



Cropping Patterns

Crops in India were Categorised in two ways

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Based on End Usage:

- Food Crops
- Cash Crops
- Plantation Crops
- Horticulture crops

Based on Seasons:

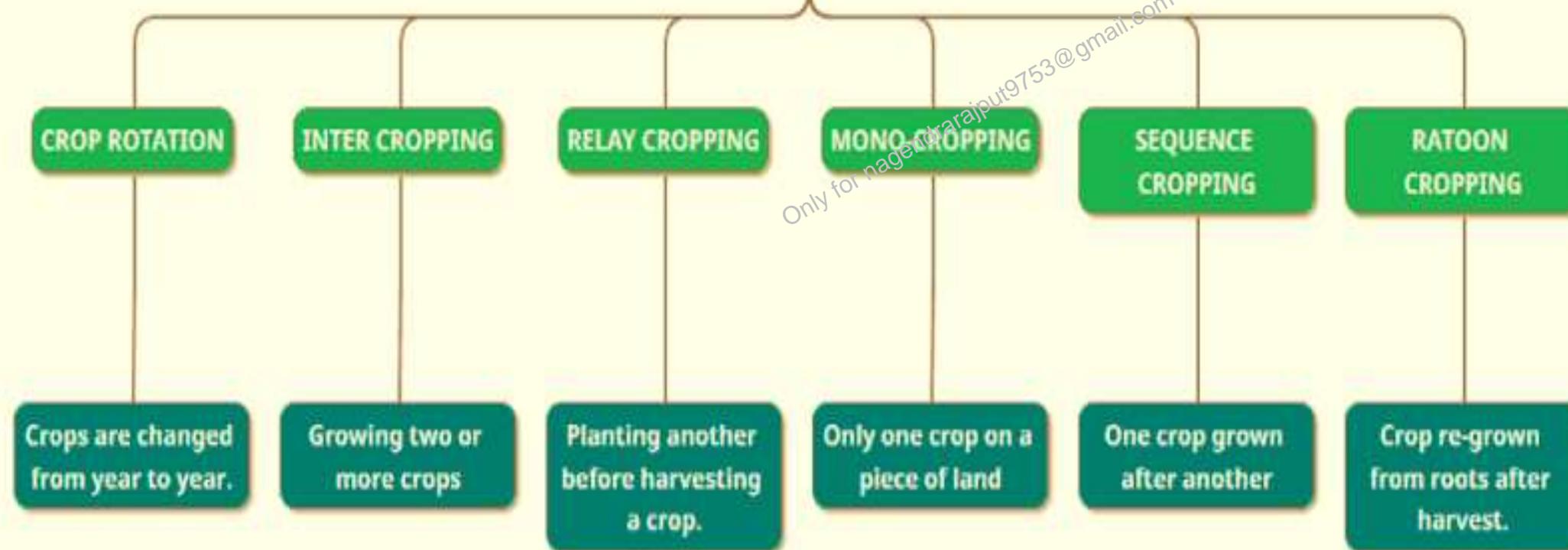
- Kharif Season
- Rabi Season
- Zaid Season

- Different crops grown in an area at a particular point of time is called cropping pattern.

- Cropping pattern depends on climate (temperature, rainfall, wind etc.), soil, support price, value, demand - market, labor availability, historical setting, etc.



TYPES OF CROPPING SYSTEMS



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F

Climate: Rice is cultivated extensively when the monsoons are good. But when monsoons are weak, millets are grown instead of rice. Cotton in Maharashtra, tea in Assam and jute in West Bengal remain the dominant crops due to highly favorable conditions for cultivation.

A

Soil: Regular soils are ideal for cotton cultivation. Cotton is the obvious choice in such soils when the climate is favorable.

C

Minimum Support Price (MSP): Rice and wheat which are offered MSP are preferred by farmers. Value: Millets in the hilly areas of HP and Uttarakhand are replaced by high value horticulture crops like apples.

T

Historical setting: Sugarcane is grown more extensively in North India even though the conditions are most favorable in South India. This is because the sugarcane cultivation was encouraged by British as an alternative to indigo which lost its significance and market in states like Uttar Pradesh due to introduction of artificial dyes.

O

Diversification of crops due to surplus food grain production post Green Revolution has led to significant changes in cropping pattern. Other than rice and wheat, oilseeds and pulses also became more prominent.

R

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Rice

Wheat

sugarcane

Tobacco

Cash crops

Oil seeds

Cotton

pulses

Millets

Jute

Maize

Food crops

Rice



Coffee

Vegetables

Oranges

Apples

Horticulture crops

Pears

Walnuts

Rubber

Banana

Cashew

Tea

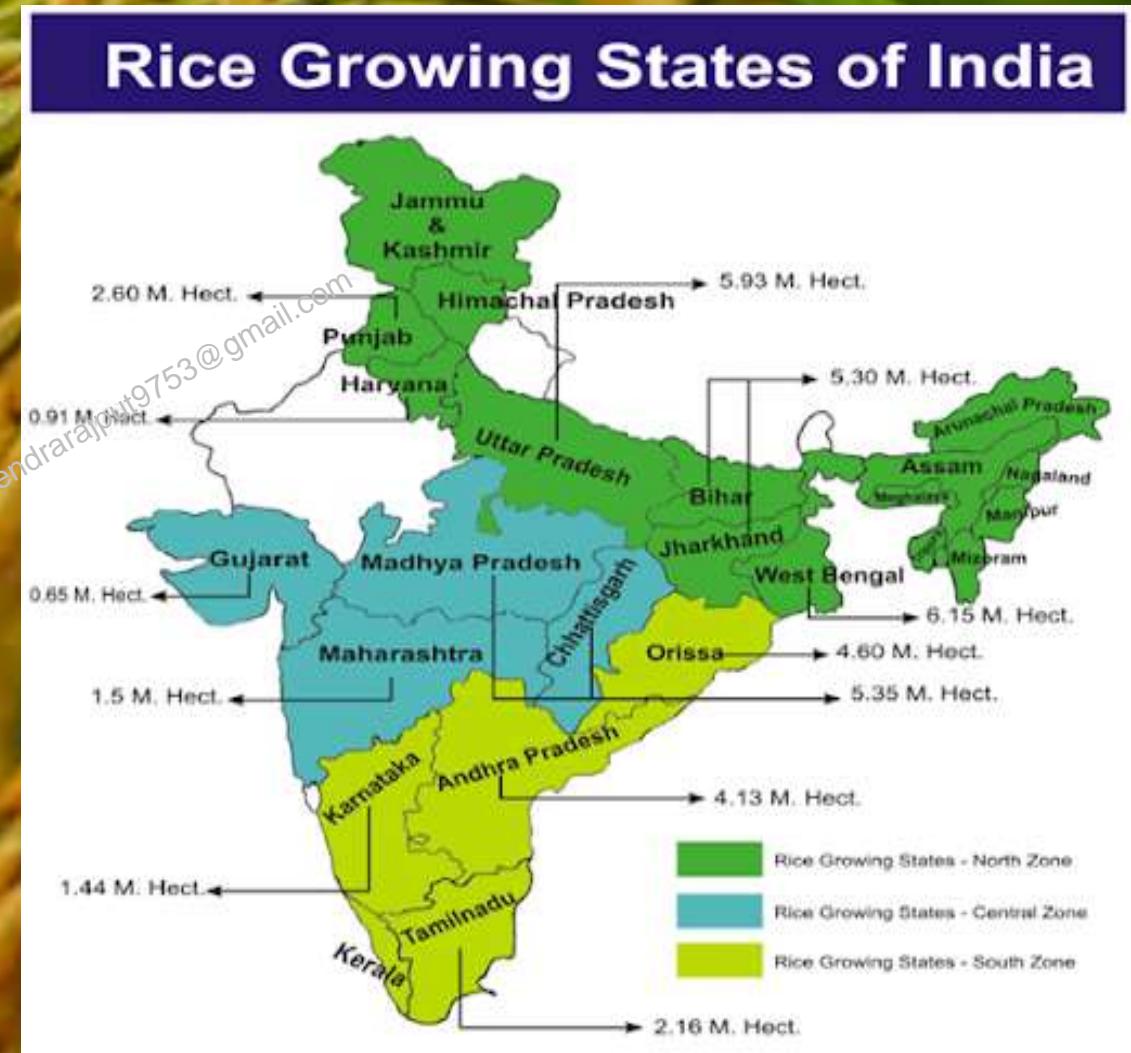
Plantation crops



S. No	Cropping Season	Time Period	Crops	States
1.	Rabi	Sown: October-December Harvested: April-June	Wheat, barley, peas, gram, mustard etc.	Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir, Uttarakhand and Uttar Pradesh
2.	Kharif	Sown: June-July Harvested: September-October	Rice, maize, jowar, bajra, tur, moong, urad, cotton, jute, groundnut, soybean etc.	Assam, West Bengal, coastal regions of Odisha, Andhra Pradesh, Telangana, Tamil Nadu, Kerala and Maharashtra
3.	Zaid	Sown and harvested: March-July (between Rabi and Kharif)	Seasonal fruits, vegetables, fodder crops etc.	Most of the northern and northwestern states

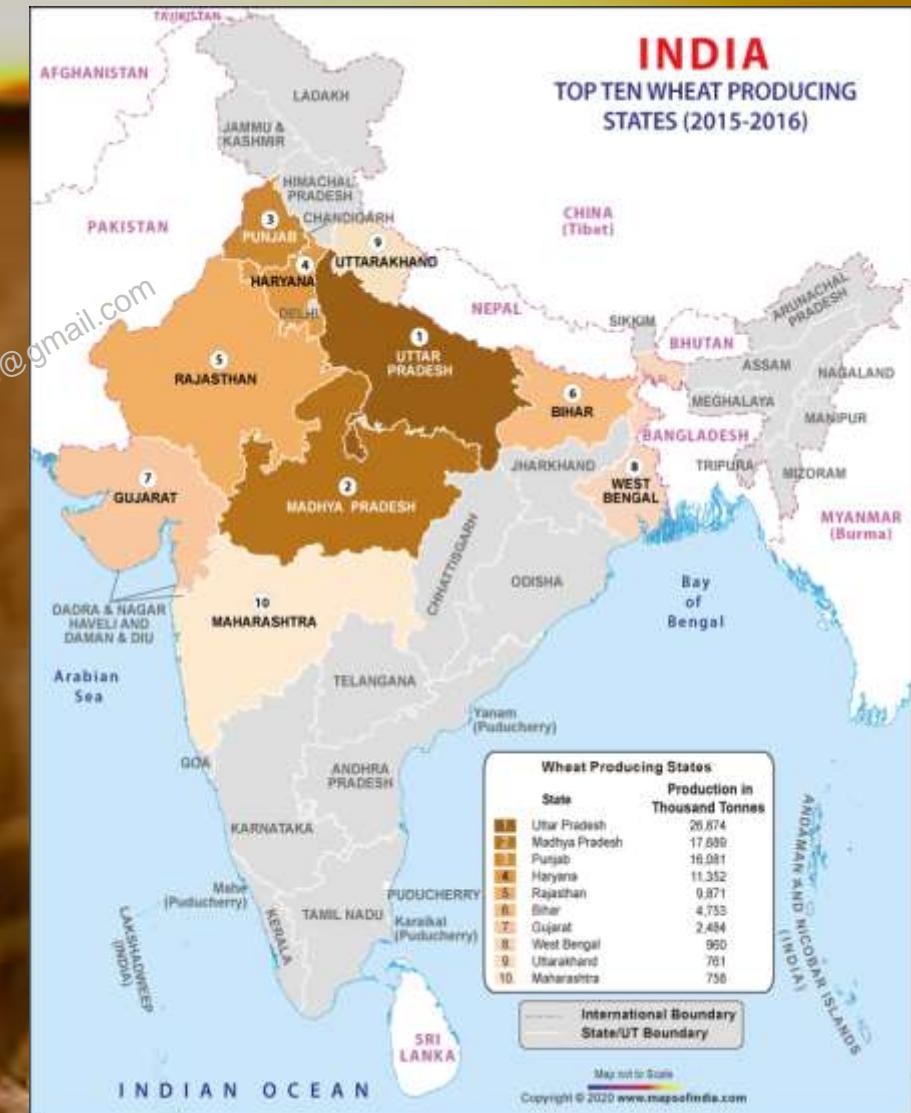
RICE

- **Temperature:** Between 22-32°C with high humidity.
- **Rainfall:** Around 150-300 cm.
- **Soil Type:** Deep clayey and loamy soil.
- **Top Rice Producing States:** West Bengal > Punjab > Uttar Pradesh > Andhra Pradesh > Bihar.
- It is the **staple food crop** of majority of Indian people.
- India is the **second largest producer of rice in the world after China.**
- In states like Assam, **West Bengal and Odisha**, three crops of paddy are grown in a year. These are **Aus, Aman and Boro**.
- **National Food Security Mission, Hybrid Rice Seed Production and Rashtriya Krishi Vikas Yojana** are few government initiatives to support rice cultivation.



WHEAT

- **Temperature:** Between 10-15°C (Sowing time) and 21-26°C (Ripening & Harvesting) with bright sunlight.
- **Rainfall:** Around 75-100 cm.
- **Soil Type:** Well-drained fertile loamy and clayey loamy (Ganga-Sutlej plains and black soil region of the Deccan)
- **Top Wheat Producing States:** Uttar Pradesh > Punjab > Madhya Pradesh > Haryana > Rajasthan.
- India is the second largest producer after China.
- This is the second most important cereal crop and the main food crop, in north and north-western India.
- Success of **Green Revolution** contributed to the growth of Rabi crops especially wheat.
- **Macro Management Mode of Agriculture, National Food Security Mission and Rashtriya Krishi Vikas Yojana** are few government initiatives to support wheat cultivation.



JUTE

- **Temperature:** Between 25-35°C
- **Rainfall:** Around 150-250 cm
- **Soil Type:** Well drained alluvial soil.

- **Production:**

- India is the **largest producer** of jute.
- It is **mainly concentrated in eastern India** because of the **rich alluvial soil of Ganga-Brahmaputra delta**.
- Major jute producing states include **West Bengal, Bihar, Odisha, Assam, Andhra Pradesh, Meghalaya and Tripura**.

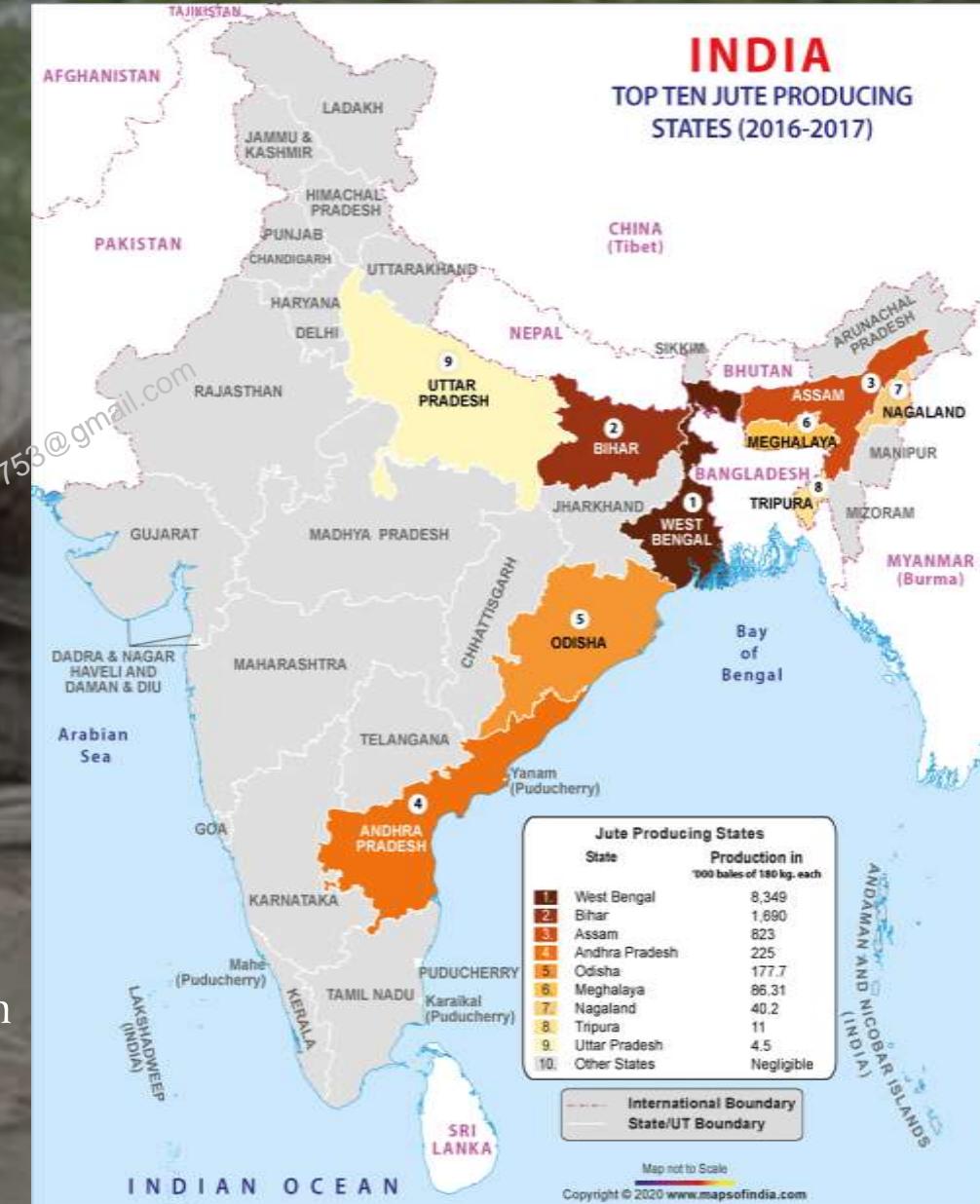
- **Uses:**

It is known as the **golden fiber**. It is used in making **gunny bags, mats, ropes, yarn, carpets and other artefacts**.

- **Government Initiatives:**

Golden Fiber Revolution and Technology Mission on Jute and Mesta are two of the government initiatives to boost jute production in India.

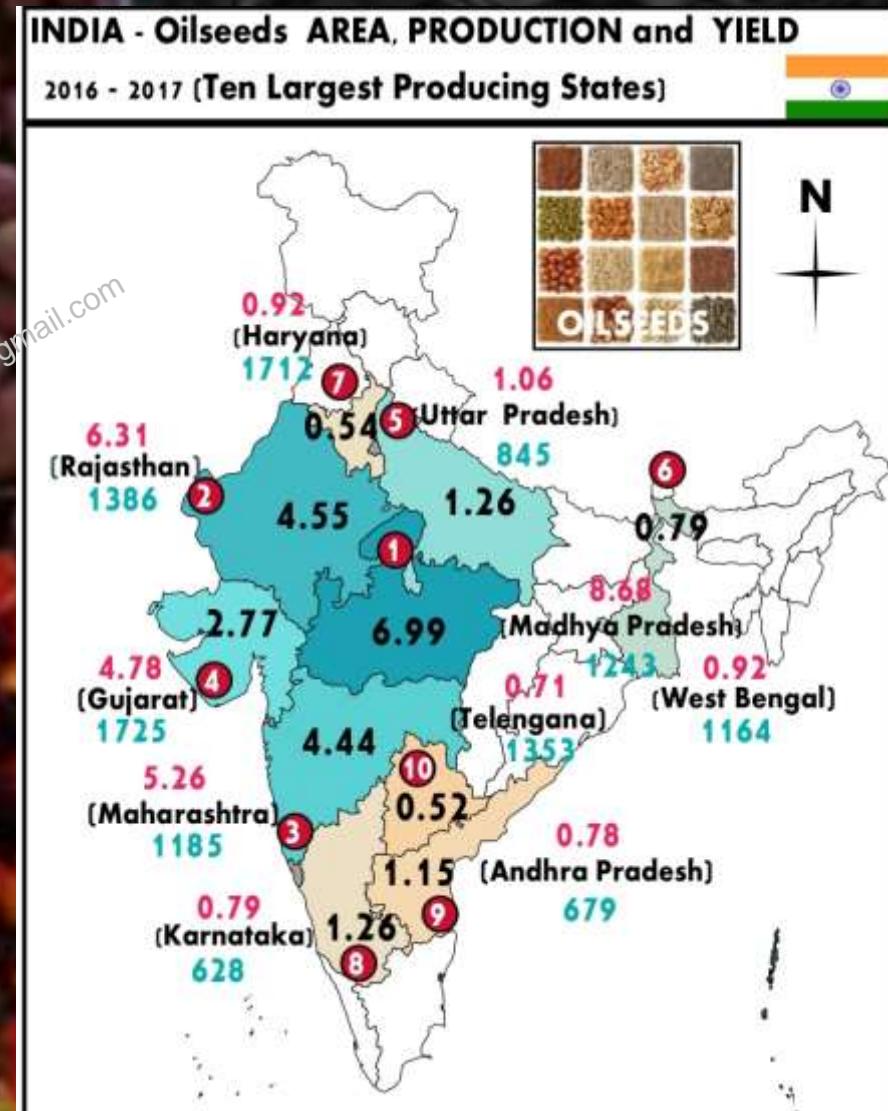
- Due to its **high cost**, it is **losing market to synthetic fibres and packing materials, particularly nylon**.



