ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
II Year – Semester IV

PRINCIPLES OF ORGANIC FARMING
(CREDITS 4+2=6)

UNIT - I
- Relevance of organic farming to A.P, India, and global agriculture and future prospects- advantages - barriers.

UNIT - II
- Initiatives taken by the central and state governments, NGOs and other organizations for promotion of organic agriculture in India.
- Organic nutrient sources and their fortification – organic manures- methods of composting

UNIT - III
- Nutrient use in organic farming-scope and limitations.
- Nutrient management in organic farming.
- Organic ecosystem and their concepts.

UNIT - IV
- Fundamentals of insect, disease and weed management under organic mode of production-cultural-biological methods-non chemical pest & disease management.
- Botanicals- pyrethrum, neem seed kernel extract, neem seed powder, soluble neem formulations, neem oil.
- Operational structure of NPOP – other agencies for organic production.

UNIT - V
- Inspection – certification - labelling and accreditation procedures for organic products.
- Processing, - economic consideration and viability.
- Marketing and export potential of organic products – national economy.
PRINCIPLES OF ORGANIC FARMING (PRACTICAL)

1. Visit to organic farm to study the various components, identification and utilisation of organic products.
2. Compost making- aerobic and anaerobic methods
3. Vermicompost preparation
4. Preparation of enriched farm yard manure
5. Visit to organic clusters and bio control lab to study the maintenance of bio-fertilizers/bio-inoculant cultures
7. Methods of application of Bio-pesticides (Trichocards, BT, NPV)
8. Preparation of neem products and other botanicals for pest and disease control
9. Preparation of green pesticides (panchagavya, beezamrutam, jeevamrutam, ghanajeevamrutam, dravajeevamrutam).
10. Different methods of biofertiliser applications.
11. Quality analysis of biofertilisers/bioinoculants and compost
12. Case studies of Indigenous Technical knowledge (ITK) for nutrient, insect, pest, disease and weed management
13. Economic analysis of organic production system
14. Study of post harvest management in organic farming
15. Study of quality parameters of organic produce
16. Visit to organic farms to study the various components and their utilization

References

Answer any FIVE questions. Each question carries equal marks.  
\[ (5 \times 5 = 25) \]

1. What are the essential characteristics of Organic Farming?
2. What is Vermicomposting and write about Vermiculture.
3. What are the desirable characters of Green Manuring?
4. Write about the use of Bio fertilizers in Organic Farming?
5. Write about weed management in Organic farming.
6. Write briefly about Regenerative Agriculture.
8. Write about different types of Biofertilizers used in Organic Farming.

SECTION - B

Answer all the questions. Each question carries TEN marks.  
\[ (5 \times 10 = 50) \]

1.  
   a) Write about the Principles of Organic farming.  
   (OR)
   b) What are the components in organic farming for Sustainable crop production?

2.  
   a) What are the Advantages of Organic farming?  
   (OR)
   b) What are the Government policies on promoting Organic farming?

3.  
   a) Write about different types of Organic manures.  
   (OR)
   b) Write briefly about Biological methods of Insect pest Management in Organic farming?

4.  
   a) Write about the Operational structure of NPOP.  
   (OR)
   b) Write about the Accreditation procedures for Organic Products.

5.  
   a) Write about the concepts of Organic ecosystem.  
   (OR)
   b) Write about the Marketing and Export potential of Organic farming.
UNIT – I
Introduction to Crop Physiology and its importance in Agriculture.
Plant cell - The endomembrane system - Plasma membrane, endoplasmic reticulum, nuclear envelope, golgi apparatus, vacuole and endosomes - Structure and functional characteristics - Plastids, mitochondria, oil bodies, peroxisomes and glyoxysomes - Structure and functions.

UNIT – II
Factors affecting WUE.

UNIT – III
Lipid metabolism – Biosynthesis of fatty acids in plastids – Functions of lipids – Significance of lipids in plant metabolism.

UNIT – IV
Physiology of flowering – Photoperiosism and flowering – Importance of photoperiodism – Classification of plants based on photoperiodic responses
physiological roles – Commercial uses.

Senescence and abscission – Definition – Classification of senescence – Physiological and biochemical changes that occur during senescence - Prevention of leaf and flower senescence – Abscission and its relationship with senescence.

