

- Land-use records are maintained by Land Revenue department.
- The Survey of India is responsible for measuring geographical area of India.
- Land under settlements, roads, canals, industries, shops, etc. is called Land put to Non-agricultural Uses.
- The land such as barren hilly terrains, desert lands, ravines, etc. and normally cannot be brought under cultivation with the available technology is called **Barren and Wastelands**.
- Land which is left un-cultivated for one or less than one year is called **Current Fallow**.
- Land which is left uncultivated for more than a year but less than five years is called **Fallow other than Current Fallow**.
- Land which is left un-cultivated for more than five years is called **Culturable Waste-Land**.
- The physical extent of land on which crops are sown and harvested every year is known as net sown area is called **Net Area Sown**.
- Land-use in a region is influenced by the nature of economic activities carried out in that region.
- Area under non-agricultural uses has registered the highest rate of increase.
- The total cultivable land (Net sown area + fallow land + cultivable wasteland) in India is 58.67 % of reporting area.
- Food grains (cereals and pulses) crops are largest cultivated crops of India. (75% of total cropped area)
- The country produces about 11 per cent cereals of the world and ranks third in production after China and U.S.A.
- 'aus', 'aman' and 'boro' are the variety of rice seed.
- Rice is the first most important staple food crop of India.
- India is second largest producer of Rice and produces 22% of world rice.
- Wheat is the second most important food crop of India.
- Jowar is main food crop in semi-arid areas of central and southern India.
- Bajara is a hardy crop which can resist frequent droughts.
- Maize is a food as well as fodder crop.
- Pulses are rich sources of proteins. Pulses are legume crops which increase fertility by nitrogen fixation. India is a leading producer of pulses in the world.
- Tur (Arhar) is also known as red gram or pigeon pea.
- Arabica, robusta and liberica are the varieties of coffee.
- Cotton and Jute are two main fibre crops grown in India.
- The strategy of introduction of high yielding seeds of wheat and rice with irrigation is called **Green Revolution**. Due to it agricultural production increased rapidly in 1960s.
- In rainfed areas agro-climatic planning was introduced in 1980s.
- New high yielding seed varieties of **wheat** came from **Mexico** and **rice** from **Philippines**.

LAND-USE CHANGES IN INDIA

Q.1 Explain three factors which influence the land use changes in a region.
Explain three types of changes in an economy which affect land use.

Ans. Three types of changes in an economy which affect land use are:

1) **The size of the economy:**

- a) With increase in the levels of income the pressure on land increases and marginal lands are brought under use.
- b) **For e.g.** With increase in industrial activities the agricultural lands are put under non-agricultural uses.

- 2) **Change in the composition of the economy**
 - a) With growth in secondary and tertiary sector land use changes from agricultural uses to non-agricultural uses.
 - b) **For e.g.** In Delhi city the agricultural land is being used for building purposes.
- 3) **Decline in agricultural sector:**
 - a) The pressure on land for agricultural activities continues to be high because large number of people depends on agriculture and it feeds the large population.

Q.2 Name the three land use categories that have registered an increase in their reporting area since 1960-61. Also give one reasons for their increase.

Ans. Three land uses categories have registered an increase. They are -

- 1) **Area under non-agricultural uses:**
 - a) The rate of increase is the highest in case of area under non-agricultural uses.
 - b) This is due to the increase in demand for land for industrial, infrastructural facilities and services.
 - c) Expansion of area under both urban and rural settlements.
 - d) Thus, the wastelands and agricultural land are put under non-agricultural uses.
- 2) **Area under forest:**
 - a) The increase in the area under forest is due to increase in the demarcated area under forest.
- 3) **Area under current fallow:**
 - a) The area under current fallow fluctuates over years, depending on the variability of rainfall and cropping cycles.

Q.3 Name four land use categories that have registered a decrease in reporting area since 1960-61. Also give one reasons for their decrease.

Ans. The four categories are:

- 1) **Area under barren, wasteland and culturable wasteland:**
 - a) Is due to increase in the pressure on land for both the agricultural and nonagricultural uses.
- 2) **Net sown area:**
 - a) Is due to the increases in area under nonagricultural use. The agricultural land is put under buildings and factories.
- 3) **Pastures and grazing lands**
 - a) Is due to expansion of cultivation on pasture lands.

COMMON PROPERTY RESOURCES

Q.4 What are common property resources?

