

APPENDIX - I

BASIC TERMS

- ACTUAL USE.** The total number of livestock that have actually grazed on a range and the length of time they have used it, usually expressed in animal unit months, cow months or sheep months.
- AFTERMATH.** Regrowth of range or forage or other crops after grazing or harvesting.
- ALPINE CLIMATE.** Pleasantly cool short summer, severe long winter with much snow.
- ALTITUDE.** Height from sea level.
- ANIMAL EQUIVALENTS.** Food requirements of different kinds of animals expressed in terms of animal unit.
- ANNUAL PASTURES.** It refers to areas or pastures that are seeded each year wholly or in part. Such pastures may include a series of crops like winter rye, Sudangrass, soybeans and rape, which furnish forage nearly all the year.
- ANNUAL PLANTS.** Plants which complete their life cycle in one year.
- ARCTIC CLIMATE.** Climate at the poles; similar to Alpine climate.
- ARID ZONE.** Area receiving less than 300 mm precipitation per annum which is not enough for supporting any economic crop.
- ARTIFICIAL REPRODUCTION.** Renewal of range vegetation by direct seeding or planting.
- ASPECT.** It is the direction towards which an area has its sloping face, i.e., eastern or north-eastern etc.
- A.U. (ANIMAL UNIT).** A cow weighting about 425 kg. and eating 9 kilograms of air dry forage per day.
- A.U.M. (Animal Unit per month).** Weight of air dried forage that an animal unit will eat in one month i.e. 270 kg.
- A.U.Y. (Animal Unit per year).** Weight of air dried forage that an animal unit will eat in one year i.e., 3285 or 3300 kg.
- BALANCED RATION.** Range forage and other feed which contain the dietary essentials in sufficient quantities and in proper proportion for growth, maintenance, and reproduction of livestock.
- BARREN.** A range area without or nearly without vegetation.
- BASAL AREA.** Area of soil surface covered by range grasses after these are cut at 2.5 cm height above soil surface.
- BIENNIAL PLANTS.** Plants which complete their life cycle in two years.
- BIOMASS.** Living as well as dead material of plant or animal origin.
- BIOTIC.** About living organism.
- BRAND.** In Range Management, the mark and process of marking the skin or wool of an animal in a distinctive pattern, by use of a hot iron, chemicals, or paint, to designate ownership. Contrast with Tagging.
- BROWSE.** Woody vegetation having some forage value.
- BROWSING LINE.** A line marking the height to which browsing animals have removed the foliage of shrubs and trees.
- BRUSH COVER.** Small trees or bushes strewn over grasslands.
- CANOPY AREA.** Area of soil surface covered by the crown.
- CARNIVORS.** All those living organisms who depend on herbivores for their food i.e., flesh eaters.
- CARRYING CAPACITY (of a range).** (a) Maximum number of animal units that can be grazed in one hectare for one year. (b) Minimum number of hectares required to feed one animal unit for one year. (c) Maximum number of months one animal unit can graze in one hectare.
- CHECK DAM.** A small obstruction (speed breaker) constructed in a gully or other watercourse to decrease the velocity of flow, thus minimizing channel scour and promoting the deposition of eroded material. Check dams may be made of a large variety of materials, including concrete, masonry, loose rock, wooden boards, logs, brush wood, sod, earth, wire mesh, jute cloth, or even parts of discarded automobiles or other miscellaneous junk.

