

The Complete Book on Spices & Condiments (with Cultivation, Processing & Uses) 2nd Revised Edition

Author:- NIIR Board of Consultants & Engineers

Format: paperback

Code: NI169

Pages: 888

Price: Rs.2275US\$ 200

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within 5 days

The term spices and condiments applies to such natural plant or vegetable products and mixtures thereof, used in whole or ground form, mainly for imparting flavor, aroma and piquancy to foods and also for seasoning of foods beverages like soups. Usually spices are an ingredient used to season a dish in the meal during its preparation and condiments are for using at the table to enhance the dish as each individual's tastes prefer. The great mystery and beauty of spices is their use, blending and ability to change and enhance the character of food. Spices and condiments have a special significance in various ways in human life because of its specific flavours, taste, and aroma. Spices and condiments play an important role in the national economies of several spice producing, importing and exporting countries. India is one of the major spice producing and exporting countries. Most of the spices and herbs have active principles in them and development of these through pharmacological and preclinical and clinical screening would mean expansion of considerable opportunities for successful commercialization of the product. Spices can be used to create these health promoting products. The active components in the spices phthalides, polyacetylenes, phenolic acids, flavanoids, coumarines, triterpenoids, serols and monoterpenes are powerful tools for promoting physical and emotional wellness.

Some of the fundamentals of the book are definition of spices and condiments nomenclature or classification of spices and condiments, Indian central spices and cashew nut committee, origin, properties and uses of spices, forms, functions and applications of spices, trends in the world of spices, yield and nutrient uptake by some spice crops grown in sodic soil, tissue culture and in vitro conservation of spices, in vitro responses of piper species on activated charcoal supplemented media, soil agro climatic planning for sustainable spices production, potentials of biotechnology in the improvement of spice crops, medicinal applications of spices and herbs, medicinal properties and uses of seed spices, effect of soil solarization on chillies, spice oil and oleoresin from fresh/dry spices etc.

The present book contains cultivation, processing and uses of various spices and condiments, along with photographs of machinery/equipments with addresses of their manufacturers. The book is an invaluable resource for new entrepreneurs, agriculturists, agriculture universities and technocrats.

1. DEFINITION OF SPICES AND CONDIMENTS

Nomenclature or Classification of Spices and Condiments

Brief History of Spices

First International Search for Indian Spices
Role of the ICAR in Spice Development in India
Spices Enquiry Committee
Indian Central Spices and Cashewnut Committee
Review of Researches on Cashewnut and 14 Spices
Setting-Up of the Central Plantation Crops Research Institute (CPCRI), Kasaragod
All-India Co-Ordinated Spices and Cashewnut Improvement Project (AICSCIP), Segregated to -
All-India Co-Ordinated Improvement Project for Spices (AICIPS)
Main Attainments of the Project (AICSCIP)
Segregation of AICSCIP into 2 Projects on Cashew and Spices
National Research Centre for Spices (NRCS, ICAR 1986)
The Indian Institute of Spices Research (1995), Calicut
Krishi Vigyan Kendra
Other Organizations Involved in Spices Development.
Division of Plant Introduction (IARI) and National Bureau of Plant Genetic Resources
Role of Department of Agriculture and Co-Operation, Ministry of Agriculture, Government of
India
Directorate of Arecanut and Spices Development
Spices Development Council, Department of Agriculture and Co-operation
Agmark Laboratories and Directorate of Marketing and Inspection (DMI)
Role of the Cftri and other CSIR National Laboratories in the Technological Spice Development
Programmes
Spices Export Promotion Council, Cochin
Cardamom Board
Functions of the Cardamom Board
Spices Board, Govt of India
Spices Cess Act
Indian Cardamom Research Institute
International Spices Development Activities
International Pepper Community (IPC), Jakarta, Indonesia
International Working Group on Spices (IWGS)
Development of International ISO Standards for Spices and Condiments and their Processed
Products as well as their Methods of Test (ISO : TC 34/SC 7)
World Trade Organization (WTO)
Recommended Action Plans
Importance of Individual Spice Requirements
Trends in Individual World Markets
Forms of Spices and Spice Products Traded
Concluding Remarks : The Challenges for the Indian Spice Industry
Productivity Challenge
Quality Challenge
Value-Addition Challenge
Equity Challenge

2. ORGIN, PROPERTIES AND USES OF SPICES

Ajowan
Ajowan Contains Calcium and Iron
Allspice
Anise/Aniseed
Annatto
Asafoetida/Asafetida
Basil
Bay/Laurel Leaf
Other • Bay Leaves

