

**Abscisic acid (ABA, Abscisin, Dormin)**

Naturally occurring plant growth inhibitor, promoting senescence, abscission and / or dormancy.

**Abscission**

Detachment of leaves, flowers, fruits or other plant parts.

**Abscission zone (Abscission layer)**

Zone where transverse division and separation of cells occur, leading to abscission of organ.

**Absolute**

Purified floral concrete. Impurities like plant waxes, albumin, colouring matter etc., are removed by separation techniques using absolute alcohol (See Concrete).

**Accessory**

In Floriculture, an item used in support of landscape or floral design such as figurine, bird bath, pool or accent rocks.

**Accessory bud**

A bud located above or beside the main axillary bud.

**Accessory fruit**

A fruit developing from accessory floral parts like floral tube, receptacle etc., in addition to the ovary.

**Acclimatization**

The process of adapting to a new environment.

**Achene**

A dry indehiscent, one seeded fruit in which the ovary wall remains free from the seed coat.

**Acropetal**

From a physiological base to a physiological apex.

**Acuminate**

Tapering to a point, as a leaf.

**Adaptability**

The capacity of an organism or species to become suited to its environment.

**Adaptation**

The fitness of a population in a given environment.

**Adaptive trial**

A trial conducted to assess the adaptability of a technology or a variety to a particular region.

**Adventitious**

Produced in an unusual or abnormal position, or at an unusual time of development or away from the natural habitat.

**Adventitious embryony (Nucellar embryony)**

Type of apomixis where embryos arise from a cell or group of cells either in the nucellus (usually) or in the integuments in addition to the regular embryo.

**Aeration**

Supply of oxygen to the roots of plants and micro-organisms in the soil.

**Aerenchyma**

Tissue of thin walled cells with large, air filled intercellular spaces, found in roots and stems of some aquatic and marsh plants.

**Aerial roots**

Roots absorbing moisture from the air e.g. orchids.

**Aeroponics**

A system of growing plants where the roots are suspended and bathed in a nutrient mist rather than a nutrient solution as in hydroponics.

**Aerosol**

Type of formulation of insecticide, antibiotic or plant growth substances dispersed as very fine droplets on application, forming smoke or fog.

**Aestivation (Estivation)**

The arrangement of sepals and petals in the flower bud before expansion.

**Aetiology (Etiology)**

The science of the cause or origin of diseases.

**Afforestation**

Artificial establishment of a forest where tree crops are not previously grown or on deforested land.

**After-cultivation**

Harrowing, tilling and other cultural operations in a field after the emergence of the crop.

**After-ripening**

The physiological changes that occur in a dormant seed to enable germination.

**Agar (Agar agar)**

A gelatinous substance obtained from certain species of red algae, widely used as a solidifying agent in aseptic culture.

**Aggregate fruit**

A fruit developing from a flower having several pistils that ripen together in a single mass.

**Agriculture**

- (1) An activity of man aimed at the production of food, fibre, fuel etc., by the use of terrestrial resources.
- (2) The art, science and industry of managing the growth of plants and animals for human use.

**Agri-silviculture**

Use of land for the concurrent production of agricultural and forest crops.

**Agro-climatic regions**

Broadly homogenous zones with respect to climate and edaphic factors.

**Agro-ecology**

The study of the relation of agricultural crops and environment.

**Agro-forestry**

Self-sustaining land management system combining production of agricultural crops with that of tree crops with or without livestock.

**Agrostology**

The science which deals with the study of grasses, their classification, management and utilization.

**Air drainage**

Air outlets and convection currents which prevent dead air and frost pockets.

**Air-inarching**

Technique of grafting a branch to the trunk of a tree.

**Air layering**

Layering in above ground branches by removing a ring of bark and placing the rooting medium around.

**Air plants**

Plants not attached to the ground.

**Air root-grafting**

The grafting of roots on to a branch while it is still attached to the tree.

**Aitionomic**

Able to develop parthenocarpic fruits only in response to some stimulus external to the ovary.

**Akene**

Dry, one seeded, small, indehiscent fruit of one carpel, seed like in appearance.

**Albido**

The white tissue beneath the peel of citrus fruit.

**Albino**

An organism lacking normal pigmentation due to genetic factors. The condition is albinism.

**Alkaloids**

Group of nitrogen containing basic organic compounds which possess poisonous and medicinal properties e.g. atropine, morphine quinine and strychnine.

**Allelopathy**

Any direct/indirect harmful effect that one plant has on another or mutually on each other through the production of chemical compounds that escape into the environment.

**Alley**

A narrow passage left across rows to facilitate harvesting and cultural operations.

**Allogamy**

Cross fertilization in plants.

**Allograft ( Homograft )**

A graft between like species.

**Allopolyploidy**

Polyploidy involving the combination of chromosomes from two or more species.

**Alpine garden**

A garden comprised of plant species normally found growing at high elevations.

**Alpine plant**

A plant suitable for rock gardens or one that normally grows in exposed mountain regions.

**Alternate**

An arrangement of leaves, buds, and other organs borne singly at different heights on either side of the stem or axis.

**Alternate bearing ( Biennial bearing )**

The phenomenon of producing heavy bearing during 'on year' which is alternated by shy bearing during 'off year.'

**Altitude (Elevation)**

Vertical distance of a level, a point or an object from mean sea level (MSL).

**Ambient**

- (1) The environment of a particular time.
- (2) Set of climatic conditions existing during an experiment.

**Amphimixis**

Normal sexual reproduction in which the morphologically dissimilar male and female gametes unite together for the formation of zygote.

**Analogues**

Organs of different plants with like function but of unlike origin.

**Androecium**

The collective term for stamens of a flower.

**Androdioecious**

Condition in which male and hermaphrodite flowers are borne on separate plants.

**Androgenesis**

Plant development from male gametophytes.

**Andromonoecious**

Condition in which both male and hermaphrodite flowers are borne on the same plant.

**Anemophily ( Anemophilous )**

Pollination by wind.

**Angel crops**

Crops raised without chemical fertilisers, plant protection chemicals and growth stimulants.

**Angiosperm**

A member of the group of flowering vascular plants whose seeds are enclosed within a mature

ovary (fruit) in contrast to the seeds of gymnosperms which are not enclosed in an ovary.

**Annual**

Plant that completes its life cycle from seed to seed within one year or one growing season.

**Annual ring**

A distinct layer of growth as seen in the cross section of a woody stem (See Growth ring).

**Annual up timing (Crop timing)**

Adjusting planting and / or adopting cultural operations to facilitate harvesting of the crop at a specified time.

**Anther**

The portion of the male flower that bears the pollen.

**Anthocyanin**

Chemical plant pigment; usually red or blue.

**Anti-auxin**

Substance which can inhibit growth by antagonising the activity of auxins.

**Anticoagulant**

Material added to rubber latex to prevent coagulation by natural means before it reaches the factory.

**Antioxidants**

Substances which are antagonistic to oxidation process.

**Antitranspirants**

Substances that retard or inhibit transpiration.

**Apetalous**

Without petals.

**Apogamy**

A type of apomixis in which the embryo develops from the cells other than egg cell.

**Apomixis**

Occurrence of an asexual reproductive process in place of normal sexual reproduction involving reduction division and fertilization.

**Approach grafting**

A grafting method where rootstock is taken to the scion donor plant for grafting. Stock and scion are independent for their nourishment till the completion of the graft union (Synonym : Inarching).

**Aquaculture**

- (1) The cultivation or rearing of aquatic plants or animals.
- (2) The technique of growing plants without using soil (hydroponics) either in circulated, aerated nutrient solutions or in inert media such as gravel, sand, peat, vermiculite or saw dust, to which a nutrient solution is added.

**Aquatic plant**

Any plant that grows in or near water.

**Arborescent**

Becoming tree like, nearly the size of a tree.

**Arboretum**

Area set aside for growing and displaying different kinds of woody ornamental trees, shrubs and vines with proper labelling.

**Arboriculture**

Cultivation of trees and shrubs.

**Areole**

The area occupied by a group of spines or hairs on a cactus.

**Arid fruit culture**

The cultivation of edible fruits in arid region that are consumed either fresh or processed.

**Aril**

- (1) Modified mesocarp covering the seed of nutmeg Also called mace.
- (2) An appendage or outer covering of a seed, growing from the hilum or funiculus.

**Aromatic**

Chemical compound derived from the hydrocarbon, benzene ( $C_6 H_6$ ), having a pungent odour.

**Aromatic plants**

Plants which yield aromatic essential oils on steam distillation or solvent extraction e.g. lemongrass; patchouli.

**Artificial long days**

Interruption of dark period or extension of natural daylength to prevent flower bud initiation of short day plants.

***Artificial seed***

Encapsulated or coated somatic embryos used for planting like seeds.

***Aseptic***

Free of all microorganisms.

***Aseptic canning***

A technique in which food is sterilised outside the can and then aseptically placed in previously sterilised cans which are subsequently sealed in an aseptic environment.

***Asexual***

Lacking or not involving sex; sexless; not involving union of gametes.

***Asexual propagation***

- (1) The multiplication of plants using a vegetative plant part.
- (2) Plant propagation not involving union of gametes. The propagation using parthenogenetic seed (as in mangosteen ) is asexual.

***Astringency***

A puckering taste to the mouth caused by tannins.

***Astroturf***

A synthetic lawn, popularly used in developed countries in roof gardens , as well as in stadium (mainly in football and hockey).

***Atrophy***

Dwarfing or reduction in size, often extreme, through disease affecting the whole plant or part.

***Attenuation***

The decrease in the intensity of radiation caused by the absorption and scattering of the radiation as it passes through the matter.

**Autecology**

The study of the interaction of a plant species with its environment.

**Autogamy**

Self fertilisation or the fertilisation of a flower by its own pollen.

**Autograft**

A type of graft which involves transplantation of tissue or an organ from one part of an individual to another part of the same individual.

**Autopolyploidy**

Polyploidy with similar sets of chromosomes.

**Autotroph**

A self sufficient organism that synthesizes its own food from inorganic molecules.

**Auxanometer**

An instrument used to measure growth of plants.

**Auxin**

Plant growth regulator that functions more by stimulation of cell elongation than through an effect on cell division.

**Axenic culture**

A culture without foreign or undesired life forms.

**Axillary bud**

A bud origination in an axil or point where a leaf stalk or branch forms an angle with the main stem.

**Baccate**

Berry like ; pulpy or fleshy.

**Back cross**

A cross of a hybrid with one of its parents with the purpose of transferring a specific gene.

**Bactericidal**

Capable of killing bacteria.

**Balata**

A product analogous to "gutta percha" obtained from the bark of *Mimusops globosa*.

**Balled and burlapped**

Any plant dug with a soil ball and tied up in burlap.

**Balling**

The aggregation of macerated tea leaves into lumps or balls during rolling or fermentation.

**Bare root ( Bare root plant )**

Rooted plant without soil, opposite to balled and burlapped.

**Bari**

Tea plantation in which trees are allowed to grow without pruning to produce seed.

**Bark**

The tough exterior covering of a woody stem or root outside the cambium.

**Bark grafting**

A method of grafting in which dormant scion is inserted between the bark and wood of a rootstock.

**Bark inversion**

A method of grafting for dwarfing a plant in which a complete ring of a bark is removed from the trunk, inverted and regrafted into place.

**Bark ringing**

The removal of a ring of bark from the trunk of a plant to regulate shoot growth and flowering.

**Barley water**

Fruit beverage containing at least twenty five per cent fruit juice or pulp, thirty per cent total soluble solids and 0.25 per cent barley starch.

**Basipetal**

- (1) Development in succession towards the base, oldest at the apex and younger at the base.
- (2) Transport of substances away from the apex, within a plant.

**Bearing habit**

The relative position of flowering and fruiting on the shoots of a plant (See Fruiting habit).

**Bed**

- (1) Narrow flat-topped ridge on which crops are grown with a narrow furrow on each side to facilitate irrigation and drainage.
- (2) An area in which seedlings or sprouts are grown before transplanting.

**Bed planting**

Planting on elevated level beds, which are separated by narrow furrows.

**Bedding plants**

Plants that are raised by commercial growers and sold in the early stages of growth for use in outdoor gardens.

**Bench grafting ( Root Grafting )**

Grafting where roots are used as the rootstock.

**Berry**

A simple fruit with one or more carpels and having the entire pericarp fleshy.

**Berry fruits**

A synonym of small fruits or soft fruits.

**Biennial**

A plant with a two year life cycle, growing vegetatively and storing food in the first year and producing flowers and seeds in the second year.

**Biennial bearing**

See Alternate bearing.

**Bifarious**

Arranged in two opposite rows.

**Bilateral cordon**

Training system as in grapes, where the trunk is divided into two branches extending horizontally on a supporting wire.

**Binomial system of nomenclature**

The assignment of names to organisms using two Latin words, the first denoting the genus and the second denoting the species e.g. *Mangifera indica*.

**Bio-aesthetic planning**

Planting of trees and plants for beautifying roads, parks, public and private places.

**Bioassay**

Determination of the biological activity as well as relative strength of a substance (hormone, drug etc.) by comparing its effect on a test organism with that of a standard preparation.

**Biomass**

The combined dry or wet weight of all the organisms in a habitat.

**Biometrics**

The science dealing with the application of statistical procedures for the study of biological problems.

***Biosynthesis***

Biological synthesis, building or forming of biochemical compounds in a living organism.

***Biotechnology***

The application of biological organisms, systems or processes in industrial scale for the benefit of man.

***Biotic***

Pertaining to life.

***Biotype***

Physiological race or form within a species which is morphologically identical, but is different in genetic, physiological, biochemical or pathogenic characteristics.

***Bird baths***

A garden adornment consisting of a bowl shaped container fixed over a pillar, storing water for birds.

***Bird chilli (Tabasco chilli)***

Perennial chilli (*Capsicum frutescens*), with small sized pungent fruits.

***Bisexual***

Both sexes present and functional in the same flower.

***Blackout system***

A means of covering plants with black polythene or cloth to shorten the photoperiod to promote flowering of short day plants.

***Blade***

The expanded portion of a leaf, the lamina.

***Blanching***

- (1) Heating of a fruit or vegetable product in boiling water or steam for a brief period to inactivate enzymes before processing.
- (2) The technique of covering plant parts with soil or other materials to exclude light.

***Bleeding***

Loss of sap through wounding.

**Blind shoot**

A shoot in which the apical bud aborts, resulting in no further growth.

**Bloom**

- (1) The state of flowering.
- (2) Blossom.
- (3) Delicate waxy or powdery substance on the surface of leaves, berries etc.

**Blossom**

See Bloom.

**Bluing**

The objectionable development of blue pigment in flower petals usually after harvest.

**Bole**

The basal region of the stem or trunk of a tree.

**Bolting**

Process by which plants produce flower stalks and flowers.

**Bonsai**

Japanese art of growing miniature trees and shrubs in shallow containers by extreme dwarfing treatments.

**Bonsai style**

Training plants in bonsai-like fashion.

**Bonus crop**

An additional crop of economic importance taken in intercropping / mixed cropping systems without any extra inputs.

**Border plants**

Plants located at the perimeter of landscapes or experimental plots.

**Botanical garden**

A garden used for growing and displaying ornamental plants for educational and research purposes.

**Botanical name**

Scientific name assigned to a plant species.

**Botanical pesticides (Botanicals)**

Pesticides obtained from plants.

**Bottle garden**

The art of making miniature garden by growing delicate plants inside bottles.

**Bound water**

Water held by the cell against freezing.

**Box ridging**

A system in which box shaped ridge is formed around the base of the plant to control erosion and aid irrigation.

**Bracing**

Method of grafting done to support branches which are in danger of breaking off.

**Bract**

A modified, often very small leaf / leaf-like structure subtending a flower or inflorescence. It may appear to be the part of the flower.

**Bramble**

A fruit which is a member of the Rubus genus.

**Break**

New lateral shoot, often developing after the removal of apical dominance by pinching.

**Breaker**

A device at the end of a hose to permit application of water at low velocity.

**Breeder seed**

The seed raised and controlled by the originating or sponsoring institution or breeder.

**Bridge grafting**

The repair grafting done when the root system of the tree is injured.

**Brining**

Treating vegetables with solution of salt in water ( brine ) to improve flavour and to serve as a heat transfer medium for facilitating processing.

**Brix**

The percentage of total soluble solids in fruit juices, plant saps etc., measured using Brix hydrometer.

**Broadcasting**

The process of scattering agricultural inputs, such as seed, fertiliser and manure on the surface of the soil by hand or by implements for uniform distribution over the entire field.

**Brown budding**

A budding method commonly adopted in rubber using buds taken from bud wood of one year growth and stock plants of ten months or more growth.

**Brown head**

A bloom that is excessively open.

**Browning**

The process of browning of cut surfaces of fruits and plant parts due to polyphenol oxidation.

**Brush (in grapes)**

Vascular strands remaining on the pedicel of grapes after the berry is detached.

**Bud**

- (1) Undeveloped shoot or flower, often enclosed by reduced or specialised leaves called bud scales.
- (2) A vegetative outgrowth from yeast.

**Bud break**

The resumption of growth of resting buds.

**Bud mutation**

Mutation in bud, causing variation in the arising branch, flower or fruit ( Synonym: Bud sport, Bud variation).

**Bud sport**

Mutation in bud, causing variation in the arising branch, flower or fruit (Synonym: Bud mutation, Bud variation).

**Budded stump**

Planting material comprised of the stock plus a dormant or recently activated bud, the stock being cut off a few centimeters above the bud.

**Budding**

- (1) A form of grafting using a single bud.
- (2) Production of a shoot from an underground stem.
- (3) The new growth in the spring.
- (4) The process by which yeasts produce vegetative outgrowths.

**Bud rubbing**

The removal of buds from spurs or shoots by pushing or rubbing with hand.

**Bud scale**

Protective scale-like leaves which cover the shoot apex, flower and embryonic leaves.

**Bud sport (Bud mutation)**

A plant or portion of a plant arising by spontaneous mutation in the apical meristem of a bud.

**Bud stick**

A shoot or twig used as a source of bud for budding.

**Bud take**

The success of budding operation as observed by the presence of green, healthy bud which is in the process of bud union.

**Bud wood**

Shoot from which bud is selected for budding.

**Bulb**

A specialized underground plant organ consisting of a greatly reduced stem (basal plate) surrounded by fleshy, modified leaves called scales.

**Bulbel (Bulbils, Bulblets)**

- (1) Small or miniature bulbs arising from the parent bulb.
- (2) Aerial bulblets.

**Bulb cutting**

Cutting of bulb used for propagation.

**Bull**

The inflorescence of banana during its ascent up the pseudostem.

**Bull head**

- (1) The corm of a banana plant which has flowered.
- (2) A condition when the short petals or excess number of petals give a blunt, broad appearance to a flower.

**Burning**

The browning of leaves caused by excess fertiliser.

**Bush**

A low woody plant, without a distinct trunk, but with a number of branches at or near the ground level.

**Button**

- (1) In coconut, female flower which is a small spherical body about 1.3 cm in diameter with resemblance to a small nut.
- (2) The young emerging fruit of a mushroom.

**Buttress**

Outgrowth of the trunk and roots at or above the surface of the ground to give the plant additional support.

**C<sub>3</sub> plants**

Plants showing decreased carbohydrate production due to photorespiration and in which three-carbon sugars are the first stable intermediates in the Calvin Benson cycle of photosynthesis.

**C<sub>4</sub> Plants**

Plants that can photosynthesize at a faster rate than C<sub>3</sub> plants due to special leaf anatomy and a unique biochemical pathway which begins with a stable, four-carbon sugar intermediate.

**Cabbage**

- (1) The piece of banana pseudostem discarded from the head or large corm.
- (2) The terminal bud of coconut.
- (3) *Brassica oleracea* var. *capitata*, the vegetable coming under Cruciferae family.

**Cacti**

A group of xerophytic plants, not having true leaves, thriving without being watered for several days.

**Caducous**

- (1) Falling off early or prematurely, as the calyx in some plants.
- (2) Not persistent.

**Caffeine**

The purine base alkaloid found in tea and coffee which works as stimulant.

**Callus**

Mass of parenchymatous cells, developing on or around a wound or from an explant.

**Calli clone**

Plants regenerated from callus.

**Calyx**

The outer parts of the flower (sepals) is collectively called calyx.

**Cambium**

A lateral meristem in vascular plants which produces increases in diameter of stems and roots through the production of xylem, phloem and parenchyma cells.

**Campanulate**

Bell shaped.

**CAM plants**

Desert plants in which Crassulacean Acid Metabolism (CAM) system is prevalent where the CO<sub>2</sub> is fixed at night e.g. *Bryophyllum calycinum* and cactus plants.

**Candied fruit/vegetable**

A fruit / vegetable impregnated with cane sugar or glucose syrup, and subsequently drained free of syrup and dried.

**Cane**

- (1) A main stem of a small fruit plant or vining crop.
- (2) In grapes the term applies to previous season's growth or new shoots after they lose their leaves.

**Canker**

A dead area caused by a fungal disease.

**Canning**

A method of preserving food in a fresh condition by processing and sealing in airtight containers.

**Canopy**

The overhead cover or horizontal projection of a plant formed by its leaves, branches etc.

**Caoutchouc**

American Indian name for rubber, meaning weeping wood.

**Capillary watering**

See Mat watering.

**Capsule**

A simple, dry, dehiscent fruit, formed of two or more united carpels.

**Carbonated beverages**

Carbonated drinks prepared by using fruit juices.

**Carbon nitrogen ratio ( C:N ratio)**

The ratio of carbonaceous materials to nitrogen in plant or soil.

**Carotine**

An orange pigment occurring in certain plastids; precursor of vitamin A.

**Carpel**

One of the innermost floral structures which bears or encloses the ovules.

**Carpet bedding**

Covering the beds in gardens with dense, low growing herbaceous plants.

**Carpellody**

Abnormal development of the stamen into carpel like, fleshy structures, resulting in misshapen 'catface' fruits e.g. papaya.

**Caryopsis**

An indehiscent fruit with one seed which is completely fused to the inner surface of the pericarp.

**Cash crop**

A high value marketable crop e.g. tea; cardamom.

**Casual**

An introduced plant which has not become established, although sometimes found in places where it is not cultivated.

**Catabolism**

Metabolic process in which complex materials are converted into simple compounds e.g., respiration.

**Catch crop**

(1) A quick growing crop incidentally planted and harvested between two major crops in consecutive seasons.

(2) A contingency crop grown to replace a major crop which has failed.

**Catch wire**

A wire that serves as an attachment for developing grape shoots or other plants with tendrils.

**Catkin**

A hanging type of spike inflorescence that has male or female flowers with a perianth.

**Cauliflorous**

Bearing inflorescence on the trunk or woody branches e.g. cocoa; jack.

**Cauline**

Arising from or inserted on the stem.

**Central leader**

System of training a fruit tree in which it is trained to form a trunk extending from the soil to the top of the tree.

**Centre of diversity**

An area where the genetic and specific diversity is very high.

**Certified plants**

Plants produced under strict guidelines and inspections controlled by a regulatory agency to ensure trueness to type and freedom from damage, insects, diseases etc.

**Certified seed**

The progeny of breeder, foundation or registered seeds, so handled as to maintain satisfactory genetic purity and identity.

**Chat**

An assortment of fresh dessert fruits cut into pieces and sprinkled with salt and spices.

**Check**

A row or plot of standard variety included in field experimentation for comparison.

**Chemical mutagen**

A chemical capable of causing genetic mutation.

**Chemical thinning**

Thinning of blossoms by the use of chemical substances.

**Chemotropism**

A bending or turning in response to chemical stimulus.

**Cherelle**

Small and immature pods of cocoa.

**Chicory**

Roots of *Cichorium intybus* used for blending and mixing with coffee to the extent of 40 per cent.

**Chilling injury**

Damage to plant parts resulting from exposure to cold, above freezing temperature.

**Chilling requirement**

The number of hours at or below a specific temperature, necessary for uniform bud break following winter dormancy.

**Chilling unit**

A period of time at or below a specified threshold temperature that has the maximum effect toward fulfilling the chilling requirement of a given plant.

**Chimera**

A plant having tissues of different genetic composition adjacent to each other.

**Chinese layerage**

See Air layering.

**Chip budding ( Yemma budding)**

Budding where a single bud with a piece of wood is fitted to a suitable cut in the stock.

**Chlorophyll**

Green pigment found in plants, used for photosynthesis.

**Chlorosis**

Yellowing caused by loss of or reduced production of chlorophyll.

**Chromoplast**

A coloured plastid containing pigments other than chlorophyll, often yellowish or red.

**Chupon**

Vertical stems or shoots of cocoa.

**Ciliate**

Margined with hairs

**Cion**

Obsolete term for scion.

**Circumposition**

See Air layering.

**Circumutation**

An irregular spiral movement of a plant which takes place from unequal growth rates.

**Citrangle**

An intergeneric hybrid between *Poncirus trifoliata* and *Citrus sinensis*, used as rootstock.

**Cladophyll (Cladode)**

A stem that resembles a leaf in appearance.

**Clarifying agents**

Substances used to remove haziness or sediment produced by oxidative deterioration in fruit juices, wines, beer etc.

**Clean cultivation**

Periodic soil tillage to eliminate all vegetation other than the crop being grown.

**Cleft grafting**

A grafting method where the scion piece is placed in a split (cleft) formed on a stock plant (See Wedge grafting).

**Cleistogamy**

Self pollinating nature of closed flowers.

**Cleistogamous**

Flowers which fertilise themselves without opening.

**Climacteric**

The maximum respiration rate of a fruit, reached just before full ripening.

**Climacteric fruits**

Fruits exhibiting increased rate of respiration before full ripening e.g. mango; banana.

**Climate**

The aggregate of weather conditions over a long period of time.

**Climate control greenhouse**

Greenhouse in which climatic factors like temperature, light (intensity and duration) and humidity are controlled manually or automatically.

**Climax vegetation**

The most fully developed natural vegetation the climate can sustain.

**Climber**

Annual or perennial herb or shrub with special structures to climb over a support.

**Clonal propagation**

Asexual propagation of plants from a single plant, resulting in true-to-type and uniform progenies.

**Clonal seed**

A seed collected from a clone.

**Clone**

A group of genetically uniform plants, vegetatively propagated from a single parent.

**CO<sub>2</sub> compensation point**

The concentration of carbon dioxide at which photosynthesis balances respiration and there is no net CO<sub>2</sub> flux. In C<sub>3</sub> plants this is about 50 ppm, whereas in C<sub>4</sub> plants it is almost zero.

**Coconut milk**

The milky juice obtained from macerated coconut kernel (endosperm).

**Coconut water (Liquid endosperm)**

In coconut, water like liquid filling the entire cavity of the endosperm when young and partially filled when fully ripe.

**Caffeine**

The purine base alkaloid in tea and coffee, acting as a stimulant.

**Colchicine**

A poisonous (alkaloid) drug obtained from *Colchicum autumnale*, used for inhibiting spindle formation during mitosis at metaphase for doubling of chromosome number.

**Cold frame**

An enclosed bed for propagating or protecting plants in temperate climate, where the source of heat is solar energy (See Hot bed).

**Cold hardiness**

The ability of a plant to resist injury during exposure to low temperature.

**Cold storage**

An insulated storage using mechanical refrigeration to maintain a stable low temperature for long term storage of agri-horticultural products.

**Cold test**

A germination test in which seeds are planted for a period in cool moist soil before transferring to a high temperature in order to assess the seedling vigour.

**Cole crops**

- (1) Cabbage and its various allies.
- (2) Representatives of the species *Brassica oleracea*

**Coleoptile**

A protective sheath covering, the first leaf of a grass seedling.

**Collar pruning**

Pruning of a mature tea bush by cutting close to the soil, thereby removing all the frame, leaving only the central stem (See Rejuvenation pruning).

**Collective fruit**

Fruit formed from a complete inflorescence or from several flowers as of mulberry and pineapple.

