Glossary

A

Acid Soil: Soil with a pH lower than 7.0

Acclimatization: The adaptation of an organism or a population to climatic change, generally considered the result of genetic change via natural selection.

Actinomycetes: Actinomycetes are threadlike organisms that appear to be single celled. The threads (hyphae with no visible cell walls) are about the diameter of bacteria (and or coarse clay) and are often branched and tangled. The pleasant odour of freshly plowed ground comes from actinomycetes of the soil.

Additive gene action: The effects of alleles combining in a linear, incremental fashion to produce genetic variation.

Adsorption: The attachment of compounds or ionic parts of salts to a surface or another phase. Nutrients in solution (ions) carrying a positive charge become attached to (adsorbed by) negatively charged soil particles.

Adventitious: Pertaining to a plant part that develops outside the usual order of time, position, or tissue. An adventitious bud arises from any part of a stem, leaf, or root but lacks vascular connection with the pith; an adventitious root arises from parts of the plant other than a preexisting root, eg., from a stem or leaf.

Aerial seeding: The broadcast seeding of seeds, seed pellets etc., from aircraft.

Aerobic: Living or acting only in presence of air or free oxygen.

Afforestation: The establishment of a forest or stand in an area where the preceding vegetation or land use was not forest.

Aggregation, soil: The cementing or binding together of several soil particles into a secondary unit, aggregate or granule.

Aging: A physiological or morphological change in the life of an organism or its parts, generally irreversible and typically associated with a decline in growth and reproductive vigour.

Agroforestry: A land use system that involve deliberate retention, introduction or mixture of trees or other woody perennials in crop and animal production systems to take advantage of economic or ecological interactions among the components.

Air layering: A procedure to induce root development on an undetached aerial portion of a plant. Air layering is commonly induced by wounding or girdling the undetached aerial portion of a plant, treating it with root stimulant and wrapping it in moist material so that the treated portion grows roots and becomes capable of independent growth after separation from the mother plant.

Alkaline soil: Any soil having a pH greater than 7.0.

Allele: An alternative form of a gene differing in DNA sequence.

Allelopathy: The inhibitory or stimulatory effects of released organic chemicals by one plant on the germination, growth or metabolism of a different plant.

Alluvium: All sediment deposits resulting directly or indirectly from sediment transport within streams deposited in riverbeds, floodplains, lakes, fans and estuaries.

Amendment, soil: Any substance (gypsum, lime, manures, sewage sludge, sawdust, composts etc.) added to the soil to improve plant growth.

Anaerobic: Living or functioning in the absence of air or free oxygen.

Analysis of variance (ANOVA): A statistical procedure by which (a) total variance is separated into components attributable to defined sources (eg., treatments, sites, families) and (b) mean square ratios are calculated and compared to determine the probability that differences among treatments or populations are too large to be due to chance.

Anion: An ion carrying a negative charge of electricity.

Anion exchange capacity: The sum total of exchangeable anions that a soil can adsorb.

Anthropogenic: Of human origin or influence.

Aphid: A small (1 to 6mm), soft-bodied, often pear-shaped insect of the family Aphididae (Homoptera) that sucks sap from leaves, stems or roots.

Apical dominance: The upward growth of terminal shoot meristem(s) at the expense of lateral shoots below them whose development they inhibit. Difference in degree of apical dominance often determine differences in growth habit among plants.

Apical meristem: A group of meristematic cells at the apex of a shoot or root that gives rise to primary tissues through cell division followed by cell differentiation.

Arboretum: A place where primarily trees are grown for scientific and educational purposes.

Arid: A term applied to regions or climates that lack sufficient moisture for crop production without irrigation.

Arithmetic mean: The average value of a series or set of observations, obtained by dividing the algebraic sum of all observations in the set by the number of observations.

Asexual reproduction: The process of reproduction without fertilization. New individuals may develop from vegetative parts such as tubers, bulbs or rooted stems or from sexual parts such as unfertilized eggs or other cells in the ovule.