OIL SEEDS

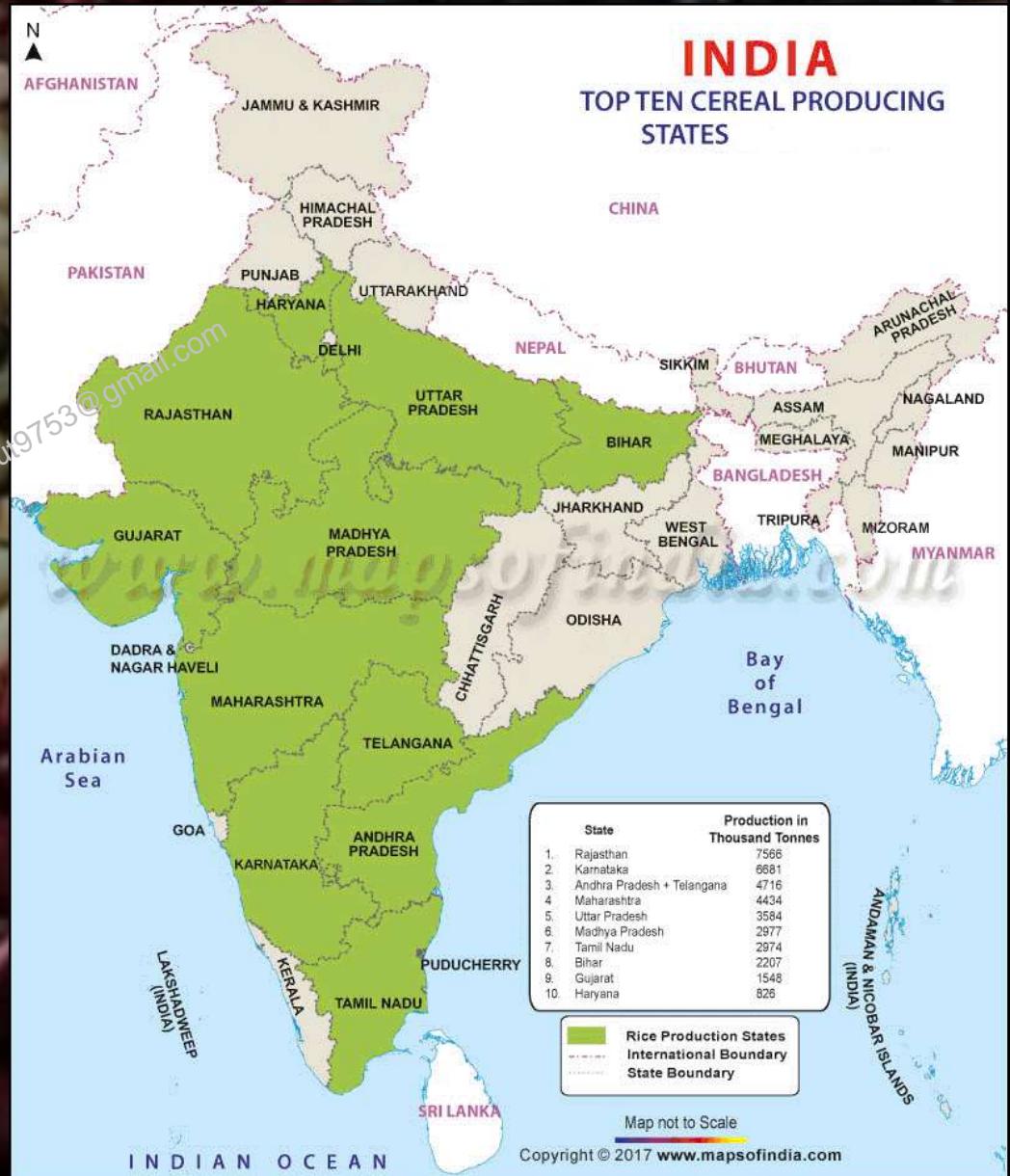
- Temperature: Between 15-30°C
- Rainfall: Around 30-75 cm.
- Soil Type: Loam to clayey loam and well drained sandy loams.
- Top Oilseeds Producing States: Madhya Pradesh > Rajasthan > Gujarat > Maharashtra > Uttar Pradesh.
- Main oil-seeds produced in India are groundnut, mustard, coconut, sesamum (til), soyabean, castor seeds, cotton seeds, linseed and sunflower.
- Most of these are edible and used as cooking mediums.
However, some of these are also used as a raw material in the production of soap, cosmetics and ointments.
- Yellow Revolution and Integrated Scheme on Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) are examples of government initiatives for oilseeds.

- Groundnut is a kharif crop and accounts for about half of the major oilseeds produced in the country.
- Linseed and mustard are rabi crops.
- Sesamum is a kharif crop in north and rabi crop in south India.
- Castor seed is grown both as rabi and kharif crop.



PULSES

- Temperature: Between 20-27°C
- Rainfall: Around 25-60 cm.
- Soil Type: Sandy-loamy soil.
- Top Pulses Producing States: Madhya Pradesh > Rajasthan > Maharashtra > Uttar Pradesh > Karnataka.
- India is the largest producer as well as the consumer of pulses in the world.
- These are the major source of protein in a vegetarian diet.
- Major pulses grown in India are tur (arhar), urad, moong, masur, peas and gram.
- Being leguminous crops, all these crops except arhar help in restoring soil fertility by fixing nitrogen from the air. Therefore, these are mostly grown in rotation with other crops.
- National Food Security Mission for Pulses, Pulses Development Scheme and Technological Mission on Pulses are few of the government's plans to support pulses production.



ISSUES & TRENDS

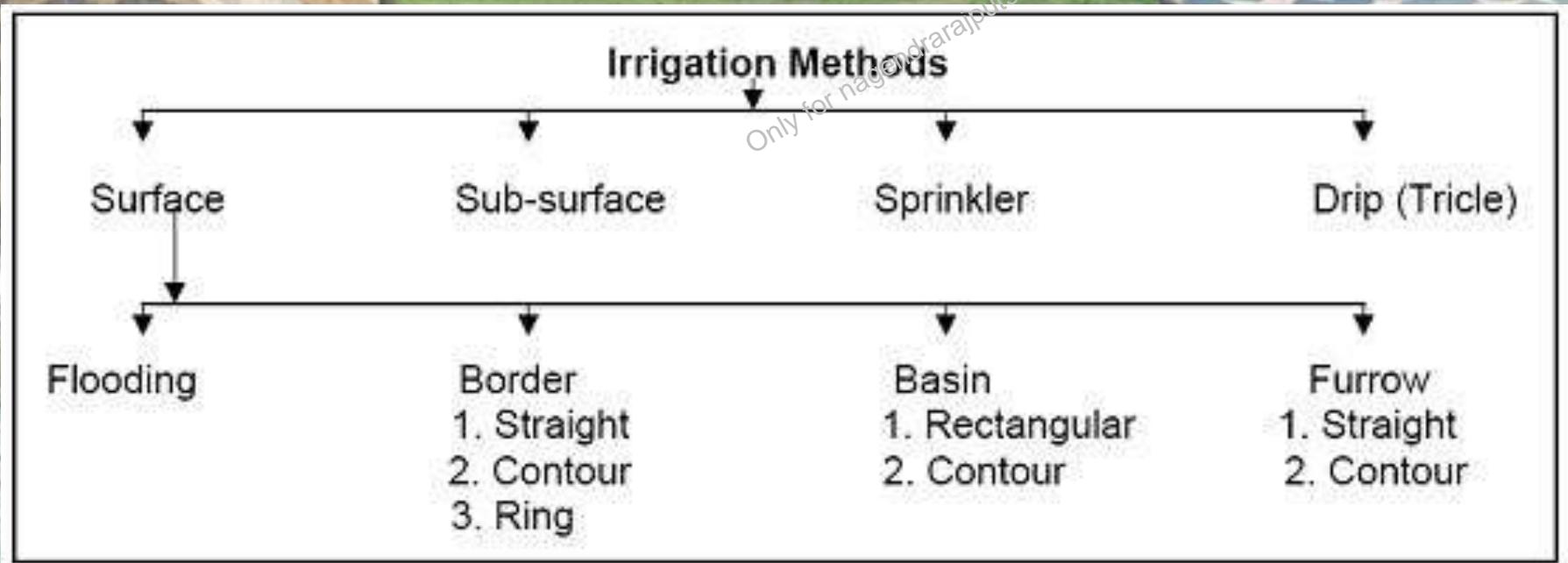
- MSP has skewed the cropping pattern towards Rice and Wheat based
- Dominance of food crops over nonfood crops
- Variety of crops: Horticulture has recently surpassed food grains
- Dominance of cereals among food crops
- Decline in coarse cereals: irrigation and consumption pattern change
- Declining importance in Kharif crops: vagaries of monsoon

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IRRIGATION SYSTEM



Definition : Irrigation is the artificial application of water to land for the purpose of agricultural production. Effective irrigation will influence the entire growth process from seedbed preparation, germination, root growth, nutrient utilisation, plant growth and regrowth, yield and quality.



Benefits of Micro Irrigation

- Higher Profits
- Water Saving & Water Use Efficiency (WUE)
- Less Energy Costs
- Higher fertilizer-use efficiency (FUE)
- Reduced Labour Costs
- Reduce Soil Loss
- Marginal Solis & Water
- Efficient & Flexible
- Improved Crop Quality
- Higher Yields

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Issues and Challenges in Indian Irrigation

- **Low Rainfall**

While average annual rainfall is 1170 mm, some parts of north east get around 10000 mm per year, while parts of western Rajasthan get only 100 mm. The below graphics shows that around 68% of total net sown area fall under either lower or low rainfall.

- **Poor Utilization of Irrigation Facilities**

over 60 % of the total 142 million hectares of farmland in the country is not covered under irrigation.

- **Low Irrigation Efficiency**

5 states account for 78% of progress in micro-irrigation. (Andhra Pradesh, Karnataka, Gujarat, Maharashtra, and Tamil Nadu). So, rest are behind.

- **Ineffective Groundwater Policy**

UNESCO World Water Development Report states that India is the largest extractor of groundwater in the world.

Subsidies on electricity and high MSP for water intensive crops is also leading reasons for depletion.

- **Increasing Demand of Water**

Agriculture sector is using about 83 per cent of available water resources, but demand from other sectors may reduce availability for agricultural use to 68% by 2050.

- **Surface Water Over Exploitation**

Surging population, increasing industrialization are increasing demands on freshwater/surface water resulting in mindless overexploitation.

- **Climate Change Challenges**

Temperature drives the hydro-logic cycle, and influences hydro-logical processes in a direct or indirect way. A warmer climate may lead to intensification of the hydro-logical cycle, resulting in higher rates of evaporation and increase of liquid precipitation.

● Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

- To ensure access to some means of protective irrigation to all agricultural farms in the country, to produce ‘per drop more crop’, thus bringing much desired rural prosperity.
- The aim of PMKSY is not only the creation of assured irrigation but to create protected irrigation by using rainwater by “Jal Sanchay” and “Jal Sinchan”.
- It has the following components
 - Accelerated Irrigation Benefit Programme (AIBP): To focus on faster completion of ongoing Major and Medium Irrigation including National Projects.
 - PMKSY- Har Khet ko Pani: Enhance the physical access of water on the farm and expand cultivable area under assured irrigation
 - PMKSY - Per Drop More Crop: Installation of Micro Irrigation Systems (Drip & Sprinkler) in fields, extension activities, coordination & management.
 - PMKSY - Watershed Development: Effective management of runoff water and improved soil & moisture conservation activities such as ridge area treatment, drainage line treatment, rain water harvesting, in - situ moisture conservation and other allied activities on watershed basis and converging efforts with MGNREGS for the above.

Micro Irrigation

- The government has set the target of covering 100 lakh ha in five years under micro-irrigation.
- Department of Agriculture, Cooperation & Farmers Welfare (DAC & FW) is implementing Per Drop More Crop component of Pradhan Mantri Krishi Sinchayi Yojana (PMKSY-PDMC) since 2015-16 for enhancing water use efficiency in agriculture sector and more importantly the overall benefits towards increasing returns to farmers.
- Government has created a dedicated Micro Irrigation Fund (MIF) of INR 5000 crores with National Bank for Agriculture and Rural Development (NABARD) with the objective to facilitate States in mobilizing resources for expanding coverage of Micro Irrigation.
- Micro irrigation not only increases water use efficiency but also the productivity of the crops.

Fertigation

- Fertigation is a method of fertilizer application in which fertilizer is incorporated within the irrigation water by the drip system.
- In this system fertilizer solution is distributed evenly in irrigation.
- The availability of nutrients is very high therefore the efficiency is more.
- In this method liquid fertilizer as well as water soluble fertilizers are used. By this method, fertilizer use efficiency is increased from 80 to 90 per cent.

Advantages of fertigation:

- Nutrients and water are supplied near the active root zone through fertigation which results in greater absorption by the crops.
 - As water and fertilizer are supplied evenly to all the crops through fertigation there is possibility for getting 25-50 per cent higher yield.
 - Fertilizer use efficiency through fertigation ranges between 80-90 per cent, which helps to save a minimum of 25 per cent of nutrients.
 - By this way, along with less amount of water and saving of fertilizer, time, labour and energy use is also reduced substantially. Urea, potash and highly water soluble fertilizers are available for applying through fertigation.

Agriculture Marketing

- Agriculture Marketing policy in India is governed by the APMC Act and has been a reason for concern due to layers of middlemen operating leading to the farmer getting only 15-40% of the consumer price at market.
- The monopoly APMC's have led to various fees levied on the farmer increasing their cost of production and marketing.

Issues and Challenges:

- Highly regulated markets: Under the present APMC Act, only registered intermediaries at regulated markets can sell farm produce. These restrictions create artificial barriers and unnecessarily hinder free flow of agricultural commodities in India.

- Fragmented Markets: There are about 2500 regulated APMCs and around 5000 sub-market yards regulated by the respective APMCs, along with many Rural markets or Grameen Markets. These fragmented marketing infrastructures led to escalation in the cost of prices and prevents the farmer from getting remunerative prices.

- Many fees in APMCs: These fees are considered to be around 15% of the value of agricultural produce in some of the states and these lead to escalation of cost of prices of farm produce.
- Post-harvest losses: This happens due to fragmented markets, lack of access to proper storage, poor transport facilities.
- Contract farming
 - There are no legal backing / laws to recognize contract farming
- State subject
 - There is lack of uniformity throughout. While the Centre has a model Act for APMC regulation, it is up to the states to implement.

Other APMS Issues

Issue of middlemen

No grading facilities

Even perishables have to go through APMCs

Storage facility: Lack of storage facility (cold storage) and

Cold chain infrastructure: Lack of cold chain infrastructure to transport from Mandi to cold storage/customer.



सत्यमेव जयते

Ministry of Agriculture

Government Of India

GOVERNMENT INITIATIVES

AGRICULTURE EXPORT POLICY

Keeping in mind the significant role Indian agriculture holds, Government of India introduced Agri Export Policy in 2018.

•Objectives:

- **Double Exports:** To double **Agricultural Exports** from the present \$30 billion to \$60 billion by 2022 and reach \$100 billion in the next few years thereafter, with a stable trade policy regime.
 - **Diversification:** To **diversify** the export basket, and **boost** high value and value-added agricultural exports including focus on perishables.
 - **Non-Traditional Agri Products Promotion:** To promote novel, indigenous, organic, ethnic, traditional and non-traditional Agri products exports.
 - **Market Access:** To provide an **institutional mechanism** for pursuing market access, tackling barriers and deal with sanitary and phytosanitary issues.
 - **Global Integration:** To strive to double India's share in world agri-exports by integrating with global value chain at the earliest.
 - **Benefit Farmers:** Enable farmers to get benefit of export opportunities in the overseas market.
- **Vision:** Harness export potential of Indian agriculture, through suitable policy instruments, to make India a global power in agriculture and raise farmers income.

Elements of Agriculture Export Policy:

The recommendations in the Agriculture Export Policy have been organised in two categories – Strategic and Operational

	Policy Measures
Strategic	Infrastructure and Logistics Support
	Holistic Approach to boost exports
	Greater involvement of State Governments in Agri Exports
Operational	Focus on Clusters
	Promoting Value added exports
	Marketing and promotion of "Brand India"
	Attract private investments into production and processing
	Establishment of Strong Quality Regimen
	Research & Development
	Miscellaneous

Recently, the Agricultural and Processed Food Products Export Development Authority (APEDA) along with State Government of Andhra Pradesh has dispatched the first shipment of high-quality bananas from Anantapur in Andhra Pradesh to Jawaharlal Nehru Port (JNPT) in Mumbai for exports to international markets.

- The long-distance affects the viability of export shipments due to high transport costs and quality losses. Hence, this time efforts were made for reducing the transit time by using refrigerated rail containers (freight transport that is refrigerated for the transportation of temperature-sensitive cargo).

APMC ACT

- As per the act, the State is divided into several market areas, each of which is administered by a separate Agricultural Produce Market Committee (APMC) which impose its own marketing regulation (including fees).
- Apart from that, legal persons, growers, and local authorities are permitted to apply for the establishment of new markets for agricultural produce in any area.
- There will be no compulsion on the growers to sell their produce through existing markets administered by the Agricultural Produce Market Committee (APMC).
- Separate provision is made for notification of 'Special Markets' in any market area for specified agricultural commodities.
- Provision for Contract Farming, allowing direct sale of farm produce to contract farming sponsor from farmer's field.
- Single point levy of market fee on the sale of notified agricultural commodities in any market area.
- Provision made for resolving disputes arising between private market/ consumer market and Market.
- Provides for the creation of marketing infrastructure from the revenue earned by the APMC.
- After more than 14 years of struggle by the Ministry of Agriculture and Farmers' Welfare (MoAFW) to get the model APMC Act accepted at the State-level — only some States have adopted it fully (a few such as Uttar Pradesh are yet to look at it) — the MoAFW has come up with another model Act — the Agricultural Produce and Livestock Marketing (promotion and facilitation) Act, 2017 (APLMA, 2017).

INDIA'S AGRICULTURE SECTOR: PRODUCTIVITY CHALLENGES



At **169.6 million hectares**, India's cultivated land mass is the largest in the world.²³



The Government of India's top research institute reports that nearly **60% of agricultural land is at risk** because of fertilizer misuse, poor cropping practices and soil nutrient deficiencies.²⁴



India uses **13% of the world's extracted water**, and **87% is used for irrigation**.

Expanding irrigation has been a key strategy for increasing productivity; the proportion of arable land under irrigation increased from 20% to 35% from 1981 to 2013.²⁵



The country is faced with the prospect of **declining rainfall during the monsoon**, India's prime growing season for rainfed agriculture.



55% of the population is engaged in agricultural production. As farms are divided among family members, average **farm size today** (1.16 hectares / 2.87 acres) **is half what it was 40 years ago.**²⁶



Unemployment among agricultural workers **rose from 9.5%** in 1993–1994 to **15.3%** in 2004–2005.²⁶



Irrigation water use efficiency is very low

35–40% efficiency in surface irrigation such as flooding or canals, and 65–75% efficiency when pumping groundwater. These **unsustainable practices** are depleting the country's aquifers.²⁷



Government **subsidies to farmers** for fertilizer, electricity and irrigation **increased more than eightfold** between 1990–1991 and 2006–2007. Areas receiving the highest subsidies regularly underperform those with lower subsidies.²⁸



Government **subsidies for buying and distributing food grains** to low-income and disadvantaged households **grew from 2.2% of agricultural GDP** during the 1990s **to 5%** in the 2000s²⁹, crowding out investments in agricultural education, research, technology and extension.



