TEA (*CAMELLIA SINENSIS* (L) O. Kuntze)

- **Protective Effects Of Tea On Human Health**

❖ Flavonoids, the most prominent of which is **catechins** and their derivative **polyphenols,** are the most abundant and most biologically active molecules that are responsible for most of the health-giving properties of tea.

❖ Tea contains **theanine,** (which is a unique amino acid in tea), **proteins, caffeine, vitamin C, carbohydrates, polysaccharides, and lipids.**

❖ Inappropriate diets and smoking generates high levels of reactive oxygen species, like peroxides in humans, which are the basic cause of heart disease. **Tea polyphenols** have strong scavenging properties for free oxygen radicals, thus **lowering the risk of heart ailment.**

Introduction

❖ **Tea** plant (*Camellia sinensis* (L) O. Kuntze) (family: **Theaceae**) was discovered by Chinese around 2700 BC in South-east Asia, in the high valley of the Brahmaputra, the Irrawaddy, the Salween and the Mekong rivers of the borders separating India, China and Burma.

❖ In its wild state, it forms an evergreen bush which on cultivation, is kept at a low level (**Tea Table).**

❖ Depending on weather the tea harvests (leaves) undergo **fermentation or not,** respectively, makes tea to be **black or green.**

Botany

❖ Tea was formerly named *Thea japonenense*. Later **Linnaeus** renamed it *Thea sinensis*. In 1959, the generic name was changed to *Camellia*. The plant is a diploid with 2n = 2x = 30. A number of triploids and tetraploids have been found or created by research efforts.

❖ There are 2 main varieties of tea – **the *sinensis*** (the China plant with **small leaves *C. sinensis* var. *sinensis***) and the ***assamica*** (the Assam plant with **large leaves *C. sinensis* var. *assamica***) varieties.

❖ The assam tea plant is a shrub which grows up to 15 m high with straight trunk.

❖ The China tea is also a shrub which grows up to 6 m high with several stems.

❖ Other minor varieties include **Cambodian tea,** of which the following varieties are being cultivated – ***Manipuri, Lushai*** and ***Betjan*** which are stable ecotypes.

Ecology Of Tea

- **Climate** and **soil characteristics** are the most important ecological factors for growing **Tea:**
- **CLIMATE:**
  - Generally, tea thrives within latitude 43^0 north and 27^0 south.
  - The plant performs at 1500 – 4000 mm of rainfall, with a dry season of not more than 3 months.
  - The ideal average annual temperature is between 18^0C and 20^0C.

- **Soil requirements:**
  - Generally, the best plantations of tea are found on deep soils with a good structure, well-drained with a well-developed humus-bearing layer and high mineral reserves.
  - The tea plant requires soils with pH of 4.5 – 5.5, if the pH is not up to 5.5, it is better.

Agronomy Of Tea

- **Generative** and **Vegetative.**
- **Tea Nursery:**
- The following principles should be noted when up setting up cuttings nursery of tea:
  - **Siting**
  - **Shading**
  - **Substrate**
  - **Containers**
  - **Preparation of tea Cuttings**
  - **Maintaining humidity levels**
  - **Preventive measures**
  - **Fertilizer application**
  - **Hardening-off**
  - **Pruning**
- **Guide towards successful establishment of Tea plantation:**
  - Sit selection
  - Layout
  - Bush clearing
  - Drainage
  - Anti-erosion measures
  - Eradication of self-propagation weeds

- Tilling

❖ **Management of Tea plantation:**

❖ **Planting out**

- **Planting density / spacing**

❖ **Temporary shading**

❖ **Mulching**

❖ **Windbreaks**

❖ **Bringing Tea into bearing / yield:**

- The main aim of bringing tea plant into bearing is to shape the plant into a permanent frame which is low, broad, heavily branched and capable of producing a large number of shoots (Tea Table), culminating in a high leaf yield.

❖ **Plucking:**

- This is the periodic harvesting. The pluckers are equipped with an apron or waterproof against damp conditions and rains.

❖ **Productivity pruning:**

- The period of the operation of productivity pruning varies from 2 – 6 years depending on climatic conditions and clonal materials planted.

❖ **Regenerative pruning:**

- Regenerative pruning is carried out at 0.35 m from the ground and **tipping** is done at an height of 0.60 m.

❖ **Skiffing (cutting into green wood):**

- The plant is slightly cut back in order to maintain a good yield.
- This type of cutting is rarely required.

❖ **Fertilizer requirements of tea:**

- Annually and for a yield of 1000 kg/ha of commercial-grade tea, the plant takes up an average of 40 – 50 kgN, 7 – 9 kgP and 20 – 25 kgK from the soil.

❖ **Weeding:**

- The young tea plant is very sensitive to weed competition. Regular weeding (manually or chemically) becomes compulsory.

Disease and Insect pests of Tea

❖ **Diseases:**

- Root rot (*Armillariella mellea, Rosellinia arcuata*). Common in forested land.

- Blister blight (*Exobasidium vexans*):

❖ **Insect pests:**

❖ The leaf insect pest of tea include:

- *Homona coffearia*
- *Urticating caterpillars*
- *Helopeltis spp.*
- *Aphids*

❖ The branch insects pest are:

- *Xyleborus fornicates,*
- *Zeuxera coffeae,*
- Termites (*Neotermes, Glytotermes, Coptotermes*)

Mites (*Oligonichus coffeae* or red spider)