Glossary

Abscission (àb-sizh´-en)—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 hours 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:

\[
\text{Max temp (°F) + Min temp (°F) – 50°F}\]

Daily values are totaled for the season. Values less than zero are ignored (but not deducted from the total).

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.)

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.

Adjuvant (àj´-e-vent)—See Additive.

Adventitious (àd´-vèn-tish´-es)—Growth not ordinarily expected, usually the result of stress or injury. A plant’s normal growth comes from meristematic tissue, but adventitious growth comes from nonmeristematic tissue.

Adventitious bud—A bud in an unusual place on a plant, often on an internode. May be the result of injury. Suckers and water sprouts usually grow from adventitious buds.

Compiled by Mike Hammitt, Master Gardener, Cowlitz County, Washington State University; and Teresa Welch, Publications Editor, Oregon State University.
Adventitious root—A root in an unusual place, often where a branch contacts soil or damp material. A plant cannot be reproduced from cuttings or layering unless adventitious roots develop.

Aeration—Mechanically loosening or puncturing soil to increase permeability to water and air.

Aerobic—Active in the presence of free oxygen.

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

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

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.)

Allelopathy (à-lê-lòp´-e-thê)—The excretion by some plants of compounds from their leaves and/or roots that inhibit the growth of other plants.

Ammonium (NH₄⁺)—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.

Anion (án´-î-en)—A negatively charged ion. Plant nutrient examples include nitrate (NO₃⁻), phosphate (H₂PO₄⁻) and sulfate (SO₄²⁻). (See also Cation.)

Annual—A plant that completes its life cycle in one growing season.

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.

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 (á´-pi-kel)—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.

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

Asexual propagation—See Vegetative propagation.

Aspect—Direction of exposure to sunlight.

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

Attractant—A material that lures pests.

Auxin (ôk´-sin)—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 (àk´-sil)—The upper angle formed by a leaf’s stalk (petiole) and the internodes above it on a stem.

Axillary bud—A bud that forms in an axil.

Bacillus thuringiensis (Bt) (be-sil´-es thûr-ën´-jë-ën´-sis)—A bacterium used as a biological control agent for many insect pests.

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

**Balled and burlapped (B&B)** — 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 (BR)** — A plant with little or no soil around its roots; a common method of selling deciduous plants and small evergreens.

**Basal** (bâ´-sel, -zel) — (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 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.

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

**Biennial** — A plant that germinates and produces foliage and roots during its first growing season, then produces flowers and seeds and usually dies during its second growing season.

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

**Biosolids** — A by-product of wastewater treatment sometimes used as a fertilizer.

**Blanch** — To exclude light from plants or parts of plants to render them white or tender. Often done to cauliflower, endive, celery and leeks.

**Blight** — Rapid, extensive discoloration, wilting and death of plant tissue.

**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** (bôn-sî´) — One of the fine arts of gardening; 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.

**Botrytis** (bo-trî´-tìs) — 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.

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

Bud sport—See Mutation.

Bud union—The suture line where a bud or scion was grafted to a stock.

Budding—The grafting of a bud onto stock of a different plant. The bud is the scion.

Budstick—A shoot or twig used as a source of buds for budding.

Bulb—An underground storage organ consisting of a thin, flattened stem surrounded by layers of fleshy, dried leaf bases. Roots are attached to the bottom. (See also Corm, Tuber, Rhizome.)

Bulbil (bûl’-bel, -bil’)—A small bulb-like organ that sometimes forms in place of flowers.

Bulblet—(1) An underground bulbil. (2) A tiny bulb produced at the base of a mother bulb.

Calcium carbonate (CaCO₃)—A compound found in limestone, ashes, bones and shells; the primary component of lime.

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

Calyx (kâ’-likes, kâl’-iks)—The collective term for the sepals (the cup, usually green, between a flower and its stem).

Cambium (kâm’-bê-em)—The living, growing layer of cells between the xylem and phloem. In woody plants, it is located just beneath the bark.

Candelabrum (kàn’dl-ä´-brem)—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 localized lesion on a limb or trunk, usually due to disease or injury. Part of the bark or wood appears to be eaten away or is sunken.

