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

RAJYA SABHA
UNSTARRED QUESTION NO. 646
TO BE ANSWERED ON THE 25/07/2025

BLUEPRINT OF AGRICULTURAL REVOLUTION 4.0

646.   SHRI AYODHYA RAMI REDDY ALLA

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

(a)   whether Government has a blueprint for 'Agricultural Revolution 4.0' which would entail harnessing the power of Artificial Intelligence (AI), Internet of Things (IoT) and Big Data Analytics for improving productivity in agriculture;
(b)   if so, the details thereof;
(c)   whether Government is working on developing IoT sensors to enable farmers to optimise inputs based on real-time soil and plant conditions;
(d)   if so, the details thereof;
(e)   whether Government is working on smart irrigation systems so as to promote conservation of water; and
(f)   if so, the details thereof?

ANSWER

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

(a) to (d):   The government has employed Artificial Intelligence (AI) methods and IoT-enabled systems to improve crop productivity, sustainability and farmer livelihoods, and to address various challenges in the agricultural sector to aid farmers, etc. 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 the PM Kisan Samman Nidhi scheme. This solution supports 11 regional languages and is evolving to assist with other government programs. At present, it handles over 20,000 farmer queries daily and so far, more than 95 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 crops, 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 61 crops and over 400 pests combinations.
iii. AI/ML-based analytics using field photographs for crop health assessment and pest identification.
 iv. Crop health monitoring using Satellite imagery, weather & soil moisture datasets for rice and wheat crops.
  v. Under the National e-Governance Plan in Agriculture (NeGPA) component of the Digital Agriculture Mission, funding is given to the States/UTs for Digital Agriculture Projects using emerging technologies like Artificial Intelligence (AI) and Machine Learning (ML), Internet of Things (IoT) sensor-based systems etc.

vi. Government is assessing real-time fertility condition of soils through its ongoing Soil Health Card Program, where soil samples are collected from fields of farmers. These soil samples are analysed in the Laboratory for determining the 12 important soil parameters, and based on their results, optimum integrated fertilizer recommendations are given to the farmers through the Soil Health Card.

(e) to (f):   Department of Agriculture & Farmers Welfare (DA&FW) is implementing the Centrally Sponsored Scheme of Per Drop More Crop (PDMC) in the country from 2015-16 onwards. PDMC focuses on enhancing water-use efficiency at the farm-level through Micro-Irrigation, namely Drip and Sprinkler Irrigation Systems. Micro Irrigation systems help in saving water as well as reducing fertilizer-usage through fertigation lower labour expenses lower other input costs and overall income enhancement of farmers. The Government provides financial assistance @ 55% for small and marginal farmers and @ 45% for other farmers for the installation of Drip and Sprinkler systems under the PDMC.

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