GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION

LOK SABHA
UNSTARRED QUESTION NO. 1191
TO BE ANSWERED ON 09/02/2021

EFFECT OF CLIMATE CHANGE ON AGRICULTURE

1191. SHRI SHRIRANG APPA BARNE:
SHRI SANJAY SADASHIVRAO MANDLIK:
SHRI CHANDRA SEKHAR SAHU:
SHRI SUDHEER GUPTA:
SHRI BIDYUT BARAN MAHATO:

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

(a) whether the effects of climate change are causing direct harm not only to human beings, but also to agricultural crops and if so, the details thereof;

(b) whether the Government has made an estimation of the likely impact of climate change on agriculture and food security and if so, the details thereof;

(c) whether any expert body/committee has been appointed in advisory capacity or in any other way to make suggestions/recommendations to address the situation and if so, the details thereof;

(d) whether ICAR study shows that farming in 20% of districts of the country is threatened by climate change and if so, the details thereof;

(e) whether the ICAR has also identified that of the 28 million hectares under wheat, about 9 million hectares are categorized as being prone to sudden heat stress and if so, the details thereof; and

(f) the further steps taken/being taken by the Government to counter the said situation?

A N S W E R

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE
कृषि और किसान कल्याण मंत्री **(SHRI NARENDRA SINGH TOMAR)**

(a) Climate change is perceptible through a rise in all India mean temperature and increased frequency of extreme rainfall events in the last three decades. This causes fluctuation in production of major crops in different years.

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(b) Yes, impact of climate change on Indian agriculture was studied under National Innovations in Climate Resilient Agriculture (NICRA). Rainfed rice yields in India are projected to reduce marginally (<2.5%) in 2050 and 2080 and irrigated rice yields by 7% in 2050 and 10% in 2080 scenarios. Further, wheat yield projected to reduce by 6-25% in 2100 and maize yields by 18-23%. Future climates are likely to benefit chickpea with increase in productivity (23-54%).

(c) Indian Council of Agricultural Research (ICAR) has initiated a network project NICRA during 2011 to address the impact of climate change on Indian agriculture. NICRA project is being reviewed by a High Level Monitoring Committee (HLMC) under the Chairmanship of Secretary, DARE & DG, ICAR with invited members representing different Ministries, Government of India. This committee recommends measures to be taken through NICRA for making Indian agriculture more resilient to changing climate. Besides an expert committee periodically review the project and advise on various aspects.

(d) Vulnerability assessment of Indian Agriculture to climate change is undertaken by Indian Council of Agricultural Research (ICAR). Such an assessment was for 573 rural districts of India (excluding the Union Territories of Andaman and Nicobar Islands, Lakshadweep). Based on the vulnerability analysis, 109 districts out of 573 rural districts (19% of total districts) are 'very high-risk' districts, while 201 districts are risk districts. The details are available at
http://www.nicra-icar.in/nicrarevised/images/publications/Risk%20&%20vulnerability%20assessment%20of%20Indian%20agriculture%20to%20climate%20change.pdf)

(e) Integrated simulation modelling studies indicated that under Representative Concentration Pathway 4.5, maximum temperature is expected to increase by 1 to 1.3^{o}C in 256 districts, by 1.3 to 1.6 ^{o}C in 157 districts (2020-2049). The increase ranged from <1.3 ^{o}C in 199 districts to >1.6 ^{o}C in 89 districts. Cultivation of wheat in these districts is likely to be affected by heat stress.

(f) Under NICRA project, wheat germplasm comprising of advanced breeding lines and land races have been screened for heat/drought tolerance. ICAR-Indian Agricultural Research Institute (IARI) has released the high yielding varieties such as HD 2967 and HD 3086 which are being grown in large areas of North-west and North India. Zero till planting of wheat has advanced the wheat sowing in Punjab and Haryana.

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