

December 2018 Offsets Update

Summary

- Conservation Cropping is still the protocol of use to Alberta farmers looking at the carbon market, but make sure to pre register by May 1st.

Conservation Cropping

Overview

Conservation Cropping replaced the old Tillage protocol in the 2012-13 season. It is similar 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) \$1.73 to \$0.87/acre to the farmer at a carbon price of \$23.00 and a 2/3 to 1/3 farmer/aggregator split.

Soil disturbance has to stay under certain specifications, less for two pass than for 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 Dec 31, 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. A new requirement for sign up of potential quarter sections in an aggregation project by May 1st of the claiming year was introduced in 2018.

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 principle: right source, right rate, right time, and right place. It looks like the carbon 'harvest' would be variable, depending on nitrogen management. Fertilizer savings or yield advantages may result in addition to the carbon payment. Crops do not need to be direct seeded, but if so Conservation Cropping carbon payments may also be collected off the same field, 'stacking' the income from both. This protocol has been approved for some years but has never become operational, largely because of the complexity and the measurements/proofs required.

Update

Work is still being done to try and make the protocol operational.

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

Recently operational and has been used by some feedlots.

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 harvest. 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 to date.

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

No offsets yet. 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. Record keeping is relatively easier to measure and prove than other protocols.

Update

Carries on after changing from 0.65 to 0.59 tonnes of 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 substitute for coal or gas fired power.

Update

In use by two biogas plants that use manure and other agricultural materials. To be combined with a wastewater protocol into one 'Biogas' protocol.

Biomass (Energy Generation from the Combustion of Biomass Waste)

Overview

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

Update

No agricultural projects yet, has been used in forestry.

Energy Efficiency (Energy Efficiency Projects)

Overview

Carbon offsets for improvements in energy use. 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

First offsets this year.

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 for now. Conservation offsets may offer another source of income in the future.

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 was thought to have been necessary.

Update

Progress has been difficult, and the offset value small. Development has been stopped. ALUS programs in certain Alberta counties offer other incentives for forages, and other programs exist or are in development:

http://www.agpartners.ca/aepa/Portals/0/160413_Wetland%20Incentives%20for%20Agriculture.pdf

Wetlands

Overview

Incentive for wetlands

Update

Protocol has been rejected due to variation in the science as well as legislated wetland protection in the Wetland Policy. However other wetland incentives are available or in development. See 'Wetland Incentives for Agriculture'

http://www.agpartners.ca/aepa/Portals/0/160413_Wetland%20Incentives%20for%20Agriculture.pdf

[Paul Jungnitsch](#), Carbon Offset Agrologist with Alberta Agriculture and Forestry, last updated November 2018

For more information contact the Ag Info Centre at 310-FARM (3276), Paul Jungnitsch at 780-427-3801, 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: https://www.alberta.ca/alberta-emission-offset-system.aspx?utm_source=redirector