

Agriculture, Food Management & Land Reforms**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).

Determinants of Agriculture:

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

- **Physical factors:** relief, climate and soil.
- **Institutional factors:** Size of farm holdings, Land tenure, and land reforms.
- **Infrastructural factors:** Irrigation, power, Transport, credit, market, insurance and Storage facilities.
- **Technological factors:** High yielding Varieties of seeds, chemical fertilisers, Insecticides and machinery.

Types of Farming:**Subsistence Farming:**

- A considerable proportion of farmers in the country practice subsistence farming.
- Farmers 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.

Shifting Agriculture:

- 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.

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.

Mixed Farming:

- 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 Farming:

- 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.

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.

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
 - Canal irrigation
 - Inundation Canals
 - Perennial Canals
 - Well irrigation and
 - Tank irrigation

Canal Irrigation:

- It is the second most important source of Irrigation in our country.
- 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:
 - **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.
 - **Perennial Canals:**
 - These are developed from perennial rivers by constructing Barrage to regulate the flow of water.
 - About 60 percent of the canal irrigated Area falls in the northern plains of India,

Well Irrigation:

- 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.
- 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:
 - Open wells
 - Tube wells

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.

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:

- 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:
 - The undulating relief and hard rocks make Difficult to dig canals and wells.
 - Natural depressions serve as reservoirs.
 - Absence of perennial rivers.
 - Impermeable rock structure which do not Permit percolation.
 - The scattered nature of population and Agricultural fields

Modern irrigation methods:

- There are many ways in Modern Irrigation.

- Among them mostly practiced in India are drip irrigation, sprinklers and Rain Gun and central pivot irrigation

Drip Irrigation Method:

- It was first developed.
- In this method, Water is supplied in the form of drops through Nasals.
- Water can be saved upto 70%.

Springler Method:

- It is the simplest and easiest method of all.
- In this method, water is supplied to the Field from the source through the pipes with Have small holes.
- It can be used in the areas of uneven surface also.

Rain Gun:

- Rain gun is used to spread water like Rain.
- It can be used to water the crops which Grow upto 4 feet.
- It is useful to irrigate the Crops like sugarcane and maize.

Central – Pivot Irrigation:

- It is also called water wheel and circle Irrigation.
- It is a method of crop irrigation in which equipment rotates around a pivot and Crops are watered with springlers.

Multipurpose River Valley Projects:

- 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.

Major Crops Cultivated in India:

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

- Food crops (wheat, maize, rice, millets, Pulses etc.).

- Cash crops (sugarcane, tobacco, cotton, Jute, oilseeds etc.).
- Plantation crops (tea, coffee and rubber).
- Horticulture crops (fruits, flowers and Vegetables). Food Crops Due to its large population, Indian agriculture Is largely dominated by the food crops.

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:
 - Broadcasting,
 - Ploughing or drilling
 - 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.

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- 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.

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:

- It 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.
- 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.
- 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
 - BOHEA – originated from China
 - 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 Arabica (High quality-cultivated more In India)

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 Arecanut 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.

Livestock:

- 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.

Cattle:

- Cattle constitute 37.3 percent of livestock Population in India.
- India has second largest Cattle population after Brazil at World level.
- Cattle population in India belongs to different Breeds. These include:

- Milch Breed
- Draught breed
- 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.

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 2016-17 Census held by State /UT Animal Husbandry Department, Uttar Pradesh, Rajasthan and Madhya Pradesh.
- While looking at the meat, Uttar Pradesh Is the leading producer following Maharashtra and West Bengal.
- The leading state in the wool production is Rajasthan followed by Karnataka.

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.
- In India, fishing is categorised into two types: They are
 - Marine or Sea Fisheries
 - Inland or Fresh Water Fisheries

Marine or Sea Fisheries:

- It includes coastal, Off-shore and deep sea fisheries mainly on the continental shelves.
- Kerala leads in the Marine fish production in India.

