Joint Workshop of the Animal Health & GHG Emissions Intensity Network (AHN) and Modelling European Agriculture with Climate Change and Food Security (MACSUR)

University of Reading, United Kingdom

25th June 2015

This workshop was undertaken by participants of the Animal Health & GHG Emissions Intensity Network to support the objectives of the Global Research Alliance on Agricultural Greenhouse Gases. The information contained within should not be taken to represent the views of the Alliance as a whole or its Partners.

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EXECUTIVE SUMMARY

This report is a summary of key discussions, action points and outcomes from the first joint workshop of the Animal Health and GHG Emissions Intensity Network (AHN) of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) and the Livestock and grassland modelling theme (LiveM) of the Modelling European Agriculture with Climate Change for Food Security (MACSUR) Knowledge Hub. The report is aimed at all Network members and researchers/research funders interested in the links between animal health and GHG mitigation.

This international workshop was held on the 25th June 2015 at the University of Reading, England. It brought together researchers from the AHN and MACSUR and was attended by 26 participants representing 11 countries: UK, Norway, the Netherlands, Ireland, Kenya, Colombia, Switzerland, Spain, Belgium, Austria and Italy.

The aim of the workshop was to further develop links between AHN and MACSUR and provide an opportunity to contribute to high quality papers that will help set the research agenda in this field. The objectives for the workshop were to:

- Share and compare research priorities in order to identify activities and practical plans for the next two years;
- Identify how to make the best use of the resources we have and prevent overlap;
- Identify complimentary areas;
- Determine which topic areas have potential funding opportunities and benefits for the two groups; and
- Consider engagement with other initiatives.

The workshop was co-chaired by AHN Co-ordinators, Professor Ilias Kyriazakis (Newcastle University, UK) and Dr Tim Robinson (ILRI, Kenya), and Dr Richard Kipling (Aberystwyth University, UK) and Dr Şeyda Özkan (Norwegian University of Life Sciences, Norway) from MACSUR. The joint workshop provided an excellent opportunity for delegates to get to know one another and to discuss network aims and commonalities.

The morning session was dedicated to overview presentations from each network and discussions to identify commonalities from each network's research priorities. The focus of the afternoon session was group discussions, based on pre-set questions to identify resource within the networks, areas for collaboration, direction of travel and funding opportunities.

This report will be circulated to all workshop participants and Network members. It will be uploaded onto the GRA website (http://globalresearchalliance.org/) and summarised in the UK Agri-Science & Innovation newsletter. Readers are invited to circulate the report to interested researchers and research funders.

LIST OF ABBREVIATIONS

AgMip	The Agricultural Model Intercomparison and Improvement Project
AHN	Animal Health & GHG Emissions Intensity Network
ANIHWA	Animal Health and Welfare ERA-Net
COST	European Cooperation in Science and Technology
CropM	Crop Modelling
Defra	UK Government Department for Environment, Food and Rural Affairs
ERA-Net	European Research Area Network.
EU	European Union
FACCE-JPI	Joint Programming Initiative on Agriculture, Food Security and Climate Change
FAO	Food and Agriculture Organisation of the United Nations
GHG	Greenhouse Gas
GLEAM	Global Livestock Environmental Assessment Model
GRA	Global Research Alliance on Agricultural Greenhouse gases
KTN	Knowledge Transfer Network
LCA	Life Cycle Analysis
LiveM	Modelling of livestock, permanent grassland and farms
LRG	Livestock Research Group
MACCs	Marginal Abatement Cost Curves
MACSUR	Modelling European Agriculture with Climate Change for Food Security
OIE	World Organisation for Animal Health
OECD	Organisation for Economic Co-operation and Development
SusAn	Sustainable Animal Production ERA-Net
SRUC	Scotland's Rural College
STAR-IDAZ	Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses
TradeM	Trade Modelling
UK	United Kingdom
WHO	World Health Organisation

1 SUMMARY AND OUTCOMES OF JOINT WORKSHOP OF THE ANIMAL HEALTH & GHG EMISSIONS INTENSITY NETWORK (AHN) AND MODELLING EUROPEAN AGRICULTURE WITH CLIMATE CHANGE AND FOOD SECURITY (MACSUR)

1.1 Workshop aims

The workshop was introduced by Dr Şeyda Özkan who set the workshop aims, which were as follows:

- Share and compare research priorities in order to identify activities and practical plans for the next two years;
- Identify how to make the best use of the resources we have and prevent overlap;
- Identify complimentary areas;
- Determine which topic areas have potential funding opportunities and benefits for the two groups; and
- Consider engagement with other initiatives.

