## Institutional Two Best Practices

1. **ACADEMIC AUDIT**
2. **VERMIBIOTECHNOLOGY**

## ACADEMIC AUDIT

The continuous progress of the College is monitored through an annual external academic audit conducted by the Internal Quality Assurance Cell (IQAC).

**Objectives of the practice:**

- To encourage the faculty to aim constantly at quality and sustenance activities.
- To help the teachers, in all departments to use innovative methods in their classroom teaching and learning process.
- To encourage faculty to improve their professional developments.
- To develop research culture at the grass root level.
- To review the functioning of departments, associations and facilities.
- To identify the strengths and limitations of the department.

**The Context:**

Annual Academic Audit is introduced by the college to reinforce the healthy practices of the college with suitable mechanisms to identify and reform whether the goals and objectives of the college are being implemented successfully. The notion of conducting academic audit is to assess the academic performance of staff in particular and departments as whole. Specifically, the audit is conducted on the basis of criteria wise as suggested by the NAAC. Issues identified were curricular designing and development, teacher quality and profile, performances of students, innovative methods in teaching and learning process, academic progress of the department, professional developments of staff , research and extension activities conducted by the department, students support activities, best practice of the department and so on. In view of this exercise, the strength and limitations of the department can be identified and suitable measures are suggested. This practice develops a healthy competition among the members of faculty of each department and also among the departments.

It is to be ensured that students graduating from the college are groomed to master any set of skills or knowledge. They are trained to maintain a high standard with their counterparts in urban.

**The Practice:**

- ✓ Academic audit committee is being constituted with external expert, Principal and coordinator of IQAC.
- ✓ Once the committee is constituted, the date and time of the academic audit will be informed to the respective departments well in advance.
- ✓ A department evaluative report in duplicate has to be kept ready based on the format evolved for audit - one being the self-study report of the department and the other for the individual teacher profile.
- ✓ The departments are expected to be prepared with the following documents and display them before the Academic Audit Committee.
    a. Curricular aspects
    b. Teaching, learning and evaluation methodology adopted in the department
    c. Research and extension details
    d. Student support activities
    e. Best practice of the department
- ✓ At first Head of department or coordinator of Micro Quality Assurance Cell(MQAC) presents the activities of the department. Then the members of academic audit interact with each member of faculty with regards to programme and courses; various concepts of the courses taught and also go through all their records and credentials.
- ✓ At the end, the committee evaluates the whole departments' academic performance. A report is prepared with the significant contribution of the members of faculty. Hard copies of the reports duly signed are being sent to the IQAC. IQAC after due verification sends the report to the Principal. The reports of audit team will be finally sent to the concerned Heads of the Departments for their perusal and further course of action.

**Evidence of Success:**

After conducting the academic audit regularly, it has been found that a significant improvement of the individual faculty with regard to attending seminars, publishing papers, undertaking consultancy, organizing seminars / workshops, maintaining records etc. Further the performance of departments is remarkably accomplished. Student support activities, student progressions and placement activities are considerably increased.

## Problems Encountered and Resources Required

In view of continuous internal assessment of students, teaching schedule, research and extension activities and examinations related duties make the teacher unable to collate the data and write the self study report. Clerical assistance was not available. The teachers has to adopt/familiarize new technology/gadgets to get their work done easily.

**Resource required**

- Human Resources - collect information to process and collate.
- Financial assistance - for stationary and other miscellaneous items for preparing reports.
- Technological resource - Use of computers and other modes of data processing.
- Material Resources -– Paper and stationary items for preparation of audit.

Notes: The IQAC develops standards for the various administrative and academic functions of the college. It also orients and trains staff members existing and new entrants on various issues and changes in higher education. The IQAC sheds responsibilities and works in a team at all levels of the hierarchical structure. In particular IQAC has introduced quality circles in department level by forming Micro quality assurance cell (MQAC)

# VERMIBIOTECHNOLOGY
# Best Practices

1. Title of the Practice:
   Vermibiotechnology
2. Objectives of the Practice:

- To convert plant origin wastes from our college campus and animal origin wastes particularly, cow dung into vermicompost in order to maintain a litter free campus all through the year
- To evolve and develop eco-friendly and novel technologies for restoration and improvement of soil health through Vermiboitechnology
- To increase crop productivity through the utilization of vermi-products *viz.*,Vermicompost, Vermiwash and Vermitea as one of the agro-inputs
- To disseminate the developed novel technologies to farming community and interested students of our college for adoption in their crop fields in order to increase crop yield for meeting out the ever-growing demands of food grains
- To create and sustain pollution free environment for the present generation and posterity.