- CLAY PAN.** A dense, largely impermeable and heavy soil horizon underlying the upper layers of the soil; hard when dry and plastic or stiff when wet; presumably formed in part by the accumulation of clay particles or as a result of some chemical changes.
- CLIMATE.** The sum total of all atmospheric or meteorological influences which combine to characterize a region and give it individuality by influencing the nature of its soils, vegetation, and land use. Weather is the condition of the atmosphere at a given time; climate is the summation of weather conditions.
- CLIMAX STAGE.** Final stage of a vegetation succession.
- COASTAL CLIMATE.** Hot, humid during day, cold dry at night.
- COLONY (Plant).** An initial community resulting from two or more species entering a bare area simultaneously.
- COMMUNITY.** Any group of plants growing together.
- COMPETITION.** Struggle of various individuals or species for a specific resource at one place and at one time.
- COMPLEMENTAL FEED (COMPLEMENTARY FEED).** Feed and forage resources which meet the needs of livestock for the period when they are not on the range.
- COMPOSITION.** The relative proportions of different plant species in the total vegetation cover over a given area.
- CONCENTRATED FEED.** Cereal grains or their products and other processed feed material for animals in which high nutrient values have been retained (T.D.N \geq 18%) with a minimum amount of crude fiber or water.
- CONSERVATION OF NATURAL RESOURCES.** The protection, improvement, and use of natural resources according to scientific principles which will assure their highest economic and social service.
- CONSERVATIVE GRAZING.** A rate of animal stocking that results in approximately proper utilization of the range vegetation in all but the most severe drought years. The degree of grazing that causes little or no soil disturbance and vegetation deterioration.
- CONSUMERS.** All organisms which are ultimate users of food.
- CONTINENTAL CLIMATE.** Very hot dry summer, very cold dry winter.
- CONTOUR LINE.** A horizontal line on the sloping ground whose all points are at the same altitude.
- CONTROLLED FIRE.** Burning of litter etc., as a cultural practice for some specific purpose with complete control and strict watch and ward.
- CORRAL.** A small enclosure for handling livestock.
- COVER.** Proportion of the ground occupied by the above-ground parts of the plants when viewed vertically downwards from above.
- CROWN AREA.** Outer surface area of the crown of a tree or shrub.
- DAM, DIVERSION OR BARRAGE.** A barrier built for the purpose of diverting part or all the water from a stream into a different course.
- DECOMPOSERS.** All organisms which break down the synthesized food into its constituents, i.e. minerals, gasses etc.
- DECREASER.** Those plant species whose number decreases in response to heavy grazing.
- DEFERRED GRAZING.** The system of management whereby the forage on a part or on all of a range area is allowed to be grazed after it had attained a certain stage of growth (seed maturity).
- DEGREE SLOPE.** Slope expressed in degrees, like that of an angle. (Forty-five degree slope is equal to 100 per cent slope).
- DENSITY.** (a) Number of plants per unit area, (b) Number of tillers per unit area, (c) Amount of living biomass per unit area.
- DIPPING TANK.** A small tank where sheep etc. are dipped in order to treat some skin diseases or control skin parasites, etc.
- DORMANCY.** Condition of a seed or plant in which life functions are virtually at a standstill.

ECOLOGY. Study of organisms with respect to environment.

ECOTONE. Boundary zone between two communities.

EDAPHIC. About soil.

ENCLOSURE. An area fenced to include certain kinds of animals or an area within which animals are confined.

ENERGY. Capability to do work or to bring a change.

ENERGY CAPTURE. Energy trap, conversion of light energy into chemical energy.

ENERGY TRAP. Conversion of solar energy into chemical energy by green plants through photosynthesis.

ENVIRONMENT. Sum total of all factors which affect the growth of an organism i.e. climate, soil, fauna and flora.

EPHEMERAL PLANTS. Plants which complete their life cycle in a very short time (a few weeks).

EXCLOSURE. An area from which animals are excluded.

FAMILY. Isolated group of organism belonging to a single species; often descendants of a single plant.

FEE. A charge made for livestock grazing on the basis of a certain rate per head for a certain period of time.

FEED. Harvested forage such as hay or other fodder and grain or other processed feed for livestock. Contrast, forage.

FIRST LAW OF THERMODYNAMICS. Energy in one form can be transformed (converted) into an other form.

FORAGE. The plant material which is grazed by range livestock.

FORAGE VOLUME. Portion of a forage shrub/tree within reach of grazing animals or measure of the forage crop, in a range area during any year.

FORB. A nongrass herbaceous plant; same as herb or weed in range language; syn. Broadleaved herb.

FORMS OF ENERGY. Light, heat, chemical electrical, etc.

GRASS. A green plant which is member of family Poaceae.

GRAZE. The eating of any kind of growing vegetation by domestic livestock or wild animals. See Browse.

GRAZING CAPACITY. Carrying capacity of a range.

GRAZING INTENSITY. Number of animal units grazing in one hectare for one year.

GRAZING SYSTEM. An arrangement or scheme for utilizing a range land which results in the betterment of both plants and animals.

GROUND COVER. All herbaceous plants and low-growing shrubs in a forest.

GRUBBING. The act of removing roots, whether woody or herbaceous.

GULLEY EROSION. Formation of large drainage channels which are too big to be obliterated by ploughing.

