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**Global warming is making food more expensive and less nutritious**

By Associated Press, adapted by Newsela staff

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GENEVA, Switzerland — Human-caused climate change is dramatically hurting the Earth's land, and the way people use the land is making global warming worse, a new United Nations (U.N.) scientific report says. That creates a vicious cycle which is already making food more expensive, scarcer and less nutritious.

"The cycle is accelerating," said NASA climate scientist Cynthia Rosenzweig, a co-author of the U.N. report. "The threat of climate change affecting people's food on their dinner table is increasing."

However, if people change the way they eat, farm and manage forests, it could help save the planet from a far warmer future, scientists said.

Earth's land is only 30 percent of the globe. Yet the land is warming twice as fast as the planet as a whole. While heat-trapping gases, such as carbon dioxide, are causing problems in the atmosphere, the land has been less talked about as part of climate change.

The U.N. special report was created by more than 100 scientists and unanimously approved by diplomats from nations around the world. It was presented at an August 8 meeting at the World Meteorological Organization headquarters in Geneva, Switzerland. The report proposed possible fixes and made more serious warnings.

"The way we use land is both part of the problem and also part of the solution," said Valerie Masson-Delmotte, a French climate scientist who helped with the study. "Land management can help secure a future that is comfortable."

**"We Need To Act Urgently"**

Scientists in Geneva emphasized both the seriousness of the problem and the need to make changes soon.

"We don't want a message of despair," said Jim Skea, a professor in London, England, who also contributed to the report. "We want to get across the message that every action makes a difference."

Still, the message hit home hard for some of the authors.

"I've lost a lot of sleep about what the science is saying. As a person, it's pretty scary," said Koko Warner, a manager in the U.N. Climate Change group who helped write a report chapter on risk management and decision-making. "We need to act urgently."

The report said climate change already has caused deserts to grow and permafrost to thaw. Permafrost is a frozen layer beneath the Earth's surface. The report also blamed climate change for making forests more vulnerable to drought, fire, pests and disease. Climate change has added to the forces that have reduced the number of species on Earth, too.

"Climate change is really slamming the land," said World Resources Institute researcher Kelly Levin, who wasn't part of the study.

The future could be worse.

**Too Much Carbon Dioxide Is Bad For Crops**

"The stability of food supply is projected to decrease as the magnitude and frequency of extreme weather events that disrupt food chains increases," the report said.

In the worst-case scenario, food security problems would change from moderate to high risk with just a few more tenths of a degree of warming beyond current temperatures. They would go from high to very high risk with another 1.8 degrees Fahrenheit (1 degree Celsius) of warming.

"The potential risk of multi-breadbasket failure is increasing," NASA's Rosenzweig said about the danger to many crops. "Just to give examples, the crop yields were affected in Europe just in the last two weeks."

Scientists had long thought one of the few benefits of higher levels of carbon dioxide, the major heat-trapping gas, was that it made plants grow more and the world greener, Rosenzweig said. Still, numerous studies show high levels of carbon dioxide reduce protein and nutrients in many crops.

Rosenzweig gave the example of wheat. Experiments show that with high levels of carbon dioxide in the air, wheat has 6 to 13 percent less protein, 4 to 7 percent less zinc and 5 to 8 percent less iron.

**Eat Less Meat, More Veggies**

Yet better farming practices — such as better fertilizer applications — have the potential to fight global warming, too, and could reduce carbon dioxide pollution by 18 percent of current emissions levels by 2050, the report said.

If people change their diets, reducing red meat and increasing plant-based foods, such as fruits, vegetables and seeds, the world can save as much as another 15 percent of current carbon dioxide emissions by 2050. It would also make people more healthy, Rosenzweig said.

The science panel says it can't demand a change in personal diet choices.

Still, Hans-Otto Pörtner, a panel leader from Germany said he lost weight and felt better after reducing his red meat consumption. He then told a reporter if she ate less ribs and more vegetables, "that's a good decision and you will help the planet reduce greenhouse gas emissions."

Reducing food waste can fight climate change even more. The report says that between 2010 and 2016, global food waste accounted for 8 to 10 percent of heat-trapping emissions.

**Land Emissions Are Increasing**

"Currently 25 to 30 percent of total food produced is lost or wasted," the report said, and fixing that would free millions of square miles of land.

Most scenarios predict the world's tropical regions will have climate changes that have been unheard of before by the mid-to-late 21st century, the report noted.

Agriculture and forestry together account for about 23 percent of the heat-trapping gases that are warming the Earth, slightly less than from cars, trucks, boats and planes. Add in transporting food, energy costs and packaging and that grows to 37 percent, the report said.

Overall land emissions are increasing, especially because forests in the Amazon are being cut down in Brazil, Colombia and Peru. The same way humans breathe oxygen, trees take in carbon dioxide. This natural process helps reduce the carbon dioxide in the air.

"We ought to recognize that we have profound limits on the amount of land available and we have to be careful," said Stanford University environmental sciences chief Chris Field, who wasn't part of the report.

Questions:

* Using evidence from this article, explain how climate change has already affected the earth.
* Using evidence from this article, explain how climate change disrupts food chains.
* What can we do today to reduce the effect of climate change on the land?
* Explain why climate change should or should not be a topic of world concern.