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
• **National Adaptation Fund on Climate Change**- It was launched in 2015 to support concrete adaptation activities which mitigate the adverse effects of climate change. • **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 • **National Action Plan on Climate Change**- It was launched in 2008 to mitigate and adapt to the adverse impact of climate change. • It contains *8 national missions* that cover various sectors and objectives related to climate change. • **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. • **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** - It was launched in 2015 to *enhance water use efficiency* and irrigation coverage in agriculture. • **Paramparagat Krishi Vikas Yojana-** It is a sub scheme under PMKSY that promotes *organic farming* and certification. • **Biotech KISAN-** It was launched in 2017 as a farmer-centric scheme that empowers small and marginal farmers through biotechnology • **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

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