

Since ancient times, agriculture has remained a prime economic activity of most of the people in India. Even today also, main support for the Indian economy is agriculture. Agriculture is an important resource of India. About 60% of the labour power is engaged in agriculture. Besides supplying food to the people of India, raw material for many industries also comes from agriculture. Agriculture occupies about 22% of the national product. Crops and other farm products hold about 18% contribution in export which earns huge foreign exchange. The Indian economy is mainly dependent on agriculture. Thus India is an agrarian country.

In most of the areas in India, two or more crops annually can be taken due to the factors like fertile plains, favourable climate for round the year cultivation, irrigation, skilled and hard working farmers etc. Even then the progress in the field of agriculture is not sufficient. The Indian farmers are generally poor and uneducated. Agricultural production in India is much less compared to the world due to reasons like inadequate facilities of irrigation, irregular and uncertainty of rain, more population, larger family, smaller farms, no interest in experimentation, less usage of chemical fertilisers, modern machinery and scientific approach for cultivation, educated mass opting away from agriculture, the so called lower status for agriculture in the society etc.

### Types of farming

The socio - economic condition of the people of India, administrative policy and the entire Indian economy are associated with agriculture. Farming types are classified according to irrigation methods, farm outputs, economic return etc.

**(1) Subsistence Farming :** After Independence many agricultural development projects are implemented, yet the economic condition of Indian farmer is very weak even today. Costly seeds, fertilizers and use of insecticides are not affordable in smaller farm holdings. The farm production is just sufficient for his family and is consumed in the maintenance of the family. This is called subsistence farming. So even today, Indian agriculture is considered to be an activity for life maintenance only.

**(2) Dry Farming :** Where the rainfall is inadequate, irrigation facilities are less there, farming is dependent only on rain. Only one crop is taken through the humidity accumulated within the land. This is known as Dry farming. Crops like jowar, millet and pulses which require less water are grown here. In Gujarat, wheat and gram are grown in the humid soils after the monsoon is over.

**(3) Wet Farming :** Wet farming is carried out in the regions of heavy rain and adequate facilities for irrigation. If there is no rainfall or if it is insufficient, more than one crop is taken with the help of irrigation, wherein paddy, sugarcane, cotton, wheat and vegetables are grown.

**(4) Shifting (Jhoom) Agriculture :** Here, forests are burnt and cleared, and farming is carried out there. The farming takes place for two or three years. When soil fertility is reduced, that area is abandoned and the same method is applied to start farming at other place. This is called Jhoom cultivation. Cereals or vegetables are grown in this type of agriculture. The production is less in this type of agriculture.

**(5) Plantation Agriculture :** This is a special type of agriculture. Here rubber, tea, coffee, cocoa, coconut, apple, mango, oranges, grapes, amla (myrobalan), lemon, kharek (khalela, dried date) etc. are reared with great care. It is necessary that there should be more capital investment, skill, technical knowledge, machines, fertilizers, protection on all sides, acquisition and transportation facilities.

**(6) Intensive Farming :** Intensive farming is the mechanized way of farming through utilization of increased irrigation, use of chemical fertilizers, insecticides and other mechanical equipments. Cash crops grow more in this type of farming. The per hectare production has increased very much here and the area sown under these crops has increased. As more importance is given to economic returns in this type of farming, it is also known as Commercial Farming.

### Farming Methods

Organic farming, sustainable farming, mixed farming etc. are some of the current methods of farming in India.

**Organic Farming :** The rate at which the chemical fertilizers and the insecticides are used, the destructive effects of these chemicals is also felt. Due to the presence of these chemicals and insecticides in grains, vegetables and fruits it has affected adversely the hygiene of the people. More damage is caused to environment. The productive capacity and fertility of the land has reduced, due to which the crop production of the land and its quality were reduced over a long run.

Organic farming is that method of farming in which urea or any other chemical fertilizer and insecticides are not used. For the nutrition of the crop dung, earthworm fertilizer, composite fertilizer etc. are used. Cow urine, neem solvents, buttermilk etc. are used for the protection of crops. The organic products are full of nutrition. They contain natural taste, sweetness and fragrance. There are minerals, vitamins and life energising elements in these crops. Now-a-days, organic farm products are more in demand so the farmers also get a good return.

**Sustainable farming :** In order to see that the soil fertility is retained for a longer time, care is taken for crop rotation, use of chemical fertilizers only when necessary, use of biotic controls for insects and harvests, water conservation etc.

**Mixed farming :** Here the cattle rearing, poultry, sericulture and fishery etc. are also carried out simultaneously along with farming.

