

SYSTEM AND METHOD FOR BIOLOGICAL TREATMENT OF BIODEGRADABLE WASTE (BW) INCLUDING, BIODEGRADABLE MUNICIPAL SOLID WASTE (MSW)

All the existing methods focus more on disposing/ hiding / avoiding/ burning the waste rather than treating it and bringing it back to its natural state.

Basics of Bio-mass and Bio-Degradable Waste -

Plants, food even bio-degradable waste form a part of Bio-Mass which have Carbohydrates, Proteins and Lipids as the basic building blocks, which are made up of various permutations and combinations of the basic elements - Carbon(C), Hydrogen (H), Nitrogen (N), Oxygen (O), and Phosphorous (P). The element potassium (K) act as a supplementary, but important element.

I have carefully analyzed the municipal solid waste generated per capita per day in various developed countries & India. Out of the total bio-degradable waste generated, 0.5 kg/capita/day is the average bio-degradable waste generated in India. In developed countries the quantity of biodegradable solid waste produced is even higher from 0.5 to 2 kg/ capita/day which is a huge quantity & cannot be ignored.

Basic principle of my invention & our project -

My invention is based on the fact that the only place where the rate of treatment matches the rate of extraction is the digestive system of any being, where the food is taken as an input; it is disintegrated into basic elements. I studied the digestive systems and observed that all the animals including humans complete their digestion process approximately in 24-48 hrs. i. e. they return whatever they have taken from nature, back to nature in a short time span.

The theory was conceptualized as a 'Nature to Nature Theory'

I have invented a methodology to treat bio-degradable waste in a series of biological reactions in a short span of time by identifying the Microbes which produce their own enzymes and some additional enzymes which can catalyze the disintegration of biodegradable waste [inspired from digestive systems].

Environmental Advantages of the invention -

Treats the bio-degradable waste in a short span of 24-72 hours

Disintegrates the bio-degradable waste into a fertile output which is highly rich in nutrients - C, H, N, P, and K. It can be used as a fertilizer which will be easily absorbed by the soil and eventually by the roots of plants.

By using my methodology, a large quantity of waste can be treated in a relatively smaller space, thus the need for landfills will be reduced; large quantities of land will be saved and the degradation of soil and groundwater due to leachate formation will not take place.

Will maintain the ecological balance of nature by balancing the 'extraction and treatment speed'

Experiments and Results which prove the invention at Laboratory Scale -

The experiments were conducted on the Wastesamples of - Vegetarian, Non Vegetarian, Mixed Sample of Vegetarian+ Non-Vegetarian, Water Hyacinth & Nirmalya.

We also conducted different experiments on agriculture waste, Sugarcane Bagasse, wood, Extracted lignin etc.

All the samples were sent to standard certified laboratories, before treatment and after treatment, and the results have shown the effectiveness of the microbes identified by us.

Ground Applications of Our Invention in various fields –

- To treat biodegradable waste of societies, township, restaurants, hotels, fruit & vegetable markets, gardens).
- To treat agriculture waste.
- To treat green waste like water hyacinth.(Jalparni)
- To treat Sugarcane bagasse from sugar industry.
- To prepare animal feed using the output.
- To treat paper as biodegradable waste
- To treat the extremely tough waste product of paper waste i.e. Lignin
- To generate ethanol from bagasse.
- To use Methane produced in the process as an end product to generate electricity or biogas.
- To treat slaughter house waste.

Sample Images of Prototype used for abovementioned treatments:



Machine,
set



Control Panel



Initial Drain Chamber



Different chambers with rotors, pully