Research and Innovation Fellowship for Agriculture

2019 RIFA Project Catalog

Full Applications due March 8, 2019

The Research and Innovation Fellowship for Agriculture (RIFA) offers early-career professionals enrolled in agricultural and development-oriented graduate programs at all University of California campuses the opportunity to plan, engage and implement two to six-month-long international projects in developing countries.

To APPLY:

1. Search through Catalog to view opportunities
2. Fill out Application, listing order of preference
3. Provide current CV
4. Write an Expression of Interest letter to each Host project for which you wish to be considered

RIFA application resources:

RIFA application - Find a RIFA Mentor - RIFA Timeline - RIFA Application Checklist
(all can be found at https://ip.ucdavis.edu/scholars-and-students/RIFA/)

Research and Innovation Fellowship for Agriculture

Project titles linked to full project listings – click title to read detailed project description.

Project Title	Country	Host Organization	Max. # fellows	Duration	Keywords
Multiple Countries					
Food Technology Feasibility Study	various	Mercy Corps	2	2	Youth, urban agriculture, value chains,
Various projects (6), see listing for details	various	CIMMYT	2	varies	wheat, data analysis, modeling, field trials
Central & South America					
Agronomic Research Needs Assessment for Coffee Production Systems	Guatemala	DISAGRO de Guatemala S.A.	2	3 months	Coffee production, farmers, data collection
Development of Two-species –interaction phenology modeling to predict efficacy of bio-control agents of crop pests	Peru	International Potato Center (CIP)		6	potato, nutrition, interventions, data analysis
Improving data science in Plant breeding	Peru	International Potato Center (CIP)			Data management and analysis
Index interpolator-Generating fine-scale risk maps for main sweet potato insect pests	Peru	International Potato Center (CIP)	1	6	ILCYM, pest management, risk management
East Africa					
Nutrition Sensitive Agriculture through Farmer Field School	Kenya	Agriculture Improvement Support Services (AGRISS) (DIG)	2	flexible	Nutrition, health, farmer trainings
Indigenous Minorities and Disability Farmer Field Schools	Uganda	Developing In Gardening (DIG)		flexible	M&E, rural development, data collection
Enhancing Resilience to Reduce Humanitarian Needs	Ethiopia	Mercy Corps	1	6	Resilience, livestock, feed, fodder
UNLEASHED/Yeslife Scope	Uganda	Yeslife Scope	2	3	Refugees, ag tech, crops horticulture, nutrition

Research and Innovation Fellowship for Agriculture

Project Title	Country	Host Organization	Max. # fellows	Duration	Keywords
Research into the development of the Livestock Sector	Zanzibar, Tanzania	Zanzibar Livestock Research Institute (ZALARI)	1	4	Livestock, co-ops, poultry, dairy, innovation
Developing Agricultural market systems in Sudan	Sudan	Mercy Corps	1	6	Markets, value and supply chains, IDPs, refugees
Karamoja Food and Nutrition Activity "Apolou"	Uganda	Mercy Corps	1	6	Food security, nutrition, capacity development
West Africa					
Improved nutrition through food fortification	Senegal and the Gambia	United Purpose	1	flexible	Fortified crops, nutrition, survey, behavior change
Nigerian Agri-Food Enterprise Development Scheme (NAFEDS)	Nigeria	Youth off the Streets Initiative	3	3	Food security, nutrition, youth development
Central Asia					
Pathways to Innovation in Central Asia: Building regional capacities for agri-enviromental research	Tajikistan	University of Central Asia		flexible	capacity building, academic, projects

South and SE Asia				
Integrating Appropriate Agricultural Technology in the Climate-Challenges Smallholder Systems of Indian Sundarbans	India	Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI), West Bengal, India	4-6 months Oct-November preferred	agricultural landscape assessment, impact evaluation, qualitative research
Food, Agriculture and Social Entrepreneurship (FASE)	Cambodia	Green Shoots Foundation/CIDO	3	value chain, soils, water, innovation
Toward Sustainable Food Systems Profiles for Decision-makers in Kenya and Vietnam	Vietnam	CIAT	Flexible Prefer 3-4 months	food systems, analysis, data collection

Research and Innovation Fellowship for Agriculture

Project: Food Technology Feasibility Study
Host: Mercy Corps
Location: 40 possible countries depending on interest and field team needs

Project Summary: Engaging unemployed youth in food technologies represent a tremendous opportunity to render the market more efficient, while simultaneously providing long-term entrepreneurship and employment. This project looks into energy-efficient production and post-harvest technologies available in the countries where we work to evaluate their economic feasibility and develop youth business engagement models so that these youth can fill the gaps in select horticultural markets. Technologies considered include hydro- and aquaponics, solar processing, and cold storage among others.

Project Description:
As the number of urban consumers is exploding to 3.5 billion today to reach 6 billion in 40 years, it poses new challenges for the agriculture systems. If we are to feed the urban population, while at the same time ensure smallholder farmers are part of this consumption revolution, we need to address new challenges. These include the lengthening of supply chains from where the food is produced to where the food is consumed, requiring more efficiency in the way the food is stored and transported; addressing specific urban demand for specific types of products; conforming to increased regulations; and the need overall for more scrutiny in terms of food safety and quality standards.
The food technology initiative will assess and develop technology-based market models with a specific focus on youth. Technologies to be assessed include, but are not limited to:

- Peri-urban hydro/aquaponics – with more and more people moving to the cities in search for work or fleeing insecurity in the country side, coupled with pressure on natural resources such as land and water, hydroponics offer a solution for contained, low-input, high value production on small pieces of land close to consumption centers.
- Cold storage, including low-cost and high-tech – n the environments in which Mercy Corps works, post harvest food losses are estimated at 30 - 50%. Additionally, horticultural crops (vegetables, flowers and perishable tree crops) generally provide much higher margins and returns on investment to smallholder farmers when compared to the production of common alternatives, but horticultural crop production is often very limited due to lack of a cool/cold chain. Developing cool/cold storage facilities can decrease post-harvest losses tremendously; smooth supply throughout the year, increase product quality for end consumers, and ultimately increase producers' revenues. A study conducted by WUR on the impact of preservation techniques on product quality shows that temperature control and a closed cold chain are the most important methods for safeguarding quality in fresh product chains;
- Biobased/biodegradable packaging – this responds to new rules and regulations on the export markets such as the US and EU to help producers be ahead of the curb and ensure long-term export markets. Many quality problems can be resolved by choosing the right packaging. Factors such as the design of packaging and the way products are stacked determine the efficiency of the

cooling process. What we want to do is evaluate the potential of using biobased –biodegradable packing materials for food packaging in local market situations; screen commercially available biobased/biodegradable packaging materials on their suitability, reformulate or redesign to specific requirements if needed; and evaluate options for producing packing materials from local waste;

- Solar-powered processing – To reduce food waste and conserve horticultural products better, solar-powered processing offer tremendous opportunities – despite policy constraints and availability/appropriateness/affordability of equipment. Improved solar-powered food processing also greatly decreases time poverty of those (usually women) who have to otherwise process food manually (specifically maize, rice and cassava, but no doubt other crops as well). Evaluating economically viable options for equipment and markets can go a long way to increase nutrient content and generate employment for youth, and girls in particular.

The Fellow will conduct an in-depth economic study to determine the feasibility of these technologies, and engage with the youth and financial community to determine appropriate business models.

Work Environment:
The fellow will be based in one of the 40 Mercy Corps countries and will travel to Mercy Corps field offices in this country to assess the potential for post-harvest technologies. S/he will work in close relationship with Mercy Corps country staff as well as Mercy Corps' Global Agriculture Systems' team for guidance and supervision, and will connect with the horticulture market private sector stakeholders and government entities to better assess constraints, opportunities, the legal environment, etc. to make informed recommendations.

Desired Skills of Fellow(s):
Preferably, the Fellow will come with:

- An interest in agriculture markets and economics;
- A strong background in market research and/or economic feasibility studies;
- An interest in technology;
- A willingness to travel to the field and understand cultural intricacies; and
- Be solution-oriented, look beyond what's obvious, and a willingness to dig into what's possible

Language: English, French (but not required)

Desired Duration In-Country: 2 months, flexible depending on country team's availability

Main Point of Contact: Sandrine Chetail, Director Technical Support Unit, Agriculture Systems, schetail@mercycorps.org, +22780175146

Principal Field Based Collaborator: Mercy Corps Director (TBD)
University of California Faculty/Staff Counterpart (Mentor): Student to find.