Indian Bay Leaf
West Indian Bay Leaf
Indonesian Bay Leaf
Boldo Leaves
Caper
Caraway
Cardamom/Cardamon
Celery
Chervil
Chile Peppers
Chives
Cinnamon
Cloves
Coriander
Cumin and Black Cumin
Dill and Dillweed
Epazote
Fagara/Szechwan Pepper
Fennel Seed
Fenugreek
Galangal/Galangale/Galingale
Garlic
Ginger
Juniper
Kaffir Lime (Leaf, Fruit)
Kari Leaf
Lemon Balm
Lemon Verbena
Lemongrass
Lovage
Mace
Marjoram
Mints: Spearmint and Peppermint
Mustard
Myrtle
Nigella
Nutmeg
Onion
Oregano
Paprika
Parsley
Peppers: Black, White, Green, Long/Pippali, CUBEB
Poppy Seed
Rosemary
Saffron
Sage
Sassafras
Savory
Screw-Pine Leaf/Pandanus Leaf
Sesame
Sorrel
Star Anise
Sumac

Tamarind
Tarragon
Thyme
Turmeric/Tumeric
Wasabi
Zeodary

3. FORMS, FUNCTIONS AND APPLICATIONS OF SPICES

Introduction
Spice Forms and Composition
Fresh whole Spices
Dried Spices
Spice Extractives
Essential (Volatile) Oils
Oleoresins (Non-Volatiles and Volatiles)
Other Extractives
The Functions of Spices
Primary function of Spices
Flavor, Aroma and Texture
Coloring Properties
Secondary Functions of Spices
Spices as Preservatives
Emerging Secondary Function of Spices
Spices as Medicines
Spice Preparation
Global Equipment used in Spice Preparation
Spice Applications
Marinades, rubs and Glazes
Spice Blends, Seasonings and Condiments
Spice Quality and Specifications
International Standards and Specifications
Maintaining Spice Quality
Fumigation
Controlled Atmosphere Storage
Sterilization

4. TRENDS IN THE WORLD OF SPICES

Trends in foods and spices
Understanding and Effectively Meeting the Growing Demand for Authenticity
Authentic Ethnic Ingredients
Spices and Flavorings of Popular Authentic Ethnic Cuisines
Authentic Ethnic Flavorings
Authentic Preparation and Cooking Techniques
Presentation Styles
Fusion and Regional American Flavorings
Fusion Flavors
Regional American Flavors

5. YIELD AND NUTRIENT UPTAKE BY SOME SPICE CROPS GROWN IN SODIC SOIL

Introduction
Materials and methods
Results
Effect of Fertilizer
Nutrient Concentration and Uptake
Amelioration of Sodic Soil

6. TISSUE CULTURE AND IN VITRO CONSERVATION OF SPICES

Introduction

Cardamom

Clonal Multiplication

Regeneration of Plantlets from Callus

Inflorescence Culture

Black Pepper

Clonal Multiplication

Callus Cultures and Regeneration of Plantlets

Micropropagation of related species of Piper

Ginger

Clonal Multiplication

Regeneration of Plantlets from Callus

In Vitro Selection

Turmeric

Micropropagation

Plant Regeneration from Callus

Vanilla

Micropropagation

Saffron

Micropropagation

Tree spices

Micropropagation

In Vitro Proliferation of Mace and Synthesis of Flavour Components in Culture

Seed and herbal spices

Production of secondary metabolites

Synseed technology

In vitro Conservation of Spices Germplasm

Protoplast Isolation and Culture

Genetic Transformation

Isolation of DNA and Studies on Biochemical/molecular Markers

Conclusion

7. IN VITRO PROPAGATION OF BLACK PEPPER (PIPER NIGRUM L.)

Introduction

Materials and methods

Results

8. IN VITRO RESPONSES OF PIPER SPECIES ON ACTIVATED CHARCOAL SUPPLEMENTED MEDIA

Introduction

Materials and methods

Results and Discussion

9. TISSUE CULTURE STUDIES ON TREE SPICES

Introduction

Materials and methods

Results

Clove

10. MICROPROPAGATION OF SOME IMPORTANT HERBAL SPICES

Introduction

Materials and methods

Explants

Results

In Vitro Seed Germination

11. SOIL-AGRO CLIMATIC PLANNING FOR SUSTAINABLE SPICES PRODUCTION

Introduction

Agro-climatic Zonations-concepts and Backgrounds

Delineations of Agro Eco Region (AER) and Agro Eco Sub Regions (AESR)

Characteristics of Spice Growing Soils in Different Agro Eco Sub Regions

Bengal Basin-hot, Moist Subhumid Eco sub Region (Q8Cm7).

