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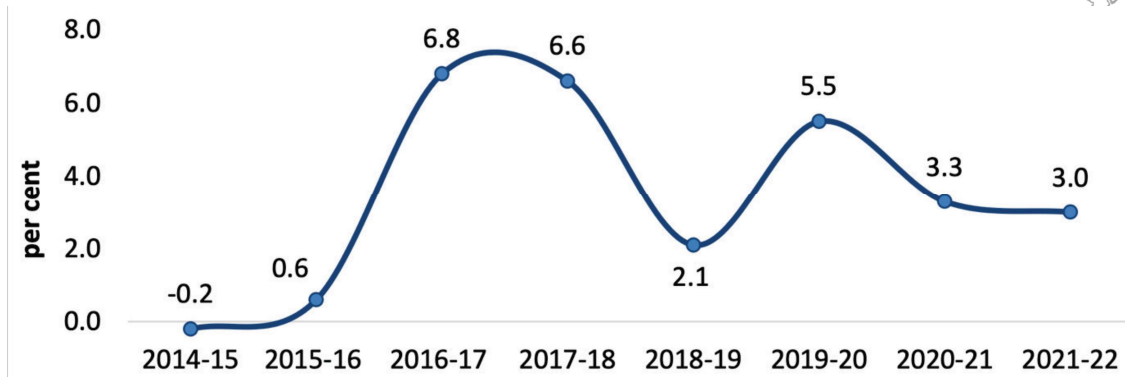


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## 40 AGRICULTURE- INTRO (कृषि- परिचय)

(Definition) Agriculture is a primary economic activity that includes growing crops, fruits, vegetables, flowers and rearing of livestock. कृषि एक प्राथमिक आर्थिक गतिविधि है जिसमें बढ़ती फसलें, फल, सब्जियां, फूल और पशुधन का पालन शामिल है

- **Modi-Target:** Double farmers' income by 2022-23 compared to 2015-16. (किसान की आय दुगुनी करो)
- **UN-SDG#1:** End poverty in all forms. | **UN-SDG#2:** Eliminate global hunger, protect indigenous seed and crop varieties, doubling agriculture productivity and small farmer incomes by 2030.
- **Sir Arthur Lewis' Dual Economy Model** (द्वैत अर्थव्यवस्था): Economic development results in labourer moving away from agriculture to the more productive industrial sector, & agriculture sector becomes less important part GDP. कृषि से विनिर्माण और सेवा में मजदूरों का गमन
- Indians in agriculture is steadily falling down: 55% (2011) to 42% (2018) (*World Bank data*).
- The growth rate of agri= zig zag due to El-Nino led drought years. Manmohan target 4% annual growth rate, Modi's 2x income target would require 10% annual growth rate in agriculture.



- Within Agriculture & Allied sector: Highest production (money-wise)= Crops > Livestock > Forestry > Fishing. (कृषि पर संलग्न क्षेत्रों में सबसे ज्यादा उत्पादन कहा से होता है)
- For more on GDP&GVA calculation- REF: Pillar#4C.

#### 40.1.1 🕒 Agri Production Numbers/GK: India is \_ \_ \_ .

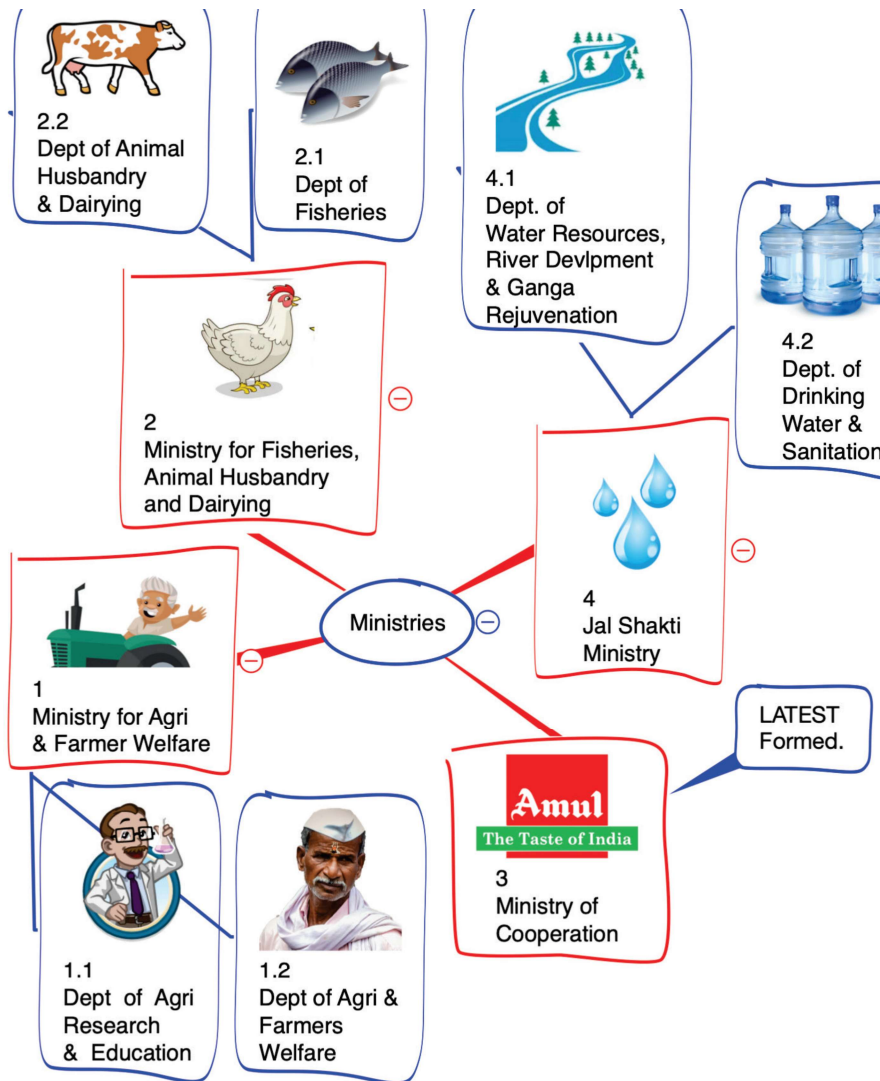
- ✓ 🏆 Milk: #1 Producer (more than 1/5th of world milk supply)
- ✓ 🏆 Vegetable Oil: #1 importer India. (वनस्पति तेल में दुनिया का सबसे बड़ा आयातकर्ता भारत है)
- ✓ 🏆 Sugar: #2 producer. #1 consumer. (शक्कर में दुनिया का दूसरा सबसे बड़ा निर्माता और पहलेला सबसे बड़ा उपभोक्ता)
- ✓ 🏆 Fisheries: #2 producer. 28 million Indians working. Exports earning ₹40,000+ cr per year
- ✓ 🏆 Eggs: #3 Producer, Meat: #8 Producer

#### 40.1.2 🏢 [Yearbook-Info] A Ministry of Agriculture and Farmers Welfare

It is made up 2 departments and implements National Policy for Farmers (2007)

<p>🏢 Dept#1 Agro-itself</p>	<p>Department of Agriculture, and Farmers Welfare</p> <ul style="list-style-type: none"> <li>- <b>Statutory:</b> Coconut Development Board, National Cooperative Development Corporation, Protection of Plant Varieties and Farmers' Rights Authority,</li> <li>- <b>Attached Office:</b> National Rainfed Area Authority.</li> <li>- <b>CPSE:</b> National Seeds Corporation Ltd. (NSC)</li> <li>- <b>Autonomous / Cooperative bodies:</b> National Agricultural Cooperative Marketing Federation of India (NAFED), Small Farmers Agribusiness Consortium (SFAC). Various boards / institutes for horticulture, plant health management, Agro marketing etc.</li> </ul>
<p>🏢 Dept#2: Agro Research Extension</p>	<p>Department of Agricultural Research &amp; Education (DARE)</p> <ul style="list-style-type: none"> <li>- <b>Autonomous body:</b> Indian Council of Agricultural Research (ICAR: भारतीय कृषि अनुसंधान परिषद)</li> <li>- Central Agro universities @Imphal (Manipur), Pusa (Bihar), Jhansi (UP)</li> </ul>

\* Hindi terms not given for most org. because above information is meant for MCQ only. In the mains exam you may attribute all things to 'कृषि और किसान कल्याण मंत्रालय की वैधानिक / सहकारी / स्वायत्त संस्था <insert English term/abbreviation>'.



### 40.1.3 [Yearbook] Min. for Fisheries, Animal Husbandry and Dairying

This ministry was setup in 2019, with two departments

1. 🐟 Dept of Fisheries (Matsyapalan Vibhag)
2. 🐄 Dept of Animal Husbandry And Dairying (Pashupalan Aur Dairy Vibhag):
  - A) → Statutory: National Dairy Development Board (NDDB)
  - B) → Statutory: Animal Welfare Board of India under The Prevention of Cruelty to Animals Act,1960.

Previously above subjects were under the Agri ministry.

### 40.2 👥 COOPERATIVE SOCIETIES & NEW MINISTRY





#### 40.2.1 🧑🏫 Cooperative Society: Meaning

- ⇒ (Definition) The cooperative society is a voluntary association of persons who join together with the motive of welfare of the members and/or prevent exploitation by middlemen. (सहकारी सोसाइटी/संगठन= लोगों का एक स्वैच्छिक समुह जो सदस्यों के विकास के लिए या दलालों के शोषण से बचने के लिए बनाया जाता है)
- ⇒ (Data) There are 8.5 lakh registered cooperatives in the country, with over 29 crore members
- ⇒ For example: The farmers of Kheda region (Gujarat) were exploited by the middlemen in the milk trade. So, Sardar Vallabhbhai Patel advised them to sell their milk by forming a cooperative society (1946) which later evolved into AMUL.

#### 40.2.2 🧑🏫 Cooperative Society: Features / Benefits (लक्षण / खासियत / फायदे)

- **Voluntary membership:** A person is free to join. can also leave anytime. (स्वैच्छिक सदस्यता)
- **Legal status / Stable existence:** formed by minimum 10 persons and registered
  - under A) State laws (if Single State Cooperative Society), or
  - B) under union's multi-state cooperative Societies Act 2002- if it is operating in more than 1 state e.g. National Agri. *Cooperative* Marketing Federation Of India (NAFED).
- Cooperative Society is a separate artificial legal person. It can enter into contracts and hold property in its name. Death, or insanity of an individual members do not affect continuity of a cooperative society. Limited liability of members. (Explained in Pillar#1C2)
- **Equal Voting:** one person gets one vote irrespective of how much capital he contributed.
- **Service / Welfare motive:** Not driven by desire for excessive profit or excessive growth.
- **Support from government:** m through low taxes, subsidies, and low interest rates on loans.

#### 40.2.3 🧑🏫 Cooperative Societies: Types of (विभिन्न प्रकार)

- ⇒ (i) **Consumer's cooperative societies:** purchases goods in bulk directly from the factory and sells goods to the members, thereby eliminating the middlemen's commission. (उपभोक्ताओं के लिए)
- ⇒ (ii) **Producer's cooperative societies:** small-scale producers buy raw material directly from source/members, thereby eliminating the middlemen's commission. e.g. AMUL =Milk Producers' cooperative Society → milk: butter cheese ice cream → sell. [उत्पादों के लिए]
- ⇒ (iii) **Farmer's cooperative societies:** member-farmer cooperate for purchase and sharing of seeds, fertilisers, machinery, land. This helps solving the problems associated with farming on fragmented land holdings.[किसानों के लिए]
- ⇒ (iv) **Marketing cooperative societies:** They help small producers in selling their products. e.g. Tribal Co-operative Marketing Development Federation of India (*TRIFED*) under the Ministry of tribal affairs. [विपणन सहकार के लिए]
- ⇒ (v) **Credit cooperative societies:** To collect money from members and give loans to the members at affordable rates. Formed by farmers, villagers, caste-based organisations etc. [पूंजी/रुण देने के लिए]
- ⇒ (vi) **Cooperative housing societies:** To help members get houses by pooling land/loans etc.

#### 40.2.4 🧑🏫 [Yearbook] Modi forms a new Ministry for Cooperation

The country has 1,94,195 cooperative dairy societies and 330 cooperative sugar mill operations.



📅 Budget-2021: finance minister had promised a “separate administrative structure” for cooperatives. This was finally done in 2021-July.

BEFORE	🗳️ AFTER 2021-July Reform
Agriculture Ministry → Department of Agriculture, Cooperation and Farmers Welfare = looked after administrative, legal and policy framework for cooperative movement in India.  पहले सहकारी मंडली/संस्थानों की ज़िम्मेदारी कृषि मंत्रालय की थी, अब इसके लिए अलग से एक सहकार मंत्रालय की स्थापना।	<ul style="list-style-type: none"> <li>- Government announced the formation of a separate Union Ministry of Cooperation / Cooperative Ministry.</li> <li>- Home Minister Amit Shah was given charge of the new Ministry</li> <li>- Will look after administrative, legal and policy framework for cooperative movement in India- including cooperative organizations in agriculture, dairies, sugar mills, spinning mills, banking-finance etc</li> </ul>
Statutory Body: Multi State Cooperative Societies ACT, 2002 → Registrar of Multi State Cooperative Societies = functioned under Agri Ministry	Shifted here (“बहुराज्य सहकारी समितियों के रजिस्ट्रार” जो पहले कृषि मंत्रालय के अंतर्गत थे, अब सहकारी मंत्रालय के अंतर्गत)

Benefits and challenges of this move? Ans. Shifted to Mains Handout. #Prelims-RAFTAAR

#### 40.2.5 🏛️ Multi-State Cooperative Societies Act 2002 → Amendment Bill 2022

YEAR	LAW
1984	Multi-State Cooperative Act.
2002	Multi-State Cooperative Societies Act to replace earlier 1984's act.
2022	Multi-State Co-operative Societies (Amendment) Bill to amend 2002's act.

#### **Above bill aims for**

- ⇒ Setup statutory body “Co-operative Election Authority” to conduct elections for board members of multi-state co-operative societies. (बहु-राज्य सहकारी संगठनों के बोर्ड सदस्यों के चुनाव के लिए एक सहकारी चुनाव प्राधिकरण बनाया जाएगा)
- ⇒ Setup Ombudsman for hearing the complaints by the members of coops. (सदस्यों की शिकायत सुनने के लिए शिकायत निवारण अधिकारी)
- ⇒ Setup a fund for revival of sick multi-state co-operative societies. The Fund will be financed through contributions by profitable multi-state coops. (बीमार/घाटे-वाले बहु-राज्य सहकारी संगठनों को पुनर्जीवित करने के लिए एक एक वित्तीय-कोष बनाएँगे। मुनाफ़ेवाले संगठनों ने इसमें पैसा देना होगा।)
- ⇒ Facilitate merger of two or more coop societies. (दो या उससे अधिक सरकारी संगठनों का एकीकरण करवाना आसान होगा)

#### 🤖 Criticism



- 🤖 1) Some State governments are opposed alleging that some provisions of this bill encroaching upon State government's power to regulate single state cooperative Society. (राज्य सरकारों को आपत्ति है कि हमारी शक्तियां कम हो जाएगी)
- 🤖 2) Profitable coops opposed to idea of giving money to revival of sick/loss making coops. (मुनाफ़े वाले संगठनों को एतराज/आपत्ति है कि हम क्यों पैसा दे बीमार/घाटे-वाले संगठनों की मदद के लिए?)

#### 40.2.6 🧑🧑 3 new coop societies for export, organic, seeds (2022)

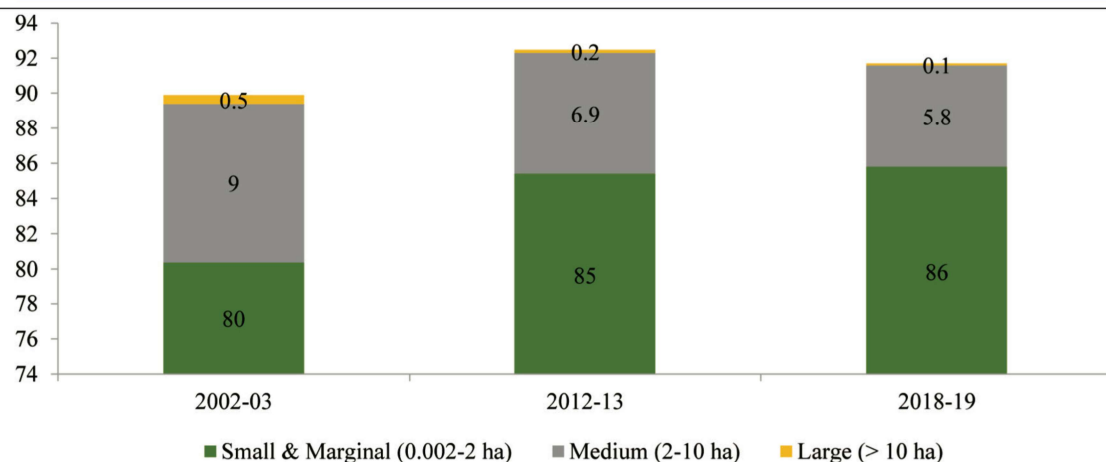
Union Govt approved setting up 3 new coop societies under Multi-State Cooperative Societies (MSCS) Act, 2002.

- 1) national multi-state cooperative export society (राष्ट्रीय बहू-राज्य निर्यात सोसायटी)
- 2) national multi-state cooperative organic society (प्राकृतिक खेती के लिए)
- 3) national multi-state cooperative seed society (बीज के लिए)

#### 40.3 🌱🌐 AGRI-INPUT → LAND (जमीन)

- ⇒ While India accounts for >17% of world population but barely 2.5 % of land of the world. (भारत के पास आबादी के अनुपात में जमीन बहुत कम है)
- ⇒ Agriculture is a purely land based activity. Size and quality of land has direct bearing on agriculture productivity and farmers' income. Land ownership also serves as a social value & security against credit. (किसान के लिए सामाजिक प्रतिष्ठा और कर्ज लेने के लिए जमीन की मालिकी महत्वपूर्ण)
- ⇒ 🤖 Challenges? Rising population, division of land among heirs → fragmentation of landholdings (भूमिजोत का विखंडन). Small sized-farms are not conducive for farm-machinery → productivity 📉. छोटे खेतों में बड़ी मशीन चला नहीं सकते → उत्पादकता कम 🤖
- ⇒ fragmentation of land holding has 📈. Average size of a farm reduced from 0.725 hectare (2003) to 0.512 ht (2019) (जमीन का भी खंडन हो रहा है. खेत की औसत आकार कम हो रही है.)
- ⇒ 86% of agri-families have farm size of 2 hectares or less.

**Figure 18: Distribution of Households by Size Category of Ownership Holdings (per cent)**

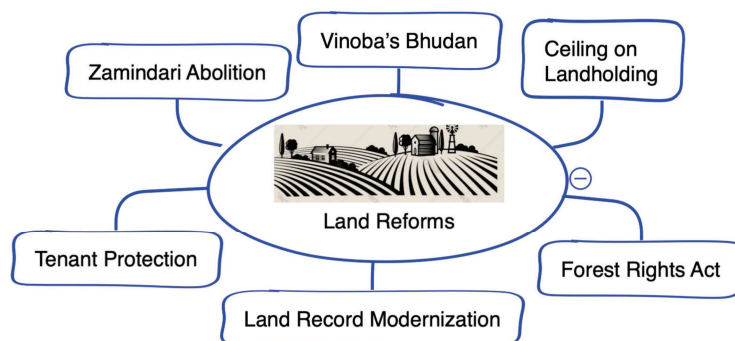


- ⇒ 🤖 Solution? Small-marginal farmers should be encouraged to join mfg / service sector jobs, selling their land to big farmers = **Land Consolidation (भूमि एकत्रीकरण)**.



⇒ **Land Reform** (भूमि सुधार) is the government led division of agricultural land and its reallocation to landless people. Whereas, **Land Acquisition** (भूमि अधिग्रहण) means Govt acquiring private land for industrial or infrastructure development.

#### 40.3.1 🌐 Land reforms in India after independence



⇒ (1) **Zamindari Abolition**, Vinoba's Bhudaan movement (2) **Ceiling on Landholding** i.e. fixing maximum size of land holding that an individual can own. (3) Laws to protection of tenant farmers (जोतदार किसान)

⇒ (4) **National Land Records Modernization Programme** (NLRMP-2008: राष्ट्रीय भूमि रिकॉर्ड आधुनिकीकरण कार्यक्रम) by Department of Land Resources under Rural Development Ministry. Because digital land records help reducing court case related to sale / inheritance & help keeping track of land ceilings.

⇒ (5) **Forest Rights Act**: वन अधिकार अधिनियम 2006 which gives 'Patta' (farm land ownership title) to the forest dwellers, if the given family was cultivating that forest land for the last 75 years.

⇒ **Land is a state subject**, so Union circulated Model Agriculture Land Leasing Act, 2016:

- 1) To protect land owner from illegal occupation by tenant farmer
- 2) To help tenant farmer get bank loans using leasing agreement as proof.

**Further Self-study?** (1) Land reforms is a Mains-GSM3 topic. Do selective study from [mrunal.org/tag/land-reforms](http://mrunal.org/tag/land-reforms) (2) Soil pollution & soil erosion is Environment topic do it from your Unacademy Notes. (3) Soil & Crop distribution: Geography topic from NCERT/ Majid/Unacademy Booklet.

**AB ? MCQ.** Which of the following are responsible for the decrease of per capita holding of cultivated land in India? (Asked in UPSC-CDS-2012-II)

1. Low per capita income.
2. Rapid rate of increase of population.
3. Practice of dividing land equally among the heirs.
4. Use of traditional techniques of ploughing.

Answer Codes: (a) 1 and 2 (b) 2 and 3 (c) 1 and 4 (d) 2,3 and 4



#### 40.4 🌱 AGRI-INPUT → SEEDS: बीज



(Introduction: Origin) Since we can't drastically increase the area under cultivation, so, agriculture yield (amount of crop produced in a given acre of land) depends greatly on seed quality.

- For best yield, hybrid seeds must be replaced every year, and non-hybrid must be replaced every three years. But in India, seed replacement rate is less than optimum because of (1) new seeds are not affordable and 2) not available to all farmers. So, government has approved 100% FDI (in automatic route) in seed development. संकर बीजों को हर साल बदलना चाहिए किंतु गरीब किसान के लिए मुश्किल
- **Seed village concept:** Group of farmers in a village given training to produce seeds of various crops so they can fulfill seed demand of their own & neighbouring villages.
- **Seed bank / Seed vault** is a depository that stores seeds to 1) preserve genetic diversity 2) supply seeds during natural calamities and unforeseen conditions. Global Seed Vault is located in the Svalbard @Norway, in Arctic.
- Agro Ministry gives funding for above two initiatives.

**AB** ? MCQ. Which best describes the main objective of Seed Village Concept? (UPSC-Pre-2015)

- (a) Encouraging the farmers to use their own farm seeds and discouraging them to buy the seeds from others.
- (b) Involving the farmers for training in quality seed production and thereby to make available quality seeds to others at appropriate time and affordable cost.
- (c) Earmarking some villages exclusively for the production of certified seeds.
- (d) Identifying the entrepreneurs in villages and providing them technology and finance to set up seed companies.

#### 40.4.1 🌱👉 Agri-Input → Seeds → Green Revolution: हरित क्रांति

Green revolution refers to the large increase in food production with the help of High Yielding Variety (HYV: उच्च उपज देने वाली किस्म) of hybrid seeds.

