

ECONOMICS TECHNICAL NOTE

Soil Carbon Sequestration Opportunities for Montana Producers

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Concerns about the increase in greenhouse gases (GHG) in our atmosphere and global warming have increased interest in mitigating these increased gases through soil carbon sequestration. Agricultural producers may be able to benefit by providing carbon sequestration services. Cropland, grazing land and forest land can be used to sequester carbon. Additional on-farm GHG emission reduction activities, such as methane capture and reduced nitrogen application, are also eligible for carbon credits.

The Kyoto protocol of the United Nations Framework Convention on Climate Change is part of an ongoing international discussion that aims to identify means of reducing greenhouse gases (UNFCCC 1998). To conform to Articles 3.3 and 3.4 of the Kyoto protocol, projects must meet the standards of: additionality, permanence, duration, and leakage (UNFCCC 1998, Watson et al. 2000). Additionality means that credits generated must be additional to any changes in carbon that would have occurred under a “business as usual” scenario. Permanence refers to the length of time that carbon is sequestered and maintained in a sink such as a forest or agricultural soil. Duration refers to the length of the contract. Leakage concerns the issue of project activities causing economic agents to take actions that would increase greenhouse gas emissions elsewhere.

Countries that have signed the Kyoto protocol can engage in emission trading that counts toward meeting Kyoto protocol requirements. Countries can purchase emission or removal credits only from other countries that have ratified the agreement. This has resulted in carbon trading markets being created in the Amsterdam-based Climate Exchange and the London-based Climate Exchange in the European Union. Since the United States did not sign the Kyoto protocol, it can only sell emissions or removal credits to countries who have also not signed the Kyoto protocol. This has resulted in a carbon trading market that is fractured into a market for sellers who have ratified the protocol and sellers who have not.

The Chicago Climate Exchange (CCX) was created as a voluntary, pilot GHG emissions trading program targeting emissions and offsets in North America (US, Canada, and Mexico) as well as limited offset projects in Brazil (Chicago Climate Exchange). CCX is a legally binding, self-regulatory exchange. The CCX is America's only market for reducing and trading greenhouse gases throughout North America. CCX has received funding from NRCS through the Conservation Innovation Grant (CIG) program to expand the program beyond a few Midwest states.

Farmers who undertake specific emission reduction and carbon sequestration activities can earn and sell carbon credits to other CCX members. Eligible agricultural projects include no-till and low-till farming, grass and tree planting, and methane collection at livestock operations. Producers following NRCS practices Residue Management, No-Till/Strip Till/Direct Seed (Code 329) and Prescribed Grazing (Code 529) would meet the carbon sequestration requirements.

Greenhouse gas emission reduction credits are delivered to the CCX market place in a quantity not less than 10,000 credits. A credit is equal to one metric ton of carbon dioxide sequestered per acre, per year. This requires individual producer offers to be delivered to the market place through “aggregators”. These “aggregators” enroll producer acreages of carbon projects into blocks of credits that are traded on the CCX. In exchange the “aggregators” receive a percentage of the value of the carbon credits when they are traded on the exchange. To be sure that the terms of the contract are being fulfilled, a certain percentage of land tracts are spot checked by “verifiers”. These “verifiers” can be part of the “aggregators” or hired by the “aggregators” to verify the contract.

The amount of carbon sequestered varies by land use and credit-earning potential. The CCX provides a map that divides the country into different zones by land use. These zones identify the amount of metric tons per acre of carbon sequestered that CCX will sell. The maps are located at:

<http://www.chicagoclimateexchange.com/content.jsf?id=781>

The carbon credit rates for rangeland for Montana are divided into three zones and each is split between degraded rangeland and non-degraded rangeland. The rates vary from 0.12 to 0.27 credits per acre for non-degraded rangeland and 0.24 to 0.40 credits per acre for degraded rangeland. Grassland seeded after January 1, 1999 is eligible for carbon credits of 1.0 ton per acre.

The carbon credit rates for cropland for Montana are divided into two zones with one split between irrigated and non-irrigated cropland. Western Montana counties are not eligible for cropland carbon credits. The rate is 0.32 credits for dry crop land and 0.6 credits for irrigated cropland.

The carbon credit process for forestry is more complicated. Forestry items eligible for forestry carbon credits include:

- Afforestation (tree planting) on land that had not been in forest for ten years or more;
- Reforestation on land where forests were destroyed by natural events (usually wildfire) and are unable to regenerate naturally;
- Urban forests planned since January 1, 1990; and,
- Sustainable forest management.

The amount of credit eligible is based on site-specific items undertaken by each specific project.

The payment for carbon credits is based on the sale of the contract on the Chicago Climate Exchange minus the “aggregator” service fee. The price of carbon has generally been in the \$2.00 per ton range with the price in 2006 and 2007 in the \$3.00 to \$4.00 per ton range.

There are many aggregators in the United States. Three offer their services to Montana producers. They are:

- National Carbon Offset Coalition – Their web site is:

<http://www.ncoc.us/>

- Iowa Farm Bureau through their AgraGate Climate Credits Corporation – Their web site is:

<http://www.iowafarmbureau.com/special/carbon/default.aspx>

- North Dakota Farmers Union – Their web site is:

<http://carboncredit.ndfu.org/>

These web sites provide more detailed information for producers interested in providing soil carbon sequestration. These sites also have application forms available.

References

Bi-annual Program Evaluation Report (February 2007 – October 2007) for the Carbon Credit Generation Program submitted by the Chicago Climate Exchange, Inc., October 2007.

United Nations Framework Convention on Climate Change (UNFCCC). 1998. Reports of the Conference of the Parties on its third session, held at Kyoto from 1 to 11, December 1997. FCCC/CP/1997/7/Addl. 18 March, 1998.

Watson, R.T., I.R. Noble, B. Bolin, N.H. Ravindranath, D.J. Verardo, and D.J. Dokken. 2000. “Land Use, Land-Use Change and Forestry.” A Special Report of the Intergovernmental Panel on Climate Change, Cambridge, UK: Cambridge University Press.