UNIT – V


FUNDAMENTALS OF CROP PHYSIOLOGY (PRACTICAL)

Solutions- Preparation, Seed vigor and viability tests, optimum conditions for seed germination, leaf area measurement, Growth analysis, Measurement of water status in plants, Measurement of water potential, Measurement of stomatal frequency and index photosynthetic pigments- Absorption spectrum, Leaf anatomy of C3 and C4 plants, Measurement of photosynthesis – Hill’s reaction, Measurement of photosynthesis by IRGA, Effect of plant growth regulators on plant growth. Diagnosis of nutrient deficiency symptoms in crops, Yield analysis

References


ANDHRA UNIVERSITY  
B. VOCATIONAL COURSE  
AGRICULTURE  
2020-21 Admitted Batch  
II Year Semester- IV  
FUNDAMENTALS OF CROP PHYSIOLOGY  
MODEL QUESTION PAPER  
SECTION – A  

Time: 3 Hours  
Maximum: 75 Marks  

**Answer any FIVE questions. Each question carries equal marks.**  

1. Write about the structure and functions of Endoplasmic Reticulum.  
2. Write about the Factors effecting the Water use Efficiency.  
3. Write about Non cyclic Phosphorylation.  
4. Write Briefly about Biological Nitrogen fixation.  
5. Describe the classification of plants based upon Photoperiodism.  
6. Write about the types of Senescence.  
7. What are the factors effecting Fruit ripening and write about climacteric and non-climacteric fruits.  
8. Write about the metabolic changes during Seed development.  

**SECTION - B**  

**Answer all the questions. Each question carries TEN marks.**  

1. a) Elaborate the structure and function of Cell wall in plants.  
   (OR)  
   b) Write about the Chloroplasts and describe its ultra structure.  
2. a) Write about the components of Water potential and its Importance.  
   (OR)  
   b) Write briefly about the Functions of NPK in nutrition of Plants.  
3. a) Write about C4 Photosynthetic carbon assimilation cycle.  
   (OR)  
   b) Explain Oxidative Pentose pathway and its significance.  
4. a) Write about the Physiological role of Auxins in Plants.  
   (OR)  
   b) Write about Physiological and Biochemical changes that occur during Senescence and methods to prevent leaf and flower senescence.  
5. a) Elucidate the remedial measures for breaking Seed dormancy.  
   (OR)  
   b) Write about tests of seed viability and vigor.
UNIT I - Introduction to seed and seed quality
   Seed - definition - Seed structure - Seed development and maturation Germination - phases of seed germination
   Dormancy - types of seed dormancy - Seed senescence - causes of seed senescence Seed quality characteristics - significance
   Classes of seed - Generation system of seed multiplication in seed supply chain.

UNIT II - Principles of seed production
   Seed replacement rate and varietal replacement - Seed Multiplication Ratio - Seed renewal period. Causes of varietal deterioration and maintenance Genetic and agronomic principles of seed production Factors affecting quality seed production
   Methods of seed production of varieties and hybrids.

UNIT III - Seed production techniques of agricultural crops
   Floral biology and pollination behavior - seed production techniques of varieties and hybrids of: rice, maize, cotton varieties and hybrids – Bt cotton

UNIT IV - Seed production techniques of vegetable crops
   Floral biology and pollination behavior - seed production techniques of varieties and hybrids of: tomato, snakegourd, bittergourd ,ashgourd, ribbed gourd and bottlegourd

UNIT V - Post harvest seed handling techniques
   Threshing - methods
   Drying - methods of seed drying - advantages and disadvantages
   Seed cleaning and grading - upgrading - equipments - working principles
   Seed treatment - importance - types - Seed invigouration techniques - seed hardening - seed fortification - seed priming - Seed enhancement techniques - seed coating - seed pelleting.

