can produce roots and shoots at each node. (adj. rhizomatous)

**Rhizosphere.** The thin layer of soil immediately surrounding plant roots.

**Root bound.** A condition in which a plant’s root system has outgrown its pot resulting in root constriction. Typically, the roots begin to encircle the pot’s outer edge. Further growth is prevented until the plant is removed from the container.

**Root cap.** The cells that protect the root tip as it pushes through the soil. These cells slough off and are replaced by others as roots grow downward.

**Root cutting.** An asexual method of propagation that involves removing a section of root from a 2- to 3- year-old plant during the dormant season and placing it into growing medium.

**Root hair.** Thin hair-like structure that grows from the epidermis of the region of maturation of the root. This structure absorbs water and nutrients from the soil.

**Root knots.** Swelling and deformation of roots.

**Root meristem.** A type of apical meristem located at the tips of roots. Provides for elongation of the roots and produces the cells that will become the epidermis, cortex, xylem, cambium, and phloem of the mature root.

**Root and stem rot.** Soft and disintegrated roots and lower portions of the stem; sometimes results in death of the plant.

**Root pruning.** The cutting or removal of some of a plant’s roots.

**Rootstock.** The portion of a plant used to provide the root system and sometimes the lower part of the stem for a grafted plant.

**Root sucker.** See [Sucker](#).

**Rosette.** A small cluster of leaves radially arranged in an overlapping pattern.

**Rot.** Decomposition and destruction of tissue.

**Rotation (rotate).** The practice of growing different plants in different locations each year to prevent the buildup of soil borne diseases and insect pests.

**Row cover.** A sheet of synthetic material used to cover plants in order to retain heat and exclude insect pests.

**Rugose.** Wrinkled.

**Rogue.** To uproot or destroy diseased or atypical plants.

**Runner.** See Stolon. (Examples of runners are strawberries and spider plants.)

**Russet.** Yellowish-brown or reddish-brown scar tissue on the surface of a fruit. Also naturally occurring tissue on potato tubers.

**Rust.** Fruiting structure of certain family of fungi. Raised pustules on leaves, stems, and fruits; contain yellow-orange or rust-colored spore masses.

## S

**Sand.** The coarsest type of soil particle.

**Sanitation.** The removal and disposal of infected plant parts; decontamination of tools, equipment, hands, etc.

**Saprophyte.** An organism that can subsist on non-living matter.

**Sapwood.** The newly formed lighter outer wood located just inside the vascular cambium of a tree trunk and active in the conduction of water.

**Scab.** Slightly raised, rough areas on fruits, tubers, leaves, or stems.

**Scabrous.** Leaf textures that are rough to the touch; texture of sandpaper.

**Scaffold branches.** The principal branches of a tree or shrub arising from the trunk or another main branch to form the plant's framework.

**Scaffold whorl.** The first three to four branches on a trunk uniformly spaced.

**Scale.** (1) A modified leaf that protects a bud. (2) A type of insect pest.

**Scalping.** Excessive removal of turf leaves by close mowing, resulting in a brown, stubbly appearance.

**Scarification.** Artificial methods to soften the seed coat including scratching or rupturing the seed coat with sandpaper, nicking it with a knife, or degrading it with concentrated acid.

**Scion.** The portion of a plant or cultivar that is grafted onto a separate rootstock, consisting of a piece of shoot with dormant buds that will produce the stem and branches.

**Sclerites.** Insects' bodies are separated into segments, and the cuticle of each segment is formed into several hardened plates called sclerites.

**Sclerotia.** Seed-like, compact masses of fungal tissue that allow fungi to survive unfavorable conditions.

**Scout.** Assessing pest pressure and plant performance. The first step in any IPM plan.

**Secondary growth.** Growth that increases the girth of stems or roots without elongating them. Secondary growth is seen in some dicots but not in monocots.

**Secondary nutrient.** A nutrient needed by plants in a moderate amount: calcium, magnesium, and sulfur. (See also [Macronutrient](#), [Primary nutrient](#).)

**Secondary root.** A type of root system that forms after the primary root emerges from a seed and branches outward.

**Seed.** Matured ovule that occurs as, or in, mature fruits.

**Seed, certified.** A seed lot inspected to meet minimum standards and to ensure trueness to type for a given cultivar.

**Seed coat.** The protective outer layer of a seed that provides protection for the enclosed embryo.

**Seed coat impermeability.** Caused by a hard seed coat that is impermeable to water, preventing the seed from germinating.

