AGRICULTURE DEFINITION, IMPORTANCE OF AGRICULTURE

1. Agriculture Definition, Importance of Agriculture

Agriculture is the main base of our daily life. All the thinks directly on indirectly depend on the agriculture in the world. It is a big sector of life.

Importance of Agriculture:

- Agriculture is the most important enterprise in the world.
- -In a true sense, it is a productive unit where the free gifts of nature—land, light, air, temperature, rainwater, humidity etc are integrated into a single primary unit (crop plants or their usable parts) indispensable for human beings.
- -The secondary productive units namely, animals including livestock, birds and insects feed on these primary units and provide concentrated end products such as meat, milk, eggs, honey, wool, hide, silk and lac etc.
- -Agriculture provides us food, feed, fiber, fuel, furniture, raw materials and feed –back materials for and from factories, funds and flood control. A free, fair and fresh environment, abundant food driving out famine and friendship eliminating fights.
- -It also considers employment generation, economics, education, ecology, energy consumption, use of equipment, an earning for production, protection, processing, consumption, preservation and war against wastage, transport and trade.
- -The cultural energies of production are draft power, farm equipment, irrigation water, fertilizers and manures, chemicals (herbicides/pesticides/growth hormones) and electricity for preservation.

2. Agronomy | Basic Concepts of Agronomy

Agronomy, The term is derived from the Greek words "agros" meaning "Field" and "nomos" meaning "to manage." In recent times, agronomy has assumed newer dimensions and can be defined as a branch of agricultural science that deals with methods which provide a favorable environment to the crop for higher productivity.

Basic Concepts of Agronomy-

Agronomy is considered as the mother or primary branch of agriculture. Like agriculture, it is nothing but an integrated and applied aspect of different disciplines of pure sciences. It has three distinct branches:

Crop Science (mainly field crops)-

Soil science

Environmental Science (that deals with applied aspects)

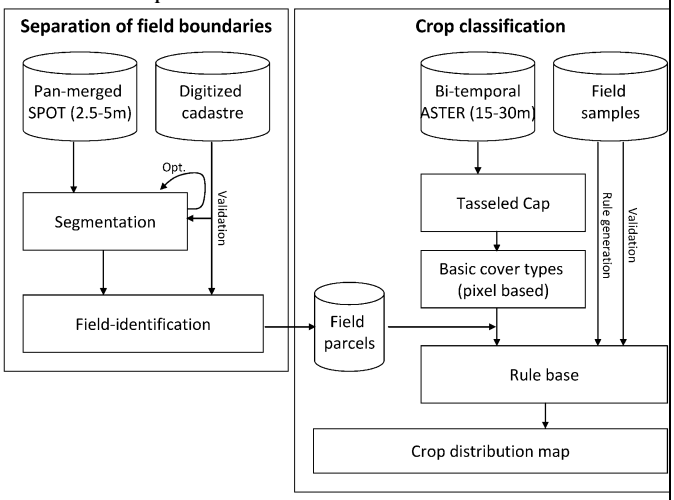
The central theme of agronomy is of soil-crop-environment relationship.The core of agronomy is the field of crop plants with the theme of controlling the environment (micro climate). The nature of agronomy is based on soil-plant-environment relationship. Agronomy thus denotes activities on the ground to raise outspread and noble crops to obtain massive yields.

3. Field crop classification

It is well known that there are more than 600 cultivated plant species, From which there are about 100- 200 species play important role in the world trade. However, only fifteen plant species represent the most important economic crops. Therefore, these crop species must be classified or grouped in a convenient way to facilitate communication, dissemination and retrieval of scientific information as well as promotes the conservation, and improvement of certain plants. Generally, classification of these species is important for these reasons:

- To get acquainted with crops.
- To understand the requirement of soil & water different crops.
- To know adaptability of crops.
- To know the growing habit of crops.
- To understand climatic requirement of different crops.
- To know the economic produce of the crop plant & its use.

- To know the growing season of the crop
- Overall to know the actual condition required to the cultivation of plant.



The grown field crops are classified according to different stand points as follows:

- Botanical classification.
- Agronomic classification
- Special- purpose classification.
- Classification according to life span.
- Classification according to root depth.
- Classification according to growth habit.

4. Agro climatic zone

An "Agro-climatic zone" is a land unit in terms of major climates, suitable for a certain range of crops and cultivars. The planning aims at scientific management of regional resources to meet the food, fiber, fodder and fuel wood without adversely affecting the status of natural resources and environment. Crop yield is (FAO, 1983). Agro-climatic conditions mainly refer to soil types, rainfall, temperature and water availability which influence the type of vegetations. An agro-ecological zone is the land unit carved out of agro-climatic zone superimposed on landform which acts as modifier to climate and length of growing period.

