Section-2

Agriculture

India is a self sufficient nation in agriculture. Different types of fertile soil are found here. Because of the availability of adequate temperature all the year round, the crops get longer time for their proper growth and maturity. The perennial rivers that flow down the Himalayas always have adequate water all the year round due to melting of glaciers in their source areas. The Monsoon rainfall also recharges the underground water and the surface water. It is a unique gift of the nature to the Indian agriculture.

Due to nature of Monsoon the rainfall controls the pattern of agriculture. Most of the parts receive rainfall for 3 4 months in a year and that too uneven and irregular. That is why in most of the areas only one crop is grown in a year. Only in 15 percent area where facility of irrigation is available, two or more crops are grown. Thus, in most of the areas of India dry agriculture is prevalent. The agriculture system developed with the support of rainfall is known as dry agriculture.

IMPORTANCE:

Agriculture is Important in India due to following different factors

1. It is the life line of the economic life of the country. About 2/3 of the total population rely on agriculture for their living in India.
2. The large population of the country gets their food from agriculture.
3. Agriculture provides raw material to industries such as Cotton Cotton Textile Industries, Sugarcane Sugar industry, Jute industry and other agriculture produce provides raw materials to agriculture processing

industries such as Juicy fruits provide base for the production of Jelly, Jam, Squash. Similarly, silk worms provide raw materials to silk industries. Thus, agriculture also strengthens the industries.

4. Due to availability of diversified type of climate, soil and land surface; diversification in crop production is also seen. In the production of many crops, India is significantly placed in the world. India is one of the leading nations in the production of Tea, Sugarcane, Coarse grains, some oilseeds etc. In the production of Rice, Jute, Tobacco, Wheat, Cotton etc. it holds second to fourth position.

3. Indian agriculture contributes significantly in the national income. 24 percent of the country's income comes from agriculture.

Agriculture plays an important role in internal and international trade. Through internal trade railways income and through foreign trade port income increases.

In short, the main objective of agriculture is to provide food, raw materials to the industries and through export of the agriculture produce it earns foreign exchange.

Land use of Agricultural Land in India: Land is a very significant resource for those who are dependent on agriculture because it is totally based on land resources. That is why in rural areas landless are always poor. In the production of crops the quality of land plays a major role where as in other economic activities such as in industries, transport, housing it is not that important. These can be even constructed on barren and fallow land. Because it is an immovable property so land is a matter of social dignity also. It enhances the social status. It can be mortgaged for loan. Landless are deprived of these benefits. In cultivable land category four types of land are included (1) Net sown area (2) Current fallow land (3) Other fallow land (4) cultivable waste land.

There is immense pressure on cultivable land due to rise in population and its non - agricultural use is on the rise. In such situation the agriculture production can be increased in two forms only -

1. Increase in per hectare yield.

2. Increasing total productivity by growing more than one crop from the same land within a year. It is called agricultural intensity. It can be understood by this example. For example you have 2 hectares of land. In one agriculture year you sow and grow paddy crop. After this during rabbi season you sow wheat on the same 2 hectares of land and reap wheat crop. Then quick yielding variety of Moong is sown and harvested. In real sense you have only 2 hectares of land but in one agriculture year you grow 3 crops from the same land, so you got the benefit of growing crop in 2x3 = 6 hectares of land.

This agriculture intensity is exhibited through an index and represented in percentage.

$$\text{Agriculture Intensity} = \frac{\text{Total sown area}}{\text{Net sown area}} \times 100$$

$$= \frac{6\ \text{Bigha}}{2\ \text{Bigha}} \times 100 \qquad = \frac{600}{2} = 300$$

becomes 300%. Punjab is ahead of the other states in India in agriculture intensity. The factors affecting agriculture intensity can be achieved by capital investment. Therefore, there is close relationship between agriculture intensity and capital utilisation. Students now it must be clear to you that why agriculture intensity is less in Bihar in comparison to Punjab?

Factors affecting Agriculture Intensity

1. Irrigation
2. Fertilizer
3. High yielding variety of seeds
4. Machanisation
5. Insecticides
6. Appropriate cost of theagricultural produce

There is very less chance of increase in net sown area in India but agriculture intensity is that alternative through which agriculture produce can be increased.

Capital Utilisation: Utilisation of irrigation, fertilizer, high yielding variety of seeds, machines etc. by investment of capital

Due to the presence of tropical climate in most of the parts in India, sufficient temperature and light is available here. Because the distribution of rainfall is not even in all places, therefore, there is variation in humidity percentage from place to place and it becomes an important factor in regulating the agriculture pattern, types of crops and its productivity. When crops are grown only on the basis of moisture received through rainfall then it is called rain fed agriculture. This agriculture is of two types Dry land agriculture and Humid land agriculture.

The agriculture in the area of less than 75 C.M. of rainfall is 'Dry Land' and areas having more than 75 C.M. of rainfall is called 'Humid Land' agriculture.

On 38.67% agricultural land of India, agriculture is dependent on rainfall. Coarse grains, Pulses, Oilseeds, Cotton etc. are examples of rain fed agriculture.

