

# Entrepreneur India

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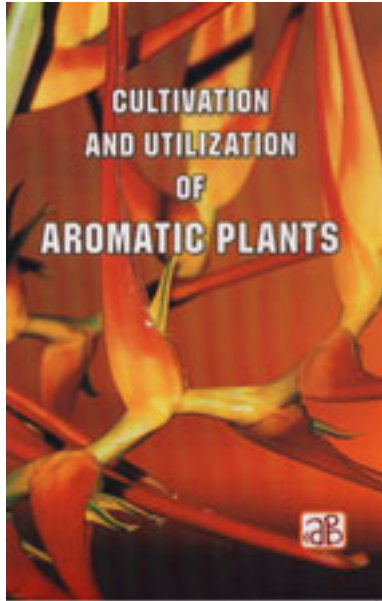
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## Cultivation and Utilization of Aromatic Plants



<b>Code:</b>	ENI155
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Aroma has played a vital role, directly as well as indirectly, in the life of human beings since its appearance on the earth as a result of evolution. India, Egypt and Persia were amongst the first countries to have conceived the process of distillation of essential oils. 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. 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. The chemical nature of these aromatic substances may be due to a variety of complex chemical compounds. 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.

This book basically deals with cultivation of *matricaria chamomilla*, present agro production technology status of celery, cultivation of *ocimum gratissimum* linn. var *clocimum*, the production and perfume potential of *jasminum* collections, chemical modification of turmeric oil to more value added products, biologically active compounds from turpentine oil, folk medicinal uses of indigenous aromatic plants in nepal, traditional uses of selected aromatic plants of bhutan and their cultivation prospects, blending aspects of perfumes with turpentine constituents, the chemistry of mint flavour, essential oils of *cinnamomum* species, citral containing *cymbopogon* species etc..

The aim of publishing this book is to provide multidisciplinary information on aromatic plants. The book covers method of cultivation and utilization of various aromatic plants. This is very useful book for farmers, technocrats, agriculture universities, libraries, new entrepreneurs etc.

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**Sample Chapter:**

# Removal of Calamus Odour from Patchouli Oil

## INTRODUCTION

During distillation of cured leaves of four different strains of patchouli namely Java, Johore, Indonesian and Malaysian, it was observed that the oil obtained from Java strain, gave calamus odour which is not desirable for Patchouli oil as it masks true Patchouli odour. The presence of calamus odour in patchouli leaves (Java strain) and its removal by strong fermentation has been reported. The present study describes an approach for the removal of calamus odour by the distillation method since the oil obtained from strongly fermented leaves still had the calamus odour.

## MATERIALS AND METHODS

Leaf samples for distillation of oil were collected from about six month old plants of above strains of Patchouli (*Pogostemon patchouli* Pellet), maintained at the experimental plots of the Indian Institute of Horticultural Research, Hesaraghatta.

Twigs containing first four to five pairs of leaves were harvested during morning hours. Leaves were stripped off the twigs and were shade dried in the laboratory for about a week. During drying the leaves were turned frequently to ensure uniform drying. After the leaves had dried, they were packed and stored in paper bags.

For fermentation, the leaves from Java strain, after stripping from the twigs were heaped and allowed to dry and were not turned frequently. 100 g of dried leaves were distilled in a clevenger apparatus for 8 hours and the percentage of oil in each case was recorded (in triplicate).

In another set of experiment, during distillation of the dried leaves oil fractions were collected separately at one hour interval upto 8 hours. The oil obtained from each strain and also the eight fractions from each strain were tested for calamus odour by comparison with *Acorus calamus* oil. Also the oils were tested for the presence of *b* asarone by TLC method, since it is reported that the calamus odour is apparently due to *b* asarone. The percentage of *b*-asarone in Patchouli oil was estimated by the method of Chopra.

## RESULTS AND DISCUSSION

The yield of oil and asarone content of different strains of unfermented and strongly fermented leaves of Java strain of patchouli are given in the table 1. Marked differences were observed in the essential oil content among the four strains; leaves from Malaysian strain, recorded the highest oil content (3.4%) and that from Java strain lowest (1.2%). Strongly fermented leaves of Java strain recorded higher oil content (1.8%) compared to unfermented leaves (1.2%).

**Table 1**

**Essential Oil and *b*-asarone Content of Patchouli (*Pogostemon Patchouli* Pellet)**

Sl.No.	Strain	Essential oil content ml/100g.(%)	Calamus odour	<i>b</i> -asarone mg/100 ml of oil
1.	Java			
(a)	Unfermented leaves	1.2	Present	9.8 (b)
	Fermented leaves	1.8	Present	2.3 2.
	Johore	3.0	Not Present	Nil 3.

Indonesian

2.1

Not Present

Nil

4.

It is clear from the table that the oil obtained by distillation of unfermented and strongly fermented leaves of Java strain has calamus odour. The calamus odour could not be detected in the oil from other strains. The presence of b-asarone could be detected in the oil from Java strain and not in the oil obtained from other strains. While the b-asarone content was highest in the oil from unfermented leaves of Java strain (9.8%) and that from fermented leaves was lowest (2.3%).

Among the eight fractions of patchouli oil obtained by the distillation of fermented and unfermented leaves of Java strain collected at hourly intervals, the calamus odour and b-asarone could be detected only in the first fraction and not in the latter fractions indicating that the b-asarone was removed during the first hour of distillation.

Recent investigations have revealed carcinogenic properties of b-asarone (Cis, 2, 4, 5-trimethoxy, 1-propenyl benzene). The Food and Drug Administration Department of USA has prohibited the use of calamus in any form (root, extract or oil). Also the presence of b-asarone masks the true odour of patchouli oil. In the light of above findings we recommended the rejection of the oil fraction obtained during first hour distillation of Patchouli leaves (Java strain which contains b-asarone) in order to obtain Patchouli oil free from calamus odour.

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