

STUDY ON COMPARATIVE EVALUATION OF EARTHWORM SPECIES FOUND IN SHOLAS FOR VERMICASTING PRODUCTION

EP No: 19/2006-07; **Research centre:** Valkaradu Modern Nursery Centre, **Range:** Dindigul Modern Nursery Range, Modern Nursery Division, Dharmapuri; **Scheme:-TAP scheme**

Introduction:

The Shola forests of the Western Ghats are unique montane ecosystems characterized by rich biodiversity and high organic matter accumulation. Earthworms play a vital role in maintaining soil health and nutrient cycling, making them essential for vermicasting production. However, different earthworm species exhibit varying efficiencies in organic matter decomposition, nutrient enrichment, and adaptability to forest conditions. Comparative studies on earthworm species in Shola forests aim to identify the most effective species for vermicasting production. This study was conducted at Valkaradu Modern Nursery Centre during 2006-07 to identify the most effective earthworm species for vermicasting production. The experiment focussed on assessing the productivity and reproductive potential of different earthworm species collected from various Shola forests.

Objectives:

1. To identify earthworm species found in Shola forests and evaluate their suitability for vermicasting production.
2. To compare the vermicasting yield and earthworm multiplication rate across different species under controlled conditions.

Materials and Methods:

Materials:

Earthworms were collected from four different forest regions and placed in experimental vermicasting beds measuring 1m × 1m × 0.30m. The collected earthworms were taxonomically identified by ManonmaniamSundaranar University, Alwarkurichi. The identified species and their sources were:

- *Pontoscolexcorethrurus* – Kumuli
- *Celerielladitheca* – Sirumalai
- *Diporochaetadorsochaeta* – Kodaikanal
- *Perionyx spp.* – Megamalai

100 kg press mud, 50 kg farmyard manure (FYM), and 50 kg bagasse was used as feeding material across all treatments to ensure uniform conditions.

Methods:

100 earthworms of a specific species was introduced in each experimental tub and the vermicasting yield was recorded periodically. At the end of the experiment, the total vermicasting production and final earthworm population count were recorded. The nutrient composition of the vermicastings was analyzed at the Soil Science Lab, SFRI, Chennai.

Analysis of Data:

| Earthworm Species | Source Forest | Total Vermicasting (kg) | Final Earthworm Population (No.) |
|--------------------------------|----------------------|--------------------------------|---|
| <i>Pontoscolexcorethrurus</i> | Kumuli | 51 | 509 |
| <i>Perionyx spp.</i> | Megamalai | 50 | 589 |
| <i>Celerielladitheca</i> | Sirumalai | 40 | 329 |
| <i>Diporochaetadorsochaeta</i> | Kodaikanal | 35 | 215 |

Results and Discussion:

The study revealed distinct variations in vermicasting production and earthworm reproduction across the tested species. *Pontoscolexcorethrurus* from Kumuli exhibited the highest vermicasting yield (51 kg), *Perionyx spp.* from Megamalai, while slightly lower in vermicasting yield (50 kg), demonstrated the highest reproductive potential, with an increase from 100 to 589 earthworms in three months. This indicates that *Perionyx spp.* may be more suitable for earthworm production and multiplication. In contrast, *Celerielladitheca* from Sirumalai and *Diporochaetadorsochaeta* from

Kodaikanal showed comparatively lower yields (40 kg and 35 kg, respectively), making them less viable for vermicasting production.

Recommendations:

Perionyx spp. among other speciesis recommended for vermicastingproduction due to its superior capacity of vermicasting production and reproductive potential in Western Agroclimatic Zone.