



Report on

### **Hands-on training for mass production of bio-fertilizers**

Date: 07.05.2024 – 15.05.2024

Venue: C306, SOAS, KRMU

Event Type: Hands-on training

Mode of Activity: Offline

Target Group: Students of semester II and IV, SOAS

Chief instructor and organizer: Dr. Neha Sharma

Co-instructor and coordinator: Dr. Rabiya Basri

Organized by: School of Agricultural Sciences

Number of Participants: 33

#### **Introduction:**

*Trichoderma harzianum*, a powerful biofertilizer, revolutionizes agricultural practices with its multifaceted benefits. This versatile fungus enhances soil fertility by promoting nutrient uptake, particularly phosphorus and micronutrients, fostering robust plant growth. Its antagonistic properties combat harmful pathogens, suppressing diseases like damping-off and root rot, ensuring healthier crops. As a biocontrol agent, *T. harzianum* fosters sustainable agriculture, reducing reliance on synthetic chemicals while preserving environmental balance. Its symbiotic relationship with plant roots enhances resilience to stressors, fostering sustainable yields and ecological harmony. In the realm of biofertilizers, *Trichoderma harzianum* stands as a beacon of innovation, ushering in a greener, more prosperous agricultural future. Mass production of *Trichoderma harzianum* is crucial for its role in organic pest management, promoting crop yield, and advancing eco-friendly agricultural practices worldwide. Its sustainable and effective biocontrol properties offer a green alternative to chemical interventions, ensuring both environmental health and agricultural productivity. 33 students participated in 7 days hands on training and gained practical knowledge of mass production of bio fertilisers.

#### **Day 1: 7th May 2024**

The training program commenced with an introduction to *Trichoderma harzianum*, a widely used bio-fertilizer known for its beneficial effects on plant growth and disease suppression.

**Importance in Agriculture:** Participants learned about the significance of *Trichoderma harzianum* in promoting plant health, enhancing nutrient uptake, and suppressing soil-borne pathogens.



**Production Process Overview:** A detailed overview of the production process of *Trichoderma harzianum* bio-fertilizer was provided, including substrate selection, inoculation techniques, and fermentation procedures.

**Practical Session:** Students engaged in a hands-on session where they prepared inoculum for *Trichoderma harzianum* cultivation, learning the initial steps of the production process, including sample collection (shown in pictures below).





#### Day 2: 8th May 2024

**Substrate Preparation:** The focus of the day was on substrate preparation for *Trichoderma harzianum* cultivation, with emphasis on selecting suitable organic materials and optimizing nutrient content (shown in pictures below).

**Inoculation Techniques:** Participants learned various inoculation techniques used to introduce *Trichoderma harzianum* into the substrate, ensuring efficient colonization and proliferation (shown in pictures below).



