SUSTAINABLE AGRICULTURE - GS III MAINS

Q. With a growing population, depleting resources and the increasing threat of climate change, sustainable agriculture is the need of the hour to feed the global population. Discuss (15 marks, 250 words)

News: *J&K building modern and sustainable agriculture and allied industry through HADP scheme: LG Manoj Sinha*

What's in the news?

- **Jammu and Kashmir** Lieutenant Governor Manoj Sinha called upon educational institutions to take innovative approaches to minimize the agricultural input costs and maximize output with efficient farming techniques and technological support.
- Presiding over the eighth convocation ceremony of Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST) here, Sinha said Jammu and Kashmir is building a modern and sustainable agriculture and allied industry through the **Holistic Agriculture Development Programme (HADP).**

Sustainable Agriculture:

- Sustainable agriculture is that form of agriculture which attempts to produce **sufficient food to meet the needs of the present without compromising the ability of future generations** to meet their own needs, say by exhausting soil fertility or irreversibly damaging the environment.
- It integrates **three main goals - environmental health, economic profitability, and social equity.**

Key takeaways:

- The Government of India has identified **10 key components of sustainable agriculture,** which broadly includes – improve crop seeds, livestock, fisheries, water use, pest management, nutrient management, agriculture insurance, credit, markets, access to information, and livelihood diversification.

Strategies for Sustainable Agriculture:

1. Appropriate production systems:

- A shift in policy for the agricultural production system to match the agro-ecological resources is critical for sustainability.
- For example, promotion of dry land agriculture rather than input-intensive farming in arid and semi-arid areas and promoting less water-intensive crops like pulses and millets.

- Similarly, crops like rice needing large amounts of water can be shifted to other regions that are relatively more endowed with water.

2. Poly-cultures and Crop Rotation:

- Moving farmers from mono-cultures to poly-cropping and the rotation of crops can lead to reductions in the need to apply fertilizers and pesticides.
- Such diverse systems are likely to be more productive, labour intensive and provide enhanced ecosystem services and, therefore, much more sustainable.

3. Emphasis on nurturing the soil:

- Greater emphasis on nurturing the soils rather than plants will provide higher benefits on sustaining yields, improving ecosystem health and sequestering carbon.

4. Promotion of Zero Budget Natural Farming:

- Initiatives such as Zero Budget Natural Farming, with low external input and production costs, could help restore ecosystem health and diversified livelihoods of smallholder farmers.

5. Reducing Food waste and promoting sustainable consumption patterns:

- To reduce food wastage, greater investments are needed in improving post-production infrastructure, including storage space in rural areas and improved harvesting techniques and transportation.

6. Precision Farming:

- It involves sensors, GPs mapping, and data analytics to monitor and optimise crop performance.

7. Agroforestry:

- It is a land-use integrated management system that combines trees and shrubs with crops and livestock to create a more sustainable and productive farming system.

8. Renewable Energy-based:

- It can be used to power farming operations.
- It can reduce greenhouse gas emission and dependence on fossil fuels.

Challenges:

1. Lack of awareness and knowledge:

- Many farmers must know the benefits of sustainable agriculture practices or how to implement them effectively.

2. Limited Access to Finance:

- Small and marginal farmers need more access to finance to make these investments.

3. Inadequate Policy and Regulatory Framework:

- Adopting sustainable agriculture practices is not always supported by India's policy, and the regulatory framework does not always support adopting sustainable agriculture practices.

4. Limited Research and Development:

- There is a need for more investment in disseminating research findings and developing extension services to help farmers adopt these practices.

5. Lack of Infrastructure and Technical Support:

- Adopting sustainable agriculture practices often requires significant infrastructure and technical support.

6. Low Productivity:

- Agriculture in India is characterised by low productivity, a significant impediment to its growth and development.

7. Fragmented Landholdings:

- It has made it difficult for farmers to access credit and other support services.

8. Lack of Market Access:

- Resulting in lower incomes for farmers and higher food prices for consumers.

9. Inadequate Infrastructure:

- This makes it difficult for farmers to transport their produce to markets, store it safely, and sell it later.

10. Climate Change:

- The changing weather patterns, including erratic rainfall and rising temperatures, affect crop productivity and increase farmer's vulnerability.

With growing population, depleting resources and the increasing threat of climate change, it will be impossible to full fill the needs of the future unless we transition to sustainable food and agricultural systems that would ensure world food security, provide economic and social opportunities, and protect the ecosystem services on which our future depends.