

Molly Moe
Shenandoah High School
Shenandoah, IA
Burundi, Factor 6: Sustainable Agriculture

Burundi: Simple Solutions to Complex Problems

Burundi is a small landlocked country that is located in East-Central Africa. Burundi is bordered to the north by Rwanda, to the south and east by Tanzania and to the west by the Democratic Republic of Congo (African Health Observatory). During the harvest season, families spend up to two-thirds of their income on food (African Health Observatory). The cotton that is grown in Burundi is highly appreciated because of its quality. The main food crops are maize, sorghum, sweet potatoes, bananas, beans, cassava, taro, and palm oil (Burundi Embassy). Burundi in general has a tropical highland climate although it varies from region to region depending upon the differences in elevation. The central plateau has cool weather averaging 68 degrees Fahrenheit. The area of Lake Tanganyika is warmer than the central plateau. The weather averages about 73 degrees Fahrenheit while at the range of the highest mountain areas are cooler averaging around 60 degrees Fahrenheit. There are certain areas like the Northwest region of the country where there is heavy rainfall then there are other areas where rainfall is inconsistent. The longest wet season runs February through May and the dry season is June through August (Encyclopedia of the Nations).

Burundi is the smallest, poorest and most densely populated nation in Africa. The Burundian economy is mainly grounded in agriculture. It is estimated that 90% of the population relies on agriculture combined with livestock for their livelihood (Burundi Embassy). Unfortunately, only 3% of the gross domestic product comes from livestock. Burundi has a poor transportation system and the distance to the sea from Burundi has forced the economic growth to be limited. Burundi's exports account for 80% of its foreign exchange income. Germany, Belgium, Kenya, and Tanzania make up its chief trading partners (Burundi Embassy).

The population is growing substantially in Burundi. Currently, there are 11.9 million people and it is expected to rise to 13 million in 2025. With such a high population, Burundi is considered to be a very densely populated country. There are approximately 500 people per square kilometer and it is the second highest density country in Sub-Saharan Africa. Unfortunately, each family, with an average of 5 family members, has less than 0.3 hectare of land. This small area can only produce enough food for the family for just 3 months (FAO).

Burundi has very poor health care and they have very few doctors to help alleviate this problem. Diseases like malaria, influenza, diarrhea, and measles are very common across the country. Many diseases are spread through poor sanitation and the contamination of drinking water. Access to drinking water has increased within the last decades but it is still very low, particularly in rural areas (Every Culture). Burundi has a very high level of chronic malnutrition. The average rate of malnutrition is 46% among children under five and over 60% in some regions. Chronic malnutrition is a problem due to several factors such as the lack of recurring food efficiency and inappropriate nutrition practices for infants and young children. In many places it is overpopulated, chronic malnutrition is widespread and there are

unresolved epidemics of diseases like malaria with 4.8 million suspected and confirmed cases in 2014 and HIV/AIDS which affected 1.3 % of adults in 2012 (WHO). There is a substantial emigration problem in Burundi because there are many problems with the country's economy. In addition to these issues, the farmland that is available lacks sufficient nutrients to efficiently grow the crops Burundians need to survive.

In Burundi, the women's primary duties are childbearing and child care. They are responsible for several other duties like household chores, including cleaning and preparing food. In the rural regions, women are also expected to work in agriculture and do most of the work of planting. Their fertility is believed to be transferred to the seeds which they are planting. Women have little to no voice when it comes to business, political or government topics. Even though the mother is highly honored, she has very little authority in decision making in the family or in society as a whole. Fatherhood is considered to be an important responsibility because the man is the one who is in charge of the family. Each family generally has its own house, which is most often grouped in compounds that includes the homes of extended family members. In Tutsi traditions, wives and husbands live separately. In Hutu practice, the husband and wife share a house (Every Culture).

