

# VOCATIONAL CURRICULUM – 2017

(With Effect from the Academic year 2018-19)

## AGRICULTURAL CROP PRODUCTION



### State Institute of Vocational Education

O/o the Commissioner of Intermediate Education,  
Telangana State, Hyderabad

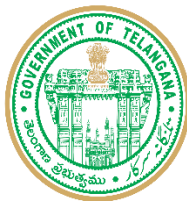
&

### Board of Intermediate Education

Telangana State, Hyderabad



Dr. A. Ashok I.A.S  
COMMISSIONER



INTERMEDIATE EDUCATION  
Government of Telangana  
Nampally, Hyderabad- 500001  
Phone: 040-24655915

---

### Fore word

In any developing society with a booming population, Vocational Education occupies an important position for generating large scale employment opportunities. Viewed in this context the importance of Vocational Education for our country cannot be over emphasized. Vocationalization of Secondary Education was introduced in 1988 at the Intermediate level. Recently, the Government of India has developed a National Skills Qualification Framework for establishing a clear path for vocational education from the school level to the highest level. The Department of Intermediate Education has recently framed a new curriculum to bring greater value to the system of vocational education. The primary aim of this reform is to prepare the students with employable skills for absorption in organized sectors and in few cases, even for self-employment.

State Institute of vocational education and Board of Intermediate Education, Telangana have reviewed the curriculum of vocational courses in order to reorient them for their practical approach. Greater emphasis is now being placed on Laboratory work and on the job training.

Simultaneously, The State Institute of Vocational Education and the department of Intermediate Education are presently making efforts to upgrade the quality of infrastructure in the colleges to meet the challenges of the changed curriculum. I am confident that the revised curriculum and the new text books would prove to be beneficial to the students in the vocational stream and help them train in need based productive courses leading to gainful employment.

Commissioner of Intermediate Education  
Government of Telangana

<b>S No.</b>	<b>Contents</b>	<b>Page No.</b>
<b>I</b>	<b>Introduction</b>	<b>4</b>
<b>II</b>	<b>Objectives of the Course</b>	<b>5</b>
<b>III</b>	<b>Skills to be provided</b>	<b>6</b>
<b>IV</b>	<b>Job Opportunities</b> a) Wage Employment b) Self-Employment	<b>8</b>
<b>V</b>	<b>Scheme of Instruction and Examination &amp; OJT</b>	<b>9</b>
<b>SYLLABUS</b>		
<b>VI</b>	<b>First year</b> <b>Theory</b> Paper I: Principles of Agricultural Crop Production Paper II: Soil and Water Management Paper III: Farm Management & Agricultural Extension  <b>Practicals</b> Paper I: Principles of Agricultural Crop Production Paper II: Soil and Water Management Paper III: Farm Management & Agricultural Extension	<b>12</b>
<b>VII</b>	<b>Second Year</b> <b>Theory</b> Paper I: Management of Field & Commercial Crops Paper II: Management of Horticulture Crops Paper III: Seed Production & Processing  <b>Practicals</b> Paper I: Management of Field & Commercial Crops Paper II: Management of Horticulture Crops Paper III: Seed Production & Processing	<b>23</b>
<b>VIII</b>	<b>List of Equipment</b>	<b>32</b>
<b>IX</b>	<b>Collaborating Institutions and On The Job Training Sites</b> a) List of Collaborating Institutions b) On – the – Job Training Sites	<b>44</b>
<b>X</b>	<b>Teaching staff and their Qualification</b>	<b>45</b>
<b>XI</b>	<b>Vertical Mobility</b>	<b>46</b>
<b>XII</b>	<b>Reference Books</b>	<b>47</b>
<b>XIII</b>	<b>Model Question Papers</b>	<b>49</b>
<b>XIV</b>	<b>List of Participants</b>	<b>55</b>

## I.

## INTRODUCTION

Sustainable agricultural production is becoming a challenging task in view of depleting land & water resources, unpredictable climatic conditions, rising population growth rate and meeting the demand for food grain production. However, the problem can be tackled by adopting intensification and diversification in agricultural systems and raising productivity levels through education, training, research, technology adoption and institutional support. Farmer remains at the centre stage in the whole system and this entrepreneurship can be made more productive by developing his competency levels both in technical and managerial skills. A trained manpower serves and acts as a guiding force in exploiting potentials in agricultural production in general and Agricultural Crop Production in particular. Vocational initiative is an important link between education and production functions. An emphasis is laid, therefore, on developing competencies among the students through improvement of their skill – set.

Curriculum for a vocational course should contain ingredients such as (i) selection of competencies for on-the-job performance (ii) instructional programmes on principles and elements of a particular study subject and for development of skills to perform practical activities and (iii) developing capabilities to start either agricultural business or attain gainful employment.

The additional efforts are made for the value addition of course syllabus in terms of adequate exposure to seed production & processing, micro irrigation, landscape designing, nursery management, Co-operative societies etc., which will widen the scope of employability of students and throw open many job opportunities in different sectors.

The students who pass out vocational course at 10+2 stage are likely to absorb themselves in various sectors or initiate own agricultural business. The present competency based curriculum on Agricultural Crop Production offers possible employment opportunities and job description giving details of responsibilities and skill sets required for efficient performance. It will serve as a foundation in organization of instructional programmes for theory and practical classes and to prepare instructional material such as book writing, poster and chart preparations, practical manuals / Audio visual aids and even production of video programmes.

The competency based curriculum on Agricultural Crop Production will also help in structuring apprenticeship training programmes and serve as a guide to the employers with regard to measuring competency of the students. The focused practicals will also bridge the gaps between theory and practice. Apart from the course content, it has also given information on possible requirement of laboratory equipment, workshop materials, farm implements, spraying equipment and other materials used as inputs in Agricultural Crop Production. It also provides list of collaborating institutions and on-the-job training sites, besides curriculum outlines for each OJT site.

The curriculum of “Agricultural Crop Production” will be useful to various agencies engaged in implementation of vocational education and to those who are looking towards employing appropriate technical manpower. It will also serve as a guide for curriculum development in sub-disciplines of the vocation.

The students who undergo this Vocational course have handful practical experience which helps them in exposure to Private Industry / Public Employment.

## **II      OBJECTIVES OF THE COURSE**

1. To develop man power with scientific knowledge and skills for sustainable Agricultural Crop Production.
2. To develop capability for gainful employment.
3. To develop capabilities for world of work service sector
4. To provide the elements and principles of Agricultural Crop Production with reference to:
  - Climate and weather parameters including agro climatic zones of the region
  - Soil characteristics of the region
  - Tillage practices
  - Irrigation water management including micro irrigation techniques
  - Dry land farming, Soil & Water conservation and watershed management
  - Manures and fertilizers
  - Efficient crops and cropping systems and Contingency crop planning
  - Plant protection – Pests, diseases, weed management, bio-control and IPM technologies
  - Nursery management and landscape designing
  - Production technology for field, commercial and horticulture crops
  - Sustainable agriculture practices like farming systems
  - Organic farming
  - Harvest and post-harvest handling
  - Marketing guidelines
5. To address the issues of climate change
6. To develop all necessary skills in practical Agricultural Crop Production.
7. To develop abilities for organization of farmers meeting, field days, crop seminar and such other extension activities.
8. To train students for developing entrepreneurship in seed production and agro-input supply
9. To develop capabilities and competencies for agribusiness.
10. To provide knowledge about the functioning of cooperative societies.
11. To provide knowledge about credit facilities and supporting schemes.
12. To acquaint with farm accounting and record maintenance.
13. To develop competency in computing cost of cultivation and balance sheet preparation.
14. To expose towards the recent developments in the fields of production, marketing, extension and ICT's

### **III. SKILLS TO BE PROVIDED**

1. Identification of field problems – nature and extent
2. Conducting field demonstrations
3. Organizing field days
4. Conducting of on-farm trials
5. Organizing Agricultural Crop Production campaigns
6. Preparation of cropping scheme
7. Assisting in layout and conduct of field trials
8. Identification and handling of agro-meteorological instruments
9. Maintaining meteorological instruments and observatory
10. Recording of weather data
11. Interpretation of weather data
12. Analysis of rainfall and interpretation
13. Familiarization and use with primary and secondary tillage implements
14. Familiarization and use with seeding equipment
15. Seed bed preparation and methods of planting
16. Identification crops and varieties
17. Assessment of labour requirement for operations
18. Acquaintance, use and maintenance of farm records
19. Calculation of seed requirement for various crops
20. Demonstrating seed treatment
21. Identification of organic manures
22. Demonstrating Rhizobium inoculation
23. Identification of organic and concentrated organic manures
24. Identification and growing of green manure crops
25. Preparation of vermin-compost and use in field and horticulture crops
26. Maintenance of farming system models
27. Identification of nutrient deficiency symptoms
28. Application of fertilizers (time, method and rate)
29. Identification of pest and disease problems
30. Acquaintance with special operations like earthing up, propping, desuckering, nipping, pruning etc in various field and horticulture crops
31. Identification of weeds in different crops and their control measures

32. Use of pesticides, herbicides and other chemicals
33. Use of plant protection and herbicide equipment
34. Preparation and use of bio-pesticides
35. Soil sampling and analysis for various plant nutrients
36. Familiarization and use of soil testing equipment
37. Identification of commercial inorganic fertilizers
38. Calculation of fertilizer needs of crops
39. Detection of adulteration in fertilizers
40. Determination of soil physical properties
41. Assessment of irrigation water quality and familiarization with Indian water quality standards
42. Determination of water holding properties of soils
43. Familiarization with drip and sprinkler irrigation methods
44. Calculation of crop water requirements
45. Identification of land capability class, characterization of soil losses due to erosion, suggestion of soil and water conservation practices
46. Managing crops in fields
47. Selection of site and orchard layout
48. Raising nursery and transplanting procedures
49. Recording of biometric observations
50. Cleaning and grading of produce
51. Acquaintance with seed certification procedures
52. Rouging in seed production plots
53. Identification of maturity in various crops
54. Determination of moisture content in seed
55. Practice in cleaning, grading, drying, packaging, tagging and storage
56. Computation of cost of production of crops
57. Familiarization and processing of loan application
58. Preparation and use of audio-visual aids
59. Preparation of exhibits, charts and display boards
60. Managerial skills, ability to convince, exposure to different communication media
61. Familiarization with ICT's like e-nam, e-sagu etc.



