10th Social Science Lesson 4 Notes in English

4. Components of Agriculture

Introduction

- Soil is one of the most important natural resources. India's varied natural environments resulted in a great variety of **soils compared to any other country** of similar size in the world.
- The rich, deep and fertile soils support high density of population through agricultural prosperity.

Soils

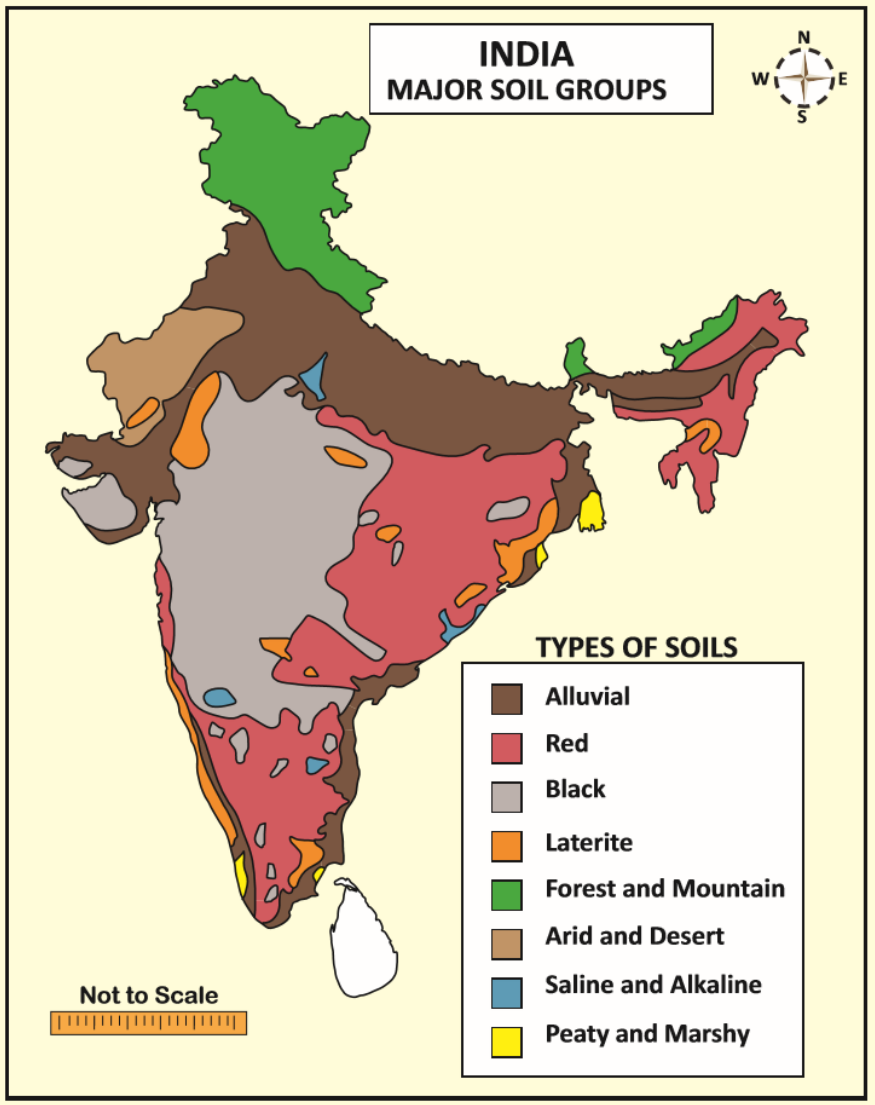
- Soil is the uppermost layer of the land surface, usually composed of **minerals, organic matter, living organisms, air and water**.
- Grains in the soil are of three categories namely, **clay, silt, and sand**. Soils are generally formed by the weathering of rocks under different conditions.
- Some soils are formed by the deposition of agents of denudation. Soils can vary greatly from one region to the other.

Types of Soils

The **Indian Council of Agriculture Research (ICAR) set up in 1953** divides the soils of India into the following **eight major groups.**

Soil Type	Characteristics	Distribution	Crops growing
Alluvial soil	**Khadar** – light coloured, more siliceous. **Bhangar** – the older alluvium composed of lime nodules and has clayey composition. It is dark in colour. **Formation** - sediments deposited by streams and rivers when they slowly loose **Chemical properties** - rich in potash, phosphoric acid, lime and carbon compounds but poor in nitrogen **Nature** –Sandy-loam-silt-clay profile shows no marked differentiation	Ganga and Brahmaputra river valleys; Plains of Uttar Pradesh, Uttaranchal, Punjab, Haryana, West Bengal and Bihar	Rice, Wheat, Sugarcane and Oilseeds
Black soils	**Formation** - Derived from basalts of Deccan trap. **Colour** - black colour, due to presence of titanium, iron. **Chemical properties** - Consist of calcium and magnesium arbonates, high quantities of iron, aluminium, lime and magnesia. Rich in potash lime, Aluminium calcium and magnesium poor in Nitrogen Phosphoric acid and humus **Nature** - Sticky when wet High degree of moisture retentivity	Maharashtra and Malwa plateaus, Kathiawar peninsula, Telangana and Rayalaseema region of Andhra Pradesh and northern part of Karnataka	Cotton, Millets, Tobacco and Sugarcane
Red soils	**Formation** - decomposition of ancient crystalline rocks like granites and gneisses and from rock type **Chemical properties** - rich in minerals such as iron and magnesium. Deficient in nitrogen, humus, phosphoric acid and lime. **Nature** - Light texture, porous friable presence of limited soluble salts Clay fraction of the red soils generally consists of Kaolinitic minerals.	Eastern parts of Deccan plateau, southern states of Kerala, Tamil Nadu, Karnataka and Chota Nagpur plateau (Jharkhand)	Wheat, Rice, Cotton, Sugarcane and Pulses
Laterite soils	**Formation** - formed in the regions where alternate wet and hot dry conditions prevail. It is formed by the process of leaching **Chemical properties** - Composed mainly of hydrated oxides of iron and aluminium, **Nature** - More acidic on higher areas poor in high level, cannot retain moisture while plains they consist of heavy loam and clay and easily retain moisture	Assam hills, hill summits of Kerala and Karnataka and eastern Ghats and region of Odisha	Coffee, Rubber, Cashew nut and Tapioca