- **Phase-1:** mid 1960s upto mid 1970s → focus on wheat, rice and more affluent states such as Punjab, Andhra Pradesh and Tamil Nadu. (गेहूं चावल ज्यादा समृद्ध राज्यों में)
- **Phase-2:** mid-1970s to mid-1980s → HYV seeds were spread to a larger number of states. They also focused on crops apart from wheat and rice. (अन्य राज्यों में भी हरित क्रांति का प्रसार)
- **Biofortification:** is the process by which the nutritional quality of food crops is increased. E.g. ICAR developed **CR Dhan 310**- a rice variety that has higher protein & zinc content than traditional rice. **Germans** developed **Golden rice** for VitaminA



Homework: read NCERT Class11 Economy: Ch2 for more vocabulary

#### 40.4.2 🌱🌿 Agri-Input → Seeds → Landraces (जमीनी प्रजाति की फसले/बीज)

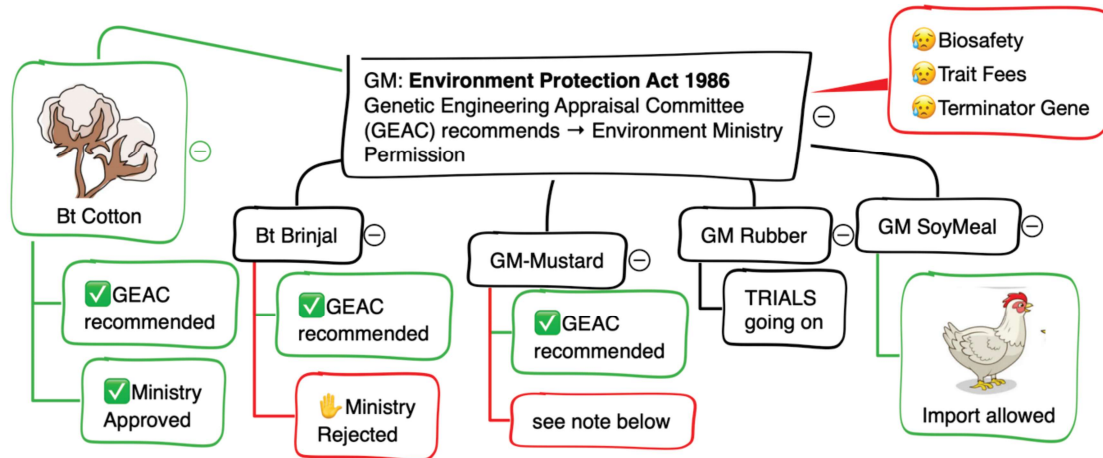
- Hybrid crops are created by scientists artificially in the labs.
- Whereas, “Landraces” are naturally occurring variants of commonly cultivated crops. (फसलो की ज़मीनी प्रजातियाँ -जिसे प्रयोगशाला में नहीं बनाया, बल्कि प्राकृतिक रूप से उद्भव हुआ)
- Landraces are climate resultant, may contain better quality of nutrients. (एसे ज़मीनी प्रजातीयजलवायु परिवर्तन के खिलाफ़ टिकाऊ उन्हें ज़्यादा पोषक द्रव्य होते है)
- 2021-Padma-Shree given to Rahibai Popere for conservation of landraces. She’s nicknamed ‘Seedmother’, hails from Ahmednagar, Maharashtra. (महाराष्ट्र कि रहिबाइ को पद्मश्री)

#### 40.4.3 🌱🌿 Agri-Input → Seeds → 😊 Pepsi vs Potato Farmers

- ⇒ 1970’s Indian Patents Act (भारतीय पेटेंट अधिनियम) doesn’t give Patent to seeds / plant varieties. But,
- ⇒ 2001’s Protection of Plant Varieties and Farmers’ Rights Act (पौधों की किस्मों और किसानों के अधिकारों का संरक्षण) grants Intellectual Property Rights (IPR: बौद्धिक संपदा अधिकार) to plant breeders, researchers and farmers who have developed any new plant varieties
- ⇒ **Pepsi** supplied FC5 potato hybrid variety to Indian farmers. It has a lower moisture content (कम नमी) so suitable for making Pepsi-Lay’s potato chips. Later, contract expired yet farmers continue to grow this variety (& selling to other chips makers).
- ⇒ **2019:** Pepsi complained against Guj Farmers, but later withdrew. (शिकायत वापस ले ली).
- ⇒ **2021:** Govt cancelled the registration of Pepsi’s potato variety citing that Pepsi had not given the required documents while registering the variety. (सरकार ने उसका पंजीकरण ही रद्द कर दिया है)

#### 40.4.4 🌱🌿 Agri-Input → Seeds → Genetically modified (GM) crops

- **Hybrid seeds** (संकर बीज) are developed by cross-breeding / cross-pollination with other plants.
- Whereas, **Transgenic / Genetically modified** (आनुवंशिक आधार पर आशोधित किस्मे) seeds are developed by transferring selected genes from one organism into another. E.g. Bacterium Bacillus thuringiensis genes inserted in cotton → Bt. cotton → if bollworm pests eat it, it’ll die by the toxin crystals in Bt.cotton plant.
- **GM-Regulation?** Environment Protection Act 1986 (EPA: पर्यावरण संरक्षण अधिनियम ) → Genetic Engineering Appraisal Committee (GEAC: जेनेटिक/जननीक इंजीनियरिंग/अभियांत्रिकी मूल्यांकन समिति) conducts studies, and recommends approving a GM crop in India → Environment ministry gives final permission.
- **2002:** Environment ministry allowed Bt. Cotton (a non-food crop) cultivation in India



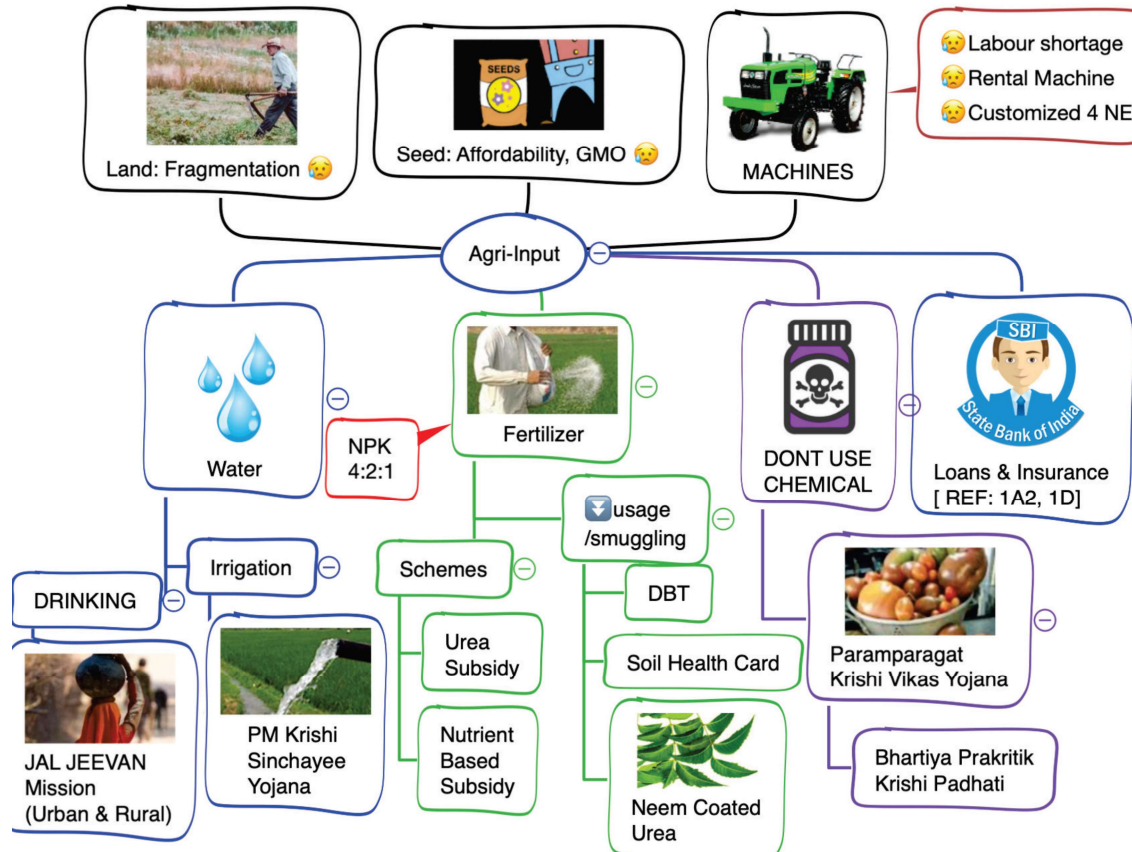
#### 40.4.5 🌱🐛 GM Mustard approval- Kabhi haan kabhi naa

	GEAC	Environment Ministry
2017	Approved	Rejected & ordered GEAC to do more field study.
2022-Oct	Approved again	Pending/yet to give full clarity.

#### 40.4.6 🌱🐛 Seeds → GM crops → Challenges?

- Biosafety concerns** (जैव सुरक्षा संबंधी चिंताएं) GM food crops may be unsafe for human and animal consumption. They may harm the soil bacteria & bees → harm to entire food web and biodiversity. GM crop may eliminate the wild/indigenous species by cross-pollination (पर-परागण)
- American company Monsanto's Bollgard technology is used for developing Bt Cotton seeds. So, Indian Bt-cotton seed production companies have to pay a type of royalty to Monsanto, called **Trait fees** (विशेषता शुल्क). Govt of India decides the ceiling on Trait fees. Some legal disputes going on. what/how/why NOTIMP.
- Monsanto also owns patent over **Terminator gene technology** (समापक जनीन प्रौद्योगिकी) i.e. when such seeds are planted, they'll produce crops only once. Their resultant crop's seeds will be sterile (बाँझ/ नपुंसक) → Farmer forced to buy new seeds from company for every season. Terminator gene seeds are not allowed in India.

📖 **Further self study of GM Sci.tech** → (i) NCERT Biology class 12 chapter 10, 12 (ii) Unacademy Notes 2.0 OR any other material that you like/or you have



#### 40.5 🌧️ 🌱 AGRICULTURE → WATER (IRRIGATION: सिंचाई)



**Definition?** The supply of water to crops at different intervals is called irrigation.

- ⇒ **Challenges?** While India accounts for more than 17% of world population but we have barely 4% of world's water resources. आबादी के हिसाब से जल संसाधन बहुत कम है भारत के पास
- ⇒ India is a water stressed country. >50% of the agri depends on rainfall. Only four months of monsoon & if El-Nino we receive even less rainfall. → 2014 & 2015 drought → food inflation.
- ⇒ The countries with the largest areas under groundwater irrigation: India (39 million ha), China (19 million ha) and USA (17 million ha) (भारत में भूजल द्वारा सिंचाई बहुत ज्यादा मात्रा में होती है)
- ⇒ **Irrigation water productivity** is defined as ratio of the crop output to the irrigation water applied. To produce 1 kg of rice, Indian farmers use 3,000-5,000 litres of water, whereas Chinese farmers manage it within 350 litres of water. भारतीय किसान बहुत ज्यादा पानी इस्तेमाल करते हैं



- ⇒ MSP, heavily subsidized electricity, water and fertilizers = 60% of water is consumed by water intensive crops like paddy and sugarcane. चावल और गन्ने की खेती के चलते पानी व्यय ज्यादा
- ⇒ By 2050, India will be in the global hotspot for 'water insecurity'. (जल असुरक्षितता)
- ⇒ To earn 2x (double) income, a farmer must cultivate multiple crops annually. But majority of farmers face water shortage so they can't do so. (बिना पानी के किसान की आमदनी दुगना करना असंभव)

#### 40.5.1 🏛️ 🌿 🌳 [Yearbook] Jal Shakti Ministry

2019-May: Government formed Jal Shakti Mantralaya by merging following ministries

1. Ministry of Water Resources, River Development and Ganga Rejuvenation (जल संसाधन, नदी विकास और गंगा संरक्षण)
2. Ministry of Drinking Water and Sanitation (पेयजल और स्वच्छता)

Now Ministry#1 and Ministry#2 have been made 'Departments (विभाग)' under the Jal Shakti Ministry. (पहले जो मंत्रालय थे अब वह विभाग में तब्दील/परिवर्तित कर दिए)

#### 40.5.1.1 🏛️ [Yearbook1] Dept. of Water Resources, River Development & Ganga Rejuvenation

जल संसाधन, नदी विकास एवं गंगा संरक्षण विभाग consists of <list not exhaustive>

Dept	N/A (ये मंत्रालय के पास कोई विभाग नहीं है)
<b>Attached / subordinate offices</b> संलग्न/अधीनस्थ कार्यालय	- Central Water Commission (केंद्रीय जल आयोग) → National Water Academy, Pune   Ganga Flood Control Commission   Bansagar Control Board (Son River)  Central Water and Power Research Station   Central Soil and Materials Research Station
<b>Statutory Bodies</b> वैधानिक संस्था	- Betwa River Board, Brahmaputra Board under respective Acts. - Various water dispute tribunals (जल विवाद न्यायाधिकरण) under Inter-State Water Disputes Act, 1956 - Under Environment Protection Act, 1986 → - National Ganga River Basin Authority (NGRBA) → later, replaced by "National Ganga Council" chaired by PM - Central Ground Water Authority (केंद्रीय भूजल प्राधिकरण) formed under the Environment (Protection) Act.1986
<b>Govt Companies</b>	- Water and Power Consultancy Services Ltd (WAPCOS) - National Projects construction Corporation Ltd.
<b>Autonomous Bodies</b>	- National Institute of Hydrology   Krishna River Management Board - Godavari River Management Board

#### 40.5.1.2 🏛️ [Yearbook2] Dept of Drinking Water And Sanitation: पेयजल और स्वच्छता विभाग

→ doesn't have any MCQ worth Organizations. (परीक्षा के लिए जानने लायक कोई संस्था नहीं)



#### 40.5.2 🌧️👤👤 Water Schemes → NRDWP (2009)

National Rural Drinking Water Mission राष्ट्रीय ग्रामीण पेयजल मिशन

- **Boss?** Drinking Water Dept: Centrally Sponsored Scheme → Core Scheme = NOT 100% funded by Union. (50:50) (केंद्र द्वारा प्रायोजित - महत्वपूर्ण योजना जहां राज्य ने भी खर्च का कुछ हिस्सा देना पड़ता है)
- To provide every rural person with safe water for drinking, cooking & domestic needs.
- Additional focus on areas affected by Arsenic, Fluoride & chemical contamination, Encephalitis disease etc. (रासायनिक संदूषण तथा एन्सेफेलाइटिस बीमारी को रोकने के लिए ज्यादा ध्यान दिया जाए)
- 2019: NRDWP subsumed under a new scheme namely Jal Jeevan Mission (JJM).

#### 40.5.3 🌧️👤👤 Water Schemes → Pradhan Mantri Krishi Sinchai Yojana (2015)

**Boss?** Agro Ministry (2015) (Implementation done by Jal Shakti Ministry etc). Valid till 2025-26.

Core Scheme = Not 100% Funded by Union. States required to contribute ₹

**Aim?** To improve the irrigation coverage, reduce wastage of water, using 4-pillar strategy:

1. **Accelerated Irrigation Benefit Programme (AIBP)** (त्वरित सिंचाई लाभ कार्यक्रम) → Requires Jal Shakti Ministry to finish the ongoing national irrigation projects at a faster pace.
2. **Har Khet ko Pani** → Requires Jal Shakti ministry to distribute water to each and every farm by setting up canal network.
3. **Watershed Development** (जलसाव विस्तार विकास) → Requires Rural Development Ministry's Dept of Land Resources to setup water harvesting structures like check dams, *Nala bund*, farm ponds, tanks etc. + traditional water storage systems such as *Jal Mandir (Gujarat)*; *Khatri & Kuhl (H.P.)*; *Zabo (Nagaland)*; *Eri & Ooranis (T.N.)*; *Dongs (Assam)*; *Katas & Bandhas (Odisha & M.P.)*.
4. **Per drop more crop** → Requires Agriculture Ministry to improve the water usage efficiency through Micro-irrigation devices such as drips, sprinklers, pivots, rain-guns. *Related terms* →
  - a. **Fertigation**: Mixing water-soluble fertilizers in drip system → fertilizer delivered into the root system → 📉 wastage of fertilizers.
  - b. **Mulching**: It is a simple process of covering the bare soil with straw, wood chips, shredded bark etc. to 📉 the water evaporation, soil erosion and weed growth.

⚠️👤👤 **Micro-irrigation challenges?** High cost of purchase. Trampling by elephant, boar, nilgai etc. damages the equipment, but repairman not available locally and repair costs not covered in crop insurance. So less adoption. (सूक्ष्म सिंचाई का सामान हाथी कुचल दे तो मरम्मत का पैसा नहीं देती सरकार)

#### 40.5.4 🌧️👤👤 Water Schemes → Namami Gange Yojana (2015)

—1986: Ganga Action Plan by PM Rajiv Gandhi.

- 2008-09: Ganga was declared the 'National River'
- 2015: Modi repacked previous schemes / initiatives under 'Namami Gange'. **Boss?** Water Resources Dept. Central Sector Scheme = 100% funded by union



- To make Ganga pollution free in the next 5 years through Sewage / Effluent Treatment Plants (गंगा पानी साफ करने के संयंत्र), Information, Education & Communication (IEC: सूचना, शिक्षा और संचार) etc.

#### 40.5.5 Water Schemes → Jal Kranti Abhiyan (2015)

**Boss?** Water Resources Dept. : In every district, 2 villages facing acute water shortage (पानी की तीव्र कमी) are designated as 'Jal Gram' and efforts are made to turn them into 'water surplus' villages.

- This is not a separate scheme. ₹ is mobilized from others schemes like Pradhan Mantri Krishi Sinchayee Yojana, NRDWP, MNREGA etc. to create dugwells, watershed, artificial recharge tanks etc. water assets. (दूसरी योजनाओं का पैसा इधर-उधर से बटोर के चलाते हैं)

#### 40.5.6 Water Schemes → Jal Shakti Abhiyan (2019 onwards)

For generating awareness amongst citizens for water conservation. 2022's Theme: Catch the Rain

#### 40.5.7 Water Schemes → Jal Jeevan Mission (Rural) (2019)

- **Boss?** Jal Shakti Ministry
- **Objective?** Har Ghar Jal (piped water supply) To all rural households by 2024.
- To Cities with million+ population will be encouraged to achieve it in current year (2020) itself.
- Focus on rainwater harvesting, groundwater recharge and using household wastewater for reuse in agriculture. वर्षा जल संचयन, भूजल पुनर्भरण और कृषि में पुनः उपयोग के लिए घरेलू अपशिष्ट जल का उपयोग करना।
- Previous scheme NRDWP scheme subsumed into this new scheme. (पुरानी योजना इसमें हुई विलीन)
- **Funding?** Govt aims to spend ₹ 3.60 lakh crores in this by converging with other Central and State Govt Schemes and using their funds. Further, if required, the Govt will also use additional funds available under the Compensatory Afforestation Fund Management and Planning Authority (CAMPA- क्षतिपूरक वनीकरण कोष प्रबंधन और योजना प्राधिकरण) for this purpose.

#### 40.5.8 Water Schemes → Jal Jeevan Mission (Urban) (2021)

 Budget-2021: Jal Jeevan Mission (Urban), will be launched

- 1) To provide Functional Household Tap Connection (FHTC) to houses in all 4378 Urban Local Bodies. (शहरी आवास को नल द्वारा पानी)
- 2) This mission will also provide liquid waste management in 500 AMRUT cities. (What are AMRUT cities? = Ref#5: Urban infrastructure) तरल अपशिष्ट प्रबंधन



#### 40.5.9 Water Schemes → ATAL Bhujal Yojana (=ATAL JAL) (2019)



- **Boss?** Jal Shakti Ministry. **Funding:** 50:50 by Union + World Bank.
- This scheme is **not meant for entire India** but only in the selected areas of selected 7 states facing extreme water shortages viz. Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. (सिर्फ चुनिंदा राज्य जहां पानी की बहुत किल्लत)
- Panchayat led ground water management and behavioral change (व्यवहार / वर्तन में परिवर्तन). Better performing gram panchayats, will be given more funding allocation.
- Villagers formed into 'Water User Associations' → try to minimize water wastage, build water assets, IEC etc. (पानी के व्यय बर्बादी को रोकना)

#### 40.5.10 Water Schemes → Misc. Schemes (विविध छिटपुट योजनाएं)

**Boss?** Jal Shakti Ministry. Central Sector Schemes =100% funded by union (In the sense that states are not required to give money) + Additional loans from World Bank.



<b>DRIP (2012)</b>	<ul style="list-style-type: none"> <li>- Dam Rehabilitation and Improvement Program.</li> <li>- DHARMA webportal: to monitor safety of dams in India, minimize loss of life and property damage in case of dam overflow / disaster.</li> </ul>
<b>National Hydrology Project (2016)</b>	<ul style="list-style-type: none"> <li>- Objective? Remote Sensing for water resources, flood forecast etc. (सुदूर संवेदन के द्वारा जल संसाधन और बाढ़ का पूर्वानुमान)</li> </ul>
<b>NABARD</b>	<ul style="list-style-type: none"> <li>- Budget-2017: NABARD given funds for long term irrigation infrastructure (20k cr) and Micro Irrigation (5kcr)</li> </ul>

#### 40.5.11 Agri-Input → Water → Composite Water Management Index

⇒ NITI Aayog divides India in: 1) non-Himalayan states 2) North-Eastern and Himalayan states, 3) Union Territories (UTs).

⇒ NITI ranks them into nine themes and 28 indicators against the base year 2017-18.

#### 40.5.12 Agri-Input → Water (irrigation) → River Interlinking in Budget-2022

1. River inter-Linking project. Self-study in Geography for more on this topic.
2.   Budget-2022:- Funding for river interlinking: Ken-Betwa, Damanganga-Pinjal, Godavari-Krishna, Krishna-Pennar, Pennar-Cauvery and Par-Tapi-Narmada (although Par-Tapi-Narmada dropped due to public protest) (इन नदियों को आपस में जोड़ने के लिए नए बजट में कुछ बातें की गईं)

#### ? MCQ. Find correct statement(s): (UPSC-Prelims-2020)

- 1) 36% of India's districts are classified as "overexploited" or "critical" by the CGWA.



- 2) Central Ground Water Authority (CGWA) was formed under Environment (Protection) Act.  
 3) India has the largest area under groundwater irrigation in the world.

Codes: [a] 1 only [b] 2 and 3 only [c] 2 only [d] 1 and 3 only

40.6 🗑️ 👤 AGRI-INPUT → FERTILIZER (उर्वरक / खाद)



(Introduction: Definition) **Manure / Compost** is a natural substance from decomposition of organic waste. Whereas, **Fertilizer** is an artificial chemical prepared in factories to boost nutrients in the soil.

