

STUDY ON THE OPTIMUM REQUIREMENT OF WATER PER UNIT AREA FOR THE PRODUCTION OF VERMICASTING

EP No: 53/2004-05; **Research centre:** Harur Modern Nursery Centre,

Range: Dharmapuri Modern Nursery Range, Modern Nursery Division, Dharmapuri;

Scheme:- JA Research

Introduction:

Vermicasting is environmental biotechnology that transforms organic waste into high-nutrient organic manure using earthworms. The process involves earthworms digesting raw organic waste and converting it into nutrient-rich soil. The efficiency of vermicasting production is influenced by several factors, including moisture levels. This study aimed to determine the optimum quantity of water required for effective vermicasting production per unit area. The experiment was conducted at the Modern Nursery Centre, Harur, under the Modern Nursery Division, Dharmapuri, during 2004-2005 (EP No. 53/2004-05). The objective was to identify the water requirement for vermicasting production and establish the most efficient watering schedule.

Objectives:

1. Determine the optimal water requirement for vermicasting production.

Materials and Methods:

Materials:

The experiment was conducted using two vermicasting tubs, each measuring 1.20m × 0.80m × 0.60m (0.58 m³). The feeding material included Pressmud, Bagasse and Farmyard Manure (FYM) in a ratio of 2:1:1. The feeding material was filled up to a height of 52 cm in each tub. Watering was done at regular intervals, and observations were recorded daily.

Methods:

The experiment was conducted over 120 days. Initially, 8 liters of water was added per tub once every two days for 45 days. After this period, the water quantity was reduced to 4 liters per tub once every two days until the end of the experiment. The total amount

of water used per tub was recorded, and the vermicasting yield was measured at the end of each month.

Results and Discussion:

The study revealed variations in vermicasting production based on the water quantity applied. The results are summarized below:

Month-Year	Quantity of Water Added (Liters)	Quantity of Water Added (Liters)	Vermicasting Collected (kg)	Vermicasting Collected (kg)
	Tub 1	Tub 2	Tub 1	Tub 2
Dec – 2004	82	82	30.00	26.30
Jan – 2005	104	104	-	-
Feb – 2005	48	48	21.50	25.00
Mar – 2005	57	57	37.00	32.00
Apr – 2005	20	20	6.30	6.40
Total	311	311	94.80	89.70

The results indicate that 310 liters of water is required to produce approximately 90 kg of vermicasting per tub in a 120-day period.

A key finding was that reducing the water quantity after 45 days did not negatively affect vermicasting production. This suggests that maintaining initial high moisture levels helps in rapid decomposition, after which lower water levels are sufficient for sustaining the process.

Recommendations:

Based on the overall analysis, 310 liters of water per 0.58 m³ of feed material is recommended for producing 90 kg of vermicasting over a 120-day period.