Characteristics of Dry Land Agriculture:

1. Methods of conservation of rainwater are used here so that the stored water can be used during dry season.
2. Water excess of their necessity is conserved for the recharge of the underground water.
3. Due to dryness the amount of humus is very less in the soil.
4. Due to dryness the upper layer of the soil is eroded away by the wind.
5. Dry land agriculture is mostly done by poor farmers who have scarcity of capital and necessary resources to do developed agriculture.
6. There is less income through agriculture here and so it is compensated by pastoral farming. Now due to increasing population pressure the grazing grounds are turning in to agricultural fields.

Though poor farmers and dry land agriculture, both are closely related to each other. Therefore, for the upliftment of poor farmers government has made several programmes such as

1. Integrated Rural Development Programme, Drought Prone Area Development Programme, Grains in return of work and employment programme, MNREGA etc.
2. Seeds of quick yielding variety are being prepared.
3. New technique of agriculture is being developed.
4. Technique to control water loss and its storage to be advertised.
5. Pastoral farming and poultry farming are being developed as supplement to agriculture.
6. Cottage and small scale industry is also being developed.
7. For semi - dry tropical areas International Crop Research Institute (Hyderabad) and Central Dry Area Research Institute (Jodhpur) is working for the remedy of dry land and other agriculture related problems.

Types of Agriculture:

Agriculture is an ancient economic activity. The different Geographical and cultural settings of India has also affected the agriculture as per the situation of time. Thus, several type of agriculture is being done here -

1. **Primitive Subsistence Farming**
2. **Intensive Subsistence Farming**
3. **Commercial Farming**

Primitive Subsistence Farming: It is a type of agriculture which is being practiced here since ancient time. This type of agriculture is done as per the prevailing tradition. The tools used for agriculture are traditional such as wooden plough, hoe and Dao. With these tools fields cannot be ploughed deeply. Somehow the seeds are sown and crop is harvested once it is ready. There is deficiency of investment of modern techniques and that is why the yield is less and due to less fertility of the soil, the per unit productivity of the crops is also less. The example for this type of agriculture is Slash and Burn

Agriculture. In this the farmers clears the piece of land by cutting the wild vegetation that had grown and burn them and then sow the crops. In this the crop is grown for the subsistence. When the fertility of the field decreases then the farmers shift and repeat the same process on a fresh piece of land.

This type of agriculture is known by different names in different parts of the country.

In the North Eastern states Assam, Meghalaya, Mizoram and Nagaland it is known as *'Jhumming'*, *'Pamlou'* in Manipur, *'Dipa'* in Bastar districts of Chhattisgarh and in Andaman and Nicobar Islands.

Intensive Subsistence Farming:

This type of agriculture is done in most parts of the country. This method of agriculture is adopted in those areas where the pressure of population is more on land. In this method of agriculture involvement of labor is more and methods of traditional agriculture are greatly adopted. Traditional knowledge is adopted to maintain the fertility of the agricultural land; safe keeping of the seeds and climate related knowledge is also being used. With the increase of the population the size of the agricultural fields has shrunk and in absence of alternative employment opportunities, more than the required number of population is involved in this type of agriculture practices. Thus, it also presents the form of hidden unemployment.

In this type of agriculture mainly food grain (Rice) is grown. Because of very large population, even greater production becomes less for such a large population size and that is why it is called as subsistence agriculture.

Commercial Farming:

True to its name, in this form of agriculture the crops are grown for commercial motives. Today in this type of agriculture more capital input and modern agricultural techniques are being adopted. The farmers try to earn greater profit from their capital investment. In the modern agriculture technique, high yielding variety of processed seeds, chemical fertilizer, irrigation, chemical insecticides etc. are being used. In India this method of

agriculture was the outcome of 'Green Revolution' and was widely adopted in Punjab and Haryana. In this mainly Wheat is cultivated. In Punjab and Haryana 'Basmati Rice' is also grown under this method of agriculture.

Plantation agriculture is also a type of commercial farming. Similar to industries, in this form of agriculture there is provision of manager and labor and the farmer is similar to a mill owner. The total production of this method of agriculture is used as raw material for the industries.

Tea, Coffee, Rubber, Sugarcane, Banana etc. are plantation crops in India. Tea in Assam and Darjeeling, Coffee in Karnataka, Rubber in Kerala, are some of the important plantation crops mainly grown in these states. As the crops are mainly grown for commercial purposes, therefore a well developed network of transport and communication is very essential.

Cropping Pattern:

The physical diversities give birth to cultural diversity in India. This diversity is also reflected on different crops that are grown here, in their pattern and methods of cultivation adopted. Here, various types of food crops, pulses, oilseeds, beverage crops, fiber crops, fruits, vegetables etc. are cultivated. These different varieties of crops are grown according to the different type of seasons. Here three types of season related crop groups are cultivated

(1) Rabi crops
(2) Kharif crops
(3) Zaid crops (Garma Crops)

Rabi crops are sown in winter months in between October to December and harvested in summer season in between April to June. Major crops are Wheat, Barley, Gram, Peas, Red Lentil (Masoor) and Mustard etc.Though, Rabi crops are cultivated in large parts of the country but states of North West India such as Punjab, Haryana, Western Uttar Pradesh, are important. It is that area where as a result of Green Revolution we became self reliant in food grains. Green Revolution has its essentials conditions (1) Developed through latest technique, High Yielding Variety (HYV) Seeds which

gives high per hectare productivity, (2) Means of irrigation, (3) Chemical fertilizer, (4) Chemical insecticides etc.