Research and Innovation Fellowship for Agriculture

Project: International Maize and Wheat Improvement Center Projects
Host: CIMMYT
Location: Mexico, Kenya, Ethiopia

Summary: CIMMYT offers research topics which are integrated in its 5 research programs: Genetic Resources program, Global Maize program, Global Wheat program, Socio Economics program and Sustainable Intensification program.

Project Description: RIFA will support the following topics from the student research projects of CIMMYT for 2019. Click on the link of the topic below to determine your interst and eligibility for one of the 6 topics.
Fellows wishing to work with CIMMYT will need to choose a specific project and follow up with project leads for the project they select.

1. Impacts of conservation agriculture in diverse agro-ecologies (Mexico)
2. A decision support tool for targeting nutrient management recommendations for maize in Eastern Kenya
3. Spatial variability of high-throughput phenotypic data in field experiments (Mexico)
4. Development of hybrid wheat technology (Mexico)
5. Youth Engagement with the rural economy in Africa (Ethiopia)
6. Spatial Analysis of Fertilizer Profitability (Ethopia)

Work Environment: Depending on the topic the students will be involved in field and/or lab work, data analysis. Travel to experiment stations in the host country will be often included.

Desired Skills of Fellow(s): Each of the 6 projects listed include the skills CIMMYT desires for each.

Language: English/ Spanish

Desired Duration In-Country: 6 months

Number of Fellows: 2

Main Point of Contact: Joanna Braun, j.braun@cgiar.org, +52 1 55 2130 0898

Principal Field Based Collaborator: varies by project

University of California Faculty/Staff Counterpart (Mentor): Student must find.

Research and Innovation Fellowship for Agriculture

Project: Agronomic Research Needs Assessment for Coffee Production Systems in Guatemala

Host: DISAGRO de Guatemala S.A.

Location: Guatemala

Project Summary: Identify grower and industry understanding of the relationship between plant nutrition (plant and soil health) and disease, grower experience and understanding, concerns and constraints that impact upon disease management strategies.

Project Description:

DISAGRO is a Guatemalan-based international supplier of agricultural fertilizers and other agricultural inputs working across Central America and Colombia. DISAGRO provides producers with a full portfolio of inputs, supplies, products and equipment. As a firm, we estimate that we provide 50% of Guatemalan coffee farmers with fertilizer and other inputs and are interested in better understanding farmer use of these products and the impact it has on the soil, plant and yield outcomes for producers across Guatemala. In order to assess producer needs and the role of inputs across a range of producers (smallholder, cooperatives and commercial production), we are seeking research support through RIFA.

RIFA Students will use a combination of participatory research techniques and data analysis to carry out a review of nutrient management strategies and impacts in Guatemalan coffee production. Within their first two weeks of arrival in Guatemala, they will conduct a focus group interview with key stakeholders in the Guatemalan coffee industry including producers, technical assistance providers, input providers, cooperative leadership, and researchers. Following this first information-gathering session, students will conduct a series of individual and small-group interviews with other key informants that work with coffee production of varying sizes and management systems.

In addition to facilitating student introductions to interviewees, DISAGRO will also provide students access to DISAGRO's repository of on-farm data. They will analyze this data to obtain further insights about the nutrient management practices of coffee producers in Guatemala and the impacts of those practices.

Following their coffee-production landscape survey and data analysis, students will provide Disagro with a written report of their findings. This report will include information about coffee producer nutrient management strategies, fungicide use, and access and utilization of technical assistance. It will also include student recommendations about opportunities for further research at the nexus of coffee farm nutrient management and plant resilience. Disagro will use this information to inform future research questions as well as product dissemination strategies.

Research and Innovation Fellowship for Agriculture

Work Environment:
Field work. Coffee growing regions such as: Sacatepequez, Huehuetenango and Chimaltenango

Desired Skills of Fellow(s):
Knowledge of statistics and data management, proficiency in Excel, excellent communication skills. Working knowledge of Guatemalan coffee sector and stakeholders. Understanding of survey methods and design.

Language: Spanish

Desired Duration In-Country: 3 months, between June-September 2019

Main Point of Contact: Estuardo Jara ejara@disagro.com +502 24749300

Principal Field Based Collaborator: Anaite Herrera acherrera@disagro.com +50224749328

University of California Faculty/Staff Counterpart (Mentor): Patrick Brown, Professor of Plant Sciences, UC Davis. phbrown@ucdavis.edu

Research and Innovation Fellowship for Agriculture

Project: Development of two-species-interaction phenology modeling to predict efficacy of bio-control agents of crop pests
Host: The International Potato Center (CIP)
Location: Peru

Project Summary: The Insect Life Cycle Modeling (ILCYM) software supports the development of process-based temperature-driven and age-stage structured insect phenology models and to apply these models for insect species distribution and risk mapping. Currently ILCYM only predicts risks for individual insects, but in principal the interaction between pests and parasitoids could be modeled as well. The objective of this study and the student, will be to implement approaches for two species interaction models and develop bio-control efficacy indexes using available life table and parasitism data of potato pests.

Project Description:
As an ecological method in integrated pest management (IPM), certain insect species (parasitoids) can be used that parasitize pests, thereby increasing the mortality of the latter. Both species of the parasitoid-host system are poikilothermic organisms, so that the effect of temperature on their life cycle can be determined through life tables and used to model population development. The Insect Life Cycle Modeling program (ILCYM; https://research.cip.cgiar.org/confluence/display/ilcym/Home) has been developed to evaluate pest risks through GIS maps under current and future climates using phenology modeling of insects.

Currently ILCYM only predicts risks for individual insects, but in principal the interaction between pests and parasitoids could be modeled as well. Parasitism rates can be predicted, which can be used to simulate the increase or reduction of the pest population over time based on temperature, using the phenological models of the pest and the parasitoid. The aim of the student will be to develop a module in ILCYM which provides results regarding the interaction of the parasitoid on the pest, where the user can manipulate certain parameters such as: the initial population of the pest, the initial population of females of the parasitoid, and the temperature, which can give us a perspective of the degree of influence of the parasitoid on the pest population, when these parameters change.

The student will implement a methodology that allows linking phenology models of insect pests and their respective parasitoids and/or predators. This will be achieved by correctly defining and calculating a parasitism rate, based on available life tables of host, parasitoids and parasitism rates, literature review and mathematical functions, as well as creating different “biocontrol/parasitism indexes” that show the effectiveness of the control of pests (e.g. by defining the estimated time to reduce the population by half or reduction in growth of pest population). For the implementation of the interaction the student will generate estimates of life parameters and appropriate functions between the fluctuating temperature and the number of host and parasitoid individuals. The student

will then use the developed module spatially determine the areas where releasing the parasitoid would be effective, using the "Index Interpolator" tool of the ILCYM 4.0 program, in addition to simulating the “biocontrol indices” in different hypothetical future temperature scenarios (for temperature increases of 1 ℃, 2 ℃ and 3 ℃), and the survival of the parasitoid in the defined zones, mediating time series curves. The student will implement these improvements in ILCYM 4.0.
For development of the host-parasitoid module, the interaction between the potato tuber moth Phthorimaea operculella (Zeller) (Lepidoptera: Gelechiidae) and three specific parasitoids Apanteles subandinus, Copidosoma koehleri, Orgilus lepidus will be used. If time permits, in a second stage we will also work with the whitefly pest Bemisia tabaci and its parasitoid Encarsia tabacivora.

Work Environment:
The Fellow will be based at CIP headquarters in Lima. Project is mostly office work.

Desired Skills of Fellow(s):
The fellow is recommended (but it's not an absolute requirement) to have basic skills programing in R, knowledge of statistics and have basic knowledge in use of Geographic information systems (GIS)

Language: Spanish, limited working proficiency.

Desired Duration In-Country: 6 months, March - August.

Main Point of Contact: Heidy Gamarra: h.gamarra@cgiar.org / +511 349-6017 Ext. 2240

Principal Field Based Collaborator: Pablo Carhuapoma : p.carhuapoma@cgiar.org

University of California Faculty/Staff Counterpart (Mentor): Robert Hijmans. Professor, Department of Environmental Science and Policy, rhijmans@ucdavis.edu

Research and Innovation Fellowship for Agriculture

Project: Improving Data Science in Plant Breeding
Host: International Potato Center
Location: Peru

Project Summary: CIP is lagging behind on the application of state-of-the-art data science in breeding for its most important crops potato and sweet potato. The goal of this project is to support the ongoing process of filling the gaps in data management, data analysis, and the visualization of data and analysis results for breeding at CIP.

