

The Complete Technology Book on Vermiculture and Vermicompost (Earthworm) with Manufacturing Process, Machinery Equipment Details & Plant Layout 3rd Edition

Author:- Dr. Himadri Panda

Format: paperback

Code: NI116

Pages: 384

Price: Rs.1475US\$ 125

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within **5** days

Advantage of vermicomposting is that it composts the wastes of rural areas. They clean our villages by using unnecessary organic and non-organic materials. Improves the texture of the soil and its ability to store water. Improves root growth and the multiplication of beneficial soil microorganisms by providing optimum aeration to the soil.

Vermicompost (vermi-compost) is a mixture of decomposing vegetable or food waste, bedding materials, and vermicast created by the decomposition process using various species of worms, usually red wigglers, white worms, and other earthworms. This is known as vermicomposting, and the practise of raising worms for this purpose is known as vermiculture. Sewage treatment can also be done with vermicomposting.

The Global Vermicompost Market is reach growing at a CAGR of 16.74%. The Growth of the global vermicompost market is caused by various factors, such as improved soil aeration, improved water holding capacity, better nutrient cycle, and enriched soil with micro-organism, helps in plant root growth and structure, enhanced germination. The vermicomposting method is used in organic farming. Increasing the use of sustainable agricultural practices, such as vermicomposting along with Government support for organic farming is significantly contributing to the global vermicompost market growth. Vermicompost offers plants with necessary nutrients and helps in plant diseases suppression. Worm castings often comprise 7 times more phosphorus, 11 times more potassium, and 5 times more nitrogen than ordinary soil, which are crucial minerals required for plant growth.

Vermiculture and Vermicompost (Earthworm), as well as their manufacturing methods, are all covered in depth in this book. It also offers photos of equipment as well as contact information for industrial providers.

This book is a one-stop shop for everything you need to know about the Vermiculture and Vermicompost (Earthworm) industry, which is ripe for manufacturers, merchants, and entrepreneurs. This is the only book that goes into great detail about Vermiculture and Vermicompost. It's a genuine feast of how-to material, from concept to equipment buying.

1. INTRODUCTION

Advantages of Vermicomposting

Vermicomposting in Daily Life

Vermiculture v/s Vermicomposting

Vermitechnology (VT)

Progress of Worm Industry
Turning Garbage into Money
Chemical Composition of the Vermicompost
Vermicomposting at Home
Vermicomposting on the Farm
The Business of Worms
Interaction of Vermicompost-Earthworm-Mulch-Plantroot (Vemp)
Earthworm Farming is not Hard

2. EARTHWORMS : ECOLOGICAL TYPES

Trophic Classification of Earthworms
Drilosphere
Physical Effects of Earthworms on Soils
Chemical Effects of Earthworms on Soils
The Effect of absence of Earthworms in Soils

3. PHYLUM ANNELIDA : EARTHWORM

Earthworms
Economic Importance
Pheretima Poshuma
The Body Wall
Locomotion
The Coelom
The Digestive System
Food and Digestion
Respiration
Excretory Organs
Physiology of Excretion
Chloragogen Cells
Vascular System
The Nervous System
Working of the Nervous System
Receptor Organs
Generative Organs
Copulation
Fertilization and Cocoon Formation
Classification

4. EARTHWORMS : LIFE CYCLE

Life Cycle Studies
Life Cycle Patterns
Life cycle—Lampito mauritii
Cocoons
Juveniles
Non-Clitellates
Clitellates
Life Cycle—Perionyx excavatus
Cocoons
Juveniles
Non-clitellates
Clitellates
Doubling Time
Biochemical Changes During Growth

5. EARTHWORMS: FOR CULTURE

Worms for Vermiculture

Earthworm Breeding

Vermicompost

Collecting local Earthworms

6. WHY VERMICOMPOSTING

Fertilizers use and Deterioration of Soil Environment

Testing the Impact of Vermicomposting

Nitrogen and Humification in Vermicomposting

Vermicompost - a Quality Manure

Recycling of Wastes through Vermi-Composting

Minimizing Pollution Hazard

Providing Growth Promoters

Vermicomposting : Advantages

Black Gold (Worm Castings) from Worms

Adverse Effects on Crops

Economic Viability

7. VERMICOMPOST HIGH-GRADE FERTILIZER

Crucial to Organic Agriculture

Wide-spread use in the Tropics and Sub-Tropics

Flexible Method

Rapid Conversion

What Exactly is Vermicompost?

Characteristics

Conversion Processes

Plant Nutritionists - Encouragement of Soil Fertility

Soil Conditioning and Plant Strengthening Effect

Minimisation of Solid Waste with Low Toxicity and Containing Heavy Metals

Which Species of Earthworms?