#### **IV. JOB OPPORTUNITIES**

##### **a) Wage Employment**

1. Village Level Assistant / village Level Worker / Village Extension Worker
2. Field Assistant / Farm Assistant / Field man / Agriculture Assistant / Agriculture Extension Officer / Village Extension Officer (Including equivalent positions in Command Area Development Agency, Dry land Development Projects, Drought Prone Area Programme)
3. Field Investigator / Field Demonstrator / Village Coordinator
4. Meteorological observer
5. Plant observer / Scouting
6. Plant Protection Assistant
7. Laboratory Assistant
8. Seed Production Assistant
9. Seed Grader
10. Processing Assistant in processing plants
11. Agriculture Marketing Assistant
12. Farm Storage Assistant
13. Cane Assistant / Cane Inspector
14. Soil Conservation Assistant / Watershed Management Assistant
15. Secretary to Agricultural Cooperative Societies
16. Agricultural Assistant in Grameena Banks
17. Salesman / Helper in Inputs Wholesale Shops/Farmer's Service Societies / Agro-Services Centers
18. Vocational Instructor (Agricultural Crop Production)

##### **b) Self-Employment**

1. Agri-Input Supplier
2. Seed Grower
3. Crop producer
4. Custom Service
5. Contractor / Contractor Farming

**V. ANNUAL SCHEME OF INSTRUCTION AND EXAMINATION  
FOR AGRICULTURAL CROP PRODUCTION COURSE  
FIRST YEAR**

Part-A		Theory		Practicals		Total	
		Periods	Marks	Periods	Marks	Periods	Marks
1.	English	150	50	0	0	150	50
2.	General Foundation course	150	50	0	0	150	50
<b>Part-B</b>							
3.	<b>Paper-I</b> Principles of Agricultural Crop Production	135	50	135	50	270	100
4.	<b>Paper-II</b> Soil & Water Management	135	50	135	50	270	100
5.	<b>Paper-III</b> Farm Management & Agricultural Extension	135	50	135	50	270	100
<b>Part-C</b>							
6.	<b>OJT</b>	0	0	365	100	365	100
<b>Total</b>		<b>705</b>	<b>250</b>	<b>770</b>	<b>250</b>	<b>1475</b>	<b>500</b>

\*on the Job Training for 1<sup>st</sup> year from 1<sup>st</sup> November to 31<sup>st</sup> December

**SECOND YEAR**

Part-A		Theory		Practicals		Total	
		Periods	Marks	Periods	Marks	Periods	Marks
1.	English	150	50	0	0	150	50
2.	General Foundation course	150	50	0	0	150	50
<b>Part-B</b>							
3.	<b>Paper-I</b> Management of Field & Commercial Crops	110	50	115	50	225	100
4.	<b>Paper-II</b> Management of Horticulture Crops	110	50	115	50	225	100
5.	<b>Paper-III</b> Seed Production & Processing	110	50	115	50	225	100
<b>Part-C</b>							
6.	<b>OJT</b>	-	-	450	100	450	100
<b>Total</b>		<b>630</b>	<b>250</b>	<b>795</b>	<b>250</b>	<b>1425</b>	<b>500</b>

**TOTAL FIRST YEAR AND SECOND YEAR MARKS 1000**

\*OJT Programme for 2<sup>nd</sup> year students from 1<sup>st</sup> August to 31<sup>st</sup> October.

### **EVALUATION OF ON THE JOB TRAINING:**

The “On the Job Training” shall carry 100 marks for each year and pass marks is 50. During on the job training the candidate shall put in a minimum of 90 % of attendance. The evaluation shall be done in the last week of January.

### **Marks allotted for evaluation:**

S.No	Name of the activity	Max. Marks allotted for each activity
1	Attendance and punctuality	30
2	Familiarity with technical terms	05
3	Familiarity with tools and material	05
4	Manual skills	05
5	Application of knowledge	10
6	Problem solving skills	10
7	Comprehension and observation	10
8	Human relations	05
9	Ability to communicate	10
10	Maintenance of diary	10
	<b>Total</b>	<b>100</b>

**NOTE:** The On the Job Training mentioned is tentative. The spirit of On the Job training is to be maintained. The colleges are at liberty to conduct on the job training according to their local feasibility of institutions & industries. They may conduct the entire on the job training periods of (365) First year and (450) Second year **either by conducting classes in morning session and send the students for OJT in afternoon session or two days in week or weekly or monthly or by any mode which is feasible for both the college and the institution.** However, the total assigned periods for on the job training should be completed. The institutions are at liberty to conduct On the Job training during summer also, however there will not be any financial commitment to the department.

### SCHEME OF INSTRUCTION PER WEEK

	<b>Part-A</b>	<b>Theory</b>	<b>Practicals</b>	<b>Total</b>
1.	English	4	-	4
2.	General Foundation Course	4	-	4
	<b>Part-B</b>			
3.	Paper –I	4	4	8
4.	Paper-II	4	4	8
5.	Paper-III	4	4	8
6.	<b>Total</b>	<b>20</b>	<b>12</b>	<b>32</b>

**VI. SYLLABUS**  
**AGRICULTURAL CROP PRODUCTION**  
**FIRST YEAR THEORY**  
**PAPER-I: PRINCIPLES OF AGRICULTURAL CROP PRODUCTION**

S.No	Name of the Unit	No. of periods	Weight age in marks	Short Answer Questions	Essay type Questions
I	Agriculture	12	4	2	-
II	Agro meteorology	36	16	2	2
III	Tillage and Tilth	28	16	2	2
IV	Cropping Systems	18	10	2	1
V	Weed Management	25	16	2	2
VI	Sustainable Agriculture	16	6	0	1
	<b>Total</b>	<b>135</b>	<b>68</b>	<b>10</b>	<b>08</b>

**DETAILED SYLLABUS**

**1. Agriculture**

- 1.1 Terminology – Agriculture, Agronomy & its relationship with basic sciences
- 1.2 National & International Institutes of agriculture research in India
- 1.3 Agro climatic zones of Telangana-soils, land use pattern, major sources of irrigation and ground water potential.

**2. Agrometeorology**

- 2.1 Terms & Definitions – Weather & Climate
- 2.2 Earth Atmosphere – its composition, extent and Structure-Atmosphere weather variables, atmospheric pressure.
- 2.3 Monsoon, types and impact on agricultural operations
- 2.4 Wind, solar radiation, Air temperature, Soil temperature, Humidity & Evaporation and their utility in Agricultural Crop Production
- 2.5 Weather hazards and their mitigation – drought cyclones, and their effect on Agricultural Crop Production.
- 2.6 Weather forecasting – Importance and types of weather forecasts and their uses, remote sensing and its application in agriculture
- 2.7 Agriculture and weather relations, modification of crop micro climate, climatic normal for crop and live stock production.
- 2.8 Climate change, climatic variability, global warming, causes of climate change and its impact on regional and national agriculture.

**3. Tillage and Tilth**

- 3.1 Definition, Objectives and Factors influencing tilth, types of tillage – Primary tillage, secondary tillage & inter-cultural operations
- 3.2 Characteristics of fine tilth of soil-effect on soil properties – pore space, structure, bulk density, particle density and color of the soil.

- 3.3 Sowing – methods of sowing – time and depth of sowing of major agriculture crops of Telangana – Crop stand establishment – factors effecting of optimum stand establishment.
- 3.4 Crop density – planting geometry – competition – types of competition, intra and inter plant competition – plant population – effect on growth and yield – optimum plant density and planting pattern for major crops of Telangana.
- 3.5 Types of implements in agriculture – Primary, Secondary, seeding and harvesting implements.
- 3.6 Modern concepts of tillage – Conservation of soil moisture through minimum tillage, zero tillage and stubble mulch farming.
- 4. Cropping Systems**
  - 4.1 Management of crops & cropping systems in rain fed areas – intercropping, Sequence cropping and Crop rotation
  - 4.2 Choice of crops and cropping based on length of crop growing season – potential cropping system
  - 4.3 Contingent crop planning for aberrant weather condition – late onset, dry spell and early withdrawal of monsoon in India and in Telangana.
  - 4.4 Farming systems – mixed farming - advantages
  - 4.5 Components of IFS and its advantages – site specific development of IFS models for different agro climatic zones in rain fed, irrigated and irrigated dry conditions.
- 5. Weed Management**
  - 5.1 Common weeds, Losses, benefits and Crop-weed association and competition
  - 5.2 Classification of weeds – based on morphology, life cycle, habitat, origin, association and soil P<sup>H</sup> with examples.
  - 5.3 Methods of weed control and classification of herbicides
  - 5.4 Herbicide rotations, mixtures, compatibility with agro chemicals and relevance in agriculture
  - 5.5 Chemical weed control in different crops (Rice, Black gram, groundnut, cotton, onion & Mango) and Integrated weed management
  - 5.6 New developments in herbicides – micro herbicides and Nano herbicides
- 6. Sustainable Agriculture**
  - 6.1 Introduction, Definition, factors affecting ecological balance and major components of sustainable agriculture systems
  - 6.2 Organic farming - definition, principles, relevance to modern agriculture & components of organic farming
  - 6.3 Choice of crops and varieties in organic farming – conversion of soil to organic farming
  - 6.4 Organic nutrient management, types of organic manures, bio fertilizers – efficient use of organic sources of nutrients

**AGRICULTURAL CROP PRODUCTION**  
**FIRST YEAR**  
**PAPER – I: PRINCIPLES OF AGRICULTURAL CROP PRODUCTION**  
**(PRACTICALS)**

S. No.	Name of the Unit.	No. of Periods	Weightage in marks
1.	Agriculture	12	4
2.	Agro meteorology	36	11
3.	Tillage and Tilth	28	10
4.	Cropping Systems	18	8
5.	Weed Management	25	10
6.	Sustainable Agriculture	16	7
	<b>Total</b>	<b>135</b>	<b>50</b>

