India-People and Economy

Chapter-5 Land Resourcesand Agriculture

Land Use Categories

- Land-use records are maintained by land revenue department
- The land use categories add up to reporting area, which is somewhat different from the geographical area
- The Survey of India is responsible for measuring geographical area of administrative units in India

The land-use categories as maintained in the Land Revenue Records are as follows :

i. Forests : It is important to note that area under actual forest cover is different from area classified as forest. The latter is the area which the Government has identified and demarcated for forest growth. The land revenue records are consistent with the latter definition. Thus, there may be an increase in this category without any increase in the actual forest cover.
ii. Land put to Non-agricultural Uses : Land under settlements (rural and urban), infrastructure (roads, canals,etc.), industries, shops, etc. are included in this category. An expansion in the secondary and tertiary activities would lead to an increase in this category of land-use.
iii. Barren and Wastelands : The land which may be classified as a wasteland such as barren hilly terrains, desert lands, ravines, etc. normally cannot be brought under cultivation with the available technology.
iv. Area under Permanent Pastures and Grazing Lands : Most of this type land is owned by the village ‘Panchayat’ or the Government. Only a small proportion of this land is privately owned. The land owned by the village panchayat comes under ‘Common Property Resources’.
v. Area under Miscellaneous Tree Crops and Groves(Not included is Net sown Area) : The land under orchards and fruit trees are included in this category. Much of this land is

privately owned.

vi. Culturable Waste-Land : Any land which is left fallow (uncultivated) for more than five years is included in this category. It can be brought under cultivation after improving it through reclamation practice

vii. Current Fallow : This is the land which is left without cultivation for one or less than one agricultural year.Fallowing is a cultural practice adopted for giving the land rest. The land recoups the lost fertility through natural processes.

viii. Fallow other than Current Fallow : This is also a cultivable land which is left uncultivated for more than a year but less than five years. If the land is left uncultivated for more than five years, it would be categorised as culturable wasteland.

ix. Net Area Sown : The physical extent of land on which crops are sown and harvested is known as net sown area.

Land-use Changes in India

Land-use in a region, to a large extent, is influenced by the nature of economic activities carried out in that region

Three types of changes that an economy undergoes, which affect land-use are-

i. The size of the economy grows over time as a result of increasing population, change in income levels, available technology and associated factors. As a result, the pressure on land will increase with time and marginal lands would come under use

ii. The composition of the economy would undergo a change over time. In other words, the secondary and the tertiary sectors usually grow much faster than the primary sector, specifically the agricultural sector. This type of change is common in developing countries like India. This process would result in a gradual shift of land from agricultural uses to non-agricultural uses.

iii. The contribution of the agricultural activities reduces over time, the pressure on land for agricultural activities does not decline

The reasons for continued pressure on agriculture land are:

a. In developing countries, the share of population dependent on agriculture usually declines much more slowly compared to the decline in the sector’s share in GDP

b. The number of people that the agricultural sector has to feed is increasing day by day

- India has undergone major changes within the economy over the past four or five decades, and this has influenced the land-use changes in the country
- Share of area under forest, area under non-agricultural uses, current fallow lands and net area sown have shown an increase

The following observations can be made about these increases:

i. The rate of increase is the highest in case of area under non-agricultural uses. This is due to the changing structure of Indian economy, which is increasingly depending on the contribution from industrial and services sectors and expansion of related infrastructural facilities. Also, an expansion of area under both urban and rural settlements has added to the increase. Thus, the area under non-agricultural uses is increasing at the expense of wastelands and agricultural land.
ii. The increase in the share under forest, as explained before, can be accounted for by increase in the demarcated area under forest rather than an actual increase in the forest cover in the country.
iii. The increase in the current fallow cannot be explained from information pertaining to only two points. The trend of current fallow fluctuates a great deal over years, depending on the variability of rainfall and cropping cycles.
iv. The increase in net area sown is a recent phenomenon due to use of cultural waste land for agricultural purpose. Before which it was registering a slow decrease. There are indications that most of the decline had occurred due to the increases in area under non-agricultural use.

