Katie Reed
Holdrege High School
Holdrege, Nebraska
Haiti, Factor 6: Sustainable Agriculture

Haiti. A country filled with kind-hearted people, beautiful mountains and miles of oceanfront, but all of its beauty is masked behind high unemployment, starvation, and deadly diseases that ravish the land. With over 80 percent of all Haitians living under the international poverty line, it is the poorest country in the western hemisphere. Over ten percent of all Haitian children die before their fifth birthday, solely due to: starvation, preventable diseases, and a lack of clean water. The Island of Hispaniola is split into two countries. Haiti is located on the west side, with the country, the Dominican Republic lying to the east. Haiti was founded by Christopher Columbus in 1492, but the island was already inhabited by the Taino and Arawak Indians. Haiti became a constant battle between the great world powers for control over the land; it was bountiful in lumber and the Spanish soon learned the tropical weather was ideal for growing coffee and sugarcane. Haiti changed hands from the Spanish to French as they fought for control. Haiti declared their independence from France and became an independent country in 1804, the second country to sign their own Declaration of Independence. Even with their own independence, the road ahead for Haiti proved to be very difficult. As new technology and research has transformed agriculture around the world, Haiti has continued with the same agricultural practices, with little advancement, for the last several hundred years. With an ever changing world their lack of ability to adapt and sustain themselves will only continue to make them fall behind, if things are not radically changed. Haiti's agriculture is the base of their economy and livelihoods, but also the root cause of many of their issues. There are many contributors to Haiti's corrupted government, poor farming practices, and high mortality rate, but sustainable agriculture is one of the biggest challenges they face. Improving Haiti's sustainable agriculture will become the catalyst to improving daily life for all Haitians, rippling out to help many other challenges and problems facing their country. Though there is no simple answer to all of its problems, there are steps that can be taken to help.

Agriculture is not only the largest contributor to the Haitian economy, but it also employs almost two thirds of the working force (Girault). Almost sixty percent of all Haitians live in rural areas. Most of these people make up the sector of small subsistence farmers ("Agriculture and Food Security"). The Village of Jeannette, Haiti, located 70 miles west of Port-au-Prince is an average small town, farming community in Haiti. Most houses in Jeannette have bricks as a supporting base, scraps of metal for the walls, a thatched roof, and a dirt floor. Twelve by eight feet is the average house size. Most households have a minimum of six to ten people living under one roof. It is custom for children to take care of their parents and extended family when they age. But with many illnesses such as AIDS, HIV, malaria, and waterborne diseases resulting in death, many children are orphaned; leaving older, extended relatives to step in to take care of them. Depending on the family situation it may be a parent (s), children, and extended family, or it may be a grandparent taking care of several grandchildren (Corbett). There are no telephone poles or running water in Jeannette. This causes many women and children to walk several miles a day to fetch water, that is usually not sanitary (Water Project). The only form of electricity is at the community school, which is obtained by solar panels. The school is responsible for teaching almost 650 children per school year, but even with a high number of students, almost every kid tests out of ninth grade (which is above the nation's average of third grade). There is one doctor and several other health care workers that work at a clinic supported by the Haitian government, though they are not able to perform any complicated procedures or take care of any critical cases, it is a great asset for a small community to have a reliable clinic (Singing Rooster).

One-fifth of Haiti's soil is designated as sustainable for farming, but over two-fifths of their soil is responsible for growing crops (Ferguson). The most highly valued asset in Haiti is land, not only does it allow for farming or space for a herd of animals, but it is widely used for capital resources (Haiti: World

Bank Hunger). Most land is passed from generation to generation and is very rarely sold outside of the family. Land titles and official government documents are rare to come by, but they have developed their own way of transacting it. Farms are usually three acres with a small house for the family (Haiti: Country and Cultures). Most sustainable farmers annually earn about three hundred dollars. These farmers grow their own food to feed their families; to earn a little money, most farmers sell a small portion of their crop or they hire themselves out as cheap labor to buy a few necessities. Most sustainable farming families do not eat any food that they do not grow or raise themselves. Beans, corn, yams, cabbage, potatoes, eggplant, avocadoes, grapefruit, and coffee are some of the main crops their climate and soil allow them to grow (Singing Rooster). Goats, chicken, cattle, and pigs are raised for milk, eggs, and meat (Girault). Since meat is considered a luxury, it is often times sold for a profit. Donkeys, horses and mules are used for transporting goods to the market, carrying supplies, and working in the fields; but because they are expensive to feed, it forces many farmers to overwork their animals, compensating for not having a large herd (World Horse Welfare).