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

Capillary force—The action 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 (ke-pich´-e-lem)—(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.

Caterpillar—See Larva.

Catfacing—Disfigurement or malformation of a fruit. Fruits typically affected include tomatoes and strawberries. Although not fully understood, cat-facing is thought to be caused by insects or adverse weather during fruit development.
Cation (kat’-î-en)—A positively charged ion. Plant nutrient examples include calcium (Ca$$^{++}$$) and potassium (K$^+$).
(See also Anion.)

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

Cell—The smallest structure in 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 (pl., cerci) (ser´-kes)—A thread-like or sometimes forceps-like tail near the tip of an insect’s abdomen (usually a pair).

Chelate (kê´-lât)—A complex organic substance that holds micronutrients, usually iron, in a form available for absorption by plants.

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 (kle-ro´-sis)—Yellowing of a leaf.

Clay—The smallest type of soil particle (less than 0.002 mm 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 plexiglass 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.

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 plexiglass-covered frame 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 (ko’lê-òp´-ter-e)—An insect family made up of species having horny front wings that fit over their hindwings. Includes beetles and 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. (See also Shoulder ring.)

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 together in the hope that the combination will discourage disease and insect pests.

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

**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 pesticide**—A pesticide that kills on contact.

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

**Corm**—An underground storage organ consisting of the swollen base of a stem with roots attached to the underside. Crocus and gladiolus are examples of plants that form corms. (See also Bulb, Tuber, Rhizome.)

**Cormel** (kôr´-mel)—A small, underdeveloped corm, usually attached to a larger corm. (See also Bulbil, Bulblet.)

**Corymb** (kôr´-imb)—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** (kôt´l-êd´-n)—A seed leaf; the first leaf from a sprouting seed. Monocots have one cotyledon; dicots have two.

**Cover crop**—A crop dug into the soil to return valuable organic matter and nitrogen to the soil. Legumes such as clover, cowpeas and vetch are common cover crops. Also called green manure.

**Cross-pollination**—The fertilization of an ovary on one plant with pollen from another plant, producing an offspring with a genetic makeup distinct from that of either parent. (See also Pollenizer.)

**Crotch angle**—The angle formed between a trunk and a main scaffold limb. The strongest angle is 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.
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**Cultivar**—A specially cultivated variety of a plant that most often is reproduced vegetatively. For example, Transparent is a cultivar of apple. (See also Variety.)

**Cuticle**—(1) A relatively impermeable surface layer on the epidermis of leaves and fruits. (2) The outer layer of an insect’s body.

**Cutin** (kyoot ’en)—(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**—A piece of leaf, stem or root removed from a plant and prompted to develop into a new plant that is genetically identical to the parent plant.

**Cyme** (sîm)—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 be seen on the outside of infected roots.

**Damping-off**—A disease caused by many different organisms. In the most conspicuous cases, a seedling’s stem collapses at or near the soil surface, and the seedling topples. Another type rots seedlings before they emerge from the soil or causes seeds to decay before germinating.

**Day-neutral plant**—A 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** (dî-sij’-oo-es)—A plant that sheds all of its leaves annually.

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

**Defoliation** (dê-fo’-lê-â-shen)—The unnatural loss of a plant’s leaves, generally to the detriment of its health. Can be caused by high wind, excess 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.

**Dermaptera** (der-màp´-ter-e)—An insect family made up of species having chewing mouthparts and a pair of large, forceps-like appendages near the tail. Wingless or with one or two pairs of inconspicuous wings. Earwigs are an example.

**Desiccation**—Drying out of tissue.

**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 do not require staking. (See also Indeterminate.)

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

**Diatomaceous earth** (dî-et-e-mâ´-shes)—The fossilized remains of diatoms (a type of tiny algae) used to kill insect pests, snails and slugs.

**Dicotyledon, dicot** (dî´kòt´l-êd´-n)—A plant having two cotyledons (seed leaves).
**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.

**Diocious** (di-ô´-shes)—A plant species having male and female flowers on separate plants. An example is holly. For female holly to produce berries, a male holly must be in the vicinity to provide pollen. (See also Monoecious.)

