



AGRICULTURE IN INDIA

In the previous lessons, we have studied physiography, climate and natural vegetation in India. Now, we will study about agriculture which is the backbone of Indian economy. In India around 70% of the population earns its livelihood from agriculture. It still provides livelihood to the people in our country. It fulfills the basic need of human beings and animals. It is an important source of raw material for many agro-based industries. India's geographical condition is unique for agriculture because it provides many favourable conditions. There are plain areas, fertile soil, long growing season and wide variation in climatic condition etc. Apart from unique geographical conditions, India has been consistently making innovative efforts by using science and technology to increase production.

In this lesson we will discuss about various types of farming, cropping patterns and establish their relationship with various geographical factors. We will also discuss some of the major issues and challenges faced by Indian Agriculture in this lesson.



OBJECTIVES

After studying this lesson you will be able to:

- explain various types of farming in India;
- describe salient features of Indian agriculture;
- list the major crops grown in India along with their utility;
- establish relationship of crops with the types of soil and climatic conditions;
- locate major crop producing areas on the outline map of India, and
- analyse challenges faced by farmers in Indian agriculture.

12.1 TYPES OF FARMING IN INDIA

You know that India has diversified topography. You have already learnt about it in the lesson on physiography of India. The country has Himalayan mountain ranges



extending from Jammu and Kashmir in the west to Arunachal Pradesh in the North-East. They have hill ranges in the form of Eastern Ghats and Western Ghats. Do you know India has one of the largest plain areas of the world in the form of Indo-Ganga plain? Central part of India is dominated by plateau area. Apart from variation in landform, the country has varieties of climatic conditions, and soil types. These physical variations along with other factors like availability of irrigation, use of machinery, modern agricultural inputs like High Yielding Varieties (HYV) of seeds, insecticides and pesticides have played their respective roles in the evolution of different farming practices in India. Some of the major types of farming are discussed below.

- 1. Subsistence and commercial farming:** Majority of farmers in India practise subsistence farming. This means farming for own consumption. In other words, the entire production is largely consumed by the farmers and their family and they do not have any surplus to sell in the market. In this type of farming, landholdings are small and fragmented. Cultivation techniques are primitive and simple. In other words there is a total absence of modern equipments like tractors and farm inputs like chemical fertilizers, insecticides and pesticides. In this farming, farmers mostly cultivate cereals along with oil seeds, pulses, vegetables and sugarcane. **Commercial farming** is just the opposite to subsistence farming. In this case, most of the produce is sold in the market for earning money. In this system, farmers use inputs like irrigation, chemical fertilizers, insecticides, pesticides and High Yielding Varieties of seeds etc. Some of the major commercial crops grown in different parts of India are cotton, jute, sugarcane, groundnut etc. Rice farming in Harayana is mainly for commercial purpose as people of this area are predominantly wheat eaters. However in East and North-Eastern states of India, rice cultivation would be largely of subsistence type.
- 2. Intensive and Extensive Farming:** The basic difference between these two types of farming is the amount of production per unit of land. In comparison with temperate areas of USA, Canada, and former USSR, India does not practise extensive cultivation. When we use large patch of land for cultivation then we call it extensive farming. Here, total production may be high due to larger area but per unit are production is low. **Intensive Farming** records high production per unit of land. Best example of intensive cultivation is in Japan where availability of land for cultivation is very limited. Similar kind of situation can be observed in the state of Kerala in India.
- 3. Plantation Farming:** It is an estate where a single cash crop is grown for sale. This type of agriculture involves growing and processing of a single cash crop purely meant for sale. Tea, coffee, rubber, banana and spices are all examples of plantation crops. Most of these crops were introduced in India by the Britishers in the 19th Century.

4. **Mixed Farming:** It is a situation in which both raising crops and rearing animals are carried on simultaneously. Here farmers engaged in mixed farming are economically better off than others.

All classifications are based on nature and purpose of farming. It may overlap. For example: Banana is a plantation type of farming. It can also be classified as commercial farming.



Do you know

Green Revolution: It stands for a major technological breakthrough in India based on (i) improved seeds of high yielding varieties, (ii) adequate and assured supply of water for irrigation, and (iii) increased and appropriate application of chemical fertilizers for increasing agricultural production.

White Revolution: It stands for remarkable increase in milk production and establishment of a national milk grid, removing regional and seasonal imbalances. Among the technological inputs are (i) crossbreeding of indigenous cows with high milk yielding European breed; (ii) pasteurization of milk for keeping it for a longer duration; (iii) collection of quality milk from members in rural areas; and (iv) refrigerated transport system which helps sending milk to far off metropolitan centres both by road and rail.

Blue Revolution: It refers to big rise in catching of fresh water and marine fish.

Yellow Revolution: It refers to remarkably steady and assured supply of poultry products.

Pink Revolution: It refers to a considerable rise in the production of quantity of apples particularly in the states of Himachal Pradesh and J&K.



ACTIVITY 12.1

Conduct a survey within 1 km radius of your residence and find out which types of crops are grown in that specific area. Record your findings in the table given below and give reasons for the same.

Name of the crop	State	Type of farming	Reasons
Hint: Apple	HP	Commercial	Suitable climatic conditions, grown in large quantities for high demand in the market

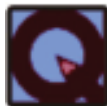


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12.2 SALIENT FEATURES OF INDIAN AGRICULTURE

- (a) **Subsistence Agriculture:** As mentioned earlier, most parts of India have subsistence agriculture. This type of agriculture has been practised in India for several hundreds of years and still prevails in a larger part of India in spite of the large scale change in agricultural practices after independence.
- (b) **Pressure of population on Agriculture:** Despite increase in urbanization and industrialization, about 70% of population is still directly or indirectly dependent on agriculture.
- (c) **Mechanization of farming:** Green Revolution took place in India in the late sixties and early seventies. After more than forty years of Green Revolution and revolution in agricultural machinery and equipments, complete mechanization is still a distant dream
- (d) **Dependence upon monsoon:** Since independence, there has been a rapid expansion of irrigation infrastructure. Despite the large scale expansion, only about one third of total cropped area is irrigated today. As a consequence, two third of cropped areas is still dependent upon monsoon. As you know, monsoon in India is uncertain and unreliable. This has become even more unreliable due to change in climate.
- (e) **Variety of crops:** Can you guess why India has a variety of crops? As mentioned in the beginning of the lesson, India has diversity of topography, climate and soil. Since India has both tropical and temperate climate, crops of both the climate are found in India. There are very few countries in the world that have variety comparable to that of India. You would realize that when we would discuss the different type of crops in detail. Look at the table No.1 to get an idea.
- (f) **Predominance of food crops:** Since Indian agriculture has to feed a large population, production of food crops is the first priority of the farmers almost everywhere in the country. However, in recent years, there has been a decline in the share of land used for food crops due to various other commercially most advantageous uses of these land.
- (g) **Seasonal patterns:** India has three distinct agricultural/cropping seasons. You might have heard about *kharif*, *rabi* and *zaid*. In India there are specific crops grown in these three seasons. For example rice is a *kharif* crop whereas wheat is a *rabi* crop.



