



**CRS Farmer to Farmer Program  
Volunteer Assignment Scope of Work**

**To express interest in this assignment, please email [maria.figueroa@crs.org](mailto:maria.figueroa@crs.org)**

<b>Summary Information</b>	
<b>Assignment Code</b>	<b>ET</b>
Country	Ethiopia
Country Project	Crop (Grain and Horticulture)
Host Organization	Injibara University
Assignment Title	Basic Crop Modeling and Simulation Methods
Assignment preferred dates	End June
Objectives of the assignment	<ul style="list-style-type: none"> <li>• Train university instructors and PhD and MSc students on basic Crop Modeling and Simulation Methods</li> </ul>
Desired volunteer skill/expertise	Advanced knowledge and experience on crop agronomy specifically on crop modeling and simulation
Type of Volunteer Assistance	Technology Transfer (T)
Type of Value Chain Activity	On Farm production (F)
PERSUAP Classification <sup>1</sup>	Type 2

**A. BACKGROUND**

CRS Farmer-to-Farmer (F2F) Program is a USAID funded 5-year program (July 2018 – June 2023) that will provide technical assistance from United States (U.S) volunteers to farmers, farmer groups (cooperatives and associations), agribusinesses and other agriculture sector institutions. The program objectives are to facilitate economic growth within targeted agriculture sub-sectors, enhance sub-sector inclusiveness to expand participation to a broader range of individuals and communities and to increase the American public’s understanding of international development issues and US international development programs. Volunteers, recruited from all States and the District of Columbia, are individuals who have domestic careers, farms and agribusinesses, or are retirees who want to participate in development efforts. F2F program will assist in agriculture development, commodity value chain competitiveness and firm upgrading by providing technical assistance to introduce new technologies, innovations and development of local capacity for more productive, profitable, sustainable and equitable agriculture systems.

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<sup>1</sup> USAID precisely classifies PERSUAP in four categories; **PERSUAP Type I** assignments directly related to pesticides recommendations, **Type II** as assignments with indirectly related with pesticides, **Type III** assignments related to curriculum review and designing, business plan development and strategies development and **Type IV** as assignments associated with other USAID projects and collaborators.

Agriculture is the leading economic sector in many developing countries despite production based on subsistence farming that suffers from low yields and high vulnerability due to climate change. Agriculture in Ethiopia accounts for 47% of GDP, 90% of exports and 85% of employment. This suggests that investment in agriculture can contribute to food security and poverty reduction for the majority of the rural poor. Research across the world has proven that investment in agriculture can result in a sharp increase in economic development and poverty reduction.

Agriculture in Ethiopia is largely rainfed. Rainfed agriculture is the dominant source of staple food production and covers 93% of the region's agricultural area. There is a large yield gap between what is actually harvested from farmers' fields and what could potentially be achieved. Research has shown that the yield gaps in Ethiopia cannot be explained only by biophysical conditions (e.g. lower amounts of rainfall), but also due to sub-optimal management conditions. Researches indicated that low yield in the rainfed agro-ecological landscapes of Ethiopia is typically not due to the lack of water alone rather a result of the inefficient management of water, soils, and crops.

Injibara University is situated in Awi Zone which is one of 10 Zones in the Amhara National Regional state of Ethiopia. It is bordered on the west by Benishangul-Gumuz Region, on the north by North Gondar Zone and on the east by West Gojjam. It is located between the magnificent mountains in the highlands of Ethiopia. It is situated 455 km,NW from the capital city ,Addis Abeba and 110 km, SE from capital city of the Region BahirDar. The university is relatively new university started its operation in 2015 by the Ethiopian government. The university has 4 collages and 24 departments. One of the largest programs is the College of Agriculture, Food and Climate Science. This program is split into five main focuses; Plant Science, Animal science, Agricultural Economics, Natural resource and management, Horticulture and Forestry and climate science.

## **B. ISSUE DESCRIPTION**

Agriculture is the backbone of the Ethiopian economy. This particular sector determines the growth of all other sectors and consequently, the whole national economy. On average, crop production makes up 60 percent of the sector's outputs.

Thus, Agro-ecosystems comprise a complex interaction among the components and systems of soil, crops, the atmosphere and farming practices. An understanding of the complex interaction of soil-water-atmosphere and crop yield is important for sustainable crop production.

Crop simulation models are computer-based mathematical models representing the interaction of crop growth and the environment. The crop simulation models play an important role in research where limited resources are badly affecting the agricultural research, resource management in the agricultural field and have been using to understand, observe, and experiment with crop systems for decades. Crop growth simulation models are used as research tools for assessing the relationships between crop productivity and environmental factors. These models use one or more sets of differential equations over time, normally from planting to final harvest, to estimate agricultural production as a function of weather and soil conditions, as well as crop management. The ultimate aim of using crop models is to answer

such questions that otherwise could only be answered by carrying out expensive and time-consuming experiments.

