

# Climate-smart agricultural practices can be wins for farm profits, the environment and food security

The House Select Committee on the Climate Crisis held a hearing titled, “Solving the Climate Crisis: Opportunities in Agriculture,” on October 30, 2019 (<https://tinyurl.com/yxibu375t>). In her opening statement, Committee Chair Kathy Castor said that agriculture not only experiences the impacts of the climate crisis (more generally referred to climate change or global warming), it is also “responsible for nearly 10 percent of the annual greenhouse emissions” in the US.

The hearing was focused on identifying various ways that agriculture could contribute to a reduction in the emissions of greenhouse gases while helping farmers “maintain and increase their profitability.” In the current low-price environment, any contribution that changes in agricultural practices can make to the bottom line through reducing costs and increasing income is a positive for farmers.

The 4 people providing testimony for the hearing were Dr. Jennifer Moore-Kucera, American Farmland Trust; Fred Yoder, farmer and Solutions from the Land; Tina Owens, Danone North America; and Viral Amin, DTE Energy’s Power & Industrial Group. Full copies of their written testimony can be found on the hearing’s webpage.

This column is focused on the testimony of Moore-Kucera.

Moore-Kucera said, “by promoting climate-smart, regenerative agricultural practices can be a win-win-win. We can ensure our nation’s food security, improve our environment, and enhance economic returns to farmers and ranchers.”

She said the evidence of climate change includes: 20 of the past 22 years have been the hottest on record, more extreme weather events, increased atmospheric carbon dioxide levels, and the increased number and severity of wildfires like those in California in the past several years.

Moore-Kucera told the committee that the bulk of agriculture’s contributions of greenhouse gasses to the atmosphere come from nitrous oxide (53 percent) and methane (46 percent). Only 1.5 percent comes carbon dioxide.

The nitrous oxide comes from “agricultural soil management (activities such as fertilizer application, growing N-fixing plants), drainage of organic soils and irrigation practices, manure management, and field burning of agricultural residues. Nitrous oxide stays in the atmosphere about 114 years and is almost 300 times more efficient at trapping heat than CO<sub>2</sub>.”

Methane contributions to the atmosphere are “primarily from enteric fermentation from livestock and manure management, as well as rice cultivation and field burning of agricultural residues. Methane’s lifetime in the atmosphere is only 12 years, but it is 25 times more efficient at trapping heat than CO<sub>2</sub> over a 100-year period.”

In addition to contribution to global climate change, agriculture can be a significant part of the solution.

The amount of soil carbon in agricultural soils can be increased by minimizing soil disturbance, maximizing soil cover, maximizing the continuous presence of roots in the soil, integration of livestock into the cropping system, and diversifying the crop mix and rotations.

According to Moore-Kucera, “If we add up the current and projected future adoption of cover crops (25 percent) with no-till or reduced till practices (100 percent), [the US] could reduce [greenhouse gas] emission by up to 148.5 MMT CO<sub>2</sub>e [carbon dioxide equivalent] per year. This translates to approximately 25 percent of the total ag [greenhouse gas] emissions and that doesn’t include what can be achieved through the addition of best practices for grazing land management and livestock/manure management. This 148.5 MMT CO<sub>2</sub>e is equivalent to removing 31.5 million passenger vehicles from the road each year.”

On grazing lands, “ensuring sufficient rest periods between grazing events can maximize plant productivity and, hence, the amount of carbon fixed from the atmosphere.” In addition, the use of methane digesters to convert manure from dairies and other concentrated animal production systems can increase revenue and reduce the contribution of methane to the atmosphere. Feed additives can also reduce the emission from cattle.

With the benefit of a grant from the USDA- NRCS, the Farmland Trust conducted a soil-health case study of the “return on investment for healthy soil practices for a variety of crops” by four farmers (one each in California, Illinois, Ohio, and New York).

“These farmers implemented steps such as no-till, nutrient management, cover crops, compost, and mulching. As a result, these farms cut their greenhouse gas emissions by an average of 379 percent on fields selected for the analysis. This means that these fields transformed from being net emitters to net reducers of greenhouse gases.

“These case studies also illustrate the many benefits associated with healthy soil practices. The actions taken by these farmers increased yields and profits, stopped soil erosion problems, and improved water quality. The farmers saw, on average, increased yields of 12 percent, reduced nitrogen losses of 54 percent, reduced phosphorus losses of 81 percent, and reduced sediment losses of 85 percent. The average net income increase for the three crop farmers was \$42 per acre per year. For the California almond grower, his net income increased an average \$657 per acre per year, thanks to the soil health practices.”

Though the issue of climate change is a still an open question for some farmers, these case studies suggest that the adoption of healthy soil practices can not only benefit the environment, they can make a significant contribution to a farm’s bottom line.

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