1.2 Introductions from each Network

1.2.1 Animal Health & GHG Emissions Intensity Network (AHN)

Professor Ilias Kyriazakis introduced the Global Research Alliance on Agricultural Greenhouse Gases (GRA) (http://www.globalresearchalliance.org/) and gave an overview of the AHN, which included aims and objectives, structure, relevant research projects and future opportunities. The presentation highlighted the need for a coordinated effort to bring different disciplines and initiatives together.

The Animal Health & GHG Emissions Intensity Network is a UK led initiative of the Livestock Research Group of the GRA. The aim of the Network is to bring together researchers from across the world to investigate links and synergies between efforts to reduce livestock disease and GHG emissions intensity reductions.

The objectives of the AHN focus on research and funding in order to maintain and enhance capacity in the field of animal science and GHG emissions intensity work.

The AHN is an open network that currently consists of 79 members across 25 countries and has representation from all continents. Individuals interested in joining the AHN should contact the Secretariat at animalhealthnetwork@adas.co.uk.

The full presentation is given in Appendix 3.

1.2.2 Modelling European Agriculture with Climate Change for Food Security (MACSUR)

MACSUR and LiveM was introduced by Dr Richard Kipling. MACSUR sits within the Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI) and acts as a knowledge hub, to bring expertise together from across Europe and Israel, with the aim of increasing the use of modelling to look at the impacts of climate change and mitigation measures. MACSUR is European Union (EU) focussed whereas AHN has a global remit.

MACSUR is funded by matched national funding. Phase 1 ended on the 31st May 2015 and Phase 2 has been guaranteed funding from FACCE-JPI until the 31st May 2017. Over the next two years MACSUR

will look to develop plans for the continued development of the agricultural modelling 'community' beyond 2017.

There are three themes within MACSUR (CropM, LiveM and TradeM) which have cross-cutting activities. LiveM is the modelling of livestock, permanent grasslands and farms and is run by Professor Nigel Scollan, Dr André Bannink, Dr Richard Kipling and Dr Eli Saetnan. In relation to crop and grassland modelling, the modelling of livestock production systems is complex; farm-scale interactions between biophysical and management variables are of particular importance in such systems, and at this level the outputs of crop and grassland models represent just two of many types of input.

MACSUR aimed to pursue opportunities during the joint workshop to develop collaborative and complementary activities with the AHN, and also to involve the network in the development of a review of research priorities and challenges for modelling livestock health and disease under climate change.

The full presentation is given in Appendix 4.

1.3 Research Priority Sessions

Dr Richard Kipling introduced the session, which aimed to link AHN and MACSUR priorities, identify how they can be achieved (based on current resource) and define the ideal outcome and funding opportunities.

The following section sets out each Network's priorities and then links the two based on outputs from a group discussion.

1.3.1 MACSUR – Research priorities identified in workshop session (at MACSUR meeting held on Wednesday 24th June)

- Maximise relevance of disease and health modelling topics and outputs to stakeholders;
- Assess disease and health modelling capabilities and limitations;
- Prioritise new experimental research required to progress modelling of disease and health in the context of climate change;
- Data quality standards/assessment for livestock disease and health data;
- Data availability for health and disease modelling (availability & quality differs between countries);
- Fit for purpose modelling solutions (whether at policy or farm level to suit the needs of all stakeholders);
- Models that characterise interactions between diseases, and between diseases, poor health, interventions (management, vet, engineering) and environmental conditions (including climate change);
- Modelling impacts of disease, parasites and poor health on GHG emissions;
- Understanding the efficacy of fine-scale diseases and health modelling (have broad scale data on weather, but not fine-scale data, such as effect of humidity – if the benefits are useful, important to collect information):
    - MACSUR modelling has been EU focused, but can look at what the differences are to world-wide context and explore where there are gaps and overlap.
    - MACSUR have links to The Agricultural Model Intercomparison and Improvement Project (AgMip - based in US, global outlook) so can look at how EU developments contribute to world-wide and vice versa.

- Modelling adaptation to and mitigation of disease and poor health;
- Modelling impacts of breeding for resilience to and mitigation of poor health and disease:
    - Are there trade-offs or synergies with current breeding policies for livestock production; and,
- Overall aim to identify how to combine resources and expertise.