Project Description:
Potato and sweet potato breeding at CIP does currently not utilize the huge amount of available data in the most optimal way. There are gaps in terms of data management, data analysis and the presentation/visualization of data and analysis results for decision making. Depending on the profile and the interest of the Fellow, the focus of this project will be on the improvement of data analysis, or on the improvement of data and analysis results visualization.
In both cases the exact project goal is flexible, depending on discussion with the Fellow and on near-future developments at CIP, but the idea is to make significant progress in the respective domains. As an example, the following project goals are suggested, but also some more research-oriented goals could be included. Furthermore, if the project execution enables a research publication, full authorship to the Fellow will be granted.
For the improvement of the data analysis of experimental data arising from field trials, automation of a wide range of mixed model analyses of such breeding trial data could be a project goal. For the improvement of data and analysis results visualization, a project goal could be the development of a user-interface tool for the breeders to visualize the analysis results and other available data, improving their ability to make well-funded breeding decisions.

Work Environment:
The Fellow will be engaged in office work at CIP headquarters in Lima (Peru). The possibility will be offered to visit breeding operations for potato and sweet potato in the Peruvian highlands.

Desired Skills of Fellow(s):
The Fellow should have broad skills and interest in data science applied to crop breeding. Good coding skills, preferably in R, is a prerequisite. Also, either good statistics skills, in particular with respect to linear mixed models, or proficiency in user-interface tools for data visualization is required. Proficiency in the Spanish language is an asset. The Fellow is also expected to have the ability to integrate in a team quickly, to have good communication skills and be a team player, and to be able to deal in a sensitive manner with possible cultural differences.

Language: English

Desired Duration In-Country: flexible

Main Point of Contact: Bert De Boeck (email: b.deboeck@cgiar.org ; mobile phone: +51 918 819 677)

Principal Field Based Collaborator: same

University of California Faculty/Staff Counterpart (Mentor): Robert Hijmans (email: rhijmans@ucdavis.edu): Professor at the Department of Environmental Science and Policy of the University of California, Davis

Research and Innovation Fellowship for Agriculture

Project: Nutrition-sensitive Agriculture through Farmer Field School
Host: Agriculture Improvement Support Services (AGRISS) Development in Gardening (DIG)
Location: Kenya

Project Summary: The goal of the project is to improve the health and nutrition status of HIV affected populations, vulnerable and at risk populations in western Kenya

Project Description:
The project will focus on nutrition sensitive agriculture to improve the life of women of reproductive age and children below 5 years. Its our desire that the fellow will help in Monitoring and evaluation of this project and mentor the team in report writing.
The project will be reaching out to 2500 beneficiary through a farmer field school approach. There will be need to measure a number of parameters to check on the change in knowledge, attitude ans skills.
There will be data collection every month from the field which will be fed to the system, analyzed and used to make decisions. The fellow will work with the project M & E officer to measure the change and help the project coordinator make well informed decisions.

Work Environment:
Most of the work is in the communities where the beneficiary lives. The fellow will therefore have regular trips to the field in Homa Bay County to work with the community based facilitators who collect information and also in the project office to oversee data entry and work together in setting systems and mentor-ship to the M & E officer .

Desired Skills of Fellow(s):
Project monitoring and evaluation
Food systems

Language: English

Desired Duration In-Country: flexible

Number of Fellows: up to 2

Main Point of Contact: Olivia Atieno Nyaidho email: olivia@reaplifedig.org
phone number +254733493019 / +254710824154

Principal Field Based Collaborator: Christine Chege, Post-Doctoral Fellow in Nutrition, c.chege@cgiar.org

University of California Faculty/Staff Counterpart (Mentor): fellow to find.

Research and Innovation Fellowship for Agriculture

Project: Indigenous Minorities and Disability Farmer Field Schools

Host: Development in Gardening, Uganda

Location: Uganda

Project Summary:

The fellow would be responsible for increasing the projects visibility, both domestically and internationally. After two years of implementation, the projects' qualitative impacts on climate resiliency, health, community cohesiveness, and gender equity are still largely undocumented. The fellow would create a strategy to capture these narratives and translate them for a variety of stakeholders including the Government of Uganda, in-country partners, international private donors, and DIG supporters.

Project Description:

Development in Gardening (DIG), a successful organization in empowering vulnerable communities in their own solution building through Farmer Field Schools, is looking for a fellow to support the scaling of an ongoing field schools with two vulnerable populations-an indigenous minority group and people living with disabilities.

Located in Southwestern Uganda, the fellow will work under DIG's Uganda Program Manager and Field Coordinator to improve the qualitative component of DIG's monitoring and evaluation strategy. The fellow will be in charge of the following tasks;

1) Gather data through an informal literature review that demonstrates best practices for creating effective narratives used in impact evaluation and donor engagement.

2) Develop strategies for capturing the narratives of farmers, families, and communities and disseminating narratives

3) Conduct field visits, focus groups, surveys, and semi-structured interviews to capture narratives

4) Disseminate narratives through strategy developed in component (1)

5)Train field staff on 'best-practice' narrative development and create a supplementary training manual incorporating lessons learned

The fellow will gain day-to-day experience in the operations of a large-scale, nutrition-senstive food security project in rural communities. The fellow will also gain an understanding of DIG's monitoring and evaluation strategy and promote the expansion of our qualitative component.

The fellow will have the opportunity to be immersed in the daily life of small-holder farmers and understand the obstacles that they face from access to inputs to market availability and stability. The fellow will capture stories relating to climate change, gender empowerment, health, and community cohesiveness.

We expect the fellow to spend a large portion of their time listening and understanding the complexities of these marginalized groups and their place within the larger community. The Batwa, an indigenous minority group, were evicted from the Bwindi Impenetrable Forest in the 1960's in an attempt to save the Silverback gorillas. Once hunter-gatherers, the Batwa found themselves landless and with no skills in modern agriculture after the eviction. This traumatic history has led to a slow integration of the Batwa back into society and has left them highly stigmatized and marginalized, having low education levels, high rates of alcoholism, and a short-term work mentality. DIG's Farmer Field School program has been specifically designed to address these needs and build solutions with the Batwa community that honors their culture and creates resilient, food secure communities.

People living with disabilities in rural areas also face high rates of stigmatization from the larger community. With little government support in rural areas, people living with disabilities (PLWD) depend on others for their food, income, and other household needs. DIG works with PLWD to develop farming and gardening strategies that are within their individual capacities to achieve self-reliance. PLWD who achieve self-reliance gain status within their community, gain healthy and stronger bodies, and are able to meet their own needs.
DIG's Farmer Field Schools go beyond training people, families and communities. DIG's Field Schools use design-based programming to listen and help communities develop long-term solutions within their local context. The fellow has the opportunity to help us illuminate these stories.

Work Environment:
The fellow will spend 70% of their time in the field and 30% in the office. The fieldwork will take place in the rural areas of Kabale and Kisoro District in Southwestern Uganda. The office work will take place at our field office and place of international staff residency, in Kabale District.

Desired Skills of Fellow(s):
We are looking for a fellow who has a basic understanding of the interplay between humans, the environment, and agriculture. We are seeking a fellow who has strong writing skills and is conversant in project report writing, success stories, blogs, and social media, or demonstrates the ability to learn. The fellow must be flexible and have the ability to work in a dynamic work environment. They must possess the skills to work in a culturally diverse environment and be able to succeed within the norms the given context. The fellow must be self-determined and resourceful and be comfortable reaching out to local counterparts and other sources to complete tasks, comfortable in a rural setting and eager to learn about local Ugandan culture.
Language: English

Desired Duration In-Country: flexible

Main Point of Contact: Lauren Masey, laurenmasey@gmail.com, 1-346-333-6714

Principal Field Based Collaborator: Gloria Mushabe, mushabegloria@gmail.com

University of California Faculty/Staff Counterpart (Mentor): fellow to find.

Research and Innovation Fellowship for Agriculture

Project: Index Interpolator – Generating fine-scale risk maps for main sweet potato insect pests in Burundi and Rwanda

Host: International Potato Center (CIP)

Location: CIP headquarters, Peru

Project Summary: The Insect Life Cycle Modeling (ILCYM) software supports the development of process-based temperature-driven and age-stage structured insect phenology models and to apply these models for insect species distribution and risk mapping. A sub-module, called Index interpolator (II), has been developed for interpolation of pest risk indexes based on finer scale in mountainous areas where large difference in climatic (temperature) conditions may occur over short distances that cannot be captured from global weather data sources. The objective of this study and the student, will be to improve the II tool by implementing additional interpolation approaches using a data from a study in Rwanda and Burundi for major sweet potato pests.

