

Manufacture of Biofertilizer and Organic Farming (2nd edition)

Author: Dr. Himadri Panda

Format: Paperback

ISBN: 9788195744794

Code: NI369

Pages: 328

Price: Rs. 1,195.00 US\$ 49.00

Publisher: Asia Pacific Business Press Inc.

Usually ships within 5 days

Manufacture of Biofertilizer and Organic Farming (2nd edition)

The book "Manufacture of Biofertilizer and Organic Farming" offers an extensive overview of the biofertilizer industry, touching on all aspects from production techniques to the application within organic farming practices. The table of contents reveals a comprehensive structure, guiding the reader through a thorough exploration of biofertilizer types, production methods, manufacturing processes, and applications in organic farming. This book appears to serve as an invaluable resource for those interested in sustainable agriculture, providing insights into the benefits and challenges associated with biofertilizers and organic farming methods. Starting with an introduction to biofertilizers, the book classifies them based on their types and sources of nitrogen fixation, further detailing the components and characteristics of common biofertilizers. It also outlines the application methods, limitations, and production processes for bio powder and granulate fertilizers. This foundation sets the stage for a deeper dive into the biofertilizer manufacturing business, providing a step-by-step guide on starting and running such a venture, including business planning, technology sourcing, manufacturing processes, and marketing strategies.

The classification section further delves into biofertilizers based on the microorganisms used and their functions, offering a detailed look at the types of biofertilizer and their uses in agriculture. The production sections discuss various methods, including the use of fermenters, tea waste, and even bird excreta, showcasing the diversity in raw materials that can be utilized in biofertilizer production. It also covers the manufacturing of phosphate-rich organic manure (PROM), highlighting its importance and benefits. The later chapters focus on organic farming, outlining its advantages, types, and nutrient management techniques. It emphasizes weed, pest, and disease management within organic farming systems, presenting methods and practices to enhance sustainability. Additionally, it discusses the regulatory framework, certification processes, and government schemes promoting organic farming, particularly in the Indian context. The book concludes with an exploration of future challenges and opportunities in the biofertilizer industry and organic farming, suggesting areas for further research and development.

"Manufacture of Biofertilizer and Organic Farming" is designed to be a detailed resource for entrepreneurs, startups, farmers, researchers, and students interested in sustainable agriculture. It provides a comprehensive understanding of the biofertilizer production process and its critical role in supporting organic farming practices. Through its detailed explanations and practical guidelines, this book aims to promote the adoption of sustainable agricultural practices that benefit the environment, enhance soil health, and contribute to food security.