1.3.2 AHN – Current priorities

The AHN priorities are broader than those set out by MACSUR, which reflects the Network's global scope and that its remit is broader than modelling. The Network focuses on emissions intensity reductions as an impact of improved livestock health, and not the downstream emissions caused as a result of disease and disease prevention. Key priorities are as follows:-

- Secure funding for network facilitation (post June 2016) and for research;
- Engage entry-level postdocs and PhD students:
    - To inject energy into the Network and create output
- Scoping study to priorities interventions and identify hotspots (geographic and thematic):
    - Trypanosomosis work acts as a framework that should influence following work
    - Use global distribution maps, livestock health maps and links in productivity and animal health so can model effects of improving animal health and then best direct further research
    - Dr Tim Robinson is working on LiveGaps (Bill & Melinda Gates foundation) using livestock distribution maps and linking with herd models to look at how using health interventions changes productivity
    - Cattle/ruminant sector is where gains can be made
- Identify inter-disciplinary issues (e.g. links to other GRA Networks and other initiatives);
- Promote the multiple benefits (animal health, animal welfare, food security and GHG mitigation) focussing on a particular entry point e.g. productivity gains (with GHG as a co-benefit);
- Foster links between animal health and GHG scientists:
    - Focus has to be on productivity gains, in order to drive interest
- Engagement with social scientists and economists (e.g. barriers to uptake); and,
- 'Success breeds success' – showcase some of our work.

1.3.3 Group discussion to identify common objectives and priorities

Common objectives were identified as:

- Data quality and access (produce standards and databases, and assess livestock data availability);
- Scoping studies on the impacts of disease;
- Prioritising experimental research; and,
- Interdisciplinary issues (characterise interactions between disease/health/environmental etc.).

The group agreed that engaging with younger/early career scientists and identifying funding options would be a stepping stone in engendering collaboration between the two groups in order to tackle the above objectives. It was also discussed that increased engagement with social scientists is important and that barriers to the uptake of new practices by stakeholders need to be modelled.

Engaging early career scientists

Funding for the exchange of post-doctorate students is a high priority, because they ensure that the Networks remain 'energised' and that specific actions are completed. There is no funding within the AHN to allow for exchange programmes to be put in place. Funding for MACSUR partners is determined by national funding bodies. In most cases, support is given for networking and capacity building (sometimes including academic exchanges). For example, Norwegian institutes in MACSUR are funded by the Norwegian Research Council, which has supported a one year exchange for Dr Şeyda Özkan from the Norwegian University of Life Sciences to work on collaborative modelling at Aarhus University, Denmark. Dr Yvette de Haas has experience of exchanges being funded by European Cooperation in Science and Technology (COST) Actions (http://www.cost.eu/COST_Actions/networking) and Marie Sklodowska-Curie actions (http://ec.europa.eu/research/mariecurieactions/).

MACSUR is considering the provision of training for scientists, through the development of a Marie Curie Innovative Training Network bid and through plans to build on e-learning and short courses already developed within the CropM theme, to produce similar resources for livestock modellers.

Funding opportunities

Ensuring the longevity of the AHN and MACSUR along with the desire to produce tangible outputs was a key concern: both require funding. Opportunities for funding through ERA-NETs on Sustainable Animal Production (SusAn) and monitoring and mitigation of agricultural and forestry GHGs were identified, with calls for research likely to be published in early 2016. It was thought that it may be possible for members of MACSUR and AHN to make proposals that bridge the two ERA-NET's through FACCE-JPI initiative. Another funding source identified was the Animal Health and Welfare ERA-Net (ANIHWA) (www.anihwa.eu) that releases calls for three countries minimum.

Experience of accessing funding was discussed, with key points highlighted:

- Ensure requests for funds state specific outputs and the pathway to achieving them. Open ended priorities are seen as a sink of money.
- Researchers/scientists need to understand what funders want from them. For example Government funded (non-research council) work needs to be framed in supporting policy or policy development. Research council funding addresses how science can lead to a basic question that will lead to further science to create wealth.

ACTION: Hold a strategic planning session to identify how to tap into funding streams.

ACTION: Identify a mechanism to bridge the two ERA-NET calls – Pinder Gill (Defra) who sits on the steering group for SusAn to support.

1.4 Discussion session

The participants split into three groups (see Table 1) to each explore the following questions.

1. For each research topic, what expertise is there in AHN and MACSUR?
2. In the topics where work is complementary, what practical activities can MACSUR/AHN undertake with the resources available?
3. In the topics where there is duplication (both groups working on the same topic), how can we make best use of resources?
4. Beyond the activities possible with current resources:

a. In which topic areas can we identify potential funding opportunities for the two groups, and how can they be developed?
b. In which topic areas can we benefit from engagement with external initiatives/researchers?

Table 1 Groups for afternoon discussion session

Group 1	Group 2	Group 3
Chair: Tim Robinson	Chair: Ilias Kyriazakis	Chair: Anthony Wilson
Notes: Alice Willett	Notes: Adele Hulin	Notes: Richard Kipling
Adrian Williams Hefin Williams Andrea Vitali Pinder Gill Jose Luis Rodriguez Isabel Blanco Penedo	Nick Wheelhouse Şeyda Özkan Naomi Fox Birgit Gredler Yvette de Haas	Dave Bartley Phil Garnsworthy Michael Macleod

An amalgamated summary of the discussions within each of the groups is given hereafter, under the numbered questions set out above.