Ans. CPR is defined as community's natural resource, where every member has the equal right of access and usage with specified obligations, without anybody having property rights over them. **Examples of CPRs** are Community forests, pasture lands, village water bodies and other public spaces such as 'Chopaal'.

Q.5 Mention the advantages of CPR in rural areas/society.

Ans. Community property resources are important for:

- a. Providing fodder for the livestock and fuel for the households.
- b. Providing other minor forest products like fruits, nuts, fibre, medicinal plants, etc.
- c. Providing additional income from livestock to the landless and marginal farmers and other weaker sections. For them it is the main source of livelihood.
- d. Provide easy access for women to collect the fodder and fuel.

AGRICULTURAL LAND

Q.6 Explain the importance of land resource to the livelihood of the people depending on agriculture.

Ans. Land resource is more important to the people whose livelihood depend on agriculture:

- (i) Agriculture output purely depends on land resource. Thus, lack of access to land increases incidence of poverty in rural areas.
- (ii) Quality of land has a direct bearing on the productivity of agriculture, which is not true for other activities.
- (iii) In rural areas, land ownership has a social value and serves as a security for credit, natural hazards or life contingencies, and also adds to the social status.

Q.7 Name two types of land saving technologies. Which one of them is more important? Give two main reasons for its importance.

Ans. There are two types of land saving technologies:

- a. **Raising the yield** of particular crop per unit area of land by modern inputs.
- b. Increasing the yield of all crops per unit area of land by increasing **cropping intensity**.

Increasing cropping intensity is more important of the two.

Cropping intensity has many advantages such as:

- (i) It not only helps in increasing output from limited land but also increases the demand for labour.
- (ii) Land in India is scarce but labour is abundant therefore this technique reduces unemployment in the rural economy and fully utilizes land resources.

Q.8 What is cropping intensity?

Ans. It refers to the number of crops raised on a field during an agricultural year. It is the total cropped area as the percentage of net sown area. It is calculated by -

$$\frac{\text{Gross cultivate Area}}{\text{Net sown area}} \times 100$$

CROPPING SEASONS IN INDIA

Q.9 Explain the three distinct crop seasons in northern and interior parts of India. Name two crops grown in the each season.

Ans. There are three distinct crop seasons in northern India:

1) **The Kharif season**

- a) It largely begins with onset of Southwest Monsoon in May-June and ends in September-October.
- b) Cultivation of **tropical crops** such as rice, cotton, jute, jowar, bajra and tur is done.

2) **The rabi season**

- a) It begins with the beginning of winter in October-November and ends in March-April.
- b) The low temperature conditions during this season facilitate the cultivation of **temperate and subtropical crops**.
- c) Crops such as wheat, gram and mustard are grown.

3) **Zaid season:**

- a) It is a short duration summer cropping season in April and May.
- b) It begins after harvesting of Rabi crops.
- c) The cultivation of watermelons, cucumbers, vegetables and fodder crops during this season is done on irrigated lands.

- Q.10 Explain why in southern parts of India same crops can be grown thrice in a year.
Ans. In southern India the temperature remains high throughout the year. It is suitable for growing tropical crops during any period in the year. Thus, in this region same tropical crops can be grown thrice in an agricultural year.

TYPES OF FARMING

- Q.11 What are the two types of farming classified on the basis of main source of moisture for the crops? Give differences between the two.
Ans. **Irrigated farming** and **Rainfed farming** are the two types of farming classified on the basis of main source of moisture for the crops.
Both differ in terms of nature of irrigation and the objective of irrigation:
1. **Rainfed farming also known as Protective farming:**
 - a. The objective of protective irrigation is to protect the crops from adverse effects of lack of soil moisture.
 - b. Irrigation acts as an additional source of water over and above the rainfall.
 - c. The strategy of this kind of irrigation is to provide soil moisture to maximum possible area.
 2. **Irrigated farming also known as Productive irrigation:**
 - a. It is meant to provide sufficient soil moisture in the cropping season.
 - b. It is done to achieve high productivity.
 - c. In such irrigation the water input per unit area of cultivated land is higher than protective irrigation.

