

# INDEX

---

## PLANT ECOLOGY

### A

- Abies, 228, 234, 235  
Abiotic component, 57, 62, 65  
Absolute humidity, 23  
Abundance, 135, 138  
Acacia, 226  
Acacia indica, 241  
Acacia leucophloea, 235  
Acacia nilotica, 242  
Acanthus ilicifolius, 204, 236  
Accidental halophytes, 203  
Accumulating type, 203  
Acid Rain, 278-280  
Adhatoda, 226  
Adina, 226  
Aegiceras majus, 204, 209, 216  
Aeleuropus repens, 204  
Aerophytes, 196  
Aerohalophyte, 202, 203  
Aesculus indica, 234  
Afforestation, 340-344  
Agave, 242  
Age pyramids, 101, 102  
Ageratum conyzoides, 221  
Aggregation of germules, 122  
Agricultural pollution, 285-289  
Agrortis hiemalis, 243  
Air chambers, 169  
Air pollution, 266-285  
Albizia, 225, 226, 235  
Alpinia speciosa, 242  
Altitudinal ecotypes, 109  
Amensalism, 104

- Application of plant ecology, 5  
AQI, 282, 283  
Ardesia humiles, 204  
Arid, 24  
Arid-humid, 24  
Aroideae, 204  
Aroids, 200  
Artemissia, 228  
Artocarpus, 227, 237  
Arundinella, 230  
Asclepiadaceae, 198  
Asplenium nidus, 197  
Associates, 91  
Association index, 140  
Aster, 234  
Atmospheric pollution levels, 274  
Autecology, 4, 90  
Avicennia alba, 204  
Avicennia officinalis, 204

### B

- Balanocarpus, 227  
Bambusa, 225  
Barberis Asiatic, 236  
Bauhinia, 225, 226, 227, 235, 236  
Beach, 230  
Berberis, 227, 228, 236  
Betula, 227, 238  
Biocenology, 4  
Biological degradation, 487  
Biodiversity depletion, 372  
Biological diversity, 372-379  
Biodiversity conservation, 376, 377  
Biogas, 329, 330

Biogeochemical cycles, 10, 79  
 Biological nitrogen fixation, 83  
 Biological spectrum, 119-121  
 Biosphere, 7  
 Biotic components, 62, 65-66  
 Biotic factors, 40-55  
 Biotope, 113  
*Bischofia*, 235  
 BOD, 265  
*Borassus*, 236  
*Boswella*, 225  
 Botanical zones, 236  
*Braya*, 235  
 Browsing, 40  
*Bruguiera gymnorhiza*, 236  
*Buchnania*, 226  
*Butea monosperma*, 232, 240

**C**

*Calamus*, 225  
 Cannibalism, 105  
 Carbon cycle, 81  
 Carbon dioxide assimilation method, 78  
 Capillary water, 36  
*Cassia fistula*, 222  
*Cassula*, 209  
*Catenaria*, 218  
 Causes of succession, 144  
*Chaenopodium album*, 217, 242  
*Chamaephytes*, 118, 119  
 Characteristics of ecotypes, 108  
*Chartquadrat*, 130  
*Chersophytes*, 157  
 Chipko movement, 332  
 Chlorophyll method, 78  
*Chloroxylon*, 218  
 CFCs, 303  
 Clans, 126  
 Classification of Halophytes, 202  
 Classification of Hydrophytes, 158  
 Climate of India, 221  
 Climatic ecotypes, 109  
 Climatic-edaphic ecotypes, 109  
 Climax, 145, 146, 152  
 Climax forest, 152  
*Coenospecies*, 111

Co-existence, 113, 122  
 Combined water, 36  
 Commercial forestry, 341  
 Commensalism, 104  
 Community composition, 113-117  
 Community dynamics, 121  
 Community of grasses and herbs, 192  
 Community of wood plants, 192  
 Conservation ecology, 5  
 Competition, 105  
 Conservation forestry, 341  
 Consociation, 126  
 Consumers, 57, 58, 62, 63, 65  
 Consumption data, 323, 324  
 Crude population density, 97  
*Cryptophytes*, 117  
 Cytoecology, 5

