



Department of Botany

Dr Rupinder Kaur

SPICES



**A Spice is a seed,fruit,root,bark
or other plant substance Used for flavoring
,coloring
or preserving food**



HISTORY

- Historical information says that early hunter and gatherers wrapped a meat in the leaves of bushes, accidently discovering that this enhance the taste of meat.
- **Ancient Egypt** in 1555 BC classified **coriander ,fennel, juniper , garlic and thyme** As health promoting spice.
- Then in early **Chinese , ancient Mesopotamia** , discover a different spices and their uses.
- Spices indigenous to **India** are **cardamom and turmeric** cultivated as early eighth Century BC .

CLOVE



UMBELLIFEROUS Spices



PEPPERS



CLOVE

Kingdom

Plantae

Class

Eudicot

Order

Myrtales

Family

Myrtaceae

Genus

Syzygium



History →

- Clove is indigenous to the *Moluccas island* of eastern *Indonesia*.
Later it introduced to *Mauritius*.

In India, clove was introduced in 1800 AD by the East India Company and is now

- cultivated in *Tamil Nadu, Kerala and Karnataka*.
- Largest producer of clove is *Zanzibar and Pemba Island*.

Botany

SOIL →

Loamy soil of humid tropics and can grow in **red soil** of the Middle of Kerala and Karnataka having pH between 4.0 - 5.6.



Climate →

- Clove require **humid tropical or subtropical climate**.
- Temperature from 16 to 38°C with annual rainfall of 150 to 250cm

Plant description →

- Tree is evergreen.
- Grow about 25-40feet in height.
- Leaves are small , opposite, dark green, dotted with oil gland.
- Flowering began about 5th year, which is hermaphrodite.
- Flower buds are hand picked when they are dull red in color.
- Shape of bud is like **nail** called as **clove**.