For the reason that crop modeling and simulations have in agricultural studies to answer strategic and tactical questions concerning agricultural planning, on-farm soil and crop management and its effectiveness and to minimizing the cost of research it's important that the instructors and agronomists of Injbara university to have advanced knowledge and skill on crop modeling.

Therefore, since the University is new and most of the staffs are new to address the skill and knowledge gap on crop modeling and role of it on crop productivity and production enhancement the host Injbara university asked CRS F2F program volunteer assistance.

### **C. OBJECTIVES OF THE ASSIGNMENT**

The objective of this assignment is to strengthen the knowledge and skill gap of the host staffs and agronomists on crop modeling and role of it on crop productivity and production enhancement.

The training and technical assistance areas includes

- Introduction and Systems Installation
- Overview of Crop Modeling
- radiation interception
- Program Light Environment
- Calculating light interception
- Transpiration
- Simulating carbon assimilation and photosynthesis
- Simulating above ground growth
- Simulating Root Growth
- Addition of limiting factors (water, nitrogen)

In addition, to these suggested topics, the F2F volunteer specialist will be given an opportunity to initially assess the knowledge and skill gaps of the Injbara University and comprehensively develop training topics for fruitful intervention. This will be done during the early stages of the assignment.

The target beneficiaries or audience of this training and technical assistance will be the staffs of Agricultural, Food and Climate Science college and agronomists of Injbara University.

#### **D. HOST CONTRIBUTION**

The Host, Injbara University will select staff, instructors and students to attend trainings. The host will also assign key personnel to work closely and facilitate the volunteer in his/her overall works including translation to the local language and to assist the volunteer during trainings. The host will arrange transportation and venue as required. CRS F2F Ethiopia will organize the volunteer's hotel arrangements (lodging) and ensure all required facilities are appropriate. CRS will cover lodging costs against receipts and provide per-diem advances for meals.

#### **E. ANTICIPATED RESULTS FROM THE ASSIGNMENT**

It is anticipated that this volunteer's technical assistance will contribute to improved knowledge and skills of the host (Injbara University), resulting in meeting its goal of technically assisting the instructors and agronomists of the University to further understand the basic concepts and techniques of Crop modeling and simulation. The volunteer will contribute to the following

- 59 staffs (50 instructors and 5 technical assistances) with improved knowledge and skill on Crop modeling and simulation.
- Future use of models as aid to research, understanding, simulation and prediction as well as integration between disciplines
- Curriculum/training materials for future crop modeling reference

#### **F. DELIVERABLES**

Deliverables by the volunteer includes:

- A record of people involved in training
- Volunteer final report due BEFORE departure
- Group presentation with local stakeholders at the end of the assignment
- Outreach activity press release or a media event back in US

## **G. DESIRABLE VOLUNTEERS SKILLS**

The volunteer is expected to have the following qualifications and competencies:

- Advanced and extensive practical knowledge and experience on Crop modeling and simulation.
- Experience in crop modeling curriculum development and developing training materials
- Experience in adult training and technical assistance
- Good interpersonal and communication skills including analytical skills
- Respect the cultural and religious norms of the rural people.

## **H. SCHEDULE OF VOLUNTEER ACTIVITIES IN ETHIOPIA**

<b>Day</b>	<b>Activity</b>
Day 1	Arrival in Addis at Bole Airport, the volunteer will be met by a CRS's client hotel Saro Maria Hotel (mail: reservation@saromariahotel.com; Phone: +251 11 667 2167). The volunteer will locate the hotel kiosk and receive their pre-arranged transport
<b>Day 2</b>	<b>Rest Day (Sunday)</b>
Day 3	<ul style="list-style-type: none"><li>• Take prearranged CRS vehicle or client taxi to CRS office (CRS working days are Monday to Friday from 8:00AM to 5:00 PM East Africa Time)</li><li>• Welcoming by CRS, and briefing meeting on security, general orientation, logistic and reporting formats.</li><li>• Discuss anticipated outcomes and work plan</li><li>• Travel to the assignment site Awi zone, Amhara region</li><li>• S/he will be introduced with the host and will be accommodated. If time permits, general orientation with the host will be pursued.</li></ul>
Day 4	<ul style="list-style-type: none"><li>• Further assess skill and training gaps through visiting and discussing with members</li><li>• Based on information gathered and gaps identified, enrich the prepared training materials incorporating hands-on practices.</li></ul>
Day 5-8	Provide training and advice for members
<b>Day 9</b>	<b>Rest Day (Sunday)</b>
Day 10-12	<ul style="list-style-type: none"><li>• Continue provision of trainings and technical assistances</li><li>• Field level advice to instructors and staffs</li></ul>
Day 13	Briefing / exit meeting with the host in the presence of CRS staff Volunteer travels back to Addis Ababa