Contents

Contents

1. INTRODUCTION

1.1 Types of Biofertilizers

1.1.1 Symbiotic Nitrogen-Fixing Bacteria

1.1.2 Loose Association of Nitrogen-Fixing Bacteria

1.1.3 Symbiotic Nitrogen-Fixing Cyanobacteria

1.1.4 Free-Living Nitrogen-Fixing Bacteria

1.2 Components of Biofertilizers

1.3 Characteristics Features of Common Biofertilizers

1.4 Applications of Biofertilizers

1.5 Limitations of Biofertilizers

1.6 Production of Bio Powder Fertilizer

1.6.1 Material Dewatering

1.6.2 Conversion to Bio Organic Compost

1.6.3 Crushing Process

1.6.4 Mixing Process

1.7 The Production of Bio Granulate Fertilizer

1.8 Factors Affecting Efficiency of Biofertilizers

2. HOW TO START A BIOFERTILIZER MANUFACTURING BUSINESS

2.1 Here are the Steps to Start Biofertilizer Manufacturing Business

2.1.1 Craft a Business Plan

2.1.2 Source the Technology

2.1.3 Learn Biofertilizer Manufacturing Process

2.1.4 Registration & Licensing

2.1.5 Secure a Space

2.1.6 Establish the Factory & Laboratory

2.1.7 Arrange Utilities

2.1.8 Plant & Machinery

2.1.9 Raw Materials

2.1.10 Promote Product

2.2 Who Can Start Biofertilizer Manufacturing Business?

3. CLASSIFICATION OF BIOFERTILIZERS

3.1 Classification Based on Microorganism Used in Biofertilizer

3.2 Classification Based on Function of Biofertilizer

3.3 Types of Biofertilizer

3.4 Grouping of Biofertilizers

3.5 Microorganisms in Biofertilizers and Their Uses

3.5.1 Nitrogen Fixing Biofertilizers Bacteria

3.5.2 Phosphate Solubilising Biofertilizers

3.5.3 Phosphate Absorbers Biofertilizers

3.5.4 Biofertilizers for Micro Nutrients

3.5.5 Plant Growth Promoting Rhizobacteria (PGPR)

3.6 Production of Biofertilizers on Industrial Level

3.7 Application of Biofertilizers

3.8 Tips to Use Biofertilizers

4. PRODUCTION AND DISTRIBUTION OF BIOFERTILIZERS

4.1 Definition and Classification

4.2 Practical Significance of Biofertilizers

4.3 Requirement of Biofertilizers

4.4 Production Technology of Biofertilizers

4.5 Production of Biofertilizers

4.6 Standards and Quality Control

- 4.7 Government Support and Programmes
- 4.8 Constraints
- 4.9 Areas for Future Development
- 4.10 Conclusions
- 5. MANUFACTURE OF BIOFERTILIZER
- 5.1 The Compost Factory
- 5.2 Collection and Storage of the Raw Material
 - 5.2.1 Plant Residues
 - 5.2.2 Urine Earth and Wood Ashes
 - 5.2.3 Water and Air
- 5.3 Arrangement and Disposal of the Bedding Under the Work Cattle
- 5.4 Charging the Compost Pits
- 5.5 Turning the Compost
- 5.6 Time-Table of Operations
- 5.7 Output
- 5.8 Manurial Value of Indore Compost
- 6. BIOFERTILIZER PRODUCTION USING FERMENTER
- 6.1 Benefits of Fermenters in the Production of Biofertilizer
- 6.2 Production Process
 - 6.2.1 Inoculum Preparation
 - 6.2.2 Fermenter Setup
 - 6.2.3 Medium Preparation
 - 6.2.4 Inoculation
 - 6.2.5 Fermentation Process
 - 6.2.6 Biomass Growth
 - 6.2.7 Harvesting
 - 6.2.8 Formulation and Packaging
 - 6.2.9 Quality Control
 - 6.2.10 Application
- 6.3 Global Expansion and Localization
- 6.4 Supply Chain, Branding, and Marketing
- 6.5 Regulatory Changes and Industry Compliance
- 6.6 Technological Innovation and Competitor Analysis
- 6.7 Feasibility and Techno-Economic Viability Study
- 6.8 Future Opportunities
- 7. BIOFERTILIZER MANUFACTURING FROM TEA WASTE
- 7.1 Benefits
- 7.2 Agricultural Applications
- 7.3 Manufacturing Process
 - 7.3.1 Collection and Preparation of Tea Waste
 - 7.3.2 Composting
 - 7.3.3 Enrichment with Beneficial Microorganisms
 - 7.3.4 Aging and Quality Control
 - 7.3.5 Packaging and Storage
 - 7.3.6 Application
 - 7.3.7 Monitoring and Feedback
- 7.4 Machinery are Required in Manufacturing of Biofertilizer from Tea Waste
- 7.5 Feasibility Study
- 7.6 Techno-Economic Viability Study
- 7.7 Global Expansion and Localization
- 7.8 Challenges and Solutions in Biofertilizer Production