Inland or Fresh Water Fisheries:

- Rivers, Lakes, canals, reservoirs, ponds, tanks etc.
- Are the sources of fresh water 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, Mulletts etc.
- Major issues faced by Farmers in India Small and fragmented land-holdings the problem of small and fragmented Holdings is more serious in densely populated and intensively cultivated states in India.

High Costs of Inputs:

- 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 in 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.

Agricultural marketing:

- 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.

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 equipment.

Green revolution:

- Norman Borlaug started the Green Revolution movement in the 1960s.
- He is referred to as the “Father of the Green Revolution” globally.
- For his efforts in creating High Yielding Varieties (HYVs) of wheat, it resulted in him being awarded the Nobel Peace Prize in 1970.
- The Green Revolution in India was primarily directed by M.S. Swaminathan.
- Beginning in the middle of the 20th century, the introduction of new, high-yielding variety seeds into emerging countries led to a significant increase in the production of food grains (particularly wheat and rice).
- Mexico and the Indian subcontinent were the locations of its initial stunning achievements.
- India’s status as a food-insecure nation was transformed by the Green Revolution from 1967–1968 to 1977–1978, making it one of the world’s

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- He is known as the “Father of the Green Revolution” in several countries.
- He won the 1970 Nobel Peace Prize as a result of his work developing High Yielding Varieties (HYVs) of wheat.
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- The output of food grains (especially wheat and rice) increased significantly in emerging nations starting in the middle of the 20th century as a result of the introduction of new, high-yielding variety seeds.
- Its groundbreaking successes were first seen in Mexico and the Indian subcontinent.
- The Green Revolution, which lasted from 1967–1968 to 1977–1978, altered India’s status as a food-insecure country, making it one of the worlds.

The goals of the green revolution:

Short Term:

- During the second Five Year Plan, the revolution was started to combat the famine crisis in India.

Long-term:

- The long-term goals included a general modernization of agriculture based on rural development, industrial development, infrastructure, raw materials, etc.
- Industrial and agricultural employees should both have jobs available to them.

Research:

- Developing plants that are more resilient to disease and harsh temperatures.

Globalization of the Agricultural World:

- This process involves introducing technology to developing countries and establishing several firms in key agricultural regions.

The Foundations of the Green Revolution:

Extension of Farming Areas:

- Despite an increase in the area under cultivation starting in 1947, the demand did not keep pace with this growth.

- This quantitative increase in farmland was made possible by the Green Revolution.

Double-cropping System:

- A key component of the Green Revolution was double cropping.
- It was decided to have two crop seasons each year rather than simply one.
- Because there is just one rainy season per year, the one-season-per-year practise was developed.
- Now, the second phase's water supply came from huge irrigation projects.
- Dams were constructed, and other straightforward irrigation methods were also used.

Using seeds with superior genetics:

- The scientific component of the Green Revolution used seeds with superior genetics Revolution.
- Specifically for wheat, rice, millet and maize, the Indian Council for Agricultural Research created new strains of high yield variety seeds.
- The main crops during the Revolution were maize, wheat, rice, jowar, and bajra.
- Grain products other than food were not included in the new strategy's scope.
- For many years, wheat was the foundation of the Green Revolution.

India's Green Revolution:

- Indian Green Revolution's historical context the Bengal Famine, which occurred in 1943 and was the biggest food crisis ever recorded, caused an estimated 4 million people to die of starvation in eastern India.
- Even after gaining independence in 1947, the government's focus on enlarging the agricultural lands persisted until 1967.
- However, the rate of population growth was outpacing the rate of food production.
- To boost yield, an immediate and dramatic intervention was required. The Green Revolution served as the catalyst for the action.