1. Visit to meteorological observatory to study the meteorological equipment, measurement of rainfall by rain gauge(6)
2. Recording of evaporation by USWB Class A pan evaporimeter, measurement of wind velocity and direction, atmospheric pressure and relative humidity (4)
3. Recording of ambient and soil temperature, study and interpretation of weather data (4)
4. Visit to farm implements machinery wherever available or visit to FIM at PJTSAU, Rajendra nagar, Hyderabad (6)
5. Different methods of sowing and depth of sowing, participation in seed treatment with different pesticides, fungicides, bio-fertilizers and bio-pesticides (6)
6. Study of primary tillage implements (4)
7. Study of secondary tillage implements (4)
8. Study of seeding equipment (6)
9. Determination of purity, viability and germination percentage (12)
10. Preparation of seed bed for nursery (6)
11. Participation in Rhizobium inoculation and seed treatment (5)
12. Study of important cropping patterns, crop sequences and intercropping systems in a selected village (6)
13. Visit to IFS unit in different agro climatic zones of nearby state university / institutions and farmers field. (6)
14. Identification of weeds and Herbarium preparation, Familiarization of herbicide label information (4)
15. Field study of weed control in cropped and non-cropped areas
16. Study of herbicide application equipment(6)
17. Calculation of herbicide doses (4)
18. Herbicide application and precautionary measures(6)
19. Visit to an organic farm fields – preparation and benefits (6)
20. Preparation of NPV solution, Preparation of NSKE and Neem oil(4)
21. Visit to Bio-control lab, PJTSAU(4)

**AGRICULTURAL CROP PRODUCTION**  
**FIRST YEAR**  
**PAPER-II: SOIL AND WATER MANAGEMENT (THEORY)**

S.No	Name of the Unit	No. of periods	Weight age in marks	Short Answer Questions	Essay type Questions
I	Soil in Relation to Plant Growth	25	16	2	2
II	Mineral Nutrition, Manures & Fertilizers	35	18	3	2
III	Irrigation Water Management	40	18	3	2
IV	Dry land Agriculture	35	16	2	2
	<b>Total</b>	<b>135</b>	<b>68</b>	<b>10</b>	<b>8</b>

**DETAILED SYLLABUS**

**1. Soil in Relation to Plant Growth**

- 1.1 Components of a mineral soil, soil texture and soil structure
- 1.2 Soil fertility and soil productivity
- 1.3 Physical problems in soils – crusting, compaction, hardpan – light soils, shallow – ill drained and flooded soils.
- 1.4 Soil reaction – acidity, salinity, alkalinity, saline alkaline soils – properties and soil diagnostic criteria – effect of these on soil conditions and plant growth.
- 1.5 Soil fertility management – Reclamation of problematic soils.
- 1.6 Remote sensing and GIS – role in detection and management of problem soils.

**2. Mineral Nutrition, Manures and Fertilizers**

- 2.1 Essential elements – Classification, Functions and deficiency symptoms
- 2.2 Classification of manures & fertilizers.
- 2.3 Biogas plant, green manuring – types & crops and Vermicomposting, Bio fertilizers
- 2.4 Fertilizer application methods
- 2.5 Fertilizer recommendations approaches – soil test based fertilizer recommendations – Integrated nutrient management – Definition and component
- 2.6 Nutrient use efficiency – soil, plant and management factors influencing use efficiency – improving nutrient use efficiency for NPKS & Zn fertilizers
- 2.7 Sources, method and time of nutrient application under irrigated and rain fed conditions – Nano fertilizers.

**3. Irrigation Water Management**

- 3.1 Definition and objectives of irrigation and drainage- Soil moisture availability – Field capacity, permanent wilting point, available soil moisture.
- 3.2 Water resources of Telangana – Surface and ground water resources – important major irrigation projects in Telangana



- 3.3 Water requirement of crops – crop water requirement, effective rainfall, critical stages for irrigation, effective root zone depth and moisture extraction pattern
- 3.4 Water management practices for major field and horticultural crops of Telangana (Rice, Groundnut, Maize, Redgram, Mango, Citrus & Banana)
- 3.5 Water use efficiency (WUE) - factors influencing WUE – Methods of irrigation and Micro irrigation
- 3.6 Scheduling of irrigation – different criteria - feel and appearance method – soil moisture retention and depletion of available soil moisture (DASM) – IW/CPE ratio.

#### **4. Dry land Agriculture**

- 4.1 Characteristics of dry land & rain fed agriculture- Problems of dry land agriculture – Climate & Soil
- 4.2 Soil erosion – Water& wind erosion, Losses due to erosion
- 4.3 Soil & Moisture conservation – Agronomic, Mechanical
- 4.4 Efficient crops & cropping systems for dry lands / fertilizer use in dry lands
- 4.5 Watershed management – weather harvesting structures suitable for different soils – In-situ and Ex-situ

**AGRICULTURAL CROP PRODUCTION**  
**FIRST YEAR**  
**PAPER – II: SOIL AND WATER MANAGEMENT (PRACTICALS)**

S. No.	Name of the Unit.	No. of Periods	Weightage in marks
1.	Soil in Relation to Plant Growth	25	10
2.	Mineral Nutrition, Manures & Fertilizers	35	13
3.	Irrigation Water Management	40	14
4.	Dry land Agriculture	35	13
	<b>Total</b>	<b>135</b>	<b>50</b>

**S. No.**

**Unit of Activity No. of Hours: 135**

1. Description of soil profile in the field(5)
2. Soil sampling(2)
3. Determination of soil P<sup>H</sup>(2)
4. Determination of electrical conductivity of soil water extract(2)
5. Determination of organic carbon, nitrate, phosphate and potassium by the use of rapid soil test kit(6)
6. Determination of carbonate and bicarbonate ions in soil water extract(5)
7. Preparation of enriched farm manure(5)
8. Visit to vermihatchery – vermicompost and vermiwash at their respective centers.
9. Study and identification of straight and complex fertilizers(3)
10. Detection of adulteration in fertilizers(4)
11. Visit to a soil testing laboratory and participating in testing of soil samples(4)
12. Participation in different methods of fertilizer application(4)
13. Study of procedures and participation in use of biofertilizers for field and horticulture crops(6)
14. Identification of green manure crops(3)
15. Working out quantities and doses of fertilizers for application in the field(6)
16. Calculation of soil porosity(3)
17. Determination of soil moisture by gravimetric method(6)
18. Determination of field capacity by field method(6)
19. Estimation of crop water requirements(6)
20. Laying out of check basin, ring basin, border strip and furrow irrigation(6)
21. Demonstration of drip and sprinkler irrigation methods in the field(6)
22. Assessment of quality of irrigation water – pH and EC(3)
23. Analysis of rainfall and interpretation(3)
24. Study of agronomic measures of soil and water conservation(6)
25. Visit to CRIDA and ICRISAT(6)
26. Visit to a watershed project area(6)
27. Visit to a problematic soil/field(6)
28. Visit to micronutrient laboratory PJTSAU(6)
29. Visit to a commercial fertilizer and pesticide shop(4)

**AGRICULTURAL CROP PRODUCTION  
FIRST YEAR  
PAPER-III: FARM MANAGEMENT & AGRICULTURAL EXTENSION  
(THEORY)**

<b>S.No</b>	<b>Name of the Unit</b>	<b>No. of periods</b>	<b>Weight age in marks</b>	<b>Short Answer Questions</b>	<b>Essay type Questions</b>
I	Introduction to farm management	20	8	1	1
II	Farm records	20	8	1	1
III	Agricultural marketing	25	12	3	1
IV	Farm credit	20	8	1	1
V	Agricultural cooperation	25	16	2	2
VI	Agricultural extension	25	16	2	2
	<b>Total</b>	<b>135</b>	<b>68</b>	<b>10</b>	<b>8</b>

**DETAILED SYLLABUS**

**1. Introduction to Farm Management**

- a) Definition, nature and scope of farm management, management of farm with respect to land, labour, capital and organization
- b) Maintenance of farm records
  - (i) Farm managers dairy
  - (ii) Cash book
  - (iii) Wage Register
  - (iv) Stock registers of agricultural equipment, livestock, fertilizers and insecticides
  - (v) Dead stock register
  - (vi) Inventory

**2. Agricultural marketing**

- a) Definition and importance of agricultural marketing, functions of markets, defects in the present marketing system, steps taken to safeguard the farmers, Regulated markets- functions and advantages.
- b) Marketing channels of food grains, oil seeds; concept of Rythu Bazar – e-nam, mana ooru, mana kuragayalu
- c) Rythu bandhu pathakam – Marketing godowns and their management

**3. Farm credit**

- a) Meaning, definition, need and classification of farm credit.
- b) Sources of credit, scale of finance, easy lending in good credit system, Sources of credit – NABARD, RRD, Kisan credit cards.
- c) Crop insurance – Pradhan Mantri fasal bhima Yojana, types of insurance

#### **4. Agricultural cooperation**

- a) Definition, meaning, aims and principles of cooperation.
- b) Cooperative institutions – India / Telangana – Credit and Non-credit activities; multipurpose cooperative institutions, different functions of farmers cooperatives

#### **5. Agricultural extension**

- a) Extension education – meaning, objectives; differences between formal education and extension education
- b) Extension models – audio-visual aids; mass communication-media, method and result demonstrations, exhibitions, farmers training centers.
- c) Leadership qualities- self-help groups, dynamics, Krishi Vigyan Kendras; DATTC; Rythumithra; PRA, FPO'S (Farmer Produce Organization) for training farmers and farm women.
- d) New trends in agricultural extension – Privatization of extension, merits, problems, strategies with examples.
- e) Cyber extension – meaning, features, successful models.
- f) Indigenous Technical Knowledge (ITKs) and ICT's (Information and Communication Technology)

**AGRICULTURAL CROP PRODUCTION**  
**FIRST YEAR**  
**PAPER – III: FARM MANAGEMENT & AGRICULTURAL EXTENSION**  
**(PRACTICALS)**

S.No.	Name of the Unit.	No. of Periods	Weightage in marks
1.	Introduction to farm management	20	7
2.	Farm records	20	7
3.	Agricultural marketing	25	10
4.	Farm credit	20	6
5	Agricultural cooperation	25	10
6	Agricultural extension	25	10
	<b>Total</b>	<b>135</b>	<b>50</b>