HALOPHYTE. Plant which can tolerate salts.

HARD PAN. An indurated (hardened) or cemented soil horizon. The soil may have any texture and is compacted or cemented by iron oxide, organic material, silica, calcium carbonate, or other substances.

HAY. Air dried forage used to feed livestock during emergencies.

HEAVY GRAZING. When more than half of standing forage is consumed.

HERBAGE. Total amount of vegetation present in the range.

HERBIVORES. All those living organisms (animals) which depend on green plants for their food.

HOST. A large organism which provides food to a small organism (parasite).

HURDLE SYSTEM. A method of handling livestock by use of hurdles, or moveable fences, making it possible to change the area of immediate use daily or at frequent intervals.

HYDROPHYTE. Plant which grow in water.

IMPERVIOUS SOIL. A soil very resistant to penetration by water and usually to air and plant roots. In field practice the term is applied to strata or horizons that are very slowly penetrated by water and that retard or restrict root penetration. 'Relatively impervious' or 'Slowly pervious' are better expressions.

INCREASES. Those plant species whose number increases in response to heavy grazing.

INDICATOR SPECIES. Key plant species or important plant species that suggest changes in vegetation.

INVADER. Those outside plant species which occupy the range land extremely rapidly and dominate existing species.

K. An abbreviation that stands for maximum carrying capacity of a (range) area.

KEY SPECIES. Plant species which indicate range health.

K-TYPE PLANTS. Plants producing small number of large seeds, usually perennials.

LATITUDE. Distance from the Equator (tropics) either towards north or south.

LEGUME. A green plant which is member of family Leguminosae. ✓

LIGHT GRAZING. When less than half of standing forage is consumed.

LITTER. Dead plant and animal material. ✓

LIVESTOCK MANAGEMENT. Application of business methods and technical principles to animal production.

LOAM SOIL. A noncoherent mixture of sand and clay containing also calcium carbonate and organic matter.

LONGITUDE. Distance from Greenwich line (a hypothetical north-south line passing through London) either towards east or west.

MARGINAL RANGE LAND. A range land where income is equal to expenditure and profit is nil.

MARINE CLIMATE. Mild and very humid throughout the year.

MARKING. Any method, other than branding, of placing a sign on an animal for the purpose of identification. For example, ear marks and slits, tags.

MATURE SOIL. A soil with well developed characteristics (horizons) produced by the natural processes of soil formation, and in equilibrium with its environment.

MEADOW. Pasture, moist highly productive rangeland.

MEDITERRANEAN CLIMATE. Hot dry summer, rainy cool winter.

MESOPHYTE. A plant that grows under medium or average moisture condition; neither an aquatic nor a desert species.

MODERATE GRAZING. When about half of the standing biomass is consumed and the other half is left as unused portion.

MORTALITY. Death rate.

NATALITY. Birth rate.

NATURAL REPRODUCTION. Renewal of range vegetation by self-sown seeds, sprouts, rhizomes, etc.

NATURAL RESOURCES. Potentially useful materials, forces, capacities, and conditions provided by nature. for establishing and sustaining an ecosystem such as soil, water, climate etc.

NIBBLING. Eating away of growing tips of shoots.

NOMAD. Non-settled people, moving from place to place along with their livestock i.e. beduins, bakarwals, pawindas.

NOMADIC GRAZING. Un-managed grazing by the livestock (of unsettled tribes); very harmful to vegetation.

NORMAL SOIL. A soil having a profile in equilibrium with the two principle forces of the environment - native vegetation and climate - usually developed on gently undulating upland, with good drainage, from any parent material, not of extreme texture or chemical composition, that has been in place long enough for biological influences to exert their full effect.

NUTRITIVE VALUE. A term usually prefixed by 'high', 'low', etc., to indicate relative capacity of given forage in furnishing nutrition for livestock.

OMNIVORES. All those living organisms which depend on both herbivores and carnivores for their food.

OVERSTOCKING. Placing of more animals on a range area than it can support or maintain through the grazing period without overgrazing. See overgrazing.

OVER-UTILIZATION. Excessive use of a plant, a pasture, or part of a pasture in any one season or year.

PALATABILITY. The acceptability of a forage by grazing animals as shown by their preferences.

PARASITE. A small organism which gets its food from other large organism (host) without killing it.

