

Shri Shivaji Education Society's
Board for Higher Education Vidyanagar Karad.



YASHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAD

DEPARTMENT OF MICROBIOLOGY

SHORT TERM COURSE

Production of Biofertilizers and Biopesticides

2023-24

Index

Total Students: 20

Class: B. Sc. II

Duration: 03 Months

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7	Attendance
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YASHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAD.

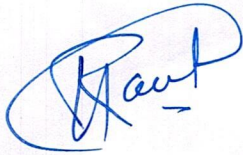
Department of Microbiology

2023-24

Notice

Date: 22/7/2023

All the Students of the B.Sc. II are hereby informed that the Department of Microbiology is going to run a UGC NSQF certified certificate course entitled as **“A Certificate Course in production of Biofertilizers and Biopesticides”** Interested Candidates enrol their names to Dr. A. A. Raut, course Co-ordinator on or before 27th July, 2023.



Head
Department of Microbiology
DEPARTMENT OF MICROBIOLOGY



Yashwantrao Chavan College of Science, Karad

Department of Microbiology

Course Title: A Certificate Course in production of Biofertilizers and Biopesticides.

Course Duration: 24 weeks

Overview:

Microbiology laboratory skill is an essential part of an aspiring career in life science. This program is designed to train the participants in the fundamental techniques of applied microbiology. The major aim of the program is to provide hands-on training to the participants that could boost their confidence in exploring further higher research or analysis in the field of life sciences.

Objective:

9. To provide basic information regarding various parts of commonly used biofertilizers and biopesticides.
10. To prepare the microbiology student with important techniques used in production of biofertilizers and biopesticides.
11. It highlights the basic techniques for processing biofertilizer and biopesticide samples.
12. Improve interpersonal and teamwork skills

Unit 1:

Soil - Soil in general, physical and chemical properties of soil, types of microorganisms in soil, Soil structure.

(6 weeks)

Unit 2:

Role in microorganisms in soil fertility, Microbiological interactions - Symbiosis, Commensalism, Amensalism, Parasitism, Predation.

(6 weeks)

Unit 3

Basics of Biofertilizers and Biopesticides - History and concept of Biofertilizers and biopesticides. Importance, scope and potential of Biofertilizers and biopesticide. Integrated Pest Management.

(6 weeks)

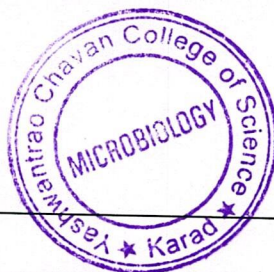
Unit 4

General account of microbes used as Biofertilizers, Rhizosphere : definition, rhizosphere and non rhizosphere microflora, Root Soil ratio, interactions between plant and rhizosphere flora.

(6 weeks)

Practicals

(6 weeks)



13. Enumeration of soil microbes by Direct Microscopic count and Plate culture method
14. Examination of rhizosphere
15. Isolation & study of *Azotobacter sp.* from soil.
16. Isolation & study of *Rhizobium sp* from root nodules of leguminous plants.
17. Isolation of Phosphate solubilizing bacteria
18. Isolation of *Bacillus thuringiensis sp.*

Outcome of the course

After successful completion of the course students will get overall knowledge about the basic technique used in production of biofertilizers and biopesticides and quality control department. This will create job opportunity for them in government laboratory as well as in private industries.



YASHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAD

Department of Microbiology

Short Term Course

A Certificate Course in production of Biofertilizers and Biopesticides

2023 - 2024

Name of the Enrolled Students

Date: 19/08/2023

Roll no.	Name of Students
1	Gayatri Bandu Dalvi
2	Sanika Pradip Lipare
3	Shreya Mahesh Gholap
4	Pranali Malhari Shinde
5	Sanika Anil Gharge
6	Sakshi Shivaji Gurav
7	Jay Bhimrao Shewale
8	Prachi Sadashiv Patil
9	Divya Babu Gaikwad
10	Diksha Avinash Tate
11	Pranita Shahaji Wagh



HEAD
DEPARTMENT OF MICROBIOLOGY



YASHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAD

Department of Microbiology

Short Term Course

“A Certificate Course in production of Biofertilizers and Biopesticides”

Year 2023 - 2024

Date : 24/08/2023

All the students who have enrolled their names for course of A Certificate Course in production of Biofertilizers and Biopesticides are hereby informed that their theory lecture is going to start from 1st September, 2023. All concerned should note and follow.



HEAD
DEPARTMENT OF MICROBIOLOGY

**YASHWANTRAO CHAVAN COLLEGE OF
SCIENCE, KARAD**

Department of Microbiology

Short Term Course

A Certificate Course in production of Biofertilizers and Biopesticides

Year 2023 - 2024

Theory Time Table

September 2023 to January 2024


Lect. Time	Monday	Tuesday
9.30- 10.20	G30 (AAR)	G30 (AAR)

Feb. 2024

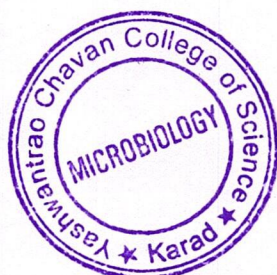
Practical Time Table

Lect. Time	Saturday
8.00 - 8.50	Practical Lab no. 3 Department of Microbiology
8.50 - 9.40	
9.40 - 10.30	

- 5) G30- Golden Jubilee Lecture hall no 30
- 6) All concerned should note and follow.