**Colouring agents**

Substances added to food products to make them attractive and appetising.

**Combining ability**

The relative ability of an inbred line or a clone, when crossed to another inbred line or clone, to transmit desirable trait(s) to its cross.

**Command area**

The land area that can be irrigated by canal or from a dam or an irrigation project.

**Commercial Floriculture**

Area of horticulture related to the commercial production and marketing of cut flowers, flowering pot plants, foliage plants and bedding plants.

**Community forestry**

Forest managed for the interest of local community or village, run almost exclusively by them.

**Companion crop**

Any subsidiary crop grown in association with a main crop.

**Compatibility**

- (1) In sex cells, the ability to unite and form a fertilized egg that can grow to maturity.
- (2) Congenial condition for successful graft union between stock and scion.

**Compatible varieties**

- (1) Varieties that will set seed when cross pollinated
- (2) Varieties that will make a successful graft union when inter-grafted.

**Compensation point**

The light intensity at which the photosynthetic intake of carbon dioxide is equal to the respiratory output of carbon dioxide.

**Competition (Interference)**

The process in which two individual plants or two populations of plants interact such that at least one exerts a negative effect on the other.

**Complete flower**

A flower having pistil(s), stamens, petals and sepals.

**Component crops**

Individual crops of a cropping system.

**Compost**

A product obtained by the controlled decomposition of organic matter having a C:N ratio of about 10:1.

**Compote**

- (1) Fruits cooked in sugar syrup, retaining their shape.
- (2) A stemmed container used for arranging flowers.

**Compound layering (Serpentine layering)**

Layering method where a flexible branch is alternately covered and exposed along its length, resulting in several new plants.

**Compound leaf**

A leaf composed of two or more leaflets e.g. ferns.

**Concrete (Floral concrete)**

The substance containing odoriferous principles of commercial flowers like jasmine, rose and tuberose obtained by solvent extraction (See Absolute ).

**Condiments**

These are substances of plant origin with pronounced odour and piquancy, used for seasoning food and stimulating appetite (See Spices and condiments ).

**Congeneric**

Belonging to the same genus.

**Conifer**

A cone bearing plant or gymnosperm.

**Conservation**

Sustainable use of natural resources, such as soils, water, plants, animals and minerals.

**Conservatory (Fernery)**

A greenhouse of the tropics which protects plants from fierce sunlight and strong wind.

**Continental climate**

A climate having large daily and annual ranges of temperature.

**Continuous cropping**

Growing of crops one after the other without seasonal fallowing.

**Contour planting**

Planting crops along the contour.

**Control**

- (1) The untreated plant for comparison with the experimental treatment (See Check).
- (2) To direct or regulate as in induction of organogenesis in cultures through hormone regulation.

**Controlled atmosphere storage (CA storage)**

A storage method in which the concentrations of atmospheric gases (mainly O<sub>2</sub> and CO<sub>2</sub>) and atmospheric pressure are adjusted to extend the storage life of fresh produce (See Modified atmosphere storage).

**Cool season vegetables ( Temperate vegetables )**

Vegetables whose growth and productivity are favoured by low temperatures; most of them have the ability to withstand frost; also known as winter vegetables.

***Coppice farming***

Practice of intensive exploitation of land capability by regular harvesting of trees which produce numerous shoots from the stump after cutting.

***Coppicing***

The cutting back of trees or shrubs close to the main trunk or ground level resulting in the production of a number of vigorous new shoots (See Pollarding).

***Copra***

The mature endosperm (kernel) of coconut when dried to about six per cent moisture content.

***Cordate***

Heart-shaped.

***Cordial***

A sparkling, clear, sweetened fruit juice from which pulp and other insoluble substances have been completely removed.

***Corm***

The underground swollen base of stem axis enclosed by scale leaves.

***Cormel***

Miniature corm arising from a parent corm.

***Corona***

An appendage between the petals and stamens e.g. cup of the daffodil.

***Cosmetic pruning***

Minor pruning of dead flowers and weak or crossing shoots to keep a plant tidy and balanced in shape.

***Cotyledons***

Embryonic seed leaves that stores nutrients to sustain the growth of a newly germinated plant.

***Coumarin***

A naturally occurring plant growth inhibitor.

***Cover crop***

A crop grown alone or in between rows of crops to reduce soil erosion, conserve nutrients, and supplement organic matter.

***Creepers***

A plant which spreads along the ground surface or other substrata.

***Critical level***

Concentration of a nutrient element below which deficiency symptoms may develop or a response to addition of the nutrient may be observed.

***Crocks***

Broken pieces of earthen pots.

***Crop***

Plants sown and harvested by man for economic purposes.

***Crop cafeteria***

The demonstration of identified efficient crops / varieties in an agrometeorological region/zone offering an opportunity to the farmer to choose a suitable crop or crop combination commensurating with the available resources and requirements.

***Crop canopy***

The overhead cover or horizontal projection of a crop formed by its leaves, branches etc. which can influence the penetration and interception of radiant energy.

***Crop competition***

The tendency of plants of the same or different species growing together to strive for and capture common resources like light, water, nutrients and space, resulting in reduced growth and/or altered form of the crop(s).

***Crop duration***

Days taken by a crop from germination to maturity.

***Cropping pattern***

Yearly sequence and spatial arrangements of crops and fallow, on a given area.

**Cropping system**

Cropping pattern and its interaction with farm resources, farm enterprises and available technology.

**Crop residue management**

Use of the non-commercial portion of the crop for soil protection and improvement.

**Crop rotation**

The practice of growing different crops on the same land in a regular, recurring sequence.

**Crop season**

The most favourable weather condition to get better yield.

**Crop timing**

Regulating the harvesting time of crops by way of adjusting the planting time, pruning or suitable treatments.

**Cross pollination**

Transfer of pollen from the anther of one plant to the stigma of another plant (unless of the same clone).

**Crotch**

Any angle formed between two woody branches, or that point where the main trunk divides into branches.

**Crown**

- (1) The junction between stem and root near the ground level.
- (2) The tree-top.
- (3) Leafy top of pineapple fruit used for vegetative propagation.
- (4) Part of a rhizome with a large bud suitable for propagation.

**Crown bud**

A flower bud, whose development has ceased, resembling a crown.

**Crown budding**

Replacing the undesirable and susceptible crown of a high yielding tree with a resistant clone by budding.

**Crown grafting**

A graft union made at the crown of a plant on an established rootstock.

**Crown slips**

Shoots growing on the crown of pineapple (between fruit and crown), used for planting after rooting.

**Cruciferous**

Of or pertaining to the mustard family, Cruciferae.

**Crush**

Fruit beverage containing at least twenty five per cent fruit juice or pulp and fifty five per cent total soluble solids.

**Cryo-preservation**

Storage of cells, tissues, organs and seeds at super-low temperature.

**Crystallised fruit/vegetable**

Candied fruit/vegetable when covered or coated with crystals of sugar, either by rolling in finely powdered sugar or by allowing sugar crystals to deposit on them from a dense syrup.

**CTC method**

Crushing, tearing and curling method of processing tea.

**Culinary**

Suitable for cooking or processing in some form.

**Culm**

The joined stem of a grass, which is usually hollow, except at the nodes.

**Cultigen**

A plant species or race which has arisen in the course of cultivation.

**Cultivar (cv. )**

A contraction of the phrase 'cultivated variety' which designates a group of plants which are significant in agriculture, forestry or horticulture.

**Cultivation**

Labour and care taken in the raising of plants such as stirring soil, fertilising etc. or loosening the soil around a plant for weed control and providing soil mulch.

**Curing**

Natural or artificial aging of the plant produce brought about by some (dry or wet) heat treatment.

**Cuticle**

The waxy covering on plant parts like leaves and fruits, which prevents excess moisture loss.

**Cuttage**

Method of plant propagation by means of cuttings.

**Cutting**

The portion of a plant cut and removed for rooting, in asexual propagation.

**Cybrid**

Hybrid of two cells, produced by protoplast fusion, having the cytoplasm of both and nucleus of one.

**Cyclic**

Having floral parts in whorls.

**Cymba**

A woody, boat like spathe which encloses the inflorescence in certain palms.

**Cyme**

An inflorescence in which primary axis bears single terminal flower that develops first, the arrangement being repeated by axis of secondary and higher orders.

**Cytokinins**

Group of plant growth substances which promote cell division and exert other growth regulatory functions e.g. zeatin, kinetin, benzyl adenine, 2iP.

**Cytoplasmic male sterility**

A type of male sterility conditioned by the cytoplasm rather than the nuclear genes and transmitted only through the female parent.

**Cytotoxic**

Toxic to cells.

**Damping off**

A seedling disorder caused by microorganisms.

**Dark storage**

Storage of foliage plants, cut flowers etc. in darkness during transit (from harvest to end use).

**Datun**

A brush made from a small twig of a tree used for cleaning teeth.

**Day neutral plants**

Plants in which flowering is not affected by day length.

**De-acclimation**

De-hardening or the loss of adaptation to a climate.

**Dead-head**

To prune the spent flowers or the unripe seed pods from a plant.

**Dead heading**

Removal of dead flowers or the unripe seed pods from plants.

**De-blossoming**

Removing blossoms from a plant.

**De-budding**

Removal of floral or vegetative buds.

**De-bunching**

The removal of the bunch soon after emergence to speed up growth of the follower.

**Deciduous**

(1) Shedding leaves during winter or dormant season.

(2) The falling of plant parts at the end of a growing period.

**Deciduous plants**

Trees and shrubs that drop their leaves before entering onto the rest period.

**Decortication**

Removal of bark or outer covering of plant or plant produce.

**Decumbent**

Lying on the ground with the end ascending.

**De-differentiation**

Process in which the inter-organ, inter-tissue and inter-cellular relations are broken, leading to the formation of a mass of parenchymatous cells, called callus.

**Defleating**

The cutting down of leaves that could scar the fruit, leaves with leaf spot and leaves that have collapsed.

**Defoliant (Defoliator)**

Chemical used for inducing leaf fall, usually to facilitate harvest.

**Defoliate**

To strip off leaves .

**Defoliation**

The removal of leaves by hand or using chemicals or by withholding water.

**Degrees Brix**

A measure of total soluble solids content which approximates the percentage of sugar found in juice or a fruit. Corresponds to Degrees Balling.

**Dehanding**

Removal of the false hand (hand with undeveloped fingers) and / or the last apical hand of banana at the time of bagging.

**Dehisce**

To open spontaneously when ripe.

**Dehiscence**

The bursting or splitting of fruit (to emit the seeds) or anther (to emit the pollen grains).

**Dehiscent fruits**

A type of dry fruit in which the carpels split along definite sutures at maturity.

**Dehydration**

Removal of water by sun drying or by artificial heat under controlled conditions of temperature humidity, and air flow.

**Dehydro-freezing**

A process of freezing food where freezing is preceded by partial dehydration.

**De-novo**

Arising spontaneously from unknown or very simple precursors.

**Dentate**

Toothed leaf margin.

**De-potting**

Removing the plant from the original container mainly for repotting.

**Desert**

Places where the annual rainfall is often less than 250 mm and with extreme temperature fluctuations.

**Deshooting**

Removal of shoots that are unwanted.

**Desiccate**

To dry thoroughly to remove moisture from an object to below normal level.

**Desiccation**

The process of drying up of tissues due to excess water loss or due to conditions that prevent the entry of water to the roots / shoot.

**Dessert**

A final course of fruits, puddings or other sweets at the end of meals.

**Dessert fruit**

Any fruit which may be served after meals.

**Determinant inflorescence**

Inflorescence in which the apical flower blooms first.

**Devernalization**

Negation of a vernalizing stimulus by temperatures above a critical level.

**Dew-point (Dew point temperature)**

The temperature at which condensation will start and 100 per cent relative humidity results in a given mixture of air and water vapour.

**Diallel crossing**

Crossing of a number of genotypes in all possible combinations.

**Diandrous**

Having two-stamens.

**Diara cultivation**

Cultivation of vegetables in the river beds, making use of the organic sediments and subterraneous moisture.

**Dibbling**

A method of sowing by placing crop seeds in the holes manually by using a dibbler,

maintaining specific spacing and number of plants between the rows and within the rows.

***Dicliny***

A condition in which male and female organs are separate and in different flowers.

***Diclinous***

Unisexual and requiring two flowers to represent both sexes.

***Dicotyledon ( Dicot)***

Class of plants having embryos with two cotyledons.

***Die-back***

Death of shoots, originating from the shoot tip.

***Differentiation***

The process of changes in composition, structure and function of cells and tissues during growth.

***Digitate leaf***

Leaf with many finger like leaflets radiating from a central point, or joined only at the base.

***Dihybrid***

Plants that differs by two pairs of genes.

***Dimorphic***

Exhibiting two distinct forms.

***Dimorphism***

The occurrence of two types of leaves, flowers or other structures on a single plant or on different plants of the same species.

***Dioecious***

Condition in which staminate and pistillate flowers are produced on separate plants.

***Diploid***

A nucleus, organism, or generation that has two sets of chromosomes.

***Disbudding***

The removal of vegetative or floral buds.

***Disc floret***

The central regular five lobbed floret of a flower-head in compositae.

***Diseminule***

A part of a plant which gives rise to a new plant (propagule).

**Dish garden**

The art of making miniature garden by growing delicate plants in containers such as bowl shaped drinking cups or a brandy goblet.

**Distal**

Opposite from the point of origin or attachment; toward the apex.

**Diurnal**

Of or during the day; not nocturnal.

**Diversified cropping**

The cropping plan in which no single crop contributes to 50 per cent or more towards the annual crop production or income.

**Division**

(1) A taxonomic grouping of plants belonging to similar classes.

(2) The process of cutting into sections of rhizomes, stem tubers, tuberous roots etc. for propagation.

**Dominance**

Ability of an allele to express itself in the heterozygous state.

**Donor plant**

See Mother plant.

**Door yard fruit**

Fruit species grown in small numbers around homes.

**Dormancy**

Resting state of buds, seeds and spores that fail to grow when provided with seemingly optimal conditions.

**Dormin**

Initial name given to abscisic acid (ABA). A dormancy inducing substance which has been extracted from buds and leaves. Also known as abscisin II.

**Double**

Term to describe flowers having more than the usual number of petals.

**Double cropping**

Taking two crops a year in sequence from the same piece of land.

**Double cross**

A cross between two single crosses involving four different inbreds.

**Double fertilization**

Union of two male gametes with the female gamete and polar nuclei.

**Double hedge planting**

Pairs of row of plants form a double hedge where the spacing within the rows and between the set of two rows are close but the spacing between pairs of rows is wider.

**Double leader**

Two shoots competing as leaders on a tree, each trying to assert apical dominance.

**Double recessive**

An organism with two recessive alleles for a particular trait.

**Double working**

Type of grafting where the graft combination contains an interstock between the scion and the stock.

**Downy**

Term to describe soft hairs; also called pubescent e.g. African violet.

**Drainage**

The process of removal of excess water from the land.

**DRC**

Dry rubber content, ascertained by coagulating a weighed sample of latex.

**Drip culture (Sand culture)**

A modification of hydroponics where plants are kept in sand medium and watered with a nutrient solution.

**Drip irrigation (Trickle irrigation)**

The application of small quantities of water directly to the root zone through various types of delivery systems.

**Drought**

Lack of moisture that hinders plant growth.

***Drupe***

A fleshy one-seeded indehiscent fruit with the seed enclosed in a strong endocarp.

***Drupelet***

A small drupe as that in an aggregate fruit as the blackberry.

***Dry farming***

The production of crops without irrigation on the land which receives annual rainfall of less than 500 mm.

***Dry fruits***

Class of fruits in which the pericarp is often hard and brittle at maturity.

***Dry ice***

Frozen solid carbon dioxide.

***Drying off***

The process of preparing bulbs and tubers for their necessary rest or dormant period by withholding water.

***Dry matter***

Remains of the plant after the removal of water.

***Dry-pack storage***

The storage of cut flowers in vapour-proof containers, usually at 0°C.

***Duff (Litter)***

The partially decomposed organic matter (e.g. leaves, flowers, fruits etc.) found beneath plants, as on a forest floor.

***Dwarfing rootstock***

Rootstock which has a dwarfing effect on scion.

***Earth vegetables***

All forms of vegetables in which food is stored in underground parts.

***Echinate***

Having prickles or spines.

***Ectocarp***

The outer layer of cells of the pericarp or fruit wall.

***Eco-climate***

Climate under the crop canopy.

***Eco-system***

An ecological system involving living and non-living units where a stable cyclic interchange of energy and materials occur in a defined space and time.

***Eco-type***

Plant type or strain within a species, resulting from exposure to a particular environment.

***Edgings***

A border of bricks, low shrubs or dwarf perennials provided to demarcate garden paths or to make an area more conspicuous.

***Effective rooting depth***

Soil depth from which the full grown crop extracts most of the water needed for evapo-transpiration.

***Electronic leaf***

Device in a mist system to switch on the mist as and when the cuttings/plants become dry.

***Elite plant***

A plant with superior traits.

***Elite variety***

An improved variety developed by plant breeders and released to farmers due to its superiority in at least one respect.

***Elliptic***

Oval but narrowed towards the rounded ends.

***Emasculation***

Removal of stamens of self fertile plant to aid self sterility.

***Embryo***

The rudimentary plant within the seed.

***Embryo culture***

*In vitro* culture of isolated mature or immature embryo.

***Enation***

Outgrowth on a plant surface.

***Endemic***

Peculiar to a particular area.

***Endocarp***

(1) The inner layer of cells of the pericarp or fruit wall.

(2) The stony part of a drupe or pome.

***Endodormancy***

Dormancy regulated by endogenous physiological factors.

***Endogenous***

Arising from deep-seated tissues.

***Endosperm***

Tripliod food storage tissue of angiosperm seed resulting from triple fusion.

***Endospermic seeds***

Seeds with dominant endosperm.

***Enemophilous***

Desert-loving.

***Energy cropping plantation***

Growing of crops like casuarina and eucalyptus for energy purpose.

***Enology***

The art and science of wine making.

***Entire***

Without lobes or indentations.

***Entomophilous***

Insect-pollinated.

***Epicarp***

Outer layer of fruit wall.

***Epicormic shoots***

A cluster of shoots, derived from dormant adventitious buds, on a main stem or branch after a wound or cut has been made.

***Epicotyl***

That portion of an embryo or seedling above the cotyledons.

***Epidermis***

Outermost cell layer of young plants and some parts of older plants (like leaves and fruits).

***Epigeal***

Plants in which the cotyledons appear above the soil surface (See Hypogeal).

***Epigeous germination***

Germination pattern of seed where the hypocotyl elongates and raises the cotyledons above ground level.

***Epigynous***

Condition in which the perianth and stamens of a flower are attached above the ovary.

***Epinasty***

Condition in which the upper surface of a structure, such as a leaf, grows more rapidly than the lower surface, causing a downward curvature.

***Epiphyte***

Nonparasitic plant growing on another plant, absorbing atmospheric moisture with the help of velamen roots.

***Episodic growth***

Growth occurring in spurts or flushes, as against continuous growth.

***Equable***

Uniform, even or smooth.

***Eremophyte***

Desert plant.

***Erratic bearing (Irregular bearing)***

Inconsistent and unpredictable flowering and fruiting behaviour.

***Esculentus***

Means 'edible' (used in botanical names).

***Espalier***

Plants trained to grow flat against a wall.

***Essential oil***

Volatile aromatic extracts prepared by steam distillation of ground spices (See Spice essential oils).

***Estate***

A property where rubber, tea, coffee etc. are cultivated.

***Estivation***

See Aestivation.

***Ethereal oil***

Essential oil.

***Ethylene***

A gaseous plant growth substance, regulating vegetative growth, fruit ripening and abscission of plant parts.

***Etiolation***

Development of plants or plant parts in darkness, resulting in elongated stem, small leaves, and reduced chlorophyll content.

***Etiology (Aetiology)***

The science of the cause or origin of diseases.

***Even span greenhouse***

A greenhouse whose roof-slopes are of equal length and angle.

***Evergreen***

Plants that have persistent green leaves for two or more growing seasons.

***Excised embryo test***

Germination test of seeds whose embryos require long periods of after-ripening.

***Exhausting***

The process of removing air from the contents of the can, for preserving food and reducing corrosion.

***Exocarp***

The outer skin-like region of the fruit pericarp.

***Exogenous***

Arising from the external tissues.

***Exotic plant***

A newly introduced plant, not native to a place (See Indigenous).

***Explant***

Excised plant part used for tissue culture.

***Explantation***

The removal of living tissue from an organism and its culturing in an artificial medium.

***Explosive fruit***

Fruit which bursts suddenly and violently, scattering seeds over a considerable area.

***Extensive production***

Crop production using large area of land with minimum labour and inputs.

***External dormancy***

Dormancy imposed by unfavourable external conditions like moisture stress, extreme temperature and sub-optimal levels of oxygen and light.

***Ex-vitro***

Conditions, reactions or responses of organisms removed from *in vitro* conditions. (In Latin *ex vitro* means 'from glass')

***Eye***

- (1) Common term for a bud.
- (2) Bud of a tuber.
- (3) A lateral bud as on a rose stem.
- (4) Small opening on a fig which is the site of pollination.

**F<sub>1</sub> (First filial generation)**

The first generation of offspring resulting from an arranged cross between selected parents in breeding programmes (See Monohybrid).

**F<sub>2</sub> (Second filial generation)**

The second generation of offspring resulting from crosses between individuals of the F<sub>1</sub> generation.

**Face-packing**

Packing fruits for market with the top layer of the container artistically arranged, while the fruits below are without arrangement and often inferior in quality.

**Facilitation**

The process in which two individual plants or two populations of plants interact in such a way that at least one exerts a positive effect on the other. Double facilitation is equivalent to mutualism.

**Facultative long and short night plants**

Plants which do not require a night length longer or shorter than a given critical length for a response to occur, but which will respond faster if the dark period is longer or shorter, respectively, than a critical length.

**Fallow**

A system in which cultivated land is left without a crop for long periods.

**False cardamom**

See Large cardamom.

**False fruit (Pseudocarp)**

A fruit that incorporates in addition to the ovary wall, other parts of the flower, such as the receptacle.

**Family**

Group of genera.

**Fan branches**

The main branches of a shrub or a tree appearing like the leaves of a fan.

***Fan-and-pad cooling system***

A cooling system, utilized in greenhouses, where cooling is brought about by evaporation of air drawn in through wet pads with the help of fans.

***Farm forestry***

Practice of growing trees specifically for fuel, food and a variety of other resources on a farm.

***Farming system***

Appropriate combinations of cropping systems, livestock, fisheries, poultry and forestry, ensuring ecological and socio economic balances.

***Farming system research***

Research on farming systems, multi and interdisciplinary in nature, to enhance and stabilize agricultural production.

***Fasciation***

A malformation in plant shoots resulting in an enlarged and flattened shoot, as if several shoots are fused.

***Fauna***

Pertaining to the animal life of a locality or region or that existing during a specific geological period or time.

***Favism***

Haemolytic anaemia caused by eating broad beans or by inhaling the pollen of its flower.

***Feeder roots***

Ultimate branches of a root system with a large absorbing area.

***Feni***

Fermented wine made from cashew apple in Goa.

***Fermentation***

- (1) Anaerobic breakdown of organic substances by microorganisms, producing heat, wastage gases and a variety of end products.
- (2) Process after maceration (rolling) in the production of tea.

(3) A step in cocoa processing to get rid of the pulp around the beans and to induce chemical changes for improving the quality.

(4) A step in processing of parchment coffee where the mucilage is removed by natural fermentation.

**Fernery (Conservatory)**

A greenhouse of tropics which protects plants from fierce sunlight and strong wind.

**Fertilization**

(1) The fusion of male and female gametes to produce zygote, containing chromosomes of both the parents.

(2) The application of fertilisers to the soil to increase fertility.

**Fertiliser**

Substance which supplies mineral nutrients to plants in required quantity.

**Fibrous root system**

Root system in which primary and lateral roots develop almost equally and have a limited quantity of cortex.

**Field test**

An evaluation test whereby the field performance of experimental plants, their response to inputs and physical factors etc. are assessed in comparison to control.

**Filament**

The stalk of a stamen or male flower part.

**Filiform**

Thread-like.

**Fimbriate**

Bordered with hair, fringed.

**Finger**

The individual fruit in the hand of a banana bunch.

**Fish leaves**

In tea, the first two leaves formed on a shoot as it grows from a bud.

**Flaccid**

Wilted.

**Flat**

Shallow tray made of wood, plastic or metal with drainage holes for germinating seeds or rooting of cuttings.

**Flat grafting**

Grafting in which smooth transverse cut is made on both scion and stock (as in cactus) and the flat surfaces are held firmly in position by thread or raffia.

**Fleshy fruits**

Class of fruits having soft and fleshy pericarp at maturity; includes berry, pepo, hesperidium, drupe and pome.

**Fleshy root**

A root that accumulates and stores a rich supply of reserve food for the plant.

**Flexuous**

With a wavy form.

**Flora**

- (1) The plant life of a locality or of a geological era.
- (2) Plants taken collectively.
- (3) A book in which all the plants from a particular area are described.

**Floral concrete**

See Concrete.

**Floral foam**

A water absorbing material (a substitute for pin holder or wire mesh) used in floral decoration to keep the cut flowers in place.

**Florets**

Small, individual flowers that make up a very dense inflorescence.

**Floricane**

A flowering and fruiting stem of a bramble, the season after it was produced (in the season of production, it is called primocane).

**Floriculture**

The art and science of growing and marketing flowering and foliage plants.

**Florigen**

Hypothetical hormone like substance implicated in floral initiation in many plant species.

**Florist**

One who is involved in the procurement and selling of flowers.

**Flower**

The angiosperm reproductive structure which may include calyx, corolla, androecium and gynoecium.

**Flower bud**

An unopened flower.

**Flower bud initiation**

Formation of floral primordium.

**Flower blasting**

Flower bud abortion after the completion of flower differentiation.

**Flower differentiation**

Complete morphological differentiation of the floral organs following flower bud initiation.

**Flower initiation**

Visible organisation of flower primordia (buds) at the stem apex.

**Flower induction**

An invisible developmental process that occurs prior to visible flower bud initiation.

**Floral preservative**

Chemical used to prolong the vase life of cut flowers.

**Floral primordium**

Very early stage of flower bud.

**Florescence**

Refers to anthesis or flowering time, the state of being in bloom.

**Flotation**

A method for separating a valuable material from a less valuable material by placing them in a liquid in which one will sink and the other will float.

**Foliar**

Pertaining to leaves.

**Foliar diagnosis**

Estimation of mineral nutrient deficiency or excess by analysing the chemical composition, colour and/or growth characteristics of the foliage.

**Foliar embryos**

Vegetative embryos developed at the edge of leaves, capable of growing into new plants.

**Foliar feeding**

Feeding plants with nutrient solution through the leaves.

**Foliage plant**

Any plant grown primarily for its foliage, utilized for interior decorations or landscaping.

**Follicle**

Simple dry dehiscent fruit having one locule which splits along one suture.

**Follower**

A banana sucker which has been allowed to grow for bunch production.

**Forcing**

The manipulation of environment factors for producing a marketable pot plant or cut flower, especially during off season.

**Forest**

A plant community, predominantly of trees and other woody vegetation, usually with a closed canopy.

**Forestry**

- (1) Management of forest for maximum sustained yield of their resources and benefits.
- (2) The science or management of forests.

**Forkert budding**

A modification of patch budding where the lower portion of the patch of the rootstock is not cut but retained as a flap. The bud patch is inserted in the portion and the flap is drawn over the inserted bud, followed by wrapping as usual.

**Form**

A member of a population that differs from the others to a degree not great enough that it can be called a cultivar.

**Foundation planting**

Planting of trees, shrubs or ground covers in front of a building foundation.

**Frame work**

The 'skeleton' of main branches of a tree or shrub.

