India is an agro based country. It ranks 2nd in agricultural products manufacturing in the world. So organic farming plays an important role in agro field. India has many natural resources of various organic compounds and so it is an excellent opportunity to produce sufficient quantity of organic foods to meet the global demand. There is a bright future for organic farming to export its quality product. Organic farming is a form of agriculture that excludes the use of synthetic fertilizers and pesticides, plant growth regulators, livestock feed additives, and genetically modified organisms. This type of farming is not new to Indian farming community. Several forms of organic farming are being successfully practiced in diverse climate, particularly in rain fed, tribal, mountains and hill areas of the country. The popularity of organic farming is gradually increasing and now organic agriculture is practiced in almost all countries of the world, and its share of agricultural land and farms is growing. The present book contains the organic farming management, production and uses of various organic compounds, which are well known and also for agriculture for their worldwide use. Compost serves as a growing medium, or a porous, absorbent material that holds moisture and soluble minerals, providing the support and nutrients in which most plants will flourish. Use of organic manure is extremely essential for better crop productivity and maintaining the fertility of soil to ensure sustainable production. This book basically deals with Indian agriculture before the green revolution, characteristics of sustainable agriculture, essential characteristics of organic farming, objectives of organic and conventional farming, livestock and human wastes, organic farming in rice, important regulations for organic farming, production of organic compost, effect of organic fertilizers in pongamia pinnata, significance of azospirillum and pseudomonas on growth of elucine crocana, chemical composition of banana, effect of azospirillum and phosphate solubilizing culture on quality of sugarcane, industrial wastes as sources of plant nutrients, role of organic fertilizer in upland crop production etc. The book provides you with comprehensive information on organic farming and related methods of farming. The book aims to provide you with many other profitable information about the method of obtaining sustainable agricultural and organic farming.

Contents

1. INTRODUCTION TO ORGANIC FARMING
   Indian Agriculture before the Green Revolution
   The Green Revolution
   Impact of Green Revolution on the Environment
   Why Organic Farming?
2. SUSTAINABLE AGRICULTURE AND ORGANIC FARMING
The Background
Characteristics of Sustainable Agriculture
Definition of Sustainable Agriculture
Organic Farming
National Programme for Organic Production (Features)

3. CONCEPTS, DEFINITION AND COMPONENTS
Concept and Definition
Organic vs Natural Farming
Essential Characteristics of Organic Farming
Key Principles of Organic Agriculture Systems
Mixed Farming
Crop Rotation
Organic Cycle Optimization
Objectives Of Organic and Conventional Farming
Options in Organic Farming
Pure Organic Farming
Integrated Green Revolution Farming
Integrated Farming System
Management of Organic Farming
Advantages of Organic Farming
Barriers to Organic Farming
Components Of Organic Farming
Organic Manures
Non-Chemical Weed Control Measures
Biological Pest Management

4. ORGANIC MANURES, THEIR NATURE AND CHARACTERISTICS
Farmyard Manure
Compost
Sheep and Goat Manure
Poultry Manure
Oil-Cakes
Meal Group of Manures
Sewage, Sludge and Sullage

5. LIVESTOCK AND HUMAN WASTES

6. AVAILABLE ORGANIC MATERIALS AND PLANT NUTRIENTS
Livestock Wastes
Crop Residues and Aquatic Weeds
Rural and Urban Wastes
Agro-industrial Wastes
Fisheries and Marine Industry

7. ORGANIC FARMING IN RICE
Objectives of Organic Farming
Traditional Practices
Aspects of Modern Agriculture
Important Regulations for Organic Farming
Nutrient Requirement
Ecofriendly Management of Pests and Diseases in Rice
Conservation of Native Natural Enemies to Enhance in
Situ Biological Control in Rice
Components of Eco-Friendly Disease Management
Methods of Application
Conclusion

