



# FIRST-YEAR OF BACHELOR OF VOCATIONAL MINOR SUSTAINABLE AGRICULTURE REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: AGRICULTURAL WASTE MANAGEMENT  
SEMESTER-II, W.E.F. 2024-2025

**RECOMMENDED BY THE BOARD OF STUDIES IN BVOC (SA) AND  
APPROVED BY THE ACADEMIC COUNCIL**

DevrukhShikshanPrasarakMandal's

Nya. TatyasahebAthalye Arts, Ved. S. R. Sapre Commerce, and  
Vid. DadasahebPitre Science College (Autonomous), Devrukh.  
Tal.Sangmeshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: \_\_\_\_\_

Name of the Implementing Institute	:	Nya. TatyasahebAthalye Arts, Ved. S. R. Sapre Commerce, and Vid. DadasahebPitre Science College (Autonomous), Devrukh. Tal.Sangmeshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Vocation ( Sustainable Agriculture )
Name of the Department	:	Science
Name of the Class	:	First Year
Semester	:	Second
No. of Credits	:	02
Titleof the Course	:	Fruits and Vegetable Processing and Preservation
Course Code	:	B111SAT
Name of the Vertical in adherence to NEP 2020	:	Major and Minor
Eligibility for Admission	:	Any 12 <sup>th</sup> Pass and/or Diploma in agriculture seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances/Regulations(if any)		

**Syllabus for First Year of Bachelor of Vocation in Sustainable Agriculture**  
**(With effect from the academic year 2024-2025)**

**SEMESTER-II**

**Paper No.–**

**Course Title: Agricultural Waste Management**

**No. of Credits -**

**02 Type of Vertical: Major and Minor**

**COURSE CODE: B111SAT**

**Learning Outcomes Based on BLOOM's Taxonomy:**

After completing the course, the learner will be able to...

<b>Course Learning Outcome No.</b>	<b>Blooms Taxonomy</b>	<b>Course Learning Outcome</b>
CLO-01	Remember	Remember the Basics of Agricultural waste management and its different type
CLO-02	Understand	Understand the concept of agricultural waste and its significance in sustainable agriculture.
CLO-03	Apply	Apply various waste management strategies and techniques .
CLO-04	Analyse	Analyse environmental, economic, and social impact of Agricultural waste.
CLO-05	Evaluate	Evaluate the potential for waste production, recycling, and reuse in agricultural systems.
CLO-06	Create	Create ability to develop problem solving skills through case studies and practical exercises.

## Syllabus for First Year of Bachelor of Vocation in Sustainable Agriculture

(With effect from the academic year 2024-2025)

**SEMESTER-II**

**Paper No.–**

**Course Title: Agricultural Waste Management**

**No. of Credits - 02**

**Type of Vertical: Major and Minor**

**COURSE CODE: B111SAT**

<b>COURSE CONTENT</b>			
<b>Module No.</b>	<b>Content</b>	<b>Credits</b>	<b>No. of Lectures</b>
1	Introduction to Agricultural Waste Management - Definition and types of agricultural waste - Importance of waste management in sustainable agriculture Environmental, economic, and social implications of agricultural waste  Classification and Characterization of Agricultural Waste Categorization of agricultural waste based on origin and composition Methods for characterizing waste properties and determining waste potential Waste Generation and Quantification Waste Management Strategies: Reduce, Reuse, Recycle	01	15
2	Composting and Vermicomposting Principles and processes of composting Vermicomposting: role of earthworms in waste decomposition  Compost quality assessment and utilization in agriculture  Anaerobic Digestion and Biogas Production  Anaerobic digestion: process and principles  Biogas production and its applications  Case studies of successful anaerobic digestion projects Nutrient Management and Waste Utilization	01	15
<b>Total</b>		<b>02</b>	<b>30</b>

## Required Previous Knowledge

No previous Knowledge is required.

