

Cornhusker Economics

Cooperative Extension

Institute of Agriculture & Natural Resources
Department of Agricultural Economics
University of Nebraska – Lincoln

Carbon Sequestration: What's It all About?

Market Report	Yr Ago	4 Wks Ago	10/20/00
<u>Livestock and Products,</u>			
<u>Average Prices for Week Ending</u>			
Slaughter Steers, Ch. 204, 1100-1300 lb Omaha, cwt	\$70.31	\$65.19	\$67.67
Feeder Steers, Med. Frame, 600-650 lb Dodge City, KS, cwt	82.25	94.91	90.37
Feeder Steers, Med. Frame 600-650 lb, Nebraska Auction Wght. Avg	88.03	97.67	97.12
Carcass Price, Ch. 1-3, 550-700 lb Cent. US, Equiv. Index Value, cwt	109.91	98.94	103.87
Hogs, US 1-2, 220-230 lb Sioux Falls, SD, cwt	35.50	43.50	37.50
Feeder Pigs, US 1-2, 40-45 lb Sioux Falls, SD, hd	29.00	29.00	*
Vacuum Packed Pork Loins, Wholesale, 13-19 lb, 1/4" Trim, Cent. US, cwt	94.70	120.60	121.30
Slaughter Lambs, Ch. & Pr., 115-125 lb Sioux Falls, SD, cwt	68.12	70.05	65.13
Carcass Lambs, Ch. & Pr., 1-4, 55-65 lb FOB Midwest, cwt	154.00	158.00	153.00
<u>Crops,</u>			
<u>Cash Truck Prices for Date Shown</u>			
Wheat, No. 1, H.W. Omaha, bu	2.71	2.98	3.09
Corn, No. 2, Yellow Omaha, bu	1.61	1.53	1.79
Soybeans, No. 1, Yellow Omaha, bu	4.27	4.61	4.47
Grain Sorghum, No. 2, Yellow Kansas City, cwt	2.71	2.68	3.04
Oats, No. 2, Heavy Sioux City, IA, bu	1.14	1.16	1.25
<u>Hay,</u>			
<u>First Day of Week Pile Prices</u>			
Alfalfa, Sm. Square, RFV 150 or better Platte Valley, ton	90.00	90.00	117.50
Alfalfa, Lg. Round, Good Northeast Nebraska, ton	32.50	65.00	67.50
Prairie, Sm. Square, Good Northeast Nebraska, ton	*	82.50	85.00
* No market.			

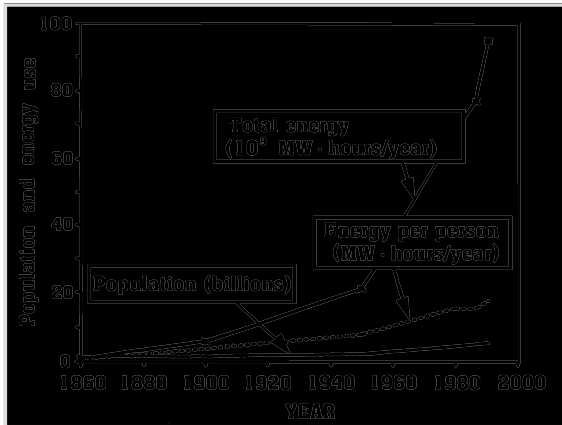
The following article is based on an interview I did with Professor Dan Walters on the *Market Journal* video broadcast on October 16. The full interview can be viewed by going to the Rural Routes website (ruralroutes.unl.edu) and clicking on "broadcast" under the "October Market Journal" heading.

The concern about carbon sequestration arises from the phenomena of global warming, the build-up of greenhouse gases and the loss of carbon from the soil and the inter-relationship of these activities. Global warming is caused by the increase of atmospheric gases such as carbon dioxide, methane and nitrous oxide which absorb longwave radiation and prevent heat from being radiated away from the earth. The evidence of global warming is that there has been a small but consistent upward trend in the global temperature over the past 100 years and about a six inch increase in the sea level. A contributing factor has been the increase in energy use. The increase in world energy demand and the increase in the per person energy use is shown in the figure below. The total energy line is increasing exponentially but even more significant is the upward trend in per capita consumption.

Where does agriculture fit into this? Agriculture practices and land modification account for about 23% of the contribution to global warming, while increased energy use, CFC's and other industrial sources account for 77% of the global warming. While nitrous oxide only accounts for about 6% of greenhouse gases and carbon dioxide about 49%, the nitrous oxide has a much greater impact on the atmos-



WORLD ENERGY DEMAND



phere than carbon dioxide. But agriculture is also potentially part of the solution.

The major effort on a global basis to address the problem of greenhouse gases and global warming has been the United Nation's Kyoto Protocol, which was signed by 87 countries in 1997. So far, only 12 nations have ratified it. It places the onus on 38 developed countries, referred to as the Annex B countries, to reduce greenhouse gas emissions within the next ten years. Many developing countries are not included in the list of Annex B countries. For example, China, India and South Korea together account for about 19% of the world's carbon dioxide emissions, but they are exempt from the regulations. The Annex B nations are allowed three flexibility mechanisms as incentives to meet the reduced emissions. These are 1) the "clean development mechanisms" which allows them to sponsor emission reduction projects in developing nations and claim the reduced emissions; 2) the "international emissions trading system" which allows the B nations to buy and sell allowances to emit greenhouse gases; and 3) the "joint implementation" plan which allows transfer of credits associated with projects that reduce emissions.

The third alternative is the one that relates directly to agriculture and focuses on carbon as a commodity. Crops, as well as trees and other plants, collect carbon dioxide from the air. But the carbon escapes when plants are exposed to oxygen and decompose. Decaying crops left in the soil however, store or sequester carbon. There are a number of questions that arise here. These include: 1) How much carbon can be sequestered by agriculture? This is often referred to as the how big is the carbon sink in agriculture; 2) Can increased carbon sequestering offset the use of fossil

fuels in agriculture in terms of the impact on global warming? 3) What is the cost to sequester carbon? and, 4) How can the level of carbon be measured?

Before a market for carbon can be established, acceptable levels and easy, accurate ways to measure the levels need to be established. In other words, the supply side variables need to be established before the demand side can be brought into the equation to establish a carbon market. When the supply and demand variables are understood and quantified, it will provide a guide to farmers on the potential that carbon has as a commodity for them, and what the monetary incentives are to increase carbon levels in their soils. In the meantime, increasing carbon levels probably makes sense agronomically by increasing productivity and conserving soil. To get one farmer's experience, see the *Market Journal* interview with David Dukes from Bedford, Iowa, which is also available on the rural routes website.

In the last legislative session, a bill was passed in Nebraska which requires an assessment be made of the carbon sequestration potential. The goal is to provide a means for landowners to estimate the carbon sequestration potential and quantify the carbon sequestration associated with agricultural and land management practices in the state.

Sources:

- Dan Walters, "Soil Carbon Sequestration: An Overview of Global Warming and Agriculture." A set of presentation slides.
- Natural Resource Conservation Service, USDA. *Growing Carbon: A New Crop That Helps Agricultural Producers and the Climate Too*. Brochure published by USDA.
- Agriculture Canada. *Agricultural Soil Carbon Sinks and the Kyoto Protocol: A Practical Opportunity for the Environment*. Brochure published by Agriculture Canada.

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