3. The Context

Earthworms have long been described as the intestine of the earth, friends of farmers and so on, because of their manifold useful functions in the soil. Recently, earthworms are recognized as one of the bioreactors due to their ability to degrade organic waste materials and convert them into a useful product called vermicompost. The technology is described as vermiculture technology or vermibiotechnology. Due to human population explosion beyond the limit and rapid urbanization in India, total agricultural land area is decreasing day by day. It directly affects the crop production. Although, the usage of various chemical fertilizers and pesticides are reported/presumed to increase the crop yield many folds, but their excessive and indiscriminate usage cause tremendous alterations in natural soil environment. In order to cope with this trenchant problem, the vermibiotechnology has become the most suitable remedial alternative and low cost technology of the day. Earthworms are present in almost all terrestrial ecosystems, and are one of the most important components of the soil invertebrate macro fauna. Approximately 8,300 species of Oligochaetes have been described (of which more than 5,700 are valid species), in 38 families and 811 genera. Roughly 50% of these (around 4,000) are Megadrile earthworms. In India, 590 species of earthworms with 69 genera are reported. These earthworms can be cultured or used in composting by adopting simple procedures either in pits, crates, tanks, concrete rings or any containers. Organic materials from plant and animal origin are to be used only after pre-processing or pre-digestion as food materials for earthworms.

4. The Practice

**The Composting Earthworms**
**The exotic Earthworms are**

- The African night crawler, *Eudriluseugeniae*
- The European Red worm, *Eiseniafetida*

**The Indigenous Earthworms are**

- *Perionyxexcavatus*
- *Lampitomauritii*
- *Polypheretimaelongata*
- *Pontoscolexcorethrurus*

Of all these available earthworms, we utilize three species of earthworms *viz.*, *Eudrilus eugeniae*, *Perionyx excavatus* and *Lampito mauritii* for vermicompost production in our yard.

**The vermicomposting process**

**Preparation of Vermicomposting Tank**

Tanks (10'Length x 3'Height x 3' Width) constructed with brick and mortar with proper water outlets, in our vermished are utilized for vermicompost production.

Vermibed (vermes= earthworms; bed= bedding) of about 15 to 20 cm thick was laid with the following layers

Broken bricks (5cm) at the bottom

⇩

Coarse sand (3 cm)

⇩

Fine sand (3cm)

⇩

Red soil (4 cm) at the top

⇩

The vermibed should always be kept moist, but should never be flooded.

**A layer of broken bricks is laid at the bottom of the tank (5 cm)**

**A layer of coarse sand is laid in the tank (3 cm)**

**A layer of fine sand is laid in the tank (3 cm)**

**A layer of red soil is laid in the tank (4 cm) – Top layer**

**Excess water outlet provision in the tanks**

**<u>Optimum culture conditions</u>**

pH – 6.5 to 7.5

Moisture - 40-60%,

Temperature - 20-35°C

**<u>Organic wastes</u>**

Agriculture wastes

Vegetable wastes from market

Kitchen wastes from Houses/Hotels

Municipal wastes

Press mud (from sugar industries)

Industrial wastes *etc.*,

**Animal dung**

- Cattle
- Horses
- Pigs
- Poultry droppings
- All the above wastes should be free from non bio-degradable materials like
- Glass pieces
- Stones
- Plastics (bags/cups)
- Ceramics
- Metals

## Pre-digestion of Earthworm food

Collection of organic waste materials (plant wastes + animal wastes)

⇩

Sun drying of organic wastes (Shredders may be used if the plant wastes are larger in size) in the open place independently (plants and animals) by spreading.

⇩

Moisten them during the day.

⇩

Make a Heap of organic wastes, independently (plants and animals).

⇩

Moisten the heap

⇩

Mixing of organic wastes (plants + animals) approximately at 50:50 concentrations.