Aspect: The direction that a slope faces.

Auxin: A natural organic compound formed in actively growing parts of plants, particularly in the growing points of shoots, which in minute concentrations regulates cell expansion and other developmental processes.

Available nutrient: That portion of any nutrient in the soil that can be absorbed readily by growing plants.

Available water: The portion of water in a soil that can be readily absorbed by plant roots.

B

Bagworm: A defoliator of numerous woody plant species whose larvae spin individual silk cases or bags. Bagworms are seldom serious forest defoliators but are sometimes a pest on plantations or ornamental trees.

Bareroot seedling: A seedling lifted from a nursery with its roots freed from the soil in which it had been grown.

Basal area: The cross sectional area of a single stem, including the bark, measured at breast height.

Base population: The set of plants from which selections will be taken to form advanced-generation breeding or production populations.

Biodiversity: The variety and abundance of life forms, processes, functions and structures of plants, animals and other living organisms including the relative complexity of species, communities, gene pools and ecosystems at a spatial scales that range from local through regional to global.

Biological control: The artificial application of a natural control agent to regulate a pest species.

Biomass: The living or dead weight of organic matter in a tree, stand or forest in units such as living or dead weight, wet or dry weight, ash-free weight etc.

Biosphere: The environment in which living organisms live.

Blight: A disease or disease symptom characterized by rapid discoloration, wilt and death of all parts of a plant.

Bole: A trunk or main stem of a tree.

Brackish: Slightly salty. Water with a content of 1.5-3per cent salts; seawater has over 3per cent salts.

Breast height: A standard height, 1.37 m from the ground level for recording diameter basal area etc. of a tree.

Breeding: The science of changing the genetic constitution of a population of plants or animals through sexual reproduction.

Breeding population: A group of selected parents that are intercrossed to form population for the next cycle of selection.

Breeding value: The narrow-sense heritable departure of a parent's progeny test value from the average of its population. Breeding value equates to two times the individual's general combining ability.

Broadcast: To spread or apply seed, fertilizer or pesticide more or less evenly over an entire area.

Broad-sense heritability: The ratio of total genetic variance to phenotypic variance.

Broad-spectrum pesticide: A nonselective pesticide (usually an insecticide) that is toxic to many species.

Buffering: The capacity of the soil solids and liquids to resist appreciable change in pH of the soil solution.

Bulk density: Soil bulk density is the weight of the soil solids per unit volume of the total soil.

Butt rot: Any decay or not developing in and sometimes characteristically confined to the upper root crown and base or lower stem of a tree.

C

Calcareous soil: A soil containing lime or other carbonates. It is indicated by effervescence (the release of tine bubbles of CO_2) when an acid such as dilute HCl is applied to the soil..

Callus: A growth of large, undifferentiated, nonlignified, homogeneous cells produced by the cambial zone on the margin of a wound.

Canker: A disease of the bark and cambium that causes a usually well-defined sunken or swollen necrotic lesion.

Capillary water: Plant-available water held in the capillary or small pores of a soil.

Carbon:nitrogen ratio: The ratio of the weight of organic carbon to the weight of total nitrogen in the soil or inorganic material.

Cardinal direction: One of the four principal directions north, south, east or west.

Carrying capacity: The maximum number of biomass of organisms of a given species that can be sustained or survive on a long-term basis within an ecosystem.

Caterpillar: A larva of butterflies, moths and sawflies.

Cation: An ion carrying a positive charge of electricity.

Cation exchange capacity (CEC): A measure of the total amount of exchangeable cations that can be held by the soil.

Chlorosis: An abnormal yellowing of foliage. Chlorosis is often a symptom of some mineral deficiency, virus infection, root or stem girdling or extremely reduced light.

Chromosome: A microscopic, generally threadlike or rodlike body consisting of linear segments of deoxyribonucleic acid (DNA), carrying the genes and forming the primary constituent of the cell nucleus.