**S. No.** **Unit of Activity No. of Hours: 135**

1. Study of different types of farm records maintained in the farm(5)
  - a. Maintenance of dairy
  - b. Inventory
  - c. Livestock Register
2. Visit to Grameena Bank / PACS(6)
3. Study the effective use of Audio – Visual aids(6)
4. Preparation of Exhibits(6)
5. Preparation of Charts(6)
6. Preparation of display boards(6)
7. Visit to All India Radio and T.V stations (Yadagiri channel) (6)
8. Visit to method demonstration trials(6)
9. Visit to result demonstration trials(6)
10. Visit to Krishi Vigyan Kendras to acquaint with their activities(6)
11. Visit to farmer’s training centers(8)
12. Visit to Rythu Bazar to collect information on market prices and price fixation(10)
13. Study of different market channels of agricultural commodities, like food grains, oil seeds etc.,(10)
14. Visit to PJTSAU- Research field(10)
15. Visit to Rythu mitra sangams(8)
16. Visit to SHGs(8)
17. Visit to Adarsha rythu groups to know working pattern in rural areas(8)
18. Visit to AMC(8)
19. Analysis of problems faced by farmers in getting agriculture loans(8)
20. Visit to polam bodi(5)
21. Visit to DAATT centres(4)
22. Visit to successive Cooperative societies(4)
23. Visit to e-sagu centre at IIIT, Gachibowli(4)

**AGRICULTURAL CROP PRODUCTION**  
**SECOND YEAR**  
**PAPER-I: MANAGEMENT OF FIELD & COMMERCIAL CROPS (THEORY)**

S.No	Name of the Unit	No. of periods	Weight age in marks	Short Answer Questions	Essay type Questions
I	Cereals and millets	32	18	3	2
II	Pulses	16	10	2	1
III	Oilseeds	28	10	2	1
IV	Fibres	14	6	0	1
V	Sugar crops	8	8	1	1
VI	Narcotics	4	8	1	1
VII	Fodder and forage crops	8	8	1	1
	<b>Total</b>	<b>110</b>	<b>68</b>	<b>10</b>	<b>8</b>

**DETAILED SYLLABUS**

Area, production and productivity in India and Telangana. Climatic and soil requirements. Study of the agronomic practices viz., land preparation, improved and recommended varieties for Telangana, seed rate, seed treatment, spacing, sowing time, manures, fertilizers and biofertilizers, irrigation schedules, intercultural, weed control, insect and disease control measures, IPM, harvesting, processing, grading, marketing and quality standards.

**1. Cereals and millets**

Rice, Maize, Jowar, Bajra, Ragi, Oats and Quinoa

**2. Pulses**

Redgram, Blackgram, Bengalgram, Greengram and Clusterbean

**3. Oilseeds**

Groundnut, Sunflower, Castor, Sesamum, Safflower, Niger and Soyabean

**4. Fibres**

Cotton, Mesta and Jute

**5. Sugar crops**

Sugar cane

**6. Narcotics**

Tobacco

**7. Fodder / forage crops**

Fodder cowpea, horsegram, napier hybrid and paragrass

**AGRICULTURAL CROP PRODUCTION  
SECOND YEAR**

**PAPER – I: MANAGEMENT OF FIELD & COMMERCIAL CROPS (PRACTICALS)**

S.No.	Name of the Unit.	No. of Periods	Weightage in marks
1.	Cereals and millets	30	13
2.	Pulses	16	7
3.	Oilseeds	26	10
4.	Fibres	14	6
5.	Sugar crops	10	5
6.	Narcotics	10	5
7.	Fodder and forage crops	09	04
	<b>Total</b>	<b>115</b>	<b>50</b>

**S. No.** **Unit of Activity No. of Hours: 115**

1. Identification of various crops of region and state(5)
2. Study of varietal characteristics of important crops (Rice, Maize, Redgram, Groundnut, Castor, Cotton, Sugarcane and Tobacco)(4)
3. Participation in seed treatment (4)
  - a. Fungicides seed treatment to all crop seeds
  - b. Imidacloprid seed treatment for cotton and chillies to control sucking pests
  - c. Chlorpyrifos seed treatment for groundnut to control rootgrub
4. Participation in Rhizobium seed treatment in legumes(3)
5. Participation in raising different methods of rice nurseries(5)
  - a. Wetbed method
  - b. Dry bed method
  - c. Dapog method
  - d. Nursery for paddy transplanter
6. Participation in raising seed bed of SRI paddy nursery(4)
7. Participation in seed bed preparation for sowing of ID crops(5)
8. Seed rate and fertilizer calculations(5)
9. Participation in fertilizer application and sowing the crop(5)
10. Observation of seedling emergence and calculation of plant population per unit area for crops like groundnut, redgram, jowar and cotton(5)
11. Participation in pre emergence application of herbicides(5)
  - a. Atrazine for cereal crops
  - b. Pendimethalin for oilseed crops
12. Participation in intercultivation and thinning operations(7)
13. Participation in collection of biometric data(5)
14. Participation in earthing up in sugarcane and tobacco(6)
15. Estimation of gypsum requirement and application in groundnut(5)
16. Study of top dressing N & K fertilizers(6)
17. Study and identification of nutrient deficiency symptoms in cotton/sugarcane/groundnut/rice(6)
18. Participation in propping up in sugarcane, topping and desuckering in tobacco(4)
19. Participation in collection of herbarium(pests, diseases and nutritional disorders)(6)
20. Visit to nearby progressive farmers fields(6)
21. Visit to nearby Research stations/ICAR institutes/KVK etc.(6)
22. Visit to nearby processing units(4)
23. Visit to Fodder & forage unit, PJTSAU, RajendraNagar (4)

**AGRICULTURAL CROP PRODUCTION**  
**SECOND YEAR**  
**PAPER-II: MANAGEMENT OF HORTICULTURE CROPS (THEORY)**

S.No	Name of the Unit	No. of periods	Weight age in marks	Short Answer Questions	Essay type Questions
I	Introduction	5	2	1	0
II	Nursery Management	8	6	0	1
III	Landscaping	8	6	0	1
IV	Production of fruit crops	21	10	2	1
V	Production of vegetable crops	10	8	1	1
VI	Production of flower crops	12	8	1	1
VII	Production of plantation crops	8	6	0	1
VIII	Production of spice crops	20	10	2	1
IX	Medicinal and Aromatic Plants	10	08	1	1
X	Protected cultivation Techniques	08	04	2	0
	<b>Total</b>	<b>110</b>	<b>68</b>	<b>10</b>	<b>08</b>

**DETAILED SYLLABUS**

**1. Introduction**

Definition, Importance and Scope of Horticulture; Divisions of Horticulture

**2. Nursery Management**

Types of Nursery beds; Propagation methods, preparation of nursery beds, handling of nursery plants.

**3. Landscaping**

Importance; elements and principles of landscape design; establishment and maintenance of lawns

**4. Production of fruit crops**

Commercial cultivation of the following crops with respect to area, production & productivity, climate, soil, varieties, propagation, different systems of planting, manures & fertilizers, irrigation requirement, intercultivation & weed control, plant protection, training, pruning, harvesting and post harvest guidelines

4.1 Mango

4.4 Guava

4.7 Custard apple

4.2 Banana

4.5 Sapota

4.3 Citrus

4.6 Apple ber

**5. Production of vegetable crops**



Commercial cultivation of the following crops with respect to origin, area, production & productivity, climate, soil, varieties, planting, manures & fertilizers, irrigation requirement, intercultivation & weed control, plant protection, harvesting and post harvest guidelines

5.1 Tomato

5.2 Lady Finger

5.3 Brinjal

5.4 Leafy Vegetables

5.5 Gourds

## **6. Production of flower crops**

Commercial cultivation of the following crops with respect to origin, area, production, climate, soil, varieties, propagation, manures & fertilizers, irrigation requirement, intercultivation & weed control, plant protection, harvesting, grading, packing and post harvest guidelines.

6.1 Rose

6.2 Jasmine

6.3 Chrysanthemum

6.4 Gladiolus

6.5 Carnations

6.6 Dhavanam

## **7. Production of plantation crops**

Commercial cultivation of the following crops with respect to origin, area, production, climate, soil, varieties, propagation, planting, manures & fertilizers, irrigation requirement, intercultivation & weed control, plant protection, harvesting, post harvest guidelines and processing

7.1 Papaya

7.2 Coconut

## **8. Production of spice crops**

Commercial cultivation of the following crops with respect to origin, area, production & productivity, climate, soil, varieties, propagation, planting, manures & fertilizers, irrigation requirement, intercultivation & weed control, plant protection, harvesting, post-harvest guidelines and processing

8.1 Chillies

8.2 Turmeric

8.3 Onion

8.4 Coriander

## **9. Medicinal and Aromatic Plants**

9.1 Aswagandha

9.2 Asparagus

9.3 Aloe vera

9.4 Lemon grass

9.5 Citronella

## **10. Protected cultivation techniques**

**AGRICULTURAL CROP PRODUCTION**  
**SECOND YEAR**  
**PAPER – II: MANAGEMENT OF HORTICULTURE CROPS (PRACTICALS)**

S.No.	Name of the Unit.	No. of Periods	Weightage in marks
1.	Introduction	5	2
2.	Nursery Management	10	5
3.	Landscaping	10	6
4.	Production of fruit crops	16	6
5	Production of vegetable crops	19	6
6	Production of flower crops	10	4
7	Production of plantation crops	8	5
8	Production of spice crops	22	7
9	Medicinal and Aromatic Plants	08	5
10	Protected cultivation techniques	07	4
	<b>Total</b>	<b>115</b>	<b>50</b>

**S. No.** **Unit of Activity No. of Hours: 115**

1. Visit to orchards and identification of fruit crops(6)
2. Planting and care of fruit plants(6)
3. Interculture operations in fruit trees(5)
4. Study of methods of irrigation in fruit crops(5)
5. Application of manures and fertilizers for mango/citrus(6)
6. Identification and control of insect pests, diseases and special problems in Mango, Guava (6)
7. Identification and control of insect pests, diseases and special problems in Citrus, Sapota (6)
8. Identification and control of insect pests, diseases and special problems in Banana (6)
9. Identification and control of insect pests, diseases and special problems in Apple Ber and Custard apple (6)
10. Visit to fruit markets(5)
11. Visit to vegetable farm to study the system of cultivation(6)
12. Identification of various vegetable seeds(4)
13. Preparation of nursery beds and raising of seedlings(6)
14. Application of manures and fertilizers for vegetable crops(6)
15. Identification of important insect pests, diseases and deficiency symptoms of vegetables and their control(6)
16. Identification of commercial flowers(6)
17. Training and pruning in rose(5)
18. Visit to florist shops and flower market(4)
19. Application of manures and fertilizers in Cashew nut / Coconut(3)
20. Visit to plantation crop fields(3)
21. Visit to Herbal garden (4)
22. Preparation of potting mixture in nursery management(6)
23. Propagation techniques (grafting, budding, layering)(5)
24. Visit to floriculture unit at Horticultural University, Hyderabad(4)

