



Hours of Reality

COUNTDOWN TO THE FUTURE

Countdown to the Future: FOOD AND FARMING

WE NEED TO TALK ABOUT THE FUTURE OF FOOD

There is no future without food — and right now, the future of food is looking more and more uncertain.

It's not just the jaw-dropping feat of feeding a population projected to reach over 9.7 billion by 2050. It's doing it while arresting the dangerous loss of [24 billion tons of fertile soil each year](#).

It's also doing it while climate change isn't just making farming even more difficult, but also making the food we grow less and less nutritious.

That's a lot to chew on — so let's dive in.

THE CLIMATE CRISIS IS A FARMING CRISIS

Farmers around the world don't have to call it the climate crisis to live it.

Just ask the families across the American Midwest who lost their homes and entire crops [to catastrophic floods in 2019](#). Or the farmers in southeast Australia [struggling through the worst drought in modern history](#). Or the Indian farmers hearing rising temperatures [could slash their incomes up to 25 percent](#) in coming years.

The primary climate-related threats to farmers and our food supply fall into three categories: more heat stress, more pests, and diseases spreading further than ever before.

HEAT STRESS: IT'S TOO HOT

- With the last five years being the hottest years on record, we're seeing average temperatures rise and droughts get longer and longer.
- The Earth now experiences more numerous and extreme hot days than at any time in history. The stress on plants when temperatures exceed their optimum ranges for extended periods can decrease yields — at a time when we need them to be going up.
- Extended extreme heat and drought can also affect the digestive systems of key livestock like cows and sheep and even cause asphyxiation.
- **Bottom line:** Higher average temperatures mean lower yields and even lost harvests for farmers around the world.

YOU KNOW WHO LOVES THE HEAT? PESTS

- Warmer temperatures enable pests that devour crops to travel further into new territories toward each pole, reproduce in greater numbers, and eat more.
- For example, climate change has helped facilitate the spread of the mountain pine beetle. This beetle is now inhabiting areas in the United States toward the Pacific Northwest that were once too cold for survival.
- Giant swarms of desert locusts threaten famines in Africa, the Middle East, and West and South Asia. Climate impacts including heat waves and intense rains from tropical

storms can lead to more prolific and unpredictable locust swarming

WHAT'S FOR DINNER? SICK, JUNK FOOD.

- Diseases like wheat rust and aflatoxins are spreading thanks to climate change, [threatening 90 percent of current wheat varieties grown worldwide](#). Meanwhile, aflatoxins (molds) can raise the risk of liver damage, blindness, and cancer.
- The higher levels of carbon dioxide in the atmosphere that trap extra heat also reduce plants' need for protein — and protein levels in crops.
- High carbon dioxide concentrations also cut levels of key nutrients such as iron, zinc, calcium, and magnesium by [5–10 percent in most plant species](#).
- Experts project that as the climate crisis makes crops less nutritious, an additional [25 million children under five will be at risk of malnutrition by 2050](#).

NOW THE GOOD NEWS

The same farms struggling with the realities of climate change *could* also play a key role in helping solve this crisis. That's because soils are a natural carbon sink, storing several times more carbon than the atmosphere, making the farmers who manage our soils potential heroes in the fight for a sustainable future.

Good thing, too, because today, agriculture is a major contributor to global warming, producing an [estimated 11 percent](#) of the emissions changing our climate. Experts project that to keep temperature rise below the 2-degree Celsius red line, the sector needs to close an estimated [11-gigaton gap in expected emissions by 2050](#). How much is 11 gigatons? Visualize 4.4 million Olympic-sized pools-worth of emissions.

So how do we do it? One answer may be in turning more and more to regenerative agriculture.

REGENERATIVE AGRICULTURE: PROMISING POSSIBILITIES

Regenerative agriculture is a land management practice that prioritizes soil health by rebuilding organic carbon. It can also improve carbon

sequestration in soil, increase water retention, and reduce erosion.

- Some key practices in regenerative agriculture include no- or low-till farming, using cover crops and crop rotation, agroforestry (farmland integrated with trees and shrubs), nutrient recycling, the use of biochar (charcoal-like, thermally decomposed biomass), and managed livestock grazing.
- According to one study, [the use of cover crops](#) on 85 percent of annually planted US cropland could sequester around 100 million tons of carbon dioxide per year, offsetting about 18 percent of US agricultural production emissions and 1.5 percent of total US emissions.
- If farmers used cover crops on 25 percent of global cropland, we could potentially remove about [0.55 gigatons of carbon dioxide per year from the atmosphere](#).
- Using biochar can sequester carbon and improve the condition of some soil types, and [improve food security by improving yields by as much as 25 percent in the tropics](#).

In addition, some advocates say regenerative farming could bring farmers greater profits and increased resilience to climate change. *But* — and it's a big “but” — more research is necessary to fully understand the potential.

WHAT CAN YOU DO?

To better understand the challenges of sustainable food production and feeding a growing population in the future while protecting our climate, request a presentation from a trained Climate Reality Leader as part of [24 Hours of Reality: Countdown to the Future](#).