**Seed dormancy.** An adaptive feature of some plants to keep the seeds from germinating until conditions exist that favor seedling survival.

**Seed leaf.** See [Cotyledon](#).

**Seed scarification.** Involves breaking, scratching, or softening the seed coat so that water can enter and begin the germination process.

**Selective pesticide.** A pesticide that kills only certain kinds of plants or animals; for example, 2,4-D kills broadleaf lawn weeds but leaves grass largely unharmed.

**Self-fertile.** A plant that produces seed with its own pollen.

**Self-fruitful.** A plant that bears fruit through self-pollination.

**Self-pollination.** Pollination that can occur when the anther and stigma are in the same flower or if the anther and stigma are in different flowers on the same plant or in different flowers on different plants of the same species, variety, or cultivar.

**Self-sterile.** A plant that needs pollen from another species, variety, or cultivar (e.g., cross-pollination).

**Self-unfruitful.** A plant that requires another variety for pollination. (See also [Pollinizer](#).)

**Semi-trailing.** Caneberries that are fully trailing the first year but become more erect the following year.

**Senescence.** The aging process. Also used to describe a plant that is in the process of going dormant for the season, although technically only the parts that are dying (the leaves) are becoming senescent.

**Sepal.** The outer covering of the flower when it is in the bud stage. They are leaf-like in structure and usually green; however they can be colored and look like petals, as in tulips. They may fold back as in roses or remain upright as with carnations. Together, all the sepals form the calyx.

**Separation.** A term applied to a form of propagation by which plants that produce bulbs or corms multiply.



**Sessile.** Sessile means "sitting" or "resting on the surface." A characteristic of plant parts which have no stalk. Flowers or leaves are borne directly from the stem or peduncle, lacking a petiole or pedicle. Stalkless flowers, as in a spike with sessile flowers attached directly at the base.

**Sexual propagation.** The deliberate, directed reproduction of plants using seeds or spores. (See also [Asexual propagation](#).)

**Shear.** To cut back a plant (as opposed to selective pruning or deadheading). Often used to regenerate plants with many small stems, where dead-heading would be too time consuming.

**Sheath.** The basal portion of the leaf surrounding the grass stem. In grass plants, it is usually split with overlapping edges.

**Shoot.** One season's branch growth. The bud scale scars (ring of small ridges) on a branch mark the start of a season's growth.

**Shoot meristem.** The apex of a shoot where cells actively divide to provide more cells that will expand and develop into the tissues and organs of the plant. Also called apical meristem.

**Short-day plant.** A plant requiring more than 12 hours of continuous darkness to stimulate a change in growth, e.g., a shift from the vegetative to reproductive phase. (See also Long-day plant, Day-neutral plant.)

**Shot-hole.** Roughly circular holes in leaves resulting from the dropping out of the central dead areas of spots.

**Shoulder ring.** One of the ridges around the base of a branch where it attaches to a trunk or to another branch. (See also [Collar](#).)

**Shrub.** A woody plant that grows to a height of 3 to 12 feet. May have one or several stems with foliage extending nearly to the ground.

**Side-dress.** To apply fertilizer to the soil around a growing plant.

**Sign.** The part of a pathogen seen on a host plant; the physical evidence of something that has attacked a plant.

**Signal word.** An indication of toxicity on pesticide labels. Pesticides labeled "caution" are the least toxic, those labeled "warning" are more so, and those labeled "danger" are the most toxic.

**Silt.** A type of soil particle that is intermediate in size between sand and clay.

**Simple metamorphosis.** A type of insect development involving three stages: egg, nymph, and adult. The nymph usually resembles the adult. (See also [Complete metamorphosis](#).)

**Siphonaptera.** A major order of insects that have two pairs of wings, or are wingless, and piercing-sucking mouthparts as adults and chewing mouthparts as larvae (fleas).

**Slicing.** Penetration of turf in a vertical plane by a series of solid flat tines.

**Slime flux.** A type of ooze specific to trees where the fermentation of plant fluids creates pressure.

**Slime mold.** A 'primitive' class of fungi called Myxomycetes. Slime molds are saprophytic fungi that live on dead organic matter, such as wood mulch, and appear in several different colors. Also called Dog Vomit mold, the spores are widespread and it usually appears in spring or early summer after soaking rains.

**Slit seeder.** A gasoline-powered machine that slices even rows into the soil, and drops grass seed directly into those rows to improve seed-soil contact. Slit seeders are most typically used to apply seed over an existing lawn, where mature grass or weeds may get in the way of the new seed.