Eisenia Fetida - Hard Workers

Transformation of the Organic Material:

Reproduction

Under Perfect Conditions

Further Uses

Feed

Source Material for the Fodder

Nutritional Balance in Feed

Feeding Process

Various Worm Composting Methods

Size of the Worm Compost Heap

Climate

Construction of a Worm Farm

Harvesting the Vermicompost

Storage of Vermicompost

Spreading the Vermicompost

The Liquid Variety: Vermiwash

A Method to Prepare Vermiwash

Application of Vermiwash

Management

Great Potential for Large and Small Organic Farms alike

8. VERMICULTURE AND VERMITECH

How to Start Vermiculture

Preparation of Vermibeds

Setting Up of a Vermiwash Unit

An Enterprise

Economics of Vermitech (In Indian Rupees)

Construction and Maintenance of a Twin Unit System Marketing

9. VERMICOMPOSTING MATERIALS

Animal Dung

Agricultural Waste

Forestry Wastes

City leaf Litter

Waste Paper and Cotton Cloth etc.

City Refuge

Biogas Slurry

Industrial Wastes

Feeding Vermicomposting Materials

What should not be Fed to Earthworms?

How much Earthworm Eat

How to Feed Earthworm?

Vermicomposting : Types

Small Scale or Indoor Vermicomposting

Large Scale or Outdoor Vermicomposting

In-situ Culturing of Earthworms

Simple Promotion of Vermic Activity in Fields

Development of Earthworms in Gardens and Orchards Large Scale

Commercialized Vermicomposting in Open Heaps

Vermicomposting : Requirements

Environmental Requirements

Air (Aeration)

Moisture Content

Temperature

How to Construct a Worm Bin

Bedding Materials

Other Requirements

Container

Containers : Types

Small Barrel or Drum Composter

Large Barrel or Drum Composter

Three-chambered Bin

Making of three-chambered bin

Bedding Material

Ideal Conditions for Life of Earthworms

Food for Worms

Adding Food Waste

Proper Ingredient Mixture

Browns

Greens

Particle Size

Fertilizer and Lime

pH

Other Factor Affecting Earthworm's Growth
Earthworm and Insects
Tilling and Earthworm Population
Earthworm and come Drowning
Maintaining the Bin
Harvesting the Compost and Worms
General Problems in Production of Vermicomposting Remember

10. EXPERIMENTS FROM THE FIELD 151

Earthworms: Their Effect on Plant Growth
Growing Vegetables
Are Earthworms Alone?
Effect on Soil Quality
Soil Loss
Adverse Effects on Crops
Impact of Chemicals on Earthworms
Impact of Heavy Metals
Earthworms in Food Chains
Earthworm Parasites

11. EARTHWORMS : THEIR APPLICATION IN ORGANIC AGRICULTURE 166

Organic Method Under Rainfed Conditions
I. Cultivation of Groundnut (per acre) (All costs in Indian ruppees)
Cost of Field Preparation
Net Profit From Both Types of Cultivation (Per Acre)
II. Cultivation of Brinjal (Per Acre)
Net Profits from both Types of Cultivation (Per Acre)
III. Cultivation of Okra (Per Acre)
Net Profit from Cultivation
IV. Cultivation of Paddy
V. Cultivation of Sugarcane

12. WAYS TO MAKE COMPOST

Selection of Suitable Species
Epiges (*Eisenia Foetida*)
Endoges (*Eudrilus Eugeniae*)
Aneciques
Basic Characteristics of Suitable Species
Composting Material : Preliminary Treatment
Vermicomposting Schemes
Maintenance of Vermicomposting Beds
Scheme One
Scheme Two
Scheme Three
Scheme Four
Scheme Five
Scheme Six
Harvesting the Worms and Compost
Using Worm Compost
Vermicomposting Efficiency
Transportation of Live Worms
Vermicompost : Applications

Flower or Garden pots
In Horticulture
In Agriculture
Vermicomposts : Characterization
Vermiwash
Problems in Using Vermiwash
Earthworm Paste
Vermicomposting : General Procedure at Home
Vermicomposting : General Procedures at Agricultural Farms
Vermicomposting : Kiss Plan
Advantages of KISS Plan
Step 1: Windrow Preparation
Important Considerations
Step 2: Extending the Windrow
Step 3: Making Quality Castings
Step 4: Moisture and Irrigation
Step 5: Windrow Cover
Step 6: Harvesting
Earthworms Predators and Parasites
Mite pests in Earthworm Beds
White or Brown Mites
Red Mites
Mite Prevention
Removal of Mite
Parasites and pathogens

13. EARTHWORMS : END USES AND POTENTIAL

Earthworms in Medicine
Earthworms as Feed
Economic Potential
Legal Constraints
Conclusion

14. METHODS OF EARTHWORMS

MEASUREMENT

Sampling Methods

Hand Sorting

Principle

Materials

Procedure

Washing and Sieving

Principle

Materials

Procedure

Use of Chemical Repellants

Principle

Materials

Procedure

Electrical Methods

Principle

Materials

Procedure

Trapping Methods

Materials
Procedure
Other Method
Flotation
Heat Extraction
Number of Casts
Measurement of Earthworm Biomass
Storage and Identification
Storage
Identification

15. VERMICOMPOSTING: A WORLD SCENARIO

Grace McKellar Centre, Geelong, Victoria, Australia

Hobart City Council, Tasmania, Australia

National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina,

United States Newcastle City Council, New South Wales, Australia Oregon Soil Corporation,

Beaverton, Oregon, United States

Pacific Southwest Farms, Ontario, California, United States

Resource Conversion Corporation/Canyon Recycling, San Diego, California, U.S.

