Cotton is the most important fibre crop not only of India but of the whole world. It gives the basic raw material (cotton fibre) to cotton textile industry. Its seed (binola) is used in vanaspati industry and can also be utilized as part of fodder for milch cattle to get better milk.

Conditions of Growth

Cotton is the crop of tropical and sub-tropical areas and needs evenly high temperature changing between 21°C and 30°C. The growth of cotton is detained when the temperature falls less than 20°C. Ice is enemy number one of the cotton plant and it is grown in areas having at least 210 ice free days in a year.

The modest necessity of water can be met by an average annual rainfall of 50- 100 cm. However, it is prosperously grown in areas of lesser rainfall with the help of irrigation. About one-third of the total area under cotton cultivation is irrigated. In the year 1988-89 an area of 24.77 lakh hectares out of a total of 73.43 lakh hectares i.e. 33.73 per cent of the total area under cotton was irrigated.

About 80 per cent of the total irrigated area under cotton falls in Punjab, Haryana, Gujarat and Rajasthan. Moist weather and heavy rainfall at the time of boll-opening and picking are destructive to cotton as the plant becomes unsafe to pests and diseases. High amount of rainfall in the starting and sunny and dry weather at ripening time are very essential for a good crop.

Cotton is a kharif crop which needs 6 to 8 months to grow. Its time of sowing and harvesting varies in different parts of the country depending upon the climatic conditions. In Punjab and Haryana it is sown in April-May and is harvested in December-January that is before the winter frost can harm the crop.

In the peninsular part of India, it is sown upto October and harvested between January and May because there is no risk of winter frost in these areas. In Tamil Nadu, it is grown both as a kharif and as a rabi crop.

Here the rainfall occurs after September and cotton is sown in October. The irrigated crop is sown in January-February. Most of the crop is grown combined with other kharif crops such as maize, jowar, ragi, sesamum, castor, groundnut and some vegetables.

Cotton cultivation is intimately connected to deep black soils (regur) of the Deccan and the Malwa Plateaus and those of Gujarat. It also grows well in alluvial soils of the Satluj-Ganga Plain and red and laterite soils of the peninsular regions. Cotton rapidly consumes the fertility of soil. Thus, constant application of manures and fertilizers to the soils is very essential.

Picking is a important period from the labour point of view. Since picking of cotton is not still mechanized, a lot of cheap and efficient labour is needed at this time. Normally the picking season is expand over a time period of about three months.

Types of Cotton

Three main types of cotton are generally recognised on the basis of the length, strength and structure of its fibre.

1. Long staple cotton:

It has the longest fibre whose length changes from 24 to 27 mm. The fibre is long, fine and shining. It is used for making fine and superior quality cloth. Noticeably, it earns the best price. There has been quick progress in the production of long staple cotton since Independence. About half of the total cotton produced in India is a long staple. It is mostly grown in Punjab, Haryana, Maharashtra, Tamil Nadu, Madhya Pradesh, Gujarat and Andhra Pradesh.

2. Medium staple cotton:

The length of its fibre is between 20 mm and 24 mm. About 44 per cent of the total cotton production in India is of medium staple. Rajasthan, Punjab, Tamil Nadu, Madhya Pradesh, Uttar Pradesh, Karnataka and Maharashtra are its major producers.

3. Short staple cotton:

This is inferior cotton with fibre less than 20 mm long. It is used for producing inferior cloth and earns less price. About 6 per cent of the total production is of short staple cotton. U.P., Andhra Pradesh, Rajasthan, Haryana and Punjab are its major producers.

Production of Cotton:

India has the largest area under cotton cultivation in the world though she is the world's third largest producer of cotton after China and the USA. At present it is grown over 6 per cent of the net sown area.

Table 24.14 Production, Area and Yield of Cotton in India:

Year	**1950-51**	**1960-61**	**1970-71**	**1980-81**	**1990-91**	**1997-98**	**1998-99**	**1999-2000**	**2000-01**	**2001-02**	**2002-03**	**2003-04**
	ADVERTISEMENTS:		ADVERTISEMENTS:		ADVERTISEMENTS:			ADVERTISEMENTS:			ADVERTISEMENTS:	
Production (Million bales)	3.0	5.6	4.8	7.0	9.8	10.59	12.83	11.5	9.50	10.80	8.7	13.8
Area (Million hectares)	5.8	7.6	7.6	7.8	7.4	8.9	9.3	8.7	8.5	9.1	7.7	7.6
Yield (kg/he	88	125	106	152	225	208	224	225	190	186	193	307

ctare)

It is obvious from the table that there has been practically no expansion in area under cotton except in the years between 1950-51 and 1960-61 when it raised from 5.8 million hectares in 1950-51 to 7.6 million hectares in 1960-61. Some growth in area under cotton cultivation was noted in 1990s and it extended the maximum of 9.3 million hectares in 1998-99.