1	**Western Himalayan Region**	**Ladakh, Kashmir, Punjab, Jammu etc.brown soils & silty loam, steep slopes.**
2	Eastern Himalayan Region	Arunachal Pradesh, Sikkim and Darjeeling. Manipur etc. High rainfall and high forest covers heavy soil erosion, Floods.
3	Lower Gangatic plants Regions	West Bengal Soils mostly alluvial & are prone to floods.
4	Middle Gangatic plans Region	Bihar, Uttar Pradesh, High rainfall 39% irrigation, cropping intensity 142%
5	Upper Gangatic Plains Region	North region of U.P. (32 dists) irrigated by canal & tube wells good ground water
6	Trans Gangatic plains Region	Punjab Haryana Union territory of Delhi, Highest sown area irrigated high
7	Eastern Plateaus & Hills Region	Chota Nagpur, Garhjat hills, M.P, W. Banghelkhand plateau, Orissa, soils Shallow to medium sloppy, undulating Irrigation tank & tube wells.
8	Central Plateau & hills Region	Madhya Pradesh
9	Western Plateau & hills Region	Sahyadry, M.S. M.P. Rainfall 904 mm Sown area 65% forest 11% irrigation 12.4%
10	Southern Plateau & Hills Region	T. Nadu, Andhra Pradesh, Karnataka, Typically semi and zone, Dry land Farming 81% Cropping Intensity 11%
11	East coast plains & hills Region	Tamil Nadu, Andhra Pradesh Orissa, Soils, alluvial, coastal sand, Irrigation
12	West coast plains & Hills Region	Sourashtra, Maharashtra, Goa, Karnataka, T. Nadu, Variety of cropping Pattern, rainfall & soil types.
13	Gujarat plains & Hills Region	Gujarat (19 dists) Low rainfall arid zone. Irrigation 32% well and tube wells.
14	Western Dry Region	Rajasthan (9 dists) Hot. Sandy desert rainfall erratic, high evaporation. Scanty vegetation, femine draughts.
15	The Island Region	Eastern Andaman, Nikobar, Western Laksh dweep. Typical equatorial, rainfall 3000 mm (9 months) forest zone undulating.

5. Cropping Systems and Rotations

All crops are grown as part of a cropping system. A cropping system is the sum total of all crops and the practices used to grow those crops on a field or farm.

Simple example = one variety grown each year in the same field with nutrients provided as fertilizer to replace nutrients sold off the farm with the crop

Complex example = system where fruits, vegetables, tree crops, grain crops, forage grasses and legumes, and livestock are all grown on a farm during the course of a year with

multiple harvest times and managed recycling of nutrients within the system. Even a simple cropping system is quite complex in terms of interactions of plants with soil, soil organisms and crop pests.

Monoculture: the production of a single crop in a field. This p: a cropping sequence on a field that includes more than one crop over many years. Benefits have been know for many years, though types and size of benefits have changed over time as technology developed.

6. Problems of dry land agriculture

Concept-

Indian agriculture is predominantly a rainfed agriculture under which both dry farming and dry land agriculture is included. Dry faring was the earlier concept for which amount of rainfall (less then 500 mm annually) remained the deciding factor for more then 50 years. In modern concept, dry land areas are those where the balance of moisture is always on the deficit side. In other words, annual evapotranspiration exceeds precipitation. In dry land agriculture, there is no consideration of amount of rainfall. It may appear quiet strange to a layman that even those areas which receive 1100 mm or more rainfall annually fall in the category of dry land agriculture under this concept. To be more specific, the average annual rainfall of Varanasi is around 1100 mm and the annual potential evapotranspiration is 1500 mm. thus the average moisture deficit so created comes to 400 mm. this deficit in moisture is bound to affect the crop production under dry land situation ultimately resulting into total or partial failure of the crops. Accordingly the production is either low or extremely uncertain and unstable which are the real problems of dry land in India.

Problems-

In dry land agriculture, scarcity of water is the main problem. Apart from the low and erratic behavior of rainfall, high evaporative demand and limited water holding capacity of the soil constitute the principle constraint in the crop production in dry land area. Yield fluctuations are high mainly due to vagaries of weather, often much behind the risk bearing capacity of the farmers. It is surprising to a layman that even humid areas with 2000 mm of annual rainfall not only suffer from moisture stress, but also face drinking water scarcity. Monsoon starts in the month of June and ends in last week of September or sometimes in the first week of October. Most of the rainfall is received during this period. With undulating topography and low moisture retention capacity of the soil, major portion of the rain water is lost through runoff, causing erosion and adding to the water logging of low lying areas. After the rain stops, very little moisture is left in the profile to support plant growth and grain production.

In dry land area deficiency and uncertainty in rainfall of high intensity causes excessive loss of soil through erosion which leaves the soil infertile. Owing to erratic behavior and improper distribution of rainfall, agriculture is risky, farmers lack resources, tools become inefficient and ultimately productivity is low.

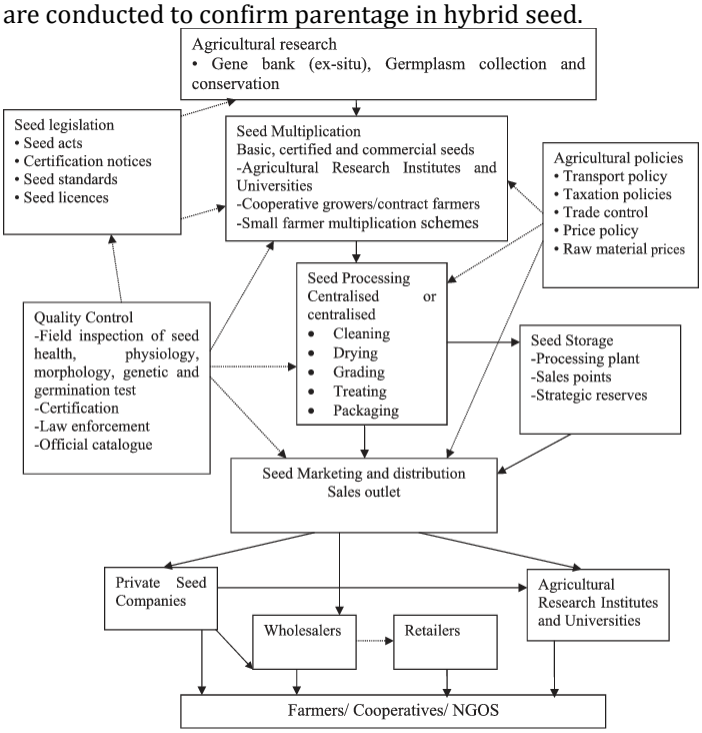
vertisoles have high clay content and high moisture retention capacity. Owing to its swelling and shrinking characteristics, permeability is low and hence the rate of infilteration of water is minimum. This causes more surface and high soil loss from the top layer owing to surface erosion. It is estimated that 68.5 tones/ha per year soil is lost from vertisoles. Due to high clay content it develops cracks during Rabi season at flowering stage of crops.

