Loknete Ma. Hanmantrao Patil Charitable trust, Vita

Adarsh institute of Technology & Research Centre

Gat No - 421 At Post - Khambale (Bha.) Khanapur Dist - Sangli
415311, Vita,Maharashtra,415311

AITRC

Criteria 7: Institutional Values& Best Practices

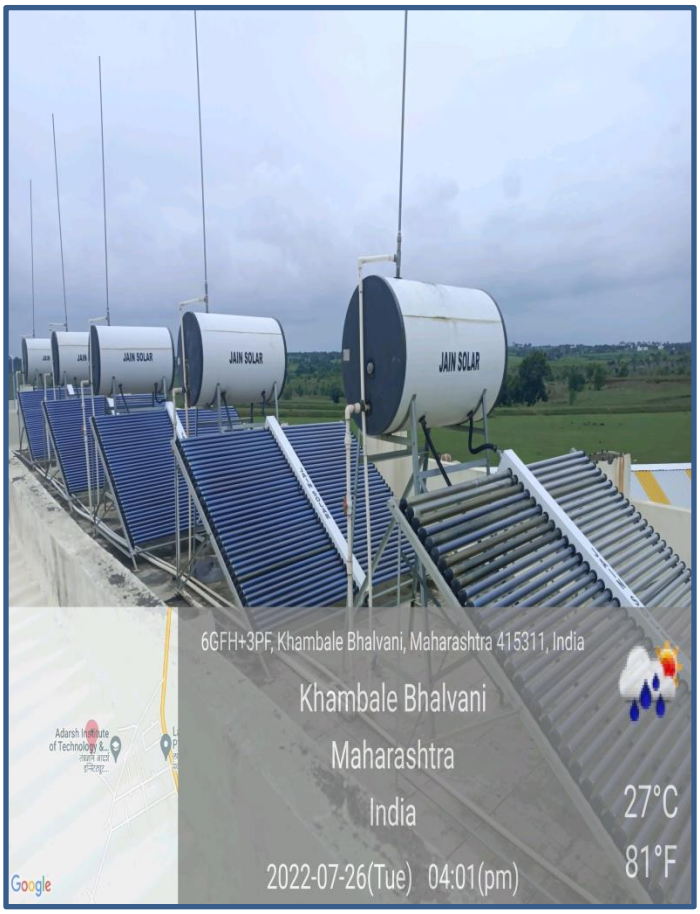
Particulars	7.1.2 - The Institution has facilities and initiatives for 1.Alternate sources of energy and energy conservation measures 2.Management of the various types of degradable and non-degradable waste

	3. Water conservation 4. Green campus initiatives 5. Disabled-friendly, barrier free environment

CRITERIA NO VII: INSTITUTIONAL VALUES AND BEST PRACTICES

- Solar Energy

  Having solar panels installed in the college can significantly help on saving the energy. Installing solar panels to produce electricity is a wise investment that surely reduces electricity bills. It has been observed by the authorities of the College that certain percentage of annual power requirement of the college can be met by renewable sources of energy



- Use of LED bulbs equipment

Solid Waste Management

- To reduce waste at institute, students and staff are educated on proper waste management practices through lectures, advertisement on notice boards, displaying slogan boards in the campus.
- Waste is collected on a daily basis from various sources and is separated as dry and wet waste.
- Color coded dustbins are used for different types of wastes. Green for wet and blue for solid waste.
- Daily garbage is collected and handed over to authorized Municipal corporation for further processing. All waste water lines from toilets; bathrooms etc. are connected with Municipal drainage mains. Waste material like plastic, papers etc. are collected and sold out to scrap vendor from time to time.
- Efforts have taken to produce compost manure from the canteen solid waste and waste from other sources and efficiently run by the students. Manure is used for the purpose of herbal garden as well or for planted tree

