GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE & FARMERS' WELFARE
DEPARTMENT OF AGRICULTURE & FARMERS' WELFARE

LOK SABHA
UNSTARRED QUESTION NO. 2736
TO BE ANSWERED ON THE 16th December, 2025

STRATEGY TO PROMOTE CLIMATE RESILIENT AGRICULTURE

2736.DR. LATA WANKHEDE:
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SHRI ATUL GARG:
SHRI RAJESH VERMA:

Will the Minister of AGRICULTURE AND FARMERS' WELFARE कृषि एवं किसान कल्याण मंत्री be pleased to state:

(a) Whether the Government has undertaken a comprehensive strategy to promote climate resilient agriculture in view of increasing climate variability and if so, the details thereof;

(b) whether the Government has evaluated the impact of climate-smart farming practices and whether these techniques have been disseminated through Krishi Vigyan Kendras, agri-startups and digital advisory platforms and if so, the details thereof;

(c) whether the Government has strengthened the Soil Health Card scheme by improving soil testing capacity, expanding nutrient advisory services, increasing access to bio-fertilisers and promoting balanced use of chemical inputs to maintain long-term soil productivity and if so, the details thereof;

(d) whether the Government is leveraging satellite imaging, drone-based crop surveys, automated weather stations, mobile-based advisories and AI-enabled yield prediction systems to help farmers make informed decisions and reduce climate-related losses and if so, the details thereof; and

(e) Whether the Government has assessed the manner in which these combined interventions would help stabilise farm incomes and reduce climate vulnerability and if so, the details thereof?

ANSWER

MINISTER OF STATE FOR AGRICULTURE AND FARMERS WELFARE
कृषि एवं किसान कल्याण राज्य मंत्री (SHRI RAMNATH THAKUR)

(a) & (b): Indian Council of Agricultural Research (ICAR) is implementing a project- National Innovations in Climate Resilient Agriculture (NICRA), that studies the impact of climate change on agriculture. Under the project, risk and vulnerability assessment to climate change has been carried out at district-level for 651 predominantly agricultural districts as per Intergovernmental Panel on Climate Change (IPCC) protocols. 310 districts were identified as vulnerable, out of which 109 districts have been categorized as 'very high' and 201 districts as 'highly' vulnerable. For enhancing resilience and adaptive capacity of farmers to climate variability, location-specific climate resilient technologies such as system of rice intensification, aerobic rice, direct seeding of rice, zero till wheat sowing, etc have been demonstrated through KVKs in 448 Climate Resilient Villages. Capacity building for establishing village level seed banks and community nurseries is being undertaken under NICRA. Drought and flood tolerant climate-resilient varieties of rice, wheat, soybean, mustard, chickpea, sorghum, gram, and foxtail millet were demonstrated in several NICRA

villages. Besides, training programmes are conducted under Agricultural Technology Management Agency (ATMA) on various issues of agricultural practices. To address the impact of climate change, ICAR has released 2900 varieties during last 10 years (2014-2024). Out of these 2661 varieties are tolerant to one or more biotic and/or abiotic stresses.

Krishi Vigyan Kendras (KVKs) promote adoption of new technologies in agriculture and allied sectors. KVKs act as frontline extension centres, bridging the gap between research and practice through hands-on training, tailored to local agro-climatic conditions. 151 KVKs in climatically most vulnerable districts are implementing Technology Demonstration Component of NICRA.

(c): Government has strengthened the Soil Health Card (SHC) Scheme by enhancing soil testing capacity, improving nutrient advisory services, and promoting balanced use of chemical fertilizers along with increased access to bio-fertilisers. Soil samples are processed using standard procedures and analyzed for parameters such as pH, Electrical Conductivity, Organic Carbon, available Nitrogen, Phosphorus, Potassium, Sulphur and micronutrients including Zinc, Copper, Iron, Manganese, and Boron. Diagnostic assessments are carried out periodically to issue SHCs at least once in three years. Since 2014-15, 25.61 crore Soil Health Cards have been generated and distributed. To strengthen soil testing infrastructure, 8,302 Soil Testing Laboratories, including static, mobile, mini, and village-level labs, have been established. In addition, 1,020 school mini soil labs have been established under the School Soil Health Programme. ₹1,970 crore has been released under the scheme since inception. Further, to promote awareness and adoption of SHC-based recommendations, 93,781 farmers' trainings, 6.80 lakh demonstrations, and 7,425 farmers' melas and campaigns have been organized.

(d) & (e): Government has been leveraging Artificial Intelligence (AI) and IoT-enabled systems to enhance crop productivity, sustainability, and farmer livelihoods. The 'Kisan e-Mitra' voice-based AI chatbot, supporting 11 regional languages, assists farmers with queries on PM-KISAN and other programmes, handling over 20,000 queries daily and having responded to more than 95 lakh queries to date. The National Pest Surveillance System uses AI and Machine Learning to detect pest infestations early, helping farmers reduce climate-induced crop losses; the system is currently used by over 10,000 extension workers and supports 61 crops and more than 400 pests. AI-based analytics using field photographs and satellite imagery are also being deployed for crop-weather matching and monitoring of sowing patterns.

To mitigate the impacts of adverse weather on agriculture, under the Gramin Krishi Mausam Sewa (GKMS) scheme, medium-range weather forecasts for the next 5 days at the district and block levels are generated by Indian Meteorological Department (IMD). Based on rainfall and other weather parameters along with weather forecasts issued by IMD, 130 Agromet Field Units prepare Agromet Advisories in English as well as in the regional language for dissemination through multiple channels. The Panchayat-level weather forecast information is accessible through multiple digital platforms, including: eGramSwaraj (https://egramswaraj.gov.in/), 'Gram Manchitra' Application of MoPR (https://grammanchitra.gov.in/gm4MVC), 'Meri Panchayat' Mobile App and Mausamgram web portal of IMD (https://mausamgram.imd.gov.in/).

The Government has assessed that these combined interventions, ranging from climate-resilient agriculture under NICRA, large-scale dissemination of stress-tolerant varieties, strengthened soil health management, technology adoption through KVKs, AI- and IoT-based decision-support systems, weather-based advisories,—collectively help stabilize farm incomes and reduce climate vulnerability by enhancing productivity, adaptive capacity, and risk preparedness of farmers.

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