Project Description:

Insect life cycle modeling software (ILCYM; https://research.cip.cgiar.org/confluence/display/ilcym/Home) was developed to enable predictions of insect pest risks (through various risk indexes) in different geographies based on temperature dependent phenology models in a GIS environment. The limited availability of global sources for detailed climatic surfaces however restricts the accuracy of predictions of the potential distribution and abundance of insect pests in mountainous regions along elevation gradients. To improve the ability of the insect life cycle modeling software ILCYM to capture the fine-scale distribution of pests in mountainous regions, we have developed a module called "Index Interpolator" (II) that can interpolate pest risk indexes with a finer spatial and temporal resolution. Currently II uses a default methodology based on thinplate regression splines and calculated annual averages with altitude, latitude and longitude as co-variables to interpolate the various pest risk indexes. This however has been shown not to work optimally in all geographic areas. Thus, there is a need to test the use of other estimation methods, time intervals and co-variables.

The student will use daily temperature records collected from 52 meteorological stations distributed homogeneously throughout the study areas at altitudes ranging from 1200 to 2600 for Rwanda and 700 to 2700 meters for Burundi. These are two areas where the current version of the II tool was unable to generate sensible risk maps for the pests under investigation and will be used for improvements. Adjustments will be made in the use of II to simulate with better precision the risk indexes for the main sweetpotato pests in that area (the sweetpotato weevils Cylas puncticollis & Cylas bruneus, the sweetpotato butterfly Acraea acerata, and the sweetpotato whitefly Bemisia tabaci biotype B). For the interpolation of indexes, latitude, longitude and elevation are used as independent variables. Additional methodologies commonly used in the interpolation of climatic data will be

applied and evaluated and use of monthly or weekly rather than annual averages to estimate the risk indexes will be implemented. The option of selecting or eliminating covariates will also be implemented and evalusated. The interpolated results will be validated with the records of catches of the pest being evaluated. Finally, the student will automatize the process of quality checking of climatic data obtained from weather stations (temperature especially) to identify atypical values that may affect results.

Work Environment:
Office work in headquarters of CIP, Peru.

Desired Skills of Fellow(s):
The fellow is recommended (but it's not an absolute requirement) to have basic skills programing in R, knowledge of statistics and have basic knowledge in use of Geographic information systems (GIS)

Language: Spanish; limited working proficiency

Desired Duration In-Country: 6 months

Main Point of Contact: Heidy Gamarra: h.gamarra@cgiar.org / +511 349-6017 Ext. 2240

Principal Field Based Collaborator: Pablo Carhuapoma : p.carhuapoma@cgiar.org

University of California Faculty/Staff Counterpart (Mentor):
Robert Hijmans, Professor of Department of Environmental Science and Policy/ University of California (UCDAVIS)
email: rhijmans@ucdavis.edu

Research and Innovation Fellowship for Agriculture

Project: Enhancing Resilience to Reduce Humanitarian Needs in the Lowlands of Ethopia

Host: Mercy Corps

Location: Ethiopia

Project Summary:

Increased Resilience for vulnerable Households in lowland areas of Ethiopia, and reduced need for humanitarian responses

Project Description:

Building Resilience in the lowlands of Ethiopia should revolve around building and/or strengthening systems that support the continuity of the livelihoods of the pastoralist and agro-pastoralist communities and livestock is the mainstay of the herding communities. One of the key systems that supports the continuity as well as the productivity of livestock production is Fodder/Feed System. In view of this; we propose facilitating an establishment of commercial fodder/feed hubs in the lowlands of Afar, Oromia and Somali Regions. This is a cost-shared initiative that will be realized and owned by a business entity, which could be a private limited company, or share company that may include local feedlot operators, feed processing businesses, local livestock traders and local youth. Among others, this activity requires fodder seeds and/or seedlings production that will be delivered by local agri-input vendors in the respective regions. There will be value additions like proper baling, storage and preservation. Tractor-mounted machines will be used for baling.

To realize this core activity, the following sub-activities will be undertaken;

A. Development of local Commercial Fodder Production along the perennial river banks (Awash, Genale, Dawa, Wabeshebelle) in the lowlands of Afar, Oromia and Somali Regions,
B. Establishment of fodder/feed warehouses in the lowlands of Afar, Oromia and Somali Regions,
C. Expansion/openings of fodder/feed retail Kiosks in strategic woreda towns,
D. Raising community awareness on fodder/feed production and utilization at household level.

Mercy Corps Ethiopia is seeking a RIFA fellow to help us develop a viable model for the commercial fodder / feed hubs, working in close collaboration with our team. Activities are likely to include: Conduct learning study to understand existing models in Ethiopia (and drawing on literature about best practice examples in other countries); Design and participate in technical and market assessments of proposed locations for the hubs, including conducting interviews with potential owners; Provide recommendations for technical models for the hubs, with associated costs; Develop a business operating model for the hub and for the commercial fodder enterprises, grounded in technical and market realities; and Provide training for the Mercy Corps team and potentially market actors on the model.

Research and Innovation Fellowship for Agriculture

Work Environment:
The fellow will engage in both field work and office work, with potential regions including: Awash, Samara, Negelle Borana, Yabello, Harawayu, Teletelle, Hudet, Gode, Shinile, and Jigjiga towns in Afar, Oromia and Somali Regions.

Desired Skills of Fellow(s):
Mercy Corps is looking for a fellow who has a background in at least one of the following areas:
Business development preferably Agri-business development
Business modeling
Business management
Financial Analysis/Cost Benefit Analysis
Product Marketing

Language: English fine.

Desired Duration In-Country: 6 months

Main Point of Contact: William Baron, e-mail: wbaron@mercycorps.org,
Cell phone: +251 98 601 9330

Principal Field Based Collaborator: Numery Abdulhamid, e-mail:
nabdulhamid@mercycorps.org, Cell phone: +251 91 502 7075

University of California Faculty/Staff Counterpart (Mentor): Student must find.

Research and Innovation Fellowship for Agriculture

Project: UNLEASHED/YesLife Scope

Host: YesLife Scope

Location: Uganda

Project Summary: We improve the livelihood of the refugees using agriculture and aim at introducing the technology to the marginalized people (refugees included).

Project Description:

We are envisioning helping the refugees grow food by themselves, improve their livelihood, fight malnutrition and grow their economy while contributing to the economy of the host country using agriculture. Normally, the refugees here, receive only beans, maize, oil and little flour for porridge and the danger is there if they don't participate actively in the production of the food that is needed. We are working now with families and the problem is still to get the right skills and knowledge to grow their plants very well and at the end have good products that can help them find market and eat good food.

We expect that the fellow helps us/our farmers acquire practical knowledge/skills and sessions that can later on help them do better than how they are doing currently.

The fellow will also help us to know, when, how and what to grow according to the land, and specific season, he/she will help us know the goodness of technology and how to use it in agriculture and the one that is needed for our plants.

Work Environment:

We will need the fellows most especially in the fieldwork, in the practical work but also we will not restrict them to be part of our strategic work according to the need.

Desired Skills of Fellow(s):

- crop management, pest management
- agro-tech, - organic-farming, - agro-business, - products value addition

Language: French - elementary proficiency.

Desired Duration In-Country: 3 months

Main Point of Contact: vickymat4@gmail.com, 256788180256

Principal Field Based Collaborator: Sephora Uzele Murogo

University of California Faculty/Staff Counterpart (Mentor): Student must find.

Research and Innovation Fellowship for Agriculture

Project: Research into and Development of the Livestock Sector in Zanzibar, Tanzania

Host: Zanzibar Livestock Research Institute (ZALIRI)
Location: Zanzibar, Tanzania

Project Summary:
ZALIRI would like a RIFA fellow to come and share their expertise on and to further develop and execute a research project or portion thereof that is currently being conducted by the institute. The fellow would have the opportunity to advance and contribute to a project currently underway. There is even the opportunity for the fellow to create their own research project that works towards ZALIRI's goals of developing the livestock sector in Zanzibar. Possible areas include: the use of seaweed as animal feeds, ruminant nutrition, dairy production and marketing, etc.

Project Description:
The mission of the Zanzibar Livestock Research Institute is to further develop the livestock sector in Zanzibar to help improve the livelihoods of those farmers with livestock, as well as to promote livestock farming and discover new and innovative solutions for farmers. ZALIRI is a new government institute in Zanzibar created just over a year ago, the one year anniversary of it's inception was a national televised event attended by the President of Zanzibar where research by the institute was presented, included that by past RIFA fellows.