PRINCIPLES OF SEED TECHNOLOGY (PRACTICAL)

1. Study of seed structure of agricultural and horticultural crops.
2. Seed dormancy breaking methods.
3. Acid delinting in cotton.
4. Detasseling techniques for hybrid seed production in maize.
5. Emasculation and dusting techniques for hybrid seed production in important field crops.
6. Practicing pre-germinative techniques , enhancing floral ratio and improving seed set in cucurbits
7. Fruit grading and seed extraction methods in vegetables - tomato, brinjal, chillies, bhendi and cucurbits.
8. Seed cleaning and grading techniques and detection of seed mechanical injury.
Answer any FIVE questions. Each question carries equal marks. (5*5=25)

1. Explain the safe guards for maintenance of genetic purity of seed.
2. Write a note on seed production methods for hybrids.
3. Explain seed production technology of Cotton.
4. What is seed dormancy? Explain different types seed dormancy?
5. Write about different classes of seeds.
6. Write about seed production technology of cucurbits.
7. What are the factors affecting quality seed production.
8. what is senescence? Write about significance along with it’s causes.

SECTION - B

Answer all the questions. Each question carries TEN marks. (5*10=50)

1. a) Give a detailed note on seed production technology of Rice.
   (OR)
   b) Discuss the procedure followed for Maize seed production technology.

2. a) Explain generation system of seed multiplication in seed supply chain.
   (OR)
   b) What is seed drying and explain different methods of seed drying along with principles and requirements.

3. a) Write about seed production technology of Tomato.
   (OR)
   b) Describe planning, layout and establishment of seed processing plant.

4. a) Write about seed cleaning and grading.
   (OR)
   b) Write a detailed note on importance, types and equipment required for seed treatment.

5. a) i) Describe the causes of varietal detioration.
        ii) Write the procedures for seed production of varieties.
   (OR)
   b) What is seed? Explain seed structure and phases of it’s germination.

UNIT–I: Cereals
   Rice, Wheat, Grain and fodder Maize, Grain and fodder Sorghum

UNIT – II: Millets
   Pearl millet, Finger millet, Foxtail millet, Kodo millet, Little millet, Proso millet, Barnyard millet.

UNIT–III: Pulses
   Red gram, Bengal gram, Green gram, Black gram, Soybean, lab – lab

UNIT – IV: Oilseeds
   Groundnut, Sesame, Mustard, Sunflower and Safflower, Coconut, Oil palm

UNIT–V: Fibres and Sugars Cotton, Jute, Mesta, Sugarcane, Sugar beet

BREEDING OF FIELD CROPS (PRACTICAL)


1. Rice, Wheat
2. Maize, Sorghum
3. Pearl Millet, Finger Millet, Little Millet
4. Kodo Millet, Barn Yard Millet, Proso Millet and Foxtail Millet.
5. Red gram Bengal Gram, Green Gram, Black Gram, Soybean, Lab – Lab.
7. Sunflower, Safflower.
8. Coconut And Oil palm
9. Cotton, Jute and Mesta
10. Sugarcane And Sugar Beet
Answer any FIVE questions. Each question carries equal marks. \( (5*5=25) \)

1. Draw the flowcharts for origin of Diploid, Tetraploid and Hexaploid Wheat.
2. Write about the latest classification of Sorghum given by Harlan and De Wet.
3. Write about the 3 basic type of crosses made in Hybridization of Sugar cane?
4. What are the main reasons for Low yields of Pulses compared to Cereals.
5. Write about the Progenitor and desirable plant type in Chick pea.
6. Write about the types of cultivated species in Cotton.
7. Write about the classification of Cultivated Species of Rice?
8. Write about Breeding techniques of Finger millet.

SECTION - B

Answer all the questions. Each question carries TEN marks. \( (5*10=50) \)

1. a) Write about the breeding techniques for developing Hybrid Rice. 
   (OR)
   b) Elucidate the Objectives of Plant Breeding.
2. a) Write about the Objectives for Breeding of Red Gram. 
   (OR)
   b) Write about the classification of Ground Nut and why it is called as an unpredictable crop.
3. a) Explain Head to row and remnant seed method and Heterosis breeding in Sunflower. 
   (OR)
   b) Write about the Taxonomy of Brassica crops and their economic characters.
4. a) Write elaborately about the Breeding procedures in Cotton. 
   (OR)
   b) Write about bolting and Photoperiod induction in Sugar beet.
5. a) Write about the Breeding procedures for disease and abiotic stress resistance in Sugar cane. 
   (OR)
   b) Write about the Breeding objectives of Soybean.
UNIT 1: Production Economics and Farm Management - Nature and Scope

