

KONGUNADU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
COIMBATORE - 641 029



DEPARTMENT OF BOTANY

CERTIFICATE PROGRAMME IN
ECO FARMING TECHNIQUES

CURRICULUM AND SCHEME OF EXAMINATIONS
(CBCS)
(2023 - 2024 onwards)

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PROGRAMME OUTCOMES (PO)

PO1

- ❖ Organic farming has immense carrier potential about elements of soil and its management to inculcate soil knowledge on nutrient resources viz., manures, fertilizers and biofertilizers

PO2

- ❖ Students get an excellent opportunity to enrich knowledge on the basics of soils and their influencing parameters with relevant to soil fertility, fertilizers and manures.

PO3

- ❖ Understand the impact of the professional agricultural solutions in societal and environmental context

PO4

- ❖ Expansion of experience on various gardening practices and their varied applications in organic farming

PO5

- ❖ Implement appropriate knowledge to explore their entrepreneurial skills to gain benefits economically, culturally and aesthetically

PO6

- ❖ Address the socioeconomic challenges related to organic farming and to propagate knowledge on various aspects of horticulture and appropriate attentions on human health problems.

PO7

- ❖ Able to recognize and examine the relationships between inputs and outputs infarming

PO8

- ❖ Use of research-based knowledge and research methodologies including product composition protocol, analysis and application to accomplish their objectives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1

- ❖ To learn about importance of climatic zones, establishment of natural farming, Systems of cropping, and propagation techniques of horticultural crops

PSO 2

- ❖ To learn about production technology of tropical, subtropical, arid, humid and temperate horticultural crops

PSO3

- ❖ To understand the concept of natural farming and conserve environment through ecological balanced techniques

PSO4

- ❖ To equip necessary ecological skills for the maintenance of fertile soil and less toxic environment.

PSO5

- ❖ To implement the acquired knowledge on commercial applications of organic farming

CET1

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS) COIMBATORE – 641 029

PROGRAMME NAME: CERTIFICATE PROGRAMME IN ECO FARMING TECHNIQUES

Curriculum and Scheme of Examination under CBCS
(Applicable to the students admitted during the Academic Year 2023-2024)

Semester	Subject Code	Title of the Paper	Instruction hours /cycle	Exam Marks			Duration of Exam (hours)	Credits
				CIA	ESE	Total		
	23CET101	C.P.1- Introduction to Organic Farming techniques	2	25	75	100	3	2
	23CET102	C.P.2- Horticulture techniques in Organic Farming	2	25	75	100	3	2
	23CET1CL	C.Pr.1. Organic Farming Techniques	2	40	60	100	3	2
	23CET1IT	Case Study Analysis	2	20	80	100	3	2
		Grand Total	8	-	-	400	-	8

Note:

CBCS - Choice Based Credit System

CIA - Continuous Internal Assessment

ESE - End of Semester Examinations

Tally Table:

S. No.	Subject	Marks	Credits
1.	Core-Theory	200	4
2.	Core Practical	100	2
3.	Case Study Analysis	100	2
Grand Total		400	8

- 25% CIA is applicable for all subjects
- A **Field Trip** preferably relevant to the course should be undertaken during the course

CET2

Components of Continuous Internal Assessment (CIA)

Components		Marks	Total
Theory			
CIA I	75	(75+75=150/10)	25
CIA II	75		
Assignment/ Seminar		5	
Attendance		5	
Practical			
CIA Practical		25	40
Observation Notebook		10	
Attendance		5	
Project			
Review		15	20
Regularity		5	

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1 - Remembering; **K2** - Understanding; **K3** - Applying; **K4** - Analyzing; **K5** - Evaluating

1. Theory Examination - Part I, II & III

(i) CIA I & II and ESE: 75 Marks

Knowledge Level	Section	Marks	Description	Total
K1 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	75
K1 – K5 Q11 to 15	B (Either or Pattern)	5 x 5 = 25	Short Answers	
K2 - K5 Q16 to 20	C (Either or Pattern)	5 x 8 = 40	Descriptive / Detailed	

2. Practical Examination:

Knowledge Level	Section	Marks	Total
K3	Experiments & Record Work	50	60
K4		10	
K5			

CET3

3. Project Viva Voce:

Knowledge Level	Section	Marks	Total
K3	Project Report & Viva voce	60	80
K4		20	
K5			

