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Haiti, Sustainable Agriculture

## **Haiti - Overcoming Environmental Barriers**

The country of Haiti is the most food insecure nation in the world; however, it was once filled with lush, virgin trees and blooming plants. Soil erosion, deforestation and natural storms are the main causes for the loss of beauty in this island. Haiti has been suffering with sustaining their agriculture since the 1700's when French colonizers destroyed vast areas of rainforest to make way for sugarcane plantations. However, the soil erosion along with deforestation has skyrocketed since then, making the soil infertile. In Haiti, the agriculture sector is primarily the biggest source of income Haiti gets. Without the fertile soil Haiti cannot grow the crops needed for farming. This causes less and less people to be dependent on the farms but by making Haiti's agriculture stronger, food scarcity can no longer be a problem many Haitians have to endure.

Haiti is located on the island of Hispaniola, bordered by Dominican Republic to the east, between the Caribbean Sea and the Atlantic Ocean. Because of Haiti's location, it makes the country very vulnerable to the storms that come through the area, affecting not just the agriculture but the families that depend on the crops. Families in Haiti usually live on farms of 2.5 acres ("Haiti: economic growth"). Compared to the U.S, this farm size is drastically smaller. In addition to the size of the farms, the average person who is struggling makes about or below \$1.25 per day, this is seen mostly in rural areas. This demonstrates that the loss of production in agriculture is also connected to the low income in Haiti. If the families are having trouble producing the crops and they do not have the money to buy any resources to help grow/buy food, then that can lead to further poverty. The current population of Haiti is about 11,484,453 as of Wednesday, February 3, 2021 and about 59% of their population lives below the poverty line ("Haiti - population"). Some foods that are primarily the major items exported by Haiti include bananas, oil, cocoa, coffee and mangoes. When it comes to agriculture, the rates of production are much smaller than the rates of imports because their soil is not giving the resources needed to sustain growing crops, mostly due to the rugged terrain.

A typical family size is about four people in each household; the majority of all rural housing consists of two-room dwellings. Those dwellings have mud walls, floors and roofs that are also layered and covered with their local palm leaves ("Haiti- Housing"). In most dwellings there is no electricity or piped water; sanitation facilities often consist of a simple outhouse distance from the living space. The average living space and living conditions in Haiti is very different from some you might see in the United States. Studies show that only a small amount of the population has access to electricity, and those who do rarely have it all day, every day (Soret). This problem can also affect the government. With many being unable to pay for electricity, this has left the Haitian government to make less money, making it a budgetary crisis.

In Haiti, education is considered free; however, only half of the children are enrolled in primary school. According to an expert on children rights and resources the reason is because "92% of schools are private,

leaving most families unable to pay school fees” (Soret). In addition to the school fees many of the needed resources to attend the schools are very expensive leaving almost the whole education very unaffordable. Along with school expenses, the annual per capita public health spending in Haiti is \$13 and for most people this is very affordable; however, living on only a dollar a day spending 13 dollars is quite expensive. Most people usually do not spend that money on healthcare. By looking at Haiti's infant mortality rate, one can see that healthcare is not a very common thing. According to research, Haiti's infant mortality rate is extremely high with a staggering 52.2 per 1,000 live births (Haiti - infant mortality rate). This is most likely due because of the lack of accessible healthcare mixed with the overwhelming amount of poverty.

Haiti's soil infertility is becoming worse due to many problems. The recent storms that come through the area brings flooding along with it, washing even more topsoil into the sea. Haiti's soil is already infertile; the storms are just adding to the problems. Environmental degradation is a critical concern in Haiti, which poses a serious threat to many Haitian citizens. At this rate Haiti's cultivated land will begin to decline, making even less space to grow the crops. Due to the soil erosion, jobs are becoming more scarce providing the farmers with nothing. Women are the main face of agriculture, because of the decline in crop production, they are taking almost no money home to their families. With less money being taken in, food scarcity can become a bigger problem. Malnutrition in children is also very common, according to studies 264,000 children under 5 years suffer from chronic malnutrition (“Haiti: nutrition profile”). With the decrease in crop production mixed with even less money being made, many more children could suffer from malnutrition. Malnutrition is seen vastly over Haiti, the effects seen from malnutrition on adults and children are significantly getting worse.

Farming as a whole makes up the basic fabric of rural life. Contributing significantly to the overall state of rural regions in terms of employment and other business opportunities for the people of Haiti (Satterthwaite). Rural populations rely on agriculture to provide not only for the economy but for their families, because of the soil erosion the struggles of farming has greatly increased. To go along those lines, research done by Country Studies talks about how “75 percent Haiti's population lives in rural areas, while only 25 percent remained in urban areas; this was one of the lowest urban-to-rural population ratios in Latin America and the Caribbean”(“Haiti- Population”). This goes to show how many people in the rural areas live with the effects of soil erosion. Even though the soil erosion affects a big part of rural areas the smaller part of urban areas are also affected just as much.