Soil Type	Characteristics	Distribution	Crops growing
Forest and mountain soils	Differ from region to region depending on climate. **Formation** - due to mechanical weathering caused by snow, rain, temperature variation **Chemical properties** - are deficient in potash, Phosphorus and lime. **Nature** - light, sandy, thin and found with the pieces of rock. Their character changes with the parent rocks. Very rich in humus. slow decomposition makes it acidic	Coniferous forest belts of Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim. Eastern and Western Ghats	Coffee, tea, rice, maize, potato, barley, tropical fruits and various types of spices
Arid and desert soils	**Formation** - Due to prevalence of the dry climate, hightemperature and accelerated evaporation, the soil is dry, it also lacks humus content due to the absence of vegetative cover **Chemical properties** - Contain high percentages of soluble salts, alkaline with varying degree of calcium carbonate and are poor in organic matter; rich enough in phosphate though poor in nitrogen **Nature** - light in colour, low humus,friable structure, low in moisture	Rajasthan, Northern Gujarat and southern Punjab	millets, barley, cotton, maize and pulses (with irrigation)
Saline and alkaline soils	**Formation** - formed due to ill drainage which causes water logging, injurious salts are transferred from subsurface to the top soil by the capillary action, it causes the salinisation of soils **Chemical properties** - liberate sodium, magnesium and calcium salts and sulphurous acid **Nature** - Consists of un decomposed rock and mineral fragments which on weathering	Andhra Pradesh and Karnataka. In the drier parts of Bihar, Uttar Pradesh, Haryana, Punjab, Rajasthan and Maharashtra	
Peaty and marshy soils	**Formation** - formed in humid regions from the organic matter. It is found in the areas of heavy rainfall and high humidity Peaty soils are black, heavyand highly acidic. **Chemical properties** - deficient in potash and phosphate. Contain considerable amount of soluble salts and 10-40 per cent of organic matter; and high proportion of vegetable matter. **Nature** - Contain considerable amount of Soluble salts and 10-40 per cent of organic matter; and high proportion of vegetable matter.	Kottayam and Alappuzha districts of Kerala; and coastal areas of Odisha and Tamil Nadu, Sundarbans of West Bengal, in Bihar and Almora district of Uttarakhand	Paddy, jute



Soil degradation

- Soil degradation is an acute problem in India. According to a 2015 report of the Indian institute of remote sensing (IIRS).
- The estimated the amount of soil .erosion that occurred in India was **147 million** hectares. The main problems of the Indian soils are

i) Soil erosion (sheet erosion, Rill erosion, Gully erosion, Ravine and Badland)

ii) Degradation of Soil,

iii) Water-logging,

iv) Saline and Alkaline, and

v) Salt Flats, types of soils are different erosion.

Methods of Conservation and Management of Soil

1. Afforestation

2. Constructing Dams and Barrages

3. Prevention of Overgrazing

4. Improved methods of Agricultural practices

- Contour method
- Rotation of crops
- Contour bunding
- Strip cropping
- Planting of shelter belts Adopting the techniques of sustainable agriculture are different conservation methods for better soil management.

Irrigation

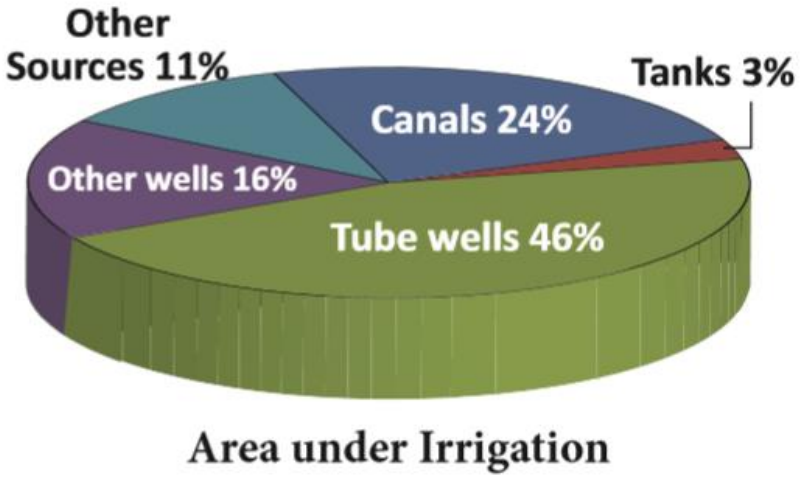
- Watering of agricultural plants through artificial means is called irrigation.
- Being a hot country with seasonal and irregular rainfall, it always needs irrigation to carry out agricultural activities during dry period.
- Beside erratic rainfall, prevalence of **high temperature, cultivation of annual crops and hydrophytes, commercial farming and porous soil** make irrigation an essential one for the agriculture of our country.

Sources of Irrigation

In India, different sources of irrigation are used depending upon the **topography, soils, rainfall, availability of surface or groundwater, nature of river (whether perennial or non-perennial), requirements of crops** etc. The main sources of irrigation used in different parts of the country are

1. Canal irrigation
2. Well irrigation and
3. Tank irrigation

Canal Irrigation



Area under Irrigation

It is the second most important source of irrigation in our country. Percentage of area under canal irrigation in our country is **24%** (source: Statistical year book 2017 during 2013-2014)Canals are the effective source of irrigation in areas of low level relief, deep, fertile soils, perennial source of water and extensive command area. The canals are of two types:

1. Inundation Canals:

- In this, **water is taken out directly from the rivers without making any kind of barrage or dam.**
- Such canals are useful for the diversion of flood water from the rivers and remain operational during rainy season.

2. Perennial Canals:

- These are developed from perennial rivers by constructing barrage to regulate the flow of water.
- In our country, most of the canals fall under this category. These canals are useful for irrigation.
- In India the total area under canal irrigation is about **15.8 million hectares in 2014.**
- About 60 percent of the canal irrigated area falls in the northern plains of India, particularly in Uttar Pradesh, Punjab, Haryana, Rajasthan, and Bihar.
- In south and central India, Andhra Pradesh, Maharashtra, Karnataka, Madhya Pradesh, Chattisgarh, Odisha, and Tamil Nadu are the important states where canal irrigation is found.

Well Irrigation

Sl. No.	Name of the State	Area in %
1.	Uttar Pradesh	26.6
2.	Madhya Pradesh	14.6
3.	Rajasthan	13.1
4.	Gujarat	7.8
5.	Punjab	7.1

- A well is a hole or trough, usually vertical, excavated in the earth for bringing groundwater to the surface.
- Well irrigation is the most important source of irrigation as it contributes about **62 percent of net irrigated area in India**.
- It is a cheap, dependable, and popular source of irrigation in the country. Well irrigation is unavoidable in the region of low rainfall and becomes an essential one where the canals and tank irrigation are not available.
- Wells are of two types: **i) Open wells and ii) Tube wells**

1. Open Wells:

This type of irrigation is widely practiced in the areas where groundwater is sufficiently available. The areas are in Ganga Plains, the deltaic region of **Mahanadi, Godavari, Krishna, Cauvery and parts of Narmada and Tapti valleys.**

2. Tube Wells:

Tube wells are developed in the areas of low water table, sufficient power supply and soft subsurface geological units. Tube wells are predominant in the states of **Gujarat, Maharashtra, Punjab, Madhya Pradesh and Tamil Nadu**

Tank Irrigation

Sl. No.	Name of the State	Area in Lakh Hectares (2013-14)
1.	Tamil Nadu	3.78
2.	Andhra Pradesh	3.40
3.	Madhya Pradesh	2.64
4.	Telangana	2.30
5.	Karnataka	1.54
Source: Irrigation – Statistical Year Book India – 2017		

- A tank is a natural or man-made hollow on the surface developed by constructing a small bund around it across a stream.
- It is used to collect and store water for irrigation and other purposes. **Irrigation by tanks is a very old system in India.** It also includes irrigation from lakes and ponds.
- The tank irrigation is popular in the peninsular India due to the following reasons:
  1. The undulating relief and hard rocks make difficult to dig canals and wells.
  2. Natural depressions serve as reservoirs.
  3. Absence of perennial rivers.
  4. Impermeable rock structure which do not permit percolation.
  5. The scattered nature of population and agricultural fields