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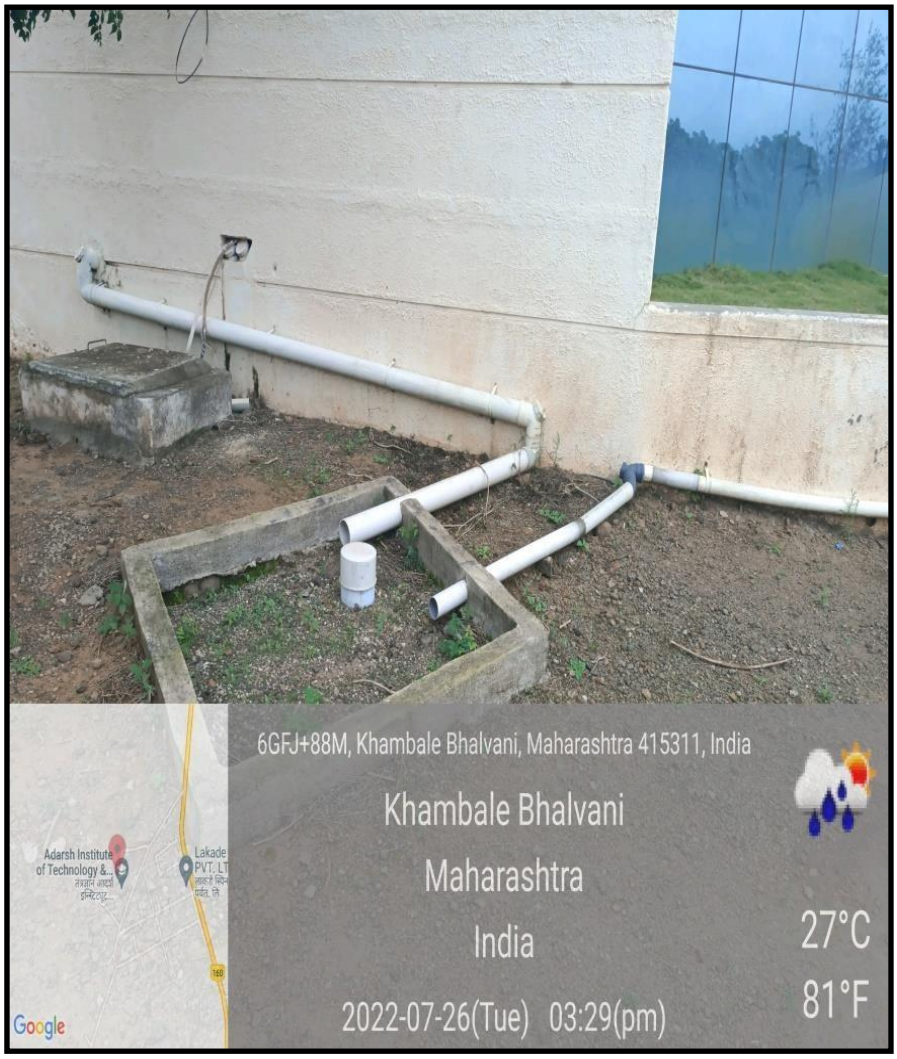
CRITERIA NO VII: INSTITUTIONAL VALUES AND BEST PRACTICES

- Rain water Harvesting
  AITRC has unveiled a rain water harvesting system with a dedication to support the city. Rain water obtained from roofs of college the water collected is diverted deep pit. Harvested water is primarily used for the purpose of recharging groundwater to overcome the loss of groundwater.



- Construction of Tanks
  There is facility of water tank to meet the high water demand of college. The water collected from rain water harvesting is stored in water tanks