1. **For each research topic, what expertise is there in AHN and MACSUR?**

The range of disciplines and stakeholders represented within AHN and MACSUR were discussed; both networks involve veterinarians, epidemiologists, economists, breeding companies, GHG researchers, modellers, disease specialists and nutritionists. Expertise currently in AHN that would be of use to MACSUR was identified as pharmaceuticals and therapeutics, policy makers and contacts in FAO. Expertise in MACSUR that would be of use to AHN include crop / grassland sciences, systems analysts and knowledge on climate variability. There are social scientists in other parts of MACSUR that could be contacted.

Engineering / technology development and medical sciences were identified as potentially useful expertise that were not represented in either network. Involvement of medical specialists and organisations such as One Health would be beneficial to increase the impact regarding the wider benefits of addressing the animal health issue.

A range of stakeholders are relevant to the success of both Networks and included: farmers, policymakers, funders, industry, levy boards and farm advisors. Understanding stakeholder engagement is important to ensuring continued support to the Networks. It is important to highlight lessons learned in the past about stakeholder engagement, and ensure stakeholder representation at planned network events is emphasised. Further to this, communication via social media and newsletters can be used to establish and maintain contacts and exchange information.

2. **In the topics where work is complementary, what practical activities can MACSUR/AHN undertake with the resources available?**
3. **In the topics where there is duplication (both groups working on the same topic), how can we make best use of resources?**

Question 2 and 3 elicited responses that had a common focus on modelling so are considered within the same section.

There are a number of complementarities and duplications between the two networks. The requirement for robust and useable models was focused upon across all discussion groups and as such is the main area covered below.

A potential activity is to develop a hierarchy of health issues contributing to GHGs. This is an AHN priority as it could lead to funding opportunities and there are existing links with the work on Marginal Abatement Cost Curves (MACCs) which was delivered within the remit of AHN. The method involved would be: choose a system (e.g. Beef), identify the important diseases (via consulting stakeholders), identify the consequences on performance, mortality, replacement rate etc., and from this draw conclusions on GHG emissions. Economics, welfare and production are a focus when looking at disease. There is a need to look at indirect measures based on exposure.

For some models, such as the Global Livestock Environmental Assessment Model (GLEAM), information on their capacity to model disease and health impacts is available. It would be beneficial to both Networks to create an inventory of impacts and model capabilities, which includes:

- What can current models do?
- How flexible are models?

ACTION: Explore practical approaches for the creation of inventories of priority health issues and modelling capabilities using AHN and MACSUR resources (do AHN Secretariat and/or MACSUR coordination team and partners have the resources needed to deliver this?)

ACTION: Carefully define variables and identify data scope required for the inventory of relevant data.

This approach will help to link model types to disease/health conditions and identify gaps in capability. Dr Michael McLeod carried out this type of analysis for the GLEAM model and might be interested in adapting that approach to address this wider task. In order to achieve this, the following would need to be agreed:

- What impacts are we interested in covering?
- How are the different types of impact characterised (i.e. clinical and sub-clinical)?
- How will impacts on how efficiently animals digest food and the consequent impact on emissions be dealt with?
- What level of stakeholder engagement is required to understand which diseases, conditions and impacts are of most concern?
- Should existing models be tested under different scenarios?

In modelling related to Defra policy requirements farmers are assumed to want to make more profit, however other issues such as biodiversity are not taken into account. For example; Professor Phil Garnsworthy has been involved in work on biodiversity measures, seeking to understand the factors underlying when and how stakeholders apply biosecurity strategies. It is important to understand how stakeholder behaviour (management choices etc.) is characterised in models and identify what assumptions are made.

ACTION: Carry out a Survey or workshop to assess the different ways that livestock health and disease models incorporate stakeholder choices (explicitly or implicitly) and how this might be improved (including asking stakeholders or reviewing literature on stakeholder behaviour to understand the problems with current approaches).

Dr Anthony Wilson suggested that sometimes funders may not be willing to fund modelling and that levy boards etc. are more interested in applied end-points. However, Dr Dave Bartley suggested that easy links may exist for modellers when funders are connected to stakeholders who can benefit from modelling outputs.

ACTION: Review and collate current knowledge and data about what information stakeholders want and what information they get from models, in order to gain an overview of the role of modelling, its impacts and potential.

Practical activities that can be progressed together are summarised below.

