Laurie Enders, PA School for Excellence in the Ag Sciences,
Armstrong High School, Kittanning, PA
Burundi, Factor 6: Sustainable Agriculture

Burundi: Where Subsistence Needs Sustainability

Across the world, one in nine people fall asleep without food in their stomach, and one in three people experience some form of malnutrition. Food security, the availability of food and one's ability to access food, for many families, is a very prevalent issue. Sub-Saharan Africa has the highest prevalence of malnourishment, and a large array of factors contribute to the suffering of these people. From a lack of education, to unsustainable agricultural practices, the people of these nations require a solution to their plight.

Landlocked by Rwanda, Tanzania, and the Democratic Republic of the Congo, Burundi is a small country that lies south of the equator in East Africa. It is currently ranked 184th out of 188 countries in the world on the Human Development Index (World Food Programme). Listed as #10 for malnourishment in the world, with approximately one third of the children under five years of age being malnourished, it is one of the world's most severely impoverished nations (Pike). For years the people of Burundi have been underfed and overworked, often times relying on subsistence farming. With political conflict, deforestation, and rapid population growth at a rate of 3.23% (CIA), Burundi is in dire need of a solution to their dietary necessities.

90% of the population utilizes agriculture to sustain their lives, and are those most affected by food insecurity (Neve). In the average household, there are five people including; a mother, a father, and three children, each under the age of fifteen. Every woman is generally educated for ten years, and each man has an average education of eleven years. It is estimated that only about 57% of age-eligible students enroll in primary school and only 26.7% of all students complete their primary education (Gale). Some children, if in a single parent household, will be educated less due to the fact that they will most likely drop out of school to help support the family's needs.The tense political climate of the country has caused the school programs to be unstable and has lead to poor school attendance for children eligible for school. Currently, due to the short span of education children receive, if they attend school at all, the literacy rate in Burundi for people above the age of fifteen is at about 61%.

Not only is there a lack of education in Burundi, but also a severe lack of proper healthcare. Healthcare is extremely limited. Hospital bed density is extremely low, with less than one hospital bed available for every 1,000 people, and only five doctors, twenty-eight nurses, and one pharmacist per 100,000 people (Gale). Due to malnutrition, a lack of education, and insufficient healthcare, HIV/AIDS affects 1.1% of the population, and just over half of the population have unimproved sanitation facility access. Most of the citizens of Burundi have no healthcare because they simply cannot pay for it. With wages equivalent to two US dollars a day, it is impossible for them to have any basic aid. When someone requires healthcare, they often go into debt, and may resolve to sell a portion of what little amount of land they have, just to pay off that debt.

In Burundi, the population is rapidly increasing, at about 3.23%. This is not only causing land to be even more limited, but also food demand to rise. They also cannot afford to begin using sustainable agricultural practices on their own because they cannot provide the money to make the initial investment for it. This causes the soil nutrition to be depleted further, and agricultural productivity to worsen. Without proper healthcare, and health education, the people of Burundi have an increasing population that will need to be supported by an already failing food production system.

Most farms in Burundi rely on subsistence farming, which is a system in which a farmer grows what they need to survive and produce little more. Food is scarce for the citizens of Burundi. Diets typically include corn, sorghum, beans, peas, millet, cassava, sweet potatoes, and bananas (Every Culture). This carb filled diet is hardly enough to get by on and little to no protein or fats are available to eat. Currently, 55.9% of the children in Burundi experience malnutrition (Global Hunger Index). When the season is bad they rely on casual work and may eat only once a day. Main staple crops that are harvested include: bananas, cassava, sweet potatoes, sorghum, rice, maize, and beans. The people that live near Lake Tanganyika may eat fish if they can afford it, but meat is rare in a typical diet. These people have a very hard time producing enough food to get themselves by, especially because of the fact that they rely purely on subsistence farming.

Already facing the challenge of producing enough food, farmers also face the challenge of producing that food on a very small amount of land. The average farm size for a family in Burundi is 0.5 hectares as of 2009, but the population is rapidly increasing and the typical farm size may decrease further due to the population growth (WRENmedia). The soil quality is generally poor due to soil erosion caused by immense rains, and the poor agricultural practices utilized by families. Both of these factors cause the food production to be low, and barely reach the minimum required to get each family by. In Burundi, most farmers do not have any planned agricultural practices and rely heavily on practices that are now outdated and insufficient (IFDC Burundi). Between the falling quality of the soil and the lack of knowledge of how to improve crop and livestock yields, farmers face barriers to not only improving their agricultural productivity, but also their income (New Agriculturist). They have no plan in place to maintain soil nutrition, or to increase harvest. Without education, the people of Burundi are not aware that the current agricultural practices that they use are not sustainable.