PASTURE. An irrigated/moist area supporting an excellent stand of vegetation suitable for grazing. See meadow.

PERCENT SLOPE. An increase or decrease in altitude (in units of length) after travelling a horizontal distance of 100 units.

PERENNIAL PASTURES. Grazing land occupied by permanent grazable plants or by self-seeding annuals, usually both, which remains unplowed for long periods (five years or more).

PERENNIAL PLANTS. Plants which live and complete their life cycle for three years or more.

PIONEER STAGE. Initial stage of vegetation succession over an area.

PLANT COVER. All plants found on a given range, irrespective of whether these are within reach of livestock, or not palatable, non-palatable, or poisonous.

PLANT POPULATION. Plants of one species living together in one place at one time.

PLANT SYMBOL. An abbreviation used on vegetation type map or otherwise to indicate a given species.

POLAR CLIMATE. Arctic climate.

POTENTIAL. Maximum possible (production) capacity.

PREDATOR. An organism which kills and eats other organisms (prey); usually larger than prey.

PREY. An organism which is killed and is eaten by a predator; usually smaller than predator.

PRIMARY PRODUCERS. All those organisms which synthesize their own food (green plants).

PROPAGULE. Any part of plant that will give rise to a new individual, when it is separated from a plant.

PROPER USE. Grazing of a range area to the best advantage of vegetation and of livestock considering all factors such as numbers of livestock, desirable season of grazing, distribution of animals etc., and proper correlation with other uses of the land.

PYRIC. Factor related to fire.

QUADRAT. A metallic, plastic or wooden frame of varying shapes and sizes used for sampling (range) vegetation.

r. An abbreviation that stands for Current growth rate.

RANGE. A vast area supporting natural vegetation which is suitable for grazing.

RANGE APPRAISAL. An evaluation of the capacity of range lands to produce income, which includes not only consideration of grazing capacity, but also facilities for handling livestock, accessibility and relation to other feed sources.

RANGE COMMUNITY. Association of green plants, fungi, bacteria, insects, birds, rodents and livestock living together in a range. It is dependent on other neighbouring communities.

RANGE CONDITION. Health of the range; measured by the relative presence (abundance) of climax species and their contribution in total forage production.

(a) Excellent range: Where more than 75% production of forage is from climax species.

(b) Good range: Where 50-75% production of forage is from climax species.

(c) Fair range: Where 25-49% production of forage is from climax species.

(d) Poor range: Where less than 25% production of forage is far from climax species.

RANGE ECOLOGY: Study of relationship of vast grazable vegetation unit with environmental factors.

RANGE ECOSYSTEM: A range community which is more or less independent of other adjoining communities; major outside inputs being solar radiation and precipitation.

RANGE IMPROVEMENT. Adoption of certain operations for increasing the production and enhancing the utility of the range such as development of water supply, levelling, fencing, artificial reseeding and control of noxious plant etc.

RANGE LAND. A unit of agricultural land which supports or is suitable for supporting range vegetation.

RANGE MANAGEMENT. Application of science on range for obtaining maximum production on sustained basis.

RANGE PLANT COVER. Ground surface occupied by all herbaceous and shrubby plants on a range area.

RANGE READINESS. That growth stage of the range plants and condition of soil which permits grazing without endangering the ability of the plants to maintain themselves and to regenerate or without causing undue compacting of the soil.

RANGE TREND. Direction of changes in the range condition. It is either positive (improving) or negative (degrading).

RANGE VEGETATION. Association of all green plants which grow in a range.

REFUGE. An area designated for the protection of game animals, birds, and fish, within which hunting or fishing is either prohibited or strictly controlled.

REPRESENTATIVE SAMPLE. A small portion of a population which truly depicts essential variation existing in that population.

RESERVE FEED. A supply of roughage and concentrates in excess of normal requirements for emergencies, such as droughts or abnormally severe winters, etc.

RETROGRESSION. Deterioration or degradation of vegetation and soil due to over grazing, fire or other outside factors.

RILL EROSION. Formation of small and shallow drainage channels which can be easily obliterated by ploughing.

ROOT/SHOOT RATIO. Weight of shoot biomass with respect to root biomass.

Rotation Pastures: A field used for grazing which is seeded to perennials and (or) self-seeding annuals but which forms a unit in the crop-rotation plan and is ploughed within a five year or shorter interval for other crops.

r-TYPE PLANTS. Plants producing large number of small seeds, usually ephemerals, annuals and cereals.