As a result of the Green Revolution, several environmental problems are now emerging in these areas. Dou you know anything about it?

Kharif : Kharif rops are sown during rainy season in India and harvested in September October. Paddy is the important crop grown in this season. Other crops which are also grown in this season are Maize, Jowar, Bajra, Arhar, moong, Urad, Groundnut, Soyabean, Cotton, Jute etc. Rice is mainly grown in Assam, West Bengal, Bihar, Odisha, Andhra Pradesh, Tamil Nadu, Kerala, Konkan coast of Maharashtra. Since last few years good quality of Basmati rice is grown in Haryana and Punjab. In the areas where the rainfall is more than the normal there three crops of paddy is grown and are named as Aus, Aman and Boro.

Zaid: Crop sown in summer season between Kharif and Rabi crops is called Zaid or Garma crop. In this mainly Paddy, Maize and vegetables are grown. In the vegetables mainly cucumber, kakri, pumpkin, Nenua, ladiesfinger, muskmelon, watermelon etc. are important.

Important Crops of India

Crops	Duration of Time	Season	Important crops
Kharif	Up to June-July to October-November	Rainy season	Rice, Maize, Jowar, Bajra, Arhar, Moong, Urad, Cotton, sesame Jute, Groundnut.
Rabi	Up to October-November to March-April	Winter season	Wheat, Barley, Gram, Masoor, Peas, Linseed, Mustard.
Zaid	Up to March-April to May-June	Summer season	Vegetable – Pumpkin, Kakri, Cucumber, muskmelon,watermelon, paddy,maize, moong, urad.

The special feature of crops grown in India is that 100 cm Isohyet divides the country in to two large agricultural regions. Rice is grown in the areas that receive more than 100 cm of rainfall where as wheat is grown in those areas where rainfall is less than 100 cm.

There is an area of transition in between these two important agricultural regions. There is a special crop feature of dry areas where the main crops are jowar, Bajra, groundnut, oilseeds and pulses.

Major Crops The major factors that affects diversity of Indian agriculture are amount of rainfall, types of soil, diversified agricultural methods etc. As a result of which different crops are grown in India, important among them are paddy, wheat, maize, jowar-bajra, pulses-oilseeds, beverage crops, fiber crops etc.

Rice:

It is a staple food crop of our country over which majority of population rely. 22% of the world's rice area is in India and this is 23% of the total agricultural area. Following are the favorable Geographical conditions which are suitable for Rice cultivation:-

(i) Temperature: It is a tropical crop; therefore high temperature is required for its growth. At least 24° C of temperature is required for its cultivation. At the time of sowing the ideal temperature is 21° C, during growing period 24°C and at the time of harvest it should be 27°C.

(ii) Rainfall: For rice cultivation rainfall between 125 cm - 200 cm is required. Any region having lesser rainfall than this, the crop is grown with the help of irrigation.

(iii) Soil: For its cultivation very fertile alluvial soil is required. Its soil should be clay-loams so that the roots of the plant may develop properly.

(Iv) Labor: Human labor in large number is required for its cultivation. The whole process of sowing to harvesting is accomplished by human labor. The cheap labor of India creates favorable human environment for its cultivation.

Production and Distribution:

Most of the rice of India is grown in the areas of alluvial soil, deltaic and coastal parts. Apart from these it is also cultivated in the stair shaped fields of lower valleys of Himalayas and in valleys of southern plateau.

In the Satluj-Ganga plains, the cultivation of rice has made commendable progress with the help of irrigation. Its important producing