The people of Burundi urgently require a solution that will improve their current conditions, but currently, they face many barriers that impede them from improving their lifestyles and practices on their own. A barrier that the people of Burundi face is the weather. In Burundi, immense rains affect parts of the country and drought affects others. In a year, most of Burundi receives approximately 130-160cm of rain (Nations Encyclopedia). Due to the hilly landscape of many parts of Burundi, this rainfall contributes to the soil erosion that they experience. Farmers also face the challenges that the weather presents. High rainfalls and then periods of drought occur throughout Burundi. These dramatic changes in the weather present challenges that cannot be controlled.

Many factors and barriers that impact the people of Burundi do not only affect one part of their lives, but rather, affect many. This can be seen especially in the educational barrier that the citizens of Burundi face. As the current literacy rate in Burundi is at 61%, many farmers don’t have the knowledge of how to farm and work efficiently and sustainably.

One set of practices and principles that would improve the agricultural production of Burundi would be the implementation of sustainable agriculture. Sustainable agriculture is farming in a way that is not detrimental to the environment by understanding the relationship between organisms and their environment. It itself is currently used around the world to combat erosion, desertification, and soil depletion, and to reduce pesticide/herbicide use, as well as to minimize environmental degradation associated with industrial agricultural practices. “In Burundi - where an expanding population is living-off limited land, often divided into small parcels - increasing food production will mean focusing on integration and efficiency in farming systems rather than simply bringing more land under cultivation” (Food and Agriculture Organization of the United Nations).

Sustainable agriculture is not widespread or easily available to the average farmer in Burundi. As farmers continue to cultivate without the proper knowledge of what practices to use, soil degradation will continue, and subsistence farming, as hard as it already is, will only become more difficult. Between soil erosion due to immense rainfall, overuse of soil leading to nutrient insufficient soil, and deforestation that causes a lack of biodiversity, the condition of farms in Burundi is extremely poor and unstable. The state of these current farms leave conditions that are unable to support the production of a decent crop yield. In Burundi, the purpose of sustainable agricultural practices would be to improve soil conditions, and combat erosion due to rainfall. Some agricultural practices that would benefit Burundi are: crop rotation, landscaping, composting, and agroforestry (Greentumble). Utilizing sustainable agricultural practices would help Burundian farmers to increase crop yields using less money, and increase agricultural production for themselves and their community by learning how to use sustainable practices and sharing these practices throughout their community.

Soil quality is an extremely prevalent problem, but most Burundians cannot afford to buy fertilizers to improve the soil quality as the fertilizers are simply too expensive. Something that can help to improve the soil conditions in Burundi is crop rotation. Crop rotation is the practice of planting different crops from year to year that utilize different nutrients as they grow so as not to deplete soil nutrition. One example of crop rotation is the rotation between corn and soybeans in the United States. One year farmers will plant soybeans, which are nitrogen fixing plants, and the next year, the farmers will plant corn which will utilize the nitrogen that the soybean plant fixed. When the same crops are planted from year to year it depletes the soil of important nutrients that help the plants to grow. Over time, the soil becomes so nutrient deficient that it cannot produce a yield. When crop rotation is utilized, it helps to maintain the nutrients and provide new nutrients for the soil, as well as future crops.

The landscape of Burundi could also be utilized in order to benefit the farmland. Much of the country is comprised of hills, and the implementation of some of the principles of sustainable farmland landscaping would also be a benefit to Burundi (worldatlas). Introducing terrace farming to the landscape of Burundi would help to reduce soil erosion and runoff. A terrace farm is a farm in which a sloped plane, a hill, is cut into and shaped so that forms a series of receding platforms similar to stairs. This practice involves carefully shaping the landscape to resemble steps in the land, so instead of a ramp shape for water to run down, there are many levels that help the water to re-enter the ground and not wash away topsoil.

