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VOLUNTEER REPORT FORMAT

To be submitted to CRS at the end of volunteer assignment and shared with the Host

1.1 Assignment information: **ET11**

- a) Volunteer Name: Charles Bruce Williams III
- b) Host Organization: Adigrat University Agricultural College
- c) Assignment: Vegetable Production (vertical tomato production and potato production in arid and highlands areas)
- d) Dates of Assignment: August 28 to September 27, 2014
- e) Number of days worked: 28

1.2.1 Objective 1 in your SOW: **To train and technically assist targeted beneficiaries(10 staff, 10 intern students, and 50 small holder farmers) in the production of tomatoes and potatoes**

a) Progress with the objective:

Tomato production, crop rotation, disease and insect pests were primarily addressed. Little was covered regarding potato production and pest problems due to time constraints and low farmer interest.

Introduction

Northern Ethiopia, especially the Tigray region around Adigrat, is an arid, highlands area (2000m+) populated primarily by small landholder farmers (1-2ha). Important non-irrigated crops include barley, wheat, corn (maize) and teff. Primary irrigated crops include tomato (primarily Roma type), onion, pepper (chile and hot peppers types), and an assortment of other vegetables (cabbage, Swiss chard, beet root, carrot, pumpkin, lettuce, and others). Rain is seasonal with long dry periods from early Autumn to Spring. Irrigation is mostly by primitive flood type systems or manual watering. No modern drip or overhead systems were observed in any vegetable operation.

Animal husbandry centers around sheep, goats, and cattle. Land is steep, rocky, and heavily terraced. Many areas appear to be suffering from over-farming, erosion, and deforestation. Opuntia (pear cactus) and Eucalyptus (both non-native introduced plants) dominate much of the landscape and are utilized for forage, food, building, and fuel.

Farmers and Farming

Infrastructure available to farmers is minimal. Public roads, when present, are in relatively good shape. However, unpaved roads are the norm and they are poorly maintained. Electricity, clean water, good transportation, and communication is non-existent or minimal in most rural areas. Availability of fertilizer is limited to urea and DAP(diammonium phosphate). No potash fertilizers were found to be available. Of the dozen or so farms I visited, only one was using an improved cultivar of tomato (obtained from the Agriculture Ministry). All other tomato growers were saving their seed from a previous season or purchasing seed from the open market. In nearly all cases, bacterial diseases were epidemic and causing premature plant death and severe yield loss. The only field without major bacterial diseases was that planted with the improved tomato variety provided by the government.

The presence of the South American Pinworm, *Tuta absoluta*, appears ubiquitous throughout the region. Although only introduced to southern Europe in 2006, this pest of solanaceous plants (eg.



tomato, potato, pepper), was so common that sticky pheromone traps often had adult Tuta moths in them soon after placing in the field. Traps left for 24 hours or more were overwhelmed by these insects. Damage to tomato and potato was observed and photographed, however most damage was minimal and I would not consider the damage to be detrimental to crop yield at this point. Mainly due to the fact that bacterial leaf spot/blight was massively defoliating all tomato plants. Damage was atypical of Tuta damage seen in other locations in Europe (Republic of Georgia and Moldova).

All of the agriculture I observed would be classified as subsistence type agriculture. No commercial or agricultural business/entrepreneurial operations were seen or visited. Crops in surplus of family needs were sold or traded to local markets. No mechanism for on farm storage, refrigeration, or processing were observed. Most farmers were 3 months or less from starvation.

Faculty and Student Interaction

The number of beneficiaries trained exceeded the target in the objective.

Adigrat University was established in Adigrat a little over 3 years ago to provide a quality post-secondary education to regional citizens. Many (or most) students attend free but are required to go into government or civic service position for a period of time upon graduation.

Building construction is ongoing. The faculty is young and the administration is struggling to service over 7,000 students that flood through the gates of the University. I was associated with the Department of Plant Sciences. A basic education in plant science, agronomy, forestry, ecology, genetics, entomology, and chemistry is provided by a dedicated and young faculty. Laboratory facilities are currently minimal or non-existent. I only met 2-3 students interested in pursuing a career in production agriculture; most were looking for government or academic jobs with greater earning potential and urban interface. Most students were in Plant Science due to the position availability or government mandate. Seminars were given to students on four separate occasions with good interaction and discussion. Topics included tomato production, Tuta absoluta Biology, Tomato diseases/Nutrient Problems, and tomato staking/pruning techniques.

I was impressed by the faculty's dedication, intellectual talents, and awareness of current scientific progress. Many were working toward a specialized Doctorate and some had degrees from European or US institutions of higher learning. Most of the faculty emphasized teaching, although research and extension were also encouraged. Teaching loads seemed heavy (one instructor had 7 sections) by USA or European standards. Little time was left available for research or extension activities. In addition, many of the faculty had classical academic training with no training in Extension Education techniques, farm demonstration, or practical farm management experience.

b) Expected impacts/results

Faculty and Students

In private, I tried to encourage faculty to “leap frog” the technology gap by using innovative technologies to improve the local agricultural economy. For example, the use of low pressure gravity fed drip irrigation coupled with greenhouses, screen houses, or high tunnel technologies would allow many



of the small holder farmers to dramatically increase “profitable” production(off season or early season production of tomatoes, peppers, or other vegetables). This approach seems to be working for Kenyan farmers and many of the former Soviet Block countries. In addition, faculty needs to encourage the use of improved cultivars, fertilizer, soil testing and other modern farming practices in classes. Sons and daughters will take this new technology home and it will likely be utilized.

