

Adalyn McKeag
Ames High School
Ames, Iowa, USA
Ethiopia, Food Insecurity

Removing Barriers to Food Insecurity in Ethiopia

In a landlocked country spanning approximately 472,000 square miles along the Horn of Africa, around 14-15 million people in Ethiopia suffer from food insecurity (Overview of Ethiopia). The population of nearly 110.14 million people, with a growth rate of 3.09%, is characterized by most families having four or more children (Overview of Ethiopia). Unfortunately, 55% of children under the age of 5 suffer from malnutrition, and around 15 million people require food support (UN World Food Programme). Even with many Ethiopian families on food source programs, the majority of the country still suffers from malnutrition, poverty, and high disease rates from food and civil-related issues. Ethiopia can begin addressing some food insecurity issues by implementing a more effective food support system and providing the necessary education to foster a stronger agricultural environment. Tackling food insecurity requires providing Ethiopians with the essentials to become self-sufficient in food-related matters. Although this method may take years, the issue must be addressed directly.

What children eat is important because around 22% of Ethiopia's population is malnourished (For Every Child, Nutrition!). In addition, 72% of the population experiences nutrient deficiencies (Belay, Adamu), with the most common deficiencies being Vitamin A, Iodine, Iron, and Zinc. (AmhaKebede). The traditional foods, Shiro and Injera, lack some of the essential nutrients necessary for survival. A cup of Shirō can provide 16 grams of protein, as well as a rich source of vitamins A, C, K, and folate. Some versions of Shiro can add additional nutrients of iron, calcium, and vitamins. (Shiro, The Sure Thing). A single serving of Injera provides approximately 12 grams of protein, along with a rich source of essential minerals, including sodium, iron, calcium, potassium, phosphorus, magnesium, and zinc. Injera can also contain some variations of vitamins B, A, and K. (*Livestrong.com*). Despite these two commonly eaten dishes containing a good amount of vitamins and minerals, malnutrition rates have skyrocketed, leaving most children susceptible to diseases and death. Following the effects of COVID-19, severe droughts, and mass displacement, it is challenging for the government and organizations to effect change. These issues account for 45% of child-related deaths under the age of 5, along with stunting 5.4 million children, all under the age of 5 (*For every child, nutrition! | UNICEF Ethiopia*).

Many households also struggle financially, making it difficult for families to afford a balanced diet. (For Every Child, Nutrition!). Shiro contains a mixture of spices, chickpea flour, olive oil, an onion, minced garlic, and tomato paste. (Shruthi Baskaran-Makanju). Injera, a flatbread usually eaten with stews or meats, is made out of flour, a starter, and temperate water. (Cenk, Cheyenne). Within the Ethiopian Market (all prices calculated to USD), 0.10 kg of onion costs around \$0.16, 0.20 kg of tomato costs \$0.16 (Food Prices in Ethiopia), and a pound of wheat flour costs between \$0.22 and \$0.57. (Page Analysis). In the USA, these prices are considerably lower; however, Ethiopia's average annual household income per capita is \$797 for urban households and \$291 for rural households. (Determinants of Inequalities). The minimum monthly budget required to purchase these products, along with meat, fruits, cheese, eggs, and other essentials, is at least \$296.43. (Food Prices in Ethiopia). This is more money than the annual household income for rural areas and doesn't account for additional expenses, such as school, agricultural properties, rent, and bills. With the average yearly income for urban areas being \$797, most people in these areas would struggle to afford the costs of nutritious foods. Considering that 57% of rural households have access to proper drinking water compared to 83% in urban areas. (Determinants of Inequalities).

Prominent civil issues, primarily related to high crime rates, theft, and the Tigray conflict, have had long-term historical impacts in Ethiopia. From 1983 until the presumed end in 1985, Ethiopia experienced a devastating famine, leading to the estimated death of 1 million people (News, BBC).

