Carbon

Ag Lenders Conference
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Grand Forks, Minot, Bismarck, Fargo
David Ripplinger

Things are Getting Weird

Consumers attitudes and behavior and political priorities are changing in ways that will dramatically impact US agriculture.
The customer is always right, so is the government regulator

Climate

Concerns about climate change have never been greater.
The recently released IPCC report stated that drastic action needs to be made immediately to avoid disaster.

Greenhouse Gas Equivalents

Different molecules impact the atmosphere and the trapping of heat differently.

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<td>Carbon dioxide, fossil (CO₂)</td>
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<td>Methane, fossil (CH₄)</td>
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<td>Methane, biogenic (CH₄a)</td>
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Carbon

Use Carbon – Carbon Dioxide – Greenhouse Gases interchangeably

$\text{CO}_2$ is the most prevalent GHG, but certainly not the only one

Nitrous Oxide – fertilizer

Methane - livestock

Voluntary Carbon Markets

Voluntary carbon markets in the form of carbon offsets sold by farmers have received considerable attention in the last year.

Corporate Carbon Reduction Strategies

Nested in broader Environmental, Social, and Corporate Governance (ESG) efforts
- SEC reporting
- Black Rock Requirements
- Carbon Reduction (Net Zero) Statements

Corporate Carbon Reduction Strategies

Types of Reduction
- Scope 1: carbon emissions within the business
- Scope 2: carbon emissions from purchased power, steam, heat, or cooling
- Scope 3: carbon emissions from business’ supply chain

Offsets – carbon reductions used to compensate emissions that occur elsewhere

Why Agriculture?

Agriculture is a large source and sink of carbon. We have by far largest interactions with the environment. Crop and livestock production. It has received considerable attention recently as a source of carbon offsets for corporate clients.
Carbon Offsets

- In agriculture have taken the form of long-term agreements with farmers to adopt and maintain use of carbon emission reducing or capturing practices
- Alternative tillage
- Cover crops
- Up to ten years in length, $5 or more per acre per year
- Typically only available to new or recent adopters *(Additionality)*

- Often bundled with other services
- May include clawback

No-till/Cover Crops

Alternative tillage and cover crops are the two dominant practices being incentivized with carbon offset programs.

Decision to adopt alternative tillage or cover crops is not an easy one.
- Non-financial benefits
tough to price, impossible to finance?
- Costs are upfront, benefits are backloaded
- Benefits are difficult to forecast/measure precisely

Considerations

There are a few resources from Extension and others covering carbon offset contract considerations.
Almost entirely based on traditional contracting concerns:
- Counter-party risk
- Understand the terms – duration, measurement/validation, damages
- Understand the new practice
They’re missing the big picture

What is the value of carbon?

Decision is being framed as contracting for practice with the carbon being valued at zero.

What liabilities do farmers and ranchers have?

Anhydrous ammonia has a carbon footprint of about 2.87 metric tons per ton.

This would equate to a carbon price of $57/ton of NH3, if carbon is $20/MT. If carbon is $200/MT, the carbon price is $570/ton of NH3.

If anhydrous ammonia is $800/ton, then the tax would be a 7.1% or 71% ad valorem tax!

“Ultimately, what we see is (only) 5% to 10% of a credit actually goes to the farmer and rancher who created the credit because of all of what I will call the middlemen.”

Debbie Reed
Ecosystem Services Markets Consortium
Regulation-based Carbon Markets

Result from government policy.

**California Carbon Credits** – resulting from California’s low-carbon fuel standard, a cap-and-trade system, intended to reduce carbon emissions from transportation fuels.

**Renewable Identification Numbers (RINS)** – generated as part of the federal Renewable Fuel Standard that mandates biofuel use.

**Renewable Energy Credits (RECs)** – used by the power industry to manage emissions.

There is discussion of development of new national carbon market standards and programs in agriculture.

California’s low-carbon fuel standard, which incentivizes low-carbon fuels and has led to investments to reduce the carbon footprint of fuels made at existing refineries and the development of a variety of new projects.
Animal-related emissions

Methane degrades quickly in the atmosphere.

As animal weights increase, the carbon footprint per pound of meat declines.

Remember additionality/baseline. Shouldn’t these declines be credited to the livestock industry?

Opportunity 1. Renewable Natural Gas

California’s Low-Carbon Fuel Standard allows renewable natural gas (RNG) added anywhere into the pipeline network that reaches California to be eligible for carbon credits.

This has motivated the investment of BILLIONS of dollars into the dairy and swine industry to install anaerobic digestors that produce RNG from manure.

The decision for dairy and swine producers is usually easy because of existing manure management infrastructure (eg slotted floors). Not feasible for dry lot cattle as soil disrupts digestor efficiency.

Opportunity 2. Grazing/Integrated Livestock Management

Grazing results in the capture of CO₂ in soils.

Depending on the practice this could be as much as 286 pounds per acre per year (Follett and Reed 2010).

Solution 1. Feed Additives

Kebreab and Roque 2021 found that feeding 3 ounces of seaweed reduced beef-methane emissions by 82%.
Carbon and Consumer Choice

Canadian Carbon Tax

There are federal and provincial taxes on carbon emissions – including natural gas which is used for grain drying. Receipts like those on the right are common. A carbon tax has been discussed as part of the recent $3.5 trillion infrastructure bill.

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