

Surabhi Sharma
4-H Youth Development
Jersey City, New Jersey, United States of America
Haiti, Sustainable Agriculture

Combating Food Insecurity in Haiti Using Sustainable Agriculture

Food insecurity is a critical issue in Haiti. According to the World Food Programme, as of 2024, nearly 5.4 million people - about half of the population - suffer from acute hunger, representing a nearly three-fold increase since 2016. Multiple factors can account for this dramatic rise, namely rampant armed violence and chronic political instability; only worsened by frequent natural disasters, such as earthquakes, hurricanes, and floods. It is clear that decisive action must be taken to curtail this crisis and alleviate the suffering of the Haitian people. A viable method for promoting food availability is sustainable agriculture, specifically through the implementation of agroforestry on farms by leveraging farmers' clubs to disseminate these farming techniques.

Background

Haiti occupies the western three-eighths of Hispaniola, an island situated in the Caribbean Sea. It has a subtropical climate, characterized by high temperatures and humidity. Mountain ranges dominate the country's terrain, accounting for over seventy-five percent of its land area (Interactive Country Fiches, "Haiti"). As a result, agricultural activity is centralized in river valleys and coastal flatlands. These areas are extremely vulnerable to extreme weather events, namely floods (Climate Knowledge Portal). Climate change has only exacerbated the intensity and impacts of these events. Floods and droughts are becoming more frequent, resulting in deaths and forced displacement. Moreover, the disruption of seasonal patterns caused by climate change has significantly reduced crop yields and even resulted in the extinction of some native fruit crops, such as the sweet orange in Camp-Perrin from the Southern Department of Haiti (UNICEF). The Global Economic Forum has reported that rises in sea level, also caused by climate change; are expected to increase the regularity of high-tide flooding.

This is concerning because agriculture is the backbone of Haiti's economy. The agricultural sector employs approximately two-thirds of the country's labor force and accounts for one-fourth of the Gross Domestic Product (Girault et al.). Most of Haiti's farms are small, averaging about 3.5 acres or 1.5 hectares of land (Encyclopedia of the Nations). These farms tend to be modest, family-run enterprises; and families often depend on the food they grow in these farms for sustenance. Despite the prevalence of agriculture in Haiti's economy, its growing population greatly exceeds domestic food production; meaning the nation imports almost 50% of its entire food supply (Le Monde International).

Over the past two decades, Haiti has undergone rapid urbanization. As of 2025, more than half of Haiti's population lives in cities or towns, compared to the 1950s, where more than 90 percent resided in the countryside (World Bank Group). This has created immense demand for land and resources, which has caused extensive environmental degradation. For example, necessity for fuel has resulted in deforestation. Most Haitians cannot afford alternative sources for fuel energy, meaning wood burning is the primary method for meeting energy needs (DGB Group). As a result, Haiti has lost a significant amount of its forest cover, with one 2018 study asserting less

than one percent of the country's original forest cover still remains (Hedges et al.). This, in turn, has caused many other issues; including soil erosion. Soil erosion has greatly reduced the amount of fertile land available for cultivation in Haiti. The Institute for Public Health at Washington University at St. Louis reported that there was 15.25 percent decline in arable land from 2018 to 2019, largely due to soil erosion. On top of that, deforestation is shown to increase damages wreaked by floods. In their 2024 study of the Haitian city of Cap-Haïtien, Louis et al. found that the drastic decline in forest cover in Haiti worsened the structural damage caused by flash floods and other extreme weather events. Urbanization in Haiti is only poised to accelerate, with the Global Facility for Disaster Reduction and Recovery estimating that Haiti's urban population will surge from 6 million to 11 million by 2050.

Haiti is the poorest country in the Latin American and Caribbean (LAC) region. More than six out of ten people live in poverty (International Fund for Agricultural Development). The current average daily wage for Haitians is \$1.71, considerably lower than the nationally-mandated minimum wage of \$3.00 (My Neighbor's Children). Critical human health infrastructure is inaccessible to many Haitians. Over 95 percent of Haiti's hospitals are in Port-au-Prince, meaning healthcare is unavailable, or at least extremely hard to obtain, for those who do not live in the city. However, many hospitals are non-operational due to a lack of funding and attacks by gangs (Associated Press). Sanitation facilities are practically non-existent: in 2013, the Joint Monitoring Programme for Water Supply and Sanitation reported that less than 10 percent of drinking water dispensed to Haitians went through any treatment processes, leaving many vulnerable to diseases such as cholera. Energy access is a persistent problem - in 2022, Port-au-Prince received less than 20 hours of energy a day; and prolonged power shortages are common. Most rural areas have no access to electricity. Haiti's education system is similarly dismal: more than 250,000 children aged 6 to 11 and 65,000 youth aged 12 to 14 are not enrolled in school, mainly for financial reasons (World Bank). To boot, Haiti has the highest rate of illiteracy in the Western Hemisphere; with 40 percent of the population unable to read and write.