INTEXT QUESTIONS 12.1

1. Differentiate between intensive and extensive farming by giving two points of difference each.

2. Based on the salient features studied above, identify the one applicable in your area. (example : The farming is largely mechanized in Harayana and well irrigated. So that there is less dependance on monsoon.)

12.3 MAJOR CROPS OF INDIA

India grows almost each and every crop. Can you think why? If we consider the varieties of crop grown from Kashmir to Kanyakumari and western coast of Gujarat to extreme north eastern states of Arunachal Pradesh, there would be hundreds of crops. We group all these crops into four broad types. Let us discuss the main crops under each type in detail:

Table 12.1

Sl. No	Types of Crops	Meaning	Major Crops
1.	Food grains	Crops that are used for human consumption	Rice, Wheat, Maize, Millets, Pulses and Oil seeds
2.	Commercial Crops	Crops which are grown for sale either in raw form or in semi-processed form	Cotton, Jute, Sugarcane, Tobacco and Oilseeds
3.	Plantation Crops	Crops which are grown on Plantations covering large estates	Tea, Coffee, Coconut and Rubber
4.	Horticulture	Sections of agriculture in which Fruits and Vegetables are grown	Fruits and Vegetables

1. Food grains

- (i) **Rice:** Rice is the most important food crop of India. It is predominantly a **Kharif** or summer crop. It covers about one third of total cultivated area of the country and provides food to more than half of the Indian population. Maximum population of India is of rice consumers. Do you know what types of geographical conditions are required for rice cultivation? If you look at rice grown areas of India, you should find that this is the only crop in India which is grown in varied conditions as illustrated below..

Some of the **geographical conditions** are as follows:

- (a) **Temperature:** Rice requires hot and humid conditions. The temperature should be fairly high i.e. 24°C mean monthly temperature with average temperature of 22°C to 32°C.



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- (b) **Rainfall:** Rainfall ranging between 150-300 cm is suitable for its growth in areas of Punjab, Haryana and Western Uttar Pradesh where rainfall is less than 100 cm, rice is cultivated with the help of irrigation.
- (c) **Soil:** Rice is grown in varied soil conditions but deep clayey and loamy soil provides the ideal conditions. Rice is primarily grown in plain areas. It is also grown below sea level at Kuttinad (Kerala), hill terraces of north eastern part of India and valleys of Kashmir.

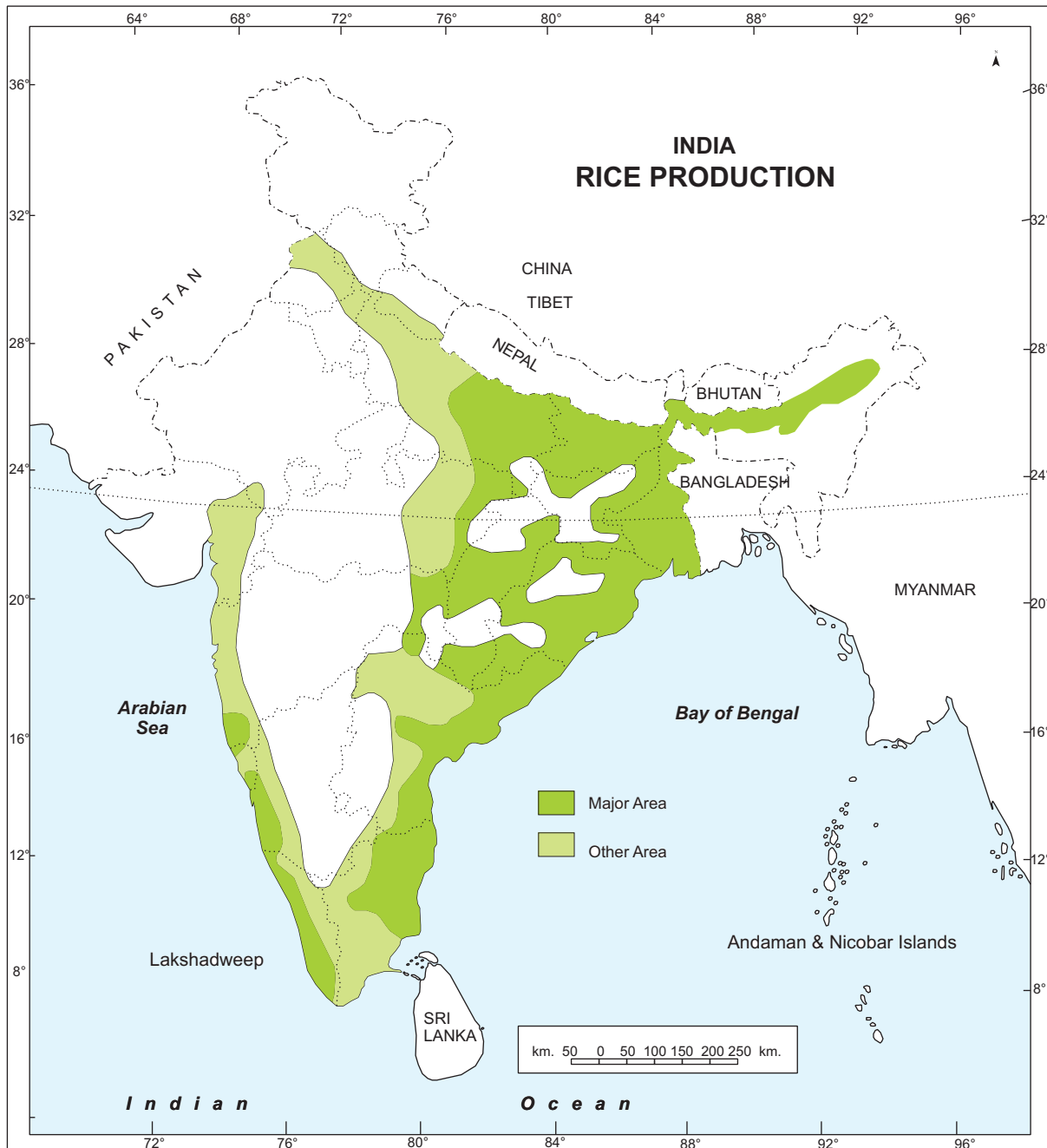


Figure 12.1: India: Rice Producing Areas



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(d) **Labour:** Rice cultivation requires easily available cheap labour because most of the activities associated with it are labour orientated and are not very well suited for mechanization.

