

YORKSHIRE & THE HUMBER FARMER & RESEARCHER GROUP

Minutes of a Meeting of the Food and Farming Forum Farmer Group held at FERA (Food and Environment Research Agency) On Tuesday 20th April 2010 – Anaerobic Digestion (AD)

Farmer Group Members:

Steve Willis (Chair)
Jim Williams (Dairy)
Rob Copley (Retail)
Gareth Gaunt (Renewables)
Chris Redfearn (Arable / Estate Management)
Edward Sykes (Retail)
Richard Houseman (Dairy)
Keith Blenkiron (Arable, Beef, Poultry)

Present:

Dean Cook (FERA)
Ian Cox (FERA)
Carrie O'Malley (FERA)
Iain McDonnell (Environment Agency)
Colin Dennis (Bishop Burton College)
Dominic Naylor (Bishop Burton College)
James Copeland (NFU)
Graham Ward (Horticulture – Stockbridge Technology Centre STC)
Harley Stoddart (NNFCC)
Helen Ovens (Yorkshire Forward)

Secretariat:

Deborah Hare (Project Manager)

Apologies for absence

Anna Longthorp (Pigs)
David Hugill (Poultry)
Mark Palmer (Vegetables)
David Airey (Uplands)
Tim Dunn (Uplands)
Robert Borrill (Poultry and peas)

1. Welcome and Introduction

Steve Willis welcomed everyone to the meeting, informing the group that this was the 4th farmer group meeting that had been held since the group formed.

Thanks were given to FERA for hosting the meeting.

The group introduced themselves.

2. **Review of Farmer Group contract and funding**

Steve Willis reported that we have managed to acquire funding for the farmer group and that all the members had been sent a letter detailing the information in the contract with Yorkshire Forward. Steve explained that there are responsibilities linked to the group; we are looking for members to impart knowledge to their own networks as a commitment to the group.

A signed record of attendance will be used to pay expenses for the group.

3. **Changes in Microbial Populations During AD – Carrie O'Malley (FERA)**

(Presentation available on www.foodandfarmingforumyh.org.uk)

- FERA is currently researching how best to use microbial systems to realise the resource value of waste to increase the efficiency of anaerobic digestion.
- They are looking at DNA sequences in environmental samples to determine the structure of microbial communities. The results will give a rapid indication as to the health of AD.
- They are working with a model anaerobic digester which has 4 vessels to separate the different stages of AD; hydrolysis, fermentation, acetogenesis and methanogenesis.
- Work involves knowing what is already there by compiling lists of organisms present, then looking at how it can be manipulated by adding certain groups of species. An example, if the hydrolysis stage is too fast or slow this could be controlled.
- They are looking at the bigger picture to start with.

Comments

Ian Cox reported that in other industries, for example water companies, they have added sludge to kick-start the process. Carrie remarked that custom seed microbials are available.

Richard Houseman suggested that use of this knowledge could be transferred to ruminant animals where microbial communities already exist. Carrie agreed the cow is a good model.

Harley Stoddart questioned if they had noticed different levels of gas production in the separate vessels? Carrie replied that they have not compared like for like, as this is an industrial scale model, but they would like to set up a pilot with a single stage feedstock. Stating that going forward, 4 vessels is the minimum way to go.

Outputs from the model – the solids are currently being used as soil conditioners and the gas has been cleaned up to 95% methane but is currently not utilised. Iain McDonnell said this gas is therefore not waste but a product.

In the model AD they are using leaf waste and inoculating it with cow slurry, mulch and tomato leaves. They are finding it is having a 2 week turnover.

James Copeland questioned if they have tested the process at specific temperatures or with specific bacteria. Carrie said they will be able to look at this further down the line and will intervene with such things once they are content with the current model. James

wanted to know if they were picking up other things when they were doing the sequencing, and they have picked up a powdery mildew.

James also queried the pH of the digestate going onto the land. Carrie said the working liquor is neutral and in effect they are improving the waste, with it being in separate vessels you can see an increase in pH from 5.2 to 7.3. The liquid is recirculated in the vessels.