India's Ministry of Agriculture reports that from 2005 to 2007, **30%** of harvest and post-harvest **economic losses came from the fruit and vegetable sectors**, although that sector comprised only 13.6% of total production.³⁰

E – NAM

- National Agriculture Market (eNam) is a pan-India electronic trading portal which networks the existing APMC mandis to create a unified national market for agricultural commodities
- 115 wholesale regulated markets have been integrated with e-NAM platform to achieve the target of total 585 e-NAM markets in 16 States and 2 Union Territories.
- **Benefits of e-NAM**
 - Transparent price discovery:
 - Farmers produce can find the best price through online auction and a monopoly of neighbourhood markets can't stop bids from interstate operators.
 - Farmers have bargaining power and can wait for an expected price quote from a trader, buyer or processor.
 - Reduce post-harvest losses
 - Timely auction and price prediction can help farmers harvest and transport accordingly to ensure minimum post-harvest losses.
 - NAM will lead to construction of cold chain and logistics which can further reduce the harvest losses.

■ Increase farmers income

- Transparent price discovery will help farmers sell for a better price.
- Single point levy of market fees helps farmers from multiple mandi fees.
- Reduction in intermediary cost will ensure farmers spend less to market their produce.

○ Issues/Challenges

- Lack of quality testing labs in markets to grade the produce.
- Lack of investment in technology by the APMC in spite of collecting many types of fees.

- **Venture Capital Assistance:**
 - In order to encourage Agri-prenuers to set up Agri-based processing Units directly or indirectly benefiting the small and marginal farmers, SFAC has sanctioned VCA to 484 Projects in 2018 alone.
 - **Formation of Farmer Producer Companies:**
 - Farmer Producer Companies (FPCs): 22 Farmer Producer Companies (FPCs) were formed and registered involving 22000 farmers during January to December 2018
 - Farmer Producer Organizations (FPOs): As of December 2018, total of 773 FPOs have been registered and 123 FPOs are under the process of registration
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Gramin Agricultural Markets (GrAMs)



- **Agricultural Marketing Infrastructure (AMI)**
 - Agricultural Marketing Infrastructure (AMI) sub scheme of Integrated Scheme of Agricultural Marketing (ISAM) is also in place till 2020.
- **Model Contract Farming Act**
 - The Government has formulated and released a progressive and facilitative Model Act in May 2018 for its adoption by States/UTs
 - The Act covers the entire value and supply chain from pre-production to post harvest marketing including services contract for the agricultural produce and livestock.

Committee noted that the aim of the Gramin Agricultural Markets (GrAM) scheme is to improve the infrastructure and civic facilities in Gramin Haats across the country. Under the scheme, 4,600 of the existing 22,000 Haats will be developed and upgraded using MGNREGA and other government schemes.

E - TECHNOLOGY

E-Technology in agriculture refers to the usage of IT and related technology to enhance productivity of farm produce.

Information technology can be used as a tool to improve farm productivity or as an indirect tool to empower farmers with information inputs (knowledge of new farming techniques, farm equipment, access to expert help, weather information etc.) which in turn helps in quality and informed decision making.

Digital technology includes spectrum of technologies like telecom (telephone, cable, satellite, computer networks), computing (computers, intranet, internet, software and mobile phones), broadcasting (radio and tv tech).

Benefits:

1. Improved decision making: By having the necessary information, farmers can make better and informed decision concerning their agricultural activities. Farmer can have access to information of various input sellers, produce buyers and organisations that aid farmers. This makes life of farmer easier from production to distribution.
2. Better planning: there are farming softwares which keep track of crops, predict yields, analysis soils, suggest nutritional and water requirement.
3. Community involvement: Many IT applications help in increasing community involvement in agriculture. This helps in discussing ground level problems and sharing solutions among themselves and with the authorities who can help.
4. Agricultural breakthroughs: Latest scientific developments and technological breakthroughs concerning agriculture can reach the farmers in no time.
5. Agriculture for everyone: Simple IT applications like YouTube video application, benefit interested individuals to become backyard farmers growing their own sustainable gardens.

Issues:

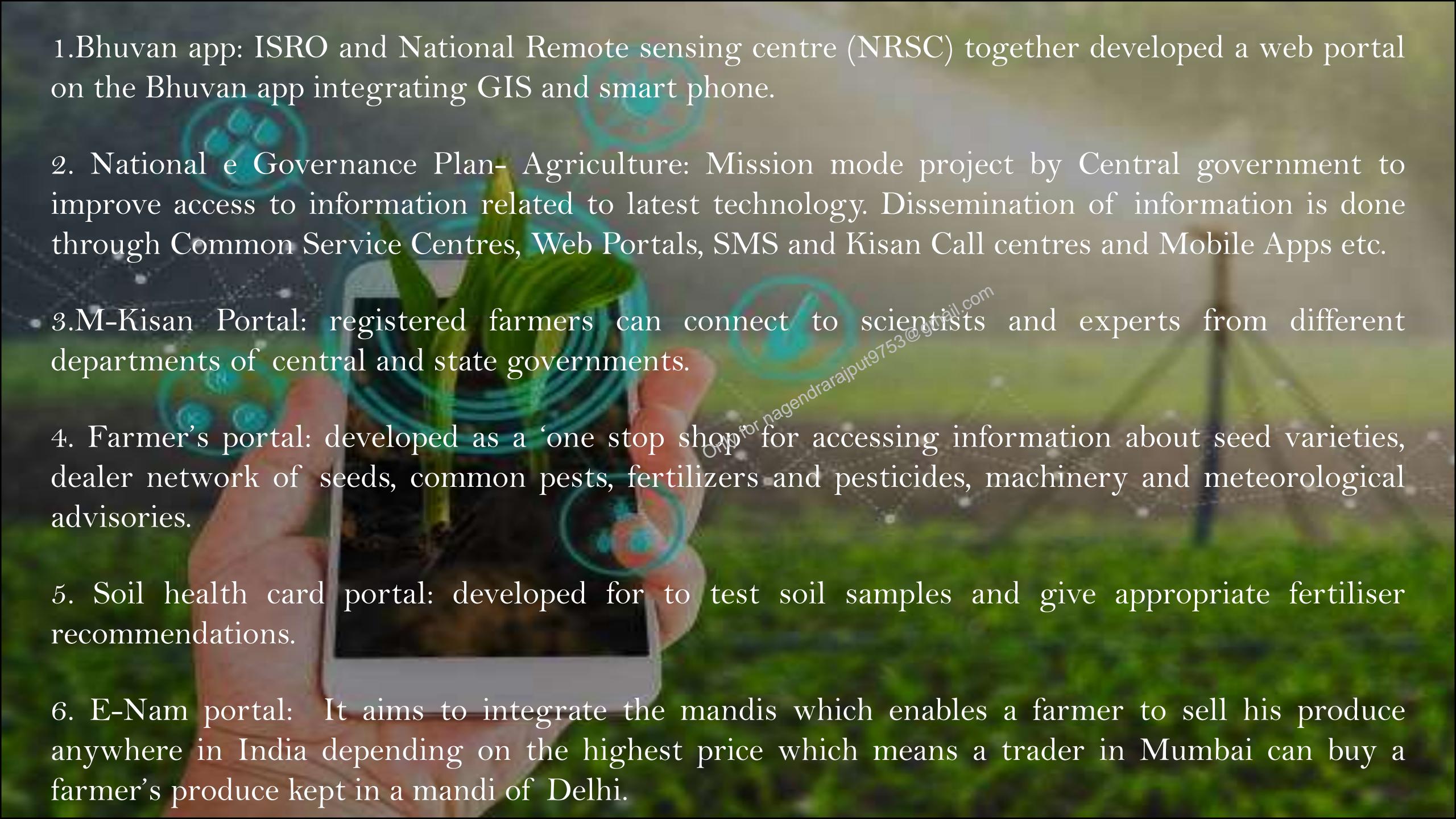
1. Power supply: Lack Continuous power supply may affect technologies like mobile operated farm equipment or mobile operated crop monitoring devices.
2. Connectivity: Lack of reliable and affordable connectivity to rural and tribal areas.
3. Bandwidth: Even if telephone and communication services exist in the common service centres, low bandwidth is a major limitation in providing effective e-services to farmers.
4. User friendliness: Complex interfaces; language and readability of content pose constraints in dissipating information to the farmers.
5. Plethora of Apps: Redundant and duplicate efforts are done by different organisations and ministries resulting in many apps for the same purpose. This creates unnecessary confusion and redundancy of services.
6. Common dissemination points: Village level kiosks are to installed to disseminate information and also to literate farmers on the usage of internet-based content and services.
7. Investment and financing: Unaffordable digital devices like smart phones, routers, smart farm equipment discourage farmers from using the latest Digi technologies.

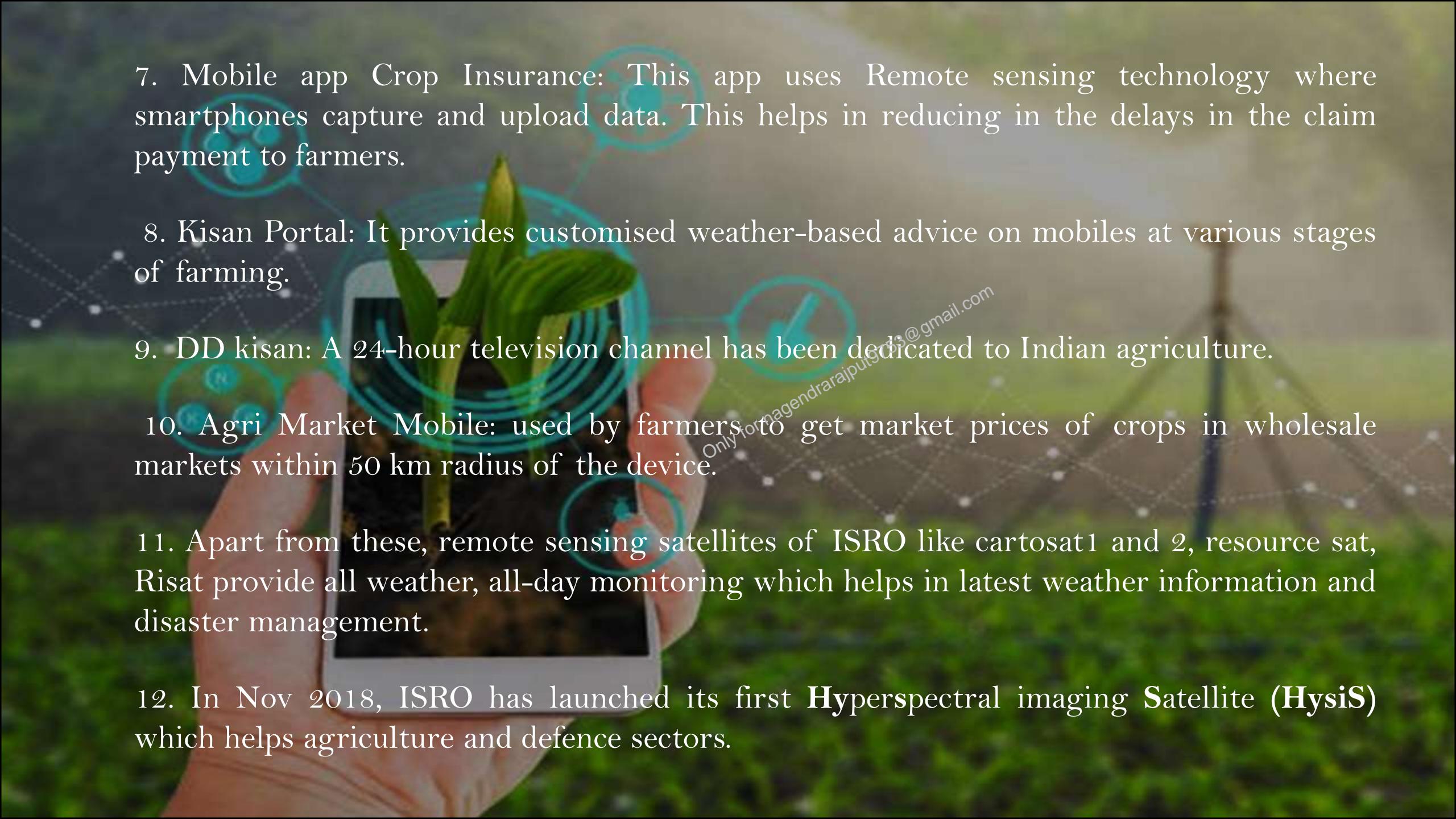
GOVERNMENT INITIATIVES

Soil Management, Water Management, Seed Management, Fertilizer Management, Pest Management, Harvest Management and Post-Harvest Management are the important components of e-Agriculture which technology aids farmers with better information and alternatives.

It uses a host of technologies like Remote Sensing, Computer Simulation, Assessment of speed and direction of Wind, Soil quality assays, Crop Yield predictions and Marketing using IT.

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- 1.Bhuvan app: ISRO and National Remote sensing centre (NRSC) together developed a web portal on the Bhuvan app integrating GIS and smart phone.
 2. National e Governance Plan- Agriculture: Mission mode project by Central government to improve access to information related to latest technology. Dissemination of information is done through Common Service Centres, Web Portals, SMS and Kisan Call centres and Mobile Apps etc.
 - 3.M-Kisan Portal: registered farmers can connect to scientists and experts from different departments of central and state governments.
 4. Farmer's portal: developed as a ‘one stop shop’ for accessing information about seed varieties, dealer network of seeds, common pests, fertilizers and pesticides, machinery and meteorological advisories.
 5. Soil health card portal: developed for to test soil samples and give appropriate fertiliser recommendations.
 6. E-Nam portal: It aims to integrate the mandis which enables a farmer to sell his produce anywhere in India depending on the highest price which means a trader in Mumbai can buy a farmer’s produce kept in a mandi of Delhi.

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7. Mobile app Crop Insurance: This app uses Remote sensing technology where smartphones capture and upload data. This helps in reducing in the delays in the claim payment to farmers.
8. Kisan Portal: It provides customised weather-based advice on mobiles at various stages of farming.
9. DD kisan: A 24-hour television channel has been dedicated to Indian agriculture.
10. Agri Market Mobile: used by farmers to get market prices of crops in wholesale markets within 50 km radius of the device.
11. Apart from these, remote sensing satellites of ISRO like cartosat1 and 2, resource sat, Risat provide all weather, all-day monitoring which helps in latest weather information and disaster management.
12. In Nov 2018, ISRO has launched its first **Hyperspectral imaging Satellite (HysiS)** which helps agriculture and defence sectors.

DIRECT and INDIRECT SUBSIDIES

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- Subsidy: A subsidy is a benefit given to an individual, business, or institution, usually by the government. It is usually in the form of a cash payment or a tax reduction. The subsidy is typically given to remove some type of burden, and it is often considered to be in the overall interest of the public, given to promote a social good or an economic policy.
- Direct subsidy: Direct subsidies are those that involve an actual payment of funds toward a particular individual, group or industry. Example: Direct Benefit Transfer of LPG.
- Indirect subsidy: Indirect subsidies are those that do not hold a predetermined monetary value or involve actual cash outlays. Example: PDS subsidy.

○ Benefits of Direct Subsidy

- **Targeting:** Cash transfer have better targeting by reducing pilferages and directly transferring to beneficiary accounts.
- **Government Burden:** Reduced government burden freeing from transportation and storage costs
- **Efficiency:** Cash travel faster than kind and benefits are delivered immediately to the beneficiary accounts.
- **More Freedom to spend:** on different consumption needs of different households.
- **Financial Inclusion:** 99% of households have Bank accounts which makes it easier to transfer cash to beneficiaries.

○ Issues of Direct Subsidy

- **Lack of Awareness:** is leading to not witness the full potential of Direct Subsidy
- **Accessibility:** Even with universal financial inclusion, accessibility to banking services in rural areas is very poor.
- **IT Infrastructure:** to verify the beneficiaries and provide services is very poor
- **Not insulated for inflation:** Cash supply can cause inflation and Cash transfers are not insulated for inflation.



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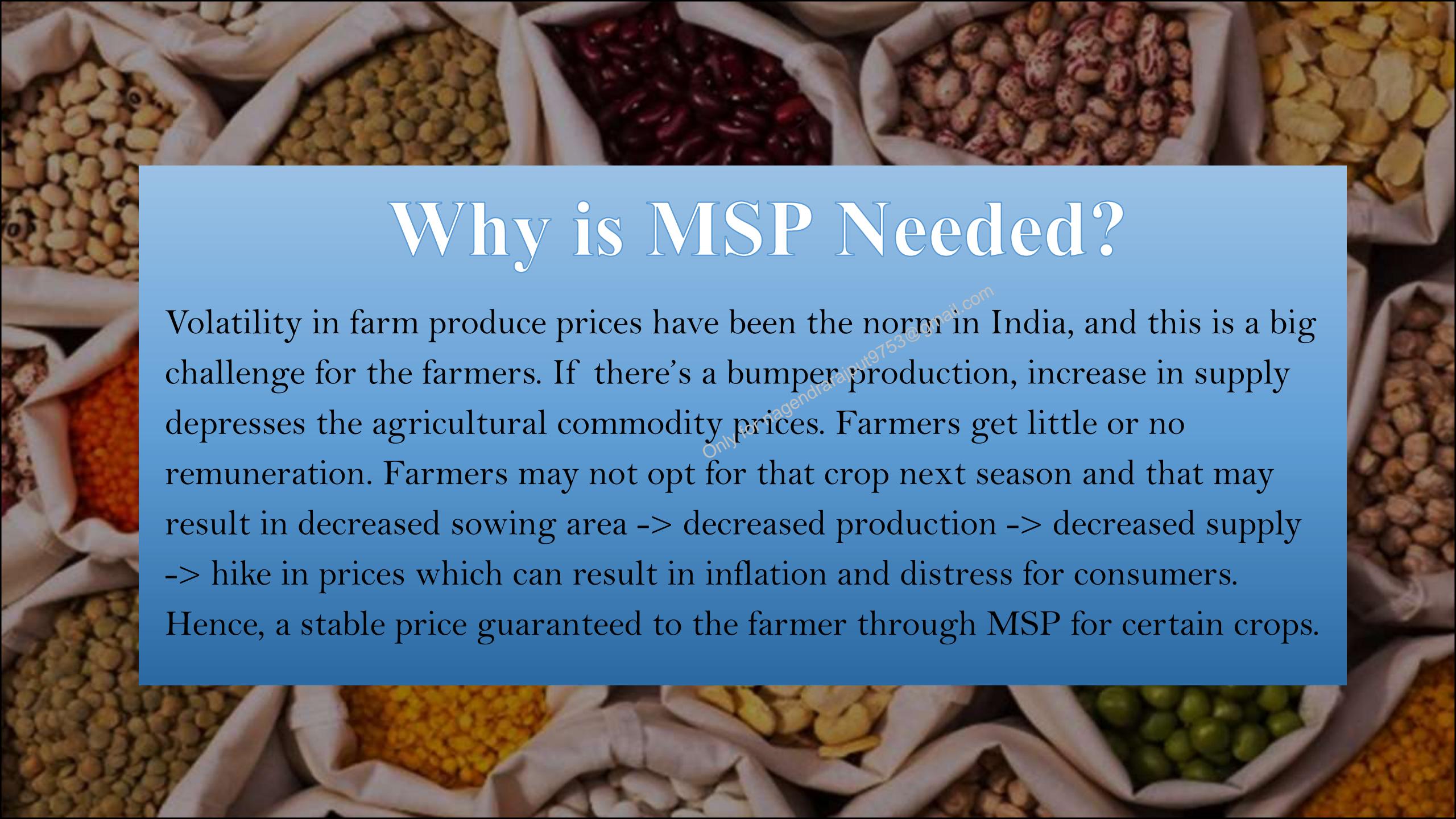
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MINIMUM SUPPORT PRICE

What is MSP?

It is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices. The minimum guaranteed prices are fixed to set a floor below which market prices cannot fall.

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Why is MSP Needed?