**AGRICULTURAL CROP PRODUCTION  
SECOND YEAR  
PAPER-III: SEED PRODUCTION & PROCESSING (THEORY)**

S.No	Name of the Unit	No. of periods	Weight age in marks	Short Answer Questions	Essay type Questions
I	Plant breeding	15	10	2	1
II	Seed	30	16	2	2
III	Seed production techniques of varieties/hybrids of rice, maize sunflower, cotton, groundnut, blackgram, redgram	20	16	2	2
IV	Seed Certification	15	10	2	1
V	Seed Testing	25	14	1	2
VI	Role of WTO and OECD in seed marketing	05	02	1	0
	<b>Total</b>	<b>110</b>	<b>68</b>	<b>10</b>	<b>08</b>

**DETAILED SYLLABUS**

**1. Plant breeding: Introduction -**

Objectives of plant breeding, self pollination mechanisms, cross pollination mechanisms, male sterility, vegetative reproduction, hybridization - techniques

**2. Seed: Importance**

- a) Difference between seed and grain, characteristics of quality seed, classes of seed – nucleus, breeder, foundation certified and truthfully labeled seed
- b) Principles of seed production, Isolation distance, Rouging, synchronization, supplementary pollination, maintenance of physical and genetic purity in released varieties
- c) Difference between hybrids and varieties

**3. Seed production techniques of varieties/hybrids of**

Rice, maize, Bajra, sunflower, cotton, Groundnut, Blackgram, redgram, greengram

**4. Seed Certification**

Processing, seed drying, seed threshing, seed cleaning, seed treatment, seed storage, multigrade seed processor.

**5. Seed testing:**

Moisture, physical purity, genetic purity, viability vigour, factors influencing seed germination, seed dormancy, methods to break dormancy, GOT (Grow Out Test), seed packing, seed act – intellectual property rights

**6. Role of WTO and OECD in seed marketing.**

**AGRICULTURAL CROP PRODUCTION**  
**SECOND YEAR**  
**PAPER – III: SEED PRODUCTION & PROCESSING (PRACTICALS)**

S.No.	Name of the Unit.	No. of Periods	Weightage in marks
1.	Plant breeding	25	10
2.	Seed	30	15
3.	Seed production techniques of varieties/hybrids of rice, maize, sunflower, cotton, groundnut, blackgram, redgram, green gram	25	10
4.	Seed Certification	10	5
5.	Seed Testing	20	6
6.	Role of WTO and OECD in seed marketing.	05	4
	<b>Total</b>	<b>115</b>	<b>50</b>

**S. No.**

**Unit of Activity No. of Hours: 115**

1. Seed sampling(4)
2. Seed moisture test(5)
3. Seed germination test(6)
4. Seed viability and vigour test(4)
5. Seed dormancy & methods of breaking seed dormancy(4)
6. Seed physical purity analysis(6)
7. Seed genetic purity test(GOT)(6)
8. Visit to seed testing laboratory(6)
9. Visit to seed processing plant(6)
10. Seed packing and storage(6)
11. Seed treatment techniques(6)
12. Visit to NSC/ Seed company(6)
13. Rouging in Rice crop(6)
14. Rouging & Detasselling in maize crop(6)
15. Rouging in pulses(6)
16. Rouging in Castor(6)
17. Visit to SRTC, Rajendranagar(6)
18. Seed certification Procedures(6)
19. Visit to TSSCA(Telangana State Seed & Organic Certification Authority)(6)
20. Visit to seed production plots(8)

## VIII. LIST OF EQUIPMENT

Sl. No	Item	Number/Quantity Requir
1.	Spade	15
2.	Pickaxe/Kudali	15
3.	Khurpi	30
4.	Sickle/Hansiya/Koyta	15
5.	Crow bar	03
6.	Buckets	06
7.	Baskets/Tokra	15
8.	Seed and fertilizer drill (Bullock drawn)	01
9.	Wooden Plough	03
10.	Mould board Plough	01
11.	Harrow	02
12.	Ridge Former/Leveller	01
13.	Cultivator	01
14.	Hand Hoe	03
15.	Wheel Harrow	01
16.	Plank	01
17.	Winnowing Stool	01
18.	Hand rotary duster	01
19.	Food sprayer	01
20.	Knapsack sprayer	01
21.	Power sprayer	01
22.	Seed treating Drum	01
23.	Insect killing bottle	05
24.	Insect net	05
25.	Seed storage bins	06
26.	Soil augers	03
27.	Sampling tube	03
28.	Soil and water test kits	02
29.	Soil colour chart	01
30.	Rain gauge	01
31.	Dry and wet bulb thermometer	01
32.	Hygrometer	01
33.	Physical balance	01
34.	Weight box	01
35.	Mortar and pastle	01
36.	Laboratory grinder	30
37.	Aluminium moisture box	01
38.	Digestion and distillation unit	01
39.	Distillation water still	01
40.	Sieves set	01
41.	Hot plate	01
42.	Water bath	01

43.	Insect cabin box	06
44.	Thermometer	06
45.	Chemical balance	01
46.	Trays	06
47.	Wash bottle	15
48.	Sample divider	01
49.	Gravity separator	01
50.	Conductivity bridge	01
51.	Conductive bridge	01
52.	Hand refractor meter	01
53.	Tensiometers	01
54.	Neutron Moisture meter	01
55.	Digestion and distillation unit	01
56.	Flame photometer	01
57.	Calorimeter	01
58.	Distilled water unit	01
59.	Sprinkler irrigation unit	01
60.	Drip irrigation unit	01
61.	Tractor 35 HP	01
62.	Power tiller	01
63.	Tractor drawn cultivator, disc harrow, disc plough, M.B. plough, Ridger etc.	01
64.	Moisture meter	01
65.	Precision balance (0.01 g precision & 500 grams capacity)	01
66.	Double ring infiltrometer	01
67.	Secataur	10
68.	Push Hoe	04
69.	Grafting and budding knife	10
70.	Water can with rose	10
71.	Germination trays	10
72.	Measuring tape	01
73.	Tree pruner	02
74.	Refrigerator	01
75.	Electrical oven	01
76.	Weather tracker	01
76.	Charts showing symptoms of nutrients, disorders, pests and Diseases	
76.	Charts showing different methods of training	

### B. LIST OF GLASSWARE

Sl. No	Item	Quantity Required
1.	Beakers -50 ml to 100 ml	As per requirement
2.	Petri dishes (100 mm dia)	50
3.	Graduate measuring cylinders	As per requirement
4.	Conical Flask – 50 ml to 100 ml	As per requirement
5.	Pipettors (capacity-5 ml to 50 ml)	As per requirement
6.	Glass jars	25
7.	Carboursy 20 liters	01
8.	Test tubes	200
9.	Funnel	As per requirement
10.	Burettes	05
11.	Glass rod	2 kg
12.	Watch glasses	100
13.	Clamps of different types	As per requirement
14.	Rubber tubing and glass rubbing	As per requirement
15.	Round bottom flask 250 ml	03
16.	Stands and Try pot	As per requirement
17.	Porcelain tile	As per requirement
18.	Asbestos sheet	05

C.

**LIST OF CHEMICALS**

Sl. No	Item	Quantity Required
1.	Conc. Nitric acid	2 L
2.	Conc. Sulphuric acid	2 L
3.	Conc. Hydrochloric acid	2 L
4.	Boric acid	½ kg
5.	Acetic acid	½ kg
6.	Oxalic acid	½ kg
7.	Sodium hydroxide	2 kg
8.	Potassium hydroxide	1 kg
9.	Potassium permanganate	1 kg
10.	Potassium dichromate	1 kg
11.	Devardas alloy	1 kg
12.	Activated charcoal	½ kg
13.	Calcium chloride	2.5 kg
14.	Copper sulphate	1 kg
15.	Ferrous ammonium sulphate	0.5 kg
16.	Barium chloride	2.5 kg
17.	Chloroform	2 kg
18.	Indicators of various types like methyl red, methyl orange Phenolphthalene	5 g each
19.	PH. Buffer tablets 4,7 and 0	10 tablets each
20.	Carbon tetra chloride	2 kg
21.	Mercuric chloride	0.5 kg
22.	Magnesium carbonate	0.500 g
23.	Silver Nitrate	0.500 g



24.	Potassium thiocyanate	100 g
25.	Stannous chloride	500 g
26.	Universal Indicators	500 g
27.	Sodium bicarbonate	1 kg
28.	Potassium dihydrogen phosphate	0.5 kg
29.	Perchloric acid	500 g
30.	Orthophosphoric acid	1 L
31.	Sodium hypochlorite	100 g
32.	Iodine	1 L
33.	Rectified spirit	50 g
34.	Diphenyl amine	50 g
35.	Ammonium molybdate	100 g
36.	Ammonium hydroxide	5 L
37.	Ethyl alcohol	2 L
38.	Para nitrophenyl	100 g
39.	E.D.T.A. Disodium salt	50 g
40.	Eriochrome black T indicator	100 g

**D. LIST OF SOME IMPORTANT HERBICIDES FUNGICIDES AND PESTICIDES**

<b>Item</b>	<b>Quantity Required</b>
<b>A) Herbicides</b>	
1. Simazine	As per requirement
2. 2-4D	As per requirement
3. Diuron	As per requirement
4. MCPA	As per requirement
5. Butachlor	As per requirement
6. Fluchloralin (Basalin)	As per requirement
7. Pendimethalin	As per requirement
8. Isoproturon	As per requirement
9. Gramoxone (Paraquat)	As per requirement
10. Tribunal (Metha Benzthiazuron)	As per requirement As per requirement
11. Atrazine	As per requirement
12. Alachlor	As per requirement
<b>B) Fungicides</b>	
1. Bordeaux mixture	As per requirement
2. Copper oxy chloride	As per requirement
3. Captan, thiram	As per requirement
4. Zineb	As per requirement
5. Dithane-Z78 and Dithane – M 45	As per requirement
6. Wettable sulphur power	As per requirement
7. Streptocycline	As per requirement
8. Tetracycline	As per requirement
9. Carbendizem	As per requirement
10. Mycobutanil	As per requirement

