



## **AUTOMATED WASTE-CONVERSION UNIT USING RESIDENTIAL WASTE**

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**Abstract—** The waste management system in urban city is getting developed at present by the new idea of city municipality corporation but although all the waste is not properly damped by which cause health hazards which are formed due to contamination & pentagons. Modern intensive agricultural practices face numerous challenges that pose major threats to global food security. In order to address the nutritional requirements of the ever-increasing world population, chemical fertilizers and pesticides are applied on large scale to increase crop production. However, the injudicious use of agrochemicals has resulted in environmental pollution leading to public health hazards. Moreover, agriculture soils are continuously losing their quality and physical properties as well as their chemical (imbalance of nutrients) and biological health. Bio-fertilizers are one of the best modern tools and gift of our agricultural science as a replacement to our conventional fertilizers. Conventional fertilizers contain compost; household wastes and green manure and are not as effective as chemical fertilizers. By the end the output our project which will be helpful to the farmers and be a part of contribution in cleaning society.

**Index Terms—** Bio fertilizer, agrochemicals, pesticides

### **I. INTRODUCTION**

Agriculture sector contributes towards one third share in global gross domestic products. soil

quality, availability of nutrients, environmental conditions as well as the biological health of the soil are other important criteria for improving crop yield per unit area for achieving the targeted goal of food security. Bio fertilizers are microbial inoculants or carrier-based preparations containing living or latent cells of efficient strains of nitrogen fixing, phosphate solubilizing and cellulose decomposing microorganisms intended for seed or soil application and designed to improve soil fertility and plant growth by increasing the number and biological activity of beneficial microorganisms in the soil. The objects behind the application of Bio fertilizers /microbial inoculants to seed, soil or compost pit is to increase the number and biological / metabolic activity of useful microorganisms that accelerate certain microbial processes to augment the extent of availability of nutrients in the available forms which can be easily assimilated by plants. The need for the use of Bio fertilizers has arisen primarily due to two reasons i.e., though chemical fertilizers increase soil fertility, crop productivity and production, but increased / intensive use of chemical fertilizers has caused serious concern of soil texture, soil fertility and other environmental problems, use of Bio fertilizers is both economical as well as environment friendly. Organic fertilizers (manure, compost, vermicomposting) are also considered as Bio fertilizers, which are rendered in available forms due to the interactions of microorganisms or their association with plants. Bio fertilizers, thus

include i) Symbiotic nitrogen fixers Rhizobium sp. ii) non-symbiotic, free living nitrogen fixers Azotobacter, Azospirillum etc. iii) BGA-inoculants Azolla-Anabaena, iv) Phosphate solubilizing microorganisms (PSM) Bacillus Pseudomonas, Penicillium Aspergillus etc. v) Mycorrhiza vi) Cellulolytic microorganisms and vii) Organic fertilizers. fertilizer, natural or artificial substance containing the chemical elements that improve growth and productiveness of plants.

## **II. LITERATURE SURVEY ON THE PROJECT**

PEPER 1: -

David.H Hubbell, Murray H. Gaskins (2016). Use of biological Nitrogen fixation in biofertilizers crops: A review. *Int. J. Res. Eng. Appl. Sci.* 6(7):36-44.

The association of specific microorganisms with plant roots is an ancient observation. The most obvious examples are pathogenic in nature, where the effects of the microorganism on the plant are usually plainly visible as damage to root tissue, which is also of ten devastating to the health of the host plant. The study of this general category of root-microbe associations is encompassed in a separate scientific discipline, that of plant pathology. Unique to these associations is the specificity that is involved. For example, it is well established that any plant is not uniformly resistant or susceptible to microorganisms in general. A microbe which destroys one plant species may be without effect on a different species. The recorded number of variations on this theme is without limit. The generalization can then be made those plants of different kinds may be affected by (interact with) specific microbes in the soil environment. The possible reasons for this specificity are incompletely known but are certainly based on the genetics of the organisms involved.

PEPER 2: -

Vaibhav Srivastava, Ademirsergio Ferreira de Araujo (2013). Role of biofertilizers in agriculture: a brief review. *Mycopath.* 11(2):95-101.

Waste management and declining soil fertility are the two main issues experienced by all developing nations, like India. Now a days, agricultural utilization of Municipal Solid Waste

(MSW) is one of the most promising and cost-effective options for managing solid waste. It is helpful in solving two current burning issues viz. soil fertility and MSW management. However, there is always a potential threat because MSW may contain pathogens and toxic pollutants.

