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

RAJYA SABHA
UNSTARRED QUESTION NO. 678
TO BE ANSWERED ON THE 05/12/2025

AI-BASED WEATHER FORECASTING INITIATIVES FOR FARMERS

678 SHRI HARSH MAHAJAN:

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

(a)   whether Government is undertaking any initiative to develop Artificial Intelligence (AI)-based weather forecasting and agro-advisory systems for farmers;
(b)   if so, the major steps taken and achievements made in this regard during the last three years;
(c)   whether Government has any plan to integrate AI-based forecasting services with State Agricultural Universities, Kisan Call Centres, and rural agricultural extension systems; and
(d)   if so, the target number of farmers proposed to be benefited under this initiative.

ANSWER

MINISTER OF STATE FOR AGRICULTURE AND FARMERS WELFARE
 (SHRI RAMNATH THAKUR)

(a)   to (d): An AI-based pilot was conducted in collaboration with the Development Innovation Lab- India on agriculturally relevant local monsoon onset forecasts across parts of 13 states in India for Kharif 2025. An open-source blended model was used, including NeuralGCM, the European Centre for Medium-Range Weather Forecasts' (ECMWF) Artificial Intelligence Forecasting System (AIFS), and historical rainfall data from 125 years from the India Meteorological Department (IMD). The probabilistic forecasts predicted only the local onset of the monsoon, which is essential for deciding on the date of sowing crops. Local monsoon onset forecasts were sent via SMS through the M-Kisan portal to 3,88,45,214 farmers in 13 states in five regional languages- Hindi, Odia, Marathi, Bangla, and Punjabi. Telephonic farmer feedback surveys were conducted in Madhya Pradesh and Bihar through Kisan Call Centres after the forecasts were sent. The survey revealed that 31–52% farmers adjusted their planting decisions, primarily through changes in land preparation and sowing timing, which included crop and input choice.

Further, the government has employed Artificial Intelligence (AI) methods to improve crop productivity, sustainability and farmer livelihoods and to address various challenges in the agricultural sector. Some initiatives are given below:

I. "Kisan e-Mitra" is a voice-based AI-powered chatbot, developed to assist farmers with responses to their queries on PM Kisan Samman Nidhi scheme, PM Fasal Bhima Yojna and Kisan Credit Card. This solution supports 11 regional languages and is evolving to assist with other government programs. At present, it handles over 8000 farmer queries daily and so far, more than 93 lakh queries have been answered.

II. The National Pest Surveillance System, for tackling the loss of produce due to climate change, utilizes AI and Machine Learning to detect pest infestation in crop issues, enabling timely intervention for healthier crops. This tool, currently used by over 10,000 extension workers, allows farmers to capture images of pests to help them mitigate pest attacks and reduce crop losses. At present, it supports 66 crops and over 432 pests. AI-based analytics using field photographs for satellite-based crop mapping is being used in Crop-weather matching monitoring of crops sown.

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