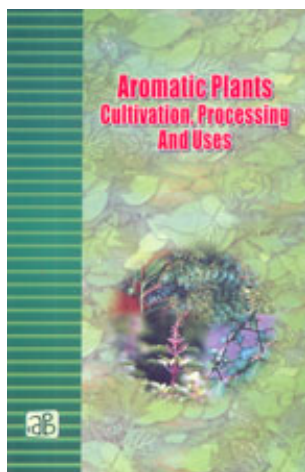


# Aromatic Plants Cultivation, Processing and Uses



**Author:** H. Panda  
**Format:** Paperback  
**ISBN:** 8178330571  
**Code:** NI120  
**Pages:** 504  
**Price:** Rs. 975.00 **US\$** 100.00  
**Publisher:** Asia Pacific Business Press Inc.  
Usually ships within **5** days

Aromatic plants have essential or aromatic oils naturally occurring in them. They help heal mental ailments and other diseases. India is endowed with a rich wealth of medicinal plants. Aromatic (Aroma Producing) plants are those plants which produce a certain type of aroma. Their aroma is due to the presence of some kind of essential oil with chemical constituents that contain at least one benzene ring in their chemical configuration. The chemical nature of these aromatic substances may be due to a variety of complex chemical compounds. These plants have made a good contribution to the development of ancient Indian material medica. In recent years, there has been a tremendous growth of interest in plant based drugs, pharmaceuticals, perfumery products, cosmetics and aroma compounds used in food flavors and fragrances and natural colors in the world. There is a definite trend to adopt plant based products due to the cumulative derogatory effects resulting from the use of antibiotic and synthetics and except for a few cultivated crops, the availability of plant based material is mainly from the natural sources like forests and wastelands. There is a need to introduce these crops into the cropping system of the county, which, besides meeting the demands of the industry, will also help to maintain the standards on quality, potency and chemical composition. During the past decade, demand for aromatic plants and its products has attracted the worldwide interest, India being the treasure house of biodiversity, accounts for thousands of species which are used in herbal drugs. 90% of herbal industry requirement of raw material is taken out from the forests.

Some fundamentals of this book are botanical description of the plant, genetic improvement, harvesting, intercropping, transplantation, irrigation and weeding, vanilla cultivation in india, commercial cultivation of vanilla, distillation of herbage for essential oil, effect of growth hormones, jasmine crop improvement & agrotechniques, efforts for new variety of jasminum auriculatum, essential oils of agarwood, cinnamomum tamala leaves, eucalyptus citriodora and caultheria pragentissima, past and future of sandal wood oil industry, by product development from turmeric and ginger rhizomes, isolation of essential oils and its flavour profile etc.

This book contains most of the important aspects related to aromatic plants. It is being published for those who are interested in growing, processing and trading of aromatic plants.

Tags

Aromatic plants cultivation India, Cultivation of aromatic plants, Aromatic plants farming, Cultivation of aromatic crops, List of aromatic plants in India, Names of aromatic plants, Aromatic plants, Processing of Aromatic Plants, Extraction of essential oils from aromatic plants, Extraction of essential oils by steam distillation, Essential oil extraction methods, How Are Essential Oils Extracted?, Essential oils, Extraction of Volatile Oil from Aromatic Plants, Steam distillation procedure, How to extract plant oils by distillation?, How to extract oil from plants?, List of aromatic plants and their uses, List of Important Aromatic Plants, Multiple Uses of Aromatic Plants, Commercial cultivation of aromatic plants

## Contents

### 1. Cultivation of Tagetes Minuta

Botanical description of the plant

Genetic improvement

Agrotechnology

Soil and climate

Propagation

Weed control

Fertilizers and manures

Irrigation

Harvesting

Intercropping

Crop rotations

Diseases

Distillation

Chemistry

Distillation unit design availability

### 2. Cultivation of Eucalyptus Citriodora

Description of the plant

Cultivation

Soil and Climate

Preparation of Land

Propagation

Nursery

Transplanting

Weeding

Manures and Fertilizers

Harvesting

Pests and Diseases

Distillation

Yield

Chemical Constituents

Uses

### 3. Cultivation of Rosmarinus Officinalis

Introduction

Description of the plant

Cultivation

Soil and Climate

Propagation

Transplanting, interculture and fertilizer application

Irrigation  
Harvesting  
Pests and diseases and their control  
Distillation  
Oil content and yield  
Chemical constituents