7. Seed Production and Seed Village

Seed Production- Production of high-quality seed is fundamental to modern agriculture. Most annual crops are established each season from seeds, and seed quality can have a major impact on potential crop yield. Seeds can serve as the delivery system not only for improved genetics but also for new planting and production methods and crop protection strategies that improve the overall efficiency of agriculture and reduce its environmental impact.

The purity of any commercial product propagated by seed begins with the genetic purity of the seed planted. Genetic purity standards have been established by state seed laws and seed certification agencies to assure growers that the seed they buy is accurately labeled with the correct crop and variety. Seed purity standards also specify the percentage of contamination by seeds or genetic material of other varieties or species. The physical purity of seed refers to the presence

and identity of weed seeds, and the percentage of other materials such as dirt or plant residues. In addition, the germination capacity of the seed in a standard test must be shown on the label. In some cases, seeds must also be tested for the presence of seed-borne diseases, and hybridity tests are conducted to confirm parentage in hybrid seed.



Production of high quality seed is an exacting task. Seed producers take many steps to protect genetic integrity, including ensuring the integrity of their planting seed, properly identifying and labeling plants and fields, planting seeds on clean land which has not been used to grow the same crop in the recent past, removing rogue plants, or plants which are not true to the variety's characteristics, and employing physical isolation – via mesh cages, distance isolation, time isolation or hand pollination – to ensure that pollination only occurs among plants of the desired variety.

Seed Village- Seed is the starting point of agriculture and dictates ultimate productivity of other inputs. Good quality seed alone increases the yield by 15-20 per cent. To meet the potential challenge of catering to the food need of 1.4 billion people of our country by 2025, a quantum increase in agricultural productivity is very much essential and hence production and distribution of high quality seeds of improved varieties/ hybrids to the fanning community is becoming increasingly important. The expansion of agriculture under tropical conditions due to the improvement of cultivars with juvenile period imposed a scientific and technological challenges concerning the seed production under different environmental conditions.

The seed programme includes the participation of state government, SAU system, public sector, cooperative and private sector institutions. With the best efforts of all these organized sectors, only 15-20 per cent of the total requirement of quality seed is being met with. In most, kind of seeds, the farmers depend on their own farm saved seeds for crop production which needs certain basic practices of selection of good seeds for sowing. Moreover the crops are raised for market and a small portion of the grains are separated, stored and used as seeds in the next season which may not meet the quality aspects as expected for a seed which results in poor field stand, and ultimately yield.

8. Meteorology

Meteorology is the scientific study of the atmosphere that focuses on weather processes and forecasting. Meteorological phenomena are observable weather events which illuminate and are explained by the science of meteorology. Those events are bound by the variables that exist in Earth's atmosphere.

They are temperature, pressure, water vapor, and the gradients and interactions of each variable, and how they change in time. The majority of Earth's observed weather is located in the troposphere. Although meteorologists now rely heavily on computer models (numerical weather prediction), it is still relatively common to use techniques and conceptual models that were developed before computers were powerful enough to make predictions accurately or efficiently.

9. Soil and Water Conservation

The natural resources conservation program is administered by the State Soil Conservation Committee (SSCC). Established by statute in 1937, SSCC membership includes the Secretary of Agriculture (chair), the Commissioner of the New Jersey Department of Environmental Protection (NJDEP), the Director of Rutgers Cooperative Extension (RCRE), the Dean of Cook College (Rutgers University), an appointee of the Governor and six local soil conservation district supervisors. The SSCC coordinates and supports the work of the 15 local conservation districts (SCDs) and their programs, establishes statewide policy, provides technical assistance and training, sets technical and administrative standards, coordinates nonpoint pollution control and agricultural cost-sharing programs, distributes funds, conducts appeals and assures accountability of local SCDs.

In addition, the SSCC coordinates with federal and state agencies to provide natural resource conservation and management services through the SCDs. The SCDs also review and enforce SSCC-approved erosion control and soil and water management practices on construction, mining and other land disturbance activities associated with

development in order to protect water quality and avoid damage from stormwater runoff.

The natural resource conservation program is implemented by the local soil conservation districts. These are special-purpose political subdivisions of the state charged with implementing natural resource conservation and assistance programs. The districts are governed by a board of five residents, known as supervisors, who are appointed by the SSCC. The districts employ staff and also enter into agreements with other natural resource management and service agencies to carry out their programs. The SSCC and all 15 local districts are part of the New Jersey Conservation Partnership which also includes the USDA Natural Resources Conservation Service (NRCS) and Rutgers Cooperative Extension (RCE).

NRCS, the technical arm of the conservation partnership, is a federal agency which provides the districts with technical assistance in engineering, biology, soils, hydrology and other areas. RCE resource management agents assist within a broad range of natural resource management areas, such as crop and pest management recommendations and soil testing.

A broad range of conservation services and assistance related to nonpoint source pollution is available through the 15 districts. These include agricultural conservation planning assistance, agricultural conservation cost-sharing programs, application of organic materials on agricultural land, agricultural water supply and management, soil erosion and sediment control; stormwater discharge authorization and soil surveys.

