

Croplands Research Group Meeting

Hyatt Regency Phoenix

Phoenix, Arizona –United States

10-11 November 2016

Meeting Report

OVERVIEW

The eighth meeting of the Croplands Research Group (CRG) of the Global Research Alliance on Agricultural Greenhouse Gases (“the Alliance”) was held at the Hyatt Regency Hotel in Phoenix, Arizona, USA, on 10 and 11 November 2016 following the ASA-CSSA-SSSA “Tri Societies” annual meeting. The Alliance meeting was chaired by USA (Dr Jane Johnson, USDA-ARS) as Co-Chair of the Group and supported by Dr Geraldo Martha (Embrapa, Brazil) on behalf of the Brazilian Co-Chair.

This report is a summary of the key discussions and outcomes of the meeting. PDF’s of the presentations and audio recordings of the meeting are provided separately on the member’s area of the Global Research Alliance website.

PARTICIPANTS

The meeting was attended by 34 participants, representing 16 Alliance member countries, and invited experts.

- **Alliance Members attending:** Argentina, Australia, Brazil, Canada, China, Denmark, France, Germany, Italy, Japan, Netherlands, Norway, Republic of Korea, Sweden, United Kingdom, USA.
- **Alliance Members unable to attend:** Chile, Colombia, Costa Rica, Finland, Ghana, Ireland, Malaysia, Mexico, New Zealand, Nicaragua, Indonesia, Peru, Philippines, Poland, Spain, Switzerland, Thailand, Uruguay, Viet Nam.

MEETING OUTCOMES

The meeting achieved the following outcomes:

- Update from the Alliance Secretariat including outcomes from the latest Council meeting.

- Discussion on Alliance Flagship projects, and the future development of a Nitrogen Flagship.
- Report on the ongoing activities of the Croplands Research Group.
- Discussion on the activities and next steps to develop the eight Networks of the Group.
- Identification of opportunities for collaboration with the Integrative Research Group.
- Called for the nomination of a third Co-Chair to the Group.
- Next steps for the Group and discussion about future meetings.

SUMMARY OF DISCUSSIONS

OPENING REMARKS

The eighth meeting of the Croplands Research Group (CRG) was opened by the new Co-Chair Dr Jane Johnson, USDA-ARS. Dr Johnson welcomed participants to the meeting and introduced Geraldo Martha (representing the Brazilian Co-Chair) to the Group. Also attending the meeting were representatives of the Integrative Research Group (IRG) to provide an overview of the establishment and activities of this new Research Group and to contribute to a joint session with CRG members on the second day.

Dr Alan Franzluebbbers, previous Co-Chair of the CRG, provided an overview of the 2015 meeting in Brasilia and activities since then. The 2015 meeting was held alongside the World Congress on Integrated Crop-Livestock-Forest Systems, with a special session at the congress that showcased work related to the Alliance. Outcomes from the Brasilia meeting included:

- An agreement to restructure the Group into a number of proposed networks.
- Discussion on partners of the Group.
- A joint session with the Inventories and Monitoring Cross-cutting Group (now reorganised into the IRG).
- Future development of regional networks was also discussed, although this has not yet occurred.
- Communication of the Group's activities and the support of partners to achieve this.

SECRETARIAT UPDATE

The update from the Secretariat covered the Alliance events and outcomes since the last CRG meeting, including the main decisions from the 2015 and 2016 Council meetings. Membership in the Alliance remains at 46 Countries, although the Alliance now has a number of new Partner organisations, including the Climate and Clean Air Coalition (CCAC), CABI, FONTAGRO and GODAN. The total number of Alliance Partners is now 13 organisations.

The main outcome from the 2015 Council meeting in Des Moines, USA, was the agreement to enhance the activities of the Secretariat, enabling the Secretariat to take a more active role in promoting the activities of the Alliance and its Research Groups as well as identifying opportunities to fund Alliance activities. A key part of this work will be undertaken by the Special Representative, Mr Hayden Montgomery, who was previously involved in establishing the Alliance. The role of the Special Representative is to raise the profile of the Alliance, and communicate the benefits of participating in the Alliance to Members, Partners, other international organisations and funders.

