



AROMATIC PLANTS



BY
SHRI GORAKH KALUNGE, IFS
ASSOCIATE PROFESSOR
IGNFA

Sr.No.	Scientific name	Common name	Family	Plant part used
1	<i>Amomum subulatum</i>	Small cardamom	Zingiberaceae	Fruit
2	<i>Cinnamomum verum</i>	Cinnamon	Lauraceae	Bark
3	<i>Curcuma longa</i>	Turmeric	Zingiberaceae	Root
4	<i>Cymbopogon citratus</i>	Lemongrass(W. Indian)	Graminae	Leaf
5	<i>Cymbopogon flexuosus</i>	Lemongrass(E. Indian)	Graminae	Leaf
6	<i>Cymbopogon martini var. motia</i>	Palmarosa	Graminae	Leaf
7	<i>Cymbopogon winterianus</i>	Citronella (Java)	Graminae	Leaf
8	<i>Jasminum sambac</i>	Jasmine	Oleaceae	Flower
9	<i>Lavandula angustifolia</i>	Lavender	Lamiaceae	Flower
10	<i>Mentha spp</i>	Mint	Lamiaceae	Aerial parts
11	<i>Pelargonium spp</i>	Geranium	Lamiaceae	Aerial parts
12	<i>Rosa damascene</i>	Damask rose	Rosaceae	Flowers

CHEMICAL NATURE

- Volatile oils are complex mixtures varying widely in their composition. The characteristic odour and flavour are mainly due to oxygenated organic compounds. Only a few possess a single component in very high percentage, viz, **santalol in sandalwood oil, citral in lemongrass oil, geraniol in palmarosa oil and eugenol in cinnamon leaf oil.**

Essential oils largely comprise following major compounds.

I. Terpenoids

- Monoterpenoids: pinenes, ocimenes, limonene, citral, geraniol, linalool, camphor, menthol
- Sesquiterpenoids: caryophyllene, germacrene, cadinene, longifolene, thujopsene, aromadendrene, zizaene, cedrol, farnesol, ishwarone, santalol, cycloscychellene
- Diterpenoids: abietic, podocarpic and labdanolic acids; abietol, pimarinol, devadarool,
- ginkgolide, sciarcol, manool

4.. Triterpenoids: squalene, panaxatriol, odoratol, jasminol

5. Tetraterpenoids: carotenes, lycopene

II. **Benzenoids**: benzaldehyde, benzyl- alcohol, acetate, benzoate, salicylate, methyl- cinnamate, chavicol, eugenol, isoeugenol, cinnamaldehyde, cinnamyl alcohol, cinnamyl cinnamate,

III. Organic sulphur compounds: disulphides, sulphoxides

IV. Nitrogenous compounds: gueriol pyridine, dehydroguaiol pyridine, guaipyridine,

PROCESSING TECHNOLOGIES BY CIMAP

- Improved distillation technologies for essential oils from mints, vetiver, patchouli, lemongrass, basil, palmarosa, citronella etc
- Process technology and plant design for production of high quality rose oil and water from flowers of *Rosa damascene*
- Improved process technology for production of concrete and absolute of tuberose, rose and jasmine flowers

EXTRACTION OF AROMA PRINCIPLES

A. DISTILLATION

- i. HYDRO-DISTILLATION**
- ii. HYDRO-STEAM DISTILLATION**
- iii. STEAM DISTILLATION**

B. MACERATION

C. ENFLEURAGE

D. EXTRACTION WITH VOLATILE SOLVENT

E. EXPRESSION



How ESSENTIAL OILS are Steam Distilled

EssentialOilsClub.info
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Essential Oil Defined - Also known as volatile oils because they evaporate readily, essential oils are the lipophilic ("fat loving"), hydrophobic ("water hating") *volatile organic compounds* that are found in aromatic plants. They are generally insoluble in water, soluble in alcohol and fixed oils, and can dissolve fatty materials such as grease.

