# COFFEE

## Botany

Though the genus coffea consists of about 70 species, only 3 species are of economic importance. They are

1) C. arabica (Arabica coffee)
2) C. canephora (Robusta coffee)
3) C. liberica (Tree coffee).

The first two species are extensively cultivated. The important differences among these two species are:

| **Character** | ***C. arabica*** | ***C. canephora*** |
|---|---|---|
| Ploidy | Tetraploid (2n=44) | Diploid (2n=22) |
| Adaptability | Higher elevation | lower elevation |
| Plant status | A small tree, a shrub or a bush under training. | A bigger tree than arabica. |
| Leaves | Dark green | Pale green |
| Blossoming | Bloom in 9-10 days after the receipt of blossom showers. | Bloom in 7 days after the receipt of blossom showers. |
| Flowers | Scaly, small bracts, per axil 4-5 inflorescence of 1-4 flowers per inflorescence. | Leafy and expanded bracts with 5 to 6 flowers per inflorescence. |
| Berries | 10-20 per node oblong to round in shape. | 40-60 or more per node, small. |
| Fruit development | 8-9 months | 10-11months |
| Root system | Small but deep. | Large but shallow |
| Pollination & fertilization | Self pollinated & Self fertile. | Cross pollinated & Self – sterile. |

**Arabica coffee**

**Robusta coffee**

The coffee plant has a prominent vertical stem with horizontal primary branches arising from it in pairs opposite to each other. Another upright shoot, sucker, arises from the main stem especially in a matured coffee plant in between the primary lateral branch and the leaf or its suar. It grows vertically like the main stem. These primary branches give rise to laterals which in turn produce tertiary and quaternary branches. The secondary and tertiary types arise towards the distal end of the branch just above the axil and the other type known as axillary bud which grows in the leaf axil and is capable of growing into a flower cluster or a lateral shoot. The axillary bud provides the main cropping wood for the plant.

Coffee is a short plant and is South India, flower initiation takes place between September to March.

The flower buds grow into a definite size under fairly cold winter conditions and undergo a period of dormancy due to the onset of drought coupled with high temperature, long day and high light intensity conditions prevailing in dry months (November to march) depending upon the places. There is practically no

vegetative growth during these dry months. Immediately after the blossom showers, growth changes are conspicuous in flower buds on the third day following rains due to the moistening of the flower buds, soil wetness and low temperature that follows immediately after rain. This causes the plants to blossom within 7 to 10 days. This imposed dormancy is a necessary event, as it enables single harvest, otherwise, coffee will be blooming throughout the year resulting in staggered harvesting concomitant with increased cost of picking, etc. The fruit is a drupe and normally contains two seeds. Abortion of one ovule due to non-fertilization leads to the formation of a single seeded fruit, called pea berry. Sometimes, 3 or more seeds may be present due to trilocular ovaries or false polyembryony and is often called triangular seeds. Occasionally, formation of more than one ovule per locule is seen and such seeds are known as elephant bean.

## Climate and soil

Climatological factors like rainfall, temperature, elevation and aspect can influence economic production of coffee much more than soil factors. Soil should be deep, well drained, slightly acidic in reaction and rich in organic matter content. The optimum soil and climate requirements for Arabica and Robusta under south Indian conditions are as follows.

| Particulars | Arabica | Robusta |
|---|---|---|
| Elevation | 1000-1500m MSL | 500-1000 m MSL |
| Annual rainfall | 1600-2500mm | 1000-2000mm |
| Blossom rain | March-April | February - March |
| Backing rain | April- May | April- May |
| Shade | Needs medium to light shade depending on elevations & aspects. | Needs uniform thin shade. |
| Temperature | 15- 25OC | 20-30 C |
| Relative humidity | 70-80% | 80-90% |

| | | |
|---|---|---|
| Soil | Deep friable, porous, rich in organic matter moisture retentive, slightly acidic Ph 6-6.5 | Same as for Arabica. |
| Aspect. | Northern, Eastern and N. Eastern aspects are ideal | Flat to gentle slopes |
| Slope of the field | A gentle to moderate slope is ideal. | Gentle slopes to fairly level are to be preferred |

## Varieties

| Variety | Parentage | Special Chracters |
|---|---|---|
| S.795 (Sln. 3) | S.288 x Kent | Resistant to leaf rust race 1 and 11 |
| Sln.7 (San Ramon hybrids) | San Ramon short internode arabica spotted in Costa Rica | Dwarf in nature, but segregates to tall by 30% |
| Sln. 8 (Hibrido-de-timor) | A spontaneous hybrid of Robusta–arabica, spotted in Portuguese Timor island | Highest vertical resistant to leaf rust |
| Sln.9 | Sln. 8 x Tafarikela | Drought hardy, suitable to different coffee zones |
| Sln.10 (Catura crosses) | Catura x S.795 or Sln.8 | Drought hardy, suitable to different coffee zones |

## Harvesting

Coffee fruits should be picked as and when they become ripe to get better quality. Arabica comes for harvesting earlier since they take 8-9 months for fruit development from flowering while robusta takes 10-11 months. Picking is

done by hand. The first picking consists of selective picking of ripe berries often seen in the outer portion of the node and is called fly picking. Thereafter, there will be 4-6 main pickings at 10-15 days intervals and final harvest. Stripping consists of picking of still remaining green berries on the plant.

Some coffee is also grown in Satara and Ratnagiri districts of Maharashtra. In line with the national policy of tribal development, coffee cultivation is being encouraged in such non-traditional areas as Andhra Pradesh, Orissa, Maharashtra, the north-eastern states and Andaman and Nicobar Islands