Programme Code: 05	CERTIFICATE PROGRAMME IN ECO FARMING TECHNIQUES		
C.P. 1. INTRODUCTION TO ORGANIC FARMING TECHNIQUES			
Batch 2023-2024	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- To discern the basic necessity of organic farming.
- To develop skills in organic manuring of agricultural soil.
- To inherit in build knowledge on safe and healthy self-utilization, self- employment and entrepreneurial skills

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1 ↑ ↓ K5	CO1	Know about preliminary techniques of farming practices.
	CO2	Understand the necessary ecological skills to maintain the fertile soil.
	CO3	Acquire knowledge on preparation of organic fertilizers and their varied applications
	CO4	Investigations on acquired techniques to achieve safe environment and to acquire healthy life.
	CO5	Implement the acquired knowledge on organic cultivation and marketing.

SYLLABUS

UNIT I:

(6 hours)

Introduction: scope, importance, history of organic farming, needs and importance of organic farming, benefits of organic farming, types of organic farming. Different concepts of organic farming – natural farming, biodynamic farming, perma culture and Zero budget farming.

UNIT II:

(6 hours)

Organic Fertilizer: classification, functions of nutrients in plant growth and development, needs and benefits of organic farming, sources of fertilizers–mixed and complex organic fertilizers –micronutrient mixtures. Importance of soil fertilizers and its productivity.

UNIT III:

(6 hours)

Organic Manure: Manure- Definition, classification, Preparation of different types of compost including coir waste, press mud – Vermicompost, Green manures (GM) and Green Leaf Manures (GLM) – Benefits and significance, *In - situ* incorporation of crop residues –Benefits; Liquid Manure.

UNIT IV:

(6 hours)

Soil Fertility Management: Types of soil and their distribution in India, Quality assessment of soil and water, factors affecting nutrient availability to plants, Soil nutrient testing, Soil reaction, Soil fertility evaluation- definition, methods, indicator plant, integrated plant nutrient management (IPNM) - definition, component of IPNM and their management.

UNIT V:

(6 hours)

Pathology and Biopesticide: Introduction and types, Principles of plant disease management, Epidemiology and Forecasting of plant diseases, biopesticides and biocontrol agents in agriculture and organic farming system, Microbial pesticides, mass production of microbial bioagents- *Trichoderma*, *Bacillus*, *Pseudomonas*, Different methods of application of biopesticides, Integrated Disease Management (IDM).

*** Self study**

Teaching Methods

Smart Class Room/PowerPoint presentation/Seminar/Quiz/Discussion

TEXT BOOKS

1. S.P. Palaniappan and K. Annadurai.(1999). Organic Farming Theory and Practice. Scientific Publishers (India), Jodhpur.
2. Sharma and K. Arun (2002). A Hand Book of Organic Farming Agrobios (India), Jodhpur.
3. GN. Agrios, (2010). Plant Pathology. Acad. Press
4. H.O. Buckman and N.C. Brady. (1990). Nature and properties of soil, The McMillan Co, New York, Indian Publishers – Eurasia Publishing House (P) Ltd., Ram Nagar, New Delhi.
5. P.C. Das (1993). Manures and Fertilizers, Kalyani Publishers, New Delhi

REFERENCES

1. G.S. Dhaliwal and D.S. Kler. (2000). Agricultural Ecology, Himalaya Publishing Company, Mumbai.
2. IIRR (1996), Recording and using Indigenous Knowledge: A Manual International Institute of Rural Reconstruction, Silang, Cavite, Philippines.

CET6

3. M. Sundaramari (2003). Indigenous Agricultural Practices for Sustainable Farming, Agrobios (India), Jodhpur.
4. C.V. Govindasamy and M.N.Alagianagalingam. 1990. Plant Pathology, Popular Book Depot, Chennai.
5. V.N. Sahai (1990). Fundamentals of Soil, Kalyani Publishers, New Delhi
6. R.S. Singh (2000). Introduction to Principles of Plant Pathology, Oxford & IBH Publishing Company, New Delhi.
7. H.T. Hartmann and D.E. Kester (1975). Plant propagation, Englewood cliffs, New Jersey, Printice Hall.
8. Havlin, Beaton. (2010). Tisdale and Nelson, PHI Learning Private Ltd, New Delhi

