



Shri Shivaji Education Society Amravati's

## SCIENCE COLLEGE

Congress Nagar, Nagpur - 440012 (M.S.) India.

Accredited With CGPA Of 3.51 At 'A+' Grade.



**Report on**  
**INDUSTRIAL VISIT**  
**TO**  
**SPIRULINA CULTURE LAB**  
**FIT HEALTH ORGANIC FOOD. PVT. LTD. KAMPTTEE**  
**2024-2025**



SHRI SHIVAJI EDUCATION SOCIETY AMRAVATI'S  
**SCIENCE COLLEGE**  
Congress Nagar Nagpur.



**DEPARTMENT OF BOTANY**

**NOTICE**

All the students of UG and PG Botany are hereby informed that the Department of Botany is organizing a one-day industrial visit to Spirulina Culture Lab. Interested students can contact the coordinator Mr. Piyushkumar R. Sharma.

**Date: 06/03/2025**

Tour Incharge

**(Mr. Piyushkumar Sharma)**

**(Prof. Punita S. Tiwari)**

Prof. & Head  
Department of Botany  
Shri Shivaji Science College,  
Nagpur.

## Report

Industrial Visit to Spirulina Culture Lab – FIT Health Organic Foods, Nagpur

Organized by: Department of Botany

Institution: Shri Shivaji Education Society Amravati's Science College, Nagpur

Date of Visit: 06th March 2025

Visit Coordinator: Mr. Piyushkumar R. Sharma

## Objective of the Visit

The Department of Botany organized a one-day industrial visit to FIT Health Organic Foods, a leading Spirulina production unit in Kamptee, Nagpur. The objective was to provide students with practical exposure to Spirulina cultivation techniques, processing technologies, and its nutritional, environmental, and economic significance.

## Industry Overview

FIT Health Organic Foods specializes in the organic cultivation and distribution of Spirulina, a high-protein, nutrient-rich blue-green algae. The unit employs sustainable open-pond systems and strict quality control protocols to deliver Spirulina in various forms such as powder, capsules, and flakes. Their focus on sustainability and health-oriented products aligns with current trends in biotechnology and nutritional science.

## Learning Outcomes for Students

During the visit, students gained valuable insight into: Biological and ecological characteristics of Spirulina Methods of culture preparation, pond design, aeration, stirring, and contamination control Harvesting, drying, grinding, and packaging processes Nutritional value and diverse applications of Spirulina in human health, cosmetics, animal feed, and agriculture Commercial and environmental benefits of Spirulina as a sustainable protein source This hands-on experience enhanced students' understanding of applied phycology, industrial biotechnology, and sustainable farming systems.

## Specialties of Spirulina Culture Lab – FIT Health Organic Foods

FIT Health Organic Foods is known for its focused, sustainable, and high-quality approach to Spirulina cultivation. Each section of their facility is designed with precision and care to ensure maximum output, safety, and nutritional value. Below are the key specialties of various components of their operation:

### 1. Cultivation Unit

- **Open Pond System:** Utilizes shallow concrete and PVC-lined ponds that allow optimum sunlight exposure.
- **Eco-friendly Practices:** Minimal use of artificial inputs; relies on natural processes for cultivation.
- **Temperature & Light Management:** Maintains ideal temperature (30–35°C) and light intensity (20–30K lux) for maximum growth and nutrient density.
- **Efficient Stirring Mechanism:** Use of solar-powered paddle wheels and manual stirring ensures uniform exposure to sunlight and aeration for all organisms.
- **Controlled pH & Nutrient Levels:** Water is enriched with Zarrouk's medium to replicate natural Spirulina-friendly environments.

### 2. Quality Control & Water Management

- **Pure Water Source:** Water used is tested and adjusted to maintain pH between 8–11, crucial for Spirulina health.
- **Contamination Prevention:** Fine mesh filters used to remove larvae, foreign algae, and particulate contamination.

- **Consistent Monitoring:** Parameters like water depth, temperature, and nutrient composition are routinely monitored.
- **Reusability:** Culture medium is reused after filtration, supporting sustainability and reducing waste.

### 3. Harvesting Section

- **Efficient Filtration:** Spirulina is filtered using fine cloth or mesh, separating it from the culture water.
- **Manual & Semi-mechanical Techniques:** Includes pressing and squeezing to remove excess water post-harvest.
- **Hygienic Washing:** Multiple washes with distilled water ensure removal of residual salts and contaminants.
- **Batch Harvesting:** Harvesting is done every 4–5 days, ensuring freshness and steady yield.

### 4. Drying & Processing Unit

- **Sun Drying Technique:** Thin strands are laid out on clean cloths to preserve nutrition and quicken drying.
- **Alternative Drying Options:** Oven drying (at 40–60°C) is used during unsuitable weather conditions.
- **Low Contamination Risk:** Fast drying prevents microbial growth and maintains Spirulina quality.
- **Grating & Shaping Tools:** Noodle press and syringes are used to form even strands for consistent drying.