A consistent decrease in area under cotton cultivation has been noted from 9.1 million hectares in 2001-02 to 7.6 million hectares in 2003-04. Anyhow, there have been four and a half-fold growth in production and three and a half-fold growth in yield between 1950-51 and 2003-04. This obviously represents the success in efforts to expand production and productivity without any addition to area under cotton cultivation.

This has been made possible beacuse of large scale commercial cultivation of high yielding hybrid varieties in long and extra long staples. Despite the three fold growth in the yield; our yield of 307 kg/hectare is simply half of the world average and far less the yield of 731 kg/hectare in the USA, 756 kg/hectare in Pakistan and 816 kg/hectare in Egypt.

Almost 65 per cent of the area under cotton is rainfed with erratic and poorly distributed rains during the cropping season. It is threatened to severe attack of pests and diseases.

In spite of the increase in production, cotton for quite some time is meeting a plateau in productivity which has to be broken.

Cotton Production Process in India

These are the cotton production process in India.

Planting

The first step of cotton production is to prepare the land for planting by making furrows in the soil. The best season for cotton planting is early February and late June. By using the help of direct water irrigation and furrows, the soil warms very fast. When the soil temperature reaches 65 degrees, the soil is ready for planting. Farmers will plant the seed in the soil.

This process is a crucial and difficult step for cotton farming. But with the proper precaution and advanced farm machine, it becomes effortless. For planting and soil preparation farmers should use heavy farm tools like a harrow, cultivator, land leveler, etc., with tractors. Soil preparation enhances the quality of soil for good production.

Growing

In the second step, we see the growth of plants. The seed sprouts up from the soil after 1-2 weeks of planting. The plant blooms and grows 2-5 feet tall after 8-10 weeks. The flower pollinates itself and alters from a creamy white color to pinkish-red within three days. After this process the flower withers and falls off, leaving behind the growing boll. At about 10 weeks the cotton boll develops.

Boll Opening

In the third step, the cotton bolls open so that the dry white bolls can evaporate, can clean the fiber, and fluff it up. With this process, the cotton crops are ready to be picked. The cotton bolls open after the 50-70 days of bloom.

Picking

This step needs the farm machine which separates the fiber from the plant. The cotton picker or cotton harvesting farm machine used to harvest the cotton, the process called picking. The machine can harvest up to 6-8 rows at a time. The best season of cotton harvesting is early July or late October.

Modules

In the step, the picker's cotton dumped on the ground and compressed with a hydraulic module builder to make a module. The modules are left in the field for storage.

Ginning

In this process, the modules transported to the cotton gain, where the cotton dried, cleaned, and the fiber mechanically separated from the cotton. The gin is a machine made with circular saws which separate the raw fiber through ribs. The ribs are used to avoid the seed from passing. The machine carefully separates the fiber from cottonseed.

Cottonseed

After the separation of cottonseed, it is capable for making cotton oil, cotton meal, hulls, and other important things.

Cotton Fiber

In this process, the raw fiber, called lint, is pressed into bales. Cotton fiber makes clothes, textiles, and many more. The bales are packed with eight steel straps, tested by experts, wrapped with full protection, and exported to the yards, mills, and other countries.

Benefits of Cotton Production

1. Cotton is much beneficial for cloths, bedsheets, curtains, and jackets.
2. The seed oil of cotton is good for food and cosmetics.
3. It is profitable for coffee filters, oil, plastics, and rubber.

Distribution of Cotton:

India has the sole distinction of growing all the four cultivated species of cotton and their intra- and inter-specific hybrids. In India, cotton is grown in three distinct agro-ecological zones, viz., Northern (Punjab, Haryana and Rajasthan), Central (Gujarat, Maharashtra and Madhya Pradesh) and Southern zone (Andhra Pradesh, Tamil Nadu and Karnataka).

1. Maharashtra:

Maharashtra is the biggest producer and produces 29.78 per cent of the total cotton production of India. Maharashtra is a traditional producer of cotton. The lava soil of deccan plateau is world famous for cotton production and is popularly called as the black cotton soil. Over 80 per cent of the production comes from Khandesh, Vidarbha and Marathwada regions consisting the districts of Yavatmal, Nanded, Amravati, Parbhani, Wardha, Jalgaon, Akola, Buldhana, Nagpur, Dhule, etc.

2. Gujarat:

Accounting for 19.33 per cent of the total production and 21.33 per cent of the cotton area of the country, Gujarat is the second biggest cotton producing state of India. The average yield is 1.8 quintals/hectare which is almost similar as the national average. With 'black cotton soil' 1.5 metre deep in some parts and with 80-100 cm yearly rainfall Gujarat offers favourable conditions for cotton cultivation.

Two-thirds of the production comes from the Gujarat plains including Bharuch, Surendemagar, Vadodra and Ahmedabad districts. Mahesana, Kheda, Sabarkantha, Surat, Amreli and Panchmahals are other main producers.

3. Andhra Pradesh:

Andhra Pradesh results for 12.46 per cent of production and 10.47 per cent of hectarage of India. Two-thirds of the production of Andhra Pradesh comes from two districts, namely Guntur and Prakasam. Adilabad, Kumool and Anantapur provide the remaining.