Fertilizers	Notes
<b>Nitrogen (N) Urea</b>	<ul style="list-style-type: none"> <li>- Haber process: natural gas (methane) converted into ammonia (NH<sub>3</sub>) → further processing to create Urea.</li> <li>- Therefore, Urea production requires natural gas import.</li> <li>- Ministry of Chemicals and Fertilizers statutorily fixes the Maximum Retail Selling Price (MRP) of urea using Essential Commodities Act, 1955 → Fertilizer (Control) Order, 1985. Then ministry gives companies subsidy for their losses. [यूरिया के बिक्री के दाम कानूनन रूप से रसायन और उर्वरक मंत्रालय तय करता है और कंपनियों को होने वाले नुकसान की भरपाई के लिए उन्हें सब्सिडी देता है]</li> <li>- Urea subsidy is a Central Sector Scheme = 100% paid by Union. (i.e. State Government not required to contribute money).</li> <li>- 2022: Urea 45 kg bag price = ₹242/- (fixed by Government)</li> </ul>
<b>Phosphorus (P)</b>	~80-85% demand is met via import. ISRO using remote Sensing technology to identify the potential mines for rock phosphate.
<b>Potash (K)</b>	<ul style="list-style-type: none"> <li>- India is 100% import dependent for Murial of potash (MOP) fertiliser- 33% of this comes from Russia &amp; Belarus but due to Ukraine war 2022, supply chain is affected. (भारत आयात पर निर्भर, किंतु यूक्रेन युद्ध के चलते आपूर्ति में समस्या)</li> <li>- Govt encouraging “Potash Derived from Molasses (PDM)” fertilizer. Molasses is a byproduct in Sugar Mills. So in future our import Reliance can decrease.</li> </ul>

Ideal **Nitrogen: Phosphorus: Potassium (NPK)** ratio in soil: 4:2:1, for India it's 8:3:1 because subsidized cheap Urea → illiterate farmers use excessively. As a result →

1. Soil & groundwater pollution. (यूरिया के अत्यधिक उपयोग के चलते जमीन और भूजल प्रदूषण)
2. Subsidized urea smuggled to non-agro purpose in chemical industries related to dyeing, inks, coatings, plastics, paints even synthetic milk. (गैर कृषि उपयोग के लिए तस्करी)
3. Subsidized urea also smuggled to Bangladesh and Nepal. (सस्ते यूरिया की पड़ोसी देशों में तस्करी)
4. Increased use & smuggling → increased subsidy burden → increased fiscal deficit.

So Govt. initiated one following reforms to control urea Misuse/Overuse/Diversion:



#### 40.6.1 Prevent urea misuse → Nutrient Based Subsidy (2010)

- पोषक तत्व आधारित सब्सिडी. Central Sector Scheme = 100% Paid by Union (i.e. State Government not required to contribute money).
- **Boss?** Ministry of Chemicals and Fertilizers gives subsidy to company based on weight of the different nutrient in the fertilizer. E.g.

Nutrient	N (Nitrogen)	P(Phosphorus)	K(Potash)	S(Sulphur)
₹ Subsidy per kg (hypothetical Numbers)	19	15	11	4

- Above subsidy given to companies for producing non-UREA type “customized/mixed” fertilizer according to soil requirement in each region.
- Example diammonium phosphate (DAP)- which contains Nitrogen (N) and Phosphorus (P).
- **Challenge?** 1) Urea not covered in this scheme, Urea subsidy paid separately. Sometimes government clears the urea subsidy files in faster manner but delays in NBS subsidy payments. Because Government does not have enough money to clear all subsidies at once. Therefore Fertilizer companies focus more on urea than other fertilizers → shortage in supply of non-Urea fertilizers → Urea overuse continued (गैर-यूरिया सब्सिडी का भुगतान सरकार वक़्त पर नहीं कर पाती क्योंकि सरकार को पैसों की किल्लत है। इसलिए कम्पनियां यूरिया उत्पादन पर ज़्यादा ज़ोर देती है → बाज़ार में यूरिया ही ज़्यादा उपलब्ध रहता है इसलिए किसान यूरिया इसकी ज़्यादा ख़रीदते हैं क्योंकि गैर-यूरिया खाद आसानी से उपलब्ध नहि होती है।)
- 2) because of the ongoing Russia Ukraine war: supply shortage in international market → fertiliser prices are likely to so govt may have to pay more quantity of subsidy to prevent the price . (युक्रेन युद्ध के चलते आयातित रसायनों/उर्वरकों की किल्लत के चलते दामों में वृद्धि होने का भय, सिवाय कि सरकार कम्पनियों को दे दनादन सब्सिडी देकर, दाम बढ़ने से रोके।)

#### 40.6.2 Prevent urea misuse → Soil Health Card (2015)

- **Boss?** Agro Ministry. Core Scheme = not 100% funded by Union.
- मृदा स्वास्थ्य कार्ड contains the status of soils with respect to 12 parameters →

<i>Macronutrients</i>	N, P, K
<i>Micro - nutrients</i>	Zn, Fe, Cu, Mn, Bo
<i>Secondary- nutrient</i>	S: Sulphur
<i>Physical parameters</i>	pH, electrical conductivity (EC), Organic Carbon (OC)

- A farmer’s land is tested & he is given updated soil card once in every 3 years.
- The card also advises on which type of crops, seeds, fertilizer, irrigation method will be suitable for his farm, according to his soil type. (किसान को सलाह दी जाएगी कौन सी फसल बीज उर्वरक सिंचाई उपयुक्त है)

#### 40.6.3 Prevent urea misuse → Neem Coating of Urea (2015)

**Boss?** Ministry of Chemicals and Fertilizers. From 2015, Government made it mandatory for fertilizer companies to neem coat the urea before selling it. **Benefits?** →



1. Prevents diversion of subsidized urea towards non-agricultural purposes.
2. Neem coating slows down the rate of dissolution of urea in soil → Improves the plant's absorption of Nitrogen from the urea → Yield is . (पैदावार में बढ़ोतरी)
3. in pest and disease attack → Pesticide consumption is also . (कीटनाशक कम चाहिए)

? MCQ. Why does the Govt promote the use of Neem-coated Urea' in agriculture? (Prelims-2016)

- (a) Release of Neem oil in the soil increases nitrogen fixation by the soil microorganisms
- (b) Neem coating slows down the rate of dissolution of urea in the soil
- (c) Nitrous oxide, a greenhouse gas, is not at all released into atmosphere by crop fields
- (d) It is a combination of a weedicide and a fertilizer for particular crops.

? MCQ. Find correct statement(s) about chemical fertilizers in India (Prelims-2020)

- 1) At present, the retail price of chemical fertilizers is market-driven and not administered by the Government.
- 2) Ammonia, which is an input of urea, is produced from natural gas.
- 3) Sulphur, which is a raw material for phosphoric acid fertilizer is a by-product of oil refineries.

Codes: [a] 1 only [b] 2 and 3 only [c] 2 only [d] 1, 2 und 3

40.6.4 Prevent urea misuse → DBT of fertilizer (2018)

**Boss?** Ministry of Chemicals and Fertilizers. (रसायन और उर्वरक मंत्रालय)

- Direct Benefit Transfer (प्रत्यक्ष लाभ अंतरण) in fertilizer: Fertilizer companies are paid subsidy only after the retailer has sold the fertilizer to farmer through Point of Sale (PoS) devices & noting down his Aadhaar Card/ Kisan Credit Card/Voter Identity Card etc. to verify his identity as farmer. → Then Govt transfers the subsidy ₹ ₹ directly into the bank account of the respective fertilizer company. (कंपनी साबित करे कि फर्जी किसान को नहीं बेचा तभी सरकार कंपनी को सब्सिडी देगी)

**Benefits?** Prevents diversion of subsidized urea towards non-agricultural purposes and towards Bangladesh / Nepal. (सिवाय के बांग्लादेशी घुसपैठिए नकली आधार कार्ड बनवा कर ले जाए)

40.6.5 Prevent urea overuse → Nano-Urea- suggested by ES22

ES22: We should encourage Nano Urea To protect soil & fertiliser efficiency

Parameters	Normal 'powder/solid' Urea	Nano-Urea
Qty required for 1 acre	90 kilogram	500 ml
Price	₹500+	₹240 per bottle (By IFFCO#)

#IFFCO- Indian Farmers Fertiliser Cooperative (IFFCO)- claims to be first company in the world to produce liquid Nano urea in 2021.



#### 40.6.6 Pradhan Mantri Kisan Samridhi Kendra (PMKSK-2022):

- ⇒ Boss? Ministry of chemicals and Fertilizers
- ⇒ To convert the existing fertilizer retail shops into Model Fertilizer Retail Shops, called Pradhan Mantri Kisan Samridhi Kendra
- ⇒ These shops will act as “One Stop Shop” for all the agriculture related inputs (seeds, fertilisers, pesticides etc) and services.

#### 40.6.7 🧑🏫 🗣️ 🧠 Prevent fertilizer misuse → PM-BJP/One Nation One Fertiliser

🧑🏫 **Boss:** Ministry of Chemicals and Fertilisers

- ⇒ Scheme name: “Pradhanmantri Bhartiya Janurvarak Pariyojna” (PMBJP) / One Nation One Fertiliser
- ⇒ Objective: If company receiving fertiliser subsidy from government → company has to use govt-mandated brand name, logo and bag-colour design. (यदि कोई कंपनी भारत सरकार से उर्वरक की सब्सिडी प्राप्त कर रही है तो उसने उर्वरक फर्टिलाइजर की थेलियों पर केवल, सरकार द्वारा निर्धारित नाम-लोगों इत्यादि इस्तेमाल करना होगा.)
- ⇒ Single brand name for UREA, DAP, MOP and NPK etc. would be BHARAT UREA, BHARAT DAP, BHARAT MOP and BHARAT NPK etc. respectively
- ⇒ A logo showing “Pradhanmantri Bhartiya Janurvarak Pariyojna”.

🧑🏫 **Benefit?**

- ⇒ 1) Easy to spot such fertiliser bags so, if any smuggling/ diversion being done then easily it can be detected. (तस्करी हो रही होगी तो तुरंत दिख जाएगा।)
- ⇒ 2) Govt can claim credit / fame among farmers. Farmers become aware / sensitive about the subsidy being paid by Govt, and engage more positively towards the future reforms of Govt. (किसानों के बीच सरकार की छवि में सुधार हो और सरकार द्वारा भविष्य में किए जाने वाले कृषि सुधारों का वो समर्थन करें)

#### 40.6.8 🧑🏫 🗣️ 🧠 Reduce Fertilizer use : PM PRANAM scheme in 🗳️ Budget-2023

Exact features yet to be launched, but Newspaper are making some guesswork. So following info-may be wrong/partially correct. (अभी तक आधिकारिक रूप से योजना जारी नहीं हुई तो हो सकता है निम्न दी गयी नोट में कुछ त्रुटियां हो)

- ⇒ Boss: Ministry of chemicals and Fertilizers
- ⇒ Objective: To reduce the use of chemical fertilisers.
- ⇒ Mechanism: if state govt manages to reduce the fertiliser consumption, & saves say Rs.100 cr subsidy bill for Union, then Union to give Rs.50cr as grant to the state government. (numbers are imaginary, because scheme features yet to be launched).
- ⇒ Scheme became necessary because fertiliser subsidy bill has increased to Rs 2.25 lakh crore in 2022-23. - Government does not have enough fiscal resources to sustain such subsidy burden.



(PM प्रणाम योजना: यदि कोई राज्य सरकार ऊर्वरक/फर्टिलाइजर उपभोग में कटौती करवाती है, तो केंद्र सरकार उस राज्य सरकार को अनुदान के रूप में पैसा देगी। केंद्र सरकार के भारी सब्सिडी बोझ को कम करने के लिए यह ज़रूरी है)

#### 40.7 🐞🌿 AGRI-INPUT → PESTICIDES & WEEDICIDES



**(Introduction: Definition)** Pesticides and weedicides (कीटनाशक, खरपतवार नाशक) are chemicals which are used for killing / controlling pests and weeds respectively.

- ⇒ 25% crop loss on account of pests, weed, diseases but India's per hectare pesticide consumption is far less than first world. We should encourage organic pesticides and biocontrol agents.
- ⇒ We should adopt **Integrated Pest Management (IPM: एकीकृत कीट प्रबंधन)** approach i.e. rather than eradicating pest population to 100%, just try to keep crop damage to economically tolerable level. Because even pests are important for biodiversity protection and food chain balance.
- ⇒ Spread awareness about proper use of chemical pesticides (esp. Endosulfan) so it doesn't contaminate in food / land / water / human bodies excessively. (सावधानीपूर्वक उपयोग के लिए जागृति)
- ⇒ **Homework-Self-Study:** Locust disaster Management. (टिड्डी आपदा प्रबंधन)
- ⇒ 📖👤 Pesticides Management Bill, 2020 to regulate the trade, storage & use of pesticides but NOT veryIMP4EXAM. # 🕒 थोड़ा-पढ़ो-आगे-बढ़ो

#### 40.8 🚫🌿🚫 AGRI INPUTS → DON'T USE CHEMICALS → PKVY (2015)



**(Intro: Definition)** Organic farming is a type of agriculture that avoids the use of synthetic fertilizers, pesticides, and other chemical inputs. It relies on crop rotation, crop residues, manures, biofertilizers, biopesticides etc. (जैविक खेती: कृत्रिम उर्वरक, कीटनाशक और अन्य रसायनों का उपयोग न करें.)

- ⇒ (Data) India has more than 44 lakh organic farmers- it is the highest in the world
- ⇒ 🌱 **Ecological benefits?** Less use of chemicals → biodiversity protected, less soil water air pollution (because farmers will not burn the crop residue). [ जैव विविधता का रक्षण होगा]
- ⇒ 🏡 **Economic benefits?** 1) organic products command higher prices among the health conscious buyers from developed countries → more exports → less CAD, more farmer's income. 2) less use of chemical fertilizers → governments urea subsidy bill will decline → fiscal deficit can be controlled. (चालू खाता घाटा, सब्सिडी बोझ, राजकोषीय खाध में कमी)

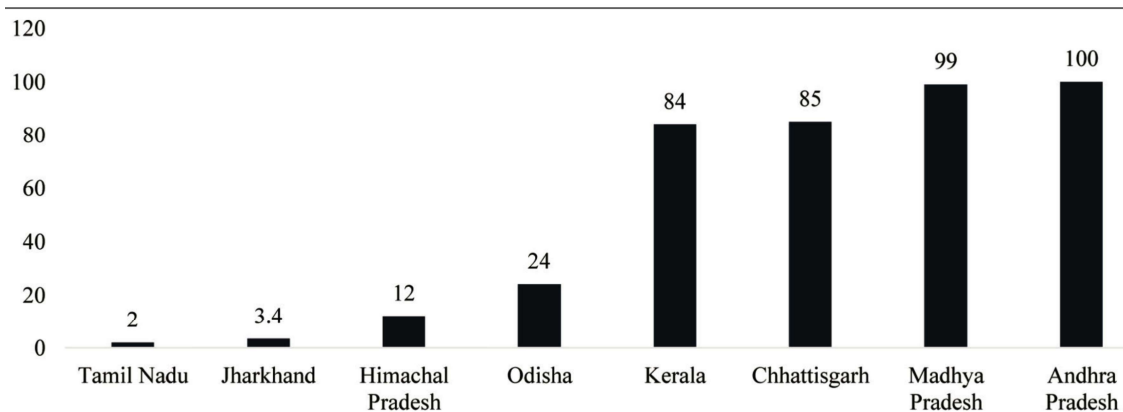


- ⇒ In 2003, Sikkim stopped entry of chemical fertilizers, and its Vidhan-Sabha declared the intention to become a 100% organic state. The goal achieved in 2015. (सिक्किम संपूर्णता जैविक खेती राज्य)
- ⇒ After Sikkim, now Tripura and Uttarakhand also planning to become 100% organic - says  
ES23
- ⇒ 2015: To encourage organic farming in India, Union Govt. launched Paramparagat Krishi Vikas Yojana (PKVY). **Boss?** Agro Ministry. Core Scheme = Not 100% paid by Union. (60:40,90:10)
- ⇒ **Mechanism?** Form a group of 50 farmers in a cluster to start organic farming. Every beneficiary farmer is given ₹ 20,000 per acre for 3 years for doing organic farming.
- ⇒ Agro Ministry's **Jaivik Kheti webportal** to help organic buyers & sellers connect with each other.
- ⇒ Agro Ministry's **Participatory Guarantee Scheme (PGS: सहभागी गारंटी योजना)** for certification of organic products. It assures the buyers the given fruit/vegetable/produce has organic origin. (जैविक उत्पादों का प्रमाणीकरण)

#### 40.9 🚫🚫🚫 AGRI INPUTS → PKVY (2015) → (BPKP-2021)

- 2020: Agri ministry launched Bhartiya Prakritik Krishi Padhati (BPKP) as a sub-scheme of Paramparagat Krishi Vikas Yojana (PKVY) (उप-योजना के रूप में शुरू किया)
- helps farmers with natural farming (don't use chemicals), biomass recycling, cow dung-urine manure, and exclusion of all synthetic chemical inputs. (प्राकृतिक खेती, बायोमास पुनर्नवीनीकरण, गोबर-मूत्र से खाद, और सभी कृत्रिम रासायनिक आदानों का बहिष्कार।)
- BPKP gives ₹12,200 / hectare financial support every 3 years. (वित्तीय सहायता दी जाती है।)

**Figure 19: Area Covered under BPKP as on 07.12.2021 (in '000 ha).**



▶️ 🗣️ **FAQ: How is BPKP similar/different than PKVY – it seems to be like old wine new bottle?**

Ans. Not important. To show-off to media, govts usually launch new scheme with same objective. We need to prepare 2-3 lines & move to next topic.

#### 40.9.1 🚫🚫🚫 Zero Budget Natural Farming (ZBNF: शून्य बजट प्राकृतिक खेती)

- 'Zero Budget' means without using any loan, and without spending any money on purchase of inputs (seeds, fertilizers, pesticides). (बीज उर्वरक कीटनाशक में पैसा खर्च किए बिना, कर्ज लिए बिना, खेती करना)



- 'Natural farming' means farming without chemicals. By using biofertilizers, earthworms, cow dung etc. Associated keywords:
  - **Jiwamrita** (microbial culture) and **Bijamrita** (seed treatment solution)
  - Biopesticides: 'Agniastra', 'Brahmastra' and 'Neemastra'
  - Most of the above are made from Cow-urine.
  - **'Waaphasa'** (giving water outside the plant's canopy),
- ZBNF saves farmers from debt-traps; and protects the environment, soil and biodiversity. (कर्ज के विष चक्र; पर्यावरण, मिट्टी और जैव विविधता की रक्षा)
- Practice first started in **Karnataka by Subhash Palekar. Himachal, Andhra** also frontrunners.
- Budget-2019 promised to expand ZBNF in other parts of India. Govt encourages it under launched **Bhartiya Prakritik Krishi Padhati (BPKP)**
- **Budget-2022:-** Chemical-free Natural Farming will be promoted esp on farmers' lands in 5-km wide corridors along river Ganga (गंगा नदी के 5 किलोमीटर इलाके में रसायन मुक्त प्राकृतिक खेती बाड़ी को प्रोत्साहन दिया जाएगा)
- **Budget-2022:-** SC/ST farmers to be given funding for agro forestry. Agro forestry is integrating trees with crops and animals e.g. Bamboo & Oil-Palm trees in farm land. (अनुसूचित जाति और जनजाति के किसानों को एग्रोफोरेस्ट्री के लिए पैसा देंगे).

#### 40.9.2 Organic farming & ZBNF → Limitations? (मर्यादा/चुनौतिया)

1. Organic farming yield (quantity produced per acre) is lower than conventional chemical-based farming. (पारंपरिक रासायनिक आधारित खेती की तुलना में कम उपज)
2. In recent years Sri Lankan govt suddenly promoted too much organic farming, discouraging the import of chemicals pesticides and fertilisers. Crop yield/production qty because fertilizer not used → food supply → food inflation , food becomes expensive for consumers, food exports declined . 2021: Now Lankan government has realised its mistake & began encouraging use of chemical fertilizer for tea, rubber and coconut (श्रीलंका सरकार ने जैविक खेती को ज़रूरत से ज़्यादा प्रोत्साहन दे दिया और वहाँ अब फ़सल पैदावार काफ़ी कम हो गई है. जिसके चलते खाद्य मंहंगाई में बढ़ोतरी और कृषि निर्यात में कमी आयी है। तो श्रीलंका सरकार को गलती समझ में आयी, वापस रासायनिक उर्वरक के उपयोग पर ज़ोर दे रहे है।)
3. Difficult to produce off-season crops using organic farming. so if entire India became "100% organic farming" → food shortage → inflation. (उत्पादन में कमी के चलते खाद्य असुरक्षा और मंहंगाई)
4. Shelf life, colour and texture of organically grown fruits/vegetables are less attractive than chemically grown hybrid / GM varieties. So, unless ordinary consumers are made aware of their health benefits they may not buy. (जैविक फल सब्जियां जल्दी बिगड़ जाते है, रंग-बनावट आकर्षक नहीं)



#### 40.9.3 Conclusion: Organic farming / ZBNF

- ✓ (SDG) New India Vision 2022 requires doubling farmers' income, while Sustainable Development Goal No.2 requires nations to adopt agriculture practices that improve land and soil quality & protect the genetic diversity of flora-fauna. (सतत विकास लक्ष्य और किसानों की आय को दुगना)
- ✓ Given the aforementioned ecological and economic benefits of organic farming /ZBNF, it can help us achieve both the targets. (पर्यावरण और आर्थिक नजरिए से बहुत फायदेमंद)

#### 40.10 AGRI INPUTS → FARM MECHANIZATION (मशीनीकरण)



(Intro: Definition) It means the higher usage of combine harvesters, land levelers, cultivators, tractors, reapers, threshers, trolleys and mechanical pickers etc. (कृषि में मशीनों का ज्यादा उपयोग)

- ⇒ **Significance?** (1) ↑ productivity of land, labour by increasing work output per unit time. (2) ↑ employment opportunities to rural youth in production, operation, and repair-maintenance of machines. (उत्पादन, संचालन और मरम्मत-रखरखाव में ग्रामीण युवा को रोजगार)
- ⇒ **Labour augmenting technological progress:** Allows each laborer to be more productive e.g. Industrial revolution → James Hargreaves' Spinning Jenny that allowed each worker to spin eight cotton threads at once (1770).
- ⇒ **Capital augmenting technological progress:** Allows capital assets / machinery to be more productive. E.g. wooden plough replaced with steel plough → more sturdy, requires less maintenance & repairs, resistant to water-fungal attacks.
- ⇒ After MNREGA scheme (wherein villagers are guaranteed 100 days of unskilled manual work), the Punjab-Haryana farmers are facing shortage of farm-laborer in peak season, & forced them to offer higher wages → many of those farmers opting for machinery to reduce labour requirement. (पंजाब हरियाणा में कृषि मजदूरों की कमी के चलते मशीनों का उपयोग ज्यादा)
- ⇒ **ES21: Corona lockdown-** movement of migrant farm labourers & farm machinery-repair/movement affected = problems during harvesting season. (फसल कटाई में दिक्कत आयी)

#### 40.10.1 Agri Inputs → Farm Mechanization: Challenges?

- ⇒ Indian tractor industry is the largest in the world, accounting for 1/3<sup>rd</sup> of total global production. Nearly 80,000 tractors exported every year to African and Asian nations. But within India, the utilization is low. India farm mechanization (40%) < China (60%)< Brazil (75%) < USA (95%).



- ⇒ Customized machinery required for India's soil and climatic diversity so R&D, Make in India required. Small-marginal farmers lack financial resources to own machines so renting centres should be setup. (भारत की जमीन और आबोहवा की विविधता के अनुरूप यंत्रों का संशोधन और विकास किया जाए)
- ⇒ 📄 Agri Ministry **Scheme?** 2017: Green Revolution - Krishonnati Yojana → Sub-Mission on Agricultural Mechanisation (SMAM): to address above challenges.
- ⇒ 📄 Agri Ministry launched Mobile App called FARMS (Farm Machinery Solutions) for farm machinery renting.
- ⇒ 📄 📱 Budget-2022:- 'Kisan Drones' for crop assessment, digitization of land records, spraying of insecticides, and nutrients. (फसल निरीक्षण, जमीन दस्तावेजों को डिजिटल बनाना, किट-नाशक दवाई तथा पोषक-तत्वों के छिड़काव के लिए "किसान ड्रोन" को प्रोत्साहन देंगे)

📄 ? MCQ. The substitution of steel for wooden ploughs in agricultural production is an example of \_\_\_\_\_ technological progress. (Asked in UPSC-Pre-2015)  
 (a) labour-augmenting (b) capital-augmenting (c) capital-reducing (d) None of the above.

