Updating your EMS to cover greenhouse gas emissions

Background

At the EMS group's Greenhouse seminar, DPI Ellinbank 24/4/07, specialist presenters explained tools to roughly assess the quantity and causes of greenhouse gas emissions from your farm, detailed current techniques and research to increase carbon held on the farm, and explained practical actions to reduce the emissions of greenhouse gases from farming right now.

A strong conclusion was that adopting best practices on feed, pastures and fertiliser use will create current best emission control practice on your farm, and reduce farm emissions by up to 10%; that there are significant, and achievable emission reductions from selecting cattle genetics for feed conversion efficiency. The good news from the forum - almost all that is possible can be achieved on-farm now without waiting for current research to produce answers.

Additionally, there are proven yield increases from improving production resources, e.g. increasing organic carbon in soils improves soil structure. We learnt, however, increasing soil carbon levels is a slow process - organic carbon levels measured in soils do not necessarily increase when measured over less than about 10 yr intervals.

Adopting best feed, pasture and fertiliser practices will reduce greenhouse gas emissions. These include feeding energy supplements to utilise high protein in summer grasses and increase production, feeding wattle bark to reduce methane production in the rumen and convert it into milk and meat, tests on high-tannin lucernes, research into vaccinations & bloat capsules for reducing methane generation in the gut, and methods of adding organic and total carbon to the soil. Genetic differences in feed conversion efficiency can reduce emissions by 250 - 400g/cow/day, which converts to production improvements.

Selection and changing the use of energy sources, and on-farm combustion engines and electrical equipment can also reduce greenhouse gas emissions. This portion of farm emissions is significant, up to 12% of total emissions.

After the seminar I was commissioned to create generic, draft, framework procedures within an EMS to cover greenhouse gas emissions linked to farming. As a professional engineer I have also drawn on information outside of the scope of the seminar. Use, alter or ignore the attachments as you like.

Starting point:

Visit Sustainability Victoria, Greenhouse Alliance, etc websites for energy, equipment, fuel useage ideas & calculations. Visit www.greenhouse.unimelb.edu.au as a farmer's source for the latest research, tools, and a newsletter.

Calculate roughly how much greenhouse gas your farm is producing now, by using the calculators at www.greenhouse.govt.au and www.greenhouse.unimelb.edu.au, and www.greenhouse.crc.org.au, and look through the NSW forests website. These also have FAQ's.

These calculators are very inexact at present as they were created to show governments where the gasses were generated. What is useful is the calculated proportions of gas contributed or reduced by each sector of your farm activity. Decide where you can influence the proportions - what changes to management, or new practices in the draft procedures, att, will influence these proportions. For instance, most farmers can reduce their emissions in the sectors covering fuel and fertiliser practice.

See the DairySAT environment assessment tool, Soils, Fertiliser, Air & Energy section for what you need to know, a check of your current practices, and additional resources list.

See www.nitrogen.unimelb.edu.au for best fertiliser practices.

Look for carbon-increasing ideas on carbon-focussed farming websites, e.g.

http://www.carboncoalition.com.au/ www.amazingcarbon.com/
http://www.casmgs.colostate.edu/

and agriculture research/carbon links on sites such as:
www.australianclimateforum.com/ecarbon/enews_apr07.php#sequestration

Soil carbon sequestration requires large volumes of actively growing fibrous roots. The percentage groundcover and the type of grazing management also have highly significant effects e.g. lucerne does not have a fibrous root system and has low levels of ground cover - usually around 20%, so lucerne monocultures frequently result in losses of both soil and soil carbon.

To add greenhouse issues to your EMS

1. Create new documents

Consider adapting any applicable ideas from the attached, draft procedures.

Consider new action plans for researching, selecting and implementing fresh practice, e.g. focussing on sequestering the various types of carbon on the farm - organic and total carbon in the soil, pasture plants, trees, under-story and other plantings in riparian areas, shelter belts, fenced-off problem areas (wet & erosion areas, excessively steep slopes) and woodlots.

2. Amend your EMS

Your **Impacts & Aspects Register** needs to be amended to add farm activities that emit greenhouse gases - cattle, use of fertiliser, esp nitrogenous fertilisers, e.g. MAP, DAP, sulphate of ammonia, urea, your use of diesel, petrol, gas and electricity.

List the changes in farm activities, and the type of procedure needed to ensure minimal impacts, in the **Operating Procedures Register.**

Revisit your **Records Register** if you are to change any records kept - e.g. additional monitoring.

Amend your **Monitoring Program** with extra procedure(s) to ensure monitoring and compliance is carried out.

An off-farm carbon profile?

Consider registering your farm's carbon levels (e.g. with Carbon Coalition) by having soils tested for carbon so they may be eligible for backdated carbon sequestration credits when trading system begins.

Draft Procedures

3 attached procedures have been drafted to get you thinking, and the paperwork started: A. on-farm greenhouse gas emissions (for fuels you burn on-farm in combustion engines), B. off-farm greenhouse gas emissions (emissions by others before the point of sale, use of non-combustion type farm machinery), and C. carbon sequestration on farm. Use these draft procedures to develop procedures for your farm.

For those who did not get to the seminar and need more background the speakers' presentation powerpoints are on our website www.enviromeat.com.au.

Ian Hill MIEAUST *30/4/07*

T: 03 5626 6217
ianhill@dcsi.net.au