

Term	Definition
Adventitious	The term adventitious means developing in an unusual position. In terms of root development, it means roots that grow from the stem or leaf.
Air root pruning	Air root pruning happens when the roots of the seedlings grow through the base of the germination tray and is pruned by air exposure.
Air-filled porosity	The air-filled porosity of a growth medium is the percentage of its volume that contains air after it has been saturated with water and allowed to drain. It is a measure of how much air is available to the roots and is therefore an excellent measure of determining the suitability of the physical properties of a growth medium.
Alien plant	Alien plants are plants that originate from other countries or areas. Alien plants were brought to this country or region for economic or ornamental reasons.
Apical bud	The apical bud is the growth point of a stem, containing the apical meristem.
Apical dominance	Apical dominance refers to powerful tip growth that suppresses the growth of lateral buds.
Beneficial organism	In agriculture, beneficial organisms contribute positively by their habits, for example by feeding on pest organisms or by pollinating flowers to enable fruit development.
Cambium	Cambium is a cylindrical layer of cells that gives rise to new cells, such as xylem and phloem cells.
Cavitation	Cavitation is caused when there are air bubbles in the water. When air bubbles hit the impeller (the section of the pump that rotates and moves the water) they implode on the impeller and can break its parts.
Cellulose fibrils	Cellulose fibrils are the 'threads' that make up the walls of root cells.
Chloroplast	Chloroplasts are the parts of plant cells that contain chlorophyll and make the plant part green.
Collenchyma	The collenchyma is a special kind of strengthening tissue in the cortex of many herbaceous stems.
Cortex	The cortex is the internal part of the root between the epidermis and the central vascular cylinder (stele).
Cotyledon	The cotyledons are the seed leaves. Monocotyledonous plants (monocots) have one cotyledon, and dicotyledonous plants (dicots) have two cotyledons in their seeds.
Deionisation	Deionisation is the removal of ions from water by exchange with other ions associated with fixed charges on a resin.
Demineralised water	Demineralised water refers to water from which the dissolved salts (minerals) have been removed. Car battery water is demineralised. All water that is used in chemical laboratories, even for washing the equipment, is demineralised.
Distillation	Distillation is the purification of salt or brackish water by removing the dissolved salts though allowing the water to evaporate and then condensate against a smooth surface, such as glass, from where it is collected again.

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Dormancy	Dormancy refers to the ability of certain plant-parts, such as seeds, to suspend metabolic processes until ideal environmental conditions occur.
Electrical conductivity	Electrical conductivity refers to the ability of any substance, such as water or growth medium paste, to conduct an electrical current. It can be expressed in various units, with the international standard unit being Siemen.
Embryo	The embryo is an organism in its earliest stage of development before it becomes self-supporting. Once the plant embryo begins to grow out from the seed, or germinate, it is called a seedling.
Embryo – nucellar	Nucellar embryos are embryos that develop from the nucellar cells that surround the zygotic embryo in certain plant species, such as citrus. Nucellar embryos give rise to plants that are true-to-type to the mother plant.
Embryo – somatic	A somatic embryo develops from asexual propagation, meaning when plants are propagated through tissue culture.
Embryo – zygotic (zygote)	A zygotic embryo develops from sexual propagation, meaning the fertilisation of a female ovule by cells formed by the male pollen.
Endodermis	The endodermis is the 'inside skin' of the cortex, and is between the cortex and the vascular cylinder (stele).
Endosperm	Endosperm is the nutritive tissue of a seed, deriving from the fertilisation in the ovule and may contain carbohydrates, proteins, and lipids. The endosperm is the temporary food source for the seed.
Endospermous seeds	Seeds in which the endosperm remains separate and is not absorbed by the cotyledons.
Epicotyl	The epicotyl is part of the stem above the point where cotyledons are attached and below the growth point. The epicotyl starts to grow after the hypocotyl.
Epidermis	Epidermis literally means 'over skin' (epi=over / around and dermis=skin). The outer skin of most plant parts is called the epidermis.
Epigeal	Epigeal means living or growing on or right above the surface of the soil.
Epigeal germination	Epigeal seed germination is when the hypocotyl elongates so that the cotyledons are carried above the soil.
Etiolation	Etiolation is a condition caused by a lack of light, which results in the plant being deficient in the green pigment chlorophyll, causing the plant to be unusually tall, spindly and pale.
Exendospermous seeds	Seeds in which the endosperm has been absorbed by the cotyledons prior to seed maturity.
Exodermis	The exodermis is the 'outside skin' or outer cell layer of the cortex.
Fibrous root system	A fibrous root system consists entirely of fibrous roots, which are thin and hair-like roots that usually contain more fibres than other roots.
Field water capacity (FWC)	Field water capacity (FWC) is reached when a growth medium is allowed to drain freely after it was saturated with water. This is the point where no free water is present in the growth medium. All the water present is bound to the growth medium particles.