#### 4. Cultivation of Coriander Sativum

Description of the Plant  
Cultivation  
Soil and Climate  
Propagation  
Irrigation  
Harvesting  
Pests and Diseases  
Distillation  
Yield  
Chemical Constituents  
Uses  
Economics of Cultivation

#### 5. Cultivation of Lavender Species

Botany  
Soil and Climate  
Cultivation  
Propagation  
Propagation By Seeds  
Transplantation  
Fertilizer Application  
Weeding  
Regeneration  
Harvesting  
Distillation  
Oil Content and Oil Yield  
Chemical Constituents  
Uses  
Economics of Cultivation

#### 6. Cultivation of Matricaria Chamomilla

Description of the Plant  
Genetics  
Cultivation  
Soil and climate  
Propagation/nursery  
Transplantation, irrigation and weeding  
Cropping sequence  
Pests and diseases  
Manures and fertilizers  
Harvesting  
Collection of seeds  
Yield  
Drying and storage  
Distillation

Yield and characteristics of the oil

Uses

Specification of the drug

Economics of cultivation

## 7. Vanilla World s second most expensive spice

Vanilla Flower

Vanilla Beans

Vanilla cultivation in India

Commercial Cultivation of Vanilla

Vanilla Extract and Flavourings

Commercial uses of Vanilla

Market for Vanilla

Exports grades and standards

## 8. Cultivation of Artemisia Annua

Description of the plant

Soil and climate

Propagation

Weed control

Fertilizers and manures

Irrigation

Harvesting

Chemistry and uses

Distillation

Economics of cultivation

## 9. Cultivation of Mentha Arvensis

Plant descriptors

Available cultivars of menthol mint

Choice of place for cultivation

Land preparation

Preparation of planting material

Production of suckers

Production of seedlings

Planting of suckers in the field

Fertilizer application

Irrigation and drainage

Interculture and weed control

Crop rotation

Intercropping

Harvesting

Yield

Storage of herbage

Pests and diseases

Insect pests

Diseases

Distillation of herbage for essential oil

Directly fired distillation tank

Design availability

Use of mint oil and its derivatives

Economics of cultivation

## 10. Cultivation of French Basil (*Ocimum Bacilicum* L.)

1. European Type
2. Reunion Type
3. Methyl Cinnamate Type
4. Eugenol Type

Botany

Soil and Climate

Field preparation

Propagation

(a) Raising of Nursery

(b) Planting

Irrigation

Fertiliser Application

Interculture

Harvesting and Yield

Agronomical Studies

Physiological Studies

Heavy metal tolerance

Effect of growth hormones

Mineral contents

Seed mucilage studies

Effect of photoperiodism

Biosynthesis of Eugenol

Tissue Culture Studies

Genetical Studies

Chemical Composition

Uses

Cosmetic

Food

Folk medicine

Ayurvedic Properties

## 11. Jasmine Crop improvement & agrotechniques

New varieties of jasmine

Arka Surabhi

Arka Arpan

Efforts for new variety of *Jasminum auriculatum*

for extraction of essential oil

Constituent of Jasmine essential oil

Agronomy

Plant protection

Water saving, labour saving low cost device for propagation of plant cuttings

Details of the device

Required materials for the device

Detailed method

Economic viability of growing jasmine for essential oil

## 12. *Semecarpus Anacardium* L.f.

Introduction

Chemistry of Nuts

### 13. Himalayan Cedarwood Oil

Essential oil of Deodar (*Cedrus Deodara*)

Essential oil of *Juniperus Recurva* var. *Squamata* and other oils of *Juniperus* spp.

