

Name:

Class:

Text Mark Up Directions: 1. Preview and number the paragraphs. 2. Read once and circle the vocabulary terms- define/synonym in margin. 3. Reread and highlight the main points (per paragraph) and paraphrase annotate in the margin.

Climate change could make food less healthy

Levels of nutrients fell as plants breathed in more carbon dioxide
[Allie Wilkinson](#) Apr 4, 2018 — 6:30 am EST



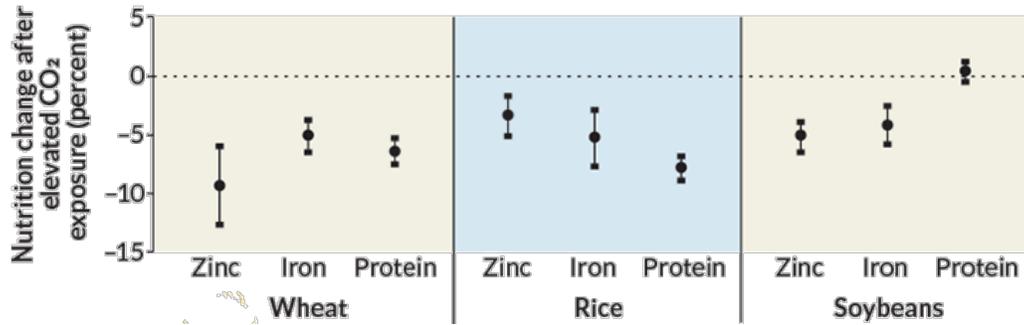
More carbon dioxide in the atmosphere may lead to wheat and other major crops becoming less healthful. As levels of carbon dioxide — CO₂ — in the atmosphere have been rising in recent decades, Earth has been warming. That's because as a greenhouse gas, CO₂ traps heat in Earth's atmosphere. That warming is one symptom of climate change. And it has the potential to affect food in many ways. Rising temperatures and the changes in rainfall that it will bring should impact how much and where crops grow. Data now show that rising levels of CO₂ also can affect how nutritious a crop will be. Some of those data were reported last year in *Annual Review of Public Health*. Indeed, it noted that several studies have come to this conclusion.

Samuel Myers is an environmental health scientist at Harvard University in Cambridge, Mass. He was part of a team that has studied the potential effects of climate change on nutrition. In one 2014 study, his group looked at six major food crops: wheat, rice, field peas, soybeans, maize (corn) and sorghum. They exposed plants to different amounts of CO₂. Some got levels of between 363 and 386 parts per million (ppm). Such concentrations were typical at that time. (CO₂ levels have since risen.) Other plants were exposed to more of that greenhouse gas as they germinated — 546 to 586 ppm. Such levels are expected to proliferate within the next 50 years or so.

After harvesting the plants, the researchers measured their levels of vitamins, minerals and other nutrients. And plants grown with more CO₂ were less nutritious. For instance, wheat and rice had lower protein levels. They also had less fortification of zinc and iron, as did the peas and soybeans. Some two *billion* people worldwide already don't get enough of these compulsory minerals. Most people depend on cereal crops, such as wheat and rice, to meet their dietary needs for both zinc and iron. If crop levels of such nutrients fall, people may face an even greater risk of falling ill.

People who substitute sugars and starches for protein face a greater risk of high blood pressure and heart disease, U.S. studies have shown. Scientists don't yet know why CO₂ impacts levels of these nutrients. But the new stupefying findings suggest scientists may want to try breeding new varieties of crops that are less affected by CO₂. That way people will still get the most benefits from their greens and grains.

Turn over for questions!



Follow up questions-answer in full sentences.

1. Paragraph two states, “In one 2014 study, his group looked at six major food crops: wheat, rice, field peas, soybeans, maize (corn) and sorghum. They exposed plants to different amounts of CO₂”. From this statement, what is the independent variable of their experiment? Why is that the independent variable?
2. From the same statement, what is their dependent variable? Why is that their dependent variable?
3. What did the scientists conclude after completing their experiment (what were their results)?
4. Why is this information important?
5. Looking at the graph, what do the negative numbers on the y-axis represent?
6. The lines on the graph are error bars (like a box and whiskers in math). Which nutrient changed the most for wheat in the graph? Support your answer with quantitative (#) evidence.