4. Punjab:

Punjab has come down from first position in 1990-91 to fourth position in 2002-03 as a producer of cotton in India. This state has the significance of giving highest yield of 4.1 quintals/hectare (2002-03) which is more than double the national average. This is because of high yields only that Punjab is capable of producing 12.42 per cent of total cotton of India from just 5.86 per cent land under cotton.

Punjab has also the distinction of producing some of the best qualities of cotton in India. All this has been made possible due to fertile alluvial soils, a close network of irrigation facilities, heavy dose of fertilizers and pesticides and above all the enterprising spirit of the farmers.

Seeds of BT cotton, which were found in few parts of the state, are showing good outcome. This variety of seeds has the advantage over other hybrid seeds as it requires minimal use of pesticides. It needs just three to five applications while other varieties had to be applied around 15-20 times—resulting in savings of around Rs. 2,500-3,000 per acre. Punjab produced 10.83 lakh bales (each bale of 170 kg).

Most of the cotton production comes from the Malwa region of the state. This region provides nearly 95 per cent of Punjab's cotton. Cotton is known as "white gold" in this region. Bhatinda, Faridkot, Firozepur and Sangrur are the main producing districts and result for over three fourths of Punjab's total production of cotton. Ludhiana, Muktsar, Moga, Mansa and Fatehgarh Sahib are other cotton producing districts.

5. Haryana:

Accounting for 11.91 per cent production and 6.77 per cent of hectarage, Haryana is the fifth largest producer of cotton in India. In the year 2002-03, Haryana produced 11.38 lakh bales. The state has the second highest yield of 3.4 quintals/hectare in the country next only to that of the nearby state Punjab.

About 80 per cent of the production arrives from Hissar, Sirsa and Fatehabad districts which are near to the main cotton producing districts of Punjab. Like Punjab, most of the production is from the American long staple varieties. Bhiwani, Jind and Rohtak and Ambala are other producing districts.

6. Madhya Pradesh:

This state experiences low products (only 1.2 quintals/hectare). More than 80 per cent of the yield comes from Malwa where there are large tracts of lava soil. East Nimar, West Nimar, Ujjain, Shajapur, Dewas, Dhar, Ratlam, Rajgarh, Indore, and Bhopal are the major producers.

7. Karnataka:

This state gives 4.22 per cent cotton of India from 5.13 per cent of India's area under cotton cultivation. The North Karnataka plateau is the major area of cotton cultivation. Dharwad, Raichur, Bellary and Gulbarga are the major producing districts.

8. Rajasthan:

Rajasthan accounts for almost 2.9 per cent of the production and 5 per cent of the area of the country. The state has the lowest production of only 1.1 quintals/hectare. Ganganagar is the most significant cotton producing district of Rajasthan and accounts for over 80 per cent of the state's yield.

This district is neighbouring to the cotton producing areas of Punjab and Haryana and enjoys the same advantages. The rest of cotton of Rajasthan comes from Bhilwara, Ajmer, Chittaurgarh, Jhalawar, Pali and Hanumangarh.

9. Tamil Nadu:

Tamil Nadu provides about 1.55 per cent of the total production with about 1.11 per cent of the total area of the country. Coimbatore, Salem, Madurai, Tiruchirapalli, Ramnathapuram, South Arcot, Vallalur, Chengalpattu and Tirunelveli K. Bomman are the major producing districts.

Uttar Pradesh, Kerala, Orissa, Meghalaya and Mizoram also produce cotton in lesser quantities.

Trade:

India is an exporter and importer of cotton. India exports inferior quality cotton majorly to U.K., where it is combined with superior quality cotton. India has been a large importer of superior quality long staple cotton majorly from the USA, Russia, UAR, Sudan and Kenya.

With the rise in domestic production of superior quality cotton, our imports have fall down considerably, accounting in saving of the foreign exchange. India has attained near self-sufficiency in the production of superior quality cotton. India exported 179.6 thousand tonnes of raw cotton worth Rs. 992 crore whereas the imports were 8.09 lakh tonnes worth Rs. 1,570 crore in 2003-04.

Taking into consideration the major provisions of World Trade Organisation (WTO) vis-a-vis India's position, the points that come up to be of immediate concern in improving the productivity and quality of Indian cotton and making it competitive world wide are: (i) bringing down the cost of cultivation and improving its productivity and quality, (ii) offering our cotton internationally attractive, (iii) keeping Indian cotton free of waste content.

India is the top agricultural country that yields the largest cotton crop producing country in the world. Here, we are showing the largest Kapas production countries in the World with ranking and production (1000 480 lb. Bales). With 28500 (1000 480 lb. Bales) India is the largest cotton producing country in India. India covers 125.84 lakh hectare area for cotton production.

Following are the leading cotton producers in the world.

- India – 28,500
- China – 26,500
- United States – 19,500
- Brazil – 12,000
- Pakistan – 6,300
- Turkey – 3,300
- Uzbekistan – 3,250
- Australia – 1,700
- Greece – 1,640
- Benin – 1450

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