The famine was mainly attributed to high poverty, drought, and poor agricultural practices. Since then, Ethiopia has faced challenges related to food security (News, BBC). Between 1993 and 2000, Ethiopia granted independence to Eritrea, but the autonomy caused an unforeseen border dispute, leaving thousands injured or dead (News, BBC). From 2014 to 2015, Ethiopia experienced widespread protests due to a drought that affected over 10 million people nationwide (Goddard, James). From 2020 to 2022, the Tigray Conflict began with an attack on an Ethiopian military base, following the rejection of the Tigrayan election as a separate government (News, BBC).

In this dispute, the lasting effects have had a profound impact on the Tigray region. Factories were robbed, and Tigrayan officers reported lighting crop fields on fire, stealing food, slaughtering livestock, and polluting the water supply. Tourism halted, leading to a crashing economy and the displacement of over 1 million people (Waal, Alex de). Bank closures led to a shortage of loans for farmers, resulting in most farmland being either sold or foreclosed (Waal, Alex de). The trade stopped as a result, making the salaries of 130,000 people inaccessible. During the ceasefire in 2022, the economy crashed, displacing and starving countless people (Waal, Alex de). After the crash, little reconstruction effort was made to revive Ethiopia; however, with limited trade and employment, the efforts ultimately failed.

A drought followed, leaving the area in a state of suffering and with reconstruction efforts absent. Sadly, Tigrayan officers were found raiding and stealing food aid in Tigray, making food accessibility very difficult. A nationwide threat of thievery, especially with food items, has been a recurring problem since the food insecurity problems began. The urgency for families to sell land and livestock increases the number of malnourished people and exacerbates the food shortage. The Ethiopian government believes the problem isn't urgent and will fix itself. Due to their belief, the Ethiopian government is spending \$10 billion on a new palace and \$1 billion on military aid, diverting most of the funding away from the people (Waal, Alex de). During this time of budget cuts, the Ethiopian government also had fewer international funds to assist the regions (Waal, Alex de). Human rights issues have also arisen in recent years, leading to the displacement of thousands of people, along with sexual harassment cases increasing and death and disease reports on the rise around the country. Around 2.9 million people were displaced from the region, with 141,000 people seeking refuge in other countries (World Report 2024). In Tigray, Eritrean forces committed acts of rape and sexual abuse against the women, forcing them into sexual slavery, extrajudicial murders, and abductions. The same forces also blocked humanitarian aid from entering the same villages to investigate the reports of theft, rape, and destruction (World Report 2024).

Although Ethiopia has currently faced several issues, including malnutrition, poverty, and the Tigray Conflict, education is also a significant concern. Ethiopia's education system is structured into two cycles: elementary school, which spans four years, and secondary education, comprising two stages of two years each, totaling four years (Roach, 2018). However, 20 percent of students dropped out by the end of grade two, and only 50 percent continued to stay until the end of grade eight. As of 2011, enrollment for lower-secondary education is 11.2%, which drops to 3.6% for higher-secondary education (Roach, 2018). While many standard classes are taught, such as mathematics, science, linguistics, and the arts, courses like biology, social studies, and agricultural education aren't taught until the equivalent of American high school (Roach, 2018). Around 55% of enrolled students skipped class due to work (Randell & Gray, 2016). In rural communities, the majority of children aged 10-14 are employed, with a mean number of working hours of around 28 hours, excluding time spent on household chores or other domestic tasks (Randell & Gray, 2016).

Droughts have been a recurring problem in Ethiopia for many years, with the current drought affecting around 30 million people (Crisis in Ethiopia). With the population increase and the need for running

water, the water sources have also been strained, and the reduced rainfall has impacted many families in the region (Crisis in Ethiopia). Much of Ethiopia is suffering from deforestation to make space for agricultural land; however, this is leaving a lasting effect on how the land retains water. Trees not only provide shade for the ground below them but also make it easier for bodies of water to replenish their systems. Many of the droughts have been caused by higher temperatures in the area. With the lack of trees, evaporation has taken its course along with the high dependence of big cities on such limited bodies of water. Ethiopia also suffers from a lack of access to clean, filtered water. Trees and other plants filter natural toxins that may enter the water. (How Trees Help during Drought). Trees can be part of the solution. By adding more trees to the environment, the fight against droughts, poverty, and food insecurity will be much easier.