The children are highly valued. Traditionally, male Tutsi children are given extensive training in public speaking, storytelling, and military skills. In the more agricultural Hutu culture, work ethic is introduced early; both boys and girls are assigned chores as young as the age of 5. Education is free and mandatory for children between the ages of seven and twelve, but only 50% of children attend primary school and only 8% attend secondary school. The functioning of schools has been affected by political instability in Burundi. Because of the instability, there is a lack of teachers and school supplies (Every Culture)

The citizens of Burundi consist of three ethnic groups: The Hutus (approximately 85% of the population) who are primarily agriculturalists; the Tutsis (approximately 14% of the population), who despite their small numbers have historically dominated the government and the army and are traditionally cattle raisers; and the Twa or Pygmies (1% of the population) who are well practiced in hunting and gathering. The Tutsis and the Hutus historically have a lord-serf relationship. The Hutus tended land and cattle owned by the Tutsis (Information Please).

The 3 most common religions that are practiced in Burundi among the citizens are Christianity, traditional tribal beliefs, and Islam. Christianity is practiced by 67% of Burundi (62% is Roman Catholic and the other 5% is Protestant); 23% of the people follow exclusively traditional beliefs, and the remaining 10% are Muslim. The traditional beliefs place a strong emphasis on fate as opposed to free will. The traditional religion is a form of animism which incorporates the belief that physical objects are said to have spirits (Every Culture).

Burundi has had nearly two decades of conflict and troubles, causing the people across the country to live in poverty. 8 out of 10 Burundians live below the poverty line (IFAD). Burundi was traditionally self-sufficient in food production for the people. After all of the conflict and recurrent droughts the country has had to rely on food imports and international food aid in some regions. The majority of Burundi's farmers are still trying to recover from the conflict and its aftermath. Because Burundi has such a high population rate and continues to grow, the amount of fertile land for agricultural purposes is starting to

decrease. The level of food vulnerability is extremely high because more than 60% of the population is at risk of food insecurity (IFAD).

In the eastern and northern regions, there is an increase of crop pests and a decline of land productivity. In that region, there are approximately 100,000 households at risk of permanent food insecurity and fragile nutritional conditions (IFAD). Since the population is very high, 16.5% of population is landless, not everyone has the land to grow food for themselves and their family (African Health Observatory). Due to the high levels of poverty there is little access to fertilizers and knowledge of sustainable practices (Kaboneka) .

There are many factors that cause the land to be very poor for producing crops. Due to poor farming methods and deforestation, there has been extensive soil erosion and depletion. By 2020, it is estimated that there will be no more arable land left in Burundi because the quality of the soil is consistently decreasing due to soil infertility and erosion (Encyclopedia of the Nations). There will be no arable land because people who live in Burundi aren't aware that more soil, overtime, will start to lose its fertility and ability to provide nutrients to the plants grown in that soil if it doesn't get the nutrients needed and the right amounts of it. Since war broke out in 1993, the average per capita agricultural production has been cut in half due to crop theft, recurrent drought, torrential rains, pests and deteriorating soils. The low levels of knowledge, the falling of soil infertility, and declining yields have prevented farmers from increasing their income and their amount of production (New Agriculturalist). The soil infertility is at a steady decline in Burundi because of the land being over-exploited. It is also prone to natural disasters, with recurrent floods, and hailstorms(World Food Programme).

Livestock in Burundi isn't as popular as the growing of the staple crops. Meat is eaten just occasionally due to their reverence for cattle (status, well being, and security). In some regions it is taboo to heat or boil milk because people believe that it might interfere with their cow's dairy production. The health and fertility of the animal is thought to be a reflection of its owner (Burundi - Culture and Customs). The animal that does play a key role in agriculture activities of livestock in Burundi is the goat. They are good for many reasons. They can be easily sold in case of an emergency for cash, and their manure and urine are excellent for farming activities. They are also important for special occasion feasts and eaten at marriages and funerals. However, the years of conflict in Burundi has resulted in theft and abandonment of many thousands of livestock. There also is a big problem with inbreeding due to the isolation of good and quality stock (*DIAN ABUJA'S BLOG*)

Kolping International is an organization that is helping Burundi supply livestock to families. In 2013, they distributed 226 goats and 65 pigs across the country. With Kolping International, the people who receive the livestock must have the desire for further education (Kolping International). Another organization that is working in Burundi is One Acre Fund. The purpose of One Acre Fund is to help improve the lives of small farmers in Burundi by increasing their incomes and their harvests. The projects in Burundi were launched in 2012. They started with approximately 6,000 farmers and now they have served 40,200 farmers across the country (Countries One Acre Fund).