UNIT 2: Factor – Product Relationship

UNIT 3: Factor – Factor Relationship

UNIT 4: Product – Product Relationship

UNIT 5: Farm Planning and Budgeting
INTRODUCTION TO PRODUCTION ECONOMICS AND FARM MANAGEMENT PRACTICAL

Computation of depreciation cost of farm assets. Determination of most profitable level of inputs use in a farm production process. Application of equi-marginal returns/ opportunity cost principle in allocation of farm resources. Determination of least cost combination of inputs. Selection of most profitable enterprise combination. Farm holding survey. Application of cost principles including CACP concepts in the estimation of cost of crop and livestock enterprises. Farm business analysis, Preparation of farm plan and budget, farm records and accounts and profit & loss accounts. Collection and analysis of data on various resources in India. Seminar on selected topics.
INTRODUCTION TO PRODUCTION ECONOMICS AND FARM MANAGEMENT

MODEL QUESTION PAPER

Time: 3 Hours

 maximum: 75 Marks

SECTION – A

Answer any FIVE questions. Each question carries equal marks. (5*5 = 25)

1. Define farm management? Explain it’s scope.
2. What is farm plan? What are the key features of good farm plan.
3. Write down the advantages and disadvantages of diversified farming.
4. Differentiate between farm budgeting and linear programming.
5. What is production economics and list out it’s objectives.
6. Differentiate law of variable proportions and returns to scale.
7. What is isoquant? List out it’s characteristics.
8. What are the basic production problems?

SECTION – B

Answer All the questions. Each question carries TEN marks (5*10 = 50)

1. a) List out the economic principles applied in farm management. Explain in detail law of variable proportions.

(OR)

b) Elaborate systems of farming in detail

2. a) Explain law of returns with the help of graphs and tables.

(OR)

b) i) What is risk and uncertainty. Explain the sources of risk and uncertainty.

ii) What are methods reducing the risk and uncertainty.

3. a) Explain the key features of three stages of production function.

(OR)

b) Explain the least cost combination of inputs by graphical, algebraic and arithmetic methods.

4. a) Explain and draw different types of product-product relationships.

(OR)

b) What is farm planning and budgeting. Explain the basic steps in farm planning and budgeting.

5. a) i) Production possibility curve

ii) Ridge lines

(OR)

b) Determine optimum combination of products in algebraic, graphic and tabular methods.
UNIT-I

1. Horticulture – Definition - Divisions of horticulture with suitable examples.
2. Scope and importance of horticulture - Importance of horticulture in terms of income, employment generation, industry, religious, aesthetic, food & nutritive value and export.
3. Horticultural classification based on soil, climate and botanical classification.

UNIT-II

6. Propagation by Layering - Types of layering (tip, simple, compound, mound, trench, air layering) - Natural modifications of layering (runners, suckers, stolon, offset) - Propagation by separation - Bulbs, corms; division (rhizome, stem tuber, tuberous roots).

UNIT-III

8. Principles of orchard establishment – Points to be kept in mind while selecting site for the establishment of orchards - Principles and steps in orchard establishment - Layout of orchards – Systems of planting - Square, rectangle, quincunx, hexagonal and contour systems of planting-their merits and demerits.
9. Principles and methods of training and pruning - Definition of training, objectives and training, principles and methods of training of fruit crops - Open centre, closed centre and modified leader systems their merits and demerits - Definition of pruning, objectives of pruning, principles and methods of pruning of fruit crops.
10. Juvenility and flower bud differentiation – Methods for shortening juvenility - Application of growth regulators (Gibberellins, Auxins, cytokinins, Abscissic acid, Ethylene), environmental methods (photoperiod, temperature) - Cultivation techniques (grafting, pruning, girdling, irrigation, nutrition) - Bearing habits of fruit trees.
UNIT-IV

11. Unfruitfulness, factors (physiological, phylogenical, management, parasitical, climatological) pollination - Self and Cross pollination, pollinizers and pollinators Fertilization and parthenocarpy – Types.


UNIT-V


15. Irrigation methods in horticulture crops - Different methods followed in horticultural crops (check basin, furrow, ring basin, basin, flood, pitcher, funnel, drip and sprinkler).

