

# Project AC0115 Final Report

## **Appendix E: Added value**

April 2014

### **Introduction**

Project AC0115 benefited from a number of add-on projects and activities, including postgraduate students, visiting research workers, and interaction with the Global Research Alliance.

These areas of added values are listed in the following pages.

## **ADDED VALUE**

### **Studentships/visiting researchers**

Organisation: AFBI

Name: Mr Haopeng Jiao

Project title: Measurements of methane emissions and energy and nitrogen utilisation for quantifying the carbon footprint of young Holstein cattle

Funding source: China Scholarship Council

Duration: September 2010 – October 2013

Organisation: AFBI

Name: Mr Yiguang Zhao

Project title: Effects of forage and breed types on enteric methane emissions from hill replacement ewes

Funding source: China Scholarship Council

Duration: September 2012 – October 2015

Organisation: AFBI

Name: Miss Anne Richmond

Project title: The impact of cow genotype and stocking rate on dry matter intake and methane emission.

Funding source: DARD and AgriSearch

Duration: September 2013 – March 2014

Organisation: AFBI

Name: Juan Elmer Moscoso Muñoz

Project Title: SF6 technique training course

Funding source: Universidad Nacional de San Antonio Abad del Cusco - Peru

Duration: January 2014 - February 2014

Organisation: AFBI

Name: Dr Caixia Zou

Project title: Estimation of the maintenance energy requirements, methane emissions and nitrogen utilization efficiency of two suckler cow genotypes

Funding source: China Scholarship Council

Duration: March 2013 – August 2013

Organisation: IBERS

Name: Sophie Doran

Project title: Development of proxy indicators for methane output by sheep using rapid throughput laboratory techniques

Funding source: Eblex/HCC studentship

Duration: September 2010 - 2014

Organisation: IBERS

Name: Dr Vilem Pavlu (Crop Research Institute, Czech Republic)

Project title: Effect of pasture composition on methane emission from ewes

Funding source: Stapledon Memorial Trust Travel Fellowship  
Duration: May – September 2012

Organisation: University of Nottingham  
Name: Dr Jan Lassen  
Project title: Genetic selection for reduced methane emission in dairy cattle using non-invasive breath measurements  
Funding source: Danish Research Council  
Duration: September 2012

Organisation: University of Nottingham  
Name: Rebecca Danielsson, Horacio Gonda  
Project title: Mitigating methane emissions from dairy cows - a mission impossible?  
Funding source: Formas, Sweden  
Duration: October - November 2011

**Other visitors (people or organisation that have visited specifically to find out more about the project/area of work)**

To IBERS:  
Carlos Lopez Lopez – SERIDA, Spain.

To University of Nottingham:  
Cesar Pinares – Agresearch, New Zealand.  
John McEwan - Agresearch, New Zealand.  
Mark Aspin - Pastoral Greenhouse Gas Research Limited, New Zealand.

To University of Reading/CEDAR  
Dr. Garry Waghorn, DairyNZ, New Zealand

**Links to other projects**

Linking organisation: IBERS  
Project title: Establishing techniques and competence for measuring enteric methane emission from sheep  
Lead organisation: Bioforsk, Norway (Dr Vibeke Lind)  
Funding source: Norwegian Research Council  
Duration: April 2013 – March 2014  
Details of link: Collaborative project to establish methane measuring capability for sheep in Norway.

Linking organisation: University of Nottingham  
Project title: Connecting the animal genome, gastrointestinal microbiomes and nutrition to improve digestion efficiency and the environmental impacts of ruminant livestock production (RuminOmics)  
Lead organisation: Rowett Institute, University of Aberdeen (Dr John Wallace)  
Funding source: EU-FP7

Duration: January 2012 – December 2015

Details of link: RuminOmics will relate the animal genome to microbiome, feed efficiency, and methane emissions in dairy cows

Linking organisation: University of Nottingham

Project title: Environmental and Nutritional Benefits of Bioethanol Co-products (ENBBIO)

Lead organisation: ADAS (Dr Richard Weightman)

Funding source: Defra LINK (ABAgri Ltd, AB Vista Feed Ingredients, Aunir, AHDB-BPEX, AHDB-EBLEX, AHDB-DairyCo, AHDB-HGCA, BFBi, Noble Foods, Ensus PLC, Evonic Degussa, Glencore Grain UK Ltd, Hook2Sisters, Marks and Spencer PLC, NEPIC, Premier Nutrition Products Ltd, Sciantec Analytical Services Ltd, Syngenta Seeds UK, The Scotch Whisky Research Institute, Tulip Ltd)

Duration: October 2010 – September 2014

Details of link: LINK project to evaluate nutritional value of wheat DDGS from the bioethanol industry for ruminants and non-ruminants, and to quantify its contribution to the overall GHG balance of UK livestock production, including methane emissions.

