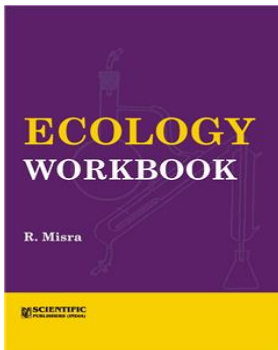


## Ecology Workbook



**R. Misra**

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### Blurb

The workbook is based on the concept of ecosystem, the structural and functional unit of ecology. The main contention of the author to provide better understanding and evaluation of the flow of energy and cycling of water and minerals to the three major plant ecosystems viz. grass, forest and freshwater. The exercises are given separately for each of the three ecosystems. During their exercise they are likely to reveal the biological basis of organic productivity. The exercise presented in the workbook will lead to better comprehension of the concept of ecosystems. First practice of the exercise on grassland and the laboratory which is likely to equip the worker with knowledge and confidence to move on to the forest or the freshwater areas for study. The other corresponding topics of the three ecosystems has the advantage of comparing and bringing the structural and functional differences between the ecosystems. The work book is useful for under graduates, post graduate students and researcher of Ecology, Botany, Zoology and Environmental Studies.

### Table of Contents

Mapping of the Site  
Physical Characters of Soil  
Chemical Characters of Soil  
Atmosphere  
Biotic Factors  
Water

#### **Community Structure**

Frequency  
Density  
Cover and Basal Area  
Importance Value Index and other Characteristics  
Comparison of Stands, Ordination, Continuum, etc.  
Charting and Mapping of Vegetation  
Intra-and Inter-specific Relations  
Raunkiaer's Life-form and Biological Spectrum  
Profile Diagram

#### **Behaviour of Component Species (Autecology) of the Ecosystem**

Geography, Evolution and Systematics  
Structural and Physiological characters and their Variations  
Population Characteristics and Ecotypic Differentiation  
Cytogenetical and Breeding Behaviour  
Reproductive Capacity, Dormancy, etc.

Vegetative Propagation

Seedling Mortality and Growth Rate (Productivity at Different Stages and Seasonal Periodicity)

### **Flow of Energy**

Radiations (Light, Heat Transfer)

Annual Increment due to Producers

Food-Chain and rate of removal of produce by Consumers

Energy release by Decomposers

### **Water Cycle**

Water Input (Precipitation)

Return of Water to Atmosphere

Loss of Water due to Percolation

Loss of Water due to Run-off

Gain of Water due to Run-off from Adjoining Area

Conservation of Water in the Soil

Conservation of Water in the Biomass

### **Carbon Cycle**

Carbon Dioxide Absorption by the Biomass

Carbon Dioxide Loss from the Biomass

Carbon Dioxide Loss from Soil and Water

Storage of carbon as Carbonate & Organic Matter in Soil and Water.

### **Nitrogen Cycle**

Nitrogen Input by Nitrogen Fixing Organisms

Nitrogen loss by Denitrifying Organisms

Uptake and Storage of Nitrogen in Plants

### **Cycling of CA, Mg, P, K**

Uptake and Storage in Plants

Amount present in Soil and Water

### **Succession**

Recording Data from Sites showing different stages of Succession

Energy level of standing crop of the Sere

Succession Diagram

**Appendix A** : List of Species found in Grasslands of Banaras Hindu University

**Appendix B** : List of Common Species found in Forests near about Varanasi

**Appendix C** : List of Species found in Freshwater Ponds

**Appendix D** : List of Equipment

**Appendix E** : List of Chemicals

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