- Q.12 What are the two types of rainfed farming? Explain the differences between the two types of rainfed farming.
Ans. Rainfed farming is classified into **dryland farming** and **wetland farming**.
1. The dryland farming is largely confined to the regions having annual rainfall less than 75 cm whereas in wetland farming the rainfall is in excess of soil moisture requirement of plants during rainy season.
 2. In dryland farming regions hardy and drought resistant crops such as ragi, bajra, moong, gram and guar (fodder crops) are grown whereas in wetland farming regions various water intensive crops such as rice, jute and sugarcane are grown.
 3. In dryland farming farmers practise various measures of soil moisture conservation and rain water harvesting whereas in wetland farming practise aquaculture in the fresh water bodies.
 4. Dryland farming regions face problems of deficient soil moisture whereas wetland farming regions may face flood and soil erosion hazards.

CROPPING PATTERN

Rice: Rice is a staple food in India. India contributes 22 per cent of rice production in the world and ranks second after China.

- i. **Geographical conditions** required for its growth:
 1. It is mainly grown in tropical humid areas.
 2. This crop is successfully grown in all areas from sea level to about 2,000 m altitude and from humid areas to dry but irrigated areas.
 3. In southern states and West Bengal the climatic conditions allow the cultivation of two or three crops of rice in an agricultural year.
 4. But in Himalayas and northwestern parts of the country, it is grown during kharif season of southwest Monsoon.

ii. Distribution and Yield:

1. About one-fourth of the total cropped area in the country is under rice cultivation.
2. West Bengal, Punjab, Uttar Pradesh, Andhra Pradesh and Tamil Nadu are the **five leading rice producing states**.
3. The yield is high in Punjab, Tamil Nadu, Haryana, Andhra Pradesh, West Bengal and Kerala. In the first four of these states almost the entire land under rice cultivation is irrigated.
4. The yield of this crop is very low in rainfed areas of Madhya Pradesh, Chhattisgarh and Orissa.

Wheat:

Wheat is the second most important cereal crop in India. India produces 12 per cent of total wheat production of world.

i. Geographical conditions:

1. Wheat is primarily a crop of temperate zone.
2. Its cultivation in India is done during winter i.e. Rabi season.
3. It is grown upto 2700 m altitude in Himalayas.
4. It is mostly grown under irrigated conditions.
5. But it is a rainfed crop in Himalayan highlands and parts of Malwa plateau in Madhya Pradesh.

ii. Distribution and Yield:

1. About 14 per cent of the total cropped area in the country is under wheat cultivation.
2. It is mostly grown in north and central regions of the country.
3. Uttar Pradesh, Punjab, Haryana, Rajasthan and Madhya Pradesh are **five leading wheat producing states**.
4. The yield level of wheat is very high in Punjab and Haryana whereas, Uttar Pradesh, Rajasthan and Bihar have moderate yields.
5. In the states of Madhya Pradesh, Himachal Pradesh and Jammu and Kashmir the yield is low because it is grown under rainfed conditions.

Jowar:

It is main food crop in semi-arid areas of central and southern India.

i. Geographical conditions:

1. It is sown in both Kharif and Rabi seasons in southern states. But it is a kharif crop in northern India where it is mostly grown as a fodder crop.
2. It is grown in semi-arid areas of India.
3. It is mostly a rainfed crop.

ii. Distribution and Yield:

1. Maharashtra alone produces more than half of the total jowar production of the country.
2. Other leading producer states of jowar are Karnataka, Madhya Pradesh and Andhra Pradesh.
3. Because it is a rainfed crop, its yield level is very low.

Bajra:**i. Geographical conditions:**

1. Bajra is sown in hot and dry climatic conditions in northwestern and western parts of the country.

2. It is a hardy crop which resists frequent dry spells and drought in this region.
 3. It is also a rainfed crop.
 4. It is cultivated alone as well as part of mixed cropping.
- ii. **Distribution and Yield:**
1. It occupies about 5.2 per cent of total cropped area in the country.
 2. **Leading producers of bajra** are the states of Maharashtra, Gujarat, Uttar Pradesh, Rajasthan and Haryana.
 3. Being a rainfed crop, the yield level of this crop is low in Rajasthan and fluctuates a lot from year to year.
 4. Yield of this crop has increased during recent years in Haryana and Gujarat due to introduction of drought resistant varieties and expansion of irrigation under it.

