



University of Kerala

Discipline	BOTANY				
Course Code	UK2MDCBOT103				
Course Title	ORGANIC FARMING				
Type of Course	MDC				
Semester	II				
Academic Level	100 – 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	03	03 Hours	-	-	03 Hours
Pre-requisites	No Pre-requisites				
Course Summary	Students will understand and analyse the ill effects of conventional agricultural practices and appreciate the benefits of organic agriculture. They will apply the knowledge of methodology of organic farming in their home gardens. They will understand the global demand and premium price organic products fetch in the market. The course may motivate the students to get into Organic Farming and Marketing business ventures.				

Detailed Syllabus:

Module	Unit	Content	Hrs
I	Introduction to Agriculture		03
	1	Introduction to Agriculture: Domestication of plants – early agricultural practices– intercropping and crop rotation, Green Revolution	
	2	Major cultivated crops and vegetables in India (Brief description about Rice, wheat, Maize, Brinjal, Ladies finger, Vigna, and Tomato).	
II	Organic farming		06
	3	Organic farming- definition, Principles and practices of organic farming. Need for organic farming.	
	4	Types - Integrated organic farming, Pure organic farming. Zero Budget Natural Farming (ZBNF), Advantages and disadvantages of organic farming Learning Activity: <i>Student may grow any short-duration vegetable by organic farming in their home and submit a report with geotagged photographs</i>	
III	Importance of Soil in Agriculture		12
	5	Definition; Soil formation; Composition and characteristics; Types of soil according to composition; Acidic, Alkaline and Saline soils; Effect of soil types on Agriculture; Method of reclamation.	
	6	Soil productivity: Meaning and Concept. Difference between Soil Fertility and Productivity; Method of Increasing productivity and fertility, importance of microbes in the enrichment of soil fertility.	

		Role of VAM as growth regulator. Drip irrigation. Relationship between soil fertility and soil pH.	
	7	Organic matter management in agricultural fields , Organic manures (cow dung, cow urine , leaves, coir pith, bone dust , etc), – plant health – sustainable agriculture– supplementation of NPK as bioresource – vermicomposting –mulching, green manure	
	8	Biogas slurry- Organic content. Status of Biogas Usage, benefits, and significance. Pipe compost- installation and benefits	
IV	Biofertilizers and Biopesticides		12
	9	Scope, application, types – mass cultivation of biological nitrogen fixers – Blue-green algae, Rhizobium, Azolla – Phosphate solubilizing bacteria – Mycorrhiza – cost-benefit analysis and Protection Measures: Integrated pest and disease management.	
	10	Organic pesticides, bio-pesticides- Types and benefits. Microbial biopesticides, and its advantages (<i>Trichoderma</i> , <i>Pseudomonas fluorescence</i> , <i>Bacillus thuringiensis</i>) Inorganic pesticides, disadvantages of their use. Seed, seedling, and soil Treatment measures. Learning Activity: <i>Preparation of tobacco decoction</i> (a plant-based pesticide)	
V	Feasibility and Economics of Organic Farming		12
	11	Feasibility of complete dependence on organic sources. Organic Agri-Horticulture in Urban and rural areas, terrace and kitchen garden. Value addition in organic products – government policies	
	12	Economics of organic products- cost of production and financial benefits to cultivator. Good Harvesting Practices; Storage; Transportation; Supply Chain. Need of certification and quality assessment of organic produce. Agencies involved in Organic certification in India.	
	13	National Programme for Organic Production. Organic Farming Mission of Kerala.	

Suggested Reading

1. Dubey, R.C., 2014. A textbook of biotechnology. S. Chand and co private limited, New Delhi.
2. Lakshmana, H.C. and Channabasava, A., 2014. Biofertilizers and biopesticides. Pointer publishers, Jaipur.
3. Himadri, P. and Dharamvir, H., 2007. Biofertilizers and organic farming. Gene–tech books, New Delhi.
4. Hegazi, N. I., Fayez, M. and Hamza, M., 2013. Biofertilizers for organic farming. Academic publishing, Egypt.
5. Dilip, N., 2016. Organic farming for sustainable agriculture. Springer publishing, New Delhi.

References

1. Goswami KP, 1989, Appropriate Technology for Rural India to produce biogas from vegetable waste.
2. Managing Manure, 2015 Mark Kopecky, Storey Publishing .

3. Rodale book of composting, 1992 , Grace Gershuny, Rodale press, Pennsylvania
4. Organic fertilizers 2019, Sonia Soloneski, Intech open.
5. Biogas fundamentals 2018, Meisam Tabatabaei, Springer.
6. Agriculture Research Data Book 2019, ICAR—Indian Agriculture. Statistics Research

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Students will understand the conventional agricultural practices that damage the health of people as well as the environment from the avaricious anthropogenic onslaughts due to the indiscriminate use of chemical fertilizers and pesticides.	U, Ap	PSO-3,4
CO-2	Students can assess the advantages of organic farming means and practices as an alternative to conventional agriculture.	U, An	PSO-3,4
CO-3	Students can analyze the various forms of microbes as suppliers of organic nutrients, including nitrates, and phosphates enriching the soil that would eventually have a bearing on the methods of cultivation with enhanced nitrogen supply.	An	PSO-3
CO-4	Students apply the knowledge of using biopesticides without harming the co- living microbiota and life forms in the ecosystem and understand that the use of crop protection chemicals can be avoided to safeguard environment.	Ap, An	PSO-5
CO-5	Students will use the acquired knowledge needed to prepare eco-friendly commercial formulations meeting national and international standards and regulations and float newer entrepreneurial ventures	U, C	PSO-3,8

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Name of the Course: Organic Farming

Credits: 3:0:0 (Lecture:Tutorial:Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
1	1	3,4	U, An	F,C	L,T	

2	2	3,4	An	F,C	L,T	
3	3	3	Ap, An	C,P	L,T	
4	4	5	U, C	C,P		P
5	5	3,8	U, An	P		P

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

Mapping of COs to Assessment Rubrics :

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1	✓			✓
CO 2	✓			✓
CO 3	✓			✓
CO 4		✓		✓
CO 5		✓	✓	✓