

Species of Cotton of Economic Importance :-

Cotton (*Gossypium* spp.) belongs to the family Malvaceae, the mallow family. There are about 50 species in genus *Gossypium*, but only four species are grown for their economic importance as fiber plants. It is considered an annual plant but it grows as a perennial in tropical areas where the average temperature for the coldest months stays above 18°C. A brief detail of these cultivated species is as under:

There are four cultivated species of cotton viz. *G. arboreum*, *G. herbaceum*, *G. hirsutum* and *G. barbadense*. The first two species are diploid ($2n=26$) and the native to old world. They are also known as Asiatic cotton because they are grown in ~~in~~ Asia. The last two species are tetraploid ($2n=52$) and are also referred to as New World cottons.

1- *Gossypium hirsutum*

G. hirsutum is the principle cultivated cotton and accounts for about 90% of the world cotton production. (It is grown in America, Africa, Asia and Australia). About 99% of all US cotton is of this type, which is also classified as upland cotton. The varieties of this species produce fiber of variable length and fineness. The plant can attain a height of 2 m. At present it is the predominant species grown in the world. The varieties of *G. hirsutum* have relatively high productivity and wide adaptability (Niles and Feaster, 1984).

The staple length of upland cotton is ~~approx~~ ranging from 24-30 mm.
 & Fineness ~~38~~ 38-55 g/tx. (mg/inch)

(2)

G. hirsutum is cultivated in more than 80 countries of the world. The major producers of this species are USA, China, India, Pakistan, Uzbekistan, Argentina, Australia, Greece, Brazil, Mexico, Turkey etc. The varieties of this species are cultivated under both irrigated and rainfed ~~areas~~ conditions.

In Pakistan, the varieties of ^{this spp.} are ^{mostly} grown in Punjab and Sind. Punjab contributes about 80% of the total national production. This species is grown at 90% or more of total cotton cultivated area in Pakistan. The textile industry in Pakistan is totally depends on this species. The seed fibers of this species are white tan, or red brown.

2. Gossypium barbadense L.

This is a new world tetraploid species ($2n=52$) is predominantly grown in Egypt, and therefore it is generally known as Egyptian Cotton. G. barbadense is also known as Sea Island Cotton and Peruvian Cotton.

The Egyptian varieties have usually extra long, fine and strong fibers ^(s.l. 33-36 mm) and very high spinning potential (upto 120), and therefore are used for production of fine and super fine fibers. However Egyptian cotton are more susceptible to both biotic & abiotic stresses, than widely adapted upland cottons.

The major producer of this species are Egypt, Sudan, Uzbekistan, Kazakhstan, Azerbaijan, Tadzhikistan, Peru, and USA. It is also grown in small areas in China, India and Pakistan. G. barbadense accounts for about 8% of the world cotton production.

This species is shrubs 1 to 3 meter tall, the stems have several branches. The fibers usually white. High oil contents (above 25%) and high biomass. Extra long fibre

3- Gossypium arboreum ($2n=26$)

This species is commercially cultivated. It is also called as Old World cotton or Desi Cotton. This species is grown in tropical and subtropical regions of Asia, it is also known as Asiatic cotton.

G. arboreum is native to India which is cultivated here from time immemorial. Arboreum cottons are usually coarse and short fibers ($12-18\text{mm}$) and low yielders, but have high degree of resistance to diseases. Some varieties have coarse and short fibers but high moisture absorbency. The varieties of this species are known as easy care cottons. The fibers made from such cottons are easily washable. It is nectariless spp.

The production of G. arboreum is limited almost extensively to South-East Asia, primarily on dry and unproductive areas of India, Pakistan, Bangladesh, Sri Lanka, Burma, China, Vietnam etc. which are not suited for G. hirsutum & G. barbadense. In Pakistan it is grown for local use only. Shrub or subshrub upto 2 meter tall. Seeds bearing usually white or Tan fibers. Red plant body.

4- Gossypium herbaceum L. ($2n=26$)

G. herbaceum L. is an old world diploid cotton which is grown in Asia (India & Pakistan) from time immemorial. G. herbaceum is also known as "Levant cotton". This species has wide adaptability and high degree of resistance to biotic (insects and diseases) and abiotic (drought & wind storms) stresses. These cottons have deep root system which helps in with standing drought conditions & also have storm proof boll characters.

These cottons have low yield potential, ⁽⁴⁾ small bolls, tall and bushy plants, late maturity duration, and contribute to the production of short and medium staple group. Plant type is shrub or subshrub upto 1.5 m. tall.

Seeds bearing usually white fibers.

G. arboreum and G. herbaceum (both species) account for about 2% of the total cotton production.

The staple length of both desi cottons is ranging from 12-18 mm.

Taxonomy: Cotton Plant

- 1- Kingdom: Plantae
- 2- Division: Magnoliophyta
- 3- Class: Mangoliopsid
- 4- Order: Malvales
- 5- Family: Malvaceae
- 6- Genus: Gossypium

(50 spp) 7- Species:

cultivated species:	[hirsutum] New world
		barbadense	
	[arboreum] old world
		herbaceum	

Classification of Genus *Gossypium*:-

Primary Distribution	Subgenus	Example of Species
Australia	Sturtia	<i>G. sturtianum</i> ✓ <i>G. costulatum</i> <i>G. australe</i> ✓
America	Hauzingenia	<i>G. thurberi</i> ✓ <i>G. davidsonii</i> <i>G. harlanessii</i> <i>G. aridum</i> <i>G. radmondii</i> ✓ <i>G. gossypicoides</i>
Africa	<i>Gossypium</i>	Asiatic diploids <i>G. anomalum</i> ✓ <i>G. arboreum</i> <i>G. stockssii</i> <i>G. herbaceum</i> <i>G. longicalyx</i>
New World	Karpas	All tetraploid spp. including New World cultivars. <i>G. barbadense</i> <i>G. darwinii</i> <i>G. hirsutum</i> <i>G. tomentosum</i> <i>G. mustelinum</i>

Classification of genus *Gossypium* belonging to family Malvaceae and tribe Gossypieae. The dicotyledonous genus comprises approximately 50 species of which 45 are diploid and five are tetraploid (Fryxell 1992). The diploid species consist of eight ~~cytological~~ cytological groups/genomes. The remaining five tetraploid species are United version of Old World A and New World D genome in A genome cytoplasm.

plants for growth habit, measuring productivity, boll size or fibre strength, evaluating for resistance to various pest and diseases.

When desirable germplasm has been located, the cotton breeder then wishes to transfer the desirable traits from the germplasm. can also be used to produce new kind of
Germplasm resources germplasm

Classification of Cotton:

- 1- Kingdom : Plantae (Plants)
- 2- Sub-kingdom : Tracheobionta (Vascular plants)
- 3- Super division : Spermatophyta (Seed plant)
- 4- Division : Magnoliophyta (Flowering)
- 5- Class : Magnoliopsida (Dicotyledons)
- 6- Sub-class : Dilleniidae
- 7- Order : Malvales
- 8- Family : Malvaceae Sub-family: Malvoideae
- 9- Genus : *Gossypium*
- 10 Sub-genus : *Strutia* (Australia), *Houzingnia* (America)
Gossypium (Africa) & *Peruvianum* (New World)
- 11- Species : *G. hirsutum* L.