Implementation of GKMS for Climate Smart Agriculture in Rural Areas

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ABSTRACT

Climate Smart Agriculture (CSA) combined with Gramin Krishi Mausam Sewa (GKMS) offers significant benefits to rural farming communities facing the challenges of climate change. CSA helps farmers manage risks such as droughts, floods, and erratic rainfall by promoting practices that enhance productivity and income sustainably. At the same time, GKMS provides real-time, location-specific weather-based agro-advisories that guide farmers in making informed decisions on sowing, irrigation, fertilization, and harvesting. These advisories are disseminated through various channels like SMS, mobile apps, and social media in local languages, ensuring they are accessible and easily understood. CSA practices also contribute to reducing greenhouse gas emissions through techniques like resource-efficient farming and conservation agriculture. The integration of GKMS further supports risk management by issuing timely weather alerts, helping farmers prepare for adverse conditions. This synergy leads to optimized use of inputs, cost savings, and improved yield stability. Initiatives like Climate-Smart Villages showcase the practical application of these strategies, empowering smallholder farmers to adapt effectively. Overall, the combination of

CSA and GKMS strengthens resilience, enhances livelihoods, and supports long-term agricultural sustainability and food security.

INTRODUCTION

The Indian agriculture right now so many challenges related to climate changes which includes weather events (unpredictable rainfall, drought, flood etc.), soil and crop stress, economic pressure on farmers and lastly the environmental impacts. To minimizing these risks climate smart agriculture along with agrometeorological advisories plays important role in agriculture. Climate-smart agriculture (CSA) is an integrative approach to landscape management which seeks to assist agricultural techniques, livestock, and crops adjust to the impacts of climate change and, where possible, alleviate them by reducing the emissions, even while taking into consideration the increasing world population to ensure food security (Lipper *et al.*, 2014). Climate Smart Agriculture consists of three pillars i.e., increase agricultural productivity and incomes; adapt to and build resilience to climate changes; and reduce the greenhouse gas emissions from agricultural farms. GKMS stands for Gramin Krishi Mausam Sewa programme at 130 centres at the district level of all the states and UTs with an objective to serve the farming community at different parts of the country. The bulletin is in English and regional language and disseminated through WhatsApp, m-Kissan, newspapers, short message services (SMS), e-mail through state agricultural department, research stations, GKMS and web portals (Anonymous, 2020). The application of agromet advisory bulletin, based on real time weather forecast is a useful tool for enhancing the production and income of farmers (Vashisth, 2013).

Role of AAS in Climate Smart Agriculture

Agro-Met Advisory Services (AAS) will be more effective if they are delivered in a clear, local language that farmers can understand. Agro-Met Advisory Services will also be supported by:

(a) Agro-meteorological database

(b) Crop conditions

(c) Real-time weather, research results on crop-weather relationships

(d) Skilled manpower in multidisciplinary resources and users interface in order to make it a more successful and continuous process (Lipper *et al*. 2014).

For the principal crops and livestock, the agromet advisory bulletins include possible risk mitigation methods. AMFU's and DAMU's multidisciplinary and agromet scientists prepare district-level agromet advisory bulletins based on the weather forecast. Farmers and other stakeholders in the relevant district receive these messages (Amith *et al*. 2022).

CLIMATE SMART VILLAGES

The Climate-Smart Village approach, pioneered by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and partners, is one standout innovation that has shown to make a difference in regions around the world heavily impacted by the ravages of climate change. The villages try to imagine what exactly a climate-smart future would look like, and what practical steps smallholder farmers can take to adapt their agricultural practices to secure dependable food supplies and livelihoods. They also strive to understand how this can be done while decreasing greenhouse gas emissions or

increasing carbon sequestration, limiting future climate change.

Dissemination of advisory

1. Awareness programmes
2. M-KISAN PORTAL
3. DAMINI
4. Meghdoot app
5. Social media

Benefits

Decision-Making	Farmers make climate-smart decisions based on reliable weather forecasts.
Risk Management	CSA practices reduce vulnerability, while GKMS provides timely alerts for weather extremes.
Input Optimization	Weather-informed CSA practices minimize input use and reduce costs.
Yield Stability	Better planning and resilient practices lead to consistent productivity.
Sustainability	Together, they promote long-term agricultural sustainability and food security.

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