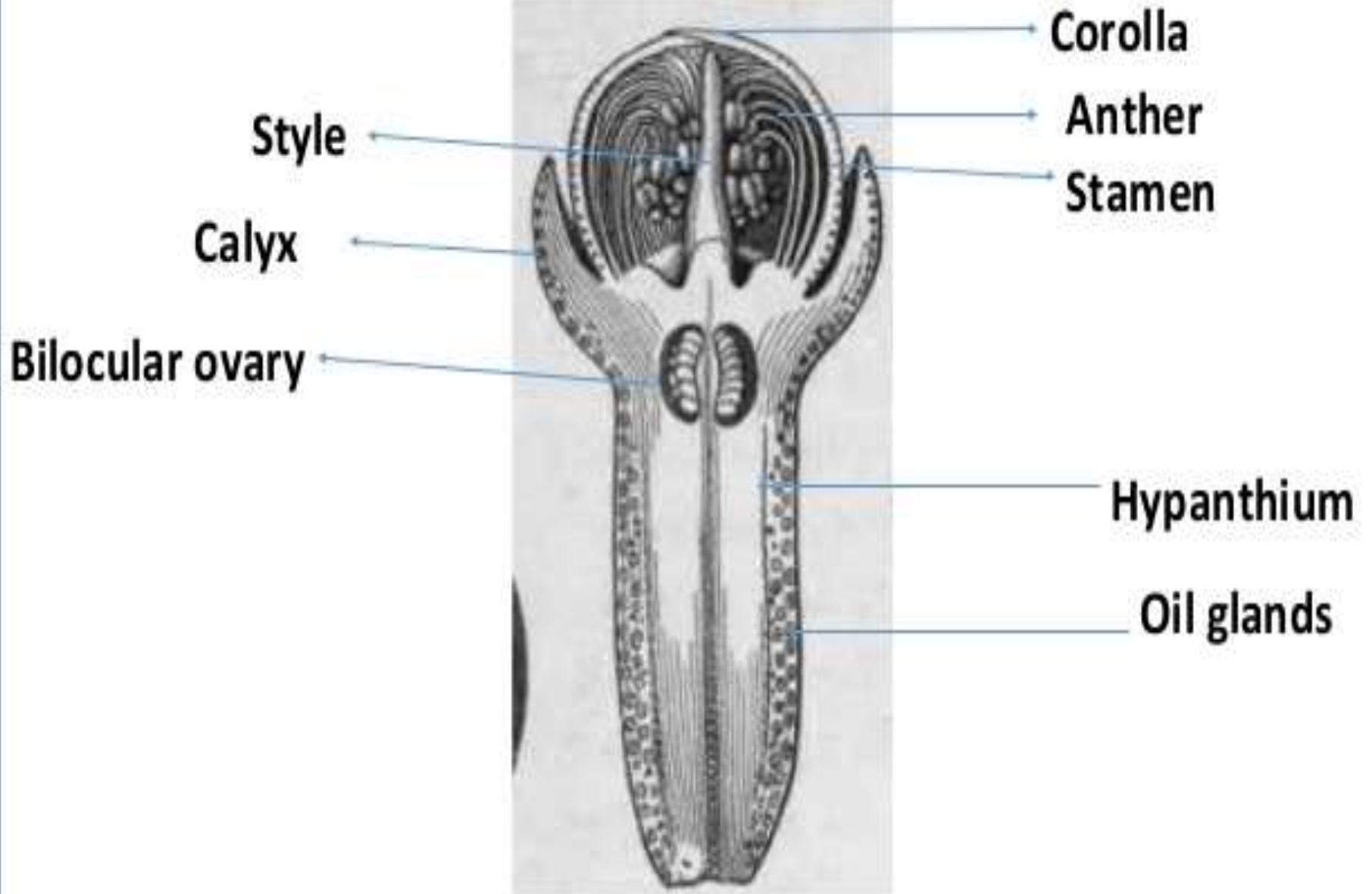


Planting and harvesting

- In India, Clove planted as an **intercrop** with coconut.
- Seedling are transplanted during beginning of **rainy season** of June and July.
- Cloves tree start flowering at 4th year.
- Seeds should be collected from fully rippled Fruit and fruit for seed collection is known as **mother of clove** are allow to ripe on tree and drop naturally



L.S. of Clove



Clove rich in:

nutrients

| | |
|------------|------|
| •Manganese | 110% |
| •Vitamin K | 7% |
| •Fiber | 5% |
| •Iron | 3% |
| •Magnesium | 3% |
| •Calcium | 3% |

Regulate blood sugar

Promote bone health

kills bacteria

High in antioxidants

Contain important nutrient

Improves health

Reduce stomach ulcer

Protect against cancer



Umbelliferous spices

genus

fennel

coriander

**Caraway
seed**



fennel

| | |
|---------|------------|
| Kingdom | plantae |
| Class | eudicot |
| Order | apiales |
| Family | Apiaceae |
| Genus | foeniculum |
| Species | f. vulgare |

coriander

| | |
|---------|------------|
| Kingdom | plantae |
| Class | eudicot |
| Order | apiales |
| Family | apiaceous |
| Genus | coriander |
| Species | c. sativum |

Caraway seeds

| | |
|---------|----------|
| Kingdom | plantae |
| Class | eudicot |
| Order | apiales |
| Family | Apiaceae |
| Genus | carum |
| Species | C. carvi |

| GENUS | SOIL | CLIMATE |
|--------------|--------------------------------------|---|
| Fennel | Well drained soil With ph5.5-6.8 | Cool weather, temperature Between 21 to 24c |
| coriander | Well drained fertile soil | Dry and cool weather With temperature 20-30c |
| Caraway seed | Well drained soil With ph 6.5-7.0 | Humid climate with cool temperate zone |

Plant description

Fennel →



© CanStockPhoto.com - csp45275247

- ❑ Perennial herb.
- ❑ it is erect , green and grow height up to 2.5m.
- ❑ Leaves are long finally desiccated , segmented and filliform.
- ❑ Flowers are yellow , terminal compound umbels.
- ❑ Underground taproot.
- ❑ Largest producing country is **Argentina and China**.
- ❑ Largest producing fennel seed in India is **Rajasthan , Andhra Pradesh , Up , Maharashtra , Punjab and Gujarat .**

Coriander →



1. Plant grow up to 50cm.
2. Leaves are variable in shape, broadly lobed at the base .
3. Flowers are born in small umbels, pale pink , asymmetrical.
4. Roots are also called **Chinese parsley**.
5. Largest producing coriander states are **Rajasthan MP , Assam , and Gujarat**.

Caraway seed →

1. It is biennial herb 0.3-1m high.
2. First season form a rosette of leaves 8-10 inch.
3. The second season of plant grow to 2-3 feet tall.
4. Small white flower are arranged in dense terminal compound umbel.
5. Fruit are oblong, laterally compressed with short stylopodium at apex, curved.
6. Largest producing caraway seed is **Egypt and Indua**.



| Genus | planting | harvesting |
|---------------------|--|--|
| Fennel | Done early as 2-5 weeks before average last frost date in spring | Done after 65 to 90 days |
| Coriander | Late spring and autumn | 40 to 45 days after sowing and 60 to 70 days for its seeds |
| Caraway seed | Done late April to mid may | For leaves spring onward 1 st year ad seeds second year after flowering |

USES

Dried fennel seeds flavoring soup , meat dishes and pastries.