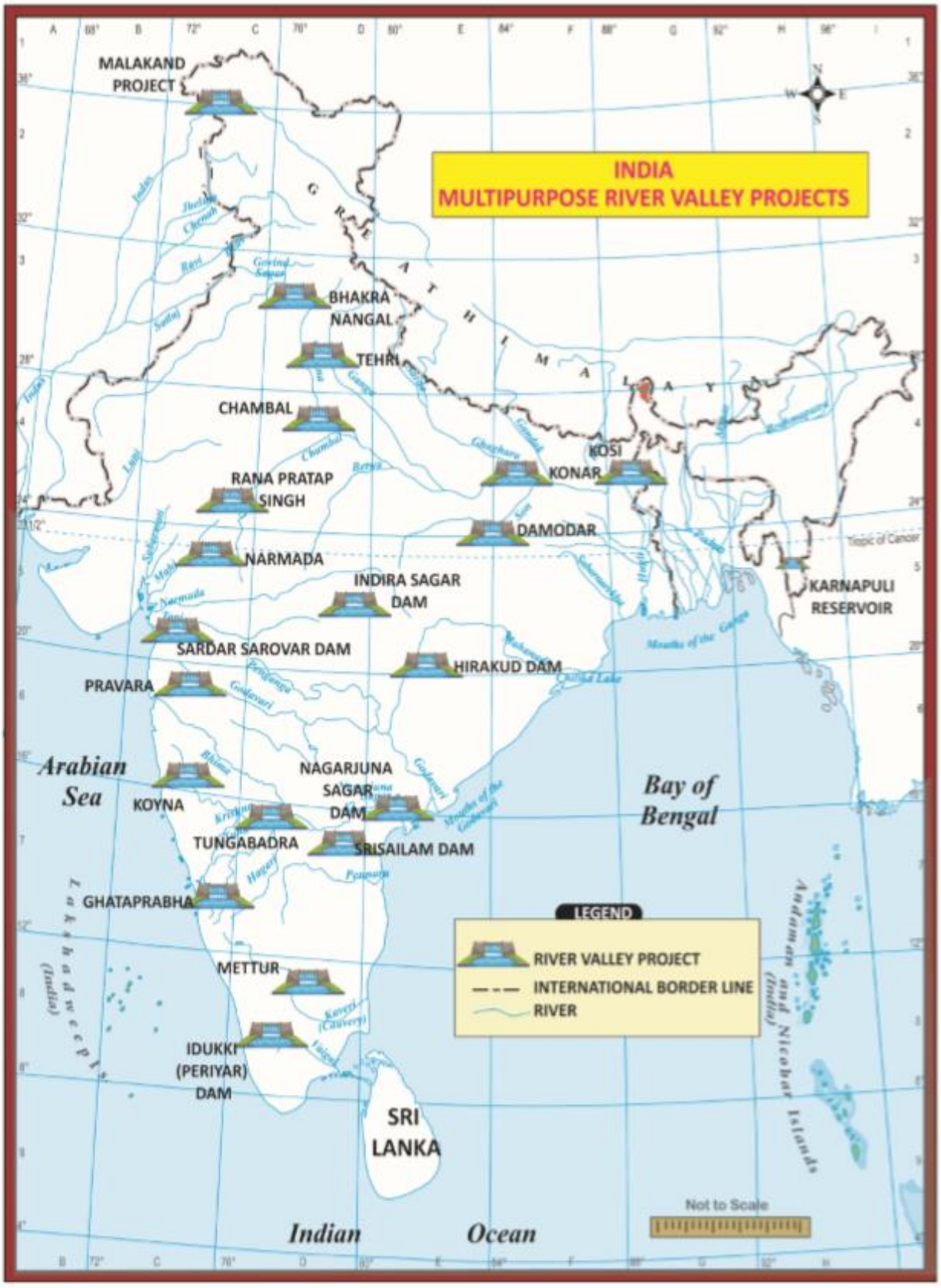
Modern irrigation methods

- There are many ways in Modern Irrigation among them mostly practiced and following in India are using **drips, sprinklers and poly houses central pivot irrigation Drip System** is used to watering like drops at near the roots of plant.
- It will cover a tiny area at plant, but suitable for big trees and horticulture plants too which used to grow bigger **Rain Gun:** Rain gun used to spread water like rain as in name and used to serve for crops which used to grow **upto 4 feets** or high also but we have to adjust sprinklers height as per crop size. typical usage of Rain guns are **in sugarcane, maize crops.**
- **Center-pivot irrigation** (sometimes called central pivot irrigation), also called waterwheel and circle irrigation, is a method of crop irrigation in which equipment rotates around a pivot and crops are watered with sprinklers

Multipurpose River Valley Projects

Name of projects	River	Benefit States	Irrigation (sq km)	Hydropower (Megawatts)
Damodar Valley project	Damodar	Jharkhand, West Bengal	5,150	.260
Bhakra-Nangal Project (highest gravity dam in the world)	Sutlej	Punjab, Haryana and Rajasthan	52,609	1,500
Hirakud Project (longest dam in the world)	Mahanadi	Orissa	1,41,600	347.5
Kosi Project	Kosi '(Sorrow of Bihar'.)	Bihar & Nepal	8,750	19.2
Tungabhadra Project	Tungabhadra	Andhra Pradesh and Karnataka	1,968	35.
Tehri Dam:	Bhagirathi	Uttarakhand	6000	1,000 MW
Chambal Valley Project	Chambal	Rajasthan and Madhya Pradesh	-	-
Nagarjuna Sagar Project	Krishna	Andhra Pradesh		
Sardar Sarover Project	Narmada	Madhya Pradesh, Maharashtra, Rajasthan	18,450	250
Indira Gandhi Canal Project	Satlaj	Rajasthan, Punjab and Haryana	-	-
Mettur Dam	Kaveri	Tamil Nadu	-	40

- It is a scientific management of water resources in our country. Construction of dam across rivers is aimed at many purposes.
- Hence, it is termed as multi-purpose river valley projects. The various purposes of a dam serves are irrigation, **hydro power generation, water supply for drinking and industrial purpose, controlling floods, development of fisheries, navigation** etc.
- Generally, majority of multipurpose projects are combination of irrigation and hydro-power which are the major aims of the projects.



Agriculture

- Agriculture is the process of producing food for people, fodder for cattle, fiber and many other desired products by the cultivation of certain plants and the raising of domesticated animals (livestock).
- Though India is industrially a fast developing nation, still the agriculture in India employs more than **50 percent of the population of the country and accounts for about 25 percent of the national income.**

Determinants of Agriculture

Agriculture in India is determined by a set of factors. Some of the important factors:

1. Physical factors: relief, climate and soil.

2. Institutional factors: Size of farm holdings, land tenure, and land reforms.

3. Infrastructural factors: Irrigation, power, transport, credit, market, insurance and storage facilities.

4. Technological factors: High yielding varieties of seeds, chemical fertilisers, insecticides and machinery.

Types of Farming

Owing to variations in the physical environment and culture, a variety of farming practices and cultivation systems have evolved in different parts of India.