10. Water Resource of India

India's average annual surface run-off generated by rainfall and snowmelt is estimated to be about 1869 billion cubic meter (BCM). However, it is estimated that only about 690 BCM or 37 per cent of the surface water resources can actually be mobilised. This is because (i) over 90 per cent of the annual flow of the Himalayas rivers occur over a four month period and (ii) potential to capture such resources is complicated by limited suitable storage reservoir sites.

Rainfall- The average annual rainfall in India is about 1170 mm. This is considerable variation in rain both temporarily and spatially. Most rain falls in the monsoon season (June-September), necessitating the creation of large storages for maximum utilisation of the surface run-off. Within any given year, it is possible to have both situations of drought and of floods in the same region. Regional varieties are also extreme, ranging from a low value of 100 mm in Western Rajasthan to over 11,000 mm in Meghalaya in North-Eastern India. Possible changes in rainfall patterns in the coming decade, global warming and climate change and other predicted or observed long-term trends on water availability could affect India's water resources.

Ground Water- India's rechargeable annual groundwater potential has been assessed at around 431 BCM in aggregate terms. On an all India basis it is estimated that about 30 per cent of the groundwater potential has been tapped for irrigation and domestic use. The regional situation is very much different and large parts of India have already exploited almost all of their dynamic recharge. Haryana and Punjab have exploited about 94 per cent of their groundwater resources.
Areas with depleting groundwater tables are found in Rajasthan, Gujarat, most of western Uttar Pradesh and in all of the Deccan states.

Occurrence of water availability at about 1000 cubic meters per capita per annum is a commonly threshold for water indicating scarcity (UNDP). Investment to capture additional surface run-off will become increasingly more difficult and expensive in the future. Over time, both for surface and groundwater resources, a situation where resources were substantially under utilised and where considerable development potential existed, has transformed in little more than a generation to a situation of water scarcity and limited development options.

11. What is Forestry?

What is Forestry?
Forestry is the science, art, and practice of sustainably managing forested resources for the benefit of humans. That's the simple definition – its full understanding requires a little in-depth analysis of some key points.

1. Forestry is both a science and an art.
It is rooted in the basic sciences of biology, chemistry and mathematics and is performed with the applied sciences of ecology, silviculture, and management. While science guides the decisions of a forester, it does not make them for him or her. Foresters must apply their knowledge in a decision-making arena where good solutions are not always obvious, conflicting human interests must be considered, and conflicting opinions must be compromised. This need for experienced judgment, diplomacy and tact constitutes the art of forestry.

2. Forestry is a profession – not just a job or occupation.
It is a practice in the sense that medicine and law are practices. The education of forestry practitioners is accredited by a professional association (Society of American Foresters) and their professional conduct is guided and governed by a Code of Ethics. There is much more to being a forester than taking a few courses.

3. Forestry is guided by the principles of sustainability.
Sound forestry decisions consider the current and future health of the forest and strive to ensure that benefits will be available for future generations.

4. Forestry involves more resources than just trees.
Although trees are the predominant plant component of forests, foresters manage all of the resources found in forests. You will, therefore, find foresters concerned with trees, animals (both game and non-game), soils, water, insects, diseases (both tree and animal) and human beings.

5. Foresters manage for a broad spectrum of benefits that humans desire from their forests.
This includes the obvious things we take from forests – like wood and game species, but also includes less obvious things like water quality and quantity and benefits that have real value but are hard to measure – like wilderness, non-game and endangered species, recreation opportunities, clean air and biodiversity. The field of forestry can cover it all.

12. Rural Development

Rural development implies both the economic betterment of people as well as greater social transformation. In order to provide the rural people with better prospects for economic development, increased participation of people in the rural development programmes, decentralization of planning, better enforcement of land reforms and greater access to credit are needed. This section provides complete information on initiatives taken by the government for bridging the urban-rural divide by upgrading the standard of living of people in rural areas. Information about programmes, schemes, employment opportunities, Panchayati Raj institutions, development authorities, drinking water, sanitation, road construction, electrification of villages and food supply etc. is provided.

Schemes/Programmes for Rural Development-

- Gram Swaraj Abhiyan
- DISHA
- Mission Antyodaya
- MGNREGA
- PMAY (G)
- DDUGKY
- PMGSY
- DAY-NRLM
- NSAP
- RURBAN (NRuM)
- SAGY
- DIKSHA (Training Portal)
- SwachhGram

13. Rural Economy in India

India is known as an agricultural country, as most of the population of villages depends on agriculture. Agriculture forms the backbone of the country's economy. The agricul-tural sector contributes most to the overall economic development of the country. For centuries together, the Indian village has been a self-sufficient and self-contained econ-omy. During the past forty years, rural reconstruction and development have been the major thrust of economic planning, which has caused a rapid transformation in the Indian rural economic structure.

These changes have taken place in spheres, such as land reforms, agriculture, animal husbandry, supplies and marketing, village industries, rural leadership, village administration, etc. With the help of the rural development pro-grammes, a cultivator is able to take advantage of the modern technological facilities in his agricultural operations. These cultivators are now using modern agricultural imple-ments and high-yielding varieties of seeds and fertilizers. Several other welfare services were introduced, such as opening up of schools, primary healthcare centres, improving the means of transport and communication, and spread of mass media services to rural areas, etc. These welfare services have materially affected the rural life.

The major factors contributed to the com-mercialization of agriculture are as follows:

- High production and productivity gains have turned out agriculture to be a profitable proposition.
- Increase in production was possible due to the use of advanced technology in agricultural operations.
- Massive expansion of road transport has reduced the distance between ru-ral and urban areas.
- Development of regulated markets and cooperative marketing structure have helped the farmers to break away from village system of moneylend-ers and middlemen.