Volatility in farm produce prices have been the norm in India, and this is a big challenge for the farmers. If there's a bumper production, increase in supply depresses the agricultural commodity prices. Farmers get little or no remuneration. Farmers may not opt for that crop next season and that may result in decreased sowing area -> decreased production -> decreased supply -> hike in prices which can result in inflation and distress for consumers. Hence, a stable price guaranteed to the farmer through MSP for certain crops.

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When & Who Determines MSP?

The minimum support prices are announced by the Government of India at the beginning of the sowing season for certain crops on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP).

- Food Corporation of India (FCI) is the designated central nodal agency for price support operations for cereals, pulses and oilseeds.
- Cotton Corporation of India (CCI) is the central nodal agency for undertaking price support operations for Cotton.

How is MSP Determined?

CACP takes into account a variety of factors like cost of production, changes in input prices, input-output price parity, demand and supply, and other micro-level and macro-level data and aggregates at the district, state and country levels to determine the MSP for the season.

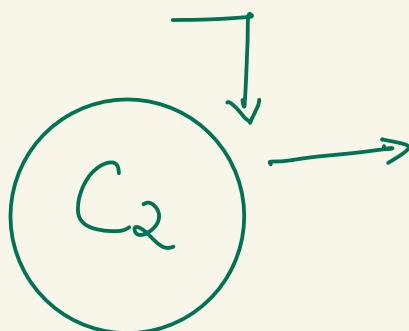
Methods of Calculation

- In formulating the level of MSP and other non-price measures, the CACP takes into account a comprehensive view of the entire structure of the economy of a particular commodity or group of commodities.
- The CACP makes use of both micro-level data and aggregates at the level of district, state and the country.
- Other factors include cost of production, changes in input prices, input-output price parity, trends in market prices, demand and supply, inter-crop price parity, effect on industrial cost structure, effect on cost of living, effect on general price level, international price situation, parity between prices paid and prices received by the farmers and effect on issue prices and implications for subsidy.

Actual costs
Comprehensive costs

$$[A_2 + FL]$$

\uparrow Actual costs \downarrow F.L



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BENEFITS

Allows farmers to know in advance the minimum prices guaranteed so that they can make informed sowing choices

Acts as an insurance against the vagaries of price volatility. ✓

Ensures adequate supply of stock for PDS in Fair price shops which make available food grains at a lower price for poor households.

Ensures a stable income for farmers

Stability of prices ensures stability of supply for the next seasons as well.

Protects them from the need to go to money lenders.

Allows farmers to be able to use the higher returns to invest in mechanization.

● Issues

- Leads to overproduction.
- Lack of procurement facilities - These state and central agencies are procuring more than what is required. And more than what they can procure and store.
- MSP distorts the market because the government procurement agencies buy 70-80 percent of wheat and rice by forcing out private players.
- Exploitation by commission agents and middlemen in the process defeats the purpose of MSPs
- only six per cent of the country's farmers will get the benefits (because the other 94 per cent are either landless farmers or hold very small land) and that too will not suffice for the crop value. And that is because the government only buys as much as 25 per cent of the grain produced in the country at the rate of MSP, while the rest of the remaining crop (75 per cent) is sold at the market price.
- Calculation issues: A₂+FL whereas Swaminathan Committee had recommended C₂.
 - The A₂+FL formula takes into account actual cost-plus imputed value of family labour in the production of a crop. But the (C₂) formula factors in a lot of costs, including imputed rent on land and interest on capital, which makes the cost of production much higher than the level on which the Commission for Agricultural Costs and Prices bases its recommendations.

PM - AASHA

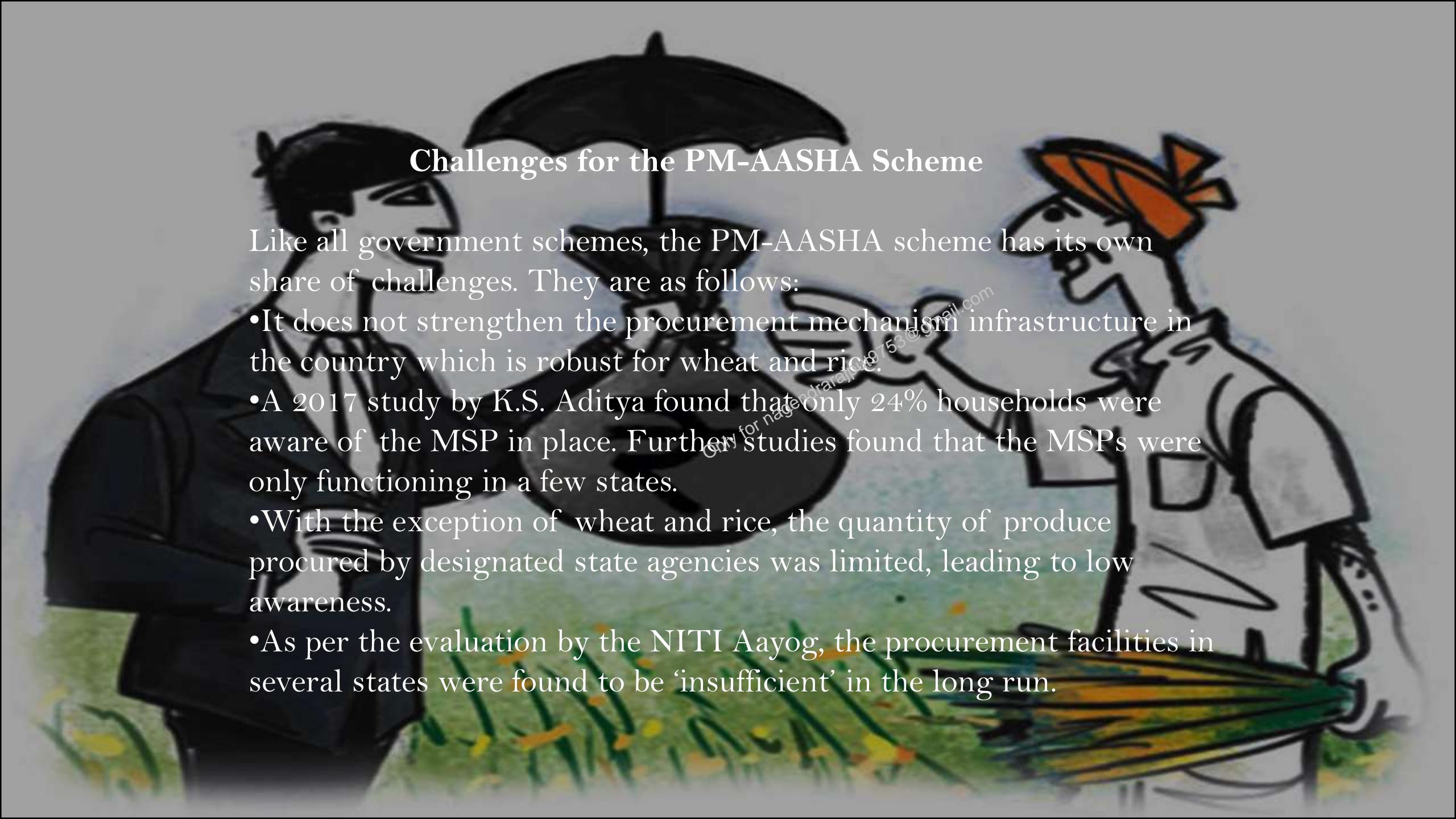
Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PM AASHA) is a scheme that aims at ensuring fair price for farmers and their produce. By strengthening the procurement process, the PM-AASHA scheme will improve the income of the farmers to a greater extent.

Components of the PM-AASHA Scheme:

1. Price Support Scheme (PSS): Through the Price Support Scheme procurement of pulses, oilseeds will be carried out by the Central Nodal Agencies with support from state governments. The PSS will be set up by the Food Corporation of India along with NAFED and any expenses incurred will be borne by the Central Government.

2. Price Deficiency payment Scheme (PDPS): In this scheme, all oilseed notified for SP will be covered. Direct payment of the difference between Minimum Support Price (MSP) and the selling price will be made to the registered farmers. All payments will be made to the registered bank account of the farmer. In other words, no procurement will take place but rather the difference between MSP and selling price will be paid to the farmers.

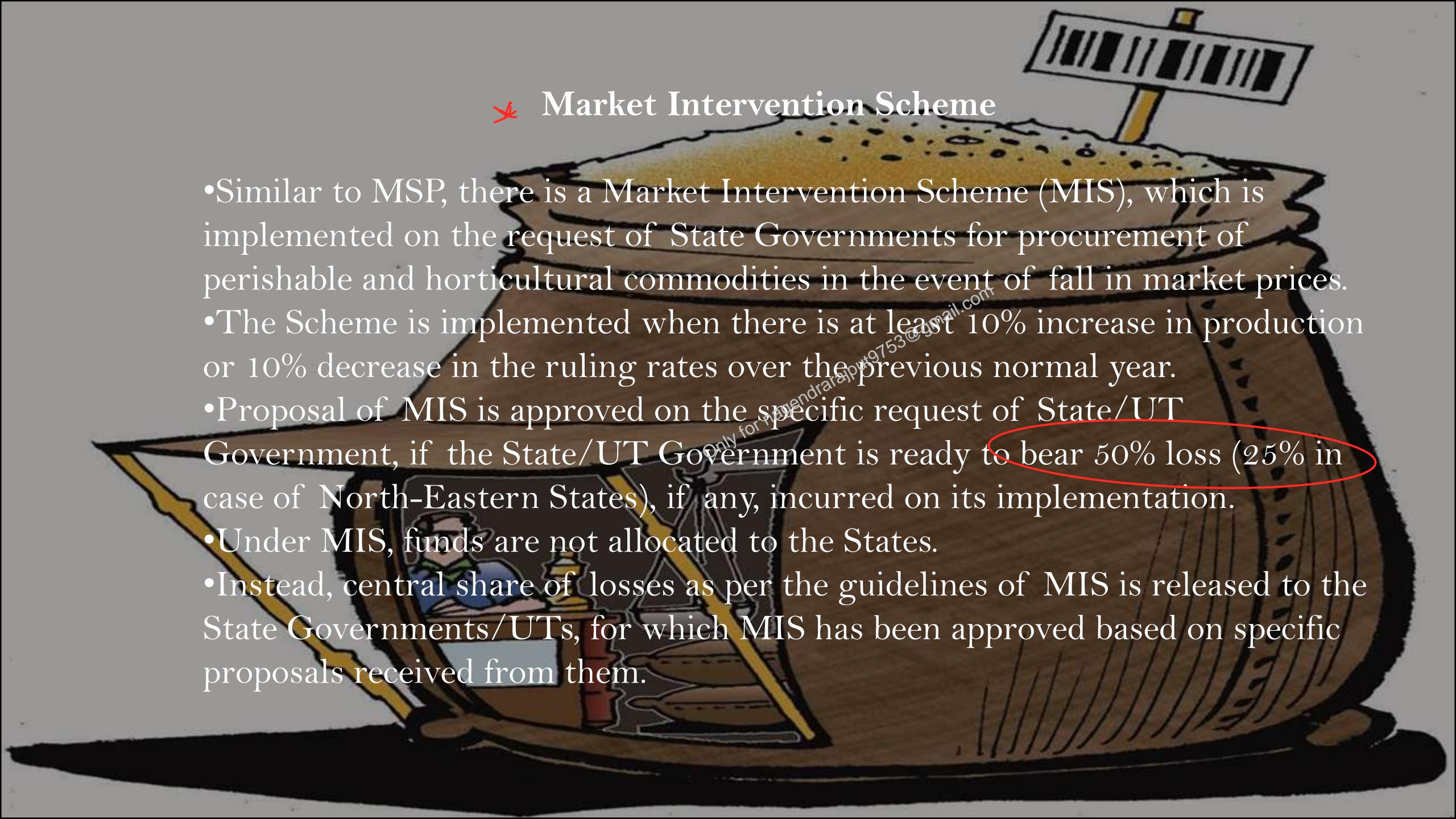
3. Pilot of Private Procurement & Stockist Scheme (PPPS): As per the Pilot of Private Procurement & Stockist Scheme (PPPS) the private sector will take part in the procurement operations. The states will have an option to carry out the scheme on pilot basis in selected APMCs with involvement from the private sector.



Challenges for the PM-AASHA Scheme

Like all government schemes, the PM-AASHA scheme has its own share of challenges. They are as follows:

- It does not strengthen the procurement mechanism infrastructure in the country which is robust for wheat and rice.
- A 2017 study by K.S. Aditya found that only 24% households were aware of the MSP in place. Further studies found that the MSPs were only functioning in a few states.
- With the exception of wheat and rice, the quantity of produce procured by designated state agencies was limited, leading to low awareness.
- As per the evaluation by the NITI Aayog, the procurement facilities in several states were found to be ‘insufficient’ in the long run.



* Market Intervention Scheme

- Similar to MSP, there is a Market Intervention Scheme (MIS), which is implemented on the request of State Governments for procurement of perishable and horticultural commodities in the event of fall in market prices.
- The Scheme is implemented when there is at least 10% increase in production or 10% decrease in the ruling rates over the previous normal year.
- Proposal of MIS is approved on the specific request of State/UT Government, if the State/UT Government is ready to bear 50% loss (25% in case of North-Eastern States), if any, incurred on its implementation.
- Under MIS, funds are not allocated to the States.
- Instead, central share of losses as per the guidelines of MIS is released to the State Governments/UTs, for which MIS has been approved based on specific proposals received from them.

Price Supports Scheme (PSS)

- The Department of Agriculture & Cooperation implements the PSS for procurement of ***oil seeds, pulses and cotton***, through NAFED which is the Central nodal agency, at the MSP declared by the government.
- NAFED undertakes procurement as and when prices fall below the MSP. Procurement under PSS is continued till prices stabilize at or above the MSP.
- Losses, if any incurred by NAFED in undertaking MSP operations are reimbursed by the central Government.
- Profit, if any, earned in undertaking MSP operations is credited to the central government.



PUBLIC DISTRIBUTION SYSTEM

WHAT IS PDS?

- The Public distribution system (PDS) is an Indian food Security System for the poor people established by the Government of India under the **Ministry of Consumer Affairs, Food, and Public Distribution**.
- While the Central government is responsible for procurement, storage, transportation, and bulk allocation of food grains, the State governments hold the responsibility for distributing the same to the consumers through the established network of approximately 5 lakh Fair Price Shops. Major commodities distributed include wheat, rice, sugar, and kerosene.
- The benefits of PDS are significant for the emerging economies. Public distribution schemes in Bangladesh, Cambodia and Pakistan have helped to get more girls into education.** (*According to Asia Research Centre*)

EVOLUTION OF PDS

- Public distribution of Food grains was retained as a deliberate social policy by India when it embarked on the path of planned economic development in 1951.
- Before the 1960s, distribution through PDS was generally **dependent 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 **Food Corporation of India** 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**. In the 1990s, the scheme was revamped to improve access of food grains to people in hilly and inaccessible areas and to target the poor.
- Subsequently, in 1997, the government launched the **Targeted Public Distribution System (TPDS)**, with a focus on the poor. TPDS aims to provide subsidised food and fuel to the poor through a network of ration shops. Food grains such as rice and wheat that are provided under TPDS are procured from farmers, allocated to states and delivered to the ration shop where the beneficiary buys his entitlement.
- 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. This marks a shift by making the **right to food a justiciable right**.

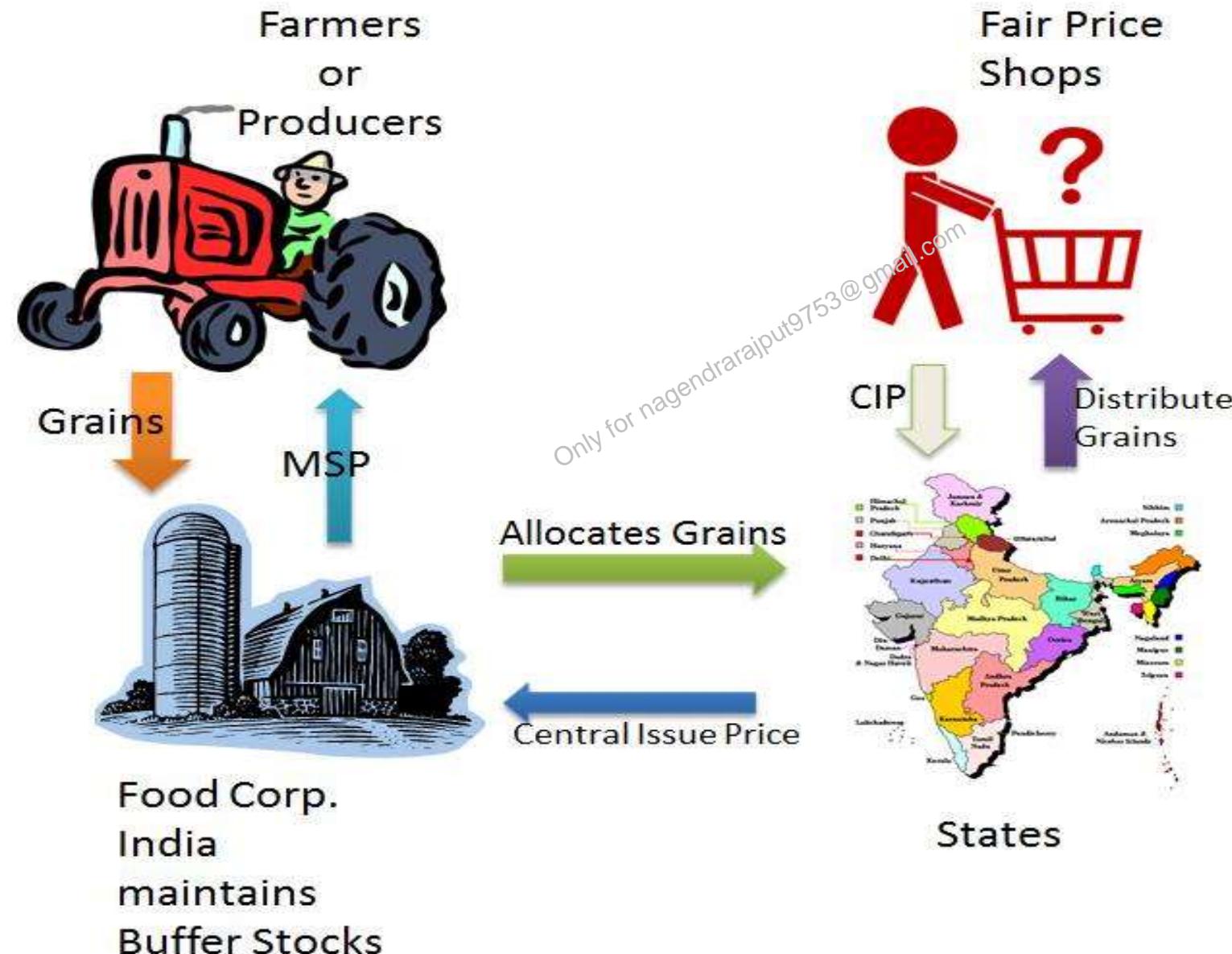
OBJECTIVES OF PDS

- Creation of Food Corporation of India and Agricultural Prices Commission in 1965 consolidated the position of PDS. The government was now committed to announce a minimum support price for wheat and paddy and procure quantities that could not fetch even such minimum prices in the market.
- The resultant stocks were to be utilized for maintaining distribution through the PDS and a portion of these were used to ~~create~~ and **maintain buffer stocks**.
- All through the ups and downs of Indian agriculture, PDS was continued as a deliberate social policy of the government with the objectives of:
 1. Providing food grains and other **essential items to vulnerable sections** of the society at reasonable (subsidised) prices
 - 2.to have a **moderating influence on the open market prices** of cereals, the distribution of which constitutes a fairly big share of the total marketable surplus
 - 3.to attempt **socialisation** in the matter of distribution of essential commodities.

FUNCTIONS OF PDS

- 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.
- The **Food Corporation of India (FCI)** is the nodal agency at the centre that is responsible for transporting food grains to the state godowns. Specifically, FCI is responsible for:
 - procuring grains at the MSP from farmers
 - maintaining operational and buffer stocks of grains to ensure food security
 - allocating grains to states
 - distributing and transporting grains to the state depots
 - selling the grains to states at the central issue price to be eventually passed on to the beneficiaries.

How PDS Works?



ISSUES IN PDS

Greater access to subsidised grains for the poor was expected to reduce malnutrition, leading to a reduction in the number of underweight children. However, most national-level surveys conducted during this period including the **National Family Health Survey** did not find any correlation between PDS use and decline in malnutrition.

