

PROJECT WITH STUDENTS

NAME OF FACULTY: **Ms. SHEKINAH CHALLAM, ASSISTANT PROFESSOR,
DEPARTMENT OF BIOTECHNOLOGY**

Title of the project: screening for antimicrobials in plants.

Date of Start: July 19, 2023

Date of Complete: 15 April, 2024

No of Days/Duration: 9 months

Collaborators (if any)

Objective: to expose students to different techniques used in microbiology and enhance the research aptitude of students

Outcome: the students were equipped with different skill sets required for research in microbiology

NAME OF THE STUDENTS

1. Arbanylla War
2. Lisia Singpho
3. Jiphila Shabong
4. Khusboo Sarma

NAME OF FACULTY: **DR BAIK MENLANG MANNERS, ASSISTANT SENIOR
PROFESSOR, DEPARTMENT OF BIOTECHNOLOGY**

Title : *In vitro* asymbiotic seed germination of *Dendrobium crumenatum* and *in vitro* seedling development.

Date of Start : 13th February, 2023

Date of Complete : 19th June 2024

No of Days Duration: 17 months

Collaborators (if any) : None

Objective:

In general under *in vitro* conditions, propagation of orchid seed can be done by means of symbiotic and asymbiotic germination. Orchids, in their natural habitat have a symbiotic relationship with mycorrhizal fungi for germination and seedling development. Therefore, *in vitro* symbiotic germination requires the co-culturing of specific mycorrhizal fungi and orchid seeds. Asymbiotic germination or *in vitro* tissue culture allows for effective germination and propagation of orchid seeds by replacing mycorrhizal fungi with organic nutrients and culture medium. Therefore, *in vitro* tissue culture has emerged as a promising approach and thus the objective of the study.

Outcome :

The study was undertaken to propagate seeds of *Dendrobium crumenatum* asymbiotically *in vitro* using MS media supplemented with combinations of BAP and NAA at varying concentrations. As similar studies pertaining to the *in vitro* germination of this species of orchid is limiting, the result obtained by seedling formation *in vitro* is thus promising.

NAME OF FACULTY: DR SAMRAT ADHIKARI, ASSOCIATE PROFESSOR & HEAD, DEPARTMENT OF BIOTECHNOLOGY

Title : *Development of Paper fertilizer .*

Date of Start : 13th February, 2023

Date of Complete : 19th June 2024

No of Days Duration: 17 months

Collaborators (if any) : IIC-SEC, St. Edmund's College

Objective:

The project aims to develop an eco-friendly biofertilizer from waste paper by leveraging microbial biodegradation and nutrient enrichment. This approach promotes sustainable waste management while enhancing soil fertility. Specific objectives include:

- Waste Paper Decomposition – Utilizing microbial consortia to break down cellulose into organic compounds.
- Nutrient Enhancement – Enriching the biofertilizer with nitrogen-fixing bacteria, phosphate-solubilizing bacteria, and cyanobacteria.
- Soil and Plant Growth Improvement – Evaluating the impact of the biofertilizer on soil health and plant productivity.
- Sustainability and Cost-Effectiveness – Developing a scalable and environmentally friendly alternative to chemical fertilizers.

Expected Outcomes:

- Effective Waste Utilization – Reduction in paper waste through biotransformation into a valuable agricultural input.

- Nutrient-Rich Biofertilizer – Improved nitrogen, phosphorus, and organic matter content beneficial for plant growth.
- Enhanced Soil Health – Increased microbial activity, better water retention, and improved soil fertility.
- Higher Crop Productivity – Significant improvement in plant growth compared to conventional fertilizers.
- Eco-Friendly and Economical Alternative – A cost-effective, sustainable fertilizer reducing dependency on synthetic chemicals.