### Agricultural products of India

As per the seasons, the agricultural crops of India can be grouped into three categories : 1 Kharif crop 2. Rabi crop and 3 Zaid crop.

| Kharif (monsoon) Crops                                                                                                                                                                                                                                                                        | Rabi (winter) Crops                                                                                                                                                                                                                                             | Zaid (summer) Crops                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Crops which are taken during rainy season are called kharif crops.</li> <li>● Time for these crops is from June-July to October-November.</li> <li>● Paddy, maize, jowar, millet, cotton, til, groundnut mung and matth are kharif crops.</li> </ul> | <ul style="list-style-type: none"> <li>● Crops which are taken during winter are called rabi crops.</li> <li>● Time for these crops is from October-November to March - April.</li> <li>● Wheat, gram, barley, mustard, linseed etc. are rabi crops.</li> </ul> | <ul style="list-style-type: none"> <li>● Crops which are grown during summer are called zaid crops.</li> <li>● Time for these crops is from March to June.</li> <li>● Paddy, maize, groundnut, til, millet and fruits like watermelon, cucumber, musk melon etc. are zaid crops.</li> </ul> |

**Major agricultural crops :** Due to the diversities in geographical conditions, climate, variety of land, the amount of rainfall etc. different crops are grown in different parts of India.



| Major agricultural products of India |        |           |           |            |                |        |                    |
|--------------------------------------|--------|-----------|-----------|------------|----------------|--------|--------------------|
| Food Grains                          | Pulses | Oil seeds | Beverages | Cash crops | Condiments     | Fruits | Vegetables         |
| Paddy                                | Tuver  | Groundnut | Tea       | Cotton     | Cumin seed     | Mango  | Potato             |
| Wheat                                | Mung   | Til       | Coffee    | Sugarcane  | Fennel         | Banana | Brinjal            |
| Jowar                                | Gram   | Soyabean  | Cocoa     | Jute       | Isabgul        | Chikoo | Onion              |
| Millet                               | Peas   | Castor    |           | Tobacco    | Corriander     | Papaya | Bottlegourd        |
| Maize                                | Bean   | Mustard   |           | Rubber     | Fenugreek      | Grape  | Turiya             |
| Barley                               | Matth  | Sunflower |           |            | Ajvain (Ajamo) | Jujube | Ladies finger      |
|                                      | Udad   | Coconut   |           |            | Black pepper   | Apple  | Cabbage            |
|                                      | Lentil | Linseed   |           |            | Garlic         | Guava  | Cauli flower       |
|                                      |        |           |           |            |                |        | Various Vegetables |

**Food Grains :** Grains are cultivated in about 75% of the total area sown and about 50% of the total production comes from grains. Major food grains are as follows :

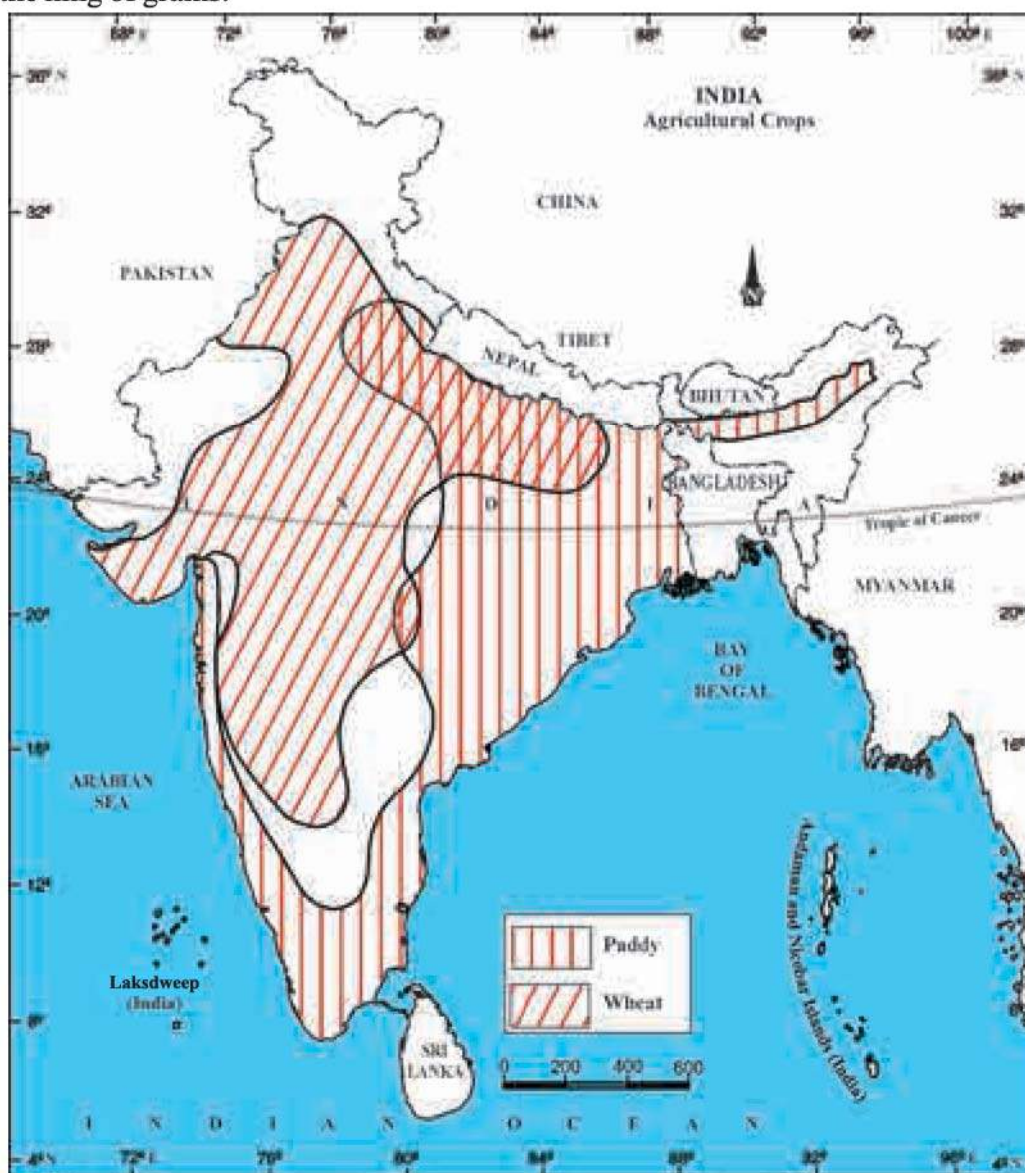
**Paddy (Rice) :** Paddy is our most important crop. A large majority of the world and about half of the population of India uses rice. India stands second in the world after China in paddy production. Paddy is sown over one fourth of the total sown area. Paddy is a crop of torrid zone. Hot and humid climate, minimum temperature of 20° C, fertile alluvial soil and more than 100 cm of rainfall are necessary for more production. In the regions of less rainfall in Punjab, Haryana and Uttar pradesh, this crop is taken through irrigation. More human labour is necessary for paddy cultivation. West Bengal, Tamil Nadu, Andhra Pradesh, Telangana, Bihar, Orissa are major paddy producing states. The crop is taken two or three times in West Bengal, Uttar pradesh, Bihar, Orissa and Tamil Nadu. In Gujarat paddy is grown in Surat, Tapi, Panchmahal, Ahmedabad, Kheda, Anand, Valsad districts. Paddy requires more water. However, instead of keeping the paddy fields fully under water, paddy is grown by irrigating through sprinklers using less water.



