

Agriculture Outlook (2006- 2010)

Next steps in promoting Economic and Environmental Sustainability

Introduction

Canadian agriculture is an important part of an integrated and complex supply chain that continues to face challenges such as technological change, environmental issues, globalization, changing consumer demands and commodity prices, increasing input prices, an appreciating CDN dollar and higher energy prices. Declining commodity prices coupled with increasing production costs have created a cost-price squeeze and a continuous decline in realized net farm income.

Manitoba's contribution to greenhouse gas (GHG) emissions is about 3% of Canada's total emissions. In Manitoba, the Transportation sector and Agriculture account for about 69% of the province's total GHG emissions. In the agriculture sector, the main contributors to GHG emissions come from nitrogen fertilizer use (N_2O) and livestock (CH_4).

When developing policies for the agriculture and agri-food system, a clear understanding of the sector is pertinent. The following outlook provides information about the changing structure of the sector and the challenges and opportunities it faces. Promoting economical sustainability in agriculture is beneficial primarily to rural Manitoba; ensuring environmental sustainability in terms of clean air and water, healthy soil and biodiversity is beneficial to all Manitobans.

Current Status and Projections:

Production Trends

- Grains and Oilseeds:
 - A shift to lower N-use crops or legumes (e.g. soybeans, peas, etc.) to lower N input costs
 - Increase in biofuel crops (e.g. canola and cereals) to capitalize on new market opportunities (influence overall crop rotation).
 - Increased market opportunities for value-added, niche market development of nutraceutical products
 - Increase in winter cereals, forage crops or other perennial crops (e.g. saskatoons, agro-forestry, etc.) on less productive lands, particularly if demand from livestock sector increases or new end uses for forages are developed
 - Changing climate may result in new or more frequent pest problems
- Livestock:
 - Increase in forage production and manure application in closer proximity to livestock facilities due to increased fuel and transportation costs
 - Using livestock rather than machines to harvest forage (i.e. extending the grazing season)
 - Increased stress from heat and pests may reduce weight gains/milk production; however, warmer winters may reduce the amount of winter feed required
 - Increase in manure treatments, such as composting, anaerobic digestion, solid/liquid separation, etc.
 - Changing climate may result in new or more frequent pest problems

Input Use Trends

- Input Costs:
 - COP for various fossil fuel-related inputs (fertilizer, fuel) increasing @ 3% per year, whereas increase in income (due to increases in price, productivity) increasing @ 1% per year, resulting in shrinking margins
 - Sources of energy consumption on farms in order of quantity:
N fertilizer > liquid fuel > machinery > P fertilizer > pesticides
 - N fertilizer alone accounts for up to 60% of energy use and 30-40% of variable cost in Manitoba grain production and is expected to increase
- Farm Energy Use Efficiency:

- Including legumes in crop rotations and using animal manures are the most effective ways to reduce producer reliance on inorganic N fertilizer.
- Increase in on-farm energy production (e.g. wind, ethanol, bio-diesel, geothermal, solar, biomass burning, etc.) as fuel costs rise
- Promote energy conservation through reduced tillage systems (potential to reduce on-farm fuel costs up to 60%)

Environmental Uncertainties

- **Climate Change and Water Supply:** More frequent extreme weather events including drought, summer rainfall, flooding
 - Drought may cause reduced crop yields and increased crop failures, more soil erosion by wind and expansion of irrigated acres due to insufficient growing season precipitation
 - Summer rainfall/flooding may cause reduced crop yields and increased crop failures, more soil erosion by water and denitrification of N fertilizer producing N₂O emissions during flooding (e.g. in 2005, 30% of farmland in Manitoba either flooded or too wet to seed).
 - Water quality and quantity effects from agricultural activity must result in minimal impact to surface and ground water quality through sound nutrient management and corresponding water retention
 - A water management program that retains surplus water to prevent erosion, captures spring runoff and allows for groundwater recharge, but also allows for removal of excess water from agricultural lands to improve field access, enhance crop growth and limit the production of N₂O, is necessary.
- **Crop Insurance and Subsidy costs 2001- 2006** citing flooding and drought years
 - Historic causes of crop loss (1966-67 to 2003-04): 36% drought and heat; 36% excess moisture; 11% frost; 8% hail; 3% disease; 6% other (MCIC 2004-05 Annual Report)
 - Approx. production insurance indemnities paid: \$97 M (2001); \$76 M (2002); \$57 M (2003); \$198 M (2004); \$295 M (2005).

