Final Report

Improve Livelihoods of Women in the Burji Special District of Southern Nations, Nationalities, and People’s Region (SNNPR) of Ethiopia

Grow East Africa (GEA)
Seed Programs International (SPI)
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Improve Livelihoods of Women in the Burji Special District of Southern Nations, Nationalities, and People's Region (SNNPR) of Ethiopia

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![Seeds of Change](www.GrowEastAfrica.org)  
![Seed Programs International](seedprogramsinternational.org)
The generous funding from Corteva allowed Seed Programs International (SPI) to partner with Grow East Africa (GEA) to run the project "Improve Livelihoods of Women in the Burji Special District of Southern Nations, Nationalities, and People's Region (SNNPR) of Ethiopia." This project supported internally displaced families in the Burji District of Ethiopia to strengthen food security and earn income by providing them with seeds, supplies and training. 50 women farmers grew vegetables and quinoa to supplement their existing staple grain crop of teff.

This project experienced challenges, mainly from unpredictable precipitation. The region experienced long periods of drought, with occasional waterlogged soils due to intermittent heavy rain. Teff and quinoa crops were dependent on seasonal rain and largely failed or had decreased harvest compared to previous seasons. Drip irrigation was used to irrigate the vegetable crops. This system allowed the vegetable crops to flourish and provide the women with their primary source of income.

Training provided by two Meki horticulturalists helped the women adapt to project challenges and assisted the women in producing yearly increases in their vegetable harvest and sales. This success has made the women hopeful for the coming years. This program has developed a model that can be replicated for other villages in the region. Seed Programs International and Grow East Africa are continuing to partner together to expand this program to two additional villages to reach 300 women farmers and their families in 2022, with hopes to expand more with each coming season.
Project Description

The Grow East Africa (GEA) program is located in the Burji District in southern Ethiopia. The District has an approximate population of 155,680 and area of 1,128.40 square kilometers. Burji is one of the poorest districts in the Southern Nations, Nationalities, and People’s (SNNP) region of Ethiopia. Burji has no paved roads, no hospital, and only two high schools to serve twenty-six villages. GEA and SPI partnered to support the Birhan Vegetables & Pulse Producers & Supply Cooperative. This cooperative is comprised of 50 women farmers (also called Birhan Ladies) from internally displaced families that relocated to near the town of Mega to escape intertribal conflict in their home region.

Funding for this project covered work for eighteen months, starting in March 2020 and extending through July 2021. Ethiopia has two grain growing seasons called belg and meher, which correspond to seasonal rainfall. Belg is the shorter season from February to April. Meher is the longer season from May to September. Grain crops grown in Ethiopia often depend on the seasonal rain. Vegetables grown in this project utilized drip irrigation systems so they could be grown all year. The goal of this project was to support rural farming families to reduce their food vulnerability by distributing seeds and training families to grow nutritious vegetables and quinoa to supplement their existing staple grain of teff. Seasonal rain has been more difficult to predict in recent years due to fluctuations caused by climate change. The project aimed to determine if supplementing their teff crop with quinoa and vegetable crops would increase income, food security, and self-sufficiency for the Birhan Ladies.

Pictured: Birhan Lady weeding the teff field
Project updates for this project were provided every six months. During the first six month period, from March though August 2020, the Birhan Ladies started their training. They learned to farm vegetables, teff, and quinoa on 4.5 hectares of leased land, learned to use the drip irrigation system, and completed training on bookkeeping, sanitation, market development of produce, and incorporation of quinoa in the local diet. The project faced challenges due to flooding. The heavy rains washed away the planted quinoa seeds and waterlogged the vegetable and teff seedlings. This resulted in 100% loss of the planted quinoa and 60% reduction in teff yield, which reduced teff income by over 44%. The project faced additional challenges due to COVID-19 and blossom-end-rot decreasing the yield of tomato plants by 50%. Even so, vegetable yields increased over 100%, which increased vegetable income by over 124%. This outcome caused nearby farmers to have increased interest in planting vegetables around their homes.

Pictured: Birhan Ladies in cabbage field.
From September 2020 through February 2021, two Meki commercial farm vegetable trainers were hired to provide real-time training from planting through harvest. They provided a combination of classroom lectures and hands-on field training. They also taught participants to stagger their plantings through the growing season to prolong the period of fresh vegetable production. Watermelon was introduced as a new crop and initial reports suggested the crop is in high demand. The project faced a few additional challenges during this time period. After the rainy season, the area faced a pronounced dry season that hardened the soil and made it difficult to plow by hand or ox. The vegetable plots were not large enough to plow using a tractor, so the soil was soaked overnight to allow hired day laborers to plow the vegetable fields by hand. In addition, the 10,000 liter storage tank was vandalized and developed a crack and leaked when the tank’s water level rose above 12 inches. This prevented the water from being uniformly distributed along the drip irrigation lines and forced participants to hand water the vegetables by carrying buckets of water. Despite the challenges, total vegetable harvest income was more than the previous year.