Clinometer: An instrument for measuring angles of elevation or depression.

Clone: The genetically uniform individuals (ramets) propagated vegetatively from a single individual.

Clone bank: A collection of selected vegetatively propagated trees established for breeding or gene conservation purposes.

Codominant tree: All trees which form the upper most leaf canopy and have their leading shoots free are called as dominant trees. These may be subdivided according to the position and relative freedom of their crowns into predominants, the tallest trees determining the general top level of the canopy and the codominants, the slightly shorter dominants or to be more precise, 5/6 of the predominants.

Coefficient of variation: A measure of relative variability or dispersion computed as the standard deviation divided by the mean, and generally expressed as a per cent.

Collar: The transition zone between stem and root, sometimes recognizable in seedlings by the presence of a slight swelling.

Combining ability: A statistical value indicating the capacity of a parent to transmit genetic superiority to it offspring. The combining ability is usually general or specific depending on the type of inheritance pattern being evaluated.

Compost: Organic residues or a mixture of organic residues and soil that have been piled and allowed to undergo biological decomposition.

Conidiophore: A specialized hypha bearing one or more conidia. A conidium is an asexual fungal spore borne on a conidiophore.

Container nursery: A facility where seedlings are raised individually in tubes, pots or other receptacles.

Contour line: 1. An imaginary line connecting points of equal elevation on the surface of the soil. 2. A true line drawn on a map connecting points of the same elevation.

Controlled pollination: A transfer or permitted transfer of pollen from a known genetic source to receptive flowers of known seed parents, all other pollen being excluded.

Coppice: 1. The production of new stems from the stump or roots. 2. To cut the main stem at the base or to injure the roots to stimulate the production of new shoots for regeneration.

Cost-benefit ratio: The ratio obtained by dividing the anticipated costs of a project by its anticipated benefits to obtain a measure of expected cost per unit of benefit.

Cotyledon: An embryonic leaf which often stores food materials.

D

Damping off: The rotting of seedlings, before or soon after emergence, caused by soil fungal species of Fusarium, Phytophthora, Pythium and Rhizoctonia attacking at or near soil level. This is the most common and probably the most serious nursery disease.

Database: A collection of data stored in a systematic manner such that the data can be readily retrieved, modified and manipulated to create information.

Debarker: A machine designed to remove the bark from trees and logs.

Deciduous: Plants that are normally more or less leafless for some time during the year.

Defoliator: Any organism but more particularly insects that can cause leaves to drop.

Denitrification: The process by which nitrates or nitrites in the soil organic deposits are reduced to ammonia or free nitrogen by bacterial action. The process results in the escape of nitrogen into the air and is therefore wasteful.

Dibble: A tool used to prepare planting holes for seedlings.

Dieback: The progressive dying from the extremity of any part of a plant. It may or may not result in the death of the entire plant.

Dioecious: A species having male and female flowers produced on separate plants.

Diploid: Having two sets of chromosomes (2n), usually one set from each parent.

Dormancy: A condition in the life of an organism or its parts when a tissue predisposed to proliferate does not do so and visible growth and development are temporarily suspended.

E

Earlywood: That part of the annual ring of wood that is less dense and composed of large-diameter, thin walled, secondary xylem cells laid down early in the growing season.

Ectomycorrhiza: See Mycorrhiza.

Edge effect: The modified environmental conditions or habitat along the margins (edges) of forest stands or patches.

Electrical conductivity (EC): A physical quantity that measures the readiness with which a medium transmits electricity.

Elite: A tree, stand or group of genotypes verified by appropriate testing as being genetically superior or desirable for a specified environment and propagation system. The superiority of cross-bred parents is determined by progeny tests and that of clones by clonal tests.

Endomycorrhiza: See mycorrhiza.

Entomophily: Pollination by insects

Enzymes: Substances produced by living cells which can bring about or speed up chemical reaction. They are organic catalysts.