- 7.9 Advancements and Future Directions
- 8. BIOFERTILIZER GRANULES MANUFACTURING
 - 8.1 What are Biofertilizer Granules?
 - 8.2 Benefits of Biofertilizer Granules
 - 8.3 Difference between Fertilizer Granules and Biofertilizer Granules
 - 8.3.1 Composition
 - 8.3.2 Mode of Action
 - 8.3.3 Environmental Impact
 - 8.4 Manufacturing Process of Biofertilizer Granules
 - 8.4.1 Selection of Microbial Strains
 - 8.4.2 Preparation of Carrier Materials
 - 8.4.3 Inoculum Production
 - 8.4.4 Granulation
 - 8.4.5 Drying
 - 8.4.6 Quality Control
 - 8.5 Application and Usage
 - 8.6 Environmental Impact
 - 8.7 Challenges and Considerations
 - 8.8 Future Directions
 - 8.9 Regulatory Considerations
 - 8.10 Adoption and Scaling-Up
 - 8.11 Case Studies and Success Stories
 - 8.12 Future Challenges and Opportunities
 - 8.13 Recommendations for Further Research
 - 8.14 Machinery and Equipments Used in Biofertilizer Granules
 - 8.14.1 Pre-Treatment Section
 - 8.14.2 Granulation Section
 - 8.14.3 Post-Treatment Section
- 9. BIOFERTILIZER MANUFACTURING FROM BIRDS EXCRETA
 - 9.1 Unveiling the Treasure Trove: Composition of Bird Excreta
 - 9.2 Benefits of Biofertilizer from Birds Excreta
 - 9.3 Specific Bird Excreta and their Applications
 - 9.4 Advantages of Biofertilizer from Bird Excreta
 - 9.5 Manufacturing Process of Biofertilizer from Bird Excreta
 - 9.6 Machinery Used In Manufacturing of Biofertilizer from Birds Excreta
 - 9.6.1 Pre-Processing Equipment
 - 9.6.2 Composting and Fermentation Equipment
 - 9.6.3 Nutrient Enrichment and Formulation Equipment
 - 9.6.4 Additional Equipment
 - 9.6.5 Important Notes
 - 9.7 Addressing Challenges and Ensuring Quality
 - 9.8 Innovation and Technology for Sustainable Growth
 - 9.9 Policy and Regulatory Framework
 - 9.10 Education and Awareness
 - 9.11 Policy Support
 - 9.12 Market Development
- 10. PHOSPHATE RICH ORGANIC MANURE (PROM) MANUFACTURING
 - 10.1 Understanding the Need
 - 10.2 Enter PROM
 - 10.3 Applications and Benefits
 - 10.3.1 Agricultural Applications
 - 10.3.2 Benefits
 - 10.4 Manufacturing Process

- 10.4.1 Ingredients
- 10.5 The Composting Process
 - 10.5.1 Pre-Composting
 - 10.5.2 Main Composting
 - 10.5.3 Maturation
 - 10.5.4 Curing and Processing
- 10.6 Additional Considerations
 - 10.6.1 Nutrient Balancing
 - 10.6.2 Quality Control
 - 10.6.3 Environmental Impact
- 10.7 Further Resources
- 10.8 Machinery Required Manufacturing of PROM
- 10.9 Synthesis of Phosphate-Rich Biofertilizer with Anaerobic Digester Sludge and Vermicompost
 - 10.9.1 Manufacturing of PROM (Substances and Procedures)
 - 10.9.2 Agitated Stirred Tank Bioreactor (Slurry Reactor)
- 10.10 Production of PROMs Combined with Biogas Generation
- 11. PRODUCTION OF VARIOUS BIOFERTILIZERS
 - 11.1 Production of Bacterial Biofertilizer
 - 11.1.1 Historical Background
 - 11.1.2 Production of Biofertilizer
 - 11.1.3 Strain Selection Criteria
 - 11.1.4 Steps for Biofertilizer Preparation
 - 11.1.5 Green Manuring
 - 11.2 Algal and Other Biofertilizers
 - 11.2.1 Mass Production of Cyanobacterial Biofertilizers
 - 11.2.2 Large-scale Cultivation of Azolla
 - 11.3 Endophytic Nitrogen Fixers
 - 11.3.1 Facultative Endophytic Diazotrophs
 - 11.3.2 Obligate Endophytic Diazotrophs
 - 11.3.3 Other Bacteria
 - 11.4 Biofertilizers aiding Phosphorus Nutrition
 - 11.5 Production of Mycorrhizal Biofertilizer
 - 11.5.1 Ectomycorrhizal Fungi
 - 11.5.2 VA Mycorrhizal Fungi
- 12. LIQUID BIOFERTILIZER MANUFACTURING
 - 12.1 Method of Application of Liquid Biofertilizer
 - 12.2 Function of Liquid Biofertilizer
 - 12.3 Advantages of Liquid Biofertilizer
 - 12.4 Constraints of Liquid Biofertilizer
 - 12.5 Liquid Biofertilizer Manufacturing Process
 - 12.6 Machinery Used in Liquid Biofertilizer Manufacturing
 - 12.6.1 Raw Material Processing
 - 12.6.2 Fermentation
 - 12.6.3 Separation and Purification
 - 12.6.4 Formulation and Packaging
 - 12.7 Additional Equipment
- 13. HOW TO PRODUCE ORGANIC FERTILIZERS FROM FOOD WASTE
 - 13.1 How is Organic Fertilizer Produced from Food Waste?
 - 13.2 Technology and Apparatus for Processing Food Waste into Organic Fertilizer
 - 13.2.1 Dehydration
 - 13.2.2 Compost
 - 13.2.3 Granulation