**Slow-release fertilizer.** A fertilizer material that must be converted into a plant-available form by soil microorganisms.

**Smut.** Black masses of spores produced by fungi that may form on stems, ears of corn, etc. A specific type of fungus that grows in the grain heads.

**Soft pinch.** To remove only the succulent tip of a shoot, usually with the fingertips.

**Soft rot.** The water soaked appearance of cells that don't get enough oxygen.

**Soil.** A natural, biologically active mixture of weathered rock fragments and organic matter at the earth's surface.

**Soil horizons.** A soil horizon is a layer generally parallel to the **soil** crust, whose physical characteristics differ from the layers above and beneath. Each **soil** type usually has three or four horizons. Horizons are defined in most cases by obvious physical features, chiefly color and texture.

**Soilless mix or substrate.** Components used in potting mixes that are not true soils, such as vermiculite, perlite, peat, bark, sand, gravel, sphagnum moss used in container growing mixes but no real soil.

**Soil salinity.** A measure of the total soluble salts in a soil.

**Soil solution.** The solution of water and dissolved minerals found in soil pores.

**Soil structure.** The arrangement of soil particles or their aggregates.

**Soil texture.** How coarse or fine a soil is. Texture is determined by the proportions of sand, silt, and clay in the soil.

**Solitary flower.** A plant that forms a stalk that bears a single flower, such as a tulip.

**Soluble salt.** A mineral (salt) often remaining in soil from irrigation water, fertilizer, compost, or manure applications.

**Sonic repeller.** A sonic wave-emitting unit said to disrupt the activities of small mammals or insects but not proven to be effective.

**Sooty mold.** Common name given to a condition that is not truly a disease, but a black coating on leaves, branches and fruit made up of a fungal growth that is usually dark colored and powdery-like, giving it the name sooty mold. These fungi are saprophytic, that is, they do not feed on live plant tissue, but rather thrive on insect secretions, known as honeydew, that are high in sugars.

**Sori.** A cluster of sporangia borne on the underside of a fern frond.

**Species.** A group of individual plants interbreeding freely and having many (or all) characteristics in common.

**Species-specific.** Limited to effecting one species or a certain group of species.

**Specific epithet.** The second word in a Latin binomial. Sometimes called trivial name.

**Specimen.** An individual plant with outstanding characteristics (leaves, flowers, or bark), generally used as a focal point in a landscape.

**Spiking.** Penetration of turf in a vertical plane by series of solid round tines.

**Spines.** Are modified leaves, leaflets, petioles or stipules. Blackberries or wintergreen barberry (*Berberis juliane*) have spines.

**Spiracles.** Circular tubes in the exoskeleton of insects that allow air into the trachea. In an insect's respiratory system, tracheal tubes deliver oxygen directly to tissues.

**Split complementary.** In landscaping, use of a pure color and a color from either side of its complementary counterpart.

**Spongy parenchyma.** The lower layer of cells in the mesophyll.

**Spore.** (1) The reproductive body of a fungus or other lower plant, containing one or more cells. (2) A bacterial cell modified to survive in an adverse environment. (3) The reproductive unit of ferns.

**Sport.** See [Mutation](#).

**Spot treatment.** To apply a pesticide to a small section or area of a crop.

**Sprig.** A stolon or rhizome used to establish turf.

**Spur.** Short, stubby stems common on fruit trees such as apples and pears. These spurs produce the flower buds.

**Stamen.** The male, pollen-producing part of a flower consisting of the anther and its supporting filament.

**Stamens or staminate.** The male fertilizing organ of a flower, typically consisting of a pollen-containing anther and a filament; flowers with no pistil (stamens only), also called imperfect because they lack the pistil.

**Standard.** A plant pruned so that it consists of a single bare vertical stem, atop which a shaped mass of foliage, usually globular, is maintained.

**Stem cutting.** A section of a stem prepared for vegetative propagation; forms adventitious roots on the stem.

**Sterile.** (1) Material that is free of disease organisms (pathogens), as in potting medium. (2) A plant that is unable to produce viable seeds.

**Stigma.** The receptive surface on a pistil that receives pollen.

**Stipules.** A pair of appendages found on many leaves where the petiole meets the stem.

**Stock.** See [Rootstock](#).

**Stolon.** An above-ground creeping stem that can produce roots and shoots at each node. This horizontal stem can be either fleshy or semi-woody.