⇩

Transfer the mixed wastes into shed

⇩

Moisten them inside the shed

⇩

The final product is pre-digested food for Earthworms

**Organic wastes – Fallen leaves of our college campus**

**Leaves are spread for sun drying**

**Cow dung is being unloaded**


**Cow dung is spread for sun drying**

**Cow dung is being watered**

**Mixing of cured cow dung and cured leaves**

**Watering of cured cow dung + leaves after mixing**

## Preparation of vermicomposting tanks

Transfer of pre-digested food into the vermicomposting tanks up to a height of 2 feet

⇩

Place poles in the pre-digested food

⇩

Ensure that there is no heat generation by thermophilic bacteria in the pre-digested food

⇩

The tank is ready for inoculation of earthworms

**Tanks are ready for filling of pre-digested food. Casuarina poles are placed for providing aeration to the composting medium from time to time by shaking**

**Tanks are filled with pre-digested food**


**Holes are made for watering the pre-digested food**

## Inoculation of Earthworms

Inoculate *epigeic* adult earthworms into the vermicomposting tanks (1 kg of earthworms in 1 sq m area)

⇩

If the inoculated earthworms enter into the pre-digested food it is a "sign" that the animal has accepted the food for consumption

⇩

Watering of the vermitank is to be done two / three times in a day (the tank should have outlets at the bottom to drain the excess water sprinkled)

⇩

Leave the system undisturbed for 4-6 days

⇩

Vermicast will be seen on the periphery and surface of vermicomposting tanks

⇩

The surface of the vermicomposting tank is seen with vermicompost (Vermicast + compost)

⇩

Make a heap of vermicompost up to a depth of 15 cm

⇩

Allow it to remain as such for 24 hrs

**A handful of earthworms are ready for inoculation**

**Inoculation of earthworms by our students**


**Earthworms after inoculation**

**A close view of vermicast + compost in the vermicomposting tank**

## Isolation of earthworms from vermicompost

Transfer the vermicompost to the floor of vermished

⇩

Take out all the adult earthworms from the vermicompost

⇩

Maintain the vermicompost in the Hatchery pit for at least 30 days in order to enable the cocoons to hatch

⇩

Make cow dung balls (prepared by using cow's urine) and keep them in the Hatchery pit

⇩

All the young worms will be attracted towards this ball and enter into it

⇩

Take out the cow dung balls after 24 to 48 hrs and inoculate the young earthworms into the tanks with pre-digested cow dung for further growth

⇩

Take and sieve the vermicompost (by using 3 mm sieve)

⇩

The final product will appear as a tea dust, black in colour and odourless

⇩

Transfer them in either preferably in storage tanks/packing materials

**Heap of vermicompost in the tank**


**Isolation of Earthworms**


**Cocoons of Earthworms**


**Hatchery Pit for production of juveniles from the cocoons**


**Tanks are meant for rearing of Young earthworms**

**Sieving of vermicompost**

**Vermicompost – Final product**

**Packing of vermicompost for sale**

5. Evidence of Success

We have created this exclusive facility in our College for converting fallen leaves (solid wastes) of our campus along with Cow dung into Vermicompost. The facility was established in the Year 2007 with the financial support of UGC. It helps us to maintain our campus free from litter, neat and tidy. This facility functions with the direct supervision of Dr P Neelanarayanan, Associate Professor of Zoology of our College since its inception.

This facility was utilized for conducting practical classes and practical examination for Advanced Diploma Students. Further, this facility is also utilized for imparting Hands –on -training to the interested students of our college and other college and Farmers on Vermicompost production techniques and its advantages. Hundreds of Students and Farmers have benefitted out of these programmes.

The supporting staff Mr. S Ramachandran, Mrs.Kamatchi and Mrs.Mallika takes care of the Vermicompost Production and maintenance of Vermicompost Yard. On an average, this yard produces approximately FOUR tonnes of Vermicompost per month. The vermicompost is kept for sale for Students, Staff and Farmers of nearby villages at the yard. College Management also utilizes the vermicompost for various crops (Coconut palm, Oil Palm, Lemon, Paddy etc.) grown by them.

At present, the Vermicompost is sold @ Rs. 8/- (Rupees Eight only)/per kg for those who buy more than 500 kg in a time. The retail price is Rs. 10/- per kg. Dr. P. Neelanarayanan is the Contact person for the purchase of Vermicompost from the yard.

Dr P Neelanarayanan and his team of supporting staff continue to produce Vermicompost *i.e.,* approximately 40-45 tonnes per annum and selling them to the needy people and running the unit in a sustainable manner for the past TWELVE years.