**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.

**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.

**Dormancy**—The annual period when a plant’s growth processes greatly slow down.

**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**—A horticultural 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.

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

**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.

**Ecology**—The science of relationships between organisms and their environment.

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

**Emasculate** (i-más´-kye-lât)—To remove a flower’s anthers.

**Embryo**—The dormant, immature plant within a seed; the “germ” referred to in wheat germ.

**Embryo culture**—See Tissue culture.

**Enation** (en-â´-shen)—Epidermal outgrowths on leaves or stems.

**Endosperm** (én´-de-spûrm´)—The nutritive tissue within the seed of a flowering plant. Surrounds and is absorbed by the embryo.

**Enzyme**—A biological catalyst that aids in conversion of food from one form to another.

**Epidermis** (èp-i-dûr´-mìs)—The outermost layer of cells covering a plant’s leaves, roots and young parts.

**Epinasty** (èp´-i-nàs-tê)—An abnormal downward-curving growth or movement of a leaf, leaf part or stem.
Espalier—The training of a tree or shrub to grow flat on a trellis or wall. Espalier patterns may be very precise and formal or more natural and informal.

Etiolation—Development of yellow, long, spindly growth on a plant as a result of insufficient light.

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

Excise—To remove or extract, as an em- bryo 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—The outer support structure of an insect.

Exotic—Non-native.

Fallow—To keep part of a garden unplanted or in a cover crop during the growing season.

Family—A broad group of plants with common characteristics.

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

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—A natural or synthetic product added to the soil or sprayed on plants to supply plant nutrients.

Fertilizer analysis—the amount of nitrogen, phosphorus (as P₂O₅) and potassium (as K₂O) in a fertilizer expressed as a percent of total fertilizer weight. Nitrogen (N) always is listed first, phosphorus (P) second and potassium (K) third.

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. Filament—The stalk supporting a flower’s anthers.

Flagging—Loss of turgor and drooping of plant parts, usually as a result of water stress.

Floricane—Second-year growth of caneberries. Produces fruit on laterals.

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

Force—To bring a plant into early growth, generally by raising the temperature or transplanting it to a warmer situation. Tulips and paperwhites 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.

Frond—Specifically, the foliage of ferns, but often applied to any foliage that looks fern-like, such as palm leaves.
**Fruit**—The edible portion of a plant that is closely associated with a flower. Botanically, a fruit is a ripened, mature ovary.

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

**Fungicide**—Any material capable of killing fungi. Sulfur and copper sulfate are two common mineral fungicides.

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

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

**Genus**—A group of related species, each of which is distinct and unlikely to cross with any other. A group of genera forms a family, and a group of families forms an order. (See also Species.)

**Geotropism** (jē-ō’-tre-pìz´-em)—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 initial sprouting stage of a seed.

**Girdling**—The cutting, removing, or clamping of bark 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.

**Glabrous** (glâ´-bres)—Hairless, but not necessarily smooth.

**Glaucous** (glô´-kes)—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**—The act of inserting a shoot or bud of one plant into the trunk, branch, or roots of another, where it grows and becomes a permanent part of the 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**—See Cover crop.

**Groundcover**—Plants used in lieu of grass for holding soil 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 cell**—Leaf epidermal cells that open and close to let water, oxygen and carbon dioxide pass through the stomata.

**Haltere** (hôl´-tir)—A small, knob-like organ (sometimes shaped like a baseball bat or bowling pin) located on the thorax of insects of the order Diptera. Takes the place of hindwings and helps balance the insect in flight.

**Hardening off**—The process of gradually exposing seedlings started indoors to outdoor conditions before transplanting.
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.

Haustorium (hō-stôr´-ē-em)—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 removing it completely at a branch point. (2) The part of a tree from which the main scaffold limbs originate.

Heartwood—The center cylinder 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 bare-root berries, trees and shrubs.

Hemiptera (hì-mìp´-ter-e)—An insect family made up of species generally having sucking mouthparts and four wings. Wings are thick at the base and membranous at the free end. Includes true bugs, stink bugs, assassin bugs and back swimmers.

Herbaceous (hûr-bâ´-shes)—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.

