# Climate Smart Agriculture (CSA)

## Why in news?

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

## What is Climate Smart Agriculture (CSA)?

- It is a comprehensive strategy for managing farmlands, crops, livestock, and forests that *counteracts the negative impacts of climate change* on agricultural productivity.
- FAO in 2019 said that CSA is an approach for transforming food and agriculture systems to support sustainable development and safeguard food security under climate change.



## Why India needs Climate Smart Agriculture (CSA)?

- **Climate change**- The world's southern continent are reportedly experiencing *severe drought* due to climate change, which negatively impacts agricultural production and farmers' livelihoods.
- **Low crop yield**- In India, crop yield is declining due to climate change. Between 2010 and 2039 it could be as high as 9%.
- **Climate disparity**- The ongoing effects of climate change such as heat waves, flash floods, droughts and cyclones are negatively influencing lives and livelihoods.
- **Pressure on land-** India has a large and growing population, but limited land area thereby putting pressure on the small and marginal farmers, who produce most of the country's food and are vulnerable to climate shocks.
- **Impetus to Paris Agreement**- The goal of limiting global warming by reducing GHG emissions is tied directly to the success of the CSA.
- **High GHG emission**- Agricultural sector produces a large amount of Green House Gas (GHG) emissions which is around 17% in 2018.
- **Food insecurity**- Both population expansion and dietary changes are contributing to increase in demand for food.
- **Radical reform**- The farming industry needs a major reform to deal with global warming and improve food output and revenue in an eco-friendly manner.
- **Innovative approach**- It charts development pathways that can make the agriculture sectors more productive and sustainable and to contribute to climate change adaptation and mitigation.

*The study of Northwest Indo-Gangetic Plain for wheat production shows that site-specific no-tillage is advantageous for fertilizer management and can boost yield,*

*nutrient usage efficiency, and profitability while lowering GHG emissions.*

## What are the challenges in adopting CSA?

- **High cost**- CSA may adopt expensive agricultural technology or infrastructure which are out of reach for marginal farmers.
- **Market barriers-** The market for CSA products is still small, which makes it unprofitable.
- **Policy paralysis-** Farmers find it challenging to embrace CSA strategies due to governmental and regulatory obstacles.
- **Lack of awareness**- Farmers may not be aware of the information and access to established approaches of CSA.
- **Cultural resistance**- Inexperience or conflicts with the established farming norms acts as a barrier.
- **Lack of definition**- CSA does not have a clear and agreed-upon definition, which allows for different interpretations and applications of the concept.
- **Monopoly**- CSA is influenced by the interests of the fertilizer industry (Greenwashing), which is a major source of GHG emissions and environmental degradation.

| **Steps taken by India to promote CSA** |
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| • **National Adaptation Fund on Climate Change**- It was launched in 2015 to support concrete adaptation activities which mitigate the adverse effects of climate change.<br>• **National Innovation on Climate Resilient Agriculture**- It is a network project of *Indian Council of Agricultural Research* (ICAR) that aims to enhance the resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration<br>• **National Action Plan on Climate Change**- It was launched in 2008 to mitigate and adapt to the adverse impact of climate change.<br>• It contains *8 national missions* that cover various sectors and objectives related to climate change.<br>• **Soil Health Mission**- It was launched in 2015 that provides *soil health cards* to farmers, which contain information on soil nutrient status and fertilizer recommendations.<br>• **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** - It was launched in 2015 to *enhance water use efficiency* and irrigation coverage in agriculture.<br>• **Paramparagat Krishi Vikas Yojana-** It is a sub scheme under PMKSY that promotes *organic farming* and certification.<br>• **Biotech KISAN-** It was launched in 2017 as a farmer-centric scheme that empowers small and marginal farmers through biotechnology<br>• **Climate Smart Village-** It was launched in 2011 as an approach that integrates various *climate-smart interventions* and practices at the village level to enhance farm productivity. |

## What lies ahead?

- CSA has the potential to assure food security, empower farmers, and protect our delicate ecosystems by merging innovation, resilience, and sustainability.
- In the face of a changing climate, the path of CSA stands out as a source of inspiration and transformation for a world working to ensure a sustainable future.

## References


1. The Hindu- Need for climate smart agriculture in India
2. IBEF- India's smart agriculture practices
3. World Bank- Climate Smart Agriculture