The word Haiti means “land of high mountains”. Haiti is filled with rugged, mountainous terrain and poor inadequate soil for farming, with seventy-five percent of its land covered in mountains. The people of Haiti cannot control how rugged their land is or all of the poor quality of the soil, but some of the poor soil is due to inadequately taking care of the land. Little irrigation, soil erosion, deforestation, floods and recurrent drought have increased poor land quality (Ferguson). The government has very little influence and involvement in Haitian agriculture, giving farmers no defense against a natural disaster, or in helping improve their farming techniques. Private and public investment is nonexistent in the agricultural infrastructure, putting farmers in a position of not being able to prevent repeating the same mistakes year after year. Job insecurity and a scarce amount of jobs have led to high national unemployment throughout the nation. In estimation of job unemployment is around seventy percent. If Haiti wants to have a living wage, they will have to increase: productivity, efficiency, and effectiveness in their work. Haitian sustainable farming does not grow enough food to feed their own families, let alone other people. But this is something that is not unrealistic, an increase in production and a decrease in importation is plausible through new techniques and agricultural education.

Most Haitian farmers live in close proximity to a large or local market in which they can bring their crops or produce to. The problem lies in producing enough food to sell to the market. Most of the farms in rural Haiti are small subsistence farms, but there are a few large farming operations that are commonly owned by the small, wealthy elite class. They typically pay cheap laborers to take care of their land and keep the rest of their profits, investing the money out of the country, therefore not helping the economy or their employees. It is impossible to earn a living wage in Haiti when the laborers and poor farmers earn on average less than a dollar a day. This is why Haiti has the third highest hunger per capita in the world (Corbett).

Another problem that faces small subsistence farmers is cheap imports given to Haiti (Corbett). Jonathan Katz summed up the issues by saying, “Decades of cheap imports, especially rice from the United States, punctuated with abundant aid in various crisis, have destroyed local agriculture and left impoverished countries such as Haiti unable to feed themselves.” Haiti has had many natural disasters and catastrophes that have inhibited their own farmers from being given the opportunity to set up their own farming practices and have created a lack of Haitian investment in their own agriculture (“Cheap Food Imports”, Katz). Haitian farmers need to sell their crops to local markets without competing against cheaper rates from countries that are trying to help Haiti. Haiti's farmers cannot afford to raise a crop, even if they are able to, when the markets can import food cheaper than they can grow it. If Haiti could increase their own crop supply to feed themselves they would be investing in their own agriculture.

There are many problems Haiti faces on a daily basis. Many of these problems will take years of hard work to reverse the negative, long term effects on the country, but there are steps that can be taken to help

improve Haiti's sustainable agriculture. Haiti's soil is not only, unsuitable for farming in much of the land, but it has also been greatly depleted. Depleted soil and poor farming techniques have led to soil erosion, low nutrients found in the soil, and the topsoil has been eroded away in much of the land (Girault). Another factor in soil erosion is deforestation. Deforestation has destroyed 90% of all the trees, significantly increasing topsoil erosion (Corbett). The only natural form of energy found in Haiti is wood, it supplies 80-90% of all home and industrial energy (McClintock). Ignorance, and a lack of understanding, have led to many wood-cutters continuing to cut down much of the forests and trees in Haiti, with little plans of rebuilding (Corbett).

As James Mckenna stated, professor in the department of crop and soil environmental sciences, "Less than half of Haiti's food is currently produced in Haiti and food production has been declining since the mid 1980s. Most of Haiti's soils are severely degraded as a result of unsustainable farm practices." When a survey was conducted in Haiti by the magazine, National Geographic, they asked the question "What major agricultural problems do you face?" The most common response they received back was, "Te a fatigue", meaning "the earth is tired" (Bourne). Haitians understand they have not changed the way they have been farming for centuries, and they have slowly stripped it away until it is barren. The earth's fatigue is one of the reasons why they continue to increase the amount of imported food, and the reason why certain crops are no longer able to be cultivated in their soil.