16. Fertilizer application- Different methods of application to horticultural crops- Broad casting, top dressing, localized placement, contact placement Band placement, row placement, pellet, foliar application, starter solution, fertigation.

HORTICULTURE (PRACTICAL)

1. Identification of garden tools.
2. Identification of horticultural crops.
3. Layout of different planting systems.
4. Layout of kitchen garden.
5. Preparation of nursery bed (raised and flat beds) and sowing of seeds.
6. Practice of different asexual methods by divisions.
7. Practice of different asexual methods by cuttings.
8. Practice of different asexual methods by grafting.
9. Practice of different asexual methods by budding.
10. Practice of different asexual methods by layering.
11. Training and pruning of fruit trees.
12. Transplanting and care of vegetable seedlings.
14. Preparation of potting mixture, potting and repotting.
15. Fertilizer application in different crops.
16. Visits to commercial nurseries/orchard.

References

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2020-21 Admitted Batch  
II Year Semester- IV  
HORTICULTURE  
MODEL QUESTION PAPER  
SECTION – A

Time: 3 Hours  
Maximum: 75 Marks

Answer any FIVE questions. Each question carries equal marks. (5*5=25)

1. Write about the influence of Humidity and Rainfall on Horticulture crops.
2. Write about the advantages of Seed Propagation.
3. What are the types of propagation by Separation?
4. Write about T or Shield budding.
5. What are the responses of plants to pruning?
6. What are the cultural causes for unfruitfulness in fruit trees?
7. What is parthenocarpy and write about its types.
8. Write briefly about the maintenance of lawn.

SECTION - B

Answer all the questions. Each question carries TEN marks. (5*10=50)

1. a) Write about divisions of Horticulture with examples.  
    (OR)  
    b) What are the criteria for the selection of a site for orchard establishment?

2. a) Explain about different systems of planting in Horticultural crops.  
    (OR)  
    b) Explain different types of Layerings in Plant propagation.

3. a) Write about the systems of Training in Fruit crops with merits and demerits.  
    (OR)  
    b) Write about the Practical applications of Plant growth regulators in Horticulture crops.

4. a) Write briefly about the types of Vegetable gardens.  
    (OR)  
    b) Mention various methods of Irrigation of Horticultural crops and explain about Drip and sprinkler Methods.

5. a) Write about the importance of Horticulture crops in National economy.  
    (OR)  
    b) Write about different methods of fertilizer application in Horticultural crops.
ANDHRA UNIVERSITY
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AGRICULTURE
2020-21 Admitted Batch
III Year – Semester V
WEED AND WATER MANAGEMENT
(CREDITS 4+2=6)

UNIT–I : Weed Biology and Ecology Weeds:
Introduction, Definitions; harmful and beneficial effects, classification, propagation, dissemination and weed seed dormancy; Weed biology and ecology; Critical periods of crop weed competition and allelopathy. Principles of Weed Management Concepts of weed prevention, control and eradication; Methods of weed management: cultural, mechanical, chemical, biological and biotechnological methods; Integrated weed management.

UNIT–II : Herbicides
Herbicides: Definition – advantages and limitation of herbicide usage in India; Herbicide classification, formulations, methods of application; Introduction to Adjuvants and their use in herbicides. Weed management in field crops; aquatic, problematic, invasive alien weeds and their management.

UNIT–III : Importance and History of Irrigation

UNIT–IV : Crop Water Requirement and Management

UNIT–V : Methods of Irrigation
WEED AND WATER MANAGEMENT (PRACTICAL)

1. Identification, classification and characterization of terrestrial weeds.
2. Identification, classification and characterization of aquatic weeds and parasitic weeds.
3. Estimation of soil weed seed bank.
4. Identification, classification and characterization of herbicides.
5. Herbicide residue determination by bioassay techniques.
6. Practicing Skill development on herbicide application techniques and spray equipments.
7. Calculation on irrigation water based on source, water flow, soil moisture status and depth of irrigation and WUE.
8. Land leveling and land shaping – Beds and channels – check basin – ridges and furrows-border strips – broad bed furrow method of irrigation.
9. Operation and maintenance of sprinkler irrigation systems and drip irrigation systems.
10. Scheduling of irrigation based on simple techniques and devices.
UNIT I:
Farm Power in INDIA – Introduction- Different sources of farm power- Merits and demerits of farm sources- status of farm power in India. Farm mechanization- Scope- Concept of farm mechanization Classifications of energy sources- Renewable- Non-renewable- Need of renewable energy sources- Types of renewable energy sources- Solar energy- Wind energy-Biogas

UNIT II:

UNIT III:
Tillage- Objectives- Classification- Primary Tillage and Secondary tillage implements, Types of tillage.Primary tillage implements- Mouldboard Plough, Disc Plough, Chisel Plough, Subsoiler, Components and Functions, Types, Advantages and Disadvantages.