11. Hexaconazole	As per requirement
12. Tetraconazole	As per requirement
<b>C) Pesticides</b>	
1. Methyl bromide	As per requirement
2. Imidachloprid	As per requirement
3. E.D.C.T. mixture	As per requirement
4. Aluminium phosphide	As per requirement
5. Malathion	As per requirement
6. Dimethoate 25 EC	As per requirement
7. Phorate granules	As per requirement
8. Isoprothalane	As per requirement
9. Phosphomidon 100 EC (Vegetables)	As per requirement
10. Monoctorophos (Vegetables)	As per requirement
11. Carbofuron	As per requirement
12. Thimet granules	As per requirement
13. Quinolphos	As per requirement
14. Parathion 2% dust	As per requirement
15. Zinc phosphide	As per requirement
16. Difenucarb	As per requirement

### **E.LIST OF OTHER MATERIAL**

<b>Sl. No</b>	<b>Item</b>	<b>Quantity Required</b>
1.	Nylone	100 metres
2.	Metre tapes	10 metres
3.	First Aid Box	01
4.	Fire extinguisher	01
5.	Graph papers	one roll
6.	Muslin Cloth	As per requirement
7.	Grease/Lubrication oil	As per requirement
8.	Stationery	As per requirement
9.	Fertilizers, Insecticides, pesticides, fungicides	As per requirement
10.	Axe and Hacksaw	one each
11.	Fitter shoes	As per requirement
12.	Hunter shoes	05
13.	Rubber gloves	two pairs
14.	PH paper stripps	15

## **F. LIST OF SOME IMPORTANT FERTILIZERS MANUFACTURED IN INDIA**

### **A. NITROGENOUS**

- i. Ammonium sulphate
- ii. Ammonium chloride
- iii. Calcium ammonium nitrate
- iv. Urea

### **B. PHOSPHATIC**

- i. Single super phosphate
- ii. Triple super phosphate
- iii. Rock phosphate

### **C. POTASSIC**

- i. Murate of potash
- ii. Sulphate of potash

### **D. N.P. FERTILISER**

- i. Diammonium phosphate
- ii. Nitrophosphates
- iii. Ammonium phosphate
- iv. Urea ammonium phosphate
- v. Ammonium polyphosphates

### **E. NPK COMPLEXES (N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O)**

- i. NPK complex (15,15,14)
- ii. NPK complex (19,19,19)
- iii. NPK complex (17,17,17)
- iv. NPK complex (10,26,26)
- v. NPK complex (14,28,14)
- vi. NPK complex (14,35,14)
- vii. NPK complex (12,32,16)

### **G.LIST OF AUDIO-VISUAL AIDS**

<b>Sl. No</b>	<b>Item</b>	<b>Quantity Required</b>
1.	Panel boards	12
2.	Charts and posters	20
3.	Pamphlets and leaf lets	As per requirement
4.	Video cassettes	As per requirement
5.	Television and VCP	one
6.	Over head projector	one
7.	Slide projector	one
8.	Camera	one
9.	Video camera	one
10	CCD Panel	one

### **H.LIST OF FIELD FECILITIES**

<b>Sl. No</b>	<b>Item</b>	<b>Quantity Required</b>
1.	Wet land	1 ha
2.	Dry land	1 ha
3.	Irrigated Dry land	1 ha
4.	Bullock pair (may be hired on daily wage basis to Give practical training to students)	1ha

## **I.ADDRESSES FOR PROCUREMENT OF INPUTS**

### **A. SUGGESTED LIST OF SUPPLIERS OF EQUIPMENTS**

1. M/s American Spring and pressing Works Pvt. Ltd., marve Road, Malad, Mumbai – 400064 or 24-157 Shakti Nagar, New Delhi.
2. M/s Addison Co. Pvt. Ltd., 158, Mount Road, Chennai – 2.
3. M/s Shaw Wallace and Co., 25, Pollock street, Calcutta – 1.
4. M/s Sunbeam Corporation, L-4, Cannought Circus, New Delhi – 110001.
5. M/s Indo – German Planting Machinery Co. Ltd., 4- Mahatma Gandhi Road, Bangalore.
6. M/s Crop Protection Corporation, 10, Hamam Street, 4<sup>th</sup> floor, Mumbai – 400001.
7. M/s Aditya Industries, 635-A, Tiruvottiyur High Road, Chennai – 19.
8. M/s Sigma Street Industries (Regd.) A-2, Industrial Estate, Ludhiana – 3.
9. M/s Jardine Handerson Ltd., Agency Dept. 4, Civil Road – Calcutta.
10. M/s K.S.I. Instruments, Rajaji Nagar, Bangalore – 560010.
11. M/s Systronic Instruments, Ahmadabad.
12. M/s Toshniwal Industries, Ajmer (Rajasthan).
13. M/s Aimil Instruments, Ahmadabad.
14. M/s K. Lal Instruments, New Delhi.
15. M/s Elico Instruments, New Delhi.

### **B. SUGGESTED LIST OF SUPPLIERS OF GLASSWARES**

1. Brosil Glass works Ltd., New Delhi.
2. Hi-Tech Glass works, Shri Ganganagar (Rajasthan)
3. Corning Glass works.
4. Dholpur Glass House, Dholpur, Rajasthan.
5. Jain Scientific Glass, Ambala Cantt. Punjab.
6. Gupta Scientific Glass, Ambala Cannt., Haryana.

### **C. SUGGESTED LIST OF SUPPLIERS OF CHEMICALS**

Local suppliers of following manufacturer

1. B.D.H. chemicals
2. Glaxo Chemicals Division
3. Riddle Chemicals
4. Lobo – Chemicals
5. E-Merck Chemical division
6. CDH chemicals
7. SISSCO Chemicals

### **D. SUGGESTED LIST OF SUPPLIERS OF PESTICIDES, FUNGICIDES AND HERCIDES**

1. Bayer (India) Limited, Express Towers, Nariman point, P.O.Box. 1436, Mumbai – 400021 or 1/56, Janpath, New Delhi – 110001.
2. Bharat Pulverising Mills Pvt. Ltd., Shriniketan 14, Queens Road, Mumbai – 400020 or 1/185B, Asif Ali Road, New Delhi – 110002.
3. Ciba of India Ltd., Royal Insurance Bldg., 14-J, Tata Road, P.O.B.No. 479, Mumbai – 400004.

4. Consolidated Crop Protection Pvt., Ltd., B.1, Tara Bang Estate Charni Road, Mumbai – 400004.
5. Cynamid India Ltd., 254-D-2, Dr. Annie Besant Road, Mumbai – 400010.
6. Esso standard Eastern Inc., Parliament Road, Mazagaon, P.Box No. 16202, Mumbai – 400010.
7. Hoechst pharmaceuticals Ltd., Dugal House, Backhay, Post Box No. 273, Mumbai – 400001 or Horchst House Asaf Ali Road, New Delhi – 110002.
8. Imperial Chemical Industries Ltd., I.C.I. House, 34, Chowringee, Calcutta – 16.
9. May and Baker (India) Pvt., Ltd., Connaught circus, Chaudhary Bldg., New Delhi – 110001.
10. Mehta Pharmaceuticals (P). Ltd., Chheharta, Amritsar.
11. Mysore Insecticides Company, 31 A, North Beach Road, Post Box No. 1835, Chennai-1.
12. National Organic Chemical Industries Ltd., Mafatlal House, Beachpay Reclamation, Mumbai – 400001.
13. Pesticides India, Mewar Oils and General Mills Ltd., Post Box No. 20, Udaipur – 313001.
14. Sandox (India) Ltd., 3, Witter Road, Ballard Estate, Mumbai – 400003 or 4/1 Asaf Ali Road, New Delhi – 110002.
15. Standard Chemicals and Pharmaceutical Co., Atlas Mills, Mumbai – 400010.
16. Tata Fision Ltd., 21, Ravelin Street, Fort, Mumbai – 400001.
17. Union Carbide India Ltd., 1, Middleton Street, Calcutta – 16.
18. Excel Industries Ltd., Jogeshwari, Mumbai – 400060.
19. Hindustan Antibiotics.
20. BASF India Ltd., 501, Barakhamba Road, New Delhi – 110001.
21. Endofil Chemicals Ltd., Nirlon House, Dr. Annie Besant Road, Mumbai – 400025.
22. M/s Rallis India Ltd., United India life Building, F-Block Connaught Place.
23. New Delhi – 110001.

#### **E. SUGGESTED LIST OF SUPPLIERS OF SEEDS**

- i. National Seed Corporation.
- ii. State Seed Corporation.
- iii. Nath Seeds Ltd., Adalai Road, Aurangabad – 431005.
- iv. Mahyco Seeds, Jalana, Maharashtra.
- v. Tarai Development Corporation, Nainital.
- vi. Gangotri Hybrids, Pashim Vihar, New Delhi.
- vii. Chaddha Seeds, Haldwani, Pant Nagar.
- viii. Century seeds, New Delhi.
- ix. Indo-American Seed Co., New Delhi.

#### **F. SUGGESTED LIST OF SUPPLIERS OF FERTILISERS**

1. Coromandel Fertilizers Ltd.
2. EID parry (India), Ennore, T.N. (Pvt.)
3. Fertilizer and chemicals Travancore Ltd., Alwaye, Kerala (Pub)
4. Fertilizer and chemicals Travancore Ltd., Ambalamedu, Cochin – Phase I, Kerala (Pub.)
5. Fertilizer and chemicals Travancore Ltd., Ambalamedu, Cochin – Phase II, Kerala (Pub.)
6. Fertilizer Corporation of India Ltd.
7. Gujarat State Fertilizers Co. Ltd., Baroda, Gujarat (Pvt.)



8. Hari Fertilizers, Varanasi, U.P. (Pvt.)
9. Hindustan Fertilizer Corporation Ltd.,
10. Indian Farmer Fertilizer Co-operative Ltd.,
11. National Fertilizer Ltd., Punjab.
12. Shriram Fertilizers and Chemicals, Kota.
13. Southern Petrochemical Industries Corporation Ltd., Tuticorin, T.N.
14. D.C.M. Chemical Works, Delhi.
15. Dharamsi Morarji Chemicals Co., Kumhar, M.P./Ambarnath, Maharashtra.
16. Hindustan Copper Ltd., Hletri, Rajasthan\
17. Hindustan Zinc Ltd., Debari, Udaipur, Rajasthan
18. Udaipur chemicals and fertilizers, Madri, Udaipur, (Rajasthan)
19. Shah Wallace and Co., Avedi, T.N.