**Free clones**

Clones that can be purchased and resold without any agreement or prohibition.

**Free pollination**

Pollination without control. The offsprings are of unknown parentage.

**Free water**

Water released by the cell when freezing occurs in intercellular spaces (See Bound water).

**Freeze-drying**

A method of food processing where the material is initially frozen at super low temperature and then vacuum dried.

**Freezing agents**

Substances used for chilling foods.

**Fresh weight (Wet weight)**

The weight of a plant or plant part including the water content.

**Frond**

General term designating leaf of coconut, oilpalm, fern etc.

**Frost**

Minute crystals of ice collected or deposited on ground or plants when the nights are cold and temperature falls below freezing point.

**Frost damage**

Damage caused by low temperature.

**Frost day**

Day with a minimum temperature less than 0 °C.

**Frost injury (Freezing injury)**

Injury or killing of plant tissues caused by exposure to low temperature and consequent formation of ice.

**Frost pocket**

A depression in the terrain into which cold air drains but from which it cannot escape, making the plants of the area prone to freezing injury.

**Fructification**

- (1) The act of producing fruit.
- (2) The production of a reproductive structure.

**Fruit**

A ripened ovary or ovaries with or without accessory floral parts and / or seeds.

**Fruit buds**

Buds containing underdeveloped flowers; also referred to as flower buds.

**Fruit butter**

Product prepared by boiling screened fruit pulp with or without adding sugar, fruit juices, and spices to a semisolid mass of homogenous consistency.

**Fruit confections**

General term used to describe candies in which fruits are used.

**Fruit drop**

Any substantial dropping of immature fruits.

**Fruit growing**

The cultivation of edible fruits that are consumed either fresh or processed.

**Fruiting habit**

The relative position of fruiting on the shoots of a plant (See Bearing habit).

**Fruit juice concentrate**

A fruit juice from which water has been mostly removed by heating or freezing.

**Fruit juice powder**

Fruit juice converted into a free flowing, highly hygroscopic powder by puff-drying, freeze-drying, vacuum drying, spray-drying or drum-drying.

**Fruit leather**

See Fruit paste.

**Fruit paste (Fruit leather)**

A product like fruit butter, but is dried in the sun or by artificial heat to a solid consistency or to approximately the consistency of putty.

**Fruit preserve**

Product made by cooking prepared fruit in sugar (sucrose) syrup until the concentration of sugar reaches 55 to 70 per cent. The fruit should be crisp and retain its form.

**Fruit set**

Persistence and development of an ovary and/or adjacent tissue following bloom.

**Fruit vegetable**

Fruits used as vegetables (e.g. plantain and tomato).

**Fugacious**

Falling off soon or fading away.

**Full bloom**

The plant at the period at which most of its flowers are blossoming.

**GA<sub>3</sub>**

See Gibberellins.

**Gametes**

Male and female sex cells.

**Gametocclone**

A plant regenerated from the *in vitro* cultures of gametic tissue.

**Gametoclonal variation**

Variation among the plants regenerated from the cultures of gametic cells.

**Gametogenesis**

Sexual reproduction.

**Garden**

A piece of land used for growing flowers, fruits, vegetables etc. Often used as a place for recreation.

**Garden agriculture**

Cultivating crops like vegetables in land more or less adjacent to settlements, utilising organic wastes.

**Gardening**

Cultivation of plants in enclosed areas for ornamental purposes.

**GATT**

General Agreement on Tariffs and Trade.

**Gene pool**

All the genes and their different alleles that are present in a population of a plant.

**Genera**

Plural of genus.

**Generation**

A single complete life cycle in the life of a plant or insect.

**Generative nucleus**

The nucleus of pollen grains which by division forms sperms.

**Genetic architecture**

The general genetic structure of a species.

**Genetic breakdown**

Loss of vigour and often the early death of  $F_2$  plants which lack the necessary adaptive complexes of either or both the original parents.

**Genetic drift**

A change in gene frequency from generation to generation as a result of chance events.

**Genetic engineering**

Technology involving man made changes in the genetic constitution of cells (apart from selective breeding).

**Genetic purity**

Trueness to type /varietal purity conforming to the characteristics of the variety as described by the breeders.

**Genetic shift**

Change in genetic make up of a variety due to growth for several consecutive generations in areas outside their adaptation.

**Genotype**

The genetic make up of a nucleus or individual.

**Genus**

A group of closely related species ( Genera is the plural). In a scientific name genus is the first of the two names given for an organism.

**Geocarpy**

The development of a fruit beneath the ground which originates from a flower above the ground.

**Geotaxis**

Plant orientation with respect to gravity.

**Geotropism**

Growth in response to gravity.

**Germination**

The initiation and development of vegetative growth of an embryo, spore, seed or other reproductive body, forming a new individual plant.

**Germplasm**

A collection of genotypes of a particular organism.

**Gestation period**

The period taken from germination / planting to commencing regular flowering and fruiting.

**Gibberellins**

A group of plant growth substances that influence cell elongation, cell division and other physiological processes in plants e.g. GA<sub>1</sub>, GA<sub>2</sub> etc.

**Girdling**

The removal of a narrow ring of bark from a shoot, cane, spur or trunk to favour fruit set, size, and /or ripening.

**Glabrous**

Lacking hairs or projections; smooth surfaced.

**Glace fruit**

Product obtained by coating candied fruit with a concentrated solution of sugar and confectioners' glucose syrup, followed by careful drying to give a transparent glaze to the surface (See Candied fruit).

**Glasshouse**

A structure that has a transparent cover and an artificial heat source for growing plants, mainly in temperate regions (See Green house).

**Glaucus**

A surface with a waxy, white coating that can be rubbed off.

**Glazing**

Covering of fruit/vegetable with a thin transparent coating of sugar, which imparts them a glossy appearance.

**Goottee**

Synonym for air layering, marcottage, circumposition, and Chinese layerage

**Gourmandisers**

Strong shoots arising from the stem as in cocoa, coffee etc.

**Grading**

The process of sorting into different lots conforming to certain pre-determined standards.

**Graft**

Planting material consisting of a scion and a rootstock.

**Graftage**

See Grafting.

**Graft chimeras**

Chimeras produced artificially by grafting or budding.

**Graft incompatibility**

The inability of two different plant parts when grafted together to have a successful, long lived graft union.

**Grafting (Graftage)**

Fusing or uniting one part of a plant (rootstock) with that of another (scion), for producing a graft.

**Grandiflorus**

Comparatively large flowered; used in botanical names.

**Gravel culture**

Modification of hydroponics where granites of irregular shape and size are used as the medium and nutrient solutions are applied.

**Gravitational water**

Water in excess of the holding capacity of soil; removed by drainage.

**Green budding**

A method of budding where seedlings of 2-6 months are used as stock while the bud wood is only 6-8 weeks.

**Green bulbs**

Bulbs with leaves, used in propagation.

**Green house**

A structure which protects plants from wind, precipitation, excessive radiation, extremes of temperature etc.

**Greenhouse effect**

The quality of the atmosphere to permit most of the insolation and prevent back radiation.

[Solar radiation is predominantly of short wavelengths which passes through the atmosphere. Terrestrial radiation is of much longer wavelength and is trapped or reflected by the atmosphere. The selective transmission of radiant energy by the atmosphere is similar to that of the glass in a greenhouse.]

**Greenhouse gardening**

Growing of unusual and out of season vegetables, fruits and flowers using greenhouse, especially under temperate climatic conditions.

**Green leaf manuring**

The practice of collecting and incorporating green leaves and tender green twigs into the soil.

**Green manure crop**

Crop grown and incorporated when succulent, to improve soil, especially of organic matter.

**Green manuring**

The practice of growing green manure crops and incorporating into the soil.

**Green plants (Foliage plants)**

Ornamental plants valued aesthetically for their foliage.

**Green pruning**

Pruning of actively growing rose plants without the benefit of a dormancy period.

**Gregarious**

Plants of one kind which occur naturally in close proximity.

**Gregarious flowering**

Simultaneous flowering as in bamboo, coffee etc.

**Grooming**

The operation of cleaning out lichens and mosses which develop on rubber trees during monsoons.

**Ground cover**

Plants grown for their low, spreading habit to prevent the growth of weeds and for protecting soil.

**Ground layering**

Layering method where ground is utilized as a rooting medium.

**Ground sucker**

A sucker or shoot arising from below the soil.

**Growing point**

Region at the tips of both stems and roots where cell division occurs and new cells are formed.

**Growth**

An irreversible process in which there is an increase in size, dry weight or volume of an organism.

**Growth hormone**

See Plant growth hormone.

**Growth inhibitor**

Any chemical that suppresses plant growth e.g. CCC; B-9

**Growth regulator**

See Plant growth regulator.

**Growth retardant**

A chemical (such as chloro choline chloride or CCC) that selectively interferes with normal hormonal promotion of growth, but without appreciable toxic effects.

**Growth ring (Annual ring)**

A distinct layer of growth as seen in the cross section of a woody stem.

**Growth stimulant**

Any chemical that encourages plant growth.

**Growth substance**

See Plant growth substance.

**Gutta percha**

Poly-isoprene obtained from the leaves of *Palaquium oblongifolium*.

**Guttation**

Exudation of water by uninjured plants usually on the edges or tips of leaves from hydathodes.

**Guying**

Supporting a tree by use of cables, rope or wires until root growth is established.

**Gynogenesis**

See Pseudogamy.

**Habit**

A characteristic form or mode of growth.

**Habitat**

Natural home or dwelling place of an organism.

**Habituation**

The acquired ability of cultures to grow and develop without depending on external source of plant growth substances.

**Hailstorm**

Prolonged and severe storm consisting largely of hail or frozen raindrops.

**Half-standard**

In floriculture, trees or shrubs grown with about one metre of clear stem.

**Hamper**

Container used for shipping gladiolus.

**Hand**

The two rows of banana fingers, having a common base in the bunch stalk.

**Hand pollination**

Pollination done by handbrush or hand.

**Hanging basket**

A container suspended from a ceiling or wall.

**Haploid**

A plant with half the number of chromosomes of the normal diploid.

**Hardening**

(1) The process of gradually exposing tissue culture plants to higher temperature and light intensity and lower relative humidity to make them establish *ex vitro*.

(2) The treatments given in the nursery to enable

seedlings /planting materials to withstand the transplanting shock and/or the adverse conditions in the main field.

**Hardiness**

Quality of plants to resist injury from unfavourable temperatures.

**Hard pan**

An impervious layer in a soil which restricts root penetration as well as movement of air and water.

**Hard seed**

Seeds that have a seed coat impervious to water or oxygen required for germination

**Hard water**

Water which contains certain minerals, usually calcium and magnesium sulphates, chlorides or carbonates in solution, to the extent of causing a curd or precipitation rather than a lather, when soap is added.

**Hard wood cutting**

Cuttings from hardwood for propagation as in the case of pomegranate, grape, fig, plum etc.

**Harvest index**

Yield of the plant parts of economic interest (economic yield) as percentage of total biological yield in terms of dry matter.

**Haulm**

Stems of herbaceous plants as distinct from hollow culms of grasses.

**Heading-back (Heading)**

A type of pruning where terminal portion of the shoot is removed, causing side buds to grow below the cut.

**Head-house**

A building in close proximity to or attached to a greenhouse, used as a workshop, storage area, pesticide room, potting area, eating area etc.

**Heart wood**

The darker, denser part in the central portion of a woody stem, consisting of dead elements which lost their conducting ability.

***Heat delay***

Delay in the initiation of a flower bud due to an abnormally high temperature.

***Heaving***

Occurs during alternate periods of freezing and thawing, where roots become exposed and frequently die.

***Heavy soil***

A soil predominantly composed of clay.

***Hedge***

Plants grown close together, forming a row of massed foliage.

***Hedge planting (Single hedge planting)***

The method of planting where the spacing between plants within the row is closer than that between rows.

***Heel cutting***

Cutting, with a heel (small slice of older wood) at the base for maximising rooting.

***Heel of cutting***

The expanded base of a side shoot after removing it away from the main stem of a plant.

***Heeling-in***

Placing plants in the ground for temporary storage (when planting cannot be done immediately) keeping the roots in contact with moist soil.

***Herb***

- (1) Plants grown for their flavour, aroma or medicinal value.
- (2) Any vascular plant which is not woody.

***Herbaceous***

Having the characteristics of a herb; not woody.

***Herbaceous cutting***

Cutting made for vegetative propagation from succulent herbaceous plants.

***Herbage***

Leaves, stems and other succulent parts of forage plants used as animal feed.

***Herbarium***

Collection of dried plants, systematically arranged and labelled.

**Herbicide**

Substance used for killing or inhibiting the growth of weeds.

**Hermaphrodite**

A flower with both stamens and pistils.

**Hesperidium**

A syncarpous, polycarpellary berry with a separable leathery rind, characteristic of orange.

**Heterograft (Xenograft)**

An interspecific graft.

**Heterophyll**

The production of more than one leaf form in a plant species.

**Heterosis**

Superiority of the  $F_1$  over the parents (Synonym: Hybrid vigour).

**Heterostyly**

A condition which favours cross pollination in bisexual flowers due to the presence of male and female parts at different levels.

**Heterotroph**

An organism which cannot synthesize its own food, and hence depends on previously synthesized foodstuffs.

**Heterozygous**

Condition where one or more genes on a chromosome differ from that on the other member of the chromosome pair.

**Hidden hunger**

A condition when a plant shows no obvious symptoms of nutrient deficiency, yet the nutrient content is not sufficient enough to give the expected yield.

**Hill**

A circular area housing several vegetable seeds.

**Hip (Hep)**

The seed pod of the rose.

**Hirsute**

Rough, hairy.

**Homestead cultivation**

Cultivation in the surrounding land of a house, by the householders.

**Homozygous**

A condition where all the genes on one chromosome are similar to all those of the other chromosome pair.

**Hormone**

See Plant growth hormone.

**Hortensis (Hort.)**

Pertaining to gardens, or plants found only in gardens.

**Horticulture**

- (1) Latin, *Hortus*, "garden"; *cultura*, "cultivation".
- (2) The art and science of production and processing of fruits, vegetables, ornamentals, spices, plantation crops, medicinal plants and aromatic plants.

**Horticultural fruit**

A fruit which is edible on ripening.

**Horticulture therapy (Hort therapy)**

Treatment of unhappy and mentally retarded people, by diverting their attention to ornamental gardening, flower decoration and growing vegetables, fruits and other horticultural crops.

**Hot bed**

Propagating structure, in temperate regions, where temperature is enhanced for germinating seeds, rooting cutting and growing nursery stock (See Cold frame).

**Hot pack ( Hot fill )**

Filling of pasteurised or sterilised food, while hot, into clean (not necessarily sterile) containers under clean (not necessarily aseptic) conditions.

**House plant**

A plant adapted to the micro-environmental conditions of houses and other buildings.

**Humid tropics**

The tropical areas with excessive moisture and relative humidity, characterized by isothermal conditions which facilitate year round crop production.

***Humification***

Process of organic decomposition.

***Humus***

An organic soil material consisting of partially or completely decomposed plant and animal matter.

***Hybrid***

An individual resulting from the union of gametes differing in one or more genes.

***Hybridization***

The process of crossing individuals with different genetic make up.

***Hybrid sterility***

The inability of some hybrids to produce viable gametes due to absence of homologous chromosomes.

***Hybrid vigour***

The increased vigour over the parental types exhibited by hybrids.

***Hydro-cooling***

A cooling method for fresh produce in which the product is flooded with large volumes of cold water to remove field heat.

***Hydrogen swell***

Swelling of food cans due to the hydrogen gas produced by the action of food acids on the metal.

***Hydro-handling***

System of unloading containers and conveying fruits and vegetables in water to minimize bruising.

***Hydrophilous***

- (1) Pollinated by water.
- (2) Preferring moist places or water as a habitat.

***Hydrophyte***

A plant which lives in water or a moist environment.

**Hydroponics (Soil-less culture)**

The technique of growing plants without using soil, either in circulated, aerated nutrient solutions or in inert media such as gravel, sand, peat, vermiculite or saw dust, to which a nutrient solution is added.

**Hydrotropism**

Growth movement of plants in response to water or moisture stimulus.

**Hygrochatic process**

Opening of fruit or movement of organs as a result of water uptake; usually connected with the dispersal of seeds or spores.

**Hygrophilous**

Living in fresh water or moist places.

**Hypobaric (Sub-atmospheric pressure) storage**

Storage of agricultural produce in low atmospheric pressure where the concentration of oxygen and ethylene are reduced, resulting in low rate of respiration.

**Hypocotyl**

The part of the embryo or seedling below the cotyledonary node and above the radicle or root; the transition region connecting the stem and root.

**Hypogeal**

- (1) Plants in which the cotyledons remain below the surface of the soil (See Epigeal).
- (2) Subterranean or occurring beneath the surface of the soil or underground.

**Hypogeous germination**

Germination in which the cotyledons remain below the surface of the soil.

**Hysteranthous**

Developing leaves after the appearance of flowers, as the almond.

**Ikebana**

Japanese style of flower arrangement which has a spiritual and religious background.

**Illegitimate clonal seeds**

Seeds collected from the budded area of known-rubber clones; but produced by natural cross pollination.

**Imbibition**

Process of absorption of water as by seeds during germination.

**Imbricated**

Covered with overlapping scales like tiles on roof.

**Immunity**

Natural or acquired resistance of a plant to active infection by the pathogenic microorganisms or to the adverse effects of a particular parasite.

**Imperfect flower**

Flower lacking either the stamen or the pistil.

**Impermeable seed**

Seed which does not allow passage of water or gases through the seed coat (See Hard seed).

**Implant**

A grafted portion of a tissue.

**Inarching**

A grafting method where rootstock is taken to the scion donor plant for grafting. Stock and scion are independent for their nourishment till the completion of the graft union (Synonym : Approach grafting).

**Inbred**

The progeny of either a single cross pollinated plant obtained by selfing or two closely related plants obtained by inbreeding.

**Inbreeding**

The crossing of closely related plants, which leads to increase in homozygous gene pairs as well as genetically linked undesirable characters.

**Incompatible varieties**

Varieties which do not successfully cross pollinate or intergraft.

**Incompatibility**

(1) Condition preventing pollen grains from functioning on a pistil.

(2) Inability to form a successful, long lived graft union.

**Incomplete flower**

Flower lacking one or more of the four sets of floral parts.

**Indeterminate growth**

Growth that is potentially limitless.

**Indexing**

Determining the presence of disease or verifying the assumption of freedom from disease or virus.

**Indexed plants**

.....

**Abscisic acid (ABA, Abscisin, Dormin)**

Naturally occurring plant growth inhibitor, promoting senescence, abscission and / or dormancy.

**Abscission**

Detachment of leaves, flowers, fruits or other plant parts.

**Abscission zone (Abscission layer)**

Zone where transverse division and separation of cells occur, leading to abscission of organ.

**Absolute**

Purified floral concrete. Impurities like plant waxes, albumin, colouring matter etc., are removed by separation techniques using absolute alcohol (See Concrete).

**Accessory**

In Floriculture, an item used in support of landscape or floral design such as figurine, bird bath, pool or accent rocks.

**Accessory bud**

A bud located above or beside the main axillary bud.

**Accessory fruit**

A fruit developing from accessory floral parts like floral tube, receptacle etc., in addition to the ovary.

**Acclimatization**

The process of adapting to a new environment.

**Achene**

A dry indehiscent, one seeded fruit in which the ovary wall remains free from the seed coat.

**Acropetal**

From a physiological base to a physiological apex.

**Acuminate**

Tapering to a point, as a leaf.

**Adaptability**

The capacity of an organism or species to become suited to its environment.

**Adaptation**

The fitness of a population in a given environment.

**Adaptive trial**

A trial conducted to assess the adaptability of a technology or a variety to a particular region.

**Adventitious**

Produced in an unusual or abnormal position, or at an unusual time of development or away from the natural habitat.

**Adventitious embryony (Nucellar embryony)**

Type of apomixis where embryos arise from a cell or group of cells either in the nucellus (usually) or in the integuments in addition to the regular embryo.

**Aeration**

Supply of oxygen to the roots of plants and micro-organisms in the soil.

**Aerenchyma**

Tissue of thin walled cells with large, air filled intercellular spaces, found in roots and stems of some aquatic and marsh plants.

**Aerial roots**

Roots absorbing moisture from the air e.g. orchids.

**Aeroponics**

A system of growing plants where the roots are suspended and bathed in a nutrient mist rather than a nutrient solution as in hydroponics. **Aerosol**

Type of formulation of insecticide, antibiotic or plant growth substances dispersed as very fine droplets on application, forming smoke or fog.

**Aestivation (Estivation)**

The arrangement of sepals and petals in the flower bud before expansion.

**Aetiology (Etiology)**

The science of the cause or origin of diseases.

**Afforestation**

Artificial establishment of a forest where tree crops are not previously grown or on deforested land.

**After-cultivation**

Harrowing, tilling and other cultural operations in a field after the emergence of the crop.

**After-ripening**

The physiological changes that occur in a dormant seed to enable germination.

**Agar (*Agar agar*)**

A gelatinous substance obtained from certain species of red algae, widely used as a solidifying agent in aseptic culture.

**Aggregate fruit**

A fruit developing from a flower having several pistils that ripen together in a single mass.

**Agriculture**

(1) An activity of man aimed at the production of food, fibre, fuel etc., by the use of terrestrial resources.

(2) The art, science and industry of managing the growth of plants and animals for human use.

**Agri-silviculture**

Use of land for the concurrent production of agricultural and forest crops.

**Agro-climatic regions**

Broadly homogenous zones with respect to climate and edaphic factors.

**Agro-ecology**

The study of the relation of agricultural crops and environment.

**Agro-forestry**

Self-sustaining land management system combining production of agricultural crops with that of tree crops with or without livestock.

**Agrostology**

The science which deals with the study of grasses, their classification, management and utilization.

**Air drainage**

Air outlets and convection currents which prevent dead air and frost pockets.

**Air-inarching**

Technique of grafting a branch to the trunk of a tree.

**Air layering**

Layering in above ground branches by removing a ring of bark and placing the rooting medium around.

**Air plants**

Plants not attached to the ground.

**Air root-grafting**

The grafting of roots on to a branch while it is still attached to the tree.

**Aitionomic**

Able to develop parthenocarpic fruits only in response to some stimulus external to the ovary.

**Akene**

Dry, one seeded, small, indehiscent fruit of one carpel, seed like in appearance.

**Albido**

The white tissue beneath the peel of citrus fruit.

**Albino**

An organism lacking normal pigmentation due to genetic factors. The condition is albinism.

**Alkaloids**

Group of nitrogen containing basic organic compounds which possess poisonous and medicinal properties e.g. atropine, morphine quinine and strychnine.

**Allelopathy**

Any direct/indirect harmful effect that one plant has on another or mutually on each other through the production of chemical compounds that escape into the environment.

**Alley**

A narrow passage left across rows to facilitate harvesting and cultural operations.

**Allogamy**

Cross fertilization in plants.

**Allograft (Homograft)**

A graft between like species.

**Allopolyploidy**

Polyploidy involving the combination of chromosomes from two or more species.

**Alpine garden** A garden comprised of plant species normally found growing at high elevations.

**Alpine plant**

A plant suitable for rock gardens or one that normally grows in exposed mountain regions.

**Alternate**

An arrangement of leaves, buds, and other organs borne singly at different heights on either side of the stem or axis.

**Alternate bearing ( Biennial bearing )**

The phenomenon of producing heavy bearing during 'on year' which is alternated by shy bearing during 'off year.'

**Altitude (Elevation)**

Vertical distance of a level, a point or an object from mean sea level (MSL).

**Ambient**

- (1) The environment of a particular time.
- (2) Set of climatic conditions existing during an experiment.

**Amphimixis**

Normal sexual reproduction in which the morphologically dissimilar male and female gametes unite together for the formation of zygote.

**Analogues**

Organs of different plants with like function but of unlike origin.

**Androecium**

The collective term for stamens of a flower.

**Androdioecious**

Condition in which male and hermaphrodite flowers are borne on separate plants. **Androgenesis**

Plant development from male gametophytes.

**Andromonoecious**

Condition in which both male and hermaphrodite flowers are borne on the same plant.

**Anemophily ( Anemophilous )**

Pollination by wind.

**Angel crops**

Crops raised without chemical fertilisers, plant protection chemicals and growth stimulants.

**Angiosperm**

A member of the group of flowering vascular plants whose seeds are enclosed within a mature ovary (fruit) in contrast to the seeds of gymnosperms which are not enclosed in an ovary.

**Annual**

Plant that completes its life cycle from seed to seed within one year or one growing season.

**Annual ring**

A distinct layer of growth as seen in the cross section of a woody stem (See Growth ring).

**Annual up timing (Crop timing)**

Adjusting planting and / or adopting cultural operations to facilitate harvesting of the crop at a specified time.

**Anther**

The portion of the male flower that bears the pollen.

**Anthocyanin**

Chemical plant pigment; usually red or blue. **Anti-auxin**

Substance which can inhibit growth by antagonising the activity of auxins.

**Anticoagulant**

Material added to rubber latex to prevent coagulation by natural means before it reaches the factory.

**Antioxidants**

Substances which are antagonistic to oxidation process.

**Antitranspirants**

Substances that retard or inhibit transpiration.

**Apetalous**

Without petals.

**Apogamy**

A type of apomixis in which the embryo develops from the cells other than egg cell.

**Apomixis**

Occurrence of an asexual reproductive process in place of normal sexual reproduction involving reduction division and fertilization.

**Approach grafting**

A grafting method where rootstock is taken to the scion donor plant for grafting. Stock and scion are independent for their nourishment till the completion of the graft union (Synonym : Inarching).

**Aquaculture**

(1) The cultivation or rearing of aquatic plants or animals. (2) The technique of growing plants without using soil (hydroponics) either in circulated, aerated nutrient solutions or in inert media such as gravel, sand, peat, vermiculite or saw dust, to which a nutrient solution is added.

**Aquatic plant**

Any plant that grows in or near water.

**Arborescent**

Becoming tree like, nearly the size of a tree.

**Arboretum**

Area set aside for growing and displaying different kinds of woody ornamental trees, shrubs and vines with proper labelling.

**Arboriculture**

Cultivation of trees and shrubs.

**Areole**

The area occupied by a group of spines or hairs on a cactus.

**Arid fruit culture**

The cultivation of edible fruits in arid region that are consumed either fresh or processed.

**Aril**

(1) Modified mesocarp covering the seed of nutmeg Also called mace.  
(2) An appendage or outer covering of a seed, growing from the hilum or funiculus.

**Aromatic**

Chemical compound derived from the hydrocarbon, benzene ( $C_6 H_6$ ), having a pungent odour.

**Aromatic plants** Plants which yield aromatic essential oils on steam distillation or solvent extraction e.g. lemongrass; patchouli.

**Artificial long days**

Interruption of dark period or extension of natural daylength to prevent flower bud initiation of short day plants.

**Artificial seed**

Encapsulated or coated somatic embryos used for planting like seeds.

**Aseptic**

Free of all microorganisms.

**Aseptic canning**

A technique in which food is sterilised outside the can and then aseptically placed in previously sterilised cans which are subsequently sealed in an aseptic environment.

**Asexual**

Lacking or not involving sex; sexless; not involving union of gametes.

**Asexual propagation**

- (1) The multiplication of plants using a vegetative plant part.
- (2) Plant propagation not involving union of gametes. The propagation using parthenogenetic seed (as in mangosteen) is asexual.

**Astringency**

A puckering taste to the mouth caused by tannins.

**Astroturf** A synthetic lawn, popularly used in developed countries in roof gardens, as well as in stadium (mainly in football and hockey).

**Atrophy**

Dwarfing or reduction in size, often extreme, through disease affecting the whole plant or part.

**Attenuation**

The decrease in the intensity of radiation caused by the absorption and scattering of the radiation as it passes through the matter.