Maize:

- I. **Geographical Conditions:**
1. Maize is a food as well as fodder crop grown under semi-arid climatic conditions.
 2. It is grown over inferior soils.
- II. **Distribution and Yield:**
1. This crop occupies only about 3.6 per cent of total cropped area.
 2. It is sown all over India except eastern and north-eastern regions.
 3. The **leading producers of maize** are the states of Madhya Pradesh, Andhra Pradesh, Karnataka, Rajasthan and Uttar Pradesh.
 4. Yield level of maize is higher than other coarse cereals. It is high in southern states and declines towards central parts.

Gram:

- i. **Geographical conditions:**
1. Gram is cultivated in subtropical areas.
 2. It is mostly a rainfed crop cultivated during Rabi season.
 3. Just one or two light showers or irrigations are required to grow this crop successfully.
- ii. **Distribution and Yield:**
1. Its cultivation has been replaced by wheat in Haryana, Punjab and northern Rajasthan following the green revolution.
 2. At present, gram covers only about 2.8 per cent of the total cropped area in the country.
 3. Madhya Pradesh, Uttar Pradesh, Maharashtra, Andhra Pradesh and Rajasthan are the main producers of this pulse crop.
 4. The yield of this crop continues to be low and fluctuates from year to year even in irrigated areas.

Tur (Arhar)

- a Tur is the second important pulse crop in the country.
- b It is also known as **red gram** or **pigeon pea**.
- c It is cultivated over marginal lands and under rainfed conditions in the dry areas of central and southern states of the country.
- d This crop occupies only about 2 per cent of total cropped area of India.
- e Maharashtra is the leading producer of it.
- f Other leading producer states are Uttar Pradesh, Karnataka, Gujarat and Madhya Pradesh.

- g Per hectare output of this crop is very low and its performance is inconsistent.

Groundnut:

- a. India produces about 17 per cent the total of groundnut production in the world.
- b. It is largely a rainfed kharif crop of drylands.
- c. But in southern India, it is cultivated during Rabi season as well.
- d. It covers about 3.6 per cent of total cropped area in the country.
- e. Gujarat, Tamil Nadu, Andhra Pradesh, Karnataka and Maharashtra are the leading producers.
- f. Yield of groundnut is comparatively high in Tamil Nadu where it is partly irrigated. But its yield is low in Andhra Pradesh and Karnataka.

Rapeseed and Mustard:

- a Rapeseed and mustard comprise several oilseeds as rai, sarson, toria and taramira.
- b These are subtropical crops cultivated during Rabi season in north-western and central parts of India.
- c These are frost sensitive crops and their yields fluctuate from year to year.
- d But with the expansion of irrigation and improvement in seed technology, their yields have improved and stabilised to some extent.
- e About two-third of the cultivated area under these crops is irrigated.
- f These oilseeds together occupy only 2.5 per cent of total cropped area in the country.
- g Rajasthan contributes about one-third production while other leading producers are Uttar Pradesh, Haryana, West Bengal and Madhya Pradesh.
- h Yields of these crops are comparatively high in Haryana and Rajasthan.

Other Oilseeds:

- i. Soyabean and sunflower are other important oilseeds grown in India.
- ii. **Soyabean** is mostly grown in Madhya Pradesh and Maharashtra. These two states together produce about 90 per cent of total output of soyabean in the country.
- iii. **Sunflower** cultivation is concentrated in Karnataka, Andhra Pradesh and adjoining areas of Maharashtra.
- iv. It is a minor crop in northern parts of the country where its yield is high due to irrigation.

Cotton:

- i. **Geographical conditions:**
 1. Cotton is a tropical crop.
 2. It is grown in kharif season in semi-arid areas of the country.
 3. Cotton requires clear sky during flowering stage.
 4. Its yield increases if is under irrigated conditions.
- ii. **Distribution and Yield:**
 1. India ranks fourth in the world in the production of cotton after China, U.S.A. and Pakistan and accounts for about 8.3 per cent of production of cotton in the world.
 2. Cotton occupies about 4.7 per cent of total cropped area in the country.
 3. There are three cotton growing areas,

- a. Parts of Punjab, Haryana and northern Rajasthan in north-west,
 - b. Gujarat and Maharashtra in the west
 - c. Plateaus of Andhra Pradesh, Karnataka and Tamil Nadu in south.
4. **Leading producers of this crop** are Maharashtra, Gujarat, Andhra Pradesh, Punjab and Haryana.
 5. Its yield is very low in Maharashtra where it is grown under rainfed conditions.

Jute: It is used for making coarse cloth, bags, sacks and decorative items.

