

"PRODUCTION OF ORGANIC FERTILIZER FROM WASTE MATERIALS"

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Abstract - In the past centuries, the farmers were eager in the usage of chemical fertilizers as they [1] yielded a great number of crops. The major issue they faced using chemical fertilizers not only affected the soil but human beings as well. n To overcome this problem faced by farmers, Bio fertilizers came as the solution.[1] It is an eco-friendly method both for the environment and farmers The Biofertilizer and biological waste are used to replace the usage of chemical fertilizers as it does not contain any toxic substance and makes the soil enriched.[1]

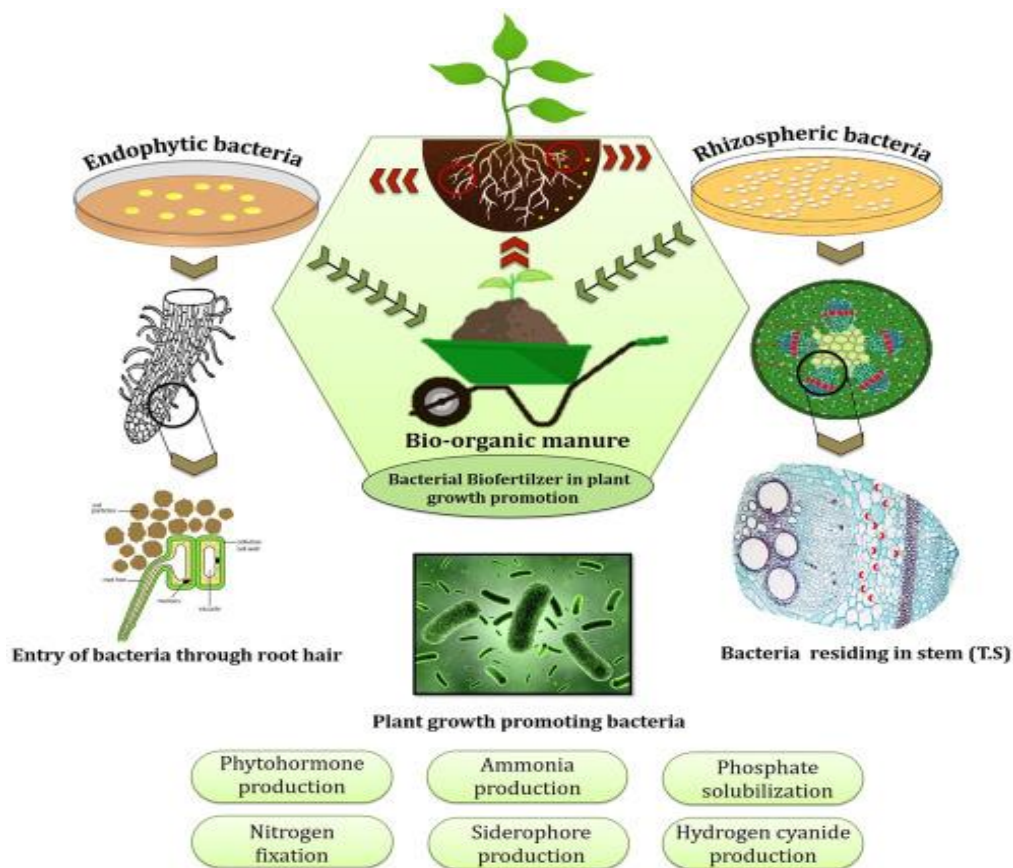
Key Words: BIO FERTILIZER, ECOFRIENDLY

1. INTRODUCTION

Bio Fertilizer: - Fertilizers are organic or inorganic, natural or synthetic substances that are added to soil to enhance plant growth and production. Plants depend on the nutrients in the soil to carry out metabolic reactions because the soil contains basic chemicals for plant growth. However, the supply of basic chemicals in soil to plants is limited. Fertilizers are applied to replace the chemical materials in soil that are utilized by plants during growth and development Different types of fertilizers are applied to different types of crops to improve crop growth and production. Organic fertilizers are natural fertilizers that are made up of animals, plants, and minerals. It can be made up of manure, tea powder mustard cake, banana pill, wood ash, and eggshell. Organic fertilizers are crucial in the agricultural sector because they have a positive effect on soil without damaging groundwater and plants. Elements Necessary for Plant Growth