Agarwood and Oil Agarwood

Uses

### 14. Essential oils of Agarwood, *Cinnamomum Tamala* Leaves,

*Eucalyptus Citriodora* and *Caultheria Pragrantissima*

Distillation

*Gaultheria*

*Eucalyptus*

### 15. Past and Future of Sandal wood Oil Industry

Plantation and Harvesting

Disease Control

Distillation of Oil

Packing

Problems and their Solutions

Adulteration

Future Prospects

Kewda Industry in Orissa

### 16. Production Technology and Package of Practices in Chilli

Cultivated Species of *Capsicum*

Constraints in Chilli Production

Technologies Developed

Disease and Disease Management

Marketing in Chilli

Value Addition in Chilli

### 17. By Product Development from Turmeric and Ginger Rhizomes

Introduction

By Product Development in Turmeric

Curcumin

Turmeric Essential Oils

Isolation of Essential Oils and its Flavour Profile

By product Development in Ginger

Survey of Raw Material

Essential oils

Oleoresin

Gingerol in Ginger Oleoresin

Starch

Protein

Crude Fibre

Commercial Extraction of Ginger Oleoresin

Process Description for Oleoresins

Oleoresin Quality

Flavour Quality of Ginger Oleoresins

Essential Oils of Ginger

Profile of Flavour in Ginger Cultivars

### 18. Synthesis of 4 Acye 3, 7,7 Trimethylbicyclo [4, 1, 0]

## Hept 3 ene and Related Compounds by Friedel Crafts

Reaction on (+) ~ Car 3 ene

### Results and Discussions

1. Synthesis of 4 acetyl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 3 ene and its position isomers (II).
2. Synthesis of 4 propionyl 3, 7, 7 trimethylbicyclo [4, 1, 7] hept 3 ene and its position isomers (III).
3. Synthesis of 4 Butyryl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 3 ene and its position isomers (IV).

### Experimental

#### Fractionation of Turpentine Oil for Isolation

of 3, 7, 7 Trimethylbicyclo [4, 1, 0] hept 3 ene ((+) Car 3 ene (I)).

4 Acetyl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 3 ene and its position isomers (II).

#### Separation of IIa, and IIc by Column Chromatography.

4 Acetyl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 2 ene (IIb)  
3 Methylene 4 acetyl 7, 7 dimethylbicyclo [4, 1, 0] heptane (IIc)

4 Propionyl 3, 7, 7 trimethylbicyclo [4,1,0] hept 3 ene and position isomers (III).

#### Separation of IIIa, IIIb and IIIc by column Chromatography.

4 Propionyl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 3 ene (IIIa).

4 Propionyl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 2 ene (IIIb).

3 Methylene 4 propionyl 7, 7 dimethylbicyclo [4, 1, 0] heptane (IIIc).

4 Butyryl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 3 ene and its position isomers (IV).

#### Sederation of IVa, IVb and IVc by column chromatography.

4 Butyryl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 3 ene (IVa).

4 Butyryl 3, 7, 7 trimethylbicyclo [4, 1, 0] hept 2 ene (IVb).

3 Methylene 4 Butyryl 7, 7 dimethylbicyclo [4, 1, 0] heptane (IVc).

19. Free and Glycosidically bound volatiles of Clove (*Eugenia caryophyllata*)

### Experimental Procedures

#### Capillary Gas Chromatographic Analysis

### Results

20. Cultivation of Spices

#### Black Pepper

#### Climate

#### Soil

#### Varieties

#### Production of Rooted Cuttings

#### Cultural Practices

#### Standards

#### Planting

#### Under Planting

## Soil Fertility and Nutrient Management

Irrigation

Bush Pepper

Diseases

Pests

Harvesting

Cardamom

Mainfield Planting

Varieties

Propagation

Diseases

Pests

Cloves

Climate and Soil

Varieties

Planting Material

Planting

Manuring

Diseases

Pests

Nutmeg

Cultural Practices

Manuring

Pests

Cinnamon

Cultural Practices

Diseases

Manuring and Processing

Diseases

Pests

Ginger

Varieties

Cultural Practices

Diseases

Pests

Turmeric

Varieties

Cultural Practices

Diseases

Pests

21. *Bunium persicum* (Boiss.) Fedtsch Botany,

Conservation Strategies and Cultivation

Botanical Description of Plant

Climate and Distribution

Reasons and Remedies for Dwindling Population of

*B. persicum* in Nature

Phenotypic Variability

Climate

Soil Type

Preparation of Land

Plantation`

(i) Plantation Through Seeds



(ii) Plantation Through Tuberos Roots  
Spacing  
Method of Plantation  
Manuring  
Weeding  
Irrigation  
Harvesting  
Intercropping  
Pests and Diseases of Kala Zira Crop  
Experimental Studies for the Propagation of  
Planting Material Under Laboratory Conditions  
Regeneration Through Tissue Culture  
Economics of the Crop  
Conclusion