Sustainability of Agriculture

Potentials

Future Strategy

Water Management

Nutrient Management

12. WATER MANAGEMENT OF SPICE CROPS

Introduction

Irrigation

Rain Water Management (Conservation and Storage)

Irrigation Water Management

How to Get Water for Irrigation

How to Irrigate and Manage the Water

Summary

13. POTENTIALS OF BIOTECHNOLOGY IN THE IMPROVEMENT OF SPICE CROPS

The Potentials of Techniques Related to tissue culture

Somatic Embryogenesis

Organogenesis

Micropropagation

Secondary metabolites from cell cultures

In Vitro Germplasm Conservation

The Potentials of Genetic Engineering : Gene and Genome Analysis Techniques

Genetic Manipulation by Gene Technology

Agrobacterium Mediated Gene Transfer

Gene Transfer by Electroporation

Gene Transfer by Micro projectile Bombardment

Gene Marker and Genome Analysis Techniques

Non-PCR Based Marking Technique: Restriction Fragment Length Polymorphism

Arbitrary/semiarbitrary Primer Based PCR Techniques

Site Target PCR Technique

Marker Assisted Selection

14. SPICES IN AYURVEDA

Ayurvedic concept of Tri-Dosha

Dosha Related Elements

Effect of Spices on Tridosha

Tips from Grandmas remedies using spices

Cardamom

Turmeric

Asafoetida

Chilli

Cinnamon Bark

Dry Ginger

Mustard

Seed Spices

15. MEDICINAL APPLICATIONS OF SPICES AND HERBS

16. THE HEALING TOUCH OF SELECT SPICES

Garlic

Mustard

Cassia
Capsicum
Caraway
Asafoetida
Pepper Mint
Basil
Fennel
Kokam
Opium poppy
Aniseed
Tamarind

17. MEDICINAL PROPERTIES AND USES OF SEED SPICES

Coriander
Fenugreek
Fennel
Cumin
Ajwain
Celery
Dill (Sowa)

18. IN VITRO MICRORHIZOME PRODUCTION IN FOUR CULTIVARS OF TURMERIC (CURCUMA LONGA L.) AS REGULATED BY DIFFERENT FACTORS

Abbreviation

Introduction

Materials and methods

In Vitro Shoot Culture

Results

In Vitro Shoot Culture and Plant Regeneration

Role of sucrose, BA and photoperiod and their interaction in microrhizome formation

Harvesting, Storage and Germination of Microrhizome

19. ENHANCEMENT OF GENETIC VARIABILITY IN CHILLI (CAPSICUM ANNUUM L.)

Introduction

Materials and methods

Result

20. BREEDING OF INDIAN PAPRIKA FOR HIGH-VALUE ADDITIONS • ORGANIC COLOUR • AND • OLEORESIN •

Introduction

Materials and methods

Results

21. USE OF COIR COMPOST AS A COMPONENT OF NURSERY MIXTURE FOR SPICES

Introduction

Materials and methods

Results

Experiment -I Effect of Terra Care as Substitute for Soil/Sand/ EYM in Conventional Potting

