GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
LOK SABHA
UNSTARRED QUESTION No. 484
TO BE ANSWERED ON 20.07.2022

AI IN AGRICULTURE

484. SHRI PARVESH SAHIB SINGH VERMA:

Will the Minister of SCIENCE AND TECHNOLOGY विज्ञान और प्रौद्योगिकी मंत्री **be pleased to state whether the Government is taking steps/initiatives with regard to application of biotechnology, Nano technology/ Robotics and Artificial Intelligence in Agriculture, health and manufacturing sector and if so, the details thereof?**

ANSWER

MINISTER OF STATE (INDEPENDENT CHARGE) OF THE MINISTRY OF SCIENCE & TECHNOLOGY & EARTH SCIENCES
(DR. JITENDRA SINGH)
विज्ञान और प्रौद्योगिकी तथा पृथ्वी विज्ञान मंत्रालय के राज्य मंत्री (स्वतंत्र प्रभार)
(डॉ. जितेंद्र सिंह)

Yes Sir, the Government is taking steps/initiatives with regard to application of biotechnology, Nanotechnology/Robotics and Artificial Intelligence (AI) in Agriculture, health and manufacturing sector. The details are as follows:

The Department of Science & Technology (DST) is implementing a National Mission-Interdisciplinary Cyber Physical Systems (NMICPS), with a budget outlay of Rs. 3,660.00 crore for a period of 5 years. As part of the Mission implementation, 25 Technology Innovation Hubs (TIHs) have been established in reputed institutes across the country in advanced technologies. The following TIHs are working in the areas of Agriculture, health and manufacturing:

S No.	Technology Innovation Hub	Technology Vertical
1	I-DAPT-Hub Foundation, IIT BHU	Data Analytics & Predictive Technologies
2	IIT Ropar Technology & Innovation Foundation at IIT Ropar	Technologies for Agriculture & Water
3	TIH Foundation for IoT And IoE at IIT Bombay	Technologies for Internet of Things (IOT) and Internet of Everything (IoE)

Some of the technology development initiatives by the TIHs are 6G Rural Health Care Network for School Children, 6G Precision Agriculture Network facilitating vertical farming, Agri-drones, bioplastics, Infant Asphyxia treatment to prevent celebral palsy, AI-based Cattle Management System, IoT enabled pond aeration system, modular urban farming systems, AI/ Machine Learning (ML) driven precision agriculture systems, AI-based application for Consumer-Oriented Agriculture Production and Matching of Dietary Preferences and Digital Entomologist Network an AI-based Cyber Physical System (CPS) to identify flying insects.

DST, under its Nano Mission Initiative, has supported thematic projects on nano technology in agriculture and through the Technology Development Programme

(TDP), seven projects in the area of AI in agriculture have been supported. Under the India-Japan Joint Research laboratory, DST has supported a project entitled "Data Science-Based Farming Support System for sustainable Crop Production under Climatic Change (DSFS)" to IIT Hyderabad for developing a sustainable crop production support system using evolving data science. Science and Engineering Research Board (SERB), a statutory body under DST, has supported 35 projects to study the application of AI in Agriculture, health and manufacturing sector.

Under KISANMITR initiative of the office of Principal Scientific Adviser, an Atmanirbhar App has been developed for providing critical information such as soil health, weather, moisture and ground water quality to the farmers.

Ministry of Electronics & Information Technology (MeitY), under its Nanotechnology Initiatives Division, has established various Centres of Excellence in Nanotechnology (CENs) at IISc Bangalore, IIT Delhi, IIT Bombay, IIT Madras, IIT Guwahati and IIT Kharagpur. Technologies developed at these centers are being transferred to various start-ups and industries for customization and productization in the Agriculture and Healthcare sector. Some of the startups such as Proximal SoilSens Technologies Pvt. Ltd. at IIT Bombay, Primary Healthcare Pvt. Ltd. at IIT Guwahati, Pathshodh Healthcare Pvt. Ltd. at IISc Bangalore, Shanmukha Innovations Pvt. Ltd. at IISc Bangalore are incorporating AI - based solutions to commercialize Nanotechnology based agriculture and healthcare products in the market. Various R&D projects are also being implemented at these CENs for developing nano-electronics based technological solutions in the sector of Agriculture and healthcare.

Department of Biotechnology (DBT) has supported 857 projects in the area of Agriculture (including Agriculture Biotechnology, Nano-biotechnology, Aquaculture and Marine Biotechnology, Animal Biotechnology etc.) and health (including Stem Cell, Cancer Disease Biology, Genome Editing Technology in the Nano-biotechnology, AI in health etc).

Department of Agriculture and Farmers Welfare, under its Digital Agriculture Scheme, has implemented projects involving modern technological solutions like AI, ML, Blockchain, Data Analytics, IoT, Robotics and Drones.

Council of Scientific and Industrial Research (CSIR) is implementing projects in the areas of biotechnology, Nano technology/ Robotics and Artificial Intelligence in Agriculture, health and manufacturing sector through its various laboratories namely; CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh; CSIR-Central Mechanical Engineering Research Institute (CSIR-CMERI), Durgapur; CSIR-Fourth Paradigm Institute (CSIR-4PI), Bengaluru; CSIR-Institute of Microbial Technology (CSIR-IMTECH), Chandigarh and CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI), Pilani.

Ministry of Health and Family Welfare is implementing the National Digital Hearth Mission (NDHM) (Now known as Ayushman Bharat Digital Mission-ABDM), which aims to support the integrated digital health infrastructure of the country and promote use of digital health technologies in health sector. The ABDM integrates cutting edge technologies such as Artificial Intelligence, IoTs, block-chain etc. with existing health IT applications as per need for improving the performance of the health services.

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