

Manufacture of Biofertilizer and Organic Farming

Author: H. Panda

Format: Paperback

ISBN: 9788178331461

Code: NI239

Pages: 336

Price: Rs. 975.00 US\$ 25.95

Publisher: Asia Pacific Business Press Inc.

Usually ships within **5** days

With the introduction of green revolution technologies, the modern agriculture is getting more and more dependent upon the steady supply of synthetic inputs. Intensive agriculture with the use of chemical fertilizers in large amount has, no doubt, resulted in manifold increase in the productivity of farm commodities but the adverse effect of these chemicals are clearly visible on soil structure, micro flora, quality of water, food and fodder. At this critical juncture, biofertilizers are useful supplement to chemical fertilizers. Organic farming has emerged as the only answer to bring sustainability to agriculture and environment. Biofertilizers is also an ideal for practicing organic farming.

Biofertilizers are the most advanced biotechnology necessary to support developing organic Agriculture, sustainable agriculture, green agriculture and non-pollution agriculture. Bio Fertilizer are natural and organic fertilizer that helps to keep in the soil with all the nutrients and live microorganisms required for the benefits of the plants. Today product like biofertilizers using the biotechnology techniques have proved that biological control is widely regarded as a desirable technique for controlling insects and pests, due to its minimal environmental impact and its avoidance of problems of resistance in the vectors and agricultural pests. The increasing demand for biofertilizers and the awareness among farmers and planters in the use of biofertilizers have paved way for the fertilizer manufacturers and new entrepreneurs to get into biofertilizers production. It is one of the important components of integrated nutrient management, as they are cost effective and renewable source of plant nutrients to supplement the chemical fertilizers for sustainable agriculture.

This book gives a detailed process on manufacture of biofertilizers & organic farming. It contains chapters on biofertilizers, role of biofertilizer in crop production, production and distribution of biofertilizer, organic farming, method of organic farming, weed and pest management, and many more. This book will be very helpful to soil scientists, microbiologists, biologists, students, new entrepreneurs, fertilizer industry, organization engaged in biofertilizers production, training centres and to all those interested in the efficient use and recycling of wastes, resource management and sustainable farming.

Contents

1. BIOLOGICAL WASTES AS SOURCES OF BIOFERTILIZERS

Significance of Waste Recycling, Chemical Characteristics of Wastes and Utilisation, Hydraulic loading is calculated as follows:, Heavy Metals and Associated Problems, Pathogens and Health Hazards, Effect on Crops Yield and Soil Properties, Effect on Crop Yields, NPK Through Fertilizer, Effect on Soil Properties, Problems in Waste Utilization, Future Research Needs

2. A NOTE ON BIOFERTILIZERS

Rhizobium, Production of Rhizobium Inoculants, Isolation of Rhizobium, Identification of Rhizobium, Establishing the Starter Culture, Mass culture of Rhizobium, Making the Carrier-based Inoculant, Packing and

Storage, Field Application of Rhizobium Inoculant, Crop Respons, Azotobacter, Production of Azotobacter Inoculant, Field Applications, Seed Treatment, Seedling Treatment, Pouring of Slurry, Top Dressing, Beneficial Roles of Azotobacter, Azospirillum, Production of Azospirillum Inoculant, Isolation of Azospirillum, Confirmation of Azospirillum, Making the Starter Culture, Mass Culture, Carrier-Based Inoculant, Field Use of Azospirillum, Seed Treatment, Seedling Treatment, Top Dressing, Crop Response, Blue - Green Algae (BGA) Biofertilizer, Production of BGA Inoculant, Isolation of BGA, Starter Culture, Mass Culture of BGA, Storage, Field Use of BGA Inoculants, Crop Response, Phosphate Biofertilizers, Isolation of Phosphate Solubilizers, Mass Production, Field Application, Vesicular - Arbuscular Mycorrhizal Fungi, Genera of VAM Fungi, Morphology of VAM, Isolation of VAM spores, Mass Production of VAM, Field Application, Important of VAM Fungi, Azolla: A Green Manure Cum Biofertilizer, Mass Cultivation of Azolla, Field Application of Azolla, Azolla As A Green Manure, Azolla As A Dual Crop

