Minutes of the Methane Phenotype Working Group (MPWG)

By Phone 1000 GMT 5th October 2012

Present: Hutton Oddy (NSW DPI/UNE, Aus), John Basarab (Agr & Rural Development, Canada), Natalie Pickering (AgResearch, NZ), Jan Lassen (Aarhus Uni, Denmark), Roger Hegarty (UNE, Aus), John McEwan (AgResearch, NZ),

Apologies:
Steve Miller (Uni of Guelph, Canada), Marcos Vinicius da Silva (EMBRAPA, Brazil), Yvette de Haas (Wageningen Uni, Netherlands), Cesar Pinares (AgResearch, NZ), Kirsti Cammack (Uni of Wyoming, USA), Adrian Cookson (RMG Network, NZ), Phil Vercoe (Uni of WA, Aus), Ben Hayes (DPI VIC, Aus), Grant Shackell (AgResearch, NZ)

General Discussion:
This meeting was mainly a general discussion about the first two parts of the main body of the paper: Variation in FI and CH4 and measurement protocols.

Notes on the discussion are provided below with a few questions that arose for further thought, and a few action points.

Variation in FI:
To cover the natural factors that affect variation in FI.

Variation of time, i.e short term or long term measurement e.g paper by Jason Archer (J. Anim. Sci. 1997. 75:2024–2032) on the optimum duration of test for measurement of FI, growth rate, feed conversion and residual FI. Approximately 35 days was sufficient for measurement of FI, and 70 days for growth rate, feed conversion and residual FI.

Also repeatability over time, variation within a day and across days as trial goes on.

John Basarab: Has feed intake data from GrowSafe system where all animals can access any node at any time. Data to be used to determine;

- Short (4 day) vs long (30-80 days) term variation.
- Within and across day repeatability in FI. Need to agree on a statistical model to apply to this. Natalie Pickering and others (John McEwan) help with this as done similar on NZ sheep.
- Pattern of feeding by genotype can be described in datasets for the RFI-fat adjusted phenotype etc
- Level of feeding by genotype interactions is more difficult as likely to be confounded with the RFI genotype; low RFI animals consume less and have different FI and feeding event patterns. Some discussion and clarification is needed here.

Acknowledge that there may still be a pecking/social order among the animals, but difficult to analysis as animals have access to many feeding stations at any time during the day. If good statistical methods exist that would be great to incorporate, otherwise this could be time-consuming.
Other things to discuss in this section:

- Stocking rate i.e. number of animals per node or feeding station using GrowSafe
- Role of feed stuffs and season/ambient temperature can be obtained from the literature (e.g. Durunna et al., etc)

**Question:** how is this (FI and CH₄) to be used in real life?

- How should we describe CH₄? as CH₄DMI has DMI h² in it, confounding?
- In Breeding objective should be as 2 separate traits CH₄ and FI?
- This should come under the “best-bet information” and “parameter estimation and design for methane phenotypin programs” sections. Ben Hayes?

“Gold-standard”

J McEwan: In NZ chambers are thought of as the gold standard

Jan Lassen: Chambers also thought of as gold standard but there are good and bad chambers. Colleagues have visited lots of chambers to figure out best set up and settled on glass walls so animals can see each other clearly, more comfortable and more like paddock.

Cesar have paper describing SF6 in paddock and chambers on real pasture diet?

**Question:** How long should the measurement be to capture the variation?

- If have to pick between the strategies, a) to measure one animal a number of times or b) to measure more progeny per sire, genetists tend to say do b.

**Question:** How measurements with different technologies can be combined?

**Methane variation**

Jan Lassen: measure on the milking platform, spot measure every 5 secs in the feeding bin (diet: concentrate). Results, the repeatability between visits (over 6-10 visits) = 0.4 gross methane emissions/cow.

**Question:** Are the cows habitual feeding with milking times?

**Thought:** Should list variability not just repeatability in paper

**CO₂**

Jan CO₂ data: has looked at CH₄:CO₂ ratio. Prediction equation to predict CO₂ emission with LW etc and can estimate CH₄g/day

**Actions:**

- Variation in FI: John B to share data with Natalie
- Variation in CH₄: John McE, Cesar and Roger
- Jan to describe his measurement protocol
- John McE and Hutton to work on the introduction

**Action:** Next meeting scheduled for 16th November same time.
**Actions from last meeting:**

GGAA conference, Richard via John McEwan confirmed there are a number of workshops being held before and after the conference. Roger has been asked to present a paper and run a workshop on measurement of methane in breath. The meeting thought it may be better if this were combined with an ASGGN workshop.

Still on-going, will have an open meeting before/after the conference similar to Cairns.

**Action:** Hutton and Roger to talk and discuss with Richard Dewhurst (GGAA meeting Secretary).

ASGGN website. The ASGGN website is available as a preview site. [http://preview.asggn.org/](http://preview.asggn.org/)

Still on-going. The ASGGN page is up and running with member login. Information about countries activities/projects is welcome.

**Action:** Grant has set up a page for each country and people should send in some information on programs, key people, links, photos etc for their countries page.

PAG conference 12-16th January, there is an opportunity to have an informal catch-up with those attending. Details and those attending will be clarified closer to the date.