



(Gossypium herbaceum)

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SCIENTIFIC CLASSIFICATION:

Scientific name: *Gossypium herbacium* Family: Malvaceae Vernacular name: Kapas



INTRODUCTION:

- The cotton is the most oldest fibre of the world and is also known as KING OF FIBRES.
- The term cotton is derived from Arabic word **'qutun'.**
- Cotton is one of the most important commercial crops of the world and hence also known as WHITE GOLD.
- Cotton remains the backbone of indian rural <u>economy</u> especially in dry land areas.



ORIGIN:

- Cotton has been under cultivation since ancient times in two widely separated continents, South Asia and Central America.
- This plant is a shrub native to tropical and sub tropical regions around the world,including the Egypt and India along with America and Africa.
- The cotton was first cultivated as fabric in the Indus River Valley and Chinese,Egyptian and South American civilisations begin weaving cotton fabrics.



MORPHOLOGY:

- It is a scrub attaining a height of 1-1.5m.
- Cotton exhibits dimorphic branching,that is vegetative(monopodial) and fruiting(sympodial) branches.
- The main stem of the plant is monopodial in growth.
- The vegetative or main branch do not bear flowers directly, but give out secondary branches that are truely sympodial since a flower is borne at the tip .





Fig.on:- Branching habit of Gossypium

Leaf:

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- The leaves are spirally arranged on the main stem.
- The leaves are large, palmately lobed (three, five or seven lobed) and clothed with multicellular stellate hairs.

Inflorescence:

• The inflorescence is scorpioid cymose

Flower:

- The flowers are large and snowy. They are surrounded by an involucre of large,leafy bracts(epicalyx) that are generally persistent in many varieties of cultivated cottons
- Numerous stamens with a kidney shaped,onecelled(monothecous) anther are united by their filaments into astaminal tube surrounding the style.

Fruit:

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- The cotton fruit (boll) is a sperical or oval leathery capsule consisiting of 3-4 locules or chambers which correspond to the carpel number.
- The cotton boll or fruit are green, immature segmented pods containing approximately 32 immature seeds from which the the cotton fiber will grow.
- The content of each division is called a 'lock', within which 6-9 seed are present.
- The surface of each is covered with hairs;long hairs or linnt, floss or staple and short hairs or fuzz or linter.

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STAGES OF DEVELOPMENT:

The developmental phases for cotton can be divided into five main growth stages:

- 1. Germination and emergence
- 2. Seedling establishment
- 3. Leaf area and canopy development
- 4. Flowering and boll development
- 5. Maturation









TYPES OF COTTON:

Gossypium hirsutum (n=26) – upland cotton, native to Central America, Mexico, the Caribbean and southern Florida, (90% of world production)

- Gossypium barbadense (n=26) known as extralong staple cotton, native to tropical South America (8% of world production)
- *Gossypium arboreum* (*n*=13) tree cotton, native to India and Pakistan (less than 2%)
- *Gossypium herbaceum* (n=13) Levant cotton, native to southern Africa and the Arabian Peninsula (less than 2%)
- **Peruvian cotton** has fuzzy, almost wool like fibers.
- **Brazilian cotton** is a perennial cotton with long, silky fibers.



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TYPES OF COTTON:

- The two New World cotton species account for the vast majority of modern cotton production, but the two Old World species were widely used before the 1900s. While cotton fibers occur naturally in colors of white, brown, pink and green, fears of contaminating the genetics of white cotton have led many cotton-growing locations to ban the growing of colored cotton varieties, which remain a special product.
- *G. arboreum and G. herbaceum* are referred to as Old World Cotton, whereas *G. barbadense and G. hirsutum* are called New World Cotton.
- Asiatic cotton has fibers less than one inch (2.5 cm) long and rather coarse in texture. It is grown mostly in India, Iran, China, and Russia.

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CLIMATIC CONDITION:

- Cotton is essentially a tropical crop grown at altitudes ranging from sealevel to 900m.
- It requires a minimum frost free growing season for 200 days and a abundance of sunshine and a warm uniform temperature not below 21°C but it can withstand a temperature up to 43°C.
- The crop is quit susceptible to rain but an average rainfall about 100cm is required in the early stages of growth and relatively dried season while flowering and no rainfall durng ripening or picking as it causes the fiber to become mouldy and discoloured.