Emerging Opportunities to Adapt to Economic and Environmental Challenges

- **Biofuels**
 - Increased ethanol production from 10 M to 130 M litres per year by 2010
 - Increased bio-diesel production from 10 M to 85 M litres per year by 2010
- **Transportation**
 - Manure sharing among crop and livestock operators (enterprise integration)
 - Increasing the role of railways in Manitoba's transportation of goods. On average, railroads are three times more fuel and GHG emissions efficient than trucks.
- **Green Credits / Ecological Goods and Services**
 - Increase production of deep-rooted perennial crops because they sequester 20% more carbon in the subsoil than annual crops
 - Provide producer payments to cover property taxes of marginal lands converted to, and kept in, permanent cover
 - Emerging technologies to quantify emissions reductions, yield production and associated costs/savings to lead to the development of green credits
- **Market opportunities for lower input and/or organic crops**
 - Amount of cropland in reduced- or zero-tillage systems continues to increase from 1990's
 - Markets for pesticide-free production or organically-grown production is increasing nationally by approximately 20% per year
- **Market opportunities for grass fed livestock**
 - Less energy required for swath grazing and improved pasture management, resulting in lower GHG emissions and lower COP than livestock raised in feedlots
 - Potential health benefits from grass fed livestock
 - More appropriate utilization of marginal lands than annual cropping

Watch out for carbon credit contracts

BY GERALD PILGER

Garry Wagner of Lancer, Sask., was one of the first Canadian grain farmers to sell carbon credits he accumulated by zero-tilling his farm. He's already received 98¢/ac. and expects to receive a total of about \$6/ac. over the next 4 years simply for doing exactly what he has been doing — no-till.

"This is great stuff!" says Garry. "It's new found money. I was zero-tilling anyway so I thought I might as well get the money. It's not a lot of money but it is a start and carbon prices may go up as more companies become aware they can buy the carbon credits from farmers practicing zero-tillage."

Garry sold his credits to C-Green Aggregators Ltd. of Regina. Jeff Gross is a partner in this company, and explained an offset aggregator is a registered business that administers and trades carbon credits on behalf of individual producers.

C-Green accumulates the carbon credits from several growers and then sells the credits in a block on the Chicago Climate Exchange (CCX). The CCX operates similarly to the stock market. Corpora-

tions that want to offset their greenhouse gas production can bid on the carbon reductions and removals farmers or other companies have achieved. In North America, where limiting greenhouse gas is voluntary, the value of offset carbon credits is about \$4/tonne.

This converts to roughly \$0.60 to \$1.20/ac. for soils in Saskatchewan (depending on soil type and existing organic matter in the soil). In Europe some countries have passed laws that limit the production of greenhouse gas and companies have to reduce those gases. Offset carbon credits have traded for over \$50/tonne in the past.

Two practices make C-Green unique as an aggregator: C-Green is the only company in Canada that's actively buying soil-based carbon credits, and it was also selling credits based on backdated farming practices. Until Aug. 3, 2006, Saskatchewan zero-tillers could sell carbon credits based on their 2003-2006 farming practices. That deal is now over, but Jeff is working on a new program that still might let you sell credits based on backdated farming practices.

According to Jeff, the chance to sell

backdated carbon credits removes nearly all the risk of signing a carbon trade agreement. "After all, farmers will have already met the contract requirements in 2003, 2004 and 2005. As long as they don't till the land or burn or bale the straw in 2006 they will have met the contract. And even if a grower is forced to till the land or remove the straw this year, that contract only requires a grower to pay back the money he received for selling the credits for that piece of land. He does not have to pay a penalty."

Farmers in Saskatchewan were quite eager to sign C-Green contracts. By July 26, 2006, Jeff reported over one million acres were under contract.

GRAIN FARMERS, BE CAREFUL

Len Eddy, managing director with AgCert Canada, cautions farmers to fully understand the commitment you make before you sign any offset carbon contract. AgCert is an international company and has been an aggregator of carbon credits for over 5 years in Canada. Last winter AgCert bought 100,000 tonnes of carbon credits on behalf of EPCOR and

they have signed contracts with 350 pork producers to obtain these credits.

AgCert targeted pork producers because to sell carbon credits, the actual reduction in carbon must be proven achievable, measurable and recognized by a regulating body. There has been considerable study of greenhouse gas production in intensive livestock operations (ILO) and there are proven management practices that reduce the amount of carbon released into the environment from an ILO. That's why AgCert relies on intensive swine production facilities in Canada and elsewhere in the world to supply the credits they require.

Len is cautious when it comes to credits generated through minimum-till farming practices. He says there has been limited research into the greenhouse gas reduction possible by zero-tillage. At this time there are no definitive reduction numbers that are recognized by all traders. So Len feels farmers are taking a large risk by selling credits based on zero-tillage since it becomes the seller's responsibility to meet the level of greenhouse gas reduction they have sold.