## Access to the Course

The course is available for all the students admitted for Bachelor of Vocation (SA) as a Major or a minor. The students seeking admission in other disciplines may select the course as a minor considering the terms and conditions laid down by the University of Mumbai, the Government of Maharashtra, and the college, from time to time.

## Forms of Assessment

The assessment of the course will be of Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 50:50. The detailed pattern is as given below.

### Term End Evaluation (30 Marks)

#### Question Paper Pattern

Time: 1.5 hours

Question No.	Unit/s	Question Pattern	Marks
Q.1	All	Fill in the Blanks	6
Q.4	All	Attempt any three question from the following five questions (Applied Questions)	24
<b>Total</b>			<b>30</b>

### Internal evaluation (20 Marks)

Sr. No.	Description	Marks
1	Mid Term Examination	10
2	Active Participation in teaching learning Process	5
3	Subject related activities as assigned by the teacher	5
<b>Total</b>		<b>20</b>

## Grading Scale

The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

## References for Module 1 :

1. Agricultural Waste Management: Problems, Processes, and Approaches" by Gaurav Kumar, Manoj Kumar, and Sunil Kumar Publisher: academic press

Chapter 1: Introduction to Agricultural Waste Management, Definition and Types of Agricultural

Waste, Importance of Waste Management in Sustainable Agriculture, Environmental, Economic, and Social Implications of Agricultural Waste

Chapter 2: Classification and Characterization of Agricultural Waste, Categorization of Agricultural Waste Based on Origin and Composition, Methods for Characterizing, Waste Properties and Determining Waste Potential

Chapter 3: Waste Generation and Quantification

Chapter 4: Waste Management Strategies: Reduce, Reuse, Recycle

2. "Waste Management in the Chemical and Petroleum Industries" by Alireza Bahadori Publisher: wiley

Chapter 5: Agricultural Waste Management Overview of Agricultural Waste Management, Importance of Sustainable Waste Management Practices, Classification and Characterization of Agricultural Waste

### **References for Module 2 :**

1. Composting: Principles and Practice" by J. I. Rodale Publisher: rodale books

Chapter 1: Principles and Processes of Composting

Chapter 2: Compost Quality Assessment and Utilization in Agriculture

2. "Vermicomposting: Principles and Practice" by Clive A. Edwards, Norman Q. Arancon, and Rhonda L. Sherman Publisher: CRC press

Chapter 1: Role of Earthworms in Waste Decomposition

Chapter 2: Compost Quality Assessment and Utilization in Agriculture

3. "Anaerobic Digestion: Processes, Products, and Applications" by Tim Pullen Publisher: Routledge

Chapter 1: Anaerobic Digestion: Process and Principles

Chapter 2: Biogas Production and Its Applications

Chapter 3: Case Studies of Successful Anaerobic Digestion Projects

4. "Nutrient Management in Agricultural Ecosystems" edited by Stephen R. Gliessman and Martha Rosemeyer Publisher: Boca Raton, Fla. : CRC Press

Chapter 1: Nutrient Management and Waste Utilization

Chapter 2: Utilization of Compost and Biogas Digestate in Agriculture

### **Reference Books:**

1. "Agricultural Waste Management: Problems, Processes, and Approaches" by Richard A. Holley and Mark J. Rice

2. "Agricultural Waste Management: Solutions for a Sustainable Future" edited by David C. Dey and H. S. Udaykumar

3. "Handbook of Agricultural Waste Management" edited by Ahmad Ashfaq

4. "Agricultural Waste Management: Principles and Practice" by K. Srinivasan
5. "Agricultural Waste Water Management: Current and Emerging Practices" edited by Reddy, K.R. and Delaune, R.D.
6. "Sustainable Solid Waste Management in the Southern Black Sea Region" edited by Mustafa Ilkan, Yakup Civelek, and Orhan Yenigün
7. "Management of Agricultural Wastes" edited by Satinder Kaur Brar, Brijesh K. Tiwari, and Mika Sillanpää
8. "Biogas Production: Pretreatment Methods in Anaerobic Digestion" by Marco J. Castaldi and Md Nurun Nabi

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