Linking organisation: University of Nottingham

Project title: Research Partnership on Dairy Cattle Health, Welfare and Nutrition

Lead organisation: University of Nottingham (Prof Phil Garnsworthy)

Funding source: DairyCo

Duration: June 2011 – May 2016

Details of link: Collaborative partnership that includes measuring methane emissions in work packages on feeding systems and rumen function.

Linking organisation: University of Nottingham, University of Reading

Project title: Large-scale methane measurements on individual ruminants for genetic evaluations (Methagene)

Lead organisation: Wageningen UR Livestock Research (Dr. Yvette De Haas)

Funding source: EU COST

Duration: December 2013 – November 2017

Details of link: COST Concerted Action that will compare methods for measuring methane emissions to produce harmonised phenotypes for incorporation into future breeding goals.

Linking organisation: University of Nottingham

Project title: Mitigating methane emissions from dairy cows - a mission impossible?

Lead organisation: SLU, Sweden (Prof. Jan Bertilsson)

Funding source: Formas, Sweden

Duration: January 2012 – December 2014

Details of link: Collaborative project to establish on-farm methane measuring capability for dairy cows in Sweden.

Linking organisation: University of Nottingham

Project title: Genetic selection for reduced methane emission in dairy cattle using non-invasive breath measurements

Lead organisation: University of Aarhus (Dr Jan Lassen)

Funding source: Danish Research Council

Duration: June 2011 – May 2013

Details of link: Collaborative project to compare on-farm methane measuring techniques in UK and Denmark.

Linking organisation: University of Nottingham

Project title: Methane emissions: their relationship with nutrition and genetics and development of mitigation strategies in three different dairy production systems in Mexico

Lead organisation: Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Mexico (Dr Jorge A. Bonilla Cárdenas)

Funding source: INIFAP, Mexico

Duration: October 2013 – September 2016

Details of link: Collaborative project to establish on-farm methane measuring capability for dairy cows in Mexico.

Linking organisation: University of Reading

Project title: FACCE-JPI GLOBAL NETWORK for the development of nutrition-related strategies for mitigation of methane and nitrous oxide emissions from ruminant livestock.

Lead organization: Pennsylvania State University, USA (Dr Alex Hristov)

Funding source: EU FACCE-JPI

Duration: May 2014 – April 2018.

Details of link: Collaborative project based on the Feed and Nutrition Network activity of the Global Research Alliance (GRA) Livestock Research Group (see below).

Linking organisation: University of Nottingham, University of Reading, AFBI

Project title: Large-scale methane measurements on individual ruminants for genetic evaluations (Methagene)

Lead organisation: Wageningen UR Livestock Research (Dr. Yvette De Haas)

Funding source: EU COST

Duration: December 2013 – November 2017

Details of link: COST Concerted Action that will compare methods for measuring methane emissions to produce harmonised phenotypes for incorporation into future breeding goals.

Linking organisation: AFBI

Project title: Defining optimal pasture composition and its relationship with management factors in order to maximise dairy and beef productivity, whilst minimising nitrous oxide emissions (urine N output), methane emissions and product taints

Lead organisation: Teagasc Grange (Dr. Richard Dewhurst)

Funding source: DAFM of ROI

Duration: January 2013 – December 2016

Details of link: Collaborative project to evaluate effects diet and animal factors on nitrogen utilisation for grazing cattle.

### **Global Research Alliance (GRA) activities**

The Centre for Dairy Research, University of Reading, hosted the GRA International Workshop on Methane Measurement Techniques October 2011. NPL demonstrated novel methodologies for measuring methane at the event.

Name: Jon Moorby

Activity: Attended the GRA Livestock Research Group (LRG) meeting in Amsterdam in November 2011.

Represented the UK at a regional GRA Livestock Research Group (LRG) capability building workshop held in Nairobi in September 2012.

Name: Phil Garnsworthy

Activity: Presentation at GRA workshop on “Developing rapid, low cost methods for identifying low emitting dairy cattle phenotypes” in Palmerston North, New Zealand in February 2013.

Presentation at GRA Livestock Research Group International Symposium on Emissions of Gas and Dust from Livestock (EmiLi) in St Malo in February 2012.

Presentation at Global Research Alliance (GRA) workshop on agricultural greenhouse gas measurement methodologies and techniques in Reading in October 2011.

Name: Chris Reynolds

Activity: Represented the UK in the Feed and Nutrition Network (FNN) activity of the Livestock Research Group (LRG) at their inaugural meeting in Zurich in September 2012 and subsequent meeting in Dublin in June 2013. Major objectives are to develop a data base of feed composition and nutrition relative to methane and nitrogen excretion and recommend standard operating procedures for measurements of methane emission in vivo and in vitro.