

Farm Mechanisation

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Manifest Pedagogy:

India is one of the largest agricultural economies in the world with low levels of mechanisation due to factors like affordability and accessibility of expensive machinery, being a deterrent to the use of such technologies. Hence mechanisation on farmlands holds the key for sustainable and efficient development of this sector, as well as that of the rural economy. Domestic farm machinery prowess is intrinsic to the idea of atma nirbhar krishi. The government must prioritise India-made farm machinery for its procurement scheme, while encouraging local production with PLIs.

In News: Union Minister of State for Agriculture and Farmers' Welfare stressed on the need of mechanisation in the changing climatic conditions and also urged the scientists to work more for making India a developed country in the field of agricultural mechanisation by 2047.

Placing it in Syllabus: Agriculture

Static Dimensions

- Background
- Present Status
- Government steps

Current Dimensions

- Need for Farm Mechanisation
- Challenges of Farm mechanisation
- Suggestions

Content

Farm mechanisation refers to the development and use of machines that can take the place of human and animal power in agricultural processes with the end objective to enhance the

overall productivity and production with the lowest cost of production.

Background

- Growth of India's agri sector has been on account of several positive factors related to the rural economy, including progressive policies towards agriculture, also leading to growth of the domestic tractor industry.
- Farm mechanisation in India may have made strong strides in recent years, with India as the largest tractor market in the world, which has had a significantly positive impact on the use of machinery on farmlands in India including output value, income and return rate of all types of crops.
- While there is some level of mechanisation beyond tractors, it is largely skewed toward land preparation.
- For many other operations, simple implements are used, or the tasks are done by manual labour.
- Mechanisation also varies greatly by region, with states in north India having high levels of mechanisation due to highly productive land in the region, as well as declining availability of labour force.

Present Status of farm Mechanisation

- Farm mechanisation in India has been lower at **40-45 percent**.
 - India is "**tractorisised**", not "**mechanised**".
 - Globally, the tractor industry is only **38% of the total industry** (tractor + farm machinery)
 - In India it is **80% of the total industry**.
- Compared to other countries such as the **USA (95 percent), Brazil (75 percent), and China (57 percent)**.
- **Regional Profile:** Farm mechanisation in India stands at about **40- 45% with states such as UP, Haryana and Punjab** having very high mechanisation levels but north eastern states having negligible mechanisation.

Government steps

- The use of modern machinery is currently being promoted both by the private and public sectors, with initiatives being taken by the government,
 - **Sub-Mission on Agricultural Mechanisation (SMAM)** under National Mission on Agricultural Extension and Technology,
- **Rastriya Krishi Vikas Yojana (RKVY)**
 - Mission for Integrated Development of Horticulture (MIDH).

Need for Farm Mechanisation

- **Savings:** Studies have shown a direct relationship between farm mechanisation and farm yield.
 - Farm mechanisation is said to provide a number of input savings, **seeds (15-20%), fertilisers (15-20%)**.
- **Efficiency:** It can help reduce time by approximately **15-20 percent**, thus increasing the efficiency of farm labour and reducing drudgery and workloads
- **Social benefits:** It decreases the workload of women due to improved efficiency of labour.
 - It helps in encouraging the youth to join farming and attract more people to work and live in rural areas.
- Improvement in the cropping intensity and making agricultural land become commercially more viable.
- **Cost of labour:** The cost of deploying labour for agriculture operations is increasing substantially.
 - Farm mechanisation is the way to reduce labour cost and **can reduce the cost of farming by 20 percent**.
- **Farm income:** Use of agricultural machinery helps to increase productivity & production of output, undertake timely farm operations and enable the farmers to quickly

rotate crops on the same land.

- **Sustainable agriculture:** Farm mechanisation provides optimal utilisation of land and water resources that can influence the environmental footprint of agriculture leading to sustainable outcomes.

Challenges in Farm mechanisation

- **Scale and operations:** India has a very small average landholding size (**2.66 acres as per Agriculture Census, 2015-16**) and that too is scattered over different places in small parcels. This is making individual ownership of agriculture machinery economically unviable.
- **Low-income level of farmers:** about **86% of farmers in India are small and marginal** and earn on an average Rs. 6,426 per month as per the 2016 NSSO report.
- **Credit:** The procedure to avail agriculture term loans for various activities helping farm mechanisation is very cumbersome.
 - The rate of interest is higher for such loans in comparison to crop loans.
- **Awareness:** Farm mechanisation is viewed as the only usage of tractors, power tiller combines harvesters and threshers. Farmers are not aware of other machines suitable for small landholdings and methods of using them.
- **Variability in farm power:** Power availability varies highly from one state to the other as according to the agro-climatic regions. Lack of access to power results in the slow uptake of farm mechanisation and hence non-intensification of farm productivity, particularly among small and marginal farmers.
- **Subsidy limitations:** Farm mechanisation requires substantial investment. Central Govt. and various State Govts. have been providing subsidies for Individual/ Group of farmers/ Cooperative to invest.
- **Dependent population:** The level of farm mechanisation

behaves inversely with the population engaged in agriculture. 70 percent of India's rural households still depend primarily on agriculture for their livelihood

Suggestions

- **Custom hiring service** -Need to innovate custom hiring service or a rental model by institutionalisation for high-cost farm machinery.
- **Small farm types of machinery/implements** need to be promoted keeping in view the versatility of various crops, cropping patterns, and agriculture operations.
- **Ease of financing** such as KCC, procedures to avail term loan may be simplified with minimum documentation along with the capacity building of banks.
- Adopting recommendations of **Ashok Dalwai committee**:
 - CHSc at different levels, should be supported to broaden their technologies to include modern systems like drones, sensor-based applications.
- **Make-in-India farm machinery** holds the key to enable India to realise its dream of 'atmanirbarta'. Creating self-reliance in farm machinery manufacturing is a critical step.
- **Need to innovate and make farm machinery domestically**, to ensure growth of agriculture, while ensuring growth of the farm mechanisation, especially in the context of diminishing agricultural labour.
- **Promoting indigenous R&D**-The government can support India's farm mechanisation programme by initiating a series of reforms, including but not limited to promoting indigenous R&D, and extending support for crop-specific mechanisation technologies.
- **Restrict imports of farm machinery**-FY21 (April 2020 to February 2021) the value of farm machinery imported was around `1,185 crore compared to `477 crore in FY 2018, i.e. 148% growth in three years.

- In FY21, 63% of imported farm machinery by value came from China, making China-based manufacturers significant beneficiaries of the SMAM (Sub-Mission on Agricultural Mechanism) scheme.
- **Need for procurement assistance**-The various government-run provide no distinction between a product fully designed and developed in India for Indian farm conditions and a product designed and developed abroad and imported into India.
 - These schemes provide an equal amount of subsidy to all products and thus do not incentivise businesses who have invested in India, to design and develop these products.
- **Need a farm-machine PLI**- There is a need for incentivising the farm machinery industry through a PLI scheme to deliver “best in class” products for domestic and export markets.

Conclusion

Going forward and with the right approach, farm machinery, a \$100-plus billion global industry, has enormous potential and scope to realise PM Modi vision of ‘Atmanirbhar Bharat’ and doubling farmers income with farm products made and developed in India for India.

Mould your thoughts

Q.The sustainable and effective growth of Indian agriculture and the rural economy depends on farm mechanisation. Discuss (250 words)

Approach to the answer.

- Introduction about Farm mechanisation.
- Need for farm mechanisation
- Present status and government measures
- Challenges of farm mechanisation
- Suggestions

- Wayforward and conclusion