The relationship between ZALIRI and RIFA has worked successfully in the past and the same model that was used previously will be used again this year. ZALIRI would like for a RIFA fellow to come and consult as well as offer expertise on a project that is currently underway. The fellow will work to further develop the project, or to carve out an additional part of the project for exploration. The exact role that the fellow would play is flexible and can be created in a collaborative effort between the student, the student's university, ZALIRI, local government, and any other parties involved. Research projects currently underway at ZALIRI include utilizing seaweed as a mineral supplement and feed ingredient for poultry, a dairy cattle and dairy systems survey, development of a dairy distribution/co-op, beef cattle carcass assessment and many other projects. Exact projects are dependent on the time that the fellow would be on location.

There is also the possibility that the fellow creates their own research project as long as it lies within the areas of ZALIRI research and works to enhance the livestock sector in Zanzibar. The fellow is expected to complete a portion of a project currently underway or to create and complete their own experiment to write up in a scientific paper for publication.

Work Environment:
The fellow will engage in fieldwork and lab work and will also have an office space for writing and for paperwork. Fieldwork will involve setting up, executing, monitoring, and recording data on active experiments with live animals. The work will be done on Unguja, the larger of the two islands of Zanzibar, but it is also possible for the fellow to complete research on Pemba, the smaller island of Zanzibar (ZALIRI has offices here as well). Some lab work will be completed at Sokoine University on the mainland of Tanzania in Morogoro.

Desired Skills of Fellow(s):
The fellow will need to be self-motivated in order to accomplish the work of executing an experiment. The fellow will need to have skills in project development and design as well as any technical skills needed to accomplish the project. Lab assistants are available but the fellow should have the general skills and knowledge needed to complete any lab work. The fellow will also need to be proficient in a statistical software (R or SAS). The fellow will need to have the skills to manage a research site and team as well as skills needed for public outreach. The fellow is expected to complete research that they will publish in a scientific journal.

Language: Swahili (able to learn on assignment); elementary proficiency

Desired Duration In-Country: 4 months

Main Point of Contact: Faki Ame Kessi, fakikessi@yahoo.co.in

Principal Field Based Collaborator: same

University of California Faculty/Staff Counterpart (Mentor): Student must find.

Research and Innovation Fellowship for Agriculture

Project: Developing Agricultural Marketing Systems in Sudan
Host: Mercy Corps
Location: Sudan

Project Summary: The Mercy Corps Sudan team is currently working to expand our market systems development (MSD) portfolio particularly in the area of strengthening agricultural systems and production to improve resilience of vulnerable communities. With this expansion, we would like the support of a RIFA fellow to lead relevant agricultural assessments to inform ongoing projects and future proposals.

Project Description:
Since 2004, Mercy Corps has been providing a diverse portfolio of humanitarian assistance in Sudan to vulnerable internally displaced populations (IDPs), South Sudanese refugees, returnees and host community members. Mercy Corps is currently operational in South Kordofan, South Darfur and White Nile States. In addition, Mercy Corps is scheduled to expand into Gadaref and Kassala States in East Sudan. Mercy Corps is currently supporting the people of Sudan by:
- Enhancing community self-reliance through community-managed and funded WASH services for conflict-affect communities, including long-term displaced populations.
- Increasing the resilience of communities to economic and social shocks by providing them with access to increased food security and market-driven livelihood opportunities.
- Building civil society emergency response capacity by supporting local organizations.
- Responding to the emergency response capacity by supporting local community based organizations.
- Responding to the nutrition and protection needs of conflict-affected populations.

In 2017, Mercy Corps Sudan underwent a portfolio evaluation and sector landscape analysis to inform its FY18-FY22 country strategy. Through this process, it was determined the time is right for Mercy Corps Sudan to expand its portfolio from mostly humanitarian assistance to more long-term development programming due to the evolving needs. Three focus areas were selected during the country strategy development process: 1) healthy and well-nourished communities; 2) economically viable and inclusive livelihoods for young people; and 3) strengthening local governance structures to become more accountable and response to community needs.

Mercy Corps seeks support from a RIFA Fellow in assessing Sudanese agriculture markets systems to inform new program design in alignment with our current country strategy. Due to government restrictions and access issues, there is little information available on production levels and commodity and input supply chains feeding these regions and links to Khartoum. The RiFA fellow will engage with Mercy Corps staff to development assessment tools and to carry out agricultural market assessments in the field. In addition, the RIFA will work with Mercy Corps to build their capacity in market systems and carrying out such assessments. The RIFA fellow will also contribute to the design and development of new and existing programs.

Work Environment:
The RIFA Fellow will be based in Mercy Corps Khartoum country office with travel to field offices in Kadugli, South Kordofan and Nyala, South Darfur via road and air. The Fellow will work with a team of 50 Sudanese and four expatriate staff. S/He will work closely with the Food Security and Livelihoods teams based in both Khartoum and the field offices.

The Fellow will be provided accommodation (private self-contained sleeping quarters) in the Mercy Corps Team Guesthouse. The guesthouse also has a functional kitchen and several bathrooms. There is WIFI and air conditioning available in the guesthouse and office. When traveling to the field, accommodation will be provided at either Mercy Corps guesthouses or hotels which have been vetted by Mercy Corps country officials.

Desired Skills of Fellow(s):
Required
Knowledge of design and implementation of market assessments ideally using Market Systems Development (MSD) approaches;
Willingness to train in-country staff or partner staff in assessment techniques and analysis;
Have a strong understanding of monitoring and evaluation practices;
Be able to write quality reports, communication pieces, and learning products;
Field experience ideally in Africa or a hardship location.

Preferred
Direct experience leading market assessments;
Direct experience training others.
Arabic language skills are desirable.

Language: English, native or biligual proficiency.

Desired Duration In-Country: 6 months, ASAP

Main Point of Contact: Sandrine Chetail, Director Technical Support Unit, Agriculture Systems, schetail@mercycorps.org, +22780175146

Principal Field Based Collaborator: Wasana Punyasena, Deputy Country Director, Sudan

University of California Faculty/Staff Counterpart (Mentor): fellow to find.

Research and Innovation Fellowship for Agriculture

Project: Karamoja Food and Nutrition Activity "Apolou "
Host: Mercy Corps
Location: Uganda

Project Summary: Mercy Corps Apolou program is a 5-year USAID Food for Peace-funded integrated development and nutrition program. The program goal is to improve food and nutrition security of vulnerable households residing in a hard to reach areas of Karamoja Uganda with a larger strategic focus on market facilitation that promotes long term systemic change. Adoption of improved practices that support inclusive food and nutrition security remain limited. Mercy Corps seeks a RIFA Fellow to guide the project team and local partners in prioritizing household learning needs and affordable (time & financial) learning methodologies that increase practice adoption.

Project Description: Apolou adapts approaches and field activities based on context, evidence and reflection. Core to the program's approach in achieving food and nutrition security within critically vulnerable populations are the social dynamics and household and community resource management attitudes and practices coupled with a larger strategic focus on market systems that promote long-term systemic change. Apolou addresses the complex factors primarily through activities centered around governance and partnerships, health and nutrition, water and sanitation and on-farm and alternative (non-agriculture-based) livelihoods. Apolou's Purpose 4 team leads all economic and market systems activities including crop and livestock-based livelihoods, alternative off-farm livelihoods, savings groups, and market facilitation. Purpose 4 coordinates across the other sectors (Purposes), especially Governance and Nutrition to support activity integration.

Apolou has established community-based structures to promote education and training of pastoralist/agro-pastoralist to assist them to make changes to their lifestyle and farming practices. Apolou recognize that the dynamic and changing pastoralist life in Karamoja necessitates lifelong learning for continued adaptation. Learning is linked to innovation and ability to manage change, and learning by adults is therefore, a focus for Apolou. Although a large portion of the population the program works with is (semi-)illiterate, we believe that learning, when appropriately facilitated, is an investment in capacity building that delivers rewards in terms of increased sustainable production, business profitability, jobs and sustainable rural communities. Life in pastoral communities now requires access to good information and demands not only sound traditional farming skills but a higher level of skills than before, including the ability to work with other farmers and other actors.

During the first year of implementation, Apolou has explored methods for information and skill transfer. Informal learning from peers, via print or electronic media (e.g. unstructured learning) combined with learning on the job, has been an important source of learning for many farmers. But lead farmer or farmer field school approaches have mixed results when implemented by development programs. We seek a RIFA Fellow to assist the Apolou team in restructuring farmer education and

training approaches. Given the importance of interaction with others in the decision-to-change process, we would like to make training more experiential or peer-based but we are unsure of how to develop the skills of locally based trainers in facilitating such training programs. We seek training methodologies that are both financial and time resource sensitive but stimulate adoption of practices, or ideally, group-learning that critiques technologies and techniques for adaptation and final adoption.