**Autecology**

The study of the interaction of a plant species with its environment.

**Autogamy**

Self fertilisation or the fertilisation of a flower by its own pollen.

**Autograft**

A type of graft which involves transplantation of tissue or an organ from one part of an individual to another part of the same individual.

**Autopolyploidy**

Polyploidy with similar sets of chromosomes.

**Autotroph**

A self sufficient organism that synthesizes its own food from inorganic molecules.

**Auxanometer**

An instrument used to measure growth of plants.

**Auxin** Plant growth regulator that functions more by stimulation of cell elongation than through an effect on cell division.

**Axenic culture**

A culture without foreign or undesired life forms.

**Axillary bud**

A bud origination in an axil or point where a leaf stalk or branch forms an angle with the main stem.

**Baccate**

Berry like ; pulpy or fleshy.

**Back cross**

A cross of a hybrid with one of its parents with the purpose of transferring a specific gene.

**Bactericidal**

Capable of killing bacteria.

**Balata**

A product analogous to "gutta percha" obtained from the bark of *Mimusops globosa*.

**Balled and burlapped**

Any plant dug with a soil ball and tied up in burlap.

**Balling**

The aggregation of macerated tea leaves into lumps or balls during rolling or fermentation.

**Bare root ( Bare root plant )**

Rooted plant without soil, opposite to balled and burlapped.

**Bari**

Tea plantation in which trees are allowed to grow without pruning to produce seed.

**Bark** The tough exterior covering of a woody stem or root outside the cambium.

**Bark grafting**

A method of grafting in which dormant scion is inserted between the bark and wood of a rootstock.

**Bark inversion**

A method of grafting for dwarfing a plant in which a complete ring of a bark is removed from the trunk, inverted and regrafted into place.

**Bark ringing**

The removal of a ring of bark from the trunk of a plant to regulate shoot growth and flowering.

**Barley water**

Fruit beverage containing at least twenty five per cent fruit juice or pulp, thirty per cent total soluble solids and 0.25 per cent barley starch.

**Basipetal**

- (1) Development in succession towards the base, oldest at the apex and younger at the base.
- (2) Transport of substances away from the apex, within a plant.

**Bearing habit**

The relative position of flowering and fruiting on the shoots of a plant (See Fruiting habit).

**Bed**

- (1) Narrow flat-topped ridge on which crops are grown with a narrow furrow on each side to facilitate irrigation and drainage.
- (2) An area in which seedlings or sprouts are grown before transplanting.

**Bed planting** Planting on elevated level beds, which are separated by narrow furrows.

**Bedding plants**

Plants that are raised by commercial growers and sold in the early stages of growth for use in outdoor gardens.

**Bench grafting ( Root Grafting )**

Grafting where roots are used as the rootstock.

**Berry**

A simple fruit with one or more carpels and having the entire pericarp fleshy.

**Berry fruits**

A synonym of small fruits or soft fruits.

**Biennial**

A plant with a two year life cycle, growing vegetatively and storing food in the first year and producing flowers and seeds in the second year.

**Biennial bearing**

See Alternate bearing.

**Bifarious**

Arranged in two opposite rows.

**Bilateral cordon**

Training system as in grapes, where the trunk is divided into two branches extending horizontally on a supporting wire.

**Binomial system of nomenclature**

The assignment of names to organisms using two Latin words, the first denoting the genus and the second denoting the species e.g. *Mangifera indica*.

**Bio-aesthetic planning** Planting of trees and plants for beautifying roads, parks, public and private places.

**Bioassay**

Determination of the biological activity as well as relative strength of a substance (hormone, drug etc.) by comparing its effect on a test organism with that of a standard preparation.

**Biomass**

The combined dry or wet weight of all the organisms in a habitat.

**Biometrics**

The science dealing with the application of statistical procedures for the study of biological problems.

***Biosynthesis***

Biological synthesis, building or forming of biochemical compounds in a living organism.

***Biotechnology***

The application of biological organisms, systems or processes in industrial scale for the benefit of man.

***Biotic***

Pertaining to life.

***Biotype***

Physiological race or form within a species which is morphologically identical, but is different in genetic, physiological, biochemical or pathogenic characteristics.

***Bird baths***

A garden adornment consisting of a bowl shaped container fixed over a pillar, storing water for birds.

***Bird chilli (Tabasco chilli)***

Perennial chilli (*Capsicum frutescens*), with small sized pungent fruits.

***Bisexual***

Both sexes present and functional in the same flower.

***Blackout system***

A means of covering plants with black polythene or cloth to shorten the photoperiod to promote flowering of short day plants.

***Blade***

The expanded portion of a leaf, the lamina.

***Blanching***

- (1) Heating of a fruit or vegetable product in boiling water or steam for a brief period to inactivate enzymes before processing.
- (2) The technique of covering plant parts with soil or other materials to exclude light.

***Bleeding***

Loss of sap through wounding.

**Blind shoot**

A shoot in which the apical bud aborts, resulting in no further growth.

**Bloom**

- (1) The state of flowering.
- (2) Blossom.
- (3) Delicate waxy or powdery substance on the surface of leaves, berries etc.

**Blossom**

See Bloom.

**Bluing**

The objectionable development of blue pigment in flower petals usually after harvest. **Bole**

The basal region of the stem or trunk of a tree.

**Bolting**

Process by which plants produce flower stalks and flowers.

**Bonsai**

Japanese art of growing miniature trees and shrubs in shallow containers by extreme dwarfing treatments.

**Bonsai style**

Training plants in bonsai-like fashion.

**Bonus crop**

An additional crop of economic importance taken in intercropping / mixed cropping systems without any extra inputs.

**Border plants**

Plants located at the perimeter of landscapes or experimental plots.

**Botanical garden**

A garden used for growing and displaying ornamental plants for educational and research purposes.

**Botanical name**

Scientific name assigned to a plant species.

**Botanical pesticides (Botanicals)**

Pesticides obtained from plants.

**Bottle garden**

The art of making miniature garden by growing delicate plants inside bottles.

**Bound water**

Water held by the cell against freezing.

**Box ridging** A system in which box shaped ridge is formed around the base of the plant to control erosion and aid irrigation.

**Bracing**

Method of grafting done to support branches which are in danger of breaking off.

**Bract**

A modified, often very small leaf / leaf-like structure subtending a flower or inflorescence. It may appear to be the part of the flower.

**Bramble**

A fruit which is a member of the Rubus genus.

**Break**

New lateral shoot, often developing after the removal of apical dominance by pinching.

**Breaker**

A device at the end of a hose to permit application of water at low velocity.

**Breeder seed**

The seed raised and controlled by the originating or sponsoring institution or breeder.

**Bridge grafting**

The repair grafting done when the root system of the tree is injured.

**Brining**

Treating vegetables with solution of salt in water ( brine ) to improve flavour and to serve as a heat transfer medium for facilitating processing.

**Brix**

The percentage of total soluble solids in fruit juices, plant saps etc., measured using Brix hydrometer.

**Broadcasting** The process of scattering agricultural inputs, such as seed, fertiliser and manure on the surface of the soil by hand or by implements for uniform distribution over the entire field.

**Brown budding**

A budding method commonly adopted in rubber using buds taken from bud wood of one year growth and stock plants of ten months or more growth.

**Brown head**

A bloom that is excessively open.

**Browning**

The process of browning of cut surfaces of fruits and plant parts due to polyphenol oxidation.

**Brush (in grapes)**

Vascular strands remaining on the pedicel of grapes after the berry is detached.

**Bud**

(1) Undeveloped shoot or flower, often enclosed by reduced or specialised leaves called bud scales.

(2) A vegetative outgrowth from yeast.

**Bud break**

The resumption of growth of resting buds.

**Bud mutation**

Mutation in bud, causing variation in the arising branch, flower or fruit ( Synonym: Bud sport, Bud variation).

**Bud sport**

Mutation in bud, causing variation in the arising branch, flower or fruit (Synonym: Bud mutation, Bud variation).

**Budded stump**

Planting material comprised of the stock plus a dormant or recently activated bud, the stock being cut off a few centimeters above the bud.

**Budding**

- (1) A form of grafting using a single bud.
- (2) Production of a shoot from an underground stem.
- (3) The new growth in the spring.
- (4) The process by which yeasts produce vegetative outgrowths.

**Bud rubbing**

The removal of buds from spurs or shoots by pushing or rubbing with hand.

**Bud scale**

Protective scale-like leaves which cover the shoot apex, flower and embryonic leaves.

**Bud sport (Bud mutation)**

A plant or portion of a plant arising by spontaneous mutation in the apical meristem of a bud.

**Bud stick**

A shoot or twig used as a source of bud for budding.

**Bud take**

The success of budding operation as observed by the presence of green, healthy bud which is in the process of bud union.

**Bud wood**

Shoot from which bud is selected for budding.

**Bulb** A specialized underground plant organ consisting of a greatly reduced stem (basal plate) surrounded by fleshy, modified leaves called scales.

**Bulbel (Bulbils, Bulblets)**

(1) Small or miniature bulbs arising from the parent bulb.

(2) Aerial bulblets.

**Bulb cutting**

Cutting of bulb used for propagation.

**Bull**

The inflorescence of banana during its ascent up the pseudostem.

**Bull head**

(1) The corm of a banana plant which has flowered.

(2) A condition when the short petals or excess number of petals give a blunt, broad appearance to a flower.

**Burning**

The browning of leaves caused by excess fertiliser.

**Bush**

A low woody plant, without a distinct trunk, but with a number of branches at or near the ground level.

**Button**

(1) In coconut, female flower which is a small spherical body about 1.3 cm in diameter with resemblance to a small nut.

(2) The young emerging fruit of a mushroom.

**Buttress** Outgrowth of the trunk and roots at or above the surface of the ground to give the plant additional support.

**C<sub>3</sub> plants**

Plants showing decreased carbohydrate production due to photorespiration and in which three-carbon sugars are the first stable intermediates in the Calvin Benson cycle of photosynthesis.

**C<sub>4</sub> Plants**

Plants that can photosynthesize at a faster rate than C<sub>3</sub> plants due to special leaf anatomy and a unique biochemical pathway which begins with a stable, four-carbon sugar intermediate.

**Cabbage**

- (1) The piece of banana pseudostem discarded from the head or large corm.
- (2) The terminal bud of coconut.
- (3) *Brassica oleracea* var. *capitata*, the vegetable coming under Cruciferae family.

**Cacti**

A group of xerophytic plants, not having true leaves, thriving without being watered for several days.

**Caducous**

- (1) Falling off early or prematurely, as the calyx in some plants.
- (2) Not persistent.

**Caffeine**

The purine base alkaloid found in tea and coffee which works as stimulant.

**Callus**

Mass of parenchymatous cells, developing on or around a wound or from an explant.

**Calli clone**

Plants regenerated from callus.

**Calyx**

The outer parts of the flower (sepals) is collectively called calyx.

**Cambium**

A lateral meristem in vascular plants which produces increases in diameter of stems and roots through the production of xylem, phloem and parenchyma cells.

**Campanulate**

Bell shaped.

**CAM plants**

Desert plants in which Crassulacean Acid Metabolism (CAM) system is prevalent where the CO<sub>2</sub> is fixed at night e.g. *Bryophyllum calycinum* and cactus plants.

**Candied fruit/vegetable**

A fruit / vegetable impregnated with cane sugar or glucose syrup, and subsequently drained free of syrup and dried.

**Cane**

- (1) A main stem of a small fruit plant or vining crop.
- (2) In grapes the term applies to previous season's growth or new shoots after they lose their leaves.

**Canker**

A dead area caused by a fungal disease. **Canning**

A method of preserving food in a fresh condition by processing and sealing in airtight containers.

**Canopy**

The overhead cover or horizontal projection of a plant formed by its leaves, branches etc.

**Caoutchouc**

American Indian name for rubber, meaning weeping wood.

**Capillary watering**

See Mat watering.

**Capsule**

A simple, dry, dehiscent fruit, formed of two or more united carpels.

**Carbonated beverages**

Carbonated drinks prepared by using fruit juices.

**Carbon nitrogen ratio ( C:N ratio)**

The ratio of carbonaceous materials to nitrogen in plant or soil.

**Carotine**

An orange pigment occurring in certain plastids; precursor of vitamin A.

**Carpel**

One of the innermost floral structures which bears or encloses the ovules.

**Carpet bedding**

Covering the beds in gardens with dense, low growing herbaceous plants.

**Carpellody** Abnormal development of the stamen into carpel like, fleshy structures, resulting in misshapen 'catface' fruits e.g. papaya.

**Caryopsis**

An indehiscent fruit with one seed which is completely fused to the inner surface of the pericarp.

**Cash crop**

A high value marketable crop e.g. tea; cardamom.

**Casual**

An introduced plant which has not become established, although sometimes found in places where it is not cultivated.

**Catabolism**

Metabolic process in which complex materials are converted into simple compounds e.g., respiration.

**Catch crop**

(1) A quick growing crop incidentally planted and harvested between two major crops in consecutive seasons.

(2) A contingency crop grown to replace a major crop which has failed.

**Catch wire**

A wire that serves as an attachment for developing grape shoots or other plants with tendrils.

**Catkin**

A hanging type of spike inflorescence that has male or female flowers with a perianth.

**Cauliflorous**

Bearing inflorescence on the trunk or woody branches

e.g. cocoa; jack. **Cauline**

Arising from or inserted on the stem.

**Central leader**

System of training a fruit tree in which it is trained to form a trunk extending from the soil to the top of the tree.

**Centre of diversity**

An area where the genetic and specific diversity is very high.

**Certified plants**

Plants produced under strict guidelines and inspections controlled by a regulatory agency to ensure trueness to type and freedom from damage, insects, diseases etc.

**Certified seed**

The progeny of breeder, foundation or registered seeds, so handled as to maintain satisfactory genetic purity and identity.

**Chat**

An assortment of fresh dessert fruits cut into pieces and sprinkled with salt and spices.

**Check**

A row or plot of standard variety included in field experimentation for comparison.

**Chemical mutagen**

A chemical capable of causing genetic mutation.

**Chemical thinning**

Thinning of blossoms by the use of chemical substances.

**Chemotropism**

A bending or turning in response to chemical stimulus.

**Cherelle**

Small and immature pods of cocoa. **Chicory**

Roots of *Cichorium intybus* used for blending and mixing with coffee to the extent of 40 per cent.

**Chilling injury**

Damage to plant parts resulting from exposure to cold, above freezing temperature.

**Chilling requirement**

The number of hours at or below a specific temperature, necessary for uniform bud break following winter dormancy.

**Chilling unit**

A period of time at or below a specified threshold temperature that has the maximum effect toward fulfilling the chilling requirement of a given plant.

**Chimera**

A plant having tissues of different genetic composition adjacent to each other.

**Chinese layerage**

See Air layering.

**Chip budding (Yemma budding)**

Budding where a single bud with a piece of wood is fitted to a suitable cut in the stock.

**Chlorophyll**

Green pigment found in plants, used for photosynthesis.

**Chlorosis**

Yellowing caused by loss of or reduced production of chlorophyll.

**Chromoplast**

A coloured plastid containing pigments other than chlorophyll, often yellowish or red. **Chupon**

Vertical stems or shoots of cocoa.

**Ciliate**

Margined with hairs

**Cion**

Obsolete term for scion.

**Circumposition**

See Air layering.

**Circumutation**

An irregular spiral movement of a plant which takes place from unequal growth rates.

**Citrance**

An intergeneric hybrid between *Poncirus trifoliata* and *Citrus sinensis*, used as rootstock.

**Cladophyll (Cladode)**

A stem that resembles a leaf in appearance.

**Clarifying agents**

Substances used to remove haziness or

sediment produced by oxidative deterioration in fruit juices, wines, beer etc.

***Clean cultivation***

Periodic soil tillage to eliminate all vegetation other than the crop being grown.

***Cleft grafting***

A grafting method where the scion piece is placed in a split (cleft) formed on a stock plant (See Wedge grafting).

***Cleistogamy***

Self pollinating nature of closed flowers.

***Cleistogamous***

Flowers which fertilise themselves without opening.

***Climacteric***

The maximum respiration rate of a fruit, reached just before full ripening.

***Climacteric fruits***

Fruits exhibiting increased rate of respiration before full ripening e.g. mango; banana.

***Climate***

The aggregate of weather conditions over a long period of time.

***Climate control greenhouse***

Greenhouse in which climatic factors like temperature, light (intensity and duration) and humidity are controlled manually or automatically.

***Climax vegetation***

The most fully developed natural vegetation the climate can sustain.

***Climber***

Annual or perennial herb or shrub with special structures to climb over a support.

***Clonal propagation***

Asexual propagation of plants from a single plant, resulting in true-to-type and uniform progenies.

***Clonal seed***

A seed collected from a clone.

**Clone**

A group of genetically uniform plants, vegetatively propagated from a single parent.

**CO<sub>2</sub> compensation point**

The concentration of carbon dioxide at which photosynthesis balances respiration and there is no net CO<sub>2</sub> flux. In C<sub>3</sub> plants this is about 50 ppm, whereas in C<sub>4</sub> plants it is almost zero.

**Coconut milk**

The milky juice obtained from macerated coconut kernel (endosperm).

**Coconut water (Liquid endosperm)**

In coconut, water like liquid filling the entire cavity of the endosperm when young and partially filled when fully ripe.

**Caffeine**

The purine base alkaloid in tea and coffee, acting as a stimulant.

**Colchicine**

A poisonous (alkaloid) drug obtained from *Colchicum autumnale*, used for inhibiting spindle formation during mitosis at metaphase for doubling of chromosome number.

**Cold frame**

An enclosed bed for propagating or protecting plants in temperate climate, where the source of heat is solar energy (See Hot bed).

**Cold hardiness**

The ability of a plant to resist injury during exposure to low temperature.

**Cold storage**

An insulated storage using mechanical refrigeration to maintain a stable low temperature for long term storage of agricultural products.

**Cold test** A germination test in which seeds are planted for a period in cool moist soil before transferring to a high temperature in order to assess the seedling vigour.

**Cole crops**

(1) Cabbage and its various allies.

(2) Representatives of the species *Brassica oleracea*

**Coleoptile**

A protective sheath covering, the first leaf of a grass seedling.

**Collar pruning**

Pruning of a mature tea bush by cutting close to the soil, thereby removing all the frame, leaving only the central stem (See Rejuvenation pruning).

**Collective fruit**

Fruit formed from a complete inflorescence or from several flowers as of mulberry and pineapple.

**Colouring agents**

Substances added to food products to make them attractive and appetising.

**Combining ability**

The relative ability of an inbred line or a clone, when crossed to another inbred line or clone, to transmit desirable trait(s) to its cross.

**Command area**

The land area that can be irrigated by canal or from a dam or an irrigation project.

**Commercial Floriculture**

Area of horticulture related to the commercial production and marketing of cut flowers, flowering pot plants, foliage plants and bedding plants.

**Community forestry**

Forest managed for the interest of local community or village, run almost exclusively by them.

**Companion crop**

Any subsidiary crop grown in association with a main crop.

**Compatibility**

(1) In sex cells, the ability to unite and form a fertilized egg that can grow to maturity.

(2) Congenial condition for successful graft union between stock and scion.

**Compatible varieties**

(1) Varieties that will set seed when cross

pollinated

(2) Varieties that will make a successful graft union when inter-grafted.

**Compensation point**

The light intensity at which the photosynthetic intake of carbon dioxide is equal to the respiratory output of carbon dioxide.

**Competition (Interference)**

The process in which two individual plants or two populations of plants interact such that at least one exerts a negative effect on the other.

**Complete flower**

A flower having pistil(s), stamens, petals and sepals.

**Component crops**

Individual crops of a cropping system.

**Compost** A product obtained by the controlled decomposition of organic matter having a C:N ratio of about 10:1.

**Compote**

- (1) Fruits cooked in sugar syrup, retaining their shape.
- (2) A stemmed container used for arranging flowers.

**Compound layering (Serpentine layering)**

Layering method where a flexible branch is alternately covered and exposed along its length, resulting in several new plants.

**Compound leaf**

A leaf composed of two or more leaflets e.g. ferns.

**Concrete (Floral concrete)**

The substance containing odoriferous principles of commercial flowers like jasmine, rose and tuberose obtained by solvent extraction (See Absolute ).

**Condiments**

These are substances of plant origin with pronounced odour and piquancy, used for seasoning food and stimulating appetite (See Spices and condiments ).

**Congeneric**

Belonging to the same genus.

**Conifer**

A cone bearing plant or gymnosperm.

**Conservation**

Sustainable use of natural resources, such as soils, water, plants, animals and minerals.

**Conservatory (Fernery)** A greenhouse of the tropics which protects plants from fierce sunlight and strong wind.

**Continental climate**

A climate having large daily and annual ranges of temperature.

**Continuous cropping**

Growing of crops one after the other without seasonal fallowing.

**Contour planting**

Planting crops along the contour.

**Control**

(1) The untreated plant for comparison with the experimental treatment (See Check).

(2) To direct or regulate as in induction of organogenesis in cultures through hormone regulation.

**Controlled atmosphere storage (CA storage)**

A storage method in which the concentrations of atmospheric gases (mainly O<sub>2</sub> and CO<sub>2</sub>) and atmospheric pressure are adjusted to extend the storage life of fresh produce (See Modified atmosphere storage).

**Cool season vegetables (Temperate vegetables)**

Vegetables whose growth and productivity are favoured by low temperatures; most of them have the ability to withstand frost; also known as winter vegetables.

**Coppice farming**

Practice of intensive exploitation of land capability by regular harvesting of trees which produce numerous shoots from the stump after cutting.

**Coppicing** The cutting back of trees or shrubs close to the main trunk or ground level resulting in the production of a number of vigorous new shoots (See Pollarding).

**Copra**

The mature endosperm (kernel) of coconut when dried to about six per cent moisture content.

**Cordate**

Heart-shaped.

**Cordial**

A sparkling, clear, sweetened fruit juice from which pulp and other insoluble substances have been completely removed.

**Corm**

The underground swollen base of stem axis enclosed by scale leaves.

**Cormel**

Miniature corm arising from a parent corm.

**Corona**

An appendage between the petals and stamens e.g. cup of the daffodil.

**Cosmetic pruning**

Minor pruning of dead flowers and weak or crossing shoots to keep a plant tidy and balanced in shape.

**Cotyledons**

Embryonic seed leaves that stores nutrients to sustain the growth of a newly germinated plant.

**Coumarin**

A naturally occurring plant growth inhibitor.

**Cover crop**

A crop grown alone or in between rows of crops to reduce soil erosion, conserve nutrients, and supplement organic matter. **Creepers**

A plant which spreads along the ground surface or other substrata.

**Critical level**

Concentration of a nutrient element below which deficiency symptoms may develop or a response to addition of the nutrient may be observed.

**Crocks**

Broken pieces of earthen pots.

**Crop**

Plants sown and harvested by man for economic purposes.

**Crop cafeteria**

The demonstration of identified efficient crops / varieties in an agrometeorological region/zone

offering an opportunity to the farmer to choose a suitable crop or crop combination commensurating with the available resources and requirements.

***Crop canopy***

The overhead cover or horizontal projection of a crop formed by its leaves, branches etc. which can influence the penetration and interception of radiant energy.

***Crop competition***

The tendency of plants of the same or different species growing together to strive for and capture common resources like light, water, nutrients and space, resulting in reduced growth and/or altered form of the crop(s).

***Crop duration***

Days taken by a crop from germination to maturity.

***Cropping pattern***

Yearly sequence and spatial arrangements of crops and fallow, on a given area.

***Cropping system***

Cropping pattern and its interaction with farm resources, farm enterprises and available technology.

***Crop residue management***

Use of the non-commercial portion of the crop for soil protection and improvement.

***Crop rotation***

The practice of growing different crops on the same land in a regular, recurring sequence.

***Crop season***

The most favourable weather condition to get better yield.

***Crop timing***

Regulating the harvesting time of crops by way of adjusting the planting time, pruning or suitable treatments.

***Cross pollination***

Transfer of pollen from the anther of one plant to the stigma of another plant (unless of the same clone).

**Crotch**

Any angle formed between two woody branches, or that point where the main trunk divides into branches.

**Crown**

- (1) The junction between stem and root near the ground level.
- (2) The tree-top.
- (3) Leafy top of pineapple fruit used for vegetative propagation.
- (4) Part of a rhizome with a large bud suitable for propagation.

**Crown bud**

A flower bud, whose development has ceased, resembling a crown.

**Crown budding**

Replacing the undesirable and susceptible crown of a high yielding tree with a resistant clone by budding.

**Crown grafting**

A graft union made at the crown of a plant on an established rootstock.

**Crown slips**

Shoots growing on the crown of pineapple (between fruit and crown), used for planting after rooting.

**Cruciferous**

Of or pertaining to the mustard family, Cruciferae.

**Crush**

Fruit beverage containing at least twenty five per cent fruit juice or pulp and fifty five per cent total soluble solids.

**Cryo-preservation**

Storage of cells, tissues, organs and seeds at super-low temperature.

**Crystallised fruit/vegetable** Candied

fruit/vegetable when covered or coated with crystals of sugar, either by rolling in finely

powdered sugar or by allowing sugar crystals to deposit on them from a dense syrup.

**CTC method**

Crushing, tearing and curling method of processing tea.

**Culinary**

Suitable for cooking or processing in some form.

**Culm**

The joined stem of a grass, which is usually hollow, except at the nodes.

**Cultigen**

A plant species or race which has arisen in the course of cultivation.

**Cultivar (cv.)**

A contraction of the phrase 'cultivated variety' which designates a group of plants which are significant in agriculture, forestry or horticulture.

**Cultivation**

Labour and care taken in the raising of plants such as stirring soil, fertilising etc. or loosening the soil around a plant for weed control and providing soil mulch.

**Curing**

Natural or artificial aging of the plant produce brought about by some (dry or wet) heat treatment.

**Cuticle**

The waxy covering on plant parts like leaves and fruits, which prevents excess moisture loss.

**Cuttage** Method of plant propagation by means of cuttings.

**Cutting**

The portion of a plant cut and removed for rooting, in asexual propagation.

**Cybrid**

Hybrid of two cells, produced by protoplast fusion, having the cytoplasm of both and nucleus of one.

**Cyclic**

Having floral parts in whorls.

**Cymba**

A woody, boat like spathe which encloses the inflorescence in certain palms.

**Cyme**

An inflorescence in which primary axis bears single terminal flower that develops first, the arrangement being repeated by axis of secondary and higher orders.

**Cytokinins**

Group of plant growth substances which promote cell division and exert other growth regulatory functions e.g. zeatin, kinetin, benzyl adenine, 2iP.

**Cytoplasmic male sterility**

A type of male sterility conditioned by the cytoplasm rather than the nuclear genes and transmitted only through the female parent.

**Cytotoxic**

Toxic to cells.

**Damping off**

A seedling disorder caused by microorganisms.

**Dark storage** Storage of foliage plants, cut flowers etc. in darkness during transit (from harvest to end use).

**Datun**

A brush made from a small twig of a tree used for cleaning teeth.

**Day neutral plants**

Plants in which flowering is not affected by day length.

**De-acclimation**

De-hardening or the loss of adaptation to a climate.

**Dead-head**

To prune the spent flowers or the unripe seed pods from a plant.

**Dead heading**

Removal of dead flowers or the unripe seed pods from plants.

**De-blossoming**

Removing blossoms from a plant.

**De-budding**

Removal of floral or vegetative buds.

**De-bunching**

The removal of the bunch soon after emergence to speed up growth of the follower.

**Deciduous**

- (1) Shedding leaves during winter or dormant season.
- (2) The falling of plant parts at the end of a growing period.

**Deciduous plants** Trees and shrubs that drop their leaves before entering onto the rest period.

**Decortication**

Removal of bark or outer covering of plant or plant produce.

**Decumbent**

Lying on the ground with the end ascending.