The 2016 Council meeting was held 11-12 October 2016 in Mexico City, Mexico. It focused on the finalisation of the Strategic Plan that was agreed to at the 2015 Council meeting, to advance Alliance objectives under four key strategies: 1) further research collaboration; 2) foster outreach, knowledge sharing and information exchange; 3) build effective partnerships; and 4) leverage financial and other resourcing.

Flagships

Ahead of the Council meeting the Council Chair and Vice-Chair requested Research Groups develop a number of proposals. These would be discussed by Council Members and Partners, with the objective of adopting projects to provide a direction of research for the Alliance in the next few years. The development of these priority activities, or “Flagship projects”, is in response to identified weaknesses in the Alliance, as discussed at the 2015 Council meeting. These included a lack of connection between the Alliance Council and its Research Groups and therefore often a lack of funding for Research Group activities. The International Research Collaboration Working Group also identified the importance of identifying and clearly articulating research priorities as a way to better mobilize and target resources at a meeting in Brussels.

The Flagships selected at the Council meeting for immediate development were:

1. On-farm assessment of multi-beneficial water management techniques in the rice sector.
2. Improved greenhouse gas inventories – making them count.
3. Enteric fermentation mitigation hub.
4. Soil carbon sequestration.

The next steps are to establish Task Forces that comprise of Members, Partners and Research Groups and will transform each of the proposals into fully scoped projects ready to be implemented. The development of Flagships is an opportunity to align countries domestic research programmes and involve Partner organisations in activities of the Research Groups. Flagship proposals will also identify upcoming research calls from Alliance Members and Partners, and other organisations, to provide funding for the flagship proposals. The Council was also very interested in further developing a Flagship on nitrogen, although as yet this proposal has no concrete activities and is a collection of possible topics to address.

POTENTIAL COLLABORATORS AND PARTNERS

Dr Upendra Sainju (USDA-ARS), the incoming community leader for a Soil Carbon and Greenhouse Gas Emissions Community of the Agronomy Society of America and Associate Editor of Journal of Environmental Quality, requested the Groups ideas for a special session or symposium to be held at the 2017 meeting of the society in Tampa, Florida. Topics could be cross-cutting, for example integrated crop-livestock systems or soil carbon and GHG emissions. Members should provide any topic suggestions to Upendra Sainju (Upendra.sainju@ars.usda.gov) and Jane Johnson (jane.johnson@ars.usda.gov). There are potentials that papers presented in the symposium will be published collectively as symposium papers in the Journal of Environmental Quality.

Policy Links and Partnerships

The Secretariat noted that the Alliance Council now Partners with 13 international and regional organisation to help achieve its aims. Research Groups are encouraged to invite these Partners to attend annual meetings and to participate in developing work plans and activities. The CRG may also invite other organisations and experts to become partners of the Group, its Networks or specific activities. These organisations can help the CRG to meet the six objectives (current research landscape, building capability, good practice guidance and methodologies, research networks and

databases, collaborative research, and policy support and links to international initiatives) that each Research Group reports against.

In particular, the CRG should consider inviting partners that will help achieve the final objective to provide policy support and link to other international initiatives. Organisations that the CRG could invite to partner in activities and to help with the dissemination of research outcomes are the International Fertiliser Industry Association, the SAI Platform, and CGIAR centres and programmes – such as CYMMIT and CCAFS.

ACTIVITY UPDATES

MAGGnet

Managing Agricultural Greenhouse Gases Network (MAGGnet) is an activity to co-ordinate a multi-national approach for inventory and analysis of GHG mitigation research. The database collects meta-data from experimental research sites and can be used by researchers looking for comparable site or modellers to identify data-sets. Meta-data has now been received from 337 experimental sites across 23 countries, and countries are also updating site information. MAGGnet has attempted to include response data as part of the information collected, although finding a consensus /common unit across members is difficult.