The four categories that have registered a decline are barren and wasteland, cultural wasteland, area under pastures and tree crops and fallow lands

The following explanations can be given for the declining trends:

i. As the pressure on land increased, both from the agricultural and nonagricultural sectors, the wastelands and culturable wastelands have witnessed decline over time.
ii. The decline in land under pastures and grazing lands can be explained by pressure from agricultural land. Illegal encroachment due to expansion of cultivation on common pasture lands is largely responsible for this decline.

Common Property Resources

- Land, according to its ownership can broadly be classified under two broad heads –
    - Private land is owned by an individual or a group of individuals
    - Common property resources (CPRs)is owned by the state meant for the use of the community
- CPRs provide fodder for the livestock and fuel for the households along with other minor forest products like fruits, nuts, fibre, medicinal plants, etc.
- In rural areas, such land is of particular relevance for the livelihood of the landless and marginal farmers and other weaker sections since many of them depend on income from their livestock due to the fact that they have limited access to land
- CPRs also ar important for women as most of the fodder and fuel collection is done by them in rural areas
- . They have to devote long hours in collecting fuel and fodder from a degraded area of CPR.
- CPRs can be defined as community's natural resource, where every member has the 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 where a group larger than a household or family unit exercises rights of use and carries responsibility of management

Cropping Seasons in India

There are three distinct crop seasons in the northern and interior parts of country-

a. kharif- The khari season largely coincides with Southwest Monsoon under which the cultivation of tropical crop such as rice, cotton, jute, jowar, bajra and tur is possible
b. rabi- The rabi season begins with the onset of winter in October-November and ends in March-April this season facilitate the cultivation of temperate and subtropical crops such as wheat, gram and mustard.
c. Zaid- It is a short duration summer cropping season beginning after harvesting of rabi crops. The cultivation of watermelons, cucumbers, vegetables and fodder crops during this season is done on irrigated lands.

Types of Farming

On the basis of main source of moisture for crops, the farming can be classified as

a) irrigated farming

- The nature of irrigated farming as well based on objective of irrigation, i.e. protective or productive
- The objective of protective irrigation is to protect the crops from adverse effects of soil moisture deficiency which often means that irrigation acts as a supplementary source of water over and above the rainfall
- The strategy of this kind of irrigation is to provide soil moisture to maximum possible area
- Productive irrigation is meant to provide sufficient soil moisture in the cropping season to achieve high productivity
- In such irrigation the water input per unit area of cultivated land is higher than protective irrigation

b) rainfed (barani)farming

- Rainfed farming is further classified on the basis of adequacy of soil moisture during cropping season into dryland and wetland farming
- In India, the dryland farming is largely confined to the regions having annual rainfall less than 75 cm
- These regions grow hardy and drought resistant crops such as ragi, bajra, moong, gram and guar (fodder crops) and practise various measures of soil moisture conservation and rain water harvesting
- In wetland farming, the rainfall is in excess of soil moisture requirement of plants during rainy season
- Such regions may face flood and soil erosion hazards
- These areas grow various water intensive crops such as rice, jute and sugarcane and practise aquaculture in the fresh water bodies

Food grains

On the basis of the structure of grain the foodgrains are classified as cereals and pulses

Cereals

- The cereals occupy about 54 % of total cropped area in India
- The country produces about 11% cereals of the world and ranks third in production after China and U.S.A.
- India produces a variety of cereals, which are classified as fine grains (rice, wheat) and coarse grains (jowar, bajra, maize, ragi), etc

Rice

- Rice is a staple food for the overwhelming majority of population in India
- It is a crop of tropical humid areas, it has about 3,000 varieties which are grown in different agro-climatic regions
- It can successfully grown from sea level to about 2,000 m altitude and from humid areas in eastern India
- In southern states and West Bengal the climatic conditions allow the cultivation of two or three crops of rice in an agricultural year
- In West Bengal farmers grow three crops of rice called ‘aus’, ‘aman’ and ‘boro’
- In Himalayas and northwestern parts of the country, it is grown as a kharif crop during southwest Monsoon season
- India contributes 22% of rice production in the world and ranked second after China in 2008-09
- About one-fourth of the total cropped area in the country is under rice cultivation
- West Bengal, Punjab and Uttar Pradesh were the leading rice producing states in the country in 2009-10
- The yield level of rice is high in Punjab, Tamil Nadu, Haryana, Andhra Pradesh, Telangana, West Bengal and Kerala
- Rice cultivation in the irrigated areas of Punjab and Haryana was introduced in 1970s following the Green Revolution
- The main reason due to which there is high yielding of rice in this region are
    - Genetically improved varieties of seed
    - high usage of fertilisers and pesticides
    - lower levels of susceptibility of the crop to pests due to dry climatic conditions
- . The yield of this crop is very low in rainfed areas of Madhya Pradesh, Chhattisgarh and Odisha