Subsistence Farming

- A considerable proportion of farmers in the country practice subsistence farming. In this, **agricultural land holding is small.**
- As the farmers are poor, they can't apply the modern inputs which cost more.
- They grow crops with the help of family members and consumes almost the entire farm produce with little surplus to sell in the market.
- Preference is given to food crops. In addition to the **food crops, sugarcane, oilseeds, cotton, jute and tobacco** are also cultivated.
- Traditional farming method results in low productivity. In Punjab, some parts of Rajasthan, Uttar Pradesh and Madhya Pradesh subsistence farming is practiced.

Shifting Agriculture

Different names of shifting agriculture in different regions in India	
Name	**Place**
Jhum	Assam
Poonam	Kerela
Podu	Andhra Pradesh, Odisha
Beewar, Mashan, Penda, Beera	Various Parts of Madhya Pradesh

- This type of agriculture is performed by **tribal people in a piece of forest land after clearing the trees through felling and burning the trunks and branches**.
- Once the land is cleared, crops are grown for two to three years and the land will get abandoned as the fertility of the soil decreases.
- The farmers then move to new areas and the process will be repeated.
- They cultivate some grains and vegetable crops using the manual labour. It is also called as **"Slash and burn"** cultivation.

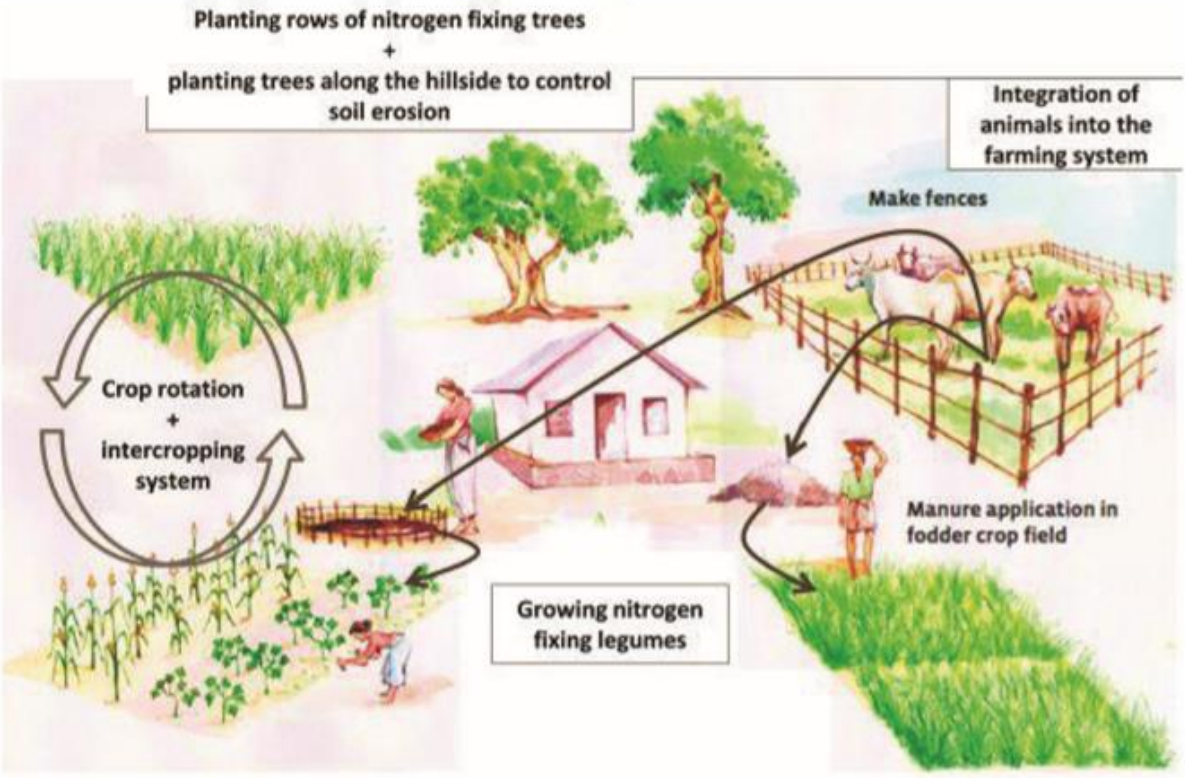
Intensive Farming

- Intensive farming is an agricultural intensification and mechanization system that aims to maximize yields from available land through various means, such as heavy use of pesticides and chemical fertilizers.
- This intensification and mechanization has also been applied to the raising of livestock with billions of **animals, such as cows, pigs and chickens, being held indoors.** They have become known as factory farms.
- Intensive farming is practiced in Punjab, parts of Rajasthan, Uttar Pradesh, and Madhya Pradesh in India.

Dry Farming

- This type of farming is practiced in arid areas where irrigation facilities are lacking. Crops cultivated in these areas can withstand dry conditions.
- The crops grown generally with the help of irrigation are also grown under **dry farming. In such circumstances, the yields are generally low.**
- Most of the areas under dry cultivation entertain only one crop per year. This is practiced in drier parts of Rajasthan, Gujarat, Madhya Pradesh etc.

Mixed Farming Agriculture



Mixed Farming Agriculture

Mixed farming is defined as a system of farm which includes **crop production, raising livestock, poultry, fisheries, bee keeping** etc. to sustain and satisfy as many needs of the farmer as possible.

Terrace Cultivation

- This type of cultivation is practiced specially in hilly areas, where lands are of sloping nature.
- The hill and mountain slopes are cut to form terraces and the land is used in the same way as in permanent agriculture.
- Since the availability of **flat land is limited, terraces are made to provide small patches of level land**.
- Soil erosion is also checked due to terrace formation on hill slopes.
- In our country, terrace cultivation takes place in the states of **Punjab, Meghalaya, Haryana, Uttar Pradesh, Himachal Pradesh, and Uttrakhand.**

Cropping Seasons in India		
Cropping Seasons	Major crops cultivated	
	Northern States	Southern States
Kharif Season June–September	Rice, Cotton, Bajra, Maize, Jowar, Tur	Rice, Ragi, Maize, Jowar, Groundnut
Rabi Season October–March	Wheat, Gram, Rapeseeds, Mustard, Barley	Rice, Maize, Ragi, Groundnut, Jowar
Zaid Season April–June	Vegetables, Fruits, Fodder	Rice, Vegetables, Fodder

Major Crops Cultivated in India

The major crops of India are divided into four major categories as follows:

1. **Food crops** (wheat, maize, rice, millets, pulses etc.).

2. **Cash crops** (sugarcane, tobacco, cotton, jute, oilseeds etc.).