Epicormic branch: A shoot arising spontaneously from an adventitious or dormant bud on the stem or branch of a woody plant often following exposure to increased light levels of fire.

Erodible (soil): Soil susceptible to erosion.

Erosion: The wearing away of the land surface by detachment and transport of soil and rock materials through the action of moving water, wind or other geological agents.

Etiolation: The paleness or yellowness in a plant due to nondevelopment of chlorophyll caused by inadequate light.

Evapotranspiration: The loss of water from a soil by evaporation and plant transpiration.

Even-aged stand: A stand of trees composed of a single age class in which the range of trees ages is usually ± 20 per cent of rotation.

Exchangeable sodium: Sodium that is attached to the surface of soil particles which can be exchanged with other positively charged ions in the soil solution, such as calcium and magnesium.

Exotic: A plant or species introduced from another country or geographic region outside its natural range.

Experimental error: The variation among experimental plots or other experimental units due to causes other than the treatments that have been applied. It does not imply a mistake but instead indicates that some variation is essentially random or can not be controlled.

Explant: An organ, tissue or other plant part excised from a donor plant that is used to initiate an *in vitro* culture.

F

Fallow: Cropland left idle in order to restore productivity mainly through accumulation of water, nutrients or both.

Felling: The cutting down of trees

Fertilizer: Fertilizers are sources of plant nutrients that can be added to soil to supplement its natural fertility. They are intended to supply plant needs directly.

Field capacity: The moisture content of the soil when downward movement of water has nearly ceased is called field capacity. This condition usually exists in a well-drained soil about two or three days after a rain.

Flood irrigation: Irrigation by running water over nearly level soil in a shallow flood.

Foliar diagnosis: Estimation of the plant nutrient status of plant or the plant nutrient requirements of a soil for producing a crop through chemical analyses or colour manifestation of plant leaves or by both methods together.

Full-sib progeny: The offspring resulting from a cross of a single pair of parents.

G

Gall: A pronounced swelling or abnormal growth usually localized of greatly modified tissue structure arising on plants in response to irritation by a

foreign organism, commonly an insect or pathogen.

Gall midge: A small fly of the family Cecidomyidae whose pink or yellowish larvae cause many kinds of small galls on plants, generally on leaves, roots, cones, seeds or twigs.

General combining ability (GCA): The relative ability of an individual to transmit genetic superiority to its offspring when crossed with other individuals. GCA of a parent signifies the average performance of its progenies in various crosses compared with progenies of other parents in the same test.

Genetic gain: The average improvement in a progeny (clonal) population over the mean of the parental population resulting from selection in the parental population. The amount of gain depends on selection intensity, parental variation and heritability.

Genome: A complete haploid set of chromosomes as found in a gamete.
Graft: To place a portion (the scion) of one plant in close cambial contact with the cambium of another plant or another part of the same plant (generally a rootstock), with the object of securing vegetative union between the two the scion being detached from its parent plant either before or after the operation.

Graft incompatibility: The inability of the rootstock and scion to form or maintain a union resulting in loss of desired growth or death.

Gravitational water in soils: The water that temporarily occupies aeration pore space but will drain down to a lower depth if there is drier soil below. Gravity is the most obvious factor in this movement even though the capillary potential of the drier soil is usually the stronger factor.

Ground water: Water that fills all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Growth regulator: An organic substance usually a hormone, effective in minute amounts for controlling or modifying growth processes of plants or insects.

Growth ring: The cumulative layers of cells produced during a single growing season and characteristically containing earlywood and latewood cells of differing morphology.

Grub: A thick bodied larva with thoracic legs and well developed head usually sluggish.

H

Half-sib progeny: The offspring resulting from a cross of one parent with more than one other parent.

Haploid: Having one complete set of chromosomes per cell.

