

The upward trend in air temperatures puts agriculture at risk

In a January 10, 2022 press release titled, “U.S. saw its 4th-warmest year on record, fueled by a record-warm December,” the National Oceanic and Atmospheric Administration of the US Department of Commerce (NOAA) identified 20 separate billion-dollar disasters in 2021 (<https://tinyurl.com/2p8w63u7>). The total damage from these 20 disasters totaled \$145 billion.

They included wildfires in the west, tornados and severe weather events in the Midwest, and tropical storms along the Gulf Coast.

Three days later, on January 13, 2022, NOAA announced that “2021 was the world’s 6th-warmest year on record,” based on weather records dating back to 1880 (<https://tinyurl.com/2p8w63u7>). This press release included a graph showing that 1976 was the last year that the world had a yearly average temperature below the 20th-century average. One would have to be at least 45 years old to have lived in a year with a below-average global average temperature.

Not every year is warmer than the previous year—there is random variation—but the trend is clear. Copernicus, “Europe’s eyes on the Earth,” released a similar report, “Surface air temperatures for December 2021,” (<https://tinyurl.com/f9nuv9tx>) that includes a graphic that showed “Monthly global surface air temperature anomalies” from 1979 through 2021 compared to the 1991-2020 period and the 1981-2010 period.

It turns out that whether one uses the NOAA 20th century average temperature or either of Copernicus’ two time periods for the comparison, the results are extremely clear. Even with year-to-year and month-to-month variation, the trendline for global temperatures is upward and that puts agriculture at risk.

We can also see a correlation between the long-term increase in global air temperatures and the increase in greenhouse gasses (GHG) that have resulted from the burning of fossil fuels and other human activities. Even if one were to make the argument that much of the global warming that we are experiencing is the result of non-human factors, we would still need to contend with the impact of warmer weather and seek to find ways to mitigate it.

The clearest way to make an impact on global warming is to identify ways to reduce the emission of GHGs, measured in CO₂-equivalent (CO₂E) units, that result from our daily activities. Virtually all of the release of CO₂E is the result of the activities of those of us in the industrialized world and so it is up to us, consumers and farmers in the industrialized world, to make the necessary changes, not simply to eliminate our net emission of CO₂E gasses but to find ways to remove some of them from the atmosphere as well, particularly CO₂.

When people talk about cattle releasing methane or the release of CO₂ from the soil as the result of common tillage practices, it is easy for farmers to begin to feel that responsibility for the problem is being laid at their doorstep. We understand that feeling.

But all of us in the industrialized world will have to do our part if we are to reduce the problems that have resulted from an ever-warming world. Because this is an agricultural policy column, our focus is on what those of us in the agricultural community can do to go CO₂E negative.

The first step is to identify ways that we can reduce our emissions of GHGs. Those who have adopted no-till practices have already taken a first step by reducing one pass of a tractor

over their field. Each of us needs to look at our own operations and our daily lives and find ways to reduce our dependence on fossil fuels.

We can look at our homes and identify improvements that we can make to reduce our energy use with the ultimate goal of creating a net zero house that is well-insulated and creates as much energy as it uses.

While many in conventional agriculture have looked askance at their organic agriculture neighbors, these farmers have a leg up on finding ways to maintain soil fertility without the use of CO₂E dependent synthetic fertilizers. On the other hand, when organic farmers use propane burners to kill weeds instead of applying pesticides they are in the same boat as the rest of us in terms of GHG emissions. We all need to find better ways to control weeds.

The purpose of this particular column is not to lay out a set of practices that will lead to net zero homes, farms, and ranches. Its purpose is to challenge all of use to rethink the daily and professional activities we engage in and identify ways that reduce our GHG footprint with the ultimate goal of going CO₂E negative.

Policy Pennings Column 1110

Originally published in MidAmerica Farmer Grower, Vol. 37, No. 356, January 21, 2022

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