8. PRODUCTION OF ORGANIC COMPOST
Composting
Importance Of Composting
Maximizing the Nutrients Availability from Agricultural Compost
Effect on Soil and Crop
Method of Spreading Compost
Rate of Application
Time of Application
Classification of Composting
Kinetics of Composting
Moisture Content
Ingredients to Avoid
Microbes Involved in Composting
Design Criteria
Type and Amount of Compost
The Climate
Availability of Land
Handling
Practical Method of Making Compost
Considerations in Building a Compost Heap
Managing the Compost Heap
Curing
Practical Applications Composting
Biogas Technology
Composition of Slurry
Slurry for Agriculture
Transfer of Biogas Technology
Growing of Mushrooms
Conventional Types of Compost
Compost Making and Spawning
The Work Schedule
Suggestions

9. EFFECT OF ORGANIC FERTILIZERS IN
PONGAMIA PINNATA
Material and Methods
Results and Discussion
Summary

10. ORGANIC FERTILIZER: A SUPPLEMENTARY NUTRIENT SOURCE FOR SUGARCANE
Experiment and Results
Azotobacter
Azospirillum
11. EFFECT OF ORGANIC FERTILIZER ON SORGHUM
Material and Methods
Results And Discussion
Summary

12. SIGNIFICANCE OF AZOSPIRILLUM AND PSEUDOMONTAS ON GROWTH OF ELUCINE CROCANA
Material and Methods
Results and Discussion
Growth Attributes
Yield Attributes
Summary and Conclusion

13. BIOMASS PRODUCTION OF ACACIA NILOTICA
Material and Methods
Results and Discussion
Summary

14. CHEMICAL COMPOSITION OF BANANA
Material and Methods
Phosphate Solubilizing Microorganism
Mycorrhizal Inoculum
Plant Material
Treatment
Results and Discussion
Summary

15. N-FIXING AND PHOSPHATE SOLUBILIZING BACTERIA
Material and Methods
Results and Discussion
Summary

16. ASYMBIOTIC ORGANIC FERTILIZERS OF KHARIF SORGHUM
Material and Methods
Results and Discussion
Summary

17. EFFECT OF AZOSPIRILLUM AND PHOSPHATE SOLUBILIZING CULTURE ON QUALITY OF SUGARCANE
Material and Methods
Treatment Details
Results and Discussion
Summary and Conclusion

18. ORGANIC NUTRIENT
Soil Populations and Processes
Use of Biofertilizers
Enrichment of Compost with Microbial Inoculants
Nitrogen Fixing Microbs
Rhizobium
Leguminous Plants / Rhizobiaceae Symbiosis
Azotobacter Inoculant
Azospirillum Inoculant
Blue-Green Algae Inoculant
Multiplication of BGA
Frankiaceae Symbiosis
Large Scale Inoculum Production
Significance Of BNF
Mycorrhiza
Roots as Sinks and Sources of Nutrients and Carbon in Agricultural Systems
Importance of Mycorrhiza
Benefits to Plants
Other Roles in Ecosystems
Values of People
Mycorrhizal Interactions with Plants and Soil Organisms in Sustainable Agroecosystem
Symbiosis
Root System Form
Soil and Site Factors Influencing Mycorrhizas
Characteristics Of Fungal Isolates
Host Plants
How Mycorrhizas Work
Nitrogen Transfer in Mycorrhizal Plants
Nitrogen Nutrition in Mycorrhizal Plants
Phosphorus Fertility
Future Thrusts

19. INDUSTRIAL WASTES AS SOURCES OF PLANT NUTRIENTS
Significance of Waste Recycling
Chemical Characteristics of Wastes and Utilization
Effect on Crops Yield and Soil Properties
Effect on Crop Yields
Pathogens and Health Hazards
Heavy Metals and Associated Problems
Effect on Soil Properties
Problems in Waste Utilization
Future Research Needs