Hardpan: A hardened or cemented soil horizon or layer. The soil material may be sandy or clayey and may be cemented by iron oxide, silica, calcium carbonate or other substances.

Hedge: To repeatedly clip an ortet or some of its ramets to produce a low-

hedged plant to slow or halt maturation of the plant and to control its size and shape for efficient collection of cuttings.

Heritability: The proportion of variability of a character due to heredity, the remainder being due to environment.

Hedge orchard: An orchard of hedged plants that produces cuttings or other tissue for vegetative propagation.

Humus: The fraction of the soil organic matter remaining, usually amorphous and dark coloured, after the major portion of added residues have decomposed.

Hydrolysis: That chemical reaction involving double displacement in which hydrogen of water combines with the anion of the mineral and hydroxyl of water combines with the cation of the mineral to form an acid and a base.

Hydroxyl: Oxygen with one hydrogen forming OH^-, the anion of bases.

I

Immobilization: The transfer of an element from the soluble inorganic into the organic form of microbial or plant tissues.

Impervious soil: A soil through which water, air or roots can not penetrate.

Inbreeding: The production of offspring by mating related organisms often by selfing. This procedure especially if carried out for a number of generations, exposes undesirable recessive characters.

Inbreeding depression: The reduction in vigour or fertility that often accompanies inbreeding of normally crossbred organisms, usually attributed to an accumulation of deleterious recessive genes.

Increment borer: An auger like instrument with a hollow bit and an extractor used to extract thin radial cylinders of wood (increment cores) from trees having annual growth rings to determine increment or age.

Individual selection: The process of choosing single plants based o their own merit as parents or ortets from a family or population.

Infiltration: Entry of water downward into the soil surface.

Inoculation: The process of introducing cultures of microorganisms into soils or culture media, such as by adding Rhizobia bacteria coated on legume seed.

Inorganic: Refers to substances occurring as minerals in nature or obtainable from them by chemical means. Refers to all matter except the compounds of carbon, but includes carbonates.

Inorganic nitrogen: Nitrogen in combination with mineral elements, not in animal or vegetable form. Ammonium sulfate and sodium nitrate are examples of inorganic nitrogen combinations while proteins contain nitrogen in organic combination.

Integrated Pest Management (IPM): The use of many different techniques in combination to control pests, such as the combined uses of resistant plant varieties, natural predators of the pest, specific chemical pesticides, good preventive measures and good management practices, such as crop rotation.

Intensive forestry: The practice of forestry to obtain a high level of volume and quality of outturn per unit of area through the application of the best techniques of silviculture and management.

Intermediate host: The host that harbors the immature stages or the asexual stages of a parasite.

Ion: Atoms or groups of atoms that are electrically charged as a result of the loss of electrons (cations) or the gain of electrons (anions).

J

J-root: A root that is bent into a J-shape because the seedling was improperly grown or planted in a hole or slit that was too shallow or narrow.

Juvenile phase: The period during the life of a tree before flowering or before a mature type of foliage appears.

K

Knot: A cross section of a branch that is imbedded in lumber or other wood product. A knot may be regarded as either a decorative feature or a defect. A sound knot occurs if the branch was living when the tree was cut; a loose knot, so called because the knot commonly falls out of the lumber, occurs if the branch was dead when the tree was cut.

L

Larva: The immature form of insects that undergo metamorphosis

Leaching: The removal of materials that dissolve in water as it passes through soil (or other material) is called leaching. The term eluviation is used if solid particles are moved.

Leaf miner: An insect whose larvae feed on the inner tissues between the upper and lower epidermis of leaves or needles.

Leaf spot: A leaf disease characterised by numerous generally distinct, circular or angular lesions.

Lesion: A localized and delineated diseased area.

Lethal dose: The amount of an insecticide, its active ingredient or other toxicant necessary to kill a specified proportion of an insect population.