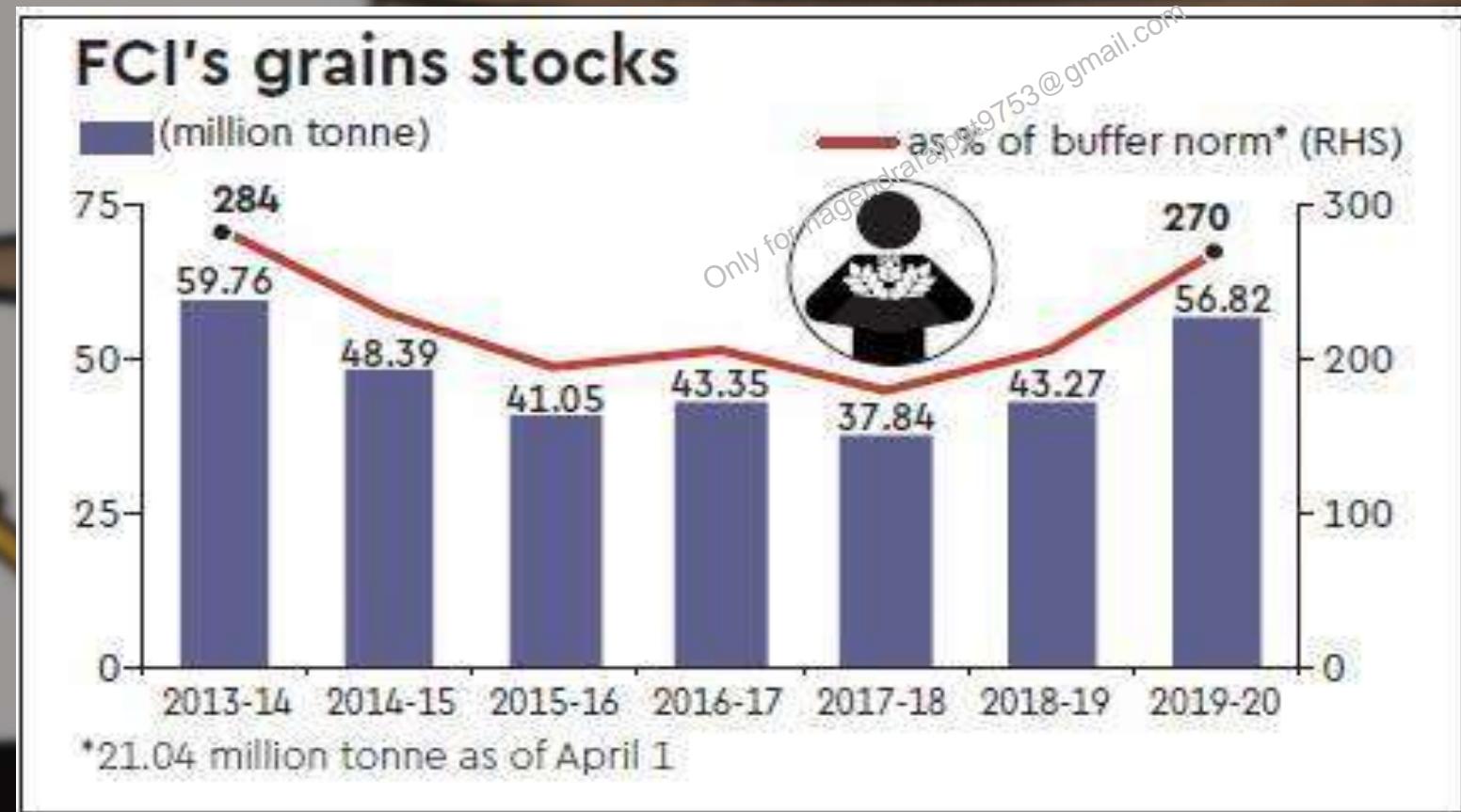
1. Identification of beneficiaries:

1. Large errors occur in exclusion and inclusion of Below Poverty Line (BPL) and Above Poverty Line (APL) families in beneficiary data. The problem of targeting is compounded by the **lack of good quality regular data; no regular official estimates of the actual income of households.**
2. The entitled beneficiaries are not getting food grains while those that are ineligible are getting undue benefits. An expert group of the Ministry of Rural Development on the methodology for conducting the BPL census found that about **61% of the eligible population** was excluded from the BPL list while **25% of non-poor households were included** in the BPL list.
3. Another indicator of inaccurate classification of beneficiaries is the existence of **ghost cards** in several states. 'Ghost cards' are cards made in the name of non-existent people. The existence of ghost cards indicates that grains are diverted from deserving households into the open market.

2. Shortfall in storage capacity with FCI against the central pool stock:

A performance audit by the CAG has revealed a serious shortfall in the governments' storage capacity.

- After obligations under TPDS have been met, the food grains that have been procured need to be stored as a buffer stock. While there has been a sharp hike in procurement from, FCI's storage capacity (both owned and hired) has not increased commensurate to the growth in procurement.



3.Rising Subsidy and financial burden:

1. There are other issues with regard to trends in procurement vis-à-vis production of food grains. As recent data show, the **central government procures about a third of the quantity of cereals** produced domestically. However, the amount slated for procurement is expected to increase under the NFS Act, raising concerns regarding the sustainability of such a food delivery mechanism.
2. There are also concerns regarding the **financial feasibility** of such a system. The centre bears a large financial burden, the food subsidy because the **cost of procuring and delivering food grains is about six times its sale price**. It is anticipated that the food subsidy will rise steadily due to the increased procurement of grains under the Act, related costs and other factors.

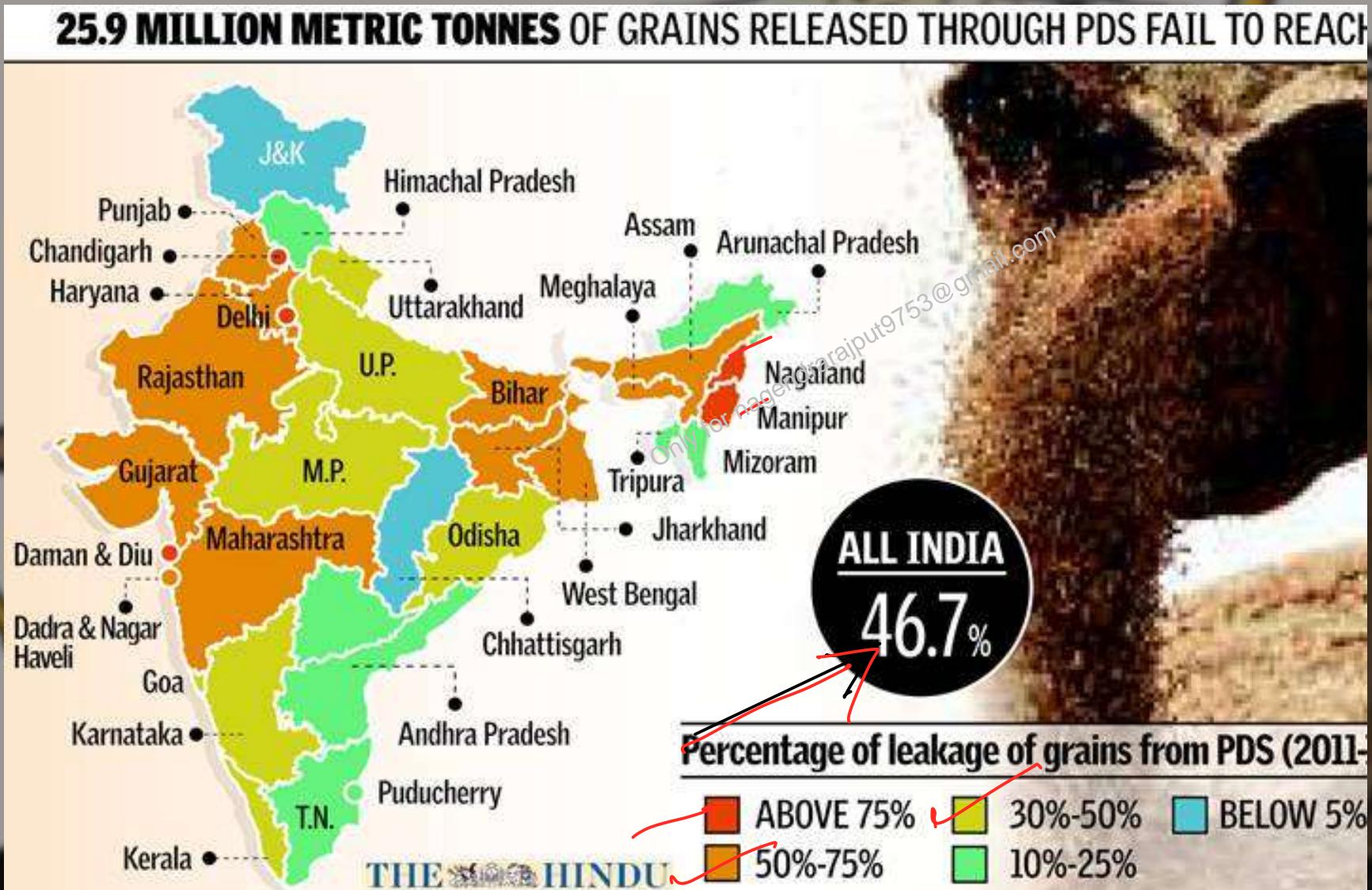
4.Inconsistent quality:

The majority of the respondents reported that the quality of ration is inconsistent— sometimes it is fine, sometimes it is awful. The complaints were mainly of bad quality of wheat. Most of the recipients were unsatisfied with the quality of wheat and rice.

5.Corruption and leakages:

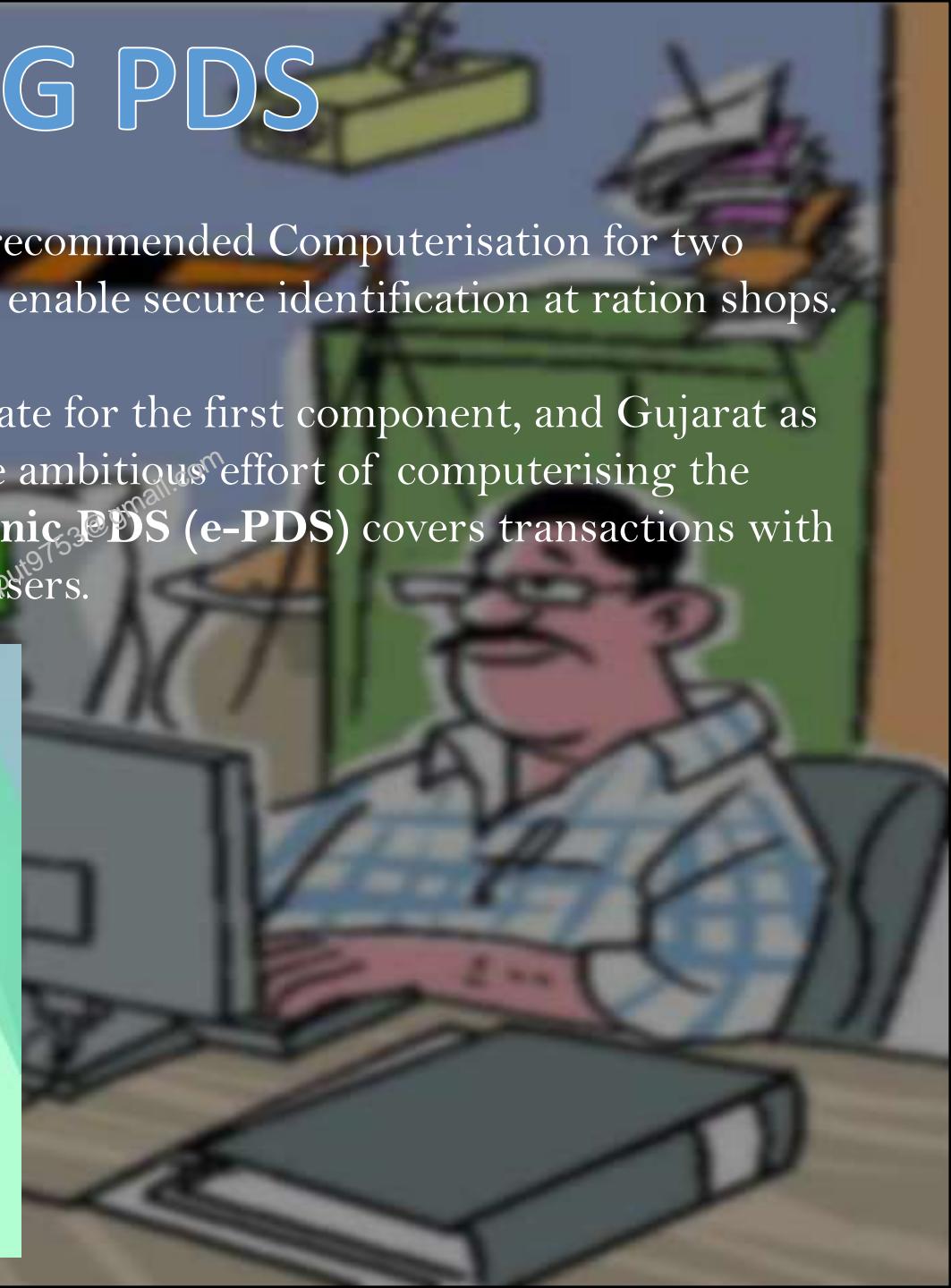
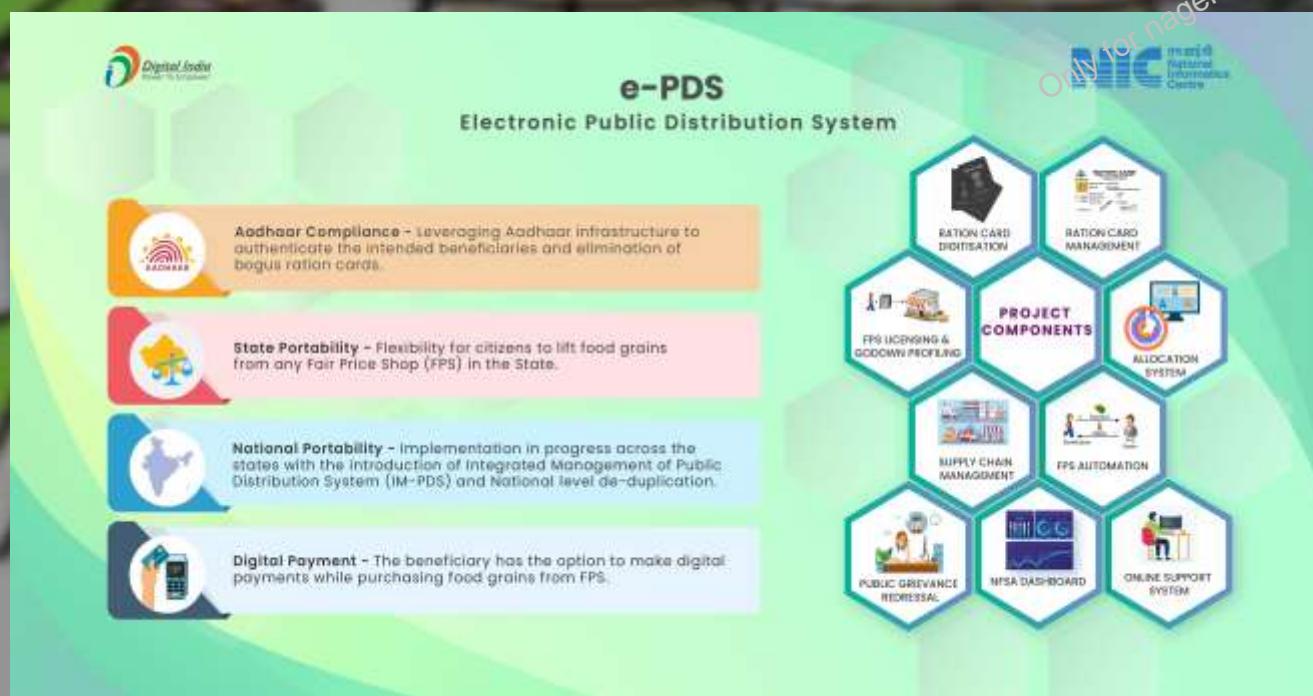
1. Despite a number of significant, system-wide changes over recent years, high levels of corruption and leakage continue to plague the PDS. Part of this leakage occurs at the level of the fair price shops, where some store owners exchange the high-quality goods provided from the government for distribution through the PDS with lesser quality goods from the general stores.
2. Dual pricing introduced through the TPDS is seen by some as an incentive for stakeholders to divert commodities into the open market where they can command a higher price.

6. Lack of transparency in the selection of procedure of PDS dealers



REVAMPING PDS

- The Justice Wadhwa Committee Report for PDS (2011) recommended Computerisation for two reasons: a first one to prevent diversion, and a second one to enable secure identification at ration shops.
- The Committee has recognised **Chhattisgarh** as a model state for the first component, and Gujarat as a model for the second. Other states have embarked upon the ambitious effort of computerising the whole supply chain, most notably **Karnataka**, where **electronic PDS (e-PDS)** covers transactions with authorised wholesale dealers and a **biometric database** of users.



Shanta Kumar Committee on FCI Reforms ✓

Procurement Policy	<ul style="list-style-type: none"> Outsource procurement in good states Provide per hectare cash to farmers to diversify crops Popularise warehouse receipts No open-ended procurement Stringent quality checks during procurement
Storage	<ul style="list-style-type: none"> Outsource storage to private companies Automatic Liquidation of excess buffer stock in open market Strategic buffer reserve of 5MMT grains + 5MMT Forex Use silos instead of godowns
Transport	<ul style="list-style-type: none"> Use containers instead of gunny bags Forklift and machines instead of manual labour Use inland waterways to transport food grains Voluntary Retirement option to permanent staff
Distribution	<ul style="list-style-type: none"> End to End Computerisation Provide 6 months ration at once Direct Cash Transfer to the Lady of the house NFSA: instead of covering 67% of population cover only 40% Less subsidy but more quantity to priority households

Shanta Kumar Panel Recommendations

A panel headed by former Himachal Pradesh chief minister Shanta Kumar to improve FCI's operational efficiency and financial management as well as overall improvement in management of food grains had submitted its report on January 19



Direct cash transfer to help deregulate fertilisers

Save ₹30,000 crore/year in PDS by direct cash transfer in cities

Price support policies to encourage oilseeds and pulses

CHANGE FOOD security law to reduce beneficiaries from 67% to 40%, raise supply to 7 kg/person from 5 kg

FCI TO become an agency for innovations in food management, focus on competition grain supply

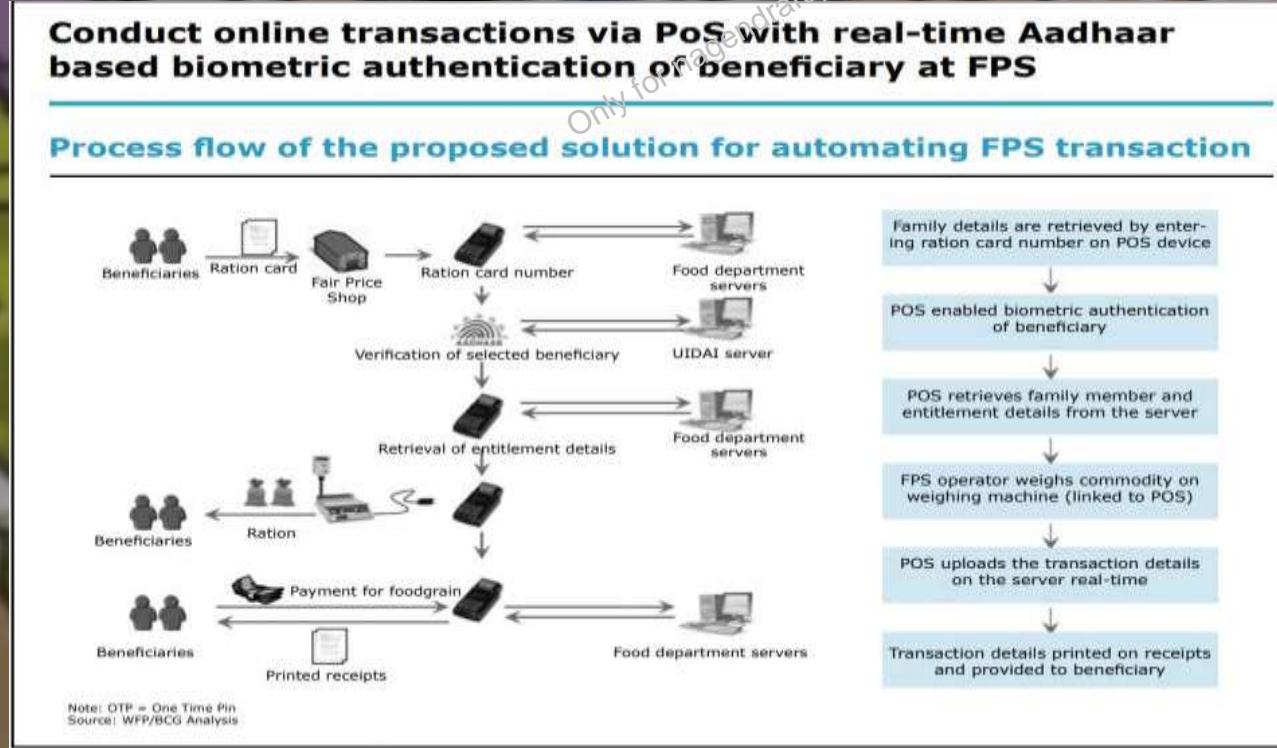
FCI TO withdraw from major states like Punjab, Haryana, Andhra Pradesh, Madhya Pradesh and Odisha and focus on east and northeast India

"A number of recommendations can be implemented by FCI alone, others by the department of food and public distribution and by the department and the rest by the centre"

OFFICIAL
Food Corporation of India

Use of Aadhaar:

As part of Beneficiary Data Digitisation, States/UTs have been requested to seed the Aadhaar Number wherever available so as to weed out bogus/duplicate/ineligible beneficiaries. So far data of 61.25 per cent beneficiaries have been linked to the Aadhaar Number.