- i. **Distribution:**
 1. It is a cash crop in West Bengal and adjoining eastern parts of the country.
 2. At present, India produces about three-fifth of jute production of the world.
 3. West Bengal is largest jute growing state. Bihar and Assam are other jute growing areas.
 4. Being concentrated only in a few states, this crop accounts for only about 0.5 per cent of total cropped area in the country.

Sugarcane:

- i. **Geographical conditions:**
 1. Sugarcane is a crop of tropical areas.
 2. Under rainfed conditions, it is cultivated in sub-humid and humid climates.
 3. But it is largely an irrigated crop in India.
- ii. **Distribution and Yield:**
 1. India is the second largest producer of sugarcane after Brazil.
 2. It accounts for about 23 per cent of the world production of sugarcane.
 3. But it occupies only 2.4 per cent of total cropped area in the country.
 4. Uttar Pradesh is the largest producer of sugarcane but the yield is low.
 5. Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh are other leading producers of this crop where yield level of sugarcane is high.

Tea:

- i. **Geographical conditions:**
 1. Tea is a plantation crop used as beverage.
 2. It is an indigenous crop of hills in northern China.
 3. It is grown over undulating topography of hilly areas
 4. It requires well-drained soils in humid and sub-humid tropics and sub-tropics.
- ii. **Distribution and Yield:**
 5. In India, tea plantation started in 1840s in Brahmaputra valley of Assam which is the leading producer of tea (53%) in India.
 6. West Bengal and Tamil Nadu are the other leading producers of tea. In West Bengal it is grown in Darjiling, Jalpaiguri and Cooch Bihar districts.
 7. Tea is also cultivated in Tamil Nadu in south on the lower slopes of Nilgiri and Cardamom hills in Western Ghats.

8. India is a leading producer of tea and accounts for about 28 per cent of total production in the world.

Coffee:

- i. **Geographical conditions:**
1. Coffee is a tropical plantation crop.
 2. Its seeds are roasted, ground and are used for preparing a beverage.
 3. It is grown on well drained highlands.
 4. India mostly grows superior quality coffee, arabica, which is in great demand in International market.
- ii. **Distribution and Yield:**
1. India produces only about 4.3 per cent coffee of the world and ranks sixth.
 2. Coffee is cultivated in the highlands of Western Ghats in Karnataka, Kerala and Tamil Nadu.
 3. Karnataka is the leading producer of coffee.

AGRICULTURAL DEVELOPMENT IN INDIA

Q.13 Describe the status of Indian agriculture before independence. **OR**
Mention major problems faced by Indian agriculture during pre-independence period.

Ans. Before and during independence Indian agriculture faced many problems:

- a. Indian agricultural economy was largely subsistence in nature before Independence.
- b. Agricultural production was low in the first half of twentieth century.
- c. This period witnessed severe droughts and famines.
- d. During partition about one-third of the irrigated land in undivided India went to Pakistan.
- e. This reduced the proportion of irrigated area in Independent India.

Q.14 What steps/strategy did the government of India took/adopted to remove the problems of Indian agriculture?

Ans. The Government took following steps:

- (i) After Independence the food grain production was increased by switching over from cash crops to food crops;
- (ii) Cropping intensity was increased.
- (iii) Fallow land under brought under cultivation.
- (iv) Intensive Agricultural District Programme (IADP) and Intensive Agricultural Area Programme (IAAP) were launched in 1950s.
- (v) Introduction of package technology in 1960s called 'Green Revolution' which increased foodgrain production many times.
- (vi) In rainfed areas agro-climatic planning was introduced in 1980s.
- (vii) In 1990s the policy of liberalization and free market economy.

Q.15 Mention any three objectives of agro-climatic planning introduced by Planning Commission of India in 1988.

Ans. The objectives were:

- a. To achieve regionally balanced agricultural development in India.
- b. To diversify Indian agricultural production.
- c. To harness the local resource for the development of dairy farming, poultry, horticulture; livestock rearing and aquaculture.

Q.16 State the main features of the package technology called 'Green revolution'.

Ans. The package technology of Green Revolution was launched in 1960s.

- (i) This technology was introduced in irrigated areas of Punjab, Haryana, Western Uttar Pradesh, Andhra Pradesh and Gujarat.
- (ii) New high yielding seed varieties of wheat (from Mexico) and rice (from Philippines) were introduced.
- (iii) Along with it chemical fertilizers were introduced.
- (iv) Sources of irrigation were introduced for the success of this new agricultural technology.
- (v) This strategy increased the food grains production at very fast rate.

