

Bamboo Plantation and Utilization Handbook

Author: H. Panda

Format: Paperback

ISBN: 9788178331508

Code: NI243

Pages: 568

Price: Rs. 1,475.00 US\$ 150.00

Publisher: Asia Pacific Business Press Inc.

Usually ships within **5** days

Bamboo is an important non wood forest product. In India, bamboo, which is traditionally considered the Poor man wood, and labelled as Green Gold is being considered a major export item by the centre for the global market. Bamboo is perfectly suited to agro forestry as a woody grass. Bamboo has been exploited from natural stands from time immemorial. Bamboo is increasingly being cultivated like other agricultural crops, that is, in professionally managed plantations. The growth of industries utilizing bamboo requires the sustainable cultivation and management of bamboo resources. India is blessed with very rich bamboo resources. Bamboo can play an important role in raising forest cover and a major role in stabilization of the environmental problems. The annual yield in tonnes/ha depends on the environment as well as the species. It is estimated that almost 25% of the biomass in the tropics and 20% in the subtropics, come from bamboo. The cultivation of bamboo as a wood substitute helps to offset depletion of the rain forest. Its rapid growth ensures an effective reconstruction of damaged eco systems. Bamboo is one of many sustainable non wood resources that can generate income for a large forest dependent rural population and it needs to take further steps to realize its full potential. In India, the North East has the largest stock and diversity of bamboos. Though India has the largest area under bamboo, the yield per hectare is very low compared to other countries. Bamboo plantation rising should be encouraged & promoted due to their high value, productivity, uniformity of crop, choice of species linked to peoples' need and industrial need. Bamboo forest constitutes about 13% of the total forest area of the country. About 50% of bamboo produced in India grows in North Eastern region and West Bengal. India has the second largest bamboo reserves in the world after China. This book basically deals with bamboos in India, the bamboo plant harvesting, cultivating, silviculture and management, collection of material and preparation of cuttings treatment for root induction in cuttings, preparation of nursery and planting nursery management transplanting, pattern of biomass allocation in growing bambusa bamboos, biochemical characteristics of plantation bamboo leaf (bambusa bambos) with reference to organic productivity, economic analysis, bamboo plantation, problems and prospects, need for bamboo plantation, consumption pattern of bamboos in India, working and finishing qualities of bamboo, bamboos for structural use, pipe water supply system and drainage, bamboo furniture weaving industry etc.

This book provides a complete detail on Bamboo plantation and its utilization. This book contains chapters like types of bamboo in India, taxonomy, cultivation, harvesting, growth management, bamboo utilization, Bamboo products and many more. This book will be very helpful to all its readers, environmentalists, agronomists, entrepreneurs, industrialists, or anyone with a special interest in bamboo cultivation.

Contents

1. INTRODUCTION

2. DISTRIBUTION OF BAMBOOS IN THE WORLD

Bamboos in Asia

Bangladesh

China

India

Indonesia

Japan

Korea

Loas

Malaysia

Myanmar

Papua New Guinea

Phillippines

Singapore

Sri Lanka

Thailand

Vietnam

Africa

America

3. BAMBOOS IN INDIA

Arundinaria Michaux s.s.

Bambusa Schreber

The Chinese Bamboo

Chimonobambusa Makino

Dendrocalamus Nees

Dinochloa Buse

Drepanostachyum Keng

Gigantochloa Kurz

Himalayacalamus Keng

Indocalamus Nakai

Melocanna Trin.

Ochlandra Thw.

Oxytenanthera Munro

Phyllostachys Sieb. and Zucc.

Pleioblastus Nakai

Pseudosasa Nakai

Pseudoxytenanthera Soderstrom and Ellis

Schizostachyum Nees

Semiarundinaria Makino

Sinarundinaria Nakai

Sinobambusa Makino

Thamnocalamus Munro

Thyrsostachys Gamble

4. THE ENVIRONMENT

The Bamboo Plant

Culm

Rhizome

Flower

Flowering

5. CULTIVATION

Soil

Preparation for Plantations

Fertilizers

Regeneration
Propagation
Silviculture and Management
6. HARVESTING
Yield
Production
7. TAXONOMY
8. ECOLOGICAL REQUIREMENTS
9. GROWTH CHARACTERISTICS
Development of Bud
Clump and Culms
Rhizomes
Flowering
In Vitro Flowering of Bamboo
10. ESTABLISHMENT AND MANAGEMENT
Direct Sowing of Seeds
Seed Characters
Direct Sowing
Transplanting
By Culm With Roots and Rhizome
By Stock With Roots and Rhizome
By Rhizome With Roots
By Offset Planting
By Culm Cutting
Collection of Material and Preparation of Cuttings
Treatment for Root Induction in Cuttings
Preparation of Nursery and Planting
Nursery Management
Transplanting
Precautions
By Branch Cuttings
By Tissue Culture and Macroproliferation
Tissue Culture of Bamboo
Collection of the Bud Materials
Sterilisation of Explants
Preparation of Media
Sub Culture
Rooting and Outplanting
Transplanting
Production of Culms
Macroproliferation
Season of Planting
Number Under Planting
Method of Planting
Guidelines for Management
11. GROWTH AND DEVELOPMENT
Growth of Seedlings
Development of Rhizome
Culm Growth and Development
Annual Recruitment of Culms
Culm Height and Diameter
Monthly Recruitment of Culm
Daily Height Growth

