

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

RAJYA SABHA
STARRED QUESTION NO. 124
TO BE ANSWERED ON 02/08/2024

INITIATIVES FOR IMPROVING AGRICULTURAL PRODUCTIVITY

*124. SHRI SUDHANSHU TRIVEDI:

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

- (a) the measures that have been taken for promoting organic farming for improving soil health and water retention, making farms more resilient to droughts;
- (b) the initiatives taken for providing real-time data to farmers, enabling them to make informed decisions about crop selection, sowing schedules and irrigation practices;
- (c) the measures being taken to have a data-driven approach to improve agricultural productivity and mitigate the impact of climate change; and
- (d) the steps being taken for improving efficiency in water use for agriculture, that is critical amid the looming water crisis and for the promotion of water-efficient technologies?

ANSWER

MINISTER OF AGRICULTURE AND FARMERS WELFARE

(SHRI SHIVRAJ SINGH CHOUHAN)

(a) to (d): A statement is laid on the Table of the House.

STATEMENT IN RESPECT OF PARTS (a) TO (d) OF THE RAJYA SABHA STARRED QUESTION NO. 124 FOR 02/08/2024 REGARDING “INITIATIVES FOR IMPROVING AGRICULTURAL PRODUCTIVITY”

(a): Government is promoting organic farming on priority in the country since 2015-16 for improving soil health and water retention through the schemes of Paramparagat Krishi Vikas Yojana (PKVY) in all the States other-than North Eastern States and Mission Organic Value Chain Development for North Eastern Region (MOVCDNER). Both the schemes stresses on end-to-end support to farmers engaged in organic farming i.e. from production to processing, certification & marketing and post-harvest management training and Capacity Building and also focus on sustainable agriculture.

Indian Council of Agricultural Research operates All India Network Programme on Organic Farming (AINP-OF) with 20 cooperating centers covering 16 States and developed organic package of practices for 76 cropping systems. The results also showed improvement of soil physical, chemical and biological properties resulting in better micro environment for crop growth and productivity compared to conventional farming. Better resilience of crops to weather extremes have also been observed under organic farming. Continuous practice of raising the crops organically has good potential to sequester the C with higher soil organic carbon (22 % increase in 6 years), reduction in energy requirement (by about 10-15 %) and increase in water holding capacity (by 15-20 %), thereby promoting climate resilience in farming.

(b) & (c): Ministry of Agriculture and Farmers Welfare has taken various initiatives to build Digital Public Infrastructure (DPI) for agriculture as an open source, open standard and interoperable public good. This will enable the development of innovative farmer-centric digital services and make available timely and reliable agricultural information. These initiatives intend to provide access to technology and information to the farmers across the country to address the farmer-centric solutions, through various digital initiatives, such as:

- AgriStack: Under the Agristack initiative, the Government has initiated the development of three core registries, viz. Farmers Registry (Registry of Farmers), Geo-Referenced Village maps (of the Farmland plots) and Crop Sown Registry through the Digital Crop Survey.
- The Digital Crop Survey establishes a clear picture of crop being sown across all the farmlands in the country during the different agriculture seasons. With the implementation of AgriStack, farmer can digitally identify and authenticate himself/herself to access benefits and services, obviating cumbersome paperwork and with little or no need to physically visit various offices or service providers. Some examples include availing Government schemes and crop loans,

connecting to agri-input suppliers and buyers of agricultural produce, accessing personalized advisories in real time, etc. Further, this data is also helpful for Government agencies in accurate production estimation, crop diversification and making schemes and services more efficient and transparent, such as paperless MSP-based procurement, crop insurance, and Credit card-linked crop loans, and develop systems for balanced use of fertilizers, etc.

- Krishi- Decision Support System (DSS) integrates and standardizes geospatial and non-geospatial data, including satellite, weather, soil, crop signatures, reservoir, and groundwater data. Krishi-DSS offers crop maps, soil maps, drought/flood monitoring systems, etc, which support evidence-based decision-making by the government and facilitate innovative solutions by research institutions and the agritech industry.
- Comprehensive Soil Fertility and Profile Maps: A Nationwide Soil Resource Mapping project has been initiated by the Soil and Land Use Survey of India (SLUSI), which is making an inventory of soils at a village level on a finer and more detailed 1:10,000 scale using high-resolution satellite and ground data. Under this project, a detailed soil profile study is being carried out to create standardized soil maps for rational land use and crop planning, thus promoting sustainable agriculture.

A data driven approach, is being followed to improve agricultural productivity and mitigate climate change. In this regard risk and vulnerability assessment of Indian Agriculture to climate change was undertaken by Indian Council of Agricultural Research (ICAR), under National Innovations in Climate Resilient Agriculture (NICRA).

