Carbon Market Opportunities for Agriculture

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Carbon credits generated by agriculture are a relatively new commodity. They are generated on-farm by employing a management practice or project that reduces emissions of greenhouse gases (GHG; such as methane, nitrous oxide, or carbon dioxide). The amount of carbon credits generated on farm are measured and verified, typically by an independent, third-party verifier. They are sold in markets to other businesses (polluters) that purchase “carbon offsets” as an environmental attribute.

A carbon credit is a metric ton (2204 lbs) of carbon dioxide equivalent (CO₂e). It is the currency for trading of GHG emissions that are reduced, destroyed (e.g., burning), removed from the air, or never produced. Carbon markets have been established because GHG polluters either voluntarily (as in most of the U.S. currently) or through mandatory legislation (e.g., cap-and-trade laws) purchase carbon offsets to enable them to emit in excess of their defined cap limit. Cap-and-trade legislation and carbon markets have been in Europe and other countries for several years. The U.S. currently does not have a national cap-and-trade system for carbon. However, California recently instituted its own cap-and-trade system.

Primary goals of carbon markets are to reduce GHG emissions and provide an organized, competitive, market-driven mechanism to reduce these emissions, and to reduce, over time, the absolute quantity in GHG emissions. Demand for carbon offsets occurs when a cap-and-trade system or perhaps a carbon tax is implemented. Also, while carbon trading is going on among sellers and buyers, polluters are required by legislation to reduce absolute emissions incrementally over time.

Currently, carbon credits from agriculture can be generated by carbon sequestration in trees (forests), soil/tillage practices, or from capture of methane in anaerobic digesters. In the case of methane it can be flared-off, producing carbon dioxide (which is 21-times less potent as a GHG as methane); used to generate electricity; or, cleaned and compressed to natural gas to produce power or heat. Other potential practices to reduce carbon emissions and produce carbon credits are being researched (e.g., reduction in digestive tract methane production by ruminants).

The market price for carbon offsets varies depending upon demand. In June 2008 carbon offsets were worth about $7.50 per metric ton of CO₂e on the Chicago Climate Exchange. In
December 2008, the market price was just over $1.00 per metric ton. When a federal cap-and-trade system is implemented and demand for offsets increases, U.S. prices are projected to increase to $10 to $12 per metric ton by 2012, $20 by 2020, and $45 by 2030 as markets develop.

An agricultural business desiring to develop an on-farm practice or project to generate and sell carbon credits can work with a ‘carbon broker’ or aggregator who understands carbon markets. They also facilitate on-farm measurement of credit generation, third-party verification, and bundling of credits from several farms to help market carbon credits.

Carbon markets provide a financial opportunity to adopt conservation and mitigation technologies and practices to reduce GHG. They also offer some agricultural businesses the potential to generate revenue, and to help compensate for additional on-farm costs associated with voluntary and/or future mandatory air quality improvements and energy management.