- The term “green revolution” in India refers to a time when contemporary agricultural practises and technology, such as the usage of HYV seeds, tractors, irrigation systems, pesticides, and fertilizers, transformed Indian agriculture into an industrial system.
- The Ford and Rockefeller Foundations, the US government, and the Indian government all provided funding.
- The output of wheat increased by more than three times between 1967–1968 and 2003–2004, although the entire rise in grain production was only two times, making the Green Revolution in India essentially the Wheat Revolution

Positive Impacts of Green Revolution:

Tremendous Increase in Crop Produce:

- It resulted in a grain output of 131 million tonnes in the year 1978-79 and established India as one of the world’s biggest agricultural producers.
- The crop area under high yielding varieties of wheat and rice grew considerably during the Green Revolution.

Reduced Import of Food-Grains:

- India became self-sufficient in food-grains and had sufficient stock in the central pool, even, at times, India was in a position to export food-grains.
- The per capita net availability of food-grains has also increased.

Benefits to the Farmers:

- The introduction of the Green Revolution helped the farmers in raising their level of income.
- Farmers ploughed back their surplus income for improving agricultural productivity.
- The big farmers with more than 10 hectares of land were particularly benefited by this revolution by investing large amounts of money in various inputs like HYV seeds, fertilizers, machines, etc.
- It also promoted capitalist farming.

Industrial Growth:

- The Revolution brought about large scale farm mechanization which created demand for different types of machines like tractors, harvesters, threshers, combines, diesel engines, electric motors, pumping sets, etc.
- Besides, demand for chemical fertilizers, pesticides, insecticides, weedicides, etc. Also increased considerably.
- Several agricultural products were also used as raw materials in various industries known as agro based industries.

Rural Employment:

- There was an appreciable increase in the demand for labour force due to multiple cropping and use of fertilizers.
- The Green Revolution created plenty of jobs not only for agricultural workers but also industrial workers by creating related facilities such as factories and hydroelectric power stations.

Negative Impacts of Green Revolution:**Non-Food Grains Left Out:**

- Although all food-grains including wheat, rice, jowar, bajra and maize have gained from the revolution, other crops such as coarse cereals, pulses and oilseeds were left out of the ambit of the revolution.
- Major commercial crops like cotton, jute, tea and sugarcane were also left almost untouched by the Green Revolution.

Limited Coverage of HYVP:

- High Yielding Variety Programme (HYVP) was restricted to only five crops: Wheat, Rice, Jowar, Bajra and Maize.
- Therefore, non-food grains were excluded from the ambit of the new strategy.
- The HYV seeds in the non-food crops were either not developed so far or they were not good enough for farmers to risk their adoption.

Regional Disparities:

- Green Revolution technology has given birth to growing disparities in economic development at interregional and intra regional levels.

- It has so far affected only 40 percent of the total cropped area and 60 per cent is still untouched by it.
- The most affected areas are Punjab, Haryana and western Uttar Pradesh in the north and Andhra Pradesh and Tamil Nadu in the south.
- It has hardly touched the Eastern region, including Assam, Bihar, West Bengal and Orissa and arid and semi-arid areas of Western and Southern India.
- The Green Revolution affected only those areas which were already better placed from an agricultural point of view.
- Thus, the problem of regional disparities has further aggravated as a result of the Green Revolution.

Excessive Usage of Chemicals:

- The Green Revolution resulted in a large-scale use of pesticides and synthetic nitrogen fertilisers for improved irrigation projects and crop varieties.
- However, little or no efforts were made to educate farmers about the high risk associated with the intensive use of pesticides.
- Pesticides were sprayed on crops usually by untrained farm labourers without following instructions or precautions.
- This causes more harm than good to crops and also becomes a cause for environment and soil pollution.

Water Consumption:

- The crops introduced during the green revolution were water-intensive crops.
- Most of these crops being cereals required almost 50% of dietary water footprint.
- Canal systems were introduced, and irrigation pumps also sucked out the groundwater to supply the water-intensive crops, such as sugarcane and rice, thus depleting the groundwater levels.
- Punjab is a major wheat- and rice-cultivating area, and hence it is one of the highest water depleted regions in India.