(e) **Distribution:** Rice is grown in almost all the states of India. The main rice producing states are Tamilnadu, West Bengal, Andhra Pradesh, Bihar, Jharkhand, Uttarakhand, Chhatisgarh, Punjab, Odisha, Uttar Pradesh, Karnataka, Assam and Maharashtra. It is also grown in Haryana, Madhya Pradesh, Kerala, Gujrat and Kashmir Valley (See figure 12.1).

(ii) **Wheat:** Wheat is the second most important food crop of India next to rice. It is a **Rabi** or winter crop. It is sown in the beginning of winter and harvested in the beginning of summer. Normally (in north India) the sowing of wheat begins in the month of October-November and harvesting is done in the month of March-April. This is the staple food of millions of people particularly in the northern and north-western regions of India. Unlike rice, wheat is grown mostly as a rabi or winter crop.

Some of the **geographical conditions** are as follows:

(a) **Temperature:** It is primarily a crop of mid-latitude grassland. It requires cool climate. The ideal temperature is between 10°C to 15°C at the time of sowing and 21°C to 26°C at the time of ripening and harvesting.

(b) **Rainfall:** Wheat thrives well in areas receiving annual rainfall of about 75cm. Annual rainfall of about 100cm is the upper limit for wheat cultivation. As you know areas receiving more than 100cm of rainfall are suitable for rice cultivation. Like rice, wheat can also be grown by irrigation method in areas where rainfall is less than 75cm. But on the other hand, frost at the time of flowering and hailstorm at the time of ripening can cause heavy damage to the wheat crop.

(c) **Soil:** Although wheat can be grown in a variety of soils but well drained fertile loamy and clayey loamy soil is best suited for wheat cultivation. Plain areas are very well suited for wheat production.

(d) **Labour:** Wheat is highly mechanized and requires less labour.

(e) **Distribution:** The main regions of wheat production in India are U.P., Punjab, Haryana, Rajasthan, Madhya Pradesh, Gujrat, Maharashtra. U.P., Punjab and Haryana together produce more than 66% of the total wheat of the country (See figure 12.2).

(iii) **Millets:** Millets are short duration warm weather crops. These are coarse grain crops and are used for both food and fodder. These are kharif crop. These

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are sown in May-August and harvested in October-November. Today millets are mostly consumed by poor people as their staple food. In India, lots of millet is grown and these are known by various local names. Some of these are *Jawar*, *Bajra*, *Ragi*, *Korra*, *Kodon*, *Kutki*, *Hraka*, *Bauti*, *Rajgira*. In India, *Jawar*, *Bajra* and *Ragi* are grown on large areas But unfortunately area under these crops has drastically reduced over the years.

