

June 2016 Offsets Update

Summary

- Conservation Cropping still the protocol of use to Alberta farmers looking at the carbon market, but other protocols are getting closer to becoming operational. The carbon price has increased by a quarter from last year with another increase due in 2017.

Conservation Cropping

Overview

Conservation Cropping replaced the old Tillage protocol in the 2012-13 season. It is similar to that protocol as it is based on direct or two pass seeding building up organic matter, and thereby storing atmospheric carbon in the soil. The carbon yield is fixed at 0.11 tonnes/acre in the Parkland area and 0.06 in the Dry Prairie. This works out to around \$1.40 to \$0.75/acre to the farmer.

Soil disturbance has to stay under certain specifications, less for two pass than single pass systems. Default right to the offset is to the landowner, but most sign off to the farmer if renting the land out. Used on a wide scale on cropland in Alberta. It is set to expire at the end of 2021 but like all protocols can be reviewed at any time.

Update

Generally working well, the main carbon protocol of use to farmers at present. Income has increased somewhat and will increase again next year.

NERP (Agricultural Nitrous Oxide Emissions Reduction)

Overview

This protocol is based on improving nitrogen fertilizer efficiency, putting more in the crop and less in the air as nitrous oxide, a potent greenhouse gas. It uses the 4R system: right source, right rate, right time, and right place. The carbon harvest is variable, depending on crop yield versus nitrogen applied, the degree of nitrogen management, and the improvement over a three year record of previous yields. Fertilizer savings or yield advantages may result in addition to the carbon payment, plus the bonus of accurate agronomic records. Crops do not need to be direct seeded, but if so Conservation Cropping carbon payments may also be collected off the same field. This protocol has been approved for some years but has been difficult to use, largely because of the complexity and the measurements and proofs required.

Update

This protocol was recently revised in 2015, with some credits anticipated from that crop year. It may become more widely operational in 2016. One of the key challenges has been getting accurate and provable, yet practical and affordable yield and fertilizer use measurements.

Beef: Feedlot (Fed Cattle)

Overview

Aimed at beef cattle, this protocol rewards shortening the time in the feedlot by improving efficiency. Similar to the NERP protocol the carbon yield is variable, depending on the improvement over a three year baseline. Feed savings should result from the earlier harvest dates, in addition to the income from the carbon payment. Available for a few years, the amount of records and practical methods of getting and proving them has been the main challenge.

Update

This protocol was revised this February to make it easier to use and to include the feeding of edible oils. It is hoped to become operational this year.

Beef: Genetics (Residual Feed Intake or RFI)

Overview

Cattle bred for more efficient feed use, thus reducing methane and nitrous oxide. Carbon yield is variable. Feed savings appear to be the main benefit so far.

Update

Two research trials at Lacombe and Brooks are underway.

Beef: Lifecycle (Reduced Age at Harvest)

Overview

This protocol rewards shortening the entire lifespan of the cattle, from birth to slaughter. Also around for a few years, the amount of records and practical methods of getting and proving them has been a challenge, plus the tendency of backgrounding time to vary depending on market conditions, feed availability, etc.

Update

No projects yet.

Dairy

Overview

More efficient production of milk from dairy cattle, which reduces methane and nitrous oxide emissions. A market advantage from reducing the carbon footprint of milk is expected to be a benefit, plus feed savings and the carbon income. Another complex protocol, it would seem to be well matched to the highly managed dairy industry, but getting it operational has been a challenge.

Update

This protocol is a work in progress. One trial was completed on 50 farms in Alberta with Alberta Milk and the Atlantic Dairy and Forage institute, and a case study was completed on record keeping technologies.

Wind

Overview

Wind generated electricity replacing coal or natural gas fired power. Used on a wide scale, this is the second largest generator of offset carbon tonnes after the Tillage/Conservation Cropping protocols. The carbon yield is currently fixed at 0.59 tonnes of carbon for every megawatt/hr generated, under a tenth of the income of the power generated. Relatively easier to measure and prove.

Update

Carries on after changing from 0.65 to 0.59 tonnes carbon per Mw/h in March of 2015.

Biogas (Anaerobic Decomposition of Agricultural Materials)

Overview

Biologically produced gas such as methane from manure is used to create heat or electricity that substitutes for coal or gas fired power. Two feedlot projects have posted credits.

Update

Flagged for revision, possibly minor. Can use if special permission is granted

Biomass (Energy Generation from the Combustion of Biomass Waste)

Overview

Combustion of biomass material (wood, straw, etc) to replace energy from fossil fuels

Update

Revised, making it easier to claim credits for using straw as fuel. No agricultural projects yet, has been used in forestry.

Energy Efficiency (Projects/Commercial and Institutional Buildings)

Overview

Carbon offsets for improvements in energy use. Energy Efficiency – Projects has been adopted by a number of industries and the City of Calgary. Research has been done to see if upgrades to barns and other farm buildings (furnaces, lights, etc) would qualify. Difficulties have been with measurements and proofs, especially as improvement has to be shown from a recorded baseline.

Update

Both protocols have not been workable so far for farmers.

Micro-generation (Distributed Renewable Energy Generation)

Overview

Carbon credits for small scale solar and wind power. This protocol is relatively new and has not been used yet. The power generation has to be small scale (under one megawatt) and connected to the grid. Carbon would be credited at 0.64 kg for each kWh generated.

Update

No projects yet.

Trees: Standing (Afforestation Conservation)

Overview

Carbon dioxide from the air is stored in trees. The current draft is for planted trees only, with the land not being in forest for at least 20 years previously, and it has to be locked into trees for at least 60 years. The trees could have been planted in 2002 or later, but the carbon would be only claimable from the start of the carbon project.

Update

Was undergoing a technical review but development has been stopped.

Trees: Harvest (Afforestation Harvest)

Overview

Carbon dioxide is also stored in trees however the trees could be harvested and the carbon would be considered to be locked in the harvested product, if the end use is lumber. Pulp or paper is not allowed as an end use as they are considered to result in methane being released in landfills.

Update

Development has been stopped.

Forages (Conversion to Perennial Forages)

Overview

Converting cropped land to perennial forages, which results in increasing the carbon dioxide stored in the soil as organic matter. Some form of locking the land into forages for a time may be necessary.

Update

Progress has been difficult, and the offset value small. Development has been stopped.

Wetlands

Overview

Incentive for wetlands

Update

Development of the wetland *carbon* protocol has been stopped, however that of the wetland *conservation* protocol is pushing ahead and may be of use soon. A new and different environmental market.

[Paul Jungnitsch](#), Carbon Offset Agrologist with Alberta Agriculture Forestry, last updated June 2016

For more information contact Paul Jungnitsch at 780-427-3801, the Ag Info Centre at 310-FARM (3276), or check the main Alberta Agriculture and Forestry Carbon Offset webpage with information sheets on the individual agricultural protocols:

<http://www.agriculture.alberta.ca/agcarbonoffsets>

The information contained here is the interpretation of Alberta Agriculture and Forestry. Alberta's carbon offset system is managed by Alberta Environment and Parks. Offset projects must comply with the most recent quantification protocols and program requirements published by Environment and Parks at:

<http://aep.alberta.ca/climate-change/guidelines-legislation/specified-gas-emitters-regulation/offset-credit-system-protocols.aspx>

