



where would you be without conservation

since the 1930s New Mexico
weathered two droughts worse than
the Dust Bowl. did you notice? no?
maybe it was because of conservation

state-of-the-art conservation techniques

carbon sequestration



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Introduction

Carbon sequestering and carbon credit sales are gaining importance to New Mexico ranchers and farmers, and good grazing management is a key to both this new market and, ultimately, the quality of the land. The following provides some basic information about this emerging topic that is buzzing across the rangelands of New Mexico.

Background

Carbon Dioxide Carbon is one of the basic elements of all things living. It exists in the air (atmosphere) as carbon dioxide. Carbon dioxide is one of the green house gases (GHG) that we read about almost every day in the news. Controversy continues over whether or not increasing concentrations of carbon dioxide in the atmosphere contribute to global warming or global climate change. However, there are some facts about atmospheric carbon.

1. Worldwide, there is a greater concentration of carbon dioxide in the atmosphere today than has been the case for hundreds of years.
2. We are experiencing erratic weather and changing weather patterns, but whether or not they are tied to the concentration of greenhouse gases in the air will remain subject to scientific debate for a long time to come.

The unit of measure of tradable carbon credits is known as a carbon emission reduction credit (CERC) or emission reduction unit (ERU). A CERC is equivalent to one metric ton of carbon dioxide gas (or GHG equivalent) that is not emitted into the earth's atmosphere due to human-caused change. CERCs can be generated by sequestration techniques such as storing carbon into land and water. These credits are then available to buyers interested in offsetting their GHGs or for other strategic purposes. In terrestrial

ecosystems a carbon credit is average carbon dioxide entrapment over an area of ground measured in metric tons (tonne) of carbon dioxide (approximately 2,205 pounds) The estimation of a carbon credit sequestered for trading purposes has risk and measurement inaccuracy built in.

Carbon Dioxide Flux is the movement of the gas up and down from the earth surface. Downward movement indicates that plants are absorbing carbon dioxide, and upward movement indicates that carbon dioxide is being released from the system. During the growing season in daylight hours, the plants take in carbon dioxide, and at night, the plants release carbon dioxide. On cloudy days, in the dormant season, and during dry periods, the plants do not readily take in carbon dioxide and may in fact release it. These changes in carbon dioxide flux allow researchers to calculate the amount of carbon that actually ends up stored in the soil (**Carbon Dioxide Entrapment**). In order to get positive carbon additions to the soil, plants must take up more carbon dioxide than was released during the year.

Role of the Ranch

From research at USDA's Agricultural Research Service field stations we know that inappropriately grazed lands lose carbon and grasslands not grazed at all cease to store carbon at some point and can eventually lose carbon thru soil erosion processes, and that properly managed working grasslands store carbon.

Carbon sequestration, then, is about more than managing to produce carbon credits for income. It is about farm and ranch sustainability over the long haul. It is about the things you do, managing your ranch so that it will sustain itself and produce for you during

your lifetime as well as the lifetimes of those who will inherit your land.

The USDA's Agricultural Research Service estimates that 20 million metric tons of carbon is currently sequestered each year in U.S. farm and grazing land soils. This estimate indicates that U.S. farms and ranches are indeed a net "carbon bank" or sink, sequestering carbon in the soil and keeping it out of the atmosphere. USDA and State Department personnel estimate that an additional 180 million metric tons annually could be stored in farm and range land acres. This would account for 12 to 14 percent of the total U.S. emissions of carbon according to the State Department.

The Chicago Climate Exchange (CCX)

The Chicago Climate Exchange is North America's only and the world's first global marketplace for integrating voluntary legally binding emissions reductions with emissions-based trading and offsets, for all six (name the six or leave number off) greenhouse gases. Landowners and operators use the services of aggregators to group carbon credits from

several suppliers and offer those carbon credits to the market in the form of a portfolio. Aggregators will help determine:

- potential for carbon sequestration;
- practices necessary to achieve that potential;
- how those practices can be verified in a cost-effective manner to assess carbon sequestered; and
- how to aggregate sequestered carbon, and market it to provide a desirable package to buyers.

The Chicago Climate Exchange has many aggregators in which they draw upon; their website has a list of approved aggregators.

NRCS technical assistance is critical to managing the natural resource practices that sequester carbon and produce environmental benefits, and NRCS will continue in that role to the benefit of our environment. NRCS technical specialists have developed the CarbOn Management Evaluation Tool for Voluntary Reporting (COMET-VR) to evaluate changes in soil carbon resulting from changes in management systems in cropping and range systems.

Contact your local NRCS office for further information.