MAGGnet has supported the model inter-comparison activity underway in the IRG and the template has been adapted by the Paddy Rice Research Group to account for paddy rice systems. A MAGGnet overview paper was published in *Carbon Management* (<http://dx.doi.org/10.1080/17583004.2016.1180586>) and those interested in contributing will find the meta-data template and sharing agreement on the Global Research Alliance Modelling Platform (GRAMP) and Alliance websites.

The next step for this activity is to develop a forum and searchable database so that site specific information may be easily found. Although this idea was put forward as a flagship proposal it was seen to be too narrowly focussed (not involving livestock or paddy rice), the Council also felt the Alliance may not be the right initiative to hold or manage databases.

The Group noted that MAGGnet was a good opportunity to bring together domestic programmes for international exposure, useful to support modelling activities and could be a good activity to expand across the Alliance. Similar activities are underway elsewhere (in particular the Peru University library system was mentioned) and there may be opportunities to link with these.

GRAMP

The aim of Global Research Alliance Modelling Platform (GRAMP) is to provide the metadata for models used to estimate agricultural GHG emissions and improve understanding to further model development.

The platform includes a version history for each of the models, publications where the models are referenced, usage and access to the models. The site is able to facilitate webinars for the Group, having hosted four webinars so far (available on YouTube), and has a community of 600 users. The initial funding for GRAMP, provided by DEFRA -UK has now ended, and the site is looking for future funding opportunities.

GRAMP is linked with an open source modelling platform, allowing source code for each model to be uploaded. The source code for the DeNitrification-DeComposition (DNDC) model is expected to be available in mid-2017. New model families BASFOR and BASGRA, as well as CENTURY and DAYCENT will be on the site in late 2016.

Literature Database

The CRG open access literature database is hosted at Kansas State University Library and now references over 6,000 published articles with another 700 articles to be added. The database is searchable by country, climate and cropping system. To ensure your papers are added to the database, or to share your library, follow Livia Olsen on Research Gate (livia@ksu.edu).

This activity is still considering the issue of grey literature (non-peer reviewed papers) and how this could be included. This type of literature may fill gaps in some regions, but may need to be screened before inclusion.

Communications/Facebook

The CRG has a Facebook page (GRA Croplands Research Group), which shares Group activities, news and outcomes from across the Alliance and relevant work from other groups. The Group is encouraged to like the Facebook page and share information and publications to the page.

NETWORKS UPDATE AND NEXT STEPS

At the 2015 meeting in Brasilia the CRG agreed to the establishment of several new Networks, based on key areas of research related to greenhouse gas emissions and carbon sequestration for croplands. The Coordinators from each of the seven recently established Networks provided an update on the development of activities and work areas, including the development of a fact sheet to outline the topic. Two breakout sessions across the two day meeting provided an opportunity to finalise these fact sheets and identify the next steps for each Network. The overview and identified next steps for each Network are summarised below.

Irrigation Efficiency

The Irrigation Efficiency Network is led by Kevin Bronson, USA. The Network is looking for additional members, particularly irrigation specialists.

The Network may cover changes in management practices including conversion to irrigation, or different irrigation practices and benefits (pivot irrigation, furrow irrigation, sub-surface drip etc.). Different irrigation methods may link to activities in other Networks, for example sub-surface drip irrigation is the most efficient method especially for use with fertigation (application of fertiliser through irrigation) and can reduce N₂O emissions when applied as a high number of smaller dose applications. The practice of furrow irrigation requires soils to be tilled and link to conservation agriculture.

The Network could undertake a life-cycle analysis for the various irrigation systems to identify the most appropriate options. Another activity could be information on the best practices for the application of manure and slurry onto fields and the use of liquid manure for fertigation.

