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**TOPIC**

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Need for climate-smart  
Agriculture in India

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## NEED FOR CLIMATE-SMART AGRICULTURE IN INDIA

### In Context

- Climate-smart agriculture has the potential to assure food security, empower farmers, and protect our delicate ecosystems.

### Climate change and food insecurity

- **About:**

- ♦ The two most important issues facing humanity in the 21st century are climate change and food insecurity.

- **Challenge of climate change:**

- Some of the ongoing effects of climate change, such as heat waves, flash floods, droughts, and cyclones, are negatively influencing lives and livelihoods.
- The world's southern continents are reportedly experiencing severe drought due to climate change, which negatively impacts agricultural production and farmers' livelihoods.

- **Threats of Climate change for agriculture:**

- As a result of climate change, traditional farming practices are becoming less productive.
  - ♦ Farmers are taking a variety of adaptation measures to reduce the negative effects of climate change.
  - ♦ The future impacts of climate change on agricultural productivity could be substantial.
    - In India, crop yield decline owing to climate change (between 2010 and 2039) could be as high as 9%.

- **Concerns of food insecurity:**

- Both population expansion and dietary changes are contributing to an increase in the demand for food.
- The need for a holistic strategy is driven by **climate change's dual challenges of adaptation and mitigation**, and the pressing need for **agricultural production to rise** by 60% by 2050 in order to **fulfil food demand**.

### Climate-smart agriculture (CSA)

- **What is Climate-smart agriculture?**

- ♦ Climate-smart agriculture is an approach for transforming food and agriculture systems to support sustainable development and safeguard food security under climate change.
- ♦ CSA comprises three pillars or objectives:
  - sustainably increase agricultural productivity and incomes;
  - adapt and build resilience to climate change; and
  - reduce/remove GHG (greenhouse gases) emissions, where possible.

- **Dimensions of climate-smart practices include:**

- ♦ Water-smart, weather-smart, energy-smart, and carbon-smart practices.
- ♦ They improve productivity, deal with land degradation, and improve soil health.

- **How?**

- ♦ Improvements in agroforestry, sustainable water management, and precision agriculture are all concrete examples of CSA ideas in action, and they are not limited by any one country.
- ♦ CSA promotes crop diversification, increases water efficiency, and integrates drought-resistant crop types, all of which help lessen the disruptive effects of climate change.
- ♦ There has been a worldwide uptick in community-supported agriculture efforts.
- ♦ These efforts are made in an attempt to create agricultural systems that are both resilient and environmentally friendly.

- **CSA in India:**

- ♦ The National Action Plan on Climate Change emphasises the role of climate-resilient agriculture in **India's adaptation measures**.

- ◆ **Government initiatives in India focusing on CSA:** The National Adaptation Fund for Climate Change, National Innovation on Climate Resilient Agriculture, Soil Health Mission, Pradhan Mantri Krishi Sinchayee Yojana, Paramparagat Krishi Vikas Yojana, Biotech-KISAN, and Climate Smart Village are a few examples of government initiatives in India focusing on CSA.
- ◆ **Public and private sector initiatives:** Various public and private sector entities such as farmer-producer organisations and NGOs are also working towards the adoption of CSA.

### Significance of CSA:

- **Enhanced output with ecological stability:**
  - ◆ The importance of CSA lies in its ability to increase agricultural output while maintaining ecological stability.
  - ◆ This correlation is not only a desired consequence but rather essential for long-term food security and sustainable resource usage in a warming planet.
- **Increased resilience:**
  - ◆ By reducing exposure to climate-related dangers and shocks, CSA increases resilience in the face of longer-term stressors like shorter seasons and erratic weather patterns.
- **Economic stability:**
  - ◆ In addition to these benefits, a significant outcome of CSA implementation is the increasing economic autonomy of farmers.
  - ◆ CSA causes a dramatic change in farming communities' economic and social structure by distributing information about and providing access to climate-resilient methods.
- **Uplifting disadvantaged farmers:**
  - ◆ As the climate changes, farmers, significantly those already disadvantaged, can gain enormously from adopting climate-smart techniques.
  - ◆ The majority of Indian farmers are small or marginal. Therefore, CSA can play a significant role in helping them increase their profits.
- **Reduced GHG emissions:**
  - ◆ The agricultural sector also produces a large amount of GHGs. The sector's share in GHG's emissions in 2018 was 17%.
  - ◆ Therefore, CSA implementation is crucial for lowering GHG emissions and protecting biodiversity.
  - ◆ Furthermore, it aids in enhancing farmland carbon storage.

### Way ahead

- The most challenging aspect of dealing with global warming is to **create localised responses**.
  - ◆ Therefore, investing in **capacity-building** programmes and providing **practical CSA tools and knowledge** is essential.
- **Agroforestry and carbon sequestration** are two examples of CSA measures that could help India meet its international obligations and contribute to the global fight against climate change.
- The intersection of climate vulnerability and agricultural importance places India at a unique juncture where **CSA adoption is not merely desirable but essential**.

### DAILY MAINS QUESTION

Adoption of Climate-smart agriculture (CSA) in India is not merely desirable but essential. Analyse.