



Climate-Smart Agriculture-Opportunities and Challenges

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Agriculture that sustainably increases productivity, resilience (to climate change, reduces greenhouse gases) and enhances achievement of national food security and development goals. Climate-smart agriculture represents an innovative approach to address the challenges posed by climate change in the agricultural sector. The primary goal of climate-smart agriculture is to optimize productivity while minimizing the ecological footprint of farming activities. One of the key components of CSA is the promotion of climate-resilient crop varieties. Through the development and adoption of drought-tolerant, heat-resistant and pest-resistant crops, farmers can better cope with changing climate conditions.

History of Climate-smart agriculture (CSA)

- 2009: Term Climate-Smart Agricultural development.
- 2010: 1st Global Conference on Food Security, Agriculture and Climate Change in The Hague (Netherland) - the concept of CSA was presented.
- 2012: At the 2nd Global Conference in Hanoi, Vietnam: Climate-Smart Agriculture Sourcebook advanced the CSA concept intending to benefit primarily smallholder farmers and vulnerable people in developing countries.
- 2013: 3rd Global Conference in Johannesburg, South Africa, discussions began on a climate smart agriculture alliance.
- 2014: Climate Subunit in New York, the Global Alliance for Climate- Smart Agriculture Action plan was presented.

Climate-smart agriculture - three pillars

- Productivity:** Climate-smart agriculture aims to sustainably increase agricultural productivity and incomes from crops, livestock and fish, without having a negative impact on the environment.
- Adaptation:** Climate-smart agriculture (CSA) aim to reduce the exposure of farmers to short-term risks.
- Mitigation:** Climate-smart agriculture should help to reduce greenhouse gas (GHG) emissions.

ICTs in Climate-smart agriculture

- ✓ Radio (local and amateur stations)
- ✓ Internet
- ✓ Mobile phones (Interactive Voice Response & voicemail)
- ✓ Social media (twitter, Facebook)
- ✓ Text messages SMS
- ✓ Mobile apps

Dimensions of Climate-Smart Agriculture

- Weather smart
- Water smart
- Nutrient smart
- Carbon/energy smart
- Institution/knowledge smart.

Programmes related to CSA

- 1) MICCA
- 2) NICRA
- 3) DAMU

MICCA- Mitigation of Climate Change in Agriculture

- Identify and develop context relevant sets of CSA practices with farmers, and support their implementation
- Analyze the adoption and benefits of CSA to inform up-scaling, extension, policy and investments

NICRA -National Innovations on Climate Resilient Agriculture

- NICRA is a network project of the ICAR.
- The project aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration.

DAMU- District Agro Meteorological Unit (DAMU)

- Under Gramin Krishi Mausam Sewa (GKMS) is the flagship programme of Govt.
- District Agro Meteorological Unit (DAMU) established in ICAR–KVK, Hagari (Ballari) during 2019 with primary objective of preparing weather-based advisories for management practices in agriculture.

Opportunity of Climate-Smart Agriculture

- Understanding the barriers to adoption of different climate-smart agricultural practices
- Water Management
- Livestock Management
- Integrated Pest Management (IPM)
- Capacity Building and Knowledge Sharing

Climate -Smart Agriculture Challenges

- Soil Degradation
- Water Scarcity
- Pest and Disease Outbreaks
- Knowledge and Capacity Gaps

Conclusion

Developing countries must undergo a significant transformation in order to meet the related challenges of food security and climate change. Effective climate-smart practices already exist and could be implemented in developing country agricultural systems. Considerable investment is required- (knowledge gap, research and development of technologies). Institutional and financial support.

Strengthened institutional capacity. Available financing, current and projected are substantially insufficient to meet climate change. Extension functionaries were having medium level awareness about impact of climate change on agriculture. They used electronic media, training and conferences and seminars as major sources of information for climate change. Need training on climate smart agriculture aspects.