Global warming may have 'devastating' effects on rice

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As carbon dioxide rises due to the burning of fossil fuels, rice will lose some of its protein and vitamin content, putting millions of people at risk of malnutrition, scientists warned on Wednesday.

The change could be particularly dire in southeast Asia where rice is a major part of the daily diet, said the report in the journal *Science Advances*. "We are showing that global warming, climate change and particularly greenhouse gases – carbon dioxide – can have an impact on the nutrient content of plants we eat," said co-author Adam Drewnowski, a professor at the University of Washington.

Protein and vitamin deficiencies can lead to growth-stunting, birth defects & diarrhoea. ▪ NYT

Risk factor

"This can have devastating effects on the rice-consuming countries where about 70% of the calories and most of the nutrients come from rice." Protein and vitamin deficiencies can lead to growth-stunting, birth defects, diarrhoea, infections and early death.

Countries at most risk include those that consume the most rice and have the lowest gross domestic product (GDP), such as Myanmar, Laos and Cambodia, Mr. Drewnowksi said.

The findings were based on field studies in Japan and China, simulating the amount of CO_2 expected in the atmosphere by the second half of this century – 568 to 590 parts per million. Current levels are just over 400 ppm.

Researchers found that iron, zinc, protein, and vitamins B1, B2, B5, and B9 – which help the body convert food to energy – were all reduced in the rice grown under higher CO_2 conditions. "Vitamin B1 (thiamine) levels decreased by 17.1%; average Vitamin B2 by 16.6%," said the report.

On average, protein content fell 10.3%, iron dropped eight percent and zinc was reduced by 5.1%, compared to rice grown today under current CO_2 conditions.