Poor farming practices have dictated where farmers can plant and the quality of their crops because of the soil. Poor sustainability changes the way a farming family survives and struggles to keep afloat. Most farmers cannot afford to add nutrients to their soil, meaning once the nutrients have been depleted the crops are therefore deprived of them. Naturally adding nutrients to the soil is one way a farmer could take the initiative in helping to increase their crop yields and grade of plants that they are producing ("Agriculture and Food Security"). With land being passed from family to family, it can be hard to increase the size of their farm, this means to increase productivity they will usually need to better utilize the land they have ("Haiti: Culture and Customs"). Climate change and Haiti's dramatic changes from floods to droughts do not help the farmers, but it is something they will need to learn how to adapt easier to, in hopes for their crop's survival.

One simple way to improve this problem is crop rotation. There is land in Haiti that has had the same crop planted on it for the last hundred years. If a farmer would plant corn in the same area of land year after year, the soil will lose all of its nitrogen. But if a farmer would implement a simple crop rotation of planting corn for two years and then planting beans on the land the next year, the soil will naturally have nitrogen added back into the soil. Haiti has a rainy season that lasts from April until October, during this time heavy rains can damage soil through soil run off, one way to increase soil productivity and to reduce soil erosion is contour plowing. Contour plowing is the farming technique of plowing across a slope following its elevation lines, the lines create a water break that decreases the creation of gullies and eventually decreases soil runoff during heavy rains. Contour plowing can have the potential to decrease erosion by 25%-90%, a significant decrease by a simple method (Britannica). Contour bunding follows the same principles, but it adds an emphasis on placing stones around contours of slopes. This is a practical step that could be taken by Haitian farmers because of the easy accessibility to rocks in their area (McClintock).

With the average rural farm size of less than two acres bringing agricultural machinery to Haiti would not make economical sense. Bringing a disc, planter, or combine to a small Haitian farmer would only cause more issues in their current state, they would not understand how to run it, pay for it, or have the knowledge to know how to fix it when it would break down; but one new technological advancement that could be very beneficial to Haitian farmers is hydroponics. Hydroponics is a method for growing plants in water, without soil, by using mineral rich nutrients; and it may just be one answer in helping Haiti's farmers. Hydroponics can be used in many different ways, but one way is fish farming. Haiti imports

almost 80% of their 38 million pounds of fish they annually consume. Even though Haiti is surrounded by water, most of their reefs are barren and lacking a good supply of fish. Fish farms are located on a few small acres of land. The fish live in a colony and the farm is set up as a continuous chain. Some of the fish are used as a brood stock, they are used for eggs and hatchlings. The goal is for the fish to replace the imported fish and later become a commodity to be exported. Waste from the fish is than turned into food for the plants and fertilizers. This waste can either be put on soil to increase the soil nutrients or used as nutrients for plants grown with hydroponics.

With Haiti's poor soil, hydroponics is an option for avoiding using real soil, but still growing healthy plants (Caribbean Harvest Foundation). "Give a man to fish and he will eat for a day...teach him to fish and he will eat for a lifetime!" this is Caribbean Harvest Foundation's mission statement that their non-profit organization was founded upon. The Caribbean Harvest Foundation uses aquacultural technology and practices to help create a fishing industry in Haiti. Their goal is to employ thousands of unemployed Haitians to increase fisheries for their country. Haitians can become involved in this organization or by following suit of their ideas. Haitian families can establish their own farm fisheries on their land or set up their own hydroponic systems for their crops. Haiti's soil is still farmable in some areas, but in some places, using no soil would allow those who have ground that is not sustainable for agriculture to be have their own farm.

Hydroponic fish farms need about $2200 invested to initially start-up. This initial investment covers the start-up materials and two cages. Two cages of fish will yield one full time job, three thousand pounds of fish, and an average income of three thousand dollars per year; that is over four and a half times higher than the average annual income per family (Caribbean Harvest Foundation). Fish farms are difficult to begin in a third world country because of the high amount of initial investment needed to start up, but once the fish farm is up and running, they are highly beneficial to the family and community.

