Develop Your Diagnostic Skills Workshop Series
Glossary of Terms

Most of the following terms are taken from The North Carolina Extension Gardener Handbook: https://content.ces.ncsu.edu/extension-gardener-handbook/glossary, or from the Illustrated Glossary of Plant Pathology that may be found on the APS website: https://www.apsnet.org/edcenter/resources/illglossary/Pages/default.aspx. In the first section below, we include common terms associated symptoms, the next section is terms associated with signs, and the last section includes select entries from the entire North Carolina Extension Gardener Handbook, with terms that pertain less to plant pathology or plant health removed. To see the entire glossary, however, please refer to the first link above.

Symptoms:

Blight: Extensive and rapid death of plant tissue.

Canker: Sharply-defined dead area on a woody plant part.

Chlorosis (adj. chlorotic): Yellowing of a normally green plant part.

Damping off: Death of seedlings, before or after emergence from the soil.

Dieback: Death of a branch from the tip down.

Fruit rot: Decay of fruit. May be firm or soft.

Fruit spot: Lesions or discolored or necrotic spots on fruit.

Gummosis: Exudation of sticky sap. In conifers, this is known as “resinosis.”

Leaf blights: rapid death of leaves.

Leaf galls: Swellings on leafy tissue.

Leaf spots: Lesions or discolored or necrotic spots on leaves.

Mosaic or mottle: Patchwork of colors, usually light-green, yellow, or dark-green, against the normal green background color of the leaf.

Mummy: A dried, shriveled fruit.

Necrosis (adj. necrotic): Death of plant tissue. A necrotic leaf blotch is pictured. Note that any well-defined dead area of a leaf, stem, or root can be called a “necrotic lesion.”

Ringspot: Chlorotic or necrotic rings or arcs surrounding healthy tissue.

Root galls: Swellings on root tissue.

Root rot: Decay of roots. The exterior portion is easily pulled off the central core of vascular tissue.

Scorch: Necrosis and desiccation of leaf tissue, starting at the margins.

Shot-hole: Clean-edged, round to oval holes in leaves where necrotic spots have fallen out.

Stem galls: Swellings, usually woody, on stems.

Stippling or flecking: Numerous very small chlorotic or necrotic points.

Vascular streaking: Darkening of the plant's conductive tissue. Visible after cutting along or into the stem.

Water-soaking: A dark, "wet" appearance to a spot, best seen by holding the leaf up to a light source.

Wilting: Loss of turgor in all or part of a shoot.

Witches'-broom: Abnormal proliferation of shoots on one area of a stem.

Malformation: Any deviation from the normal shape of a plant organ.

Signs are evidence of the damaging organism or factor.

Bacterial streaming- large populations of bacteria that exude from the cut surface of infected plant tissue when observed with a microscope

Conks-a fungal structure, usually formed by wood rot fungus, that commonly extends from the bark in a shelflike fashion.

Emergence holes-an opening created primarily by wood-infesting insects to exit the wood.

Frass-small, dark, shiny drops of excrement from insects.

Fruiting bodies-any of various complex, spore-bearing fungal structures

Gallery-a collection or pattern of small tunnels radiating from a single source, such as is made by certain insects.

Honeydew-a sticky fluid rich in sugars, excreted by certain insects, commonly aphids, mealybugs, and whiteflies.

Mushrooms-a large fungal fruit body, spores typically develop under the cap on gills, and other structures.

Mycelium-a mass of thread-like vegetative growth of fungi, individual threads are called hypha or plural hyphae,

Nematodes- the pathogen or parasite

Ooze- bacteria that is forced out of tissue

Powdery mildew- the pathogen

Rust- the pathogen

Rhizomorphs-a specialized fungal structure

Sclerotia- resting structure of a pathogen

Smut- the pathogen

Sooty mold-a dark-colored fungus growing on honeydew secreted by insects, typically on leaves, stems, and fruit.

A to Z Glossary of terms

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

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.

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.

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 non-meristematic 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.

Aerobic. Active in the presence of free oxygen.

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.)

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.

Anaerobic. Active in the absence of free oxygen.

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.

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

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

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.

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

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.

Blackleg. Darkening at the base of a stem.

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 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.

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 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.

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

C

Callus. Tissue that forms over wounds.

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.

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.

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

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.

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.)

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

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 geneticially different types of cells.

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

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

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.

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.

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

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.)

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.)

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

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.

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

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

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.

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.

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.

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.

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

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.

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.)

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.

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

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.

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.

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.

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.

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.

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.

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.

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

Etioliation. 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.

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

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

F

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

Fastigiate. (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.

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.

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.

Frass. The excrement of insect larvae.

Frond. 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.

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.

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

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.)

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

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.

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.

Haustorium. 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.

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.

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.

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

Hypocotyl. The seedling stem that develops below the cotyledons.

I

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

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.

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.)

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.

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.

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

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.

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.

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

J

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

K

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.

L

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.

Lesion. A localized area of discolored or dead tissue.

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

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

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

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.

Margin(al). Edge or border of a leaf planting

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

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.

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).

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

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.

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

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.

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.

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.)

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

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

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

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

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

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.

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

O

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.

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.

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.

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

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.

Pathogen. Any organism that can cause a disease.

Pathology. The study of plant diseases.

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

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.

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+) ions in the soil. pH values are logarithmic.

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.

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.

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.

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

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

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

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.

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

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.

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.

Pubescent. Leaf textures that are hairy.

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.

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

R

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

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.

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

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 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 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.

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

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.

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.

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

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.

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.

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.

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.

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.

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 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.

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

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.

Sorus (pl. 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.

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

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.

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.

Stippling. Small spots on plant tissue caused by insect feeding.

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.

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.

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.

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 that is found at the tip of shoots.

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. 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.

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*).

Trace element. See Micronutrient.

Trailing. Cane berries that are not self-supporting and have low yields.

Translocation. Movement of sucrose and other substances around/within plant tissues through phloem.

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.

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.

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).

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

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.

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

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

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.

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.

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.