Heterozygous (hèt´-er-o-zî´-ges)—Having mixed hereditary factors, not a pure line.

Homoptera (ho-mòp´-ter-e)—An insect family made up of species having sucking mouthparts and usually two pairs of wings. Includes aphids, scales, leafhoppers and cicadas.

Homozygous (hom´-o-zî´-ges)—Having purity of type, a pure line.

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 branch of the science of agriculture that relates to cultivating gardens or orchards, including the growing of vegetables, fruits, flowers and ornamental shrubs and trees.

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

Hot composting—a fast composting process that produces finished compost in 6 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.

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

Humus—The end product of decomposed animal or vegetable matter. (See also Compost.)

Hybrid—A cross between two varieties or species, whether of the same genus or two genera.

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 (hi´-me-nòp´-ter-e)—An insect family made up of species having four membranous wings, of which the front pair are larger. Includes bees, wasps, sawflies and ants.

Hypha—A single filament of a fungus.

Hypocotyl (hî´-pe-kät´-el)—The first leaf-like structure that appears on a germinating seed. Grows upward in response to light.

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 Resistant, Tolerant.)

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

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.)

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 collective (in´-fle-rès´-ens)—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—The parts of a pathogen that infect plants.

Insectary plant (in-sèk´-te-rê)—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 drying out of its interior organs.

Insecticide—Any material that kills insects. Includes numerous botanical, mineral and chemical products, both organic and synthetic.

Instar—The stage of an insect’s life between molts.

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.

Intercropping, interplanting—The practice of mixing plants to break up pure stands of a single crop.

Internode, interstem—The portion of a stem between two 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 out-competing other plants in the same area; difficult to control.

Ion—An atom or molecule with either positive or negative charges. (See also Anion, Cation.)

Isoptera (ï-sòp´-ter-e)—An insect family made up of species having soft bodies, strong mandibles and well-developed claws. Workers and soldiers are wingless and sterile. Termites are an example.

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 carbohydrate utilization. (2) The first stage of an insect’s life cycle, either a larva or a nymph.

K—See Potassium.

Key—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.

Larva—The immature form of an insect that undergoes complete metamorphosis. Different from the adult in form. Also called caterpillar.

Latent bud—A bud that does not break during the season after it is formed. Usually found on the lower portion of a shoot, it does not expand under normal growth stimuli. It will be stimulated into breaking if the growth above it is damaged or pruned away.

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

Lateral bud—A bud on the side, rather than the tip, of a stem.

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 aboveground stem.

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 laterals. (See also Central leader.)

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

Leaflet—A single division of a compound leaf.

Lenticel (lènt´-e-sèl)—A small opening on the surface of fruits, stems and roots that allows exchange of gases between internal tissues and the atmosphere.

Lepidoptera (lèp´-ì-dòp´-ter-e)—An insect family made up of species having four wings covered with minute scales. Members undergo complete metamorphosis through the egg, larva, pupa and adult stages. Includes butterflies and moths.

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

Loam—A soil with roughly equal influence from 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.)

**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.

**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**—Ripeness, usually the state of development that results in maximum quality.

**Meristem** (mèr’-e-stèm)—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.

**Mesophyll** (mèz’-e-fìl´)—A leaf’s inner tissue, located between the upper and lower epidermis, where raw materials (carbon dioxide and water vapor) are held for use in photosynthesis.

**Metamorphosis**—The process by which an insect develops. (See also Complete metamorphosis, Simple metamorphosis.)

**Microclimate**—The climate of a small area within a larger climate area. For example, a backyard can have a climate different from that of the surrounding neighborhood, or there may be climate differences within a backyard. Microclimates can influence plant growth and should be considered in plant selection and care.

**Micronutrient**—A nutrient used by plants in small amounts, less than 1 part per million (boron, chlorine, copper, iron, manganese, molybdenum and zinc). Also called a trace element.

**Micropore**—A fine soil pore, typically a fraction of a millimeter in diameter. Micropores are responsible for a soil’s ability to hold water.

**Modified central leader, modified 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 skin during insect growth. The form assumed between molts is called an instar.