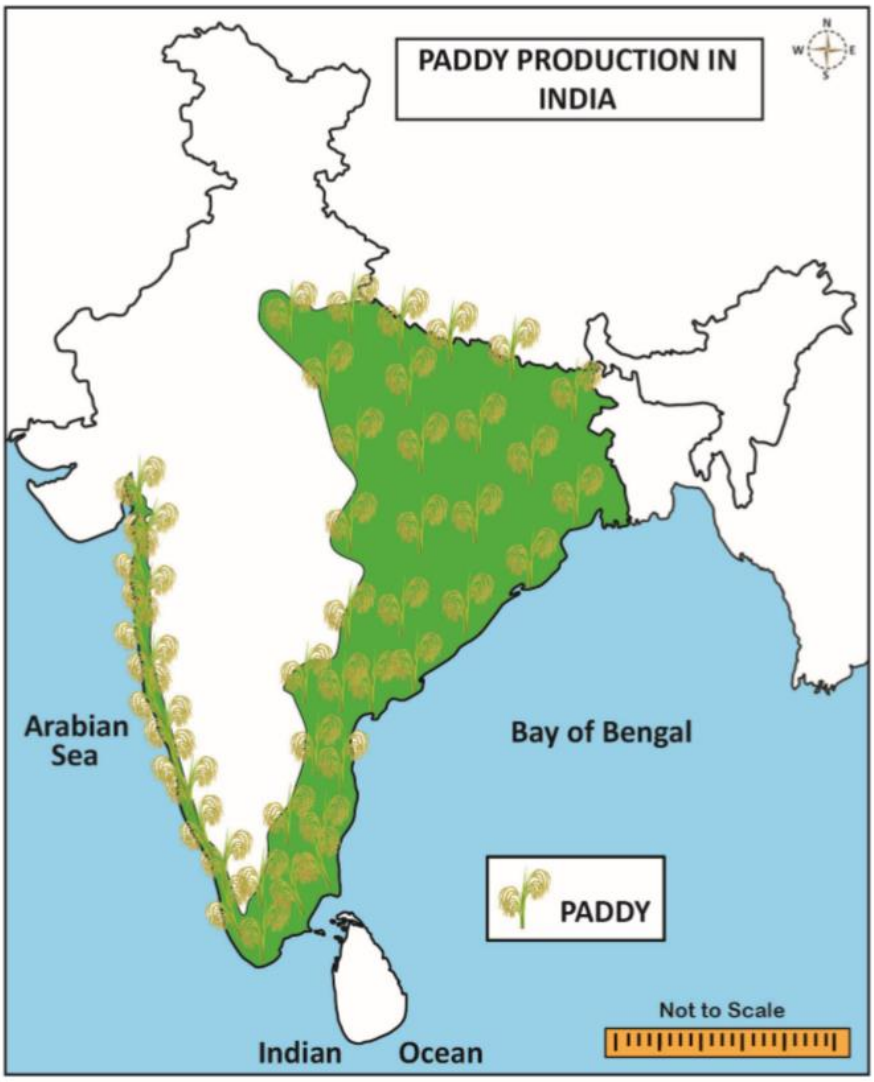
3. **Plantation crops** (tea, coffee and rubber).

4. **Horticulture crops** (fruits, flowers and vegetables).

Food Crops

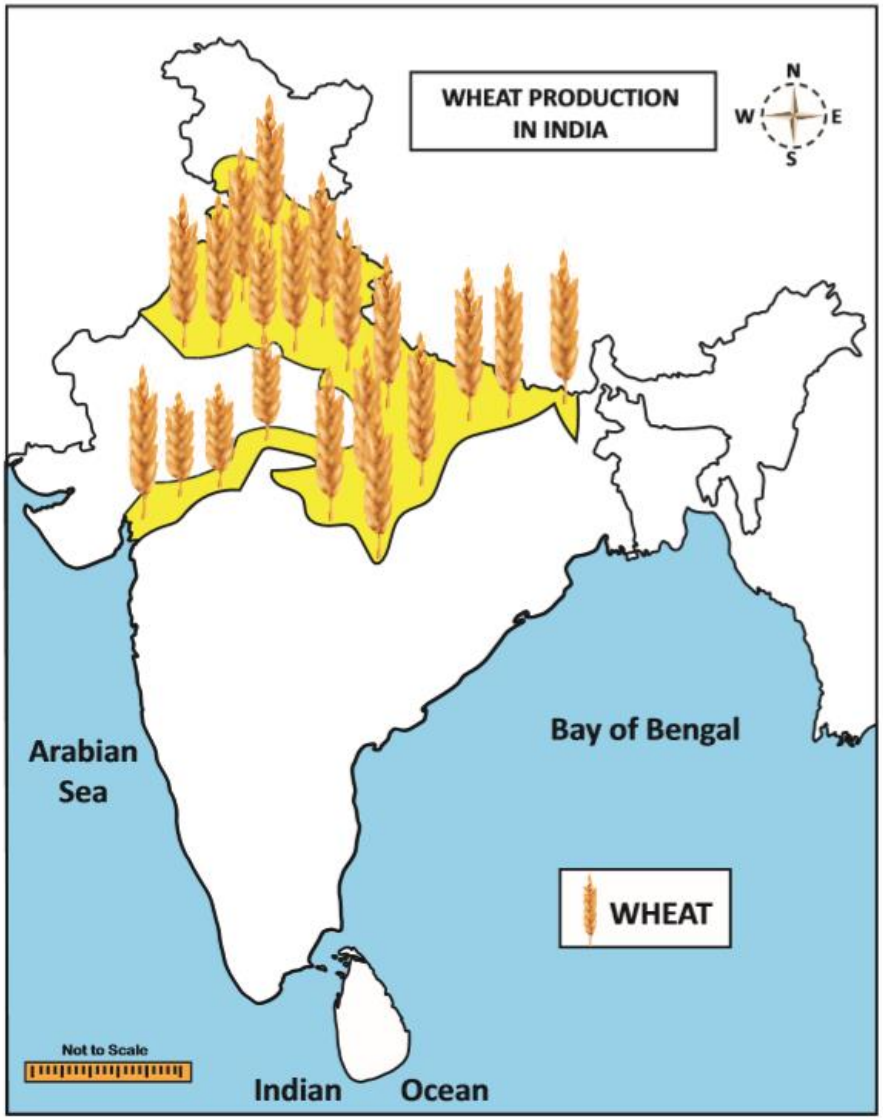
Due to its large population, Indian agriculture is largely dominated by the food crops. Food crops include cereals and pulses, amongst which **rice, wheat, jowar, bajra, maize, barley, ragi, gram and turmeric are important.**

Rice:



- Rice is an indigenous crop. India is the second largest producer of rice in the world after China. It is mainly a tropical crop, growing mainly with mean **temperatures of 24°C and annual rainfall of 150 cm.**
- Deep fertile clayey or loamy soils are suited well for rice cultivation. It also needs abundant supply of cheap labour.
- Rice in India is sown in three ways: **i) Broadcasting, ii) Ploughing or drilling, and iii) Transplanting.**
- Due to increased use of High Yielding Variety (HYV) seeds **(CR Dhan 205, AR Dhan 306, CRR 451 etc.),** many of the indigenous varieties were disappeared.
- In 2016, the first 10 leading rice producing states are West Bengal (First in India) Uttar Pradesh, Punjab, Tamil Nadu, Andhra Pradesh, Bihar, Chhattisgarh, Odisha, Assam, and Haryana

Wheat:



- Wheat is the second most important food crop of the country, after rice.
- It accounts for **22 percent of the total area and 34 percent** of the total production of food grains in the country.
- It requires **10-15°C at the time of sowing and 20-25°C at the time of ripening of grains.**
- Over 85% of the India's wheat production comes from 5 states namely Uttar Pradesh, Punjab, Haryana, Rajasthan and Madhya Pradesh.
- Apart from these regions, the black soil tract of the Deccan covering parts of Maharashtra and Gujarat also contribute a major wheat production.