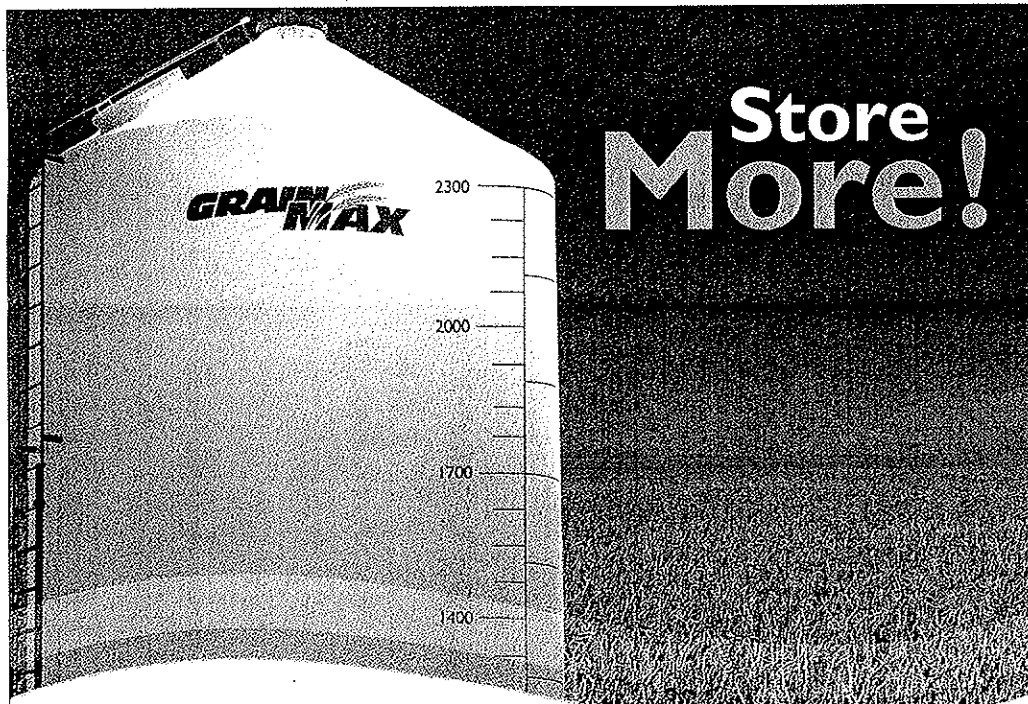
This may be difficult when there's no agreed-upon, science-based, verifiable system for determining how much carbon is in the baseline soil and there's no official trading protocol. Yet, farmers are now being approached by aggregators who want to get farmers to sell carbon credits before there are answers to these questions or even a procedure for recognizing and verifying trades.

Len says that signing a contract that calls for removing or sequestering carbon is even riskier than contracts for reducing carbon production. Carbon can be sequestered in soils but that carbon is released if the land is ever tilled. So if a farmer signs a contract in which he agrees to remove or sequester carbon he may be limiting his ability to ever till the land. Len says it's very important that a farmer reads and understands the entire offset carbon credit contract before signing it. "This is a case of seller beware," says Len. "Make sure you know what you're selling, that you can actually achieve the reductions or removals you're promising to provide, that you understand the period of time for which you are to provide the reduction or removal, and that you understand the penalties if you cannot meet the contract."

"Internationally there is some trading of carbon credits but in Canada, there is actually very little trading. This is because there are no Canadian regulations governing trading and there is no Canadian policy on how to handle Kyoto or the trading market. Until this market is defined in Canada there will be risks for anyone signing a trading contract," claims Len.

This point was echoed by Ryan Sparrow, press secretary for Environment Minister Rona Ambrose. When asked about carbon credit trading, Ryan said: "This government does not support carbon trading at this time and there are no regulations in Canada governing trading."

Still, Jeff insists farmers shouldn't be afraid to sign a C-Green contract. "The reductions and removals farmers are selling are science-based and come from years of work by Dr. Con Campbell at the Swift Current Research station. Carbon trading is a new and emerging market. Don't lis-



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ten to the rumors being spread by so called experts. There are no experts in this new area."

Saskatchewan Soil Conservation Association had the Centre for Studies in Agriculture, Law, and the Environment Fellow Mel Annand review the C-Green contract. While Mel felt the contract likely left a producer with no long-term liability, he also indicated the contract was unclear and left many important details unanswered. You can read Mel's comments at <http://csle.usask.ca/PDFDocuments/eNoteOpinionC.Green.pdf>

At best, farmers selling carbon credits now will receive a relatively small cash payment for adopting management practices that limit the amount of carbon dioxide emitted from their operation. The worst-case scenario could result in a farmer being forever liable for part of a large company's pollution somewhere in the world. A farmer could even lose the ability to change his farming practices in the future. This could result in a decrease in the value of both his land and his operation.