SALTING. Distributing salt on the range and making it accessible to livestock, ordinarily to influence their movement and to promote consumption of less or non-palatable species.

SAMPLE. A small part of the population taken to represent the quantity or quality of the whole.

SAMPLE PLOT. An area laid out for the purpose of experimentation or for monitoring; may be temporary or permanent.

✓ **SAVANNA.** An area of grassland containing scattered trees in sub-tropical semi-arid climate; typically found in East Africa.

✓ **SECOND LAW OF THERMODYNAMICS.** Each energy transformation involves some loss of energy (in the form of heat-dissipated energy).

2 ✓ **SECONDARY PRODUCERS.** All those organisms (animals) which consume the food synthesized by primary producers and convert it into new products such as animal proteins and fats etc.

2 ✓ **SEGREGATION.** The separation, usually by fences, of different kinds, classes, types, or breeds of livestock. (Genetics: separation of the genes inherited from the two parents in the formation of F1 gametes).

SELECTIVE GRAZING. The tendency of livestock and other grazing animals to prefer certain plants (and even to over-utilize these) while some other important species may be lightly grazed.

SHEET EROSION. Removal of a thin layer (film) of soil of more or less uniform thickness from the surface; usually remains unnoticed.

SHRUB. Perennial woody plants whose stem either cannot be distinguished from its crown (branches) or is shorter than 2.0 meter.

SILAGE. Pickled green forage (in silo pits, etc.); used to feed livestock during emergencies.

SITE. A land area, along with its climatic and biotic factors considered with reference to specific purpose of growing a forest or establishing a range etc.

SOLAR RADIATION. Rays coming from the sun.

STALL FEEDING. Feeding emergency/supplementary feeds to the livestock at one place in the manger.

STOOL. In Range Management, several stems arising from the same root as in certain grasses.

✓ **STRATIFICATION.** Arrangement of organisms or their parts in layers in order to avoid competition.

SUB-TROPICAL CLIMATE. Hot long summer (arid or humid), with a distinct cool winter of relatively short duration.

SUCCESSION. Systematic development of vegetation in a specific direction leading to increased production and stability.

SUPPLEMENTAL OR TEMPORARY PASTURES. Fields used for grazing when the permanent or rotation pasture are unproductive and do not supply enough feed for the livestock kept on the farm. Supplemental pastures may be provided by the aftermath of meadows, small-grain stubble, seedling small grains, annuals like Sudangrass, lespedeza, and crimson clover, or biennials like sweetclover.

SUPPLEMENTARY FEED. Feed which is rich in some specific ingredients, prepared to overcome any qualitative deficiencies in natural range forage.

SURVIVAL. Difference between natality and mortality.

SYMBIOSIS. Mutual beneficial relationship between two organisms i.e. mutual cooperation.

SYNECOLOGY. Study of relationship of populations and communities with the environment.

TAGGING. The process of attaching a metal label to livestock to designate ownership.

TEMPERATE CLIMATE. Pleasantly warm short summer and pronounced severe long winter with frost and some snow.

TERTIARY PRODUCER. All those organisms (animals) which convert the food (synthesized by secondary producers) into new products.

TILLERS. Shoots of a grass.

TOPOGRAPHY. The configuration of a land surface, including its relief, its streams and lakes etc. on a map.

TRAILING. (1) The driving of livestock from place to place. (2) The voluntary wandering of livestock about a range, usually in search of forage, water or salt.

TRAMPLING. (1) Treading under forage; the damage to plants or soil brought about by congested movements of livestock, including mechanical injury to tree reproduction and ground cover in woods.

TREE. A woody plant having one well-defined stem and a crown, the stem attaining a height exceeding 2 meters.

TROPICAL CLIMATE. Very hot, very humid, winterless climate.

UNDER-STOCKING. A condition when number of grazing animals is less than the forage production of a given range area in a given season.

UTILIZATION (of forage). Degree to which animals have removed the current growth of herbage and is expressed in percentage of grazable forage.

WATERSHED. An area which drains surplus rain water into stream, pond or river.

WATER SPREADING. The diversion of runoff water from gullies or other water courses and its distribution on adjacent gently sloping grazing lands. The moisture absorbed by the area increases the growth of vegetation.

XEROPHYTE. Plants which can tolerate or avoid drought.