Jowar:

- Jowar is the third important food crop of our country. **It is an indigenous plant of Africa.** The plant has a tendency to grow in adverse climatic conditions. Its grains are rich in carbohydrates, protein, minerals, and vitamins.

- Hence, it provides cheap food to the large section of the poor population. It is also used as fodder in many parts of the country.
- Jowar is essentially a crop of the Peninsular India. Maharashtra, Karnataka, and Madhya Pradesh are the leading producers of Jowar.

Bajra:

- **Bajra is an indigenous plant of Africa.** This forms the staple food for poor people. Its stalks are used as fodder for cattle and for thatching purposes.
- Bajra is a crop of dry region. Rajasthan is the largest producer of bajra followed by Uttar Pradesh, Haryana, Gujarat and Maharashtra.

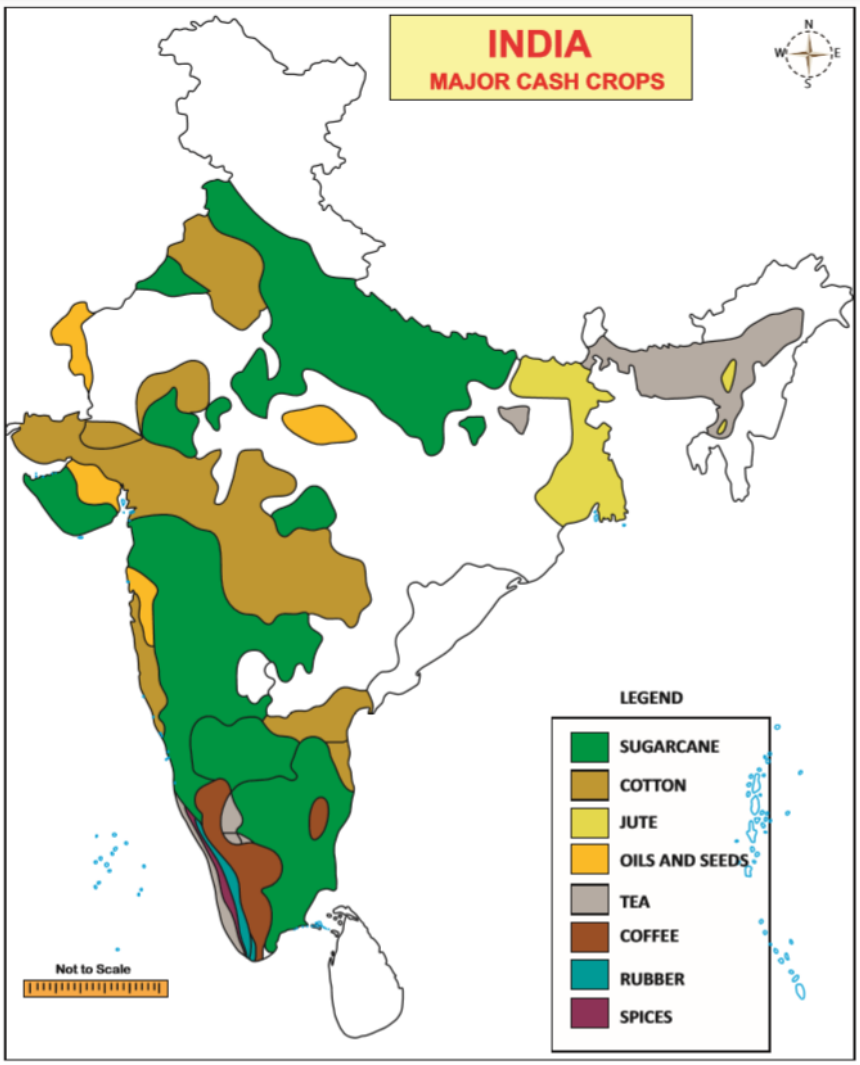
Barley:

- Barley is one of the important cereals of our country. Besides, **being poor man's diet**, it is used for making barley water, beer and whiskey.
- Rajasthan and Uttar Pradesh are the two leading producers of Barley.

Pulses:

- Pulses include a large number of crops which are mostly leguminous and rich in vegetable protein.
- They are used as human food and feeding cattle. They **fix atmospheric nitrogen in the soil** and hence are usually rotated with other crops.
- **India is the largest producer of pulses**. The major pulse growing areas are Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra and Andhra Pradesh.

Cash Crops



The crops which are cultivated for commercial purpose are called cash crops. These crops include **sugarcane, tobacco, fibre crops (cotton, jute, and mesta) and oilseeds.**

Sugarcane:

- Sugarcane is the most important cash crop of India and is the second largest producer in the world.
- This crop provides raw material for the sugar industry which is the second largest industrial category of our country.
- Besides providing **sugar, gur and khandsari,** it supplies molasses for alcohol industry and bagasse for paper industry.
- India is **ranked third in sugar production** in the world after Cuba and Brazil.
- At the state level, Uttar Pradesh is the leading producer of sugarcane followed by Maharashtra, Karnataka, Tamil Nadu and Gujarat.

Cotton:

- Cotton is the most important cash crop of India. It provides raw material to the largest industry of India. **India ranks second next to China in the production of cotton.**
- About 79% of the total area and production in the country were contributed by four states viz., Gujarat, Maharashtra, Andhra Pradesh and Punjab.

Jute:

- It is a **tropical fibre crops, grows well in the alluvial soil**. It provides raw material for Jute industry.
- It is used for manufacturing of gunny bags, carpets, hessian, ropes and strings, rugs, clothes, tarpaulins, upholstery etc.
- West Bengal is the leading state both in cultivation and production of jute. The other cultivators of jute are Bihar, Assam and Meghalaya.

Oil Seeds:

- Oil seeds, the premier source of fat in the Indian diet are derived from number of crops like groundnut, rapeseed, mustard, sesame, linseed, sunflower, castor seed, cotton seed, niger seed etc.
- These provide oil and oilcake which are used for **making lubricants, varnish, medicine, perfume, candles, soaps, manure and cattle feed.**
- Gujarat is India's largest oilseeds producing state.
- Other major producer of oilseeds are followed by Rajasthan Madhya Pradesh, Maharashtra and Andhra Pradesh.
- In **groundnut production, India is the second largest producer in the world after China.**

Plantation Crops

Plantation crops are cultivated for the purpose of exports. These are cultivated in large estates on hilly slopes. Cultivation near the coast is preferable as it facilitates exports. **Tea, coffee, rubber and spices are the major plantation crops of India.**

Tea:

- Tea is an evergreen plant that mainly grows in tropical and subtropical climates. Tea is a labour intensive and grows faster under light shade.
- Tea plants require high rainfall but its root cannot tolerate water logging. Two major varieties of tea are cultivated in India.
- They are **i) Bohea originated from China and ii) Assamica from India.**
- A number of hybrid varieties have been developed by mixing these two.
- India is the **second largest producer of tea after China in the world**. Assam is the larger producer of tea in India. Other states are Tamil Nadu, Kerala and West Bengal.