22. Essential Oils of Artemisia species in Kashmir Himalaya

Artemisia moorcroftiana Wall

Artemisia laciniata Wild

Artemisia salsoloides Will

Artemisia persica Boiss

Artemisia vestita Wall

Conclusion

23. Cultivation and Utilization of Kaempferia galanga L.

Botany

Crop Improvement

Crop Management

Extraction of Essential Oil

Physico chemical Properties of Oil

Utilisation

24. Cultivation and Improvement of Sweet Marjoram

Floristics and Crop Improvement

(i) Floristics

(ii) Studies on Floral Biology

(iii) Crop Improvement

Crop Production and Management.

(a) Soil and Climate

(b) Propagation

(c) Studies on Nutrient and Spacing

(d) Use of Growth Regulators

(e) Crop Rotation/Sequencing and Inter crops

(f) Irrigation and Inter culture

(g) Insect Pests and Diseases

(h) Harvesting, Production of Essential Oil and Yield

(i) Chemistry of Oil

25. Cultivation of Davana for Essential Oil

Introduction

Botany

Floral biology

Climate

Soil

Nursery raising  
Transplanting  
Manures and fertilizers  
Irrigation  
Interculture  
Growth regulator application  
Plant protection  
Insect pests  
Diseases  
Harvesting  
Distillation  
Yield and Oil content  
Chemical Constituents  
Physico chemical characteristics of davana

26. Essential Oil of Hyptis Suaveolens Poit  
Antimicrobial Efficacy of the Essential Oil of H. suaveolens  
(ii) Phytotoxic Behaviour of the Oil  
(iii) Chemical Constituents of the Oil  
Conclusions

27. Tagetes minuta (Wild Marigold)  
An Economic Crop for Hilly Regions  
Introduction  
Crop Management  
Harvesting and Distillation  
Quality Evaluation  
Uses of Tagetes Oil  
Research Needs

28. Present Status of Jamrosa A Review  
Cultivation  
Areas Under Cultivation and Marketing Prospects

29. Cultural Practices of CKP 25  
(Lemongrass) under Irrigated conditions  
Introduction  
Effect of Date of Plantings  
Effect of Different Spacing Combinations  
Effect of Nitrogen Levels  
Recommendations

30. Development of New Cultivars of Cymbopogons as  
Source of Terpene Chemicals

31. Indian Cymbopogons Botany, Agrotechnology,  
Utilization, Constraints and Future Scope  
Botany  
Morphology  
Taxonomic Position  
Distribution  
Cytological Studies  
\*Chromosome Number

- \*Cytogenetics
- \*Reproduction
- Agrotechnology
- Age of Plantation
- Manures and Fertilizers
- Irrigation
- Weed Control
- Harvesting
- Genetic Improvement
- Utilization
- Essential Oils
- Major Research and Development Constraints
- Conclusion and Scope for Future Work
- 32. Growth and Performance of *Cymbopogon citratus* Stapf., the West Indian Lemongrass and *Cymbopogon pendulus* (Nees ex Steud.) Wats., the Jammu Lemongrass in West Bengal
  - Result and Discussion
  - Intraspecific Variation:
  - Interspecific Variation:
- 33. Indian Turpentine Oil as a Raw Material for Terpene Chemicals
  - Production of Oil of Turpentine
  - Utilization of Oil of Turpentine
  - Constituents of Oil of Turpentine and their Derivatives
- 34. Cultivation of Musk Mallow in Jammu
  - Introduction
- 35. Morpho Economic Features of Burma Citronella (*Cymbopogon winterianus* Jowitt)
  - Introduction
  - Discussion
- 36. Oxidation of  $\gamma$  Terpinene and Isolongifolene with *t* Butyl chromate
  - Oxidation of terpinene (I)
  - Oxidation of isolongifolene (VI)
- 37. Scope for Commercial Cultivation of Aromatic Plants in Upper Pulney Hills

## 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](mailto:npcs.india@gmail.com) **Website:** [NIIR.org](http://NIIR.org)

Sat, 24 Oct 2020 15:30:47 +0530