Rideau Regional Hospital, Perth, Ontario, Canada

San Quentin Prison, California

Seattle Kingdome Stadium, Seattle, Washington, United States Sovadec, La Voulte, France

Vermiculture Production Center, Pinar del Rio Province, Cuba Vermicycle Organics, Inc.,

Charlotte, North Carolina, United States

India

Green Cross Society of Mumbai, India

Indian Aluminum Co. Ltd, Belgaum, India

M.R. Morarka - GDC Rural Research Foundation, Jaipur

16. ROLE OF EARTHWORMS

In sustainable Agriculture

Organic Farming

Earthworms Activities

Soil Fertility and Texture

Soil Aeration

Water Impercolation

Decomposition and Moisture

17. MONITORING WORM BED ENVIRONMENT

Moisture Control

Keeping Beds Warm during Winter

Lighting

Earthworm Predators or Annoyances

- Flies

- Mites

White or Brown Mites

Red Mites

- Hammerhead Worms

- Centipedes

- Ants

- Black Soldier Fly Larvae

Troubleshooting Worm Bed Conditions

pH

Bedding Too Dry

Red Mite Infestation

Deformed Worms

18. VERMITECHNOLOGY

Definition

History

In Other Countries

In India

19. ADVANTAGES OF VERMICULTURE

Production of Cheap Animal Protein

Vermi Cast

Soil and Vermi Cast

Earthworm Inoculation in Soil

Decomposition of Bio-Degradable Wastes and Vermicomposting Vermiculture in Pollution Abatement

20. VERMICULTURE

General and Planning

Selection of Suitable Species

Basic Characteristics of Suitable Species

Description of Suitable Species

Family : Lumbricidae

1. *Bimastos parvus* (= *Allolobophora* (*Bimastos*) *parvus* Eisen)

2. *Eisenia foetida* (Sav.)

Family : Eudrilidae

1. *Eudrilus Eugeniae* (Kinb.)

Family : Megascolecidae

1. *Lamptio mauritii* (Kinb.)

2. *Metaphire anomala* Mich. (= *Pheretima Anomala*)

3. *Metaphire Posthuma* (= *Pheretima posthuma*)

4. *Perionyx Excavatus* E. Perr.

5. *Perionyx sansbaricus* Michaelson

Family: Octochaetidae

1. *Octochaetus* (*Octochaetoides*) *Surnensis* Mich.

2. *Ramiella Bishambari* (Steph.)

Sub-family : Diplocardinae

1. *Dichogaster Bolau* (Mich.)

2. *Dichogaster Affinis* (Mich.)

3. *Dichogaster Curgensis* (Micha.)

4. *Dichogaster Saliens* (Bedd.)

5. *Ramiella Bishambari* (Steph.)

6. *Erythodraeodrilus Suctorius* (Steph.)

7. *Ocnerodrilus* (*Ocnerodrilus*) *Occidentalis* (Eisen.)

Family : Moniligastridae

1. *Moniligaster Perrieri* (Mich.)

2. *Drawida Willisi* (Mich.)

Maintenance of Base Culture

21. VERMICOMPOSTING

General

Advantages of Vermicomposting

Vermicomposting Materials

Preliminary Treatment of Composting Material

Small Scale or Indoor Vermicomposting

Large Scale or Outdoor Vermicomposting
Other Types of Vermi-Composting
Requirement for Vermicomposting
Feed for Earthworms
Vermicomposting Schemes
Maintenance of Vermicomposting Beds
Vermicomposting Efficiency
Collection of Vermicompost
Transportation of Live Worms
Marketing Outlets

22. GRANULATION OF VERMICOMPOST

Introduction
Functions
Methods
Process
Impact of Using Vermiwash as the Binding Media
Vermicompost Fertilizer Granule Machine
Feature
Types of Granulator Machines

- Disc Fertilizer Granulator
- Double Roller Extrusion Granulator
- Organic Fertilizer Granulator
- New Type Organic Fertilizer Granulator
- Rotary Drum Granulator
- Cat Litter Disc Fertilizer Granulator

23. BIS SPECIFICATIONS

24. PHOTOGRAPHS OF MACHINERY WITH SUPPLIERS CONTACT DETAILS

Vermi Compost Tank
Sprayer Pump
Rotary Drum Dryers
Vermi Compost Maker
Vermicompost Seiving Machine
Leaf Waste Shredder Machine
Packing Machine
Waste Fully Automatic Compost Machine
Rotary Twin Drum Composter
Fertilizer Granule Machine
Waste Compost Tumbler
Waste Compost Machine
Fertilizer Drum Granulator Machine
Fertilizer Granulator Machine

25. PLANT LAYOUT & PROCESS FLOW CHART

About NIIR

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world

for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes various process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

NIIR PROJECT CONSULTANCY SERVICES, 106-E, Kamla Nagar, New Delhi-110007, India.
Email: npcs.india@gmail.com **Website:** NIIR.org

Sat, 17 May 2025 07:14:03 +0000