### 10.1 Paddy Cultivation

**Wheat :** Wheat is the second important crop of our country after paddy. Wheat is grown over one third area of arable land of our country. It is the substantial food of the people of North-West India. Wheat

is a rabi crop of temperate zone. It requires black or fertile loamy soil and more than 75" of annual rainfall. Wheat can be grown in the regions of lesser rainfall with irrigation. Wheat can not be grown in the area receiving more than 100" rainfall. Less labour force is required as mechanization is introduced in Wheat cultivation. After the green revolution, the wheat production is almost doubled. Wheat cultivation is carried out mostly in Punjab, Haryana and Western Uttar Pradesh. These states contribute about two third of the total national production. As there is irrigation facility in these States there is more per hectare production. Due to the canal water in Punjab there is abundant wheat production. That is why Punjab is also called as 'Wheat Bowl' of India. Wheat is also produced in the States of Madhya Pradesh, Rajasthan, Gujarat, Maharashtra, West Bengal etc. 'Bhaliya wheat' is produced in the Bhal region of Gujarat. Besides, Mahesana, Rajkot, Junagadh, Kheda also produce wheat. Among all food grains used in the daily meals wheat is the best. Many items like rotli, bhakhri, sev, shiro, lapshi, ladu, sukhadi, bread, puri, cake, biscuits etc. are prepared from wheat. Among all grains, wheat is the most nutritious. That is why wheat is also called as the king of grains.



## 10.2 India : Agricultural Crops

Jowar, bajra, maize and barley are major coarse grains grown in India.

**Jowar :** Jowar is the most produced grain in India after paddy and wheat. This crop is grown very



widely in the dry and less rainy region of southern peninsula. Jowar is both kharif and rabi crop. Temperature between 25° to 30°C, 125 cm of rainfall, black and loamy soil are favourable conditions. It is produced in Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu, Gujarat States. Maximum farming of jowar in Gujarat is done in Surat and Tapi districts.

**Millet :** Millet is considered to be the grain of labourers. It is grown in the regions having temperature between 25°-30°C, rainfall between 40-50 cm and light sandy soil. Major States producing millet are Rajasthan, Gujarat, Uttar Pradesh and Maharashtra. The Banaskantha district in Gujarat leads in the millet production in Gujarat.

**Maize :** This is a kharif crop. Maize is the most grown crop in the world after paddy and wheat. Maize is grown more in hilly area and it is a staple food of the people. Maize contains starch, oil protein, bio-fuel etc. so it is used more in industrial productions. Sloppy, black, hard, rocky and water having gentle flow are more suitable for its cultivation. Rainfall between 50 – 100 cm and 21° to 27° C temperature are favourable factors. Its usage is increasing as animal fodder, dhani and the oil. It is increasingly used as animal fodder, making popcorn and for edible oil. Major states producing maize are Rajasthan, Uttar Pradesh, Bihar, Madhya Pradesh, Punjab, Jammu and Kashmir, Himachal Pradesh, Karnataka and Andhra Pradesh. In Gujarat, maize is grown more in Panchmahal, Dahod, Sabarkantha and Aravalli districts.