Pictured: Meki Horticulturalist training Birhan Ladies on preparing soil.
From March 2021 through June 2021, the two Meki horticulturalists provided additional trainings in preparing land, planting seed, replanting saplings, caring for plant growth to maturity, pre- to post- harvest care, and selling at the local market. The Corteva grant helped fund a replacement water storage tank to ensure a drip irrigation system could be used to water vegetables year-round. The Birhan Ladies monitored the tomatoes more closely for blossom-end-rot. Early detection was key to ensure watering was appropriate and calcium compound was applied with the slightest detection. The quinoa and teff crops continued to have challenges. Planted quinoa germinated with initial rain, but did not survive when the rain did not return on time. Planted teff survived due to the field being waterlogged, however the dry conditions reduced the quality of the harvest.

Despite challenges with the grain crops, total harvest and sales through half of 2021 are comparable to total harvest and sales through the entirety of 2020 due to the success of the vegetable crops. Even though vegetable crops were meant to supplement the existing teff crop, the vegetable crops provided a primary source of income when the quinoa and teff crops failed.

Today, the Birhan Ladies are confident and eager to continue practicing their vegetable farming skills to improve their livelihoods. Some of the women are growing vegetables on smaller plots near their residences. Their individual progress and drives towards self-sufficiency is supported and encouraged.

Pictured: Birhan Ladies selling onion at the local market.
I am Maka Yaye. I am a 28 year old mother of seven children. Three of my children are school age, two are in second grade, and the remaining children are at home.

Since joining the Birhan Ladies, I have developed many skills to plant and care for the saplings and vegetables. I learned how to use a new drip irrigation system to grow plants year-round. This project has helped me improve my livelihood. I invested my harvest dividend in goats. Today I have seven goats and a young cow.

I hope to continuously improve my life. I plan to grow with the Birhan Ladies project, earn more to lease land to farm, and purchase a house for my family. Our plan is to expand our produce market share beyond our local market and capture higher value.
Two Meki horticulturalists were hired to provide real-time training
The two horticulturalists worked along side the Birhan Ladies to train them in field plowing, vegetable bed preparation, seed planting, seedling transplanting, plant care (spraying, weeding), harvesting, transportation, storage, and product marketing. Project participants were also taught the staggered planting method, where seeds are planted on different dates throughout the season to prolong the period of fresh vegetable production.

Birhan Ladies monitored plant health, soil nutrients, and soil water
Tomato plants were regularly monitored to ensure they were treated with the appropriate nutrients and calcium compound as soon as blossom end-rot was detected. Regular monitoring helped tomatoes produce the greatest units and total sales of their grown crops. Soil nutrients were also analyzed at an external laboratory, and appropriate nutrients were added to the soil at various stages of growth. The Birhan Ladies also learned to monitor soil water to ensure plant roots were not damaged by excess watering.

The ruptured water storage tank was replaced
The ruptured 10,000 liter water storage tank needed to be replaced since it could not hold more than 12 inches of water. This prevented the water from being uniformly distributed along the drip irrigation lines and required the Birhan Ladies to hand water the vegetables by carrying buckets of water. The Corteva grant paid for a water tank replacement to ensure the vegetables could be evenly watered, without extensive labor.

Pictured: Meki Horticulturalist providing training
The main ongoing challenge of this project was the unpredictability of rain. The lack of rainfall has significantly reduced the ability of the local farmers to produce food for their families and community. The poor harvest of local farmers is causing the region-wide food shortage to become even worse. For this project, the rainfed teff and quinoa crops were more affected by the seasonal fluctuations in precipitation than the irrigated vegetable crops.

In mid-2020, the project faced challenges due to flooding. The heavy rains washed away all of the planted quinoa seed and waterlogged the soil for the teff and vegetable seeds. In the fall and winter of 2020 and into 2021, the region experienced an extreme dry season that hardened the soil and made it difficult to prepare the land for planting seeds and transplants. Through hard work, the Birhan Ladies learned to cultivate and amend the soil to eliminate large clumps and level the ground. This created a more hospitable growing environment with improved water penetration and less puddling.