Lignotuber: A woody storage structure forming a swelling, more or less at ground level originating from the axils of cotyledons or less commonly of one or more pairs of the earliest seedling leaves and from whose concealed dormant buds a new tree can develop. Lignotubers are characteristic of many

eucalypts and other Myrtaceae and often form following severe injury.

Lime: Lime is generally defines as calcium oxide (CaO), but in agriculture lime usually means any material used as a soil amendment to raise the soil pH. Ground limestone (mostly $CaCO_3$) is by far the most common agricultural liming material.

Loamy soil: A general expression for soils of intermediate texture between the coarse-textures or sandy soils, on the one hand, and the fine- textured or clayey soils on the other. Sandy loams, loams, silt loams and clay loams are regarded as loamy soils.

M

Macronutrient: A macronutrient is an element that plants must have relatively large amounts to complete their life cycles.There are nine macronutrients - carbon, hydrogen and oxygen (obtained from air and water); nitrogen, phosphorus and potassium (the primary nutrients in fertilizers); and calcium, magnesium and sulphur (often called secondary nutrients).

Mass selection: The process of choosing individuals solely on the basis of their phenotypes without regard to information about ancestors, siblings, offspring or other relatives.

Mechanical analysis: The determination of the percentages of sand, silt and clay present in a soil is called a mechanical analysis.

Metamorphosis: The ontogeny of some animals encompassing the series of changes in shape, structure and habits undergone from egg or embryonic stage into adult stage.

Micronutrient: A micronutrient is an element that plants must have to complete their life cycles, but only a small amount is required. Seven micronutrients have been identified - boron, chlorine, copper, iron, manganese, molybdenum and zinc.

Mineralization: The process by which organic matter is decomposed and inorganic ions are released is called mineralization.

Mite: A small Arachnid of the order Acarina having no obvious demarcation between the various parts of it body.

Mottle: Spots whose colour differs from that of the background or patch of different colours rather than a mass of one colour are called mottles.

Mulch: A loose covering on the surface of the soil. Usually consists of organic residues but may be loose soil produced by cultivation or other inorganic materials.

Munsell colour notation: A Munsell colour notation combines hue, value and chroma in a standard symbol such as 10YR 5/3 (This is a colour of soil with a hue = 10YR, value = 5 and chroma = 3). The notation is determined by comparing the soil colour with standard colour chips arranged in a colour book. Each page in the book represents one hue with chromas increasing from left to right and values increasing from the bottom to the top of the page.

Mycorrhiza: The morphological association, usually symbiotic of fungi with the roots of higher plants. The association is referred to as ectotrophic in those cases in which the fungal hyphae occur on the root surface and penetrate only the intercellular spaces, and as endotrophic when the hyphae occur mainly within the cells of the host plant.

N

Narrow-sense heritability: The ratio of additive genetic variance to phenotypic variance. Narrow sense heritability is useful in predicting the response of a population to natural selection.

Nematodes: Nematodes are small worms that represent a more complex form of animal life than protozoa. Most of them live on decaying organic matter, but some infect plant roots and live as parasites (still others are parasites on animals, including human beings).

Nitrification: Nitrification is a two-stage oxidation process in which ammonia is oxidized to nitrite ($NO2^-$) and the nitrite to nitrate ($NO3^-$).

Nitrogen fixation: The process of combining elemental nitrogen with another element is known as nitrogen fixation. Specifically in soils, the assimilation of free nitrogen from the soil air by soil organisms and the formation of nitrogen compounds that eventually become available to plants. The nitrogen-fixing organisms associated with legumes are called symbiotic and the free-living microbes acting independently are referred to as non-symbiotic.

O

Obligate parasite: A parasite incapable of existing independent of a host.

Open pollination: Pollination in which a mixture of related and unrelated pollen is delivered by wind, insects etc and is usually not directly influence by people.

Organogenesis: The process of differentiation of organs from cells and tissues.

Oxidation: 1. Combination with oxygen. 2. Removal of electrons from an atom, ion or molecule during a reaction.