**Pulses :** Pulse is the main source of protein for vegetarian people. Tuver, mung, gram, peas, beans, math, udad etc. are considered as pulses. Tuver, udad, mung, math are kharif crops. Gram, peas and lentil (masur) are rabi crops. Pulses are grown in all States except where rainfall is more. Major pulse producing states are Madhya Pradesh, Rajasthan, Uttar Pradesh, Maharashtra, Odisha, Bihar, Andhra Pradesh etc. In Gujarat, tuver is sown more in Vadodara district, mung and math in Kachchh district and udad in Patan district, Nitrogen is reinstated in soil by growing pulses, so it is sown as an inter crop along with or after the main food crops.

### Things to know :

Nagli (ragi) holds a unique place in the grass food-crops sown in Gujarat. Nagli is a staple food of the adivasi (aborigin) people in hilly region. Among all grass food-crops sown in Gujarat and in India, the per hectare production of nagli is the maximum. Nagli is known as Finger millet or African millet in English and is known as Bavta in Gujarati. Nagli is extremely nutritious grass food-crop. There is more of protein, minerals and vitamins in its grain. As there is more fibre in nagli, it is very advantageous for the patients of diabetes and cardiac patients. The proportion of calcium and iron is also more in nagli compared to other crops, so it is used for removing mal-nutrition and in the making of baby food. The adivasi farmers eat rotla made from the nagli flour. Besides biscuits, chocolates, toasts, nankhatai, wafer, papdi etc. are also prepared from its flour.

**Oil seeds :** Groundnut, til, soyabean, castor, mustard, sun flower etc. are considered to be oil seeds. They hold an important position in the Indian meal. After edible oil is extracted from the oil seeds, the remaining oil-cake is used as animal fodder and also as biotic manure.

**Groundnut :** Groundnut holds an important position in oil seeds. Black, and a mixture of loamy and sandy soil, land which would not retain water, 20° to 25° C temperature and 50-70 cm rainfall are the favourable conditions. Groundnut is sown as kharif crop and wherever there is irrigation facility, it can be sown during summer also. Gujarat, Andhra Pradesh, Tamil Nadu and Maharashtra are major producers of groundnut. India ranks second after China in the world in groundnut production. Gujarat leads the country in groundnut production. Districts of Junagadh, Gir, Somnath, Amreli, Rajkot, Bhavnagar etc. produce groundnut. Groundnut oil is used more in Gujarat as edible oil.



**10.3 Groundnut**

**Sesam/Til :** Til oil is used in India since ages. In North India, it is a rain-based kharif crop. In South India, it is sown as rabi crop and occasionally as zaid crop also. Almost all the states grow til. Among all oil seeds til has more content of oil. In almost all parts of the world, it is used as an edible oil. Major producers of til are Gujarat, Tamil Nadu, West Bengal, Karnataka and Madhya Pradesh states. Gujarat ranks first in India in terms of til production and the area sown. Banaskantha grows maximum til. Maximum export of til in the world is done by India.

**Mustard :** This is a rabi crop and is an important crop of North India. Mustard seed and its oil are used for medicine and also as edible oil. Rajasthan, Uttar Pradesh, West Bengal, Gujarat and Madhya Pradesh are major producers of mustard.

**Coconut :** Coconut is a plantation crop of hot and humid coastal climate and saline land. In India, the coconut plantations are found in Karnataka, Kerala, Tamil Nadu, Andaman – Nicobar etc. In Gujarat, coconut is grown in coastal regions. A special type of coconut tree which is shorter and giving more yield is developed. In south India, coconut oil extracted from the coconut kernel is used as edible oil. Besides, its water is useful as a healthy drink.



**10.4 Castor**

**Castor oil :** Castor is also known as Divela locally. It is both kharif as well as rabi crop. With 64%, India is the largest producer of castor in the world. China and Brazil come next respectively. About



80% of its production comes from Gujarat. Andhra Pradesh and Rajasthan are other producers. In Gujarat, the districts of Banaskantha, Patan, Sabarkantha, Rajkot, Junagadh, Amreli etc. produce in little quantity. The oil from cotton seeds, sun flower, paddy and maize also are used increasingly as edible oils.

### Beverages

**Tea :** Tea is a plant of tropical as well temperate zone. The tea leaf and its tender sprouts are processed and its powder and small leaves are used in drinks. India produces maximum tea after China. Sri Lanka, China and India are leading tea exporters. Sloppy land where the water easily flows down, good iron



#### 10.5 Tea Plantation

contents, 20° to 30° C temperature and about 200 cm of rainfall coming in the form of showers throughout the year are favourable conditions for tea plantations. Tea is grown more in Assam, West Bengal, Uttarakhand, Uttar Pradesh, Tamil Nadu and Karnataka. Assam and West Bengal produce about 75% tea of the nation. The tea leaves are very skilfully plucked from the plants.

