Climate, Food and Farming Research Network Call for Proposals, 2013

Grants to support scientific training of PhD students from developing countries

Background

The Climate Food and Farming (CLIFF) Research Network is a collaborative initiative of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the Universities of Copenhagen and Aarhus. The Network aims to build the capacity of young scientists, generate novel climate change research on smallholder farming systems, and facilitate South-South knowledge exchange. Each year, starting in 2011, CLIFF has provided small grants to support graduate student research and participation in international training events and conferences. The activities have resulted in a linked network of emerging scientists that improve the quality of each other's research, collaborate on new proposals, and speed-up the pace of their scientific development.

Call for proposals

In 2013, we invite applications from students from developing countries, currently enrolled in PhD programs, to become part of the CLIFF Network. Selected students will be sponsored for short-term (3-4 month) scientific training and research stays at CGIAR centres or affiliated research institutions[1]. During their tenure at the host institutions, students will learn approaches used in the Standard Assessment of Mitigation Potential and Livelihoods in Smallholder Systems (SAMPLES) research programme to evaluate smallholder farming systems in terms of system level livelihood and environmental outcomes at whole-farm and landscape scales.

The techniques that may be studied include (but are not limited to) remote sensing, economic surveys, and measurement of greenhouse gas emissions from soils. Precise training will depend on the student's and host institution scientists' interests. Applications are invited for training and travel grants of up to **12,000 USD**. The travel grants will be used to support living and research costs at the host institution.

It is important to note that these grants will not necessarily be to support participants' own research, but to facilitate training on techniques and methods being applied in SAMPLES and are expected to be applicable to the beneficiaries' own research.

The SAMPLES programme

Feeding the world sustainably requires balancing a growing population's food and nutritional needs while limiting the greenhouse gases released by agriculture. Our ability to make informed decisions to achieve this balance is currently limited by a lack of accurate data on greenhouse gas emissions at the local, national and international levels, particularly in developing countries. There is a need for less expensive and more user- friendly methods for quantifying emissions and comparing mitigation options, along with sustained effort to build technical capacity and generate tools and data to inform sustainable development discussions.

SAMPLES was created to develop the infrastructure necessary to identify pro-poor mitigation options (strategies that reduce greenhouse gas emissions from agriculture while simultaneously improving livelihoods). SAMPLES includes several components:

[1] Scientific stays to non-CGIAR centres will be considered if justified.

- Measurement protocol. The core of the SAMPLES project is the development of a field protocol for quantifying emissions and identifying mitigation options compatible with food security in smallholder systems. This includes assessment of the impacts of mitigation practices on yields and economic returns to farmers.
- Field testing. The methods to be included in the protocol are currently being field-tested by ICRAF, ILRI, and IRRI in mixed-crop systems in East Africa and rice-based systems in Southeast Asia, yielding a full season of GHG emissions data from these sites. Other CGIAR centres are also generating data on greenhouse gas emissions from various agricultural systems.
- Global, regional and landscape-level priority setting. Targeting of agroecosystems, farming systems and key categories at the landscape level to identify where the minimum number of measurements can deliver the maximum amount of information.

For more information on the SAMPLES programme contact Todd Rosenstock (t.rosenstock@cgiar.org), visit http://www.worldagroforestry.org/project/samples, or read the recent publication about SAMPLES in Environmental Research Letters: http://iopscience.iop.org/1748-9326/8/2/021003.

Application requirements

The application must include the following documents merged into one pdf file:

- 1-2 page motivation letter (described below).
- 1-page curriculum vitae that includes your contact details.
- Letter of support from your PhD supervisor
- All applications must be in English.

The motivation letter, which must be **no more than two A4 pages,** must include the following:

1. Your name, citizenship and the country where you are conducting your PhD study
2. The objectives of your PhD study.
3. Linkages between your study and the SAMPLES programme.
4. Justification for the short-term scientific visit.
5. When you intend to undertake the short-term scientific visit (note that grants will be disbursed mid-November).
6. The CGIAR centre you intend to visit.

Eligibility and conditions

- Applicants must be PhD students from and conducting their research in a developing country[2].
- Applicants must be currently enrolled PhD students, but **NOT** in their final year of study.
- The grant money should be used to finance the short-term scientific visit, **NOT** tuition or other fees related to the PhD degree.

Proposal evaluation

Applications will be evaluated based on three criteria:

- A clear demonstration of how the short-term scientific visit will be beneficial for your PhD study.
- Linkages between objectives of your PhD study and those of the SAMPLES programme.
- Completeness of application.

Submission

Applications must be submitted on or before the 20th of August 2013. To submit your application and for any questions please contact the coordinator of the CLIFF network, Ngonidzashe Chirinda, Department of Agroecology, Aarhus University,
Email: Ngonidzashe.Chirinda@agrsci.dk.

Notification

[2] Includes all countries NOT listed as "high income economies" by the World Bank http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Upper_middle_income.

Successful applicants will be notified by email before the 30th of September 2013 and will be invited to attend a CLIFF-funded workshop in December 2013/January 2014.

Other activities
Grant recipients automatically become members of the CLIFF network, which provides excellent networking and collaborative opportunities with fellow students and leading experts.

You can read more about the CLIFF network as well at CCAFS at: www.cliff.life.ku.dk and http://ccafs.cgiar.org/

Potential host centres
The following CGIAR centres and researchers have indicated their willingness to host students to collaborate on research related to the described topic. Please note that **this is not a complete list**. If you are interested in conducting research at a different centre or on a different topic related to agricultural mitigation, we encourage you to apply, and we will work with you to find a placement.

