

Botany Terms

A

ABAXIAL

Abaxial means being located on the side away from the axis. The abaxial surface of a leaf is its underside.

ABSCISIC ACID

Abscisic acid is a plant hormone that inhibits growth, causes the abscission of leaves, induces dormancy, closes stomata, and triggers other phenomena in response to adverse conditions.

ABSCISSION

Abscission is the normal separation of a leaf, fruit, or flower from a plant. Abscisic acid is the plant hormone involved in abscission.

ABSCISSION ZONE

The abscission zone is the area at the base of leaf's petiole, a fruit stalk, or a branch in which the separation (abscission) layer develops. The disintegration of this layer causes a leaf, fruit, or flower to fall from a plant. Abscisic acid is the plant hormone involved in this process.

ACICULAR

Acicular means needle-like (for example, pine needles are acicular).

ACID RAIN

Acid rain is polluted and harmful to the environment. Acid rain has a low pH. Acid rain may have been a component of the K-T extinction.

ACHENE

An achene is a dry, indehiscent one-seeded fruit with a leathery pericarp that is easily separated from the seed coat (for example, sunflower).

ADAPTIVE RADIATION

Adaptive radiation is the diversification of a species as it adapts to different ecological niches. If successful, the species becomes specialized for the new environments (the mechanism being natural selection), and they eventually evolve into different species.

ADAXIAL

Adaxial means being located on the side towards the axis. The adaxial surface of a leaf is the upper side.

ADENOSINE TRIPHOSPHATE

ATP (short for adenosine triphosphate) is a nucleotide that has a ribose sugar and three phosphate groups. ATP is a high-energy molecule used for energy storage by organisms. In plant cells, ATP is produced in the cristae of mitochondria and chloroplasts.

ADVENTITIOUS

Adventitious organs are those organs that grow from an unusual part of the plant. For example, fibrous adventitious roots grow from the trunk above the ground instead of starting underground.

AERIAL ROOT

An aerial root is a plant's root that is produced above the ground.

AGE

An age is a unit of geological time which is distinguished by some feature (like an Ice Age). An age is shorter than epoch, usually lasting from a few millions of years to about a hundred million years.

AGRICULTURE

Agriculture is the science of farming, including growing plants and raising animals.

AGROFORESTRY

Agroforestry is a land use system in which woody perennials are grown with agricultural crops (together with other land uses, like animal production).

AGROLOGY

Agrology is a branch of soil science that studies the soil used in producing crops.

AGROSTOLOGY

Agrostology is a branch of botany that studies grasses.

AIR PLANT

Air plants (also called epiphytes) are plants that live attached to a plant (or other structure like a telephone pole or a building) and not in the ground). Epiphytes include many orchids and bromeliads. Epiphytes are not parasites; they get water and nutrients from the air (and not from their host).

ALGAE

Algae are simple photosynthetic organisms that belong to the kingdom Protista. Most algae are aquatic; seaweeds are algae. Some algae are unicellular while others are multicellular.

ALIEN

An alien is a plant that is not native to a place; it came from another place.

ALOE

Aloes are succulent, clumping plants with fleshy, toothed (non-fibrous) leaves. There are about 300 species of aloe; they live in warm, dry habitats and most originated in northern Africa. Aloe vera is a popular plant whose gel-like sap is used as a medicinal salve; it is originally from

northern Africa, the Cape Verde Islands, and the Canary Islands. Aloe vera has gray-green leaves and tubular yellow flowers that grow on a stalk that is up to 3 feet tall. Classification: Family Liliceae (lilies). Genua Aloe, Species - about 300 including A. vera, A. ferox, etc.

ALTERNATE

An alternate pattern of leaves or buds is a pattern in which there is one leaf (or bud) per node, and on the opposite side of the stem (not in pairs).

ALVAREZ THEORY OF EXTINCTION

This theory is that a large asteroid, meteor, or comet hit the Earth 65 million years ago, causing huge atmospheric and geologic disruptions, leading to a mass extinction which killed the dinosaurs and many other plant and animal species.

AMBER

Amber is a yellowish, fossilized tree resin (from conifers) that sometimes contains bits of trapped matter.

AMYLOPLAST

A organelle (with double membranes) in some plant cells that stores starch. Amyloplasts are found in starchy plants like tubers and fruits.

