

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

AZOLLA CULTURE



OBJECTIVE

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

CHAIRPERSON

Dr. O. S. Deshmukh

Principal

ORGANIZER

Prof. P. S. Tiwari

Head, Department of Botany

CONVENER

Ms. 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. Piyushkumar Sharma | 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 Azolla Culture technique. Interested students can contact coordinator Ms. Aishwarya Zure.

Date: 15 Feb. 2025 Venue: Department of Botany


Prof. P. S. Tiwari
Head
Department of Botany
Professor and Head
Department of Botany,
SSES Amt's Science College,
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SSES AMRAVATI'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

**Department of Botany
Academic Year: 2024-2025**

REPORT ON WORKSHOP ON AZOLLA CULTURE

Organized by:

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

Objective:

To provide practical training for Azolla Culture to the students and enhance their understanding.

Conducted by:

Miss Aishwarya Zure, Assistant Professor (Ad-HOC), Department of Botany
Mr. Swapnil Fuse, CHB, Department of Botany

Participants:

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

Workshop Overview:

Azolla is a free-floating aquatic fern that plays a significant role in sustainable agriculture due to its ability to fix atmospheric nitrogen through a symbiotic relationship with the cyanobacterium *Anabaena azollae*. It is widely recognized as a biofertilizer, animal fodder, and wastewater treatment agent. This study was conducted to understand the optimal conditions for Azolla cultivation, focusing on growth parameters, nutrient requirements, and practical applications in agricultural ecosystems.

1. Selection of Azolla Species

The species selected for this study was *Azolla pinnata*, known for its rapid multiplication rate, high nitrogen-fixing capability, and adaptability to various environmental conditions.

2. Preparation of Culture Bed

- Selection of Site:** A shaded area with partial sunlight (6-8 hours per day) was chosen to prevent excessive evaporation and maintain optimal growth conditions.
- Construction of Bed:** A shallow tank (1m x 1.5m x 0.3m) was used for the Azolla culture. The tank was lined with a waterproof plastic sheet to prevent water seepage and to maintain a controlled environment.
- Substrate Preparation:** A mixture of compost and soil in a 2:3 ratio was evenly spread at the bottom of the tank to provide essential nutrients and anchoring support for initial growth.
- Water Addition:** Freshwater with a pH maintained between 6.5 and 7.5 was added to a depth of approximately 10-15 cm.
- Nutrient Supplementation:** Phosphorus-rich fertilizers (such as superphosphate at 20g/m²) were applied to promote growth. Iron sulphate (FeSO₄) was also added to prevent chlorosis.
- Introduction of Azolla:** Healthy Azolla cultures were introduced into the prepared bed at an initial stocking density of 500g/m².
- Monitoring:** The culture was observed daily for signs of growth, biomass accumulation, and any signs of pest infestation or nutrient deficiencies.

3. Growth Conditions

- **Water pH:** Maintained between 6.5 and 7.5 to facilitate optimal nitrogen fixation.
- **Temperature:** Growth was monitored under temperatures ranging from 25-30°C, the ideal range for Azolla cultivation.
- **Light Exposure:** Partial sunlight for 6-8 hours per day was provided to promote photosynthesis without excessive evaporation.
- **Nutrient Supply:** Regular supplementation of phosphorus, iron, and other micronutrients was carried out to ensure continuous growth.
- **Pest and Disease Management:** The culture was periodically checked for algal growth, which was manually removed. No major pest infestations were observed during the study.

4. Outcomes

- **Biomass Production:** Azolla exhibited a doubling rate within 4-5 days under optimal conditions.
- **Nutrient Content:** The harvested Azolla had a protein content of approximately 25-30%, making it a suitable livestock feed.
- **Application Potential:** The cultivated Azolla showed promising potential for use as a biofertilizer in rice fields and as an alternative protein source in animal husbandry.
- **Environmental Benefits:** The culture contributed to nitrogen fixation, reducing the need for synthetic fertilizers and improving soil fertility.

5. Conclusion

The study successfully demonstrated that Azolla can be cultivated efficiently using a compost-to-soil ratio of 2:3, optimal water depth, and regular nutrient supplementation. Its rapid growth rate and nitrogen-fixing ability make it an excellent resource for sustainable agriculture. Future research could focus on large-scale applications, integration with other sustainable farming practices, and its role in wastewater treatment.



Preparation of Culture Bed A mixture of compost and soil in a 2:3 ratio was evenly spread at the bottom of the tank to provide essential nutrients and anchoring support



Monitoring: The culture was observed daily for signs of growth, biomass accumulation, and any signs of pest infestation or nutrient deficiencies.



Daily Monitoring By Students for signs of growth, biomass accumulation, and any signs of pest infestation or nutrient deficiencies.



Harvesting of Azolla

List of students participated:

- 1) Aakanksha L. Wankar Aakanksha
- 2) Rajshree P. Kowe Rajshree
- 3) Aishwarya P. Bambal Aishwarya
- 4) Megha S. Bangadkar Megha
- 5) Chaitali S. Patil Chaitali
- 6) Jyoti H. Karkar Jyoti
- 7) Anushka Kharne Anushka
- 8) Falguni Shivhare Falguni
- 9) Kamini Furse Kamini
- 10) Preena Pallwal Preena
- 11) Rasika Patil Rasika

Action Taken Report:

The workshop on Azolla culture, organized by the Department of Botany at SSES Amravati's Science College, aimed to provide practical training to M.Sc. I-year students on the cultivation of Azolla. The workshop, conducted by Miss Aishwarya Zure and Mr. Swapnil Fuse, focused on the optimal conditions for growing Azolla, including species selection, culture bed preparation, nutrient supplementation, and growth monitoring. The participants were trained on creating a controlled environment for Azolla culture, maintaining water pH between 6.5 and 7.5, providing partial sunlight for 6-8 hours daily, and managing nutrient requirements through regular supplementation. The workshop emphasized the environmental and agricultural benefits of Azolla, including its rapid growth, nitrogen fixation, and potential use as a biofertilizer and animal feed. The hands-on approach enabled students to gain valuable experience, which will aid in future research and applications of Azolla in sustainable agriculture and wastewater treatment. The successful completion of this workshop has enhanced the students' understanding of Azolla culture and its practical applications in real-world agricultural systems.

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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