3. ROLE OF BIOFERTILIZER IN CROP PRODUCTION

Nitrogen-fixing Bacterial Inoculants, Rhizobium, Classification, Need for Inoculation, Competitiveness and Effectiveness of Strains, Factors Affecting Performance of Inoculant Strains, Yield Response to Inoculation, Azotobacter and Azospirillum, Yield Responses to Inoculation, Effect of Soil Nutrients, Frequency of Inoculation, Phosphate Solubilizing Microorganisms, Mechanism of Action, Yield Responses to Inoculation, Vesicular-Arbuscular Mycorrhizae (VAM), Mechanism of Action, Root Colonisation, Yield Responses to Inoculation, Preparation of Inoculum, Plant Growth Promoting Rhizobacteria, Mode of Action, Yield Response to Inoculation, Future Research Needs, Strategy for Successful Use of Biofertilizers

4. BIOFERTILIZERS FOR RICE ECOSYSTEM

Azolla, Growth and N-fixation, Factors Affecting Growth and N-fixation, Water, Mineral Nutrients, Light, pH and Salinity, Management Practices, Rate and Time of Inoculation, Fertilizer Application, Method of Rice Planting, Insects, Diseases and Weeds, Method of Utilization, Impact on Rice Yield and Soil Fertility, Availability of Azolla-N to Rice, Effects on Rice Yield and Soil Fertility, Economic Aspects, Suitable Agroclimatic Conditions, Adoption Constraints and Future Research Needs, Blue-Green Algae (BGA), Nitrogen Fixing Potential and N-input, Factors Affecting Growth and N-fixation, Management Practices, Fertilizer Application, Method of Rice Planting, Insects, Diseases and Weeds, Method of Inoculum Production, Method of Utilization, Impact on Rice Yield and Soil Fertility, Availability of BGA-N to Rice, Effect on Rice Yield, Economic Aspects, Suitable Agroclimatic Conditions, Adoption Constraints and Future Research Needs, Conclusions

5. GREEN MANURING

Green Manures, Leguminous Green Manures, Non-grain Legumes, Grain Legumes, Perennial Trees and Shrubs, Role of Green Manuring in Cropping Systems, Rice-based Systems, Sugarcane-based System, Cotton-based Systems, Potato-based Systems, Rainfed/dryland Systems, Plantation Crops, Fate of Green Manures on Application to Soils, Availability of Essential Nutrients, Crop Responses and Residual Effects, Green Manure Management, Residual and Long-term Effects, Maize yield (t/ha) Corresponding N input, Economics of Green Manuring, Constraints of Green Manuring, Future Research Needs, Conclusions

6. PRODUCTION AND DISTRIBUTION OF BIOFERTILIZERS

Definition and Classification, Practical Significance of Biofertilizers, Requirement of Biofertilizers, Production Technology of Biofertilizers, Rhizobium, Sources of Mother Cultures, Carriers, Production of Biofertilizers, Rhizobium, Azospirillum & Azotobacter, Blue Green Algae, Standards and Quality Control, Government Support and Programmes, Constraints, Production and Distribution Level Constraints, Storage and Distribution, Constraints at Field Level, Market Level Constraints, Areas for Future Development, Training, Improvement in production technology, Need for preparation of biofertilizer map, Region-specific effective strains, Necessary quality control acts, Proper storage facilities, Conclusions

7. BIOLOGICAL NITROGEN FIXATION

Non-symbiotic Nitrogen Fixation, Features Favourable for Non-symbiotic Nitrogen Fixation, Special Separation of Nitrogen Fixing Cells, Protein-Nitrogenase Association, High Rate of Respiration, Time Specific Nitrogenase Activity, Association With Rapid Oxygen Consumers, Presence of Hydrogenase, Colonization, Nitrogenase, Basic Requirements For Nitrogen Fixation, Mechanism of Nitrogen Reduction, Assimilation of Ammonia, Symbiotic Nitrogen Fixation, Root Nodulation, Mechanism of Nitrogen Fixation, Nitrogenase, Requirements For Nitrogen Reduction, Assimilation of Ammonia, Genetics of Nitrogen Fixation, Nif-genes of Klebsiella Pneumoniae, Regulation of Nif Genes, Nif-genes of Azotobacter, Nif-genes of Anabaena, Rhizobial

Genes, Legume Nodulin Genes, Overall Regulation of Genes, Gene Transfer for Nitrogen Fixation, Transfer of Nif genes to Non-nitrogen Fixing Bacteria, Transfer of Nif genes to Plants, Transfer of Nif-genes to Plants, Transfer of Nod Genes, Transfer of Hup Genes

8. THE SOURCE OF ORGANIC MATTER

The Root-system of Crops Soil Algae, Green-manures, Farmyard Manure, Artificial Farmyard Manure