Haiti's ability to support its population depends on the fortification of its agricultural industry. Sustainable farming practices can offset many of the pressures experienced by farmers in Haiti by protecting the country's farmland.

Solution

Agroforestry is the purposeful integration of trees and shrubs into crop farming systems (U.S. Department of Agriculture). According to Michael A. Gold, Associate Director of the Center for Agroforestry at the University of Missouri, the primary purpose of agroforestry is to attain a larger and more ecologically diverse crop yield by establishing a mutualistic relationship between its components. Agroforestry is shown to have a plethora of benefits on the environment. Firstly, the incorporation of trees improves soil structure by protecting the soil from human disturbance. It is also shown to increase the amount of organic matter in the soil, which improves the nutrient quality of harvested crops (ATTRA). Additionally, agroforestry has been shown to induce carbon sequestration, which is the removal of carbon dioxide (CO₂) from the Earth's atmosphere (Nair et al.). By reducing the amount of heat trapped near the Earth's surfaces, extreme weather conditions associated with global warming can be moderated; and therefore protect the nation's farmland. The merits of agroforestry on the economy should not be overlooked. Agroforestry diversifies farmers' income sources by producing timber, fruit, nuts,

and other non-timber forest products alongside traditional crops. This can have long-term positive effects on the financial security of rural communities in Haiti.

One widely-used form of agroforestry is alley cropping. In this system, trees and shrubs are planted in organized rows. Alley cropping is particularly useful for farmers who want to grow multiple crops on the same acreage, which is an effective way to increase crop yield (US Forest Service). Plantation monoculture, or the cultivation of a singular crop in a given area, is an unsuitable practice; given that it rapidly exhausts soil nutrients and fastens soil erosion (Augustin). This is especially true in Haiti's case, considering the weak development of the country's soils and its susceptibility to erosive processes. In fact, this practice has precedence in Haiti. From 1987 to 1991, the Pan-American Development Foundation (PADF) provided over 200,000 farmers with native fruit-tree seedlings and encouraged them to utilize alley cropping. The experiment was a success: many of the farmers were able to harvest a wide range of crops. Not only that, but they were able to do so in an extensive range of settings; including on mountainous slopes (McClintock). To conclude, alley cropping is a uniquely effective method for making farming more efficient in Haiti; as it addresses issues that uniquely impact the country.

An integral aspect of successfully adopting these practices is teaching them to farmers. Many past initiatives aimed at improving the lives of Haitians have failed, for numerous reasons. For example, in the 1980s, the U.S. The Agency for International Development (USAID) attempted to eradicate swine fever from affecting Haiti by killing all of the native pigs. This, understandably, only fostered resentment amongst the Haitian people and influenced feelings of distrust towards foreign aid (McClintock). Therefore, it is absolutely necessary that programs created for this purpose consider the thoughts and feelings of Haitians.

A possible approach for this are fathers' clubs. Fathers' clubs have existed in Haiti since at least 1981, and are organized by local health organizations, such as the Haitian Health Foundation (HHF). These clubs are aimed at educating fathers from rural families about child and family health. The presence of fathers' clubs in a child's birth village has had a positive effect on the child's vaccination status, growth, and vitamin A supplementation (Sloand et al.) An expansion of fathers' clubs to encompass topics pertaining to sustainable farming would be ideal, as fathers' clubs are trusted institutions throughout Haiti and are commonplace throughout rural Haiti.

Similar programs have found success internationally. For example, in Nicaragua, the farmers' association Asociación de Pueblos Comunitarios (PAC) - which is supported by the Whole Planet Foundation, which was founded by the Whole Foods Market - works to break the cycle of poverty in underserved farming communities by offering services including "training, quality improvement, access to credit, harvest collection, post-harvest services, and commercialization" (APAC). Agricultural advocacy group SeedChange has reported that the program has enabled farmers in drought-prone regions to grow the food they need in spite of difficult climatic conditions and avoid market exploitation by setting up their own sales stands. The success of PAC is a promising sign for fathers' clubs in Haiti, as both countries struggle with industrialization-induced land loss and poor public infrastructure and have economies which are dependent on agriculture (The World Factbook).