Mixture on Growth of Black Pepper Cuttings

22. EFFECT OF SOIL SOLARIZATION ON CHILLIES (CAPSICUM ANNUUM L.)

Introduction

Materials and methods

Results

23. SUPERCRITICAL FLUID EXTRACTION OF SPICES

24. INDIAN SPICE EXTRACTION TECHNOLOGY

Introduction

Indigenous Technology

Steam Distillation

Solvent Extraction

25. SPICE OIL AND OLEORESIN FROM FRESH/DRY SPICES

26. ONFARM POST HARVEST TECHNOLOGY FOR PLANTATION SPICES

(a) Cardamom

(b) Large cardamom

(c) Vanilla

(d) Pepper

(e) Cloves

(f) Nutmeg and Mace

(g) Cinnamon

Conclusion

27. BULBOUS SPICES

Onion

Indian Names

Description, Distribution and Economic Importance

Types of Onions

Varieties

Quality Parameters of a Good Variety

New Varieties Released

Crop Management

Climate

Soil and its Preparation

Rotation

Propagation

Irrigation

Interculture and Weeding

Roguing

Manuring

Importance of Nutritional Elements

Harvesting

Yield

Seed Production

Plant Protection

Marketing

Preparation for Market

Grading

Composition

Storage

Packaging

Post-harvest Handling

Marketing Within the Country

Factors Affecting Efficient Storage

How to Reduce Storage Losses in Onions

Processed Products

Quality Parameters of White Onions for Dehydration Purposes

Dehydration of Onion

Onion Powder

Onion Salt

Uses

28. GARLIC

Indian Names

Description and Distribution

Varieties

Quality Parameters for Garlic Bulbs for Breeding/
Production
New Varieties
Crop Management
Soil and Climate
Manurial Requirements
Seed Rate and Sowing Methodology

Harvesting
Yield
Diseases and Insect Pests
Tissue Culture of Garlic
Marketing
Smoking
Packaging
Grading
Curing, Packaging and Storage
Curing
Packaging
Storage
Control Measures for Rubbering, Sprouting and Bulb Splitting Disorders
Composition
Commercial Forms of Dehydrated Garlic
Garlic Powder-An Improved Patented Process
Odourless Garlic Powder
Garlic Salt
Oil of Garlic
Garlic Oleoresin
Transport
Uses
Garlic as Condiment
Garlic Oil as Insecticide
Garlic Paste/Mixture as Biofungicide
Garlic Oil as an Adhesive
Garlic Residue with Antibacterial Properties
Garlic in Medicine
Garlic Use for Cancer
In Human Nutrition
Leek/ Stone Leek Welsh Onion
Indian Names
Description and Distribution
Soil and Climate
Varieties
Crop Management
Raising Nursery/Transplanting
Manuring
Seed Production
Harvesting
Plant Protection
Composition
Post-Harvest Technology/Processing
Uses
Shallot

Indian Names

Description and Distribution

Crop Management

Uses

29. SEED SPICES

International Trade

More Recent International Trade

Future Prospects

Ajowan or Bishop s Weed

Indian Names

Description and Distribution

Area, Production and Export

Varieties/Selections

Crop Management

Climate and Soil

Cultural Practices

Diseases and Pests

Post-Harvest Technology

Grading

Composition

Adulterants

Packaging and Storage

Processed Products

Essential Oil

In Medicine

Comparative Antimicrobial Activity of Seed Spice Essential Oils

Aniseed

Indian Names

Description and Distribution

Varieties

Crop Management

Post-Harvest Technology

Composition/Quality

Quality Standards

Packaging

Storage and Transport

Processed Products

Distillation of Oil

Caraway, Black Caraway or Siah Zira

Indian Names

Description and Distribution

Caraway

Black Caraway

Area, Production and International Trade

Crop Management

Soil and its Preparation

Manuring/Fertilization

Methods and Time of Sowing

Intercropping

Interculture

Irrigation

Harvesting and Threshing

Yield

Plant Protection
Harvesting
Post - Harvest Technology
Packaging and Storage
Composition
Adulteration
Quality Standards (PFA/BIS/ISO)
Processed Products
Volatile Oil
Decarvonized Oil
Caraway Chaff Oil
As Food Flavourant
Medicinal Uses
30. A. CELERY SEED
Indian Names
Description and Distribution
Varieties
Crop Management
Land Preparation
Sowing Method
Fertilizers
Irrigation
Plant Protection
Tissue Culture
Harvesting and Threshing
Yield
Post - Harvest Technology
Cleaning/Preparation for the Market
Composition/Quality
Grading
Packaging and Storage
Contaminants Tolerance Limits
Processed Products
Seed-based Processed Products
Processed Products from Celery Leaves/Stalks
How to Handle and Store Celery Seed and its Products
As a Food Flavourant
In Medicine
In Perfumery
Fatty Oil
Celery Root Use
B.Celeriac
Description and Distribution
Crop Management
Composition
31. CORIANDER
Indian Names
Description and Distribution
Origin and Brief History
Botanical Description
Crop Management
Climate
Soil

Preparation of Land
Manuring and Application of Fertilizers
Varieties
Rotation and Mixture
Sowing Time
Seed Rate and Method of Sowing
Increasing Seed Germination
Irrigation
Weeding and Hoeing
IISR (ICAR) recommendations for crop management of coriander
Plant Protection
Tissue Culture
Harvesting and Threshing
Yield
International Quality Specifications for Seed Spices
Post-Harvest Technology
Preparation for the Market
Quality Grading
Composition of Seeds and Coriander Leaves
Packaging and Storage
Processed Products
Volatile Oil
Fatty Oil (Non-Volatile Oil)
Coriander Herb Oil
Coriander Oleoresin
Coriander Dal-an Improved CFTRI Process
Seasoning from Coriander Roots
As Flavourant
In Medicine
In Perfumery
Oleoresin-other Uses
Soluble Coriander (Superesin)