- Open well recharge

- Bore Well Recharge

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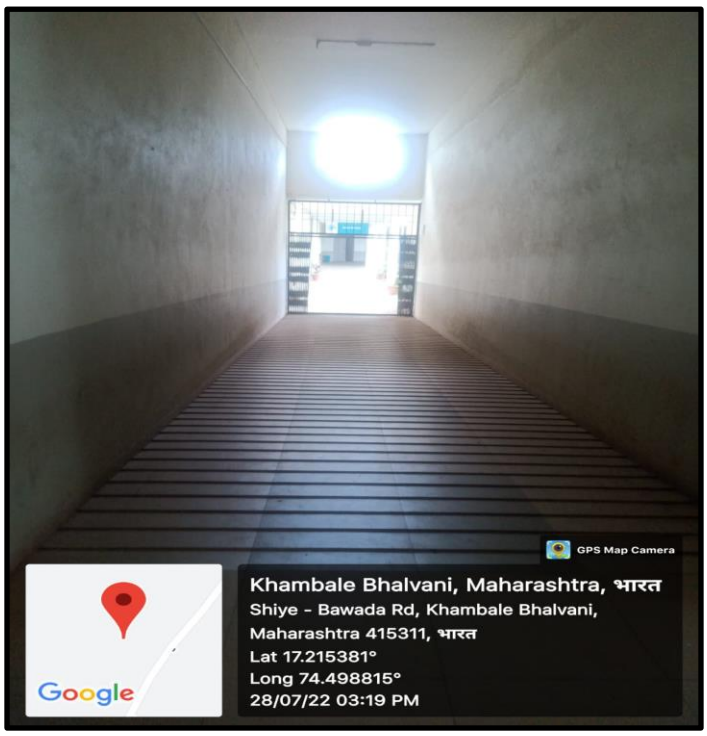
CRITERIA NO VII: INSTITUTIONAL VALUES AND BEST PRACTICES

- Disabled friendly
  Ramp & lifts for easy access.



Disabled Friendly Washrooms

Criteria VII: Institutional Values and Best Practices

Metric No: 7.1.3

Metric Name: Facilities in the Institution for the management of the following types of degradable and non-degradable waste.

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Hon. Adv. Vaibhav S. Patil President Hon. Adv. Sadashivrao H. Patil Ex. MLA, Founder

REPORT

On

"VERMICULTURE AND VERMICOMPOSTING IN COLLEGE CAMPUS"

INTRODUCTION

Vermicomposting is stable, fine granular organic manure, which enriches soil quality by improving its physicochemical and biological properties. It is highly useful in raising seedlings and for crop production. Vermicomposting is becoming popular as a major component of organic farming system

Vermicomposting comprises two methods:

Bed Method: This is an easy method in which beds of organic matter are prepared.

Pit Method: In this method, the organic matter is collected in cemented pits. However, this method is not prominent as it involves problems of poor aeration and waterlogging.

AIM

The most important aim of vermicomposting is manufacturing and generating organic manure that has a greater quality than other inorganic manure, to enrich the soil which lacks nutrition. Wastes generated from the agricultural practices, from dairy and animal industries are disposed of in a place which causes a very unhygienic environment. Hence, by using these materials, organically rich manure can be made to grow nutritious plants. The aim is to generate vermicomposting using organic wastes along with the aid of earthworms.

Advantages of Vermicomposting Method

Organic wastes from kitchens or farms can be digested by earthworms, which results in a material with no toxicity and has a well-built structure. This has a potential to gain a greater economic value in the market, and further more acts as a material that can condition the soil for salubrious plant growth.

Vermicomposting contains minerals that are necessary for the growth of the plants, improves the availability of nutrients in the soil and hence is a complex fertilizer

Precautions For Vermicomposting

1. To ensure that the culture would turn out successful and fruitful.

2. From our hands-on experiences, vermicomposting pit should be protected from direct sun light so that the worm would survive. Direct heat possibly causes the worms to die.

3. Spray water on the pit as when required to maintain moisture level because worms are fond of it.

4. We should also protect the worms from ant, rat, bird and excessive rain.

Circumstances for Earth worms

Temperatures of 15-25°C and moisture levels of 75-90 percent are ideal for earthworm growth. They can survive in both acidic and alkaline environments, but a pH of around 7 is best. Lime can be used to neutralize excessive acidity (calcium carbonate). Even though earthworms may survive in environments with little oxygen and high carbon dioxide, aeration is necessary for optimal growth. It is critical to maintain proper bed drainage so that the beds do not become wet, since this can result in oxygen deficiency and the growth of anaerobic bacteria, which can generate poisonous compounds that are hazardous to the worms.