**D**

*Dacrydium caledonicum*, 243  
*Dahlia*, 246  
*Dalbergia latifolia*, 225, 226  
*Dalbergia sissoo*, 235, 236  
*Damara ovata*, 243  
*Daphne*, 228  
 Day neutral plants, 17  
 Deciduous forests, 192  
 Declining population, 101  
 Decomposers, 58  
 Deforestation, 336-338  
*Dellenia*, 225  
*Delonix regia*, 222  
 Denitrification, 85  
 Density, 135  
 Dependency, 114  
*Deschampsia*, 230  
 Deterioration of land, 290  
*Deyeuxia*, 230  
 Diaphragm, 169  
*Dichanthium*, 229  
 Different types of natural resources and their conservation, 290  
*Dillenia indica*, 235  
*Dipterocarpus*, 237-238  
*Dischidia nummularia*, 198  
 Discontinuous species, 218-219  
 Disphotic zone, 13

**E**

- Ecads, 106  
 Ecessis, 121  
*Echinocarpus*, 235  
 Ecological Amplitude, 96, 113  
 Ecological density, 97  
 Ecological efficiency, 75  
 Ecological energetics and production ecology, 5  
 Ecological genetics of population, 106-111  
 Ecological indicators, 238-247  
 Ecological life history of species, 90  
 Ecological niches, 66  
 Ecological pyramid, 73  
 Ecotone, 116-117  
 Ecospecies, 110  
 Ecosystem, 56-89  
 Ecosystem Ecology, 5  
 Ecotypes, 107-111  
 Edaphic Ecotypes, 109  
 Effecting atmosphere, 12  
 Effect of grazing and browsing, 40  
 Effect of human activities on vegetation, 46  
 Effect of layers of vegetation, 14  
 Effect of parasitic plants, 50  
 Effect of suspended particles, 12  
*Elettaria*, 225  
*Eleusine coracana*, 218  
 Emigration, 103  
 Emission, 273  
 Endophytes, 119  
 Endemics, 217  
 Energy plantation, 325  
 Energy resources 323  
 Environment, 7-55  
 Environmental complex, 91  
 Environmental pollution, 248-298  
*Ephedra*, 234  
 Epibionts, 218  
*Epiphyta arboriela*, 119  
 Epiphytes, 196-200  
*Equisetum arvense*, 242  
 Eremophytes, 157

- Eriogonum ovalifolium*, 243  
*Erythroxylon*, 226  
*Eucalyptus*, 242  
*Eugenia*, 225  
*Euhalophytes*, 202  
*Euphorbia*, 241  
*Eurotia cerutoides*, 243  
 Evergreen forests 193  
 Evolution of plant community, 121  
*Exodermis*, 199  
 Exploitation 113, 122  
 Ex-situ Biodiversity conservation, 377, 378  
 External morphology of xerophytes, 178
- F**
- Factors affecting distribution of species, 219  
 Factors affecting the plants in the aquatic environment, 162  
*Feronica*, 225  
*Festuca rubra*, 243  
*Ficus*, 246  
 Fidelity, 141  
 Fire, 46  
 Floating but rooted hydrophytes, 159  
 Floristic composition, 129  
 Floating hydrophytes, 158  
 Floating stage, 151  
*Phoenix sylvestris*, 237  
 Food and agriculture resources, 301  
 Food chain, 69  
 Food web, 71  
 Forest as an ecosystem, 64  
 Forest conservation laws, 345  
 Forest management, 335, 339, 340  
 Forest resources, 292  
 Forest significance, 335  
 Fuel wood plantation, 327  
 Formation 124  
 Formation or origin of new ecotypes, 109  
*Fragaria*, 237, 238  
*Fraxinus*, 228  
 Free floating hydrophytes, 158  
 Frequency, 136