Another sustainable agriculture practice that can be used in Burundi to improve agricultural productivity is agroforestry. Agroforestry is planting trees in or around agricultural land to promote biodiversity and prevent soil erosion. Rainfall in Burundi is very common with the country receiving approximately 160 centimeters of rainfall per year. Much of this rain falls between the months of February and May, aligning with the main growing season. This rain is beneficial to areas with plant life, but detrimental to the areas where plants are absent as the rains cause the soil to erode away. When agroforestry is implemented and

trees are planted intermittently throughout an agricultural space, the tree helps to hold the soil down so that it does not erode away. With another species of plant life on the land, it also helps to promote a more biodiverse space. Having a biodiverse space helps to ensure that there are many organisms contributing to the soil quality and to the overall quality of the surrounding environment.

Composting is just one more sustainable agriculture practice that has the potential to benefit the farmers of Burundi and increase their agricultural productivity. By utilizing pulp, animal manure, ashes, banana waste, and more organic matter, farmers would be able to create a highly beneficial fertilizer that can greatly benefit their crop yields as well as increasing soil nutrition (Jenifer). It is not only much cheaper than trying to buy a chemical fertilizer, but it is also more accessible and environmentally sustainable. This practice will put a use to something that is currently viewed as just a waste product, and will turn it into something highly valuable for the average farmer in Burundi. Usage of crop waste to help return nutrients to the soil through the organic matter that is left behind will help the soil conditions improve. It is a practice that can help the people of Burundi enrich the nutrient content of their soil without added expenses.

As of today, there are many organizations trying to help these farmers to become more sustainable and to essentially free them from subsistence farming. The Food and Agriculture Organization of the United Nations is currently conducting farmer field schools in order to educate on more sustainable practices to be implemented on the average citizen's farm (Food and Agriculture Organization of the United Nations). Working towards a common goal, the Episcopal Relief and Development laid out a plan to help diversify and improve agriculture in forty locations in Burundi, as well as conducting some reforestation across the country (Episcopal Relief & Development). Although these organizations are putting a hand in to help Burundi, much of the success of the country as a whole also relies on the work of government, communities, and individuals. The government's role in assisting its people would be to help invest in the communities to improve their food security. By improving access to clean water and healthcare, the government can help its citizens to improve their lives and overall well-being. For the individuals and communities of Burundi, their role in helping to implement sustainable agricultural practices is to take the information that they have learned from organizations, such as the FAO, and share it with the other people in their community. By sharing knowledge, the citizens can work together to improve their individual farms. In one training, a group of people educated about eighty Burundi farmers. These farmers were then able to educate 1,000 other farmers on what they had learned (Staff). Sharing knowledge enabled these people to not only improve their own lives, but also the lives of those in their community.

All of these practices, if implemented, would help increase agricultural productivity in Burundi for both subsistence farmers, and industrial farmers. With an increase in agricultural productivity, the people of Burundi will be better nourished and healthier, and the nation itself would no longer need to import as many goods as they currently do. This will also help to strengthen Burundi's economy so that it could potentially provide better access to healthcare and education to its citizens. Proper nutrition helps to create a stronger immune system, provide more energy, and improve overall well-being (HHS Office, and Council on Sports). As the lives of the people in Burundi improve, they are able to influence those around them.

Sustainable agriculture has the potential to ameliorate the situation the people of Burundi are in. For a typical family in Burundi, sustainable agriculture practices would help to lift a large burden off of their

backs. As these practices are implemented, soil quality will rise, crops will grow more efficiently, and waste products will be utilized. As a family can produce more crops more efficiently, children will not have to drop out of school and will be able to receive an education, gaining the potential to learn about even more sustainable practices that can benefit their family. Also, with a larger crop yield, farmers will generate a larger income and the economical situation of Burundi can improve as people become able to participate in the economy. Most importantly, families will be able to eat, and will no longer be malnourished. With better land, comes better, more nutritious food, and together, the percent of malnourished children, and adults, will begin to decline as the people of Burundi become healthier.

In the end, although Burundi is currently a malnourished nation, they do not have to continue on that way. The conditions and circumstances that the people live in can be greatly improved through sustainable agriculture practices. By implementing crop rotation, landscaping, agroforestry, and composting, the people of Burundi can improve their agricultural productivity, food availability, and potentially their national economy. So, in using these practices, sustainable agriculture can have a positive impact on Burundi by increasing their overall agricultural production. In having proper nourishment, the nation of Burundi has the potential to not only survive, but to thrive. They will be able to export more goods, feed their own people, seek out further education, and improve their way of living. Sustainable agriculture is one way for the world to help Burundi, and with every step that is made, there is more hope for a better and brighter future for all.

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