32. TREE SPICES

A. Aromatic Tree Spices
B. Acidulant Tree Spices

Cassia and Cinnamon
Nomenclature
Species of Cinnamomum Grown in India
I. Jangli-Darchini (CASSIA) or Karuva
Indian Names
Description and Distribution
Crop Management / Propagation
Propagation of Cassia
Air Layering in Cassia
II. Tejpat or Tamal Patra or Indian Cassia Lignea
Indian Names
Description and Distribution
Crop Management
Harvesting and Collection of Tamala Leaves
Preparation for Marketing
Yield
Essential Oil from Tamala Leaf
Leaf Oil

Bark Oil

III. Tezpat

Indian Names

Description and Distribution

Brief Description of Commercial Types and Classification or Grades of Cassia

China Cassia (*Cassia Lignea*)

Indonesia Cassia (Batavia Cassia, Java Cassia, Padang Cassia or Korintje Cassia, Cassia Vera)

Vietnam Cassia

Commercial Grades of Cassia in World Market

Physico-Chemical/Specification of Cassia Types

Packing

Storage

Transportation

33. FENNEL

Indian Names

Description and Distribution

Major Types of Fennel Seed in the World Market

Crop Management

Climate

Soil

Varieties

Land Preparation

Sowing Time

Seed Treatment, Seed Rate and Sowing Methods

Raising Seedlings in the Nursery

Transplanting of Seedlings

Intercropping

Manuring and Top-dressing with Fertilizers

Interculture Operations

Irrigation

Package of Practices Recommended

Tissue Culture

Plant Protection

Phased Harvesting and Threshing

Yield

Post-Harvest Technology

Commercial Classification/Grading

Composition

Packaging and Storage

Processed Products

Volatile Oil

Fixed Oil

As Food Flavourant

In Medicine

Residue (case) as Cattle Feed

Fenugreek

Indian Names

Description and Distribution

Area, Production and Exports

Crop Management

Climate and Soil

Preparation of Land

Manuring
Varieties
Package of Practices
Propagation
Seed Rate
Irrigation and Interculture
Tissue Culture
Plant Protection
Harvesting - Desi Methi
Production of Seed
Yield
Post-Harvest Technology
Packing and Storage
Composition
Marketing
Grades and Specifications
Processed Products
Fixed Oil
Volatile Oil
Effect of Roasting and Cooking on Nutritive Value
Oleoresin
Methi Leaves
As Food or Food Flavourant
In Medicine
As Cattle Feed, Veterinary Medicine
In Cosmetics; Dye/Hair Tonic and Cure for Baldness!
Leaves as a Vegetable Curry
Fixed Oil: Uses

34. CINNAMON OR TRUE CINNAMON

Indian Names
Description and Distribution
World Trade in Cinnamon
World Outlook/Prospects
Crop Management
Soil and Climate
Propagation
Manuring and Intercultivation
Weeding
Pruning/Cropping
Crop Improvement
Variability Studies
Plant Protection
Harvesting
Post-Harvest Technology
Preparation and Curing of Bark Spice for Marketing
Curing of Barks
Cutting and Peeling
Preparation of Quills
Drying
Utilization of Leaves and Twigs
Yield
Economics of Cultivation
Govt Incentives for Cinnamon Production and Marketing

Grading
Composition
World Types and Commercial Classification/Grades of Cinnamon
Type Sri Lanka (Ceylon)
Type Seychelles
Type Madagascar
Packaging of Different Commercial Classes of Cinnamon Bark and Powder
Packing of Cassia and Cinnamon and their Products
Storage of Cinnamon and Fumigation
Transport of Cinnamon
Processed Products
Cinnamon/Cassia Bark Oil
Cinnamon-Leaf Oil
Cinnamon and Cassia Oleoresins
Other Products
Packaging and Storage
Stem Bark
Stem Bark Oil
Cinnamon-Leaf Oil
Root Bark Oil
Seed Oil
Cinnamon Buds
Cinnamon Wood
35. CLOVE
Indian Names
Description, Distribution and Economic Importance
Constraints in Large-scale Cultivation/Production of Cloves in India
Crop Management
Site for Clove Cultivation
Climate and Soil
Varieties
Propagation
Mixed Cropping
Soil-working
Weeding
Support
Manuring
Interculture/Pruning, Thinning
Irrigation
Soil-and -Moisture Conservation Works
Water Management
Crop Management and Breeding Strategy
Crop Improvement: The Breeding Strategy Adopted at the IISR (ICAR)
Harvesting and Curing
Plant Protection
Yield
Economics of Cultivation
Constraints in Clove Cultivation
Central and State Govt Incentives for Production and Marketing of Cloves
Post-Harvest Technology
Preparation of Cloves for the Market
Grading
Storage