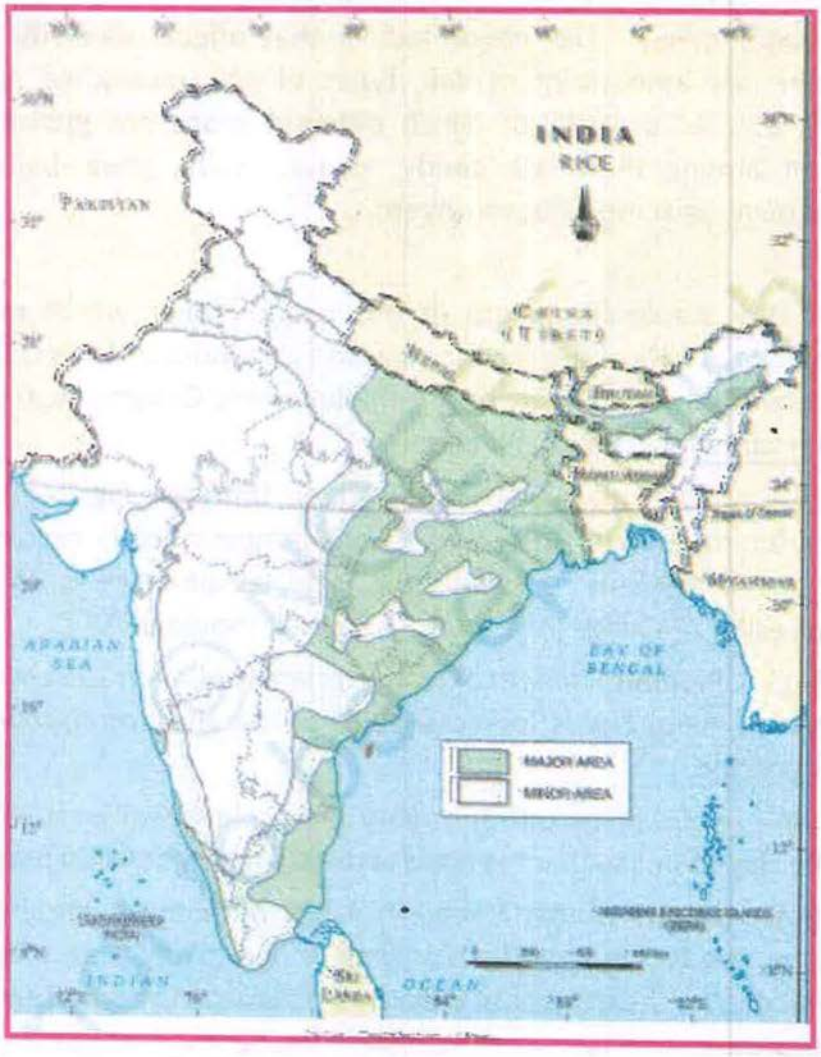

Fig 2.1 India: Distribution of Rice

are West Bengal, Bihar, Uttar Pradesh, Andhra Pradesh, Odisha, Chhattisgarh, Assam, Kerala, Tamil Nadu etc. All three varieties of rice are grown in West Bengal.

Wheat:

Wheat is the second most important cereal crop after rice. Our country is the second largest producer of wheat and produces about 10 percent of the total wheat production of the world. It is grown in winter season and at the time of ripening it requires bright sunshine. It requires

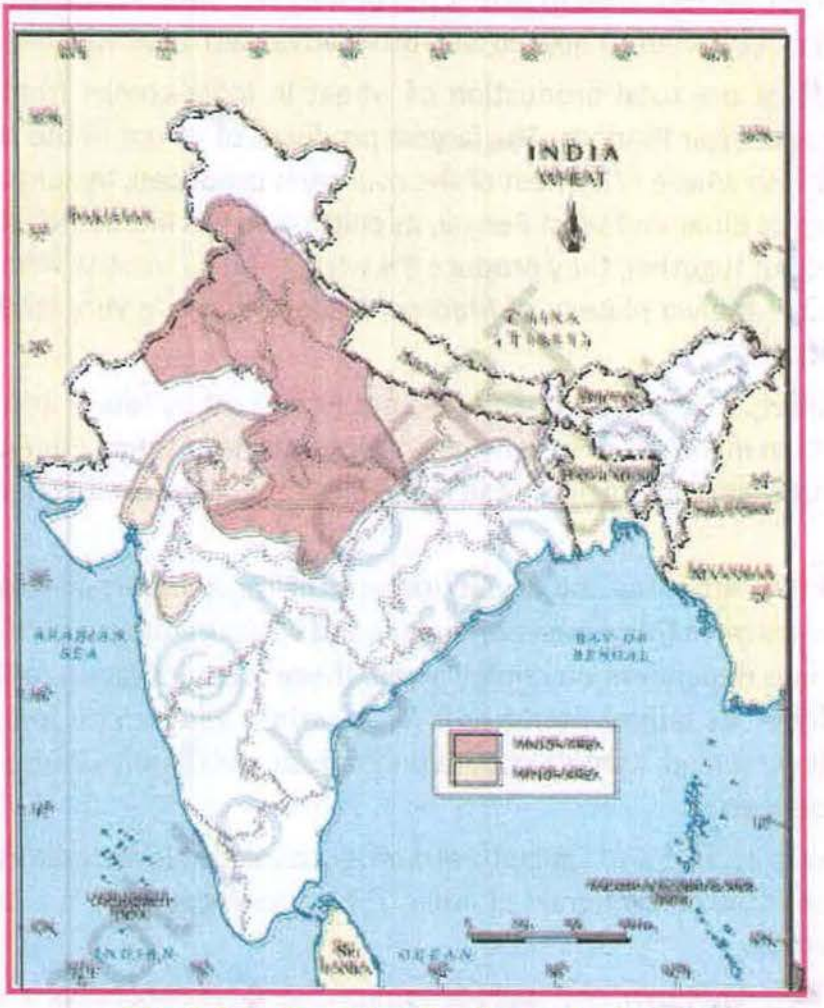

Fig 2.2 India: Distribution of wheat

evenly distributed annual rainfall of 50-75 cm during growing season. It cannot be cultivated in the areas where annual rainfall is more than 100 cm. 100 cm annual rainfall Isohyet divides wheat and rice producing areas. With the help of irrigation, wheat can be grown in those areas also which receives 20 cm of annual rainfall.

In 1967 Green Revolution started in our country and its maximum impact was on wheat cultivation. In 1970-71 the production of wheat doubled in comparison to 1960-61. There was about 1.5 times increase in the area and per hectare yield of wheat but per hectare productivity of wheat in India is very less when compared with other advanced nations of the world.

2/3 of the total production of wheat in India comes from Punjab, Haryana and Uttar Pradesh. The largest producer of wheat in the country is Uttar Pradesh where 1/3 wheat of the country is produced. In nontraditional areas such as Bihar and West Bengal, its cultivation has increased and if both states are put together, they produce 8% wheat of the country. Wheat is also cultivated in Malwa plateau of Madhya Pradesh and in a very large area in Maharashtra.

Millets : Jowar, Bajra and Ragi are important millets of the country. They contain materials of very high nutritional value in them. For example in Ragi, ample amount of iron, calcium, micro nutrients and roughage are found.