1. CGIAR Center: International Center for Tropical Agriculture (CIAT), Cali, Colombia
Researcher: Jacobo Arango
Topic: Greenhouse gas emissions from tropical forages
For several years, CIAT and its partners have worked on the process of Biological Nitrification Inhibition in *Brachiaria humidicola*. This work relies on the proven potential that tropical grasses have to inhibit nitrification rates in soil and therefore decrease the emission of nitrous oxide (N_2O) - a potent greenhouse gas with even more warming potential than carbon dioxide - to the environment. This research is carried out in the Cauca department (south east of Colombia), consisting of greenhouse measurements in field trials in collaboration with Cauca University and local farmers. Different tropical forages are being tested under site-specific conditions on their potential to reduce GHG emissions.

2. CGIAR Centre: International Maize and Wheat Improvement Centre (CIMMYT), Ciudad Obregón, Mexico
Researcher: Nele Verhulst
Topic: Greenhouse gas emissions under varying tillage and residue management practices in irrigated wheat
The International Maize and Wheat Improvement Center (CIMMYT) develops and evaluates sustainable agronomic practices in long term experiments in different agro-ecological environments. As a part of the sustainability evaluation, trace gas emissions are measured and compared for contrasting agronomic practices in collaboration with the Mexican university CINVENSTAV (Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional). Part of the results obtained in maize-based systems in Central Mexico has been published in Agriculture, Ecosystems and Environment (Dendooven et al., 2012a) and Science of the Total Environment (Dendooven et al., 2012b). In July 2013 a greenhouse gas sampling campaign was started in a long-term experiment at CIMMYT's experimental station in Ciudad Obregon in northern Mexico. The experiment studies different tillage practices and residue management options for an irrigated, wheat-based system. The selected student would spend two to three weeks in Ciudad Obregon to become familiar with the field experiment, studied agronomic practices and sampling method. The rest of the stay will be dedicated to analyzing gas samples in the lab of CINVESTAV in Mexico City and the analyses of the results. **Fluency in Spanish is essential** to be able to interact with fellow students, researchers and field staff.

3. CGIAR Centre: International Centre for Tropical Agriculture (CIAT), Southeast Asia (country flexible)
Researcher: Tassilo Tiemann
Topic: Mitigation co-benefits of improved forages in Southeast Asia

The improvement of animal nutrition is an important step to higher resilience in the face of climate change. Improved crops for animal feeding are the basis for the next steps towards reduced herd sizes but continuous animal production. CIAT together with regional partners has identified suitable forage crops specifically for cut and carry systems in highland areas of Laos and Vietnam as well as for low land areas in Laos, Thailand and Cambodia. These include several suitable grass species (*Brachiaria* hybrid 'Mulato2', *Panicum maximum* varieties, *Paspalum atratum* and *Pennisetum purpureum* hybrids) as well as some legumes (most dominantly *Stylosanthes guianensis*) and their management for cattle, goat and pig smallholder systems. The selected student would work with researchers to begin to assess the climate change mitigation co-benefits of these improved forages.

4. CGIAR Center: World Agroforestry Centre (ICRAF), Nairobi, Kenya.
Researcher: Todd Rosenstock
Topic: Livelihood and climate trade-offs from smallholder mixed crop-livestock systems
For several years, ICRAF, ILRI, and partners have worked to understand the impact of changing farming practices on livelihoods and the environment in smallholder mixed crop-livestock system of Western Kenya. This work relies on knowledge of the importance of the various sources and sinks of greenhouse gases (soils, animals, manures, and vegetation) and livelihood options (e.g., dairy, tea, maize, etc.). We are using a range of range of methods, from laboratory incubations to models, to evaluate the common and alternative livelihood improvement strategies in the Kaptumo, Kenya area. There are opportunities for students to become involved in the specific quantification tasks (e.g., biomass estimation at landscape scales) or to gain a breadth of experiences.

5. CGIAR Center: International Rice Research Institute (IRRI), Los Baños, Philippines
Researcher: Ole Sander
Topic: Mitigation of greenhouse gas emissions from rice production
Alternate-wetting-and-drying (AWD) is an irrigation technique that has been verified to conserve water and at the same time mitigate greenhouse gas emissions from rice production. Onsite trial demonstrations were conducted in different irrigation systems in the Province of Bulacan, Philippines during the dry cropping season of 2013. Preliminary results, however, showed that farming households were generally reluctant to adopt AWD as it was yield-neutral, among other socio-economic factors. In the coming dry season, a participatory research and gender analysis approach (PRGA) will be used to out-scale the project. This approach—which to a certain degree requires and elicits feedback from the farmers—can be expedient in the development of Measurement, Verification and Reporting (MRV) guidelines for the promotion and uptake of mitigation projects.

6. CGIAR Centre: International Maize and Wheat Improvement Centre (CIMMYT), Northern or Eastern India
Researcher: ML Jat
Topic: Quantification of GHG emissions from long-term research on conservation agriculture in rice-wheat and rice-maize cropping systems of the eastern Indo-Gangetic Plains

7. CGIAR Centre: International Livestock Research Institute (ILRI), Nairobi, Kenya.
Researchers: Klaus Butterbach-Bahl, David Pelster
Topic: Quantification of greenhouse gas emissions and analysis of mechanisms driving emissions from diversified landscapes

8. CGIAR Centre: Centre for International Forestry Research (CIFOR), Nairobi, Kenya.
Researcher: Mariana Rufino
Topic: System analysis to balance climate change mitigation with livelihood improvement in agricultural systems of East Africa