In the 2021 growing season, rainfall was again a problem. Initial rain allowed the planted quinoa to germinate, however, the following lack of rain caused the quinoa saplings to die. Waterlogged soils allowed the planted teff to survive the lack of prolonged rain. However, the dry conditions thwarted seed development and quality, which resulting in an inferior harvest. Grow East Africa plans to test-plant different quinoa varieties to identify one better adapted to the changing climate. They also plan to work more closely with regional rain forecasters and local farmers to better understand when to plant.
Qualitative Assessment
Grow East Africa continues to collect informal interviews and participant observations to understand how this project affects the Birhan Ladies. The lack of spring rain has caused area farmers to worry about pending hardship in the area due to poor harvest. The Birhan Ladies also experienced low harvest or failed teff and quinoa crops. However, the women acquired renewed hope due to the success of the vegetation crops. News of their success in vegetable farming reached the Women Affairs Offices in their districts and region. As a result, the Birhan Ladies are in high spirit and their community sees them as contributors to the local economy. Overall the women were delighted with their hard work, which yielded increased produce weight, sale revenue, and dividend.

Quantitative Assessment
Due to the hard work of the Birhan Ladies, they have seen a year-to-year increase in vegetable yield since starting in 2018. Table 1 shows the year-to-year changes in harvest and sales for the vegetable, teff, and quinoa crops. 2021 only represents a half year. Total harvest and sales through half of 2021 are comparable to total harvest and sales through the entirety of 2020. In 2021, tomato produced the greatest harvest and sales, followed by onion. Pepper, cabbage, watermelon, and red root were also grown. No harvest or sale of teff and quinoa were reported through the first half of 2021.

Table 1: Grow East Africa Farm Harvest and Sales from 2018 through 2021

<table>
<thead>
<tr>
<th>Crop</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021 - Half</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Harvest (Quintal)</td>
<td>Sale (Birr)</td>
<td>Harvest (Quintal)</td>
<td>Sale (Birr)</td>
</tr>
<tr>
<td></td>
<td>11.64</td>
<td>11640</td>
<td>38.53</td>
<td>38530</td>
</tr>
<tr>
<td>Teff</td>
<td>9</td>
<td>29700</td>
<td>18</td>
<td>47700</td>
</tr>
<tr>
<td>Quinoa</td>
<td>2</td>
<td>3300</td>
<td>2.64</td>
<td>6996</td>
</tr>
</tbody>
</table>
**Land Preparation:** Day laborers, oxen, and tractors were hired to help prepare the land for farming throughout the project.

**Training:** Two Meki horticulturalists were hired to provide training to the project participants in preparing land, planting seed, replanting saplings, caring for plant growth to maturity, pre- to post harvest care, and selling at the local market.

**Seeds, Supplies, and Vegetable Care:** Expense includes the purchase of seed, soil amendments, fungicide, insecticide, tools, and supports for maturing vegetable growth.

**Salary:** Expense included salary for the onsite Vegetable Plant Supervisor and Program Manager.

**Summary of Project Expenses:** See the table below for a summary of project expenses throughout the project timeline. If further information is desired, please do not hesitate to ask. We are happy to provide additional details or documentation.

**Total Project Expense**

- **Seed, Supplies, and Vegetable Care:** 14.2%
- **Land Preparation:** 30.7%
- **Salary:** 11.3%
- **Transportation:** 4.1%
- **Training:** 30.0%
- **Storage:** 3.9%
- **Water Tank Replacement:** 5.0%
Grow East Africa and Seed Programs International are thankful to have received the Corteva grant to support 50 women farmers that were internally displaced within the Southern Nations, Nationalities, and People’s (SNNP) region of Ethiopia. Although this project was meant to supplement the grain staple crop of teff, it instead provided a vital source of food and income to the women when the teff crop failed or had low harvest.

Although unpredictable rainfall and drought provided challenges to this program, we were able to grow the program to provide the needed inputs to facilitate success. The women learned essential agricultural and marketing skills to support their goals of improving their nutrition, earning an income, and becoming self-sufficient. The women are thankful for the opportunity it participate in the program and contribute to the local economy.

Due to the success of this program, Grow East Africa and Seed Programs International are again collaborating to expand the program to two additional villages and a total of 300 women. The expanded program with utilize the lessons learned in this program, highlighting an iterative and human-centered design process to increase our impact to more women farmers in the region.

Pictured: Birhan Ladies preparing harvested onion for drying