

# Trapping more carbon from plant residue would help reduce agriculture's greenhouse gas emissions

While the collapse of Champaign Towers South and the ensuing rescue-victim recovery effort headlined most of the news this past week, three other stories caught our attention.

In a New York Times article, "It's Some of America's Richest Farmland. But What Is It Without Water?" (<https://tinyurl.com/umsb68as>) we read about the challenges farmers in California's Central Valley are facing.

With scorching heat and a drought, some farmers in the Central Valley are deciding that it makes more financial sense to sell the water they would have used to produce their crops to desperate farmers further south. This drought combined with less water coming from the melt of snow in the nearby mountains and reduced water availability as the result of the historic pumping of water faster out of underground aquifers faster than it is recharged, the price of water has skyrocketed making it more valuable than some of the crops that would be grown using that water.

As Somini Sengupta writes, "if the drought perseveres and no new water can be found, nearly double that amount of land is projected to go idle, with potentially dire consequences for the nation's food supply. California's \$50 billion agricultural sector supplies two-thirds of the country's fruits and nuts and more than a third of America's vegetables—the tomatoes, pistachios, grapes and strawberries that line grocery store shelves from coast to coast."

A Washington Post article by Sarah Kaplan, "Climate Change has gotten deadly. It will get worse," (<https://tinyurl.com/jjcbxub5>) reports that the sweltering heat that has recently parched the US Northwest has resulted in the number of hospital emergency room visits topping that of the "worst stages of the covid-19 pandemic."

The article goes on to note that "in Oregon, Washington, and western Canada, authorities are investigating more than 800 deaths potentially linked to the punishing heat... [and] researchers who specialize in the science of attribution say they are 'virtually certain' that warming from human greenhouse gas emissions played a pivotal role."

The third article, "Arctic's 'Last Ice Area' May Be Less Resistant to Global Warming," by Henry Fountain (<https://tinyurl.com/yryk2up5>) reports on research that was conducted by scientists on the German icebreaker Polstern during a year spent in the Arctic Ocean. They found that an area that has historically been covered by thick sea ice and could support polar bears and other wildlife was now characterized by thin ice and "plenty of open water." The scientific consensus is that this thinning of the sea ice is an effect of global climate change.

While these three events could occur simultaneously as the result of random chance, we think that explanation is unlikely given that the globe has warmed by 2° Fahrenheit since the beginning of the industrial age.

We are well aware that a number of farmers and their farm organizations have been resistant to any discussion of the role of human activity in releasing greenhouse gases that result in this temperature increase, but we think the time for denial is long over. It is our observation that farmers, in the US and around the world, are among those who will be most directly affected.

Farmers in the Central Valley are on the frontline of those affected by climate change. Many others will find that their area is no longer suited to the crops they have traditionally grown. Farmers in some areas will be negatively affected by increased rainfall levels while others will be affected by drought. Crop production zones may shift as the result of changes in both temperature and rainfall patterns.

While farmers may not think that they are part of the problem (like most of us, they are), we would argue that they can be an important part of the solution. The challenge is to reduce the level of greenhouse gasses in the atmosphere.

Industrial processes that would capture carbon dioxide and sequester it in deep underground are expensive and use significant amounts of energy in the process. As a result, the talk of industrial carbon capture at the smokestack (clean coal technology) has waned.

Farming, on the other hand, does this as a matter of course. The process is called photosynthesis and results not only in the food we eat, it also produces crop residue that can be sequestered in the soil. Fields and forests can be seen as huge natural industrial factories that capture significant amounts of carbon for little or no cost.

The challenge is to find energy efficient ways to sequester that naturally captured carbon so we can steadily reduce the level of greenhouse gasses in the atmosphere.

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