Sometimes the most simple ideas yield the best results, this is true in the case of tire gardening. It may be a very simple idea, but it can be implemented in almost any region and climate of the world. I had the opportunity to spend six weeks in Haiti this past summer. While I was there, I got to help with the start up of tire gardens in Gressier, Haiti. Tire gardening can bring fresh vegetables to the overpopulated, urban areas or to a poor, mountainous region. Through these gardens, fresh vegetables can be provided for: malnourished children, poor families, and extra produce can be sold for a small profit in the markets. Vegetables rich in protein and nutrients are not only scarce, but they are not popularly eaten by the average Haitian. Cost and availability are key contributors to poor vegetable eating; with little variety in vegetables and high costs, it is difficult to find vegetables to affordably feed a family with. Vegetables commonly eaten are: potatoes, yams and corn, all of which contain a high amount of starch, and few vital nutrients. Tire gardening is one way to transform this plight.

One of the best things about this idea, is that all of the supplies needed for these gardens are usually inexpensive and easy to obtain. Tires, for example, are not only inexpensive in Haiti, but very easy to find. It is common to find old tires along the roadside; sometimes they are being sold, and it is possible to buy several for under one U.S. dollar, or other times you can find tires deserted. The only supplies needed to start these gardens are: old tires, soil, manure (human or animal), and seeds; it is also best to use seeds that are able to self reproduce. In picking a spot to plant, it is key to find a place with partial shade, and as close to a water supply as possible. Than start with six to seven tires, that way it is not overwhelming for a family to take care of, but they will have the opportunity to have a variety of vegetables. The steps to follow are simple: mix together the soil with the manure, than get the soil partially moist. After planting, it is ideal to cover the seeds with old tree branches for three to four days to let the seeds adjust to the hot and humid Haitian climate. After the seeds have adjusted, the covering may be removed. Even if the idea behind the tire gardens is simple and easy to implement, it still has the ability to be highly effective.

Education is key in helping transform a society. The Haitian people need to understand what and how they are doing things. Improving their knowledge and agricultural education will be the start of teaching the younger generation how to improve the problems of the past. Educating the women is equally important as educating the men, as nearly 40 percent all of rural households are run in some form by the women on the farm (Girault). One of the best ways to teach agricultural education is to demonstrate it and to teach Haitians how to teach others. Haiti's culture is storytelling. With a large percentage of the population illiterate, Haitians have adapted to teaching by telling stories. If this is understood, organizations can teach agricultural education best through stories and demonstrations. One example is teaching crop rotation. If a farmer does not believe or understand the benefits of it, it is best to come alongside him and to plant one row of another crop to demonstrate. This way the farmer is learning first-hand, but he is not being told what to do, he still has the choice to change his ways if he sees the benefits. The most highly effective organizations are those that have a goal of being completely Haitian run and led by a certain end date. This ensures that the organization does not allow others to become dependent on them, but instead they are equipping the next generation of leaders.

Haiti has corruption in every part of their government, leading to a weak government and great pressure put on its people. Many great agriculture programs could be beneficial to Haitian farmers, but would quickly become ineffective if the government regulated it (Corbett). Therefore if farmers and businessmen want to become successful, they are going to have to learn to increase their own sustainability without their government. Haiti is controlled and run by a small, elite group of officials that continue to increase their wealth, but do little for the people of their own country. Though this may be an added challenge hindering them, this is not a barrier, it simply means agricultural programs will be more beneficial when run independently.

Improving Haiti's sustainable agriculture could greatly improve job security, higher exports, less imports, and increase their economy. Haiti has many problems and challenges that it faces each and every day. These problems are rooted deep inside its infrastructure, and it will continue to be a long and slow process to fix, but there are steps that can be taken to fix them. By improving their agriculture sustainability, Haiti will have a greater chance in establishing more jobs to decrease imports, and in the future to increase exports. Job insecurity and high unemployment are some of the problems they face everyday, but by developing: fish farms, naturally increasing their soil nutrients, stopping deforestation, implementing tire gardening and improving their agricultural education, jobs will need to be established for this to take place. Haiti is a country based on agriculture, it affects every aspect of their lives. Haiti has faced many challenges since its birth, from natural disasters to chronic diseases and malnutrition affecting most of the population, but they are forced to continue on. They have shown the world a great resilience and heart. Buried behind Haiti's problems lies a beautiful country filled with beautiful people, scenery, and customs. Though it can be difficult to unmask the beauty, the country of Haiti will continue to fight for its adaptability and sustainability.

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