The way to fight this problem of soil infertility and erosion is by implementing a farm system of efficiency rather than trying to bring more land into cultivation. It is more efficient to increase the quality of the land that they are currently working with than to try to claim new land that has not been previously farmed (FAO). The people of Burundi should focus on a small area of land that they would bring back to good condition either by using a cover crop or tilling manure into the soil. Once that land is in pristine condition, they would move onto another piece of land that is infertile and needs the proper nutrition. Burundi lacks the modern technology that many farmers in the U.S. use today that provide accuracy like seeding spacing and how far the seed should go in the ground. They have to plant seeds manually rather than having a piece of equipment do it. Accuracy is a big factor in successful farming. Without the education that is needed to successfully grow crops, their harvest would typically be lower than it would be with a tractor or a piece of precision equipment that focuses on accuracy. Through the SCAD project, 80 Burundian farmers were taught how to effectively grow crops from people who were experts in these certain fields of agriculture. Then, those farmers educated other community members by teaching them what they learned. The farmers that were educated by the SCAD projects made posters and photos showing farmers from neighboring communities how they got to where they are today utilizing the new methods (Wageningen University). People who have the knowledge and are willing to educate other people can tremendously make a difference of the lives of many by teaching them how to successfully farm. Even if they don't have modern technology, there are ways to still have accuracy and success in farming with little to no precision technology.

Even though there isn't a big population of livestock in Burundi, there are many benefits of having a small herd of livestock to help fertilize the land. Manure can increase and maintain soil fertility by providing many nutrients with Potassium, Magnesium, Sodium, Nitrogen, Copper, and many other elements that soil can benefit from. Manure improves the land by increasing the soil organic matter content and exchange capacity. It also improves the infiltration within the soil. There isn't much land that a family owns, but if they raise a livestock animal such as a cow, pig, and even a goat, that animal can help increase the soil fertility of a family's land (W. Bayu). I understand the importance of livestock manure on a farm because I was raised on a farm where we use manure from our goats and rabbits to fertilize our garden for the year. I understand how important it is for soil to get the right amount of nutrients at the right time, or else the crop you are trying to grow will be of poor quality.

There are other types of fertilizer that can tremendously help soil infertility. The different ways that soil fertility can be accomplished by using organic matter is to use compost, cover crops and crop rotation (FAO). Farmers in Burundi plant twice a year; they generally plant beans in one season and maize in the second (One Acre Fund). Cover crops are a good way to slowly bring back the nutrients to the land even though it is accomplished very slowly. The benefits of using organic matter is that it releases the nutrient supply to the ground, while it also increases the water-holding capacity of the soil because organic matter behaves similarly to a sponge and it can hold up to 90% of its weight in water. It also improves the soil structure. With better soil structure, permeability improves. One of Burundi's main problem of soil infertility is that there is a great amount of soil erosion. By the use of organic matter, and increasing soil organic matter from 1% to 3%, you can reduce erosion 20% to 33% because of increased water infiltration and the stable soil aggregate formation which is caused by the use of organic matter (Funderburg).

Soil infertility is a widespread problem in Burundi because the farmers lack knowledge about improving soil fertility and there is very little governmental support and agricultural education that is being shared with the citizens. Because the farmers don't have a lot of money to purchase chemical fertilizers, educating them about how they can use what they already have available and encouraging changes in their farming practices will be the least expensive way to improve the quality of their farmland. Through the use of livestock manure to bring nutrients to the soil, the use of cover crops to maintain moisture, increase organic matter in the soil to help prevent erosion, and adding their own compost to mix into the ground, soil fertility will increase. Even though Burundi is one of the most densely populated countries in Africa and families have very little land, they can make the best of what they have by changing their farming techniques to improve their soil to have better quality food and a bigger harvest. If Burundian farmers aren't educated, they can expect to see a continuing decrease in the soil fertility to a point where they won't be able to farm the land at all due to worsening soil erosion and complete soil infertility. There are several organizations including One Acre Fund and Kolping International that are dedicated to educating people about livestock husbandry, successful farming practices and ultimately providing the tools people need to produce an adequate food supply.

