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Comparison of Waste Reduction and NPK value between Black Soldier Fly and vermi

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Abstract - Vermicomposting and the employment of black soldier fly larvae (BSFL) for waste management can be compared to learn more about two different but related methods for recycling organic waste. Both approaches are green and support long-term waste management, but they differ in their features and intended uses. Here is a summary of the comparison between using black soldier flies can take longer to break down some materials, they can process organic matter more quickly, the potential of black soldier fly larvae (BSFL) and vermicomposting as organic fertilizer sources for agricultural and horticultural applications can be better understood by comparing nutritional composition of the two. Analyzing the availability, balance, and use of the vital plant nutrients nitrogen (N), phosphorus (P), and potassium (K) in each of these organic products is necessary to comprehend the extent of this comparison

***Key Words*:** black soldier fly larvae, vermicomposting, nitrogen (N), phosphorus (P), and potassium (K)

1.INTRODUCTION

A species of true fly in the Stratiomyidae family is the black soldier fly (Hermetia illucens). Although it originated in North America, it is now widespread throughout the globe, mostly because of human-assisted distribution. Because of its black coloring and predilection for decomposing organic waste, the black soldier fly is easily distinguished. The extraordinary capacity of the black soldier fly (Hermetia illucens) to ingest and process a variety of biodegradable organic materials makes it extremely beneficial in the management of organic waste.

1.1 OBJECTIVE

- Comparison of black solider fly and Eisenia Foetida to check the efficiency of waste reduction by adding organic waste as a substrate
- To compare the npk in bsf and vermi compost plant

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2.METHODALOGY

1)CONSTRUCTING LOVE CAGE: Purpose: The primary purpose of a love cage is to create an environment that encourages black soldier flies to mate and lay eggs. Mating in black soldier flies usually occurs shortly after they emerge from the pupal stage.

Screening love cage is a modified version of a standard love cage that incorporate the mating process. Here's how a screening love cage can be used in BSF cultivation
The screen is at the h=4ft
b=4ft
In love cage attractant is kept for strong mating =1 kg
And the cage is maintained at the room temperat1ure at 30 deg c

Fig 2.1

2) EGG WOOD

- The female bsf deposits the mass of about 500 egg at the gap of the egg woods.
- One egg wood is at the size of 11cm.
- Arranged in step by step.
- One set of egg wood contains 4 egg woods at the bottom of the egg woods poultry waste is kept for attractant as a tool for mating

Fig2.2

3. REARING UNIT

- The egg woods are taken to the rearing unit and the substrate(msw) is added below the egg woods
- After 3 days the 3 days' larva falls down to the tray and search and consume the food for survive
- 24 kg of msw waste is added as a substrate

Fig 2.3

4. 8TH DAY OLD LARVAE

- 8dol with the moisture level of 28 deg c is maintained, feeding was consumed till 18 days and the total weight of substrate in the tray is 28kg
- 18dol=0.028mg
- Totally the larvae in the trey is 56000 larvae
- 1 larvae consume=2gmof waste

5.Left over waste and waste reduction

Initial weight=28000gm
Final weight=4820gm
Initial weight-final weight/initial weight*100
Efficiency=28000-4820/28000*100=82.7%

waste	weight
Kitchen waste	10kg
Poultry waste	8kg
Fruit scraps	9.2kg

6. WASTE REDUCTION IN EISENIA FETIDA

- Reproduction: Vermicomposting worms are hermaphroditic, meaning they possess both male and female reproductive organs. They lay eggs in a cocoon, which hatches into several baby worms. Under favourable conditions, these worms can reproduce rapidly and increase their population.
- Size and appearance: Adult vermicomposting worms are relatively small, typically measuring 2 to 4 inches (5 to 10 centimeters) in length. They have a cylindrical body with a reddish-brown color and a segmented structure. Their bodies are covered in a slimy mucus, which aids in respiration and movement.

Fig 6.1

7.VERMI PIT

- L=6.2feet
- b=3feet
- Capacity =30 kg
- Amount of substrate added =22kg
- 1 typical adult worm consume=0.5 to 0.8gm of waste
- Amount of worms =100gm

Fig 7.1

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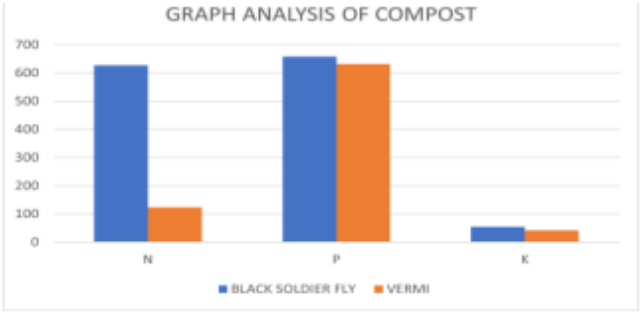
8.CHECKING THE WASTE REDUCTION OF BSF AND VERMI

Vermicomposting can take longer than other composting techniques, especially for big volumes of trash, therefore it requires space and time. In comparison to black soldier fly, it could take more time and space to accomplish considerable waste reduction that conserves moisture, such coconut coir or peat moss Complete Decomposition: Composting worms may not be able to completely decompose some waste types, particularly some hard or fibrous materials. These substances might continue to be in the compost, necessitating additional processing or disposal. When compared to hermetia illucens (black soldier fly) and Eisenia fetida, hermetia illucens waste reduction takes place quickly and gives the efficency of 82.7% within 18 days. Vermi takes time to take the substrate due to its life cycle, after mating the cocoon takes incubation period of 15 days but the black soldier fly completes the life cycle within

9.2 RESULT ANALYSIS OF NPK



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