

STUDY ON EARTHWORM SPECIES FOR VERMICASTING PRODUCTION FROM WESTERN GHATS SOUTH SIDE FORESTS

EP No: 44/2007-08; **Research centre:** Valkaradu Modern Nursery Centre,
Range:Dindigul Modern Nursery Range, Modern Nursery Division, Dharmapuri;
Scheme:-TAP scheme

Introduction:

The Western Ghats, a biodiversity hotspot in India, have variety of earthworm species that play a crucial role in soil health and organic matter decomposition. Vermicasting, or vermicomposting, is an eco-friendly method of converting organic waste into nutrient-rich compost using earthworms. The effectiveness of this process depends on the adaptability and efficiency of different earthworm species in various forest ecosystems. The southern side of the Western Ghats, characterized by dense forests and high organic matter accumulation, provides an ideal environment for studying earthworm species involved in vermicasting. Native species dominate these ecosystems, contributing significantly to soil fertility and nutrient cycling.

This study aimed to evaluate various earthworm species collected from different forest regions of the Western Ghats (South Side) for their suitability in vermicasting production. The experiment was conducted at the Modern Nursery Centre, Valkaradu, under the Modern Nursery Division, Dharmapuri, during 2007-08 (EP No. 44/2007-08). The objective of the study was to identify region-specific earthworm species suitable for vermicasting production based on yield and nutritive quality.

Objectives:

1. Identify earthworm species from the Western Ghats (South Side) forests.
2. Evaluate their efficiency in vermicasting production.
3. Analyze the nutritive value of the vermicast produced by different species.

Materials and Methods:

Materials:

The study involved the collection of earthworms from four distinct forest locations in the Western Ghats namely Srivillipuththur, Kalakkadu, Courtallam, and Keeriparai. Experimental vermicasting beds measuring 1m x 1m x 1m. were used for studying the collected species. The feeding material consisted of a mixture of press mud (150 kg), farmyard manure (75 kg), and bagasse (75 kg) for each tub. In each experimental tub 200 earthworms from a specific location were released.

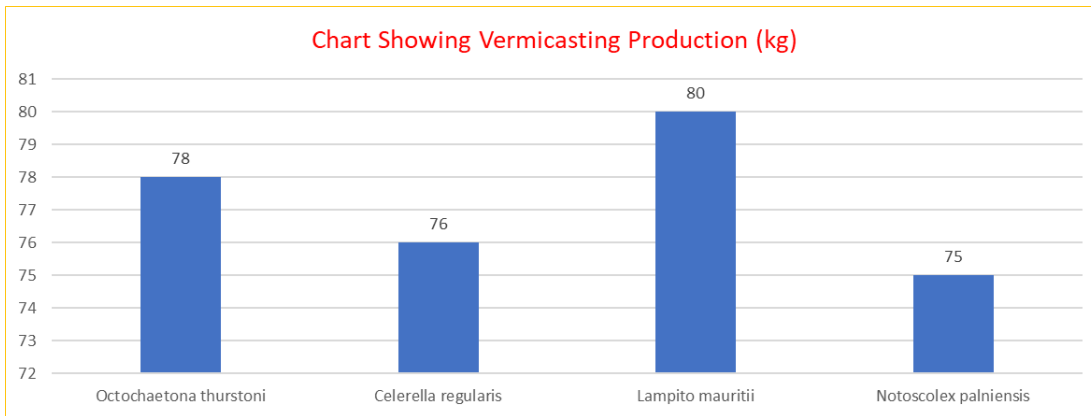
Methods:

The experiment was conducted over a period of three months. The total vermicasting yield was recorded at the end of the experiment. Species identification of the collected earthworms was carried out at Manonmaniam Sundaranar University, Alwarkurichi. The nutritive values of the vermicasting samples were analyzed at the Soil Science Laboratory, State Forest Research Institute (SFRI), Chennai. Data were recorded on total vermicasting yield and nutrient composition to assess the most efficient species for vermicasting production.

Results and Discussion

The study revealed variations in vermicasting production among different earthworm species. The vermicasting yield recorded at the end of the experiment is summarized below:

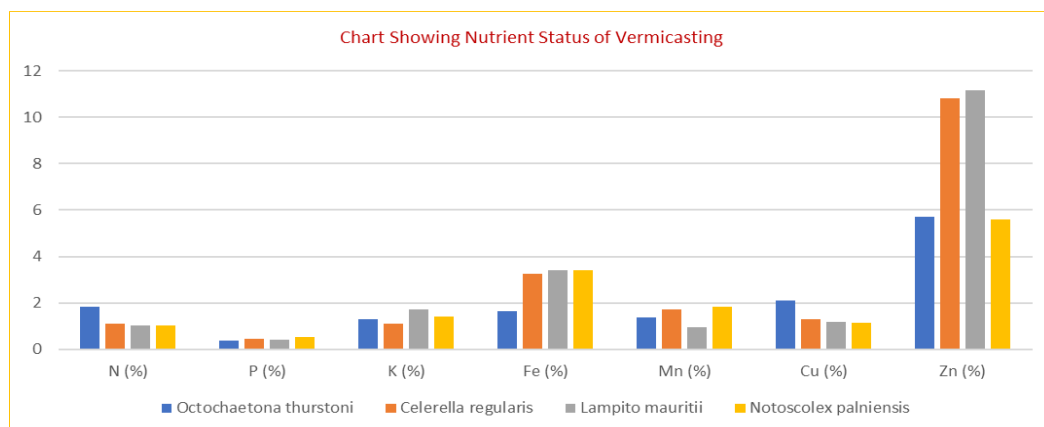
Earthworm Species	Source Forest	Total Vermicasting Production (kg)
<i>Octochaetona thurstoni</i>	Srivillipuththur	78
<i>Celerella regularis</i>	Kalakkadu	76
<i>Lampito mauritii</i>	Courtallam	80
<i>Notoscolex palniensis</i>	Keeriparai	75



Among the species studied, *Lampito mauritii* collected from Courtallam exhibited the highest vermicasting production (80 kg), followed by *Octochaetona thurstoni* from Srivillipuththur (78 kg), *Celerella regularis* from Kalakkadu (76 kg), and *Notoscolex palniensis* from Keeriparai (75 kg).

A comparative analysis of the vermicasting nutritive values showed that *Lampito mauritii* from Courtallam produced the most nutrient-rich vermicast. The following table presents the macro- and micronutrient composition of the vermicasting:

Earthworm Species	N (%)	P (%)	K (%)	Fe (%)	Mn (%)	Cu (%)	Zn (%)
<i>Octochaetona thurstoni</i>	1.84	0.38	1.3	1.65	1.36	2.10	5.7
<i>Celerella regularis</i>	1.09	0.47	1.1	3.25	1.71	1.3	10.8
<i>Lampito mauritii</i>	1.02	0.41	1.7	3.39	0.95	1.2	11.18
<i>Notoscolex palniensis</i>	1.01	0.52	1.4	3.40	1.83	1.14	5.6



The results indicate that *Lampito mauritii* not only produced the highest vermicasting yield but also exhibited the best nutrient composition, making it the most suitable species for vermicasting production. The variation in nutrient values across different species suggests that environmental factors and species-specific traits significantly influence vermicasting efficiency. It is also worthy to note that in a similar experiment in North-Eastern Agroclimatic Zone, *Lampito mauriti* was found to be effective for vermicasting production.

Recommendations

Based on the findings of the study, among the species tried *Lampito mauritii* from Courtallam is recommended as the most efficient species for quality vermicasting production. It is suitable for large-scale vermiculture applications due to its superior yield and nutrient composition.