**Monocotyledon, monocot** (mòn’ e-kòt’ l-é-d’-n)—A plant having one cotyledon (seed leaf).

**Monoeccious** (me-nê´-shes)—A species having both male and female flowers on the same plant. Pecans, avocados and squash are examples of monoeccious plants. (See also Dioecious.)

**Morphology** (môr-fòl´-e-jê)—The study of the form of plants or plant parts.

**Mosaic**—Nonuniform 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
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weeds. Wood chips, bark chips and shredded leaves are examples; inorganic materials such as rocks or newspapers also are used.

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

**Mycelia** (mî-sê´-lê-e)—Masses of fungal threads (hyphae) that make up the vegetative body of a fungus.

**Mycology** (mi-kòl´-e-jê)—The study of fungi.

**Mycoplasma**—See Phytoplasma.

**Mycorrhizae** (mî-ke-rî´-zê)—Beneficial fungi that infect plant roots and increase their ability to take up nutrients from the soil.

**N**—See Nitrogen.

**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** (ne-kro´-sis)—Tissue death.

**Nematocide** (ni-màt´-e-sîd)—A material that kills or protects against nematodes.

**Nematode**—A microscopic roundworm, usually living in the soil. Many feed on plant roots and can be disease pathogens or vectors. Others are beneficial parasites of insect pests.

**Nitrate** (NO$_3^-$)—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 (N)**—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.

**Node**—The point on a plant where a branch, bud, or leaf develops. On younger branches, it usually is marked by a slight swelling. The space on the stem between nodes is an internode.

**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.

**N-P-K**—Acronym for the three major plant nutrients contained in manure, compost and fertilizers. N stands 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 stage of an insect that undergoes simple metamorphosis. Usually similar in form to the adult.
Offset—A new shoot that forms at the base of a plant or in a leaf axil.

Oil—See Horticultural oil.

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

Organelle (ör´ge-nèl´)—A structure within a cell, such as a chloroplast, that performs a specific function.

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.).

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

Orthoptera (ôr-thòp´-ter-e)—An insect family made up of species having a tough, leathery shell, membranous hindwings and straight forewings. Includes locusts, crickets, grasshoppers and katydids.

Osmosis (äs-mo´-ses)—Passage of materials through a membrane from an area of high concentration to an area of lower concentration.

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).

Ovule—Within the ovary, a body that will develop into seed after fertilization.

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

P—See Phosphorus.

Palisade mesophyll (mèz´-e-fil´)—The cells just beneath a leaf’s upper epidermis that contain most of the leaf’s chlorophyll and are responsible for most photosynthesis.

Palmate (pàl´-mât´)—(1) A leaf whose veins radiate outward from a single point somewhat like the fingers of a hand. (2) A form of espalier training.

Parasite—Any animal or plant that lives in or on another animal or plant and withdraws nutrients from its host.

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

Parterre (pär-târ´)—A formal garden in which shrubs, flowers and paths form a geometric pattern of matched pairs.

Parthenocarpic (pår´-the-no-kär´-pìk)—Seedless.

Pathogen—Any organism that causes disease. Generally applied to bacteria, viruses, fungi, nematodes and parasitic plants.

Pathology—The study of diseases.

Ped—A cluster of individual soil particles.

Pedicel (pèd´-i-sel)—The stem of an individual flower.

Peduncle (pì-dunga´-kel)—The main stem supporting a cluster of flowers (as opposed to a pedicel, which is the stem of an individual flower).

Pendulous—More or less hanging or declined.

Perennial—A plant that lives 2 or more years and produces new foliage, flowers and seeds each growing season.

Perianth (pèr´-é-ànth´)—Collectively, all external flower parts.

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—The usually showy structures around a flower’s reproductive organs.

Petiole (pèt'-ê-ol’)—The stalk of a leaf.

pH—A measure of acidity or alkalinity. The scale is logarithmic; a change in 1 pH unit is a 10-fold change. Values from 0 to 7 indicate acidity, and values from 7 to 14 indicate alkalinity. For example, 7 is neutral, 6 is acid (10 times the hydrogen ion concentration of pH 7), and 5 is very strongly acid (100 times the hydrogen ion concentration of pH 7).