Pattern of Biomass Allocation in Growing Bambusa Bambos

12. BIOMASS AND YIELD

Biomass Production

Total Biomass

Below Ground and Above Ground Ratio

Biochemical Characteristics of Plantation Bamboo Leaf (Bambusa Bambos) With Reference to Organic Productivity

Economic Analysis

Bambusa Bambos

Dendrocalamus Strictus

Expenditure

Income

13. CYCLE AND FERTILIZER APPLICATION

Felling Cycle

Fertilizer Application

Three Elements (Nitrogen, Phosphorus and Potassium)

Amount of the Three Elements to be Applied

Effect of the Various Kind of Nitrogen Fertilizers

Other Elements (Silicate)

Season of Fertilizer Application

14. INTRODUCTION IN SOCIAL FORESTRY

Strip Plantation

Community Forestry/Programme

Degree of Local Participation

Local Institutions

Land Allocation

Procedure of Working

Requirements/Rule of Working

Resource Sharing

Monitoring of Works

Limitations

The Problem of Land Use Conflicts

Lack of Identity of Interests

Scope for Community Forestry

Agroforestry Plantation

Bamboo with Horticulture Crops

Rehabilitation of Degraded Forest

Afforestation

Reclamation of Wastelands

15. NEED FOR BAMBOO PLANTATION

Present State of Pulp and Paper Industries

Raw Material

Raw Material Status

Guidelines for Raising Bamboo Plantation

Preparation of Nursery and Planting

Transplantation

Production of Culms

Research Work on Selecting Bamboo Species for Paper-making

Comparison of Pulp and Paper Making Characteristics of Plantation Bamboo with some Tree Species

Establishment of a Bamboo Plantation by Paper Industry Bamboo

16. BAMBOO PLANTATION—PROBLEMS AND

PROSPECTS

Cultivation Techniques

Projection of Culms
Problems of Cultivation
Seed Collection
Vegetative Propagation
Soil Moisture Conservation
Plant Protection
Weeds
Grazing and Fire
Clump Congestion
Socio-economic Constraints
Prospects of Bamboo Cultivation
Economic Analysis
Employment Generation
17. UTILIZATION
Consumption Pattern of Bamboos in India
Other Recent Uses
Bamboo Parquet (Block Flooring)
Laminated Bamboo
Bamboo Strip for Air Craft
Bamboo - Reinforced Concrete
Artificially - Shaped Bamboo
Bamboo, New Raw Material for Phytoserol
18. MASS PROPAGATION
Materials and Methods
Results and Discussions
19. NON-LINEAR MODELS IN BAMBOO SEEDLINGS
Materials and Methods
Results and Discussion
Conclusion
20. PROPERTIES AND PRESERVATION
Natural Durability of Bamboo
Preservative Treatment of Harvested Bamboos
Prophylactic Treatment of Bamboos during Storage
Drying or Curing and Seasoning
21. BAMBOO AND ITS USES
Bamboo Shoots
Seeds
Leaves
Fruits
Rhizomes
Banslochan, Tabashir or Tabasheer
Culms
Working and Finishing Qualities of Bamboo
Bamboos for Structural Use
Pipe Water Supply System and Drainage
Bamboo Furniture
Weaving Industry
Bamboo Board
Bamboo Reinforcement in Concrete
Bamboo-reinforced Mud Walls
Light Bamboo Wall
Paper Pulp
Rayon Pulp

Bamboo as Fuel
Bamboo as Charcoal
Conservation of Soil
Bamboo as a Saviour of Environment
Phytoremediation of Polluted Environment
A Renewable Resource for Agro-forestry Production
Bamboos as Ornament
Artificially Shaped Bamboo
Bamboo for Alleviation of Poverty
Women Empowerment
Potential in India

22. BAMBOO CUISINE

Sungsi
Sayur Rebung
Garang Asam
Gulai Manis Rebung
Gulai Rebung Masam
Gulai Rebung Teri Basah
Beko

23. GROWTH YIELD AND ECONOMICS

Productivity
Demand and Supply Position
Market
Price-Trend
Employment Generation
Economic Analysis
Resource Survey
Trade
Socio-economics