If you are approached by an aggregator looking to buy carbon credits, make sure you read the fine print carefully. Understand fully what your responsibilities and liabilities are, and the time period for the contract and the time you're responsible for the carbon you have offset. Realize the current buyers are primarily agents of large final emitters (LFE) that are likely buying offsets as an insurance against implementation of Kyoto and not because they are interested in protecting the environment. LFEs will be as comfortable buying the offsets from India or South America as they are buying offsets from Canadian farmers.

Most importantly, realize a sale at this time is strictly speculative. If Kyoto falls off the rails, the money offered now is likely the most you will see. If, however, our government follows through on Kyoto, the huge need for offsets will likely establish a price near the \$15/tonne government-imposed ceiling. Or, there's even the chance the ceiling could be removed and who knows how much offsets will be worth. Europe has already paid farmers up to \$58/tonne for offsets.

FOS's VIEW

Albert Jacobs, geologist and a founding member of Friends of Science (FOS), claims the only ones who benefit from carbon credit trading are the traders. He also says carbon credit trading does not reduce global warming.

FOS questions the value of carbon credits, and disputes the theory greenhouse gases are causing global warming. FOS does not believe that carbon dioxide is the main culprit. "If you compare the concentration of carbon dioxide in the atmosphere with temperature readings from 1940-1975 you'll find that carbon dioxide was rapidly increasing when global temperatures were falling," explains Albert. "In fact, in the early '70s the public was being warned of global cooling and the possibility of another ice age."

Albert says FOS believes atmospheric carbon dioxide concentrations are a result of global warming and not the cause of it. Instead, FOS believes solar radiation and cosmic radiation are more likely the cause of long-term changes in our climate. "People confuse weather with climate. Weather is what we experience daily by day and as we all know it's constantly changing.

"Climate refers to the long-

“Until this market is defined in Canada there will be risks for anyone signing a trading contract.”

term conditions — over 30 or more years. Climate also changes. It follows long-term cycles which closely match solar output. We have scientifically identified 80-year, 200-year and 1,000-year solar cycles. These warm and cool cycles enabled the Vikings to farm in Greenland 1,000 years ago during what is called the Medieval Warm Period and the Little Ice Age.

Furthermore, the methodology used in developing the computer model has been proven to be flawed and statistically unreliable. Two Canadians are credited with disproving the hockey stick graph and bringing into question the entire premise Kyoto was built upon.

Dr. Ross McKittrick, an associate professor in the Department of Economics at the University of Guelph, and mathematician Steve McIntyre from Toronto showed the hockey stick graph was incorrect. Then the United States National Academy of Sciences (NAS) investigated the assumptions and computer model the global warming theory was based upon. On July 6, 2006, NAS released a 155-page report that verified the work of McKittrick and McIntyre and which condemned the hockey stick graph and many aspects of global warming.

Albert says the earth is presently warming at 0.6 to 0.8°C every 100 years. This warming would occur regardless of human actions and producing less carbon dioxide will not stop this long-term change in the climate.

FOS believes bad science and politics are responsible for the myth of man-made global warming. An example of bad science is the "hockey stick graph" which claimed the earth had a relatively stable global temperature for a thousand years and then there has

been a rapid rise in the temperature for the last 100 years. This computer model generated graph ignored both the Medieval Warm Period and the Little Ice Age.

The house of cards environmentalists and politicians built around global warming is starting to collapse. There's now a push by scientists in New Zealand for a Royal Commission into the science of climate change before any further action is taken. Canada has stepped back from its commitment to Kyoto. In Europe, many countries have set greenhouse gas emission limits well above the target levels.

Only Britain is sticking to the initial Kyoto targets. Spain has already announced it cannot afford to meet Kyoto. As a result, the global carbon credit trading market has collapsed in Europe and prices for offset credits are tumbling. Britain finds itself alone in trying to reduce carbon levels and is spending billions of euros to meet emission levels no one else is trying to reach.

What does this mean for western Canadian farmers? If unregulated carbon credit trading will do little to reduce global warming prices for offset carbon credits may drop as countries back away from Kyoto. Most importantly, farmers who sign an offset contract will have committed their farm to management practices that they may not be able to change even though credits are not the solution to any problem.

Gerald Pilger farms in Ohaton, Alta.

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