Function of ecosystem, 58

### G

Gaseous cycle, 81

Garcinia, 225, 227

Gentiana, 234

Geological history and distribution, 219

Geographical niches, 66

Geophytes, 118, 119

*Geranium*, 234

Ginkgo biloba, 217

Global warming, 299, 301

Gravitational water, 36

Grazing food chain, 69

Greenhouse effects 299, 303

Growing population, 101

Gross Primary Productivity (GPP), 75

Gymnocoela acutiloba, 243

Gymnosporia, 226

Gypsophila patrinii, 243

### H

Habitat ecology, 4

Habitat niches, 66

HFC, 303

Halophytes, 156, 201-216

Haloxylon salicorneum, 201

Hardwickia, 226, 227

Hekistotherm, 21

Helophytes, 118

Hemicryptophytes, 117-118-119

Heterophylly, 164

Humid, 24

Humus, 34

Hydrocarbon plants, 327

Hydrologic cycle, 23

Hydrohalophytes, 202, 204

Hydrosere, 148-152

Hygrohalophytes, 202, 204

Hygrophilous grasslands, 229

Hygroscopicwater, 36

Hypolimnion, 22

### I

Immigration, 103

Impatiens, 242

Imperata cylindrica, 242

Important character of halophytes, 205

Important features of epiphytes, 196

Importance of light to plants, 14

Index of similarity, 140

Indian forest policy, 344, 345

Indicators, 239-247

Indigofera, 228

*In-situ* biodiversity conservation, 377

Interactions among population, 104

Interaction between plants growing in a community, 48

Interaction between plants and local animals, 40

Interaction between plants and micro-organisms, 52

Interspecific association, 128

Intraspecific competition, 105

IUCN

*Ixora parviflora*, 242

### J

*Juncus gerardii*, 242-243

*Juniperus*, 228, 235

### K

*Kandelia rheadii*, 204, 236

Kinds of ecotypes, 108

### L

*Lagerstroemia*, 225

*Lantana*, 227

*Launea*, 226

*Laurasia*, 228

Law of tolerance, 96

*Lepidium*, 241

*Leptadenia*, 226

Life form, 127

Life from classes and biological spectrum, 117

Life tables, 98

Line transect, 132

*Lippia nodiflora*, 240

List quadrate, 129

Lithophytes, 157

*Lycium barbarum*, 242

**M**

- Maba, 225  
 Madhuca, 226  
 Major ecosystems, 60  
*Mallotus philippensis*, 225  
 Mangrove, 201-216  
 Marine resources, 297  
 Maturepopulation, 101  
 Meadow, 192  
*Meconopsis*, 235  
*Melacanna*, 204  
 Mesohalophytes, 203  
 Mesophytes, 265, 191  
 Mesophytic bushlands, 192  
 Mesophilous grasslands, 229  
 Mesosphere, 26, 28  
*Metasequoia*, 217  
*Metallocolus*, 242  
*Metallophytes*, 242  
 Methods of measuring primary production, 77  
*Michelia Champaca*, 235, 238  
 Microclimate, 31  
 Microenvironment, 31  
 Microtherm, 21  
 Migration barriers, 218  
 Mineral resources, 290  
*Miohalophytes*, 202  
 Miscellaneous effects, 40, 47, 48  
 Monoclimax, 147  
 Monocropping, 483  
*Monotropa*, 242  
 Mortality, 98  
*Murraya*, 227  
 Mutualism, 104, 113  
 Mycorrhizal associations, 54  
*Myremecophily*, 47, 48, 198  
*Myriostachya weightiana*, 204  
*Myristica*, 227

**N**

- Natality, 97, 98  
 National wasteland development Board (NWDB) 489  
 Natural resources, 330, 331  
 Natural resource conservation, 332

- Narenga porphyrocoma*, 241  
 Neoendemics, 218  
*Neottia*, 242  
*Neptunia amplexicaulis*, 243  
 Net primary production, 75-76  
 Neutralism, 104, 114  
*Nicotiana sylvestris*, 245  
*Nidularium*, 200  
*Nitaria*, 212  
 Nitrogen assimilation, 84  
 Nitrogen cycle, 82  
 Nitrogen fixation, 83  
 Nitrification, 84  
 Noise pollution, 281  
 Non-renewable natural resources, 290  
 Nuclear energy, 329  
 Nudation, 121  
 Nutrient disorders, 485  
*Nyssa sylvatica*, 242