24. BAMBOO PRODUCTS

Strength Properties and Other Parameters
Characteristic Uses
Seasoning of Bamboo
Seasoning Behaviour of Round Bamboo
Air Seasoning
Kiln Seasoning
Chemical Seasoning
Shrinkage Behaviour of Round Bamboo
Inter Section Point (I.S.P.)
Electrical Resistance of Bamboo
Preservation of Bamboo
Preservative Treatment of Bamboos
Methods of Treatment of Bamboos
Treatment of Dry Bamboos
Treatment of Green Bamboos
Performance of Treated Bamboos
Specialised Technological Uses of Bamboo
Building Boards from Bamboo
Properties of the Boards
Packaging Purpose Boxes
Structural Applications of Bamboo
Technology of Bamboo constructions and Erection Aspects
Erection of Truss

25. CHEMICAL ANALYSIS OF BAMBOO TISSUES

Experimental

26. OPTIMUM DIGESTION CONDITIONS FOR PRODUCTION OF STRONG BAMBOO PULPS —A PRELIMINARY STUDY

Experimental Procedure

Results

Conclusion

27. ANATOMICAL FEATURES OF BAMBOO USED FOR PAPER MANUFACTURE

Growth of Bamboo Culm

Structural Topography of Internode

28. STUDIES ON COLOUR REVERSION OF BAMBOO PULP BLEACHED WITH C-E-H SEQUENCE

Introduction

Literature Review

Experimental

Set 1- Effect of Delignification

Set 2 – Effect of Over and Underchlorination

Set 3 – Effect of Alkali Charge in Alkali Extraction

Set 4 – Effect of Temperature in Alkali Extraction

Set 5 – Effect of Hypochlorite Charge in Hypo Stage

Set 6- Effect of pH (Buffer) in Hypo Stage

Set 7 – Effect of Temperature in Hypo Stage

Observations and Discussion

Conclusion

29. EFFECT OF BEATING ON THE CELL MECHANICS OF THE INDIVIDUAL BAMBOO FIBRE

Elementary Fibril

Cell Wall Mechanics of Wood Fibres

Cell Wall Structure

Force Distribution Across the Cell Wall

Internal Fibrillation

External Fibrillation

Bamboo Fibres

30. STUDIES ON THE FINES OF BAMBOO PULP

Experimental

Fractionation of Pulp

Isolation of Fines

Chemical Composition of Fines & Coarse Fractions

Evaluation of Whole Pulp and Fractionated Pulp in Valley Beater

Evaluation of Recombined Pulps

Discussion of Results

Fractionation of Pulp

Chemical Composition of Fines and Coarse Fibre Fractions

Influence of Fines on Some Pulp and Sheet Properties

Properties of Recombined Pulps

Conclusions

31. PULP AND PAPER MANUFACTURE

Chemistry and Morphology

Hemicelluloses

Fibre Morphology

Proximate Chemical Composition

Chemical Pulping
First Stage Digestion
Bleaching of Chemical Pulps
High Yield Pulping
Bleaching of High Yield Pulps
Rayon Grade Pulp
Fibre Morphology and Sheet Properties
Beating Characteristics
Decay on Storage and Its Effect on Pulp Properties
Industrial Experiences on Paper Making From Bamboo

32. PESTS OF BAMBOO

Seed Pests
Control
Nursery Pests
Termites
Control Measures
Plantation and Natural Stands of Bamboos
Culm and Shoot Borers
Defoliators
Witches Broom
Sap Suckers
Felled and Stored Bamboos
Termites
Protection Strategies
Protection of Bamboo Seeds
Nursery Pests
Plantations and Natural Stands
(a) Defoliators
(b) Sap Suckers
(c) Culm and Shoot Borers
Felled and Dried Bamboos

33. DISEASES AND DECAY OF BAMBOO

Microflora of Stored Bamboo Seeds
Nursery Diseases
Damping-off
Foliage Diseases
Witches' Broom
Diseases of Bamboo in Plantations and Natural Forests
Bamboo Blight
Rhizome Bud Rot
Rhizome Rot
Basal Culm Rot
Culm Rot
Culm Sheath Rot
Rhizome and Root Rot
Stem Infection
Foliage Infection
Decay in Bamboo

34. ASSOCIATIONS AND INSTITUTIONS

The Forest Research Institute, Dehra Dun
The State Forest Research Institutes (SFRIs)
Support to Craft and Artisan Related Activities: Training, Extension and Marketing
Industry and Related Applications

Integrated Rural Bamboo (IRB) Project
Bamboo Information Centre (BIC-India)
American Bamboo Society
The Bamboo Society of Australia
European Bamboo Society
The International Bamboo Foundation & The Environmental Bamboo Foundation of Indonesia, Indonesia
International Bamboo Association (IBA) and the
International Network for Bamboo and Rattan (INBAR)

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.

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

Tue, 22 May 2018 21:15:46 +0530