Table1. Elements Necessary for Plant Growth

Primary nutrients	Secondary nutrients	Micronutrients
Nitrogen	Calcium	Boron
Phosphorus	Magnesium	Chlorine
Potassium	Sulfur	Copper
		Iron
		Manganese
		Molybdenum
		Zinc



1.1 MATERIAL AND METHODS

- **MATERIALS:** Ash, Eggshell, Banana pill, Waste tea powder, Mustard cake We had to make the composition of ash, banana pills, Waste /Used tea powder and Mustard cake in a ratio of 1:1:1:1 kg banana peel is substance contain its own

- The composition is as follows

- **Ash:-**

In this composition, we had used wood ash containing calcium carbonate as its Major component, representing 25-45 percent. Less than 10 percent is potash and 1-5 percent phosphate ;

- **Eggshell:-**

In an eggshell, there is rich in calcium more than 85-95 percent. Eggshells have the capabilities to provide nutrients to the soil. Rich calcium provides good aeration.

- **Banana pills:-**

Banana peel is primarily consistent with potassium and manganese is about Proteins, crude fiber, and carbohydrates.

- **Waste/Used tea powder:-**

Used tea Powder consists of nutrients and tannic acid about 50-60 percent that, when added to the soil, create a more fertile environment for a garden, landscape, and container plants.

- Mustard cake:-

The mustard cake is used in fertilizer for beneficial for providing soil proper nutrient mustard cake prevents healthy farm without any virus on the plant which stops the growth of the plant.

❖ Method and equipment

- Grinder = grinding is the mechanical operation where we grind the banana peel, eggshell. Where we get the mixture of the material. grinder help to mix the raw material and get into different varieties of grinding as per size ii determined to the machine. mostly grinder is used in chemical companies. Cement industry, etc.

- Micro oven= after grinding we kept the raw material in the micro oven for around 2hrs at 30`c.

The micro oven is used to remove the moisture from the material to dry it completely. The micro oven is used in companies for drying purposes of raw materials and products.

- Weighing Balance= after drying it we weigh the balance of raw material. And take the proportion of material to prepare the biofertilizer. This equipment is mostly used in each industry to calculate the weight of the material, product.

1.2 PROCEDURE

- 1) First of all we collect the raw material from the hotel's village homes shops and fruit Shop
- 2) then take Eggshell for grinding it into a powder form and then it is dry in open Sun.
- 3) Then we take Tea waste powder then we wash it from the water and Dry it in open sun
- 4) Then we take Ash and screen it removes all particles/pieces of coal to take Ash in powder.
- 5) Then we take banana peels and dry them in open sun and microvan at 30`c for 2hr after drying banana peels Then we grind in powder form.
- 6) The last material is mustard cake is grind into Powder form.
- 7) After all this process we take all materials for separately Weight up to 1 kg of each material
- 8) Then we take the all material in a ratio of 1:1:1:1 kg from and mix it after using it fertilizer we test the Fertilizer in the laboratory to identify its composition then we use it in Tomato plant for getting its result

2. RESULT AND DISCUSSION



Before 15 days



After 15 days

3. CONCLUSION

From These Project, We Conclude How The Bio Fertilizer Is Effective Than Chemical Fertilizer. From These, We Conclude The Time Required For Growth Of Plant Is Different In Both Types Of Fertilizer Chemical And Bio Fertilizer, And There Cause Of Effect On The Plant And Soil How They Enrich The Soil For The growth Of Plant And There Nutrients And It Cost Fluctuate On Different Types Of Fertilizer Which In Beneficial For All Types Of Farmer.

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