Coffee:

- Coffee is grown in shade and it grows effectively in the altitudes **between 1,000 and 1,500 m above mean sea level.**
- There are two main varieties of coffee.
- They are **i) Arabica (High quality-cultivated more in India) and ii) Robusta (Inferior quality).**
- India is the **7th largest producer of coffee globally.** Karnataka is the leading producer of coffee in India.
- It produces 71% in India, and 2.5 % in the world (source; coffee board of India-2018).

Rubber:

- Rubber plantation were first established in **Kerala in 1902.**
- It needs hot and wet climatic conditions **(temperature above 20°C and rainfall above 300cm).**
- Most of the land under rubber belongs to small land holders. The major rubber growing areas are Tamil Nadu, Kerala, Karnataka and Andaman and Nicobar Islands.

Spices:

- **India has been world famous for its spices since ancient times.**
- These spices mostly used for flavouring or tampering cooked food and for preparing medicines, dyes etc.
- Pepper, chillies, turmeric, ginger, cardamom, clove and areca nut are the major spices cultivated in India.
- **Kerala is the leading producer of spices in India.**

Horticulture Crops

- It refers to the cultivation of **fruits, flowers and vegetables**. Fruits and vegetables are important supplement to the human diet, as they provide essential minerals, vitamins, and fibres required for maintaining health.
- India is in the **second position** in the production of fruits and vegetables. Apple is mostly produced in Himachal Pradesh, Jammu and Kashmir and Uttarakhand.
- Production of banana is concentrated in Tamil Nadu and Maharashtra. Orange is cultivated in Maharashtra, Uttarakhand, Himachal Pradesh, Jammu and Kashmir, Tamil Nadu and Karnataka.
- Grape is cultivated mainly in Uttarakhand, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka. India contributes about 13% of the world's production of vegetables.

Livestock

Sl. No.	Name of the Livestock	Population in Lakhs (2012)
1.	Cattle	1.91
2.	Goats	1.35
3.	Buffaloes	1.09
4.	Sheep	0.65
5.	Pigs	0.10
Source: 19th Livestock Census, Department of Animal Husbandry, Dairying & Fisheries		

- Livestock is an integral component of the farming system in India.
- The livestock sector is socially and economically very significant due to its multi-functional outputs and contribution to socio-cultural security.
- It also helps to improve food and nutritional security by providing nutrient-rich food products, generate income and employment and act as a **cushion against crop failure, provide draught power and manure inputs to the crop subsector.**
- Livestock sector contributes approximately **4 percent of national GDP (Gross Domestic Product) and 25.6 percent to agriculture GDP.**
- As per 19th Livestock Census, conducted in 2012 (Government of India, 2014), India's livestock sector is one of the largest in the world with 11.6 percent of world livestock population, which consists of cattle (37.3 percent), goats (26.4 percent), buffaloes (21.2 percent), sheep (12.7 percent) and pigs (2.0 percent) etc.

Distribution of Livestock in India in 2012

Sl. No.	Name of the State	Total No. of Livestock in Lakhs (2012)
1.	Uttar Pradesh	687.2
2.	Rajasthan	577.3
3.	Andhra Pradesh	561.0
4.	Madhya Pradesh	363.3
5.	Bihar	329.4
Source: 19th Livestock Census, Department of Animal Husbandry, Dairying & Fisheries		

Cattle

- Cattle constitute **37.3 percent of livestock** population in India. India has second largest cattle population after Brazil at World level.
- Among the states, Madhya Pradesh leads with 10.3 percent followed by Uttar Pradesh (10.2 percent) and West Bengal (8.7 percent).
- Cattle population in India belongs to different breeds. These include: **1) Milch Breed, 2) Draught breed, and 3) Mixed or General breed.**

Goats

- The goat is the poor man's cow providing milk, meat, skin and hair. It is the main source of meat for the country.
- While looking at the current status of goat population among Indian states, **Rajasthan records first with 16 percent followed by Uttar Pradesh and Bihar.**

Buffaloes

- Buffaloes are an important source of milk supply for India.
- Uttar Pradesh has the highest number of buffaloes (28.2%) followed by Rajasthan (9.6%) and Andhra Pradesh (7.9%).

Dairy, Meat and Wool Production

- According to State / UT Animal Husbandry Department, **during 2016-17, the total production of milk in our nation is 163.7 million tonnes.**

- At this time, the leading producer was Uttar Pradesh with 27.6 million tonnes (16.8 percent) followed by Rajasthan with 19.4 million tonnes (11.8 percent) and Madhya Pradesh with 13.4 million tonnes (8.2 percent) in total milk production.
- While looking at the meat, the total production is 7.4 million tonnes. Uttar Pradesh is the leading producer with 1.3 million tonnes (18.2 percent), where Maharashtra and West Bengal are estimated with 0.8 million tonnes (11.4 percent) and 0.7 million tonnes (9.6 percent) respectively in the total country's production.
- The total wool production of our nation is 43.5 million kilograms.
- The leading state in the wool production is Rajasthan with 14.3 million kilograms (32.9 percent) followed by Jammu and Kashmir with 7.3 million kilograms (16.7 percent) and Karnataka with 6.6 million kilograms (15.1 percent) in country's total wool production.

Fisheries

- Fisheries in India are a very important economic activity and a flourishing sector with varied resources and potentials.
- Fishing in India is a major industry in its coastal states, employing over **14 million people.**
- It produces about **3 percent of World's fish and occupies second place among the fish producing nations of the world after China**.
- It also helps in augmenting food supply, generating employment, raising nutritional level and earning valuable foreign exchange.
- The length of Indian coastline is **7,517 km** including the coastline of the islands, however the mainland's length is **6,100 km**. In India, fishing is categorised into two types: they are

