 

**Farmer-to-Farmer (F2F) East Africa**

**Volunteer Assignment Scope of Work (SOW)**

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| **Summary Information** | |
| Assignment Code | ET51 |
| Country | Ethiopia |
| Country Project | Horticultural Crops Production and Sector Support |
| Host Organization | National Agricultural Biotechnology Research Center(NABRC) |
| Host partner | The Ethiopian Institute of Agricultural Research (EIAR) |
| Assignment Title | Operation and management of DNA[[1]](#footnote-1) sequencing (genetic analyzer) machine and training on utilization of these machines |
| Assignment preferred dates | November --December, 2016 |
| Objective assignment | * Optimize operation of DNA sequencing machine * Equip laboratory technicians with practical skills on utilization and maintenance of the DNA sequencing machine and use of sequencer kits and reagents * Equip researchers and laboratory technicians with practical skills on how to obtain a sequence data from different databases and apply bioinformatics tools |
| Desired volunteer skill/expertise | * Demonstrated expertise in installation and application of DNA sequencing machine and use of sequencer kits or reagents, * Proven skills on how to obtain a sequence data from different databases and apply bioinformatics tools to generate useful information |

1. **BACKGROUND**

Low agricultural productivity in Ethiopia is attributed to among other factors the limited utilization of molecular science and innovations of biotechnologies for agricultural value chains. Modernization of agriculture through molecular science and genetic engineering is largely at infant stage. On the other hand, the country has large potential for agricultural improvement through biotechnological science. In this line, the government of Ethiopia is taking pioneering steps and development. The establishment of the National Agricultural Biotechnology Center (NABRC)at the Holetta under the National Agricultural Biotechnology Program of the Ethiopian Institute of Agricultural Research (EIAR) could be counted as one step ahead. Established by the financial support of the World Bank through Agricultural Research Training Program (ARTP) and Research and Capacity Building Program (RCBP) of the EARI, the NABL is officially inaugurated on September 2010. Its vision is to improve the agricultural livelihood of the nation through market competitive agricultural technologies. The three important pillars or missions of the NABC include enhancing agricultural research efficiency through application of biotechnology tools; improving production, productivity and quality of plants, animals and microbes and their products; and supporting the fulfillment of the Growth and Transformation Program (GTP) of the country at large.

Farmer-to-Farmer (F2F) program in Ethiopia is operating in alignment with the USAID Feed-the-Future (FtF) Initiative of the Food Security Bureau of the US government and the GTP-Agricultural Growth Program (AGP) of the Ethiopian government.

1. **ISSUE DESCRIPTION**

In pursuance to the recent establishment of the National Agricultural Biotechnology Research Program (NABRP) by the Ethiopian Agricultural Research Institute (EARI) of the Ethiopian government, the present programmatic activities of the NABRP strategically setup in three sub-programs. Under these three sub-programs, eight functional projects are also strategically set for operations. Most operations of these sub-programs and projects are being run in the National Agricultural Biotechnology Center (NABRC).

The three Programs are Plant Biotechnology (operational since 2000), Animal Biotechnology (operational since 2006), and Microbial Biotechnology (operational since 2011). Under these programs, the list of eight current projects under operations also includes:

* Tissue culture protocol development and
* Mass propagation of disease free plants
* Molecular characterization of plants/Marker assisted selection(MAS)
* Diagnosis and indexing of diseases
* Assessment of the occurrence of GMO/ GMO detection
* Reproductive Biotechnology
* Rumen Biotechnology
* Microbial Starter Cultures
* Microbial Enzymes

The above projects and biotechnology applications are integrated in the national strategic priorities and projections of the national agricultural research system. Strategic crops include maize, tef, wheat, rice, oil and pulse crops, and root and tubers crops such as potatoes, Enset, cassava and fruits like mangoes, citrus and avocados & spices. These commodities have been identified as having problem of high quality seed or planting material provision and availability of varieties with high productivity and stress tolerance etc. In livestock improvement of dairy cows, poultry and fish as well as honey production is given attention.

Based on its operation under the above projects, the NABRP-NABRC and F2F Program in Ethiopia discussed on possibility of partnership.