Wheat

- Wheat is the second most important cereal crop in India after rice
- India produces about 12% of total wheat production of world
- It is primarily a crop of temperate zone
- Its cultivation in India is done during winter i.e. rabi season
- About 85% of total area under this crop is concentrated in north and central regions of the country i.e. Indo-Gangetic Plain, Malwa Plateau and Himalayas up to 2,700 m altitude
- About 14% of the total cropped area in the country is under wheat cultivation
- Uttar Pradesh, Punjab, Haryana, Rajasthan and Madhya Pradesh are five leading wheat producing states
- The yield level of wheat is very high in Punjab and Haryana whereas, Uttar Pradesh, Rajasthan and Bihar have moderate yields
- The states like Madhya Pradesh, Himachal Pradesh and Jammu and Kashmir growing wheat under rainfed conditions have low yield

Jowar

- The coarse cereals together occupy about g16.50 % of total cropped area in the country
- Among these, jowar or sorghum alone accounts for about 5.3% of total cropped area
- It is main food crop in semi-arid areas of central and southern India
- Maharashtra alone produces more than half of the total jowar production of the country
- Other leading producer states of jowar are Karnataka, Madhya Pradesh, Andhra Pradesh and Telangana

Bajra

- Bajra is sown in hot and dry climatic conditions in northwestern and western parts of the country
- It is a hardy crop which resists frequent dry spells and drought in this region
- It is cultivated alone as well as part of mixed cropping
- This coarse cereal occupies about 5.2% of total cropped area in the country
- Leading producers of bajra are the states of Maharashtra, Gujarat, Uttar Pradesh,

Rajasthan. and Haryana

- 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

- Maize is a food as well as fodder crop grown under semi-arid climatic conditions and over inferior soils
- This crop occupies only about 3.6% of total cropped areaThe leading producers of maize are the states of Madhya Pradesh, Andhra Pradesh, Telangana, Karnataka, Rajasthan and Uttar Pradesh

Pulses

- Pulses are a very important ingredient of vegetarian food as these are rich sources of proteins
- These are legume crops which increase the natural fertility of soils through nitrogen fixation
- India is a leading producer of pulses and accounts for about one-fifth of the total production of pulses in the world
- The cultivation of pulses in the country is largely concentrated in the drylands of Deccan and central plateaus and northwestern parts of the country
- Pulses occupy about 11% of the total cropped area in the country
- Gram and tur are the main pulses cultivated in India

Gram

- Gram is cultivated in subtropical areas
- It is mostly a rainfed crop cultivated during rabid season in central, western and northwestern parts of the country
- Madhya Pradesh, Uttar Pradesh, Maharashtra, Andhra Pradesh, Telangana and Rajasthan are the main producers of this pulse crop

Tur(Arhar)

- Tur is the second important pulse crop in the country. It is also known as red gram or pigeon pea

- It is cultivated over marginal lands and under rainfed conditions in the dry areas of central and southern states of the country
- Maharashtra alone contributes about one-third of the total production of tur
- Other leading producer states are Uttar Pradesh, Karnataka, Gujarat and Madhya Pradesh

Oilseeds

- The oilseeds are produced for extracting edible oils
- Drylands of Malwa plateau, Marathwada, Gujarat, Rajasthan, Telangana, Rayalseema region of Andhra Pradesh and Karnataka plateau are oilseeds growing regions of India
- These crops together occupy about 14% of total cropped area in the country
- Groundnut, rapeseed and mustard, soybean and sunflower are the main oilseed crops grown in India

Groundnut

- India produces about 19% of the total groundnut production in the world (2008-09).
- It is largely a rainfed kharif crop of drylands
- In southern India, it is cultivated during rabi season as well
- It covers about 4% of total cropped area in the country
- Gujarat, Tamil Nadu, Telangana, Andhra Pradesh, Karnataka and Maharashtra are the leading producers
- Its yield is low in Telangana, Andhra Pradesh and Karnataka