Works Cited

"Burundi." *Burundi : FAO in Emergencies*. N.p., n.d. Web. 27 Mar. 2017.
<http://www.fao.org/emergencies/countries/detail/en/c/161508/>

"Burundi." *Countries and Their Cultures*. N.p., n.d. Web. 24 Mar. 2017.
<http://www.everyculture.com/Bo-Co/Burundi.html>

"Burundi." *World Food Programme*. N.p., n.d. Web. 24 Mar. 2017.
<http://www1.wfp.org/countries/burundi>

"Burundi - Climate." *Encyclopedia of the Nations*. N.p., n.d. Web. 25 Mar. 2017.
<http://www.nationsencyclopedia.com/Africa/Burundi-CLIMATE.html>

"Burundi – culture and customs." *Great Lakes Agency for Peace and Development International*. N.p., 09 Aug. 2012. Web. 27 Mar. 2017. <https://glapd.com/about/where-we-are-from/burundi-culture-and-customs/>

"Burundi:Food safety and nutrition - AHO." *Burundi:Food safety and nutrition - AHO*. N.p., n.d. Web. 27 Mar. 2017.
http://www.aho.afro.who.int/profiles_information/index.php/Burundi:Food_safety_and_nutrition#S.C3.A9curit.C3.A9_alimentaire

"Burundi Population 2017." *Burundi Population (2017) - World Population Review*. N.p., n.d. Web. 26 Mar. 2017. <http://worldpopulationreview.com/countries/burundi-population/>

"Burundi presentation - Economy and business." *Burundi business information*. N.p., n.d. Web. 26 Mar. 2017. <http://www.burundiembassy-usa.org/businessinfo.html>

"Countries." *Countries One Acre Fund*. N.p., n.d. Web. 27 Mar. 2017. <https://www.oneacrefund.org/results/countries#sec-tab-3>

"Enabling poor rural people to overcome poverty in Burundi." IFAD, 2012. Web. 26 Mar. 2017. www.ruralpovertyportal.org

Funderburg, Ed.D. Eddie. "What Does Organic Matter Do In Soil?" *Noble Foundation*. N.p., n.d. Web. 27 Mar. 2017. <https://www.noble.org/news/publications/ag-news-and-views/2001/august/what-does-organic-matter-do-in-soil/>

Kaboneka, Salvator. "Soil fertility status and challenges in Burundi: an overview." *SAO/NASA ADS: ADS Home Page*. N.p., 01 Apr. 2015. Web. 27 Mar. 2017. <http://adsabs.harvard.edu/abs/2015EGUGA..17.1134K>

"Livestock farming in Burundi." *Livestock farming in Burundi*. N.p., n.d. Web. 27 Mar. 2017. https://www.kolping.net/en/press/news/news_detail/artikel/burundi-9.html

"Livestock Restocking in Burundi: More Complicated than 'The Gift of a Goat'." *DIANABUJA'S BLOG: Africa, The Middle East, Agriculture, History and Culture*. N.p., 18 Mar. 2013. Web. 27 Mar. 2017. <https://dianabuja.wordpress.com/2012/04/23/livestock-restocking-in-burundi-more-complicated-that-the-gift-of-a-goat/>

"New Agriculturist." *New Agriculturist: Country profile - Burundi*. N.p., n.d. Web. 27 Mar. 2017. <http://www.new-ag.info/en/country/profile.php?a=2965>

"The Role of Animal Manure in Sustainable Soil Fertility Management in Sub-Saharan Africa: A Review." *Journal of Sustainable Agriculture*. W. Bayu , 8 Oct 2008. Web. 27 Mar. 2017. http://www.tandfonline.com/doi/abs/10.1300/J064v25n02_09

Wageningen University. "Burundi Farmers Teach Each Other How to Farm More Efficiently." *Phys.org - News and Articles on Science and Technology*, 20 Aug. 2014, phys.org/news/2014-08-burundi-farmers-farm-efficiently.html. <https://phys.org/news/2014-08-burundi-farmers-farm-efficiently.html>