



Grazier

► by **Kindra Gordon**

Capitalizing on carbon

The newest buzzword among conservationists is carbon sequestration. If you have healthy grazing lands or no-till crop fields, you are already in vogue because these land-management practices help keep carbon “sequestered” in the soil.

Conversely, tilling soil or overgrazing breaks down plant material, which releases carbon into the atmosphere. Once released, the carbon — in the form of carbon dioxide — is considered a greenhouse gas that contributes to global warming and to subtle changes in climate worldwide.

Huge potential

As concern for global warming has grown, so has support for earth-friendly methods that reduce greenhouse gases. Thus, conservation practices — often implemented to reduce erosion or to improve wildlife habitat — also offer the added benefit of suppressing the release of carbon.

“More carbon sequestered in the soil means less carbon dioxide in the atmosphere, which would mitigate the greenhouse effect and reduce the magnitude of associated climate changes. Thus, sequestering carbon has the potential to provide a societal good,” says Barbara Frase, a professor of biology at Bradley University in Peoria, Ill.

Fortunately for beef producers, their land-management practices can contribute to that societal good. “The potential for grazing lands to store, or sequester, carbon is huge, based on land area alone,” Frase says. She points out that approximately 55% of the total U.S. land surface is grazed by livestock.

Research continues to determine how much carbon different types of land store, but initial estimates indicate that permanently established grazing lands appear to sequester some of the highest amounts of carbon per acre.

Tom Lucas, with the Natural Resources Conservation Service (NRCS) in Oklahoma, reports that studies conducted in his state indicate that well-managed grasslands have sequestered from 200 pounds (lb.) per acre to almost a ton per acre. On the other hand, overgrazed lands can have a net annual loss as high as 400 lb. of carbon per acre per year, Lucas points out.

Frase adds, “Sequestering carbon in the soil may also benefit the livestock grower

directly since, in general, higher levels of soil-organic carbon result in greater plant productivity. Greater plant productivity in turn generally means more pounds of forage and, therefore, more pounds of meat produced.”

Cashing in

Reducing carbon emissions has become a worldwide priority because of its role in global climate change. The 1997 Kyoto Protocol proposed by the United Nations (UN) calls for countries to reduce their carbon emissions by 7% by the year 2010 or face stiff penalties. One hundred sixty countries have already agreed to the protocol.

Although the United States has not ratified the Kyoto agreement, the American government and private industry have shown a strong interest in providing monetary incentives to companies and landowners who work to reduce carbon emissions. Many believe this may take the form of payments from government programs or from the sale of carbon as a commodity.

“There are at least two types of carbon credits that have already been traded that directly involve agriculture,” Lucas says. The first type of carbon credit (equaling one metric ton of sequestered carbon) is a carbon emission reduction credit (CERC). “This can occur when an individual, a company or an entity takes steps to reduce the amount of carbon dioxide that is

released into the atmosphere,” Lucas explains.

For instance, an Iowa company recently put together a group of conventional-till corn and soybean growers in the state who wished to convert to minimum-till and no-till farming. The total carbon tonnage reduction from this change in management was converted into CERCs, and these were then bundled and sold to a Canadian utility consortium that was seeking to offset its carbon emissions from its operations.

“It appears this was a 10-year agreement that will result in an average annual payment of \$6 per acre so long as the producers stay with their end of the bargain,” Lucas says.

A second type of trade involves carbon credits issued and sold for storing carbon. This carbon payment has already occurred on forestland in Washington and Oregon. “This would work especially well on grasslands because the majority of carbon is stored in the roots of the grass, which would be less susceptible to fire than trees are,” Lucas says.

“Such ‘carbon trading’ mechanisms are currently in their infancy, but it is likely that a substantial market for carbon credits could develop,” Frase adds.

However, before carbon payments can become commonplace, more research is needed to determine how much carbon is stored in pasture and in rangeland soils, Frase says. “Although croplands have been studied in this regard, there are very few data on soil-organic carbon from grazing lands,” she says.

She recently made that the focus of one of her research projects in Colorado. “Of particular interest is the question of whether different management practices affect the amount of carbon stored in the soils. Working in cooperation with local ranchers, we are starting to obtain carbon data from pastures that are not being grazed and from areas under different grazing regimes, e.g., short-duration high-intensity grazing, season-long grazing, annual rotational grazing,” she explains.

The NRCS, the U.S. Department of Energy and several private firms are also working on models to calculate how much carbon is sequestered in growing plants, roots and soil.



Producers who are good stewards of the soil may be rewarded for their environmental efforts for another reason — storing carbon.

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“Baseline data such as these are necessary for producers to be rewarded for growing carbon as well as livestock,” Frase says.

Opportunities to earn income from carbon sequestration are likely to increase in the future as market or governmental mechanisms are put into place. Companies, such as Amoco, DuPont and Ford Motor Co., have all shown interest in methods to lower or offset carbon emissions.

“I don’t know when this market will

develop or what a carbon credit will be worth when it does, but I do believe that among all agricultural production systems, proper grassland management is the most likely long-term player in the carbon offset market,” Lucas says.

He adds, “If you are already managing your grasslands in such a way as they are storing carbon, I believe you will be among the first who will be able to sell your credits. I further believe that once a major emitting company makes a purchase of grassland carbon credits others will quickly follow.”

Until that happens, producers are advised to stay abreast of legislation that would affect

carbon credits locally or nationally.

Lucas says there has even been talk of paying producers for past management efforts. So if you are in the process of switching to lower tillage or no-till or establishing pastures, keep good records to verify changes later.

Another tip: If you’re inclined to sell CERCs, avoid long-term contracts at first. Most sources expect prices to rise in the future.

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