Phenological stage (fé-ne-lò´-ji-kel)—Crop development stage.

Pheromone (fèr´-e-mon)—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 (flo´-èm´)—Photosynthate-conducting tissue. (See also Xylem.)

Phosphate—The form of phosphorus listed in most fertilizer analyses (P₂O₅).

Phosphorus (P)—A primary plant nutrient, especially important for flower production. In fertilizer, usually expressed as phosphate (P₂O₅).

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

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

Photosynthesis (fo´to-sìn´-thì-sìs)—The process in green plants of converting water and carbon dioxide into sugar using energy from sunlight.

Phototropism (fo-tôt´-re-pìz´-em)—A growth response to light. Growth of a plant toward a light source is the most common example.

Phytoplasma (fit´-o-plaz´-me)—A microscopic, bacteria-like organism that lacks a cell wall. Previously called mycoplasma.

Phytotoxic—Toxic to a plant (phyto = plant).

Picotee (pìk´e-tê´)—A pattern of flower petal coloration in which the edges of the petal are a contrasting color to the body.

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

Pistil (pis´-tel)—The female sexual organ of a flowering plant, made up of the stigma, style and ovary.

Plant growth regulator—See Growth regulator.

Plant nutrition—A plant’s need for and use of basic chemical elements. (See also Macronutrient, Micronutrient.)

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

Pleniflora, pleno, plena—A term used in botanical names to indicate a double-flowered variety. (See also Double.)

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.

Pollenizer—A plant whose pollen sets fruit on another plant. (See also Cross-pollination.)
Pollination—The transfer of pollen from a male anther to a female stigma, enabling fruits to set and develop.

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

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

Pomology (po-möl’-e-jê)—The science of fruits and the art of fruit culture, especially tree fruits.

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

Potash—The form of potassium listed in most fertilizer analyses (K₂O).

Potassium (K)—A primary plant nutrient, especially important for developing strong roots and stems. In fertilizers, usually expressed as potash (K₂O).

Predator—An animal that eats another animal.

Preemergent—A product applied before crops or weeds emerge from the soil.

Preharvest interval—The period of time that must pass from the time a pesticide is applied to a crop until the crop is safe to pick and use.

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 nutrient—A nutrient required by plants in a relatively large amount (nitrogen, phosphorus and potassium). (See also Macronutrient.)

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

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

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

Prune—To remove plant parts to improve a plant’s health, appearance or productivity.

Pseudobulb (soo’-do-bûlb’)—A thickened, aboveground, modified stem that serves as a storage organ. Found in some orchids.

Pubescent (pyoo-bès´-ent)—Hairy.

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

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

Quick-release fertilizer—A fertilizer that contains nutrients in plant-available forms such as ammonium and nitrate.

Raceme (râ-sêm´)—A flower stalk on which the florets start blooming from the bottom of the stem and progress toward the top.

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

Radicle—The first part of a seedling to emerge from the seed. Grows downward and develops into the primary root.

Relative humidity—The ratio of water vapor in the air to the amount of water the air could hold at the current temperature and pressure.
Resistant—A plant having qualities that make it retard the activities of a pathogen or insect pest. (See also Immune, Tolerant.)

Respiration—The process within plants of converting sugars and starches into energy. (See also Oxidation.)

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

Rhizobia bacteria (ri’-zo-’bê-e)—Bacteria that live in association with roots of legumes and convert atmospheric nitrogen to plant-available forms, a process known as nitrogen fixation.

Rhizome (ri’-zom’)—A thickened underground stem that grows horizontally with bud eyes on top and roots below. Bearded iris is an example of a plant that produces rhizomes.

Rhizosphere (ri’-ze-sfìr’)—The thin layer of soil immediately surrounding plant roots.

Root cutting—A section of root prepared for the purpose of vegetative propagation.

Root hair—A delicate, elongated epidermal cell that occurs just behind a root’s growing tip. Root hairs increase the root’s surface area and absorptive capacity.

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

Root sucker—See Sucker.

Root-bound—A condition in which a plant’s roots have completely filled its container. Typically, the roots begin to encircle the pot’s outer edge. Further growth is prevented until the plant is removed from the container.