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	M	H
CO2	S	M	H	H	M
CO3	H	S	M	H	H
CO4	S	H	M	S	M
CO5	S	M	M	H	H

S - Strong

H - High

M - Medium

L - Low

Programme Code: 05	CERTIFICATE PROGRAMME IN ECO FARMING TECHNIQUES		
C.P. 2. HORTICULTURE TECHNIQUES IN ORGANIC FARMING			
Batch 2023-2024	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- To recognize the importance of organic horticulture
- To develop skills in quality enhancement of horticultural products
- To configure knowledge on self- employment and entrepreneurial skills

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1 ↑ ↓ K5	CO1	Understand preliminary techniques on horticultural practices
	CO2	Disseminate knowledge on necessary techniques to maintain the quality of fresh products
	CO3	Acquire knowledge on Propagation techniques, preparation of organic fertilizers and their application
	CO4	Analyses various schemes to accomplish ecofriendly agricultural approach
	CO5	Application of acquired knowledge on horticultural organic cultivation practices and marketing

SYLLABUS

UNIT I:

(6 hours)

Cropping systems and Farming systems: Systems of farming- Wet land, Garden land and dry Land Farming systems- Factors affecting choice of crops and varieties – Types of cropping systems – Mono cropping, multiple cropping. Agronomy and Modern concept in crop production, Integrated farming systems.

UNIT II:

(6 hours)

Cultivation of crops with organic inputs: Soil health for organic farming, Field crops, Leguminous crops, Vegetable crops (tomato, leafy greens), Tree crops (Fruits and Nuts), flowering plants, medicinal and aromatic plants, Organic production systems for field and forage crops, Rotational grazing and pasture management, Water use efficiency & methods of irrigation, Micro irrigation system – Drip, Mist and Sprinkler types.

UNIT III:

(6 hours)

Propagation and storage: Propagation through vegetative parts and specialized organs, seeds, micro-propagation, Seed selection, collection and production, methods for the maintenance and storage of seeds. Seed certification process. Seed, seedling and soil treatment measures. feasibility on complete dependence of organic sources.

UNIT IV:

(6 hours)

Economical aspect of organic farming and Government Schemes: National Horticultural Board and its schemes. NWDPR, IAMWARM and NHM and NFSM. Functions, Training and Visit System of TNADP, ICAR- KVK, Agri Clinics and Agri Business Centres. Kisan Credit Card Scheme, National Agricultural Insurance Scheme

UNIT V:

(6 hours)

Sustainability and Marketing: Trade & Supply Chain Management- Introduction & Challenges, Quality Control and certification procedures of Organic products, Organic trademark, National Standards for Organic Production (NSOP) and Tamil Nadu Organic Certification Department (TNOCD)- general standards for organic agricultural production, Organic farming adaptation, Agro-ecosystem approach and its importance in Indian economy and nutrition

*** Self study**

Teaching Methods

Smart Class Room/PowerPoint presentation/Seminar/Quiz/Discussion

TEXT BOOKS

1. N. Kumar, (1997). Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
2. K.S. Shanmugavelu, (1989). Viticulture in India. Agro Botanical Publishers.
3. JS Arora (2014). Introductory Ornamental Horticulture. Kalyani Publishers, New Delhi.
4. P. Balasubramaniyan and S.P. Palaniappan, (2001). Principles and Practices of Agronomy. Agrobios.

CET9

5. C.A. Beyl and R.N. Trigiano (2015). Plant Propagation Concepts and Laboratory Exercises, 2nd edition. CRC Press, Boca Raton, FL.

REFERENCES

1. H.T. Hartmann and D.E.Kester. (1975). Plant propagation, Englewood cliffs, New Jersey, Printice Hall.
2. T.K. Bose, (1986). Fruits of India – Tropical and subtropical, Nayaprakash, Calcutta.
3. K.K. Singh, (1987). Mango- A Hand Book, ICAR Publications, New Delhi.
4. R. Balasubramanian and B.Gururajan. 2009. Crop Production, Kalyani Publsiher, Ludhiana
5. B.N. Chatterjee and S.Maiti. (1993). Cropping system – Theory and Practice, Oxford and IBH Publishing Company Pvt. Ltd., New Delhi.
6. Chiddha Singh. (1997). Modern Techniques of raising field crops, Oxford and OBH Publishing Company Pvt. Ltd., New Delhi.
7. Singh, S.S. (1997). Crop Management under irrigation and rain fed conditions, Kalyani Publishers, New Delhi.
8. TNAU. (2006). Crop production Guide, TNAU and Directorate of Agriculture, Chennai.