However, some changes can be made to maximize the reach and impact of fathers' clubs. Firstly, fathers' clubs only offer participation to men; meaning that female farmers are disadvantaged. Allowing women to join these clubs will enable them to establish financial independence, a valuable step in overcoming gender-based inequality. Additionally, there is the crucial question of who will teach these classes and construct the syllabi. According to Sloand, the World Health Organization (WHO) and UNICEF currently provide the curriculum for fathers' clubs; so it is not out of the realm of possibility that foreign aid organizations can be involved in supporting them. I believe that the Food and Agriculture Organization of the United Nations (FAO) or USAID's Bureau for Humanitarian Assistance (USAID/BHA) are ideal candidates for supporting this project, as they are outfitted to design and execute large-scale assignments. However, in the future, management of fathers' clubs should be transferred to a Haitian organization, such as the HHH. This will allow Haiti to become self-sufficient by avoiding over-reliance on foreign aid groups.

Another way to improve outreach is to establish an online presence. To this end, I created an app that can be used by farmers in fathers' clubs to learn from each other and form a community. The app is called "Zanmi Tè", which is Haitian Creole for "Friend of the Land". The central objective of Zanmi Tè is to facilitate peer-to-peer sharing amongst Haitian farmers and provide practical, easy-to-understand educational resources to learn about agroforestry. The main languages of Zanmi Tè are Haitian Creole and French.

Attached below are some screenshots of Zanmi Tè. The text is in English so it can be understood for the sake of this paper. It is a work in progress. The app was designed and coded by Surabhi Sharma, and the intellectual property belongs to her.

Figure 1.1

On the home page, users can share their success stories through real-time updates.



Figure 1.2

Users can join discussion circles, which are tied to local farmers' clubs. They can also create and share their own photo diaries to catalog the growth of their farms.



Figure 1.3

Users can record and post voice or video tips to give advice to their fellow farmers. They can also ask questions if they need help.

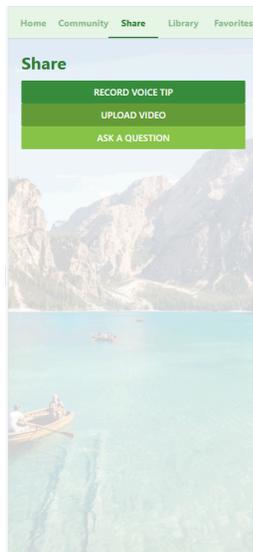


Figure 1.4

The Library section will have guides on agroforestry practices users can refer to independently, as well as information on what sustainable farming is and how it can help them keep their farms healthy.

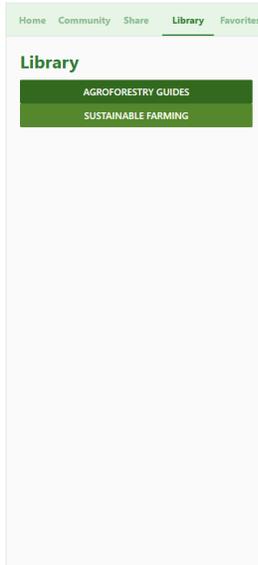
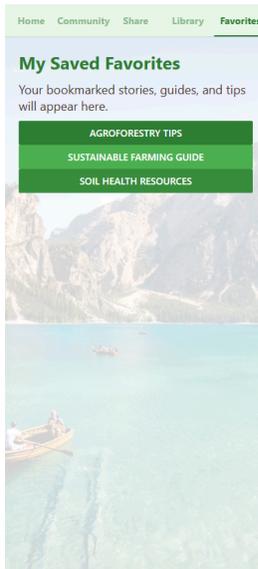


Figure 1.5

Users can bookmark their favorite resources so they can come back to them in the future.



Currently, the greatest roadblock to releasing Zanmi Tè is accessibility. Firstly, the Internet is not widely available in rural Haiti (TS2). For this reason, the app can be used without Internet access, meaning it can be used by anybody with an electronic device. Additionally, as aforementioned, many Haitians are illiterate. Therefore, educational resources on the app will utilize visual aids so they can be understood by everyone.

Conclusion

Given the environmental and socio-political challenges Haiti faces, action must be taken to ensure the well-being of its people. Through adoption of a two-pronged solution - the incorporation of agroforestry onto farms and an expansion of fathers' clubs to include information about these new techniques - food insecurity and its disastrous effects can be counteracted.

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