Impacts on Soil and Crop Production:

- Repeated crop cycle in order to ensure increased crop production depleted the soil's nutrients.
- To meet the needs of new kinds of seeds, farmers increased fertilizer usage.
- The pH level of the soil increased due to the usage of these alkaline chemicals.
- Toxic chemicals in the soil destroyed beneficial pathogens, which further led to the decline in the yield.

Unemployment:

- Except in Punjab, and to some extent in Haryana, farm mechanization under the Green Revolution created widespread unemployment among agricultural labourers in the rural areas.
- The worst affected were the poor and the landless labourers.

Health Hazards:

- The large-scale use of chemical fertilizers and pesticides such as Phosphamidon, Methomyl, Phorate, Triazophos and Monocrotophos resulted in a number of critical health illnesses including cancer, renal failure, stillborn babies and birth defects.

Minimum Support Price:

- The MSP, which is based on a computation of at least 1.5 times the farmers' production costs, is the rate at which the government purchases crops from farmers.
- A "**minimum support price**" (MSP) is set for any crop the government deems to be profitable for farmers and so deserving of "support."

Crops covered by MSP:

- The fair and remunerative price (FRP) for sugarcane is also recommended by the Commission for Agricultural Costs & Prices (CACP), along with MSPs for 22 mandatory crops.
- A department within the Ministry of Agriculture and Farmers Welfare is known as CACP.

- 14 kharif season crops, 6 rabi season crops, and 2 more commercial crops make up the list of required crops.
- Additionally, on the basis of the MSPs, the MSPs for toria and dehusked coconut are fixed.

Criteria for suggesting the MSP:

- The CACP takes into account a number of criteria, including the cost of cultivation, when suggesting the MSP for a commodity.
- It considers the commodity's supply and demand dynamics, domestic and international market price trends, parity with respect to other crops, repercussions for consumers (inflation), the environment (soil and water consumption), and trade agreements between the agricultural and non-agricultural sectors.

Three Different Types of Production Cost:

- The CACP estimates three different types of production costs for each crop, both at state- and India-wide average levels.
 - 'A2': Pays for all direct expenditures made by the farmer for things like seeds, fertilizer, pesticides, hired labor, leased land, fuel, irrigation, and so forth.
 - A2 plus an imputed value for unpaid family labour is included in the phrase "A2+FL."
 - 'C2': It is a more comprehensive cost that, in addition to A2+FL, takes into account rentals, interest forgone on owned land, and fixed capital assets.
- When advising MSP, CACP takes into account both A2+FL and C2 expenses.
- CACP estimates simply A2+FL as the return cost.
- C2 costs, however, are largely utilised by CACP as benchmark reference expenses (opportunity costs) to determine whether the MSPs they suggest at least cover these costs in some of the key producing States.

- The Union government's **Cabinet Committee on Economic Affairs (CCEA)** makes a final determination regarding the MSP level and other suggestions given by **CACP**.

MSP Required:

- Since 2014, farmers have been forced to endure falling commodity prices due to the twin droughts of 2014 and 2015.
- Demonetization and the introduction of the GST, two simultaneous shocks, damaged the rural economy, particularly the non-farm sector but also agriculture.
- The majority of farmers continue to be in a precarious condition as a result of the epidemic, the slowdown in the economy following 2016–17, and other factors.
- Increased costs for diesel, energy, and fertilisers have only made the situation worse.

Problems in Minimum Support Prices (MSP)

- **Confined extent only two crops** - rice and wheat - are purchased despite the official release of MSPs for **23** other crops because these are given under the NFSA (National Food Security Act).
- The remainder is mainly incidental and irrelevant.
- **Ineffectively Implemented:** Only 6% of the MSP could be obtained by farmers, according to the Shanta Kumar Committee's report from 2015, which directly translates to 94% of farmers in the nation not receiving the benefit of the MSP.
- More of an Acquisition Price Prices in the domestic market have no relationship to the existing MSP regime.
- Its sole purpose is to satisfy the NFSA's standards, making it, in essence, and a procurement price.
- **Farming possible Paddy and Wheat Dominant:** The overproduction of rice and wheat caused by the skewed MSP system prevents farmers from growing other crops and horticultural products, which have more demand and may, therefore, boost farmers' income.