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Grafting (budding)	Grafting refers to any process of inserting a part of one plant into or onto another plant in such a way that they will unite and grow as a single unit.
Gravitropism (geotropism)	Gravitropism, also referred to as geotropism, is a turning or growth movement by a plant in response to gravity. 'Gravi' refers to gravity as the force that pulls everything towards the centre of the earth, and 'tropism' means the turning in response to a stimulus.
Humidity (relative humidity – rh)	Humidity, also referred to as relative humidity, is the percentage water vapour in the air at a given temperature. This means that at 20% relative humidity, 20% of any given volume of air will consist of suspended water molecules.
Hypocotyl	The hypocotyl is the part of the stem between the roots and where the cotyledons are attached.
Hypogeal	Hypogeal means remaining below ground.
Hypogeal germination	Hypogeal germination refers to when the cotyledons remain below the ground while the epicotyl of the seedling grows.
Imbibition	Imbibition means the absorption of something, such as liquid or heat. In terms of seed germination, it means the absorption of water by the seed coat.
Internodes	Internodes are the stem sections between the nodes.
Invasive plants	Invasive plants are alien plants that have become harmful to the natural ecosystem. Not all alien plants are invasive – in South Africa only 2.5% of plants that are introduced become invasive. Invasive plants do not have natural enemies or other limitation on their growth, and they tend to overrun ecosystems that they are introduced into. Invasive plants are a major threat to biodiversity and ecosystem stability.
Lamina	The lamina is the blade of the leaf.
Medulla	The medulla is the pith of the stem.
Medullary rays	Medullary rays are bands of parenchyma cells that run from the cortex to the medulla between the vascular bundles in a stem.
Meiosis	Meiosis is a process in organisms that reproduce sexually during which the cell nucleus divides into four nuclei, each of which contains half the usual number of chromosomes.
Meristem	Meristems are embryonic plant tissue where cell division takes place, such as the apical meristems of stems and roots. The vascular cambium is a lateral meristem causing secondary thickening growth of stems and roots.
Meristematic region	The meristematic region of the root is where cell division takes place, and is immediately behind the root cap.
Mesophyll parenchyma	Mesophyll parenchyma consists of irregularly shaped cells with large intercellular spaces that fill the space between the palisade parenchyma and the lower epidermis in leaves.
Metabolism (metabolic processes)	Metabolism, or metabolic processes, means the ongoing series of chemical interactions that take place in every living organism that provides the energy and nutrients to sustain life.

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Micro-jets and drippers	Micro-jets and drippers are devices developed to deliver small volumes of water over a limited area in order to improve the efficiency of water usage. Micro-jets and drippers are the emitters in the irrigation system.
Micropyle	The micropyle is a small opening in the seed coat, which was originally a small opening in the ovule through which the pollen passed during fertilisation.
Nodes	Nodes are locations on the stem where leaves are or were attached and where vascular strands branch out to the leaves.
Nucellus	The nucellus surrounds the embryo sac in the ovule and acts as a nutritional source that sustains the initial development of the embryo. In some plants there is hardly any nucellus.
Nutrient deficiency	A nutrient deficiency is when there is not a sufficient quantity of a specific nutrient element and the plant cannot complete a certain physiological process as a result.
Osmosis	Osmosis is the flow of water and other liquids through a semi-permeable membrane, such as the thin membrane underneath the shell of an egg, from an area with high concentration to an area with low concentration, gradually evening out the liquid balance.
Ovule	The ovule is a small structure inside the ovary of a seed plant that contains the female reproductive cells inside the embryo sac, and which develops into a seed after fertilisation.
Ovum (P: ova)	The ovum is the female reproductive cells that are contained in the ovule of the plant.
Palisade parenchyma	The long, tightly-packed parenchyma cells enclosed by the upper epidermis of the leaf and the site for photosynthesis.
Palmate	Palmate means forming a branching pattern that spreads like fingers from a hand.
Parenchyma	Parenchyma tissue is soft plant tissue made up of thin-walled cells that forms the greater part of leaves, stem pith, roots and fruit pulp.
Pericycle	The pericycle is the outer layer of the stele.
Pest organism	In agriculture, pest organisms are organisms that cause damage to livestock, crops, humans, or land fertility, for instance tsetse fly, fruit fly and malaria mosquitoes. In the nursery, citrus pests are organisms whose feeding and / or reproductive habits lead to a reduction in the quality of the citrus trees produced.
Petiole	The petiole is the stalk of the leaf. Some leaves do not have a petiole and are therefore sessile.
pH	pH indicates the acidity or alkalinity of any substance, such as water or growth medium, on a scale of 1 to 14. pH can range from 1 (extremely acidic) to 14 (extremely alkaline), with a pH value of 7 being neutral. Plant sap has a pH of 5.8 and the pH of human blood is almost 7. A substance with a low pH is referred to as acidic while a substance with a high pH is referred to as alkaline.
Phenology	Phenology refers to regularly recurring biological phenomena and the environmental and climatic factors that influence them. In citrus, phenology refers to the annual cycle of the citrus tree.

