COFFEE (*COFFEA SPECIES*)

Family: Rubiaceae

- **Cultivated varieties**

❖ **Varieties of cultivated coffee:**

➢ ***Coffea arabica***

➢ ***C. canephora* (robusta coffee)**

➢ ***C. liberica***

ORIGIN OF COFFEE

❖ Originated from Africa:

➢ ***C. arabica*,** despite its name, comes from Ethiopia.

➢ Wild populations of ***C. Canephora*** still exist in the evergreen forests from central Africa to West Africa.

- **Current distribution of cultivated coffee species**

❖ ***C. arabica*: (Highland Coffee)** South and Central America, **Highland regions of Africa**;

❖ ***C. canephora:* (Lowland Coffee)** Africa (relatively low quantity, hot and humid areas)

- **Ecology and Botany of cultivated coffee**

❖ ***C. arabica:***

➢ Original source of coffee beans and has best coffee quality.

➢ Most suitable climate is the original (Ethiopian) climate i.e. tropical climate tempered with altitude with two contrasting seasons.

➢ It has a slender tree which is heavily branched and kept in shape by judicious **pruning**

➢ Axillary and sub-axillary buds develop into reproductive lateral branches.

❖ ***C. canephora:***

➢ It is a lowland coffee originated from equatorial Africa.

➢ With the exception of *C. arabica*, all other species of coffee are lowland types.

➢ All lowland coffee types are similar in vegetative and reproductive characteristics.

➢ Require hot and humid equatorial to sub-equatorial climates.

Site Selection For Coffee Growing

❖ Site to be selected for coffee cultivation is determined by type of coffee to be grown which is on the basis of requirements for altitudes.

❖ Deep, slightly acid, well-drained loams, (especially, hillsides with a gentle slope) that are rich in nutrients especially potash and organic matter are ideal for coffee.

Propagation of Coffee

❖ **Raising of coffee seedlings:**

➢ Plantable seeds or seedlings must be obtained from designated centers – Research Institutes or Colleges and Faculties of Agriculture of Universities.

Preparation of coffee seeds –

Raising coffee seedlings

➢ Maintenance of seedlings in the nursery:

➢ Watering

➢ Weeding

➢ Control of disease infection especially damping-off, leaf spot (*Cercospora spp.*)

Clonal / Vegetative Propagation of Coffee

❖ This ensures true-to-type in the following traits –

➢ Production capacity

➢ Reaction to environment (soil, climate tolerance / resistance to pest attacks)

➢ Technological

➢ Organoleptic properties of coffee.

• **Propagation Of Coffee By Stem Cuttings**

➢ **Selection and preparation of stem cuttings:**

❖ **Setting Of Cuttings:**

- **Maintenance of set cuttings:**
- **Transplanting and Hardening-off**

Transplanting Of Coffee Seedlings Into The Field:

- **Planting spacing / planting densities:**
- ***C. canephora:***
- 4.0 m x 2.5 m (1100 trees/ha)
- 2.5 m x 2.0 m (2000 trees/ha)
- ***C. arabica:***
- 4.0 m x 2.5 m (1000 trees/ha)
- 2.0 m x 2.0 m (2500 trees/ha)

- **Maintenance Of Coffee Plantation**
- **Weeding**
- **Mulching**
- **Shade**
- **Pruning:**

Pruning:

- An important maintenance operation in coffee.
- Coffee yield is directly dependent on good pruning operations.

Forms Of Pruning In Coffee Culture

- **De-suckering**
- **Topping:**
- **Single stem**
- **Double stem rotation**
- **Vertical / Upright multiple stem**
- **Leaning multiple stem**
- **Hawaiian system**
- **Colombian system**
- **Candelabra system**
- **Guatemalan system**

Harvesting And Processing Of Coffee Berry

❖ **Harvesting:**

➢ Generally coffee plants come into bearing 3 years after transplanting into the field.

➢ The immature berries are green while the mature ones are either yellow, purple or red depending on variety.

Processing / Post-harvest Handling Of Coffee Berries.

➢ Wet method

➢ Dry method

Roasting:

➢ Roasting brings out the proper flavour of coffee.

Grinding:

➢ Roasted coffee is ground into small particles before it can be used.

➢ Soluble coffees like Nescafe, are made from infusion of coffee from roasted and ground beans which is drastically dried in very hot air.

❖ **Grading:**

➢ Re-drying – for uniform moisture content.

➢ Cleaning – removal of foreign matter and unhulled beans.

➢ Hulling and polishing – removal of testa.

➢ Size grading – a set of cylindrical sieve used to separate smaller and broken beans.

Major Diseases Of Coffee

❖ **Hemileia leaf rust:** (the leaf)

➢ **Causal organisms:** *Hemileia vastatrix, H. coffeicola.*

➢ **Control:** use of resistant varieties, copper fungicides and farm hygiene / sanitation.

❖ **American leaf spot:** (foliage and berry)

➢ **Causal organisms:** *Stilbellum flavidum, Agaricus citricolor*

➢ **Control:** farm hygiene / sanitation, copper fungicides.

❖ **Black rot:** (foliage and berry)

➢ **Causal organism:** *Pellicularia koleroga*

➢ **Control:** farm sanitation, copper fungicides.

Major Insect Pest Of Coffee

- **Defoliator (*Epicampoptera glauca*).**
- **Effect:** coffee plant with lace-like leaves
- **Control:** spray plant with endosulfan directing jet upwards from underneath.
- **Berry borers (*Stephanoderes hampei*).**
- **Effect:** Beetles bore small holes in ends of berries. Larvae feed, develop and destroy berries.
- **Control:** Regular harvesting, hygienic measures, spray with insecticides.
- **Termites.**
- **Effect:** roots eaten up .Coffee plant falls off without any symptom.
- **Control:** Destroy termitarium in and around coffee plots.