Peatlands Management

The Peatlands Management Network is led by Hanna Silvennoinen, Norway, taking over from Lillian Øygarden the previous coordinator. The focus of the Network will be expanding participation to other countries that have cultivated peatlands, such as the Baltic region and South East Asia as the Network should consider mitigation options for boreal systems and tropical peatlands. The Network should also consider activities to support peatlands restoration, a research area that is not well covered elsewhere and could increase participation, especially from European countries.

A workshop of the Network will be organised for July-September 2017 in Norway, funding has been applied for to cover the cost of travel and accommodation up to 20 participants).

The areas of interest for the Network include:

- Making the Network globally relevant and different from existing groups (e.g., FAO).
- Identifying where lands should be cultivated and the best management options to reduce emissions.
- Identifying what peatlands should/could be restored based on the policies and requirements for each country.
- Rename the Network “Peatlands and Land Use Planning Network”.
- Completing a stocktake and inventory –of fertilisation and drainage policies globally.
- Creating a database of sustainable fertiliser practices.

Next steps for the Network:

- Contact the leaders of the FAO Mitigation of Climate Change in Agriculture (MICCA) and the International Peatland Society (IPS) to identify gaps for the CRG Peatlands Network and collaboration opportunities.
- Contact Alliance country representatives to expand contacts.
- Review the main challenges facing cultivated peatlands in different regions
- Opportunity to develop a proposal for a Horizon 2020 funding call on greenhouse gases.

Landscape Management of Agricultural Systems

The Network on Landscape Management of Agricultural Systems is led by Xunhua Zheng, China. The Network aims to develop management decision tools for reducing greenhouse gas emissions at the landscape level. This model based tool could explore management strategies at the landscape and catchment scale, using various models and different scales. The area that the Network intends to cover includes:

- Developing effective decision support tools.
- Validating models.
- Testing available tools.

Future activities:

- Compare and validate different models – comparing one catchment from China and one from France and then further develop the models.
- Create a demonstration tool – for the farm and catchment scale.
- Develop a proposal for a joint project
- Align future activities with the Integrative Research Group.

Agroforestry Systems

The Network on Agroforestry Systems is led by Richard Farrell, Canada and now has 12 researchers participating, including the World Agroforestry Centre in Nairobi. The Network covers a range of practices such as alley cropping, silvopastoral systems, riparian planting and also includes adaptation practices and other agricultural systems (e.g., integrated livestock).

The Network has proposed a workshop alongside the 2019 Canadian Soil Science Society, at the University of Saskatchewan. If the proposal is accepted funding would be provided for two speakers and graduate students from members of the Croplands Research Group.

The next steps for the Network are to:

- Increase regional participation and identify different regional systems.
- Finalise the factsheet to share with the Group.
- Identify the impediments to adoption.
- New research to understand what happens at the tree-crop interface, addition of trees to systems and how to alter them.

Conservation Agriculture

The Conservation Agriculture Network is led by Craig Drury, Canada. A draft version of the fact sheet for this Network is available for the Group to review. The aim of the Network is to understand how conservation agriculture practices, including reduced till systems, permanent soil cover and reduced fallow periods can reduce N₂O emissions. Other strategies to reduce GHG emissions from crops include enhancing soil carbon sequestration, improved soil quality, increased nutrient use efficiency, and increased water use efficiency.

The activities of the Network include understanding where each practice is able to reduce emissions, what conditions are required and how this enhances productivity. The Network will also estimate the mitigation impact of crop rotations and cover crops, multi-intervention practices and how these change GHGs, as well as considering where alternative conservation tillage practices might be beneficial if no-till is not appropriate. Activities for the Network could include:

- Cover crops and crop rotation, where does it work or not (dryland and water constraints).
- Bringing together results from multiple regions and countries to understand the options.
- Cover crops, where these increase N₂O emissions and how to manage this practice.
- Natural vegetation and ecosystems that can be mimicked in agricultural systems.
- Review the uptake of nitrogen across the whole system – rotation, tillage, and cover crops.
- Global assessment of where cover crops work – and if not what the options would be instead.