**De-differentiation**

Process in which the inter-organ, inter-tissue and inter-cellular relations are broken, leading to the formation of a mass of parenchymatous cells, called callus.

**Defleating**

The cutting down of leaves that could scar the fruit, leaves with leaf spot and leaves that have collapsed.

**Defoliant (Defoliator)**

Chemical used for inducing leaf fall, usually to facilitate harvest.

**Defoliate**

To strip off leaves .

**Defoliation**

The removal of leaves by hand or using chemicals or by withholding water.

**Degrees Brix**

A measure of total soluble solids content which approximates the percentage of sugar found in juice or a fruit. Corresponds to Degrees Balling.

**Dehanding**

Removal of the false hand (hand with undeveloped fingers) and / or the last apical hand of banana at the time of bagging.

**Dehisce**

To open spontaneously when ripe.

**Dehiscence**

The bursting or splitting of fruit (to emit the seeds) or anther (to emit the pollen grains).

**Dehiscent fruits**

A type of dry fruit in which the carpels split along definite sutures at maturity.

**Dehydration**

Removal of water by sun drying or by artificial heat under controlled conditions of temperature, humidity, and air flow.

**Dehydro-freezing**

A process of freezing food where freezing is preceded by partial dehydration.

**De-novo**

Arising spontaneously from unknown or very simple precursors.

**Dentate**

Toothed leaf margin.

**De-potting**

Removing the plant from the original container mainly for repotting.

**Desert**

Places where the annual rainfall is often less than 250 mm and with extreme temperature fluctuations.

**Deshooting**

Removal of shoots that are unwanted.

**Desiccate**

To dry thoroughly to remove moisture from an object to below normal level.

**Desiccation**

The process of drying up of tissues due to excess water loss or due to conditions that prevent the entry of water to the roots / shoot.

**Dessert**

A final course of fruits, puddings or other sweets at the end of meals.

**Dessert fruit**

Any fruit which may be served after meals.

**Determinant inflorescence**

Inflorescence in which the apical flower blooms first.

***Devernalization***

Negation of a vernalizing stimulus by temperatures above a critical level.

***Dew-point (Dew point temperature)***

The temperature at which condensation will start and 100 per cent relative humidity results in a given mixture of air and water vapour.

***Diallel crossing***

Crossing of a number of genotypes in all possible combinations.

***Diandrous***

Having two-stamens.

***Diara cultivation***

Cultivation of vegetables in the river beds, making use of the organic sediments and subterraneous moisture.

***Dibbling***

A method of sowing by placing crop seeds in the holes manually by using a dibbler, maintaining specific spacing and number of plants between the rows and within the rows.

***Dicliny***

A condition in which male and female organs are separate and in different flowers.

***Diclinous***

Unisexual and requiring two flowers to represent both sexes.

***Dicotyledon (Dicot)***

Class of plants having embryos with two cotyledons.

***Die-back***

Death of shoots, originating from the shoot tip.

***Differentiation***

The process of changes in composition, structure and function of cells and tissues during growth.

***Digitate leaf***

Leaf with many finger like leaflets radiating from a central point, or joined only at the base.

***Dihybrid***

Plants that differs by two pairs of genes.

***Dimorphic***

Exhibiting two distinct forms.

**Dimorphism**

The occurrence of two types of leaves, flowers or other structures on a single plant or on different plants of the same species.

**Dioecious**

Condition in which staminate and pistillate flowers are produced on separate plants.

**Diploid**

A nucleus, organism, or generation that has two sets of chromosomes. **Disbudding**

The removal of vegetative or floral buds.

**Disc floret**

The central regular five lobbed floret of a flower-head in compositae.

**Diseminule**

A part of a plant which gives rise to a new plant (propagule).

**Dish garden**

The art of making miniature garden by growing delicate plants in containers such as bowl shaped drinking cups or a brandy goblet.

**Distal**

Opposite from the point of origin or attachment; toward the apex.

**Diurnal**

Of or during the day; not nocturnal.

**Diversified cropping**

The cropping plan in which no single crop contributes to 50 per cent or more towards the annual crop production or income.

**Division**

- (1) A taxonomic grouping of plants belonging to similar classes.
- (2) The process of cutting into sections of rhizomes, stem tubers, tuberous roots etc. for propagation.

**Dominance**

Ability of an allele to express itself in the heterozygous state.

**Donor plant**

See Mother plant.

**Door yard fruit** Fruit species grown in small numbers around homes.

**Dormancy**

Resting state of buds, seeds and spores that fail to grow when provided with seemingly optimal conditions.

**Dormin**

Initial name given to abscisic acid (ABA). A dormancy inducing substance which has been extracted from buds and leaves. Also known as abscisin II.

**Double**

Term to describe flowers having more than the usual number of petals.

**Double cropping**

Taking two crops a year in sequence from the same piece of land.

**Double cross**

A cross between two single crosses involving four different inbreds.

**Double fertilization**

Union of two male gametes with the female gamete and polar nuclei.

**Double hedge planting**

Pairs of row of plants form a double hedge where the spacing within the rows and between the set of two rows are close but the spacing between pairs of rows is wider.

**Double leader**

Two shoots competing as leaders on a tree, each trying to assert apical dominance.

**Double recessive** An organism with two recessive alleles for a particular trait.

**Double working**

Type of grafting where the graft combination contains an interstock between the scion and the stock.

**Downy**

Term to describe soft hairs; also called pubescent e.g. African violet.

**Drainage**

The process of removal of excess water from the land.

**DRC**

Dry rubber content, ascertained by coagulating a weighed sample of latex.

**Drip culture (Sand culture)**

A modification of hydroponics where plants are kept in sand medium and watered with a nutrient solution.

**Drip irrigation (Trickle irrigation)**

The application of small quantities of water directly to the root zone through various types of delivery systems.

**Drought**

Lack of moisture that hinders plant growth.

**Drupe**

A fleshy one-seeded indehiscent fruit with the seed enclosed in a strong endocarp.

**Drupelet**

A small drupe as that in an aggregate fruit as the blackberry.

**Dry farming** The production of crops without irrigation on the land which receives annual rainfall of less than 500 mm.

**Dry fruits**

Class of fruits in which the pericarp is often hard and brittle at maturity.

**Dry ice**

Frozen solid carbon dioxide.

**Drying off**

The process of preparing bulbs and tubers for their necessary rest or dormant period by withholding water.

**Dry matter**

Remains of the plant after the removal of water.

**Dry-pack storage**

The storage of cut flowers in vapour-proof containers, usually at 0°C.

**Duff (Litter)**

The partially decomposed organic matter (e.g. leaves, flowers, fruits etc.) found beneath plants, as on a forest floor.

**Dwarfing rootstock**

Rootstock which has a dwarfing effect on scion.

**Earth vegetables**

All forms of vegetables in which food is stored in underground parts.

**Echinate**

Having prickles or spines.

**Ectocarp**

The outer layer of cells of the pericarp or fruit wall.

**Eco-climate**

Climate under the crop canopy.

**Eco-system**

An ecological system involving living and non-living units where a stable cyclic interchange of energy and materials occur in a defined space and time.

**Eco-type**

Plant type or strain within a species, resulting from exposure to a particular environment.

**Edgings**

A border of bricks, low shrubs or dwarf perennials provided to demarcate garden paths or to make an area more conspicuous.

**Effective rooting depth**

Soil depth from which the full grown crop extracts most of the water needed for evapo-transpiration.

**Electronic leaf**

Device in a mist system to switch on the mist as and when the cuttings/plants become dry.

**Elite plant**

A plant with superior traits.

**Elite variety**

An improved variety developed by plant breeders and released to farmers due to its superiority in at least one respect.

**Elliptic**

Oval but narrowed towards the rounded ends.

**Emasculation**

Removal of stamens of self fertile plant to aid self sterility.

**Embryo**

The rudimentary plant within the seed. **Embryo culture**

*In vitro* culture of isolated mature or immature embryo.

**Enation**

Outgrowth on a plant surface.

**Endemic**

Peculiar to a particular area.

**Endocarp**

- (1) The inner layer of cells of the pericarp or fruit wall.
- (2) The stony part of a drupe or pome.

**Endodormancy**

Dormancy regulated by endogenous physiological factors.

**Endogenous**

Arising from deep-seated tissues.

**Endosperm**

Tripliod food storage tissue of angiosperm seed resulting from triple fusion.

**Endospermic seeds**

Seeds with dominant endosperm.

**Enemophilous**

Desert-loving.

**Energy cropping plantation**

Growing of crops like casuarina and eucalyptus for energy purpose.

**Enology**

The art and science of wine making.

**Entire**

Without lobes or indentations.

**Entomophilous**

Insect-pollinated.

**Epicarp**

Outer layer of fruit wall. **Epicormic shoots**

A cluster of shoots, derived from dormant adventitious buds, on a main stem or branch after a wound or cut has been made.

**Epicotyl**

That portion of an embryo or seedling above the cotyledons.

**Epidermis**

Outermost cell layer of young plants and some parts of older plants (like leaves and fruits).

***Epigeal***

Plants in which the cotyledons appear above the soil surface (See Hypogea).

***Epigeous germination***

Germination pattern of seed where the hypocotyl elongates and raises the cotyledons above ground level.

***Epigynous***

Condition in which the perianth and stamens of a flower are attached above the ovary.

***Epinasty***

Condition in which the upper surface of a structure, such as a leaf, grows more rapidly than the lower surface, causing a downward curvature.

***Epiphyte***

Nonparasitic plant growing on another plant, absorbing atmospheric moisture with the help of velamen roots.

***Episodic growth***

Growth occurring in spurts or flushes, as against continuous growth.

***Equable*** Uniform, even or smooth.***Eremophyte***

Desert plant.

***Erratic bearing (Irregular bearing)***

Inconsistent and unpredictable flowering and fruiting behaviour.

***Esculentus***

Means 'edible' (used in botanical names).

***Espalier***

Plants trained to grow flat against a wall.

***Essential oil***

Volatile aromatic extracts prepared by steam distillation of ground spices (See Spice essential oils).

***Estate***

A property where rubber, tea, coffee etc. are cultivated.

***Estivation***

See Aestivation.

***Ethereal oil***

Essential oil.

***Ethylene***

A gaseous plant growth substance, regulating vegetative growth, fruit ripening and abscission of plant parts.

***Etiolation***

Development of plants or plant parts in darkness, resulting in elongated stem, small leaves, and reduced chlorophyll content.

***Etiology (Aetiology)***

The science of the cause or origin of diseases.

***Even span greenhouse*** A greenhouse whose roof-slopes are of equal length and angle.

***Evergreen***

Plants that have persistent green leaves for two or more growing seasons.

***Excised embryo test***

Germination test of seeds whose embryos require long periods of after-ripening.

***Exhausting***

The process of removing air from the contents of the can, for preserving food and reducing corrosion.

***Exocarp***

The outer skin-like region of the fruit pericarp.

***Exogenous***

Arising from the external tissues.

***Exotic plant***

A newly introduced plant, not native to a place (See Indigenous).

***Explant***

Excised plant part used for tissue culture.

***Explantation***

The removal of living tissue from an organism and its culturing in an artificial medium.

***Explosive fruit***

Fruit which bursts suddenly and violently, scattering seeds over a considerable area.

***Extensive production***

Crop production using large area of land with minimum labour and inputs.

**External dormancy** Dormancy imposed by unfavourable external conditions like moisture stress, extreme temperature and sub-optimal levels of oxygen and light.

**Ex-vitro**

Conditions, reactions or responses of organisms removed from *in vitro* conditions. (In Latin *ex vitro* means 'from glass')

**Eye**

- (1) Common term for a bud.
- (2) Bud of a tuber.
- (3) A lateral bud as on a rose stem.
- (4) Small opening on a fig which is the site of pollination.

**F<sub>1</sub> (First filial generation)**

The first generation of offspring resulting from an arranged cross between selected parents in breeding programmes (See Monohybrid).

**F<sub>2</sub> (Second filial generation)**

The second generation of offspring resulting from crosses between individuals of the F<sub>1</sub> generation.

**Face-packing**

Packing fruits for market with the top layer of the container artistically arranged, while the fruits below are without arrangement and often inferior in quality.

**Facilitation**

The process in which two individual plants or two populations of plants interact in such a way that at least one exerts a positive effect on the other. Double facilitation is equivalent to mutualism.

**Facultative long and short night plants**

Plants which do not require a night length longer or shorter than a given critical length for a response to occur, but which will respond faster if the dark period is longer or shorter, respectively, than a critical length.

**Fallow**

A system in which cultivated land is left without a crop for long periods.

**False cardamom**

See Large cardamom.

**False fruit (Pseudocarp)**

A fruit that incorporates in addition to the ovary wall, other parts of the flower, such as the receptacle.

**Family**

Group of genera.

**Fan branches**

The main branches of a shrub or a tree appearing like the leaves of a fan.

**Fan-and-pad cooling system**

A cooling system, utilized in greenhouses, where cooling is brought about by evaporation of air drawn in through wet pads with the help of fans.

**Farm forestry**

Practice of growing trees specifically for fuel, food and a variety of other resources on a farm.

**Farming system**

Appropriate combinations of cropping systems, livestock, fisheries, poultry and forestry, ensuring ecological and socio economic balances. **Farming system research**

Research on farming systems, multi and interdisciplinary in nature, to enhance and stabilize agricultural production.

**Fasciation**

A malformation in plant shoots resulting in an enlarged and flattened shoot, as if several shoots are fused.

**Fauna**

Pertaining to the animal life of a locality or region or that existing during a specific geological period or time.

**Favism**

Haemolytic anaemia caused by eating broad beans or by inhaling the pollen of its flower.

**Feeder roots**

Ultimate branches of a root system with a large absorbing area.

**Feni**

Fermented wine made from cashew apple in Goa.

**Fermentation**

- (1) Anaerobic breakdown of organic substances by microorganisms, producing heat, wastage gases and a variety of end products.
- (2) Process after maceration (rolling) in the production of tea.
- (3) A step in cocoa processing to get rid of the pulp around the beans and to induce chemical changes for improving the quality.
- (4) A step in processing of parchment coffee where the mucilage is removed by natural fermentation.

**Fernery (Conservatory)** A greenhouse of tropics which protects plants from fierce sunlight and strong wind.

**Fertilization**

- (1) The fusion of male and female gametes to produce zygote, containing chromosomes of both the parents.
- (2) The application of fertilisers to the soil to increase fertility.

**Fertiliser**

Substance which supplies mineral nutrients to plants in required quantity.

**Fibrous root system**

Root system in which primary and lateral roots develop almost equally and have a limited quantity of cortex.

**Field test**

An evaluation test whereby the field performance of experimental plants, their response to inputs and physical factors etc. are assessed in comparison to control.

**Filament**

The stalk of a stamen or male flower part.

**Filiform**

Thread-like.

**Fimbriate**

Bordered with hair, fringed.

**Finger**

The individual fruit in the hand of a banana bunch.

**Fish leaves**

In tea, the first two leaves formed on a shoot as it grows from a bud.

**Flaccid** Wilted.

**Flat**

Shallow tray made of wood, plastic or metal with drainage holes for germinating seeds or rooting of cuttings.

**Flat grafting**

Grafting in which smooth transverse cut is made on both scion and stock (as in cactus) and the flat surfaces are held firmly in position by thread or raffia.

**Fleshy fruits**

Class of fruits having soft and fleshy pericarp at maturity; includes berry, pepo, hesperidium, drupe and pome.

**Fleshy root**

A root that accumulates and stores a rich supply of reserve food for the plant.

**Flexuous**

With a wavy form.

**Flora**

- (1) The plant life of a locality or of a geological era.
- (2) Plants taken collectively.
- (3) A book in which all the plants from a particular area are described.

**Floral concrete**

See Concrete.

**Floral foam**

A water absorbing material (a substitute for pin holder or wire mesh) used in floral decoration to keep the cut flowers in place. **Florets**

Small, individual flowers that make up a very dense inflorescence.

**Floricane**

A flowering and fruiting stem of a bramble, the season after it was produced (in the season of production, it is called primocane).

**Floriculture**

The art and science of growing and marketing flowering and foliage plants.

**Florigen**

Hypothetical hormone like substance implicated in floral initiation in many plant species.

**Florist**

One who is involved in the procurement and selling of flowers.

**Flower**

The angiosperm reproductive structure which may include calyx, corolla, androecium and gynoecium.

**Flower bud**

An unopened flower.

**Flower bud initiation**

Formation of floral primordium.

**Flower blasting**

Flower bud abortion after the completion of flower differentiation.

**Flower differentiation**

Complete morphological differentiation of the floral organs following flower bud initiation.

**Flower initiation**

Visible organisation of flower primordia (buds) at the stem apex.

**Flower induction**  
An invisible developmental process that occurs prior to visible flower bud initiation.**Floral preservative**

Chemical used to prolong the vase life of cut flowers.

**Floral primordium**

Very early stage of flower bud.

**Florescence**

Refers to anthesis or flowering time, the state of being in bloom.

**Flotation**

A method for separating a valuable material from a less valuable material by placing them in a liquid in which one will sink and the other will float.

**Foliar**

Pertaining to leaves.

**Foliar diagnosis**

Estimation of mineral nutrient deficiency or excess by analysing the chemical composition, colour and/or growth characteristics of the foliage.

**Foliar embryos**

Vegetative embryos developed at the edge of leaves, capable of growing into new plants.

**Foliar feeding**

Feeding plants with nutrient solution through the leaves.

**Foliage plant** Any plant grown primarily for its foliage, utilized for interior decorations or landscaping.**Follicle**

Simple dry dehiscent fruit having one locule which splits along one suture.

**Follower**

A banana sucker which has been allowed to grow for bunch production.

**Forcing**

The manipulation of environment factors for producing a marketable pot plant or cut flower, especially during off season.

**Forest**

A plant community, predominantly of trees and other woody vegetation, usually with a closed canopy.

**Forestry**

- (1) Management of forest for maximum sustained yield of their resources and benefits.
- (2) The science or management of forests.

**Forkert budding**

A modification of patch budding where the lower portion of the patch of the rootstock is not cut but retained as a flap. The bud patch is inserted in the portion and the flap is drawn

over the inserted bud, followed by wrapping as usual.

**Form** A member of a population that differs from the others to a degree not great enough that it can be called a cultivar.

**Foundation planting**

Planting of trees, shrubs or ground covers in front of a building foundation.

**Frame work**

The 'skeleton' of main branches of a tree or shrub.

**Free clones**

Clones that can be purchased and resold without any agreement or prohibition.

**Free pollination**

Pollination without control. The offsprings are of unknown parentage.

**Free water**

Water released by the cell when freezing occurs in intercellular spaces (See Bound water).

**Freeze-drying**

A method of food processing where the material is initially frozen at super low temperature and then vacuum dried.

**Freezing agents**

Substances used for chilling foods.

**Fresh weight (Wet weight)**

The weight of a plant or plant part including the water content.

**Frond**

General term designating leaf of coconut, oilpalm, fern etc.

**Frost**

Minute crystals of ice collected or deposited on ground or plants when the nights are cold and temperature falls below freezing point. **Frost damage**

Damage caused by low temperature.

**Frost day**

Day with a minimum temperature less than 0 °C.

**Frost injury (Freezing injury)**

Injury or killing of plant tissues caused by exposure to low temperature and consequent formation of ice.

**Frost pocket**

A depression in the terrain into which cold air drains but from which it cannot escape, making the plants of the area prone to freezing injury.

**Fructification**

- (1) The act of producing fruit.
- (2) The production of a reproductive structure.

**Fruit**

A ripened ovary or ovaries with or without accessory floral parts and / or seeds.

**Fruit buds**

Buds containing underdeveloped flowers; also referred to as flower buds.

**Fruit butter**

Product prepared by boiling screened fruit pulp with or without adding sugar, fruit juices, and spices to a semisolid mass of homogenous consistency.

**Fruit confections**

General term used to describe candies in which fruits are used.

**Fruit drop** Any substantial dropping of immature fruits.

**Fruit growing**

The cultivation of edible fruits that are consumed either fresh or processed.

**Fruiting habit**

The relative position of fruiting on the shoots of a plant (See Bearing habit).

**Fruit juice concentrate**

A fruit juice from which water has been mostly removed by heating or freezing.

**Fruit juice powder**

Fruit juice converted into a free flowing, highly hygroscopic powder by puff-drying, freeze-drying, vacuum drying, spray-drying or drum-drying.

**Fruit leather**

See Fruit paste.

**Fruit paste (Fruit leather)**

A product like fruit butter, but is dried in the sun or by artificial heat to a solid consistency or to approximately the consistency of putty.

**Fruit preserve**

Product made by cooking prepared fruit in sugar (sucrose) syrup until the concentration of sugar reaches 55 to 70 per cent. The fruit should be crisp and retain its form.

**Fruit set**

Persistence and development of an ovary and/or adjacent tissue following bloom.

**Fruit vegetable** Fruits used as vegetables (e.g. plantain and tomato).

**Fugacious**

Falling off soon or fading away.

**Full bloom**

The plant at the period at which most of its flowers are blossoming.

**GA<sub>3</sub>**

See Gibberellins.

**Gametes**

Male and female sex cells.

**Gametocclone**

A plant regenerated from the *in vitro* cultures of gametic tissue.

**Gametoclonal variation**

Variation among the plants regenerated from the cultures of gametic cells.

**Gametogenesis**

Sexual reproduction.

**Garden**

A piece of land used for growing flowers, fruits, vegetables etc. Often used as a place for recreation.

**Garden agriculture**

Cultivating crops like vegetables in land more or less adjacent to settlements, utilising organic wastes.

**Gardening**

Cultivation of plants in enclosed areas for ornamental purposes.

**GATT**General Agreement on Tariffs and Trade.

**Gene pool**

All the genes and their different alleles that are present in a population of a plant.

**Genera**

Plural of genus.

**Generation**

A single complete life cycle in the life of a plant or insect.

**Generative nucleus**

The nucleus of pollen grains which by division forms sperms.

**Genetic architecture**

The general genetic structure of a species.

**Genetic breakdown**

Loss of vigour and often the early death of  $F_2$  plants which lack the necessary adaptive complexes of either or both the original parents.

**Genetic drift**

A change in gene frequency from generation to generation as a result of chance events.

**Genetic engineering**

Technology involving man made changes in the genetic constitution of cells (apart from selective breeding).

**Genetic purity**

Trueness to type /varietal purity conforming to the characteristics of the variety as described by the breeders.

**Genetic shift**Change in genetic make up of a variety due to growth for several consecutive generations in areas outside their adaptation.

**Genotype**

The genetic make up of a nucleus or individual.

**Genus**

A group of closely related species ( Genera is the plural). In a scientific name genus is the first of the two names given for an organism.

**Geocarp**

The development of a fruit beneath the ground which originates from a flower above the ground.

**Geotaxis**

Plant orientation with respect to gravity.

**Geotropism**

Growth in response to gravity.

**Germination**

The initiation and development of vegetative growth of an embryo, spore, seed or other reproductive body, forming a new individual plant.

**Gerplasm**

A collection of genotypes of a particular organism.

**Gestation period**

The period taken from germination / planting to commencing regular flowering and fruiting.

**Gibberellins**

A group of plant growth substances that influence cell elongation, cell division and other physiological processes in plants e.g. GA<sub>1</sub>, GA<sub>2</sub> etc. **Girdling**

The removal of a narrow ring of bark from a shoot, cane, spur or trunk to favour fruit set, size, and /or ripening.

**Glabrous**

Lacking hairs or projections; smooth surfaced.

**Glace fruit**

Product obtained by coating candied fruit with a concentrated solution of sugar and confectioners' glucose syrup, followed by careful drying to give a transparent glaze to the surface (See Candied fruit).

**Glasshouse**

A structure that has a transparent cover and an artificial heat source for growing plants, mainly in temperate regions (See Green house).

**Glaucus**

A surface with a waxy, white coating that can be rubbed off.

**Glazing**

Covering of fruit/vegetable with a thin transparent coating of sugar, which imparts them a glossy appearance.

**Goottee**

Synonym for air layering, marcottage, circumposition, and Chinese layerage

**Gourmandisers**

Strong shoots arising from the stem as in cocoa, coffee etc.

**Grading**

The process of sorting into different lots conforming to certain pre-determined standards.

**Graft** Planting material consisting of a scion and a rootstock.

**Graftage**

See Grafting.

**Graft chimeras**

Chimeras produced artificially by grafting or budding.

**Graft incompatibility**

The inability of two different plant parts when grafted together to have a successful, long lived graft union.

**Grafting (Graftage)**

Fusing or uniting one part of a plant (rootstock) with that of another (scion), for producing a graft.

**Grandiflorus**

Comparatively large flowered; used in botanical names.

**Gravel culture**

Modification of hydroponics where granites of irregular shape and size are used as the medium and nutrient solutions are applied.

**Gravitational water**

Water in excess of the holding capacity of soil; removed by drainage.

**Green budding**

A method of budding where seedlings of 2-6 months are used as stock while the bud wood is only 6-8 weeks.

**Green bulbs**

Bulbs with leaves, used in propagation. **Green house**

A structure which protects plants from wind, precipitation, excessive radiation, extremes of temperature etc.

**Greenhouse effect**

The quality of the atmosphere to permit most of the insolation and prevent back radiation.

[Solar radiation is predominantly of short wavelengths which passes through the atmosphere. Terrestrial radiation is of much longer wavelength and is trapped or reflected by the atmosphere. The selective transmission of radiant energy by the atmosphere is similar to that of the glass in a greenhouse.]

**Greenhouse gardening**

Growing of unusual and out of season vegetables, fruits and flowers using greenhouse, especially under temperate climatic conditions.

**Green leaf manuring**

The practice of collecting and incorporating green leaves and tender green twigs into the soil.

**Green manure crop**

Crop grown and incorporated when succulent, to improve soil, especially of organic matter.

**Green manuring**

The practice of growing green manure crops and incorporating into the soil.

**Green plants (Foliage plants)**

Ornamental plants valued aesthetically for their foliage.

**Green pruning**

Pruning of actively growing rose plants without the benefit of a dormancy period. **Gregarious**

Plants of one kind which occur naturally in close proximity.

**Gregarious flowering**

Simultaneous flowering as in bamboo, coffee etc.

**Grooming**

The operation of cleaning out lichens and mosses which develop on rubber trees during monsoons.

**Ground cover**

Plants grown for their low, spreading habit to prevent the growth of weeds and for protecting soil.

**Ground layering**

Layering method where ground is utilized as a rooting medium.

**Ground sucker**

A sucker or shoot arising from below the soil.

**Growing point**

Region at the tips of both stems and roots where cell division occurs and new cells are formed.

**Growth**

An irreversible process in which there is an increase in size, dry weight or volume of an organism.

**Growth hormone**

See Plant growth hormone.

**Growth inhibitor**

Any chemical that suppresses plant growth e.g. CCC; B-9

**Growth regulator**

See Plant growth regulator. **Growth retardant**

A chemical (such as chloro choline chloride or CCC) that selectively interferes with normal hormonal promotion of growth, but without appreciable toxic effects.

**Growth ring (Annual ring)**

A distinct layer of growth as seen in the cross section of a woody stem.

**Growth stimulant**

Any chemical that encourages plant growth.

**Growth substance**

See Plant growth substance.

**Gutta percha**

Poly-isoprene obtained from the leaves of *Palaquium oblongifolium*.

**Guttation**

Exudation of water by uninjured plants usually on the edges or tips of leaves from hydathodes.

***Guying***

Supporting a tree by use of cables, rope or wires until root growth is established.

***Gynogenesis***

See Pseudogamy.

***Habit***

A characteristic form or mode of growth.

***Habitat***

Natural home or dwelling place of an organism.

***Habituation***

The acquired ability of cultures to grow and develop without depending on external source of plant growth substances.

***Hailstorm*** Prolonged and severe storm consisting largely of hail or frozen raindrops.

***Half-standard***

In floriculture, trees or shrubs grown with about one metre of clear stem.