Transport
Defective Cloves
Composition
Adulteration
Quality Standards
Packing of Cloves
Packaging of Clove Oil
Packaging of Clove Oleoresin
Processed Products
Clove-bud Oil
Clove-stem Oil
Clove-leaf Oil
Oil of Mother Cloves
Clove-root Oil
As Food Flavourant
In Medicine
In Perfumery and Cosmetics
Other Uses

36. JUNIPER

Indian Names
Description and Distribution
Crop Management
Soil and Climate
Propagation
Flowering and Fruiting
Harvesting of Berries
Post-Harvest Technology
Drying of Fruits (Berries)
Grading
Composition of Juniper Berries/Fruits
Adulteration
Juniper Berry Essential Oil (Volatile Oil)
Composition of Juniper Volatile Oil
Manufacturing Alcoholic Beverages
As Food and Food Flavourant
Juniper Oil
Other Parts of the Tree
In Medicine
Volatile Oil
Juniper Wood
Other Uses/by-Products
Exhausted Fruits/Berries
Juniper Needles
Roots
Wood
Juniper Wood Oil
Mace and Nutmeg
Indian Names
Mace
Indian Names
Description and Distribution
Crop Management
Climate and Soil

Propagation by Nursery Technique
Transplanting of Seedlings in the Field
Mixed Cropping
Manuring
Mulching
Interculture/Weeding
Plant Protection
Constraints in Nutmeg Cultivation
Crop Improvement
Sex Determination-Past, Present and Future
Harvesting and Curing
Yield
Economics of Cultivation
Central and State Govt Incentives for Production and Marketing
Post-Harvest Technology
Packaging of Mace and Nutmeg
Grading
Quality/Composition of Mace and Nutmeg
Processed Products
Mace Products
Nutmeg Products
Variations in Aroma/Flavour of Nutmeg and Mace Accessions
Nutmeg
Mace

37. PIMENTO OR ALLSPICE OR PIMENTA

Indian Names
Description and Distribution
Description
Distribution
Area, Production and Exports/Imports
Crop Management
Soil and Climate
Propagation
Transplanting of Seedlings
Weeding/After-Care
Aftercare : Fertilizer Schedule
Manuring
Successful Fruiting in Allspice-A Recent Achievement of NRCS (IISR, Calicut .)
Harvesting and Yield
Major Types of Allspice (Pimento)
Crop Improvement Strategy or Breeding Strategy
Yield of Berries
Plant Protection
Post-Harvest Technology
Grades/Types
The ISO Grades of Pimento (Whole and Ground)
Physical Requirements for Whole Pimento
Chemical Requirements of Whole Pimento
Storage of Pimento
Transport of Pimento
Composition
Packaging and Storage
Processed Products

Pimenta Berry Oil
Pimenta-leaf Oil
Pimenta Oleoresin and Oil
As Food Flavourant
Use in Medicine
Berry Oil
Leaves
Pimenta Bark and Wood
A. Star-Anise
Indian Names
Description and Distribution
Area and Production
Crop Management
Soil and Climate
Propagation
Raising Nursery and Transplanting
Weeding
After-care Mulching
Manuring and Fertilization
Maturation and Flowering
Fruit Development
Harvesting of Fruits
Yield of Fruit
Post-Harvest Technology
Drying of Fruit
Processing Technology and Products
Manufacturing Essential Oil
Native vs Modern Distillation of Oil
Yield of Oil
Quality of Star-anise Oil
Quality Grading of Star-anise Oil
Leaf Oil
Fatty Oil
Star-anise as Flavourant
In Medicine
Star-anise Oil
B. Japanese star-Anise
Description and Distribution
Area, Production and Exports
Crop Management
Post-Harvest Technology
Processing Technology
38. BALM OR LEMON BALM
Indian Names
Description and Distribution
Crop Management
Soil and Climate
Propagation
Cultural Practices
Harvesting
Yield
Post-Harvest Technology
Processing Technology