📄 ? MCQ. Private investment in Indian agriculture is mostly on labour saving mechanization. This could be a response to (Asked in UPSC-CDS-2015-II)  
 (a) rising productivity of agricultural sector (b) rising inequality in agriculture  
 (c) rising wages and tighter labour market (d) debt write-off by the Government

#### 40.11 📄 📱 📄 AGRI INPUTS → FINANCE / CREDIT: ऋण

(Intro: Origin) Small and marginal farmers produce little marketable surplus, and often deprived of the remunerative prices even during bumper crops, so without borrowing they can never buy inputs for the next cropping cycle. (छोटे सीमांत किसानों के पास बेचने के लिए विपुल मात्रा में अनाज होता नहीं और अच्छी पैदावार के दौरान भी, बाजार में अच्छे मूल्य मिलते नहीं हैं, इसलिए हमेशा वे कर्ज में डूबे रहते हैं)

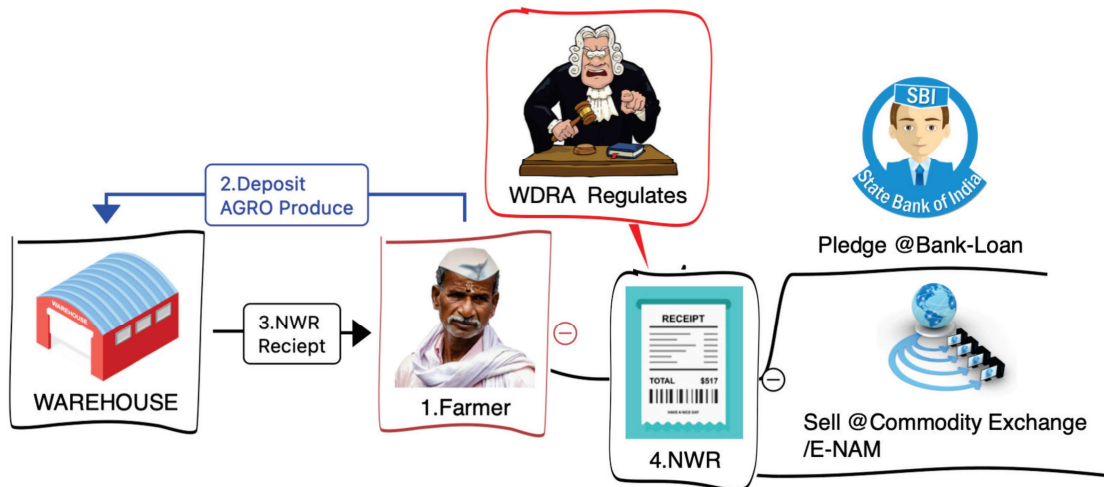
- ⇒ Economic Survey 2016 found an inverse relation between size of landholding vs. Indebtedness (ऋणग्रस्तता) of farmers i.e. small/marginal farmers are more indebted than big farmers.
- ⇒ 📄 📄 ES20: The share of North Eastern States <1% in total agricultural loans.
- ⇒ 📄 Budget-2020: 1) Agriculture credit target for the year 2020-21 has been set at ₹15 lakh crore. NABARD will provide a refinance facility for this. 2) if a PM-KISAN beneficiaries doesn't have Kisan Credit Card (Ref:Pillar#1D), he will be given such a card.
- ⇒ 📄 Agri Loan Targets in Recent Budgets: ₹16.5 lakh cr (2021), ₹18 Lcr (2022).

Table 1: notable steps to enhance credit availability to farmers →

RBI's PSL norms: रिजर्व बैंक द्वारा प्राथमिक क्षेत्र के ऋण मानक	Ref: Pill#1: Monetary policy handout
Nationalisation of banks after the Independence. Setting up of differential banks (RRB, LAB, SFB).	Ref: Pill#1: Bank classification handout
Kisan credit card, interest subvention scheme,	Ref: Pill#1D: Fin.inclusion



#### 40.11.1 🏠 ➡️ Agri-Finance → Negotiable Warehouse Receipts (NWR)



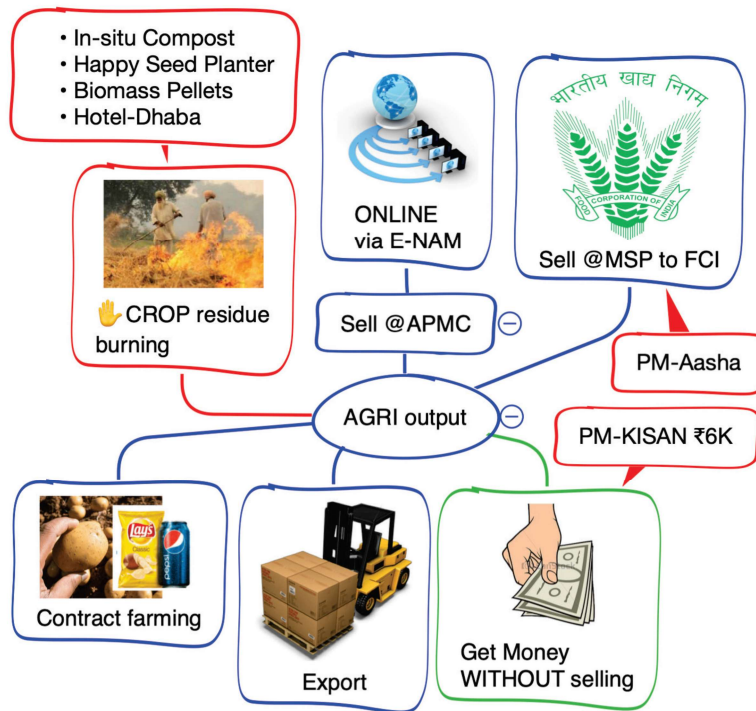
- ⇒ **Boss?** Ministry of Consumer Affairs, Food & Public Distribution → Statutory Body  
**Warehousing Development and Regulatory Authority (WDRA:** भांडागारण विकास एवं विनियामक प्राधिकरण)- law in 2007.
- ⇒ Farmer deposits his produce into WDRA registered warehouses and gets negotiable warehouse receipt (NWR; परक्राम्य गोदाम रसीद). He can use it in two ways
- Pledge it in the banks to obtain loans for the next cropping cycle. OR
  - Trade it via the commodity exchange markets or electronic National Agriculture Markets (e-NAM).
- ⇒ 🎯 **Benefit?** NWR prevents the distress sale of agriculture produce. Farmer can wait and watch for the prices to improve before selling, while his crop is safely stored in the warehouse.

#### 40.11.2 🏠 📄 🏠 🏠 Agri-Finance → Loan waivers for the farmers (किसान को कर्जमाफी) Shifted to Mains Handout.

#### 40.12 🏠 🏠 AGRI-INPUT → RISK REDUCTION → INSURANCE

**(Intro: Origin)** Though agriculture sector is a minor contributor to India's GDP, but large proportion of our population depends on agriculture. Agriculture itself depends on monsoon, pests, disease and other vagaries of nature. But insurance penetration & insurance density is low in India.

- 2002: Agriculture Insurance Company of India Ltd. (AIC) was setup.
- Agro Ministry launched 🏠 🏠 🏠 **Pradhan Mantri Fasal Bima Yojana** (Core scheme) and other crop insurance schemes. (More in 📄 **Pillar#1D: general insurance**)



#### 40.13 🗑️💧 AGRI-OUTPUT → DON'T BURN THE CROP RESIDUE (फसल-अवशेष/ पराली)



(Intro: Origin) Every year during Sept-October, farmers of Punjab, Haryana, Uttar Pradesh burn the paddy stubble & residue which are leftover from previous cropping season. Burning clears the farm land for sowing wheat for next cropping season. अगले मौसम में गेहूं उगाने के लिए फसल-अवशेष/ पराली जलाना

- **Result?** Thick smog, air pollution, particulate matter (PM 2.5) in Delhi.
- open burning of crop residues has ill effects on soil organic carbon and soil fertility

#### 🔧 Solutions?

- In-situ composting (स्वस्थानी उपजाऊकरण)
- Machines like Rotary Slasher, Zero Till Seed Drill, Rotavators, 'Happy Seeder: They help in wheat sowing without having to get rid of paddy straw on the land.
- 2015: National Green Tribunal order → Burning crop residue is a crime under Section 188 of the IPC and under the Air and Pollution Control Act of 1981
- 📁 Budget-2018: Union to give 100% funding to Punjab, Haryana and Delhi to tackle this menace. Further, individual farmers to be given subsidy for such machinery purchase.
- 📊 ES20: PM2.5 emission (g/Kg) from burning crops: Sugarcane (12.0) > Maize (11.2) > Cotton (9.8) > Rice (9.3) > wheat (8.5). So, we should promote low lignocellulosic crop like maize, potato, soybean etc. because their residue's burning creates less air pollution.
- Setup biomass depots for storage of crop residues. from there



- Thermal power plants to use crop residues with coal. (तापीय ऊर्जा) → Budget 2022 announced use of 5-7% biomass pellets in thermal power plants.
- biochar briquettes as fuel for local industries, brick kiln and hotel/dhaba

#### 40.14 BUDGET-2023 ON AGRO

AREA	BUDGET-2023 ANNOUNCEMENTS
Coop Societies	- vision of 'Sahakar Se Samridhi'. - Computerisation of 63,000 Primary Agricultural Credit Societies (PACS) will be done - A national cooperative database for GPS mapping of cooperative societies.
Use 'less fertiliser': PM-PRANAM	"PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth". - Union to encourage States and Union Territories to reduce consumption of chemical fertiliser.
Organic farming	- We'll setup 10,000 Bhartiya Prakritik Kheti Bio-Input Resource Centres. - To train 1 crore farmers to adopt natural farming. - We'll create creating a national-level pesticide and micro-fertilizer (e.g. Nano Urea) and manufacturing network.
Horticulture	Atmanirbhar Clean Plant Program: - To boost availability of disease-free, quality planting material- horticultural crops
Agri Startup	Agriculture Accelerator Fund for encouraging agri-startups in rural areas
Millets /Shree Anna	we grow several types of 'Shree Anna' such as kuttu, ramdana, kangni, kutki, kodo, cheena, and sama. we'll give the funding to Indian Institute of Millet Research, Hyderabad. It is an org. under under Indian Council of Agricultural Research (ICAR).
Loans	we'll give ₹ 20 lakh crore loans to agri, animal husbandry, dairy and fisheries.
Subsidy	Refer to Pillar2B for data on food and fertilizer subsidies.
Irrigation	Upper Bhadra Irrigation Project (Karnataka) given funding.

#### 40.15 AGRI-SELLING → APMC (कृषिगत उत्पाद विपणन समिति)



**(Intro: Origin)** In the Post-independent India, despite the abolition of zamindari, the farmers were not 'liberated' from exploitation. Because, the goons of local Baniyaa or money lender would forcibly take away the farmers' harvest without paying sufficient money. So, state governments enacted APMC laws that "first sale of agriculture produce can occur only at the market yards / Mandis of Agricultural Produce Market Committees (APMC)." (किसानों को साहूकारों के वसूली/शोषण से बचाने के लिए राज्यों ने कानून बनाए कि कृषि उपज की सबसे पहली बिक्री माला एपीएमसी मंडी में ही हो पाएगी)



#### 40.15.1 ⚠️ APMC Problems? समस्याएं / चुनौतियां

1. APMC trustees (office bearers) are **politically influential persons**. They enjoy a cozy relationship with the licensed commission agents. These agents form cartel, manipulate prices, deprive farmers of remunerative prices; engage in hoarding & artificial shortage of food supply in the retail market, thereby driving up the food inflation for profiteering. (राजनीतिसे जुड़े तत्व, किसान को अच्छी कीमत नहीं देते, संग्रह-खोरी द्वारा बाजार में चीजों को महंगा करके मुनाफाखोरी करते हैं)
2. APMC trustees lack the managerial skill / vision for vertical integration with food processing industries. [because their only skill is 'Politics', प्रबंधन कौशल्य कम है]
3. While these Mandis charge multiple entry, exit and other fees. But money is siphoned off → poor infrastructure, lack of cold-storage, transport facilities → waste of fruits & vegetables even in good monsoon years. (शीतगार, परिवहन बुनियादी अवसंरचना की कमी के चलते सब्जी फल बर्बाद)

#### 40.15.2 📄 Model APMC Act? (आदर्श कानून)

Since **agriculture is a state subject**, ultimately state governments have to reform their archaic laws. Union Government already circulated a model APMC Act, 2003 (सातवीं अनुसूची में राज्य सूची में है)

- It allows the private entrepreneurs and cooperatives to set up their parallel markets, & sell directly to consumers
- It allows the corporate companies to engage farmers in 'contract farming (अनुबंध खेती)' and directly purchase the produce from farmgate.

#### Further, Union Government released

- 1) Model Agricultural Produce and Livestock Marketing Act 2017 (APLM: मॉडल कृषि उपज और पशुधन विपणन) → it has better features than above model act, covering both Agro commodities as well as livestock, fisheries and poultry.
- 2) Model Contract Farming Act, 2018 → aims to protect farmers engaged in contract farming with better features than model APMC act 2003.

**2016:** NITI Aayog launched Agricultural Marketing and **Farmer Friendly Reforms Index (AMFFRI)** to rank States and UTs. No state has achieved 100/100 score yet.

#### 40.15.3 🏛️📄🗑️: 🗑️🗑️ 3 Farm laws repealed (2020-21)

For Prelims-RAFTAAR, I'll make very very brief summary. Rest of the arguments shifted to Mains Handout

3 farm laws	Objective
Farmers' Produce Trade and Commerce (Promotion and Facilitation) Ordinance/Act, 2020.	Reform State APMC Acts. Give facility to farmers to sell it to people/organizations outside APMC
Farmers (Empowerment and Protection) Agreement on Price	⇒ Contract farming agreement means an advance agreement between the farmer and the buyer agent, before the production of farm commodities. (अनुबंध



Assurance & Farm Services Ordinance/Act, 2020.	खेती: ग्राहक और किसान के बीच, कृषि उत्पादन से पहले, किया गया एक अग्रिम समझौता है) ⇒ This new law aimed to reform the State laws to protect both farmer and buyer (food processing company)
Essential Commodities (Amendment) Ordinance/Act, 2020	⇒ To help food processing companies in stock limits.

But some farmer organizations protested against these laws, ultimately govt repealed these 3 laws. What were farmers demands? Etc. analysis = SHIFTED to Mains Handout. #Prelims-RAFTAAR.

**AB ? MCQ. In India, markets in agricultural products are regulated under the (UPSC-Pre-2015)**

- (a) Essential Commodities Act, 1955
- (b) Agricultural Produce Market Committee Act enacted by States
- (c) Agricultural Produce (Grading and Marking) Act, 1937
- (d) Food Products Order, 1956 and Meat and Food Products Order, 1973

#### 40.16 AGRI-SELLING ONLINE → E-NATIONAL AGRICULTURE MARKET (E-NAM)

- Boss? Agro Ministry (2016) → Small Farmers' Agribusiness Consortium (SFAC)
- Central Sector Scheme = 100% paid by Union.
- e-NAM (ई-राष्ट्रीय कृषि बाजार) aims to connect the existing 580+ APMC mandis across India through a web portal, thus enabling interstate and intrastate (within state) trade of agricultural commodities. (मंडियों को ऑनलाइन जोड़कर व्यापार में सुगमता)
- Govt is providing free software and ₹ 75 Lakh per APMC mandi for infrastructure creation.
- It'll also remove the information asymmetry (सूचना की विषमता) between buyers and sellers, and help in real time price discovery based on actual demand and supply.
- 2019-Nov: FM Nirmala.S says State Govts should dismantle the APMC-mandis & replace them with E-NAM Mandis so farmers can get a better price for their produce.
- Budget-2020: Negotiable Warehousing Receipts (e-NWR) will be integrated with e-NAM. This will help merchants buy e-NWR from E-NAM portal.

**AB ? MCQ. What are the advantages of 'National Agriculture Market' scheme?(Pre-2017)**

- a) It is a pan-India electronic trading portal for agricultural commodities.
- b) It provides the farmers access to nationwide market, with prices commensurate with the quality of their produce.
- c) Both a and b
- d) Neither a nor b

#### 40.16.1 Agri-Selling → Gramin Agricultural Markets (GrAMs)

- Boss? Agro Ministry (2018) → NABARD fund for Agri-Market Infrastructure Fund (AMIF).



- Gramin Haats are owned by Local Bodies (Panchayats/councils), Agricultural/ Horticultural Departments of State Govts, Cooperatives, APMCs and Private Sector. Total ~22,000 of them. Whereas APMC mandis are barely 580+.
- Budget-2018: 1) we will upgrade Gramin haat into GrAMs (ग्रामीण कृषि बाजार) 2) We'll link them with e-NAM. So, farmers can directly sell from nearby Gram Haat, instead of transporting the produce to the APMC Mandis at the district level.

#### 40.16.2 📦 🚚 🌐 Agri-Selling → Outside India → Agri Export Policy, 2018

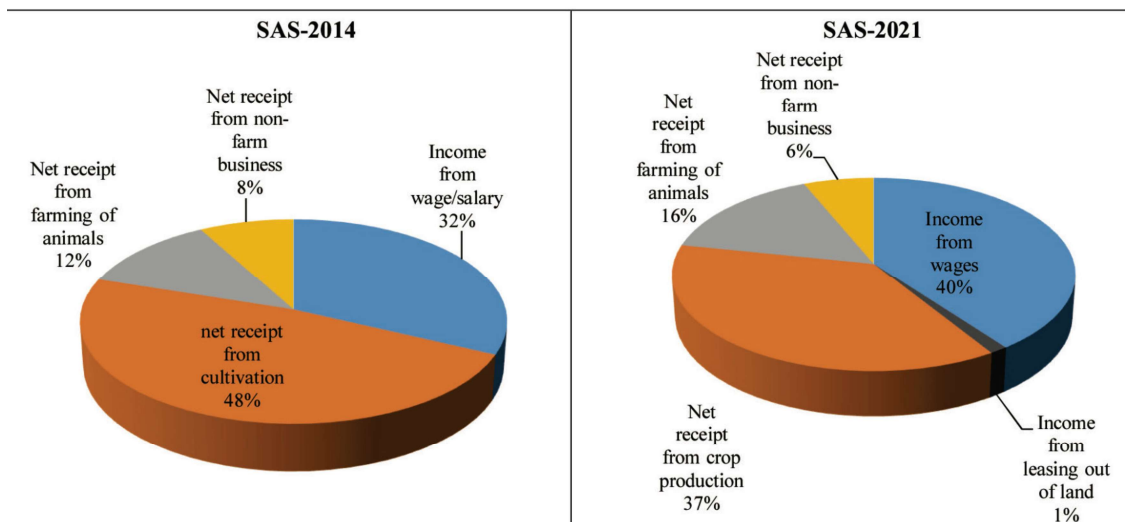
⇒ Agri Export Policy Boss? Commerce Ministry. (वाणिज्य मंत्रालय की कृषि निर्यात नीति)

⇒ Objective – to improve agri exports.

⇒ Salient features – shifted to Mains Handout.

#### 40.16.3 📦 🚚 🗣️ 🏠 Agri-Selling → Farmer's income: SAS Survey DATA

**Figure 16: Composition of Average Monthly Income of Agricultural Households**



- Situation Assessment Survey (SAS) of agricultural households conducted by the Ministry of Statistics & Programme Implementation (MOSPI) → National Statistical Office (NSO). स्थिति आकलन सर्वेक्षण
- Latest Report covers timeframe of 2019. It was published in 2021. Notable Findings →
- agriculture household monthly income has 📈 from ₹ 6426 (in 2014) to ₹ 10218 (2019) (एक भारतीय किसान परिवार की औसत आमदनी मुश्किल से 10,000 रुपये प्रतिमाह है).

Highest monthly incomes of farming families	Lowest monthly incomes of farming families:
– Meghalaya (Rs 29,348)	– Jharkhand (Rs 4,895)
– Punjab (Rs 26,701)	– Odisha (Rs 5,112)
– Haryana (Rs 22,841)	– West Bengal (Rs 6,762)



- fragmentation of land holding has . Average size of a farm reduced from 0.725 hectare (2003) to 0.512 ht (2019) (ज़मीन का भी खंडन हो रहा है. खेत की औसत आकार कम हो रही है.)

#### 40.17 AGRI-SELLING → INCOME SUPPORT FOR FARMERS

- NABARD released All India Rural Financial Inclusion Survey found total ~21 crore rural household. Out of them ~10 crore engaged in agriculture. Farming is not a very profitable enterprise in India because majority of the families struggle to earn even ₹10,000 per month. (खेतीबाड़ी बहुत मुनाफ़े वाला धंधा नहीं जा रहा था भगवान वृद्धि से 10 हज़ार रुपए कमा पाते है)
- ES2018 noted: Climate change's negative impact with higher temperature and shorter rainfall: income fall will be 15-18% (for irrigated farm), 20-25% (for unirrigated farm). जलवायु परिवर्तन से उत्पादकता को खतरा
- Modi-govt has target of doubling the farmers income (from base year 2015-16) in 2022-23. But for that agricultural sector must grow at 10% annually whereas it's struggling to grow even @5%! Therefore, Govt. intervention is necessary in the form of subsidies, procurement, MSP and minimum income support (PM-KISAN@6k/pa). इसलिए सब्सिडी, विपणन, न्यूनतम समर्थन मूल्य, न्यूनतम आय समर्थन के रूप में सरकारी हस्तक्षेप जरूरी

#### 40.18 AGRI-SELLING → MINIMUM SUPPORT PRICES (MSP)

Under the State APMC Acts, the first sale of agriculture commodity can occur at Agricultural Produce Market Committee (APMC) Mandis only. However, a farmer may not get remunerative prices at the Mandi due to following reasons:

1. Bumper production / supply = market prices (आपूर्ति बढ़े: दाम गिरे) AND / OR
2. Cartelization / price-fixing by the mandi-merchants.