**Coffee :** Coffee is reared over the slopes of mountains in the shades of larger trees in such a way that no direct sun light falls on the coffee leaves. The coffee crop needs 150–200 cm rainfall and 15° to 28° C temperature and sloppy mountain land. Coffee is grown in abundance in Karnataka, Kerala



#### 10.6 Coffee Plantation

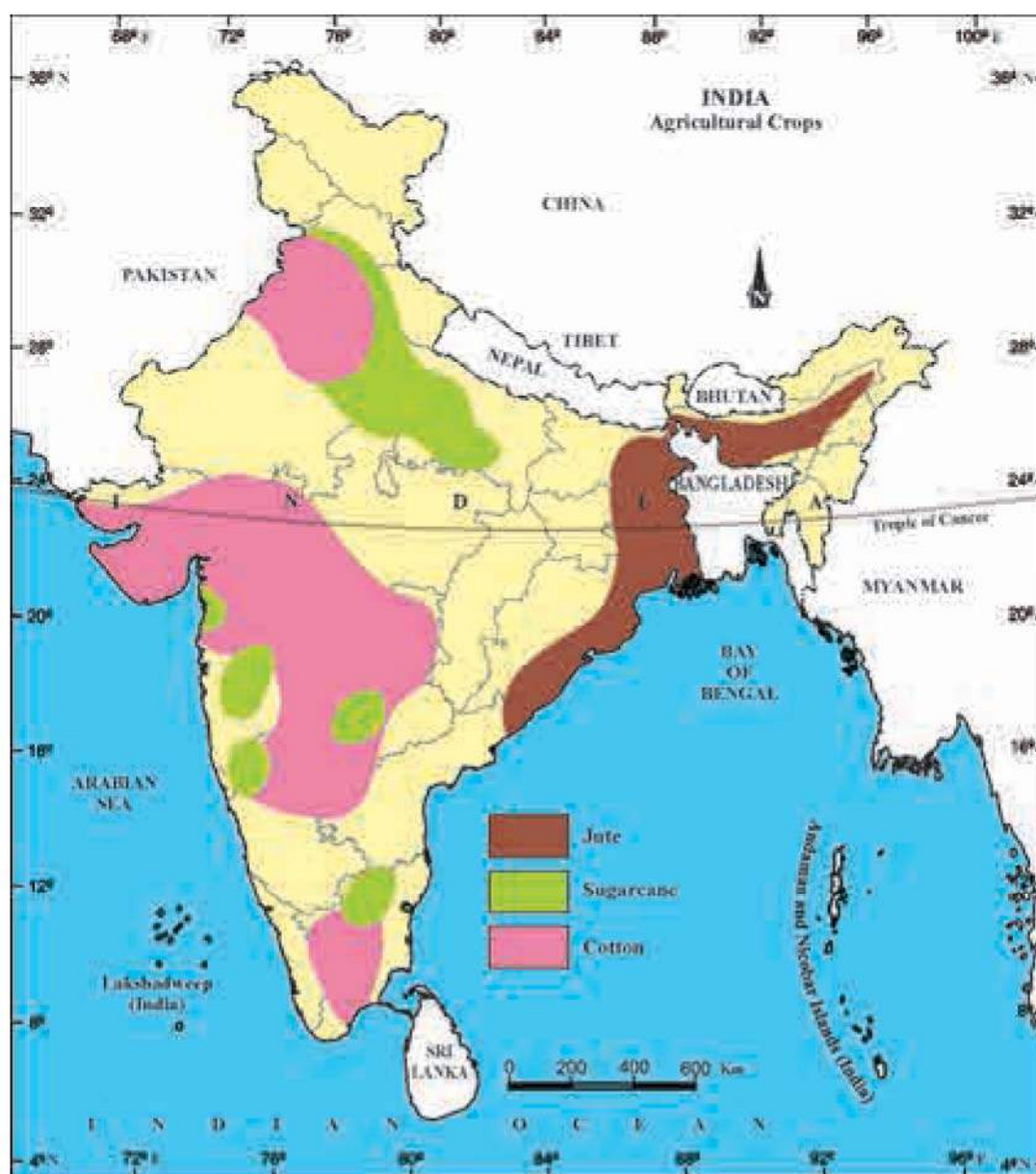
and Tamil Nadu. Coorg area of Karnataka is a well-known region for coffee production. Coffee seeds are extracted out of the nuts, grinded and then it is used as a drink.

**Cocoa :** Cocoa is prepared out of the seeds of the cocoa fruit. Coco is a beverage. Chocolate is prepared from cocoa. It requires hot and humid climate and excessive rainfall. African countries are its major producers. Cocoa production is on increase in Kerala, Karnataka, Andhra Pradesh and Tamil Nadu states.



## Cash crops

**Cotton :** Cotton is a kharif crop. Cotton holds an important place as a cash crop in Gujarat and in India. At world level, India is at the second place in the production, usage and export of cotton. Cotton (without seed) is obtained from the cotton plant. This cotton is known as 'White Gold' in India. Besides the cotton seed oil is used to prepare edible oil and its seeds and oil-cake are used as animal food. Black lava soil which can retain humidity for a longer time, soil with plenty of mineral contents, hot and humid climate, 20° to 35° C temperature and 30-70 cm rainfall etc. are favourable conditions for cotton. The growing season for cotton is about 6-8 months. Frost damages the cotton crop. In India, major cotton producing states are Gujarat, Maharashtra, Telangana, Karnataka, Andhra Pradesh, Haryana, Rajasthan, Punjab, Tamil Nadu, Odisha etc. As the farmers of Gujarat have accepted BT cotton seeds, Gujarat stands first in India in area sown, productivity, total production and quality of cotton. Cotton is grown more in Surendranagar, Rajkot, Vadodara, Ahmedabad, Sabarkantha, Mahesana, Botad, Bharuch, Kheda, Surat, Panchmahal, Amreli, Bhavnagar, Patan, Junagadh and Jamnagar districts.