1. **OBJECTIVES OF THE ASSIGNMENT**

The objectives of this particular assignment are practical (hands-on) training and direct technical assistances/demonstrations on:

* Operation and utilization of DNA sequencing machines. During this session, a particular machine of Fig. 1, operation will be optimized through the assistance by this US biotechnology laboratory technician/specialist;
  + **NB**: It is suspected that a ‘calibration buffer’ might be needed for the installation work, where the recommendation/s by this F2Fvolunteer (biotechnology laboratory technician) would be essential/compulsory.
* Machines related training and assistances (setup, installation, maintenance, etc. e.g. Flow cytometer, Freeze dryer, bioanalyzer, real-time PCR, etc);
* Various machines related training/assistances, which includes(but not limited to):
* Calibration
* Sample preparation
* Running of samples and data management
* Data analysis and computation
* Maintenance
* Usage of reagents;
* GLP for molecular lab
* Sequencing work using the following reagents [additional/different reagents can be recommended by the ‘F2F biotechnology laboratory technician/specialist’]:
* BigDye® Terminator v 1.1
* BigDye® Terminator v 3.0
* BigDye® Terminator v 3.1
  + **NB:** The NABL also kindly requested this “F2F biotechnology laboratory technician” on where these and others required reagents can be purchased in US[[2]](#footnote-2). Currently, these reagents are lacking in the laboratory (NABL).



*Fig. 1. The photo of "applied Bio-systems 3730/3730x/DAN Analyzer (ABI 3730 Genetic analyzer - 96-well plate)”, which need to be installed or fixed.*

* Optimize the operation and train staff on the sequencing
* Obtaining a sequence data from different databases such as BLAST, FASTA, NCBI
* Multiple alignment of nucleic acid and protein sequence**s**

The type of beneficiaries of this particular assignment will be biotechnology laboratory technicians of the NABC, researchers of the EIAR, and others as applicable. A total of 15-30 or more trainees are expected to attend this training and practical sessions. The educational level of these audiences could be Bachelors, MSC and PhD holders..

**Host contribution**–The host will select the appropriate trainees and ensure their availability for the trainings and technical assistances. It will also assign a focal person to facilitate the volunteer and coordinate the assignment at all times. The hostwill also provide the volunteer with office space and furniture. In consultation with CRS, it will also facilitate booking of hotel accommodation (lodging) and also facilitate the volunteer for her/his meal services. For field travel in the assignment area, the host will provide the volunteer with vehicle. The host will request CRS for fuel cost and F2F related expenses for reimbursement against receipts and its financial procedural steps of CRS.

1. **ANTICIPATED RESULTS FROM THE ASSIGNMENT**

It will be anticipated that 15-30 selected trainees of the NABRC and/or the NABRP-EARI will be trained and practically demonstrated. Some anticipated deliverables include:

* Initial presentation done (outlines/list of activities, plan, approach, etc communicated at early stage to NABRP/C),
* Trainees acquainted with theory and practical applications on aforementioned training topics and practical assistances,
* If time permits, laboratory manual will be prepared and submitted to the NABRC,
* GLP for molecular and sequencing labs developed
* Field Report with recommendation submitted to CRS
* Presentation to CRS staff and USAID;
* Completed trip reports
* Outreach events conducted in the US.

1. **SCHEDULE OF VOLUNTEER ACTIVITIES IN ETHIOPIA**

| Day | Activity |
| --- | --- |
| Day 1 | Arrival to Ethiopia. The volunteer will be met at Bole Airport by CRS’s client hotel Churchill (churchillhotel@ethionet.et / info@churchillhoteladdis; phone # 0111111212) or another client hotel with a placard bearing “CRS logo and volunteer name”. |
| Day 2 | * Briefing meeting at CRS office with CRS F2F staff and become fully briefed on logistics and itinerary of trip. Discuss anticipated outcomes and work plan; * Vehicle drive to Holetta. * First hand briefing on the main objectives and modality of the assignment and adjust the agenda for the coming days. Briefing and debriefing with the staffs. |
| Day 3 | * Based on information gathered and gaps identified, refine training materials, and pretest with higher officials and laboratory personnel of the NABRC. * Commence firsthand training and technical assistances including practical sessions |
| Days 4-7 | Training and practical in the NABRC |
| **Day 8** | **Rest day** |
| Days 7-12 | Training and practical in the NABRC continue |
| **Day 13** | **Rest day** |
| Days 14-19 | Training and practical in the NABRC continue |
| **Day 20** | **Rest day** |
| Day 21-22 | Training and practical in the NABRC continue |
| Day 23 | * Final presentation to staffs at Holetta * Complete manual and submit to the NABRC, and finalize reports of CRS * Drive to Addis Ababa |
| Day 24 | * Finalize her/his reporting at CRS office and fill out all necessary templates for final delivery to CRS * Debriefing at CRS office with USAID Mission and/or CRS staffs. * Depart for USA (evening hours) |
| TBD | Outreach event when back in the US could include: presentation with a local group/organization, press release, media event and/or speaking tour. |

