Minutes of ICARB Agriculture Workshop

Tuesday 7th June 2011, Glasgow Caledonian University

Summary

The following document provides minutes from the ICARB agriculture workshop. A copy of the agenda and presentations are available on the ICARB website: www.icarb.org

Present

Keith Baker, Glasgow Caledonian University / ICARB
Ole Pahl, *Glasgow Caledonian University*
Colin Burton, *Cemagref*
Gary Lanigan, *Teagasc*
Sheila Scott, *Caledonian Environment Centre*
Karin Helwig, *Glasgow Caledonian University*
Colin Hunter, *Glasgow Caledonian University*
Sue Roaf, *Heriot-Watt University / ICARB*
Edward Coles, *Semi-retired*
Charles Russell, *Caledonian Environment Centre*

Minutes

Welcome and Introduction - Chairs

Dr Keith Baker opened the workshop with a note of thanks to the guest speakers. Keith also apologised for the unusually low turnout at this workshop and questioned the reasons for this given that it was promoted in the same way as other workshops, which have tended to be over-subscribed. Attendees suggested the particular complexity of agriculture as an issue for carbon accounting may have been a deterrent. Dr Ole Pahl gave a brief outline of the Best Available Techniques in Farming (BATFarm) project, in which GCU is a partner.

Presentation & Discussion 1: Greenhouse gas emissions in animal husbandry - Dr Colin Burton, Cemagref

A copy of Colin's presentation is available from the ICARB website. Summary points as follows:

- A major problem with agricultural waste is that it concentrates in small areas that cannot cope with it.
- Health, rather than emissions, is the main driver for policies on agricultural waste.

- The proportions of problem emissions are very different for agriculture than other sectors - CO_2 is less of an issue (mainly buildings and transport), whereas nitrous oxide (also a problem for ozone depletion), methane and ammonia are the causes for concern. N_2O emissions are the 'alarm' that something is going wrong.
- Most treatment and abatement options are focused on manure, but emissions sources are much wider, and more complex (due to natural cycles).
- The impacts of different manure spreading strategies are open to influences including geography, weather, quantities, composition, and seasonality.
- Impacts of run-off are a major problem - no farmer intentionally allows it but it happens all the time.
- Anaerobic digestion has many benefits, but remains uneconomic without subsidies or other external funding.
- Fugitive emissions of methane from anaerobic digestion plants may only be a few percent of total, but need to bear in mind its relative impact.
- Much energy production from AD is from energy crops (not manure) - ~90% in Germany.
- 'AD+' (AD plus aeration) is now gaining traction. Whether or not it's a good compromise depends on your criteria (not so good for GHG reduction).
- Shift in slurry storage practices from no crust, to crust, to fixed cover.
- Need to stress the importance of adopting a whole farm approach - need to see the broader picture (rather than GHG reduction only) or risk not actually achieving aims, and potentially making things worse. If the system is not balanced poluution and GHGs will escape somewhere else.
- Difficulties in weighting metrics for wider sustainability assessment (etc) due to regional / international differences.
- Good example - Danish policy on waste management plans for farms.
- Need to move towards a balanced system approach (as was in IPCC but now changed). Need to consider regional / local differences and different timeframes.

Presentation & Discussion 2: Overview of methods and challenges for emission measurement from buildings and fields - Dr Gary Lanigan, Teagasc

A copy of Gary's presentation is available from the ICARB website. Summary points as follows:

- Abatement measures need to be Measurable, Real and Verifiable.

3 goals:

- Refine emission factors (move away from Tier 1 factors).
- Quantify the most effective mitigation strategies.
- Parameterise process models that can be used in decision making for the above.

- Key problem - when do you allocate a dairy cow to the beef cycle?
- Trying to model naturally ventilated farm buildings is fairly pointless as air changes per hour can vary from ~1 to ~750.
- N_2O is potentially easier to mitigate but very difficult to measure (uncertainties ~300%) due to spatial and temporal heterogeneity.
- **Key message.** Need more and better measurements to constrain models - **if** you can constrain models enough (by taking **lots** of measurements) you can (in theory) apply these to a whole country. If you can't get the measurements you might as well not bother putting any figures in a national inventory. This is not a simple matter of using standard emission factors.

- The best that can be done using assumptions are comparative assessments, but these will not produce absolute figures / percentages for calculating emissions reductions.
- The market is the main driving force in all this, not other factors - image to Tesco's is more important than anything else.

Further Information

These minutes, copies of the presentations, details of other ICARB events, and other useful information can be found on our website at: www.icarb.org

For more information on BATFarm and the topics discussed at this workshop please email Dr Keith Baker - keith.baker@gcu.ac.uk