Course Coordinator


HEAD
DEPARTMENT OF MICROBIOLOGY



Seat No.:

Name of student:

Yashwantrao Chavan College of Science, Karad
Department of Microbiology
2023-24

Paper: A Certificate Course in production of Biofertilizers and Biopesticides

Day and Date – Monday 10/04/2024

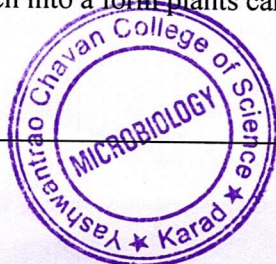
Total marks- 50

Time 10:30 a.m. to 11:30 a.m.

- Instructions:** 1. All Questions are compulsory.
2. Each Question carries 2 marks.

Q.1. State whether the statements are TRUE or FALSE and tick [√] the correct answer in the Question paper itself.

1. Sub-soiling breaks up or shatters compacted layers using deep plowing equipment. True/False
2. Soil mixtures that contain the same type of soil particles are called homogenous soil mixtures. True/False
3. The biochemical changes undergone by atmospheric nitrogen gas from its use by living organisms to decomposition and conversion back to the atmosphere is called phosphorous cycle. True/False
4. Soil materials including plant and animal residues at various stages of decomposition is called organic matter. True/False
5. A single tablespoon of healthy soil might contain only one beneficial soil microbes. True/False
6. Decomposers consume dead plants and animals and recycle the nutrients back to plants. True/False
7. Biofertilizers are the compounds that decrease the nutrient quality of the soil by using microorganisms that establish symbiotic relationships with the plants True/False
8. The intermediate sized soil particle is called as silt. True/False
9. Textural triangle is used to obtain a soil textural name for a sample after it has been mechanically analyzed. True/False
10. Compounds that contain carbon, and other elements such as hydrogen, oxygen, phosphorus, nitrogen, and sulfur are called inorganic compounds. True/False
11. The process of transforming nitrogen into a form plants can use is known as nitrogen fixation. True/False



12. When protozoa eat bacteria, they speed up the cycling of nitrogen, making nitrogen more available to plants. True/False
13. Plant growth promoting microorganisms include bacteria such as *E.coli*. True/False
14. Azotobacter sp. is a non symbiotic phosphate solubilizing bacteria. True/False
15. The smallest soil particle is called as clay. True/False
16. A physical property of the soil referring to the relative percentages of sand, silt, and clay is called texture of soil. True/False
17. Spots of color in the soil that indicates internal drainage and aeration is called tillage True/False
18. Mycorrhizae produce hormones and antibiotics that help plant growth and prevent diseases True/False
19. When one organism eats another, it loses energy from that organism. True/False
20. Compost is used as a fertilizer and soil amendment. True/False
21. When comparing light soils to heavy soils, the light soil will require less energy to cultivate. True/False
22. Permeability cannot be determined by the color of the subsoil. True/False
23. Infiltration is also called as movement of water outside the soil. True/False
24. Clods are the artificially formed groups of soil particles. True/False
25. Soil structure can be destroyed by repeated movement of equipment or livestock. True/False



YASHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAD

Department of Microbiology


Short Term Course

“A Certificate Course in production of Biofertilizers and Biopesticides”

Year 2023- 2024

Result

Roll no.	Name of Students	Marks Obtained out of 100	Percentage
1	Gayatri Bandu Dalvi	81	81
2	Sanika Pradip Lipare	83	83
3	Shreya Mahesh Gholap	80	80
4	Pranali Malhari Shinde	79	79
5	Sanika Anil Gharge	76	76
6	Sakshi Shivaji Gurav	84	84
7	Jay Bhimrao Shewale	78	78
8	Prachi Sadashiv Patil	82	82
9	Divya Babu Gaikwad	83	83
10	Diksha Avinash Tate	82	82
11	Pranita Shahaji Wagh	81	81



HEAD
DEPARTMENT OF MICROBIOLOGY



YASHWANTRAO CHAVAN COLLEGE OF SCIENCE, KARAD

Department of Microbiology

Short Term Course

“A Certificate Course in production of Biofertilizers and Biopesticides”

Year 2023- 2024

Feedback form

Sr. No.	Criteria	Excellent	Good	Average	Poor
1.	Curriculum Content				
2.	Gratification about Lecture				
3.	Gratification about practical				
4.	Hands-on Training				
5.	Knowledge from the course				
6.	The course is beneficial for Students and Parents				

Name of the Student :

Class :

Signature :



**YASHWANTRAO CHAVAN COLLEGE OF SCIENCE,
KARAD**

Department of Microbiology


Short Term Course

“A Certificate Course in production of Biofertilizers and Biopesticides”

Year 2023- 2024

REPORT

Name of the Course	“A Certificate Course in production of Biofertilizers and Biopesticides”
Class	B.Sc. I
Date	2023-24
Name of the department:	Microbiology
Program type	Short Term Course
No. of Students Enrolled	11
No. of Students Successfully completed the course	11
Passing Percentage	100
Program outcomes	<ol style="list-style-type: none">5. Students will get overall knowledge about the basic technique used in biofertilizers and biopesticides production and analysis.6. Hands on different instruments used in microbiology laboratory.7. Improve students skill for interactive and teamwork skills8. This will create career opportunity for students in government laboratory as well as in private industries.