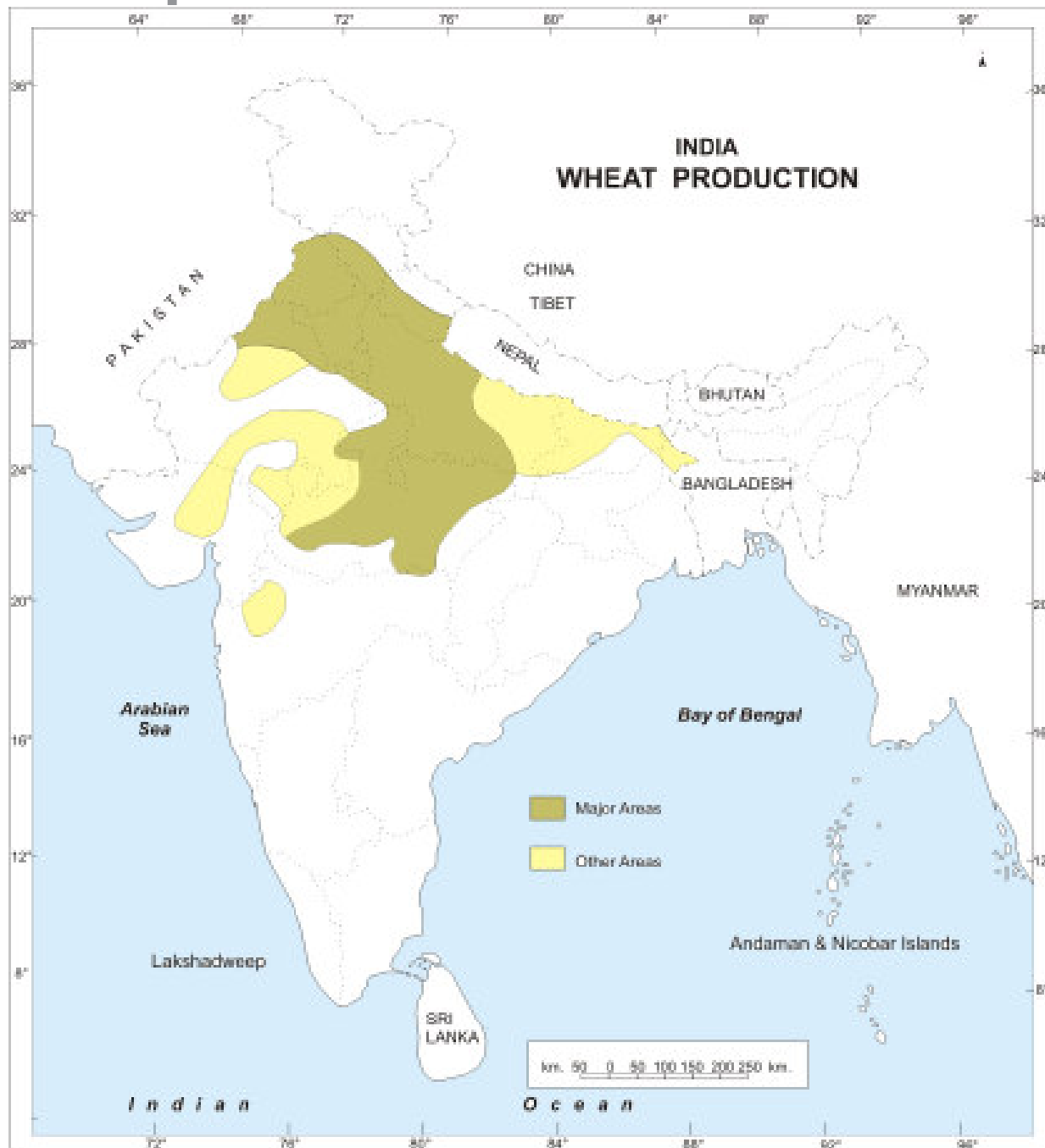


Figure 12.2: India: Wheat Producing Areas



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Some of the **geographical conditions** for growing these crops are as follows:

- (a) **Temperature:** These crops are grown where the temperature is high which ranges between 27°C to 32°C.
 - (b) **Rainfall:** As mentioned earlier that millets are 'dry land crops', therefore, rainfall ranging from 50 to 100cm is ideal for their cultivation.
 - (c) **Soil:** Millets are less sensitive to soil deficiencies. They can be grown in inferior alluvial or loamy soil.
 - (d) **Distribution:** *Jawar, Bajra*, is grown both in north and south India whereas *ragi* is generally concentrated in the southern India. *Jawar, Bajra*, is grown in Madhya Pradesh, Gujrat, Rajasthan, Maharastra, Karnataka, Tamil Nadu, Andhra Pradesh, Haryana and Punjab. *Ragi* is generally concentrated in the southern India i.e. Tamilnadu, Karnataka and Andhra Pradesh.
- (iv) **Pulses:** It includes a number of crops which are mostly leguminous and provide invaluable proteins to the vegetarian population of India. As they have fewer sources of proteins in comparison to those who consume meat and fish. They also serve as excellent forage and grain concentrates in the cattle feed. Apart from that these leguminous crops have the capacity to fix atmospheric nitrogen in the soil and are normally rotated with other crops to maintain and restore soil fertility. A large variety of pulses are found in India. These are gram, *tur or arhar* (Pigeon Pea or Red Gram), *urd* (black gram), *mung* (green gram), *masur* (lentil), *kulthi* (horse gram), *matar* (peas) etc. But among these above mentioned varieties only gram and *tur or arhar* are more important pulses.

Gram: It is the most important of all the pulses. It accounts for about 37% of the production and about 30% of the total area of pulses in India. It is a *rabi* crop which is sown between September and November and is harvested between February and April. It is either cultivated as a single crop or mixed with wheat, barley, linseed or mustard.

Some of the **geographical conditions** are as follows:

- (a) **Temperature:** It is grown in a wide range of climatic condition. Mild cool and comparatively dry climate with 20°C-25°C temperature.
- (b) **Rainfall:** 40-45 cm rainfall is favourable for gram cultivation.
- (c) **Soil:** It grows well on loamy soils.
- (d) **Distribution:** Although gram is cultivated in several parts of the country, however, 90% of the total production comes from five states. These states are Madhya Pradesh, Uttar Pradesh, Rajasthan, Haryana and Maharashtra.

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Notes

Do you know

1. In India there was a strong tradition of eating various millets as staple food. But over the years majority of the population uses either rice or wheat as staple food.
2. As lifestyle related diseases become pandemic in nature, various millets are now prescribed as an essential food to control these diseases as they contain a lot of fibers.



ACTIVITY 12.2

1. Find out the areas/states where rice, wheat, and millets are staple foods in India. Mention the staple foods (rice, wheat, millets) in each of the following states of India

States	Staple food
Rajasthan	wheat, Bajara
Karnataka	
Your state	

2. On an outline map of India show the states (in two different shades) where rice and wheat are staple foods.

2. Commercial Crops

As mentioned in the beginning of the lesson, commercial crops are those crops which are grown for sale either in raw form or semi processed form. In this section we will learn more about selected cash crop i.e. sugarcane, cotton and jute; two beverages- tea and coffee; three oil seeds i.e. groundnut, mustard and rapeseed.

- (i) **Sugarcane:** Can you think life without sugar in your everyday life? It is almost impossible to think of life without sugar. Do you know sugarcane belongs to bamboo family of plants and is indigenous to India? It is a *Kharif* crop. It is the main source of **sugar, gur and khandsari**. It also provides raw material for the manufacturing of alcohol. Bagasse, the crushed cane residue, has also multiple uses. It is used for manufacturing of paper. It is also an efficient substitute for petroleum products and a host of other chemical products. A part of it is also used as fodder.



Some of the **geographical conditions** for the growth of sugarcane are as follows:

- (a) **Temperature:** It requires hot and humid climate with an average temperature of 21°C to 27°C.
- (b) **Rainfall:** 75-150 cm rainfall is favourable for sugarcane cultivation. Irrigation is required in those areas where rainfall is less than the prescribed limit.