ANGIOSPERM

(pronounced AN-jee-oh-sperm) Angiosperms (meaning "covered seed") are flowering plants. They produce seeds enclosed in fruit (an ovary). They are the dominant type of plant today; there are over 250,000 species. Their flowers are used in reproduction. Angiosperms evolved about 145 million years ago, during the late Jurassic period, and were eaten by dinosaurs. They became the dominant land plants about 100 million years ago (edging out conifers, a type of gymnosperm). Angiosperms are divided into the monocots (like corn) and dicots (like beans).

ANNUAL

An annual is a plant that goes through its entire life cycle within a year. It grows from a seed, matures, produces seed, and dies within a year.

ANNUAL RING

Annual rings are concentric circles that appear on tree trunk cross-sections that mark the end of a growing season. These rings show whether the tree grew a lot or a little that year.

ANTHER

The anther is the tip of a flower's stamen. The anther contains the pollen.

ANTHOPHYTA

Anthophyta are flowering plants, the largest group of plants (which includes the grasses). The flowers are used in reproduction. They evolved during the Cretaceous period.

APICAL DOMINANCE

Apical dominance is the phenomenon in which a terminal (end) bud inhibits the development of lateral (side) buds.

APICAL MERISTEM

The apical meristem consists of meristematic cells located at the tip (apex) of a root or shoot.

APOGEOTROPIC ROOTS

Apogeotropic roots are roots that grow upwards to the soil surface (other roots grow downwards), emerging from the soil and growing upwards. The sego palm has apogeotropic roots, as do cycads.

APOMIXIS

Apomixis is a type of reproduction in which a plant produces seeds without fertilization.

APOMORPHY

An apomorphy is a new genetic characteristic common to a clade. Feathers are an apomorphy for birds.

APPLESEED, JOHNNY

Johnny Appleseed was a man who spread apple trees through the USA. His real name was John Chapman, but he was called Johnny Appleseed because of his love for growing apple trees.

AQUATIC

Aquatic organisms are those found in water. Many plants are aquatic, including seaweeds.

ARABLE

Arable land is suitable for growing crop plants.

ARBOREAL

Arboreal means living in trees. Many animals are arboreal, including the sugar glider.

ARBORETUM

An arboretum is a park or garden where trees and shrubs are grown for educational and/or scientific uses.

ARCUATE

Leaves with arcuate venation have veins that are curve towards the apex (tip).

AREOLE

Areoles are circular clusters of spines on a cactus. Flowers bud at an areole and new stems branch from an areole.

ARID

An arid area is dry and hot, with little rainfall and few plants.

ASTEROID

An asteroid is a large rock or small planet orbiting the Sun. Most asteroids lie in a belt between Mars and Jupiter. An asteroid impact with the Earth may have caused the K-T mass extinction.

ATMOSPHERE

The atmosphere is the mixture of gases that surrounds the Earth. The Earth's atmosphere is mostly nitrogen.

ATOM

Everything is made up of tiny atoms. An atom is the smallest part of an element that has the properties of that element.

ATP

ATP is short for adenosine triphosphate; it is a nucleotide that has a ribose sugar and three phosphate groups. ATP is a high-energy molecule used for energy storage by organisms. In plant cells, ATP is produced in the cristae of mitochondria and chloroplasts.

AUTOTROPH

(pronounced AW-toh-trofe) An autotroph (or producer) is an organism that makes its own food from light energy or chemical energy without eating. Most green plants, many protists (one-celled organisms like slime molds) and most bacteria are autotrophs. Autotrophs are the base of the food chain.

AUXIN

Auxins are growth hormones found in plants. Auxins induce phototropism, apical dominance, cell elongation and many other reactions.

AWN

The awn is a bristle-like extension of a plant near its tip.