So, to protect the farmers, Government of India announces MSP (न्यूनतम समर्थन मूल्य) before each crop sowing season. (यदि किसान को मंडी में अच्छी कीमती ना मिले तो सरकार को बेच सकें)

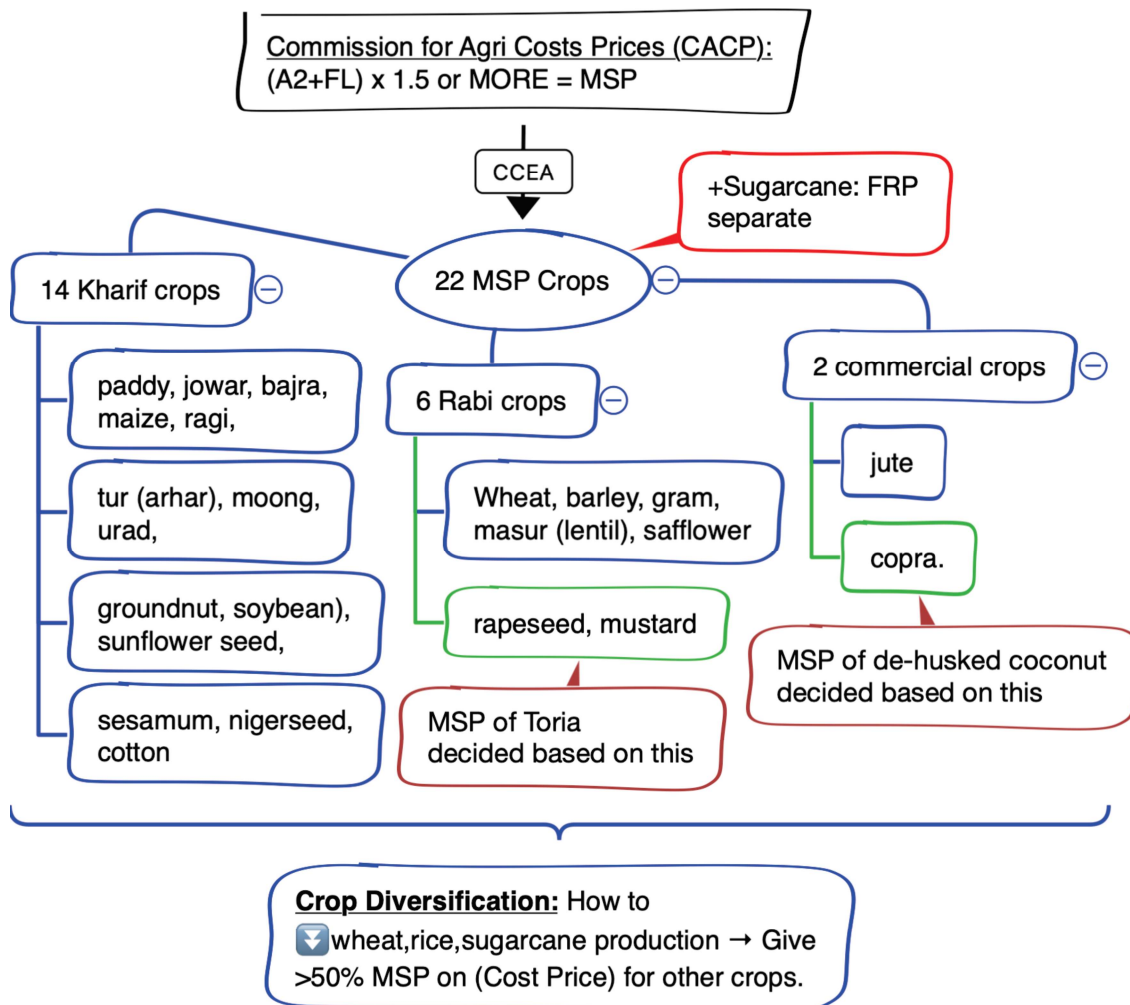
##### 40.18.1 MSP covers which crops?

*For 22 crops (MSP) + 1 sugarcane (FRP) = 23 viz.*

<b>14 kharif crops</b>	<ul style="list-style-type: none"> <li>– Kharif: Grown In Summer / Monsoon Season.</li> <li>– Paddy, Jowar, Bajra, Maize, Ragi, Arhar, Moong, Urad, Groundnut-In-Shell, Soyabean, Sunflower, Sesamum (तिल), Nigerseed (रामतिल) And Cotton;</li> </ul>
<b>6 rabi crops</b>	<ul style="list-style-type: none"> <li>– Rabi: grown in winter season.</li> <li>– Wheat, Barley, Gram, Masur(Lentil), Rapeseed/Mustard, Safflower (कुसुम)</li> </ul>
<b>3 commercial /cash crops</b>	<ul style="list-style-type: none"> <li>– Jute, Copra (coconut) and Sugarcane.</li> <li>– For Sugarcane, mechanism is different: It requires the sugar mill companies to pay the minimum Fair and Remunerative Price (FRP) fixed by Govt. (Whereas for other 22, Govt itself procures @MSP)</li> </ul>



\*\* In addition, MSP of Toria (a type of oilseed crop) fixed on basis of rapeseed-mustard and MSP of de-husked coconut (छिलका उतारा गया नारियल) fixed on the basis of the MSP of copra. But for MCQ if asked then the safe number is '22'.



#### 40.18.2 📊 🗣️ 🧑🏫 🏛️ MSP computation, Swaminathan Committee?

Agro Ministry's Commission for Agricultural Costs and Prices (CACP: कृषि लागत और मूल्य आयोग) recommends MSP (& FRP for sugar) → Cabinet Committee on Economic Affairs (CCEA: आर्थिक मामलों की कैबिनेट समिति) chaired by PM approves & announces MSP.

CACP's computation method is →

A2	Actual costs directly incurred by the farmer on seeds, fertilizers, pesticides, hired labour, depreciation on farm buildings & machinery, interest on working capital, diesel/electricity for tractor/ pump sets etc.
FL	Imputed cost of (unpaid) family labour.
$(A2+FL) \times 1.5 \text{ times}$ <b>MINIMUM.</b>	This will be the official MSP. (from Budget-2018 onwards). So farmer sees 50% profit on this cost of production.

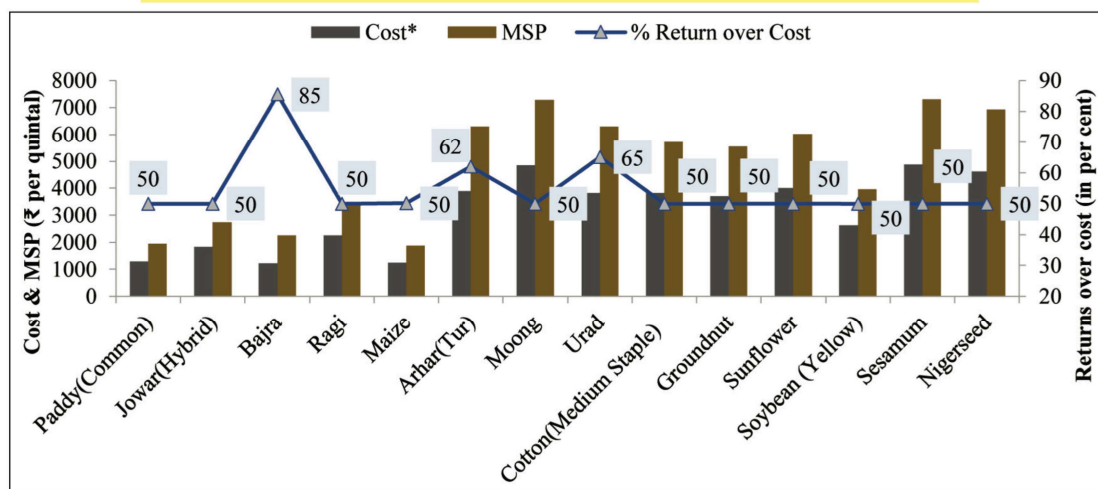


The National commission on farmers (2006) headed by Scientist MS Swaminathan had suggested 50% profit but using a different 'C2 formula', BUT

- C2 formula computed lot of costs, including imputed rent on his own land and imputed interest on his own capital etc. (i.e. what if farmer had leased the farmland or gave his savings as loan to someone else, instead of farming by himself, then how much rent / interest would he have earned?) (काल्पनिक रूप से वह कितना कमा लेता उसके भी कुछ आंकड़े जोड़े जाते हैं)
- If govt. used C2 formula, MSP will become very high due to aforementioned (hypothetical) imputed costs → higher budgetary allocation, fiscal deficit will increase. So, Govt is using A2+FL formula only.
- 2020: 😊 Corona → 🇮🇳 Atma-Nirbhar → Govt promised to 📈 MSP to help farmers.

#### 40.18.3 📊 ES22: Crop Diversification: by higher MSP (फ़सल विविधीकरण- उच्च न्यूनतम समर्थन मूल्य द्वारा)

**Figure 12: Cost, MSP & Returns of Kharif Crops for the year 2021-22.**



Critiques argue that due to MSP policies, farmers are encouraged to grow mostly sugarcane, rice and wheat, which creates 1) water shortage 2) supply-shortage of other crops. (सरकार की न्यूनतम समर्थन मूल्य नीतियों के चलते ज़्यादातर किसान गन्ना-गेहूँ-चावल लगाना पसंद करते हैं जिससे पानी की बर्बादी, अन्य फसलों की किल्लत होती है.)

- So, to encourage crop diversification, govt is giving MSP @more than 50% of Cost Price for certain crops e.g. mustard (100%), Masur (70+%), barley (60%) (इसलिए सरकार ने कुछ फसलों पर किसान की लागत खर्च के ऊपर 50% से भी अधिक एमएसपी जारी किया है)
- Benefits? - 😊 1) crop diversification. 2) water & soil conservation 3) improve farmers income. 4) self-sufficiency in pulses and oilseeds → inflation control, food and nutritional security.

#### 40.18.4 Crop Diversification: CDP program (2013)

2013: Agri Ministry's Rashtriya Krishi Vikas Yojana (RKVY): Sub-scheme- Crops Diversification Programme (CDP) to →

- ✓ To 📉 rice cultivation in the original green revolution states viz. Punjab, Haryana, Western UP



- ✓ To 🇮🇳 tobacco cultivation in Andhra Pradesh, Bihar, Gujarat, Karnataka etc
- ✓ under this scheme, govt helps farmers to shift towards less water requiring crops such as oilseeds, pulses, coarse cereals, , cotton, etc (चावल और तम्बाकू के किसानों को सरकार मदद करती है अन्य फ़सल लगाने में)

**AB ? MCQ. Consider the following:(Asked in UPSC-Pre-2018)**

1. Areca nut 2.Barley 3.Coffee 4.Finger millet 5.Groundnut 6.Sesamum 7.Turmeric

The Cabinet Committee on Economic Affairs announces MSP for which of the above?

(a) 1, 2, 3 and 7 only (b) 2, 4, 5 and 6 only (c) 1, 3, 4, 5 and 6 only (d) 1, 2, 3, 4, 5, 6 and 7

**AB ? MCQ. The FRP of sugarcane is approved by the (UPSC-Pre-2015)**

- (a) Cabinet Committee on Economic Affairs (b) Commission for Agricultural Costs and Prices.
- (c) Directorate of Marketing and Inspection in Ministry of Agriculture.
- (d) Agricultural Produce Marketing Committee.

40.18.5 🏠 🚚 🏪 🏪 Agri-Selling → MSP → Procurement (अधिप्रापण / खरीद) ?



Central agencies namely, Food Corporation of India (FCI), Cotton Corporation of India (CCI), Jute Corporation of India (JCI), Central Warehousing Corporation (CWC), National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED), National Consumer Cooperative Federation of India Ltd. (NCCF), and Small Farmers Agro Consortium (SFAC) will purchase the entire quantity offered by the farmers at MSP.

- So, it's also called '**Open Ended Procurement** (खुले छोर का)' i.e. whether farmer brings 20/200/2000/xyz kilo, Govt agencies will buy it, without any 'quota' for every farmer. [Although in real life there are some state-wise quotas but we'll not get into operational guidelines]
- Collectively, this entire mechanism is called **Market Intervention Scheme and Price Support Scheme** (MIS-PSS: बाजार हस्तक्षेप योजना और मूल्य समर्थन योजना).
- **Boss?** Agro Ministry. Central Sector Scheme = 100% paid by Union.

From **Food Corporation of India's** point of view, the **economic cost of food grains** is:

- 1) MSP paid to farmers (technically called 'Pooled cost of grains bought at MSP')
- 2) + Bonus paid to farmers (if any. This is usually announced during election season for votebank appeasement)
- 3) **Procurement Incidentals:** paid to truck drivers, loaders, diesel, cost of operating godowns etc.
- 4) **Cost of Distribution:** When delivering grains to States for their Public Distribution System (PDS) shops, National Food Security Act (NFSA), Mid-day-meal schools etc. More in Pillar#6: *Malnutrition*



**Q ?** The economic cost of food grains to the Food Corporation Of India is Minimum Support Price and bonus (if any) paid to the farmers plus \_\_ . (Prelims 2019)

- (a) Transportation cost only (b) Interest cost only  
(c) Procurement incidentals and distribution costs (d) Procurement incidentals and charges for godowns

**40.18.6** = MSP Benefits?

- ✓ Farmer always has the option to sell produce to govt, if he can't get remunerative prices from private merchants. It prevents distress-sale of produce at throwaway prices to private merchants. (सरकार द्वारा आश्वस्त किसान, घबराहट में उपज निजी व्यापारी को पानी के दामों पर नहीं बेचेगा)
- ✓ Govt announces MSP before the sowing season for 23 crops including cereals, pulses, oilseeds & certain cash crops. This advance information helps the farmer to make an informed decision about which crop to sow for maximum economic benefit within the limitations of his farm size, climate and irrigation facilities. (किसान निर्णय ले सकता है कौन सी फसल में उसे ज्यादा फायदा होगा)
- ✓ MSP sends a price-signal to market that if merchants don't offer higher than MSP prices the farmer may not sell them his produce. Thus MSP serves as an anchor or benchmark for agro-commodity market. While MSP doesn't guarantee that market prices will always be higher than MSP, but at least it ensures the market prices will not be drastically lower than MSP. (निजी बाजार के मूल्यों के लिए मानदंड का काम करता है)

**40.18.7** = MSP Limitations? (मर्यादा)

- ✓ FCI/NAFED procurement (अधिप्रापण) is usually confined to big towns and district centres. Farmers in remote & tribal area unable to bring their produce to the procurement agencies due to high cost of transportation. 1997: Govt launched Decentralized Procurement (DCP: विकेंद्रीकृत अधिप्रापण योजना) wherein State Govt themselves procure wheat and rice from farmers, & Union will bear the costs. But not much success in increasing the penetration yet.
- ✓ Procurement is usually confined to rice and wheat (cereal grains). Not usually done for pulses, oilseeds and other crops. So, aforementioned benefits of MSP remain 'only on paper', they are not implemented in reality. So farmers are demanding MSP as 'legal right' (वास्तविकता में नहीं होती। सिर्फ एक कागजी दिखावा/क्रिया है. इसलिए किसान इसे 'कानूनी-अधिकार' बनाने की माँग कर रहे हैं.)
- ✓ MSP not even announced for vegetables and fruits. (फल सब्जियों का नहीं होता)

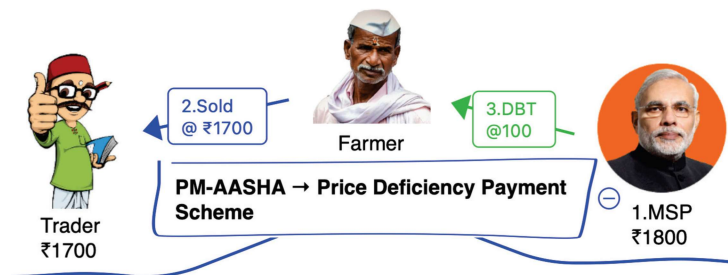
**Q ?** (UPSC-Prelims-2020) Consider the following statements

- 1) In the case of all cereals, pulses and oil-seeds, the procurement at Minimum Support Price (MSP) is unlimited in any State/UT of India.
- 2) In the case of cereals and pulses, the MSP is fixed in any State/UT at a level to which the market price will never rise.

Codes: [a] 1 only [b] 2 only [c] Both 1 and 2 [d] Neither 1 nor 2



40.19 📄 🗄️ 🎧 🧑 : 🧑 AGRI-SELLING: PM-AASHA: FIX MSP LIMITATIONS

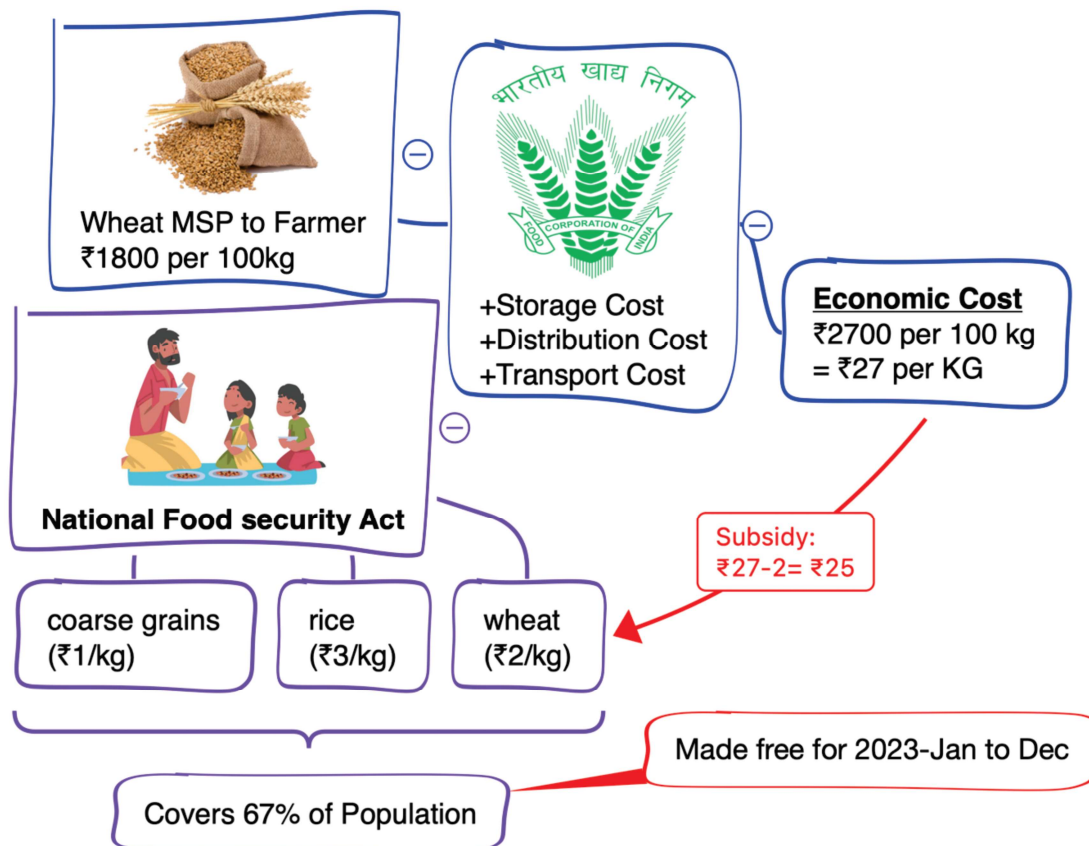


Pradhan Mantri Annadata Aay Sanrakshan Abhiyan.

Boss? Agro Ministry (2018-Sept). Central Sector Scheme = 100% funded by Union.

The scheme has three components:

1. **Price Support Scheme (PSS: मूल्य समर्थन योजना):** Central Agencies will henceforth also do physical procurement of pulses, oilseeds and Copra. (दलहन, तिलहन और कोपरा)
2. **Price Deficiency Payment Scheme (PDPS: मूल्य में कमी भुगतान योजना):** If Farmers sells oilseed crops to private merchants in APMC-mandis who are paying them less than MSP price, then govt will directly transfer the difference money in farmer's bank account.
3. **Private Procurement Stockist Scheme (PPSS: गैर-सरकारी प्राप्ति थोक-व्यापारी योजना):** Private agencies will be hired for procuring the commodities at MSP on behalf of Govt.





#### 40.20 🏠🏠🏠🏠🏠🏠: FCI & PDS (बफर भंडार)



1964-65: Food Corporation of India (FCI, HQ-Delhi), a statutory corporation, setup under Consumer Affairs Ministry (भारतीय खाद्य निगम, उपभोक्ता कार्य मंत्रालय का वैधानिक निगम)

- 1) Procurement of foodgrains from farmers at Minimum Support Prices (प्रापण करना)
- 2) Distribution of foodgrains to consumers through Public Distribution System (PDS, सार्वजनिक वितरण प्रणाली द्वारा गरीबों में खाद्यान्नों का वितरण)
- 3) Maintenance of buffer stock for food related schemes and to meet emergency situations like unexpected crop failure, natural disasters, festivals, etc. (खाद्य सुरक्षा और कीमत स्थिरता के लिए खाद्यान्नों के बफर स्टॉक का भंडारण करना)

More points / analysis of food subsidy/PDS = shifted to mains. #Prelims-RAFTAAR.

#### 40.21 🏠🏠🏠🏠🏠🏠: AGRI-SELLING: STORAGE AND TRANSPORT

📅 Budget-2020 announced:

 <b>Kisan Rail</b>	<ul style="list-style-type: none"> <li>- Indian Railways with refrigerated coaches in trains. ट्रेनों में प्रशीतित डिब्बे. 🥰 = improve national cold supply chain for perishables, milk, meat and fish. (नाशपाती कृषि उपज, दूध, मांस और मछली।)</li> <li>- 🤔 Challenge? Railway Ministry complained funding shortage for this project.</li> </ul>
 <b>Krishi Udaan</b>	<p>Ministry of Civil Aviation (नागरिक उड्डयन मंत्रालय) will permit new flights on international and national routes to transport agricultural cargo.</p> <p>😊 = farmers of North-East and tribal districts to sell their exotic fruits/flowers at premium prices. (अनोखे/जंगली फल-फूलो को ऊँची कीमत)</p>

- We'll encourage the Warehousing Development and Regulatory Authority (WDRA), Food Corporation of India (FCI) and Central Warehousing Corporation (CWC) to build more warehouses. [All these are bodies under Consumer Affairs Ministry]

#### 40.22 💰👩👨👧👦: AGRI-SELLING: DIRECT INCOME W/O SELLING → PM-KISAN@6K/PA



Pradhan Mantri Kisan Samman Nidhi - Income Support Scheme

- **Boss?** Agro Ministry. Central Sector Scheme = 100% paid by Union.
- **Beneficiary?** **Originally**, A small / marginal farmer family comprising of husband, wife and minor children -who collectively own cultivable land upto 2 hectare as per the land records of the concerned State/UT. (2 hectare = ~5 acres).
- However, 2019-May: After General Election, Modi 2.0 Govt remove the land holding ceilings. Now scheme available for all farmers, irrespective of farm size. (सभी छोटे बड़े किसानों को लाभ दिया जाएगा भले उनके पास कितने ही एकड़ की जमीन हो)

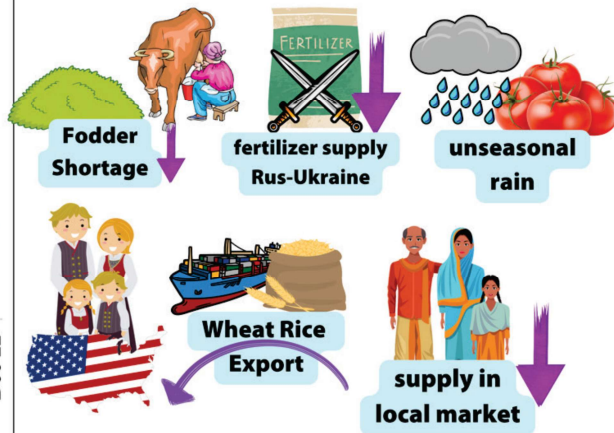
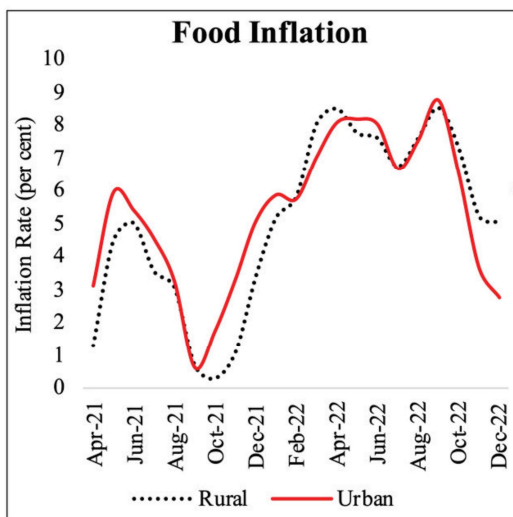


- **Entitlement?** Direct Benefit Transfer (DBT) of ₹ 6000 per year in three equal installments (₹ 2000 x 3) in the beneficiary's bank account. Thus, eliminating middlemen and corruption.
- more than 11 crore farmers are given payments - said ES23.
- **Criticism/Challenges/Reforms = Shifted to Mains.** #Prelims-RAFAAR.