**O**

- Obligatory halophytes, 203  
*Oenothera*, 243  
*Olea*, 227  
 Opening and closing of stomata, 16, 246  
*Opuntia*, 241, 242, 243  
*Orchidaceae*, 197  
 Orchids, 196  
*Orobanche*, 150, 51  
*Oryza patnai*, 204  
*Oryza sativa*, 216  
 Ozone, 28, 302  
 Ozone depletion, 302  
 Ozone hole, 303

**P**

- Pabatta*, 225  
 Paleoendemics, 218  
*Panicum*, 241  
*Panicum trugidum*, 241  
*Papaver libonoticum*, 242  
*Papaver libonoticum*, 242  
 Parasitic food chain, 70  
 Parasitism, 50, 105  
*Piper longum*, 218  
*Pepromia*, 200  
 Petroplants 327

*Piper nigrum*, 218  
*Phanerophytes*, 117, 118  
*Phaseolus mungo*, 245  
*Phosphorous cycle*, 86  
*Photosynthesis*, 13, 15  
*Photothermal quantum*, 17  
*Physiological adaptation*, 176, 189, 213  
*Physiological ecotypes*, 109  
*Physiographic factors*, 39  
*Phytoclimatic spectrum*, 119  
*Phytoedaphon*, 119  
*Phytoindicator*, 239  
*Phytoplankton*, 119  
*Plant adaptation*, 156-195  
*Plant community*, 126-128  
*Plant indicators*, 240, 241, 242, 243, 244  
*Plant nutrients*, 256  
*Plant succession*, 144-155  
*Plant cerium*, 197  
*Plectranthus*, 228  
*Pollination*, 43, 92  
*Pollution caused by solid wastes*, 250  
*Pollution caused by liquid wastes*, 251  
*Pollution caused by gaseous wastes*, 251  
*Polyclimax*, 147  
*Pneumatophores*, 205, 213  
*Population growth*, 99, 100  
*Pheumatophores*, 205, 213  
*Population growth* 99, 100  
*Population density*, 96, 97  
*Population dispersal*, 103  
*Population ecology*, 95  
*Population fluctuations*, 102, 103  
*Population structure*, 103  
*Populus*, 243  
*Predation*, 105  
*Preferential halophytes*, 203  
*Primula*, 234  
*Principles of Phytogeography*, 217-238  
*Processes within the ecosystem*, 66  
*Productivity*, 75  
*Prosopis*, 241  
*Protocol cooperation*, 104  
*Psammophytes*, 157  
*Psammosere*, 148  
*Psilophytes*, 157

*Pterocarpus*, 227  
*Pyramid of biomass*, 73  
*Pyramid of energy*, 74  
*Pyramid of number*, 72  
*Pyronema confluens*, 243  
*Pyrus*, 236

**Q**

*Qualitative structures of plant community*, 127  
*Quantitative structure of plant community*, 135  
*Quercus*, 242

**R**

*Randia*, 226, 227  
*Ranunculus*, 237  
*Red swamp stage*, 157  
*Relative humidity*, 23  
*Renewable resources*, 290  
*Respiration* 16  
*Rheum*, 245  
*Rhizophora mucronata*, 236  
*Rhizophora conjugata*, 236  
*Rhododendron*, 234, 242  
*Role of animals in pollination*, 43  
*Role of CO<sub>2</sub>*, 300  
*Rolling of leaves*, 181  
*Rumex acetosa*, 240, 242  
*Rumex acetosella*, 241

**S**

*Saccharum*, 242  
*Salicornia herbacea*, 242  
*Salix*, 219  
*Salmalia malabaricum*, 218, 226, 227  
*Salsola foetida*, 201, 235, 242  
*Salt enduring halophyte*, 203  
*Salt resistant halophytes*, 203  
*Salvadora* 240, 241  
*Salvia*, 246  
*Santalum album*, 237  
*Scindapsus officinalis*, 200  
*Sclerophytes*, 157  
*Sedge Marsh*, 152  
*Sedimentary cycle*, 85  
*Seed germination*, 94