### 5. Grinding & Packaging

- **Fine Powder Production:** Spirulina is ground using flour mills into a soft, dust-free powder.
- **Vacuum-Sealed Packaging:** Ensures long shelf life (up to 3–4 years) and retention of nutritional properties.
- **Multiple Product Forms:** Final products include capsules, powder, and flakes for varied consumer preferences.
- **Labelling & Branding:** Proper labelling ensures compliance with health standards and consumer information.

### 6. Educational & Interaction Zone

- **Demonstrations:** Live demos on culture maintenance, seeding, and processing provide hands-on learning.
- **Q&A Sessions:** Experts address doubts and explain real-world challenges in Spirulina farming.
- **Visual Learning Aids:** Charts, live cultures, and infographics help students connect theory to practice.

### 7. Market-Focused Innovation

- **Product Diversification:** Development of health drinks, chips, and Spirulina-based cosmetics.
- **Future Expansion:** Plans to explore biofertilizers, bio stimulants, and therapeutic Spirulina compounds.
- **Sustainability Focus:** Emphasis on low resource consumption and eco-conscious practices.



**Mother Culture**



**Growing Culture**



### **Students Participating in discussion and hands on experience in lab**

#### **Conclusion**

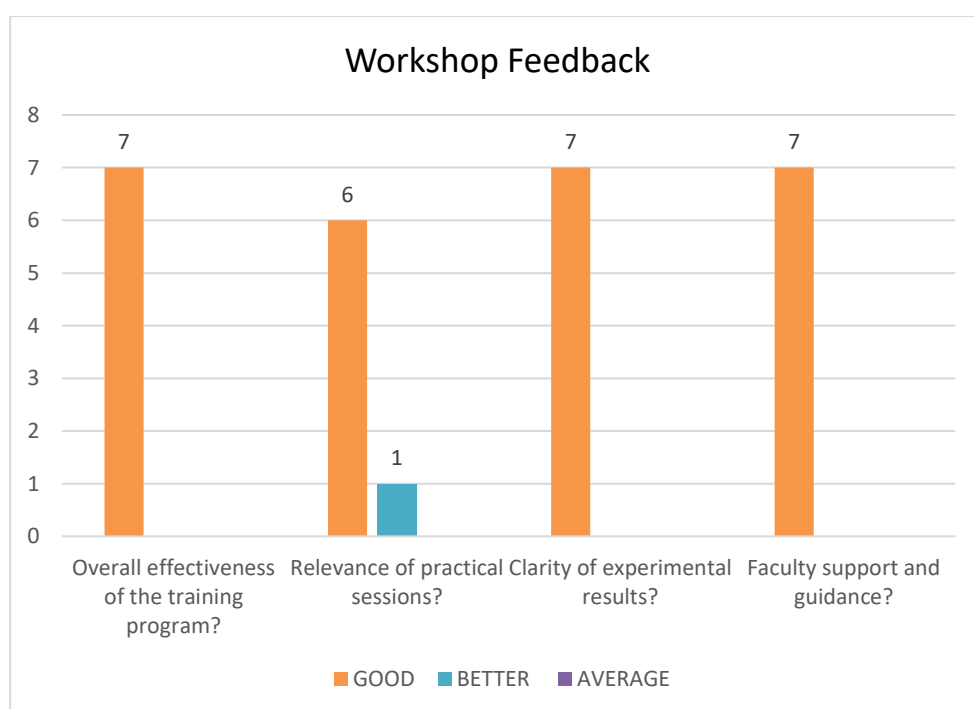
The visit successfully fulfilled its academic goals by bridging theoretical knowledge with practical exposure. It inspired students to consider *Spirulina* cultivation and algal biotechnology as promising avenues for research, entrepreneurship, and sustainable development. The Department looks forward to organizing more such industry-academia linkages in the future

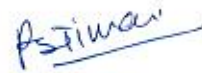
## Attendance Sheet

On 6th March 2025, the Department of Botany at Shri Shivaji Education Society Amravati's Science College, Nagpur, organized a one-day industrial visit to FIT Health Organic Foods, a Spirulina cultivation and processing unit in Kamptee, Nagpur. Coordinated by Mr. Piyushkumar R. Sharma, the visit provided hands-on exposure to Spirulina farming practices, including open-pond cultivation, contamination control, harvesting, drying, and packaging. Students observed sustainable practices such as solar-powered aeration, water reusability, and low-energy drying techniques. Live demonstrations, expert interactions, and visual aids enhanced their understanding of algal biotechnology, nutritional applications, and the commercial potential of Spirulina. The visit effectively linked classroom knowledge with industry practices, motivating students toward research, innovation, and entrepreneurship in the field of phycology and sustainable food production.

### FEEDBACK FORM

| Sr.No. | Question                                     | Response |        |         |
|--------|----------------------------------------------|----------|--------|---------|
|        |                                              | Good     | Better | Average |
| 1)     | Overall effectiveness of the Visit?          |          |        |         |
| 2)     | Relevance of practical sessions?             |          |        |         |
| 3)     | Clarity of Concepts and Hands on experience? |          |        |         |
| 4)     | Faculty support and guidance?                |          |        |         |



  
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