40.22.1 → Pension: PM Kisan Maan Dhan Yojana

Ref: Pill1D- Pension Schemes for more details. Basically farmer contributes 55-200 per month. → pension of ₹3000 upon crossing age of 60. Then on death his/her husband/wife to get 1500 pension.

40.23 **AGRI-SELLING: FOOD INFLATION FOR CONSUMERS**



**(Intro-Origin)** With green revolution, we became self-reliant in cereal production. But perishable fruits and vegetables have remained our Achilles' heel. Seasonal spikes in onion, tomatoes & pulses is a recurring nightmare for middle class families of India. The underlying causes as following:

1. **Demand Side:** Growth of middle class & their disposable incomes → demand of fruits/veggies than before.
2. **Supply Side:** shortage of commodities on account of 1) poor monsoon & pests 2) post-harvest losses due to unavailability of cold-storage & warehousing 3) hoarding (संग्रहखोरी/काला-बाजारी).

40.23.1 Food inflation Reasons and Remedies in 2022–23 by ES23

ITEM	REASON FOR INFLATION
MILK	1) fodder shortage due to untimely rains 2)  diesel price → transport cost for both milk and fodder
TOMATOES	unseasonal heavy rains in the Karnataka, Tamil Nadu, Andhra Pradesh, and Telangana affecting supply in April-Sept.



<b>WHEAT AND RICE</b>	excessive EXPORTs reducing supply for local customers.
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#### 40.23.2 Food Inflation- Govt's Reforms in 2022-23

ITEM	खाद्य महंगाई को कम करने के लिए सरकार द्वारा उठाए गए कदम
Milk	100 fodder-centric Farmer Producer Organisations (FPOs) to be setup
Wheat (गेहूँ निर्यात पर प्रतिबंध)	Banned export of wheat flour, maida, samolina (rava/sirgi) → to ↑ supply in local market.
Rice (चावल निर्यात पर करों में बढ़ोतरी)	Increased customs duty on exported rice to 20% → foreign customer will buy less → ↑ supply in local market.
Pulses (दालों के आयात पर करों में छूट)	↓ customs duty and AIDC cess on imported pulses. AIDC = Agriculture Infrastructure and Development Cess (Ref: Pillar#2B-Customs Duty)
Edible Oils (खाद्य तेल)	1) ↓ customs duty and AIDC cess on imported edible oil such as palm oil, soyabean oil and sunflower oil 2) imposed stock limits 3) ordered edible oil companies to reduce prices by 15 Rs. per litre using powers of essential commodities Act (आवश्यक वस्तु अधिनियम के तहत खाद्य तेल कंपनियों को कीमत 15 रुपये कम करवाई)
Soya Meal (for Poultry & Fish feed) (मुरगी और मछली का चारा: सोया-मील)	(1) Declared Essential Commodity & imposed stock limits to combat unfair practices like hoarding, black marketing etc. (कालाबाजारी रोकने के लिए स्टॉक सीमाएं तय की) (2) From 2021- allowed import of genetically modified (GM) soymeal
Chana	Union Govt supplies it to State at subsidised price

Now lets looks at some more points/issues:

#### 40.23.3 🍷📧🌱 Food Inflation due to shortage of Pulses supply (दालों का उत्पादन)

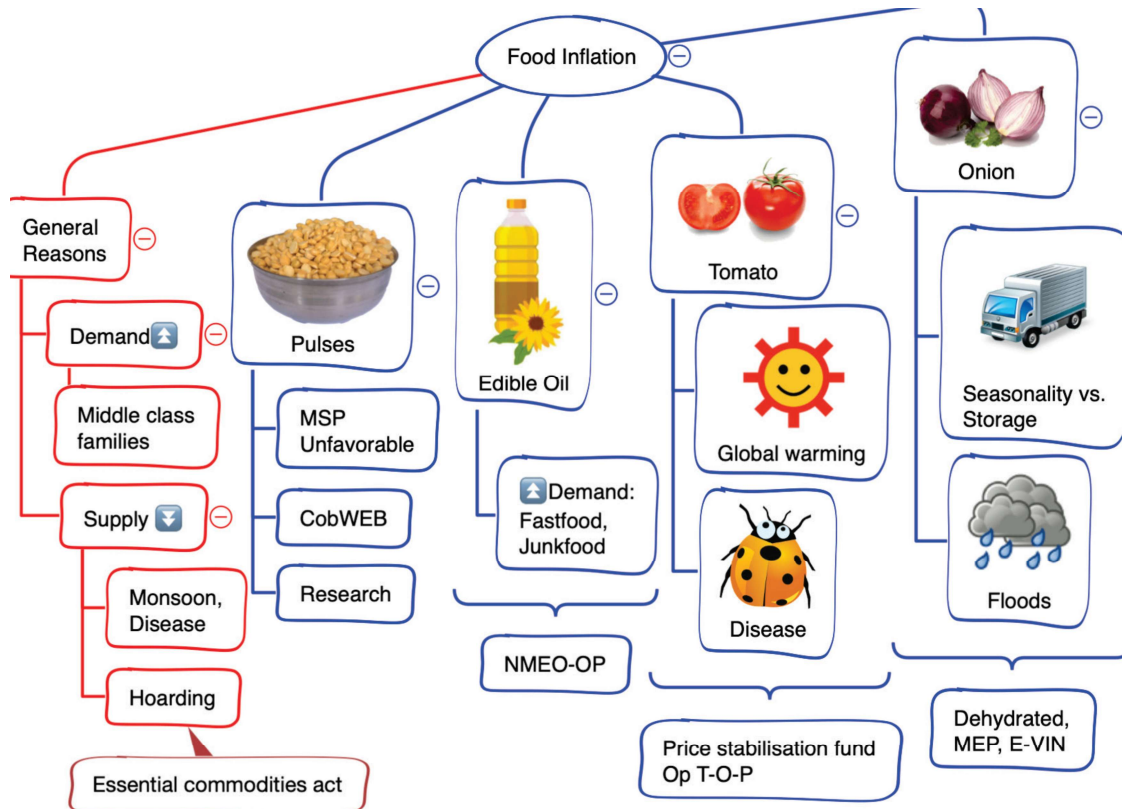
- Finest irrigated land used for cereal and cash crops like sugarcane because of better MSP. So pulses' area under cultivation is declining. Govt shd reform MSP for pulses cultivation, especially in drought prone areas because pulses require less water than sugarcane. (दाल की फसल में गन्ने से कम पानी इस्तेमाल होता है, इसलिए सूखा प्रभावित विस्तारों में उसे प्रोत्साहित किया जाए)
- Pulses make the soil nitrogen rich, it encourages weed growth- which ↓ the pulses yield. Pulses are themselves protein rich, so they're more susceptible to (1) pests attack and (2) When stored in open godowns, humid conditions = fungal growth. 25% of the produce is lost by this.  
**Solution?** New seed varieties required but Indian scientists are focused on 'cereals' rather than 'pulses'. (भारत के कृषि वैज्ञानिकों का ध्यान दालों पर संशोधन की जगह खाद्यान्न अनाज पर संशोधन में ज्यादा होता है)

#### 📊🌱🕸📧 Cobweb Cycle (मकड़ी का जाला)

⇒ if a farmer observes a high price for a specific crop for a year, he would opt to produce more of it the next year. But if all farmers think with this mindset → excessive production & supply → prices ↓ → then they stop cultivating it in the next cycle → shortage in supply → price ↑.



- ⇒ Faulty producer expectations → cyclical fluctuation in supply & prices. (किसान की दोषपूर्ण अपेक्षाएँ → उत्पादन और कीमतों में चक्रीय उतार-चढ़ाव)
- ⇒ This is called 'Cobweb' Cycle. Term given by economist Nicholas Kaldor (1934)
- ⇒ ES20 blamed this phenomenon for price fluctuations in pulses.



#### 40.23.4 🍅📧🐛 Food Inflation due to shortage of Vegetable supply

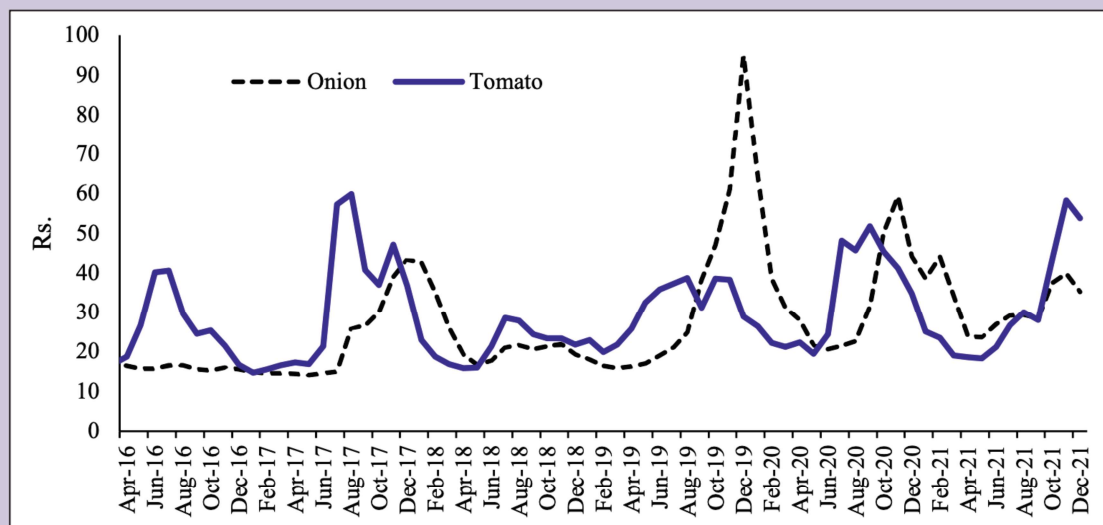
1. Global Warming: April-May heat waves destroy nascent flowers / buds of vegetable plants. (वैश्विक ताप में वृद्धि के चलते नवजात फूल / कलियों का मुरजाना)
2. Pests & Diseases (कीट और रोग): Maharashtra and Southern Indian farmers have been growing tomatoes & onions since last 3 decades. But, overuse of general pesticides → whiteflies, red mites, gram pod borers and other pests have gained immunity. → crop-loss has increased. Farmers had started using Switzerland company's seeds but later they were found to be vulnerable to certain viral diseases.
3. UPA-Congress Govt (2004-14) had rapidly hiked MSP for wheat & rice so many farmers shifted from veggies / pulses to cereal production. (गेहूँ चावल में ज्यादा समर्थन मूल्य के चलते दाल और सब्जियों की फसल कम होगा रहे हैं किसान)
4. After demonetization (2016), cash based retail vegetable industry suffered → lower prices to farmers in the last season. So they shifted away from vegetables towards sugarcane, maize, soya etc. cash & cereal crops → veggies production ↓.



5. Price wedge = large difference between the wholesale and retail prices. It's due to high transaction costs, poor marketing infra, **huge margins by middleman** etc
6. **Heavy rains, Unseasonal rains**, floods and cyclones disrupt the supply chains. e.g. 2021-Sept: unseasonal rains in Punjab, Haryana, HP → Tomato crop damaged → inflation.
7. Farmer strike in Maharashtra, UP & MP, wherein they destroyed truckload of tomatoes, milk, potatoes etc. (किसानों द्वारा हड़ताल और प्रदर्शन खुद अपना अनाज /सब्जियाँ सड़क पर फेंक देते हैं)
8. Shortage of **cold storage infrastructure (शीतागार)**. Big traders utilize them for hoarding onions and potatoes, → less space for other vegetables' storage even during bumper crops. 70% of Tomatoes grown in Rabi Season- so in remaining months there will be shortage, if they're not stored.
9. Onion inflation – explained in separate section below.
10. 🤔 😊 2020- Corona lockdown/supply-chain constrains= price rise in initial months, but later on with unlockdown, prices moderated by 2020-December (तालाबंदी में आपूर्ति श्रृंखला प्रबंधन में चुनौतियाँ जिसके चलते 2020 शुरुआती महीनों में खाद्य महंगाई बढ़ी हालांकि बाद के महीनों में वापस कम हुई)
11. 2021- Soybean shortage → feed prices 📈 → so fish & chicken prices 📈 (सोयाबीन चारा हुआ महंगा → मुर्गीपालन और मछलीपालन करने वालों ने अपने दाम महँगे कीए)
12. 2022: scene explained in the earlier chart at the starting of this topic.

#### 40.23.5 📅 📊 🌱 Seasonality in Onion-Tomatoes


**Figure 1A: Retail prices of tomato and onion**



Source: Department of Consumer Affairs

ES22 observed	Onion	Tomato
70% grown during	Rabi season	Rabi season
Transplantation (फ़सल बोना)	December-January	October-February
Harvest (फ़सल काटना)	By May	By June



 ES22 observed	Onion	Tomato
Affected by weather/climate in	Maharashtra, Karnataka	Punjab, UP, HP, Haryana, South India

Thus, if drought / cyclone / excess rain / pest attack in above months → huge supply shortage & inflation.

#### 40.24 : FOOD INFLATION → ONIONS

Onion Shortage caused by (प्याज की कमी)

- ⇒ Late-arrival of monsoon: sowing (बीजारोपण) period delayed.
- ⇒ Prolonged rains damaged the standing crop in the Major producers viz. Karnataka, Telangana, Madhya Pradesh and Maharashtra (largest producer: Its Lasalgaon town in Nasik district is India's largest onion market).
- ⇒ 2019-Sept-Oct: Heavy rains affected cutting and transportation of the crop.
- ⇒ So, [Supply < Demand] = Onion prices increased to ₹140/kg in late-2019.

##### 40.24.1 : Govt initiatives → Onion Inflation (2019-Sept to Dec)

- ✓ Commerce Ministry → DG Foreign Trade → temporarily **banned the export** of Onions since 2019-Sept. (Although **Andhra's Krishnapuram onions** were allowed for exports. They are extremely pungent in taste (स्वाद में तीखा), liked by Srilankan and ASEAN families. But, Indian families don't like its taste much.)
- ✓ Commerce Ministry's **MMTC ltd company** will import onions from Turkey & Egypt using the ₹ from **Price Stabilisation Fund** (It's a fund under Consumer Affairs Ministry) → onions will be supplied to State Govt's Food and Civil Supply Departments → sold at reasonable prices.
- ✓ Government also directed the States to build buffer stocks, impose stock limits on traders and take action against hoarding. (स्टॉक सीमा लागू करें)
- ✓ **Long term solutions?** Help the farmers cooperatives to directly sell to customers, strict action on hoarding, develop more cold storage warehouses etc.

##### 40.24.2 : : ES21 how to control onion inflation?

Onion prices skyrocket in August-November every year. Following reforms need to be taken:

- ⇒ NAFED procures and stores onion mostly in three states- Maharashtra, Madhya Pradesh and Gujarat = more risk of adverse weather shocks / heavy rains / floods → transport bottlenecks. Need to decentralise it with modern storage facilities at multiple states. (सिर्फ तीन राज्यों में प्याज का भंडारण करने की जगह, विकेंद्रीकृत रूप से अनेक राज्यों में उन्हें भंडारित किया जाए, )
- ⇒ Health Ministry's eVIN (electronic vaccine intelligence network) =used for monitoring the Vaccine supply. Similarly, onion supply online-monitoring systems need to be developed. (ऑनलाइन तरीके से जिस प्रकार से वैक्सीन की निगरानी रखी जाती है, ऐसा ही प्याज के साथ करें)



⇒ Use of dehydrated onions that has longer shelf life should be promoted for buffer stock purposes. Hydrated variety should be sold early. (सुखाए गए प्याज लंबी अवधि तक बिगड़ते नहीं इसलिए उनका भंडारण किया जाए जबकि ताजा / ना सुखाए गए प्याज प्याज थोड़े पहले बेच दिया जाए)

#### 40.25 🍅📦👤: 👤 AGRI-SELLING: FOOD-INFLATION: GOVT INITIATIVES ?

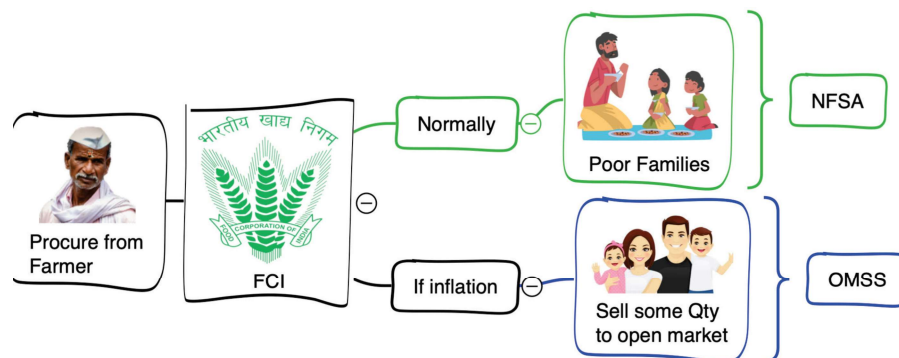
##### 40.25.1 🍅📦👤: 👤 Food Inflation → Govt initiatives → MEP

⇒ \*\* Minimum Export Price (MEP: न्यूनतम निर्यात मूल्य) It is the price below which of commodity cannot be exported from India. During inflation in a particular agro commodity, commerce ministry will ⬆️ MEP to discourage its export from India → ⬆️ supply in the local market → price ⬇️

⇒ 😬 **Limitation?** Frequent changes in MEP = uncertainty for exporter-oriented farmers for the next cropping season.

**Sidenote: Minimum Import Price (MIP):** it's the price below which a commodity can't be imported. This is usually done for protecting domestic industries against cheap imports. E.g. Government imposed MIP on pepper and areca-nut in 2018-19 (इससे कम मूल्य पर आयात नहीं कर सकते)

##### 40.25.2 🍅📦👤: 👤 Food Inflation → Govt initiatives → OMSS



⇒ 1964-65: A statutory corporation Food Corporation of India (FCI: भारतीय खाद्य निगम) was set up under Ministry of Consumer Affairs, Food and Public Distribution (उपभोक्ता मामले, खाद्य और सार्वजनिक वितरण). By default, FCI procures cereals/foodgrains @MSP & sells them to poor-families via the Public Distribution System (PDS:सार्वजनिक वितरण प्रणाली) outlets.

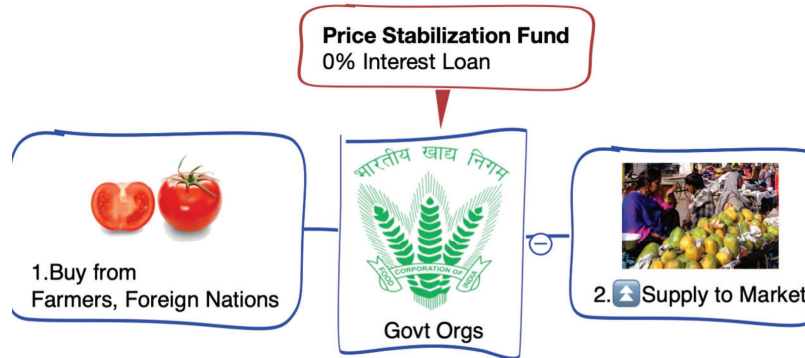
⇒ However, during food inflation, FCI would also sell the grains in open market to ⬆️ supply, ⬇️ price rise. It's called **Open Market Sale Scheme** [खुला बाजार बिक्री स्कीम].

⇒ 😬 **Limitation?** While OMSS can help during shortage / inflation of cereal grains (rice, wheat). But, not much useful in veggies because they're out of FCI-MSP ambit.

⇒ 😬 Corona-2020: FCI starts selling wheat & rice to all the charitable/ non-govt orgs who are running community kitchen for migrant workers / poor people. (कोरोना में एफ़सीआई ने सेवाभावी/समाजसेवी/गैर-सरकारी संस्थाओं को भी दे दनादन अनाज बेचा ताकि वो प्रवासी मज़दूरों में खाना उपलब्ध करा सके।)



40.25.3 🍅📧👤: 🇮🇳 Govt initiatives → Price Stabilization Fund (2014)



- मूल्य स्थिरीकरण कोष is a Central Sector Scheme = 100% funded by Union.
- **Boss?** Consumer Affairs Ministry gives Interest free loans to FCI, NAFED & other central/state agencies to procure pulses and perishable vegetables from local and foreign farmers and sell it to *aam-aadmi* at reasonable prices. (सरकारी संस्थानों को ब्याज मुक्त कर्ज दिया जाएगा जिससे वे दाल और सब्जियां खरीद के वाजिब दामों पर बेचे)

40.25.4 🍅📧👤: 🇮🇳 Govt initiatives → Operation Greens for T-O-P (2018)

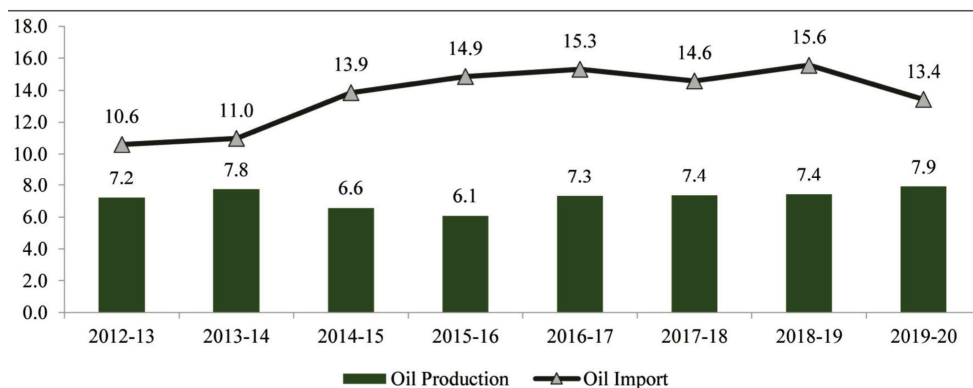
REFER To PM Kisan Sampada Yojana under the topic “Agriculture Production & Processing → Other Schemes”

40.26 🍷👤📈🇮🇳 FOOD INFLATION → EDIBLE OIL (खाद्य तेल)



Due to faulty MSP policies Edible oilseeds’ production in India is inadequate to meet consumer demand. And it is becoming expensive for India to import edible oil because [आयात महंगा हो रहा है क्योंकि]

**Figure 8: Production & Import of Oil (Million Tonnes).**





- ⇒ High demand of oil due to fast food, junk food (wafers etc) habits of young generation.
- ⇒ 🌧️ La Niña climatic conditions affecting crop production in Argentina, Brazil for Soyabean Oil
- ⇒ Malaysia and Indonesia's Palm oil purchased in large quantity by China = less qty for India.
- ⇒ 📄 edible oils used generating biofuels by USA/Brazil = less qty for India. [जैव ईंधन में इस्तेमाल]
- ⇒ 😞 Corona → supply chain constraints and labour issues in lock down.
- ⇒ 2021: Indian govt 📉 customs duty on imported palm oil to reduce prices in India and imposed stock limits under Essential commodities act. आयात होने वाले पाम ऑयल पर सरकार ने सीमा शुल्क कम किया ताकि भारत में खाद्य तेलों की महँगाई दर में कमी आ सके। आवश्यक वस्तु अधिनियम कानून के अंतर्गत स्टॉक लिमिट तय की।
- ⇒ Critics argue reducing taxes on imported edible oils, is not going to help fighting inflation, because of high demand by customers and profiteering by sellers. किंतु आलोचकों का मानना है कि व्यापारियों की मुनाफ़ाखोरी तथा ग्राहकों की बढ़ती माँग के चलते खाद्य तेलों में महँगाई को क़ाबू में नहीं हो सकती।

#### 40.26.1 🏠🌾📄👤: 🇮🇳 Govt initiatives → Edible oil ki New Scheme (NMEO-OP: 2021-Aug)

- ⇒ **Boss?** Agriculture Ministry launched National Mission on Edible Oils – Oil Palm (NMEO-OP) to make India self-reliant on edible oil production. [खाद्य तेल उत्पादन में भारत को स्वनिर्भर बनाने के लिए]
- ⇒ Centrally Sponsored Scheme = States also required to contribute money. [केंद्र द्वारा प्रायोजित योजना.]
- ⇒ With a special focus on the North east region and the Andaman and Nicobar Islands [खास ज़ोर]

##### 40.26.1.1 🏠🌾📄👤 NMEO-OP Scheme Component-1: (DBT)

- ⇒ The oil palm farmers produce Fresh Fruit Bunches (FFBs) from which crude palm oil (CPO) is extracted by the industry. Govt of India will give a price assurance to the oil palm farmers for the FFBs. This will be known as the **Viability Price (VP)**.
- ⇒ Basically, Farmer will sell the fruits to oil-miller. and if farmer is receiving less money than the Govt-formula-walla **Viability Price (VP)** then government will pay **Viability Gap (₹)** to farmer's bank account = **Direct benefit transfer (DBT)**. [सरकार द्वारा तय कीमतों से यदि कम पैसा किसानों को फ़सल बेचने पर मिल रहा है तो सरकार किसान के बैंक खाते में पैसा जमा करेगी]

🕒📄🕒👤👤 what is the exact formula for CPO adjusted with WPI to VP??? = NOT IMPORANT. Don't waste time in such things it'll give very poor cost benefit because scheme doesn't have a fancy name.

