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Answer to the Lok Sabha Question D No. 2926

a) whether the Government has taken note of the adverse impact of global warming on agriculture in the country which has manifested unusual trends such as erratic rainfall, shrinking forest cover, rising temperature and increasing food insecurity

- Yes

b) if so the details thereof and the reaction of the Government thereto;

- Extensive field and simulation studies were carried out in agriculture and allied sectors by the 23 network centers consisting ICAR Institutes.
- The Indian Network for Climate Change Assessment (INCCA) of the Ministry of Environment & Forests, has studied the climate change impact assessment in the North-Eastern states

c) whether the Government has assessed the impact of global warming on different agro-climatic zones in the country including vulnerability assessment on major food crops;

- Yes

d) if so, the details and the outcome thereof and the measures taken/being taken by the Government to meet the challenge of global warming and its impact on agricultural production

The findings from the Climate Change impact assessment of the ICAR-NPCC network project are as follows;

Rice

Irrigated rice yields are projected to reduce by -4% in 2020, 7% in 2050 and by -10% in 2080 scenarios. On the other hand, rainfed rice yields in India are projected reduced by -6%in 2020 scenario, but in 2050 and 2080 scenarios they are projected to decrease only marginally (<2.5%). Adopting improved varieties and input management can improve the yields by 6-17% in irrigated condition and by about 20-35% in rainfed condition.

Wheat

Climate change is projected to reduce the timely sown irrigated wheat production by about 6% in 2020 scenario from existing levels, however, late and very late sown wheat yields are projected to decrease by about 18% in 2020, 23% in 2050 and 25% in 2080 scenarios if no adaptation is followed. However, adaptation by sowing improved varieties coupled with

improved agronomic management can improve the yields by about 10% in 2020 (2010-2040) scenario.

Maize

Climate change is projected to reduce the irrigated kharif maize yields by up to 18% in 2020 scenario, if no adaptation is followed. However, adapting to climate change by adoption of technologies such as improved varieties and agronomical management can improve the yields by about 21% in 2020 scenario. Climate change in 2050 and 2080 scenarios is projected to reduce the irrigated kharif maize yields by 18 to 23% and the adaptation is projected to improve the yields by about 10% in 2050 and by 4% in 2080 scenario.

Sorghum

Rainfed sorghum yields, on all India scale, are projected to marginally (2.5%) decline in 2020 scenario while it is projected to decline by about 8% in 2050 scenario. Adaptation strategies such as improved and tolerant variety managed under improved input efficiency with additional nitrogen fertilizer can enhance the irrigated maize net production by about 21% in 2020, 10% in 2050 and 4% in 2080 scenarios.

Soybean

Likely increase in kharif soybean yield in the range of 8-13% under different future climate scenarios (2030 and 2080) is predicted.

Groundnut

Kharif groundnut yields are projected to increase by 4-7% in 2020 and 2050 scenarios where as in 2080 scenario the yield is likely to decline by 5%.

Chickpea

Future climates are likely to benefit Chickpea by an average increase in productivity ranging from 23 to 54%. However, a large spatial variability for magnitude of change in the productivity is projected.

Potato

Climate change may likely to benefit potato in Punjab, Haryana and western and central UP by of 3.46 to 7.11% increase in production in A1b 2030 scenario, but in West Bengal and southern plateau region, potato production may likely to decline by 4 - 16% by 2030.

Apple

In Himachal Pradesh, consequent to warming and reduction in chilling temperatures, Apple cultivation has shifted to higher elevations.

Controlled environmental studies

whereas controlled environmental studies under elevated CO_2 up to 550 ppm indicated a positive response to pulse crops like chickpea, soybean, Greengram and vegetables like onion and tomato and non-edible oil seeds like castor.

Recognizing that the climate change is likely to have a major impact on agricultural and allied sector, ICAR has initiated a mega network project, National Innovations on Climate Resilient Agriculture (NICRA) during 2010-11. It encompasses a multi-pronged strategy encompassing strategic research on adaptation and mitigation, demonstration of technologies on farmers' fields and create awareness among farmers and other stake holders.

(e) whether the Government proposed to encourage the farmers to adopt low carbon agriculture techniques to boost agricultural production in the country and if so, the details thereof ?

- No information available