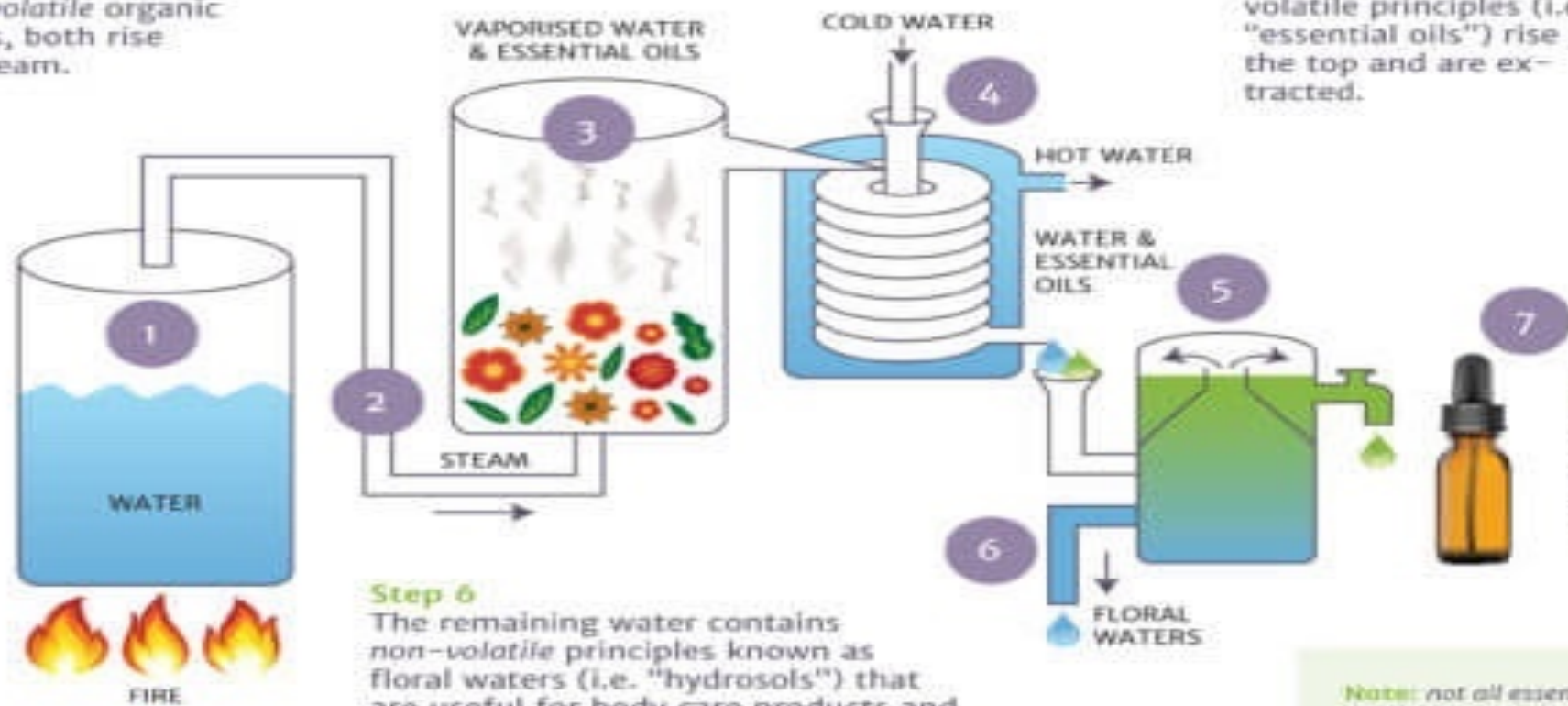
Step 3
Separating the *volatile* from *non-volatile* organic compounds, both rise with the steam.

Step 4
A condenser cools the steam, which is transformed back to water.

Step 5
In a separator, the volatile principles (i.e. "essential oils") rise to the top and are extracted.

Step 2
Passing through plant biomass, the steam breaks up the plant micro particles.

Step 1
Steam is created from boiling water



Step 6
The remaining water contains *non-volatile* principles known as floral waters (i.e. "hydrosols") that are useful for body care products and contain subtle medicinal properties.

Note: not all essential oils are steam distilled. Citrus peels are generally expressed ("cold-pressed") and CO₂ is a popular alternative to solvent extraction.

The background features a light gray gradient with several realistic water droplets of varying sizes scattered in the corners. The droplets have highlights and shadows, giving them a three-dimensional appearance.

CULTIVATION OF LEMON GRASS

1. Soil and climate

Sandy loam with abundant organic matter

Tropical and subtropical condition

Performs better upto 1500m above mean sea level

2. Seeds and planting

Slips-55600 per ha at spacing 60cm x 30cm per ha

Seeds- 4kg/ha

Timing: June-July or Oct-Nov

3. Harvesting

First harvesting starts 75 days after transplanting, thereafter 75-90days interval

Oil recovery is 0.2-0.3%

Method of oil extraction- hydro distillation or steam distillation

Yield- 20-30t/ha

Oil- 1st year 25kg/ha

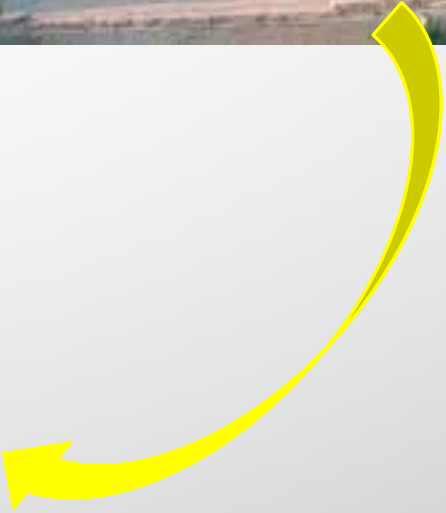
4. Varieties- OD19, Pragathi, Krishna



Lemon grass



Distillation unit





One of the most versatile oils in the world of essential oils is that of citronella. There are types of citronella essential oils based on their source. The oil extracted from *Cymbopogon nardus* is called Ceylon citronella oil, and the one from *Cymbopogon winterianus* is called Java citronella oil. Citronella essential oil is used as a natural room freshener, pain reliever, and antiseptic.



THANK YOU