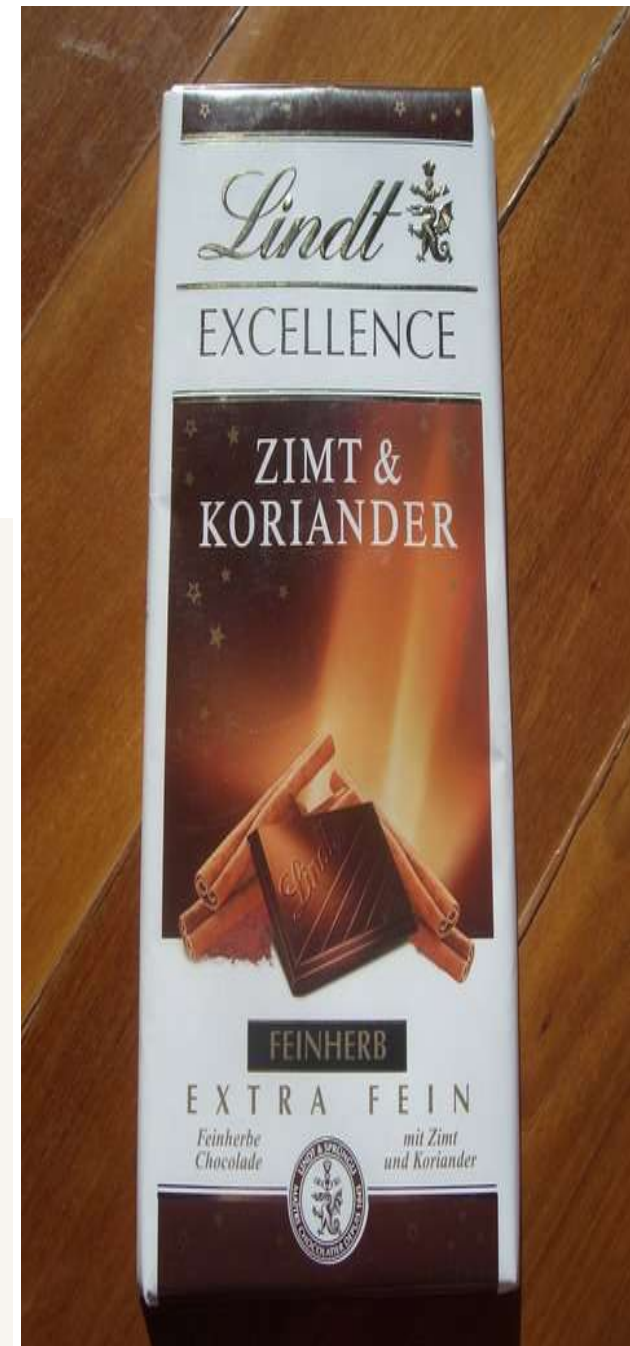
- for medicines.
- For various digestive problems including heartburn , intestinal gas etc.



Image credit: istockphoto.com/tabadam

Coriander leaves used in flavoring curries ,soups and curd.

- for flavoring perfumes ,candy,chocolate etc.
- Left after extraction of volatile oil is used locally as cattle feeder.
- Good for skin related disorder.
- Help in reducing BP.



Caraway seeds used for culinary purposes and flavoring bread , cakes ,biscuits etc .

- Important ingredient of sausage and pickles.
- Seeds act as mild stomachic and carminative.