- The MSP-based procurement system depends on intermediaries, commission agents, and APMC officials, all of whom are difficult for smaller farmers to contact.

FOOD MANAGEMENT

Public distribution system:

- The **Public distribution system (PDS)** is an Indian food Security System established under the Ministry of Consumer Affairs, Food, and Public Distribution.
- PDS evolved as a system of management of scarcity through distribution of food grains at affordable prices.
- PDS is operated under the joint responsibility of the Central and the State Governments.
- The Central Government, through **Food Corporation of India (FCI)**, has assumed the responsibility for procurement, storage, transportation and bulk allocation of food grains to the State Governments.
- The operational responsibilities including allocation within the State, identification of eligible families, issue of Ration Cards and supervision of the functioning of **Fair Price Shops (FPSs)** etc., rest with the State Governments.
- Under the PDS, presently the commodities namely wheat, rice, sugar and kerosene are being allocated to the States/UTs for distribution.
- Some States/UTs also distribute additional items of mass consumption

Evolution of PDS in India:

- PDS was introduced around World War II as a war-time rationing measure. Before the 1960s, distribution through PDS was generally dependant on imports of food grains.
- It was expanded in the 1960s as a response to the food shortages of the time; subsequently, the government set up the Agriculture Prices Commission and the FCI to improve domestic procurement and storage of food grains for PDS.

- By the **1970s**, PDS had evolved into a universal scheme for the distribution of subsidised food.
- Till **1992**, PDS was a general entitlement scheme for all consumers without any specific target.
- The **Revamped Public Distribution System (RPDS)** was launched in **June, 1992** with a view to strengthen and streamline the PDS as well as to improve its reach in the far-flung, hilly, remote and inaccessible areas where a substantial section of the underprivileged classes lives.
- In **June, 1997**, the Government of India launched the **Targeted Public Distribution System (TPDS)** with a focus on the poor.
- Under TPDS, beneficiaries were divided into two categories: Households below the poverty line or BPL; and Households above the poverty line or APL.

Antyodaya Anna Yojana (AAY):

- AAY was a step in the direction of making TPDS aim at reducing hunger among the poorest segments of the BPL population.
- A National Sample Survey exercise pointed towards the fact that about 5% of the total population in the country sleeps without two square meals a day.
- In order to make TPDS more focused and targeted towards this category of population, the “Antyodaya Anna Yojana” (AAY) was launched in December, 2000 for one crore poorest of the poor families.
- In September 2013, Parliament enacted the **National Food Security Act, 2013**.
- The Act relies largely on the existing TPDS to deliver food grains as legal entitlements to poor households.
- The Central and State Governments share responsibilities in order to provide food grains to the identified beneficiaries.
- The centre procures food grains from farmers at a **minimum support price (MSP)** and sells it to states at central issue prices.
- It is responsible for transporting the grains to godowns in each state.

- States bear the responsibility of transporting food grains from these godowns to each fair price shop (ration shop), where the beneficiary buys the food grains at the lower central issue price.
- Many states further subsidise the price of food grains before selling it to beneficiaries.

National Food Security Act (NFSA), 2013:

Objective:

- To provide for food and nutritional security in the human life cycle approach, by ensuring access to adequate quantities of quality food at affordable prices to people to live a life with dignity.

Coverage:

- The Act provides coverage for nearly 2/3rd of the country's total population, based on Census 2011 population estimates.
- 75% of rural and 50% of urban population is entitled to receive highly subsidized food grains under two categories i.e **Antyodaya Anna Yojana (AAY) Households and Priority Households (PHH)**.
- The Act entitles 35 kg of food grains as per Antyodaya Anna Yojana Households per month, whereas 5kg of food grains per Priority Households per person.
- The eldest woman of the beneficiary household (18 years or above) is considered 'Head of Family' for the purpose of issuing ration cards.