Throughout Ethiopia, numerous organizations have attempted to provide solutions to these issues. Providing services like food support and emergency care, they have helped many families survive. However, these same organizations, such as Action Against Hunger, WFP, and Farm Africa, have made families overly dependent on these programs to survive. Accessing support is also an issue due to the high rates of crime in all of the areas. Organizations like the Earth Council Geneva and International Medical Corps have initiated programs to promote backyard gardening as a food source, making it easily accessible while also increasing families' independence in terms of food and financial resources. By introducing solutions such as backyard gardening, providing better education, and planting more trees, many of the food insecurity problems could be addressed. The programs currently have a limited scope. However, with the support of the Ethiopian government, Earth Council Geneva, International Medical Corps, and Farm Africa, initiating the backyard gardening programs would cause a ripple effect, reaching a larger population.

To explore backyard gardening techniques, I conducted a research study over the past three months on the growth of plants and how different temperatures and soil types affect their development. In a controlled environment, the research included growing lettuce, carrots, green beans, tomatoes, bell peppers, and basil. All vegetables contain high amounts of Vitamin A and C, as well as Iron, Iodine, and Zinc. In the experiment, thirty-six plants were used, half in a mixture of sand and potting soil, creating a sandy loam, and the other half in pure potting soil, to see how they would be affected by the difference in soils. All plants were placed in a region with an average temperature of 75°F over two months. Generally, the soil-based plants grew normally, thriving in the environment; however, the research showed that the plants in sand-based soil also did fine, although they grew more slowly. The sand-based plants still produced the necessary vegetables and a robust plant; each plant eventually yielded a vigorous plant and a valuable product. The research concluded that many communities and organizations could benefit from using backyard gardening methods to introduce these types of plants, thereby incorporating more nutrients into their diets while also achieving low-cost benefits. Overall, based on the limited favorable results, the method of sand-based soil for healthy food production could be duplicated in Ethiopian environments.

Knowledge regarding best practices in agricultural production has been lost or compromised throughout Ethiopian history. Starting with the next generation, people will ensure that Ethiopian children will have a strong foundation for producing healthy food. Providing schools in Ethiopia with better education, as well as agricultural understanding and practices, could make it easier for future generations to learn how to

grow plants in the climate and region of their home. Increased education on the natural world around them will enable them to access better-paying jobs, making future education more easily accessible. Not only will schools have access to teach these programs on agricultural practices, but many schools can also benefit from having their own gardens. According to the research done in conjunction with this project, it is not difficult to grow crops in the Ethiopian climate. If a plan can be implemented to encourage community gardens at schools, school meals could offer a diverse range of foods, as well as a more balanced diet for all children, thereby decreasing malnutrition-related deaths. Many issues arise because farmers lack effective agricultural practices. Providing this knowledge to children will increase their understanding, as well as enabling them to introduce these practices into their family farms.

At the same time that schools begin providing plant education and growth programs, organizations can provide food sources, which can be delivered to local families through the surrounding community. Another method of preservation is freeze-dried food. Introducing this method allows for the prevention of rotting and provides the necessary nutrients and minerals for specific areas. Around 1 billion tons of food was wasted just last year, while many countries face the crisis of food insecurity (*UNFCCC*). Freeze-drying will alleviate the main problem that food distribution efforts and time management are where much of the food is wasted. Approximately 19% of food rots or goes to waste in retail or grocery stores, while 13% rots during transportation or in supply chains (*UNFCCC*). Ethiopia's transition to better food preservation methods will eliminate rot and waste in transit, allowing the country to reduce malnutrition rates.

