

Part-II

Gossypium hirsutum L.

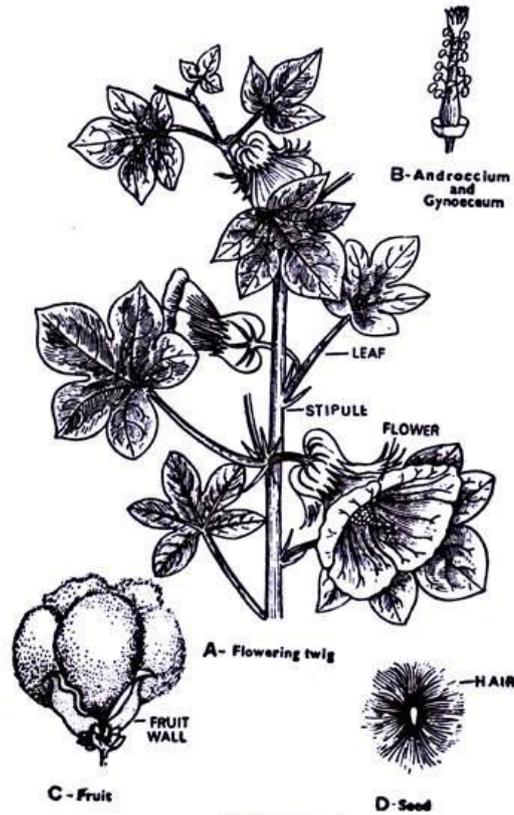
India ranks first in terms of cultivated area and ranks third in terms of cotton production in the world. In India major cotton producing states are Maharashtra, Gujrat, Andhra Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan, Tamil Nadu, Karnataka where Maharashtra is the major producer of cotton.

G. hirsutum also known as upland or Mexican cotton and is the widely planted cotton species and contribute for more than 90% of world cotton production.

Morphology:



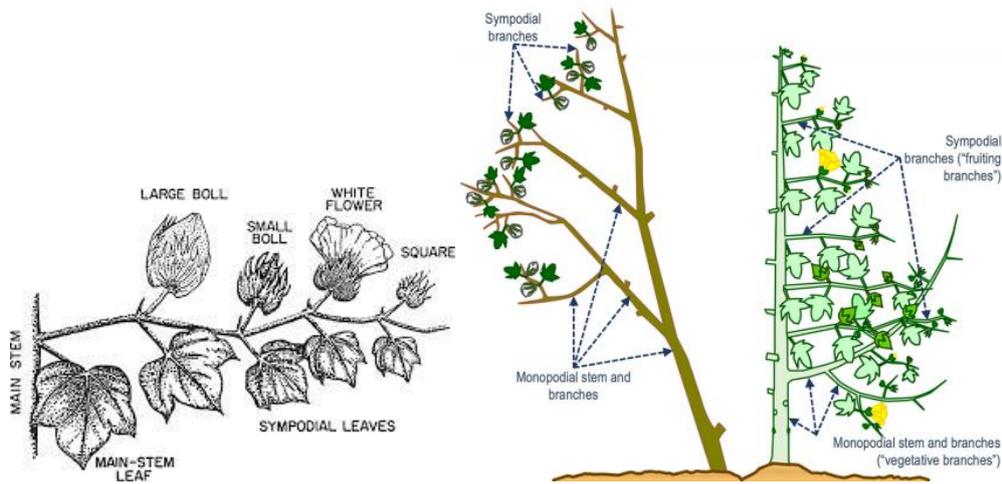
Flowering twig of *G. hirsutum*



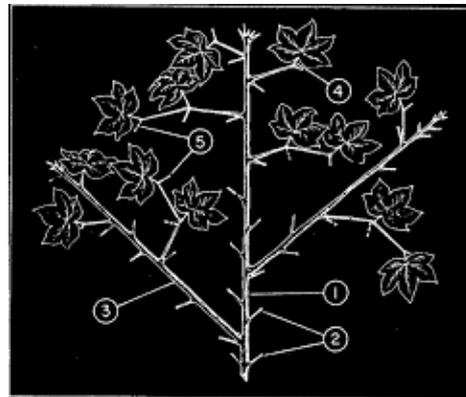
Parts of Gossypium spp.