One Nation One Ration Card for Migrants



Will enable migrant beneficiaries to access Public Distribution System from any Fair Price Shop (Intra-State portability introduced in 20 States)



Part of the PM's Technology Driven System Reforms



67 crore beneficiaries in 23 states covering 83% of PDS population to be covered by national portability by August, 2020



All the States/UTs to complete full FPS (Fair Price Shop) automation & 100% National portability to be achieved by March, 2021



CABINET DECISIONS

8 JULY, 2020

Addressing Food Security for All

Extension of PM Garib Kalyan Anna Yojana Providing Foodgrain for Five Months Approved



PMGKAY scheme extended further for a **period of next 5 months from July-Nov. 2020** as part of Economic Response to COVID-19



Additional free-of-cost foodgrains (Rice/Wheat) at a scale of **5 Kg per person per month to 81 crore beneficiaries**



Additional estimated expenditure of **₹76062 crore on by central government**



107 LMT (89% of allocated food-grain) distributed by States/UTs for April-June, 2020 under PMGKAY



TECHNOLOGY MISSIONS

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National Mission on Sustainable Agriculture

National Mission for Sustainable Agriculture (NMSA) has been formulated for enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation.

Mission Interventions:

NMSA has following four (4) major programme components or activities:

Rainfed Area Development (RAD):

RAD adopts an area based approach for development and conservation of natural resources along with farming systems. This component has been formulated in a ‘watershed plus framework’, i.e., to explore potential utilization of natural resources base/assets available/created through watershed development and soil conservation activities /interventions under MGNREGS, NWDPRA(The scheme of National Watershed Development Project for Rainfed Areas), RVP &FPR (River Valley Project and Flood Prone River), RKVY(Rashtriya Krishi Vikas Yojana), IWMP (Integrated Watershed Management Programme)etc.. This component introduces appropriate farming systems by integrating multiple components of agriculture such as crops, horticulture, livestock, fishery, forestry with agro based income generating activities and value addition.

On Farm Water Management (OFWM):

OFWM focuses primarily on enhancing water use efficiency by promoting efficient on - farm water management technologies and equipment. This not only focuses on application efficiency but, in conjunction with RAD component, also will emphasize on effective harvesting & management of rainwater. Assistance will be extended for adopting water conservation technologies, efficient delivery and distribution systems etc. Emphasis will also be given to manage and equitably distribute the resources of commons by involving the water users associations, etc.. To conserve water on farm itself, farm ponds may be dug using MGNREGA funds and earth moving machinery (to the extent manual digging under MGNREGA is not feasible)

Soil Health Management (SHM):

SHM aims at promoting location as well as crop specific sustainable soil health management including residue management, organic farming practices by way of creating and linking soil fertility maps with macro - micro nutrient management, appropriate land use based on land capability, judicious application of fertilizers and minimizing the soil erosion/degradation. Assistance will be provided for various improved package of practices based on land use and soil characteristics, generated through geographical information system (GIS) based thematic maps and database on land and soil characteristics through extensive field level scientific surveys. Besides, this component will also provide support to reclamation of problem soils (acid/alkaline/saline). This component will be implemented by State Govt., National Centre of Organic Farming (NCOF), Central Fertilizer Quality Control & Training Institute (CFQC&TI) and Soil and Land Use Survey of India (SLUSI).

Climate Change and Sustainable Agriculture: Monitoring, Modeling and Networking (CCSAMMN):

CCSAMMN provides creation and bidirectional (land/farmers to research/scientific establishments and vice versa) dissemination of climate change related information and knowledge by way of piloting climate change adaptation/mitigation research/model projects in the domain of climate smart sustainable management practices and integrated farming system suitable to local agro - climatic conditions. Comprehensive pilot blocks will be supported to illustrate functional mechanism for dissemination of rainfed technologies, planning, convergence and coordination with flagship schemes/Missions like MGNREGS, IWMP, Accelerated Irrigation Benefit Programme (AIBP), RKVY, NFSM(National Food Security Mission), NHM(National Health Mission), NMAET(National Mission on Agricultural Extension and Technology) etc. Such an integrated action of input and output flows across agriculture, livestock and other production systems will harness the growth potential of the rainfed production systems, imparting sustainability of local production systems while negotiating climate change risks.

Jute ICARE Program:

Launch: Improved Cultivation and Advanced Retting Exercise for Jute (Jute ICARE) was launched in **2015**.

- The programme was **initiated by the National Jute Board (NJB)** in association with **Central Research Institute for Research in Jute and Allied Fibres (CRIJAF) & Jute Corporation of India (JCI)**.
 - **Aims:**
 - At **mechanization** in jute farming in a farmer-friendly way and **accelerated retting using microbial consortium** for improved income for jute farmers.
 - **Following Inputs are Provided:**
 - 100% **Certified Seeds** at subsidized rate.
 - Demonstration of **scientific jute cultivation practices** for adoption at farmers' fields with mechanical intervention distribution of seed drill / Nail Weeder/Cycle Weeder.
 - Demonstration of **Microbial retting using CRIJAF SONA**, a microbial consortium and also distribution to the farmers.
 - **Retting** is the process of extracting fiber from the stem of the plants.
 - So far, Government has **supported 2.60 lakhs farmers** under ICARE Program
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- **Increased in MSP:** The **Minimum Support Price (MSP)** for Jute has been increased from Rs. 2400 in 2014-15 to Rs. 4225 in 2020-21.
 - **Retting Tanks:** Construction of 46000 Retting Tanks has been approved for increasing productivity, quality and income of Jute Farmers, which will be done by the convergence of Central Government Schemes like **MNREGA, PMKSY, RKVY** and ICARE.
 - This will **reduce retting time by 7 days** and **generate 46 lakh man-days of employment** for the rural mass of Jute Growing States.

The background of the slide features a large, sprawling field filled with numerous large, brownish-grey bales of jute fiber, stacked in long rows under a clear sky.

• **Jute Geo-Textiles (JGT):** The Cabinet Committee on Economic Affairs (CCEA) has approved a Technical Textiles Mission which includes Jute Geo-Textiles.

- JGT is one of the most important diversified jute products. It can be applied in many fields like **civil engineering, soil erosion control, road pavement construction and protection of river banks.**

• **Jute SMART:**

- It is an **e-government initiative** which was launched in December 2016 to promote transparency in the jute sector.
- It provides an integrated platform for **procurement of sacking by Government agencies.**

• **Collaboration between the National Jute Board and the National Institute of Design, Ahmedabad:**

- A **Jute Design Cell** for development of Jute Shopping Bags and Lifestyle Accessories has been set up at the Innovative Centre for Natural Fibres (ICNF) of National Institute of Design (NID), Ahmedabad.

CERTIFIED JUTE SEEDS

The Ministry of Textiles has launched a Certified Jute Seed Distribution Plan under Jute ICARE Program.

• Jute Corporation of India (JCI) had in 2019, signed an MoU (Memorandum of Understanding) with National Seeds Corporation for commercial distribution of 1,000 Metric Ton certified jute seeds for the year 2021-22.

- **Certified Jute Seed Distribution Plan:**
It will expand usage of certified seeds to over 55% area under Jute Cultivation.
- Certified seed shall be the progeny of foundation seed and its production shall be so handled as to maintain specific genetic identity and purity according to the standards prescribed for the crop being certified.
 - It will extend the benefit of certified seeds to nearly 5 lakh farmers.
 - Usage of certified jute seeds has resulted in improved quality of jute by 1 grade and enhanced productivity by 15% thereby increasing income of jute farmers by about Rs. 10,000/hectare.

NATIONAL BIOFUEL POLICY

- By 2040, India is expected to consume 15% of world's oil consumption
- Indian government is thinking of long-term expansion of bio fuel production

Salient Features:

- Categorizes biofuels to enable appropriate financial and fiscal incentives
 - Basic Biofuels first generation(1G) - bioethanol and biodiesel
 - Advanced Biofuels second generation(2G)- ethanol, Municipal Solid Waste to drop in fuels (Drop in fuels are those renewable fuels which can be blended with petroleum products)
 - Third Generation (3G) - biofuels and bio-CNG etc
- Allows raw material like sugarcane juice, sugar containing materials like Sugar Beet, Sorghum and starch containing materials like corn, cassava, wheat, broken rice not fit for human consumption
- Farmers not getting appropriate price during surplus production can use it for production of ethanol with the approval of National Biofuel Coordination Committee
- Thrust on advanced biofuel by extending VGF of 5000 crore for 6 years to setup 2G biofuel refineries
- Encourages setting up of supply chain mechanisms for biodiesel production from non-edible oilseeds and used cooking oil

Benefits

- Reduced import dependency of 4000 crore by generating 150 crore litres of ethanol
 - Cleaner environment as 150 crore litres (year supply) will see 30 lakh ton CO₂ emission reduction by reduced crop burning and decreased fossil fuel emission.
 - Reusing cooking oil can cause lifestyle diseases like diabetes and hypertension which can be reduced by using used cooking oil to produce bioethanol
 - Annually 62 MMT of MSW is generated in India which can be used as a drop in fuel
 - 2G biofuel refineries will spur infrastructural investment in rural areas
 - Biofuel refineries will generate employment opportunities for the locals
- Adopting 2G will reduce farm waste and increase the income of farmers

Issues

- By 2030 Indian food need will increase by 40% and need 500MHa more land under cultivation. Therefore, there is very less land available for cultivation of raw material for 2G biofuel production.

DIRECT SEEDING OF RICE

The pre-germinated seeds are directly drilled into the field by a tractor-powered machine. There is no nursery preparation or transplantation involved in this method. Farmers have to only level their land and give one pre-sowing irrigation.

In transplanting paddy, farmers prepare nurseries where the paddy seeds are first sown and raised into young plants. The nursery seed bed is 5-10% of the area to be transplanted. These seedlings are then uprooted and replanted 25-35 days later in the puddled field.

Advantage of DSR:

Water savings.

The first irrigation under DSR is necessary only 21 days after sowing. This is unlike in transplanted paddy, where watering has to be done practically daily to ensure submerged/flooded conditions in the first three weeks.

Less Labour: About three labourers are required to transplant one acre of paddy at almost Rs 2,400 per acre.

The cost of herbicides under DSR will not exceed Rs 2,000 per acre.

Reduce methane emissions due to a shorter flooding period and decreased soil disturbance compared to transplanting rice seedlings.

Limitations:

- Non-availability of herbicides.
- The seed requirement for DSR is also high, 8-10 kg/acre, compared to 4-5 kg/acre in transplanting.
- Further, laser land levelling is compulsory in DSR. This is not so in transplanting.
- The sowing needs to be done timely so that the plants have come out properly before the monsoon rains arrive.

KRISHI MEGH

Union Minister of Agriculture & Farmers' Welfare virtually launched the Krishi Megh (National Agricultural Research & Education System -Cloud Infrastructure and Services).

- Krishi Megh is the data recovery centre of ICAR (Indian Council of Agricultural Research).
- Krishi Megh has been set up under the National Agricultural Higher Education Project (NAHEP).
- The data recovery centre has been set up at National Academy of Agricultural Research Management (NAARM), Hyderabad.

Significance and benefits of Krishi Megh:

- Krishi Megh is equipped with the latest artificial intelligence and deep learning software for building and deploying of deep learning-based applications through image analysis, disease identification in livestock, etc.
- It enables the farmers, researchers, students and policymakers to be more equipped with the updated and latest information regarding agriculture and research.

National Agricultural Higher Education Project (NAHEP): The project is funded by both the government of India and the World Bank. The overall objective of the project is to provide more relevant and high-quality education to the agricultural university students that is in tune with the New Education Policy - 2020.

NATIONAL BAMBOO MISSION

- The restructured NBM was **launched in 2018-19** for the holistic development of the complete value chain of the bamboo sector and is being implemented in a **hub (industry) and spoke model**.

• **Objective:**

- Connecting farmers to markets so as to enable farmer producers to get a ready market for the bamboo grown and to increase the supply of appropriate raw material to the domestic industry.
- It also **endeavors to upgrade skills of traditional bamboo craftsmen** as per the requirement of contemporary markets with a tie-up with enterprises and premier institutes.
- The **Sector Skill Councils** established under the **National Skill Development Agency** (NSDA) will impart skills and recognition of prior learning to traditional artisans, encouraging the youth to carry forward their family traditions.
 - NSDA is an **autonomous body under the Ministry of Skill Development and Entrepreneurship** that anchors the National Skill Qualifications Framework and allied quality assurance mechanisms for synergizing skill initiatives in the country.

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• Initiatives to Promote Bamboo:

- Use of bamboo has been an ancient tradition in India and it is now being **supported with modern technology** and the **youth is being provided with training** for the bamboo industry.
- The **Indian Forest Act 1927** was **amended in 2017 to remove bamboo for the category of trees**.
 - As a result, anyone can undertake cultivation and business in bamboo and its products without the need of a felling and transit permission.
- Import policy has also been modified to ensure the progress of the bamboo industry in the country.
- NBM supports local artisans through locally grown bamboo species, which will actualise the goal of Vocal for Local and help increase the income of farmers, reducing dependency on imports of raw material.
- 10 most important species which are required by industry have been identified and quality planting material is being made available to farmers for plantations.
- Apart from the existing Farmer Producer Organisations (FPOs), 10,000 new FPOs will be formed in 5 years.
 - Well-organized FPOs engage in providing a range of assistance to farmers like **imparting better farm practices, collectivization of input purchases, transportation, linkage with markets, and better price realisation** as they do away with the intermediaries.
 - Common Facility Centres are being set up close to the plantations which will reduce the cost of transportation and increase local entrepreneurship, moving to a zero-waste approach.

The Union Minister for Agriculture and Farmers' Welfare has virtually inaugurated **22 bamboo clusters in 9 states** viz. Gujarat, Madhya Pradesh, Maharashtra, Odisha, Assam, Nagaland, Tripura, Uttarakhand and Karnataka.

- A logo for the National Bamboo Mission (NBM) has also been released.

New Logo:

- It portrays a bamboo culm in the centre of a circle composed of half an industrial wheel and half farmers, depicting the objectives of NBM appropriately.
- The green and yellow colour of the logo symbolise **bamboo often termed as green gold**



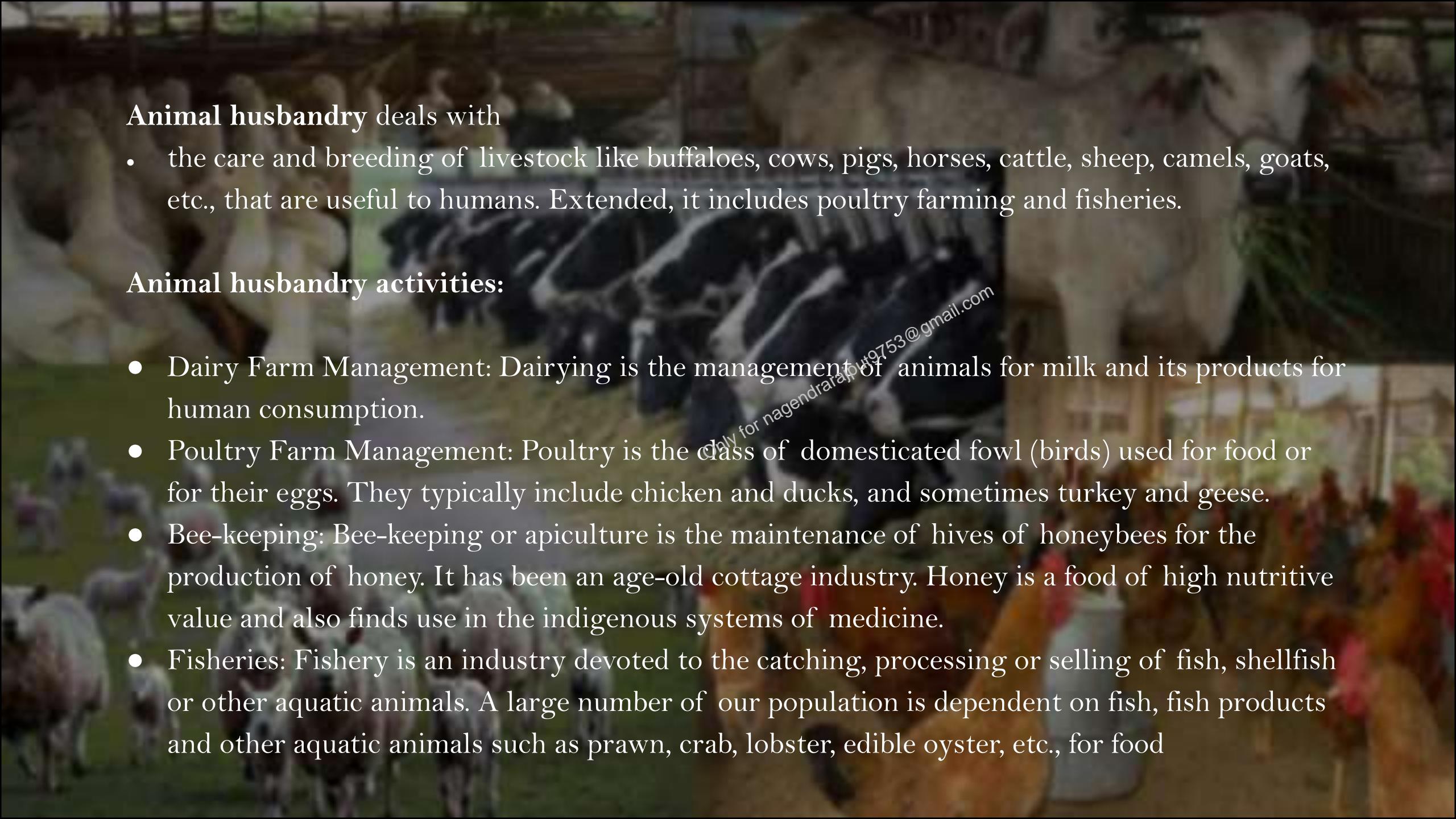
- States need to take forward the objectives of the National Bamboo Mission which would contribute to the **Aatmanirbhar Bharat Abhiyan** through an “Aatmanirbhar Krishi (self-reliant farming)”.
- With the abundance of bamboo and its rapidly growing industry, India should aim to establish herself in global markets for both engineered and handcrafted products by increasing the exports even further

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ANIMAL HUSBANDRY

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Animal husbandry deals with

- the care and breeding of livestock like buffaloes, cows, pigs, horses, cattle, sheep, camels, goats, etc., that are useful to humans. Extended, it includes poultry farming and fisheries.