Seed output 92  
*Semicarpus*, 226  
*Sesamum indicum*, 236  
*Sesuvium portulacastrum*, 204  
*Sequoia sempervirens*, 218  
*Semule*, 148  
 Shifting cultivation, 302  
*Shorea robusta*, 218, 225, 242  
 Short day plants, 17  
 Significance of Ecotypes, 110  
 Sociability, 128  
 Social forestry, 341, 346-349  
 Societies, 126  
 Soil, 32  
 Soil atmosphere, 38  
 Soil moisture, 36  
 Soil nutrients, 38  
 Soil organism, 38  
 Soil profile, 34  
 Soil reaction, 37  
 Soil temperature, 38  
 Solar energy, 300  
 Solar spectrum, 11, 12, 300  
*Sonneratia*, 237  
*Sorghum*, 243  
 Stabilization, 123  
 Stable population, 101  
 Standing crop, 76  
*Stanleya pinnata*, 243  
*Sterculia*, 225, 226  
*Stipa*, 234  
 Stratification 114, 127  
 Stratosphere 27, 28  
*Strobilanthes*, 242  
 Structure of atmosphere, 26  
 Structure of ecosystem, 56  
*Suaeda fructicosa*, 241, 242  
 Succession, 144-155  
 Succulent halophytes, 203  
 Supporting halophytes, 203  
 Synecology, 112-143  
 Synthetic characters, 127, 141  
     Submerged halophytes, 202  
     Submerged hydrophytes, 158  
     Submerged stage, 151

**T**

*Tamarindus*, 236  
*Tamarix articulata*, 242  
*Taraxacum officinale*, 217  
*Tartulla*, 242  
*Taxus baccata*, 242  
*Tectona grandis*, 242  
 Temperature fluctuation in environment, 22  
*Terminalia* 225, 226, 227  
 Termite, 48  
 Terrestrial halophytes, 202  
*Thalictrum*, 243  
 Thermal pollution, 280  
 Thermosphere, 28  
*Thuja*, 242-243  
*Tillandsia*, 200  
*Tortula pagorum*, 196  
 Total estimate, 139  
 Transect method, 132  
 Trophic level 69  
 Trophic niches, 66  
 Tropical moist forests, 224  
 Tropical dry forests, 225  
 Troposphere, 26  
 Types of survivorship curve, 99  
 Types, 242

**U**

*Ulex aquifolium* 243  
*Utricularia*, 45

**V**

*Vallozia candida*, 242  
 Vegetation of India, 224-230  
 Vegetation on sand dunes, 230  
*Venda caerulea*, 218  
*Verbena*, 241  
*Vernonia*, 241  
*Vetiveria zizanoides*, 242  
*Vicia*, 245  
*Viola*, 243  
*Viscaria alpina*, 243  
*Vitis*, 225  
 Viviparous mode of seed germination 208

**W**

- Water resources, 296  
 Wild life resources, 295  
 Wind, 29  
 Wind energy, 329

**X**

- Xanthium strumarium*, 221

Xenia, 246

- Xeromorphic characters, 178  
 Xerophilous grasslands, 229  
 Xerophytes, 177-191  
 Xeroplastic characters, 178  
 Kerosere, 148, 153

**Z**

- Zizyphus*, 226, 227, 235, 236

## SOIL SCIENCE

**A**

- Accelerated soil erosion, 459  
 Acid mineral soils, 429  
 Acid organic soils, 430  
 Acid soils, 426  
 Acid tolerance in crops, 433  
**Active factors**, 406  
 Adsorption, 420  
 Aeolian soils, 446  
 Afforestation, 466  
 Agencies causing soil erosion, 459  
 Agronomic practices, 463  
 Agrostological methods, 463, 466  
 Alkali and saline soils, 446, 450  
 Alkali tolerance in plants, 435  
 Alluvial soils, 446, 449  
 Ammonium phosphate, 480  
 Ammonium superphosphate, 480  
 Anion exchange, 423  
 Application of micronutrients, 481  
 Application of organic manures, 476  
 Application of soil conservation practices, 481