MAPPING

CO	PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1		S	H	H	M	H
CO2		S	M	H	H	M
CO3		H	S	M	H	H
CO4		S	H	M	S	M
CO5		S	M	M	H	H

S - Strong

H - High

M - Medium

L - Low

Programme Code: 05		CERTIFICATE PROGRAMME IN ECO FARMING TECHNIQUES		
CORE PRACTICAL 1: ORGANIC FARMING TECHNIQUES				
Batch 2023-2024	Semester I	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- To equip knowledge on the preparation of organic nutrients
- To imbibe knowledge on less toxic farming practices.
- To prepare quality products of high marketing value.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3 ↑ ↓ K5	CO1	Understand the concept of organic farming to conserve environment through ecologically balanced techniques
	CO2	Investigate the barriers of organic farming and horticulture.
	CO3	Implement the acquired knowledge on commercial applications of organic farming
	CO4	Implantation of healthy practices in kitchen garden and other horticultural practices
	CO5	Inculcate inherent knowledge on preparations of organic fertilizers using various appropriate procedures

LIST OF PRACTICALS

1. Preparation of Panchakavya
2. Preparation of Organic Manure
3. Preparation of Seed Balls
4. Preparation of Vermicompost/FYM
5. Preparation of Organic nutrient solution.
6. Preparation of Value added product
7. Preparation of potting mixture and its treatment
8. Preparation of Biopesticides
9. Determination of available Nitrogen, Phosphorus and Pottasium from soil
10. Visit to Organic farm.

MAPPING

CO \ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	M	S
CO2	S	M	H	S	H
CO3	H	H	M	H	H
CO4	S	H	S	M	M
CO5	H	M	H	S	H

S - Strong

H - High

M - Medium

L - Low

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**CERTIFICATE PROGRAMME QUESTION PAPER (PRACTICALS)
End of Semester Examination Question Paper Pattern
(For the candidates admitted from the academic year 2023-2024 onwards)**

Time: 3 Hours

Max. Marks: 60 Marks

BREAK UP OF MARKS

1.	Preparation of Panchakavya	10
2.	Preparation of Organic nutrient solution	10
3.	Preparation procedure for Vermicompost /FYM	10
4.	Preparation of Biopesticides	10
5.	Preparation protocol for potting mixture	05
6.	Preparation protocol for Value added product/Soil available nutrients	05
	Record	10
		<hr/>
		60
		<hr/>

Programme Code: 05		CERTIFICATE PROGRAMME IN ECO FARMING TECHNIQUES		
CASE STUDY ANALYSIS				
Batch 2023-2024	Semester I	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- ❖ To find opportunities and actions to increase the demand of organic farming
- ❖ To recommend management policies on the basis of opinion of farmers and other local stakeholders
- ❖ To know critical thinking and problem solving skills in agricultural farming

COURSE OUTCOME

On successful completion of the project work, the students will be able to

K3 ↑ ↓ K5	CO1	To understand the current event issues that are occurring in agriculture
	CO2	To documents the challenges faced during organic farming
	CO3	To Gain knowledge on self – identify towards farming behaviour
	CO4	To acquire knowledge on Ancient Traditional practices and its relevant to modern agricultural practices
	CO5	Recognize and examine the relationships between inputs and outputs of farming

The students shall undergo case study for a minimum period of one month during the last two months of the course and submit the report. Both the Internal and External Examiners shall jointly evaluate the report submitted by the students and marks will be awarded on the basis as mentioned below.

Guidelines for the Distribution of Marks:

CIA	Project Review	15	20
	Regularity	5	
ESE	Project Report Present	60	80
	Viva – Voce	20	
Grand Total			100

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	S	M	S
CO2	S	S	H	S	H
CO3	S	H	S	H	S
CO4	S	H	M	S	M
CO5	H	M	S	M	L

S - Strong

H - High

M - Medium

L - Low