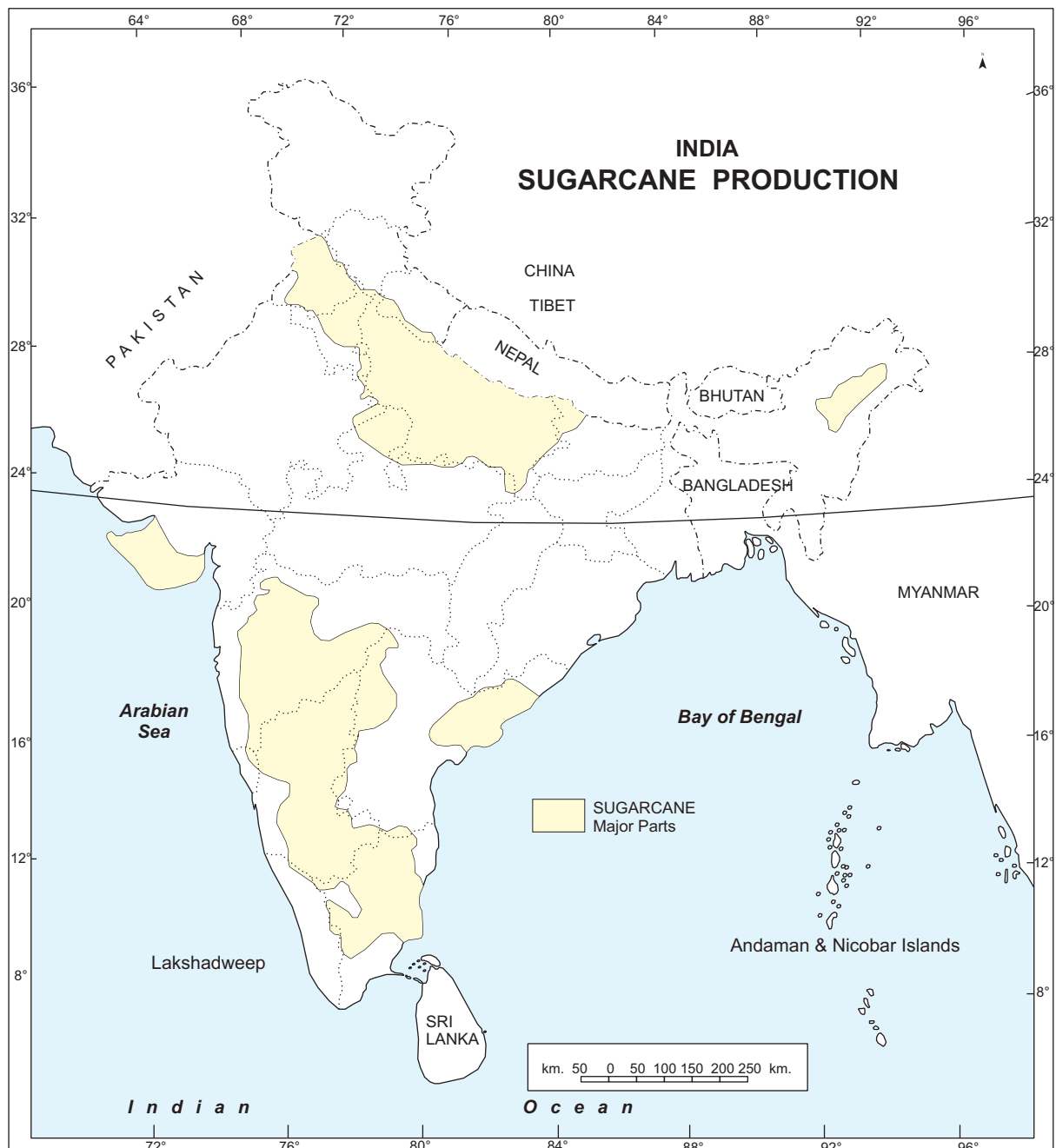


Figure 12.3: India: Major Sugarcane Producing Areas



- (c) **Soil:** It can grow in a variety of soils. In fact sugarcane can tolerate any kind of soil that can retain moisture. But deep rich loamy soil is ideal for its growth. The soil should be rich in nitrogen, calcium and phosphorous but neither it should be too acidic nor alkaline. Flat, plain and level plateau is an advantage for sugarcane cultivation because it facilitates irrigation and transportation of cane to the sugar mills. Sugarcane cultivation requires heavy manures and fertilizers because it exhausts the fertility of soils quickly and extensively.
- (d) **Labour:** It is a labour orientated cultivation and requires cheap labour. Ample human hands are required at every stage i.e. sowing, hoeing, weeding, irrigation, cutting and carrying sugarcanes to the factories
- (e) **Distribution:** India has the largest area under sugarcane cultivation in the world and the second largest producer next to Brazil. As far as distribution of sugarcane cultivation in India is concerned, there are three distinct geographical regions in the country. These regions are:
- (i) The Satluj-Ganga plain from Punjab to Bihar containing 51% of the total area and 60% of the country's total production.
 - (ii) The black soil belt from Maharashtra to Tamil Nadu along the eastern slopes of the western Ghats.
 - (iii) Coastal Andhra Pradesh and Krishna river valley.
- (ii) **Cotton:** Cotton is the most important fibre crop not only of India but also of the entire world. It not only provides a raw material for cotton textile industry but also its seed is used in Vanaspati oil industry. The cotton seed is also used as part of fodder for milch cattle for better milk production. Cotton is basically a kharif crop and grown in tropical and sub-tropical areas.

Some of the **geographical conditions** are as follows:

- (a) **Temperature:** Cotton is the crop of tropical and sub-tropical areas and requires uniformly high temperature varying between 21°C and 30°C.
- (b) **Rainfall:** It grows mostly in the areas having at least 210 frost free days in a year.

It requires modest amount of rainfall of 50 to 100cm. However, cotton is successfully grown with the help of irrigation in the areas where rainfall is less than 50 cm. High amount of rainfall in the beginning and sunny and dry weather at the time of ripening are very useful for a good crop.

- (c) **Soil:** Cotton cultivation is very closely related to Black soils of Deccan and Malwa plateau. However, it also grows well in alluvial soils of the Satluj-Ganga plain and red and laterite soils of the peninsular region.



- (d) **Labour:** As picking of cotton has not been made mechanized till now, therefore a lot of cheap and efficient labour is required at the time of picking.
- (e) **Distribution:** India has the largest area under cultivation and third largest producer of cotton next only to China and the USA. Within the country two third of total area and production is shared by four states. The main states for cotton production are Panjab, Maharashtra, Gujarat and Haryana.