- 13.2.4 Drying and Cooling
- 13.2.5 Sieving and Package
- 13.3 Gain Advantages from Utilizing Organic Fertilizer Derived from Food Waste
- 14. ORGANIC FERTILIZER MANUFACTURING FROM COW DUNG
- 14.1 Benefits of Organic Fertilizer from Cow Dung
- 14.2 Manufacturing Organic Fertilizer from Cow Dung
 - 14.2.1 Fermentation and Composting
 - 14.2.2 Crushing and Mixing of Raw Materials
 - 14.2.3 Pelletizing Process
 - 14.2.4 Drying and Cooling Process
 - 14.2.5 Packaging Process
- 14.3 Machinery and Equipments Required for Making Organic Fertilizer from Cow Dung
- 14.4 Packaging of Organic Fertilizer
- 14.5 Quality Control
- 15. PLANT LAYOUT DESCRIPTION OF BIOFERTILIZER MANUFACTURING
- 16. ORGANIC FARMING
- 16.1 Advantages of Organic Farming
- 16.2 Types of Organic Farming
 - 16.2.1 Pure Organic Farming
 - 16.2.2 Integrated Organic Farming
- 16.3 Nutrient Management in Organic Farming
 - 16.3.1 Organic Manures
 - 16.3.2 Bacterial and Fungal Biofertilizers
- 16.4 Weed Management in Organic Farming
- 16.5 Insect Pest Management
- 16.6 Diseases Management in Organic Farming
- 16.7 Limitations and Implications of Organic Farming
- 16.8 Organic Farming Regulation: Standards and Labels
- 16.9 Methods or Techniques of Organic Farming
 - 16.9.1 Crop Rotation
 - 16.9.2 Green Manure
 - 16.9.3 Compost
 - 16.9.4 Crop Diversity
 - 16.9.5 Soil Management
 - 16.9.6 Controlling Pests Biologically
 - 16.9.7 Weed Management
 - 16.9.8 Livestock
 - 16.9.9 Genetic Modification
- 16.10 The Advantages and Drawbacks of Organic Agriculture for End Users
- 17. HOW TO START ORGANIC FARMING IN INDIA
- 17.1 What Is Organic Farming in India?
- 17.2 Promoting Organic Farming in India
- 17.3 Key Characteristics of Organic Farming
- 17.4 Advantages of Organic Farming
- 17.5 Guidelines for Soil Preparation in Organic Farming
- 17.6 Steps for How to Start Organic Farming in India
 - 17.6.1 Step 1: Get Organic Certification
 - 17.6.2 Step 2: Selecting a Site for Organic Farming
 - 17.6.3 Step 3: Prepare the Soil and Make Good Compost
 - 17.6.4 Step 4: Select a Suitable Crop
 - 17.6.5 Step 5: Start Looking for Markets
 - 17.6.6 Step 6: Take Care of What You Plant
 - 17.6.7 Step 7: Water Management for Organic Farming

- 17.7 Organic Farming Practices in India
- 17.8 Integrated Weed Management
- 17.9 Organic Farming Startup Costs in India
- 17.10 Nutrient Management in Organic Farming
- 17.11 Different Types of Organic Manures
- 17.12 Pests and Diseases Management in Organic Farming
- 17.13 Government Schemes for Promoting Organic Farming
- 17.14 Different Schemes for Promoting Organic Farming
- 17.15 Profitability of Organic Farming in India
- 17.16 Investment Required for Organic Farming Business
- 17.17 Constraints Being Faced in Organic Farming
- 18. METHODS OF ORGANIC FARMING
- 18.1 Introduction to Methods of Organic Farming
- 18.2 Various Approaches to Organic Farming
- 18.3 Variety of Crops
- 18.4 Crop Rotation
- 18.5 Crop Rotation is Beneficial for Four Reasons
- 18.6 Control of Biological Pests
- 18.7 Soil Management
- 18.8 Green Manure
- 18.9 Compost
- 18.10 Control of Weeds
- 18.11 Managing Different Organisms
- 18.12 Livestock
- 18.13 Modification of Genetics
- 19. HOW TO GET ORGANIC CERTIFICATION IN INDIA
- 19.1 In India, Who is Eligible to Apply for Organic Certification?
- 19.2 Steps for Obtaining Organic Certification in India
 - 19.2.1 Step 1: Understanding the Organic Certification Requirements
 - 19.2.2 Step 2: Selection of Certifying Agency
 - 19.2.3 Step 3: Application and Documentation/Organic Certification Cost
 - 19.2.4 Step 4: Inspection and Evaluation
 - 19.2.5 Step 5: Compliance and Correction
 - 19.2.6 Step 6: Certification Decision
 - 19.2.7 Step 7: Annual Review and Renewal
- 19.3 Time for Obtaining Organic Certification in India
- 20. ORGANIC MATTER AND SOIL FERTILITY
- 20.1 Soil Humus, Its Origin and Nature
- 20.2 The Formation of Humus as a Result of the Synthesizing Activities of Micro-Organisms
- 20.3 The Role of Humus in the Soil
- 20.4 The Washington Symposium on Soil Organic Matter
- 21. WEED MANAGEMENT IN ORGANIC FARMING
- 21.1 Cultural Methods of Weed Control
 - 21.1.1 Tillage
 - 21.1.2 Tillage Combined with Irrigation
 - 21.1.3 Timing
 - 21.1.4 Seeding Rates and Cultivar Selection
 - 21.1.5 Cropping Systems
 - 21.1.6 Use of Animals
 - 21.1.7 Flooding
 - 21.1.8 Mulching
 - 21.1.9 Fire
 - 21.1.10 Composting