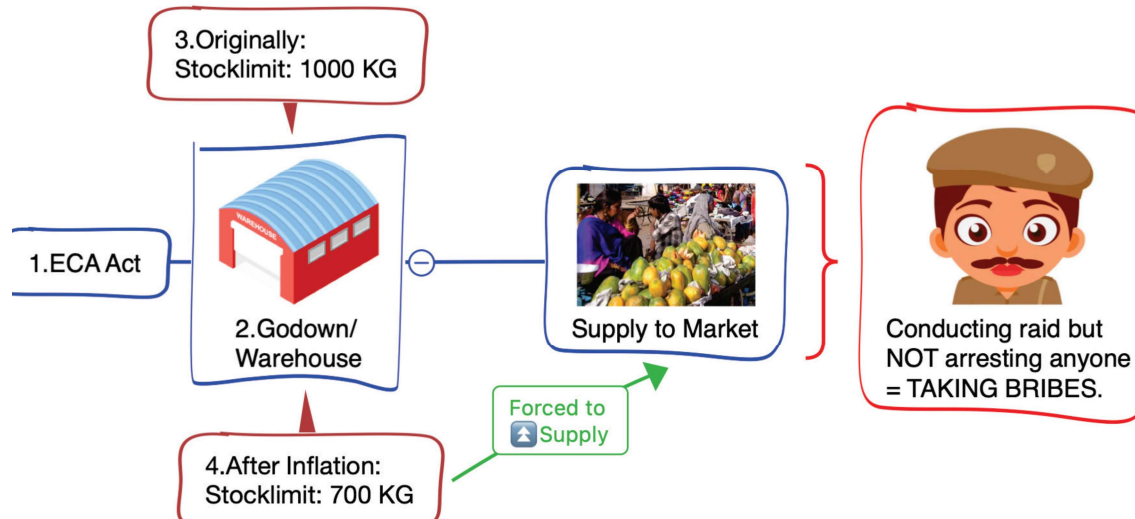
##### 40.26.1.2 🏠🌾📄👤 NMEO-OP Scheme Component-2: (TRAINING)

Farmer will be given subsidy/support for input/seed/training for New cropping techniques e.g. half moon terrace cultivation, bio fencing (Biofencing = planting lines of trees / shrubs that provide protection against cattle, wildlife, winds) [खेतीबाड़ी के लिए अच्छी गुणवत्ता के बीज, सब्सिडी और तालीम]

👤 **Conclusion:** Presently India imports 98% of its palm oil requirement. Above scheme will greatly help reducing our import bill, current account deficit, while creating income and employment opportunities for farmers and youth. [सरकार का यह क़दम खाद्य तेल के आयात को कम करने में, किसानों और नौजवानों के लिए रोज़गार के अवसर बढ़ाने में मदद करेगा]



40.27 🍷 📊 🧑 : 🧑 : 🧑 : 🧑 : FOOD INFLATION → ESSENTIAL COMMODITIES ACT



- ⇒ Essential Commodities Act 1955 (ECA: आवश्यक वस्तु अधिनियम) aims to control the production, supply and distribution of certain goods considered as essential commodities e.g. foodgrain, pulses, edible oil, sugar, jute, fertilizers & seed, cattle-fodder, medicines, petrol, diesel, kerosene, etc. During inflation/shortage: govt can impose stock limits, restrict movement of goods.
- ⇒ This was causing some hardship to food processing companies. So Government enacted Essential Commodities (Amendment) Ordinance/Act, 2020 to help companies. But then repealed this amendment after farmer protests. (स्टॉक सीमा में खाद्य प्रसंस्करण कंपनियां परेशान होती थी. सरकार ने उनकी मदद के लिए कानून में सुधार किया, लेकिन किसान आंदोलन के बाद सुधार वापस लिया.)
- ⇒ More analysis = shifted to Mains Handout. #Prelims-RAFTAAR.

**AB ? MCQ. Why India experienced high food inflation in the recent past? (UPSC-Pre-2011)**

1. Due to a gradual switchover to the cultivation of commercial crops, the area under the cultivation of food grains has steadily decreased in the last five years by about 30%.
2. As a consequence of increasing incomes, consumption patterns of the people have undergone a significant change.
3. The food supply chain has structural constraints.

Answer Codes: (a) 1 and 2 only (b) 2 and 3 only (c) 1 and 3 only (d) 1, 2, and 3

**AB ? Which were affecting price of rice in India in the recent past? (UPSC-Prelims-2020)**

- 1) MSP 2) Government's trading 3) Government's stockpiling 4) Consumer subsidies
- Codes: (a) 1,2 and 4 only (b) 1,3 and 4 only (c) 2 and 3 only (d) 1,2, 3 and 4



#### 40.28 🍌📉🏠 AGRO-SELLING → DEFLATION (2017 ONWARDS)

While agri. Inflation was a recurring nightmare during UPA-Congress raj (2004-14), the Modi-raj has resulted in food-deflation (fall in the prices) for 3 reasons: (अपस्थिति / दामों में गिरावट)

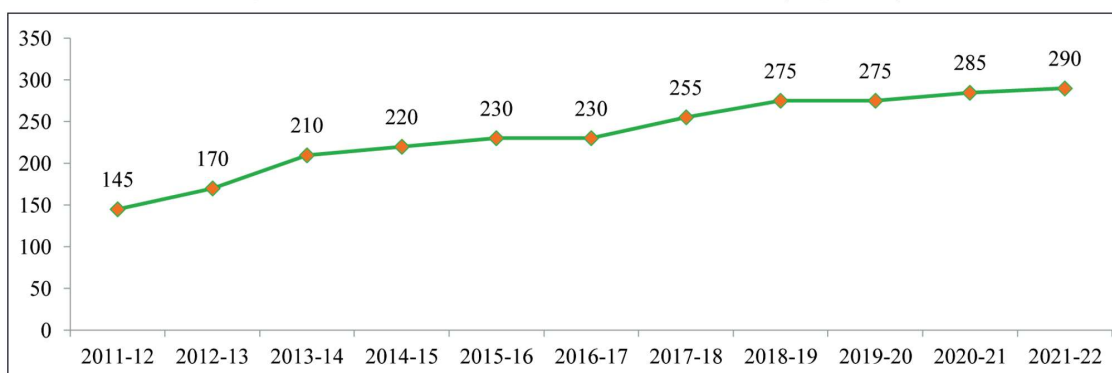
1. Demonetization, limits on cash transactions and fear of being tracked by IT/GST authorities → Traders are less inclined to hoarding → more supply available at market.
2. Protectionism by US/EU & fall of International commodity prices → India's agro exports are down → More supply available in domestic market.
3. Urjit Patel's hawkish policy helped curbing inflation. (More in 📖 Pillar#1A2)

#### 40.28.1 🍌📉🏠 Agro-Selling → Deflation → Sugar mills' problem



- **Fair and Remunerative Price (FRP)** is the minimum price decided by union govt at which sugarcane is to be purchased by sugar mills from farmers. (केंद्र सरकार द्वारा निर्धारित एफ़आरपी वो न्यूनतम दाम है जिस पर चीनी मिलमालिक ने किसान से गन्ना ख़रीदना होगा)
- Some State govts may **announce State Advised Price (SAP)** at levels higher than FRP.
- **Cane Reservation Area:** sugar mills must buy sugarcane from farmers within a specified radius. This is to protect the sugarcane farmer from cheap sugarcane import from States. (“गन्ना आरक्षित विस्तार” यानी चीनी मिल मालिक ने अपनी फेक्टरी के इर्द-गिर्द के एक निर्धारित विस्तार के किसानो से ही गन्ना ख़रीदना होगा।)
- In recent Years, Bumper production of sugarcane in India and Brazil → 📈 supply → 📉 global sugar prices → but to keep Indian farmers happy Govt did not reduce FRP. Infact, FRP has doubled in 10 years. (उत्पादन में बढ़ोतरी को विश्व बाज़ार में शक्कर के दाम गिर गए लेकिन किसानों को खुश करने के लिए पिछले 10 सालों में भारत सरकार गन्ने के समर्थन मूल्य को दुगना किया)

Figure 11: Trend in Fair & Remunerative Price (₹ /quintal)



- Mill-owners' arrears to farmers (i.e. previous payment not cleared yet.) (सरकार द्वारा निर्धारित दामों पर चीनी/शक्कर मिलमालिकों ने किसानों से गन्ना ख़रीदा होता है लेकिन हाल के वर्षों में बाज़ार में चीनी सस्ती हो गयी लेकिन किसानो को खुश रखने के लिए सरकार गन्ने के दाम बढ़ाती रही, इसलिए चीनी/शक्कर मिल-मालिक किसानो का बकाया पैसा चुका नहि पा रहे)



Then govt doing following to help the sugar mill owners, in following ways:

- Soft loan / cheap loans to sugar mill owners in the arrears to farmers.
- Finance Ministry imposed **100% customs duty** on imported sugar & 0% custom duty on export of sugar to help Indian sugar mills. (आयातित चीनी पर 100% सीमा शुल्क, निर्यात चीनी पर 0% सीमा शुल्क)
- **Subsidy** to sugar exporters

#### 40.28.2 🇮🇳 🇺🇸 🇬🇹 Agro-Selling → Deflation → Sugar Subsidy & WTO order

2019: Australia, Brazil and Guatemala complained to WTO that

- Indian Govt's subsidies/soft-loans/tariff barriers to sugar sector led to excess supply & "reduced" global prices so their local industry is hurt. (भारत सरकार द्वारा गन्ना-चीनी उद्योग को सब्सिडी और कराधान द्वारा जो प्रोत्साहन दिया गया है उससे विश्व बाज़ार में चीनी के दाम गिर गए हैं और ब्राज़ील, ऑस्ट्रेलिया, ग्वाटेमाला के चीनी उद्योग को नुकसान हुआ है ऐसी शिकायत उन्होंने विश्व व्यापार संगठन में की गई है)
- While WTO's Agreement on agriculture (AoA)'s "Peace-Clause" allows Indian govt to give food-subsidies (More in 📖 Pillar#3B: WTO) but such exemption is meant for 'food security' of its own Indians. But sugar export subsidies/taxation is going beyond the scope of food-security. (हालाँकि शांति-धारा के अंतर्गत भारत सरकार को विश्व व्यापार संगठन ने अंधाँधून खाद्य सब्सिडी देने की छूट दी थी, लेकिन वो छूट सिर्फ भारतीय लोगों की खाद्य सुरक्षा के लिए थी। चीनी निर्यात पर भारत के कदम, उस छूट के दायरे से बाहर है)
- 2021: WTO ordered Indian govt to stop its sugar subsidies. Indian Commerce ministry said that WTO judgement is "completely unacceptable" to India, and we'll appeal against it. (विश्व व्यापार संगठन ने भारत को अपनी चीनी-सब्सिडी बंद करने का आदेश दिया है। हालाँकि भारत सरकार इसके खिलाफ अपील में जाएगी।)

#### 40.29 🏠 🏭 AGRICULTURE PRODUCTION & PROCESSING → OTHER SCHEMES

##### 40.29.1 🏠 🏭 🏗️ 📊 📈 📉 Agriculture Infrastructure Fund (2020-Jul)

- ⇒ **Boss?** Ministry of Agriculture. (कृषि मंत्रालय की कृषि अवसंरचना निधि)
- ⇒ **Type?** Central Sector Scheme (=States not req. to give money.)
- ⇒ **Beneficiary?** Farmers, Agriculture Cooperative Societies, Farmer Producers Organizations (FPOs), Self Help Group (SHG), Agri-startups, Public Private Partnership (PPP) projects etc.
- ⇒ Banks and NBFCs will loan them total ₹1 lakh cr. (10k cr this + 30k cr each in next 3 years) = total 1 lakh cr. NABARD may provide them with refinance. (Ref#1D)
- ⇒ 📄 **Loan will be given for?**
  - Post-harvest Management Infrastructure (Warehouse, cold storage, etc. कटाई के बाद भंडारण के लिए बुनियादी ढांचा)
  - Community Farming Assets (सामुदायिक खेती की परिसंपत्तियां)
- ⇒ 📄 **Loan duration?** Medium to long term loans. (How many years exactly? Ans. not clearly mentioned. (मध्यम से लंबी अवधि के ऋण)
- ⇒ 📄 **Loan Interest?** To be decided by individual bank/NBFC.



- ⇒ **Loan Interest Subvention?** 3% by Government (ब्याज में सब्सिडी/मदद)
- ⇒ **Loan Default?** = upto ₹2 cr credit guarantee by Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE: Ref1D)
- ⇒ **Scheme Valid** for next ten years, starting from 2020

#### 40.29.2 **Agro Produ. & Processing → Farmer Producer Company (FPC)**

- ⇒ Western economists had predicted that small farms will eventually cease to exist as big farmers will buy their land, but that hasn't happened in India. So, Government decided better to enable small farmers to setup company & combine their landholdings.
- ⇒ 2003: Companies Act, 1956 was amended to allow new type of company- FPC.
- ⇒ FPC is a hybrid between a private limited company (=professional management) and a cooperative society (mutual benefits without excessive weightage to who contributed how much land / share capital.)
- ⇒ FPC can be setup by minimum 10 farmers (no upper limit). However, FPC is not allowed to become a Public Ltd. company i.e. they can't invite public at large to invest in their shares/bonds.
- ⇒ Agro ministry gives them financial support, credit guarantee for bank loans.

#### 40.29.3 **Agro Production & Processing → RKVY & RAFTAAR (2017)**

- ⇒ Boss? Agro Ministry. Core Scheme = not 100% funded by Union.
- ⇒ Rashtriya Krishi Vikas Yojana (RKVY) started during UPA/Congress (2007).
- ⇒ 2017: Modi renamed and rebranded it to RKVY-RAFTAAR i.e. Remunerative Approaches for Agriculture and Allied sector Rejuvenation.
- ⇒ It provides funding for Infrastructure creation (warehouse, cold storage, market facility etc.); training & skill development (Mushroom cultivation, beekeeping, aromatic plant cultivation, floriculture) and financial support to farmers to start agri-enterprise after getting the training.

#### 40.29.4 **Agro Prod. & Processing → Green Revolution - Krishonnati Yojana**

- **Boss?** Agro Ministry. **Core scheme**= not 100% paid by Union.
  - 2017: Modi made this umbrella scheme (छतरी योजना) by combining previous 11 *Congressi* Schemes viz.
1. Mission for Integrated Development of **Horticulture** (MIDH:बागबानी एकीकृत विकास): Bee keeping also promoted in it. One of MIDH sub-mission is 'Coordinated Programme on Horticulture Assessment and Management using 'geo-informatics' (Project CHAMAN) to use space technology / remote sensing data to assess the horticulture production & diseases in India. 2018: Phase-II of Chaman launched.



2. **National Food Security Mission (NFSM)** to increase production of rice, wheat, pulses, millets (coarse cereals) and commercial crops & restore soil fertility.
  - a. 2018 declared as “**National Year of Millets**”. Further, UN & FAO accepted India’s proposal to celebrate 2023 as **International Year of Millets** (अंतर्राष्ट्रीय बाजरा वर्ष). Because, millets are tolerant to drought, climate change, photo insensitive; need less water, provide nutritious elements in poor families’ diet. So, Govt create two sub-missions.
    - i. NFSM on Makka and Jau.
    - ii. NFSM on Nutri-Cereals (पौष्टिक अनाज) - Jowar, Bajra, Ragi and little millets like Kutki, Kodo, Sawa, Kangni and Cheena.
  - b. NFSM has another sub-mission: National Mission on Oilseeds and Oil Palm (NMOOP: तिलहन और तेल पाम) to augment the availability of vegetable oils and to reduce the import of edible oils. Associated term: Yellow Revolution.
3. National Mission for **Sustainable Agriculture** (NMSA: स्थायी / सतत कृषि के लिए राष्ट्रीय मिशन) to encourage organic manures, bio fertilizers, cropping practices for soil and moisture conservation measures; Rainfed Area Development (RAD) programme.
  - a. Subscheme: National Bamboo Mission (NBM) to augment the income of farmers. Further, Indian Forest Act, 1927 was amended to exclude bamboo from the definition of ‘trees’. This will encourage bamboo grown outside forest area without interference from Forest Department.
4. Sub-mission on **Agriculture Extension** (SMAE: कृषि विस्तार पर उप मिशन): farmers training & skill development with more use of electronic / print media, mobile apps and ICT tools, etc.
5. National **e-Governance** Plan on Agriculture (NeGP-A: राष्ट्रीय ई-गवर्नेंस): to enhance reach of extension services- about cropping methods, market prices etc. to the farmers.
6. Sub-Mission on **Seeds and Planting** Material (SMSP: बीज तथा पौध रोपण सामग्री): to promote new technologies in seed production, processing, storage, certification and quality etc.
7. Sub-Mission on Agricultural **Mechanisation** (SMAM: कृषि मशीनीकरण पर उपमिशन): To increase the availability of farm machines to small and marginal farmers. e.g. ‘Custom Hiring Centres’ where they can rent the machines without spending money on individual ownership. encourage R&D for small-sized machineries for small landholdings, hill-areas etc.
8. Sub Mission on **Plant Protection** and Plan Quarantine (SMPPQ: पौध संरक्षण और पौधों के अलगाव पर उपमिशन ): To minimize the damage by insect pests, diseases, weeds, rodents, etc. and to shield our agricultural biosecurity from alien species.
9. Integrated Scheme on Agriculture **Census, Economics** and Statistics (ISACES: कृषि गणना, अर्थव्यवस्थाएं तथा सांख्यिकी पर एकीकृत योजना): For data collection which can be used for R&D and policy making.
10. Integrated Scheme on **Agricultural Cooperation** (ISAC: कृषि सहयोग): Give financial assistance for farmers' cooperatives for agricultural marketing, processing, storage etc.



11. Integrated Scheme on **Agricultural Marketing** (ISAM: कृषि विपणन): To develop online and offline agricultural marketing infrastructure.

<Homework? After Prelims, self-study their features in a more comprehensive manner from Yojana-Kurukshetra magazines, because UPSC is in habit of asking about random obscure agro. schemes in the mains exam. E.g. horticulture mission.>

#### 40.29.5 🏠 🏭 Agro Production & Processing → PM Kisan Sampada Yojana

- ⇒ Boss? Food Processing Ministry. Central Sector Scheme. 100% funded by Union.
- ⇒ Modi's PMKSY (प्रधान मंत्री किसान सम्पदा योजना) is an umbrella scheme incorporating previous Congress schemes like Mega Food Parks, Integrated Cold Chain, modernization of reefer vans etc. Basically, funding is given to setup food processing infrastructure / parks / collection centres. E.g. Patanjali Food and Herbal Park at Haridwar, Uttarakhand.
- ⇒ **Budget-2018** launched a new sub-scheme under PM Kisan Sampada Yojana called "Operation Greens" for T-O-P: Tomato, Onion and Potato to improve infra for their storage & transport → round the year availability of T-O-P @affordable prices.