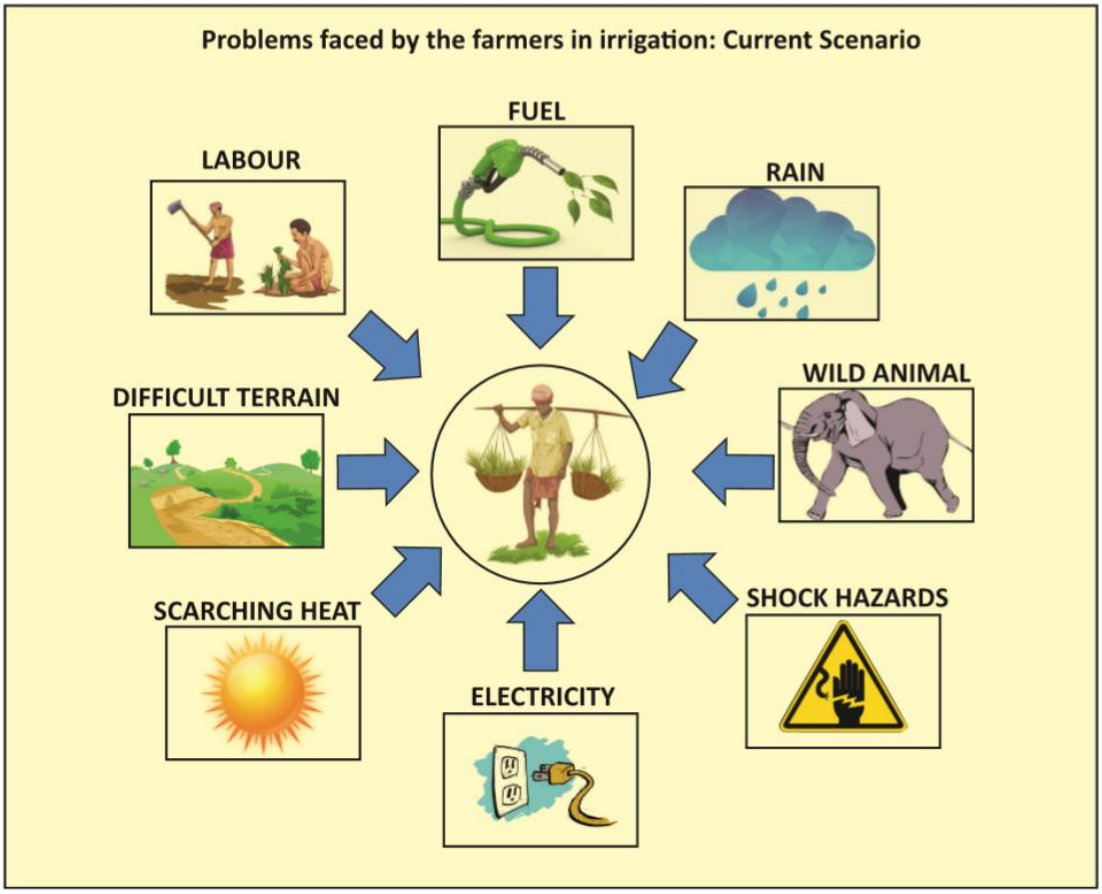
1. Marine or Sea Fisheries:

It includes coastal, off-shore and deep sea fisheries mainly on the continental shelf upto a depth of 200 m. Among the coastal states, Kerala leads in the marine fish production in India.

2. Inland or Fresh Water Fisheries:

- Rivers, lakes, canals, reservoirs, ponds, tanks etc. are the sources of fresh water and provide fresh water fisheries.
- About **50 percent** of the country's total fish production comes from the inland fisheries and Andhra Pradesh is the leading producer in India.
- In India, the important varieties of fishes caught by the fisherman are Cat fish, Herrings, Mackerels, Perches, Eels, Mullets etc.
- In 2014-15, the total inland or fresh water fish production was 65.77 lakh tonnes and the total marine fish production was **34.91 lakh tonnes.**
- In India, the top five fish producing states are Andhra Pradesh, West Bengal, Gujarat, Kerala, and Tamil Nadu.

Major issues faced by farmers in India



Major Issues of Farmers

Indian agriculture and Indian farmers are plagued by several problems; some of them are natural and some others are manmade.

Small and fragmented land-holdings:

The problem of small and fragmented holdings is more serious in densely populated and intensively cultivated states in India. About **67 percent** of operational land holdings in India are marginal holdings (< 1 hectare).

High Costs of Inputs:

Seed is a critical and basic input for attaining higher crop yields and sustained growth in agricultural production. Unfortunately, good quality seeds are out of reach for many small and marginal farmers due to their high price.

Infertile Soil:

Indian soils have been used for growing crops over thousands of years without caring much for replenishing. This has led to depletion and exhaustion of soils resulting low productivity.

Lack of Irrigation:

Only one-third of the cropped area falls under irrigated area. To make agriculture reliable, irrigation facility has to be developed.

Lack of mechanization:

In spite of the large scale mechanization of agriculture in some parts of the country, most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools.

Soil erosion:

Large tracts of fertile land suffer from soil erosion by wind and water. Such kind of areas must be properly treated and restored to its original fertility.

Agricultural marketing:

In rural India, agricultural marketing continues in a bad shape. Due to the absence of sound marketing facility, the farmers have to depend on local traders and middlemen for the disposal of their farm products which is sold at low price. Besides, there is a fluctuation in the prices of agriculture products.

Inadequate storage facilities:

Storage facilities in the rural areas are either totally absent or grossly inadequate. Under such conditions the farmers are compelled to sell their products immediately after the harvest irrespective of the condition of market

Inadequate transport:

One of the main handicaps with Indian agriculture is the lack of cheap and efficient means of transportation. Even at present there are lakhs of villages which are not well connected with main roads or with market centres

Scarcity of capital:

Agriculture is an important industry which requires a huge capital. The role of capital plays a major role in the purchase of advanced farm machineries and equipments.

List of important Agricultural Revolutions in India	
Revolution	**Related Product**
Yellow Revolution	Oil seed Production (Especially Mustard and Sunflower)
Blue Revolution	Fish Production
Brown Revolution	Leather / Cocoa / Non-Conventional Products
Golden Fibre Revolution	Jute Production
Golden Revolution	Fruits / Honey Production / Horticulture Development
Grey Revolution	Fertilizers
Pink Revolution	Onion Production / Pharmaceuticals / Prawn Production
Evergreen Revolution	Overall Production of Agriculture
Silver Revolution	Egg Production / Poultry Production
Silver Fibre Revolution	Cotton
Red Revolution	Meat Production / Tomato Production
Round Revolution	Potato
Green Revolution	Food Grains
White Revolution	Milk Production

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More to Know:

1. How is livestock census conducted in Tamil Nadu?

- State Government is conducting Livestock Census with the help of Department of Animal Husbandry at state level and Regional Joint Director at Distric level under the guidelines of Government of India Ministry of Agriculture and farmers welfare, Department of Animal Husbandary Dairying and Fisheries.
- The Livestock Census in the country started in the year **1919 – 1920.** Since then it has been conducted once in every **5 years.**
- So far 19 livestock census has been conducted and the last census was held in the year 2012. The 20 th Live stock Census – 2017 was scheduled to be conducted from 16 th July and will end on 15 th October 2017.

2. Livestock Census:

- First Livestock Census in India was conducted with the title of Dairy Cattle Census in 1919.
- Following this, the 19th Livestock census was conducted in October 2012 and it takes place at every five years.

3. PER DROP MORE CROP : (Improving water use efficiency) - Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

- The Government of India has been implementing Centrally Sponsored Scheme on Micro Irrigation with the objective to enhance water use efficiency in the agriculture sector by promoting appropriate technological interventions like drip & sprinkler irrigation technologies and encourage the farmers to use water saving and conservation technologies.
- The following are the five leading states which account for 78% of the total progress under Micro Irrigation scheme: **1. Andhra Pradesh, 2. Karnataka, 3. Gujarat, 4. Maharashtra, and 5. Tamil Nadu.**