## **IX. COLLABORATING INSTITUTIONS AND ON THE JOB TRAINING SITES**

### **A) List of Collaborating Institutes**

1. Professor Jayashankar Telangana State Agricultural University
2. Regional Agricultural Research Stations(Jagityal / Palem / Rudrur / Adilabad / Warangal)
3. Agriculture Research Stations in several districts
4. Indian Council of Agricultural Research Institutes
5. Agriculture colleges (Hyderabad / Aswaraopet / Palem / Warangal / Polasa)
6. Krishi Vigyan Kendras (KVK)
7. National Seed Corporation / TSSCA(Telangana State Seed & Organic Certification Authority) / Seed Companies
8. Horticulture Training Institute, Red Hills, Hyderabad
9. Department of Agriculture / Horticulture / Sugars
10. State Farms / Private Farms / Sugar Factories
11. Fertilizer Companies – IFFCO / RCF / KRIBHCO / NFL / GSFC
12. Pesticide manufacturers
13. DATT Centres
14. Loyola Academy, Secunderabad

### **B) On - the – Job Training Sites**

1. State Government Farms
2. Professor Jayashankar Telangana State Agricultural University Research and Seed Production Farms
3. National and State Seed Corporation
4. Seed Industries
5. Meteorological Observatory
6. Krishi Vigyan Kendras
7. Sugar Factories
8. Private Seed Production Farms
9. Seed Processing units/Plants
10. Seed Testing Laboratories
11. Soil Testing Laboratories
12. Soil Conservation Centres
13. Watershed Project Areas

14. Agriculture & Cooperative Societies
15. Agri-Clinics
16. College of Agriculture, Rajendranagar, Telangana
17. MANAGE, Rajendranagar, Telangana
18. National Institute of Rural Development, Rajendranagar, Telangana
19. CRIDA, Hayatnagar, Hyderabad, Telangana
20. ICRISAT, Patancheru, Telangana
21. Indian Institute of Oilseeds Research, Rajendranagar, Telangana
22. Indian Institute of Rice Research, Rajendranagar, Telangana
23. Area of Village Extension worker
24. Irrigation companies
25. WALAMTARI, Rajendranagar, Telangana and Chelgal, Jagityal
26. Regional Agricultural Research Stations (Jagityal / Palem /Rudrur / Adilabad / Warangal)
27. Horticulture Training Institute, Red Hills, Hyderabad
28. Loyola Academy, Secunderabad

**X      TEACHING STAFF AND THEIR QUALIFICATIONS**

**A)      Lecturer at 10+2 Level**

**Essential Qualifications:**

B.Sc. (Agriculture) with FIRST class and 3 years of experience in Agriculture and allied Departments / Fertilizer Companies / Seed Industries / Sugar Factories

**Preferential Qualifications:**

M.Sc. (Agriculture) in Agronomy / Agricultural Economics / Horticulture / Extension Education / Seed Production Technology

**B)      Instructor / Demonstrator / Lab Assistant**

i. B.Sc. (Agriculture)

ii. Intermediate (10+2) certificate in Agricultural Crop Production Vocational Course

iii. Diploma in Agriculture

## **XI. VERTICAL MOBILITY**

### **a) With Bridge Course**

Eligible for admission into:

- 1) B.Sc.
- 2) B.Sc.(Ag); B.Sc.(Commercial Agriculture and Business Management);  
B.V.S.C; B.Sc. (Horti.) (Through EAMCET)
- 3) B.Sc. (Home Science)

### **b) Without Bridge Course**

Eligible for admission into

- 1) B.Sc. (Farm Science & Rural Development)
- 2) B.A/B.Com/B.B.M

## **XII. REFERENCE BOOKS**

1. Mavi, H.S. (1985). Introduction to Agro meteorology. Oxford & IBH Publishing Co., New Delhi.
2. Patterson, S. (1985). Introduction to Meteorology. Mc-Graw Hill Book co., Inc., New York.
3. Gupta, O.P. (1984). Scientific weed management. Today and tomorrow's Printers and Publishers, New Delhi.
4. Rao, V.S. (1992). Principles of weed science. Oxford & IBH Publishing Co., New Delhi.
5. Sankaran, S. and Mudaliar, V.T. (1993). Principles of Agronomy. The Bangalore Printing & Publishing Co., Ltd., Bangalore.
6. Yellamanda Reddy, T. and Sankara Reddi, G.H. (1995). Principles of Agronomy. Kalyani Publishers, Ludhiana.
7. Morachan, Y.B. (1986). Agricultural Crop Production and Management. Oxford & IBH Publishing Co., New Delhi.
8. Murthy, J.V.S. (1994). Watershed management in India. Wiley eastern Publishers, New Delhi.
9. Gupta, U.S. (1975). Physiological Aspect of Dry land Farming. Oxford & IBH Publishing Co., New Delhi.
10. Sankara Reddi, G.H. and Yellamanda Reddy, T. (1996). Efficient use of Irrigation water. Kalyani Publishers, Ludhiana.
11. Gupta, O.P. (2004). Modern Weed Management. Agrobios (India), Jodhpur -342002.
12. Misra, R.D. and Ahmed, M. (1987). Manual on Irrigation Agronomy. Oxford & IBH Publishing Co., New Delhi.
13. Brady, N.C. (1995). The nature and Properties of soil. Mac Millan Publishing Company, New York.
14. Purohit, S.S. (2004). Medicinal Plant Cultivation. Agrobios (India), Jodhpur -342002.
15. Sahai, V.N. (1990). Fundamentals of Soil. Kalyani Publishers, Ludhiana.
16. Tisdale, S.L., Nelson, W.L. and Beaton, J.D. (1993). Soil Fertility and Fertilizers. Mac Millan Publishing Company, New York.
17. Gustafson, A.F. (2003). Hand Book of Fertilizers. Agrobios (India), Jodhpur – 342002.
18. Kanwar, J.S. (ed.). (1976). Soil Fertility - Theory and Practice. ICAR, New Delhi.
19. Hillel, D. (1980). Fundamentals of Soil Physics. Academic Press, New York.
20. Tondon, H.L.S. (1994). Fertilizer Guide. FDCO, New Delhi.
21. Jones, S.U. (1987). Fertilizers and Soil Fertility. Prentice Hall of India Private Limited, New Delhi.
22. Yawalkar, K.S., Agarwal, J.P. and Bokde, S. (1997). Manures and Fertilizers. Agri-Horticultural Publishing House, Nagpur.
23. Gupta, P.K. (2003). Soil, Plant, Water and Fertilizer Analysis. Agrobios (India), Jodhpur – 342002.
24. Seetharaman, S., Biswas, B.C., Maheswari, S. and Yadav, D.S. (1996). Hand Book on Fertilizer Usage. The Fertilizer Association of India, New Delhi.
25. Curran, P.J. (1991). Principles of remote sensing. ELBS & Longman, London.
26. De, G.C. (1989). Fundamentals of Agronomy. Oxford & IBH Publishing Co., New Delhi.
27. Russel, E.W. (1973). Soil Conditions and Plant Growth. Longmans, 10<sup>th</sup> Edition.
28. Singh, S.S. (1993). Principles and Practices of Agronomy. Kalyani Publishers, New Delhi.
29. N.C.E.R.T. Publications, Aurobindo Marg, New Delhi – 110016.
  - a) Soils and its Properties: Instructional – cum – Practical manual (1985)
  - b) Weeds and Weed Control: Instructional – cum – Practical manual (1985)
  - c) Fertilizers and manures: Instructional – cum – Practical manual (1985)
  - d) Agricultural Meteorology: Instructional – cum – Practical manual (1985)

- e) Water Management: Instructional – cum – Practical manual (1985)
  - f) Crop Management: Instructional – cum – Practical manual (1985)
  - g) Farm Management: Instructional – cum – Practical manual (1985)
30. Mahendra Pal (1986). Proceedings of the National Symposium on Cropping Systems, 3-5<sup>th</sup> April, Indian Society of Agronomy, New Delhi – 110011.
  31. Joshi, S.S. and Kapoor, T.R. (1981). Fundamentals of Farm Business Management. Kalyani Publishers, New Delhi.
  32. Balasubramaniyan, P. and Paliniappan, S.P. (2004). Principles and practices of Agronomy. Agrobios (India), Jodhpur – 342002.
  33. Singh Chidda. (1983). Modern Techniques of Raising of Field Crops. Oxford & IBH Publishing Co., New Delhi.
  34. Murthy, J.V.S. (1994). Watershed Management in India. Wiley Eastern Publishers, New Delhi.
  35. Somani, L.L., Vittal, K.P.R. and Venkateshwarlu, B. (1992). Dry land agriculture – State of art or Research in India. Scientific Publishers, Jodhpur.
  36. Sharma, B.L. (1991). Dry land farming – Perspectives and Prospects. Daya publishing House, New Delhi.
  37. Mohammad Shadi and Raja, M. (1987). Dry land Agriculture in India. Rawat Publications, Jaipur.
  38. Sahu, D.D. (2003). Agro meteorology and Remote Sensing. Agrobios (India), Jodhpur – 342002.
  39. Panda, S.C. (2004). Dry land Agriculture. Agrobios (India), Jodhpur – 342002.
  40. Sharma, A.K. (2004). A Hand Book of Organic Farming. Agrobios (India), Jodhpur - 342002.
  41. Vegetable crops in India – Yawalkar K.S. Agri Horticulture Publishing House, Allahabad.
  42. Fruit physiology and production – Amar singh, Kitabistan, Allahabad.
  43. Principles and procedures of plant protection – chattopadhaya S.B. Oxford & IBH Publishing Co. New Delhi.
  44. Seed Technology – Agrawal R.L. Oxford & IBH Publishing Co. New Delhi.
  45. Principles of seed Technology Agarwal P.K., ICAR New Delhi.
  46. Introduction to Horticulture – Kumar N., Rajyalakshmi Publications, Tamil Nadu.
  47. Plant propagation – Principles and Practices – Hartman H.T and Kester, Prentice Hall of India Pvt. Ltd., Mumbai.
  48. Ornamental Horticulture in India – Randhawe G.S., Today and tomorrow's Printers and Publishers, New Delhi.
  49. Cultivation and utilization of medicinal and aromatic plants – Atal E.K. & Kapoor CSIR, New Delhi.
  50. Hand Book of Agriculture – ICAR, New Delhi.
  51. Agricultural marketing in India – Acharya S.S. and Agarwarl N. L. Oxford & IBH Publishing Co. New Delhi.
  52. Fundamentals of farm Business Management – Johl & Kapoor.
  53. Extension Education – Adivireddy.
  54. Agroforestry hand book – Negi SS 1999, International book distributor, Dehradun
  55. Climate change and global crop productivity – Reddy K.R and Hudes MF 2000, CAB publishing House, USA
  56. Modern concepts and advanced Principles in Agricultural Crop Production. Panda SE 2012, Agribios (India) Publishers, Jodhpur
  57. Forage Production. Subashchandra Bose M, Balakrishnan V 2001, South Asian Publishers, Delhi