Rootstock—The root or stem onto which a scion or interstock is grafted.

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

Rot—Decomposition and destruction of tissue.

Rotation—The practice of growing different plants in different locations each year to prevent the buildup of soilborne 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 (roo’-gos)—Wrinkled.

Runner—See Stolon.

Russet—Yellowish-brown or reddish-brown scar tissue on a fruit’s surface.

Sand—The coarsest type of soil particle (0.05 to 2 mm in diameter).

Sanitation—The process of removing sources of plant pathogens from a growing area, for example, by cleaning up plant debris and sterilizing tools and growing media.

Scab—(1) A crust-like disease lesion. (2) A specific disease that causes scab lesions.

Scaffold, scaffold branches—The principal branches of a tree or shrub arising from the trunk or another main branch to form the plant’s framework.

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

Scarification (skàr´-e-fì-kâ´-shen)—Nicking, sanding, or otherwise compromising the hard outer coating of a seed to increase its water intake and thus promote germination. Sometimes incorrectly called scarfing.

Scion—A cutting or bud that is grafted to the stock of another plant.

Secondary nutrient—A nutrient needed by plants in a moderate amount: calcium, magnesium and sulfur. (See also Macronutrient, Primary nutrient.)
Seed coat—A hard outer covering that protects a seed from disease and insects. Also prevents water from entering the seed and initiating germination before the proper time.

Seed leaf—See Cotyledon.

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-fruitful—A plant that bears fruit through self-pollination.

Self-unfruitful—A plant that requires another variety for pollination. (See also Pollenizer.)

Senescence (si-nës’-ens)—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 (sêp´-el)—An appendage at a flower’s base, typically green or greenish and more or less leafy in appearance. Collectively, the calyx.

Separation—The process of removing new bulbs or corms from their parent for purposes of propagation.

Sessile (sês´-il’)—Stalkless and attached directly at the base, as in sessile leaves.

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

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.

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.)

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—Direct evidence of a damaging factor (for example, a pest or pathogen itself, secretions, insect webbing or chemical residue).

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 (0.002 to 0.05 mm in diameter).

Simple metamorphosis—A type of insect development in which the insect passes through the stages of egg, nymph and adult. The nymph usually resembles the adult. (See also Complete metamorphosis.)

Slow-release fertilizer—A fertilizer material that must be converted into a plant-available form by soil micro-organisms.

Soft pinch—To remove only the succulent tip of a shoot, usually with the finger-tips.

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

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 aggregates (peds) in a soil.

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

Soilless mix—A sterile potting medium consisting of ingredients such as sphagnum peat moss and vermiculite.

Soluble salt—A compound 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. Not proven to be effective.

Species—The basic unit of plant or animal classification. Plants within a species have several characteristics in common. Most important, they can cross with one another, but normally not with members of other species. Classification of species is quite fluid, with periodic revision by botanists.

Specific epithet—The second word in a plant name. (The word “species” refers to plants, not the word in the name.)

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

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.

Sport—See Mutation.

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

Spur—On fruit trees, a short, compact twig with little or no internodal development on which flowers and fruit are borne.

Stamen (stâ’-men)—The male, pollen-producing part of a flower consisting of the anther and its supporting filament.

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.

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 part of a female sex organ that receives pollen. Supported by the style, through which it is connected to the ovary. Often sticky when receptive.

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

Stock—See Rootstock.

Stolon (sto´-lôn’, -len)—A horizontal stem running along, but above, the soil surface and producing roots and leaves where its nodes contact the soil. Strawberries are an example of a plant with stolons. Also called a runner.

Stoma (pl. stomates, stomata)—Tiny openings in a leaf’s epidermis that allow water, oxygen and carbon dioxide to pass into and out of the plant.

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—The exposure of seeds to moisture and low temperature to overcome dormancy.

Style—The part of a plant’s female sex organ that supports the stigma and connects it to the ovary.
Stylet—A nematode’s lance-like or needle-like mouthpart. Used to puncture and feed from plant cells.

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—The practice of planting new crops in areas vacated by harvested crops.