UNIT IV:

UNIT V:
Planting and fertilizing equipments- Methods of sowing- study of animal drawn seed cum ferti drill- study of tractor drawn seed cum ferti drill. Planters- potato, sugarcane planter, study of intercultivation equipments- weeders.

FARM POWER AND MACHINERY (PRACTICALS)
Study of different components of I.C. engine - To study air cleaning and cooling system of engine - Familiarization with clutch – Transmission - Differential and final drive of a tractor - Familiarization with lubrication and fuel supply system of engine - Familiarization with brake – Steering - Hydraulic control system of engine - Learning of tractor driving - Familiarization with operation of power tiller - Implements for hill agriculture - Familiarization with different types of primary and secondary tillage implements - Mould plough - Disc plough and disc harrow - Familiarization with seedcum-fertilizer drills their seed metering mechanism and calibration - Planters and transplanter - Familiarization with different types of sprayers and dusters - Familiarization with different inter-cultivation equipment - Familiarization with harvesting and threshing machinery.

TEXT BOOKS:
UNIT - I
1. Rainfed agriculture – introduction and definition – dimensions of the problem – area and production from dry lands in India and Andhra Pradesh – History of rainfed agriculture and watersheds in India.

UNIT - II

UNIT - III

UNIT - IV
10. In-situ moisture conservation measures – bund forming – bunding, ridge and furrow system – conservation furrows- inter plot water harvesting, mulching – Broad Bed and Furrow (BBF) and leveling.
12. Efficient crops and varieties – cropping systems in rainfed areas – intercropping – advantages – efficient inter cropping systems in different rainfed regions of Andhra Pradesh
UNIT - V
13. Contingent crop planning for aberrant weather conditions in red and black soils.
14. Evapotranspiration – measures to reduce evapotranspiration – weeding, use of mulches, chemicals, windbreaks and shelterbelts
15. Land capability classification – alternate land use system

RAIN FED AGRICULTURE AND WATERSHED MANAGEMENT (PRACTICAL)
1. Climate classification.
2. Rainfall analysis - Mean, standard deviation, variance and CV.
3. Onset and withdrawal of monsoons and determination of length of growing crop season.
4. Study on cropping pattern of different dryland areas.
5. Mapping of dryland areas in India.
6. Interpretation of meteorological data for rainfall variability.
7. Scheduling of supplemental irrigation based on crop ET demand.
8. Critical analysis of rainfall and calculation of wet spells, dry spells ,and length of growing season.
9. Calculation of effective rainfall.
10. Determination of moisture availability index.
11. Study of cultural practices for mitigating moisture stress( mulching, plant density, depth of sowing, thinning and leaf removal).
12. Visit to watershed.
13. Field demonstration on soil & moisture conservation measures.
14. Field demonstration of water harvesting structures.
15. Study of farm ponds as a source of supplemental irrigation.
16. Visit to rainfed research station.

References
UNIT I

UNIT II

UNIT III
Apiculture - Bee species – comparison- castes of bees, bee behaviour and bee dance; Apiary management practices – bee pasturage, foraging, seasonal variations; Bee products, properties and uses; Effect of agricultural inputs on bee activity – pesticide poisoning; Lac insect- biology-strains-natural enemies of lac insect and lac products;

UNIT IV
Pests of vegetable crops – Distribution, bionomics, symptoms of damage and management strategies for insect, pest and integrated management of solanaceous, cucurbits, crucifers, root crops, leafy vegetables and bhendi

UNIT IV
Pests of fruit crops – Distribution, bionomics, symptoms of damage and management strategies for insect, pest and integrated management of mango, citrus, banana, guava, sapota, papaya, pomegranate, apple