The next steps for the Network:

- Review methods and practices for tillage, no-till, rotation etc. and the conditions and climate where these reduce GHG emissions.
- Publish case studies of conservation agriculture practices
- Understand management practices for cover crops, including impacts on soil carbon.
- Including legumes in the crop rotation to reduce N fertilization rates and GHG emissions.

Integrated Crop-Livestock Systems (ICLS)

The ICLS Network is led by Alan Franzluebbers, USA and aims to identify ways to improve production and reduce environmental impacts through greater integration of Crop-Livestock Systems. A diversity of systems, climate and soils mean that no-one solution will suit every system or region; the Network may consider expanding to different types of systems through regional activities in the future.

Tools that are able to compare mitigation impacts across systems, such as an emissions intensity focus or partial life cycle analysis are useful to tie systems together, and could be something considered by all of the Research Groups.

The Network may also publish case studies where interdisciplinary analysis is already undertaken in different global regions. Existing activities such as the Modeling European Agriculture with Climate Change for food Security (MACSUR) project in Europe (www.macsur.eu), Agricultural Model Intercomparison and Improvement project (AgMIP) (www.agmip.com) and MAGGnet could provide a way to integrate knowledge addressing in a context sensitive way the complexity and uncertainties of agricultural performances including the potential trade-offs or synergies.

Activities planned for the Network include:

- Finalisation of the factsheet, to define the Networks area of work and review this in different parts of the world.
- Develop a framework to compare carbon and nitrogen cycles across different systems.

- Participate in the 2017 American Society of Agronomy meeting and contribute to a symposium on soil carbon sequestration and greenhouse gas emissions in integrated crop-livestock systems.

Future activities:

- Series of webinars – reflecting different crop-livestock systems across the world and each answering a common set of questions, e.g. system overview, feed, manure etc.
- Synthesis paper – highlighting each region and identifying the biggest gaps in current knowledge.

Nutrient Management

The Integrated Nutrient Management Network is led by Dr Rod Venterea, USDA and now involves 20 researchers from 10 countries. The Network focuses on the fact that nitrogen is the limiting factor to productivity but is also responsible for direct and indirect N₂O. The application of nutrients to crops may also affect the release of CH₄ and CO₂.

Effective practices to reduce greenhouse gas emissions can vary depending on the crop, soil type and climate. If the Network was able to combine the existing information about practices in one or a series of meta-analyses that identify and account for regional difference this would be a useful product. Some global analyses are already underway and the Alliance could contribute to these efforts.

Management factors that affect emissions are the rate, timing, placement and type of fertiliser applied (including organic fertilisers). Known practices to reduce N₂O emissions are to reduce the application of nitrogen, use of inhibitors, identifying the best time to apply fertiliser in order to maintain yields, and the use of different fertilisers or coated fertilisers. A combination of approaches will be needed to identify the best management options for each region.

The Group mentioned that other issues for the Network to consider could include the use of legumes, living mulch and green manures in cropping systems and the effect of microbial communities on N₂O emissions.

Activities the Network could undertake:

- Identifying different practices including, fertiliser type, irrigation management, and natural nitrification inhibitors.
- Holding further N₂O measurement workshops, the last two events were well attended and supported by measurement guidelines developed by the Alliance.
- Supporting the development of a nitrogen flagship.
- Developing a list of existing funding sources for international exchanges, increasing collaborations.
- Holding a symposium, e.g. social and economic impediments to adopting practices.
- Collaborating on/contributing to meta-analyses.
- Publishing case studies to share knowledge with other organisations.
- Developing a conceptual framework to maximise nitrogen use efficiency.