P

Pan: A layer in soils that is strongly compacted, indurated or very high in clay content.

Particle density: The mass per unit volume of the soil particles.

Peat: Undecomposed or only slightly decomposed organic matter accumulated under conditions of excessive moisture.

Percolation: The downward movement of water through soil.

Permeability, soil: The quality of a soil layer that enables water or air to move though it.

pH: pH is the negative logarithm of the hydrogen ion concentration in a water solution.

Plant percent: The proportion of seeds in a given sample that develop into seedlings at the end of a given period, generally the first growing season.

Porosity, soil: The spaces between solid soil particles constitute the soil pore space or porosity.

Q

Quick test, soil: Simple and rapid chemical tests of soils usually to measure pH and also to give an approximation of the nutrients available to plants.

R

Ramet: An individual member of a clone vegetatively propagated from an ortet.

Randomized block design: An experimental design in which each block contains a complete replication of treatments allocated to the units within the blocks in a nonsystematic fashion, thus allowing unbiased estimates of experimental error to be made.

Reduction: Atoms or ions that gain electrons.

Regression: A statistical measure of the amount of change in a dependent variable and one or more independent variables.

Rejuvenation: A change in a tissue or an organism from a more mature state to a more juvenile state.

Relative humidity: The ratio of the actual vapour pressure of the air to the saturation vapour pressure.

Replication: Repeated sampling under similar conditions or applying a treatment or set of treatments more than once at one place and so far as possible at one period of time to increase the precision of comparisons and to provide an assessment of the variability among experimental units treated alike.

Rhizobium: The bacteria capable of living in symbiotic relationship with leguminous plants in nodules on the roots, the association usually being capable of fixing nitrogen.

Rhizome: A modified stem that grows below ground commonly stores food materials and produces roots, scale leaves and suckers irregularly along its length and not just at nodes.

Rhizosphere: The soil region in the immediate vicinity of the plant roots in which microbial numbers and kinds may be much different than in the bulk soil in general.

Roguing: Systematic removal of individuals not desired for the perpetuation of a population.

Root nodule: A swelling formed on the roots of leguminous plants, caused by the symbiotic nitrogen-fixing microbes.

Rust: A disease caused by a rust fungus

S

Saline soil: A nonsodic soil containing sufficient soluble salts to impair its productivity.

Salt-affected soil: Soil that has been adversely modified for the growth of most crop plants by the presence of soluble salts, exchangeable sodium, or both.

Seed production area: An existing stand that is usually upgraded and opened by removal of phenotypically undesirable trees and then cultured for early and abundant seed production.

Selection differential: The difference between the mean of the whole population and the mean of the selected group.

Selection intensity: The percentage of individuals selected from a candidate population.

Slick spots: Small areas in a field that appear wet longer and are slick due to a high content of clay with high exchangeable sodium.

Sodic soil: A soil that contains an exchangeable sodium percentage of 15 or more or a saturation extract SAR of 13 or more.

Sodium adsorption ratio (SAR): A value representing the relative hazard of irrigation water because of high sodium content relative to its calcium plus magnesium content.

Soil auger: A tool for boring into the soil and withdrawing a small sample for field or laboratory observation.

Soil moisture: Water contained in soil.

Soil structure: The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles.

Soil test: A chemical, physical or microbiological operation that estimates a property of the soil.

Soil texture: The relative proportions of the various soil separates in a soil material.

Specific combining ability: The degree to which the average performance of a specific family (usually full sibs) departs from the average of its parental breeding values.

Standard deviation: A measure of the dispersion about the mean of a population or sample. It is the positive square root of the variance.

Standard error: The standard deviation of a distribution of means or other statistic determined from samples. The standard error of the mean is estimated by dividing the standard deviation by the square root of the number of observations.

Sustainability: The capacity of the forests, ranging from stands to ecoregions to maintain their health, productivity, diversity and overall integrity in the long run in the context of human activity and use.

