

DRY LAND FARMING AND WATERSHED MANAGEMENT**Unit I**

Definition, concept and characteristics of dryland farming, delineation of dryland areas, desertification, dryland versus rainfed farming, significance and dimensions of dryland farming in Indian agriculture, types of drought, constraints limiting crop production in dryland areas.

Unit II

Problems in dry land agriculture. Moisture conservation practices and use of antitranspirants in dry land farming.

Unit III

Concept of watershed management - constraints, approaches and components. Water harvesting - concept and techniques (indigenous and modern), improved agro-techniques, conservation tillage, seed hardening.

Unit IV

Selection of suitable crops, crop rotations and crop mixtures for various categories of rain fed areas.

Practical

1. Preparation of crop rotations and cropping schemes for rain fed farming and dry land agriculture.
2. Determination of Soil Moisture constants.
3. Studies on moisture depletion pattern and rain fed farming.
4. Study of practical application of antitranspirants.
5. Visit to Dry farming research stations.
6. Maintenance of practical record.

Semester VIII

Course II

2+1=3

AGRO FORESTRY & SOCIAL FORESTRY

Unit I

Silviculture: Definition and scope of silviculture, Forestry, its scope and classification. Role of forests - geographic, productive and bioaesthetical.

Unit II

Regeneration of forests.

- (a) Natural seed production, seed dispersal, germination and seedling establishment.
- (b) Artificial Afforestation, reforestation and their objectives. Choice of tree species, nursery techniques.

Unit III

Agro forestry: Definition, concept and need of agro forestry. Classification of agro forestry systems. Elementary idea of forest types.

Unit IV

Prominent agro forestry systems prevailing in Uttar Pradesh. Limitations of agro forestry, choice of tree species for agro forestry for fuel, fodder and timber requirement.

Practical

1. Afforestation, techniques of problematic sites viz, ravines, saline-alkali soils, waterlogged areas, arid areas, hilly areas; roadside and canal bank plantation.
2. Nursery techniques - Numerical problems.
3. Numerical problems on planting and cost of earthwork estimation.
4. Identification of forest tree species.

Semester VIII

Course III

1+1=2

PLANTATION CROPS, SPICES, MEDICINAL & AROMATIC CROPS

Unit I

Importance and scope of medicinal, aromatic, spices crops and plantation crop. Indian system of use of medicinal plant, Indigenous Traditional Knowledge.

Unit II

Production technology of mentha and citronella.

Unit III

Production technology of Khus, Ocimum, Rauwolfia and Dioscoria.

Unit IV

Production technology of turmeric, Zinger, Coriander, Zira and Saunf in the North Indian Condition.

Practical

1. Identification of medicinal and aromatic plants.
2. Calculation of the cost of cultivation of mentha, citronella, Rauwolfia and Dioscorea.
3. Practical, identification and demonstration of spices in the course.
4. Visit to commercial growing places and research stations of the medicinal, aromatic and spices crops.

Semester VIII

Course IV

2+1=3

MANAGEMENT OF PROBLEM SOILS AND WASTELAND

Unit I

Saline and sodic soils ó Occurrence, classification, formation, diagnosis, characteristics and management. Acid soils - occurrence, formation, diagnosis, characteristics and management.

Unit II

Waterlogged soils - occurrence, characteristics, and management. Erosion of soils: Occurrence, characteristics and their management.

Unit III

Wasteland: Definition, classification, distribution and extent of wastelands in India with particular reference to UP. and their Management. Factors responsible for land degradation and characteristics of different types of wastelands.

Unit IV

Soil Management in Arid and Semiarid areas and Sand dune Stabilization.

Practical

1. Determination of pH, EC, gypsum requirement, lime requirement in problem soil.
2. Determination of specific gravity, bulk density, pore space, soil texture.
3. Visit to Area of problem soil in U.P. and India.

ANIMAL NUTRITION INCLUDING FORAGE & GRASSES

Unit I

The milk and colostrums, secretion of milk, chemical composition and physio-chemical properties of milk and colostrums, chemical changes occurring during storage of milk. Preservation of milk. Adulteration of milk and its detection.

Unit II

Chemistry of milk constituents *viz*, lactose, fat protein, enzymes and vitamins.

Unit III

Classification of Feeding stuffs, composition of Animal body and feeds, Functions of food constituents, the digestion and absorption of food constituents in ruminants.

Unit IV

The metabolism of fat, carbohydrate and protein. Role of minerals, Harmon's, and vitamins. Antibiotics in animal feeding with special reference to deficiency diseases.

Practical

1. Sampling of milk.
2. Analysis of milk for TS, SNF, Fat, Total ash, Calcium and Phosphorus.
3. Determination of lactose in milk and proteins.
4. Analysis of feeds for total ash, CaO, P₂O₅ and Proteins.
5. Demonstration of estimation of Ether Extract and crude fibre in feeds.

COMPUTER APPLICATION

Unit I

Introduction to computer. A brief history of computing. Data Processing and Information. Use, Definition, Anatomy, Components, Classification of Computers, Capabilities and limitation of a computer.

Unit II

Number systems. Decimal, Binary, octal, hexadecimal. Character codes - ASCII, EBCDIC and BCD.

Unit III

Computer organization - CPU, Input-output devices, various types of memories.

Unit IV

Introduction to DOS (Disk Operating System). Fundamentals of DOS Commands, Internal, External, Editor, Files and Directory, Elementary Idea of BASIC (Computer Language).

Practical

Simple Programming Exercises in BASIC

BOOKS:

1. BASIC
2. BASIC
3. Computer Fundamentals
4. Computer Fundamentals
5. Computer for Beginners

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