

GOVERNMENT OF INDIA  
MINISTRY OF AGRICULTURE AND FARMERS WELFARE  
DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE

**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 1443**  
TO BE ANSWERED ON 15/12/2023

**PROMOTION OF CLIMATE RESILIENT AND SUSTAINABLE AGRICULTURE**

1443. SHRI AYODHYA RAMI REDDY ALLA:

Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

- (a) in what manner advanced data analytics might contribute to the development of early-warning systems for farmers, helping them mitigate the impacts of climate variability on crop yields and livestock management;
- (b) in what manner financial instruments, including risk mitigation strategies and innovative funding models will be leveraged to incentivize private investment in climate-resilient agricultural projects at national level; and
- (c) whether policy frameworks play a role in promoting sustainable and resilient agricultural practices, considering the unique challenges posed by climate change, if so, the details thereof?

**ANSWER**

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE

(SHRI ARJUN MUNDA)

(a) to (c): Data analytics in agriculture plays a crucial role in addressing climate variability's impact on crop yields and livestock management. The increasing frequency and severity of extreme weather event, such as heavy rainfall, hailstorms, etc., affect the agriculture sector. To mitigate, Indian Meteorological Department (IMD) maintains an updated seamless forecasting and early warning system, issuing forecasts and warnings to Disaster Management Authorities and the public. These forecasts help in planning and taking anticipatory action, guiding various sectors including agriculture, leading to reduction in weather-related risks. The Impact-Based Forecast (IBF) provides guidelines for agricultural operations related to expected weather impacts. The Agrometeorological Advisory Services (AAS) being provided by IMD through Gramin Krishi Mausam Sewa (GKMS) offer medium-range weather forecasts, enabling 130 Agromet Field Units to generate advisories for farmers. These advisories aid in day-to-day

agricultural decisions and contribute to weather-based crop and livestock management strategies. The 199 District Agromet Units (DAMUs) extend AAS to block levels, enhancing micro-level decision-making for farmers. Daily weather forecasts, nowcasts, and IBFs for agriculture are disseminated through various channels, including print and electronic media, SMS alerts, mobile apps like 'Meghdoot' and 'Kisan Suvidha,' and social media platforms like WhatsApp and Facebook.

Weather Information Network and Data System (WINDS) for Network of Automatic Weather Stations (AWS) & Automatic Rain-Gauges (ARG) for collecting hyper-local weather data at GP & Block level has been launched by the Ministry. WINDS provides data for YES-TECH (Yield Estimation System Based on Technology) and also facilitate effective drought & disaster management, accurate weather prediction offering better parametric insurance products.

To protect the farmers from climate hazards, Government has introduced flagship yield based Pradhan Mantri Fasal Bima Yojana (PMFBY) along with weather index based Restructured Weather Based Crop Insurance Scheme (RWBCIS) from Kharif 2016. The scheme aims at supporting sustainable production in agriculture sector by way of providing financial support to farmers suffering crop loss/damage arising out of unforeseen natural calamities, adverse weather incidence and to help in stabilize the income of farmers to ensure their continuance in farming. Comprehensive risk insurance to farmers is provided against unpreventable natural calamities such as drought, dry-spells, flood, hailstorm, inundation etc. under the scheme for entire crop cycle including pre-sowing to post-harvest losses.

The government has launched several initiatives to promote sustainable and climate-resilient agricultural practices in the country. National Action Plan on Climate Change (NAPCC) was launched by the Government in 2008 which provides an overarching policy framework for climate action in the country. National Mission for Sustainable Agriculture (NMSA) being implemented by Ministry of Agriculture and Farmers Welfare is one of the Missions within the National Action Plan on Climate Change (NAPCC). Major components of NMSA includes Rainfed Area Development (RAD); Soil Health Management, Paramparagat Krishi Vikas Yojana (PKVY), Mission Organic Value Chain Development in North Eastern Region (MOVCDNER), Agroforestry, Per Drop More Crop, National Bamboo Mission (NBM) etc. The Mission aims to evolve and implement strategies to make Indian agriculture more resilient to the changing climate.

Indian Council of Agricultural Research (ICAR) under Ministry of Agriculture and Farmers Welfare, Government of India has launched a flagship network project namely National Innovations in Climate Resilient Agriculture (NICRA) to promote climate resilient agricultural

practices. NICRA project is a multi-sectoral, multi-location program carrying the major mandate of addressing climate change and variability, and addressing range of stake holders needs across the country. Research, demonstration and capacity building are the three major components, besides providing policy briefs on several aspects related to agriculture and climate change. The salient achievements of ICAR on climate resilient agriculture includes the following;

- In total, 1888 climate resilient crop varieties including 891 of cereals, 319 of oilseeds, 338 of pulses, 103 of forage crops, 182 of fibre crops, 45 of sugar crops, and 10 of other crops have been developed.
- Participatory technology development of climate resilient practices has been undertaken involving farmers in risk assessment, demonstration and adaptation techniques in 151 clusters covering 454 villages, with a footprint of 2.13 lakh households, on 2.36 lakh hectares of land.
- 68 climate resilient technologies have been demonstrated in 454 villages on 15857 farmers' fields during 2014-23.
- 88 biocontrol agents, 31 biopesticides and 41 Biofertilizers have been documented and circulated. Also District Agriculture Contingency Plans (DACPs) for 650 Districts have been developed.

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