**Stoloniferous.** Producing or bearing stolons.

**Stoma, stomate, stomata (plural).** Any pore or opening on the surface of a leaf or stem through which gases (water vapor, carbon dioxide, and oxygen) are exchanged. This pore is an opening into a leaf that is formed by specialized epidermal cells on the underside (and sometimes upper sides) of the leaf.

**Stomatal complex.** The term is also used collectively to refer to an entire **stomatal complex**, both the stomatal pore itself and its accompanying guard cells.

**Stone fruit.** A fleshy fruit, such as a peach, plum, or cherry, usually having a single hard stone that encloses a seed. Also called a drupe.

**Strain.** A variation within a cultivar or variety.

**Stratification.** Chilling seed under moist conditions. This method mimics the conditions a seed might endure after it falls to the ground in the autumn and goes through a cold winter on the ground.

**Style.** On a pistil, a tube connecting the stigma and the ovary.

**Stylet.** A nematode's lance like or needlelike mouth-part. Used to puncture and feed from plant cells.

**Subapical meristem.** Aids in formation of shoots and flowering stalks.

**Subspecies.** A major division of a species, more general in classification than a cultivar or variety.

**Succession.** The progression of a plant community to a stable mixture of plants.

**Succession planting.** (1) The practice of planting new crops in areas vacated by harvested crops. (2) Several smaller plantings made at timed intervals.

**Succulent.** Leaf textures that are fleshy, soft, and thickened in texture; modified for water storage.

**Sucker.** A shoot or stem that originates underground from a plant's roots or trunk, or from a root-stock below the graft union. (See also Reversion growth.)

**Summer annual.** Annual plant in which the seed germinates in the spring, and the plant develops, matures, and produces seed by the end of the growing season.

**Summer oil.** A light refined horticultural oil used during the growing season to control insect pests and diseases.

**Sun scald.** Winter or summer injury to the trunk or leaves of plants caused by hot sun and fluctuating temperatures. Typically, sun scalded bark splits and separates from the trunk.

**Surfactant.** See [Additive](#).

**Susceptibility.** The condition of a plant in which it is prone to the damaging effects of a pathogen or other factor.

**Sustainable gardening.** Gardening practices that allow plants to thrive with minimal inputs of labor, water, fertilizer, and pesticides.

**Suture.** A line of junction of contiguous plant parts.

**Swale.** A low place in a tract of land, usually moister than the adjacent higher land. A valleylike intersection of two slopes in a piece of land.

**Symbiotic.** Mutually beneficial.

**Symptom.** A plant's response to an attack by animal or pathogen; a visible reaction of a plant to disease such as wilting, necrosis, abnormal coloration, defoliation, fruit drop, abnormal cellular growth, or stunting.

**Synthetic fertilizer.** Chemically formulated fertilizers, mainly from inorganic sources.

**Synthetic pesticide.** Chemically formulated pesticide, mainly from inorganic sources.

**Systemic.** Spreading internally throughout the plant.

**Systemic pesticide.** A pesticide that moves throughout a target organism's system to cause its death.

## T

**Taproot.** A type of root system that grows straight down with few lateral roots.

**Taxonomy.** Classification or naming of plants or animals.

**Temporary branch.** (1) A small shoot or branch left on a young tree's trunk for protection and nourishment. (2) A low lateral allowed to remain until a tree is tall enough to have scaffolds at the desired height.

**Tender.** Not tolerant of frost and cold temperatures. In horticulture, tender does not mean weak or susceptible to insect pests or diseases.

**Tendrils.** A slender projection used for clinging, usually a modified leaf. Easily seen on vines such as grapes and clematis.

**Terminal.** The tip (apex), usually of a branch or shoot.

**Terminal bud.** The bud that is found at the tip of shoots.

**Thatch.** A tightly intermingled layer of undecomposed roots, stems, and shoots located between the soil surface and the green vegetation of the turf grass. The brown, fibrous, spongy layer located between the soil and the grass blades.

**Thermoperiod.** The change in temperature from day to night.

**Thermophilic.** Growing at high temperatures, as in microorganisms that break down organic matter in a hot compost pile.

**Thin.** (1) To remove an entire shoot or limb where it originates. (2) To selectively remove plants or fruits to allow remaining plants or fruits to develop.

**Thorax.** The thorax is made up of three segments (prothorax, mesothorax, and metathorax). Each segment has a pair of legs, and the wings are attached to the last two segments, which also have spiracles or circular openings used for breathing.