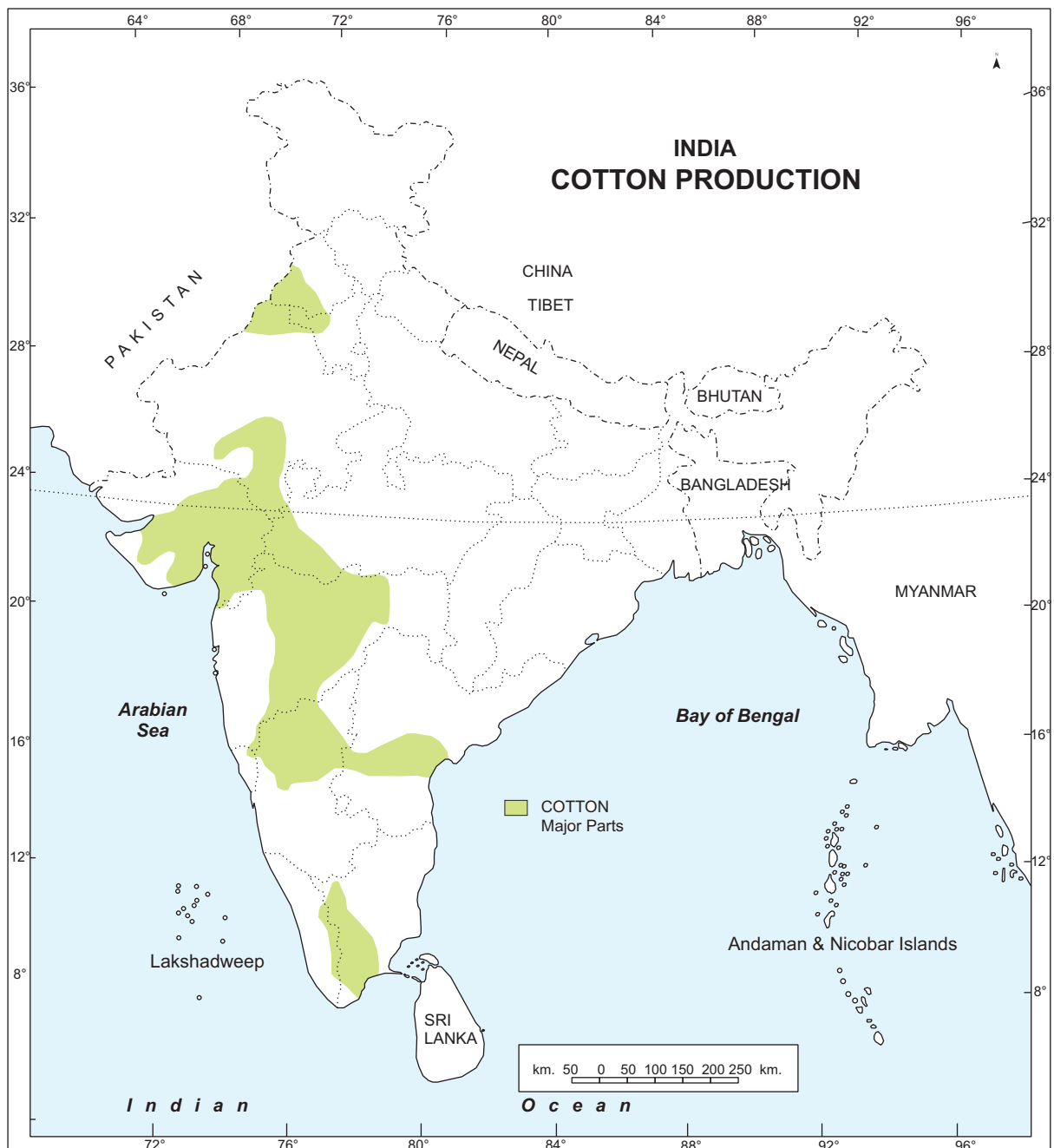


Figure 12.4: India: Major Cotton Producing Areas



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(iii) **Oilseeds:** It is one of the important groups of commercial crops in India. In fact, India has the largest area and production of oilseeds in the world. Oil extracted from oilseeds not only forms an important item of our diet but also serves as raw material for the manufacturing of hydrogenated oils, paints, varnishes, soaps, lubricants etc. Oil-cake (the residue after the oil is extracted from the oilseeds) forms an important cattle feed and manure.

Groundnut: It is the most important oilseed of India. Groundnut is grown both as kharif and rabi crop but 90-95% of the total area is devoted to kharif crop.

Some of the **geographical conditions** are as follows:

- (a) **Temperature:** It thrives best in the tropical climate and requires 20°C to 30°C temperature.
- (b) **Rainfall:** 50-75 cm rainfall is favourable for groundnut cultivation. It is highly susceptible to frost, prolonged drought, continuous rain and stagnant water. Therefore dry winter is needed at the time of ripening.
- (c) **Soil:** Well drained light sandy loams, red, yellow and black soils are well suited for its cultivation.
- (d) **Distribution:** It is the most important oilseed of India and accounts for about half of the major oilseeds produced in the country. India is the largest producer of groundnut in the world and accounts for about one third of the world's to the production. Andhra Pradesh, Tamil Nadu and Gujarat are three main producer of groundnut in India and account for about 60% of the total production. Another 30% of the total production comes from Maharashtra, Karnataka and Odisha.

3. Plantation Crops

(i) **Tea:** India is famous for its tea gardens. You must have heard about tea gardens of Assam and Darjeeling in West Bengal. It is being said that tea plantation in India was started by the Britishers in 1923 when wild tea plants were discovered by them in the hilly and forest areas of Assam. Tea is made from tender sprouts of tea plants by drying them. At present, India is the leading tea producing country in the world. China and Sri Lanka are respectively second and third largest producers of tea.

Some of the **geographical conditions for the growth of tea** are as follows:

- (a) **Temperature:** It requires hot and wet climate. The ideal temperature for the growth of tea bushes and leaf varies between 20°C to 30°C. If temperature either rises above 35°C or goes below 10°C, it would be harmful for the growth of tea bushes and leaves.



- (b) **Rainfall:** As mentioned above tea requires a good amount of rainfall ranging between 150-300 cm and the annual rainfall should be well distributed throughout the year. Long dry spell is harmful for tea.
- (c) **Soil:** Tea bush grows well in well drained, deep, friable loamy soil. However, virgin forest soils rich in humus and iron content are considered to be the best soils for the tea plantation. Tea is a shade loving plant and grows better when planted along with shady trees.