Cotton plant is annual to perennial small shrub or tree with few vegetative branches. Main stem is monopodial in growth and bears spirally arranged branches and leaves.

Stem with Dimorphic branching – a. Vegetative branches are monopodial and developed from axillary buds of lower nodes b. Fruiting branches are sympodial and developed from extra-axillary buds of upper nodes. Vegetative branches are similar to main stem which do not bear flowers and give rise to sympodial fruiting branches which bears flowers at the tip. These sympodial branches forms a zig-zag pattern. Leaves are large, blade 4-10 cm, cordate, palmately lobed with three, five or seven lobes and covered with multicellular hairs.

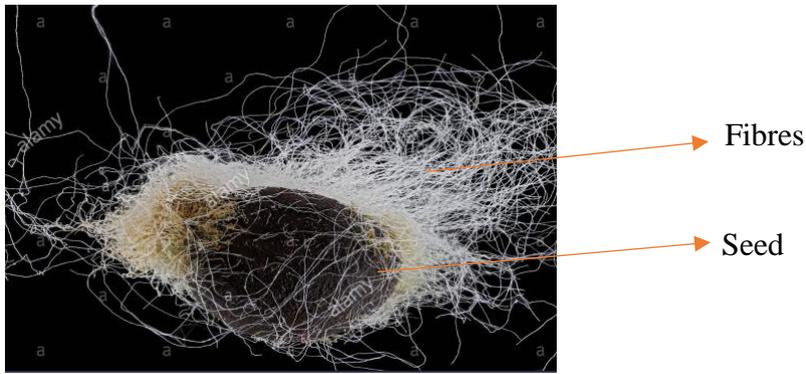


Branching pattern in Cotton

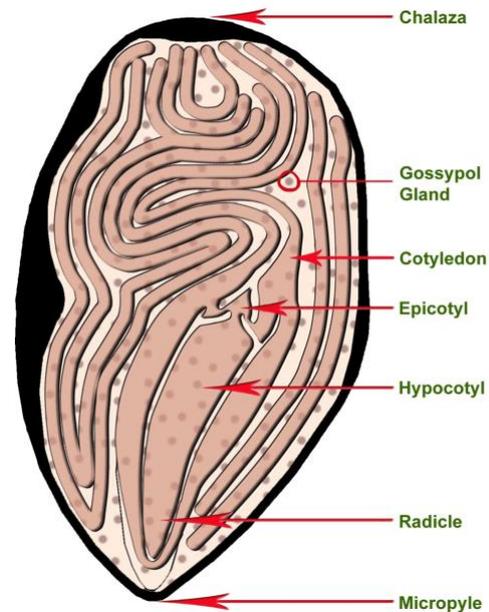


Portin of Cotton Plant showing branching pattern: 1. Main stem 2. Nodes for leaf 3. Monopodial Branching 4. Symmetrical Branching 5. Fruit Position

Flowers are large surrounded by involucre of leafy bract. Numerous stamen surrounding the style. Cotton fruit is 2 to 4 cm in size and known as **cotton boll**. Each boll is spherical leathery capsule consisting of three to five chambers (similar to the number of carpels) and known as locules. In each locule six to nine seeds are present. Each seed is of 8 to 10 mm. The surface of each seed is covered with hairs where long hairs are known as lint, floss or staple and short hairs are known as fuzz or linter. These hairs are fibres and are the epidermal prolongation of with the length from 25 to 60 mm and diameters varying between 12 and 45 μm .



Cotton Seed with fibres



L. S. of Cotton Seed

A mature cotton seed contains all of the organs necessary to produce a small seedling. The seed is pointed on one end (the micropyle) and rounded on the other (the chalaza). The tip of the primary root, or radicle, faces the micropyle, and the precursors of the stem and cotyledons are plainly visible within the seed.

The chalaza is the primary site of water and oxygen absorption during germination. The tip of the primary root, or radicle, is the first part of the plant to emerge through the micropyle. The cotyledons that will nourish the new seedling are folded inside the seed, with the hypocotyl below them ready to elongate and push the seedling through the soil. The gossypol glands visible throughout the inside of the seed are also visible in the tissues of the growing plant.