

# 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 3 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 country, 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 fragrantissima*, 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

## 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 Acyl 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.

---

**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)

Mon, 18 Feb 2019 00:25:29 +0530