- 21.1.11 Hoeing and Hand Weeding
- 21.1.12 Farmer's Care
- 21.1.13 Straw Disposal
- 21.2 Biological Control of Weeds Using Insects
 - 21.2.1 Weed Suitability to Biological Control
 - 21.2.2 Classical Approach
 - 21.2.3 Characteristics of Weeds and Problems
 - 21.2.4 Weed Survey for Natural Enemies
 - 21.2.5 Introduction of Natural Enemies
- 21.3 Use of Pathogens in Weed Suppression
 - 21.3.1 Mycoherbicides
 - 21.3.2 Characteristics of Good Mycoherbicide
 - 21.3.3 Use of Seed-Borne and Seed Infecting Microorganisms
- 21.4 Parasitic Weeds
 - 21.4.1 Management Strategies for Parasitic Weeds
 - 21.4.2 Biological Control
- 21.5 Ecological Principles
- 21.6 Research Needs
- 22. PEST MANAGEMENT IN ORGANIC FARMING
 - 22.1 Pest Management Methods
 - 22.1.1 Biological Alternatives
 - 22.1.2 Organically Acceptable Chemical Alternatives
 - 22.1.3 Cultural Alternatives
 - 22.2 Biological Control
 - 22.2.1 Botanical Pesticides
 - 22.2.2 Bacterial Insecticides
 - 22.2.3 Biological Control in Field Crops
 - 22.2.4 Other Crops
 - 22.3 Botanicals for Storage Pest Control
 - 22.3.1 Seed Treatment with Materials of Plant Origin for Insect Control
 - 22.3.2 Active Principles
 - 22.4 Cultural Practices/Ecological Methods
 - 22.4.1 Optimum Site Conditions
 - 22.4.2 Diversity Over Time
 - 22.4.3 Diversity in Space
 - 22.4.4 Habitat Enhancement
 - 22.4.5 Role of Non-Crop Vegetation
 - 22.4.6 Trap Crops
 - 22.4.7 Constructed Traps
 - 22.4.8 Plant Resistance to Pests
 - 22.5 Traditional Practices for Pest Control
 - 22.6 Other Management Practices
- 23. BIS STANDARDS
- 24. FACTORY LAYOUT AND PROCESS FLOW CHART & DIAGRAM
- 25. PHOTOGRAPHS OF PLANT AND MACHINERY WITH SUPPLIERS CONTACT DETAILS
 - Electric Steam Generator
 - Fertilizer Crusher Machine
 - Bio Fertilizer Packaging Machine
 - Compost Turner for Bio Organic Fertilizer Composting
 - Liquids Biofertilizer Manufacturing Plant
 - Ribbon Mixer
 - Hammer Mill
 - Liquid Fertilizer Filling Machine

- Bio Fertilizer Fermenter
- Double Cone Blender Mixer
- Rotary Drum Dryer
- Fertilizer Mixer
- Organic Fertilizer Pellet Machine
- Bio Fertilizer Packing Machine
- Fertilizer Vibrating Screen
- Organic Waste Composting Machine (Bioreactor)
- Fertilizer Crusher
- Biofertilizer Packing Filling Machine
- Incubator Rotary Shaker
- Fertilizer Dryer Machine
- Ribbon Mixer

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

Mon, 06 May 2024 18:34:28 +0530