Agricultural Carbon Markets, Payments, and Data:
Big Ag's Latest Power Grab

Policy Brief by

Open Markets Institute & Friends of the Earth

OPEN MARKETS

Friends of the Earth

MARCH 2023

OPENMARKETSINSTITUTE.ORG FOE.ORG

Executive Summary

Agricultural Carbon Markets, Payments, and Data: Big Ag's Latest Power Grab

How can farmers be part of the solution to global climate change? Currently, leading politicians on both sides of the aisle say the answer lies with carbon markets. These allow polluters to "offset" their greenhouse gas emissions by paying farmers to engage in practices that are supposed to draw carbon down from the air and sequester it in their soil. But behind the simplistic appeal of a "market-based" approach lies a deeply concerning trail of scientific uncertainties, fraud, and corporate exploitation. As this report reveals, corporate soil carbon credit programs are likely to further entrench chemical-intensive farming practices, disenfranchise family-scale farmers, and increase corporate control over the food system, all while failing to achieve their purported goal of reducing greenhouse gas emissions.

These carbon offset schemes rest on shaky soil carbon estimates and give corporations cover to greenwash their operations and avoid pollution regulation. At the same time, carbon payment programs run by dominant agribusiness corporations, including Bayer, Cargill, Nutrien, and Corteva, let Big Ag define climate-smart farming in ways that boost their bottom line and maintain the status quo. The programs also allow corporate giants to collect valuable farmer data and promote environmentally destructive monoculture crop production. Meanwhile, family-scale farmers using regenerative, diversified, and perennial farming practices with tangible environmental benefits and greater carbon sequestration potential are unlikely to benefit from corporate-driven soil carbon payment schemes.

Rather than wasting time and resources on a carbon market boondoggle, Congress and the USDA must invest in directly supporting farmers via established conservation programs with proven success, such as the Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP). With proper restructuring and increased funding, these programs can compensate farmers for adopting sustainable agricultural practices without enhancing corporate influence and greenwashing.

SOIL CARBON MARKETS REST ON UNCERTAIN SCIENCE

Soil carbon is especially unsuited for commodification and trading. Measuring soil carbon in a uniform way to ensure integrity in soil carbon markets will likely remain an elusive goal. There are currently dozens of different certifiers using dozens of unregulated standards to measure soil carbon, most of which are based on theoretical modeling of carbon sequestration as opposed to actual soil measurements.

These models, based on radical simplifications of soil ecosystems, fail to account for the role that microorganisms play in breaking down soil carbon and therefore risk overestimating how much carbon will remain in the soil long-term.[1] Relying on models can also oversimplify the high degrees of variation in soil carbon over time and within fields. One study found that soil carbon concentrations even in a seemingly uniform field can vary fivefold.[2] This variability confounds attempts to accurately measure year-to-year changes, undermining the ability to accurately measure or verify carbon credits.[3]

The value of soil carbon offsets are also undermined by the fact that soil carbon storage is largely impermanent. Carbon sequestered in the soil can be released with a change in land management, through severe weather events, or as soils warm due to climate change, invalidating carbon offsetting claims.

In sum, voluntary carbon trading diverts resources into offsets that, at best, overpromise and underdeliver. At worst, these schemes may increase greenhouse gas emissions since they allow corporations to keep polluting while they claim to have "net-zero" emissions. In fact, existing carbon markets, such as California's forest offset program, have been shown to increase emissions.[4]

CORPORATE CARBON CREDIT PROGRAMS ENTRENCH THE STATUS QUO

Powerful corporate players are well poised to game soil carbon markets. Major agribusiness companies like Cargill, Bayer, Corteva, and Nutrien have all launched private programs that purport to pay farmers for sequestering carbon. These projects let agrichemical companies define "climate-smart" agriculture and collect valuable farmer data in ways that will further entrench chemically intensive, biologically simplified industrial agriculture and their market power.

Studies show that agroecological management and agroforestry have far greater climate and environmental benefits than implementing isolated practices like cover-cropping or no-till agriculture on conventional, monocrop farms.[5] Even by conservative estimates, agroforestry can sequester 10 to 20 times more carbon per acre than no-till or cover-cropping.[6] But virtually all agribusiness carbon payment programs only reward farmers for a limited set of practices that can be integrated into the conventional industrial approach to farming: reducing fertilizer use, reducing tillage, or planting cover crops.[7]

Conventional approaches to cover-cropping and no-till depend on pesticide use. For example, most large-scale farms rely on herbicides to "knock down" cover crops and control weeds in lieu of tillage. This helps companies like Bayer sell more pesticides such as Roundup to farmers who are enrolled in their carbon programs.[8] Yet science shows that Roundup and other commonly used pesticides harm the soil life that is central to soil carbon sequestration along with the biodiversity that underpins food production.[9]

These programs not only entrench a harmful status quo, but by shutting out family-scale farmers practicing diversified, regenerative agriculture from a new potential revenue stream, most carbon markets will only further marginalize smaller, innovative farmers and drive consolidation.[10]

Corporate carbon payment programs also require farmers to upload agronomic data through companies' proprietary digital agriculture software to certify carbon credits. Capturing large volumes of farm-level data helps seed and agrichemical companies build dominant digital platforms through which farmers access agriculture software and data-driven farm management prescriptions. Agribusinesses use these platforms to sell more of their products and direct on-farm decisions, making it ever more difficult for farmers to transition to sustainable practices.[11]

On top of these harms, many carbon contracts aren't even a fair deal for farmers. Private carbon payment programs require that farmers contractually commit to years, even decades, of practices to produce offset credits with minimal payment guarantees. For example, while some programs tie payment to carbon credit sales value, Bayer unilaterally sets the prices it pays per practice per acre.