Seed resources, extension publications, powerpoint presentations, the “2014-15 New England Vegetable Production Guide” and sticky traps with pheromone (for Tuta absoluta) were left with the Plant Sciences faculty for teaching or demonstration purposes.

Farmers

Improved cultivar of tomato seed, other vegetable seed, new insights on disease/pest control, crop rotation, tomato production, and other new technologies were left with farmers. Subsistence farmers are individuals that need change most of all but due to the unpredictable nature of farming are least likely to change. The life and death chasm which subsistence farmers face every season does not encourage or reward on-farm experimentation or change. The majority of subsistence farmers will only change when faced with economic ruin or total failure. Work with the few farmers that are willing to change and the rest will follow(eventually).

c) Recommendations

Farmers

- Implement 3-5 year rotation schemes that will maximize profitability with the crop mix and farm management that best fits your resources and farm practices. Rotation will increase crop yields, improve soil structure, and reduce overall pest problems.
- Begin staking and pruning tomatoes to improve “market” yield and fruit quality(eg profitability). Staking tomatoes is fastest means to increase fruit yields. Proper staking and pruning also reduces pest and disease problems on plants.
- Use the highest quality seed available from the government or commercial sources. If improved tomato seed are unavailable, clean and disinfect seed properly before planting to minimize bacterial diseases. Select only mature disease-free marketable size fruit from healthy plants for seed propagation.
- Consider the use of low pressure gravity fed drip irrigation and small greenhouses, screen houses, or plastic covered high/low tunnels to grow tomatoes during the early or late seasons or during the off season.
- Treat your farming operation as a business and set short and long term goals, work toward putting together a management plan, and structure your existing resources for a profitable operation.



- For long term increased profitability, work to increase access to fertilizer, improved seed germplasm, machinery, plant protection products, and soil testing services.

Faculty and Students

The first step in any education program involves “**awareness**”. Create programs that increase the awareness of the problems facing the subsistence farming community. Some of the issues I observed were severe environmental degradation due to over-farming, fragility of the subsistence farming economy, need for greater availability of farm management tools (fertilizer, machinery, improved germplasm, etc.), and lack of University or governmental programs to address these issues.

Prioritize the issues important to the agricultural community in Tigray region. Once these issues are prioritized, **develop educational programs to increase** awareness of the problems/issues, and then implement these programs. Some of the potential means to accomplish this, is to develop or adopt simple publications, that clearly indicate proper farming technique. These can be distributed at the markets or other locations farmers congregate. The development of a University-based Agricultural News and Information group that would release newsletters, printed/video information or “how-to” publications. Initiate training and incentives that would encourage faculty to increase interaction with the farming community.

The Tigray region is a fragile environment is easily degraded by over-farming, pollution, erosion, and encroachment by non-native exotic plants. **Emphasize the uniqueness of this region** and the quality of life for all especially for future generations of Ethiopians. Current agricultural practices are not sustainable and the environment and culture of this region will suffer if not soon corrected.

Improve germplasm potential through collection, improvement, and new technologies for high value agricultural crops. Plant breeding programs are traditionally one of the most expensive University/Government research programs. However, the dividends of an effective plant breeding programs are evident where ever they are conducted. A minimal step would involve evaluating the best germplasm for use in Ethiopians agriculture.

Increase soil management technologies to include soil testing for improved crop yields, erosion control, optimum rotation schemes maximizing farmer profitability, green manure use, and increased legume/cover crop utilization.

Develop or adopt **sustainable irrigation practices** that are profitable to small farmers. Current irrigation practices are unsustainable. The use of gravity fed drip systems has enabled farmers in many developing countries to lift themselves from the subsistence farming trap and join the modern agricultural economy.

Develop, promote, or **adopt sustainable greenhouse/screen house production practices** that are profitable to small farmers. Use of “protected or controlled environment” systems have been pioneered

in many developing countries for the benefit of the farm economy. These systems are perfect for farmers with limited resources and small landholdings.

Consider development of **teaching and demonstration gardens**. Students (and farmers) should be able to use the existing University grounds to observe new farming technology in action. Improved cultivars, plant management techniques, and other novel concepts could be showcased on campus to follow the old axiom, "Practice what you preach". Use the gardens to increase the diversity of the crops grown by farmers and work to expand the agricultural economic base farmers depend upon.

Student-based vegetable gardens would be easy to initiate and maintain. Small plots of land could be made available on vacant campus land to students and faculty for vegetable gardening. Space could be allotted to students for vegetable production, if the space is not used it would revert back to the University to be re-allotted.