Procedure

1. **Clean-up and Preparation of Vermi Beds:**

   To prepare compost, either a plastic or a concrete tank can be used. The size of the tank depends upon the availability of raw materials.

2. **Substrate Application**

   After some days of gathering, we put the substrates to vermi beds . We put a mixture of loam soil, cow dung and partially decomposed leaves in the vermi bed; we put a mixture of cow dung manure. The succeeding application made used of mixed and different substrates. Before putting the substrate, we made sure that the materials are cut or break into smaller pieces. Finer materials could easily decompose. We also mixed the different media together well for the worms to easily digest these. We have moistened the materials and cover the vermi beds with roof and cover to initiate anaerobic decomposition. The substrates were kept in the beds for ten days before we put the vermi worms. It took 10 to 15 days to complete anaerobic decomposition and only then that they are ready for worm consumption.

3. Collect the biomass and place it under the sun for about 8-12 days. Now chop it to the required size using the cutter.
4. Prepare a cow dung slurry and sprinkle it on the heap for quick decomposition.
5. Add a layer (2 – 3 inch) of soil or sand at the bottom of the tank.
6. Now prepare fine bedding by adding partially decomposed cow dung, dried leaves and other biodegradable wastes collected from fields and kitchen. Distribute them evenly on the sand layer.
7. Continue adding both the chopped bio-waste and partially decomposed cow dung layer-wise into the tank up to a depth of 0.5-1.0 ft.

8. After adding all the bio-wastes, release the earthworm species over the mixture and cover the compost mixture with dry straw or gunny bags.
9. Sprinkle water on a regular basis to maintain the moisture content of the compost.
10. Cover the tank with a thatch roof to prevent the entry of ants, lizards, mouse, snakes, etc. and protect the compost from rainwater and direct sunshine.
11. Have a frequent check to avoid the compost from overheating. Maintain proper moisture and temperature.

CONCLUSIONS

The Vermiculture and Vermicomposting activity is such a worthwhile and exciting venture. We have learned a lot specifically in the methodologies, benefits and significance of this activity. After almost three months, project delivery and execution, we can therefore conclude that:

1. Vermiculture is a substantial way of reducing wastes, producing fertilizers and maintaining the balance of the ecological environment.

2. Vermicomposting can produce high-quality fertilizers which are better compared to other commercial fertilizers in the market

3. Vermiculture converts farm wastes into organic fertilizer, making it an environment-friendly technology.

4. Vermiculture increases crop yield and lessens dependence on chemical fertilizers thus mitigating climate change.

5. Vermiculture can be made into a livelihood program and become a source of extra income through selling the vermicast and also the vermi worm.

6. Taking worms out of their natural environment and placing them in the vermi beds creates a human responsibility. They are living creatures with their own unique needs, so it is important to create and maintain a healthy habitat for them to do their work. If you supply the right ingredients and care, your worms will thrive and make compost for you.

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Criteria VII: Institutional Values and Best Practices

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REPORT

On

CONSTRUCTED WETLAND IN COLLEGE CAMPUS

INTRODUCTION

A CONSTRUCTED wetland is a shallow basin filled with some sort of filter material (substrate), usually sand or gravel, and planted with vegetation tolerant of saturated conditions. Wastewater is introduced into the basin and flows over the surface or through the substrate, and is discharged out of the basin through a structure which controls the depth of the wastewater in the wetland.

A constructed wetland comprises of the following five major components:

Basin

- Substrate
- Vegetation
- Liner
- Inlet/Outlet arrangement system

AIM

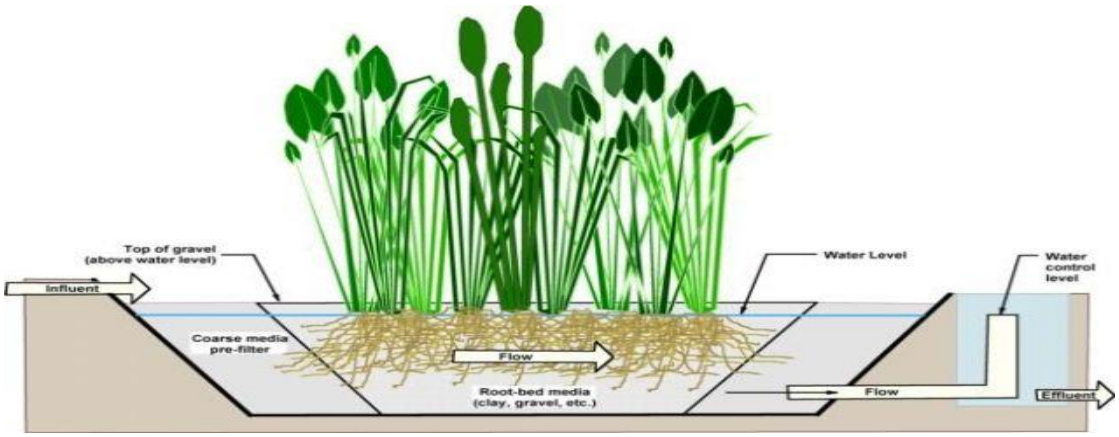
Constructed wetlands can be used to treat raw sewage, storm water. Constructed wetlands mimic the functions of natural wetlands to capture storm water, reduce nutrient loads, and create diverse wildlife habitat. Constructed wetlands are used for wastewater treatment or for grey water treatment

Advantages of CONSTRUCTED wetland Method

The advantages of constructed wetlands are:

1. Less expensive compared to other wastewater treatment methods
2. Low operational and maintenance costs
3. Facilitate wastewater reuse and recycling
4. Tolerate fluctuations in water flow
5. Provide habitat for wetland organisms
6. Can be constructed harmoniously into the landscape
7. An environmentally-sensitive approach

Mechanism of Constructed Wetlands



Constructed wetlands have three primary components:

1. Impermeable layer of clay
2. Substrate layer made of gravel
3. Ground vegetation zone

The impermeable layer is usually made of clay that prevents the filtration of waste down into the lower aquifers.

The substrate layer provides nutrients and support for the root zone. This is the layer and the root zone where the water flows. The bioremediation and DE nitrification processes are performed in this layer. Above the substrate layer lies the ground vegetative layer that is either planted or allowed to establish naturally.

Constructed wetlands are constructed on uplands and outside floodplains without affecting other aquatic sources. The construction involves excavation, backfilling, grading, diking, and installation of water control structures to achieve the desired hydraulic flow patterns.

Constructed wetland is a cost-effective and technically feasible approach to treat wastewater that is not only less expensive to construct but also has low operational and maintenance expenses. Unlike other wastewater treatment methods, it is aesthetically pleasing and eliminates odors associated with wastewater.

As mentioned above, a constructed wetland is a composition of water, substrate, plants, invertebrates, and an array of microorganisms. The mechanisms followed in constructed wetlands to improve the quality of water can vary and are often interrelated. The common mechanisms include:

- The settlement of suspended matter
- The water coming in contact with substrate undergoes filtration, chemical precipitation, and chemical transformation by bioremediation and DE nitrification processes
- The water then undergoes absorption and ion exchange on the surface of vegetation, substrate, and sediment.
- The microorganism and plants break and transform the pollutants
- The microorganisms consume the nutrients
- The predation and natural die-off of the pathogens

CONCLUSIONS

Constructed treatment wetlands have evolved during the last five decades into a reliable treatment technology which can be applied to all types of wastewater including sewage wastewaters, landfill leachate and stormwater runoff. Pollution is removed through the processes which are common in natural wetlands but, in constructed wetlands, these processes proceed under more controlled conditions. All types of constructed wetlands are very effective in removing organics and suspended solids, whereas removal of nitrogen is lower but could be enhanced by using a combination of various types of CWs. Removal of phosphorus is usually low unless special media with high sorption capacity are used. Constructed wetlands require very low or zero energy input and, therefore, the operation and maintenance costs are much lower compared to conventional treatment systems.

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