TRUE SOLUTIONS: DIRECTLY SUPPORT FARMERS WHO PRACTICE ECOLOGICALLY REGENERATIVE AGRICULTURE AND CRACK DOWN ON EMISSIONS BY CORPORATE POLLUTERS.

Agricultural carbon market schemes direct scarce resources into dubious investments and away from a necessary transition to truly regenerative agriculture and decarbonization, all while enhancing corporate power. Industrial polluters can "greenwash" the harm they are doing to the planet by pointing to their "investments" in reducing carbon, meanwhile avoiding regulation, and even exacerbating pollution hotspots in communities of color when polluters opt to offset rather than clean up their acts.

To reduce agriculture's carbon footprint and promote the adoption of ecologically regenerative farming methods, Congress and the USDA should:

- Ensure that USDA programs do not promote private carbon payment programs and reject corporate contributions to conservation programs that require farmers to share ownership of carbon credits with corporate donors.
- Invest in existing programs with a proven track record of funding environmental improvements in agriculture, such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP); channel funds toward practices that are demonstrated to enhance on-farm biodiversity, conserve water, improve soil carbon sequestration, reduce the use of synthetic inputs, and enhance farmers' resilience in the face of droughts and floods.
- Encourage tree planting as a part of the Conservation Reserve Program (CRP).
- Regulate air and water pollution from the largest, most polluting farms, including working with the EPA to set limits on agricultural greenhouse gas emissions.
- Protect farmer data by ensuring the right to port and remove data from digital agriculture platforms. Prohibit the use of farmer data gathered as part of carbon payment programs to speculate in futures markets or target farmers with personalized advertisements.

We do not have time or resources to waste on ineffective approaches to addressing the climate crisis, especially those that greenwash corporate pollution and risk increasing greenhouse gas emissions.

Farmers should be supported to shift to ecologically regenerative methods. To do that, Congress and the USDA must channel the billions of dollars that are being invested in climate-smart agriculture toward proven and transformative solutions.

Endnotes

[1] Gabriel Popkin, "A Soil-Science Revolution Upends Plans to Fight Climate Change," *Quanta Magazine*, July 27, 2021, https://www.quantamagazine.org/a-soil-science-revolution-upends-plans-to-fight-climate-change-20210727/.

[2] Keith Paustian, Sarah Collier, Jeff Baldock, Rachel Burgess, Jeff Creque, and Marcia DeLonge, "Quantifying carbon for agricultural soil management: from the current status towards a global soil information system," *Carbon Management*, Volume 10, 2019, https://www.tandfonline.com/doi/full/10.1080/17583004.2019.1633231.

[3] Nathanael M. Thompson et al., "Opportunities and Challenges Associated with Carbon farming for U.S. Row-Crop Producers," Purdue University Center for Commercial Agriculture, June 28, 2021, https://ag.purdue.edu/commercialag/home/resource/2021/06/opportunities-and-challenges-associated-with-carbon-farming-for-u-s-row-crop-producers/.

[4] Lisa Song and James Temple, "The Climate Solution Actually Adding Millions of Tons of CO2 to the Atmosphere," *ProPublica*, April 29, 2021, https://www.propublica.org/article/the-climate-solution-actually-adding-millions-of-tons-of-co2-into-the-atmosphere.

[5] Lingxi Chenyang, Andrew Currie, Hannah Darrin, et al., "Farming with Trees: Reforming U.S. Farm Policy to Expand Agroforestry and Mitigate Climate Change," *Ecology Law Quarterly* 48, no.1, September 2021.

[6] Ibid.

[7] While adopting practices such as no-till agriculture and cover-cropping can have ancillary environmental benefits beyond carbon sequestration, corporate-driven carbon payment programs do not transform the inherently destructive chemical-dependent monoculture farming model in which these practices can be deployed.

[8] "An Overview: Glyphosate," Bayer, https://www.bayer.com/sites/default/files/Glyphosate_Agvocate_FactSheet.pdf.

[9] Tari Gunstone, Tara Cornelisse, Kendra Klein, Aditi Dubey, and Nathan Donley, "Pesticides and soil invertebrates: A hazard assessment," *Frontiers in Environmental Science*, 122, 2021.

[10] In 2020, the average farm selling carbon credits to Indigo operated 1,300 acres and grew commodity grains or cotton. In 2023, Indigo had 5 million enrolled acres and 2,000 participating farmers for an average of 2,500 enrolled acres per farmer.

[11] "Bayer Monsanto Merger: Big Data, Big Agriculture, Big Problems," Friends of the Earth, November 2017, https://foe.org/wp-content/uploads/2017/11/Bayer-Monsanto-merger-report-Nov-2017.pdf; According to a 2022 presentation, Bayer generated more than 5% higher sales from its corn seed customers who had FieldView Plus compared to non-FieldView Plus users. Bayer also found that FieldView users planted Bayer corn seeds at a 2.5% higher seeding rate than the national average, via Rodrigo Santos, Bob Reiter, and Jeremy Williams, *Advancing Tomorrow's Innovations Today*, Leverkusen: Crop Science Annual R&D Pipeline Update, 2022, https://www.bayer.com/sites/default/files/2022-02/Crop%20Science%20R&D%20Pipeline%20Update%20Webinar_2022-02-16_Presentation.pdf.