Manufacturing Essential Oil
Physico-chemical Properties of Oil
As Food Flavourant
In Medicine
Basil or Sweet Basil (Tulsi)
Indian Names
Description and Distribution
Major Types of Basil
American Basil
Area, Production and Exports
Crop Management
Varieties
Soil and Climate
Breeding
Propagation
Plant Protection
Harvesting
Yield
Post-Harvest Technology
Packaging and Storage
Composition
Processed Products
Distillation of Oil
As Food Flavourant
In Perfumery and Cosmetics
In Medicine
As Insecticide, Insect-Repellent and Bactericidal
Use of Basil Seeds
Bay or Laurel Leaves
Indian Names
Description and Distribution
Post-Harvest Technology
Drying
Composition
Processing Technology
Essential Oil Recovery
Physico-chemical Properties of Volatile Oil
Bay Leaves for Flavouring
Fat from Bay or Laurel Berries
Laurel Wood Utilization
39. CURRY LEAF
Indian Names
Description and Distribution
Area, Production
Crop Management
Curry Leaf Cultivation in Homesteads of South Kerala
Raising Nursery
Manuring
Harvesting
Weeding
Prophylactic Measures for Plant Protection
Cost of Cultivation
Cultivars and their Sensitivity to Winter Temperature

Plant Protection
Termites
Post-Harvest Technology
Packing and Storage
Composition
Processed Products
Volatile Oil
Dehydrated Curry Leaves
As Food Flavourant
In Indigenous Medicine
In Perfume and Cosmetics
Fruits
Wood
Hyssop
Description and Distribution
Area, Production and Exports
Crop Management
Soil and Climate
Planting and Cultivation
Harvesting
Yield
Post-Harvest Technology
Composition
Processing Technology
Distillation of Essential Oil
Yield of Essential Oil
Physico-chemical Properties of Volatile Oil
As Condiment
In Medicine
Volatile Oil Uses
Marjoram
Indian Names
Description and Distribution
Crop Management
Soil and Climate
Propagation
Influence of Growth Regulators on Growth, Herbage and Essential Oil Yields
Harvesting
Flowering
Post-Harvest Technology
Drying, Packing and Storage
Composition
Processed Products
Volatile Oil
As Food Flavourant
In Perfumery and Cosmetics
In Medicine
40. PEPPERMINT
Indian Names
Description and Distribution
Crop Management
Processed Procucts
Volatile Oil

In Medicine/Pharmaceuticals
Waste Utilization
Spearmint
Indian Names
Description and Distribution
Crop Management
Important Steps in its Successful Cultivation in India
Composition
Processed Products
Volatile Oil
Origanum
Indian Names
Description and Distribution
Crop Management
Soil and Climate
Propagation
Sowing
After-care
Harvesting
Post-Harvest Technology
Drying
Composition
Processed Products
Volatile Oil
As Food Flavourant
In Medicine
Other Uses
Parsley
Indian Names
Description and Distribution
Area, Production and Trade
Crop Management
Climate and Soil
Direct Sowing/Sowing in Nursery Beds
Transplanting of Seedlings
Manuring/Fertilizers
Harvesting
Yield
Post-Harvest Technology
Composition
Processed Products
Dehydrated Parsley
Volatile Oil
Fatty Oil
As Food Flavourant
In Medicine
41. ROSEMARY
Indian Names
Description and Distribution
Crop Management
Climate and Soil
Propagation
Planting

Harvesting
Yield
Post-Harvest Technology
Drying and Packing
Composition
Processed Products
Volatile Oil
As Food Flavourant
In Perfumery and Cosmetics
In Medicine
Sage
Indian Name
Description and Distribution
Major Types of Sage in World Trade
Different Forms of Sage
Crop Management
Climate and Soil
Propagation
Planting
Harvesting
Yield
Post-Harvest Technology
Drying
Composition
Marketing/Trading
How to Handle and Store
Processed Products
Volatile Oil
As Food Flavourant
In Medicine
Use in Perfumery
As Anti-oxidant
Use of Residue
Uses of Seeds
Clary Sage (*Salvia sclarea* Linn.) or Garden Sage
Introduction
Savory
Indian Names
Description and Distribution
Area, Production and Exports
Crop Management
Soil and Climate
Propagation
Seed Rate, Method of Sowing and Weeding
Harvesting
Yield
Post-Harvest Technology
Processing Technology
Essential Oil of Savory
Composition of Dried Herb
Composition of Fresh Herb
Volatile Oil
Tarragou