Animal husbandry activities:

- Dairy Farm Management: Dairying is the management of animals for milk and its products for human consumption.
- Poultry Farm Management: Poultry is the class of domesticated fowl (birds) used for food or for their eggs. They typically include chicken and ducks, and sometimes turkey and geese.
- Bee-keeping: Bee-keeping or apiculture is the maintenance of hives of honeybees for the production of honey. It has been an age-old cottage industry. Honey is a food of high nutritive value and also finds use in the indigenous systems of medicine.
- Fisheries: Fishery is an industry devoted to the catching, processing or selling of fish, shellfish or other aquatic animals. A large number of our population is dependent on fish, fish products and other aquatic animals such as prawn, crab, lobster, edible oyster, etc., for food

Benefits of Animal husbandry

- **Contribution to Indian Economy:** Animal husbandry has an important place in Indian economy. Livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP.
- **Income security:** Additional income from animal husbandry can help augment rural incomes. It provides employment to about 8.8 % of the population in India.
- **Employment to millions in rural India:** For many, it is the only source of their livelihood. About 20.5 million people depend upon livestock for their livelihood.
- **Food security:** The livestock provides food items such as Milk, Meat and Eggs for human consumption. India is number one milk producer in the world. It is producing about 176.34 million tons of milk in a year (2017-18). Similarly, it is producing about 95.22 billion of eggs, 8.89 million tonnes of meat in a year. The value of output of livestock sector at current prices was Rs 8,11,847 crores in 2015-16.
- **Draft animals:** The bullocks were the backbone of Indian agriculture. Even now, the farmers especially the marginal and small depend upon bullocks for ploughing, carting and transport of both inputs and outputs.
- **Transport:** Pack animals like camels, horses, donkeys, ponies, mules etc are being extensively used to transport goods in different parts of the country in addition to bullocks. In situations like hilly terrains mules and ponies serve as the only alternative to transport goods. Similarly, the army has to depend upon these animals to transport various items in high areas of high altitude.

- **Fuel:** Dung and other animal wastes serve as very good farm yard manure and the value of it is worth several crores of rupees. In addition, it is also used as fuel (bio gas, dung cakes), and for construction as poor man's cement (dung).
- **Nutrition:** They serve as vital sources of protein that are affordable to them. Eg: Eggs, milk, chicken, meat etc provide adequate and cheap sources of protein thereby improving human health and welfare.
- **Fiber and Skins:** The livestock also contributes to the production of wool, hair, hides, and pelts. Leather is the most important product which has a very high export potential. India is producing about 43.5 million Kg of wool per annum.
- **Cultural benefits:** Livestock offer security to the owners and also add to their self-esteem especially when they are owning prized animals such as pedigreed bulls, dogs and high yielding cows/ buffaloes etc
- **Social security:** The animals offer social security to the owners in terms of their status in the society. The families especially the landless which own animals are better placed than those who do not. Gifting of animals during marriages is a very common phenomenon in different parts of the country.

Sub-Mission on Agroforestry (SMAF) Scheme

The Ministry of Agriculture and Farmers Welfare has signed a Memorandum of Understanding (MoU) with the Central Silk Board on a convergence model for the implementation of Agroforestry in the silk sector under the ongoing Sub-Mission on Agroforestry (SMAF) Scheme.

The signing of this MoU aims to incentivize the farmers to take up sericulture based Agroforestry models.

About the Sub-Mission on Agroforestry (SMAF):

- The Department of Agriculture, Cooperation and Farmers Welfare (DAC & FW) has been implementing the Sub-Mission on Agroforestry (SMAF) since 2016-17 as part of the recommendation of the National Agroforestry Policy 2014.
- This sub-mission is under the National Mission for Sustainable Agriculture (NMSA).
- India was the first country to have such a comprehensive policy which was launched at the World Agroforestry Congress held in Delhi in February 2014.
- At present, the scheme is being implemented in 20 States and 2 UTs.

Aim of the mission:

SMAF aims to encourage farmers to plant multi-purpose trees together with the agriculture crops for climate resilience and an additional source of income to the farmers, as well as enhanced feedstock to inter alia wood-based and herbal industry.

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Rashtriya Gokul Mission

To conserve and develop indigenous bovine breeds, government launched ‘Rashtriya Gokul Mission’ in 2014 under the National Programme for Bovine Breeding and Dairy Development (NPBBD).

Objectives :

1. Development and conservation of indigenous breeds.
2. undertake breed improvement programme for indigenous cattle breeds so as to improve the genetic makeup and increase the stock.
3. enhance milk production and productivity.
4. upgrade nondescript cattle using elite indigenous breeds like Gir, Sahiwal, Rathi, Deoni, Tharparkar, Red Sindhi.
5. distribute disease free high genetic merit bulls for natural service.

Implementation:

1. Implemented through the “State Implementing Agency (SIA viz Livestock Development Boards).
2. State Gauseva Ayogs will be given the mandate to sponsor proposals to the SIA’s (LDB’s) and monitor implementation of the sponsored proposal.
3. All Agencies having a role in indigenous cattle development will be the “Participating Agencies” like CFSPTI(Central Frozen Semen Production and Training Institute) , CCBFs(Central Cattle Breeding Farms), ICAR, Universities, Colleges, NGO’s, Cooperative Societies and Gaushalas with best germplasm

Gokul Grams:

Funds under the scheme will be allocated for the establishment of Integrated Indigenous Cattle Centres viz “Gokul Gram”.

Gokul Grams will be established in:

- i)the native breeding tracts and
- ii) near metropolitan cities for housing the urban cattle.

Roles and responsibilities of Gokul Grams:

1. Act as Centres for development of Indigenous Breeds and a dependable source for supply of high genetic breeding stock to the farmers in the breeding tract.
2. They will be self sustaining and will generate economic resources from sale of A2 milk (A2 milk is cow's milk that mostly lacks a form of β -casein proteins called A1 and instead has mostly the A2 form), organic manure, vermin-composting, urine distillates, and production of electricity from bio gas for in house consumption and sale of animal products.
3. They will also function as state of the art in situ training centre for Farmers, Breeders and MAITRI's.
4. The Gokul Gram will maintain milch and unproductive animals in the ratio of 60:40 and will have the capacity to maintain about 1000 animals. Nutritional requirements of the animals will be provided in the Gokul Gram through in house fodder production.
5. Metropolitan Gokul Gram will focus on genetic upgradation of urban cattle.

Rashtriya Kamdhenu Aayog (RKA)

Constituted in 2019, the Aayog is a high powered **permanent apex advisory body** with the mandate to help the Central Government to develop appropriate programmes for conservation, sustainable development and genetic upgradation of indigenous breeds of cows.

It comes under the **Ministry of Fisheries, Animal Husbandry and Dairying**.

- Rashtriya Kamdhenu Aayog will function as an integral part of Rashtriya Gokul Mission.

Functions:

- Review existing laws, policies as well as suggest measures for optimum economic utilization of cow wealth for enhanced production and productivity, leading to higher farm income and better quality of life for the dairy farmers.
- Advise and guide the Central Government and State Governments on policy matters concerning conservation, protection, development and welfare of cows and their progeny.
- Promote schemes to encourage the use of organic manure and recommend suitable measures including incentive schemes for use of dung or urine of cow in organic manure by farmers to minimize the use of chemical fertilizers.
- Make provisions for solutions to the problems related to abandoned cows in the country by providing technical inputs to Gaushalas, Gosadans and pinjarapoles.
- Develop pastures or grazing lands and to associate with institutions or other bodies whether private or public, for the purpose of developing pastures and Gauchars.

Pradhan Mantri Matsya Sampada Yojana

1. It is a scheme for focused and sustainable development of fisheries sector in the country.
2. Rs. 20,050 crores has been sanctioned for its implementation during a period of 5 years from FY 2020-21 to FY 2024-25 in all States/Union Territories, as a part of Atma Nirbhar Bharat Package.
3. The scheme focuses on beneficiary-oriented activities in Marine, Inland fisheries and Aquaculture.
4. It seeks to adopt ‘Cluster or Area based approaches’.

Aims and targets of the scheme:

1. Enhance fish production by an additional 70 lakh tons by 2024-25.
2. Increase fisheries export earnings to Rs. 1,00,000 crore by 2024-25.
3. Double incomes of fishers and fish farmers.
4. Reduce post-harvest losses from 20-25% to about 10%.
5. Generate additional 55 lakhs direct and indirect gainful employment opportunities in fisheries sector and allied activities.

Uniqueness of the scheme:

While aiming to consolidate the achievements of Blue Revolution Scheme, PMMSY envisages many new interventions such as fishing vessel insurance, support for new/up-gradation of fishing vessels/boats, Bio-toilets, Aquaculture in saline/alkaline areas, Sagar Mitras, FFPQs/Cs, Nucleus Breeding Centres, Fisheries and Aquaculture start-ups, Incubators, etc.

Other initiatives announced at the launch of PMMSY scheme:

1. Establishment of Fish Brood Bank at Sitamarhi.
2. Aquatic Disease Referral Laboratory at Kishanganj.
3. One-unit fish feed mill at Madhepura and two units of 'Fish on Wheels' assisted at Patna under Blue Revolution.
4. Comprehensive Fish Production Technology Centre at Dr. Rajendra Prasad Central Agricultural University, Pusa, Bihar.

FOOD PROCESSING INDUSTRIES

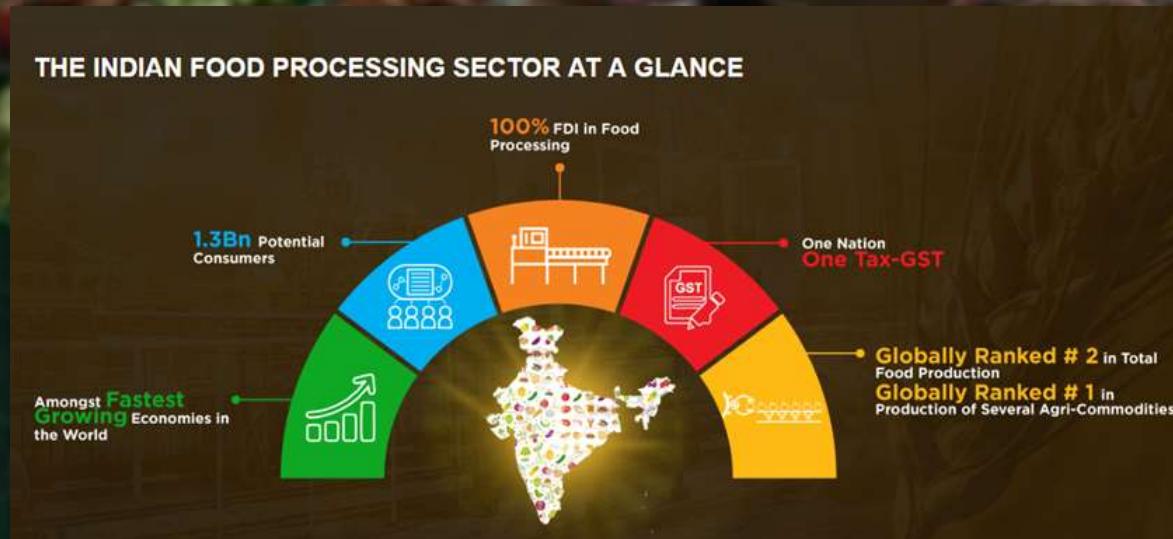
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- Any form of value addition in food in the form of sorting, grading, packaging, branding etc., is called **Food Processing**.
- Food processing not merely adds value to the agro products, but also increases their utility.
- Only 2% of the food is processed in India

Problems of Food wastage:

1. About 20 crore people go to bed hungry and 7,000 people die of hunger every day. Wastage of food is not less than a social delinquency.
2. India loses Rs. 58,000 crore every year because of wastage of food.
3. The energy spent over wasted food results in 3.3 billion tonnes of carbon dioxide production every year. Decay also leads to harmful emission of other gases in the atmosphere.
4. The wastage of food entails loss of considerable amount of resources in the form of inputs used during production



Advantages of FPI

1. FPI is employment intensive industry. Much of the employment will be created into rural India. This can remedy problem of distress migration. The sector employs almost 13% of the workforce in the organised sector and 13.7% of the workforce in the unorganised sector and contributes 9% of manufacturing value addition.
2. India is net exporter of agricultural products. But value addition of Indian product remains quite low. Food processing industry can increase our export potential.
3. It will help farmers get better prices for their produce, thus improving their income levels. It will stabilise prices by creating an assured demand for agricultural produce. It will also eliminate undue advantage currently accruing to middlemen at the cost of farmer's remuneration.
4. It can reduce food wastage and can enhance nation's food security. Food processing can reduce packaging, transportation losses. In fact, 30% of production is wasted (post-harvest losses) which comes out to be around Rs. 58,000 crore annually.
5. It will help develop vital linkages between industry and agriculture.
6. Growing urban culture, nuclear families, working couples and purchasing power makes case for processed food. Consumption in India is gradually tilting towards packaged and ready to eat foods.

Obstacles to food processing

1. Most of our food processing units are small scale, which leads to problem of poor economies of scale.
2. Low level of linkage between the industry and the farmers for the raw materials.
3. Multiplicity of laws and rules which leads to contradictions and delays. Taxes on processed food in India are among the highest in the world.
4. High cost of raw material and presence of intermediaries due to APMC acts.
5. There is lack of faster and efficient transportation, leads to wastage of agricultural goods. Inadequate cold chain infrastructure and inadequate logistics. Only 10% of food is covered by cold storage facilities in India.
6. Indian agriculture focuses on traditional crops rather commercial crops desired by the market. Variation in quality is another impediment.
7. Insufficient number of laboratories. Most laboratories at sea ports are not fully equipped to handle testing of imported products. Lack of trained manpower. Only very few universities offer special courses for food processing and entrepreneurship.
8. Indians prefer freshly cooked products as compared to packaged products. because of traditional mindset.

- ① N.I ✓
- ② M.P -
- ③ Fiscal poliy
- ④ B.O.P ✓
- ⑤ Poverty / Unemploymt.
- ⑥ Food prcogr.
 FCI
- ⑦ Capital Mkts /
- ⑧

CAs'		<u>ES'</u>
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Mega Food Park

Ministry of Food Processing Industries is implementing Mega Food Park Scheme in the country since 2008. It aims at providing a mechanism to link agricultural production to the market by bringing together farmers, processors and retailers.

● Significance:

These food parks give a major boost to the food processing sector by adding value and reducing food wastage at each stage of the supply chain with particular focus on perishables.

● Funding:

A maximum grant of Rs 50 crore is given for setting up a MFP, in minimum 50 acres of contiguous land with only 50% contribution to the total project cost.

Mode of operation:

The Scheme has a cluster-based approach based on a hub and spokes model.

• It includes creation of infrastructure for primary processing and storage near the farm in the form of Primary Processing Centres (PPCs) and Collection Centres (CCs) and common facilities and enabling infrastructure at Central Processing Centre (CPC).

Implementation:

Implemented by a Special Purpose Vehicle (SPV) which is a Body Corporate registered under the Companies Act.

State Government, State Government entities and Cooperatives are not required to form a separate SPV for implementation of Mega Food Park project.

● Subject to fulfillment of the conditions of the Scheme Guidelines, the funds are released to the SPVs

TRIFOOD Parks

Mega Food Park

TRIFOOD Parks to be set up in Madhya Pradesh.

- It is a joint initiative of TRIFED (under the Ministry of Tribal Affairs) and the Ministry of Food Processing.
- TRIFOOD Parks are food processing centres aiming at promoting value addition to minor forest produce.
- It was launched under the Van Dhan Yojana in 2020.
- The parks procure raw materials from the Van Dhan Kendras and process them to be sold across the country through Tribes India outlets.
- The minimum support price for minor forest produce is fixed by the Tribal Affairs Ministry and it is revised every three years by a pricing cell constituted under the Ministry.

Crop Colonies

Chief Minister K. Chandrasekhar Rao of Telangana asked the officials to come up with plans to divide cultivable land in the State into crop colonies so as to establish food processing units not only to make value addition to the produce of the farmers and ensure them improved income but also to provide unadulterated and quality processed foods at competitive prices.

Upstream and Downstream Integration

- 
1. Suppliers to a producers lie on upstream side, where as customers lie on downstream side. This will change according person under observation. For a farmer, supplier of seeds and fertilisers lie on upstream, while cold store owners, farm contractors, mill owners, traders in agro output lies on downstream.
2. When a particular person in supply chain assume role of two levels it is said integration.
3. Backward integration involves company expanding its activities to upstream areas. Company aims to get raw material at cheap rates, uniform quality, steady supply and eliminate any middlemen. Ex: Amul sets up dairy farmers cooperative in villages to collect milk.
4. Forward integration refers to company expanding its activities to downstream areas. Company aims to get more control over sales, consumer-contact and eliminate any middlemen. Ex: Nike, Adidas, Apple have their own retail outlets in big cities.
5. When company's backward and forward integration is so good that it practically runs everything from making raw material to selling final product to final customer. For example, oil giants such as Shell have their own oil wells, refineries and retail petrol pumps.
6. In farming and food processing, vertical integration can work wonders. For this farmer needs financial and technical support. Agriculture in India already is over employed. This with seasonal nature of majority of farming crops gives farmers a compelling reason to get into food processing business.

OPERATION GREENS

- It is a price fixation scheme that aims to ensure farmers are given the right price for their produce.
- It aims to promote Farmer Producers Organizations (FPO), Agri-logistics, processing facilities and professional management of agri-produce.
- It focuses on organized marketing of Tomatoes, Onions and Potatoes (TOP vegetables) by connecting farmers with consumers.
- State Agriculture and other Marketing Federations, Farmer Producer Organizations (FPO), cooperatives, companies, Self-help groups, food processors etc. can avail the financial assistance under it.
- To help in the structural and infrastructure part of the scheme, agriculture market committee (APMCs) promoted markets will be connected to the e-NAM platform.
- The government will also help in development of 22,000 agricultural markets.

Objectives

- Enhancing value realisation of TOP farmers by targeted interventions to strengthen TOP production clusters and their FPOs, and linking/connecting them with the market
- Price stabilisation for producers and consumers by proper production planning in the TOP clusters and introduction of dual use varieties.
- Reduction in post-harvest losses by creation of farm gate infrastructure, development of suitable agri-logistics, creation of appropriate storage capacity linking consumption centres.
- Increase in food processing capacities and value addition in TOP value chain with firm linkages with production clusters.
- Setting up of a market intelligence network to collect and collate real time data on demand and supply and price of TOP crops.

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National Agricultural Cooperative Marketing Federation of India Ltd (NAFED)

- National Agricultural Cooperative Marketing Federation of India Ltd (NAFED) is an apex organization of marketing cooperatives for agricultural produce in India.
- It is registered under Multi State Co-operative Societies Act.
- NAFED is now one of the largest procurements as well as marketing agencies for agricultural products in India.
- NAFED is the nodal agency to implement price stabilization measures under "Operation Greens" which aims to double the farmers' income by 2022.
- NAFED along with FCI with proactive role of state governments also physically procures oilseeds, pulses and copra under the Price Support Scheme (PSS).

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The background of the image is a wide-angle aerial photograph of a rural landscape. It features numerous green agricultural fields of various sizes, some with small clusters of trees or shrubs. The terrain appears to be hilly or mountainous, with the fields following the contours of the land. The overall scene is lush and green.