To begin, we anticipate the fellow will gather data via semi-structured interviews with the different population segments across a range of agricultural producers/enterprises in Karamoja to define how best people can learn and adopt technologies. Following identification of the right learning methods that best fit to the needs of Karamojong, the fellow will guide learning patterns/procedures for Apolou will adopt. The Fellow will customized the different teaching materials of Apolou to fit into the learning needs of low-literate pastoral communities in Karamoja. Time permitting, the Fellow will train Apolou staff and program trainers in these methodologies.

Work Environment:

This position is based in Karamoja region in North East Uganda. The Fellow will work within the Apolou program and cover the districts of Kaabong, Kotido, Amudat and Moroto. The Fellows primary residence will beat Mercy Corps team housing on the Mercy Corps compound in Kotido town, Kotido district. The position requires up to (60%) travel within the Karamoja region and 40% office work. Kotido town is small but there is an INGO presence. Running water and electricity are typically available and there is freedom of movement. Staff have access to basic health services. Mercy Corps has a large, well equipped field office in Kotido. The Fellow will be given a work space, a cell phone with a monthly airtime allowance, and a laptop for the duration of their assignment.

Mercy Corps will facilitate transport between all districts. It is anticipated that because of the distances between district headquarters and the nature of fieldwork, the Fellow will routinely overnight in Mercy Corps team housing on Mercy Corps compounds located in each district. At the team house, the Fellow will be assigned self-contained sleep quarters and have access to a shared kitchen and living space. When requested to attend meetings or events in Kampala, the Fellow will be accommodated on a bed and breakfast rate at one of Mercy Corps preferred hotels near our Uganda headquarters.

To learn more about the Karamoja region, we recommend reviewing USAID's 2017 Climate Risk Screening for Food Security; Karamoja Uganda (https://www.usaid.gov/sites/default/files/documents/1866/170130_Karamoja_Food_Security_Climate_Screening.pdf).

Mercy Corps team members represent the agency both during and outside work hours when deployed in a field posting or on a visit/short term assignment to a field posting. Team members are expected to conduct themselves in a professional manner and respect local laws, customs and MC's policies, procedures, and values at all times and in all in-country venues.

Desired Skills of Fellow(s):
Mercy Corps seeks a RIFA Fellow with the following knowledge, skills and interests.

Required
Knowledge of adult learning methodologies
Knowledge of experiential training approaches or practices
Developing and implementing qualitative research studies
Designing and leading training workshops

Preferred
Knowledge of agriculture and/or animal husbandry
Experience working/living in East Africa
Approaches and tools for training trainers
Experience in developing experiential training programs for (semi-)illiterate adults**Funding Notes:** The Innovation Lab for Climate resilient Cowpea project will absorb all the research cost involve in the establishment of trials, trial maintenance, participatory variety selection and data collection.

Language: English

Desired Duration In-Country: 6 months

Main Point of Contact: Scott Isbrandt, Chief of Party, Apolou;
SIsbrandt@mercycorps.org

Principal Field Based Collaborator: Gizaw Tadesse Alemu, Mercy Corps Apolou Livelihoods Manager; gtadesse@mercycorps.org, +256 (0) 782 185029

University of California Faculty/Staff Counterpart (Mentor): student to find

Research and Innovation Fellowship for Agriculture

Project: Improved Nutrition through Food Fortification in the Gambia
Host: United Purpose
Location: Senegal and the Gambia

Project Summary: The project aims to improve nutrition through the promotion of high nutrient and fortified crops in The Gambia. The fellow will contribute to a midterm survey to monitor adoption of new crops, as well as behavioral changes.

Project Description:
United Purpose is leading a food security and nutrition project in the Gambia with funding from the European Commission. The project is focused on reducing micronutrient deficiencies of women and children through sustainable and integrated approaches to food fortification. The main crops promoted include African leafy vegetables, Orange-Fleshed Sweet Potatoes (OFSP) and bio-fortified pearl millet. The main objective is to reduce under nutrition and poverty of vulnerable populations (especially women, and children under five years) by strengthening sustainable access to and consumption of fortified foods. The project includes a gender sensitive agri-business component, through establishing 300 women's farming groups. It will also promote groups for mothers in partnership with local health workers to promote nutrition education and cooking demonstrations.

United Purpose would like to host a Fellow to contribute to a midterm survey to monitor adoption and integration of these new crops and behavioral changes. The midterm survey will follow the structure of the baseline survey conducted by a RIFA fellow in 2017. The survey will inform methods and approaches for understanding behavior changes throughout the remainder of the project.

Work Environment:
The fellow will be based out of the Gambia office in Serekunda, with the option of collaborating with the Senegal office located in the capital city of Dakar.
Field work will be conducted in the Gambia in the Central River Region (North & South); Upper River Region; West Coast Region; North Bank Region; Lower River Region.

Desired Skills of Fellow(s): United Purpose seeks a fellow with strong skills in qualitative research methods. Coursework or applied experience in designing, conducting qualitative interviews and or surveys is desired. This position will require the fellow to engage in extended field work in rural areas. United Purpose seeks to work with a candidate who has an understanding for and openness to the realities of this type of work. Previous experience working with small-scale farmers is a plus.

Language: English
Desired Duration In-Country: flexible

Main Point of Contact: Tony Jansen: Tony.Jansen@united-purpose.org, +221770998898 (Senegal) +2204396071 +2204397648 (Gambia)

University of California Faculty/Staff Counterpart (Mentor): Madeleine Fairbairn / mfairbai@ucsc.edu / University of California Santa Cruz / Department of Environmental Studies

Research and Innovation Fellowship for Agriculture

Project: Nigerian Agri-Food Enterprise Development Scheme (NAFEDS)
Host: Youths of the Streets Initiative (YOTSI)
Location: Nigeria

Project Summary: NAFEDS is a strategic agri-food investment promotion and enterprise development scheme designed to create and provide 26 million direct and indirect jobs over a period of 16 years (2019 – 2035) with a target to facilitate US$12.5 agri-food investment and generate total wealth in excess of US$60 billion, thus empowering people, families and communities to lift themselves out of extreme poverty, while fostering food security, eradicating hunger and malnutrition etc

Project Description:
This project is an initiative aimed at supporting individuals, business groups, cooperative societies, families and communities in different regions across Nigeria, to engage themselves in commercial farming business, either as small-holder or large-scale farmers. It is also designed to assist other entrepreneurs to start-up, grow, nurture and sustain their own agri-food businesses across the value-chain. The target is to achieve food sufficiency and security, eliminate hunger, generate mass employment, create wealth, eradicate extreme poverty, fight crime and de-radicalized youths.

The host organization, Youths Off The Street Initiative (YOTSI), intend to assist people, families and communities in building human capital by way of skills training, as well as undertake research programmes aimed to help develop and update the business knowledge and operational capabilities of the targeted beneficiaries. It is expected that the assigned "fellows", will work to support beneficiaries in growing their businesses to become highly productive and maximally profitable by offering a variety of services.

Work Environment:
Farm sites, information resource centres, administrative offices, farm shops, open food markets, field research assignments etc. These will take place in very secured cities and safe villages across Nigeria.

Desired Skills of Fellow(s):
Any skills that could in any way help in nurturing business and agri-food ventures.
Language: N/A

Desired Duration In-Country: 3 months

Main Point of Contact: CDI Office, First Floor, Concept Plaza Annex, 5th Avenue, Gwarinpa Estate, Abuja-Nigeria; email: keniyere21073@gmail.com; telephone: +234 909 551 3080; contact person: Comrade Kennedy Iyere, President/CEO

Principal Field Based Collaborator: same

University of California Faculty/Staff Counterpart (Mentor): Student must find.

Research and Innovation Fellowship for Agriculture

Project: Pathways to Innovation in Central Asia: Building regional capacities for agri- enviromental research
Host: University of Central Asia (UCA), at the UCA Khorog Campus (Tajikistan).
Location: Tajikistan

Project Summary: Regional research capacities will be strengthened through co-development and implementation of small scale agricultural, natural resource management, and food security projects. The Fellow will actively participate in UCA's "university support" program. Fellow to be based in Khorog, Tajikistan.