Sucker—A shoot or stem that originates underground from a plant’s roots or trunk, or from a rootstock below the graft union. (See also Reversion growth.)

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

Sunscald—Winter or summer injury to the trunk of a woody plant caused by hot sun and fluctuating temperatures. Typically, sunscalded bark splits and separates from the trunk.

Surfactant—See Additive.

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

Symbiotic—Mutually beneficial.

Symptom—A change in a plant’s growth or appearance in response to living or nonliving damaging factors.

Systemic pesticide—A pesticide that moves throughout a target organism’s system to cause death.

Taproot—A thick central root attached directly to a plant’s crown. Taproots branch little if at all.

Taxonomy (tak-sán’-e-mê)—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.

Tendril—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 at the tip of a stem, trunk, or branch. Its development extends the plant’s growth.

Thatch—A tightly intermingled layer of stems, leaves and roots, living and dead, that forms between the soil surface and green vegetation of grass.

Thermoperiod—The change in temperature from day to night.

Thermophilic (ther-me-fìl´-ìk)—High-temperature, 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.

Thorn—A hard, sharp-pointed, leafless branch. Hawthorn is an example of a plant that produces thorns. (See also Prickle.)

Tiller—A shoot that arises from a plant’s crown. Generally associated with grass species.

Tissue culture—The process of generating new plants by placing small pieces of plant material onto a sterile medium. Also called embryo culture.
**Tolerant**—A plant that will produce a normal yield even if infested by a disease or insect pest. (See also Immune, Resistant.)

**Topiary** (to´-pê-èr´-ê)—A tree or shrub shaped and sheared into an ornamental, unnatural form, usually a geometric shape or the shape of an animal.

**Totipotency** (tot-e-pot´en-sê)—The ability of any cell to develop into a complete plant.

**Trace element**—See Micronutrient.

**Transpiration**—The process of losing water in the form of vapor through stomata.

**Tree**—A woody plant that typically grows more than 12 feet tall and has only one main stem or trunk.

**Tropism** (tro´-piz´-em)—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.

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

**Tuber**—An underground storage organ made up of stem tissue. Contains buds on the surface, from which shoots may arise. Potatoes are an example.

**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.

**Turgor** (ter´-ger)—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).

**Umbel** (em´-bel)—A group of flowers growing from a common point on a stem.

**Understock**—See Rootstock.

**Vaporization**—The evaporation of the active ingredient in a pesticide during or after application.

**Variety**—A strain of a plant having distinctive features that persist over successive generations in the absence of human intervention. Generally, variety applies to naturally occurring strains, while cultivar applies to horticulturally developed strains.

**Vascular tissue**—Water-, nutrient- and photosynthesize-conducting tissue. (See also Xylem, Phloem.)

**Vector**—A transmitter or carrier of disease.

**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** (vè-nâ´-shen)—The arrangement of veins in a leaf.

**Vernation** (ver-nâ´-shen)—The arrangement of new leaves within an older leaf sheath (e.g., on a grass plant).

**Vertical spacing**—The vertical space between branches on a tree.

**Viability**—A seed’s ability to germinate.

**Virus**—An infectious agent too small to see with a compound microscope. Multiplies only in living cells.
Water-holding capacity (WHC)—The ability of a soil’s micropores to hold water for plant use.

Water sprout—A vigorous shoot originating above ground on a plant’s trunk, older wood, or bud union. Usually breaks from a latent bud. Often the result of heavy pruning.

Water-soaking—Lesions that appear wet and dark and usually are sunken and/or translucent. Often a symptom of bacterial disease.

Weed-and-feed—A combination fertilizer and herbicide sometimes used on lawns.

Wilt—(1) Lack of freshness and turgor and drooping of leaves from lack of water. (2) A vascular disease that interrupts a plant’s normal uptake and distribution of water.

Wilting point (WP)—The point at which water content within plant cells is low enough that cellular turgor is lost and the plant wilts.

Witches’ broom—Abnormal brush-like development of many weak shoots.

Woody perennial—A plant that goes dormant in the winter and begins growth in spring from aboveground stems.

Xeric (zèr’-ik)—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 (zi’-lem)—Water- and nutrient-conducting tissue. (See also Phloem.)