#### 40.29.6 🏠 🏭 🌱 🏠 Atma-Nirbhar: "Op Green" expanded to all fruits & veggies



- ⇒ Food Processing Ministry → PM Kisan Sampada Yojana → sub scheme called Operation Greens for T-O-P: Tomato, Onion and Potato
- ⇒ **2020:** 🤖 Corona → 🏠 ATMANIRBHAR= now we'll expand from T-O-P to ALL fruits and vegetables. It'll provide
  - 50% subsidy on transportation from surplus area to deficient area. (जिन विस्तारों में विपुल उत्पादन/आपूर्ति है वहां से कमी/तंगी वाले बाजारों में माल पहुंचाया जाए)
  - Long term subsidy on storage infrastructure. (भंडारण के लिए बुनियादी ढांचा)
- ⇒ **Benefit?** reduced food wastage, Better prices for farmers, affordable food for consumers (अपव्यय/बर्बादी, किसान को बेहतर कीमत, ग्राहक को किफायती दाम)

#### 40.29.7 🏠 🏭 🌱 🏠 Atma-Nirbhar: Food Enterprises promotion (खाद्य उद्यमों को बढ़ावा)

- ⇒ **Scheme:** Prime Minister-Formalization of Micro Food Processing Enterprises (PM-FME):
- ⇒ Existing (unorganized sector) micro food enterprises, Farmer Producer Organisations, Self Help Groups and Cooperatives
- ⇒ will be given funding, training, support for brand Building, marketing . (असंगठित क्षेत्र के लघु खाद्य उद्यमों को वित्त पोषण, प्रशिक्षण, समर्थन)



- ⇒ Help them comply with Food Safety Standards, (खाद्य सुरक्षा मानक)
- ⇒ **Cluster based approach** of development e.g. Mango in UP, Kesar in J&K, Bamboo shoots in North-East, Chilli in Andhra Pradesh, Tapioca in Tamil Nadu etc. → 📦 Export (समूहबद्ध करके विकास, निर्यात में बढ़ोतरी)

Separately, **herbal cultivation** of medicinal plant, beekeeping will be encouraged (औषधीय पौधे और मधुमक्खी पालन को प्रोत्साहन)

📖 ? MCQ. which of the following can be considered as public investment in agriculture? (Prelims-2020)

- 1) Fixing Minimum Support Price for agriculture produce of all crops
- 2) Computerization of Primary Agriculture Credit Societies
- 3) Social Capital development
- 4) Free electricity supply of farmers
- 5) Waiver of agriculture loans by the banking system
- 6) Setting up of cold storage facilities by the governments

Codes: (a) 1, 2 and 5 only (b) 1, 3, 4 and 5 only (c) 2, 3 and 6 only (d) 1, 2, 3, 4, 5 and 6

#### 40.30 📖 FOOD PROCESSING INDUSTRIES FOR GSM3



Shifted to Mains. #Prelims-RAFTAAR

#### 40.31 📖 SECTORS → AGRO ALLIED: → ANIMAL HUSBANDRY (पशुपालन)

- Agriculture's allied sectors include Animal Husbandry, Dairying, Fisheries & aquaculture, forestry & logging (ये सब कृषि संलग्न क्षेत्र हैं)

- The dairy sector employing more than 8 crore farmers directly

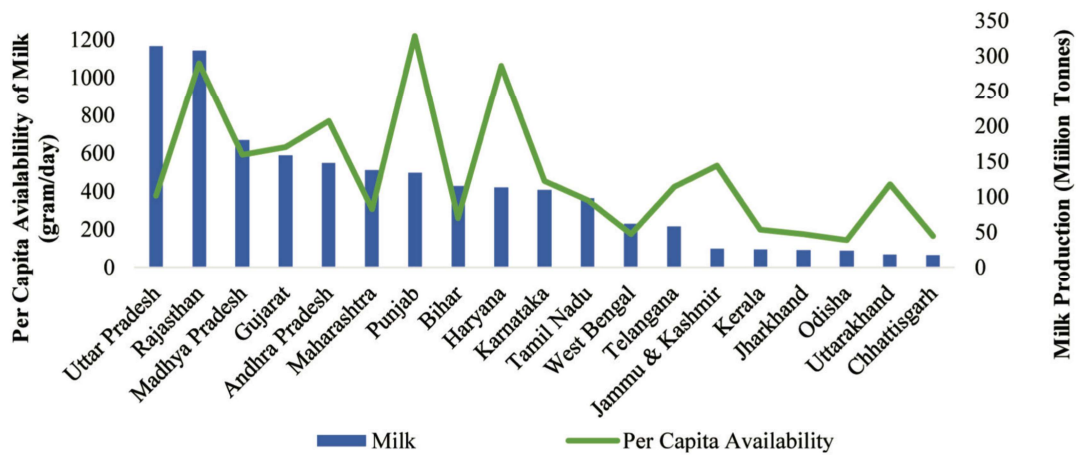
- **Agri's DPSP-Article 48:** requires the State to organise animal husbandry on modern and scientific lines, preserving and improving breeds, and prohibiting the slaughter of cows and other cattle.

- **India's #1 milk producer, #3 egg producer and #8 meat producer-** says 📊 ES23.

- Per capita availability of milk and eggs has steadily 📈 in recent years, says 📊 ES22



**Figure 22: Inter-State Variability in Milk Production (in million tonnes) & Per Capita Availability of Milk (gram per day) during the Year (2020-21\*).**



Above graph also gives a hint of why there is malnutrition in some states.

#### 40.31.1 🐄 🐑 🐐 Livestock Census (पशुधन की जनगणना)



- Department of Animal Husbandry conducts livestock Census every 5 year since 1919-20.
- The 20th Livestock Census: data collection started in 2018-Oct. data released in 2019.
- India has the world's largest livestock population

Category (Largest to Smallest)	Census-2018-19 (in million)	% growth / fall to previous census	Internal Distribution: <i>More imp for StatePCS Exam than IAS exam</i>
Cattle	192.49	0.8%	⇒ WB>UP>MP>BH>MH ⇒ Female Pop>Males. ⇒ Indigenous Population is more than Crossbred/Exotic Pop. ⇒ In-Milk giving population greater than Dry Population
Goat	148.88	10.1%	RJ>WB>UP>BH>MP
Buffalo	109.85	1.1%	UP>RJ>Guj>MP>Bihar
Sheep	74.26	14.1%	Telangana>Andhra>Kar>RJ>TN
Pig	9.06	-12.0%	Assam>JH>Megha>WB>Chhattisgarh
Mithun	0.38	26.7%	It's a Buffalo like animal found in Northeast <b>Only 4 States: Arunanchal&gt;Naga&gt;Mani&gt;Mizo</b>
Horses &	0.34	-46.0%	UP>JK>RJ>BH>Guj



Category (Largest to Smallest)	Census- 2018-19 (in million)	% growth / fall to previous census	Internal Distribution: <i>More imp for StatePCS Exam than IAS exam</i>
Ponies			
Camel	0.25	-37.5%	<b>Only 4 States: RJ&gt;Guj&gt;Haryana&gt;UP</b>
Donkey	0.12	-62.5%	RJ>MH>UP>Guj>BH
Mule	0.08	-60.0%	<i>info not available in Census document</i>
Yak	0.06	-25.0%	<b>Only 5 States: J&amp;K&gt;Arunanchal&gt;Sikkim&gt;HP&gt;WB</b>
<b>Total (Mammal) Livestock</b>	<b>535.78</b>	<b>4.6%</b>	<b>Top 5-States: UP&gt;Raj&gt;MP&gt;W.Bengal&gt;Bihar</b>

Separately

<b>Poultry</b>	<b>851.81</b>	<b>16.8%</b>	<b>Top 5-States: TN&gt;Andhra&gt;Telangana&gt;WB&gt;MH</b>
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#### 40.31.2 🐄🐓 Agro Allied: Animal husbandry → White Revolution

- India ranks first in milk production, accounting for 20 percent of world production.
- 1970-1996: Operation Flood in 3 phases, to setup dairy farmers' cooperatives → increase milk production in India.
- Afterwards, milk production in India has been increasing steadily.
- All India per capita availability of milk is 375 grams per day, it varies between 71 grams per day in Assam to 1120 grams per day in Punjab.
- **White Revolution Scheme Boss?** Department of Animal Husbandry & Dairying.
- Core Scheme = Not 100% Funded by Union.
- It is an Umbrella scheme covering many *Congressi* schemes like Dairy Entrepreneurship Development, Livestock Census, National Livestock Mission, fodder & vaccination etc.
- Notable parts of White revolution are →

Table 2: by default, Animal husbandry ministry responsible for this

<b>Pashudhan Sanjivani</b>	- Animal Wellness Programme with emergency helpline - Farmers given <b>Nakul Swasthya Patra</b> : An Animal Health card with UID identification number of each animal registered in a National Database.
<b>e-Pashudhan Haat portal</b>	Online portal for connecting farmers with breeders of indigenous bovine breeds for bulls, artificial insemination etc. (कृत्रिम गर्भाधान)
<b>E-Gopala App (2020-Sept)</b>	National Dairy Development Board's (NDDB) App to give info on cattle care, health and diet. Later, Animal's separate Unique Identification number (UID/Aadhar) numbers to be added in e-GOPALA app to make it easier for cattle owners to buy and sell animals. (मवेशियों की बिक्री होगी आसान)
<b>Rashtriya Gokul mission</b>	- Indigenous bovine breeds (स्वदेशी गोजातीय नस्ल)- conserve them & increase their population. E.g. Gir, Sahiwal, Rathi, Deoni, Tharparkar, Red Sindhi. - State govts are given money for establishing Gokul Gram breeding & disease treatment centres.



<b>National Kamdhenu breeding centre</b>	For development and conservation of indigenous breeds in a scientific manner. Two centres: 1) Itarsi near Hoshangabad in M.P. 2) Chintaladevi near Nellore in Andhra GK NOTIMP.
<b>Rashtriya Kamdhenu Aayog 2019</b>	Int-Budget-2019 setup this executive body in Department of Animal Husbandry & Dairying. <b>Goals?</b> <ul style="list-style-type: none"> <li>- Genetic up-gradation of cow resources</li> <li>- Enhance cow productivity through research in organic manure, biogas etc; Cow welfare, cow protection laws.</li> </ul> <p style="text-align: center;"><b>Structure:</b></p> <ul style="list-style-type: none"> <li>- <b>Chairman</b> with tenure of 2 years.</li> <li>- Members from govt, research institutions, social workers etc their tenure depends on govt's discretion.. HQ: New Delhi.</li> </ul>
<b>Budget-2020</b>	<ul style="list-style-type: none"> <li>✓ We'll eliminate following disease by 2025: <ul style="list-style-type: none"> <li>○ Cattle: Foot and Mouth disease, Brucellosis</li> <li>○ sheep and goat: Peste Des Petits Ruminants (PPR)</li> </ul> </li> <li>✓ We'll use MNREGA workers to develop fodder farms.</li> </ul>
<b>Dairy Sahakar 2021</b>	dairy sector to get loans through National Cooperative Development Corporation (NCDC).



### Challenge in dairy sector?

1. Post-2017: Excess supply of milk in global market → crash in milk prices. So, Indian private dairy owners also cut down their procurement prices, resulting in dairy farmers' distress & agitations. So, farmers spilling milk on highways in protest. (अत्याधिक आपूर्ति → दामों में गिरावट)
2. As animal gets old & stops giving milk → farmers sell it to slaughter house to get money to buy new animals. But, this trade becoming difficult due to present socio-political atmosphere → even leather-industry also suffering. (वर्तमान सामाजिक-राजनीतिक माहौल में बूढ़े पशुओं को कत्लखाने में बेचने में किसान को दिक्कत, जिससे कि चमड़ा उद्योग में भी समस्या)
3. RCEP Agreement Angle. 📄 Ref- Handout: Pillar-3B
4. Corona-2020: 📉 in milk demand due to lockdown, tea-shops, sweet shops, ice cream parlours, restaurants, hotel etc shutdown → private dairies stopped milk procurement from the farmers → farmers started selling to milk cooperative dairies but they're unable to pay money because slow business. (लॉकडाउन के चलते निजी डेयरी-मालिकों ने किसानों से दूध खरीदना किया बंद तो किसान सहकारी दूध मंडलियों में ज्यादा दूध भरवाने लगे किंतु वहाँ पर भी धंधा मंदा है)
5. 2022: Fodder Shortage / inflation → milk prices inflation.

### 40.31.3 🐮 🐄 Cow (welfare) Cess

Punjab was the 1<sup>st</sup> State start to levy Cow (Welfare) Cess on sale of liquor, electricity etc. Later on Chandigarh, Uttar Pradesh, Rajasthan also started collecting it.



#### 40.31.4 🐏🐐: 📊📊 ES2019 suggests focus on Small Ruminants

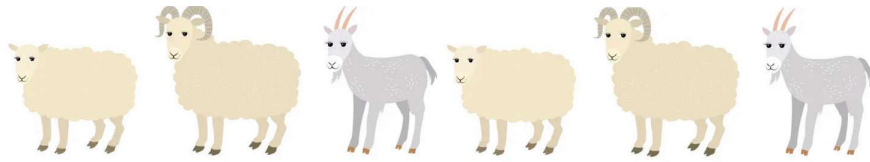


Figure 1: हम तो Day#1 से Mains Answer Writing करते थे!

Sheep and goat are collectively known as **small ruminants** (जुगाली करनेवाले छोटे जानवर)

- These small ruminants have higher survival rates under drought conditions compared to **bovines** (गौ-जातीय पशु: Cattle, Buffalo, Mithun and Yak).
- They can even live on shrubs and trees. Their reproduction rates are higher than large ruminants. Farmers/producers can sell them more frequently & no fear of 'cow-vigilantism'. (गौ-रक्षा के लिए नागरिकों द्वारा कानून को हाथ में लेना)
- Thus, small ruminants can help 📈 income of the small-marginal & women farmers. (छोटे सीमांत और महिला किसानों की आय में बढ़ोतरी)

#### 40.31.5 🧑👩👧👦👨👩👧👦 Atma-Nirbhar: Dairy cooperatives (दुग्धालय सहकारी समितियां)

- ⇒ 🤔👤 Corona lockdown = milk sales 📉.
- ⇒ Government to give 2% loan interest subvention to dairy cooperatives + If they regularly repay loans then additional 2% = total 4% interest subvention (ब्याज में राहत).
- ⇒ National Animal disease control → 100% vaccination of domestic animals against Foot and Mouth Disease (FMD) and for brucellosis. (पशुओं का टीकाकरण)
- ⇒ Animal Husbandry Infrastructure Development Fund will be setup with ₹15,000 cr (पशुपालन की बुनियादी अवसंरचना विकास निधि) → loans subsidy & credit guarantee for various projects

#### 40.31.6 🐟 Agro Allied: Fisheries → Blue revolution (मत्स्य → नीली क्रांति)

(Introduction) India is the second largest fish producer in the world. Majority of our production comes from inland fisheries sector. It provides employment, income, export earning, nutrition and food security to a large population (more than 25 million Indians). Frozen shrimp is India's largest exported seafood item.

- **Blue Revolution Boss?** Dept of Fisheries. This is also a core scheme.
- Government gives money for modernization of boats, marketing & cold storage infrastructure. National scheme for welfare of fishermen which gives money for construction of houses, tube wells for drinking water etc. Promote Inland fisheries, aquaculture & pisciculture i.e. raising fish in artificial tanks/ ponds.
- 📁 **Budget-2019:** Dept of Fisheries to launch **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** for infrastructure, post-harvest management, quality control etc.



- **Budget-2020:**
  - “Sagar mitras”: these extension workers to advise fishermen with processing and marketing. मछुआरों को प्रसस्करण-और विपणन तालीम देने के लिए सागर-मित्र
  - Target to raise fishery export to ₹1 lakh crore by 2024-25.
  - We'll promote growing algae, sea-weed and Cage Culture (*growing of fishes in existing water resources in a net cage which allows free flow of water.*)
- **Budget-2021:** 5 major fishing harbours – Kochi, Chennai, Visakhapatnam, Paradip, and Petuaghat (W.Bengal) – will be developed further (मछली पकड़ने के बंदरगाह अधिक विकसित किए जाएंगे)
- **Mariculture** = cultivation of marine organisms in their natural environment in sea upto 12 nautical miles from coast. Just like Agriculture, this is also a State-list subject. 2018: Agro Ministry announced Draft National Policy on Mariculture which encourages State Govts to lease the sea area to private entities & even farming of genetically modified species in enclosed / caged marine spaces. # 🏞 थोड़ा-पढ़ो-आगे-बढ़ो

#### 40.31.7 Pradhan Mantri Matsya Sampada Yojana (2020)



- ⇒ Originally announced in Budget 2019. but was not launched in that financial year. Then Corona → Atma-Nirbhar 2020-May/Jun → yes we'll launch it.
- ⇒ **Boss?** Ministry of Fisheries, Animal Husbandry & Dairying
- ⇒ **Type?** It's an umbrella scheme worth >20kcr. Made up of two sub-schemes/parts:
  - 1) Sub-scheme #1: Central Sector Scheme (=state not req to give money)
  - 2) Sub-scheme #2: Centrally Sponsored Scheme (=States required to give money.)

#### **This scheme provides Support / Funding / Subsidies for**

- ✓ **Sagar Mitra** youth extension workers: They'll give training to fishermen.
- ✓ **Fishing Boat/Vessels** → Loans interest subsidy and Insurance premium subsidies (नाव/पोत के लिए ऋण के ब्याज और बीमा किस्त में सब्सिडी)
- ✓ **Inland Aquaculture, Coldwater Fisheries in Himalayan areas,** (अंतर्देशीय, शीत जल मत्स्य)
- ✓ **Seaweed cultivation,** **Ornamental Fisheries** (समुद्री शैवाल की खेती, सजावटी मछली)
- ✓ **Mariculture:** cultivation of marine organisms in their natural environment in sea upto 12 nautical miles from coast.
- ✓ **Development of fishing harbours,** Post harvest infrastructure, transport, marketing support ( बंदरगाह, बुनियादी अवसंरचना, परिवहन, विपणन सहायता)



- ✓ Quality control labs so we can comply with US/EU's health/hygiene, sanitary and phytosanitary (SPS) standards. (गुणवत्ता नियंत्रण प्रयोगशालाएं, ताकि अपना मत्स्य उत्पाद विदेशों में स्वास्थ्य/स्वच्छता संबंधित मानकों पर खारिज ना हो जाए)
- ✓ **Scheme Valid** for next five years, starting from 2020
- ✓ **Outcome?** 55 lakhs direct and indirect jobs, ₹1 lakh cr fisheries export by 2025.

**Conclusion?** Fisheries and aquaculture are an important source of food, nutrition, employment and exports in India. Govt has taken an appreciable step to boost this sector further. (भोजन, पोषण, रोजगार और निर्यात की बढ़ोतरी के लिए महत्वपूर्ण इस मत्स्य क्षेत्र को, और बढ़ावा देने के लिए सरकार ने, एक साराहनीय कदम उठाया है।)

#### 40.31.8 **Shaphari certification for aquaculture exports (MPEDA, 2021)**

'Shaphari' = Sanskrit for superior quality of fishery products suitable for human consumption.

- ⇒ 2021: Marine Products Exports Development Authority (MPEDA, a statutory body under Commerce Ministry) has developed a Shaphari certification scheme for aquaculture (e.g. fish, shrimp etc), based on United Nations' Food and Agriculture Organization's technical guidelines.
- ⇒ If an Indian aquaculture farmer/company gets this certificate = means his shrimp/fish etc. are free of harmful chemicals/pesticides/antibiotics. (प्रमाणपत्र की मछली-झींगा में जहरीले रसायन नहीं)

#### 40.31.9 **Sweet Revolution (Honey / Beekeeping) मीठी क्रांति, शहद, मधुमक्खी पालन**

- 2017: 'Honey Mission' was launched by Khadi and Village Industries Commission (KVIC, a statutory body under MSME Ministry). PM Modi termed it 'Sweet revolution'. (शहद)
- 2020: Agri ministry launched National Beekeeping & Honey Mission (NBHM)
- Honey provides income from selling honey to food processing industry, beeswax in chemical industry, bee-venom to pharma industry etc.

#### 40.31.10 **Other revolutions:**

- **"Pink Revolution"** for meat and poultry industry, under Ministry of food processing however not much in Limelight under the Modi-government. (मांस और मुर्गी पालन)
- **Yellow revolution** in oilseed also not much limelight. (तिलहन)

#### 40.32 **AGRICULTURE → RESEARCH & EDUCATION, EXTENSION SERVICES**



- ✓ Indian Council of Agricultural Research (1929) is the apex body of agricultural research, education and extension under the ministry of agriculture.
- ✓ ICAR operates through 690 + Krishi Vigyan Kendra which provide last Mile connectivity to farmers and help them adopt the latest cropping technologies.
- ✓ Further details on agri-extension services = SHIFTED To Mains Handout. #Prelims-RAFTAAR



#### 40.33 🤝 GLOBAL COOPERATION: FOOD AND AGRICULTURE ORGANISATION (FAO)

- खाद्य और कृषि संगठन is a specialized agency of UN, setup in 1945 with HQ @Rome, Italy.
- It publishes Food Price Index (FPI) to monitor inflation. This index focuses on five commodity groups namely - cereals, oilseeds, dairy products, meat and sugar (खाद्य महंगाई सूचकांक बनाता है)
- FAO started celebrating international milk day on June 1 since 2001. Now 20th World Milk Day 2021 with the theme 'Sustainability in the dairy sector.' अंतरराष्ट्रीय दूध दिवस हर साल जून में मनाया जाता है

#### 40.33.1 🤝 🌾 International Year for Millets (2023)

⇒ United Nations General Assembly, in its 75th session during March 2021, declared 2023 the International Year of Millets (IYM)

⇒ India's millet production accounts for 80% of Asia and 20% of global production.

	GLOBAL	INDIA
Avg. Yield (kg/ha)	1229	1239

Thus, India's yield is higher than Global.

- ⇒ In India, millets are primarily a Kharif crop mostly grown in rainfed conditions
- ⇒ requiring less water and agricultural inputs than other staple crops.
- ⇒ Government notified Millets as Nutri-cereals in April 2018. Under the National Food Security Mission (NFSM), millets have been introduced to provide nutritional support.
- ⇒ 🌾 Budget-2023: we grow several types of 'Shree Anna' such as kuttu, ramdana, kangni, kutki, kodo, cheena, and sama. we'll give the funding to Indian Institute of Millet Research, Hyderabad. It is an org. under under Indian Council of Agricultural Research (ICAR).

#### 40.33.2 🤝 🌾 MIIRA for global Millet R&D (2023)

- ⇒ 'Millet International Initiative for Research and Awareness'.
- ⇒ India wants to launch this with help of G20 nations, for global coop in millet R&D. Details yet to be worked out

#### 40.33.3 🤝 Global Cooperation: International Years by United Nations (UN)

2024	Camelids (group of Camel species)
2023	Millets – so 🛒 🌾 Budget-2022 also announced that we'll promote millet food processing
2022	Artisanal Fisheries and Aquaculture
2021	1) Creative Economy for Sustainable Development 2) FAO Year of Fruits & Vegetables
2020	Plant Health

#### 40.33.4 🤝 Global Cooperation: International Decades by UN (अंतर्राष्ट्रीय दशक)

2018–2028	International Decade "Water for Sustainable Development"
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2019–2029	1) Nelson Mandela Decade of Peace 2) United Nations Decade of Family Farming
2021–2030	United Nations Decade on Ecosystem Restoration
2021–2030	International Decade of Ocean Science for Sustainable Development

#### 40.33.5 🌐 Global Cooperation: Misc. → SAARC Food Bank (2007)

- ✓ 2007: South Asian Association for Regional Cooperation (SAARC) countries signed the agreement to establish the SAARC Food Bank.
- ✓ The Food Bank will help member nations' people in case of emergencies.
- ✓ Each member country is required to contribute either wheat/rice.
- ✓ Stock is kept with respective Govt agencies like FCI. So, Bank doesn't hv a HQ as such.

#### 40.33.6 🌐 Global Cooperation: Misc. → International Grains Council (London)

- ✓ HQ: London, for cooperation in wheat and coarse grain matters.
- ✓ IGC has two types of members— importing and exporting members. India has been included in the category of exporting member since 2003

#### 40.33.7 🏆 Global Awards related to Agro

<b>WORLD FOOD PRIZE</b> Also nicknamed as <i>Nobel Prize in Agriculture</i>	⇒ \$250,000 Award given by the World food Foundation (Founder- Dr. Norman E. Borlaug. HQ: Iowa State in USA) ⇒ Award given Every year on UN World Food Day (October 16). ⇒ 2020: Indian-American soil scientist <b>Dr Rattan Lal</b> won for soil health ⇒ 2021: Indian origin nutrition scientist <b>Dr Shakuntala Haraksingh Thilsted</b> (Trinidad born) for research in aquaculture & food systems.
<b>Nobel Peace Prize</b> नोबेल शांति पुरस्कार	- <b>1970: Dr. Norman E. Borlaug</b> won Nobel Peace Prize for his contributions to the world food supply (He had also helped in India's Green Revolution) - <b>2020: United Nations (UN) World Food Programme</b> (HQ: Rome, founded in 1961) संयुक्त राष्ट्र विश्व खाद्य कार्यक्रम नोबेल शांति पुरस्कार 2020 जीता है

#### 40.34 📁 MAINS Qs FROM AGRICULTURE

Mostly centred around cropping types, Problems in land reforms, food processing, APMC.

Government reform to help farmers, food production etc.

⇒ This Raftaar-courses deals purely with Prelims and NOT with Mains. So, You've two options:

⇒ A) Watch previous [recorded course PCB7 completed between 2022-June to October](#): OR

⇒ B) Wait for next course for Mains-specific Economy from 2023-June onwards

Next HDT: Pillar4B: Sectors of Economy → MFG, MSME, Make/Assemble in India etc.