

## **STUDY ON THE SUITABILITY OF FLY ASH AS A MEDIUM FOR PRODUCTION OF VERMICASTINGS**

**EP No:** 65/2004-05; **Research centre:** Harur and Alwarmalai Modern Nursery Centre,  
**Range:** Dharmapuri and Kallakurichi Modern Nursery Range, Modern Nursery Division,  
Dharmapuri; **Scheme:** JA Research scheme.

### **Introduction:**

Vermicasting is a biological process that utilizes earthworms to convert organic waste into nutrient-rich castings which is nothing but the excrete of earthworms. Fly ash is a byproduct of coal combustion in thermal power plants. It is composed of silica, alumina, and unburnt carbon. It is widely available but has limited applications in agriculture due to concerns about heavy metal content and soil degradation. This study was conducted to evaluate the suitability of fly ash as a medium for vermicasting production. This research carried out during 2004-05 aimed to determine the impact of fly ash on earthworm survival and vermicasting production.

### **Objectives:**

1. To assess the feasibility of using fly ash as a medium for vermicasting production.
2. To compare the quality and quantity of vermicasting produced in fly ash-based treatments with conventional organic media.
3. To determine the chemical composition of vermicasting obtained from different treatments.

### **Materials and Methods:**

#### **Materials:**

The study was conducted at two different locations as detailed below:

1. **Harur Modern Nursery Centre** of Dharmapuri Modern Nursery Range in Modern Nursery Division, Dharmapuri (E.P.No. 65/2004-05).
2. **Alwarmalai Modern Nursery Centre** of Kallakurichi Modern Nursery Range in Modern Nursery Division, Dharmapuri (E.P.No. 65/2004-05).

The fly ash for this experiment at Harur and Alwarmalai Modern Nursery Centre's was procured from Mettur Thermal Power Station.

### **Treatment Details:**

The details of treatments adopted to evaluate the effect of fly ash on vermicasting production are as follows.

<b>Treatment</b>	<b>Composition</b>
<b>Control</b>	Pressmud (150 kg) + Baggasse (75 kg) + Farm Yard Manure (75 kg)
<b>T1</b>	Fly Ash (150 kg) + Farm Yard Manure (150 kg)
<b>T2</b>	Fly Ash (150 kg) + Pressmud (150 kg)
<b>T3</b>	Fly Ash (100 kg) + Farm Yard Manure (100 kg) + Pressmud (100 kg)
<b>T4</b>	Fly Ash (100 kg) + Leaves (100 kg) + Pressmud (100 kg)

### **Methods:**

The experiment was study spanned from 2004 to 2005. The experiment was conducted using standard vermicasting tubs, each measuring 1m × 1m × 1m, across Harur and Alwarmalai Modern Nursery Centres. The treatment compositions were prepared and filled as per the treatment chart in the experimental tubs. 1000 epigeic earthworms were introduced into each treatment tub to initiate the vermicasting production. Continuous monitoring was done to assess key parameters of vermicasting production. Data regarding the vermicasting yield was collected at predefined intervals to ensure accuracy.

### **Analysis of Data:**

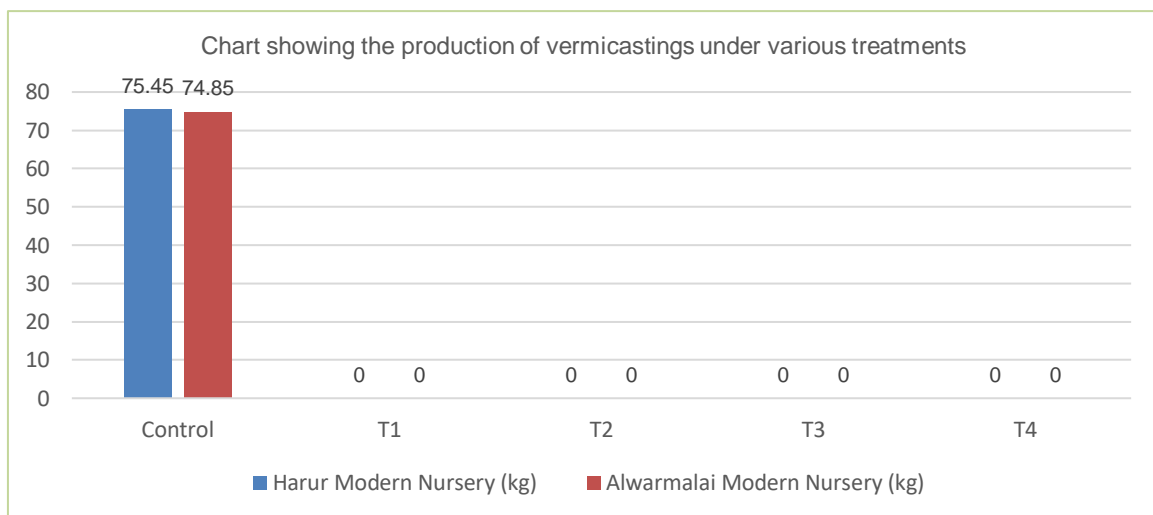
Data collection was carried out across all treatments at predefined intervals to ensure vermicasting dynamics. Vermicasting yield was quantified at seven time points, with cumulative weight recorded to evaluate overall production efficiency. Comparative analyses were performed between the control treatment and fly ash-amended treatments to assess their relative efficacy in supporting vermicasting production.

## Results and Discussion:

### Vermicasting Production Data:

Treatment	Harur Modern Nursery (kg)	Alwarmalai Modern Nursery (kg)
<b>Control</b>	75.450	74.850
<b>T1</b>	Nil	Nil
<b>T2</b>	Nil	Nil
<b>T3</b>	Nil	Nil
<b>T4</b>	Nil	Nil

The findings of the study indicate that control yielded significant vermicasting production, with 75.450 kg recorded at the Harur Modern Nursery Centre and 74.850 kg at the Alwarmalai Modern Nursery Centre, demonstrating the effectiveness of traditional organic substrates in supporting earthworm activity and composting efficiency. In contrast, treatments with fly ash failed to produce any vermicasting, suggesting an adverse impact. These results strongly indicate that fly ash, is unsuitable as a medium or feedstock for earthworms for production of vermicastings.



### Recommendations:

Fly ash is not suitable as a medium or feed for earthworms for the production of vermicastings.