LAND REFORMS

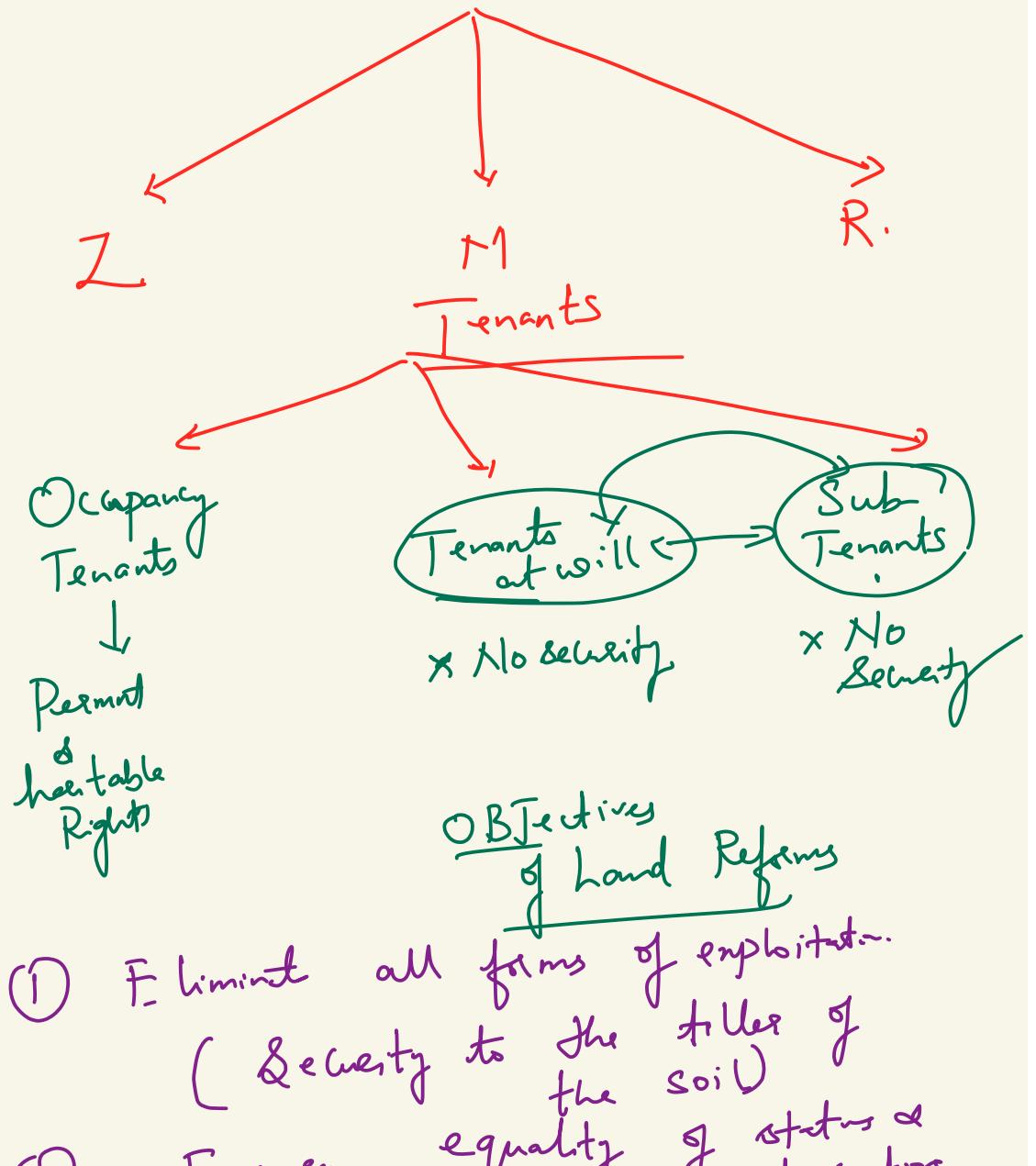
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LAND REFORMS

Land reforms can be defined as the statutory regulation of land and distribution of the land to the landless people. In other words, it's the distribution of the excess land consolidated with the landlords to the landless or consolidating fragments of land to achieve the best possible outcome from the land.

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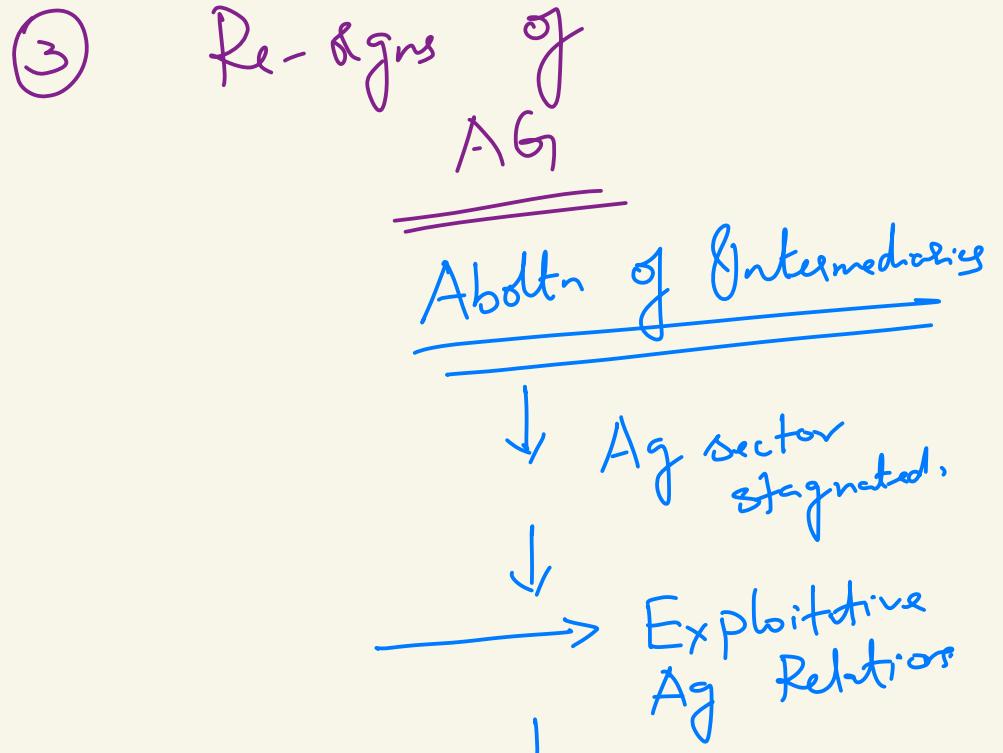
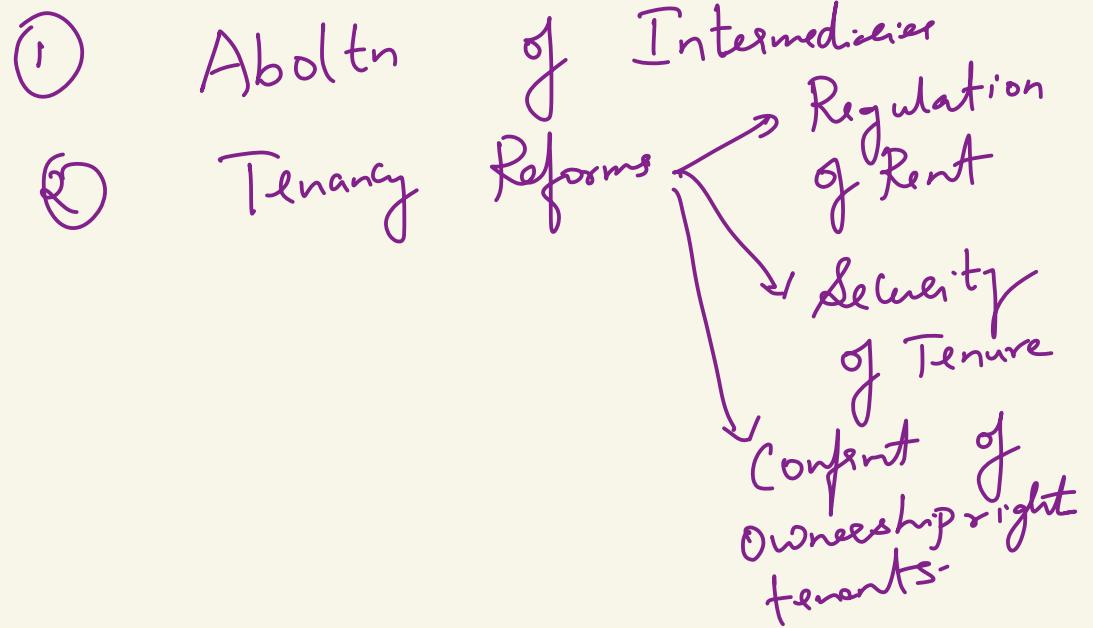
Objective	Implementation failures
Abolition of Intermediaries	<ul style="list-style-type: none"> • Clear owner is identified and owner himself to operate and manage the land
Land Ceilings	<ul style="list-style-type: none"> • Land owner used loopholes of the law and transferred land in the name of relatives and friends • Exemptions provided like sugarcane orchards • Large amount of recovered land remains undistributed and uncultivated • Litigation slowed down implementation
Consolidation of Land Holdings	<ul style="list-style-type: none"> • Very few states like UP, Haryana and Punjab made progress • Farmers emotionally attached to ancestral land • Farmers with good quality of land feared getting bad quality of land • Cumbrous process and implementation officials were slow and corrupt • Cost of consolidation was realised by the farmers which had adverse effect on resources • Small farmers got bad quality of land and couldn't fight litigation
Regulation of Tenancy	<ul style="list-style-type: none"> • Confirm rights of occupancy tenants • Security of tenure and fixing the rent
Co-operative Farming	<ul style="list-style-type: none"> • Combine landholding to achieve economy of scale • Overcome difficulties of fragmented holdings • Investment and employment opportunities



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Objectives of Land Reforms

- ① To limit all forms of exploitation.
 (Security to the tiller of the soil)
- ② To ensure equality of status & opportunities.



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↓
Some states
↔ 1951.
After 1st Five
year plan.
↓

UP (Very long time) →
(Legislation) 4.5 years
to become a land.

↓
Implementation issues
Zamindars → Courts.

↓
Zamindars × Land
Records.

↓
Loop holes (Land)
"Personal Cultvn"

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2nd ↓ Five year.
↓
Zamindari oblt
Dift format.

Tenancy Reforms

- ① Regulation of Rent ✓
- ② Security of tenure. ✓
- ③ Confernt of ownership Rights. ✓

Regulation of Rent:-

Punjab - 80%

Bombay - 40-60%

1st FYP - Max Rent
per acre Total

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Security of Tenure

- * Provisions of Law (Eviction)
- * Land only resumed.
- * Min Tenant Prescribed area.

Lm FYP → Non resumable
Excep Exempt
Land holders of [Defense].

Specific disability.

"Voluntary Surrender"

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Land Development Banks in India

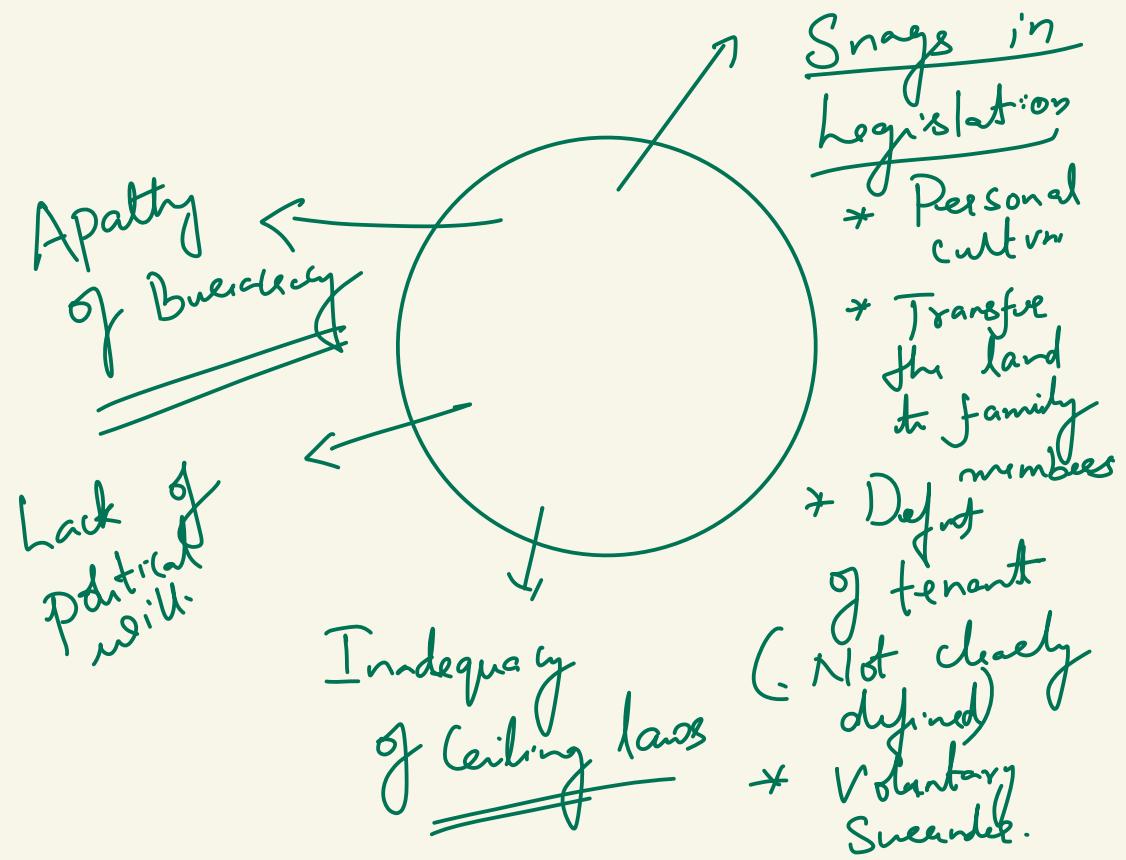
- Quasi commercial bank which accepts deposits, making business loans and offering basic investment products.
- It provides long term finance to members

Structure of Land Development Banks

- Primary Land Development Banks (PLDB):
 - cover few taluks or a developmental block.
 - All landowners can become a member and borrow loans by mortgaging land
 - Mortgaged land can be lent out for cultivation for a specific period
- Central Land Development Bank (CPLB):
 - Members are PLBDs and few promoters
 - Raise funds through floating debentures which is guaranteed by state government
 - Grants long term loans to agriculturists through PLDBs

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③ Content of ownership Rights
In FYP → 1982



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Functions

- Finances Farm mechanisation, horticulture and plantation and land development
- Finance non-land-based activities like dairy, poultry, fishery and biogas
- Rural housing by financing farmers under NHB
- Watershed development financing in rainfed areas

Issues with functioning

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- Loans generally to discharge prior debts
- CLDBs not able to raise enough funds through debentures
- No coordination between state cooperative bank and Land Development Bank
- Red Tapism causing more than a year for granting loans
- Very High Margin- only 50% of the land value as loan
- Complicated procedures not understood by illiterate farmers
- Inadequacy of trained professionals
- Mounting overdues in most Land Development Banks

Land Records Management

Issues of Land Records

- Land titles are presumptive
 - Land records provides information of who is in possession of the land rather than who the owner is.
 - Any transfer of land is recorded by a sale deed which has to be registered, but this registers a transaction and not land title.
 - Therefore, this kind of registration does not guarantee ownership even by the government as the transfer can be challenged
- Registration of property is not mandatory for all transactions
 - Under Registration Act 1908, acquisition of land by government, court decrees, land orders, heirship partitions, and leased land for less than a year registration is not mandatory.
 - Several property divisions are not recorded and possession of land is unknown causing litigation.
- Poor maintenance of land records
 - Manual registration and documents with revenue department not easily accessible to the public.
 - Therefore, difficult to know the land owner during property sale and can lead to litigation.
- Multiple entities deal with land registration and records
 - Combination of the 3 types of data records
 - Textual (RoR)
 - Spatial (maps)
 - Transactional details (Sale deeds)
 - Multiple agencies are responsible for land records and difficult to ensure the data matches across all 3 agencies

Reforms

- Administrative changes at state level that streamline the collection and maintenance of land data
- Ensure data is regularly updated and easily accessible on digital platform like Karnataka's BHOOMI Project
- Digital India Land Records Modernization Programme
 - Computerization of existing land records and transfers and registration process
 - Digitization of maps and integrating all data types like spatial and textual records
 - Survey and resurvey and update settlement records
 - Development of core GIS and capacity building
- DLRMP intends to move towards conclusive and state guaranteed titles from presumptive titles

Model Land Leasing Act

Current Issues in Land Leasing:

- Many states have banned tenancy like Kerala, and few with restrictions that only defence personal and war widows can lease land like Karnataka.
- Andhra Pradesh, Tamil Nadu, West Bengal and Rajasthan has liberal land leasing norms, but still doesn't recognise sharecroppers as tenants.
- Lack of legal documents and informal tenants can't access institutional credit and insurance which affect productivity and farmers income.

Salient Features of Model Land Leasing Act 2016 by Niti Aayog

- Legalise land leasing to promote agriculture efficiency, equity and power reduction. This will promote productivity improvement and occupational mobility.
- mutual consent for agriculture and allied activities.
- Lease holder can access institutional loan, insurance and disaster relief and invest in agriculture.
- Automatic resumption of land after lease period without leaving a minimum area to the tenant as required by some state laws
- Set up 'special Land Tribunal' in the Civil Court to resolve the dispute
- Incentivise tenants to invest in land improvement and get back unused value of investment

Benefits

- Win-win situation for both the lessee and lessor
- Promote investment on land improvement, machinery for agriculture
- Accessibility of credit and insurance
- Land liberalization will bring unused land into cultivation

Challenges

- Landowners might be apprehensive that written contract might lead to litigation
- Fear that populist governments might transfer land to tenants as per the written contracts.
- State governments has shown very little interest in the law.

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FARM BILLS 2020

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What is the Farmers Bill?

The new farmers' bill allows the farmers to sell their products directly to private buyers breaking the monopoly of man is regulated by the government. The people get empowered to get into a legal deal with the companies and produce agro-products for them. The Farmers bill also allows stocking of food articles by the agri-businesses removing the ability of the government to impose arbitrarily.

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Three Bills on agriculture reforms were introduced in the Parliament to replace the ordinances issued during the lockdown

- The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020
- The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Bill, 2020
- The Essential Commodities (Amendment) Bill, 2020



The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Ordinance has following provisions:

- Opens up agricultural sale and marketing outside the notified Agricultural Produce Market Committee (APMC) mandis for farmers
- Removes barriers to inter-State trade
- Provides a framework for electronic trading of agricultural produce.
- Prohibits State governments from collecting market fee, cess or levy for trade outside the APMC markets.

A photograph of a rural market scene. In the foreground, there are numerous large sacks of grain stacked on the ground. A person wearing a red shirt and blue pants is sitting on one of the sacks. In the background, there are trees, some buildings, and a road. The sky is clear and blue.

The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Ordinance relates to contract farming. It has following provisions:

- Provides framework on trade agreements for the sale and purchase of farm produce.
- The **mutually agreed remunerative price framework** envisaged in the legislation is touted as one that would protect and empower farmers.
- The written farming agreement, entered into prior to the production or rearing of any farm produce, lists the terms and conditions for supply, quality, grade, standards and price of farm produce and services

The Essential Commodities (Amendment) Ordinance

- Removes cereals, pulses, oilseeds, edible oils, onion and potatoes from the list of essential commodities. The amendment will **deregulate the production, storage, movement and distribution** of these food commodities.
- The central government is allowed regulation of supply during war, famine, extraordinary price rise and natural calamity, while providing exemptions for exporters and processors at such times as well.
- **Imposition of any stock limit on agricultural produce** must be based on price rise. A stock limit may be imposed only if there is a 100% increase in retail price of horticultural produce; and a 50% increase in the retail price of non-perishable agricultural food items

Benefits of Farmers Bill 2020

- The people engaged in farming will become independent and can get better prices for their products.
- A new system where the farmers and traders can do business outside the Mandis can be created as per the bill. The intra-state business also gets encouraged here along with the reduction of transportation cost.
- The people also get the provision for entering into a legal framework with the companies, exporters, retailers who are interested to buy their products. This will also give the farmers access to modern technology thus improving their production.
- As per the government, this bill can also prove to be beneficial for farmers of small and marginal range with the land of fewer than five hectares. The bill also aims at attracting FDI as it removes pulses and cereals from the essential commodities list.

ISSUES OF FARM BILLS

- Middlemen will be affected.
- These new farmers' bills might end MSP or minimum support prices and this bothers the farmers.
- The lack of bargaining capability with big companies. The people involved in farming might get the freedom to deal with the biggest of the companies but due to the lack of knowledge, he/ she might not be able to negotiate the best possible terms.
- Outside the mandis or government-regulated markets, there is hardly any regulation, and grievance redressal system is also not present there.
- The new farmers bill may weaken the APMC system which is considered to be very helpful for small farmers.
- As per the suggestions of agricultural economists, the focus should be given on strengthening APMCs rather than transferring everything to private entities.
- Contractual farming.
- Due to the removal of restrictions on food storage, big companies may store agro products in huge quantities and create artificial hikes in price.

Thank you

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