Rapeseed and Mustard

- Rapeseed and mustard comprise several oilseeds as rai, sarson, toria and taramira
- These are subtropical crops cultivated during rabi season in north-western and central parts of India
- These oilseeds together occupy only 2.5 % of total cropped area in the country
- Rajasthan contributes about one-third production while other leading producers are Uttar Pradesh, Haryana, West Bengal and Madhya Pradesh

Other Oilseeds

- Soyabean and sunflower are other important oilseeds grown in India
- Soyabean is mostly grown in Madhya Pradesh and Maharashtra
- Sunflower cultivation is concentrated in Karnataka, Andhra Pradesh, Telangana and adjoining areas of Maharashtra

Fibre Crops

- These crops provide us fibre for preparing cloth, bags, sacks and a number of other items
- Cotton and jute are two main fibre crops grown in India

Cotton

- Cotton is a tropical crop grown in kharif season in semi-arid areas of the country
- India grows both short staple (Indian) cotton as well as long staple (American) cotton called ‘narma’ in north-western parts of the country
- Cotton requires clear sky during flowering stage
- India ranks fourth in the world in the production of cotton after China, U.S.A. and Pakistan and accounts for about 8.3% of production of cotton in the world
- Cotton occupies about 5% of total cropped area in the country
- There are three cotton growing areas, i.e. parts of Punjab, Haryana and northern Rajasthan in north-west, Gujarat and Maharashtra in the west and plateaus of Andhra Pradesh, Karnataka in south
- Leading producers of this crop are Maharashtra, Gujarat, Andhra Pradesh, Punjab and Haryana and Tamil Nadu

Jute

- Jute is used for making coarse cloth, bags, sacks and decorative items
- It is a cash crop in West Bengal and adjoining eastern parts of the country
- West Bengal accounts for about three-fourth of the production in the country
- Bihar and Assam are other jute growing areas

Sugarcane

- Sugarcane is a crop of tropical areas
- Under rainfed conditions, it is cultivated in sub-humid and humid climates

- In Indo-Gangetic plain, it's cultivation is largely concentrated in Uttar Pradesh
- Sugarcane growing area in western India is spread over Maharashtra and Gujarat
- In southern India, it is cultivated in irrigated tracts of Karnataka, Tamil Nadu, Telangana and Andhra Pradesh
- India was the second largest producer of sugarcane after Brazil in 2008-09
- Maharashtra, Karnataka, Tamil Nadu, Telangana and Andhra Pradesh are other leading producers of this crop

Tea

- Tea is a plantation crop used as beverage
- It is an indigenous crop of hills in northern China
- It is grown over undulating topography of hilly areas and well-drained soils in humid and sub-humid tropics and sub-tropics
- In India, tea plantation started in 1840s in Brahmaputra valley of Assam which still is a major tea growing area in the country
- Later on, its plantation was introduced in the sub-Himalayan region of West Bengal (Darjiling, Jalpaiguri and Cooch Bihar districts)
- Tea is also cultivated on the lower slopes of Nilgiri and Cardamom hills in Western Ghats
- India is a leading producer of tea and accounts for about 28% of total production in the world
- Assam accounts for about 53% of the total cropped area and contributes more than half of total production of tea in the country
- . West Bengal and Tamil Nadu are the other leading producers of tea

Coffee

- Coffee is a tropical plantation crop
- Its seeds are roasted, ground and are used for preparing a beverage
- There are three varieties of coffee i.e. arabica, robusta and liberica
- India mostly grows superior quality coffee, arabica, which is in great demand in International market
- Coffee is cultivated in the highlands of Western Ghats in Karnataka, Kerala and Tamil Nadu