Urban populations are also greatly affected by this unsustainable agriculture. As urban areas grow, it is hard to sustain the need for resources. According to research, the interactions between humans and the way they live/their physical surroundings have significantly influenced the way the environment is affected (Manisalidis). Haiti's most struggling cities are also seen to be the most overpopulated. This is because poverty and overpopulation makes Haiti more prone to environmental degradation, therefore making the agriculture sector even less likely to provide Haiti with the resources the citizens need to survive. With the lack of help from government management, urban environmental quality is further reduced. Many barriers are also in the way of making the government able to implement solutions. For example, because of many tropical storms that come through that harms the soil, it can make it hard to implement solutions. However, even still, no precautions to help the erosion have been made. Citizens however, can help influence the government to take action. For example, there are many ways citizens'

voices can be heard, one is writing or signing a petition. This tells representatives how members of the public are feeling about an issue, which in this case is very important. Another way to encourage the government is informing the media, whether it is through the newspaper, radio or television, this is the main way that information is spread to our representatives and other people around the world. These are both great ways to address information to help eliminate soil erosion.

Numerous organizations such as "OXFAM", "Better Universe and Citizens" and "The Land Institute" have recognized Haiti's situation and have set out to try to help. They all have worked to establish a more sustainable movements and ideas when it comes to trying to stop soil erosion. "Better Universe and Citizens" have created a group that helps plant grass in places, specifically perennial grass around houses, churches, schools, and other public buildings. This is extremely important when it comes to building up Haiti's soil and improving the economy. With the help of these organizations the economy can greatly improve. This will not only help the people but also the economy, because with the better soil comes better chances of growing crops, this is why perennials are so important.

One characteristic in perennial grass that makes it so special is its dense roots. The dense roots work and protect the soil from being eroded. It is also a valuable plant for soil convection. According to the research administered by Karste and many others, they have seen that the majority of the most fertile and deep agricultural soils of the world were formed under natural perennial grasslands, "whose deep root systems accumulated organic matter in the soil which contributed many beneficial soil properties, as well as carbon sequestration" ("Soil erosion"). This program has also gotten Haiti's local citizens to help plant grass as well. Because the mountainous parts of the country are the worst affected by soil erosion, they are also looking into planting this perennial grass in the mountains for even better and dependabel soil. Teaching Haitians how to adapt to these new techniques is very important, they need to learn how it will help their community so that the benefits to these grasses can really start to take place.

The reliability from these perennial grasses can ensure better agriculture to eliminate soil erosion. Planting perennial grasses near Haiti's farms or even all over can greatly help Haiti's land. Research done by Penn State's College has shown that perennials allocate a high proportion of their growth to vegetative structures and regrow for many years, they can: 1. Protect soil from erosion; 2. Return organic matter to the soil, providing multiple soil health benefits; and 3. Remove carbon dioxide from the atmosphere, potentially sequestering (storing) carbon in the soil or aboveground plant biomass" ("Perennial and soil"). Along with the multiple health benefits, these perennial grasses themselves take carbon out of the atmosphere and store it in their stems and leaves, ultimately feeding the soil microbiome. Haiti only gets a few months of rainfall, however, these plants can absorb the rain that falls and water that is already in the soil. The likelihood of these plants drying out is very slim, however if the plants do die in the dry seasons, then these organizations can fund to buy seeds. Seeds are very inexpensive and with the organizations it will be very easy to get. Perennial grasses would make farming much more efficient and reliable. This organization could create a system that would better Haiti for the long run.

Making sure that Haiti's soil becomes fertile and sustainable, money needs to be taken into consideration. Funding would need to be a big part in this solution. There are multiple chances for these organizations to receive grants to help this project really take off. One organization that would help is USAID. Established in 1961, USAID invests in "economic development in countries" ("Agriculture and food") to ensure that

these countries are producing enough resources to survive, "USAID is advancing global food security by helping families and individuals meet their need for a reliable source of quality food and sufficient resources to produce or purchase" ("Agriculture and food"). More importantly USAID has helped many others in various parts of the world with agricultural problems. A video on the USAID's web page shows how they have helped, particularly a woman named Shova, a farmer that lives in Nepal with her situation. After the earthquake in Nepal struck in 2015, Shova was worried that her country might never recover. However, by providing immediate disaster response, humanitarian assistance and even training in farming practices, this organization was able to lift Shova and her community up, rebuilding the once destroyed country. USAID has partnered with Nepal, taking a "holistic" approach. By partnering with Nepal they are aiming for having sustainable progress with their rebuilding. With help from USAID, this organization can work with local farmers, like they did with Shova, to decrease poverty, help increase crop production, and with their grants, help make Haiti's soil fertile once again. USAID also helps countries overcome problems with human rights, education, gender equality/women empowerment and even water sanitation. With the help of this organization most of Haiti's issues can become completely solved along with becoming sustainable.

Along with this larger organization, there are also some local ones that have tried to help with Haiti's problems such as IFAD. This organization works to improve rural living conditions and rural food production. IFAD has worked to "develop strategies, methodologies and support mechanisms to ensure the inclusion of the rural poor in development processes" ("Haiti - Central Africa"). Specifically speaking they have promoted climate-smart agriculture and even worked on "investing in human capital development, building the capacity of rural associations and watershed management committees to communicate their needs and manage their productive initiatives more effectively" ("Haiti - Central Africa"). This project done by IFAD can greatly impact Haiti's agriculture and food security by improving their soil.

The people of Haiti have been struggling with their soil and proper food security for years. Ever since French colonizers destroyed many acres of land, soil erosion in Haiti's country has been gradually becoming worse. By planting perennial grasses around Haiti's farms and towns, it will greatly improve agricultural production and therefore decrease poverty, overall eliminating food insecurity everywhere in Haiti. Food insecurity and soil erosion will no longer be a problem that many Haitians have to live with.



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