STUDY ON SUITABLE EARTHWORM SPECIES FOR VERMICASTING PRODUCTION FROM DIFFERENT FOREST TYPES

EP No: 58/2005-06; **Research centre:** Alwarmalai Modern Nursery Centre, **Range:**Kallakurichi Modern Nursery Range, Modern Nursery Division, Dharmapuri; **Scheme:** TAP scheme.

Introduction:

Vermicasting, or vermicomposting, is an eco-friendly method of converting organic waste into nutrient-rich compost using earthworms. The efficiency of this process depends significantly on the species of earthworms used, as different species exhibit varying abilities to decompose organic matter and thrive in specific environmental conditions.Forests, with their diverse ecosystems, provide a unique opportunity to study the adaptability and effectiveness of different earthworm species in vermicasting production. The selection of suitable earthworm species is crucial for optimizing compost quality, decomposition rates, and overall soil health.

Earthworms significantly contribute to soil health by enhancing organic matter decomposition and nutrient cycling through vermicasting. The study aimed to identify and evaluate different indigenous and exotic earthworm species from various Reserved Forests (RF) for their efficiency in vermicasting production. The experiment was conducted at Alwarmalai Modern Nursery Centre during 2005-2006 (EP No. 58/2005-06) to determine the most suitable species for vermicasting production.

Objectives:

1. To evaluate the best indigenous and exotic earthworm species for vermicasting production.
2. To identify the earthworm species present in different forest types and assess their suitability for vermicasting production.

Materials and Methods:

Materials:

Earthworms were collected from different Reserved Forests and introduced into experimental tubs containing a feed mixture of press mud, bagasse/leaf litter, and farmyard manure (2:1:1 ratio). The identified species and their sources were:

1. *Lampito mauritii* – Pichavaram RF
2. *Celeriella bussata* – Suranganar RF
3. *Octochaetora serrata* – Valpet RF
4. *Dichogaster affinis* – Vellimalai RF
5. *Perionyx excavatus* – Rangappanur RF
6. *Lampito mauritii* – Parigam RF

Except *Celeriella bussata* – Suranganar RF belonging to the Western Agro Climatic Zone and *Lampito mauritii* – Parigam RF belonging to the North-Western Agro Climatic Zone all the other species were collected from the RF located in the North-Western Agroclimatic Zone of Tamil Nadu. Interestingly the study involved *Lampito mauritii*from both North-Western and North-Eastern agroclimatic zones.

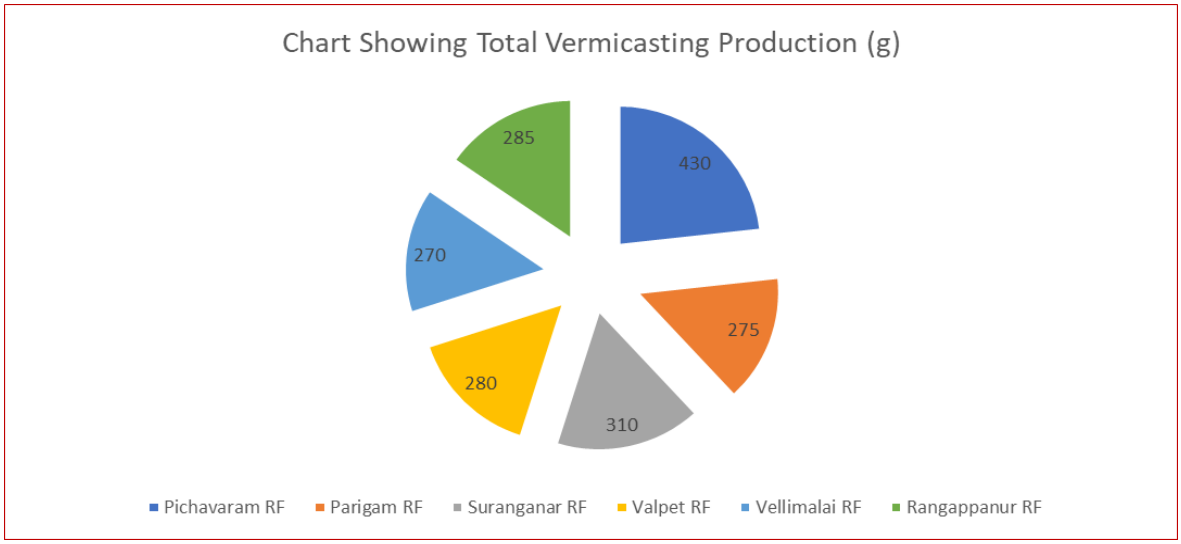
Methods:

The experiment was conducted using six separate tubs, each containing a specific earthworm species. The vermicasting yield was recorded over three months at monthly intervals to assess productivity variations. Environmental conditions, including moisture and temperature, were maintained to optimize earthworm activity. The final vermicasting yield was measured at the end of the experiment, and comparisons between species were made.

Analysis of Data:

Earthworm Species	Source Forest	Total Vermicasting (g)
Lampito mauritii	Pichavaram RF	430
Lampito mauritii	Parigam RF	275
Celeriella bussata	Suranganar RF	310

Octochaetora serrata	Valpet RF	280
Dichogaster affinis	Vellimalai RF	270
Perionyx excavatus	Rangappanur RF	285



Results and Discussion:

The experiment revealed significant variations in vermicasting production across different earthworm species. *Lampito mauritii* from Pichavaram RF demonstrated the highest productivity (430 g), significantly outperforming its counterpart from Parigam RF (275 g). This suggests that regional environmental factors influence the efficiency of the same species. *Celeriella bussata* and *Perionyx excavatus* exhibited moderate vermicasting yields, while *Dichogaster affinis* and *Octochaetora serrata* recorded the lowest productivity. The observed differences indicate that locality specific earthworm species are more suitable for vermicasting production.

Recommendations:

Lampito mauritii from Pichavaram RF (North-Eastern Agroclimatic Zone) is recommended for vermicasting production in the areas located in North-Eastern Agroclimatic Zone due to its superior yield.