National Food Security Act: Provisions

- The NFSA assigns joint responsibilities to the federal and state governments.
- The NFSA mandates the centre with the responsibility of allocating and transporting food grains to designated depots in the states and UTs.
- The centre must provide central assistance to states/UTs for the distribution of food grains from authorized FCI God owns to the doorsteps of Fair Price Shops.
- States and union territories are responsible for identifying eligible households, issuing ration cards, distributing food grain entitlements through fair price shops, licensing and monitoring Fair Price Shop (FPS)

dealers, establishing an effective grievance redress mechanism, and strengthening the Targeted Public Distribution System (TPDS).

- The National Food Security Act (2013) also includes provisions for Targeted Public Distribution System reforms, such as cash transfers for food entitlement provisioning.
- Direct Benefit Transfer involves the cash equivalent of the subsidy being transferred directly into the bank accounts of eligible households.

Significance:

- It is beneficial to the agricultural sector.
- It also helps the government control food prices.

Creation of job opportunities:

- Because agriculture is a labour-intensive industry, a boost in the agricultural sector would result in more job opportunities.
- This would boost economic growth and lead to a reduction in poverty.

Health benefits:

- Access to nutritious food would improve the public's overall health.
- Food security is also important for the nation's global security and stability.

One Nation one Ration card:

- It was rolled out by the Ministry of Consumer Affairs, Food and Public Distribution in 2019 in 4 states on a pilot basis.
- **Aim:** To ensure hassle-free delivery of subsidized food grains to all migratory beneficiaries anywhere in the country through nation-wide portability under National Food Security Act (NFSA).
- To empower all National Food Security Act migrant beneficiaries to access food grains from any Fair Price Shop (FPS) of their choice anywhere in the country by using their same/existing ration card with biometric authentication.
- A card bearing 10-digit number will be issued to the complaint state's BPL card holders which will be linked to AADHAR database.
- Beneficiaries can lift their entitled food grains from any electronic point of sale (ePoS) enabled FPS in the country through portability.

- This scheme will be instrumental in the welfare of migrant workers.

LAND REFORMS

Prior to independence:

- Farmers did not own the fields they farmed during the British Raj; instead, Zamindars, Jagirdars, and other landowners held landlordship over the land.
- The administration faced a number of significant challenges when India became independent.
- Few people controlled much of the land, and there were many middlemen who had no vested interest in self-cultivation.
- Land leasing was a typical practise.
- Tenant exploitation was prevalent practically everywhere, and the rental agreements were expropriative in character.
- Due to the terrible state of the land records, there was a huge amount of litigation.
- The fact that the land was divided up into such little pieces for commercial cultivation was one issue with agriculture.
- It led to ineffective use in soil, capital, and labour in the form of boundary lands and boundary disputes.

After independence:

- J. C. Kumarappan was chosen as the committee's chairman to investigate the land issue.
- Measures for comprehensive agrarian reform were advised in the Kumarappa Committee's report.
- India became independent, and there were four parts to its land reforms:
 - Elimination of Intermediaries
 - Rental Reforms
 - Setting Limits for Landholdings
 - Landholdings are being consolidated.
 - These were implemented in stages because there needed to be political will for them to be widely accepted.

Abolition of Intermediaries:

- Zamindari system elimination the zamindari system was abolished as the first significant piece of legislation, removing the layer of middlemen that stood between the growers and the state.
- In comparison to the other reforms, this one was relatively the most successful since it was successful in removing the zamindars' superior land rights and reducing their political and economic influence in most districts.
- The change was implemented in order to support the genuine landowners, the growers.

Advantages:

- Almost 2 crore tenants became the owners of the land they farmed when intermediaries were abolished.
- A parasite class was eliminated when middlemen were eliminated. The government now owns more land that will be given to farmers who lack access to land.
- The State now owns a large portion of the intermediaries' private forests and cultivable waste land.
- The legal abolition put the cultivators in touch with the government in a direct way.