Current News Related to Agriculture

1. Budget 2018: Govt outlines measures to boost agriculture, rural economy

- In the year 2018-19, for the creation of livelihood and infrastructure in rural areas, the total amount to be spent by ministries will be Rs14.34 lakh crore from extra budgetary and non-budgetary resources. Referring to 86% farmers in India described as small and marginal, he said efforts will be made to link them to markets to get adequate remuneration for their produce. One of the first steps FM Arun Jaitley announced was setting the minimum support price at 1.5 times the cost of production of the kharif (summer) crops.
- The Niti Aayog, after discussions with state governments, will put in place a mechanism to ensure farmers get adequate remuneration should crop prices fall. Jaitley also announced an increase in agricultural credit to Rs11 trillion. Among the other measures announced by the finance minister were development and upgradation of 22,000 rural haats or markets for which he set aside Rs2,000 crore. He further announced a provision of Rs500 crore for "Operation Green" to promote agriculture logistics.
- The government will also make efforts to link villages and rural roads to agriculture markets, secondary schools and hospitals under the Pradhan Mantri Gram Sadak Yojna (PMGSY). The corpus of funds available to women in self-help groups was Rs42,000 crore in 2016-17, Jaitley said, adding that this would be increased to Rs75,000 crore by March 2019.
- The government also announced an increase in funds allocated for the National Rural Livelihood Mission under the rural development ministry to Rs5,750 crore in 2018-19, from Rs 4,500 crore in 2017-18.
- The finance minister announced an allocation of Rs2,600 crore to ensure irrigation facilities in 96 irrigation deprived districts, besides funds to boost fisheries and animal farming. The raft of measures announced by Jaitley come after farmers in several states protested a crash in crop prices last year.
- Ahead of the budget presentation in Parliament, minister of state for civil aviation Jayant Sinha told CNBC news channel that this budget would be a political document rather than a market-focused one.
- Assembly elections are due in eight states later this year—Madhya Pradesh, Chhattisgarh, Rajasthan, Karnataka, Nagaland, Tripura, Meghalaya and Mizoram. Four other states are going to polls in the first half of 2019.
- Comments from both ministers come as India's economy is making steady recovery from the disruptions caused by structural reforms such as demonetisation and rollout of the goods and services tax (GST) that led to a slowdown in growth in the first quarter of 2017-18.
- The Economic Survey tabled in Parliament estimated that the worst is over for the economy and that it is poised to rebound and grow in the range of 7-7.5% in 2018-19.

2. India State of Forest Report 2017

Between 2003 and 2016, the forest fires have jumped by almost 38% from 24,450 to 33,664 shows the State of Forests report 2017 released by the environment ministry.

Strongly emphasising the increasingly green credentials of the country, Union Minister for Environment, Forest and Climate Change, has stated that India has shown an increasing trend in the forest and tree cover, in comparison to the global trend of decreasing forest cover during the last decade.

Releasing the India State of Forest Report (ISFR) 2017, Minister pointed out that India ranks among the top ten countries of the world in terms of forest area, despite the fact that none of the other 9 countries has a population density of more than 150 persons per sq km, compared to India, which has a population density of 382 persons per sq km. "India is ranked 10th in the world, with 24.4% of land area under forest and tree cover, even though it accounts for 2.4 % of the world surface area and sustains the needs of 17 % of human and 18 % livestock population", the Minister said. He averred that despite such tremendous population and pressures of livestock on our forests, India has been able to preserve and expand its forest wealth. The Minister added that as per the latest FAO report, India is placed 8th in the list of Top Ten nations reporting the greatest annual net gain in forest area.

3. India's Intended Nationally Determined Contribution for the 2015 Agreement Under UNFCCC

Conference of Party of UNFCCC at 19th Session held in Warsaw in November 2013 invited all Parties to initiate or intensify domestic preparations for their Intended Nationally Determined Contributions (INDC), without prejudice to the legal nature
of contribution, in the context of adopting a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties towards achieving the objective of the Convention as set out in its Article 2 and to communicate them well in advance of the

21st Session of the COP (by the first quarter of 2015 by those Parties ready to do so) in a manner that facilitates the clarity, transparency and understanding of the intended contributions, without prejudice to legal nature of the contributions.

As a follow up to the above Decision, steps have been taken to finalize India's INDC on mitigation, adaptation, finance, technology and capacity building. The comprehensive INDC would also project the requirement of support in terms of finance & technology transfers, etc. It would cover all the national missions and other initiatives under National Action Plan on Climate Change as well as State Action Plan on Climate Change.

The contributions will factor in India's domestic obligations of addressing the basic development needs in terms of achieving minimum standards of living for its entire population. The contributions will take in to account the imperatives for addressing the challenges of poverty eradication, food security and nutrition, universal access to education and health, gender equality and women empowerment, water and sanitation, energy, employment, sustainable cities and human settlement and last but not the least, the means of implementation for enhanced action for achieving among others sustainable development goals.

Prime Minister's Council on Climate Change-
Ahigh Level advisory group on climate change was constituted in June 2007 and reconstituted in November 2014 with the following objectives:
(i) Coordinate national action plans for assessment, adaptation and mitigation of climate change.
(ii) Advise government on pro-active measures that can be taken by India to deal with the
challenge of climate change.
(iii) Facilitate inter-ministerial coordination and guide policy in relevant areas.

