

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

**LOK SABHA**  
**UNSTARRED QUESTION NO. 1269**  
TO BE ANSWERED ON THE 27<sup>TH</sup> JULY, 2021

**IMPACT OF CARBON DIOXIDE ON AGRICULTURAL PRODUCTION**

1269. SHRI VIVEK NARAYAN SHEJWALKAR:

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

- (a) whether any survey has been conducted with regard to the fact that new striking revelations in the agriculture science confirms that due to increase in the amount of carbon dioxide in the atmosphere, results in enhanced photosynthesis and resultant increase in agriculture production but with the exception of carbohydrates the production of almost all other nutrients such as protien, minarals and other micronutrients has decreased, if so, the details thereof;
- (b) whether any research is being conducted to compensate the reduction of nutrients taking place in production of crops; and
- (c) if so, the details thereof?

**ANSWER**

THE MINISTER OF AGRICUTLRURE AND FARMERS WELFARE

कृषि और किसान कल्याण मंत्री

(SHRI NARENDRA SINGH TOMAR)

- (a) Yes, Sir. Based on the research conducted in Indian Council of Agricultural Research (ICAR) and State Agriculture Universities (SAUs) in the country, it is observed that elevated CO<sub>2</sub> increased the photosynthetic rate, biomass and yield, especially in C<sub>3</sub> crops (rice, wheat, barley, oats, rye etc.). It was also found from the experiments that increase in CO<sub>2</sub> enhanced wheat yield by 30% over a period of 36 years (base year 1980). However, wheat and rice grown in high CO<sub>2</sub> levels had 3-9% less minerals (zinc & iron) and 6-8% less protein. Research also indicated that increased CO<sub>2</sub> together with increased temperatures, which is the most commonly observed phenomenon in the changing climate, drastically affects yield of several food crops.
- (b) Yes, Climate resilient crop varieties that can minimise the impact of climate change on nutritional quality have been developed.
- (c) ICAR has developed 17 bio-fortified varieties in rice, wheat, maize, mustard, groundnut, finger millet, etc. for increased availability of minerals like zinc, iron, calcium and protein without affecting the yield.

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