Jowar: After rice and wheat, Jowar is the most important food crop in India. It is grown in those areas where rice and wheat cannot be cultivated. Its cultivation is dependent on rainfall and in those areas irrigation facilities are not available. Its largest producer is Maharashtra where 51% Jowar of the country is produced. Karnataka, Andhra Pradesh and Madhya Pradesh are its other producers.

Roughly, 16.5% of agricultural land is occupied in Jowar cultivation and it produces 10% of food grain of India. 75% of Jowar of India is produced in plateau areas.

Bajra: It is grown on 7% of the total cultivable land of India. It is a staple food for poor and animals. It is mainly grown on sandy and shallow black soil.

The largest producing states are Gujarat (24%), Rajasthan (20%), Uttar Pradesh (13%) and Maharashtra (10%).

Ragi: It is a crop of dry region. It comfortably grows on red, black, sandy, loamy and shallow black soil. Karnataka is its largest producing state, followed by Tamil Nadu which is the second largest producer. Ragi is also grown in Himachal Pradesh, Uttrakhand, Sikkim, Jharkhand and Arunachal Pradesh as important crop.

Maize: It is another very important coarse grain and used as food by human beings and given to animals as fodder. It is a good source of glucose and Mand **(Please check and translate Mand of Hindi)** and that is why it is given to animals to make them fat. As its per hectare yield is more, so it is an important food crop for the poor.

It is a Kharif crop and it requires temperature in between 21°C 27°C and rainfall of 75 cm. This crop grows well in the alluvial soil brought by rivers. It is mainly grown in plain areas. Introduction of modern inputs such as High Yielding Variety (HYV) seeds, fertilizers and irrigation facilities has increased the production of maize.

Pulses:

Majority of population of India are vegetarian and pulses are the source of protein in our food. Tur (Arhar), Urad, Moong, Masur, Peas and Geam are important pulses that are grown in India. The production of pulses has not increased in the same proportion as the proportional growth in food grain production. In fact, in total agricultural land, the percentage of pulse cultivation has decreased. The pulses require very less moisture so it can be grown even in dry conditions and 90% of its cultivation is done in accordance with the dry agriculture technique. All pulse crops except Tur (Arhar) makes the soil fertile by fixing Nitrogen from the air. Thus, generally they are grown in rotation with other crops. Pulses are grown in both Kharif and Rabi seasons Arhar, Moong, Urad, etc. are Kharif crops where as Gram, Peas, Masur etc. are Rabi crop. National Pulse Development Programme has been started in 1986-87 for increasing pulse production but its results are not satisfactory. Important pulse producing states in India are Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra and Karnataka.

Food Crops Other Than Grains:

Sugarcane: It is plant of Bamboo species. Sweet juice is extracted from it and Gur (Jaggary) and Sugar is made from it. Sugarcane is said to have originated from India. It is a tropical as well as sub-tropical crop. It is cultivated in the areas where the temperature is between 21°C to 27°C and rainfall ranges in between 75 cm to 100 cm. In the areas where the rainfall is less irrigation is required. It is grown in variety of soils but well drained deep loamy soil is ideal for its cultivation. This crop spoils the fertility of the soil very quickly and so large amount of fertilizer is required for its cultivation.

This crop is grown in India from Kanyakumari in the south to Gurdaspur of Punjab in the North but its major producing area lies south of 25° North latitude. In comparison to North India, South India has more favorable conditions for its cultivation.

Oilseeds: India is the largest oilseed producing country of the world. On 12% of the total cropped area of the country various variety of oilseeds are grown. The oil extracted out of them is an important part of our food and some of them are used as raw materials for the industries.

Groundnut, Mustard, Coconut, sesame (Til), Soyabean, Castor seed, Cotton Seed, Linseed and Sunflower etc. are important oilseeds which is grown in India. Some of these oilseeds are used in the manufacture of soap, cosmetics and ointments (Ubtan).

Groundnut: It is a Kharif crop. India is second largest producer of groundnut in the world. It is cultivated on 3.6% of the total cropped area of the country. It accounts for half of the total oilseeds produced in India. Gujarat is the largest producer of Groundnut in the country. Other important Groundnut producing states are Andhra Pradesh, Karnataka and Maharashtra.

Mustard: In this Rai, Mustard, Toriya, Taramira and various other oilseeds are included. It is sub-tropical Rabi crop and it is cultivated in central and North-Western parts of India during Rabi season. Very cold weather is harmful for this crop and badly affects its production. To increase its production new technique is being adopted which includes the use of high

yielding variety of seeds and adequate arrangement of irrigation has also been made. 1/3 of the total production comes from Rajasthan. Other producing states are Uttar Pradesh, Haryana, West Bengal and Madhya Pradesh. Its per hectare production is very high in Haryana and Punjab.

Linseed: It is another Rabi oilseed crop. It has many industrial uses. Linseed is a Kharif crop in North India and in South India it is a Rabi crop. Castor seed is both Kharif and Rabi crop.

Soyabean and Sunflower are other very important oilseeds of India. Soyabean is mainly grown in Madhya Pradesh and Maharashtra and both put together accounts for 90% of the total production of India. Sunflower is mainly grown in Karnataka, Andhra Pradesh, Maharashtra states of South India. It is not very important crop in North India but still it is cultivated in irrigated areas.