Indian Names
Description and Distribution
Crop Management
Soil and Climate
Propagation
Planting Season
Harvesting
Post-Harvest Technology
Composition
Processing Technology
Essential Oil
Physico-chemical Properties of Oil
Precautions in the Storage of Oil
As Food Flavourant

In Medicine
In Perfumery
Thyme

Indian Names
Description and Distribution
Major Types of Thyme
Crop Management
Climate and Soil
Propagation
Post-Harvest Technology
Commercial Quality
Composition
Handling and Storage of Thyme
Processed Products
Thyme Extractives-Volatile Oil and Oleoresin
Thymol
As Food Flavourant

In Medicine

42. ASAFOETIDA OR ASAFETIDA

Indian Names
Description and Distribution
Types or Varieties of Asafoetida Imported into India
Method of Collection of Gum-resin
Crop Management
Varieties of Asafoetida
Types/Varieties of Asafoetida of Commerce
Quality Evaluation
Composition
Processed Products
Oil of Asafoetida
Oil of Galabanum
Compounded Asafoetida Powder and Tablets : A Simple CFTRI Process
As Food Flavourant

In Medicine

Calamus or Sweet Flag

Indian Names
Description and Distribution
Crop Management
Climate and Soil Requirements

Preparation of Land
Planting Method
Planting Time
Irrigation
Weeding
Manuring
Harvesting
Yield
Plant Protection
Post-Harvest Technology
Preparation for the Market
Adulteration
Composition
Processed Products
Volatile Oil
In Medicine
In Perfumery
As an Insecticide
In Foods Beverages and Liquors

43. GALANGAL

Description and Distribution
Economic Importance
Crop Management
Varieties/Races of Galangal
Planting
Plant Protection
Application of Manures/Fertilizers
Harvesting
Yield
Post-Harvest Technology
Composition
Volatile Oil
Oleoresin Content
Galangal Rhizomes
Galangal Oil
Galangal Oleoresin
Horse-Radish
Description and Distribution
Crop Management
Post-Harvest Processing Technology
Volatile Oil
Composition of Horse-radish
Adulteration
As Condiment
Horse-Radish Cream, Sauce or Relish
In Medicine
Long Pepper or Pipli
Indian Names
Description and Distribution
Crop Management
Soil and Climate
Propagation
Manuring

Harvesting
Yield
Plant Protection
Post-Harvest Technology
Drying and Packaging.
Composition
Processed Products
Volatile Oil
As Food Flavourant
In Medicine
44. SAFFRON
Indian Names
Description and Distribution
Crop Management
Soil
Climate
Land Preparation and Planting
Manures and Fertilizers
Irrigation
Interculture
Crop Rotation
Effect of Plant Density on Flower, Yield and Corm Production
Variation in Floral Characteristics of Saffron in different Kashmir Locations
Harvesting or Picking of Flowers and obtaining Saffron
Yield
Cost of Cultivation of Saffron
Economic Viability of Saffron Cultivation
Pests and Diseases
Recent Studies on Crop Management of Saffron in Iran
Effect of Fertilizers (NPK)
Post-Harvest Technology
Sun-Drying of Saffron in Kashmir
Effect of Different Processing (Different Drying and Dehydration Techniques)
Composition
Adulteration
Packaging and Storage
Marketing
Processed Products
As Flavourant and Colourant for Foods
Medicinal Properties
45. VANILLA
Indian Names
Description and Distribution
Commercial Forms of Vanilla
General Characteristics of Vanilla Forms
Qualitative Classification of Vanilla Pods
Crop Management
Climate
Soil
Preparation of Land
Providing Supports (Posts) for Vines
Planting
Manuring

After-care
Flowering and Natural Pollination
Hand-pollination
Pod Development
Vanilla Production Plan by Tissue-Culture Technique
Vegetative Propagation of Vanilla
Yield
Plant Protection
Diseases
Post-Harvest Technology
Curing
Vanilla Bean Packing and Storage
Composition
Adulteration/Substitution
Processed Products
Vanilla Extracts/Essences
Vanilla Sugar
Vanilla Oleoresin
Vanilla powder, Vanilla absolute and Vanilla Tincture
As Food Flavourant and in Perfumery
Vanillin

46. Machinery & Equipments

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 13:17:31 +0000