Project Description:
The RIFA Fellow would be joining the UCA team implementing the project "Pathways to Innovation: Strengthening Mathematics, Science and Economic Policy Capacity in Afghanistan and Central Asia (2017- 20)." While the above project targets three regional universities, including two in Afghanistan, the Fellow shall be based at UCA Khorog (Tajikistan) and focus most attention on research projects (co-)designed with partners from Khorog State University (KSU) - including fieldwork associated with the KSU projects. Depending on the specific skills and experience of the Fellow, inputs may also be requested for supporting the Afghan projects, albeit remotely (i.e., without any travel or fieldwork in Afghanistan). Overall, through the "Pathways to Innovation" project, UCA is seeking to enhance the science and research capacities of faculty from several universities, with a focus on young to mid-career faculty.

Two broad areas of support are anticipated from the RIFA Fellow. First, direct engagement with the design and/or implementation of agricultural or sustainable resource management research projects. Second, contribution to the development of a 'certificate program' in Natural Resource Management, which will be delivered by UCA to regional universities at a later stage of the IDRC-supported project.

In regard to the research projects, local faculty members have already been identified in the regional universities, and over a dozen research concepts have been received by UCA. Proposals from KSU are related to sustainable land management, nursery development, indigenous fruit trees, the use of under-recognized under-utilized plants, and promotion of mountain tourism as alternative livelihood.

While all the proposals have core focus on agronomic and rural development, highly pertinent inter-disciplinary research areas will be highlighted in their further formulation. In particular, the proposals shall be embedded within contexts or perspectives of food security, climate change and adaptation, water-energy-food interactions, and sustainable mountain development. Knowledge generated and lessons learned from this project will strengthen not only the regional universities and their faculty, but also will feed into Aga Khan Development Network (AKDN) programming in the region. (Note: UCA is an agency of the AKDN, and thus can benefit from and feed into broader AKDN initiatives).

Research and Innovation Fellowship for Agriculture

The RIFA Fellow is expected to play an overarching support role, as part of UCA's project team, to strengthen the development, implementation, and analysis of emerging project results. Inputs will include scientific and technical elements, as well as management, communications, and editorial or writing contributions. The Fellow will work alongside (and/or be in regular contact with) UCA and other researchers. Emphasis shall be placed as much on 'mentorship' of regional faculty (through partnership) as on agri-environmental field research per se.

Work Environment: The Fellow will be based in Khorog, Tajikistan. Some regional travel will occur in Gorno-Badakhshan Autonomous Oblast (province), according to emerging project requirements (i.e. field work activities). Serving as part of UCA's team implementing the IDRC-supported "Pathways to Innovations" project, the Fellow will need to come with a flexible mindset - as appropriate for this 'capacity development' intervention that seeks to build regional universities' research and analytical skills through co-design and implementation of a suite of small agricultural and sustainable development research projects. A combination of field-based work (in support of specific selected agricultural projects) and office work (including communications, concept reviews, project design, etc.) are anticipated.

Desired Skills of Fellow(s):
The Fellow should have good knowledge / experience in agriculture, food security, sustainable land management, rural development, and/or environmental sciences - and ideally also experience in the extension of such knowledge to various audiences including academic and/or community partners. Experience in the coordination and monitoring of research in multi-stakeholder contexts also would be an asset, as well as project management. In addition to fluency in English (spoken and written), ability to communicate effectively in Russian, Tajik, and/or Farsi, would also be helpful for the team. Specific agricultural and natural resource management skills in horticulture, fruit trees (orchards), nursery development, medicinal plants, agrobiodiversity, integrated pest management - all could be integrated into UCA's "Pathways to Development" project.

Language: English. Russian, Tajik and/or Farsi helpful.

Desired Duration In-Country: Flexible, as long as possible. Time in-country should include as much of the growing season as possible. But some flexibility is possible, depending on the applicants' profiles.

Main Point of Contact: Dr Marc Foggin (Acting Director, Mountain Societies Research Institute, University of Central Asia), marc.foggin@ucentralasia.org, (+996)770822456

Principal Field Based Collaborator: Dr Murodbek Laldjebaev
http://www.ucentralasia.org/About/UcaStaff#MurodbekLaldjebaev

University of California Faculty/Staff Counterpart (Mentor): Student must find

Research and Innovation Fellowship for Agriculture

Project: Integrating Appropriate Agricultural Technology in the Climate-Challenged Smallholder Systems of Indian Sundarbans

Host: Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI), West Bengal, INDIA

Location: India

Project Summary: The participating fellow/s will identify the critical technological need of one/more communities in climate-challenged Sundarbans region in India and will integrate appropriate agricultural technology/technologies into the smallholder system. The whole process will be facilitated through the participation of community and grassroot institutions with technical support of the host institution and local public extension agencies. The fellow will engage in the project monitoring and process documentation in consultation with the host faculty.

Project Description:

Agriculture and rural livelihoods is complex, diverse and risk-prone in the Indian Sundarbans. Challenges of climatic variations, biotic and abiotic stresses, market fluctuation and recursive migration renders farming a challenging and risky proposition to the smallholders of the region. Agricultural technology has a large role to sustain regional rural prosperity since land-based enterprises are still the most important and predominant way to support local livelihoods. We aim to take up a small, but achievable model that demonstrates the integration of appropriate agricultural technology/combinations of technologies (climate-smart, gender sensitive and locally sustainable) into the smallholder system/s.

This asks for - (a) participatory identification of critical problem/s; (b) conceptualization of change model/s to solve it/them; (c) identification of appropriate technologies in consultation with relevant local stakeholders; (d) capacity building of local community to initiate action in field conditions; (e) development of mechanism to ascertain project sustainability in consultation with the host institution; and (e) continuous monitoring (and evaluation if possible), follow-up and process documentation.

The host institution plans to evaluate the intervention and conduct an impact assessment in due course of time. The model can be scaled up by the host institution and its network of grassroot organizations in their operational areas (that creates scope for future projects). The host institution is in an integral part of a cluster of agriculture and rural development organizations and maintains specialized human resources of diverse sub-disciplines of agriculture, animal sciences, fishery sciences and community development. This can be of huge advantage to the RIFA fellow/s. Moreover, we plan to engage few graduate students of the host institution with the fellow/s to help them out in field conditions. Specifically, the fellow will get exposure to and contribute towards problem identification, technology sourcing, capacity building of the community and documentation of the processes involved.

Work Environment:
The exact combination depends on the nature of project that we come up with after series of discussions. However, fieldwork is almost certain and can be combined with laboratory works and office works whenever and wherever necessary. We have strong presence in the fields, own a decent laboratory set-up (of tissue culture, microbiology, biochemistry and molecular biology) and plenty of workspaces. The fellow/s will sit in the IRDM Faculty Centre, Narendrapur, which is located at the outskirt of the Kolkata City. His/her fieldworks will be located in South 24 Parganas district of the West Bengal state. Most of these areas are within 50-75 Km away from the IRDM Faculty Centre.

Desired Skills of Fellow(s):
1. A basic understanding of agricultural technologies - seed, soil, irrigation, plant protection etc.
2. An understanding (not experience, necessarily) of rural society and/or subsistence agriculture
3. Skill of conducting focus group discussions, small scale questionnaire survey, participatory appraisals (we can provide small trainings if not trained already) etc.
4. Basic skills of process documentation
5. Skill of ICT application in agriculture/rural development (desirable, not necessary)
6. Skill of adaptation to different cultural settings
7. The fellow/s should be ready to accept the challenges of field situations in rural areas with minimum logistic supports/facilities

*However, absence of one or the other skill will certainly not hamper the project completely. We have plenty of local experts and events where they can get exposure before visiting the fields.

Language: Knowledge of Bengali will be most appropriate, which may not be known by any of the fellows. We will assist the fellow/s by deputing student volunteers who will be able to act as translators

Desired Duration In-Country: October-March (flexible); October-November is preferred since the rainy months will be over (accessibility to the islands of Sundarbans may be difficult in rainy season) and the temperature will be on a lower side. Diverse festivals during these months will offer the fellow/s with unique exposure to the local culture. However, priority of the fellow/s will be given due importance.