**B**

- Basic slag, 480  
 Biological degradation, 487  
 Bench terracing, 469  
 Basin leaching, 469  
 Biological factors, 406  
 Biological measures, 463  
 Biological system of the soil, 389  
 Biological weathering, 398, 401

Biotic agencies, 461

- Black cotton soils, 446, 448  
 Bone meal, 480  
 Broad-based ridge terracing, 469  
 Brownian movement, 421

**C**

- Calcification, 405  
 Capillary water, 388  
 Carbonation, 401  
 Cation exchange, 422  
 Causes of soil degradation, 485  
 Channel terracing, 469  
 Checking of overgrazing, 468  
 Chemical fertilizers, 477  
 Chemical properties of soil, 416  
 Chemical weathering, 399  
 Chief soil types of India, 446  
 Classification of acid soils, 428  
 Classification of soils, 441  
 Clay, 408, 409  
 Clay colloids, 421  
 Coagulation, 420  
 Colloidal fraction of soil, 421  
 Colloidal properties, 419  
 Component of soil, 385  
 Compost, 476  
 Contour farming, 464  
 Contour strip cropping, 465  
 Contour terracing, 469  
 Consequences of soil erosion, 462  
 Crop rotation, 464  
 Crumb, 412

Cultivation of grasses, 466

Cultural method, 438

## D

Decomposition of dead organic matter, 391

Definition of soil, 383

Deflocculation, 422

Density, 413

Desert soils, 451

Dialysis, 421

Differential expansion, 399

Dorsa, 450

Dry farming practices, 463, 468

Duff layer, 386

## E

Effect of alkali salts on vegetation, 435

Effects of soil acidity on plants, 430

electrical properties, 420

Eluviation, 404

Erosion, 487

Exfoliation, 399

Extrusive rocks, 396

## F

Factors affecting soil formation, 405

Factors affecting soil erosion, 462

Farm yard manures, 476

Field strip cropping, 465

Flocculation, 420 421

## G

Glacier formation, 399

Glacial soils, 446

Gleyization, 405

Granular, Granular, 412

Green manures, 477

Gully erosion, 459

Gully and ravine control, 85, 471

## H

Humification, 404

Hydration, 401

Hydrolysis, 400

Hydromorphic profile development, 405

## I

Igneous rocks, 396

Igneous soil, 452

Impact of soil degradation, 488

Improper crop rotation, 488

Illuvial soils, 446

Injury to plants, 394

Inorganic matters of soil, 416

Intrusive rocks, 396

## K

Kainite, 480

Kanhar, 450

## L

Land fallow, 464

Land slides, 459

Laterisation, 405

Laterite soil, 446

Lime stone soil, 452

Litter, 386

Low salt tolerant crops, 435

## M

Maintenance of soil fertility, 475

Mechanical methods, 438, 468, 469

Metamorphic rocks, 398

Mineral components, 385

Mining, 488

Mixed cropping, 463, 464

Moisture stress, 389

Mulching, 463, 465

## N

Nitrogen fertilizers, 479

Nitrogen fixation, 393

Nitrophosphate, 480

Normal erosion, 459

Nutrient disorder, 485

NWDB, 489

## O

Organic manures, 476

Organic matter, 385

Organic matter in soil, 416

Organic nitrogen fertilizers, 479

Origin and formation of soil, 395  
 Origin of acid soils, 427

**P**

Pan breaking, 469  
 Phosphorus fertilizers, 479  
 Plant nutrients, 473  
 Lem soils, 483

**A****Alkal****-66****S**

~~Sheet erosion~~, 463  
 Shifting cultivation, 472  
 Soil conservation, 462-472

Soil degradation, 483  
 Soil salinity, 485-486  
 Strip cropping, 465, 466

**T**

Terrace outlets, 463  
 Tillage, 463, 464  
 Tillage operation, 464  
 Tyndall phenomenon, 421

**W**

Wasteland, 483  
 Water-logging, 486  
 Water supply, 97  
 Water vapour, 388  
 Wave action, 399  
 Weathering process, 398  
 Wind erosion, 461  
 Strip cropping, 465