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Carbon Markets 101

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The development of agricultural ecosystem credit markets, specifically carbon markets, is a hot topic in the popular press and Washington, DC. The United States Environmental Protection Agency (EPA) estimates that 10% of carbon dioxide, a primary greenhouse gas, is emitted by the agricultural sector. While this is relatively a small portion of overall carbon dioxide emissions by the economic sector, agriculture has received a lot of attention in reducing overall GHG emissions recently. The ag sector is viewing carbon markets as an opportunity to attract additional revenue while adopting production practices to reduce greenhouse gas (GHG) emissions, improving soil health and yields, and potentially reducing input use. Various forms of carbon markets are being developed across the nation as companies attempt to reduce their own carbon footprint by offering payments to farmers to offset their own carbon emissions and to attract environmentally conscious consumers and investors.

In addition to activity within the private sector, there is much debate about the role of government in carbon markets. The Biden administration has clearly made this a priority in their agricultural policy agenda calling for a significant increase in federal funding and programs to help develop these markets and assist market participants. Consequently, farm organizations and major food and agribusiness groups have been heavily involved in the debate. A coalition of representing farmers, forest owners, the food sector, state governments, and environmental advocates have formed the [Food and Agriculture Climate Alliance](#) (FACA). Click [here](#) to see FACA members, which includes the American Farm Bureau Federation (including the Kentucky Farm Bureau), National Farmers Union, National Association of State Departments of Agriculture, the National Corn Growers Association, and the National Cattlemen's Beef Association.

FACA's policy recommendations include:

- Providing voluntary, incentive-based tools for farmers, ranchers and forest owners to maximize the sequestration of carbon and the reduction of other GHG emissions, as well as increase the resilience of the land.
- Supporting the development and oversight of private sector markets for GHG credits.

- Promoting public and private sector tools to incentivize farmers, ranchers, and forest owners to prioritize and scale climate-smart practices.
- Offering incentives for farmers to reduce energy consumption, increase the use of on-farm renewable energy, and make continued progress toward reducing the lifecycle GHG emissions of agriculture- and forestry-based renewable energy.
- Streamlining consumer-facing packaging and implementing a public-private-partnership to reduce the GHG impact of food waste and loss within the food value chain.
- Increasing federal investment in agriculture, forestry, and food-related research substantially and continuously.

Recently, over 300 U.S. corporations, including some industry giants in the agriculture and food industry submitted a [letter](#) to President Biden supporting reducing GHG emissions by at least 50% by 2030. The current Chairs of the U.S. Senate and House Ag Committee have prioritized this issue in the current session of Congress with various hearings being planned and bills being drafted. In addition, the newly appointed U.S. Trade Representative has indicated that environmental issues are going to play a bigger role in future U.S. trade policy.

Given the onslaught of activity surrounding this emerging issue, what are some of the basic characteristics of a carbon market you should know? What key questions should you be asking? What issues currently exist in developing a market for carbon? How will policy affect the development of these markets?

Two types of carbon markets that are driving demand today, compliance markets based on governmentally imposed limits on GHG emissions (e.g., California's Cap and Trade Program) and voluntary markets (e.g., corporate sustainability reporting). Today, most carbon markets are voluntary, incentive-based markets where companies are linking buyers and sellers of carbon credits. The sellers, typically farmers, are paid for generating carbon credits by adopting management practices that meet specific beneficial ecosystem criteria. The most common practices include no-till/reduced-till, cover crops, crop rotation, and buffer strips that sequester carbon. Farmers are typically paid based on the amount of carbon sequestered, either on a per-acre basis or per ton of carbon sequestered. Once the carbon credit is generated, it enters the market where buyers can purchase those credits to meet their sustainability goals (e.g., carbon neutral by 2040). Today, most transactions occur through a third-party entity (aggregator), which links sellers (farmers) to buyers (corporations). Since carbon markets are still developing, price discovering is occurring, and payments for carbon credits may not cover the cost and risk of implementing new management practices. Early pricing ranges in value, but \$15-\$20 per ton of carbon sequestered is common. However, the amount of carbon sequestered and practice(s) adopted will vary by individual farm. Therefore, it is critical to understand the costs and risks of implementing new practices before enrolling in carbon market programs and the farmer's responsibilities over the life of the agreement.

One key characteristic surrounding a carbon market is the concept of additionality. Some companies will only pay for new (post-enrollment in a carbon program) carbon-sequestering practices, whereas other companies will pay for practices previously adopted on the farm, but only for a limited number of years. As Kentucky is the home of no-till farming, those interested in carbon markets should seek opportunities from programs that pay for previously adopted carbon-sequestering practices. As carbon markets evolve, more companies may offer programs that pay early adopters of conservation practices; however, there are strong opinions on both sides of the argument.

Third-party aggregators are currently enrolling farmers across the country in their carbon market programs. Each program will differ in required criteria to enroll, such as minimum acre requirements, payment structure, participation length, etc. Therefore, it is critical that you ask questions, read the fine print, and seek legal advice before entering any contractual arrangement. Our colleagues at the

University of Illinois put together an article publication titled "[What questions should farmers ask about selling carbon credits?](#)" along with offering a table to review potential breakeven prices for various production practices.

While carbon markets in agriculture are in the developmental stage, numerous issues have surfaced which could prevent such markets from flourishing. Quality control and verification are vital and must be solved to ensure the buyer receives a high-quality carbon credit. The process of determining what constitutes "high-quality" is still in the developmental stage. Other issues include documentation, data privacy, and access to rural broadband to allow for technology adoption that measures reduced GHG emissions. Will there be enough demand for carbon credits to drive prices where carbon sequestration practices are adopted throughout all of agriculture? Could agriculture oversupply market demand leading to depressed prices? What changes in agricultural production practices will qualify for credit and how long must they be in existence? How and when the baseline is established so additional carbon sequestered is measured and compensated accurately? How are early adopters incentivized to enter carbon market programs? We will continue to monitor these issues, markets, and policy development in future newsletter articles. Additional resources providing more background information can be found by reviewing the videos from Agri Pulse's [Ag and Food Policy Summit](#) or from American Farm Bureau's five-part series on [Agricultural Ecosystem Credit Markets](#).

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