Steve Willis was interested to know when compared to other EU states, who is leading in AD technology? Carrie informed the group that Asia has been carrying out AD for years and there is a lot of experience in India and Napol. In the EU, Germany and Scandinavia are leading the way. In the UK, the water treatment authorities know a lot about microbials in terms of sewage treatment and they need to share information, we should be working together as they have a lot of experience. Ian Cox explained that once week/month the water authorities would sample and check the pH. Carrie said it is not a direct scientific approach and feel we can do better; we would like to combine the two approaches.

Graham Ward said some farmers are specifically growing maize to manage carbon neutral. Carrie said a lot is trial and error, based on chemical parameters. James Copeland wanted to know if there are individual inoculants you can buy off the shelf or if there is something on farm that can put in, for example maize, or if part of the microbials are lacking, can you put in pig or cow slurry? Carrie explained saying there is scope for rapid diagnosis using pH tests but it is highly theoretical at the moment.

Graham Ward commented that surely the microbial mix would be variable depending on the type of waste used; vegetable waste or cattle waste. He questioned if they will know if totally different microbes are present and if they have an independent footprint. Carrie said they would be able to tailor solutions for particular systems.

Dean Cook explained that FERA does not have a lot of internal investment from Defra, and this work is done jointly with the University of York. They are picking up on the diagnostics and taking high spec laboratory approaches, doing things in parallel to compliment it.

Harley Stoddard raised the point that we have AD units that work on different feedstocks and we need to look at how and why they work. Carrie confirmed that they are looking at the first stage and we need to increase our knowledge base.

Steve Willis summarised by saying we are clearly looking at something in its infancy and suggested the group feed into Carrie with what feedstocks they are working with. We realise there is a need for this in-depth analysis FERA have and are conscious we are working in a different environment to 20-30 years ago.

Carrie finalised by saying the more samples she can get her hands on the better.

4. **The Official Information Portal on AD and the Updated AD Cost Model – Harley Stoddart (NNFCC)**

(Presentation available on www.foodandfarmingforumyh.org.uk)

- NNFCC is the UK's national centre for biorenewables, they provide a service funded by government.
- There are two types of AD, on farm and commercial.
- It was advised that it is beneficial to utilise the feedstock available to you.
- An AD calculator is available to help users understand the economics of AD, the calculator can be found at www.biogas-info.co.uk
- Harley ran through how the calculator worked. In summary the calculator is a spreadsheet with several sheets for the different elements including feedstock, digestate value, revenue, capital and overhead costs. It acts as a feasibility study and can be used to show banks the financial information involved in the project.
- The larger the AD unit, the more efficient it will run.
- The calculator uses figures from live AD sites; therefore the information is not theoretical.

Comments

Keith Blenkiron queried the forthcoming change in the heat tariff, and Harley confirmed the calculator would be updated when the heat tariff changes in 2011.

Gareth Gaunt commented on Feed In Tariffs (FITs), Harley said it is assumed that you can produce silage for free and Gareth said it is also assumed that manure is free, but it has a value.

Harley advised that you do not want to be producing digestate with no market, either you need to be able to use it on your own land or sell it. Ian McDonnell remarked that digestate is more valuable than slurry. Harley said it is possible to tweak the system to get certain digestate but then you would be compromising the gas and the gas is more important than digestate. Digestate is profitable, it mitigates waste streams and the biggest value is if you can use it. Nutrients from digestate are more readily available. James Copeland said you need to know the use of the digestate, what is in it, the value of it £/tonne and need resource of land available.

Gareth asked if a licence for waste is an issue and Harley said it depends on the feedstock that the digestate comes out of.

James Copeland questioned if the calculator takes into account the lifespan of an AD plant, in terms of maintenance and reinvestment. Harley explained that it does, as policy makers have to see that it works.

There is a danger of people using the wrong technology or scale for what they need and we are trying to avoid this, as it would soon put other people off.