10.7 India : Agricultural Crops



**Sugarcane :** Sugarcane is a major crop in India. Maximum sugarcane is sown in India in the world. In production, India ranks second after Brazil. Sugar, gur, khandsari and ethanol are produced out of sugarcane. Black fertile alluvial lava soil, hot and humid climate,  $21^{\circ}$  -  $27^{\circ}$  C temperature, 75-100 cm rainfall are necessary for sugarcane. Uttar Pradesh is at the top in area sown, but Maharashtra leads in the production. South Gujarat and Saurashtra produce more sugarcane in Gujarat.

**Jute :** India produces maximum of jute in the world. The jute fibre is called 'Golden Fibre'. Jute cloth, gunny bags, mattresses, ropes, bags, foot wears, handicrafts items etc. are made from jute. India has a strong competition from Bangladesh with regards to cheap labour in jute industry. Jute requires fertile soil of the delta region where new sediment is deposited every year, hot and humid climate,  $30^{\circ}$  to  $40^{\circ}$  C



### 10.8 Jute cultivation

temperature and more than 100 cm rainfall. Jute is grown more in the Ganga delta in West Bengal, Assam, Bihar, Orissa and Uttar Pradesh.

**Tobacco :** Tobacco is a kharif crop. Sandy loamy soil,  $20^{\circ}$  C temperature and 100 cm rainfall are suitable for tobacco cultivation. Soil is a determining factor than climate for tobacco cultivation. Major four countries in the world which grow and export tobacco are China, Brazil, India and U.S.A. Gujarat, Andhra Pradesh, Uttar Pradesh and Karnataka are major States producing tobacco in India. The Charotar region of Kheda and Anand districts, Mahesana, Vadodara, Panchmahal grow more tobacco. About 80% of bidi - tobacco of India is produced in Gujarat. Tobacco is used to make gutkha, bidi, cigarette, snuff etc. Tobacco consumption is harmful to health. Sikkim is the first state to ban tobacco-gutkha.

**Rubber :** Rubber is prepared out of the milk oozing out of the latex trees. Acetic acid is mixed with the milk collected from the rubber plantations, then it is heated on low temperature to obtain rubber. It is used in many industrial products like tyres, tubes etc. Rubber plantation is carried out in the regions

of hot and humid climate and heavy rainfall. Malaysia ranks first in the world in rubber production. In India Kerala, Tamil Nadu, Karnataka, Assam and Tripura are rubber producing states.

**Medicinal Condiments and Spices :** Gujarat ranks first in the production of cumin seed, fennel seed and isabgul in the world. Besides this, India leads in the production and export of dried codriander, fenugreek, mustard, suva and ajvain. India contributes about 35% in the total world production of condiments. India black pepper, cinnamon, clove etc. are in high demand in the country and world. Ashwagandha, tulsi, kariyatu, mindhi aaval, white musli, madhunashini, ashok, garmal, lindi piper, galo, allovera etc. are included as medicinal plants and mint, menthol, palmroza, lemon grass etc. are included as flavoured crops.

**Fruits, Vegetables and Flowers :** In fruit production, India ranks second after China. Fruits like banana, mango, apple, grape, naspati, orange etc. are grown in India. Bananas are grown in Tamil Nadu, Gujarat and Maharashtra, apples in Jammu - Kashmir, Himachal Pradesh and grapes in Uttarakhand, Maharashtra, Himachal Pradesh, Jammu-Kashmir, Punjab, Tamil Nadu, and Andhra Pradesh. As the grape production is less than its demand, it is imported from Afghanistan, Pakistan and Australia. Besides, various vegetables are grown. Flowers like rose, jui, mogro, galgota etc. are also cultivated. Thus, various crops are grown in India.

### Things to know

With the increasing cultivation for cash crops, there is a shortage of grass. Various type of grass like fodder crop, Dharaf (GujaraatDharaf-1), Anjan (Pusa Yellow Anjan), Marcel (Gujarat marvel grass-1), Shaniar (Gujarat shaniar - 1) and jinjvo, dhaman, hemeta and clataria are grown in Gujarat. Generally, all grass types should be harvested in October, i.e. after four months of sowing them.

### Technical and Institutional Reforms in agriculture :

Earlier, farming was carried out by simple and ordinary farm implements like sickle, spade, hoe (pavdo), drill plough, plough, bullock cart etc. Now modern implements have entered into it of which tractor, trailers, rotavators etc. are common. Besides, modern equipment like thresher and harvesters are used in the wheat harvesting. There is an increase in the usage of chemical fertilizers, hybrid seeds, BT seeds, insecticides, drip irrigation and green houses etc.

### Technical Reforms

The changes which have taken place in seeds, fertilizers and farm implements in India are known as technical reforms.