Disadvantages:

- However, landlordism, tenancy, and sharecropping systems persisted in many areas after the zamindari abolition.
- The multi-layered agrarian structure's top layer of landlords was solely eliminated.
- It has caused widespread evictions.
- Large-scale eviction has in turn led to a number of issues on the social, economic, administrative, and legal fronts.

Problems:

- While the legalisation of abolition occurred in the states of J&K and West Bengal, intermediaries were given unlimited access to areas used for their own personal cultivation in other states.

- Furthermore, in other areas, agricultural holdings were not covered by the law; it only pertained to tenant interests, such as sairati mahals and similar structures.
- Consequently, even after zamindari was formally abolished, there were still a great number of major intermediates.
- Large-scale evictions as a result of it resulted in a number of administrative and socioeconomic issues.

Rental Reforms:

- Tenancy control became the next significant issue following the passage of the Zamindari Abolition Acts.
- Between 35% and 75% of India's gross production was spent on rent, which was outrageous during the pre-independence era.

Reforms in Tenancy:

- The Zamindari Abolition Acts were passed, and tenancy regulation became the next significant issue.
- In India, between 35% and 75% of the gross produce was paid in rent by tenants during the pre-independence era.
- Introducing tenancy reforms to control rent, give tenants a secure lease, and grant them ownership.
- With the exception of Punjab, Haryana, Jammu & Kashmir, Tamil Nadu, and some areas of Andhra Pradesh, fair rent was set at 20% to 25% of the gross produce level with law enacting (early 1950s) to regulate the rent payable by the cultivators.
- The reform made an effort to either completely abolish tenancy or to limit rents to provide some stability for renters.
- There was an in West Bengal and Kerala Dramatic reorganisation of the agrarian system that granted tenants land rights.

Problems:

- These laws were never implemented very well in the majority of the states.
- Some states were unable to adopt laws granting tenants the right to ownership, despite frequent emphasis in the plan texts.

- Only a few Indian states have totally eliminated tenancy, while others have granted recognised tenants and sharecropper's certain privileges.
- Despite the fact that fewer areas were under tenancy as a result of the reforms, few tenants were able to acquire ownership rights

Limits on Landholdings:

- The Land Ceiling Acts were the third major group of land reform laws.
- In plainer terms, the limits on landholdings referred to the legally prescribed upper limit beyond which no individual farmer or farm household could own any land.
- The purpose of placing such a ceiling was to prevent the concentration of land in the hands of a select few.
- The maximum amount of land that a landlord may keep was recommended by the Kumarappan Committee in 1942.
- It was three times as much money, or enough to support a family.
- All state governments had passed the land ceiling acts by 1961–1962.
- However, the upper limitations differed from state to state.
- A new land ceiling policy was developed in 1971 to bring consistency among the states.
- National recommendations were published in 1972, with ceiling limitations that varied by region based on the type of land, its productivity, and other similar variables.
- For the best land, it was 10–18 acres, for second-best land, 18–27 acres, and for the remaining land, it was 27–54 acres, with a somewhat higher cap in the hilly and desert regions.
- With the aid of these changes, the state was tasked with locating and seizing any surplus land that each household had (beyond the allotted amount), then distributing it to landless families and households in other designated groups, such as SCs and STs.

Problems:

- These acts turned out to be toothless in the majority of the states.

- Most landowners were able to avoid having their surplus land taken over by the state because to several legal loopholes and other tricks.
- Although a few very large estates were divided, in the majority of cases, landowners were able to split their property among family members and other people, including servants, in what are known as “benami transfers,” which allowed them to maintain control over the land.
- Some wealthy farmers in certain regions actually got divorced.