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Phloem	Phloem is a tissue that contains sieve cells that transport carbohydrates and other metabolites from the leaves, where they are manufactured, to the rest of the plant.
Photosynthesis	Photosynthesis literally means production through light (photo=light, synthesis=production) and is the metabolic process by which green plants turn carbon dioxide and water into food using energy obtained from sunlight.
Phototropism	Phototropic means the turning or growing of a plant towards the light.
Pinnae (S: pinna)	Pinnae are the leaflets that make up a compound leaf.
Pinnate	Pinnate means resembling a feather in appearance or structure, especially in having a central axis or stem with parts branching off.
Plagiotropism	Plagiotropic is the tendency of a plant's roots, stems or branches to grow at an angle away from the vertical.
Plant disease	A plant disease can be described as an impairment of the plant's functions by organisms such as fungi, bacteria or viruses.
Plumule	The plumule is the rudimentary primary shoot of a plant embryo.
Pollination	Pollination is the transfer of pollen from an anther to a stigma.
Poly-embryonic	Poly-embryonic refers to a plant that is able to develop more than one type of embryo from its seed, such as citrus that is able to give rise to both zygotic and nucellar embryos.
Propagation	Propagation in citrus production refers to the multiplication of plant material that is of a specific cultivar and variety, and that possesses desirable characteristics in terms of yield and the size, shape and internal quality of the fruit.
Propagule	Propagule is a collective term for the shoots, seeds, or other parts that plants use to spread or propagate, either sexually or vegetatively.
Radicle	The radicle is the part of a plant embryo that forms the tap root of the young plant after germination.
Resistance	Resistance is the opposite of electrical conductivity and refers to the resistance of a substance, such as water or growth medium paste, to conducting an electrical current. Resistance is expressed in ohms.
Respiration	Respiration is an energy-producing oxidation process in cells, the complete chemical and physical process in which oxygen is delivered to plant cells and carbon dioxide and water are given off. The plant takes up oxygen (O ₂) and releases carbon dioxide (CO ₂).
Reverse osmosis	Reverse osmosis is a water treatment process whereby dissolved salts, such as sodium, chloride, calcium carbonate, and calcium sulphate may be separated from water by forcing the water through a semi-permeable membrane under high pressure.
Rootstock	Rootstock means the root or part of a root used for plant propagation.

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Salts	Salts not only refer to table salt (sodium chloride), but any compound of acids and bases, such as calcium sulphate, potassium nitrate, magnesium chloride, etc. In these salts, the calcium, potassium and magnesium are bases, and the salts are formed when acids like sulphuric acid, nitric acid and hydrochloric acid are added. Water with a high salt concentration, also referred to as high total dissolved salts (TDS), is referred to as saline.												
Scouting	Scouting means observing nursery and plant conditions in order to gain information about the visible signs and symptoms of pests and diseases.												
Seed germination	Seed germination is defined as the emergence of the radicle through the seed coat. It is the resumption the growth of the seed after a period of dormancy.												
Stele	The stele is the central part of the root, also called the vascular cylinder.												
Stomata (S: stoma)	Stomata, the plural of stoma, are tiny pores surrounded by two guard cells in the epidermis of a leaf or stem. Stomata control the passing of water vapour and other gasses into and out of the plant.												
Ternate	Ternate means divided in three, and the term is used to describe a compound leaf that is divided into three more or less equal parts.												
Thigmotropism	Thigmotropism is the turning or growth movement by a plant in response to touch, such as in the case of vines and climbing plants.												
Transpiration	Transpiration means to lose water through the surface of a plant, particularly through the stomata.												
Trifoliate	Trifoliate means 'with three leaves', and the term is used to describe a compound leaf consisting of three pinnae that arise from the same point.												
Vector	A vector is an organism, such as an insect, that transmits disease-causing micro organisms from infected plants to other plants.												
Water hammer	Water hammer occurs when a pump is stopped abruptly, and the column of pumped water stops and flows backwards towards the pump because of the pressure inside the pipeline.												
Water holding capacity	The water holding capacity of a growth medium is the volume of water retained just after is has been saturated with water and allowed to drain freely.												
Weeds	'Weeds' is a generic word for plants growing in a place where they are not wanted. Weeds become important in commercial nurseries when they damage trees.												
Xylem	Xylem is tissue that contains cells like vessels and tracheids that transport water and nutrients from the roots to the leaves, where it is used for food production.												
Yield	Yield refers to the amount of fruit produced, and can be expressed in terms of: <table><tr><td>Tree yield</td><td>kg per tree</td><td>kg/tree</td></tr><tr><td>Orchard yield</td><td>tons per hectare</td><td>t/ha</td></tr><tr><td>Export yield</td><td>15kg carton equivalents per hectare</td><td>cartons/ha</td></tr><tr><td></td><td>(10kg carton equivalents for soft citrus)</td><td></td></tr></table>	Tree yield	kg per tree	kg/tree	Orchard yield	tons per hectare	t/ha	Export yield	15kg carton equivalents per hectare	cartons/ha		(10kg carton equivalents for soft citrus)	
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