20. USE OF BIO-INOCULANTS FOR RECYCLING OF BANANA WASTES
Material and Methods
Results and Discussion

21. ROLE OF ORGANIC FERTILIZER IN UPLAND CROP PRODUCTION
Nitrogen-Fixing Bacterial Inoculants
Phosphate Solubilizing Microorganisms
Vesicular-Arbuscular Mycorrhizae (Vam)
Plant Growth Promoting Rhizobacteria
Future Research Needs
Strategy for Successful Use of Biofertilizers

22. 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

23. BIOLOGICAL SUPPRESSION OF AQUATIC WEEDS
Biocontrol of Salvinia Molesta Mitchell (Fam. Salviniaaceae)
Cyperbogous Salviniae Calder and Sands (Fam. Curculionidae)
Biocontrol of Eichhornia Crassipes (Martius) Solms-Lauch (Fam. Pontederiaceae)
Neochetina Eichhorniae Warner (Fam. Curculionidae)
Neochetina Bruchi Hustache (Fam. Curculionidae)
Orthogalumna Terebrantis Wallwork (Fam. Galumnidae)

24. WEED MANAGEMENT IN ORGANIC RICE
Development of Weed Control Methods
Problems from Chemical Weed Control
Weed Control in Organic Farming
A. Preventive Methods
B. Cultural Methods of Weed Control
C. Mechanical Methods
D. Biological Control of Weeds
Bioherbicides
Some Basic Principles for Weed Management in Organic Farming

25. PROCESSING AND VALUE ADDITION OF ORGANIC RICE
Quick Cooking Rice
Preparation of Instant Fried Rice
Instant Rice Noodles
Preparation of Dried Starch from Rice Soup

26. BIOTECHNOLOGICAL APPROACH IN ORGANIC RICE FARMING
Why Biotechnology?
Important Benefits that have Emerged from the Transgenic Rice Research:
Food and Agriculture Organization (FAO) of UN Recommendation

27. CROP ROTATION AND RESIDUE RECYCLING IN ORGANIC RICE PRODUCTION
Major Rice Cropping Systems
Crop Rotation in Organic Production System
A Good Crop Rotation Programme Involves
Legumes in Crop Rotation
Green Manuring
Crop Residues in Organic Rice Production
28. BIOLOGICAL NITROGEN FIXATION
Non-Symbiotic Nitrogen Fixation
Features Favourable for Non-Symbiotic Nitrogen Fixation
Nitrogenase
Basic Requirements for Nitrogen Fixation
Mechanism of Nitrogen Reduction
Symbiotic Nitrogen Fixation
Host Specificity
Root Nodulation
Mechanism of Nitrogen Fixation
Nitrogenase
Requirements for Nitrogen Reduction
Assimilation of Ammonia
Genetics of Nitrogen Fixation
Nif -genes of Klebsiella Pneumoniae
Nif-genes of Azotobacter
Nif-genes of Anabaena
Genetics of Legume - Rhizobium Nitrogen Fixation
1. Rhizobial Genes
2. Legume Nodulin Genes
Overall Regulation of Genes
Gene Transfer for Nitrogen Fixation
1. Transfer of Nif-genes to Non-Nitrogen Fixing Bacteria
2. Transfer of Nif-genes to Yeasts
3. Transfer of Nif-genes to Plants
4. Transfer of Nod genes
5. Transfer of Hup genes

29. 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
Mycobactericides
Parasitic Weeds
Management Strategies for Parasitic Weeds
30. PEST MANAGEMENT IN ORGANIC FARMING

Pest Management Methods
Biological Alternatives
Organically Acceptable Chemical Alternatives
Cultural Alternatives
Biological Control
Botanical Pesticides
Biological Control in Field 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
Diversity in Space
Habitant Enhancement
Role of Non-Crop Vegetation
Trap Crops
Constructed Traps
Plant Resistance to Pests
Traditional Practices for Pest Control
Other Management Practices

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.


NPCS also publishes varies 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.