Shri Shivaji Education Society Amravati's

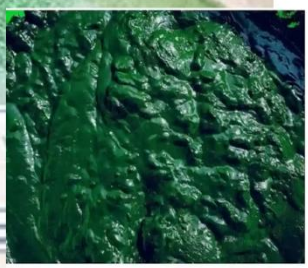
SCIENCE COLLEGE

Congress Nagar, Nagpur - 440012 (M.S.) India.
Accredited With CGPA Of 3.51 At 'A+' Grade.

BOTANY

DEPARTMENT

Spirulina Culture



OBJECTIVE

THE OBJECTIVE OF THE SPIRULINA CULTURE PROJECT FOR STUDENTS IS TO PROVIDE HANDS-ON LEARNING OPPORTUNITIES IN CULTIVATING SPIRULINA , AN ECO-FRIENDLY AQUATIC ALAGE. THE PROJECT AIMS TO TEACH SUSTAINABLE PRACTICES, ENHANCE KNOWLEDGE OF ENVIRONMENTAL CONSERVATION, AND DEMONSTRATE SPIRULINA 'S BENEFITS IN AGRICULTURE AND WATER MANAGEMENT.

CHAIRPERSON

Dr. O. S. Deshmukh

Principal

ORGANIZER

Prof. P. S. Tiwari

Head, Department of Botany

CONVENER

Mr. Piyushkumar R. Sharma

Miss. Aishwarya Zure

Assistant professor

MEMBERS

Dr. R. H. Mahakhode | Dr. S. S. Deshmukh | Dr. Anita M. Katgaye |Dr. R. P. Sonwalkar | Ms. Shruti Agarwal | Dr. Tinku kumar Rajput | Mr. Swapnil Fuse

STUDENT MEMBERS

M.Sc. I year Batch - 2024-25

NOTICE

All the students of UG and PG Botany are here by informed that Department of Botany is organising Workshop on Spirulina Culture technique. Interested students can contact coordinator Mr. Piyushkumar R. Sharma.

Date: 25 Oct. 2024 Venue: Department of Botany

Prof. P. S. Tiwari
Head
Department of Botany

Professor and Head
Department of Botany,
SSES Amt's Science College,
Congress Nagar, Nagpur-12

Mr. Piyushkumar R. Sharma
Assistant Prof. (Ad-HOC)
Coordinator

SSES AMRAVATI'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.
Department of Botany
Academic Year: 2024-2025

REPORT ON

WORKSHOP ON SPIRULINA CULTURE

Organized by:
Department of Botany, SSES Amravati's Science College, Congress Nagar

Objective:
To provide practical training for Spirulina Culture to the students and enhance their understanding.

Conducted by:
Mr. Piyushkumar R. Sharma and Miss Aishwarya Zure, Assistant Professors (Ad-HOC), Department of Botany

Participants:
M.Sc. I-year students, Department of Botany

Workshop Overview:
Spirulina is a cyanobacterium (blue-green algae) renowned for its rich protein content and health benefits. It is widely used in sustainable agriculture, aquaculture, and as a dietary supplement due to its ability to fix nitrogen and thrive in alkaline conditions. In this workshop, students gained hands-on experience in Spirulina culture, conducted in the laboratory using glass jars as culture vessels, and focused on optimizing growth conditions, nutrient requirements, and practical applications of Spirulina cultivation.

1. **Selection of Spirulina Species**
   The species chosen for this study was *Arthrospira platensis* (commonly known as Spirulina). It is known for its rapid growth, high protein content, and adaptability to alkaline environments. Spirulina inoculum was used to initiate the culture in the glass jars.

2. Preparation of Culture Setup

a) Selection of Site: The Spirulina culture was established in the laboratory, using glass jars as the primary containers for the cultivation. These jars were placed in an environment where temperature and light exposure could be controlled.

b) Culture Setup: The glass jars were filled with water, and Spirulina inoculum was added at an initial concentration of approximately 2-3g/liter to establish the culture.

c) Water Addition: Freshwater with a pH range of 8.5 to 10.5 was used for the culture, creating an alkaline environment ideal for Spirulina.

d) Nutrient Supplementation: The culture medium was supplemented with sodium bicarbonate and nitrogen-rich fertilizers, along with essential micronutrients like magnesium, iron, and phosphorus to promote optimal growth.

e) Monitoring: The culture was monitored daily for signs of growth, water quality, and any contamination. The jars were checked for changes in water clarity and the presence of healthy Spirulina, ensuring that all growth parameters were being met.

3. Growth Conditions

a) Water pH: The pH of the water in the jars was maintained between 8.5 and 10.5, which is ideal for Spirulina growth.

b) Temperature: The temperature was maintained between 30-35°C, the optimal range for Spirulina cultivation. The lab environment allowed for temperature control to prevent overheating.

c) Light Exposure: Spirulina requires 10-12 hours of light per day for photosynthesis. The glass jars were placed under indirect light, ensuring proper light exposure without causing excessive evaporation or heat buildup.

d) Nutrient Supply: Regular supplementation with nitrogen, phosphorus, and other essential micronutrients was provided to ensure continuous growth and healthy biomass accumulation.

e) Pest and Disease Management: The culture was regularly checked for any signs of contamination, such as unwanted algae or bacterial growth. Any contamination was removed promptly to maintain the health of the Spirulina culture.