Course Coordinator




Head
Department of Microbiology
DEPARTMENT OF MICROBIOLOGY

Yashwantrao Chavan College of Science, Karad

Department of Microbiology

Certificate Course – Production of Biofertilizer and Biopesticide (2023-24)

CO & PO attainment

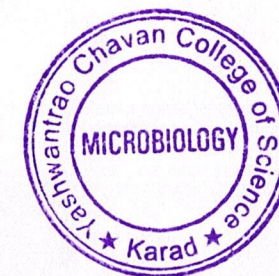
Average Attainment	Target Attainment level	Remark
2.0	Level 4	Target achieved

Course code	Course Title	% of students above 60 % for practical examination	Level of attainment for practical exam	% of students above 80 % for theory examination	Level of attainment	Attainment of course (Theory & Practical)
Certificate Course	Production of Biofertilizer and Biopesticide	100	3	72.72	2.0	2.0

By using below attainment levels 1,2,3 for the Percent of students in B

For internal exam	
Level 1	Less than 60% of students scoring more than average marks
Level 2	60% - 80% of students scoring more than average marks
Level 3	more than equal to 80% of students scoring more than average marks

Programme outcome level	Target Attainment
Level 1	0.5-1.0
Level 2	1.0-1.5
Level 3	1.5-2.0
Level 4	2.0-2.5
Level 5	2.5-3.0



Estd.:

1958

|| Be one with the downtrodden and the underprivileged ||

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Yashwantrao Chavan College of Science, Karad



- Vidyanagar, Karad - 415 124.
- Reaccredited B++ Level by NAAC, Bangalore.
- An ISO 9001 : 2015 Certified College




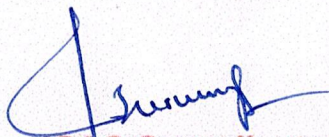
Short Term Course

Certificate of Completion

This is to certify that Mr./Miss. Jay Bhimrao Shewale
of Class B.Sc. I has Completed Short Term Course (6 Months) in Production of
Biofertilizers & Biopesticides conducted by the department of
Microbiology during the academic year 2023 - 2024


Course Co-ordinator


Head of the Department


IQAC Co-ordinator


Principal

Estd.:

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Short Term Course

Certificate of Completion

This is to certify that Mr./Miss. Sakshi Shivaji Girav.
of Class B.Sc. I has Completed Short Term Course (6 Months) in Production of
Biofertilizers & Biopesticides conducted by the department of
Microbiology during the academic year 2023 - 2024

Course Co-ordinator

Head of the Department

IQAC Co-ordinator

Principal

Estd.:

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Short Term Course

Certificate of Completion

This is to certify that Mr./Miss. Diksha Avinash...Tate
of Class B.Sc. I has Completed Short Term Course (6 Months) in Production of
Biofertilizers & Biopesticides conducted by the department of
Microbiology during the academic year 2023 - 2024

Course Co-ordinator

Head of the Department

IQAC Co-ordinator

Principal

Estd.:

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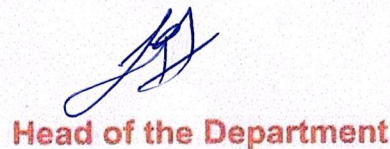


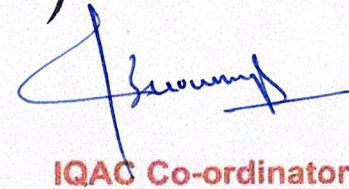
Short Term Course

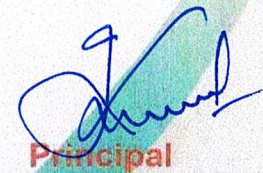
Certificate of Completion

This is to certify that Mr./Miss. Pranita Shikaji Wagh
of Class B.Sc.-I has Completed Short Term Course (5 Months) in Production of
Biofertilizers & Biopesticides conducted by the department of
Microbiology during the academic year 2023 - 2024


Course Co-ordinator


Head of the Department


IQAC Co-ordinator


Principal

Estd.:

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• Vidyanagar, Karad - 415 124. •

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Short Term Course

Certificate of Completion

This is to certify that Mr./Miss. Shreya Mahesh Gholap.
of Class B.Sc. I has Completed Short Term Course (6 Months) in Production of
Biofertilizers & Biopesticides conducted by the department of
Microbiology during the academic year 2023 - 2024

Course Co-ordinator

Head of the Department

IQAC Co-ordinator

Principal