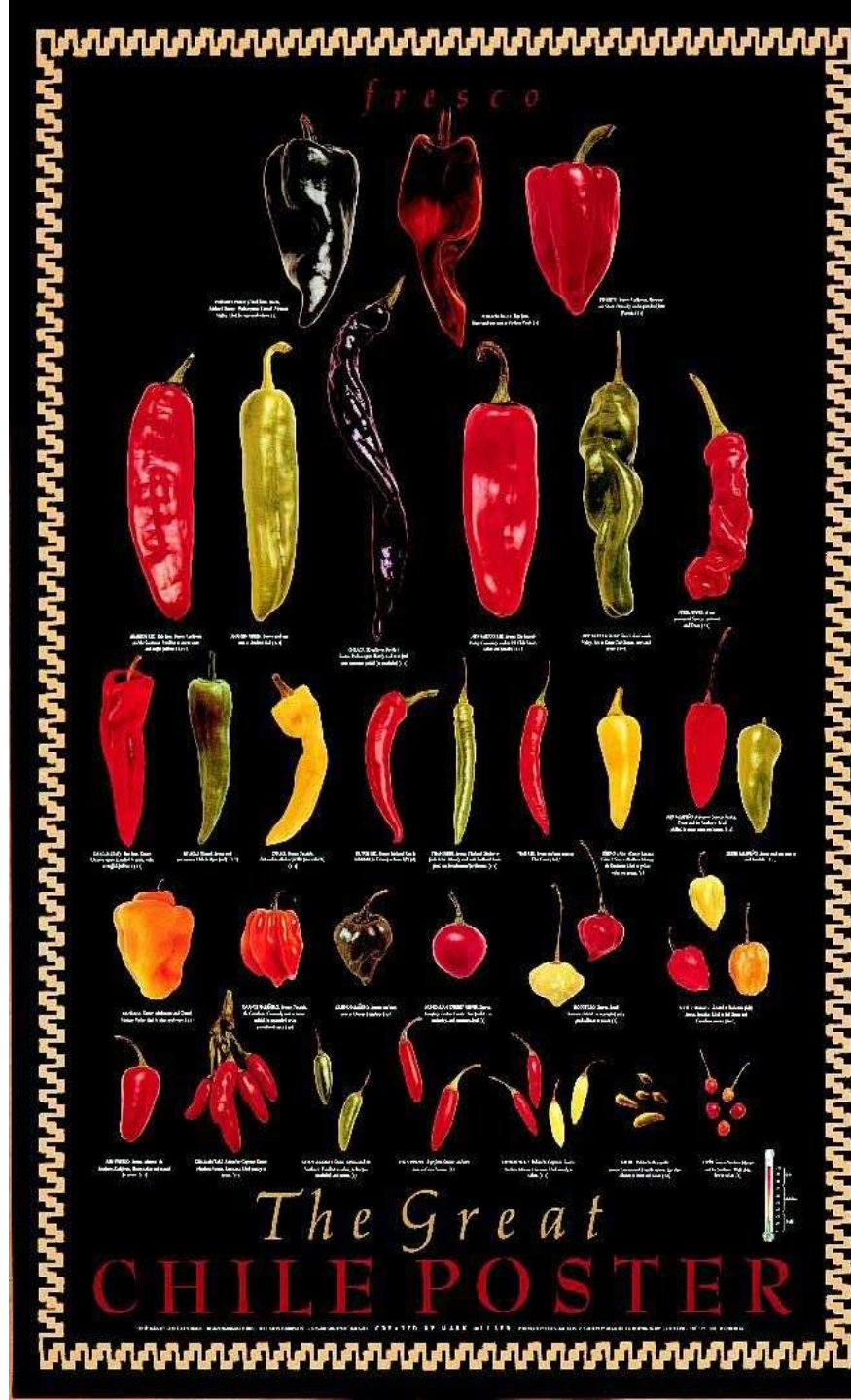


pepper



Varieties of pepper

- Black pepper
- White pepper
- Green pepper
- Wild pepper
- Orange and pepper
- Pink pepper



BLACK PEPPER

| | |
|---------|------------|
| Kingdom | plantae |
| Class | magnoliids |
| Order | piperales |
| Family | piperaceae |
| Genus | Piper |
| Species | nigrum |



HISTORY

- ❖ It originated in the hills of southern western Ghats.
- ❖ And now grow in **Indonesia , Malaysia , Sri Lanka , Thailand, China , Brazil.**

soil →

- ❖ Grow in soil that is neither too dry nor susceptible to flooding , moist, well drained and rich in organic matter.
Ph of soil should be 5.5 to 6.



climate →

- ❖ humid climate and grow between 20 degree North and south latitude from sea level to up to 1500 m.
- ❖ It tolerate temperature between 10-40 degree.
- ❖ It required rainfall 125-200cm.

Plant description



- It is **perennial** woody vine.
- Reach up to height 4mt on supporting trees poles or on trees
- Leaves are alternate , entire and long.



- It has different type of **runner**
primary
secondary
tertiary
- it has **shallow root** system

Planting and harvesting



- It is **monocrop** so support might by tree or any pole
- Just before monsoon start cutting should be planted
- After flowering it takes 9 months before the ripe berries can be picked.
- Berries are green 1st , turning yellow , and then red when fully ripe.
- It harvested after every **7 to 14 days**

Nutrients

Vitamins A
Vitamins E AND K
Calcium
Iron
Magnesium
Phosphorous
Zinc



Uses



- It is used 75% in the world .
- It may promote the weight loss
- full of antioxidant
- improve bioavailability of turmeric
- Improve digestive health
- Prevent cancer
- lower blood pressure
- improve oral health
- good for skin





Thanks