- Strategy of agricultural development in India
- After Independence, the immediate goal of the Government was to increase food grains production by
    - switching over from cash crops to food crops
    - intensification of cropping over already cultivated land
    - increasing cultivated area by bringing cultivable and fallow land under plough
- To overcome this problem, Intensive Agricultural District Programme (IADP) and Intensive Agricultural Area Programme (IAAP) were launched
- The Green Revolution in India refers to a period of time when agriculture in India changed to an industrial system due to the adoption of modern methods and technology such as high yielding variety (HYV) seeds, tractors, pump sets, etc.
- This gave fillip to the development of a large number of aro-inputs, agro-processing industries and small-scale industries
- This strategy of agricultural development made the country self-reliant in foodgrain production
- This strategy of agricultural development paid dividends instantly and increased the food grains production at very fast rate
- The Planning Commission of India focused its attention on the problems of agriculture in rainfed areas in 1980s
- It initiated agro-climatic planning in 1988 to induce regionally balanced agricultural development in the country
- It also emphasised the need for diversification of agriculture and harnessing of resources for development of dairy farming, poultry, horticulture, livestock rearing and aquaculture
- Main reasons which leads to inter-regional and inter-personal disparities in rural areas are- Lack of development of rural infrastructure, withdrawal of subsidies and price support, and impediments in availing of the rural credits

Growth of Agricultural Output and Technology

There has been a significant increase in agricultural output and improvement in technology during the last fifty years. These are-

1. Production and yield of many crops such as rice and wheat has increased at an impressive rate. Among the other crops, the production of sugarcane, oilseeds and cotton

has also increased appreciably.

2. Expansion of irrigation has played a very crucial role in enhancing agricultural output in the country. It provided basis for introduction of modern agricultural technology such as high yielding varieties of seeds, chemical fertilizers, pesticides and farm machinery
3. Modern agricultural technology has diffused very fast in various areas of the country. Consumption of chemical fertilizers has increased by 15 times since mid-sixties

Problems of Indian Agriculture

1. Dependence on Erratic Monsoon-Irrigation covers only about 33% of the cultivated area in India. The crop production in rest of the cultivated land directly depends on rainfall. Poor performance of south-west. Monsoon also adversely affects the supply of canal water for irrigation. On the other hand, the rainfall in Rajasthan and other drought prone areas is too meagre and highly unreliable. This makes them vulnerable to both droughts and floods.
2. Low productivity-The yield of the crops in the country is low in comparison to the international level. Because of the very high pressure on the land resources, the labour productivity in Indian agriculture is also very low in comparison to international level. The vast rainfed areas of the country, particularly drylands which mostly grow coarse cereals, pulses and oilseeds have very low yields
3. Constraints of Financial Resources and Indebtedness- The inputs of modern agriculture are very expensive. This resource intensive approach has become unmanageable for marginal and small farmers as they have very meagre or no saving to invest in agriculture. To tide over these. difficulties, most of such farmers have resorted to availing credit from various institutions and money lenders. Crop failures and low return from agriculture have forced them to fall in the trap of indebtedness
4. Lack of Land Reforms- Indian peasantry had been exploited for a long time as there had been unequal distribution of land. Among the three revenue systems operational during British period i.e. Mahalwari, Ryotwari and Zamindari, the last one was most exploitative for the peasants.
5. Small Farm Size and Fragmentation of Landholdings- There are a large number of marginal and small farmers in the country. More than 60% of the ownership holdings have a size smaller than one (ha). The average size of land holding is shrinking further under increasing population pressure. Furthermore, in India, the land holdings are

mostly fragmented.

6. Lack of Commercialisation- A large number of farmers produce crops for self-consumption. These farmers do not have enough land resources to produce more than their requirement. Most of the small and marginal farmers grow foodgrains, which are meant for their own family consumption.
7. Vast Under-employment- There is a massive under-employment in the agricultural sector in India, particularly in the un-irrigated tracts. In these areas, there is a seasonal unemployment ranging from 4 to 8 months. Even in the cropping season work is not available throughout, as agricultural operations are not labour intensive. Hence, the people engaged in agriculture do not have the opportunity to work round the year.
8. Degradation of Cultivable Land- One of the serious problems that arises out of faulty strategy of irrigation and agricultural development is degradation of land resources. This is serious because it may lead to depletion of soil fertility. The situation is particularly alarming in irrigated areas. A large tract of agricultural land has lost its fertility due to alkalisation and salinisation of soils and waterlogging. Excessive use of chemicals such as insecticides and pesticides has led to their concentration in toxic amounts in the soil profile.