Q.17 State any three benefits of Green Revolution in India.

Ans. Green revolution benefitted our country by -

- a. This strategy of agricultural development increased the food grains production at very fast rate.
- b. This strategy also boosted the development of a agro-inputs, agro-processing industries and small-scale industries.
- c. This strategy of agricultural development made the country self-reliant in food grain production.
- d. But green revolution was confined to selected areas, thus it led to regional disparities in agricultural development in the country.

Q.18 Describe the growth in the agricultural output and improvement in technology in our country during the last 50 years.

Ans. The agricultural production and technology has improved in our country:

(i) Production:

- a. Production and yield of many crops such as rice and wheat increased at faster rate.
- b. Among the other crops, the production of sugarcane, oilseeds and cotton has also increased significantly.
- c. India ranks first in the production of pulses, tea, jute, cattle and milk.
- d. It is the second largest producer of rice, wheat, groundnut, sugarcane and vegetables.

(ii) Irrigation:

- a. Net area under irrigation has increased by 1.5 times.
- b. With irrigation use of HYV of seeds and fertilizers has increased.

(iii) Modern Agricultural Technology:

- a. Use of farm machinery also increased.
- b. Consumption of chemical fertilizers has increased by 15 times since mid-sixties.
- c. The use of pesticides has increased since 1960s because the HYV of seeds are highly vulnerable to pests and diseases.

PROBLEMS OF INDIAN AGRICULTURE

Q.19 Explain any three major problems faced by Indian agriculture.

Ans. Most of Problems are region specific. They are:

(i) Dependence on erratic monsoon:

- a. 63% of the cultivated area directly depends on Monsoon rainfall.
- b. There are great fluctuations in the Monsoon rainfall therefore can not be depended.
- c. Delay and non-arrival of south-west Monsoon adversely affects production.

- d. Drought and floods are the two major climatic threats in our agriculture.
- e. In some areas such as Rajasthan the rainfall is very less which causes drought whereas in other areas floods are very frequent.
- (ii) **Low productivity of crops and labour**
 - a. The yield of the crops in the country is very low in comparison to the international level.
 - b. Because of the very high pressure on the land resources, the labour productivity is also very low.
 - c. Cereals, pulses and oilseeds have very low yields.
- (iii) **Constraints of Financial Resources and Indebtedness**
 - a. Modern agricultural inputs are very costly.
 - b. Most of small and marginal farmers can not afford them.
 - c. Due to it the problem of indebtedness arises.
 - d. Crop failure, low returns causes farmer to take credit from various money lenders and they fall in trap of indebtedness.
- (iv) **Lack of Land Reforms**
 - a. Unequal distribution of agricultural land.
 - b. Lack of will to implement land reforms.
- (v) **Small Farm Size and Fragmentation of Landholdings**
 - a. There are a large number of marginal and small farmers in the country.
 - b. The farm size is small. 60 % of farmers have a less than one hectare of land.
 - c. The average size of land holding is shrinking under population pressure.
 - d. The lands are fragmented because it divided among the family members.
 - e. The small size of land has become uneconomic.
- (vi) **Lack of Commercialization**
 - a. A large number of farmers produce crops for self-consumption.
 - b. These farmers do not have enough land resources to produce more than their requirement.
 - c. Modernisation and commercialisation of agriculture have taken place only in few irrigated areas.
- (vii) **Vast Under-employment**
 - a. In the un-irrigated areas there is a seasonal unemployment ranging from 4 to 8 months.
 - b. Even during the cropping season work is not available for all the days.
 - c. Hence, the people engaged in agriculture do not have the opportunity to work round the year causing underemployment.
- (viii) **Degradation of Cultivable Land: Causes**
 - a. Large region of agricultural land has lost its fertility due to alkalization and Salinisation of soils and water logging.
 - b. Wrong strategy of irrigation and agricultural operations has degraded land.
 - c. Excessive use of chemicals such as insecticides and pesticides has increased concentration of toxic material in the soil.
 - d. Nitrogen fixing Leguminous Crops are no longer cultivated in irrigated areas.
 - e. Land is not put to rest. This has destroyed the process of natural fertilization.
 - f. Soil erosion is common in humid and semi-arid tropics.