**Thorn.** A hard, sharp-pointed, leafless branch. A modification of a stem or branch which means they can be branched or not, have leaves or not and they arise from a bud. A black locust tree (*Robinia pseudoacacia*) or hawthorn (*Crataegus oxycantha*) is an example of a plant that produces thorns.. (See also [Prickle](#).)

**Threshold.** The point at which plant aesthetic quality or injury leads a gardener to decide action should be taken.

**Thysanoptera.** A major order of insects that have two pairs of wings, or are wingless, and rasping-sucking mouthparts (thrips).

**Thysanura.** A major order of insects that are wingless and have chewing mouthparts (silverfish, firebrats).

**Tiller.** A grass plant shoot arising in the axes of leaves in the unelongated portion of the stem. A shoot that arises from a plant's crown.

**Tilth.** The state of aggregation of a soil especially in relation to its suitability for crop growth.

**Tissue culture.** The process of generating new plants by placing small pieces of plant material onto a sterile medium.

**Tolerant.** A plant that will produce a normal yield even if infested by a disease or insect pest. (See also [Immune](#), [Resistance](#).)

**Tomentose.** Leaf textures that are covered with matted, wooly hairs, like Lamb's Ears ([Stachys byzantina](#)).

**Top-dressing.** 1) The practice of spreading a thin layer ( $\frac{1}{4}$  inch) of soil, compost, humus, or a sand and peat mix over the turf or soil. 2) For turf: A sand or prepared soil mix applied to the turf to help smooth the surface, enhance establishment, and reduce thatch buildup.

**Topiary.** A tree or shrub shaped and sheared into an ornamental, unnatural form, usually a geometric shape or the shape of an animal.

**Totipotency.** The ability of any cell to develop into an entire plant.

**Trace element.** See [Micronutrient](#).

**Tracheophytes.** Any plant that has elaborate tissues with water- and nutrient-conducting tissue termed "vascular tissue" including roots, stems and leaves. Some *tracheophytes* reproduce with seeds and some with spores.

**Trailing.** Cane berries that are not selfsupporting and have low yields.

**Transpiration.** The loss of water through the leaf stomata. The transpired water comes from the photosynthetic process and also from water in the cells.

**Trap Crop.** A trap crop is a plant that attracts agricultural creatures usually insects, away from nearby crops. This form of companion planting can save the main crop from decimation by pests without the use of pesticides.

**Triadic.** In landscaping, use of three colors that are at equal distances from each other on the color wheel.

**Trichomes.** The "hairs" that are extensions of the epidermal cells on a leaf.

**Tropism.** The tendency of a plant part to turn in response to an external stimulus, either by attraction or repulsion, as a leaf turns toward light. (See also [Geotropism](#), [Phototropism](#).)

**Trunk.** The main stem of a tree. Also called a bole.

**Trunk taper.** The degree to which a tree's stem or trunk decreases in diameter as a function of height above ground.

**Truss.** A flower cluster, usually growing at the terminal of a stem or branch.

**Tuber.** (1) A below ground stem used for food storage (e. g., potato). (2) For turf: An underground stem modified for food storage that is attached to the root system as found in yellow nutsedge.

**Tuberous root.** An underground storage organ made up of root tissue. Sprouts only from the point at which it was attached to the stem of the parent plant. Dahlias are an example.

**Tuberous stem.** A below ground stem consisting of a swollen hypocotyl, lower epicotyl, and upper primary root (for example, in tuberous begonias).

**Tunicate.** A tunicate bulb has a paper-like covering or tunic that protects the scales from drying and from mechanical injury. Examples of tunicate bulbs include: tulips, daffodils, hyacinths, grape hyacinths (*muscaria*), and alliums.

**Turf.** A covering of mowed vegetation, usually a grass.

**Turfgrass.** A species or cultivar of grass, usually of spreading habit, which is maintained as a mowed turf.

**Tolerance, turf.** Ability of a turf species to withstand application of a pesticide (herbicide) at the normal dosage without being killed or injured. Specific tolerance may be associated with an anatomical or physiological characteristic in the plant.

**Turgor or turgor pressure (turgid).** Cellular water pressure; responsible for keeping cells firm.

**Twig.** A young stem (1-year-old or less) that is in the dormant winter stage (has no leaves).

## U

**Umbel.** A group of flowers growing from a common point on a stem, like Queen Anne's Lace ([Ammi majus](#)).

**Understock.** See [Rootstock](#).

**USDA zones.** Areas derived by the USDA that indicate average-low winter temperatures. Used as a plant hardiness indicator. Other plant hardiness zones developed by other entities use different numbering systems.