***Hamper***

Container used for shipping gladiolus.

***Hand***

The two rows of banana fingers, having a common base in the bunch stalk.

***Hand pollination***

Pollination done by handbrush or hand.

***Hanging basket***

A container suspended from a ceiling or wall.

***Haploid***

A plant with half the number of chromosomes of the normal diploid.

***Hardening***

(1) The process of gradually exposing tissue culture plants to higher temperature and light intensity and lower relative humidity to make them establish *ex vitro*.

(2) The treatments given in the nursery to enable seedlings /planting materials to withstand the transplanting shock and/or the adverse conditions in the main field.

**Hardiness**

Quality of plants to resist injury from unfavourable temperatures.

**Hard pan**

An impervious layer in a soil which restricts root penetration as well as movement of air and water.

**Hard seed** Seeds that have a seed coat impervious to water or oxygen required for germination

**Hard water**

Water which contains certain minerals, usually calcium and magnesium sulphates, chlorides or carbonates in solution, to the extent of causing a curd or precipitation rather than a lather, when soap is added.

**Hard wood cutting**

Cuttings from hardwood for propagation as in the case of pomegranate, grape, fig, plum etc.

**Harvest index**

Yield of the plant parts of economic interest (economic yield) as percentage of total biological yield in terms of dry matter.

**Haulm**

Stems of herbaceous plants as distinct from hollow culms of grasses.

**Heading-back (Heading)**

A type of pruning where terminal portion of the shoot is removed, causing side buds to grow below the cut.

**Head-house**

A building in close proximity to or attached to a greenhouse, used as a workshop, storage area, pesticide room, potting area, eating area etc.

**Heart wood**

The darker, denser part in the central portion of a woody stem, consisting of dead elements which lost their conducting ability. **Heat delay**

Delay in the initiation of a flower bud due to an abnormally high temperature.

**Heaving**

Occurs during alternate periods of freezing and thawing, where roots become exposed and frequently die.

**Heavy soil**

A soil predominantly composed of clay.

**Hedge**

Plants grown close together, forming a row of massed foliage.

**Hedge planting (Single hedge planting)**

The method of planting where the spacing between plants within the row is closer than that between rows.

**Heel cutting**

Cutting, with a heel (small slice of older wood) at the base for maximising rooting.

**Heel of cutting**

The expanded base of a side shoot after removing it away from the main stem of a plant.

**Heeling-in**

Placing plants in the ground for temporary storage (when planting cannot be done immediately) keeping the roots in contact with moist soil.

**Herb**

- (1) Plants grown for their flavour, aroma or medicinal value.
- (2) Any vascular plant which is not woody.

**Herbaceous**

Having the characteristics of a herb; not woody.

**Herbaceous cutting**

Cutting made for vegetative propagation from succulent herbaceous plants.

**Herbage**

Leaves, stems and other succulent parts of forage plants used as animal feed.

**Herbarium**

Collection of dried plants, systematically arranged and labelled.

**Herbicide**

Substance used for killing or inhibiting the growth of weeds.

**Hermaphrodite**

A flower with both stamens and pistils.

***Hesperidium***

A syncarpous, polycarpellary berry with a separable leathery rind, characteristic of orange.

***Heterograft (Xenograft)***

An interspecific graft.

***Heterophyll***

The production of more than one leaf form in a plant species.

***Heterosis***

Superiority of the  $F_1$  over the parents (Synonym: Hybrid vigour).

***Heterostyly***

A condition which favours cross pollination in bisexual flowers due to the presence of male and female parts at different levels.

***Heterotroph*** An organism which cannot synthesize its own food, and hence depends on previously synthesized foodstuffs.

***Heterozygous***

Condition where one or more genes on a chromosome differ from that on the other member of the chromosome pair.

***Hidden hunger***

A condition when a plant shows no obvious symptoms of nutrient deficiency, yet the nutrient content is not sufficient enough to give the expected yield.

***Hill***

A circular area housing several vegetable seeds.

***Hip (Hep)***

The seed pod of the rose.

***Hirsute***

Rough, hairy.

***Homestead cultivation***

Cultivation in the surrounding land of a house, by the householders.

***Homozygous***

A condition where all the genes on one chromosome are similar to all those of the other chromosome pair.

***Hormone***

See Plant growth hormone.

***Hortensis (Hort.)***

Pertaining to gardens, or plants found only in gardens.

***Horticulture***

- (1) Latin, *Hortus*, "garden"; *cultura*, "cultivation".
- (2) The art and science of production and processing of fruits, vegetables, ornamentals, spices, plantation crops, medicinal plants and aromatic plants.

***Horticultural fruit***

A fruit which is edible on ripening.

***Horticulture therapy (Hort therapy)***

Treatment of unhappy and mentally retarded people, by diverting their attention to ornamental gardening, flower decoration and growing vegetables, fruits and other horticultural crops.

***Hot bed***

Propagating structure, in temperate regions, where temperature is enhanced for germinating seeds, rooting cutting and growing nursery stock (See Cold frame).

***Hot pack ( Hot fill )***

Filling of pasteurised or sterilised food, while hot, into clean (not necessarily sterile) containers under clean (not necessarily aseptic) conditions.

***House plant***

A plant adapted to the micro-environmental conditions of houses and other buildings.

***Humid tropics***

The tropical areas with excessive moisture and relative humidity, characterized by isothermal conditions which facilitate year round crop production.

***Humification***

Process of organic decomposition. ***Humus***

An organic soil material consisting of partially or completely decomposed plant and animal matter.

**Hybrid**

An individual resulting from the union of gametes differing in one or more genes.

**Hybridization**

The process of crossing individuals with different genetic make up.

**Hybrid sterility**

The inability of some hybrids to produce viable gametes due to absence of homologous chromosomes.

**Hybrid vigour**

The increased vigour over the parental types exhibited by hybrids.

**Hydro-cooling**

A cooling method for fresh produce in which the product is flooded with large volumes of cold water to remove field heat.

**Hydro-swell**

Swelling of food cans due to the hydrogen gas produced by the action of food acids on the metal.

**Hydro-handling**

System of unloading containers and conveying fruits and vegetables in water to minimize bruising.

**Hydrophilous**

- (1) Pollinated by water.
- (2) Preferring moist places or water as a habitat.

**Hydrophyte**

A plant which lives in water or a moist environment.

**Hydroponics (Soil-less culture)**

The technique of growing plants without using soil, either in circulated, aerated nutrient solutions or in inert media such as gravel, sand, peat, vermiculite or saw dust, to which a nutrient solution is added.

**Hydrotropism**

Growth movement of plants in response to water or moisture stimulus.

**Hygrochatic process**

Opening of fruit or movement of organs as a result of water uptake; usually connected with the dispersal of seeds or spores.

***Hygrophilous***

Living in fresh water or moist places.

***Hypobaric (Sub-atmospheric pressure) storage***

Storage of agricultural produce in low atmospheric pressure where the concentration of oxygen and ethylene are reduced, resulting in low rate of respiration.

***Hypocotyl***

The part of the embryo or seedling below the cotyledonary node and above the radicle or root; the transition region connecting the stem and root.

***Hypogeal***

- (1) Plants in which the cotyledons remain below the surface of the soil (See Epigeal).
- (2) Subterranean or occurring beneath the surface of the soil or underground.

***Hypogeous germination***

Germination in which the cotyledons remain below the surface of the soil.

***Hysteranthous***

Developing leaves after the appearance of flowers, as the almond.

***Ikebana***

Japanese style of flower arrangement which has a spiritual and religious background.

***Illegitimate clonal seeds***

Seeds collected from the budded area of known-rubber clones; but produced by natural cross pollination.

***Imbibition***

Process of absorption of water as by seeds during germination.

***Imbricated***

Covered with overlapping scales like tiles on roof.

***Immunity***

Natural or acquired resistance of a plant to active infection by the pathogenic microorganisms or to the adverse effects of a particular parasite.

**Imperfect flower**

Flower lacking either the stamen or the pistil.

**Impermeable seed**

Seed which does not allow passage of water or gases through the seed coat (See Hard seed).

**Implant**

A grafted portion of a tissue.

**Inarching**

A grafting method where rootstock is taken to the scion donor plant for grafting. Stock and scion are independent for their nourishment till the completion of the graft union (Synonym : Approach grafting).

**Inbred**

The progeny of either a single cross pollinated plant obtained by selfing or two closely related plants obtained by inbreeding.

**Inbreeding**

The crossing of closely related plants, which leads to increase in homozygous gene pairs as well as genetically linked undesirable characters.

**Incompatible varieties**

Varieties which do not successfully cross pollinate or intergraft.

**Incompatibility**

- (1) Condition preventing pollen grains from functioning on a pistil.
- (2) Inability to form a successful, long lived graft union.

**Incomplete flower**

Flower lacking one or more of the four sets of floral parts.

**Indeterminate growth**

Growth that is potentially limitless.

**Indexing**

Determining the presence of disease or verifying the assumption of freedom from disease or virus.

**Indexed plants** Plants that have been tested and found to be free of known pathogens.

**Indicator plants**

Plants which reflect deficiency of plant nutrients, soil moisture stress etc. indicating the suitability for growing crops.

***Indigenous***

A plant that is native to a particular country, habitat or climate, as distinct from an introduced plant.

***Induced mutations***

The mutations artificially produced using mutagens.

***Infilling (Supplying)***

The operation of replacing vacant sites in a plantation with new plants.

***Inflorescence***

A collective term for flowers when several are borne on one main axis , as panicle, raceme, umbel, etc.

***Inhibitory polyculture***

Polyculture of crop species where there is undesirable interaction resulting in a net negative effect on all species.

***Insecticidal plants***

Plants having insecticidal properties.

***Insecticide***

Any substance that kills insects.

***In situ***

In the natural or original position, location or site.

***Insolation***

Radiation received from the sun.

.....

**The using software is free version, you  
can upgrade it to the upgrade  
version.<http://www.allofficetool.com>**

***Integrated pest management***

System of pest management blending cultural, biological and chemical controls along with host plant resistance or tolerance.

***Intensive cropping***

Intensive land utilization adopting multiple cropping, intercropping, frequent succession of crops etc.

***Intercropping***

- (1) Growing short term crops or dissimilar crops in the interspaces of the main crop.
- (2) Growing two or more crops simultaneously on the same field.

***Intercultivation (Interculturing)***

Soil cultivation in a standing crop.

***Interfertile***

Allowing union of male and female gametes of different individuals or groups.

***Inter-generic hybrid***

A hybrid resulting from crossing species of two or more genera.

***Intermediate stock (Interstock)***

Stem or root piece present between the (desirable) scion and original rootstock that provides the root system. Double grafting is involved.

***Internode***

The length of space on a plant stem between two adjacent nodes or stem joints.

***Inter-specific***

Between species.

***Interspecific competition***

Competition amongst plants belonging to different species.

***Intra-generic hybrid***

A hybrid resulting from crossing between species within a genus.

***Intra-specific***

Within species.

***Intraspecific competition***

Competition amongst plants belonging to the same species.

**Introduction**

See Plant introduction.

**In vitro**

Latin for 'in glass'. Reactions, responses, or experiments in an artificial environment in isolation from the whole organism.

**In vivo**

Latin for 'in living'. Biological processes that occur within the whole, living organism.

**Involute**

Collection of bracts or leaves surrounding a flower or inflorescence.

**IPR**

Intellectual Property Right.

**Irradiate**

- (1) To illuminate.
- (2) To expose to waves of light, heat or nuclear emissions.

**Irregular bearing**

See Erratic bearing.

**Irrigation**

Method of supplying water by artificial means.

**Isograft (Syngraft)**

A graft between genetically identical individuals.

**Isolation distance**

Distance maintained between the seed crop and the contaminant plants.

**Isolated seed garden**

An area planted with selected clones / varieties and completely isolated from other clones / varieties by specific isolation distance all round

**Jack**

- (1) Jack tree (*Artocarpus heterophyllus*).
- (2) Japanese tool for bending trunks and branches (in bonsai culture).

**Jam**

The product prepared by boiling fruit pulp with sugar (sucrose) to a moderately thick consistency.

**Jelly**

The product prepared by boiling fruit with or without water, expressing and straining the

juice, adding sugar (sucrose) and concentrating to such consistency that gelatinisation takes place on cooling. A perfect jelly is clear sparkling, transparent and of attractive colour.

**Jorquette**

The point at which fan branches emerge from the vertical chupon stem of cocoa.

**Juvenile budling**

A budling in which the scion is derived from a young plant, usually less than two years old.

**Juvenile period (Juvenile phase/condition)**

Early period of plant growth when flowering is not observed or cannot be induced. Also characterised by easiness in rooting of cuttings in difficult to root species.

**Juvenile plant**

A young plant that has not yet gained the ability to flower.

**Juvenility**

Juvenile condition.

**Kernel**

Seed or 'stone' within a shell, or husk of one seeded fruit.

**Kharif**

Crop sown just before the south- west monsoon and usually harvested in August- September.

**Kind**

One or more related species or sub-species of crop plants, each individually or collectively known by one common name e.g. mango, banana etc.

**King of spices**

Black pepper (*Piper nigrum* ).

**Knee roots**

A root arising above ground level as a result of flooding or poor soil drainage.

**Kniffen**

System of training grapevine, named after William Kniffen. The arms of the vine are tied to horizontal wire on the same level above the ground.

**Labellum**

Lip.

**Lacquering**

Process of coating the inside of tin cans with some material ( lacquer) which prevents discolouration but does not affect the flavour or wholesomeness of the contents (food inside).

**Lactiferous**

Containing latex (milky sap).

**Lanceolate**

Lance (sword) shaped.

**Landscaping ( Landscape gardening )**

Planting and planning of outdoor space to have harmony between land-forms, architecture and plants to meet human needs for function and beauty.

**Large cardamom (False cardamom)**

*Aframomum* spp. or *Amomum* spp., important cash crop of Sikkim and Darjeeling.

**Latent bud**

A bud which may usually remain dormant for indefinite period.

**Lateral shoot**

A shoot growing sideways to the leader or main branch.

**Latex**

Milky fluid found in specialised latex producing cells, called lactiferous cells, of many higher plants e.g. rubber tree, papaya.

**Lath house**

A structure made up of lath or other materials for storing container grown nursery stock in shade.

**Latitude**

The distance measured in degrees north or south from the equator.

**Lawn**

An area covered by green carpet of grass and kept clipped by regular mowing.

**Lawn mower**

Hand operated or power-driven machine used for cutting the grass in the lawn.

***Layering (Layerage)***

Method of asexual propagation in which rooting is induced from stem, branches or roots.

***Layout (Layout plan)***

A planting plan with respect to land, space, time and planting materials.

***Leaching***

The removal of soluble plant nutrients from the soil by excess water running through it.

***Leader***

- (1) The major supporting stem or trunk of a tree or shrub.
- (2) A shoot selected to form or extend a branch or trunk.

***Leaf bud***

A bud that produces only leaves.

***Leaf bud cutting***

Cutting consisting of a single leaf with the axillary bud and a small portion of stem.

***Leaf cutting***

Entire leaf with or without petiole.

***Leaflet***

One of the ultimate segments of a compound leaf.

***Leaf mould***

Partially decayed or decomposed leaves, useful for improving soil structure and fertility.

***Lean to greenhouse***

A greenhouse built against the side of another structure such that it has only one sloping roof.

***Leavening agents***

Substance used in yeast foods to promote the growth of baker's yeast.

***Legitimate clonal seed***

A clonal seed of known parentage.

***Light saturation***

A level of irradiance above which there is no further increase in net photosynthesis.

***Lignin***

A complex substance which impregnates the walls of woody cells.

**Limb cutting**

Large unrooted stem cutting used for vegetative propagation as in drumstick

**Line**

A group of uniform individuals reproduced by seed from a common ancestry. It is a narrower group than a strain or variety.

**Liner**

Nursery stock of small size planted at close spacing in a bed for rooting, ready for transplanting.

**Liquid endosperm**

In coconut, water like liquid filling the entire cavity of the endosperm when young and partially filled when fully ripe.

**Litter**

See Duff.

**Living landscape ( Sakai)**

Art of growing and developing plants in pots creating miniature replicas of a natural landscape.

**Loam**

Soil having reasonably balanced amounts of sand, silt, and clay. Loam soils contain 7-28 per cent clay, 28-50 per cent silt, and less than 52 per cent sand.

**Lobe**

A part or segment of a leaf or petal.

**Lobule**

A part or segment of a lobe (usually of leaf).

**Local variety**

A variety well adapted to local environment. It is endemic to an area with its origin dating back to several hundred years.

**Long day plants**

Plants which flower only in daylength which exceed a particular duration called 'critical day length'.

**Longevity**

Length of time the seed can remain dormant and still be viable.

***Lopping***

Pruning or cutting away aerial parts of shrubs or trees.

***Lux***

Illumination on a surface of one square meter at a distance of one meter from a uniform source of one candela. An old unit for measuring light intensity (0.0929 foot candles).

***Luxury consumption***

The absorption of nutrients by plants in excess of their need for growth.

***Lye-peeling***

Peeling of fruits using dilute acid solutions.

***Mace***

Modified mesocarp covering the seed of nutmeg (See Aril).

***Macro-climate***

The climate of a large general region.

***Macro nutrients***

Elements necessary in relatively large quantity for successful crop growth; Essential inorganic nutrient elements such as N, P, K, Ca, Mg and S.

***Maiden***

- (1) One - year old growth, tree or shrub.
- (2) A rose in its first season after budding.

***Maiden sucker***

A large but non-fruiting ratoon.

***Maintenance pruning (tea)***

Regular pruning done in tea plantations, in one to five years to renew the foliage and to regulate the height of the plucking table.

***Malling Merton series***

A group of apple rootstocks resulted by crossing the Malling series with 'Northern Spy' to incorporate resistance to woolly aphids.

***Malling series***

A group of apple rootstocks evolved at the East Malling Research Station in England, which vary very much in vigour. M<sub>27</sub> is a popular dwarfing rootstock of the series.

**Mame**

Miniature bonsai.

**Mame bonsai (Miniature bonsai)**

Bonsai using very dwarf plants (5-20 cm).

**Mango-ginger**

*Curcuma amada*, a spice with the smell of unripe mango and colour of ginger; commonly used for pickling.

**Manual thinning**

Removal of some branches, flower buds, flowers or fruits by hand (See Chemical thinning).

**Marcottage**

See Air layering.

**Market gardening**

Growing an assortment of vegetables for local or roadside markets.

**Maritime climate**

Climate influenced by the ocean (or other factors having the same influence) resulting in mild temperature and small daily and annual variations in temperature.

**Marmalade**

Clear jelly in which slices of fruit or peel are suspended.

**Mat (Hill)**

Whole banana plant.

**Mattocking**

Gradual removal of the pseudostem after harvesting the banana bunches, for favouring the uninterrupted growth of the follower sucker.

**Mature type budling**

A budling in which the scion is derived from a bud of a mature plant.

**Maturity**

(1) Stage of full growth, development or ripeness.  
(2) Stage at which a plant is capable of reproducing by seed.

**Mat watering (Capillary watering)**

Irrigation of potted plants by capillarity. The pots are kept on an absorbent mat which provides a constant supply of water to the base of the plants.

**Maximum cropping**

Cropping for the highest possible production per unit area per unit time without considering cost of production or net return.

**Maxi stumped budling**

A budling of rubber which has been allowed to grow in the nursery for three to four years and cut back at two to three metres above the bud union, for transplanting (See Mini stumped budling)

**Media**

Substrates in which plants are grown e.g. soil, sand, peat, moss, vermiculite, humus etc.

**Medicinal plants**

Plants yielding secondary metabolites like alkaloids, steroids, glycosides, coumarins, flavanoides, etc. which have preventive and curative properties.

**Mericlinal chimera**

A chimera in which the outer layer of genetically different tissue does not extent completely around the stem, occupying only a segment of the circumference.

**Mericlones**

Plants regenerated by meristem culture.

**Meristem**

A tissue of actively dividing cells, from which various organs or tissues are developed.

**Meristem culture**

*In vitro* culture of excised apical meristem.

**Mesocarp**

The middle layer of cells of the pericarp or fruit wall; found between the endocarp and exocarp.

**Mesophytes**

Plants with characteristics intermediate to xerophytes and hydrophytes and adapted where moisture and aeration are between the extremes.

**Metrolac**

A hydrometer used for determining the density of latex and calculating its drc.

**Michie Golledge**

A widely used tapping knife of rubber.

**Micro-budding**

Budding in which the bud piece is reduced to very small size.

**Micro-climate**

The local climatic condition around and within the plant canopy, resulting from the modifications of the general climatic conditions by local difference in relief, exposure, cover etc.

**Micro-cutting**

A tiny cutting from an *in vitro* culture.

**Micro-grafting**

- (1) Grafting of tiny plant parts.
- (2) *In-vitro* grafting.

**Micro-nutrients (Minor elements or Trace elements)**

Plant nutrient elements necessary in extremely small amounts only (usually less than 50 parts per million) for normal plant growth. These include B, Cl, Cu, Fe, Mn, Mo and Zn.

**Micro-habitat**

See Microclimate.

**Micro-plots**

Small plots used for the accurate determination of the comparative performances of varieties.

**Micropagation**

*In vitro* propagation of plants using micro sized plant materials.

**Micro-species**

Species of very small size and range of genetic diversity which may later be considered as genetic variants of larger species.

**Midrib**

The main vein of a leaf.

**Miniature garden**

A rock garden done on a miniature scale, laid in troughs of concrete, stone or wood.

**Miniatures**

Cut flowers consisting of several flowers , supported on short and branched stems.

**Mini stumped budling**

Smaller stumped budling of rubber having brown colour up to 60 cm of the scion (See Maxi stumped budling).

**Minor element**

See Micro nutrient.

**Mist**

A gentle spray of water over the surface of plants.

**Mist chamber**

A nursery structure where high relative humidity is maintained through intermittent spraying of water for facilitating easy propagation of cuttings.

**Mixed Bud**

Bud containing primordial tissue for both leaves and flowers.

**Mixed cropping**

- (1) Growing perennials along with the main crop.
- (2) Growing two or more crops simultaneously without any definite row arrangement.

**Mixed farming**

Farming involving the raising of crops and rearing of animals and or poultry; based on the principle that land should support animals and *vice versa*.

**Mixed intercropping**

Growing two or more crops simultaneously with no distinct row arrangement.

**Mixoploid**

Having variable sets of chromosomes.

**Modified atmosphere storage**

See Controlled atmosphere storage.

**Modified leader**

System of training trees, intermediate between central leader and open centre.

**Molar solution**

One gram molecular weight of a substance dissolved in one litre of water or solvent.

**Monocotyledon (Monocot)**

A plant having one cotyledon in the seed.

**Monocrop**

A cropping system in which the same crop is grown year after year in the same field.

**Monoculture (Monocrop)**

A cropping system in which the same crop is grown year after year in the same field.

**Monoecious**

Condition in which staminate and pistillate flowers are produced on the same plant.

**Monoembryonic**

Having seed with a single embryo.

**Monohybrid**

$F_1$  that is heterogeneous at one locus.

**Monotypic**

A genus with only one species.

**Moribana**

'Piled flowers' in which the flower arrangements are made in shallow containers (One style of Ikebana).

**Moribund**

In a dying state.

**Morimono**

Flower arrangement in combination with fruit and or vegetables.

**Mother block**

The parent plants from which cuttings are taken at regular intervals.

**Mother of clove**

The ripe fruit of the clove tree.

**Mother plant (Donor plant)**

The source plant used for propagation.

**Mound layering (Stool layering)**

Layering in which the new shoots developing just above the soil surface are mounded around their base for excluding light and enhancing root formation.

**Mucronate**

With short narrow point.

**Mulch**

Material (straw, leaves, plastic etc.) spread on soil surface for conserving moisture, stabilizing soil temperature, suppressing weed growth etc.

***Mulch farming***

A system of farming in which the organic residues are left on the soil surface instead of ploughing in.

***Multiple cropping***

(1) Growing more than one annual and /or perennial crops in the interspaces of the main crop.

(2) Growing two or more crops consequently in the same field in the same year.

***Multiple cross***

A cross among many inbreds with pollination between desired lines.

***Multistory cropping***

Growing a friendly combination of crops, having their canopies intercepting solar energy at varying heights and roots foraging the soil at different zones.

***Multitier cropping***

See Multistory cropping.

***Must***

Crushed berries and juice.

***Mutagen***

A physical or chemical agent that is capable of inducing mutation in organisms.

***Mutagenic***

Capable of causing or inducing a mutation.

***Mutant***

An organism or gene which has undergone mutation.

***Mutation***

A sudden heritable change in the genetic make up of the cell; can be spontaneous or artificial.

***Mutualism (Eusymbiosis)***

Form of symbiosis in which two organisms belonging to different species live in intimate association to the advantage of both.

**Mutation breeding**

Artificial creation of mutations and their utilisation for crop improvement.

**Mycorrhizae**

Fungi having a symbiotic, non pathogenic association with the roots of many vascular plants. They may remain superficial(ectotropic) or within the host cell (endotropic).

**Mycotoxin**

Toxin produced by a variety of fungi such as *Aspergillus*, *Penicillium*, *Rhizopus* and *Fusarium*. Ingestion of the toxin containing food causes the syndrome known as mycotoxicosis.

**Nanism**

Dwarf growth.

**Narcotic**

A drug that in mild doses dulls the senses, relieves pain, and induces profound sleep but in excessive doses causes stupor, coma or convulsions.

**Nastic movements (Sleep movements)**

Reversible and repeatable plant movements produced in response to stimuli e.g. leaf movement in *Mimosa*.

**Natural rubber**

Natural rubber a high molecular weight polymeric substance with visco elastic properties, obtained from the latex of plant species, mainly, *Hevea brasiliensis*. Structurally it is cis 1, 4-poly isoprene (See Synthetic rubber).

**Necrosis**

Tissue browning and drying up due to death of cells.

**Nectary**

Any structure that secretes nectar (such as glands trichomes or stomata like orifices).

**Negative tropism**

Growth of plant parts away from the source of stimulus (Roots are generally negatively phototropic).

**Neocarpny**

Fruit production by an immature plant.

**Neophyrosis**

Embryo bath

**Neoteny**

The occurrence (retention) of juvenile characters in the adult phase or *vice versa*.

**New growth**

Growth of the current year.

**New wood**

The current year's growth in plants.

**Nira**

Alcoholic beverage prepared from the juice of the palm trees.

**Node**

A joint where both leaves and buds appear on the stem.

**Nomenclature**

The system of naming plants (See Binomial system of nomenclature).

**Non climacteric fruit**

A fruit without a climacteric peak during ripening (See Climacteric fruit).

**Non-recurrent apomixis**

Apomixis in which a haploid embryo arises from the egg nucleus without fertilization.

**Nucellar embryo**

A true to type somatic embryo developed from the nucellus.

**Nucellar embryony (Adventitious embryony)**

A type of apomixis where somatic embryos arise from a cell or group of cells either in the nucellus or in the integuments, in addition to the normal embryo.

**Nucellus**

A tissue originally making up the major part of the young ovule in which the embryosac develops.

**Nurse crops**

(1) Crops grown during the early years of plantation crops for providing protection against wind and frost damages.

(2) Companion crops which nourish the main crop by way of nitrogen fixation.

**Nurse root grafting**

Temporary grafting in which the nurse root sustains the plant till the scion forms its own roots.

**Nursery**

A place where young plants are raised and maintained for permanent planting.

**Nursery bed**

Prepared soil area of convenient size, where seedlings are raised for transplanting to the main field.

**Nursery business**

A business that specializes in the production of planting materials.

**Nursery stock**

Trees, shrubs, vines and other plants grown in a nursery.

**Nut**

An indehiscent, dry, one seeded fruit having a hard seed coat.

**Nutlet**

A little nut.

**Nutriculture**

See Hydroponics.