Therefore, much emphasis has been paid to composting of MSW in recent years. Application of compost from MSW in agricultural land helps in ameliorating the soil's physico-chemical properties

A part from that it also assists in improving biological response of cultivated land. Keeping the present situation in mind, this review critically discusses the current scenario, agricultural utilization of MSW compost, role of soil microbes and soil microbial response on municipal solid waste compost application

PAPER 3: -

Biederman LA, Harpole WS (2012) Biochemical and its effects on plant productivity and nutrient cycling: a meta-analysis. *G C B Bio energy* 5:202-214

The use of nitrogen and phosphorus in the agricultural field has led to a number of environmental problems and reduces the crop yields. Synthetic fertilizer usage is credited with increased soil erosion and degrading local eco system. To save the natural environment, use of organic fertilizer has become a best option and also reported as cost effective. Microalgae are considered as potential bio-fertilizers for rice cultivation as these are directly related with their nitrogen fixation ability and other positive effects for plants and soil. As a result of variability in data and N<sub>2</sub> levels applied, significant differences between treatment and control groups were not found relative to farm. Hence, Microalgae species were recommended to be used as bio-fertilizer as an alternative to mainstream synthetic fertilizers.

This is because of the increased cost of chemical fertilizer that cause soil and water pollution. In comparison, microalgae are a cheap source of N, which does not cause pollution. For this reason, the aim of the microalgae experiment as bio-fertilizer was to minimize the aggressive synthetic fertilizer use in the paddy field and to determine the potentiality of bio-fertilizer

application in order to have maximum yield as well as for ensuring eco-friendly environment by avoiding chemical pollution.

PAPER 4: -

Itelima JU, Bang WJ, Sila MD, Onyimba IA and Egbere OJ. Use of Biofertilizers in crops 7:154-165

The use of bio-fertilizers leads to improved nutrients and water up take, plant growth and plant tolerance to abiotic and biotic factors. These potential biological fertilizers would play a key role in productivity and sustainability of soil and also in protecting the environment as eco-friendly and cost-effective inputs for the farmers.

Biofertilizers keep the soil environment rich in all kinds of macro and micro nutrients via nitrogen fixation, phosphate and potassium solubilization or mineralization, release of plant growth regulating substances, production of antibiotics and biodegradation of organic matter in the soil. Biofertilizers, when applied as seed or soil inoculants, multiply and participate in nutrient cycling and leads to crop productivity. Generally, 60% to 90% of the total applied fertilizer is lost and the remaining 10% - 40% is taken up by plants. Hence biofertilizers can be important component of integrated nutrient management systems for to sustaining agricultural productivity and a healthy environment, Biofertilizers are products containing living cells of different of micro-organisms which have ability to convert nutritionally important elements from unavailable to available form through biological processes.