## V

**Vacuole.** A membrane-bound cavity within a cell, often containing a watery liquid or secretion.

**Vaporization.** The evaporation of the active ingredient in a pesticide during or after application.

**Variegated.** Having patches, stripes, or marks of different colors.

**Variety.** In the wild, a plant growing within a species that is different in some particular characteristic from other members of that species. When grown from seed, a variety will maintain all of its particular characteristics. Also called a botanical variety.

**Vascular pathogen.** A disease-causing organism that invades primarily the conductive tissues (xylem or phloem) of the plant.

**Vascular system.** The internal structure of the stem that transports water, minerals, and sugars throughout the plant.

**Vascular tissue.** Water, nutrient, and photosynthate-conducting tissue. (See also [Xylem](#), [Phloem](#)).

**Vector.** A living organism that is able to transmit or spread a pathogen.

**Vegetative bud.** A type of bud that develops into shoots.

**Vegetative propagation.** The increase of plants by asexual means using vegetative parts. Normally results in a population of identical individuals. Can occur by either natural means (e.g., bulblets, cormels, offsets, plantlets, or runners) or artificial means (e.g. cuttings, division, budding, grafting, or layering).

**Venation.** (1) The pattern of veins in leaves. (2) In insects the arrangement of veins in wings.

**Vermicomposting.** Composting with worms. Although there are over 6,000 species of worm, only seven have been found suitable for bin composting. One in particular, *Eisenia fetida* (common name: red wiggler), is the most widely used.

**Vernation.** The arrangement of new leaves within an older leaf sheath (e.g., on a grass plant).

**Vertical mower.** Also known as a dethacher or power rake, a machine used to remove thatch from grass by cutting it vertically.

**Vertical spacing.** The vertical space between branches on a tree.

**Vertical Shoot Position (VSP) trellis.** Vine shoots are trained upward in a vertical, narrow curtain with the fruiting zone below.

**Vestigial.** Of an organ or part of the body, degenerate, rudimentary, or atrophied, having become functionless in the course of evolution.

**Viability.** A seed's ability to germinate.

**Viable.** Alive; seeds must be alive in order to germinate.

**Virulent.** Capable of causing severe disease.

**Virus.** An infectious agent composed of DNA or RNA, too small to see with a compound microscope; multiplies only in living cells.

## W

**Warm-season grasses.** Turf that has its optimum growth at temperatures between 80 and 95°F.

**Water-holding capacity (WHC).** The ability of a soil's micropores to hold water for plant use.

**Watering-in.** The initial watering after plants have been potted or repotted into new containers.

**Water-soaking.** Lesions that appear wet and dark and usually are sunken and or translucent. Often a symptom of bacterial disease.

**Water sprout.** A vigorous shoot originating above the ground on a plant's trunk, older wood, or bud union. Usually breaks from a latent bud, often the result of heavy pruning.

**Weed.** A plant growing where it is not wanted.

**Weed-and-feed.** A combination fertilizer and herbicide sometimes used on lawns.

**Weediness.** Likelihood of seeds germinating into unwanted plants that must be removed.

**Wetting agent.** A chemical that aids in liquid-to-surface contact.

**Wetwood.** Another name for slime flux.

**Whorled leaf arrangement.** Three or more leaves are attached at the same point on the stem.

**Wilt.** Loss of cell turgor; drooping and drying plant parts due to interference with the plant's ability to take up water and nutrients.

**Wilting point.** Point at which the water content within plant cells is low enough that cellular turgor is lost and the plant wilts.

**Winter annual.** Annual plant in which the seed germinates in the fall, producing a plant that overwinters, matures, and produces seed the following growing season.



**Witches' broom.** A plant condition suspected to be caused by genetic mutation or a virus where all adventitious buds in a certain part of the plant start growing, resulting in a lot of tiny stems; abnormal brush-like development of many weak shoots.

**Woody perennial.** A plant that goes dormant in winter and begins growth in spring from above-ground stems.

**Woundwood.** After wounding, callus forms. Woundwood is a tough, woody tissue full of lignin that grows behind callus. When woundwood closes wounds, then normal wood continues to form.

## X

**Xeric.** A plant or landscape that conserves water. Most xeric plants need minimal supplemental water after an establishment period (18 to 24 months after planting) unless there is extreme drought.

**Xylem.** The principal water conducting tissue of vascular plants.

## Y

**Yield.** Refers to both the measure of the yield of a crop per unit area of land cultivation, and the seed generation of the plant itself.

## Z

**Zone of elongation.** The area of the root where the cells expand.