**Nutrient film technique (NFT)**

A water culture technique in which the plant roots are suspended in shallow circulating nutrient solutions, delivered as a continuous film of liquid.

**Nux**

Nut.

**Nyctinasty**

Daily nastic movements, especially of leaves which open during the day and fold at night (See Nastic movements; Photonasty).

**Oblong**

Longer than broad with margins nearly parallel for most of their length.

**Obovate**

Egg-shaped with broader end upwards.

**Officinale**

Applied to medicinal plants, especially those used by herbalist.

**Offset (Offshoot)**

- (1) An asexually produced sucker or basal shoot, bulbil or cormlet.
- (2) A young plant that appears naturally on a parent, and is easily detached and propagated.

**Off shoot**

A lateral shoot or branch which arises from one of the main stems of a plant.

**Off-type**

- (1) Any notable deviation from the normal or standard.
- (2) Plant or seed significantly deviating from the characteristics of a variety.

**Off-year**

The year in which an alternate bearing plant does not produce fruits.

**Old wood**

Ripened wood that is at least one year old.

**Oleoresins**

See Spice oleoresins

**Olericulture**

The art and science of vegetable growing.

**On-farm research**

Research conducted on farms with the active participation of the farmers.

**Ontogeny**

The process of development of an organism, organ or tissue towards maturation.

**Open pollination**

The free exchange of pollen between flowers and plants irrespective of flower type or cultivar.

**Orbicicular**

Circular or disc shaped.

**Orcharding**

Commercial production of fruits, mainly from perennials.

**Organic farming**

It is a method of farming, utilising organic inputs, which maintains soil health and ecological balance.

**Organic manure**

Carbonaceous materials of plant / animal origin incorporated in soil for improving fertility and physical properties.

**Organic matter**

Carbonaceous materials of either plant or animal origin, which exists in all stages of decomposition in soils.

**Ornamental Floriculture**

The study and cultivation of various groups of ornamental plants which are used to decorate indoor and outdoor gardens.

**Ornamental Gardening**

The study and cultivation of various groups of ornamental plants which are used to decorate indoor and outdoor gardens (Synonym: Ornamental floriculture).

**Ornamental Horticulture**

The branch of horticulture specializing in the areas of floriculture, tuft grass management, nursery stock production and landscaping.

**Ornamentals (Ornamental plants)**

Plants grown for their aesthetic value rather than commercial usefulness or food value.

**Ornithophily**

Pollination by birds.

**Ortet**

The original mother plant or donor plant from which a group of vegetatively propagated plants is derived.

**Orthodox seeds**

Seeds that can be dried to a low moisture level and which show a loss of viability with the rise in moisture content (See Recalcitrant seed).

**Orthotropic**

Vertically oriented, with an upright growth habit.  
The antonym is plagiotropic.

**Osmosis**

The diffusion of liquid through a semi-permeable membrane.

**Osmunda fibre**

The root mass of *Osmunda regalis* (royal fern) used for potting, particularly for certain epiphytic orchids and bromeliads.

**Otto of roses**

Essential oil (volatile oil) used as perfume.

**Out-breeding**

Crossing of genetically different plants. It is used to introduce new genes and increase heterozygosity (See Inbreeding and Heterosis).

**Outcross**

An off type resulting from the crossing of a parent plant with a plant other than the selected parent.

**Ovary**

The enlarged basal portion of a pistil which contains the ovules or the seeds.

**Over budding**

Budding done at higher levels for converting an existing bud wood nursery of a clone to another clone, without replanting.

**Ovule**

The structure which develops into a seed after the fertilization of the contained egg.

**Packaging**

The process of filling, weighing and sealing bags or containers.

**Packing gases**

Inert gases for preventing oxidative and other changes in foods.

**Pallet**

Low portable bench used to grow and transport bedding and potted plants.

**Palmate**

Lobed, divided in a palm-like manner.

**Panicle**

An indeterminate branching racemose inflorescence with stalked flowers.

**Paniculate**

Resembling a panicle.

**Panning**

Transplanting or potting of rooted cuttings or bulbs.

**Papain**

Water soluble proteolytic enzyme (protease) present in the latex of unripe papaya fruit. It is

used as a meat tenderizer and has industrial and pharmaceutical applications.

**Pappus**

Modified outer perianth segments of a floret in compositae.

**Paprika ( Hungarian paprika, Sweet pepper)**

A non-pungent variety of chilli belonging to *Capsicum annuum*.

**PAR**

See Photosynthetically active radiation.

**Paradormancy**

Dormancy initiated by external physical factors or biochemical signals.

**Parasite**

An organism that lives and derives its food from another plant or animal.

**Parts per million (ppm)**

Unit of measurement used for expressing the quantity of material in a solution or mixture. In metric units, one part per million is equal to one milligram of material in one litre of the solution or mixture.

**Parthenocarpy**

Fruit development without fertilization, resulting in seedless fruit.

**Parthenogenesis**

Seed development without fertilization.

**Parthenogenetic seed**

A seed developed by parthenogenesis.

**Pasteurization**

The selective destruction of some, but not all, living micro-organisms. Helpful to eliminate harmful disease organisms and to retain the beneficial micro organisms. Temperature usually does not exceed 82°C unlike in sterilization (100 °C). Terms are often incorrectly used as synonyms.

**Pathogen**

Infectious agent that causes disease.

**Patio**

An open court area in the garden that is usually covered with concrete, bricks, flag stone or other materials.

**Pea berry**

A coffee berry with only one seed instead of the normal two.

**Pectin**

Soluble gelatinous polysaccharides in ripe fruits. Used as a setting agent in jams and jellies.

**Pedicel**

Flower stalk.

**Peduncle**

Inflorescence stalk.

**Peeper**

Very young banana sucker, bearing scale leaves only, as it appears above the soil surface.

**Pepos**

Berries having a hard rind around the fruit.

**Perennation**

(1) Surviving from year to year.  
(2) Persistence of fruit long after its usual season of maturity.

**Perennials**

Plants which do not perish after flowering but continue to live for at least three or more years or seasons.

**Pergola**

An extension of an arch using climbers in a garden.

**Perianth**

A collective term for the floral envelopes, usually the combined calyx (sepals) and corolla (petals).

**Pericarp**

The fruit wall, consisting of three distinct layers *viz.*, the exocarp, the mesocarp and the endocarp.

**Pericinal**

Parallel to the surface.

**Pericinal chimera**

Chimera in which genotypically or cytoplasmically different tissues are arranged in concentric layers.

**Perlite**

Small pieces of expanded volcanic rock, used in potting media.

**Permanent sod**

A soil management system in which a sod is periodically mowed but no tillage is carried out.

**Petal**

A portion of the corolla.

**Petiole**

Leafstalk.

**Petiolule**

Stalk of a leaflet.

**pH**

Negative logarithm of hydrogen ion concentration.

**Phased planting**

Spreading the planting of a crop over an optimum period in order to extend the availability of a produce for a protracted period or to minimise competition among the component crops in intercropping (See Staggered planting).

**Phenotype**

The external physical appearance of an organism (without reference to its genetic nature) resulting from an interaction between the genotype of the individual and the environment.

**Photoblastic seeds**

Seeds in which the germination is influenced by light. Germination is stimulated by light in positively photoblastic seeds, and inhibited in negatively photoblastic seeds.

**Photodormant seeds**

Seeds which require exposure to light for germination.

**Photomorphogenesis**

The non-photosynthetic influence of light on germination, growth, development and reproduction.

**Photonasty**

Nastic movements as influenced by light e.g. opening and closing of flowers at different parts of the daily cycle (See Nastic movements).

**Photo oxidation**

Oxidation of certain cell constituents when light intensity exceeds a limit, resulting in the bleaching of chlorophyll and inactivation of enzymes.

**Photoperiod**

- (1) Day length.
- (2) Relative length of time a plant is exposed to light.

**Photoperiodism**

The developmental responses of plants to the relative lengths of light and dark periods.

**Photorespiration**

Respiratory utilisation of photosynthetic products during day time or light period. Observed in C<sub>3</sub> plants, unlike in C<sub>4</sub> plants which have little or no photo-respiration.

**Photosynthesis**

Synthesis of carbohydrate from carbon dioxide and water in the presence of chlorophyll, using light energy.

**Photosynthetically active radiation (PAR)**

That part of light spectrum (between 400 and 700 nm) which is primarily absorbed by plants and used in photosynthesis.

**Photothermal**

Pertaining to combined effects of light and temperature.

**Phototropism**

Growth of plants in response to light.

**Phreatophyte**

Plant having extremely long roots, reaching to the water table.

**Phylachron**

The time interval between the production of successive leaves.

**Phyllotaxy (Phyllotaxis)**

The radial leaf order around the stem of a plant.

**Phylogeny**

Evolutionary development of organisms.

**Phylogenetic system**

System of classification of plants according to their evolutionary pedigree.

**Physiological drought**

Non availability of water to the plant due to unfavourable physiological conditions.

***Phytochrome***

Photosensitive and photoreversible pigment system in plants.

***Phytology***

Study of plants.

***Phytotoxic***

Toxic to plants.

***Pickling***

The preservation of food in common salt or vinegar.

***Pilose***

Hairy with long soft hairs.

***Pinching ( Pinching back )***

Removal of shoot apex to overcome apical dominance and promote lateral shoot development.

***Pinholder***

Device used for holding cut flowers in position in a container.

***Pinna***

Primary leaflet of a compound leaf.

***Pinnate***

A compound leaf having leaflets (pinnae) arranged in two ranks, one on each side of a leaf.

***Piquancy***

See Pungency.

***Pistil***

The ovule producing part of a flower which is composed of stigma, style and ovary.

***Plagiotropic***

Horizontal or prostrate growth habit (Antonym: Orthotropic).

***Plantation***

A self contained settlement or estate on which plantation crops are grown.

***Plantation crops***

A group of extensively cultivated perennial crops, demanding plant to plant attention.

**Plant ecology**

Branch of ecology which deals with the study of plants in relation to the environment.

**Plant growth**

A permanent increase in volume, dry weight or both.

**Plant growth hormone**

Organic compound, produced in very small amounts in one part of a plant and transported to another part where it promotes, inhibits or modifies physiological processes.

**Plant growth substances (Plant growth regulators)**

Organic compounds (natural or synthetic) other than nutrients which in very small amounts promote, inhibit or modify physiological processes in plants.

**Planter**

- (1) Machine used for precision drilling, hill dropping or check - row planting.
- (2) A farmer who owns large estate or farm.

**Planting board**

Device for planting trees in exact position. The planting board is usually 1.5 m long, 10 cm wide and 2.5 cm thick with a central notch and one hole on either end.

**Planting distance**

The minimum distance between two plants.

**Plant introduction**

A method of plant breeding in which a variety or a species is brought to an area where it is not grown before.

**Plant murals**

A hanging patch of green plants (herbaceous perennials) on the wall like a hanging picture, suitable for congested apartments in cities.

**Plant tissue culture**

*In vitro* cultivation of plant parts, whether a single cell, tissue or organ, under aseptic conditions in defined or semi defined media.

**Plastic mulch**

Black or transparent polyethylene film used for mulching.

**Plastochron**

The time interval between two successive and similar occurrences e.g. the rhythmic initiation of leaves by the apical meristem.

**Pleiotropy**

The condition in which several characteristics are affected by a single gene.

**Ploidy**

A general term indicating the number of sets of chromosomes e.g. diploid = two sets; triploid = three sets; tetraploid = four sets; pentaploid = five sets; hexaploid = six sets.

**Plucking table**

The upper surface of the tea bushes at which level the flush is harvested.

**Plugging**

The propagation of turf grass by means of vegetative sod pieces (plugs).

**Plumule**

- (1) The major young bud of the embryo within a seed from which develops the aerial portions of the plant.
- (2) Part of the embryonic axis above the cotyledons.

**Pneumatophores**

Vertical extensions of the buried roots of certain trees (e.g. mangroves) in marsh or swamp habitats. They help for exchange of gases between the atmosphere and the submerged roots.

**Pod**

Dry dehiscent fruit which splits along two sutures e.g. the fruit of a legume.

**Polarity**

The phenomenon by which stem cuttings form shoot at the distal end and roots at the proximal end and root cuttings form roots at the distal end shoots at the proximal end.

**Pollarding**

The cutting back of trees or shrubs close to the main trunk or ground level resulting in the production of a number of vigorous new shoots (See Coppicing).

**Pollen grain**

Dust like material in the anther which gives rise to male sperm cells.

**Pollination**

Movement or transfer of pollen from the anther to the stigma.

**Pollinator**

- (1) The agent of pollen transfer e.g. insects or wind.
- (2) Plant or cultivar needed for fertilization and fruit set in another plant of the same species.

**Polliniferous**

Bearing or producing pollen.

**Polyandrous**

Having an indefinite number of stamens.

**Polyculture**

The cultivation of two or more species of crops in such a way that they interact agronomically (biologically).

**Polyembryonic**

Containing more than one embryo.

**Polyembryony**

The presence of more than one embryo in an ovule.

**Polyethylene (Polythene)**

A plastic material. It is extensively used for covering greenhouses and making containers for potting plants.

**Polyethylene mulch**

See Plastic mulch.

**Polygamo-dioecious**

With hermaphrodite and unisexual flowers on different individuals of the same species.

**Polygamous**

Bearing staminate, pistillate and hermaphrodite flowers at the same time.

**Polymorphic**

Composed of many different forms.

**Polyploid**

A condition having more than diploid number of chromosomes.

**Pome**

Inferior, indehiscent, many-seeded fruit, the greater part of which is developed from receptacle of the flower and not from the ovary e.g. apple.

**Pomology**

The art and science of fruit growing.

**Pot-bound (Root-bound)**

Having closely packed mass of roots on a plant that has grown too large for its container.

**Pot layering**

See Air layering.

**Potential crop yield**

Yield of a crop grown under the most ideal environmental and management conditions.

**Potting**

The act of planting a cutting or seedling in a pot containing potting medium (See Depotting and Repotting).

**Potting mixture**

Any mixture of soil and additives used for the potting of plants.

**PPM**

See Parts per million.

**Precipitation**

(1) Rain, drizzle, dew, snow, hail, fog or any other form of water from the sky.

(2) amount of precipitation expressed in depth of water which would cover a horizontal plane if there is no run off, infiltration or evapo-transpiration.

**Precocious**

Appearing or developing early.

**Pre-emergence weedicide**

A chemical applied to the land to destroy weed seeds before they germinate.

**Pre-packaging**

Packing a product in a consumer package by the wholesaler rather than by the retailer.

**Preserve**

See Fruit preserve.

**Preservatives**

Substances used in food processing, capable of

inhibiting, retarding or arresting the growth of micro-organisms.

**Prey crop**

The crop grown for eliminating undesirable plants through physical or allelopathic effects.

**Primary branch**

A branch arising from the trunk of a tree.

**Primary flower, fruit**

The terminal flower or fruit in the central axis of the flower or fruit cluster.

**Primary plant foods**

See Major nutrients.

**Primary root**

The root developing directly from the radicle.

**Processing**

Preparing for future use as in canning, freezing, preserving and dehydrating.

**Processing technology**

A branch of Horticulture, dealing with the post-harvest handling, storage and processing of horticultural produces.

**Procumbent**

Trailing over the ground, but not rooting.

**Productivity**

The yield or biomass production capacity of a plant per unit area per unit time.

**Progeny**

Plant derived from the seed of a parent plant.

**Proliferous**

Bearing adventitious buds on the leaves or in the flowers which can root and form separate plants.

**Propagule**

Any structure, sexual or asexual that becomes separated from the parent plant and serves as a means of propagation.

**Propagulam**

Propagule.

**Proprietary clones**

Clones distributed under agreement with certain estates or institutions which can be multiplied but are not re-saleable.

**Prostrate**

Lying close to the ground surface.

**Protandry**

Condition where the male organ matures earlier than female organ in bisexual flowers.

**Protected cultivation**

Cultivation of crops in artificial structures providing ideal micro climate and acceptable growing conditions.

**Protoclones**

Plants regenerated from protoplasts.

**Protocorms**

Small corm like bodies arising from orchid explants cultured *in vitro*.

**Protogyny**

Condition where the female organ matures earlier than male organ in bisexual flowers.

**Protoplast**

A cell from which the rigid cell wall has been removed, using cell wall digesting enzymes.

**Proximal**

- (1) Situated near the point of reference.
- (2) Next to the point of origin or attachment.
- (3) Away from the apex.
- (4) Opposite of distal.

**Prune**

Dried plum.

**Prune fruits**

Fruits of the plants of Rosaceae family which have many central seeds in each fruit.

**Pruning**

Selective removal of plant parts such as buds, shoots and roots to maintain a desirable form and to improve plant health and fruit yield.

**Psammophyte**

Plant that grows in sand.

**Pseudo-bulb**

Specialised storage structure of many orchid species consisting of an enlarged fleshy section of stem with one or more nodes.

**Pseudo-carp**

See False fruit.

**Pseudo-hermaphrodite**

Functional unisexuality in the presence of apparently well developed stamens and pistils.

**Pseudo-stem**

- (1) A type of shoot arising from an underground rhizome, consisting of overlapping petioles.
- (2) The shoot of a banana plant.

**Psychrometer**

Instrument to measure the humidity of the atmosphere.

**Psychroxerophyte**

A drought resistant plant growing in cold regions.

**Pterocarpus**

Having winged fruit.

**Pterocaulous**

Having winged stem.

**Pungency (Piquancy)**

Sharp, stinging or biting quality of a spice or condiment, while tasting.

**Pure line**

Descendants of a single homozygous plant.

**Pyrene**

A hard, stony endocarp enclosing one or two seeds.

**Pyrethrum**

An insecticide prepared from the dried flower-heads of *Chrysanthemum cinerarifolium* and *C. roseum*.

**Quadruple cropping**

Growing four crops a year, in sequence.

**Quality**

- (1) Various factors including flavour, texture, colour, appearance, odour and food value that influence the produce.
- (2) Characteristic that helps in differentiating a product regarding its acceptability to the consumer.

**Quarantine**

- (1) The isolation of plants to determine whether diseases or insect pests are present, in order to prevent infestation to healthy plants.
- (2) Regulation forbidding sale or shipment of plants, to prevent disease or insect invasion in a specific area.

**Queen of Spices**

Cardamom (*Elettaria cardamomum*).

**Quiescence (Eco-dormancy)**

Period of non-visible growth caused by unfavourable environmental conditions like cold temperature or drought (Dormancy is subdivided into rest and quiescence).

**Quonset type greenhouse**

Greenhouse having semi-round roof. Ideally, 30m long and 10 m wide with 2.5 m sides and 4.0 m centre and covered with fibre glass or poly sheets.

**Raceme**

An inflorescence consisting of a long main axis, bearing stalked lateral flowers, the lowest opening first.

**Radicant**

Rooting, with reference to roots developing from stems or leaves.

**Radical**

- (1) Proceeding from or pertaining to the roots.
- (2) Of leaves arising from the base of a stem, or a rhizome.

**Radicle**

- (1) The rudimentary root of the embryo, which forms the primary root of the young seedling.
- (2) Lower portion of hypocotyl.

**Rain forest**

Tropical forest developed under fairly high rainfall.

**Rambling**

Straggling, climbing.

**Ratoon**

- (1) New tillers, suckers or plants arising from the root, crown or rhizome of plants, which will be utilised for a subsequent crop.
- (2) To send up new shoots after being cut down or cropped.

**Ratoon crop**

The crop produced from the suckers of an original planting as in pineapple and banana.

**Ratooning**

An intensive cropping in which more than one harvest is obtained, as the ratoons are retained after the harvest of the first crop.

**Ray floret**

The outer strap-shaped floret of a composite flower.

**Recalcitrant seeds**

Seeds that lose viability when dried below a certain critical moisture level, which is comparatively high for ordinary seeds. Recalcitrant seeds are short lived (See Orthodox seeds).

**Reclaimed rubber**

Obtained by treatment of vulcanised rubber to make it reusable as a raw material in the same manner as raw rubber.

**Recurrent flowering**

The successive production of several crops of flowers during one season.

**Re-differentiation**

Regeneration of organs from the callus mass.

**Reforest**

Establishment of forests on land from which trees have been removed by felling, fire etc.

**Rejuvenate**

Renewal of growth and vigour of plants by selective pruning, fertilisation, soil management, plant protection measures, treatment with plant growth substances etc.

**Rejuvenation**

Stimulation of new growth on old plants usually accompanied by pruning.

**Rejuvenation pruning**

Pruning done for rejuvenating plants.

**Relative humidity (R.H.)**

The amount of water vapour present in the air, expressed as a percentage of the maximum water vapour that the air would hold at the same temperature and pressure.

**Relay intercropping**

Growing two or more crops simultaneously during part of the life cycle of each.

***Renewal pruning***

Pruning of a tree or shrub for constant supply of young shoots or for maintaining vigour and flowering.

***Reniform***

Kidney-shaped.

***Re-potting***

Transfer of a plant from one pot to another filled with fresh potting mixture.

***Reserve roots***

Dormant roots which would take up active work when necessary arise.

***Resins***

Water insoluble complex oxidation products of various essential oils which normally oozes out through the plant bark and hardens on exposure to the air.

***Rest***

Condition in which growth will not occur due to physiological reasons, despite the presence of favourable environmental conditions (See Dormancy).

***Rest period***

Period of non-visible growth.

***Retting***

Process of fermentation for separating fibre from coconut husks by submerging them in water in tanks, ponds or streams.

***Rhizobium***

A bacterium which can infect legumes in a symbiotic relationship and fix atmospheric nitrogen.

***Rhizocarpous***

Having a perennial root but an annual stem.

***Rhizome***

Underground horizontal stem, serving as storage organ and capable of producing new shoots and roots at the nodes.

***Rhizomatous***

Producing or bearing rhizomes.

**Rimose (Rimous)**

Having numerous clefts of tissues as the bark of trees.

**Rind**

(1) Tough, external covering or layer of fruits and stems.

(2) Outer layer of the bark of a tree.

**Ring barking**

See Girdling.

**Ringing**

Removing a narrow strip of bark round the periphery of the stem to prevent downward translocation of food beyond that point.

**Ripeness**

State of complete maturation, prior to the onset of senescence.

**Ripening**

Composite changes occurring in fruits after the end of the maturation period and by the beginning of senescence.

**Ripening hormone**

Ethylene ( $C_2H_4$ ) is known as the ripening hormone.

**Rockery (Rock garden)**

A garden constructed with boulders or rock pieces and soil where annuals, succulents, bog plants and ferns are grown. The term is derived from the words 'rocks' and 'ries'.

**Rod**

The main, woody stem of a vine.

**Rogue**

An off-type or undesirable plant present in a standing crop.

**Roguing**

The process of removing undesirable or off-type plants from a standing crop.

**Roller**

The traditional machine for macerating tea.

**Rolling**

Method of firming and smoothing ground surface, following seeding of a lawn.

**Roof gardening (Terrace gardening)**

Gardening on the flat roofs or terraces of buildings.

**Root**

Vegetative plant part which anchors the plant, absorbs water and minerals in solution and often stores food.

**Root-bound**

See Pot-bound.

**Root cap**

A protective mass of cells located at the root tip which help protect root cells in that area as the root pushes through the soil.

**Root crop**

Crop plants in which the reserve foods are stored primarily in enlarged roots e.g. sweet potato.

**Root cuttings**

Cuttings of the roots of plants, used for propagation.

**Root grafting**

Grafting where roots are used as the rootstock (Synonym: Bench grafting).

**Root-hairs**

Unicellular outgrowths from the epidermis of young roots, immediately behind their root tips, useful for absorbing water and nutrients from the soil.

**Rooting hormone**

Chemical used to encourage faster rooting or encourage rooting of more cuttings e.g. IBA, NAA, IAA etc.

**Rootings**

Rooted cuttings.

**Root medium**

A suitable substrate in which plant roots can grow. It consists of one or more mineral and/or organic components mixed together.

**Root pressure**

Pressure generated in the root and stem of plants, partially accounting for the rise of water in plants.

**Root pruning**

The practice of cutting back roots prior to repotting or transplanting to stimulate root branching and growth.

**Root stock (Under stock)**

A seedling or other plant part on which the scion is grafted or budded.

**Root sucker**

A shoot arising from the root of a plant.

**Rosemary**

An evergreen fragrant shrub *Rosmarinus officinalis* with leaves used as a culinary herb, in perfumery etc.

**Rose sick soil**

Soil in which roses will not grow well due to their continuous cultivation for years.

**Rosery**

A rose garden.

**Rosette**

- (1) A radiating cluster of basal leaves.
- (2) Bunchy or rosette appearance in many plants due to profuse leaf development with retarded internode growth.

**Rotation**

See Crop rotation.

**Row intercropping**

Growing two or more crops simultaneously where one or more crops are planted in rows.

**RTS (Ready-to-serve)**

A fruit beverage which can be served without diluting.

**Rubber**

Natural or synthetic substance characterised by elasticity, water repellence, and electrical resistance.

**Rubber honey**

Honey produced from the extra floral nectary glands at the end of the petiole (where the leaflets join) of the rubber tree.

**Runner**

A horizontal, specialised above-ground stem that gives rise to new plants from the nodes touching the ground.

**Russet**

- (1) Brownish rough area on the skin of fruits due to abnormal production of cork, caused by disease.
- (2) Apple varieties having natural russet coloured skin.

**Saddle grafting**

Grafting in which the root stock is shaped in the form of a wedge and a cleft is made in the scion for effecting successful graft union.

**Sakai (Living landscape)**

Art of growing and developing plants in pots creating miniature replicas of a natural landscape.

**Salad crops**

Crops, the produce of which are consumed raw.

**Samara**

An indehiscent dry fruit, having flattened wing like outgrowth from pericarp.

**Sand culture**

A kind of hydroponics where plants are kept in sand medium and supplied with a nutrient solution.

**Sap**

Juice or fluid substance, circulating through the vascular tissues of a plant.

**Sapling**

Young seedlings of trees.

**Saprophyte**

Plant which lives on dead or decaying organic matter.

**Sap wood**

The young, living, light coloured outer annual rings of a tree.

**Sarcocarp**

Mesocarp.

**Sarment**

A runner or stolon.

**Savanna**

Grassland with scattered trees.

**SC<sub>1</sub>, SC<sub>2</sub>, SC<sub>3</sub> etc.**

Subsequent generations of somaclone.

**Scaffold branches ( Scaffold limbs)**

The main support branches of a tree arising nearest to the ground.

**Scale**

A small often dry leaf or bract.

**Scalping**

Close mowing of lawn to remove the major portion of foliage.

**Scandent**

Climbing.

**Scansorial**

Having the habit of climbing.

**Scape**

The leafless peduncle of a flower which arises at or near the ground, as in the tulip.

**Scapiflorous**

Having flowers borne on a scape.

**Scar**

(1) A mark on a stem which marks the former attachment of a leaf, bud, flower or fruit.

(2) The hilum of a seed.

**Scarification**

Chemical or physical treatments given to some seeds in order to weaken the seed coat for facilitating germination.

**Scientific name**

Internationally accepted Latin name of an organism consisting of genus, species, varieties and forms and their subdivisions which avoids confusion while using common names (See Binomial system of nomenclature).

**Scion**

(1) Shoot or bud grafted or budded on a root stock.

(2) The upper part of the union of a graft.

**Scooping**

Removing the basal plate of a bulbous plant with the help of a scalpel or blade and exposing the cut surface of the bulb scale for propagation.

**Scout harvesting**

Collection of the small amounts of first formed fruits from young oil palms in areas where ablation has not been carried out.

**Secateur**

A handy garden tool used for pruning small branches.

**Secondary clone**

The vegetatively propagated offspring of a primary clone.

**Secondary compounds**

The compounds produced in the plant body as by-products of primary metabolic pathway e.g. hydrocyanic acid (HCN) in cassava.

**Secondary dormancy**

Dormancy observed for a second time in a seed when it is exposed to unfavourable environmental conditions after becoming imbibed.