PESTS OF HORTICULTURAL CROPS & PRODUCTIVE ENTOMOLOGY (PRACTICAL)
preservation of leaves.
5. Identification of pests of mulberry and damage symptoms.
6. Identification of symptoms of diseases and nematodes of mulberry.
11. Integrated Farm System with Sericulture in Integrated Farming system – Mechanization in sericulture.
13. Apiculture - Bee species – comparison- castes of bees, bee behaviour and bee dance; Apiary management practices – bee pasturage, foraging, seasonal variations; Bee products – properties and uses; Effect of agricultural inputs on bee activity – pesticide poisoning;
14. Lac insect- biology-strains-natural enemies of lac insect and lac products;
UNIT I

Introduction to plant pathology, terms and concepts used in plant pathology, history of plant pathology. Survival of plant pathogens. Dispersal of plant pathogens

UNIT II

Infection process – pre-penetration, penetration and post-penetration. Role of enzymes in pathogenesis. Role of toxins in pathogenesis

UNIT III

Defense mechanism in plants – structural, induced defense in plants. Plant disease epidemiology. Remote sensing

UNIT IV

Principles of plant disease management. Physical methods and biological methods. Protection – Classification of fungicides based on chemical nature and method of application

UNIT V

Host plant resistance. Integrated disease management. Application of bio-technology in plant disease management

FUNGICIDES AND PLANT DISEASE MANAGEMENT (PRACTICAL)

1. Survey and assessment of important plant diseases
2. Seeds health tests – dry seed examination, seed washing, blotter test
3. Preparation of bordeaux mixture
4. Methods of application of fungicides
5. Special methods of application – acid delinting, pseudostem injection, root feeding, pairing and pralination, trunk injection
6. Mass multiplication of Trichoderma spp and method of application
7. Cross protection
8. Preparation of leaf extracts
UNIT – I
Mango, Banana, Citrus and Grape - Botanical Name – Family – Origin – Area – Production-
Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting
techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management -
Harvesting - Yield - Storage - Physiological disorders - Disease and pest control and seed
production.

UNIT – II
Guava, Sapota, Papaya and Pomegranate - Botanical name – Family - Origin - Area -
Production - Improved varieties and cultivation practices such as time of sowing - Sowing -
Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed
management - Harvesting - Yield - Storage - Disease and pest control and seed production.

UNIT – III
Importance of vegetables and spices in human nutrition and national economy – Classification
of vegetables - 1) Botanical 2) Based on Hardiness 3) Parts Used 4) Method of culture 5)
Season.

UNIT – IV
Okra and Leafy vegetables (Amaranthus and Gogu) - Botanical name – Family - Origin -
area - Production - Improved varieties and cultivation practices such as time of sowing -
Sowing - Planting distance - Fertilizer requirements - Irrigation

Weed management - Harvesting - Yield - Storage - Disease and pest control and seed
production.

UNIT – V
Cole crops- Cabbage and Cauliflower -Botanical name – Family - Origin - Area -
production - Improved varieties and cultivation practices such as time of sowing

UNIT – V
Cucurbits – Flowering, sex expression, sex ratio - Cucumber, Ridge gourd, Bitter gourd,
Bottle gourd- Botanical name – Family - Origin - Area - Production - improved
varieties and cultivation practices such as time of sowing - Sowing - Planting distance -
Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage -
Physiological disorders - Disease and pest control and seed production.

Melons – Watermelon and Musk melon - Botanical name – Family - Origin - Area -
Production - Improved varieties and cultivation practices such as time of sowing
Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting –
Yield – Production of seedless watermelons - Storage

Physiological disorders - Disease and pest control and seed production.
Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage - Physiological disorders - Disease and pest control and seed production.

Peas and beans (Cluster bean, French bean, Dolichos) - Botanical name – Family - Origin - Area - Production - Improved varieties and cultivation practices such as time of Sowing - Planting distance - Fertilizer requirements - Irrigation

Weed management - Harvesting - Yield - Storage - Physiological disorders - Disease and pest control and seed production.

Root crops (Carrot and Radish) - Botanical name – Family - Origin - Area - Production

Improved varieties and cultivation practices such as time of sowing - Sowing - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage - Physiological disorders (splitting, forking and cavity spot) - Disease and pest control and seed production.