Tea:

It is an evergreen bush whose leaves are dried to make tea. It contains a substance known as thein which gives us slight freshness when we drink tea. It is an important beverage crop of India. India is the second largest producer but largest consumer of the tea in the world. It comes under plantation agriculture. At first, its cultivation was started by English in Brahmaputra valley in 1840. This region is still the most important tea producing region of the country.

Tea plant blooms in tropical and sub-tropical areas. It requires an ideal temperature that ranges between 25°C to 30°C and rainfall between 200 to 250 cm is essential. For tea plantation land should have sufficient slope so that there is no water logging near the roots of the plant. The humidity should be evenly distributed throughout the year for the proper and regular growth of the leaves. Morning fog and daily shower is highly helpful for the growth of the leaves. Its soil should be well drained and fertile. The soil should contain sufficient amount of phosphorous, potash and humus.

For the cleaning and cutting of the tea bushes large number of human labor is required. To maintain the freshness of the tea leaves, it is processed in the garden itself. In India Tea is produced in some major as well as in some less

important areas. The major tea producing areas are Brahmaputra and Surma valley of Assam, Hills of Darjeeling and Jalpaigudi in West Bengal and in the hills of Nilgiri in Tamil Nadu. In the less important areas, Himachal Pradesh, Uttrakhand, Meghalaya, Tripura, Andhra Pradesh etc. states are there. India is leading tea producer and exporter of the world.

Coffee: Like tea it is also a beverage crop. Coffee seeds are taken out from the fruits of Coffee bushes.

Like tea it also grows in soil containing limestone but soil must contain humus for its proper growth. For plucking of its fruit, then roasting and grinding of the seeds to make coffee powder, large human labor is required. Most of the coffee in India is produced in south India. Karnataka is the largest producer of coffee of India and produces 70% of the total coffee production of India. It is also grown in the Nilgiri hills of Tamil Nadu. In North Eastern India, Tripura is an important producing state.

There are Three Major Varieties of Coffee

1. Arabica 2. Liberica 3. Robusta.

In India best quality of Arabica coffee is grown which is in great demand all over the world. It was brought in India from Yemen and planted in the hills of Baba Budan.

Horticulture Crops:

Due to diversified climatic conditions in India several varieties of horticulture crops are grown in India such as different varieties of fruits, Vegetables, roots and aromatic plants and spices etc. India is a producer of tropical as well as temperate fruits.

India is a leading producer of Mangoes. Countless varieties of Mangoes are produced here. Uttar Pradesh, Andhra Pradesh, Maharashtra, West Bengal, Bihar are famous for Mangoes, Bihar and Uttar Pradesh for Litchi, Meghalaya for Pineapple, Andhra Pradesh and Maharashtra for Grapes and Himachal Pradesh and Jammu and Kashmir are famous for Apples, Pears, Apricots and Walnuts production. Name of few places are associated with particular fruits such as Nagpur and Cherrapunjee with Oranges, Muzaffarpur with Litchi and Bananas of Jalgaon are significant. In states such as Kerala, Tamil Nadu, Maharashtra and Mizoram large scale cultivation of Banana is done.

Geography :: 142

In horticulture crops Cashew nuts, Black Pepper and Coconuts are also important. India is the largest exporter of Cashew nuts in the world. It is mainly grown in Kerala and Andhra Pradesh.

Black Pepper is grown in the Western Ghats of Kerala and Coconut is grown in the coastal areas of Kerala, Tamil Nadu, Andhra Pradesh and Karnataka.

Non-Food Crops:

Rubber: Rubber plantation was starts in India in 1880 at Travancore and Malabar but its commercial production could start only in 1902. Rubber is a crop of equatorial climate and it requires high temperature and high humidity for its growth. Rubber is grown in Kerala, Tamil Nadu, Karnataka, Andaman and Nicobar Islands and Garo hills of Meghalaya.

Fibre Crops:

Cotton, Jute, Hemp and Natural silk are four important fibre crops grown in India. Natural silk is obtained from the Cocoons of the silkworms which grows by eating Mulberry leaves but first three fibre crops are grown in soil.

Cotton:

India is considered to be the home of Cotton. It supplies raw material for the cotton textile industries. It is a tropical as well as sub-tropical plant and it requires a climate of 210 frost free days. Black soil formed of Lava is highly suitable for its cultivation in India because it maintains moisture for longer period of time.

Bright sun shine helps in the proper growth of the cotton plants. At the time of ripening it requires dry climate. It is a Kharif crop and requires 6 to 8 months to mature. The major cotton producing states are Maharashtra, Gujarat, Madhya Pradesh, Karnataka, Andhra Pradesh, Tamil Nadu, Punjab, Haryana and Uttar Pradesh.

Jute:

Jute is the second important fibre crop of India after cotton. It is also called 'Golden Fibre'. Very good jute crop is received, when new fertile soil is

deposited in the flood plains every year. It requires loamy soil for its growth. Its other requisites are hot and humid climate and after maturity of the fibres sufficient amount of water is required for its processing. The flowing river creates ideal conditions for its cultivation. The river deltas and lower Ganga plains presents favorable conditions for its cultivation. Traditionally ropes, Chat, Gunny Bags etc. are made from the Jute which is used in packing. These days dresses and other artifacts are made from it which is in great demand in and outside the country.