England's Official Information Portal on AD

www.biogas-info.co.uk

The portal is a single point of information for AD. It lists all the technical providers and Harley advised people to contact Lucy Hopwood from NNFFC as she knows them all, and can point you in the right direction for what would be applicable. AD is not an off the shelf package that can be bought.

Harley said the RDAs are keen and getting keener in terms of AD. There are national targets and these can only be met with the help of regional involvement. Funding is out there and available.

5. **The Environment Agency's view on AD – Iain McDonell**

(Presentation available on www.foodandfarmingforumyh.org.uk)

- AD is regulated under the Environmental Permitting Regulations, which are regulated by the Environment Agency. Each AD unit will have a permit written for that particular site, the size of the unit will dictate the level of monitoring and regulation required. Any unit above 3 megawatts (MW) will fall into a higher regulated group therefore incurring larger costs in terms of paperwork and annual licence.
- Exemptions T24 and T25 are required for spreading the digestate on farm.
- They are seeing very slow progress and are looking more at community AD plant that several farmers feed into.
- Regulation is the biggest turn off for farmers.

Comments

Steve Willis raised the point that if the regulatory side is over burdened and farmers may be put off, there could be concern that the AD targets are not going to be met.

Graham Ward asked if you start putting food waste into an AD plant does the digestate therefore inherit the waste issues of the food waste. Iain confirmed that if the material fed into the AD plant is waste then the digestate produced has to be classified as waste and therefore subject to waste regulation controls.

Graham also queried the nutrient content of the digestate. Harley verified that on the calculator there is a section on the quality of digestate and the nutrient content. Iain said you have to supply a waste analysis of what is spread to land, but digestate will vary depending on consistency of product going through. Harley remarked for an AD plant to work at its optimum you need a fairly consistent input material.

Ian Cox informed the group that PAS110 is a 'Quality Protocol' for the use of digestate from AD, setting out a number of criteria to be followed. It is a standard code of practice, voluntary not mandatory.

James Copeland raised the issue of putting 'bundling' around an AD plant. Iain McDonell said there would remain a degree of discussion about 'bundling' and it will be a condition of the permit so they will come to an individual site agreement.

Dean Cook stated that Defra have written a report which looks at soil conditions, digestate use and issues around this.

6. Funding for Anaerobic Digestion – Helen Ovens (Yorkshire Forward)

(Presentation available on www.foodandfarmingforumyh.org.uk)

- Helen advised if people were thinking about AD and required public sector funding to explore RDPE sooner rather than later. Helen suggested putting an expression of interest in so that Yorkshire Forward is aware of the proposal at an early stage.
- Yorkshire Forward are awaiting clarification from DEFRA on whether applicants securing a FREP (Farm Resource Efficiency Programme) grant would be eligible to also claim for the Feed-in Tariff (FIT).
- All applications are assessed on case-by-case basis. Helen advised if applicants apply for a lower grant rate for a higher value project it is more likely to be approved.

Comments

Steve Willis stated that 2013 is only 3 years away and raised the point if the application rate for AD is lower, the grant money would not be utilised and we do not want to be in a position where we have to give the money back to the EU. Helen confirmed they do not have enough approved projects and the guidance by Defra is to spend up by October 2013.

Graham Ward remarked there is a major problem in timing. Helen clarified that the project can be ongoing but the money has to be spent in 2013.

James Copeland highlighted there is a clear message about the problem with FIT and this needs clarifying with Defra as soon as possible. The agricultural sector are investing large amounts of money into renewables, but confusion over the FIT may put people off the technology.

7. Next meeting topic ideas and dates

Harley reported there is an AD workshop for farmers planned for October. It is a joint venture between Yorkshire Forward, LandSkills, Bishop Burton College and NNFCC.

Steve Willis thanked Dean Cook once again for FERA hosting the meeting.

Steve asked if any of the group has ideas for topics for forthcoming meetings to please advise Debs. **Action All.**