Given the numerous solutions provided, careful consideration and planning will be taken to achieve success. Over the past decade, by providing support to Ethiopia, many of the issues people face could have been addressed. Starting in year one, many organizations will continue to give the money and food support that many families rely on, while also contributing funds to plant new trees along bodies of water and in areas heavily affected by drought. Introducing native trees to Ethiopia's diverse environments will enable water to be retained in certain areas, while also providing shade and natural filtration systems to help prevent future droughts and mitigate rising temperatures in addition to initiating education programs for children on plant growth and agricultural practices.

Over the next two years, those organizations will continue to provide food support and financial assistance, while also continuing to combat deforestation and plant more trees to retain more water. As the years progress into years four and five, those organizations will begin to provide seeds, tools, and education on agriculture to adults, enabling them to start backyard gardening and achieve higher yields on their crops. Having both education and seeds for agricultural practices, both rural and urban areas can start a garden as a way to obtain nutrients. The introduction of seeds for carrots, tomatoes, green beans, and basil will provide them with the necessary nutrients. Still, it will not significantly impact the agricultural economy, as many of their crops are based on wheat, barley, coffee, corn, and other essential crops.

Over the years six and seven, organizations will begin to reduce their amount of food support to families while increasing their assistance in backyard gardening and agricultural jobs. During these years, they will maintain educational programs in school to promote a better understanding of plant sciences as well as the sciences of the natural world. Between years 7 and 9, organizations will continue to implement

programs and education for everyone on agriculture, as well as the tools needed to sustain their crops. By then, families should be able to fully benefit from their backyard gardens, as well as improve the health of their communities, which are created to distribute extra food to those who have had a bad crop year.

Hopefully, by year 10, many families that used to suffer from food insecurity will be able to become independent of these programs, as well as access further education for their children and adults related to agriculture. Many of the farmers affected by the droughts and poor agricultural practices will be able to understand and address their crop issues, as well as have access to a better watering system or improved water quality. Urban areas of cities will still have access to their backyard gardens and be able to obtain the necessary nutrients and minerals. Over the next 10 years, trees will continue to grow and be maintained by such organizations, in hopes of addressing the issue of deforestation. By the end of the tenth year, many families should be able to have an independent food source from their gardens, as well as farmers and citizens alike having gained the knowledge of how to care for crops properly. Many seeds that will be planted for these families will be types of crops not typically found in Ethiopian markets and will contain the nutrients that citizens need to survive without harming the already struggling agricultural market.

With the amount of wasted food, using a method of backyard gardening will provide families with the produce they need to survive while also making it extremely easy and accessible. Through teaching adults the main procedures of agricultural development, they will be able to tend to and provide more stability to their family farms. Allowing each family to start with seeds and plants can give them a food source, eliminating the need for income or employment to support it. Creating additional programs to generate more agricultural jobs, such as managing a greenhouse or community garden, will enable more unemployed individuals to secure employment that benefits the community while also providing them with the modest income they need. Over the past decade, supplying Ethiopia with food support using freeze-dried foods has enabled families to meet their basic needs while also providing them with tools to become more independent, such as starting their own gardens, accessing job assistance, and improving their educational opportunities. Throughout the 10-year plan, begin to phase out the freeze-dried food support, allowing people to become independent and grow their own produce in their gardens.

Overall, Ethiopia suffers from violence, food insecurity, poverty, and climate issues. By starting at the source of education, allowing children to learn agricultural processes within their schools, they will gain a deeper understanding of science. The schools can use the vegetables grown in meals that are more sustainable and contain the nutrients people need to survive. By starting backyard gardening, families can have a reliable source of food, making it easier to become more self-sufficient and save money on groceries. For a few years, other countries will export food to Ethiopia to support the system while the programs begin. This will decrease stress and make the transition easier. Finally, adding trees near water systems and throughout the country will help reduce the number of droughts and allow water systems to retain most of their water while filtering out toxins. Solutions will take time, but continued effort will improve Ethiopian society.

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