Sustained yield: The yield that a forest can produce continuously at a given intensity of management.

Symbiosis: The living together in intimate association of two dissimilar organisms, the cohabitation being mutually beneficial, such as Rhizobium with the host leguminous plant.

Systemic: 1. A pathogen capable of spreading throughout it host. 2. A pesticide that is absorbed by and permeates some or all of the host tissues and is toxic to the absorbing organism.

T

Taper: The decrease in thickness, generally in terms of diameter of a tree stem or log from the base upwards or from the larger diameter end to the smaller end in logs.

Tap root: The primary plant root developing from the radicle.

Target species: A plant or animal species against which a suppression measure or pesticide is directed.

Technology transfer: The transfer of ideas, information, methods, procedures, techniques, tools or technology from the developers to potential users.

Terrace: 1. A natural level plain bordering a river, lake or sea. 2. A raised, level strip of earth usually constructed on or nearly on a contour designed to make the land suitable for tillage and to prevent accelerated erosion.

Test of significance: A computation of the probability that an observed effect or difference may have arisen purely as a result of chance or as a result of experimental error.

Tetraploid: An organism or cell that has four times (4n) the haploid (n) number of chromosomes.

Tilth: The physical conditions of soil relative to its response to tillage machinery and its mechanical impedance to root penetration.

Transgenic: Pertaining to individuals containing a foreign gene in all of their cells inserted by means of gene-transfer technologies.

Transpiration: The process by which water vapour is released from plants to the atmosphere primarily through the leaf stomata.

U

Uneven-aged stand: A stand with trees of three or more distinct age classes, either intimately mixed or in small group.

Urban forestry: The art, science and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economic and aesthetic benefits trees provide society.

V

Variable: 1. Any quantity that varies. 2. A quantity that may take any one of a specified set of values.

Variance: A statistical measure of the variation of a characteristic from the population mean; the expected value of the squared difference between a statistic and the expected value of that statistic.

Variation: The occurrence of differences among individuals of the same species attributable to differences in their genetic composition or the environment in which they were raised.

Vector: 1 A carrier of a pollen or disease. 2. A self-replicating DNA molecule (usually a plasmid, virus or bacteriophage) used to move foreign DNA into an organism. 3. Any agent, particularly animals (and typically insects) but also seed, wind and water capable of transplanting a microorganism to a host.

Vegetative propagation: The propagation of a plant by asexual means, as in budding, grafting, rooting, air layering and tissue or cell culture.

Viability: The capacity of a seed, spore or pollen grain to germinate and develop under given conditions.

W

Water table: The upper surface of ground water; that level below which the soil is saturated with water.

Water table, perched: The surface of a local zone of saturation held above the main body of groundwater by an impermeable layer, usually clay or rock and separated from the main body of groundwater by an unsaturated zone.

Waterlogged: Saturated with water, usually developing anaerobic conditions.

Weevil: A beetle of the extensive family Curculionidae, including many species whose adults or larvae are serious forest pests.

Witches' broom: An abnormally bushy, local growth of plant shoots on woody plants characterized by shortening of the internodes and prolific branching.

Wolf tree: A generally predominant or dominant tree with a broad, spreading crown, that occupies more growing space than its more desirable neighbours.

X

Xeromorphic: Having structural characteristics common among plants adapted to drought (e.g., small thick leaves with sunken stomata or revolute margins, surfaces that are heavily pubescent, waxy or highly reflective and small vein islets).

Xerophyte: A plant adapted to arid condition, having xeromorphic characteristics.

Y

Yield table: A tabular statement which summarizes on an acre or other unit area basis all the essential data relating to the development of a fully stocked and regularly thinned even-aged crop at periodic intervals covering the greater part of its useful life.

Z

Zygospore: A sexual spore resulting directly from the fusion of morphologically similar gametangia.

Zygote: The cell formed by the sexual fusion of two gametes.