The composition of Prime Minister's Council on Climate Change is as follows:

- Prime Minister (Chairperson)
- Minister of External Affairs (Member)
- Finance Minister (Member)
- Minister of Environment, Forests and Climate Change (Member)
- Minister for Water Resources, River Development and Ganga Rejuvenation (Member)
- Minister for Agriculture (Member)
- Minister for Urban Development (Member)
- Minister for Science and Technology (Member)
- Minister of State for Power, Coal and New and Renewable Energy (Member)
- Cabinet Secretary (Member)
- Foreign Secretary (Member)
- Secretary, Ministry of Environment, Forests and Climate Change (Member)
- Dr. R. K. Pachauri, Director General, TERI (Member)
- Shri Nitin Desai, Distinguished Fellow, TERI (Member)
- Shri Chandrashekhar Dasgupta (Member)

National Action Plan on Climate Change-

- Jawaharlal Nehru National Solar Mission
- National Mission for Enhanced Energy Efficiency
- National Mission on Sustainable Habitat
- National Water Mission
- National Mission for Sustainable Agriculture
- National Mission for Sustaining the Himalayan Ecosystem
- National Mission for a Green India
- National Mission on Strategic Knowledge for Climate Change
- National Clean Energy Fund
- State Action Plan on Climate Change

4. NABARD: Progressing Adaptation Actions

India's National Bank for Agriculture and Rural Development (NABARD) has been accredited as a National Implementing Entity (NIE) for India for the Adaptation Fund created under the United Nations Framework Convention on Climate Change (UNFCCC). At present, NABARD is the only NIE in the Asia-Pacific Region.

In its capacity as NIE, NABARD has generated several feasible projects on climate change adaptation in diverse agro-climatic regions and livelihood sectors, five of which have been submitted as proposals to the Adaptation Fund amounting to USD 7.3 million. The Adaptation Fund Board (AFB) in its 24th meeting held on 9th October 2014 sanctioned the first set of two projects submitted by NABARD with an outlay of USD 3.2 million for promoting climate resilient agriculture systems
in West Bengal and enabling the fisheries sector in Andhra Pradesh to respond to the challenge posed by sea level rise.

5. Panchayati Raj institutions

Panchayati Raj is the basic unit of administration in a system of governance. The Constitutional (73rd Amendment) Act 1992 came into force in India on 24 April 1993 to provide constitutional status to the Panchayati Raj institutions. This act was extended to the Panchayats in the tribal areas of eight states, namely Andhra Pradesh, Gujarat, Himachal Pradesh, Maharashtra, Madhya Pradesh, Odisha and Rajasthan from 24 December 1996. Currently, the Panchayati Raj system exists in all the states of India except

Nagaland, Meghalaya, Mizoram and in all Union Territories except Delhi.

It has three levels: Gram Panchayat (village level), Mandal Parishad or the Block Samiti or Panchayat Samiti (block level) and Zilla Parishad (district level). The term "Panchayati Raj" is an ancient concept adopted by the people of India for the local administration of a village. Raj means "rule". Mahatma Gandhi advocated the Panchayati Raj, a decentralised form of the Government where each village is responsible for its own affairs. The term for such a vision was Gram Swaraj. The leader of the Panchayat was generally called the Mukhiya or Sarpanch, and occupies an elected position.

Recommendations of Balwant Rai Mehta Committee-

The Balwant Rai Mehta Committee, headed by MP Balwant Rai Mehta, was a committee appointed by the Government of India in January 1957 to examine the working of the Community Development Programme (1952) and the National Extension Service (1953) and to suggest measures for their better working. The recommendations of the committee were approved by NDC in January 1958 and this set the stage for the launch of Panchayati Raj Institutions throughout the country. The committee recommended the establishment of the scheme of 'democratic decentralisation', which finally came to be known as Panchayati Raj.

Establishment of a 3-tier Panchayati Raj system-

The Panchayati Raj system was first adopted by the state of Rajasthan in the Nagor district on October 2, 1959. The second state was Andhra Pradesh, while Maharashtra was the ninth state. This system was adopted by the state governments during the 1950s and 60s, as laws were passed to establish Panchayats in various states. It also found its backing in the Indian Constitution, with the 73rd Amendment in 1992 to accommodate the idea.

The Amendment Act of 1992 contains provisions for the devolution of powers and responsibilities to the Panchayats, both for the preparation of economic development plans, social justice and for implementation in relation to 29 subjects listed in the eleventh schedule of the constitution.

The Panchayats receive funds from three sources:

- local body grants, as recommended by the Central Finance Commission
- funds for implementation of centrally sponsored scheme
- funds released by the state governments on the recommendations of the State Finance Commissions

The Balwant Rai Mehta Committee was a committee appointed by the Government of India in January 1957 to examine the working of the Community Development Programme (1952). The Act aims to provide a 3-tier system of Panchayati Raj for all states having a population of over two million, to hold Panchayat elections regularly every five years, to provide seats reservations for scheduled castes, scheduled tribes and women; to appoint a State Finance Commission to make recommendations regarding the financial powers of the Panchayats and to constitute a District Planning Committee to prepare a development plan draft for the district. The 3-tier system of Panchayati Raj consists of:

- Village-level Panchayats
- Block-level Panchayats
- District-level Panchayats

Powers and responsibilities are delegated to Panchayats at the appropriate level:

- Preparation of the economic development plan and social justice plan.
- Implementation of schemes for economic development and social justice in relation to 29 subjects given in the Eleventh Schedule of the Constitution.
- To levy and collect appropriate taxes, duties, tolls and fees.