UNIT – VI

Tapioca and Sweet potato - Botanical name – Family - Origin - Area - Production

Improved varieties and cultivation practices such as time of sowing - Sowing - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage - Physiological disorders - Disease and pest control and seed production.

Perennial vegetables – Drumstick and Curry Leaf - Botanical name – Family - Origin

Area - Production - Improved varieties and cultivation practices such as time of sowing - Sowing - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage - Physiological disorders - Disease and pest control and seed production.

Bulb crops – Onion and Garlic - Botanical name – Family - Origin - Area - Production

Improved varieties and cultivation practices such as time of sowing - Sowing - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage - Physiological disorders - Disease and pest control and seed production.

PRODUCTION TECHNOLOGY FOR FRUITS AND VEGETABLES (PRACTICAL)

1. Identification of vegetables and their seeds.
2. Identification of Fruit crops and their seeds.
3. Nursery raising techniques of vegetable crops.
4. Direct seed sowing and transplanting.
5. Study of morphological characters of different vegetables.
6. Study of morphological characters of different Fruits.
7. Physiological disorders of vegetable crops.
8. Intercultural operations in vegetable crops.
10. Seed extraction methods in vegetables.
11. Seed extraction methods in Fruits.
12. Harvest indices and maturity standards of vegetable crops.
15. Visit to vegetable farmer fields.
16. Visit to vegetable markets to study marketing problems.

References

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Credits 0+20=20

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
III Year - Semester VI
CROP PRODUCTION
(CREDITS 0+4=4)

- Raising Field crops- Participation and documentation of each and every agronomic practices related to the respective crop grown from Land preparation to Harvest and collection of Biometric data at all important stages of the crop.
- Record & Viva Voce- Record writing for the respective crop grown mentioning all cultivation practices followed from Land preparation to Harvest and Viva Voce.
- Participation: 50 Marks
- Record & Viva Voce: 50 Marks

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
III Year - Semester VI
CROP PROTECTION
(CREDITS 0+4=4)

- Management of Insect pests and Diseases- Participation and documentation of each and every Plant Protection activity related to the respective crop grown from Land preparation to Harvest and collection of Insect or Disease damage Herbarium or Samples.
- Record & Viva Voce- Record writing for the respective crop grown mentioning all Plant Protection activity followed from Land preparation to Harvest and Viva Voce.
- Participation: 50 Marks
- Record, Herbarium/Specimen & Viva Voce: 50 Marks
ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
III Year - Semester VI
AGRICULTURAL ECONOMICS
(CREDITS 0+4=4)

- Cost of Cultivation - Collection and documentation of the costs incurred in each and every Cultivation practice done in the respective crop grown from Land preparation to Harvest.
- Visit to a Rural Cooperative Bank or Society and learning about their Operational Procedures and Documentation of the visit.
- Record & Viva Voce - Record writing for the respective crop grown mentioning the total cost of cultivation from Land preparation to Harvest and Viva Voce.
- Participation: 50 Marks
- Record & Viva Voce: 50 Marks

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
III Year - Semester VI
RURAL EXTENSION
(CREDITS 0+4=4)

- Visit to a village and conducting Filed visits and Farmer meetings.
- Visit to an Agricultural enterprise or processing unit, learning the operational procedures and Documentation of the visit.
- Record & Viva Voce - Record writing for the activities like Field visit, Farmer meetings and Agricultural enterprise or processing unit and Viva Voce.
- Participation: 50 Marks
- Record & Viva Voce: 50 Marks

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
III Year - Semester VI
AGRICULTURAL ENTERPRENUERSHIP
(CREDITS 0+4=4)

- Participation in An Agricultural entrepreneurship activity and gaining hans on experience on any one Agricultural processing or input manufacturing or value addition process and income generation from the activity throughout the semester.
- Participation in Entrepreneurship activity: 50 Marks
- Project Thesis and Viva Voce: 50 Marks
Andhra University
A.M.A.L College, Anakapalle
B.Vocational course
AGRICULTURE
2020-21 Admitted batch
Semester IV, V & VI
### Andhra University
**A.M.A.L College, Anakapalle**  
**B. Vocational Course**  
**AGRICULTURE**

2020-21 Admitted batch

**SEMESTER- IV**

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