- Continue attendance from MACSUR at AHN meetings and vice versa, this has already been useful in providing an understanding of each other's perspectives;
- Contribution to activities undertaken by both initiatives e.g.:
    - AHN to contribute to the state-of-the-art paper being produced by MACSUR
    - MACSUR to be invited to contribute towards the AHN scoping paper.
- Key people from each network need to be kept informed on developments;
- Develop awareness of the research being carried out within each group, preferably in advance of the output stage. Communicating this information will enable links to be created:
    - Networking activities are important to build up trust and identify complementarities. These could be annual and include networking activities such as long breaks or 'speed-dating';
    - Networking options include short introductions (3 minute) by each attendee. Joint meetings are important for sharing information on research
    - Staff exchange (short or long term)
    - Exchange newsletters and invitations to be involved in activities
    - There is a need to identify how research can be linked
- Both MACSUR and AHN partners are available to respond to questionnaires, and setting up a survey is a realistic target with existing resources. Survey outputs could then be the basis for a workshop involving partners (and potentially stakeholders). This can be achieved with current resources and fits with existing activities.

4. **Beyond the activities possible with current resources:**
    a. **In which topic areas can we identify potential funding opportunities for the two groups, and how can they be developed?**

In order to push activities beyond the scope of current resources, the group thought that aligning the impact of animal health with how it affects human health would help to engage other organisations, such as the One Health Initiative.

Research activities are key to keeping the networks alive. Funding opportunities identified were COST, Horizon2020, Newton Fund (British Council), Bill Gates Fund, World Bank, Marie Curie Action, World Organisation for Animal Health (OIE) (an instrument of WHO), and the Organisation for Economic Cooperation and Development (OECD). Previously OIE has sponsored conferences (e.g. MACSUR TradeM), OECD has funded networks, and World Bank has funded training activities.

To gain COST funding it would be best to identify a high priority topic and state that networking is required to achieve it. Inclusion of both impacts of animal health on GHGs and impacts of climate change on animal health was viewed as beneficial in applying for a COST action.

With regard to Horizon2020, we need to use mechanisms such as GRA and AnimalChange to influence this funding stream. The networks could be a partner in an EU project with the inclusion of a specific task for communications and networking.

It might be possible to attract funding for some activities in the area of modelling – the primary funder in the UK is Defra. In terms of the effect of feed use efficiency, levy boards might also be interested. In other parts of Europe (and at the EU funding level) other options might exist.

b. In which topic areas can we benefit from engagement with external initiatives/researchers?

Engagement with funders and data holders was highlighted as the key areas for future engagement.

Private companies own data; harmonising and standardising this data is important but often doesn't happen. However, substantial efforts are being made in these areas to increase data availability – for example through existing Bioinformatics centres in UK; and through initiatives such as that led by Big Data Europe and AgInfra to create a 'European map of big data in agriculture and food'. One option to increase access to data is for modellers to approach data providers about the information they hold (e.g. Sainsbury's). An alternative approach would be to hold a colloquium with presentations from data-owners and people who already use data from private companies.

1.4.1 Further discussion

Additional points raised were:

- Prioritisation and definition of where we should be focussing efforts is key;
- Disease focus will vary between countries;
- The STAR-IDAZ login, for online discussions and sharing documents, is currently available for AHN members. This can be made available to MACSUR (contact animalhealthnetwork@adas.co.uk for login details);
- Persuading the Bill and Melinda Gates Foundation that animal health is an important global issue could be fruitful. Who is the best person to contact them? FAO?;
- AHN and MACSUR are complimentary, with AHN providing animal health knowledge and MACSUR the modelling capability and expertise; and,
- Dr Adrian Williams referred participants to http://www.fbspartnership.co.uk/documents/Analysis_of_Farmer_Segmentation_Research_within_the_Farm_Business_Survey.pdf

1.5 Identification of actions and road-map

Actions within current AHN and MACSUR resource:

1. AHN to contribute to the MACSUR State of the Art paper led by Dr Şeyda Özkan, Dr Richard Kipling and Professor Nicola Lacetera.

MACSUR are producing a State of the Art paper on modelling relating to the two topics in question: impacts of climate change on animal health, and impacts of animal health on GHGs. Members of AHN are welcome to contribute to the paper and will receive co-authorship providing a route to create better links between researchers in AHN and MACSUR. The paper aims to describe the current state of modelling and the direction of travel (where we would like to get and how to get there). Key messages from the paper will also be communicated to policy makers in accessible formats (policy briefs etc.).

2. Develop a hierarchy of diseases/health issues contributing to GHGs

This action was discussed during the group sessions. It could look at the most economically important diseases, based on the method used by Professor Phil Garnsworthy (in Garnsworthy, P.C. (2004). The environmental impact of fertility in dairy cows: a modelling approach to predict methane and ammonia emissions. Animal Feed Science and Technology 112: 211–223. doi:10.1016/j.anifeedsci.2003.10.011).

An initial scoping study could deliver questionnaires sent to countries, experts and relevant organisations asking about the important animal health issues. Herd models/simulations could be used to devise a filtering system to say which animal health issues would have the biggest impact on GHG. Sensitivity will be different for different systems (sensitivity analysis).

