

FINDING OUT OPTIMUM MOISTURE CONTENT IN VERMICASTING FOR BETTER QUALITY DURING IT'S STORAGE

EP No: 66/2004-05; **Research centre:** Harur Modern Nursery Centre,

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

Scheme:- JA Research

Introduction:

Vermicasting, also known as vermicomposting, is the process of using earthworms to convert organic waste into nutrient-rich compost. This study aimed to determine the optimum moisture level required for preserving the nutrient content in stored vermicasting. The experiment was conducted at the Modern Nursery Centre, Harur, under the Modern Nursery Division, Dharmapuri, during 2004-2005 (EP No. 66/2004-05). The objective was to analyze the impact of moisture retention on vermicasting quality over a storage period.

Objectives:

1. Determine the effect of moisture retention on the nutrient composition of stored vermicasting.
2. Assess the monthly variations in macro- and micronutrient content.
3. Identify the optimal storage conditions to minimize nutrient loss in vermicasting.

Materials and Methods:

Materials:

The experiment involved two treatments for vermicasting:

- **Bag No.1:** No additional moisture was added during storage.
- **Bag No.2:** Water was added to compensate for weight loss due to moisture evaporation.

Each polypropylene laminated bag was filled with 35 kg of vermicasting at the beginning of the experiment. Sample for analysis of nutrient was also collected from the same tubb form which vericasts wrer collectef for the experiment. In bag two water

added or injected based on the amount of weight loss over the period of time. Every month weight measured and loss of weight balanced with water. Samples were collected from both bags and analyzed at the CPR Environmental Education Centre, Chennai.

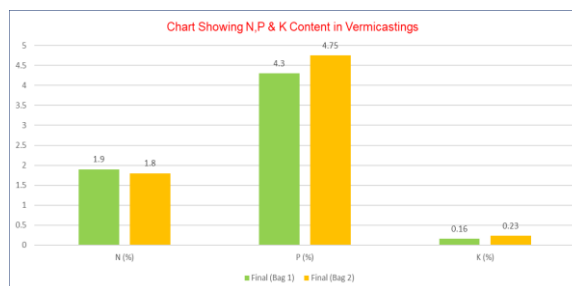
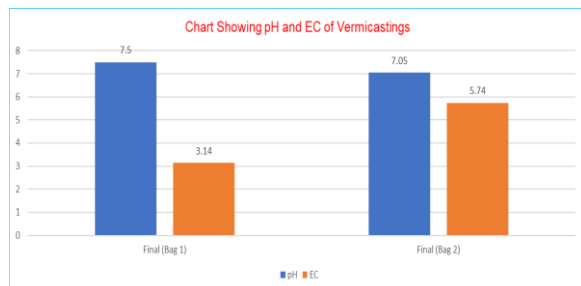
Methods:

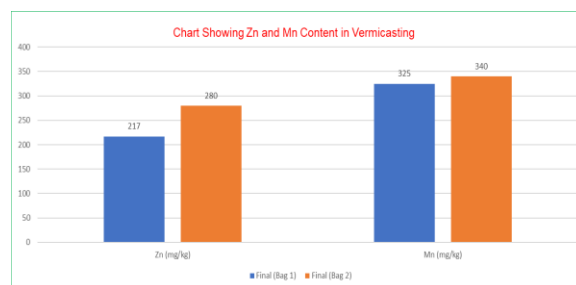
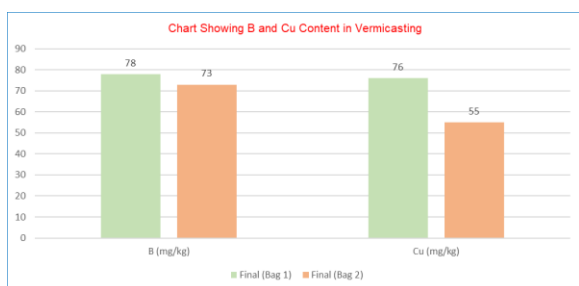
The experiment was conducted over one year. The total weight of the bags, moisture loss, and nutrient composition were recorded monthly. The macro- and micronutrient content of the stored vermicasting was analyzed, and comparisons were made between the two storage conditions.

Results and Discussion:

The study revealed significant variations in nutrient retention based on moisture levels. The results are summarized below:

Parameter	Initial (Bag 1)	Final (Bag 1)	Initial (Bag 2)	Final (Bag 2)
pH	7.87	7.50	7.87	7.05
EC	0.53	3.14	0.53	5.74
Organic Carbon (%)	22.00	17.15	22.00	16.40
N (%)	1.10	1.90	1.10	1.80
P (%)	4.40	4.30	4.40	4.75
K (%)	0.80	0.16	0.80	0.23
Ca (%)	8.90	8.00	8.90	10.00
Mg (%)	0.74	6.00	0.74	3.60
Fe (mg/kg)	8600	11500	8600	17250
Zn (mg/kg)	160	217	160	280
B (mg/kg)	120	78	120	73
Mn (mg/kg)	360	325	360	340
Cu (mg/kg)	70	76	70	55





The results indicated that Bag No.1 (without added moisture) exhibited a higher loss of organic carbon, potassium, and certain micronutrients over the storage period. In contrast, Bag No.2 (with moisture retention) showed better preservation of nitrogen, phosphorus, calcium, and iron, confirming that maintaining moisture helps retain essential nutrients in vermicasting. The present revealed that, after 6 months, Bag 1 had loss 3.80 kg of weight due to loss of moisture content while Bag 2 had loss 1 kg of weight at the end of the sixth month. The study results suggest that adding or injecting water into vermicasting bag arrests the loss of weight compared to T1 and reduces the nutrient loss.

The weight analysis of the bags further supported these findings: (After 6 Months)

Storage Bag	Initial Weight (kg)	Final Weight (kg)	Water Added (L)
Bag No.1	35.00	32.20	Nil
Bag No.2	35.00	34.00	4.91

Recommendations:

Based on the overall analysis, vermicasting should be stored with adequate moisture retention to minimize nutrient loss and maintain quality. Periodic rehydration (600 ml (approx.) per month injecting to bag) during storage is recommended for long-term preservation of essential nutrients.