



## Nutrition Deficiency due to Rising CO<sub>2</sub>

According to a study led by the Harvard Chan School of Public Health, high amounts of CO<sub>2</sub> in the atmosphere decrease the concentrations of vital vitamins and minerals such as protein, iron, and zinc in crops which can put millions of people at risk for nutritional deficiencies.

### How CO<sub>2</sub> Affects Nutrients in Crops?

- The mineral nutrient and trace element makeup of a plant is referred to as its **ionome**.
- Many of these elements come from the soil but they also come from the process of photosynthesis that converts CO<sub>2</sub> into carbohydrates and energy.
- When there are higher levels of CO<sub>2</sub> in the atmosphere, the plant's ionome suffers an imbalance, thus reducing the concentration of vital nutrients.

### Importance of Nutrients

- Protein, iron and zinc are essential nutrients.
- Essential nutrients are not produced in the body and must be derived from the diet.
- Wheat, rice, and maize together account for roughly 40% of protein, zinc and iron supply in the diet worldwide.
- We get roughly 60% of our protein, 80% of our iron and 70% of our zinc from crops.

### Impact of Deficiency in Nutrients

- Protein deficiency adversely affects the human growth and development and causes **Kwashiorkor** which is a severe form of malnutrition.
- Zinc deficiency affects the immune system and makes children, particularly, more vulnerable to malaria, lung infections and deadly diarrhoeal diseases.
- A lack of iron increases the likelihood of mothers dying during childbirth, can lower IQ, and causes anaemia, or a drop in red blood cells.

### Impact of CO<sub>2</sub> Induced Nutritional Deficiencies

- When carbon dioxide readings hit 550ppm, as they're expected to by 2050, about two percent of the global population - or 175 million people - could be zinc deficient.
- About 1.3 percent of the population - approximately 122 million people - could be protein deficient.
- Around 1.4 billion women who are of childbearing age and children under five years old are at risk of iron deficiency.
- Over 2 billion people worldwide are estimated to be deficient in one or more nutrients.
- Hundreds of millions of people could become newly deficient in these nutrients primarily in Africa, South East Asia, India and the Middle East.

- India would bear the greatest burden, with an estimated 50 million people becoming zinc deficient, 38 million people becoming protein deficient and 502 million women and children could be vulnerable to diseases associated with iron deficiency.

## Conclusion

- India is working on mitigating and adapting the climate change through its comprehensive Intended Nationally Determined Contributions (INDCs) based on Paris Agreement and multipronged approaches to achieve the Sustainable Development Goals (SDG).

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