- The farmer who earlier used leather buckets and water wheel, now uses submersible pumps or mono bloc pump, solar pump, drip irrigation and sprinklers.
- Chemical fertilizers like di-ammonia phosphate (D.A.P.), nitrogen, phosphorous, potash (N. P. K.), urea and other bio-fertilizers, liquid bio-fertilizer, bio-tec seeds are used.
- Farmers are constantly guided through radio, television, news papers, DD Kisan channel, SMS on mobile by the kisan toll free number 1800 180 1551 (Kisan call centre), Govt. Farm web portals, i-khedut and mobile app like 'agri market'.
- New agricultural researches and new techniques are conveyed to the farmers in the villages by Gram Sevak.



- A farmer training centre is established in every district head quarter wherein the farmers are given training.
- Recent information and guidance are provided to the farmers through agricultural fairs in Gujarat.
- Agricultural University and agricultural colleges are established in every state. Agricultural Universities are established at Dantiwada, Junagadh, Anand and Navsari in Gujarat. These universities carry out research and prepare new experts in agriculture.
- Besides these, Indian Council for Agricultural Research (ICAR) and Department of Agricultural Research and Education (DARE) are active at national level.

**Institutional Reforms :** The reforms connected with land ownership, crop subsidy and sale of farm produce are considered to be the institutional reforms in India.

- Government has discarded landlordism and stopped the exploitation of farmers. Under the law 'land to the tiller' (Land Tenancy act), the land tillers have been given their right to become the owner of the land.
- The disparity among the land owners has been removed by Land Ceiling Act.
- Farmers are given financial help for crop subsidy by Kisan Credit Card and by nationalised and cooperative banks.
- Farmers are given full insurance protection of their crops through Prime Minister Crop Insurance Scheme.
- When the crops fail due to drought or through excessive rain, farmers are given financial help by Government.
- By providing legal support, an open auction process is made widespread for the sale of farm products in the marketing yards.
- Facilities like cooperative societies, market associations, cooperative warehouses, cold storages, transportation and communication etc. have been provided so that the farmers would get the minimum support price of the farm products.
- Following organisations are operating for the purchase of the farm products from the farmers at support prices.
  1. National Agricultural Co-operative Marketing Federation of India (NAFED)
  2. Gujarat Co-operative Oil Seeds Growers' Federation (GROFED).
  3. National Dairy Development Board (NDDB)

## Green Revolution

Green revolution took place in our country in the decade of 1960, but before that there was a time when there was an acute shortage of food grains in the country. An agrarian country had to import food grains. The country was struggling against such dependent conditions.

- The extraordinary increase in the agricultural production because of improved seeds, increased use of chemical fertilizers, intense efforts of the farmers, widespread arrangement for electricity distribution, improved facilities in irrigation etc. is known as 'Green Revolution'.
- Main objective of the green revolution was to increase agricultural production. Farmers were encouraged to use chemical fertilizers and insecticides more. This led to attain the target to increase the agricultural production.
- There has been a record production of wheat and paddy due to green revolution.
- Where there was a scarcity of food grains in the country, today there is sufficient storage of the food grains.
- Once drought was a hazard of regular interval in India. Its adverse effects are not seen after the green revolution. Due to the buffer stock of food grains, the conditions of drought or scarcity are faced conveniently.
- The self sufficiency in food grains is a landmark of historic achievement of green revolution.

Today, the production of cash crops has increased and the production of pulses and other cereals has decreased, with the repetition of the same crop. To reach the stage where other countries of the world have progressed using better technology in agrarian field, we will have to be ready for next green revolution.

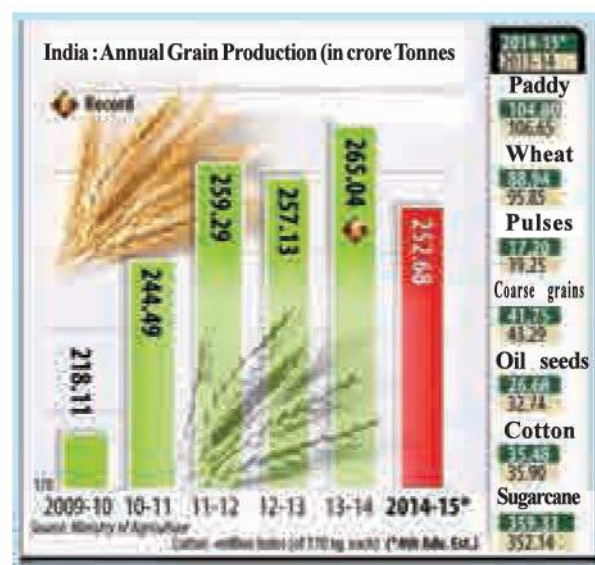
### Role of agriculture in Indian economy

Agriculture is the main occupation in India. The pressure which India had at the time of Independence is now reduced somewhat, however it still has an important contribution in Indian economy.

- It provides employment to about one half of the population of the country.
- Agriculture holds about 17% of the total Gross Domestic Production (GDP).
- Paddy, wheat, oil seeds, cotton, jute, sugarcane, tobacco, potatoes etc. are major agricultural products of India. Much foreign exchange is earned from their export.
- India ranks second in the world in agrarian production.
- Industries like cotton textile, sugar, paper, oil etc. as well as the industries regarding the food processing get their raw material from agricultural products only.
- Agriculture provides food to the people of India.

