

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE
RAJYA SABHA UNSTARRED QUESTION NO. 2095

TO BE ANSWERED ON 09/08/2024

LOSS IN FOOD PRODUCTION DUE TO CLIMATE CHANGE

2095. SHRI G.C. CHANDRASHEKHAR:

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

- (a) whether Government estimated the impact of climate change on food production, if so, the steps that have been taken to address this issue;
- (b) whether Government has estimated the loss in food production due to climate change, if so, the details thereof, crop-wise; and
- (c) whether Government plans to promote food products from genetically modified crops that are claimed to be resistant to climate change, if so, the details thereof?

ANSWER

MINISTER OF STATE FOR AGRICULTURE AND FARMERS WELFARE

(SHRI RAMNATH THAKUR)

(a) & (b): The Indian Council of Agricultural Research (ICAR) under Ministry of Agriculture and Farmers Welfare, Government of India has launched a flagship network project namely National Innovations in Climate Resilient Agriculture (NICRA). The project aims to study the impact of climate change on food production 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 help the districts and regions prone to extreme weather conditions like droughts, floods, frost, heat waves, etc. to cope with such extremes. The production of major food crops like rice, wheat, maize, groundnut and soybean and many pulse crops in the country is affected in the drought years. Similarly, severe floods also affect several field and horticultural crops. Under NICRA project, integrated computer simulation modelling studies showed that in the absence of adoption of adaptation measures, climate change is likely to be reduced yield of rainfed as well as irrigated rice, wheat and *Kharif* maize etc. The major achievements of ICAR under the program 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.
- Risk and vulnerability assessment of agriculture to climate change is carried out at district-level for 651 predominantly agricultural districts as per Intergovernmental Panel on Climate Change (IPCC) protocols. A total of 109 districts are categorized as ‘very high’ and 201 districts as ‘highly’ vulnerable.
- District Agriculture Contingency Plans (DACPs) for these 651 districts have been prepared for weather aberrations like drought, floods, unseasonal rains and extreme weather events such as heat wave, cold wave, frost, hailstorm, cyclone etc. and recommending location specific climate resilient crops and varieties and management practices for use by the State departments of agriculture and farmers.
- Enhancing resilience and adaptive capacity of farmers to climate variability, the Concept of “Climate Resilient Villages” (CRVs) has been initiated under NICRA.
- Location-specific climate resilient technologies demonstrated in 448 CRVs of 151 climatically vulnerable districts for adoption by the farmers.

ICAR through its NICRA project, creates awareness about impact of climate change in agriculture among farmers. Capacity building programmes are being conducted to educate the farmers on various aspects of climate change for wider adoption of climate resilient technologies. To address the issue of climate change, the Government is implementing National Mission for Sustainable Agriculture (NMSA) with the aim to make Indian agriculture more resilient to the changing climate. The NMSA is one of the missions under National Action Plan on Climate Change (NAPCC) which supports sustainable agricultural production in the country through its various schemes. Initially NMSA was approved for three major components comprising, Rainfed Area Development (RAD); On-Farm Water Management (OFWM); and Soil Health Management (SHM). Subsequently, new programs such as Paramparagat Krishi Vikas Yojana (PKVY), Mission Organic Value Chain Development in North Eastern Region (MOVCDNER), Per Drop More Crop, Agroforestry, National Bamboo Mission (NBM) etc. were also included.

(c) Bt. cotton is the only Genetically Modified (GM) crop approved in 2002 by the Genetic Engineering Appraisal Committee (GEAC) of Ministry of Environment, Forest and Climate Change for commercial cultivation in the Country. Indian Council of Agricultural Research

(ICAR)- Central Institute for Cotton Research (CICR), Nagpur conducted study to evaluate the impact of Bt. cotton in Maharashtra during 2012-13 and 2013-14 and observed that the incidence of bollworms infestation reduced drastically and in turn decreased the number of insecticide application from 8 to 4. Further, ICAR-CICR also conducted study on impact of Bt. cotton on soil ecology, which shown no adverse effect of Bt. cotton cultivation on soil ecological parameters. The yield difference of 3-4 qtls/acre with the adoption of Bt. Cotton was observed, which resulted in increased income due to increase in yield and reduction in insecticide cost against the cotton bollworm.