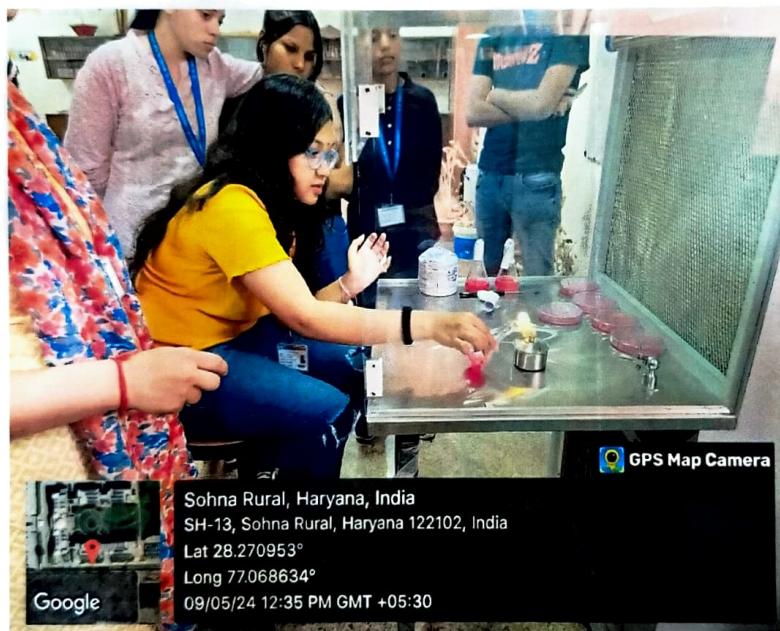




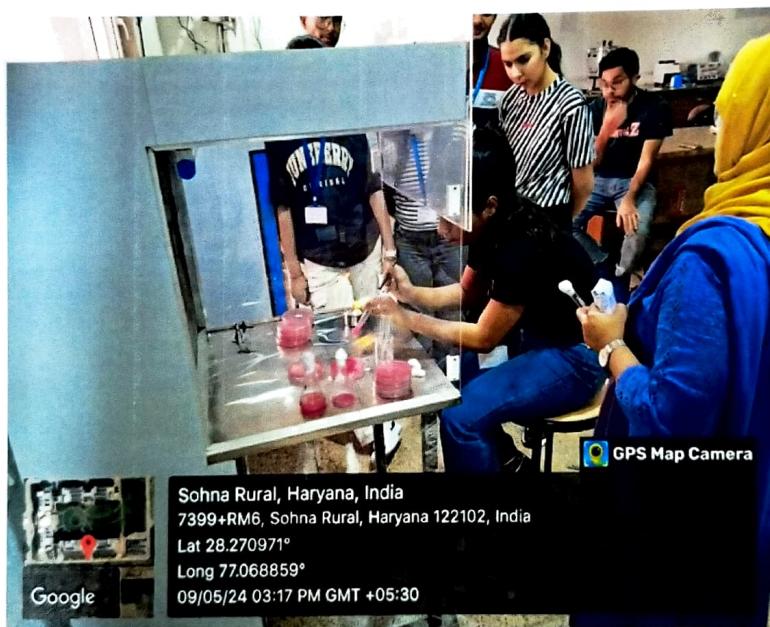
### Day 3: 9th May 2024

**Fermentation Process:** A detailed explanation of the fermentation process of *Trichoderma harzianum* was provided, highlighting temperature control, aeration, and monitoring parameters.

**Practical Session:** Students continued their hands-on experience, participating in the inoculation and fermentation of *Trichoderma harzianum* cultures under the guidance of instructors (shown in pictures below).











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#### Day 4: 10th May 2024

**Practical Session:** Students continued their hands-on experience, participating in the inoculation and fermentation of *Trichoderma harzianum* cultures under the guidance of instructors (shown in pictures below).

**Quality Control Measures:** The day began with a discussion on quality control measures in *Trichoderma harzianum* bio-fertilizer production, including purity testing, viability assessment, and contamination prevention.



#### Day 5: 13th May 2024

Substrate for mass production: Participants learned about different types of substrates used for mass production of *Trichoderma harzianum* bio-fertilizer along with practical demonstration where sorghum grains were used.

Practical Session: Students engaged in practical exercises related to quality control, including viability testing and packaging of *Trichoderma harzianum* bio-fertilizer samples.





### Day 6: 14th May 2024

**Application Methods:** The focus shifted to different application methods of *Trichoderma harzianum* bio-fertilizers, including seed treatment, soil drenching, and foliar spray, with emphasis on optimizing efficacy and coverage.

**Compatibility with Chemical Inputs:** Participants learned about the compatibility of *Trichoderma harzianum* bio-fertilizers with chemical inputs and strategies for integrated pest and disease management.

**Practical Session:** Students participated in learning the various characteristics of the bio-fertilizer prepared during this workshop and its various applications with respect to different crops and other factors (as shown in the pictures below).

**Storage and Packaging:** Participants learned about proper storage and packaging techniques to maintain the viability and effectiveness of *Trichoderma harzianum* bio-fertilizer during storage and distribution.





#### Day 7: 15th May 2024

Practical Session: Students participated in practical demonstrations of various application methods of *Trichoderma harzianum* bio-fertilizers, gaining hands-on experience in field application techniques.



**Feedback and Discussion:** Following each presentation, there was a feedback and discussion session where participants provided constructive feedback and engaged in discussions on the applications and implications of *Trichoderma harzianum* bio-fertilizers.

**Conclusion:** The training program concluded with closing remarks, emphasizing the importance of *Trichoderma harzianum* bio-fertilizers in sustainable agriculture and encouraging continued exploration and research in this field.



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