Main Point of Contact: Prof. Tapash Dasgupta, Dean, Integrated Rural Development and Management (IRDM) Faculty Centre, RKMVERI; E-mail: dean.rkmveri.irdm@gmail.com; Phone: +91-33-24772020
Principal Field Based Collaborator: Dr. Rupak Goswami, Asst. Professor, IRDM Faculty Centre, RKMVERI; E-mail: goswamirupak@gmail.com, rupgoswami@ucdavis.edu; Phone: +91-9674954840
University of California Faculty/Staff Counterpart:
Dr. Somen Nandi, Managing Director, Global HealthShare® Initiative at UC-Davis and Adjunct Faculty at the Department of Chemical Engineering, UC-Davis; E-mail: snandi@ucdavis.edu

Research and Innovation Fellowship for Agriculture

University of California Faculty/Staff Counterpart (Mentor): Student must find

Project: Food, Agriculture and Social Entrepreneurship (FASE) Curriculum & Trainer Skill Development

Host: Green Shoots Foundation/Community-based Integrated Development (CIDO)

Location: Oddar Meanchey Province, Cambodia

Project Summary: Green Shoots Foundation FASE initiative started in late 2012 in the NW of Cambodia. The aim is to demonstrate to youth that a rural economy can be thriving and help provide for their families. The role of the fellow will involve working with our local partner on updating skills and techniques, carrying out assessments.

Project Description:

Green Shoots Foundation's mission is to foster Sustainable Development by promoting holistic programs that combine Economic Development with Food & Agriculture, Education or Medical Aid. By working with local partners, we implement holistic programs to break localized poverty cycles.

In 2012, Green Shoots Foundation launched its Food & Agriculture and Social Entrepreneurship (FASE) Initiative in Cambodia through a series of pilot projects and with the intention to invest in the skills of people for long-term development. Our Vision is to "Revitalize rural economies through sustainable agriculture skills and business development" we are committed to making agriculture exciting for youth (https://tinyurl.com/y7p8hnwv). In 2014, we scaled up the pilot project to Agriculture Skills in Public Schools (ASPUS) Project with CIDO. For this we set-up, managed and trained teachers on vocational vegetable gardens in 42 government-run schools in this province. The role of the RIFA fellow can involve carrying out third-party evaluations of these gardens and provide recommendations (and or) training for improvement in the gardens.

While ASPUS is ongoing, we are also embarking on an Agriculture Training Centre in the same location. We have been given land by the government (under one hectare) and we have teamed up with architects to help design an innovative sustainable structure. For this, the role of RIFA fellows will be instrumental in :

1. Ensuring our trainers are equipped with the best skill set. Such as: soil/ water pH testing, climate change adaptation
2. Giving input on the drafted curriculum for the agriculture training center (focusing on horticulture, integrated farming, water resource management, low-cost tech solutions).
3. Feedback from past volunteers working with school teachers who trained to be school garden managers

Katie Irwin (2017) on How the experience will help her career, “"Yes, I know that this experience will help me in future jobs with non-profits; leading educational activities such as workshops, and will improve my communication, confidence and leadership skills in general when speaking with diverse groups. It helps me to gain a broader understanding of how school garden programs can be developed and maintained."

Kyle Brolis (2017) on his anticipated impact to the project, “hopefully we cultivated interest in thinking outside the box when It comes to farming - cultivating curiosity Instead of reliance on one technique or system. I hope we inspired them to be a little more self-confident and experiment more. in my opinion it is the experimentation that will allow them to thrive and innovate..."Green Shoots Foundation's mission is to foster sustainable development by promoting holistic programs that combine economic development with food & agriculture, education or medical aid. By working with local partners, we implement holistic programs to break localized poverty cycles.

Work Environment:
All work will take place in Odar Meanchey, a province in the northwest of the country bordering Thailand. The fieldwork will be in 42 vegetable gardens that Green Shoots has set-up with local partner, CIDO, and an agricultural training center in a nearby village. For office work, the fellow will have a desk at CIDO’s office.
On occasion the fellow will accompany local staff to attend NGO meeting or events.

Desired Skills of Fellow(s):
- An understanding of tropical agriculture, especially in the SE Asian context and within the realms of climate change
- Ability to work in low-resource setting (no access to labs)
- Good understanding of soil properties, techniques to improve soil quality, water resource management.
- Past experience working on Training of Trainer programs
- Ability to work independently and with teams in different countries (Green Shoots is in the UK)

Language: Khmer (if possible), limited working proficiency

Desired Duration In-Country: 3 months , anytime except July-August

Main Point of Contact: Muneezay Jaffery, muneezay@greenshootsfoundation.org, +44 7903224508

Principal Field Based Collaborator: Mr Ratana Oeurn, ratana.cido@gmail.com, +855 7741 2177

University of California Faculty/Staff Counterpart (Mentor): Student must find

Research and Innovation Fellowship for Agriculture

Project: Toward Sustainable Food Systems Profiles for Decision-makers
Host: International Center for Tropical Agriculture (CIAT)
Location: Vietnam (possibly Kenya)

Project Summary: Our 3 year project occurring in Kenya and Vietnam works in collaboration with many governmental and other institutions. The goal is to identify what key sources of information are needed to make pro-sustainable food system decisions, assess the availability of these data, and understand how they can be analyzed and packaged so as to be useful to decision-makers at local, regional, and national scales. In this third year of the project, fellow(s) will work with the CIAT team and the project partner University of Michigan to compile and analyze these data on nutrition, environment, and food systems, based on priorities set in interviews with decision makers and other stakeholders. Fellows will be part of a team working on publishing these results and on contributing to more informed decision making.

Project Description:
The world's nations have collectively agreed to meet ambitious Sustainable Development Goals (SDGs) within the coming 5-15 years, including eliminating hunger, increasing human health and well-being, creating economic growth, adapting to climate change, and producing and consuming the world's natural resources sustainably. Meeting these goals, which are outlined in 169 targets measured by 230 indicators, requires that decision-makers are able to understand the interactions between food production, consumption, and trade, human health, equity, and environmental sustainability, at their relevant scales. Adequate, accurate, integrated and understandable data and analyses in the hands of the appropriate decision-makers at national and sub-national scales are thus urgently needed to create good policy and action toward these goals, as well as to measure progress along the way.

But available national and global level data on these sectors is mostly only accessible in disparate and unconnected sources, making such information effectively unavailable in digestible formats. Moreover, such data is often considered to lack the sufficient resolution and culturally specific contexts so as to be relevant to national and especially sub-national level decision-making. On the other hand, upscaling high quality community and household-level information so as to be relevant for decision-making at larger scales implies major resource mobilization hurdles, which may be practically impossible within the short SDG time-frame.

We bring together available food and agriculture, human health, environment, and social information, with the aim of producing policy-relevant data and analysis packages of high value for national-, sub-national, and local-level decision-making toward the SDGs. In collaboration with information generating organizations and decision makers, we identify key leverage points where sound data can help to make decisions that have multiple food system benefits. We analyze the available data with the aim of creating such information packages, and test their usefulness with key decision-makers.

We are in the middle stages of this ambitious three-year project, which is led by the University of Michigan and CIAT, and enacted in two regions each of Kenya and Vietnam. We have completed our first phase in which we characterized the available data in both countries, and also the second phase, in which we interviewed a large and diverse group of stakeholders with regard to their data and decision making needs. We are entering our third phase, which is to analyze the available data in the context of identified high priority needs. A RIFA Fellow would integrate into the project with support from both CIAT and the University of Michigan, and would preferably be available to spend some months in Vietnam or in Kenya during 2019. The student will play a key role in analyzing data, and will become part of a larger project with an ambitious agenda to publish the results for the research community, and to contribute to positive impacts in both countries.

Work Environment:
Project will be a mixture of desk based data compilation and analysis based out of the CIAT Hanoi office, and potentially some field based interaction/data collection/stakeholder interaction at community and district levels in NW Vietnam. We may also be able to support a Fellow in Nairobi.

Desired Skills of Fellow(s):
Specialization in one or more aspects of sustainable food systems (e.g., soil scientist, agronomist, biodiversity conservation, genetic resources, agricultural economist, value chain specialist, life cycle assessment, food policy, nutritionist, food sovereignty and equity, or other) with broad interest in integrating other aspects toward a holistic account of food systems. Ability to analyze large datasets and experience with social and participatory data gathering methods are also beneficial.

Language: English

Desired Duration In-Country: The timing of our project fits well with the 2019 summer (and/or fall) period for UC students. We can accommodate periods from as little as 2.5 months to up to 6, but a stint of 3-4 months should work well.

Number of Fellows: up to 3

Main Point of Contact: Colin Khoury, Crop Diversity Specialist, c.khoury@cgiar.org +1 970 237 9571

Principal Field Based Collaborator: Christine Chege, Post-Doctoral Fellow in Nutrition, c.chege@cgiar.org

University of California Faculty/Staff Counterpart (Mentor): Robert Hijmans, rhijmans@ucdavis.edu, UC Davis Associate Professor, Ecology, Geography, Horticulture and Agronomy Graduate Groups