1.3 Number of people Assisted

- a) Through formal training 193
- b) Through direct technical assistance (Do not double count) 26
- c) Out of these above, number of host staffs 12
- d) Training/assistance by field

Category	Total	Males	Females
Members/ owners			
Employees		10	2
Clients/ Suppliers		165	42
Family Members (farmers)			
Total	219	175	44

1.4 Gender

- a) What gender roles did you recognize in your host community? Did these roles play a part in your assignment? How?

Gender roles were traditional. Females and males worked the home and farm, side by side, to get the job done.

No, gender roles did not play a part in the assignment. Females were well represented at farm meeting, for University faculty, and student populations.

- b) How might CRS or the host organization improve opportunities for the women in this host or host community?

I think if opportunities were improved for all, females would benefit equally.

1.6 Value of volunteer contribution in \$10,000.00

- a. Hours volunteer spent preparing for assignment 50 hours



- b. Estimated value of all material contributions volunteer contributed to host during assignment
\$1200

Value of Volunteer Time Leveraged on Assignment (U.S.\$) = \$4,138

1.7 Value of hosts' contribution in \$ (Please consult the host as well)

- a) Meals \$50
- b) Transportation \$750
- c) Lodging 0
- d) Translation 0
- e) Other (Specify) = 917

Estimated Value of Host Contribution (U.S.\$) = \$1,717

1.9 Host Profile Data:

Did you obtain any data that supplements or corrects the data in the existing host information as detailed in the SOW? Please list it. (See introduction)

1.10 Recommendations for CRS:

First and foremost, you have a wonderful and highly competent staff. Maria, Eshetayehu, and Biruk were exemplary in their hospitality and accommodations for my comfort and concerns. Adigrat University faculty and staff were good hosts and went out of their way to make me feel welcome. Sebhatu and Aregay of the Catholic diocese were also very helpful in coordinating programs and visits.

My issues are with the CRS process, paperwork, and bureaucracy.

The paperwork required of the volunteer is excessive. In the 20 years of volunteering for FtF, I have never worked with a NGO that requires so much paperwork in a volunteer assignment. Documents need to be reviewed and only those absolutely essential need to be sent to volunteer in the initial stages. Once a volunteer is signed on and in country, then many of the documents can be reviewed during initial in-country briefing.

Put the volunteer's requests first, even if it costs a little more money. The worst part of these projects is the paperwork and travel to the location. In order to get repeat high quality volunteers, you will need to be willing to give a little. I have frequent flyer status on two USA airlines but neither of those airlines was used in the overseas portion of the flight. As a result, I had no lounges for layovers, no travel perks, and sat in the in lowest priority seating. I was presented with an option for the airline I requested but was told it cost several hundred dollars more and that the cheapest option would be used. Put volunteers requests first, even if it cost a little more money. I believe you will find that you will receive big rewards in volunteer loyalty, dedication, and recruiting. The volunteer's time and effort is worth something, show them!

The "per diem" is the "per diem". Do not subtract a breakfast rate of the per diem from the volunteer's budget based upon whether that hotel serves breakfast or not. If volunteers want breakfast, then they can pay for it. Traditionally, most developing country breakfasts are poor and I avoid eating breakfasts at the hotel. I pay for and bring granola bars and supplement with fruit. But do not assume that all volunteers want you to make the decision of how to use their "per diem". I strongly recommend you discontinue this practice.



All other NGOs I have worked with furnished me a volunteer project budget when I requested it. I requested my project's budget was never furnished with it.

I have actively recruited for volunteers for CRS assignments. You need to consider a name change. A change to just CRS would be fine, however the "catholic" denomination aspect of the name really turns off many folks. It makes the operation sound like a USAID Catholic supported missionary operation and like it or not, this turns off many qualified volunteers. Most professionals that volunteer have no desire to be missionaries.

Minimize the bureaucracy! Keep it simple.

My schedule changed multiple times(and that was fine with me). However, volunteers need to know that all schedules tentative and subject to change.

Attendance rosters are difficult to keep up with especially when trying to organize and conduct an educational program....make hosts responsible for attendance rosters and the hosts makes copies of attendance rosters available to the volunteer. I requested that of folks at UA and they were happy to do it. However, the reporting(USAID) document did not match up with the information or terminology requested on the sign in sheets. I have no idea how much my host spent on transportation and other other items. This is information that the local coordinator can easily determine with a telephone call. Do not make the volunteer responsible for this information.

Make volunteers aware that they will have large amounts of free time....during my assignment, I worked with the University in the morning but was free by mid-afternoon every day. Faculty and hosts have other jobs to do and the volunteer must be able to find peace in being alone or interacting in the community alone.

Suggestions for Future Assignment Activity:

Small Farm Management

Controlled Environment Vegetables Production(tunnels, screen houses, greenhouses)

Irrigation- Using Low Input, Low Technology Gravity Drip Systems

IPM for Subsistence Farmers

Alternative Crops

Design and Development of Regional Demonstration Gardens

Successful (Profitable) Subsistence Farming

Soil Testing and Establishment of a Government or University Soils Laboratory

Simple Soil Testing and Crop Production for Subsistence Farming Practice