Technological and Institutional Reforms:

Agriculture has been practiced in India since thousands of years but since no changes has been brought in traditional methods and institutional structures with the span of the time; we find that we are lagging far behind in agriculture. Because of the rapid increase in population agricultural fields has been fragmented and as a result of which agriculture has not remained economically profitable. Most of the agriculture of India still relies on Monsoon and very limited irrigation facility has been developed. It is a major challenge to make agriculture a developed part of the economic system for the increasing population. For this, it is highly essential to bring about technological and institutional reforms because without this it is very difficult to improve agriculture. After independence efforts has been made for the consolidation of holdings, abolition of zamindari systems and to develop cooperatives.

In the first five year plan emphasis was laid down on land reforms but land reform act was not implemented properly. In the decade of 1960-70 special package for agriculture was also introduced.

It was from this package that green revolution in wheat cultivation was started. In this, wide ranging use of High Yielding Variety (HYV) of seeds, chemical fertilizer, irrigation, insecticides etc. was introduced and as a result of which there was an unexpected rise in the production of food grains and it proved to be a mile stone in food protection. During this period White Revolution (Operation Flood) was also introduced which also resulted in unexpected rise in milk production. To take this revolution further ahead, the Indian government paid particular attention on cooperative department.

In the decades of 1980s and 1990s a comprehensive land development programme was initiated, in which special attention was paid on institutional and technological development programmes. In this, efforts were made to develop agriculture in the rain fed areas. To protect the farmers from loss due to natural disasters, crop insurance programme was introduced. Grameen Banks, cooperative Societies and other Banks were established for providing loan facilities to the farmers at lower rates of interest. The government of India also introduced Kisan Credit Card (KCC), Personal Accident Insurance Scheme (PAIS). Apart from these, special agriculture related programmes for farmers were broadcasted on television and Akashwani. To check the exploitation of farmers from the middlemen, the government announces minimum support price and profitable procurement price for important crops.

In the 1980s Agro-Climatic Planning was started and regional equilibrium was emphasised in agricultural development. In this decade particular emphasis was laid on agricultural diversity, for example cultivation of costly medicinal plants etc. Apart from crop cultivation in agriculture, development of domestication of milching animals, poultry, pastoral farming, fishery etc. was greatly encouraged.

Contribution of Agriculture to the National Economy, Employment and Output:

Because India is an agricultural country, so agriculture remains to be the main stay of our economy. In 2001, about 63% of the total Indian population got employment from agriculture but ever since the attainment of Independence till today its share in the Gross Domestic Product has registered a continuous declining trend which is a matter of concern. Any decline in agriculture will bring decline in other spheres of the society and will encourage regional disparity. It is not in the interest of those people who are totally dependent on agriculture.

Understanding the importance of agriculture, the government of India is making concerted efforts to madernise agriculture for its development. Establishment of Indian Council of Agricultural Research, Agricultural

Universities, Veterinary services and animal breeding centers, Horticulture development, research and development in the field of meteorology and weather forecast etc. were given priority.

Growth in Gross Domestic Product

	1980 – 91	1992 - 2001
Agriculture	3.6	3.3
Industry	7.1	6.5
Services	6.7	8.2

It is clear from the above table that there has been increase in the Gross Domestic Product but it is not generating sufficient employment in the country. The growth rate is on decline in agriculture and it is an alarming situation.

Globlisation is affecting the agriculture of India. The meaning of Globalisation is - combining the economy of the country with the economy of the world. It has opened the Indian market for the world's market. The control of government machinery over the international trade has lessened now. Now the foreign products which includes agricultural produce also, can easily be sold in India. Due to this international competition, the Indian farmers are up against a very stiff challenge. Indian

Major Factors of Low Productivity

(i) Increasing population pressure on agricultural land.
(ii) Decreasing area of agricultural land.
(iii) Small size of agricultural fields.
(iv) Land-ownership system
(v) Less and uncertain facility of irrigation.
(vi) Uncertainty of Monsoon rainfall.
(vii) Maginalisation of agricultural land.
(viii) Less capital investment.
(ix) Limited use of modern agricultural techniques (HYV Seeds, Insecticides, Chemical Fertilizers and Modern Equipments).
(x) The propagation system of agricultural research is not in good condition.
(xi) No proper cost of agricultural products.
(xii) Lack of work all the year round.
(xiii) Lack of commercialisation in agriculture.

agriculture is fighting against several problems and greatest of them all is less per hectare yield. On every unit of land in India, the production of crops is 1/3 of Japan and 1/4 of United States of America.

To stand before the global competition, India will have to use its agriculture related potential in a planned manner. Apart from utilisation of bio-technology, unification of national market can be an important step in this direction. It is highly essential to make available roads, electrical, irrigational and loan facilities for it. Without this, it will not be possible to save agriculture from the ill effects of globalisation.

Food Security: Food is our basic need and we must have access to food, cloth and shelter. For every citizen, it is highly essential to have access to food with nutrition. In those areas of the country where poverty is widespread, problem of death due to hunger is there. To counter this problem, our government has designed a National Food Security System. It consists of two important components (i) Buffer Stock and (ii) Public Distribution System (PDS).

In the Public Distribution System food grains and other essential commodities are supplied to the inhabitants of rural and urban areas at subsidised prices. It has enabled the poor to have access to food. Food Corporation of India (FCI) is active in maintaining the buffer stock. Food grains are purchased by FCI at the minimum support price and then it is stored by them.