### **XIII. MODEL QUESTION PAPERS**

**AGRICULTURAL CROP PRODUCTION  
MODEL QUESTION PAPER  
I YEAR THEORY  
PAPER-I  
PRINCIPLES OF AGRICULTURAL CROP PRODUCTION**

**Time:3 Hours**

**Max.marks:50**

**SECTION - A**

**Note: i) Answer all Questions.**

**ii) Each question carries 2 marks**

**2x10=20**

**Marks**

1. Define Agronomy.
2. What instrument is used for measuring wind velocity?
3. What is a synoptic chart?
4. What are the different types of clouds?
5. Define Tilth.
6. What is stubble mulch farming?
7. Define Intercropping.
8. What is meant by Seed dormancy?
9. What is an Adjuvant?
10. Define Sustainable Agriculture.

**SECTION- B**

**Note: i) Answer any 5 Questions**

**ii) Each Question Carries 6 marks**

**5x6=30 Marks**

11. Explain the effects of drought on growth and yield of crops.
12. What is meant by Remote sensing? Give its applications in Agriculture.
13. Enumerate the objectives of tilth and characteristics of a good seed-bed.
14. Define crop rotation and explain the principles & advantages of crop rotation.
15. How weeds are harmful to crops?. Explain about integrated weed management.
16. Write briefly about Rotovator and Herbicide formulations.
17. Write short notes on:
  - a) Methods of sowing
  - b) Agro climatic zone of TS
  - c) Bio-pesticides

**AGRICULTURAL CROP PRODUCTION  
MODEL QUESTION PAPER  
I YEAR THEORY  
PAPER-II  
SOIL AND WATER MANAGEMENT**

**Time:3 Hours**

**Max.marks:50**

**SECTION - A**

**Note: i) Answer all Questions.**

**ii) Each question carries 2 marks**

**2x10=20**

**Marks**

1. What is C:N ratio?
2. What is a criterion of essentiality?
3. What is meant by balanced fertilization?
4. Define green manuring.
5. Define Field capacity.
6. Give critical stage for wheat and groundnut.
7. Define sub-surface drainage.
8. What is soil erosion?
9. What is a watershed?
10. What is water harvesting?

**SECTION-B**

**Note: i) Answer any 5 Questions**

**ii) Each Question Carries 6 marks**

**5x6=30 Marks**

11. What is irrigation scheduling? Write about climatological approaches of scheduling irrigations.
12. Define drip irrigation and enlist its advantages and limitations.
13. What are the different types of green manuring? Give its advantages.
14. Write briefly about different types of nitrogenous & potassic fertilizers?
15. Enumerate the objectives and components of watershed management.
16. Explain briefly about the agronomic measures in soil & water conservation?
17. Write short notes on:
  - a) Cat ion exchange capacity
  - b) Soil fertility
  - c) Soil organic matter



**AGRICULTURAL CROP PRODUCTION  
MODEL QUESTION PAPER  
I YEAR THEORY  
PAPER-III  
FARM MANAGEMENT & AGRICULTURAL EXTENSION**

**Time:3 Hours**

**Max.marks:50**

**SECTION - A**

**Note: i) Answer all Questions.**

**ii) Each question carries 2 marks**

**2x10=20**

**Marks**

1. Define Farm management.
2. Write any two functions of PACS.
3. What is a result demonstration?
4. What is fixed capital?
5. Define agricultural co-operation.
6. What is diary?
7. Expand NABARD.
8. Define Agricultural market.
9. What is crop insurance?
10. Define Extension Education.

**SECTION-B**

**Note: i) Answer any 5 Questions**

**ii) Each Question Carries 6 marks**

**5x6=30 Marks**

11. Differentiate between formal and extension education.
12. How to manage a farm with respect land, labour, capital and organization?
13. What is meant by farm credit? Explain the classification of credit.
14. Explain in brief about principles of cooperation.
15. Mention farm records and explain any two of them.
16. Write in detail about problems of present marketing system.
17. Answer any **two** :
  - a. Concept of Rytu Bazar
  - b. Method demonstration
  - c. Rytumitra

**AGRICULTURAL CROP PRODUCTION  
MODEL QUESTION PAPER  
II YEAR THEORY  
PAPER-I  
MANAGEMENT OF FIELD & COMMERCIAL CROPS**

**Time:3 Hours**

**Max.marks:50**

**SECTION - A**

**Note: i) Answer all Questions.**

**ii) Each question carries 2 marks**

**2x10=20**

**Marks**

1. Write symptoms of zinc deficiency and its correction in paddy.
2. Write about rhizobium seed treatment in legume crops.
3. Write climatic requirement of sugarcane and paddy.
4. Write suitable varieties of groundnut for rabi irrigated condition.
5. Explain the reasons for male flowers dominance in castor.
6. Explain about magnesium and boron nutrients deficiency symptoms in cotton.
7. Explain about seed treatment in sugarcane.
8. Write about desuckering in tobacco.
9. Write the scientific names of maize, greengram, sunflower and Mesta.
10. Define integrated pest management.

**SECTION-B**

**Note: i) Answer any 5 Questions**

**ii) Each Question Carries 6 marks**

**5x6=30 Marks**

11. Write about nursery and main crop management of SRI paddy cultivation.
12. Write about agronomic management of castor crop.
13. Describe seed rate fertilizer requirement, weed control for redgram.
14. Name the important pests symptoms of damage and control measures in cotton.
15. Write about curing and grading in tobacco.
16. Write irrigation scheduled in sugarcane.
17. Write short notes on any **two** of the following
  - a) Hand pollination in sunflower
  - b) Management of wilt in redgram
  - c) Propping in sugarcane

**AGRICULTURAL CROP PRODUCTION  
MODEL QUESTION PAPER  
II YEAR THEORY  
PAPER-II  
MANAGEMENT OF HORTICULTURE CROPS**

**Time:3 Hours**

**Max.marks:50**

**SECTION - A**

**Note: i) Answer all Questions.**

**ii) Each question carries 2 marks**

**2x10=20**

**Marks**

1. Define pomology.
2. Mention different types of nursery beds.
3. What is meant by sexual propagation?
4. What are the hedges and edges?
5. Write scientific name for mango and tomato.
6. Give the climate suited for rose cultivation.
7. Name two varieties of coconut cultivated in A.P.
8. Name two insect pests of chillies.
9. Give the harvesting procedure for Ashwagandha.
10. Give irrigation requirement for brinjal crop.

**SECTION-B**

**Note: i) Answer any 5 Questions**

**ii) Each Question Carries 6 marks**

**5x6=30 Marks**

11. Briefly explain the package of practices adopted for lemongrass.
12. Explain in detail about the plant protection in mango and banana.
13. Give the cultivation practices adopted for jasmine cultivation.
14. Name two plantation crops. Explain about the climate, varieties, propagation and manures & fertilizers from any one of plantation crop which you have mentioned.
15. Explain in brief the package of practices adopted for turmeric crop.
16. Give the cultivation practices adopted for bhendi crop.
17. Answer any **two**:
  - a. Importance of Horticulture.
  - b. Processing of citronella.
  - c. Pruning in rose.

**AGRICULTURAL CROP PRODUCTION  
MODEL QUESTION PAPER  
II YEAR THEORY  
PAPER-III  
SEED PRODUCTION AND PROCESSING**

**Time:3 Hours**

**Max.marks:50**

**SECTION - A**

**Note: i) Answer all Questions.**

**ii) Each question carries 2 marks**

**2x10=20**

**Marks**

1. Define 'seed'.
2. Mention the agencies involved in seed production.
3. What is meant by seed drying?
4. What is meant by seed processing?
5. Mention two important chemicals used for seed treatment.
6. What is meant by detasselling?
7. What is seed act?
8. What do you mean by isolation distance?
9. What is meant by hand pollination?
10. Define the term germination.

**SECTION-B**

**Note: i) Answer any 5 Questions**

**ii) Each Question Carries 6 marks**

**5x6=30 Marks**

11. Explain in detail various classes of seed.
12. Mention general principles of seed production.
13. Give the seed production procedure for cotton.
14. Explain the hybrid seed production procedure for rice.
15. Write about the seed certification procedure.
16. Briefly explain about seed processing.
17. Answer any **two** :
  - a) Sun drying
  - b) Seed production in cucurbits.
  - c) Isolation requirement for tomato and brinjal.

#### **XIV. LIST OF PARTICIPANTS**

<b>1.</b>	<b>Dr. A. Madhavi Lata</b> Associate Professor, Department of Agronomy, College of Agriculture, PJTSAU RajendraNagar, Hyderabad.
<b>2.</b>	<b>Sri R. Sivanand,</b> Deputy Director of Agriculture, Department of Agriculture, Hyderabad.
<b>3.</b>	<b>Dr.M.Ramesh,</b> Scientist, RARS, Palem, Nagarkurnool Dist.
<b>4.</b>	<b>M.K.Mazharuddin</b> JL in CP&M, GJC, Khanapur, Nirmal Dist.
<b>5.</b>	<b>Sri K.Vishweshwar</b> Co-Ordinator, SIVE O/o the Commissioner of Intermediate Education, Hyderabad.

**Sd/- Dr A. Ashok**  
**COMMISSIONER OF INTERMEDIATE EDUCATION**