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Reducing the Pace of Global Warming: Can the Environmental Buyer Compete with the Climate Exchange in Buying Carbon Offsets?

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CORNHUSKER ECONOMICS

Reducing the Pace of Global Warming: Can the Environmental Buyer Compete with the Climate Exchange in Buying Carbon Offsets?

Market Report	Yr Ago	4 Wks Ago	8/18/06
<u>Livestock and Products,</u>			
<u>Weekly Average</u>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight	\$78.96	\$80.17	\$86.40
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb	133.76	135.39	129.09
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb	114.67	119.95	119.34
Choice Boxed Beef, 600-750 lb. Carcass	134.41	144.12	150.87
Western Corn Belt Base Hog Price Carcass, Negotiated	70.41	67.89	75.58
Feeder Pigs, National Direct 45 lbs, FOB	49.36	49.27	50.12
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean	73.88	73.77	75.89
Slaughter Lambs, Ch. & Pr., 90-160 lbs., Shorn, Midwest	91.00	100.00	92.00
National Carcass Lamb Cutout, FOB	243.73	229.50	224.49
<u>Crops,</u>			
<u>Daily Spot Prices</u>			
Wheat, No. 1, H.W. Imperial, bu	3.14	4.61	4.01
Corn, No. 2, Yellow Omaha, bu	1.65	2.06	1.95
Soybeans, No. 1, Yellow Omaha, bu	5.82	5.46	5.01
Grain Sorghum, No. 2, Yellow Columbus, cwt	2.79	3.16	2.86
Oats, No. 2, Heavy Minneapolis, MN , bu	1.77	2.18	2.02
<u>Hay</u>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton	117.50	135.00	135.00
Alfalfa, Large Rounds, Good Platte Valley, ton	37.50	87.50	87.50
Grass Hay, Large Rounds, Good Northeast Nebraska, ton	52.50	82.50	82.50
* No market.			

The term “global warming” was coined in 1896 by the Swedish chemist Svante August Arrhenius. He observed that as the consumption of hydrocarbon fuels and industrial production had grown over the years, the atmospheric concentration of greenhouse gasses (GHG), mainly carbon dioxide (CO₂, which accounts for 80 percent of these gasses), began to correlate with a global increase in temperature. There is now general agreement in the scientific community that it is the burning of these carbon containing fuels that is causing global warming. There are two means to combat this warming: first, to reduce CO₂ emissions; second, to offset emissions by sequestering (i.e. capturing and storing) carbon in such places as old mines, oceans, forests and agricultural land.

International cooperation on global warming was formally started by the Intergovernmental Panel for Climate Change in 1997 through the Kyoto Protocol. The emissions trading part of the Protocol was modeled after the 1990 amendments to the U.S. Clean Air Act and what had been learned in developing the U.S. sulfur emissions market. Emission caps are a key part of such markets and countries who sign the Protocol have to reduce their GHG emissions 5 percent below their 1990 level by the year 2012. The Protocol officially came into force in February 2005. Arguably the most interesting feature is that the Protocol established the framework for a global emissions trading system where major corporations and other entities can trade in emissions allowances, i.e. buy allowances to cover emissions or sell allowances if the company can find ways to reduce emissions.

Emissions can also be covered by buying offsets, e.g. buying an offset from a farmer who agrees to sequester and store extra carbon in farmland.

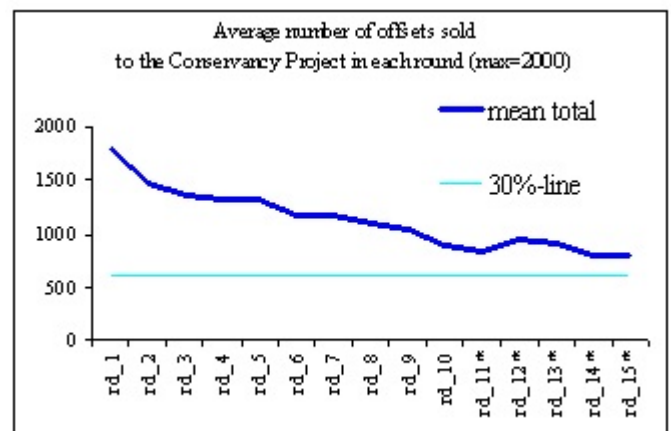
Farmers can choose to sequester more carbon in farmland by using some form of conservation tillage. A three year study explored farmer awareness of global warming, determined the type of tillage farmers are using, and explored beliefs held by farmers regarding carbon sequestration policies and efforts. This survey was sent out to 4,200 farm operators in seven counties in Nebraska, producing 770-usable responses. We found that most farmers in our sample (about 80 percent) are already using tillage practices which lead to higher carbon sequestration. Surprisingly, in terms of usual economic assumptions, the analytical results showed that carbon sequestration is not only a decision of a farm operator, but it is also affected by the influence of family members, significant others, relatives, friends and members of the business community. This is to say, the tendency to sequester more carbon on a farm is highly reinforced by public opinion. This supports the hope that even without the institutions arising out of Kyoto (i.e. the U.S. is not a partner in Kyoto), farmers will implement practices to sequester carbon.

Another interesting question which came up during the work on this project was whether farmers who sequester carbon, given the opportunity, would sell their offsets to corporate businesses or would these farmers be willing to donate or sell offsets to an environmental agency or group? The problem with selling the offsets to the environmental entity is the lower price and profit from the sale.

With this question in mind we developed an experiment which basically showed that yes, the environmental buyers similar to the Carbfund and National Network Ceres (entities who are currently active environmental buyers in the U.S.) could be strong players on the carbon offset market. Could such entities compete effectively with the Chicago Climate Exchange, who represents mainly large corporate buyers of offsets from farmers in Iowa, Kansas and Nebraska? During the experiment, conducted with students and non-student residents of Lincoln, we asked participants to make real decisions regarding selling their imaginary offsets to two buyers during several rounds. Participants earned less if they sold to the environmental agency (we named it the *Conservancy Project*) and more if they sold it to the exchange represented by large corporations (we named it the *Viking Climate Exchange*). They could

earn as much as \$30 for less than one hour of playing the game if they sold all of their offsets to the Exchange.

Most of the participants were willing to earn less money by selling at least part of their offsets to the *Conservancy Project* rather than to the *Climate Exchange*. Participants played this game with a computer, for several rounds. The choice became more difficult as the game proceeded. In the first round both buyers were paid \$1 per metric ton of offset; by round 15 the *Climate Exchange* paid \$8, whereas the *Conservancy Project* paid only \$3. Some were given up to 20 rounds; with the number of rounds set randomly. The decision making process was so intense that one person told the experimenter that she felt she would sell her soul if she sold all her offsets to the *Climate Exchange*. The graph shows that the average number of offsets sold to the *Conservancy Project* were above 30 percent, even for the last rounds.



This result is very encouraging. Basically, participants were giving up about 12 percent of their potential earnings of \$30 to show that environmental concerns matter for them. Moreover, the experiment demonstrated that the environmental entities can buy offsets for prices lower than the climate exchanges, and a lot of individuals will still be willing to sell the offsets to them. We expect most farmers would do the same – being willing to do the “right thing” and not just “maximize profits” as traditional economics would predict.

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