AXIL

The axil of a plant is the angle between the upper side of the stem and a leaf, branch, or petiole. In flowering plants, the bud develop in the axil of a leaf.

abscisic acid (ab-siz'ik as'id) (AHA) a growth-inhibiting hormone of plants; it is involved with other hormones in dormancy (p. 203)

- **abscission** (ab-sizh'un) the separation of leaves, flowers, and fruits from plants after the formation of an abscission zone at the base of their petioles, peduncles, and pedicels (p. 125)
- **achene** (uh-keen') a single-seeded fruit in which the seed is attached to the pericarp only at its base (p. 140)
- **acid** (as'id) a substance that dissociates in water, releasing hydrogen ions (p. 19)

- active transport {ak'tiv trans'port) the expenditure of energy by a cell in moving a substance across a plasma membrane against a diffusion gradient {p. 159)
- [adventitious](#) (ad-ven-tish'uss) said of buds developing in internodes or on roots, or of roots developing along stems or on leaves (p. 266)
- aerobic respiration (air-oh'bik res-puh-ray'shun) respiration that requires free oxygen (p. 186)
- [agar](#) (ah'gur) a gelatinous substance produced by certain red algae and also a few brown algae; it is often used as a culture medium, particularly for bacteria (p. 199; 341,347)
- [aggregate fruit](#) (ag'gruh-git froot) a fruit derived from a single flower having several to many pistils (p. 142)
- air layering (air lay'urr-ing) an asexual plant propagation technique whereby aerial stems are induced to form roots. The rooted portion of the stem is then cut and planted (p. 267)
- [algin](#) (al'jin) a gelatinous substance produced by certain brown algae; it is used in a wide variety of food substances and in pharmaceutical, industrial, and household products (p. 337)
- [allele](#) (uh-leel') one of at least two alternative forms of a gene (p. 242)
- [Alternation of Generations](#) (ol-turnay'shun uv jen-ur-ay'shunz) alternation between a haploid gametophyte phase and a diploid sporophyte phase in the life cycle of sexually reproducing organisms (p. 227,384)
- amino acid (ah-mee'noh as'id) one of the organic, nitrogen-containing units from which proteins are synthesized; there are about 20 in all proteins (p. 23)
- [anaerobic respiration](#) (an-air-oh'bik respuh-ray'shun) respiration in which the hydrogen removed from the glucose during glycolysis is combined with an organic ion (instead of oxygen) (p. 186)
- [aneuploid](#) (an'you-ploid) an aberration in normal chromosome number in which one or more extra chromosomes are present or one or more chromosomes are missing (p. 239)
- [angiosperm](#) (an'jee-oh-spurnl) a plant whose seeds develop within ovaries that mature into fruits (p, 442)
- [annual](#) (an'you-ul) a plant that completes its entire life cycle in a single growing season(p.91, 132)
- [annual ring](#) (an'you-ul ring) a single season's production of xylem (wood) by the vascular cambium (p. 93)
- [annulus](#) (an'yu-luss) a specialized layer of cells around a fern sporangium: it aids in spore dispersal through a springlike action; also a membranous ring around the stipe of a mushroom (p. 411)

- [anther](#) (an'thur) the pollen-bearing part of a stamen (p. 133,443)
- [antheridiophore](#) (an-thur-id'ee-oh-for) a stalk that bears an antheridium (p. 386)
- [antheridium](#) (pl. antheridia) (an-thurid'ee-um; pl. an-thur-id'ee-ah) the male gametangium of certain algae, fungi, bryophytes, and vascular plants other than gymnosperms and angiosperms (p. 332, 351,386)
- [anthocyanin](#) (an-thoh-sy'ah-nin) a water-soluble pigment found in cell sap; anthocyanins vary in color from red to blue (p. 43)
- antibiotic (an-tee-by-ot'ik) a substance produced by a living organism that interferes with the normal metabolism of another living organism (p. 373)
- anticodon (an-tee-koh'don) the three nucleotide sequence in a tRNA molecule that base pairs with the complementary mRNA codon for the amino acid carried by that specific tRNA (p. 237)
- [apical dominance](#) (ay'pi-kul dom'i-nunts) suppression of growth of lateral buds by hormones (p. 205)
- [apical meristem](#) (ay'pi-kul mair'i-stem) a meristem at the tip of a shoot or root (p.54)
- [apomixis](#) (ap-uh-mik'sis) reproduction without fusion of gametes or meiosis in otherwise normal sexual structures (p. 282)
- [archegoniophore](#) (ahr-kuh-goh'nee-oh-for) a stalk bearing an archegonium (p. 386)
- [archegonium](#) (pi. archegonia) (ahr-kuhgoh'nee-um; pl. ahr-kuh-goh'nee-ah) the multicellular female gametangium of bryophytes and most vascular plants other than angiosperms (p. 386)