STUDY TO FIND OUT THE OPTIMAL WATER REQUIREMENT FOR THE PRODUCTION OF VERMICASTINGS PER UNIT AREA

EP No: 05/2005-06; **Research centre:** Alwarmalai Modern Nursery Centre, **Range:**Kallakurichi Modern Nursery Range, Modern Nursery Division, Dharmapuri; **Scheme:**- JA Research scheme

Introduction:

Vermicasting is a sustainable waste management technique where earthworms break down organic matter into a finely degraded substance resembling peat. The resulting vermicompost is enriched with essential plant nutrients like nitrogen, phosphorus, and potassium, making it an eco-friendly alternative to chemical fertilizers. This study, focused on determining the optimal water requirements for vermicasting production. The experiment was carried out at the Alwarmalai Modern Nursery Centre of the Kallakurichi Modern Nursery Range in Dharmapuri MND, under Experiment Proposal Number E.P.No. 05/2005-06. The research was carried out during 2005-06 and aimed to optimize vermicasting production per unit area by evaluating different watering regimes.

Objectives:

The primary objective of this study was to determine the optimal water requirement for the production of vermicastings per unit area.

Materials and Methods:

Materials:

The experiment utilized three tubs, each measuring 1 m x 1 m x 1 m, filled with a mixture of pressmud, bagasse, and farm yard manure in a 2:1:1 ratio. Initially, 1500 earthworms were introduced into each tub, and their weight was recorded.

Methods

Three different watering treatments were followed:

1. **T1**: 1 liter of water per tub per day.
2. **T2**: 2 liters of water per tub per day.

3. **T3**: 3 liters of water per tub per day.

Observations were recorded every 15 days, including the quantity of vermicasting collected and the number of earthworms at the conclusion of the experiment.

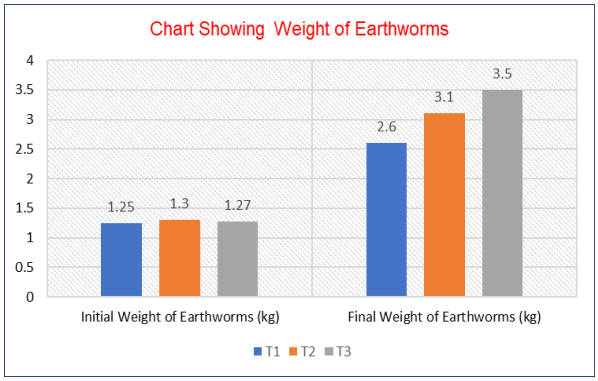
Results and Discussion

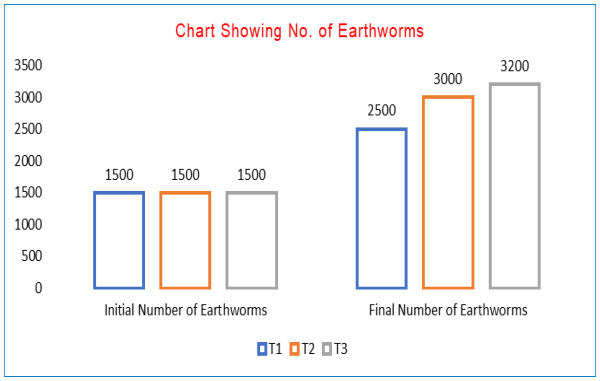
The study yielded significant insights into the relationship between water application and vermicasting production. The initial and final weights and numbers of earthworms were recorded as follows:

Treatment	Initial Weight of Earthworms (kg)	Final Weight of Earthworms (kg)	Initial Number of Earthworms (No.)	Final Number of Earthworms (No.)
T1	1.250	2.600	1500	2500
T2	1.300	3.100	1500	3000
T3	1.270	3.500	1500	3200

The vermicasting production for each treatment was as follows:

T1: 24.000 kg, **T2**: 28.000 kg and **T3**: 25.000 kg





The results indicate that Treatment 2 (2 liters of water) yielded the highest vermicasting production at 28 kg, followed by Treatment 3 (3 liters) with 25 kg. Treatment 1 (1 liter) produced the least vermicasting at 24 kg.This indicates that watering regime in Treatment 2 provides optimal moisture conditions for earthworm activity and composting efficiency.

Additionally, Treatment 3 resulted in the highest number of earthworms at the conclusion of the experiment, with 3500 earthworms, followed by Treatment 2 with 3000, and Treatment 1 with 2500.While the Treatment 3 supports a larger earthworm population, it is slightly less efficient in terms of vermicasting production compared to Treatment 2.

Recommendation:

Based on the analysis of the results from this experiment, it is recommended that to maximize vermicasting production, it is recommended to apply 2 liters of water per square meter per day.