1. **DESIRABLE VOLUNTEER SKILLS**

* Demonstrated skills and experiences on installation and utilizations of DNA sequencing machines and use of sequencer kits or reagents,
* Proven working experience in crop biotechnology laboratories,research, advisory and/or consultancies on agricultural biotechnology laboratory machines,
* Experience and/or familiarity in agriculture and agricultural biotechnology
* Good communicator and interpersonal communication skills

1. **ACCOMMODATION AND OTHER IN-COUNTRY LOGISTICS**

* Before travelling to the assignment place, the volunteer will stay in Addis Ababa at one of the CRS’s client hotels that will be booked and confirmed before the arrival date.
* In Addis Ababa, the hotel usually has rooms that include services such as airport pickup and drop-off, breakfast, wireless internet, etc.
* The hotel or CRS will arrange a vehicle for short travel from the hotel to CRS and vice versa while in Addis Ababa.
* All required materials will be prepared ahead of time and will be provided to the volunteer. CRS Ethiopia will provide the volunteer with a laptop computer (if s/he needs), local internet dongle (modem/EVDO) and mobile phone with charged local SIM-card. Any other required logistics and facilities can also be requested by the volunteer during her/his stay in Addis Ababa.
* CRS will provide a vehicle and accompany the volunteer to the place of assignment.
* During her/his assignment period, the volunteer will be booked in a hotel at Holleta town.
* CRS Ethiopia will cover the lodging bills against receipts.
* CRS HQ will provide the volunteer with a per-diem advance to cater meals and incidences.
* CRS Ethiopia will also reimburse the volunteer with laundry costs against receipts.
* Before departing to US, the volunteer will also liquidate advances (if any) at CRS Ethiopia.
* For more information, please refer to country information that will be provided.

1. **RECOMMENDED ASSIGNMENT PREPARATIONS**

* Although CRS F2F has developed such hinting SOW, the volunteer can fine-tune through her/his professional qualifications to successfully carry out this assignment.
* As this particular assignment needs special prior arrangements before the departure of this “F2F biotechnology laboratory technician/specialist” from US, s/he will be strongly advised or required to contact F2F in Ethiopia and/or the host organization through the email addresses provided in section “I” below.
* Although the assignment site is in highland area and malaria may not be prevalence, having precautions in taking pills or vaccination for malaria and (maybe also for cholera) upon recommendations by her/his doctors/health professionals in US may be advisable.
* Prior to travel, the volunteer is advised to prepare necessary training and demonstration aids and written handouts. Softcopies of the handouts and any other paper materials can be printed for immediate use at the CRS office in Addis Ababa on request by the volunteer.
* Depending on availability of electric power, the volunteer will use a laptop and LCD projector for power point presentations (LCD projector by the host and laptop will be provided from CRS).
* If the volunteer requires use of simple training aids like flip charts, markers or tape s/he should make the request and collect from the CRS office in Addis Ababa prior to travel to the assignment place.
* Translation of handouts to the local language can be done in the locality of the assignment, if required.

1. **KEY CONTACTS**

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| **CRS Baltimore** | **CRS East Africa Regional Office** |
| **Maria Figueroa,** Volunteer Recruitment Manager  EA Farmer to Farmer Program  228 W. Lexington Street  Baltimore, MD 21201, 410-951-7366  Email: [maria.figueroa@crs.org](mailto:maria.figueroa@crs.org) | **NyamburaTheuri,** Deputy Project Director  EA Farmer to Farmer Program  P.O. Box 49675 – 00100; Nairobi, Kenya  St. Augustine Court Karuna Close Road  Email: [nyambura.theuri@crs.org](mailto:nyambura.theuri@crs.org) |
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| **Host Organization:** | |
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1. *“DNA” stands for Deoxyribose Nucleic Acid*  [↑](#footnote-ref-1)
2. *If possible, to see any optional strategy to help the host organization in purchasing and delivering the required/recommended reagents to the country, s/he will be strongly advised or required to contact the host organization and/or CRS F2F in Ethiopia through the email addresses provided in section “I”.* [↑](#footnote-ref-2)