The Block Panchayat-

A block Panchayat (Panchayatsamiti) is a local government body at the tehsil or taluka level in India. This body works for the villages of the tehsil or taluka that together are called a Development Block. The Panchayat Samiti is the link between the gram Panchayat and the district administration. There are a number of variations of this institution in different states.

It is known as Mandal Praja Parishad in Andhra Pradesh, Taluka Panchayat in Gujarat, Mandal Panchayat in Karnataka, Panchayat Samiti in Maharashtra etc. In general, the block Panchayat is a form of the Panchayati Raj but at a higher level. The constituency is composed of ex-official members (all sarpanchas of the Panchayat Samiti area, the MPs and MLAs of the area and the SDO of the subdivision), co-opt members (representatives of SC/ST and women), associate members (a farmer of the area, a representative of the cooperative societies and one of the marketing services), and some elected members. The Samiti is elected for five years and is headed by the Chairman and the Deputy Chairman.

Departments-

- The common departments in the Samiti are as follows:
- General administration
- Finance

- Public work
- Agriculture
- Health
- Education
- Social welfare
- Information technology,
- Water Supply Dept
- Animal Husbandry and others

There is an officer for every department. A government appointed Block Development Officer (BDO) is the executive officer to the Samiti and the chief of its administration. BDO is responsible for his work to the CEO of ZP.

Functions-

- Implementation schemes for the development of agriculture
- Establishment of primary health centres and primary schools
- Supply of drinking water, drainage and construction/repair of roads
- Development of cottage and small-scale industries, and the opening of cooperative societies
- Establishment of youth organisations.

6. Provision of Urban Amenities in Rural Areas (PURA)

Holistic and accelerated development of compact areas around a potential growth centre in a Gram Panchayat (or a group of Gram Panchayats) through Public Private Partnership (PPP) framework for providing livelihood opportunities and urban amenities to improve the quality of life in rural areas.

Brief history-

In pursuance to the announcement of Prime Minister on Independence Day, 2003, the Planning Commission submitted a proposal for approval of the Government to implement PURA scheme. The scheme was approved by the Government in „in-principle? in January 2004. Subsequently, MoRD implemented the PURA scheme on a pilot basis in seven clusters for a period of three years (2004- 05 to 2006-07). It was approved with retrospective effect by the Cabinet in its meeting on 16.03.06 with the direction to restructure the PURA scheme. The pilot phase of PURA was evaluated by National Institute of Rural Development (NIRD). Based on the experience learnt during the pilot phase, evaluation conducted by NIRD of pilot phase and the technical support of Asian Development Bank (ADB), the PURA scheme has been restructured. The restructured PURA scheme has been approved by the Government for implementation on a pilot basis during the 11th five year plan.

Duties-

- Laying of policy guidelines
- Selection of private developers for implementation of the scheme
- Release of funds to the DRDAs
- Monitoring and evaluation of performance

Main activities / functions-

Formulation of policy guidelines, release of funds under PURA scheme, selection of private developers and its monitoring and evaluation.

List of services being with a brief write – up on them-

- Formulation of guidelines for implementation of PURA scheme.
- Evaluation and approval of Detailed Project Report
- Release of funds to DRDAs
- Convening the meeting of Project Screening and Monitoring Committee (PSMC) Inter –
- Ministerial Empowered Committee (EC) Central Level for approving the projects
- Monitoring / Evaluations
- Grievance redressal mechanism

Know About Ministry of Rural Development

The Ministry of Rural Development, a branch of the Government of India, is entrusted with the task of accelerating the socio-economic development of rural India. Its focus is on health, education, drinking water, housing and roads.

The vision and mission of Ministry of Rural Development-

Being the nodal Ministry for most of the development and welfare activities in the rural areas, the Ministry of Rural

Development plays a pivotal role in the overall development strategy of the country. The vision and mission of the Ministry are sustainable and inclusive growth of rural India through a multipronged strategy for eradication of poverty by increasing livelihoods opportunities, providing the social safety net and developing infrastructure for growth. This is expected to improve the quality of life in rural India and to correct the developmental imbalances, aiming in the process, to reach out to most disadvantaged sections of the society.
The Ministry of Rural Development consists of two Departments, viz.,

1. Department of Rural Development,
2. Department of Land Resources.

Path Behind-
Rural development implies both the economic betterment of people as well as greater social transformation. Increased participation of people in the rural development programmes, decentralisation of planning, better enforcement of land reforms and greater access to credit are envisaged for providing the rural people with better prospects.

Initially, the main thrust for development was laid on agriculture, industry, communication, education, health and allied sectors. Later on, realising that accelerated development can be provided only if governmental efforts are adequately supplemented by the direct and indirect involvement of people at the grass root level, the thrust shifted.

Accordingly, on 31st March 1952, an organisation known as Community Projects Administration was set up under the Planning Commission to administer the programmes relating to community development. The community development programme, inaugurated on October 2, 1952, was an important landmark in the history of the rural development. This programme underwent many changes and was handled by different Ministries.

In October 1974, the Department of Rural Development came into existence as a part of Ministry of Food and Agriculture. On 18th August 1979, the Department of Rural Development was elevated to the status of a new Ministry of Rural Reconstruction. It was renamed as Ministry of Rural Development on 23rd January 1982. In January 1985, the Ministry of Rural Development was again converted into a Department under the Ministry of Agriculture and Rural Development which was later rechristened as Ministry of Agriculture in September 1985. On July 5th, 1991 the Department was upgraded as Ministry of Rural Development. Another Department viz. Department of Wasteland Development was created under this Ministry on 2nd July 1992. In March 1995, the Ministry was renamed as the Ministry of Rural Areas and Employment with three departments namely Department of Rural Employment and Poverty Alleviation, Rural Development and Wasteland Development.