Landholdings being consolidated:

- Consolidation referred to the redistribution or reorganisation of dispersed lands into a single plot.
- Population growth and a lack of employment prospects in non-agricultural industries raised pressure on the land, which resulted in a developing trend of landholding fragmentation.
- Due to the land’s fragmentation, managing the irrigation system and keeping an eye on the individual land parcels was particularly challenging.
- Consolidating landholdings became a result of this.
- In accordance with this statute, if a farmer owned several small plots of land in the village, those plots were combined into one larger plot of land by either buying the smaller plots outright or swapping them.
- The consolidation of Holdings was legalised in almost all states, with the exception of Tamil Nadu, Kerala, Manipur, Nagaland, Tripura, and some areas of Andhra Pradesh.
- While land consolidation was required in Punjab and Haryana, law in other states allowed for voluntary consolidation if the majority of landowners were in favour.

Benefits:

- It stopped holdings from being endlessly subdivided and fragmented.
- It reduced the amount of time and effort farmers had to expend irrigating and cultivating various types of land.
- In addition, the change decreased farming costs and farmers’ legal disputes.

Results:

- With the exception of Punjab, Haryana, and western Uttar Pradesh, where the consolidation process was completed, the progress made in terms of holding consolidation was not very good due to a lack of significant political and administrative backing.
- However, in some states, re-consolidation was necessary because of later fragmentation of land under the population pressure

Re-consolidation is required:

- In 1970–1971 the average holding size was 2.28 hectares (Ha), but in 2015–16 it was just 1.08 Ha.
- The greatest average farm size is found in Nagaland, followed by Punjab and Haryana, which are ranked second and third on the list, respectively.
- States with high population densities like Bihar, West Bengal, and Kerala have substantially smaller holdings.
- Even the sub divisions have shrunk significantly as a result of the numerous subdivisions made over decades.

Gramdan and Bhoodan Movements:

- A student of Mahatma Gandhi named Vinoba Bhave became aware of the difficulties the landless harijans of Pochampalli, Telangana, were experiencing.
- In an effort to implement a “non-violent revolution” in India’s land reform program, he spearheaded the movements.
- The Bhoodan Movement was about encouraging the landed classes to willingly cede a portion of their land to the landless, hence the name.
- It started in 1951.
- In response to Vinoba Bhave’s plea, some landowners decided to voluntarily donate a portion of their property.
- Vinoba Bhave had received the support he required from both the federal and state administrations.
- Later, the Gramdan movement, which started in 1952, replaced the Bhoodan movement.

- The goal of the Gramdan movement was to persuade the landowners and leaseholders in each village to resign their land rights so that all of the lands would belong to a village association for an equitable redistribution and common farming.
- According to this movement, a hamlet was designated as Gramdan when at least 75% of its citizens and 51% of its territory indicated their support for Gramdan in writing.
- Magroth in Haripur, Uttar Pradesh, was the first hamlet to be incorporated into Gramdan.

Achievements of the Movement:

- The movement was the first after independence to try to bring about social change through a movement rather than through governmental legislation.
- It produced a moral atmosphere that put the large landlords under strain.
- Additionally, it boosted political activity among the peasants and landless, providing a fertile ground for political propaganda to organise peasants

Drawbacks:

- Large tracts of land were collected, but not much was given to the landless because most of the donated land was infertile or subject to litigation.
- The Gramdan movement began in villages, mostly in tribal areas, where class distinction had not yet developed and there were little differences in the ownership of landholdings.
- However, it failed where there was a difference in landholdings.
- The movement also fell short of realising its revolutionary promise.

Result:

- There was significant political support for the movements. Around 1969, the movements were at their height.
- Laws aiming towards Gramdan and Bhoodan were passed by several state governments.
- Gramdan and Bhoodan, however, lost prominence after 1969 as a result of the change from a strictly voluntary movement to a government-supported plan.

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- Vinoba Bhave's departure from the movement in 1967 caused it to lose its mass support.

Recent steps:

- The **NITI Aayog** and several business groups have recently suggested that widespread adoption of land leasing is necessary to allow landowners with unprofitable holdings to rent out their property for investment, generating more income and jobs in rural regions.
- Land holdings would be combined, which would help this purpose.
- The quickest possible completion of contemporary land reform measures, such as land record digitization, is required.