9. THE CHIEF FACTORS IN INDORE PROCESS 159

The Continuous Supply of Mixed Vegetable Wastes, Composting Single Materials, Nitrogen Requirements, The Amount of Water Needed, The Supply of Air, The Maintenance of the General Reaction, The Fermentation Processes, Gains and Losses of Nitrogen, The Character of the Final Product

10. MANUFACTURE OF BIOFERTILIZER BY THE INDORE METHOD

The Compost Factory, Collection And Storage of the Raw Material, Plant Residues, Urine Earth and Wood Ashes, Water and Air, Arrangement and Disposal of the Bedding under the Work Cattle, Charging the Compost Pits, Turning the Compost, Time-table of Operations, Output, Manurial Value of Indore Compost

11. ORGANIC MATTER AND SOIL FERTILITY

Soil Humus, its Origin and Nature, The Formation of Humus as a Result of the Synthesizing Activities of Micro-organisms, The Role of Humus in the Soil, The Washington Symposium on Soil Organic Matter

12. WEED MANAGEMENT IN ORGANIC FARMING

Cultural Methods of Weed Control, Tillage, Tillage combined with irrigation, Timing, Seeding rates and cultivar selection, Cropping systems, Use of animals, Flooding, Mulching, Fire, Composting, Hoeing and hand weeding, Farmer's care, Straw disposal, Biological Control of Weeds Using Insects, Weed suitability to biological control, Classical approach, Characteristics of weeds and problems, Weed survey for Natural enemies, Introduction of

natural enemies, Use of Pathogens in Weed Suppression, Mycoherbicides, Characteristics of good Mycoherbicide, Use of seed-borne and seed infecting microorganisms, Parasitic Weeds, Management strategies for parasitic weeds, Biological control, Ecological Principles, Research Needs

13. PEST MANAGEMENT IN ORGANIC FARMING

Pest Management Methods, Biological alternatives, Organically acceptable chemical alternatives, Cultural alternatives, Biological Control, Advantages of Bio-control, Botanical pesticides, Bacterial insecticides, Viral insecticides, Microbial antibiotics, Biological control in field crops, Other Crops, Botanics for Storage Pest Control, Seed treatment with materials of plant origin for insect control, Active principles, Cultural Practices/Ecological Methods, Optimum site conditions, Diversity over Time, Rotations, Diversity in space, Habitat enhancement, Role of Non-crop vegetation, Trap crops, Constructed traps, Plant resistance to pests, Traditional Practices for Pest Control, Other Management Practices

14. RICE-FISH INTEGRATION OF ORGANIC FARMING

Externalities of Green Revolution, Rice Productivity in States of India, Lowland Rice Ecologies, Diversification- IPS Approaches, A fish harvest from rice field, Vanishing rice lands - Economic sustainability issues, Pokkali system-the classic example, Rice-Fish, Harnessing complementarities, Group Fish Farming (GFF), Environmental Superiority, Economic sustainability, Win-Win Land use Model

15. CHOICE OF VARIETIES FOR ORGANIC FARMING

What is organic Agriculture?, Selection of rice varieties for organic farming, Weed Control, Soil fertility, Insects and Diseases, Speciality rices for organic farming, Varieties for Special systems of cultivation, Pokkali, Koottumundakan cultivation.

16. COASTAL AGRO-ECO SYSTEM IN ORGANIC RICE FARMING

Organic farming - the truths vs. myths, Organic food tastes better and is of superior quality, Organic food is more nutritious and safer, Organic farming is eco-friendly, Organics as a source of Plant nutrients, Organic Farming and Food Security, Organic Farming- a lesson from China, Biodynamic Farming, System Of Rice Intensification (SRI)

17. MICROORGANISM FOR ORGANIC FARMING

Biological nitrogen fixers, Legume - Rhizobium symbiosis, Azospirillum, Different methods of application of Azospirillum in the field, Cyanobacteria (Blue green algae - BGA), Mass Production of BGA in the field, Anabaena - Azolla Symbiosis, Utilisation of Azolla for rice, Mass production of Azolla in the field, Phosphorus solubilising microorganisms, Arbuscular Mycorrhizal Fungi (AMF), Silicate solubilising bacteria, Zinc

solubilising bacteria, Plant Growth Promoting Rhizobacteria (PGPR), Efficacy of PGPR in rice, Methods of application of *Pseudomonas fluorescens* in rice, Seedling root dip, Soil application, Foliar spray, Microbial consortium for rice

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

Wed, 24 Jul 2024 11:18:54 +0530