Next steps for the Network:

- In association with the International soil science congress the Network will hold a symposium on nutrient management in different regions. A product of this may be a synthesis paper on “improved nitrogen use efficiency”.
- Develop case studies, in collaboration with the Modeling European Agriculture with Climate Change for food Security (MACSUR) project.
- Meta- analyses on nitrogen-use efficiency and nitrogen management.
- Contribute to a list of possible funding sources.

INTEGRATIVE RESEARCH GROUP

Representatives attending the meeting from the Integrative Research Group (IRG) were Brian McConkey (Agriculture and Agri-Food Canada), Suzanne Lutfalla (INRA, France), and via Skype Jean-François Soussana (INRA, France). The IRG was formed in late 2015 and merged the two previous Cross-Cutting Groups in an effort to cover a wider range of cross-cutting topics and also scale up information across the Research Groups to policy-makers.

The IRG has attended meetings of all Research Groups and the Council meeting in 2016 to understand the opportunities and needs of the Groups. The first meeting of the IRG will be held 19-20 January 2017 to set priorities and activities of the Group and its Networks.

The IRG has 10 member countries participating in five Network areas:

- **Grasslands**, led by Uruguay and Ireland. This Network was previously coordinated by the Livestock Research Group, but its cross-cutting nature and focus on soil carbon make it a better fit with the IRG. The Grasslands Network is focused on developing guidelines for measuring and monitoring soil carbon in grasslands, a database of grazing practices to improve soil carbon and reduce GHG emissions and improvement of degraded grasslands.
- **Soil carbon sequestration**, led by France and Canada. Activities include understanding the co-benefits of soil carbon for yields and adaptation, Monitoring, Reporting and Verification (MRV) and soil organic carbon dynamics modelling.
- **Field scale**, led by France and the UK. This network incorporates existing activities from the soil carbon and nitrogen cycling cross-cutting group, including assessing mitigation and adaptation options through a multi-model ensemble, understanding climate sensitivity of GHG emissions and soil carbon and developing a compendium of models.
- **Farm and regional scale**, led by Australia and the International Institute for Applied Systems Analysis. This Network is focused on farm level calculators for soil carbon, pilot studies for regional assessment as well as regional maps of mitigation and adaptation potentials options.
- The **GHG Inventory Network** led by the Netherlands and Canada continues activities from the Inventories and monitoring cross-cutting group. The activities include guidance on improving inventories and activity data, examples of Tier 2 inventories and developing country specific emissions factors.

The IRG is now focussed on developing activities that will be completed in the next 12 months and increase participation in the Networks and the IRG, e.g. publishing a synthesis to policy makers.

IRG involvement in Flagships

The IRG expects to be involved in all of the Flagships, as the broad nature of the projects will cover a number of cross-cutting areas. However, the IRG will take a leading role in the development of the Soil Carbon Sequestration and GHG Inventory Flagships.

The **Soil Carbon Sequestration Flagship** will identify agricultural practices that sequester soil carbon and improve soil health and will cover co-benefits, MRV, soil carbon stocks and inventory data. It is likely that this Flagship would also link to a future Flagship on nitrogen.

The Flagship proposal focused on the development of technical tools and web based implementation support. A number of key partners have already been identified for the Flagship which will link to and support the 4/1000 initiative on soil carbon. Seed funding to coordinate activities across these initiatives may be available from the EU.

The **GHG Inventory Flagship** is a critical one for the Alliance as it is an opportunity to reach out to the wider community. Environment Ministries are most often the responsible agency for developing GHG Inventories, although they may not be the ministry responsible for coordinating activities in the Alliance. However, we need to make sure that Agriculture Ministries have good quality agriculture data to include in the inventory.

The Flagship will provide training and guidance, linking to local and regional research activities – and linking together existing Alliance activities and partners. Activities will include global databases, support for countries interested in improving their inventory and guidance for moving to a higher tier inventory. The role of the IRG will be more on developing the underlying system to build and improve an agricultural GHG inventory.