MACSUR can support and complement this activity by surveying modellers to gain an overview of current modelling capacity in relation to the priority health issues identified. Further development (model sensitivity testing etc.) might be possible for some MACSUR partners, or might require external funding.

ACTION: *Develop a 2-page concept note on the approach (this is essentially a fast tracked version of the proposed AHN scoping study on 'Targeting animal health interventions to reduce GHG emissions intensities').*

3. Apply to a Marie Sklodowska-Curie actions

A Call opens in September with a deadline in January 2016; this is a one stage proposal. Dr Anthony Wilson and MACSUR colleagues are already involved in developing a community of students to share models as part of MACSUR capacity building activities (participants were invited to email Anthony if they were interested in being involved).

ACTION: *Dr Anthony Wilson to take this forward and ensure that it involves AHN as well as MACSUR partners.*

4. Apply for a COST Action

A requirement of COST is that it supports a new network and is available for new partners to join. Dr Anthony Wilson and Dr Yvette de Haas, who have experience applying for these, offered to support. There is only a relatively small amount of work involved (4-5 page application).

5. Data inventory

The modellers to define data requirements and other participating researchers to identify data and information that is available. MACSUR would provide information on their priorities to support this.

ACTION: *Secretariat with support from Network Coordinators to explore potential for additional resource from the UK to deliver this.*

APPENDIX 1: PARTICIPANTS LIST

Surname	First Name	Institute
Bannink	Andre	Wageningen UR
Bartley	Dave	Moredun Research Institute
Blanco Penedo	Isabel	IRTA
Chaudhry	Abdul	Newcastle University
De Haas	Yvette	Wageningen UR Livestock Research
Fox	Naomi	Scotland's Rural College
Garnsworthy	Phil	University of Nottingham
Gill	Pinder	Defra
Gredler	Birgit	Qualitas AG
Hammami	Hedi	University of Liège
Hulin	Adele	ADAS
Kipling	Richard	Aberystwyth University
Kyriazakis	Ilias	Newcastle University
Leclere	David	International Institute for Applied Systems Analysis
Lessire	Françoise	Université de Liège
Macleod	Michael	Scotland's Rural College
Özkan	Şeyda	Norwegian University of Life Sciences
Robinson	Tim	ILRI
Rodriguez	Jose Luis	Colombian Corporation of Research in Livestock and Agriculture
Vanrobays	Marie-Laure	University of Liège
Vitali	Andrea	Tuscia University
Wheelhouse	Nick	Moredun Research Institute
Willett	Alice	ADAS
Williams	Adrian	Cranfield University
Williams	Hefin	Aberystwyth University
Wilson	Anthony	Pirbright Institute

APPENDIX 2: WORKSHOP FLYER INCLUDING AGENDA

Joint Meeting of the Animal Health & GHG Emissions Intensity Network (AHN) and Modelling European Agriculture with Climate Change and Food Security (MACSUR)

25th June 2015
09.30 – 16.00

University of Reading, UK

Address: School of Agriculture, Policy and Development, University of Reading, Earley Gate, Reading Berkshire. Sat Nav post code RG6 7BE

Parking: Car Park 23 in front of the School of Agriculture or Car Park 22 next to the surrounding buildings. Parking permits are available via sending your vehicle registration to h.f.owens@reading.ac.uk

Workshop aim

The aim of the workshop is to further develop links between the Animal Health & Greenhouse Gas Emissions Intensity Network of the Global Research Alliance on Agricultural Greenhouse Gases (http://www.globalresearchalliance.org/) and Modelling European Agriculture with Climate Change for food Security (www.macsur.eu)

This workshop will be an opportunity to contribute to high quality papers that will help set the research agenda in these fields.

Workshop objectives

- Share information on each of the initiatives
- Identify complementarities and duplications in research priorities between MACSUR and AHN
- Identify activities to focus on, how to achieve these based on resources available and identify opportunities for funding.
- Consider engagement with other initiatives.

Workshop Agenda

Thursday 25th June 2015, AHN and MACSUR Joint Meeting

Time	Agenda Item	Delegate
09.30 – 09.45	Introduction and outline of meeting aims	Şeyda Özkan
09.45 – 10.15	Introductions from each Network AHN MACSUR	Ilias Kyriazakis Richard Kipling
10.15 – 10.30	*Tea/Coffee break*	
10.30 – 10.40	Introduction to research priority session	Richard Kipling
10.40 – 11.05	MACSUR – Research priorities identified in workshop session (from Wednesday 24th June)	Şeyda Özkan
11.05 – 11.30	AHN – Current priorities	Tim Robinson
11.30 – 12.00	Group discussion to identify common objectives and priorities	Tim Robinson
12.00 – 12.45	*Lunch*	
12.45 – 14.00	Discussion session - based on list of priorities generated in the morning. Break into groups of 10/11 people	Ilias Kyriazakis Anthony Wilson Tim Robinson
14.00 – 15.00	Feedback session and discussion of differences between group views	Rapporteurs
15.00 – 15.20	*Tea/Coffee break*	
15.20 – 15.45	Identification of actions and roadmap, discuss state-of-the art paper and Close	Ilias Kyriazakis
16.00 – 18.30	Visit to University of Reading's Centre for Dairy Research	

For more information please contact:

Alice Willett (ADAS UK Ltd.)