Day	Activity
Day 14	<ul style="list-style-type: none"> <li>• Debriefing with CRS staff and/or USAID Mission</li> <li>• Finalize reimbursement expenditures and liquidations (if any) with finance.</li> <li>• Finalizes his/her reporting and submit training M&amp;E forms to CRS F2F staff. And depart for USA</li> </ul>
TBD	Outreach event when back in the USA

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

- Before travelling to the assignment place, Awi zone, the volunteer will stay in Addis Ababa at one of the CRS’s client hotels, Saro Maria Hotel (mail: [reservation@saromariahotel.com](mailto:reservation@saromariahotel.com); Phone: [+251 11 667 2167](tel:+251116672167)). For any inconvenience, please call at [0911718450](tel:0911718450), Biruk - F2F program manager.
- In Addis Ababa, the hotel usually has rooms that include services such as airport pickup and drop-off, breakfast, wireless internet, etc.
- The hotel shuttle or CRS will arrange a vehicle for short travel from the hotel to CRS office and vice versa in Addis Ababa.
- While in the field, the volunteer will stay at a hotel in Awi town (usually the hotel has breakfast, wireless internet and shuttle). The accommodation details will be confirmed prior to the volunteer’s arrival in country.
- CRS Ethiopia will arrange hotel accommodations and cover the lodging bills against receipts.
- CRS HQ will provide the volunteer with a per-diem advance to cater meals and incidences.
- Before departing from Ethiopia, the volunteer will liquidate any advances received in Ethiopia.
- For more information, please refer to country information that will be provided

**J. RECOMMENDED ASSIGNMENT PREPARATIONS**

- The volunteer can fine-tune the Scope of Work based on her/his professional qualifications to successfully carry out this hatchery management assignment.
- Generally, Ethiopia is under the tropical zone, where malaria may be a problem. Therefore, the volunteer is advised to take pills or vaccination for malaria and (maybe also for cholera) as per medical recommendations by her/his doctors/health professionals in US before departing from US.
- Prior to travel, the volunteer is advised to prepare necessary training materials and demonstration aids and written handouts. Soft copies of the handouts and any other paper materials can be printed for at the CRS office in Addis Ababa on request by the volunteer

- If the volunteer requires use of training aids like flip charts, markers and 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 require.
- Depending on the meeting places and availability of electricity and LCD projector, the volunteer may use a laptop and projector for Power Point presentations.

### **K. KEY CONTACTS**

To express interest in this assignment, please email the CRS Baltimore contact listed below. To find out additional information about the host, issue description or field conditions, please email the country contact provided below, copying the CRS Baltimore contact.

<b>CRS Baltimore</b>	
<b>Maria Figueroa</b> U.S. Operations Manager, Farmer-to-Farmer Program 228 West Lexington Street Baltimore, MD 21201-3443 P 410-951-7366 Email: <a href="mailto:maria.figueroa@crs.org">maria.figueroa@crs.org</a>	
<b>CRS Ethiopia</b>	
<b>Biruk Tesfaye,</b> Farmer-to-Farmer program manager CRS Ethiopia Office, P. O. Box 6592; Office: +251-112-788800 Cell-phone: +251-911-718450 Email: <a href="mailto:biruk,tesfaye@crs.org">biruk,tesfaye@crs.org</a> Skype: Biruk.tesfaye933	<b>Zemed Zewdie</b> Head of Programs (HoP) CRS Ethiopia Office, P. O. Box 6592 Office: +251-112-788800, Mobile: +251-911-507305 Email: <a href="mailto:zemed.zewdie@crs.org">zemed.zewdie@crs.org</a> Addis Ababa, Ethiopia
<b>Lidia Retta</b> Farmer-to-Farmer Program Officer Mobile: +251-912 091962 Email: <a href="mailto:lidia.retta@crs.org">lidia.retta@crs.org</a> Addis Ababa, Ethiopia	
<b>Host Organization</b>	
Mr. Desalew Fentie Agricultural, Food and Climate Science college Dean, Injbara University, Ethiopia Cell phone: +251-918-748085 Email: <a href="mailto:desalewfentie85@gmail.com">desalewfentie85@gmail.com</a>	