CROPLANDS RESEARCH GROUP CONTRIBUTION TO FLAGSHIP ACTIVITIES

The Group discussed how they would contribute to the Alliance Flagship activities. Flagships will need the participation of Research Groups to identify the opportunities and develop the detailed proposals including the expected outcomes. However, it is expected that the members of the Alliance Council will also need to be involved, identifying the Flagships relevant to their national research projects, where existing resources might be aligned and which research agencies researchers would be involved. Funding for Flagships will be identified based on the support of Council members and Partners as well as the ability of a Flagship to make use of international research calls or other funding organisations.

The Group expects to be involved in the developing a detailed proposal for the soil carbon sequestration Flagship and the development of a nitrogen project that could be approved as a Flagship at the next Council meeting. The Group discussed what a nitrogen Flagship might look like:

- Optimising the role of nitrogen in sustainable food production, how much nitrogen is required to produce food – without increasing N₂O emissions.
- Identifying reactive nitrogen and its impacts.
- Nitrogen Balance - The role of nitrogen to increase carbon in the soil, e.g. how much carbon does one unit of nitrogen fix.
- Identifying the on farm use of nitrogen, and efficiency of use.
- Emissions intensity and identifying the targets that we must reach to reduce GHG emissions and increase the long term storage of carbon.

Partners that could be involved are International Plant Nutrition Institute (IPNI) and also MACSUR – a project modelling GHG emissions from agricultural systems involving 17 European countries based on case studies at the regional and food chain scale.

NEXT STEPS

The Co-Chair informed the Group of a decision at the Council meeting to identify a third Co-Chair for the CRG and the request for Members to nominate people for this position. As the CRG has recently established several new Networks, a third Co-Chair would provide additional resources supporting the coordination of the Group and its expanded range of topics. The existing Co-Chairs, Brazil and USA, mean that cropland systems in North and South America are already well covered, therefore a Co-Chair from a different region of the world would be preferred bringing an understanding of different systems to the Group. Members who would like to take on this role, or would like to suggest someone should contact first their country Council representative and then the Alliance Secretariat with their nomination.

The Group discussed actions to move forward the CRG between this meeting and the next. GRAMP was offered as a communication platform for the CRG, with the ability to host webinars and a forum to continue discussions.

To increase the participation in Networks, Coordinators will finalise the fact sheet for each and along with the work plans discussed here, resend the email to the CRG and Alliance members to call for more participants. The Group should also share this information with contacts in their own countries, as participation beyond nominated country representatives to the CRG is encouraged in the Networks.

The Group requested a session during the 2017 meeting on funding opportunities for international collaboration. Members should come prepared to specific projects – possibly regionally focused – and then discuss specific research funding opportunities. In the meantime members who hear of possible funding opportunities should provide this information to the Secretariat, so these may be shared across the Alliance.

Next Meeting of the Group

A number of options were presented to the Group for the location of the 2017 meeting of the CRG; including the possibility of meeting in Japan alongside the council meeting, a meeting in Ireland 4-6 September alongside the 17th annual (Recycling of Agricultural, Municipal and Industrial Residues in Agriculture Network (RAMIRAN) conference or the Soil Organic Matter meeting in Harpenden, UK 3-7 September 2017 (<http://www.som2017.org/>).

There was an agreement to hold the 2017 meeting in Reading, UK, since a number of CRG members are already planning to attend this conference. Also, the IRG tentatively is planning a meeting at that time as well, which would facilitate interaction across the two research groups.

A location for the 2018 meeting could be alongside the International Union of Soil Scientists event, August 2018 in Rio de Janeiro, Brazil. The Group will also look for an opportunity to hold a joint meeting with the Paddy Rice Research Group in the near future.

APPENDIX 1: Participants list

Country	Attendees
Alliance Member Countries	
Argentina	Piñeiro Gervasio: University of Buenos Aires (pineiro@agro.uba.ar)
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