{Except the Tanguis cotton of peru, commercial cotton are always raised from seeds. Perennial Tanguis cotton is cut back and ratooned.}



HARVESTING:

- Harvesting begains about six months after sowing and is the most expensive operation of cotton cultivation.
- In many parts of the world ,cotton is hand-picked as cheap labour is easily available and is continued over a period of two months or more because all the fruits do not ripen at a same time .
- Cotton is picked as soon as the boll opens since if left in the field for a longer period it may fall out or be damaged by rain.
- Mechanical harvesters, all working on the principle of suction ,have been designed to pick cotton but hand picking produces considerably clean cotton.

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PRODUCTIVITY:

Area(M ha)	Production(M.t)	Productivity(t/ha)
35	23	650
8.87	23.2	444
Maharashtra (2.89)	Gujarat (8.9)	Gujarat (729)
Gujarat (2.08)	Maharashtra (3.6)	TN (688)
AP (1.04)	AP (3.2)	Punjab (641)
	Area(M ha) 35 8.87 Maharashtra (2.89) Gujarat (2.08) AP (1.04)	Area(M ha)Production(M.t)352335238.8723.2Maharashtra (2.89)Gujarat (8.9)Gujarat (2.08)Maharashtra (3.6)AP (1.04)AP (3.2)



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PROCESSING:

Before the raw cotton is spun into a yarn and woven into cloths, it must pass through a number of processes as following:

• GINNING:

Ginning is a process in which the cotton fibres are separated from the cotton seeds or lint. It also helps in removing impurities like dust, small stones, wooden particles etc. -First of all, the cotton having seeds in their balls is plucked from the field. Then it is made to pass through the gin.

• BALING:

The baling process involves depositing loads of soft or moderately hard trash into a baler machine. The interior press then forces the trash into a compact, standardsized block, which is then tied or strapped into shape.

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PROCESSING:

• PICKING:

Baled cotton is at first broken and then the fibers are passed through a 'scutcher' where they are beaten, shaken and rolled to remove all the foreign matter. The strands are then separated and delivered in a uniform layer. At the last picking machine, the cotton is condensed into a form of sheet known as 'lap'.

• CARDENING:

carding, in textile production, a process of separating individual fibres, using a series of dividing and redividing steps, that causes many of the fibres to lie parallel to one another while also removing most of the remaining impurities.



PROCESSING:

• COMBING AND DRAWING OR DRAFTING:

Cotton is combed when it is to be used for quality fabric with high thread counts. In general, combing is done to filter or sieve out any short length fibres.

Drawing, also called Drafting, in yarn manufacture, process of attenuating the loose assemblage of fibres called sliver (q.v.) by passing it through a series of rollers, thus straightening the individual fibres and making them more parallel. Each pair of rollers spins faster than the previous one.



ECONOMIC IMPORTANCE:

- The cotton is grown as a cash crop in over 70 countries.
- The fibers from the seeds are used for:
 - Insulation/Soundproofing
 - Medical and cosmetic supplies
 - -Fibers in car tires
- Cotton waste from textile production is used to improve feed for livestock- it adds fiber content.
- The average production for largescale producers is 1,700kg/ha of cotton lint (India 60 million people gain income from the cotton textile sector).



ECONOMIC IMPORTANCE:

- The oil from the seeds is used for:
 - cooking
 - vegetable oil
 - soap making
 - -seedcakes







ECONOMIC IMPORTANCE:











WOUND DRESSING TRAUMA NURSING

FIXED DRESSING FIXED JOINT





MEAL

Animal feed

EDIBLE OIL

Oil and fat for food products

LINTERS

Furniture Cellophane Photographic film Battery boxes Paper Currency Cosmetics Nanocellulose applications Bandage, cotton buds Cotton balls

| WASTE

HULL Fuel Packaging Fertilizer Animal feed



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