4. Outcomes

- Biomass Production: Spirulina exhibited rapid growth, with biomass doubling approximately every 5-7 days under the controlled conditions in the glass jars.
- Nutrient Content: The harvested Spirulina showed a protein content of approximately 60-70%, making it an excellent source of protein for livestock feed or potential human consumption.
- Application Potential: The cultivated Spirulina showed great potential for use as a biofertilizer and a high-protein supplement in animal feed, contributing to sustainable agriculture.
- Environmental Benefits: The Spirulina culture contributed to nitrogen fixation, reducing the need for synthetic fertilizers and improving soil fertility. Additionally, it demonstrated potential for wastewater treatment by absorbing excess nutrients.

5. Conclusion

The workshop successfully demonstrated that Spirulina can be effectively cultivated in glass jars under controlled conditions, such as maintaining the optimal pH, temperature, and nutrient supplementation. Its rapid growth rate, high protein content, and nitrogen-fixing ability make it a valuable resource for sustainable agriculture, aquaculture, and other environmental applications. Future studies could focus on scaling up the cultivation process, exploring its applications in wastewater treatment, and integrating Spirulina into broader sustainable farming practices.

List of students participated:

1) Aakanksha. L. Wasnik
2) Rajshree P. Kowe
3) Aishwarya P. Bambal
4) Megha S. Bangadkar
5) Chaitali S. Patil
6) Jaulwi. H. Kayarkar
7) Anushka Khare
8) Falguni. Shivhare
9) Kanini Funne
10) Prerna Pallwal
11) Rasika Patil
12) Kalyani C. Shahare
13) Sneha Somkuwar
14) Payal Dharpure
15) Riddhi Desai
16) Puja Rodekar
17) Chetan. S. Kolhe
18) Jiwak. D. Wasekar
19) Ekta Jadhav

Spirulina inoculum: Mother Culture

Filtration of Spirulina from the culture jar using a sieve to separate the biomass for further analysis

Evenly spreading of the Harvested Spirulina culture for drying to preserve the biomass

Dried Spirulina chips and the fine powder of spirulina

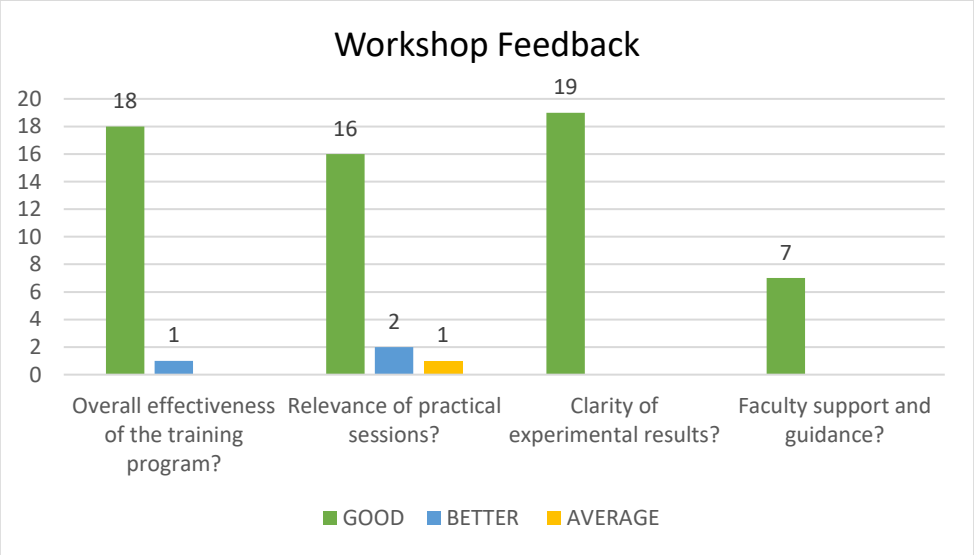
Students participated in spirulina culture

Action Taken Report:

The workshop on Spirulina culture, organized by the Department of Botany at SSES Amravati's Science College, successfully provided M.Sc. I-year students with practical training in Spirulina cultivation using glass jars. Under the guidance of Mr. Piyushkumar R. Sharma and Miss Aishwarya Zure, students learned about the optimal conditions required for Spirulina growth, including the maintenance of proper pH, temperature, and nutrient supplementation. The culture setup in glass jars allowed students to observe the growth process, monitor biomass production, and understand the potential applications of Spirulina as a biofertilizer and high-protein supplement. The workshop met its objective of enhancing students' understanding of Spirulina cultivation and its environmental and agricultural benefits, contributing to their practical knowledge of sustainable agricultural practices.

FEEDBACK FORM

Sr.No.	Question	Response		
		Good	Better	Average
1)	Overall effectiveness of the training program?			
2)	Relevance of practical sessions?			
3)	Clarity of experimental results?			
4)	Faculty support and guidance?			



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