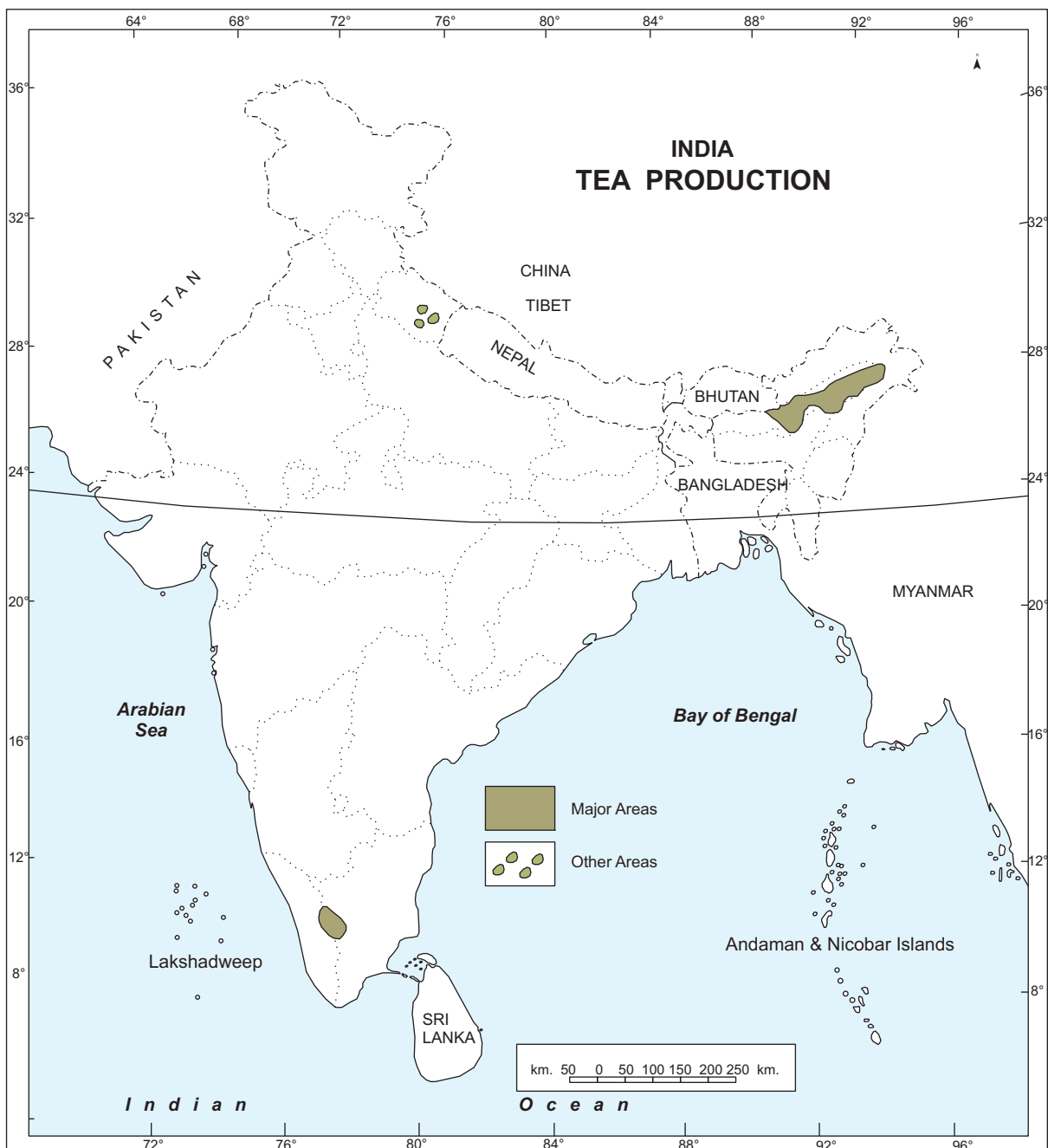


Figure 12.5: India: Tea Producing Areas

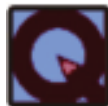


- (d) **Labour:** Cheap and efficient labour is required for tea production
- (e) **Distribution:** Assam is the leading producer that accounts for more than 50% of tea production of India. Tea producing areas of Assam are the hill slopes bordering the Brahmaputra and Surma valleys. West Bengal is the second largest producer of tea where tea is mostly grown in the districts of Darjeeling, Siliguri, Jalpaiguri and Cooch Bihar districts. Tamil Nadu is the third largest producer where tea growing areas are mostly restricted to Nilgiri hills.

- (ii) **Coffee:** Do you know from where coffee was brought to India? It is the indigenous crop of Ethiopia (Abyssinia Plateau). From Ethiopia, it was taken to Yemen in 11th Century. From Arabia, the seeds were brought by Baba Budan in 17th Century and were raised in Baba Budan hills of Karnataka. But it was British planters who took keen interest and large coffee estates were established in the hills of Western Ghats.

Some of the **geographical conditions for the growth of coffee** are as follows:

- (a) **Temperature :** It requires hot and humid climate with temperature varying between 15°C and 28°C. It is generally grown under shady trees. Therefore, strong sun shine, high temperature above 30°C, frost and snowfall are harmful for coffee cultivation. Dry weather is necessary at the time of ripening of berries.
- (b) **Rainfall:** Rainfall between 150 to 250 cm is favourable for coffee cultivation.
- (c) **Soil:** Well drained, rich friable loamy soil containing good deal of humus and minerals like iron and calcium are ideal for coffee cultivation. The soil must be properly manured to retain and replenish fertility and to increase productivity.
- (d) **Labour:** Like tea, coffee cultivation also requires plenty of cheap and skilled labour for various purposes like sowing, transplanting, pruning, plucking, dying, grading and packing of coffee.
- (e) **Distribution:** Karnataka, Kerala and Tamil Nadu are the main states of coffee production in India.



INTEXT QUESTIONS 12.2

1. Explain any three geographical conditions required for the cultivation of cotton?
2. How will India cloth its billion + population if cotton crop fails for successive number of years?

12.4 MAJOR CHALLENGES FACED BY INDIAN AGRICULTURE

If we look at the challenges faced by Indian agriculture, we can broadly group them into two categories. One category belongs to the problems that have been long standing. Second category of problems is new and has been emerging from the prevailing agricultural practices, system, changing climate and economy. Let us discuss the major challenges in detail:

1. **Stagnation in Production of Major Crops:** Production of some of the major staple food crops like rice and wheat has been stagnating for quite some time. This is a situation which is worrying our agricultural scientists, planners and policy makers. If this trend continues, there would be a huge gap between the demand of ever growing population and the production. Nobody wants India to go back to a situation that was prevailing in our country prior to Green Revolution. Try to find out what was the situation during pre-Green Revolution period.
2. **High cost of Farm Inputs:** Over the years rates of farm inputs have increased manifold. Farm inputs include fertilizer, insecticide, pesticides, HYV seeds, farm labour cost etc. Such an increase puts low and medium land holding farmers at a disadvantage.
3. **Soil Exhaustion:** On one hand green revolution has played a positive role in reducing hunger from India. On the other hand it has also led to negative consequences. One of which is Soil exhaustion. Soil exhaustion means loss of nutrients in the soil from farming the same crop over and over again. This usually happens in the rain forest.
4. **Depletion of Fresh Ground Water:** The second major negative consequence of green revolution is depletion of fresh ground water. You would remember that areas where green revolution was successful, it was due to the use of chemical fertilizers and irrigation. Most of the irrigation in dry areas of Punjab, Haryana and Western Uttar Pradesh was carried out by excessive use of ground water. Today fresh ground water situation in these states is alarming. In the coming few years if this type of farming practice continues, these states are going to face water famine.
5. **Adverse impact of Global Climatic Change:** Among various challenges, global climatic change is the recent one. It has been predicted that its impact on agriculture would be immense. Since, 70% of Indian population is engaged in agricultural activities, you can imagine the consequences. It is predicted that due to climate change, temperature would increase from 2°C to 3°C, there would be increase in sea level, more intense cyclones, unpredictable rainfall etc These changes would adversely affect the production of rice and wheat. Specifically, rise in temperature in winter would affect production of wheat in north India.





Production of rice would be affected in coastal areas of India due to ingress of saline water and increase of frequency of cyclones.

6. **Impact of Globalisation** You can see the effect of globalisation on the farm sector in India. All developing countries have been affected by it. The most evident effect is the squeeze on farmer's income and the threat to the viability of cultivation in India. This is due to the rising input costs and falling output prices. This reflects the combination of reduced **subsidy** and protection to farmers. Trade **liberalization** exposes these farmers to competition from highly subsidized production in the developed world.

Globalisation refers to the increasingly global relationships of culture, people and economic activity. **Subsidy:** A subsidy is money given by government to help support a business or person. **Liberalization:** liberty to establish any kind of economic activity at any time any where in the country without anticipating any kind of so called private or public restrictions.

7. **Providing Food Security:** Before the introduction of green revolution in India, we were not self sufficient in terms of our food grain production. Due to partition of India in 1947 the network of canal irrigation system, cotton belt and wheat bowl meant to West Pakistan which is now Pakistan. Similarly the jute belt and rice bowl was awarded to East Pakistan, which is now Bangladesh. With the introduction of green revolution, production of food grains increased substantially and India became self sufficient. However, during the last one decade the total production has become stagnant. On the other hand we have added another 16 to 18 million population over this period. Although India has become self sufficient in good it is yet to ensure food security which is dependent upon accessibility, affordability as well nutritional value of the food available. One of the biggest challenges facing India is Providing Food Security to its population.
8. **Farmers Suicide:** Every suicide has a multiple of causes. But when you have nearly 200,000 of them, it makes sense to seek broad common factors within that group. The suicides appear concentrated in regions of high commercialization of agriculture and very high peasant debt. Cash crop farmers seemed far more vulnerable to suicide than those growing food crops. Yet the basic underlying causes of the crisis remained untouched. Commercialization of the countryside along with massive decline in investment in agriculture was the beginning of the decline. Withdrawal of bank credit at a time of soaring input prices and the crash in farm incomes compounded the problems. Shifting of millions from food crop to cash crop cultivation had its own risks. Privatization of many resources has also compounded the problems.

The devastation lies in the big 5 States of Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh and Chhattisgarh. These states accounted for two-thirds of all farm suicides during 2003-08. Some of the major factors responsible are indebtedness,

crop failure and deterioration in economic status. Decline in social position, exorbitant charges by local money lenders for the vulnerable farmers, chronic illness in the family, addiction etc. have made life of farmers difficult.



ACTIVITY 12.3

If you are assigned political leadership of the country, what measures would you adopt to address the challenges that are mentioned above? Which two changes would you address and how?

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INTEXT QUESTIONS 12.3

1. How would climate change would affect agriculture in India? Explain any two situations.

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WHAT YOU HAVE LEARNT

- There are different types of farming practised in India. Some of these practices are subsistence and commercial farming, intensive and extensive farming, plantation farming and mixed farming.
- The major salient features of Indian agriculture are subsistence agriculture, highly dependent on monsoon and animals, variety of crops and predominance of food crops.
- Major crops in India can be broadly divided into four categories i.e. food crops, cash crops, plantation crops and fruits.



Notes

MODULE - 2

India: Natural Environment, Resources and Development



Notes

- Some of the major challenges faced by Indian agriculture are Stagnation in production, high cost of farm inputs, soil exhaustion, depletion of fresh ground water, climatic change, globalization and liberalization of economy, food security and farmer's suicide.



TERMINAL EXERCISES

1. Explain any four salient features of Indian agriculture.
2. Compare the geographical conditions required for the growth of rice and the growth of wheat cultivation.
3. Identify and write any four similar geographical conditions required for both tea and coffee.
4. Analyse any four major challenges confronted by Indian Agriculture.
5. Explain the concept of food security. How is it different from self sufficiency in food.
6. On the outline map of India locate the production areas of:
 - (i) Two labour intensive crops
 - (ii) Two crops that are grown in varied terrains



ANSWERS TO INTEXT QUESTIONS

12.1

1. The basic difference between these two types of farming is the amount of production from per unit of land. USA, Canada, former USSR are the major countries where extensive farming is practiced whereas Japan is the leading example of intensive farming.
2. As per the learners experience.

12.2

1. (i) Uniformly high temperature varying between 21°C and 30°C (ii) It grows mostly in the areas having at least 210 frost free days in a year; (iii) It requires modest amount of rainfall of 50 to 100cm. However, cotton is successfully grown by the help of irrigation in the areas where rainfall is less than 50 cm (iv) high amount of rainfall in the beginning and sunny and dry weather at the time of ripening are very useful for a good crop; (v) cotton cultivation is very closely related to Black soils. However, it also

grows well in alluvial soils of the Satluj-Ganga plain and red and laterite soils of the peninsular region; (vi) as picking of cotton has not been mechanized till now, therefore a lot of cheap and efficient labour is required at the time of picking (Any three)

2. As per the learners' experience.

12.3

1. Due to climatic change, temperature would increase by 2 to 3 degree Celsius, increase in sea level, more intense cyclone, unpredictable rainfall etc These changes would adversely affect the production of rice and wheat. Specifically rise in temperature in winter would affect production of wheat in north India. Production of rice would be affected in coastal areas of India due to ingress of saline water and increase of frequency of cyclone.

MODULE - 2

India: Natural Environment, Resources and Development



Notes