**III. PROBLEM STATEMENT**

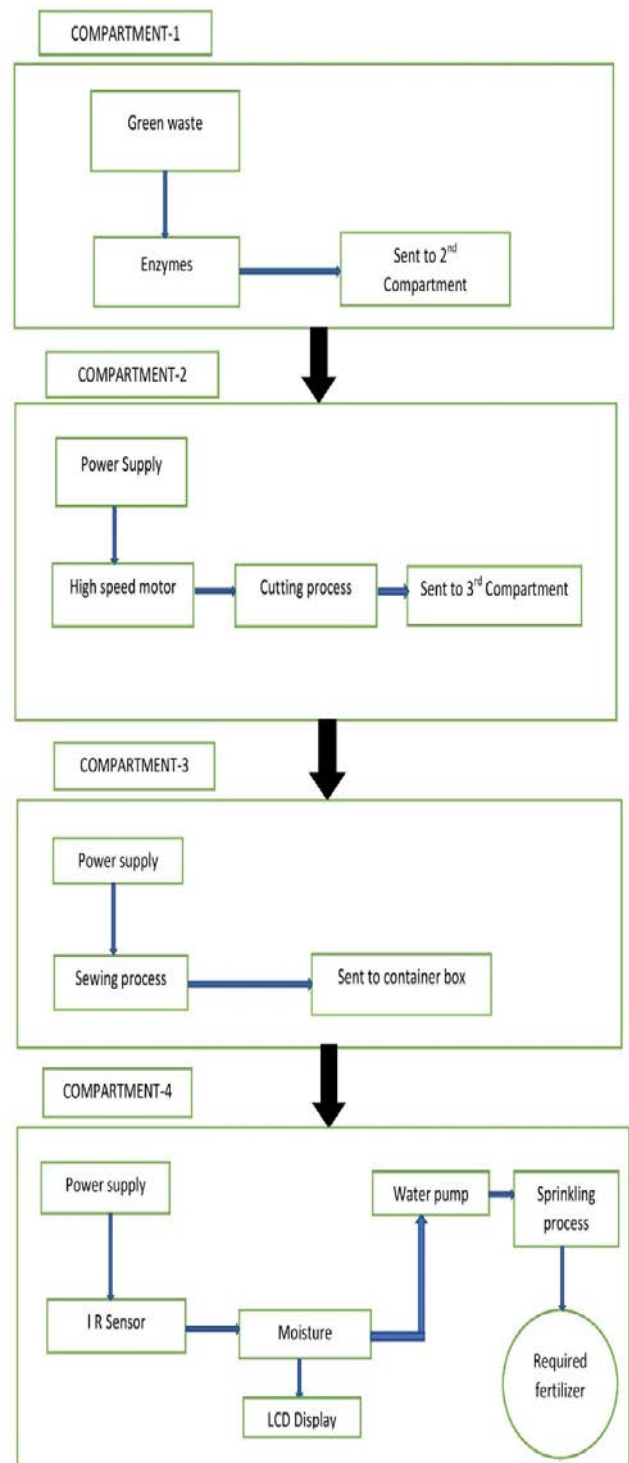
- 1.Availability of chemical fertilizers decreased the significance of green manuring.
- 2.Where the effects of the microorganism on the plant are usually plainly visible as damage to root tissue.
- 3.Much emphasis has been paid to composting of MSW (Managing solid waste) management in recent years.
- 4.The generalization can then be made those plants of different kinds may be affected by

(interact with) specific microbes in the soil environment.

5.A microbe which destroys one plant species may be without effect on a different species.

6.Low temperature are another factor that can lead to an accumulation of volatile organic acids.

**IV. BLOCK DIAGRAM OF PROPOSED MODEL**



## V. WORKING OF THE MODEL

### Compartment 1

First collect the residential wastes to fill the required level specified. After collecting the residential waste dump in the first Compartment and verify the level of residential waste dumped. Waste from the first compartment is sent to the second compartment for cutting process.

### Compartment 2

In this compartment cutting process will have carried out. In this counter cutting blade is used which is driven by high speed motor, the waste from the first Compartment is being chopped here into equal size pieces. The equally chopped pieces are sent to the third compartment.

### Compartment 3

In this compartment sewing process is carried out.

The equally chopped pieces from compartment two are received here, waste is sewed from the specified sewing plates. Sewed product is sent to compartment 4.

### Compartment 4

In this compartment decaying process is carried out. In this compartment we used IR sensor and moisture sensor being used in soil. Moisture sensor checks the presence of moisture content present in the composition of residential waste and enzymes where the moisture content is calculated. In our project percentage of moisture content should be around 25-30% taken into consideration of this reaches down the water is sprinkled using water pump to maintain the moisture level throughout the decaying process. The product from compartment 3 is received to compartment 4, enzymes are added for decaying process over the period of 30 days. The water collected from the product can be used for either agriculture purpose. At the end the required fertilizer is obtained.

## VI. ADVANTAGES

1. Increased soil carbon and reduced atmospheric carbon level.
2. Reduced soil erosion and run off.
3. Reduced energy demand for natural gas.
4. In addition to releasing nutrients, it improves soil structure.
5. Increases the water holding capacity.
6. No risk of forming toxic buildup of chemicals.

7. Renewable, biodegradable and ecofriendly.

## VII. APPLICATIONS

The applications of bio fertilizer are major in farming sector by which the use of chemical fertilizer can be reduced which help the soil to maintain and increased the soil fertility and to get the good crop.

## VIII. CONCLUSION

To promote organic farming in the country by making available the organic inputs such as the bio fertilizers, bio pesticides, fruits and vegetable market waste compost and there by better return for the produce. To prevent pollution and environment degradation by proper conversion and utilization of organic waste. By conducting this project for the production of bio fertilizers automatically dry and healthy bio fertilizers obtained as the end product.

## IX. REFERENCES

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