

Syllabus for B. Sc. Third year
Subject: AGROCHEMICALS AND FERTILISERS

Paper no.	Code. no.	Title	Marks
VIII	CH-AG-301	Agronomy, Horticulture and seed Technology	100
IX	CH-AG-302	Agricultural Technology	100
X	CH-AG-303	Laboratory Course - IV	100
XI	CH-AG-304	Laboratory Course - V	100

Paper – VIII Agronomy, Horticulture and seed Technology

CH-AG-301

Periods : 80

Unit -I

A.Agronomy

- | | |
|---|---|
| 1. Introduction: | 5 |
| Definition, Scope | |
| Relationship with other sciences | |
| Factors governing Crop Production | |
| Agro- climatic Zones of Maharashtra | |
| 2. Tillage and tillage implements : | 3 |
| Introduction | |
| Objects of tillage | |
| Type of tillage operations | |
| Tillage implements | |
| 3. Dry Land Management | 4 |
| Importance | |
| Problems of day land farming | |
| Management of dry land farming | |
| Water shed management | |
| 4. Package of practices for important field crops | 8 |
| Cotton | |
| Jowar (Sorghum) | |
| Sugarcane | |
| Soya bean | |

Unit – II

B. Horticulture

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|---------------------------------|---|
| 5. Introduction to Horticulture | 4 |
| Definition | |
| Branches of horticulture | |

Importance and scope of horticulture in India

6. Propagation of horticulture crops 8
Principles and methods of propagation of fruit crops
Propagation by seeds
Propagation by cuttings, grafting, budding, and layerage
7. Package of practices for important fruit crops of Maharashtra 8
Mango
Grapes
Banana
Importance of fruit growing
Harvesting, storage and marketing of fruits

Unit-III

- 8 Olericulture 7
Scope and importance of vegetable growing
Classification of vegetable
Types of vegetable gardens
Harvesting, grading, packaging, marketing and storage of vegetables
9. Package of Practices for important vegetable crops 13
Chilees
Onion
Tomato
Brinjal
(Package of practices include area and production, varieties, climatic requirements cultivation practices, manuring, irrigation, plant protection and economic importance.)

Unit –IV

C. Seed Technology

10. Introduction to seeds 6
Definitions
Characteristics of good quality seeds
Types of seeds
Seed dormancy
Seed treatment

Seed Agronomy –seed rate, sowing time and methods, spacing, plant population

11. General Principles of seed production	4
Genetic Principles	
Agronomic Principles	
12. Seed certification and seed legislation	10
Seed certification- objectives, fundamental concepts	
Organization of Seed certification	
Seed certification agency	
General seed certification Standards	
Certified seed production and eligibility requirements	
Classes of seeds	
Phases of seed certification	
Seed testing	
Seed legislation in India.	

Paper –IX Agricultural Technology

CH-AG-302

Periods :80

Topics :

Unit -I

1. Preservation of fruits and vegetables 20
 - Spoilage of fruits and vegetables
 - Importance and Principles of Preservation
 - Methods of Preservation
 - Canning and bottling of fruits and vegetables
 - Preparation of jams, jellies, squashes and juices
 - Drying and dehydration of fruits and vegetables
 - Preparation and preservation of pickles
 - Specific methods for orange squash, guava jelly, apple jam
 - Irradiation to reduce post harvest losses of fruits and vegetables

Unit –II

2. Problematic soils 10
 - Introduction to saline and alkali soils
 - Classification
 - Diagnostic criteria and causes of their formation
 - Adverse effects
 - Reclamation and management of saline and alkali soils
 - Introduction to acidic Soils
 - Sources of soil acidity
 - Reclamation of acidic soils
3. Hydroponics 4
 - Methods of soil-less cultivation
 - Nutrient film technique (NFT)
 - Advantages and disadvantages of hydroponics
 - Applications of hydroponics in agriculture
4. Micro- propagation techniques 6
 - Intoduction
 - Types of micro- propagation
 - Techinques of tissue culture and its applications in agriculture

Unit – III

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|----|--|---|
| 5. | Green house technology | 5 |
| | Introduction | |
| | Components and design of green houses | |
| | Advantages | |
| | Applications in agriculture | |
| 6. | Micro- irrigation | 8 |
| | Introduction | |
| | Drip and sprinkler irrigation systems, their components | |
| | Advantages | |
| | Their importance in water management | |
| 7. | Agricultural and urban waste management | 7 |
| | Introduction | |
| | Methods of conversions into organic manures and packaging for use in agriculture | |
| | Preparation and importance of vermicompost | |
| | Concepts of organic farming and sustainable agriculture | |

Unit –IV

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|-----|---|---|
| 8. | Soil and water conservation | 6 |
| | Importance | |
| | Methods of soil and water management | |
| | Waste land reclamation | |
| 9. | Agricultural Marketing | 7 |
| | Introduction | |
| | Marketing of agricultural inputs and products | |
| | Problems of marketing in agro – horticultural crops | |
| | Export potential for Indian agricultural products | |
| 10. | Floriculture | 7 |
| | Introduction | |
| | Methods of cultivation | |
| | Important flower crops of Maharashtra state | |
| | Handling, transportation and storage of floriculture products | |
| | Export potential in floriculture | |

Laboratory Course –IV

Paper –X CH-AG-303

Duration of practical –Four periods
(At least sixteen practicals are essential)

1. Study of tillage implements
2. Visit to the field to observe the package of practices for any field crop
3. Preparation of various types of nursery beds
4. study and practice of grafting technique
5. study and practice of budding technique
6. study and Practice of Layering Technique
7. Study and practice of propagation through cuttings
8. Study of garden tools and implements
9. Determination of seed moisture
10. Determination of germination percentage of seeds
11. Delinting of cotton seeds
12. Application of Azotobacter / Rhizobium culture on seed and observe their effect on crops
13. Use of growth regulators in plant propagation
14. Visit to the fruit orchards /vegetable garden to study the package of practices
15. Visit to seed production plot
16. Visit to seed testing laboratory
17. Study of physical purity analysis of seeds
18. To study the seed germination methods. (C& P,B.P.Sand)
19. Filing of application form for seed certification
20. To study seed quality testing

Laboratory Course –V

Paper XI

CH-AG-304

Duration of practicals -4 periods

(At least sixteen practicals are essential)

1. Preparation and use of soil testing kit for determination of available N,P, K
2. Estimation of total soluble salts in 1:2.5 soil water extracts.
3. Preparation and preservation of fruit juice
4. Preparation and preservation of squash
5. Preparation of fruit jam
6. Preparation of fruit jelly
7. Determination of gypsum requirement of soil
8. Determination of carbonates and bicarbonates from irrigation water
9. Determination of chlorides from irrigation water
10. Determination of sulphates from irrigation water
11. Determination of electrical conductivity of irrigation water /soil
12. Dehydration of Banana /Grapes
13. Preparation and preservation of pickles
14. Visit to the fruit preservation industry
15. Visit to the farm and diagnosis of field problems
16. Drying /dehydration of vegetables cabbage /potato /beans
17. Study of drip irrigation components /field visit
18. Study of sprinkler irrigation components /field visit
19. Determination of lime requirement of soil
20. Visit to green house to observe its design and working