**Secondary metabolites**

See Secondary plant metabolites.

**Secondary plant metabolites**

Plant metabolites, produced as the by-products of the primary metabolic pathway, used for protection and better adaptation to the environment e.g. alkaloids, terpenes, glycosides and tannins.

**Secondary plant nutrients**

Calcium, magnesium and sulphur are called secondary plant nutrients as they are not included in straight commercial fertilisers.

**Seed**

A mature ovule consisting of an embryonic plant together with stored food and surrounded by a protective coat.

**Seed-at-stake**

*In situ* sowing of seeds.

**Seed bed**

A well prepared land of convenient dimensions for sowing or planting.

**Seed certification**

Field inspections and seed tests to ensure genetic and physical purity and good germination of seed lots, and issuance of a certificate to that effect.

**Seed hardening**

Subjecting seeds before sowing to alternate cycles of wetting and drying to induce tolerance to drought.

**Seed leaf**

See Cotyledon.

**Seedling**

Young plant grown from seed.

**Seed longevity**

The period for which the seeds will remain viable.

**Seed piece**

Pieces cut from stem and used for vegetative propagation.

**Seed processing**

Process involved in the preparation of harvested seed for marketing.

**Seed rate**

The quantity of seed required for sowing in a unit area of land.

**Seed technology**

The science dealing with the production, harvesting, processing, testing, packaging and marketing of seeds.

**Self-compatible (Self-fertile)**

A plant that is capable of reproducing sexually by itself.

**Self-fertilization**

Fertilization of an egg by a pollen grain from the same plant.

**Self-incompatibility**

Inability to be self-pollinated or self-fruitful.

**Self-pollination**

Pollination with pollen from the same flower, from other flowers of the same plant, or from other flowers of plants with the same genetic constitution (from the same clone).

**Self-sterile**

Incapable of reproducing sexually by self fertilization.

**Semi-hardwood cutting**

Cutting made from newly matured stem with some bark.

**Semi-hardy plants**

Plants which are less resistant to frost.

**Senescence**

- (1) The aging process of an organ or organism.
- (2) Irreversible changes associated with the ripening of a fruit leading to its death.

**Sepal**

A segment of the calyx, or outermost floral part, which is normally green in colour.

**Separation**

Propagation using naturally detachable parts like bulbs and corms.

**Sequential cropping**

Growing two or more crops in sequence on the same field per year. There is no intercrop competition since crop intensification is only on the time dimension.

**Sequestrants**

Substances used to suppress the action of some objectionable but practically unavoidable ingredients in solution.

**Serpentine layering**

See Compound layering.

**Serrate**

Saw-tooth edge shape.

**Service area**

An area of a landscape set aside for necessary family use such as garbage storage, wood storage or clothes drying.

**Sessile**

Without stalk.

**Sett**

Portion of large tubers bearing one or more dormant buds or 'eyes' or small bulbs, used for propagation.

**Sex dimorphic palm**

In coconut, palms which produce pure male inflorescence during certain months and during other months they produce both male and female flowers.

**Sex reversal**

Phenomenon in plants like papaya where the sex of plants are changed, permanently or alternatively.

**Shade net**

Net woven from synthetic fibres to provide shade levels ranging from 20 to 90 per cent.

**Shade house**

Plant-growing structure used to shelter plants from excess sunlight (See Lath house).

**Shade trees**

Fast growing trees which provide shade to many crops in the tropics like coffee, tea and cocoa and to some orchards for their growth and development.

**Shaping**

A horticultural operation in perennial herbs and foliage plants, involving pruning, clipping or trimming of young branches for keeping them compact and elegant looking.

**Sheathing**

Surrounding base of stalk, either leaf-like or membranous.

**Shield budding (T budding)**

Budding where T shaped cut is made on the rootstock and the scion in the form a shield, is inserted under the two flaps of bark and the bud union is tied by exposing only the bud.

**Shoot**

Collective term for stem and its leaves.

**Short-day plants**

Plants which flower only in daylengths shorter than a particular duration called 'critical day length'.

**Shot**

See Peep.

**Shrub**

Woody perennial plant, low in stature with a habit of branching from the base and with bushy appearance.

**Shrub land**

Ecosystem in which relatively small ( up to 6 m ), woody, usually multistemmed, densely branched vegetation dominates.

**Side dressing**

The application of fertilisers along the side of a row or around a plant.

**Side grafting**

A method of grafting where an angular cut is made on one side of the stock, and the scion wood having slanting cut on both sides is inserted into this cut.

**Silviculture**

The art and science of cultivating forest crops.

**Simple fruit**

A fruit formed from single ovary without other parts adhering to it.

**Simple layering**

Layering method where ground or containers filled with medium is used for inducing rooting.

**Single cross**

A cross between two inbreds.

**Sink**

Plant part receiving translocated sugars and other metabolites synthesized or stored in other parts.

**Scion**

See Scion.

**Skiffing**

Pruning in tea at a high level to remove congested stems and resume flushing after a short interval.

**Skim latex**

The residual liquid of very low drc, being the by-product of concentration of normal latex by centrifuging.

**Skim rubber**

Rubber made from skimmed latex.

**Skinning**

See Peeling.

**Slaughter tapping**

All out bleeding of the rubber tree to obtain the maximum latex yield without regard to trees, which is adopted one or two years before replanting.

**Sleepiness**

Condition in flowers where petals curve upward, exhibiting wilted appearance.

**Sleeves**

Polythene covers used for raising seedlings or cuttings.

**Slips**

- (1) Herbaceous or softwood cuttings.
- (2) Shoots borne on the stem below the fruit of pineapple and which are used for vegetative propagation.

**Small cardamom**

See True cardamom.

**Small fruits**

Fruits produced by plants of small stature. Also called soft or berry fruits.

**Smother crop**

See Prey crop.

**Snag**

A short stump of a branch left after incorrect pruning.

**Social forestry**

Programme of forestry development and conservation through mixed plantations in waste lands and re-afforestation of degraded forests.

**Social gardening**

Plant husbandry having recreational, social, educational and economic values other than those covered by social forestry and Agriculture.

**Sods (Turfs)**

Pieces of earth with grass cover used for turfing.

**Sod culture**

System of soil management wherein the plants are grown in permanent grass without tillage.

**Soft fruits**

See Small fruits.

**Soft pinch**

The removal of only a portion of a shoot terminal at a point where the tissue has not become woody.

**Soft wood cuttings**

Cuttings taken from soft, succulent, new growth of woody plants.

**Soil-less plants**

See Hydroponics.

**Sole crops**

A crop grown in pure stand at optimum population density.

**Somaclonal variation**

Variation among plants regenerated through tissue culture.

**Somatic embryogenesis**

Development of embryos from vegetative cells.

**Somatic hybrid**

Hybrid cell or plant resulting from the fusion of two somatic cells belonging to different genotypes, varieties or species.

**Somatic mutation**

Mutation occurring in vegetative cells or tissues.

**Spacing**

The distance between crop rows (inter-row spacing) and between plants within the row (intra-row spacing).

**Spadix**

An elongated, fleshy flower spike with small flowers, surrounded by a spathe.

**Sparkling wine**

Wine containing carbon dioxide.

**Specialized cropping**

A cropping plan in which a single crop contributes to 50 per cent or more of the annual production or monetary receipt.

**Speciosa**

Handsome; showy (used in specific names).

**Species**

Closely related groups of plants which are subdivisions of a genus.

**Spectabilis**

Remarkable, conspicuous (used in specific names).

**Spheroplast**

A cell from which most of the cell wall has been removed.

**Spicate**

Spike like.

**Spice essential oil**

Volatile aromatic extracts prepared by steam distillation of ground spices.

**Spice oleoresins**

Volatile and non-volatile resins extracted from spices by suitable food grade solvents.

**Spices**

Plants, the products of which are used as food adjuncts to improve aroma and flavour (See Spices and condiments).

**Spices and condiments**

Natural plant or vegetable products or their mixture, used in whole or ground form for imparting flavour, aroma and piquancy to food and also for seasoning of foods.

**Spike**

A common name for a narrow elongated inflorescence.

**Spikelet**

The unit of the panicle.

**Spindly**

Characteristic of some plant growth when placed in areas of low light intensity.

**Spine**

A woody sharp pointed organ arising from a stem or leaf.

**Splice grafting**

A grafting method where a long slanting cut is made at the base of the scion and a similar cut is made at the top of the stock and kept in close contact by tying together.

**Split**

A flower having a split calyx, in which the petals protrude from the split.

**Spore**

'Seed' of ferns.

**Sport (Bud sport)**

A plant or portion of a plant that arises by spontaneous mutation.

**Sprig**

A small branch, shoot or twig.

**Sprigging**

Propagation by rhizomes or stolons placed in shallow furrows or small holes.

**Sprout**

The new growth from seeds or vegetative planting materials.

**Spudding**

Removal of weeds by cutting off below the soil surface.

**Spur**

A slow-growing short branch of a tree with short internodes that carries cluster of flower buds.

**Squash**

Fruit beverage containing at least twenty five per cent fruit juice or pulp and forty to fifty per cent total soluble solids.

**Stacking**

Fixing proper stakes for giving support to weak plants.

**Staggered planting**

Spreading the planting of a crop over an optimum period in order to extend the availability of a produce for a protracted period or to minimise competition among the component crops in intercropping.

**Straggling**

Growing long and weedy.

**Stamen**

The pollen producing male part of flower consisting of an anthers and filaments.

**Standards**

Living or non-living supports used for trailing vine crops.

**Starter solution**

Nutrient solution used for dipping seedlings while transplanting.

**Stenospermocarp**

Development of seedless fruits, consequent to embryo abortion.

**Sterilization**

The process of making things sterile through

- (1) Rendering plants non-productive.
- (2) Killing of weeds and other parts in soil with heat or chemicals.
- (3) Complete destruction of micro organisms as in processing of fruits and vegetables.

**Stigma**

The part of the pistil to which pollen adheres.

**Stimulatory parthenocarpy**

Parthenocarpy in which pollination or pollen stimulus is required.

**Stion**

Combination of root stock and scion growing into a single plant.

**Stionic effect**

The reciprocal effects of stock and scion on each other.

**Stipule**

A leaf-like or membranous organ found at the base of leaves.

**Stock (Root stock, Understock)**

A seedling or other plant part on which the scion is grafted or budded.

**Stock**

A group of closely related plants.

**Stock plant**

The source plant from which cuttings, layers, scions or explants are obtained.

**Stock sprout**

A shoot or sprout appearing from the rootstock.

**Stolon**

Runners or stems that develop roots and shoots at nodes.

**Stoloniferous**

Having suckers or runners.

**Stomata**

Pores surrounded by guard cells utilised for the exchange of gases in leaves and stems for photosynthesis.

**Stone fruits**

Members of the Rosaceae family which have only one seed per fruit.

**Stool**

A clump of plants formed at the base of the mother plant as in chrysanthemums.

**Storage industry**

Industry dealing with the extension of the shelf life of horticultural produces.

**Strain**

A group of plants within the variety which differs from it in one or more genetic or physiological characters other than the main morphological characters.

**Strap leaves**

Abnormal strap like leaves, partially or completely missing the margins.

**Stratification (Moist chilling)**

Chilling of seeds under moist conditions to break dormancy.

**Stress**

A potentially injurious force or pressure acting on the plant which may lead to injury or death.

**Strip intercropping**

Growing two or more crops simultaneously in different strips wide enough to permit independent cultivation but narrow enough for the crops to interact agronomically.

**Stump**

(1) Plant whose stem has been cut back to a height suitable for transplanting to the field.

(2) Stalk on which pineapple fruit is borne.

**Stumped budling**

A budling which has been allowed to grow in the nursery for prolonged period and cut back at a convenient height for transplanting (See Mini stumped budling and Maxi stumped budling).

**Style**

The extension from the ovary which supports the stigma.

**Sub-atmospheric pressure storage**

See Hypobaric storage.

**Sub-culture or passage**

The process of transferring cultures from one vessel to another, having fresh medium.

**Suberization**

The formation of a complex wax like substance in the cell walls of wounded or cut plant tissue to reduce water loss and protect the area.

**Sub-humid**

Climate or region where the moisture content is below that of humid conditions but still adequate enough for growing many crops without irrigation.

**Sub-lateral shoot**

A shoot growing sideways to the lateral shoot.

**Subordination**

Severe heading back of all but one of the multiple leaders to restore apical dominance.

**Subsistence crop**

Crop grown in problematic conditions, when no other crop can be grown e.g. floating-rice in flood prone areas.

**Subsistence farming**

The farming to provide food and commodities just sufficient for the farming family and not capable of generating surplus to sell.

**Sub-soil**

That layer of soil directly below the top soil.

**Substitution cropping**

The substitution of an existing inefficient crop with an identical efficient crop.

**Subtropical**

Climate or region where occasional light frosts occur.

**Successive planting**

Planting at varied dates for extending the harvest period.

**Succulent**

Plants with fleshy leaves and stems, usually tolerant to water stress.

**Sucker**

- (1) An off-shoot that develops from an adventitious bud of the roots or lower stem of a plant.
- (2) Shoot growing in the axils of leaves (pineapple).
- (3) In rose, a shoot growing from the rootstock.

**Sun-curing**

The process of drying in sun.

**Sunken garden**

A garden laid below the ground level.

**Sunscald**

The burning of a plant's foliage by the sun.

**Super cooling**

Cooling below the freezing point without solidification.

**Support crops**

Fast growing crops which work as support to vine crops (See Standards).

**Sweet pepper**

Capsicums (See Paprika).

**Swell**

Bulging of the ends of a can which was apparently normal and perfect with good vacuum (Synonym: Blower).

**Sword sucker**

A banana sucker bearing narrow sword leaves and attached to the mother rhizome.

**Sympodial**

A zig zag or irregular form of growth.

**Syconium**

The fruit of a fig.

**Syconus**

A multiple hollow fruit, consisting mainly of the much enlarged receptacle of the inflorescence e.g. fig.

**Symbiosis**

An intimate physiological association of two or more species resulting in mutual benefit e.g. Rhizobium bacteria on the roots of legumes.

**Synergism**

An activity of two or more agents in such a way that the total effect is greater than the sum of the independent effects.

**Synthetic cross**

A cross among many inbreds, clones or sibbed lines without control of pollination (Synonym: polycross, Strain building).

**Synthetic rubber**

Rubber produced synthetically from unsaturated hydrocarbons (See Natural rubber).

**Syringing**

The use of a high pressure spray of water to prevent wilting and to encourage growth.

**Syrup**

Fruit beverage containing at least twenty five per cent fruit juice or pulp and sixty five per cent total soluble solids.

**Syruping**

The process of using sugar solution (syrup) in canning of fruits to improve the flavour and to serve as a heat transfer medium for facilitating processing.

**Systemic**

Spreading throughout the vascular system of a plant.

**Systemic insecticide**

Any insecticide that is applied to the soil in soluble form and absorbed by the plant's roots and which is designed to kill most of the sucking insects.

**T Budding ( Shield budding)**

Budding where T shaped cut is made on the rootstock and the scion in the form a shield, is inserted under the two flaps of bark and the bud union is tied by exposing only the bud.

**Tabasco chilli**

See Bird chilli.

**Tailing**

Tap root pruning (rubber)

**Tamp**

To firm the soil or sand around a tree or constructional material.

**Tannin**

(1) Organic compounds present in some plants, chiefly glucosidal in nature, that cause an astringent taste.

(2) Polyphenol compound in tea leaves. It is the second most valuable constituent of tea, after caffeine.

**Tapping task**

The number of trees to be tapped by a tapper in a day.

**Taproot**

Root originating from the radicle in dicotyledonous plants, growing vertically downward and providing anchorage to the plant.

**Tasselled**

Disc-like pattern.

**Tea cream**

The milky deposit which forms in an infusion of tea on cooling due to interaction between caffeine and phenols.

**Temperate fruit**

A fruit plant which requires a cool period and is deciduous e.g. apple, pear and peach.

**Temperate vegetables ( Cool season vegetables )**

Vegetables whose growth and productivity are favoured by low temperatures; most of them have the ability to withstand frost; also known as winter vegetables.

**Temperate zone plants**

Plants that require a more or less extended chilling period for proper vegetative growth in areas that have periods of prolonged cold weather, often below freezing.

**Tendril**

Slender prolongation of a stem or leaf that helps the plant to climb.

**Terete**

Approximately cylindrical , usually tapering at one or both ends.

**Terminal**

Apical.

**Terrace gardening**

- (1) Gardening done on raised space of ground (terrace).
- (2) Gardening on the flat roofs or terraces of buildings.

**Terrarium**

A transparent enclosure, usually of glass, for providing a clean, humid environment to plants.

**Tetraploid**

Plant having four sets of chromosomes.

**Thinning**

- (1) Removal of young fruits from a cluster to help the remaining ones to have more reserve food for development.
- (2) Removal of plants from thickly populated crop stand for maintaining optimum plant population.
- (3) Pruning branches for providing the remaining ones more space and reserve food for better growth.

**Three way cross**

A cross between a single cross used as female and an inbred used as male.

**Tiller**

- (1) Side-shoot growing from the base of the stem of a cereal or grass plant.
- (2) A sprout or stalk arising from the root or the axils of the lower leaves.

**Timber industry**

The industry concerned with harvesting and production of timber for construction purposes, furniture manufacture etc.

**Tip bearer**

Plants bearing most of their fruits at the tips of one-year old shoots.

**Tip layering**

Layering near the tip of the current season's shoot by placing in soil or medium.

**Tipping**

The process of removing flushes in tea bushes for producing a level plucking table.

**Tips**

The highest quality tea, rich in flavour, made from the tips of the flush.

**Tissue analysis**

Quantitative estimation of the nutrient content of plants using suitable procedures.

**Tissue culture**

*In vitro* cultivation of plant parts, whether a single cell, tissue or organ, under aseptic conditions in defined or semi-defined medium.

**Tomentose**

Covered with densely matted hair.

**Top budding**

Method of top-working using budding on vigorous shoots.

**Top cross**

A cross between an open pollinated variety and an inbred.

**Top dressing**

The application of manures and fertilisers to an established crop.

**Top soil**

The uppermost layer of the soil (usually 15 to 20 cm), comparatively rich in organic matter.

**Topiary**

The severe clipping of plants into unusual or geometric shapes for ornamental purpose.

**Topography**

Shape and physical features of the land surface that make up the landscape of an area.

**Topophysis**

The phenomenon, observed in vegetative propagation, in which the different growing parts of a plant perpetuate their specific features in the offspring.

**Topping**

Removal of the top of the plants for regulating growth.

**Top working**

Changing a tree from one cultivar to another by budding or grafting after cutting back the main scaffold branches.

**Totipotency**

The inherent ability of the plant cell to grow and develop into a whole plant.

**Trace element**

See Micro nutrient.

**Trait**

A loose synonym for character.

**Training**

Shaping or adapting plants to specific forms by pruning, fastening or bracing.

**Transition stage**

The integration period of juvenile and mature phases of growth.

**Transpiration**

Loss of water vapour from plant tissues through stomata, cuticles and lenticels.

**Transplant**

Transferring a planting material from the nursery to the main field.

**Tree**

A large, woody plant usually having a main stem or trunk.

**Trellis**

Any structure capable of supporting the growth of vines or other climbing plants.

**Trench layering**

A layering method in which a number of new plants are obtained from a stock plant by placing the shoots in horizontal position in a trench and filling with soil.

**Trickle irrigation (Drip irrigation)**

A method of irrigation directly near the root zone of the plants through a number of low flow-rate outlets.

**Trifoliate**

Compound leaf with three leaflets.

**Triple cropping**

Growing three crops a year in sequence.

**TRIPS**

Trade Related Intellectual Property Rights.

**Trophy**

Arrangement of potted plants in different tiers around a central structure.

**Tropical fruit**

A fruit plant which is evergreen and cannot withstand freezing temperatures.

**Tropical plant**

Plants grown in areas free from frost, with growth ceasing in most of the crops at temperatures below 20°C.

**Tropical region**

Comprises the area between the Tropic of Cancer (23° 27' N latitude) and Tropic of Capricorn (23° 27' S latitude).

**Tropism**

Movement in response to an environmental signal, such as light or gravity (See Geotropism and phototropism).

**Trough**

A period of low availability of ripe fruits in oil palm.

**Truck crop production**

Large scale production of a limited number of vegetable crops for wholesale markets and shipping.

**Truck up production**

Large scale production of selected varieties of vegetables for distant markets.

**True cardamom (Small cardamom)**

Fruits of *Elettaria cardamomum*, commercially more important than large cardamom (*Aframomum* spp. or *Amomum* spp).

**Trueness to type**

Condition in which the characteristics and performance of the progeny plants closely resembles that of the parent plant.

**Truss**

- (1) A cluster of flowers or fruit.
- (2) Main supporting structure of the greenhouse roof.

**Tube culture**

A hydroponics technique where nutrient solution is pumped through PVC drain pipes.

**Tuber**

A swollen, modified underground stem or root, storing food.

**Tuberous root**

A root, producing tubers e.g. tapioca.

**Tunnels**

Temporary plant growing structures in the form of tunnels, approximately 1-2m high, made by steel tubes, bamboo etc. and covered with polythene sheet.

**Turfs (Sods)**

Pieces of earth with grass cover used for turfing.

**Turf-grass industry**

The production and maintenance of specialised grasses and other ground covers for utility, recreation, and beautification.

**Turgid**

Condition whereby the organ is completely filled with water.

**Twiner**

Annual or perennial herb or shrub which climb over support or a plant by twining themselves spirally around such support.

**Type**

A group of plants within a variety which differs in a few minor definable characteristics.

**Umbel**

A flower cluster in which all the individual flower stalks arise at one point, the cluster being flat shaped.

**Upland**

Cultivable land on high ground with good natural drainage.

**Understock**

See Rootstock.

**Vacuum cooling**

A method for extending shelf life of fruits and vegetables using a vacuum chamber where a low atmospheric pressure is maintained.

**Vanillin**

Most abundant volatile aromatic constituent of vanilla.

**Vanillism**

A form of poisoning which may appear in persons working with vanilla.

**Variegation**

A varied, somewhat mottled pattern of colouration in a leaf, flower or other plant parts due to non-uniform pigmentation.

**Variety**

A sub-division or group of plants within a species which differs in some minor definable characteristics.

**Variety release**

Release of varieties by appropriate authorities such as Central Variety Release Committee and State Variety Release Committee.

**Vascular**

Referring to the xylem, phloem or both.

**Vase life**

The length of time that a cut flower retains its aesthetic value after placing in a vase.

**Vector**

The organism or object which spreads a disease from one plant to another.

**Vegetable**

Edible herbaceous plant or plant parts, commonly used for culinary purposes or as salads.

**Vegetable garden**

Garden or place where vegetables are raised

**Vegetable garden, floating**

Production of vegetables on floating rafts.

**Vegetable garden, forcing**

Production of vegetables to grow out of their normal season.

**Vegetable garden, kitchen/home**

Production of vegetables in homesteads for the consumption of family members.

**Vegetable garden, market**

Production of vegetables for local markets.

**Vegetable garden, processing**

Production of vegetables suitable for canning, dehydration or freezing, preferably around processing factories.

**Vegetable garden, seed**

Production of vegetables exclusively for seeds.

**Vegetable garden, truck**

Large scale production of selected varieties of vegetables for distant markets.

**Vegetable pepsin**

The dried latex obtained from fruits just before maturity; often called vegetable pepsin as it contains enzymes somewhat similar to pepsin.

**Vegetative propagation**

The production of a complete plant by asexual methods like cutting, layering, budding and grafting.

**Vegetative reproduction**

Vegetative propagation.

**Veins**

The conducting tissue within a leaf and other plant parts.

**Ventilator**

Opening in a greenhouse to ensure the exchange of air.

**Vermiculite**

A sterile mica product used in rooting/potting medium.

**Vernalin**

An hypothetical hormone - like substance in plants, consequent to verbalisation.

**Vertical or upright storage**

A storage structure whose height is greater than the width or diameter. Other term are silos, tanks and deep bins.

**Vernalisation**

Low temperature treatment of seeds and seedlings, found useful in some plants, to shorten the time required for flowering.

**Vestigial bud**

An imperfectly developed bud.

**Viability**

(1) Ability of seeds to germinate.  
(2) Ability of vegetative plant propagules to sprout and grow.

**Viability test**

Test to ascertain the percentage of living cells or plants in a population.

**Vigour**

Sum total of all seed attributes which favour rapid and uniform stand establishment on the field.

**Vine**

A slender stemmed trailing or climbing plant.

**Vinegar**

Liquid obtained by alcoholic and acetic fermentation of suitable materials containing sugar and starch.

**Vitality (Viability)**

Capacity to renew growth or germinate.

**Vitamin**

An organic molecule that functions as a coenzyme or cofactor of enzymes.

**Viticulture**

The art and science of growing grapes.

**Viviparous germination**

Germination of seeds while they remain attached to the tree or fruit.

**Volatile**

A liquid readily vaporising or evaporating at relative low temperature and pressure.

**Volatile oil ( Essential oil )**

Volatile aromatic extracts prepared by steam distillation of ground spices.

**Volunteer plants**

Unwanted plants growing from the remaining seeds of a previous crop.

**Vulgaris**

Common (used in scientific names to denote common species).

**Wardian case**

A glass-topped enclosure, supplied with provision for bottom heat, used for plant propagation.

**Water gardening**

Growing water plants in artificial pools, tanks, ponds etc.

**Water harvesting**

Conservation of rain water under unirrigated condition, by collecting run off of precipitation in order to supplement soil moisture in an adjacent area.

**Water logged**

Soil condition devoid of aeration due to blocking of the pore spaces by water.

**Water shed**

The line of separation between adjacent water catchment areas.

**Water shoot (Water sprout)**

A very vigorous and straight growing non productive shoot arising from trunks or branches of trees.

**Water sucker**

A banana sucker of superficial origin, bearing broad leaves.

**Water table**

The upper surface of ground water or that level below which the soil is saturated with water.

**Waxing**

A method of coating fruits with a thin film of wax for reducing the rate of respiration and extending the shelf life.

**Wedge grafting (Cleft grafting)**

A grafting method where the scion piece is placed in a split (cleft) formed on a stock plant.

**Wetting agent**

A substance added to a spray solution for improving its contact with plant surface.

**Whip grafting**

Method of grafting in which tongue shaped cuts are made on both stock and scion and are interlocked.

**Whorl**

Flowers or foliage arranged in a circle round the stalk or branches.

**Wilting**

Loss of freshness and drooping of foliage of a plant due to inadequate supply of moisture, excessive transpiration or by disease.

**Wind break**

A group of plants grown close together for protecting crops from strong winds.

**Wind blast**

Injury to leaves and twigs by strong winds.

**Window garden (Window box garden)**

Garden where plants are grown within the room just opposite or close to the window or on the window sill outside.

**Winter vegetables ( Cool season vegetables)**

Vegetables whose growth and productivity are favoured by low temperatures; most of them have the ability to withstand frost; also known as temperate vegetables.

**Wiring**

The technique of winding wire around a branch, stem or trunk to change its shape as practiced for making bonsai plants.

**Witches broom**

The growth of many short twigs at one point on a branch.

**Withering**

The first stage in the processing of tea, lasting from 6 to 20 hours, where important chemical changes take place.

**Woody plants**

Plants with woody fibre.

**Wrapping**

Covering fruits with suitable materials for improving the post harvest life.

**Xanthophyll**

Yellow or orange carotinoid pigment associated with chlorophyll in chloroplasts, also present in certain chromoplasts.

**Xenograft**

See Heterograft.

**Xeromorphic**

Xerophytic.

**Xerophyte**

A plant adapted to a very dry environment.

**Xylem**

The upward conducting vessels within the plant.

**Yemma budding ( Chip budding)**

Budding where a single bud with a piece of wood is fitted to a suitable cut in the stock.

**Yield potential**

Maximum production capability of a crop.