Telephone: 01954 268309 Email: animalhealthnetwork@adas.co.uk

APPENDIX 3: COPY OF AHN INTRODUCTORY PRESENTATION

Slide 1

Department for Environment Food & Rural Affairs

Animal Health and Greenhouse Gas Emissions Intensity Network

Presented by: Ilias Kyriazakis, UK
Presented to: AHN & MACSUR Joint meeting; 25th June, Reading UK

Slide 2

- **Global Research Alliance on Agricultural Greenhouse Gases**
- **Overview of the Animal Health & GHG Emissions Intensity Network**
  - Network aim & objectives
  - Structure
  - Future goals

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Slide 3

- **Scope**
  - **Increase agricultural production with lower emissions**
  - Improve global cooperation in research
  - Work with farmers and partners to provide knowledge
- **Structure**
  - 3 Research Groups (including the **Livestock Research Group**) and 2 cross-cutting groups
  - Alliance Council and Secretariat
- Further info at www.globalresearchalliance.org

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Slide 4

4

Slide 5

- **GHG emissions intensity** from livestock farming could be reduced through efficiency and production gains resulting from improved livestock health
- **The Network aims** to bring together researchers (in veterinary science, epidemiology, animal science, modelling, economics etc) to explore links and synergies between animal disease control and Greenhouse Gas (GHG) emissions intensity reductions

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Slide 6

1. **Share information on current and planned reserach and funding activities**
2. **Maintain and enhance capacity in this field of research**
3. **Encourage and facilitate a joined-up approach**
4. **Establish common agreement on priority issues and explore funding opportunities**
5. **Pursue synergies with stakeholders and other relevant initiatives**

Slide 7

Network Co-ordination

- **Lead Network Co-ordinator**: Ilias Kyriazakis (Newcastle University, UK)
- **Joint Network Co-ordinator:** Tim Robinson (ILRI, Kenya)
- **Network Secretariat:**
  - Adele Hulin and Alice Willett (ADAS UK Ltd)
  - Funded by Defra for 3 years
  - Central contact point/ Member database/ Organisational support

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Progress to date

- Wide promotion to increase membership
  - 79 members across 25 countries (out of 42 GRA)
- Regional Network Champions (more needed)
- 2 Annual Network Workshops (Ireland and France)
- 1 Regional Workshop (Ethiopia)
- Developed links with FACCE-JPI, **MACSUR**, GASL, STAR-IDAZ and NEAT
- Identified potential funding routes
- Communications e.g. GRA, UK Newsletters

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Relevant research projects

- Modelling the Impact of Controlling Endemic Cattle Diseases and Conditions on GHG Emissions (Defra project AC0120)
  - *Reducing Greenhouse Gas Intensities through Improvements in Animal Health*
- Reducing GHG emissions intensities through trypanosomiasis control in East Africa
- Targeting animal health interventions to reduce GHG emissions intensities (concept note)

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Key goals for next 12 months

- Identify tangible Network outputs
- Complement other GRA-LRG Networks
- Pursue funding opportunities to secure Network future
- Facilitate interaction of research communities (Workshops and online members area)
- Regional activity at ALPA (November 2015)
- Continue to link with relevant initiatives

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Long term vision for the Network

- A Multi-national community that engages all GRA countries and world regions
- Port of call for information/input to relevant international activities
- Facilitated exchange between Animal health, GHG and Social research communities
- Concrete funded research programmes on Animal health & GHG emissions intensity

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Network information

- Network Secretariat animalhealthnetwork@adas.co.uk
- UK Agri-Science & Innovation Newsletter http://www.globalresearchalliance.org/community/alliance-member-countries/member-country-page-united-kingdom/
- GRA Livestock Research Group Newsletter
- GRA website www.globalresearchalliance.org

GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES

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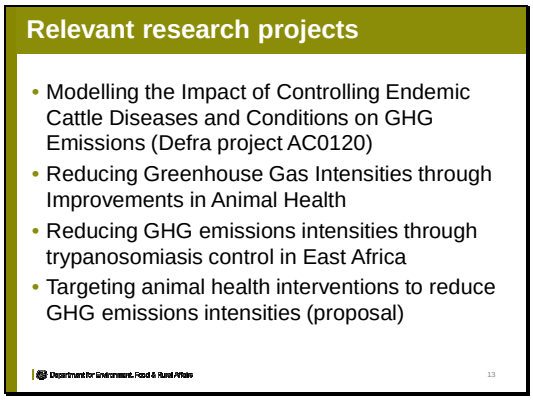