The Indian contribution is not consistent in the world agricultural market because of irregular and uncertain rain and inadequate facilities for irrigation.

Food security is necessary for any country today. If the demand for the food grains is increasing and if the food grains have to be imported, then the political independence of that country may be at a risk. We have become self-reliant in the field of grain production due to green revolution. Along with the increase in farm production, there is an increase in population of the country also. In 1951, India's



### 10.9 India : Grain Production



population was at 36 crore 10 lakhs, which today is more than 125 crores. This has increased the demand for food grains. However, there has been an increase in the production of food grains in our country during last 5 years. In 1950-51, India had produced 51 crore tonnes of food grains, which has increased to a record level of 265.04 crore tonnes in 2013-14. With the food grains which we have today, the minimum requirement of the country can be fulfilled. It is necessary to maintain buffer stock and to increase it. By the buffer stock of the grains, the scarcity of the grains can be prevented during droughts or in the case of inadequate production of the food grains. The wastage of food grains can be prevented by implementing the techniques to preserve the grains in warehouses. The hunger of thousands of families can be satisfied if this buffer stock is distributed among them free of charge. It is a strong necessity of the time to stop the wastage of food grains. It is necessary to strengthen food stocking and the arrangements to conserve it. It is a good beginning that the Government has made provision to supply the food grains up to the poor people through the Food Security Act.

### **Impact of globalization on Indian agriculture**

The policy of globalization has been implemented with the purpose that the Indian farmer can sell his farm products in world markets and earn profit. Many changes took place in the agricultural field due to globalization. The process to export or import crop productions is made very simple. Cotton, chillies and til are now available in Chinese markets and various fruits from world are now available in Indian market. The costly “genetically modified” BT seeds sold by the multi-national companies are now available in India. Due to this farming has become costly. The production of cotton and maize has increased. With the import becoming smoother, the domestic farm products have to face tough competition. Some products have gained global markets hence the necessity of registration of their Patents. It is necessary to register qualitative farm productions as National Patent in the world market.

To face the competition in agricultural products in global markets, India will have to adopt new technology and concentrate on quality. A series of planned steps will have to be taken to increase the economic prosperity and solidarity of people. With increasing population, the probable future increase in the demand for agricultural products and to maintain the march to economic progress, it is necessary to arrange the strategy for second green revolution.

### **Exercise**

#### **1. Answer the following questions in details :**

- (1) Write notes on types of agriculture.
- (2) State the institutional reforms made in agrarian field.
- (3) Write a note on ‘Global market and Indian agriculture’.
- (4) Describe the ‘Wheat crop of India’.
- (5) State about the ‘Oil seeds crops of India’.

#### **2. Write to-the-point answers of the following questions :**

- (1) Why is there more inclination for organic farming ?
- (2) Give difference : Kharif crop - Rabi crop.
- (3) Describe the contribution of agriculture in the economy of India.
- (4) ‘Paddy’ the most important crop of India. Explain.

### 3. Answer the following questions in brief :

- (1) State the uses of maize.
- (2) State the favourite conditions for the growth of coffee.
- (3) Which type of farming is carried out in Bhāl region and which crop is cultivated ?
- (4) What is meant by Green Revolution ?
- (5) Name the institutions working on agricultural research at national level.

### 4. Select the correct option from the options given for each question and write the answer.

- (1) Which of the following farming types has the lowest per hectare production ?  
(A) Plantation (B) Jhoom cultivation (C) Intensive cultivation (D) Wet farming
- (2) In which of the following farming types, the chemical fertilizers and insecticides are not used ?  
(A) Organic farming (B) Mixed farming (C) Plantation (D) Sustainable farming
- (3) Which state produces maximum groundnut ?  
(A) Kerala (B) Tamil Nadu (C) Madhya Pradesh (D) Gujarat
- (4) What is the chocolate made from ?  
(A) Til (B) Cocoa (C) Rubber (D) Tea
- (5) In the production of which of the following condiments is Gujarat first ?  
(A) Isabgul (B) Fenugreek (C) Mustards (D) Corriander
- (6) Which of the following pulses is a rabi crop ?  
(A) Udad (B) Mung (C) Gram (D) Math

#### Activity

- Classify the crops grown in your area in the following table.

| Grains | Pulses | Oil seeds | Beverages | Cash Crops | Medicinal<br>Condiments | Fruits | Vegetables |
|--------|--------|-----------|-----------|------------|-------------------------|--------|------------|
|        |        |           |           |            |                         |        |            |

- Collect the plant and seeds of different crops and see the difference after the plant has grown.
- Collect agricultural information from the website [https:// ikhedut.gujarat.gov.in/](https://ikhedut.gujarat.gov.in/) of Gujarat Government.
- Know the rates of farms products appearing in the newspapers.
- In your routine life, farm products of which regions do you use ? Prepare its list.
- Listen to the programmes on agriculture on Radio, Doordarshan or other channels, watch them and write names of five programmes.
- Collect information about the crops of Gujarat from the websites of Agricultural Universities of Gujarat.