The consumers are divided in to two categories 1. Below Poverty Line (BPL) and Above Poverty Line (APL). The people who are categorised under these categories have different issue prices for the commodities for each category. However, this classification is not perfect in itself. Many deserving poor people has not been included in BPL category and those people who are on the margin of the APL category slip back to BPL category after the destruction of a single crop but they are not counted in BPL category. As per the administrative point of view, there are many general problems in accurate classification.

Geography :: 147

Food Grain Production (In Million Tonnes)

Year	Rice	Wheat	Coarse Grains	Pulses	Total
2000-2001	85.0	70.0	31.0	11.0	197.0
2001-2002	93.0	73.0	33.0	13.0	213.0
2002-2003	72.0	66.0	26.0	11.0	175.0
2003-2004	88.0	72.0	38.0	15.0	213.0
2004-2005	85.0	72.0	34.0	13.0	205.0
2005-2006	92.0	69.0	35.0	13.0	209.0
2006-2007	93.0	76.0	34.0	14.0	217.0
2007-2008	96.0	77.0	40.0	15.0	228.0

Source : India 2008, Publication Department.

Essential reforms in the basic infrastructures such as electricity, irrigation, rural roads etc. in the agriculture sector are urgently required for the development of agriculture. Instead of wheat and rice, the cultivation of local food crops should be encouraged in which increased productions are expected. Increasing food grain production which should be on a sustainable basis is very essential because the increasing population of India needs food security. There has been increase in net sown area under fruits, vegetables, oilseeds and industrial crops where as on the other hand, there has been reduction in the net sown area under cereals and pulses. Due to increase in population, there has been increase in percentage of land engaged in non-agricultural uses. Due to the technology introduced in green revolution (Insecticides, pesticides and chemical fertilizers) the quality of the soil has been degraded which is a huge problem. Due to irrigation and incompetent water management, problem of Water logging and Salinity has emerged. Because the farmers are given free electricity, the underground water is being exploited unmindfully from the different means of irrigation. As a result of

this unsustainable pumping, the water storage in the aquifers has been reduced which has resulted in the drying of many tube wells. This has compelled the small and marginal farmers to leave agriculture. Though, the big farmers with deeper tube wells still have water. Inadequate facility of storage and lack of marketing facilities affects the productivity of the farmers. Thus, the farmers had to endure double loss as they are compelled to invest high capital for good productivity in their fields on one hand and on the other they do not get right support price or wear the loss of their crops due to some natural disaster. Thus the farmers are compelled to sell their crop production. Therefore, there can be no food security without the security of small farmers.

Defined words:

Growing Period: It is the period of favorable climate for sowing, growing and ripening of the crops.

Green Revolution: It is a revolutionary development in the agriculture of our country. In this, by using new seeds, fertilizers and by making arrangement of irrigation facility, production of few food grains was increased immensely.

Plantation Agriculture: It is a method of planting one or more variety of plants for commercial production in large economic units.

Pastoral farming and development of milk production are highly helpful in the development of small and marginal farmers in Indian agriculture. Through this their income is being increased and their living standard is being uplifted. Through this there is possibility of increasing income of people living in semi-urban areas, tribal population dominated areas and drought prone areas.

India has the largest cattle population in the world; 57% of Buffalos and 14% of cows (2003) of the world lives here. Through 'Operation Flood' substantial increase in milk production has been brought in the country and by strengthening cooperative system, white revolution has been executed. In Bihar, Sudha Milk Cooperative Society is working for the farmers of this area.

Alternative of horticulture agriculture can be seen shining on the horizon of Indian agriculture. Self help groups and non - government organisations are working in this field. Cultivation of vegetables, fruits, flowers, medicinal plants etc. are gaining momentum.

QUESTIONS

1. Answer the following Questions:

(A) Name the two most important food grains of India.

(B) Which are the three important coarse grains are grown in India?

(C) Name three cash crops of India.

(D) Which is the most important plantation crop of India?

2. Differentiate between the two:

(A) Cash crop and Plantation crop.

(B) Commercial agriculture and Subsistence agriculture.

3. Write one word for each one of the following:

(A) Crop sown in the beginning of Monsoon and harvested in winter.

(B) Crops sown in winter after rainy season and harvested in spring season.

(C) Land left after cultivation to regain its fertility and start cultivation once again.

(D) One cropped cultivation being practiced by implementing scientific and commercial methods which is similar to industrial produce.

SHORT ANSWER TYPE QUESTION:

1. Write the name of two food, cash and fibre crops which is grown in India?
2. Write the name of two important states which produces above mentioned crops?
3. Write the names of rain fed crops grown in India?
4. Discuss the contribution of agriculture in Net National Product?

5. Write in brief the main causes of low productivity of Indian agriculture?
6. What do you understand by Green Revolution?
7. Write five important characteristics of Indian agriculture?
8. Write the name of important food and commercial crops which is grown in India?

Give reason for the following:

1. Cotton is mostly grown in the black soil of Deccan region.
2. Production of Sugarcane is more in south India in comparison to North India.
3. India imports and exports cotton.
4. India is leading Tea exporter of the world.

MAP WORK:

Locate Rice, Wheat, Tea and Cotton producing regions in the outline map of India.