The project aims to study the impact of climate change on agriculture including crops, livestock, horticulture and fisheries and to develop and promote climate resilient technologies in agriculture which will address vulnerable areas of the country and the outputs of the project will help the districts and regions prone to extreme weather conditions like droughts, floods, frost, heat waves, etc. to cope with such extremes. The salient achievements under ICAR are as follows:

- During last 10 years (2014-2024), a total of 2593 varieties have been released by ICAR, out of these 2177 varieties have been found tolerant to one or more biotic and/or abiotic stresses.
- District Agriculture Contingency Plans (DACPs) for 651 districts have been prepared based on occurrence of drought, floods, unseasonal rains and extreme weather events such as heat wave, cold wave, frost, hailstorm, cyclone etc. which include problem and location specific technologies. These DACP are sent to different stakeholders including state agricultural department and need based sensitization programmes are conducted.
- To enhance the resilience and adaptive capacity of farmers to climate variability, 448 Climate Resilient Villages has been established in 151 climatically vulnerable districts under NICRA

programme. In addition, capacity building programmes are being conducted to all the stakeholders on various aspects of climate change.

(d): Government of India through the DA&FW is implementing a Centrally Sponsored Scheme (CSS) called Per Drop More Crop (PDMC) in the Country from the year 2015-16. During 2015-16 to 2021-22, the PDMC was implemented as a component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

PDMC scheme focuses on enhancing water use efficiency at farm level through Micro Irrigation, namely, Drip and Sprinkler Irrigation systems. The Micro Irrigation helps in water saving as well as reduced fertilizer usage through fertigation, labour expenses, other input costs and overall income enhancement of farmers.

Financial Assistance @ 55% for Small & Marginal farmers and @ 45% for other farmers is provided by the Government for installation of Micro Irrigation under the Scheme. In addition, some States provide additional incentives/top up subsidy for encouraging farmers to adopt Micro Irrigation.

Further, 25% higher unit cost is taken into consideration for calculation of subsidy for the North Eastern and Himalayan states and 15% higher for States with low penetration of Micro Irrigation for larger adoption of Micro Irrigation systems by the farmers under the PDMC scheme.

Ministry of Jal Shakti, Department of Water Resources, also implements PMKSY with an aim to enhance physical access of water on farm and expand cultivable area under assured irrigation, improve on-farm water use efficiency, introduce sustainable water conservation practices, etc. Under PMKSY, various measures for creation of assured irrigation source, construction of diversion canals, field channels, water diversion/lift irrigation, including development of water distribution systems are undertaken.

Command Area Development and Water Management (CADWM) Programme has been brought under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) - Har Khet Ko Pani from 2015-16 onwards. With the new Scheme of prioritized AIBP (Accelerated Irrigation Benefits Program) projects approved by Cabinet on 27th July 2016, CADWM works got restricted to only 99 prioritized AIBP projects from 2016-17 onwards. During FY 2016-17 to FY 2023-24, the CA amounting to Rs 3129 crore was released under CADWM component of PMKSY-HKPP with CCA coverage of 2347.06 Th. Ha.

ICAR-Indian Institute of Water management operates AICRP on Irrigation Water Management in 26 centres pan-India disseminating water management technologies viz., drip and sprinkler systems and surface irrigation scheduling for different crops for improving water use

efficiency under diverse soil and agro-climatic regions. Research showed that under drip irrigation, Water Use Efficiency (kg yield /m³ water; m³ = 1000 liters of water) in aerobic rice (0.76), capsicum (8.5), baby corn (0.8) and banana (7.3) were 52%, 21%, 33% and 117% higher, respectively compared with surface irrigation. Water Use Efficiency in maize (1.91), brinjal (8.3), potato (6.4), tomato (9.3) and sugarcane (10.0) were 45%, 110%, 48%, 165% and 74% higher, respectively compared with surface irrigation. Research findings were disseminated to the stakeholders pertaining to different irrigation methods and crops for enhancing agricultural water productivity through pilot scale demonstration, capacity building under different outreach programmes. The study showed that out of 573 districts analyzed, 109 were falling under very high risk prone and 201 are highly prone is given at **Annexure-I**.

List of districts that are at risk due to climate change

S. No.	State	High risk districts (No.)	Very-high risk districts (No.)
1.	Andhra Pradesh	3	1
2.	Arunachal Pradesh	6	1
3.	Assam	5	2
4.	Bihar	13	10
5.	Chhattisgarh	6	0
6.	Dadra & Nagar Haveli	0	0
7.	Daman & Diu	0	0
8.	Goa	0	0
9.	Gujarat	6	2
10.	Haryana	8	3
11.	Himachal Pradesh	6	2
12.	Jammu & Kashmir	7	3
13.	Jharkhand	6	0
14.	Karnataka	12	3
15.	Kerala	5	8
16.	Madhya Pradesh	14	2
17.	Maharashtra	11	2
18.	Manipur	6	0
19.	Meghalaya	1	6
20.	Mizoram	5	2
21.	Nagaland	5	1
22.	Odisha	13	6
23.	Pondicherry	0	0
24.	Punjab	4	5
25.	Rajasthan	10	17
26.	Sikkim	3	1
27.	Tamil Nadu	5	0
28.	Telangana	2	0
29.	Tripura	0	0
30.	Uttar Pradesh	26	22
31.	Uttarakhand	2	7
32.	West Bengal	11	3
	Total	201	109