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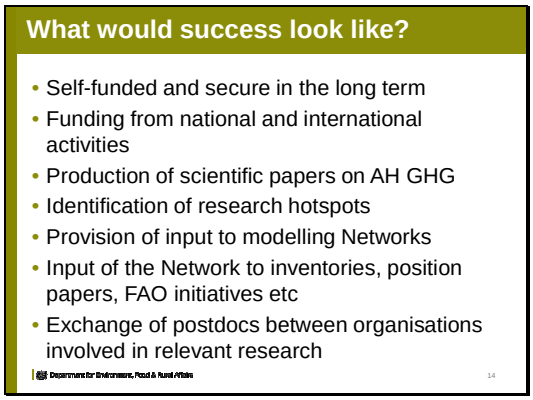

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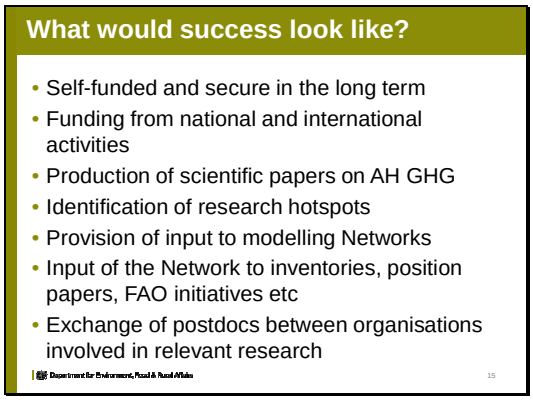
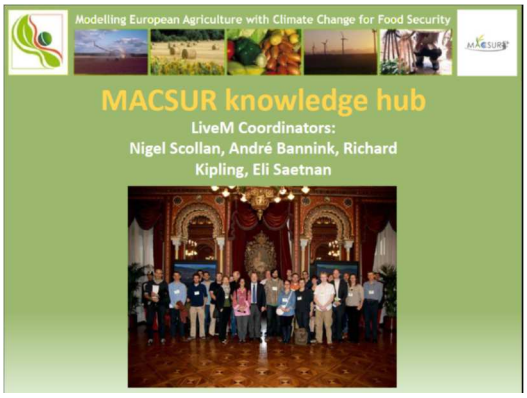


APPENDIX 4: COPY OF MACSUR INTRODUCTORY PRESENTATION

Slide 1



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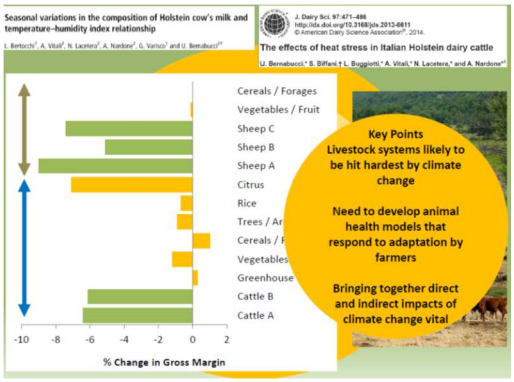

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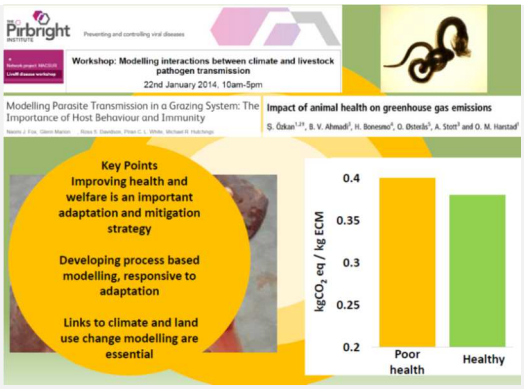

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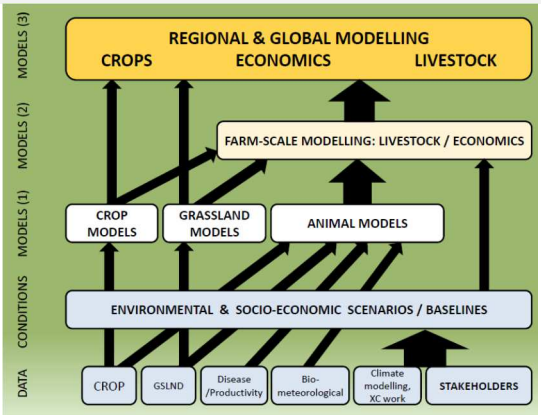

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