Again, in 1999 Ministry of Rural Areas and Employment was renamed as Ministry of Rural Development. This Ministry has been acting as a catalyst effecting the change in rural areas through the implementation of wide spectrum of programmes which are aimed at poverty alleviation, employment generation, infrastructure development and social security. Over the years, with the experience gained, in the implementation of the programmes and in response to the felt needs of the poor, several programmes have been modified and new programmes have been introduced. The Ministry's main objective is to alleviate rural poverty and ensure improved quality of life for the rural population especially those below the poverty line. These objectives are achieved through formulation, development and implementation of programmes relating to various spheres of rural life and activities, from income generation to environmental replenishment.

In order to ensure that the fruits of economic reform are shared by all sections of societies five elements of social and economic infrastructure, critical to the quality of life in rural areas, were identified. These are health, education, drinking water, housing and roads. To impart greater momentum to the efforts in these sectors the Government launched the Pradhan Mantri Gramdoya Yojana (PMGY) and the Ministry of Rural Development was entrusted with the responsibility of implementing drinking water, housing and rural roads component of PMGY.

During the Ninth Plan period, several anti-poverty Programmes have been restructured to enhance the efficiency of the Programmes for providing increased benefits to the rural poor. Self Employment Programmes were revamped by merging the Integrated Rural Development Programme (IRDP), the Development of Women and Children in Rural Areas (DWCRA), the Supply of Improved Tool-Kits to Rural Artisans (SITRA), the Training of Rural Youth for Self Employment (TRYSEM), the Ganga Kalyan Yojana (GKY) and the Million Wells Scheme (MWS) into a holistic self-employment scheme called Swarnjayanti Gram Swarozgar Yojana (SGSY).

Keeping in view the needs and aspirations of the local people, Panchayati Raj Institutions (PRIs) have been involved in the programme implementation and these institutions constitute the core of the decentralized development of planning and its implementation. The Ministry vigorously pursue with the State Governments for expeditious devolution of requisite administrative and financial powers to PRIs as envisaged under 73rd Amendment Act of the Constitution of India. On 25th December 2002, under Drinking Water Sector, a new initiative 'Swajal Dhara' empowering the Panchayats to formulate, implement, operate and maintain drinking water

Projects was launched. In order to further involve PRIs in the development process, a new initiative 'Hariyali' was launched by Hon'ble Prime Minister on 27th January 2003. Hariyali was launched to strengthen and involve Panchayati Raj Institutions in the implementation of watershed development programmes namely IWDP, DPAP and DDP.

Realising that empowerment of rural women is crucial for the development of rural India, a women's component is introduced in the programmes for poverty alleviation to ensure the flow of adequate funds to this section. The Constitutional Amendment (73rd), Act 1992 provides for reservation of selective posts for women. The Constitution has placed enormous responsibility on the Panchayats to formulate and execute various programmes of economic development and social justice, and a number of Centrally Sponsored Schemes are being implemented through Panchayats. Thus, women Members and Chairpersons of Panchayats, who are basically new entrants in Panchayats, have to acquire the required skill and be given appropriate orientation to assume their rightful roles as leaders and decision makers. Imparting training to elected representatives of PRIs is primarily the responsibility of the State Governments/Union Territory Administrations. Ministry of Rural Development also extends some financial assistance to the States/UTs with a view to improve the quality of training programmes and to catalyse capacity building initiatives for the elected members and functionaries of PRIs.

The Eleventh Plan saw the injection of huge resources from the Union Budget to the rural and farm sector. This thrust formed the substance of the Bharat Nirman Programme. The Mahatma Gandhi National Rural Employment Guarantee Act has provided a major foundational support. Department of Drinking Water and Sanitation has been separated from the Ministry of Rural Development from 13th July 2011 and renamed as Ministry of Drinking Water and Sanitation.

Schemes-

The following major programmes are being operated by the Ministry of Rural Development in rural areas,

- Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for providing wage employment,
- National Rural Livelihoods Mission (NRLM) for self-employment and skill development,
- Indira Awaas Yojana (IAY) for providing housing to BPL households,
- Pradhan Mantri Gram Sadak Yojana (PMGSY) for construction of quality roads
- National Social Assistance Programme (NSAP) for social pension
- Integrated Watershed Management Programme (IWMP) for improving the productivity of the land.
- Monitoring & Evaluation
- Council for Advancement of People's Action and Rural Technology (CAPART)
- DIKSHA (Training Portal)
- National Rurban Mission (NRuM)
- Pradhan Mantri Awas Yojna - Gramin
- DAY-National Rural Livelihoods Mission (DAY-NRLM)
- National Rural Livelihood Mission
- National Social Assistance Programme (NSAP)
- Pradhan Mantri Gram Sadak Yojana (PMGSY)
- Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)

In addition, the Ministry also has schemes for capacity development of rural functionaries; Information, Education and Communication; and Monitoring and Evaluation.

Ministers and Secretariats-

1. Narendra Singh Tomar
(a) Minister of Rural Development
(b) Panchayati Raj and Mines

2. Ram Kripal Yadav (Minister of State for Rural Development)
3. Amarjeet Sinha (Secretary of Department of Rural Development)
4. Dinesh Singh (Secretary of Department of Land Resources)

Shri Radha Mohan Singh, an Indian politician and a member of the Bharatiya Janata Party (BJP) became a Union Cabinet Minister in 2014. He is Member of Parliament from Purvi Champaran constituency of Bihar. Under Shri Narendra Bhai Modi's Prime Ministership, he was appointed Minister of Agriculture on 26th May, 2014.