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Haiti: How Life Essentials Must Supersede Sustainable Agriculture

“It is easy to throw anything into the river, but difficult to take it out again.” — Kashmiri proverb

When the average citizen of the United States considers health and nutrition, the process revolves around what choices are made for food, perhaps the frequency of bathing, and the regular schedules that enable health professionals to monitor our well being. In Haiti, the thought process is much different. Through natural disaster, governmental limitations, and disease, the question of health in Haiti revolves around multiple topics. Weather patterns and natural disasters have devastated Haitian infrastructure and provided cause for unhealthy conditions in the past decade. Haiti is only 10,714 square miles, making it slightly smaller than the U.S. state of Maryland. It is part of the islands of the Caribbean, and the second largest of this chain. The population continues to grow, despite the problems that this country has experienced. A birth rate of 24.4 per 1000 population exceeds the death rate of 8.21 deaths per 1000 population, based on 2011 census data. Haiti receives its name from the Taino Indians meaning “mountainous country”, primarily of a calcarious nature. Over 60% of the countries almost 8 million people live in rural sectors or hamlets. This equates to more than 4 million people living in the rural areas and tied with countries resources to supply sustenance to maintain marginal health by United States standards. The climate is mild in Haiti and differs at various altitudes. A tectonic fault line runs through the country, causing occasional and sometimes devastating earthquakes. The island is also located within the Caribbean hurricane belt. Haiti is susceptible to sudden disasters, making the farmers unwilling to invest too much in their farming operations. These conditions only compound the general state of health as quality and variety of food hamper the body's need for nutrition. This is then worsened by the inability for much of the nation to receive potable water, or that which is fit for human consumption. Often times contaminated with effluent from run-off or contamination, controlling sewage and water are too often a mixed end product. In each household, the family will consist of parents and children, which are sometimes adopted. Grandparents also sometime live with their children and grandchildren. The husband is in charge of maintaining the garden and tending to livestock. The woman is assigned the role as the manager of the house. She controls the property and the decision-making as to what the funds of the garden and livestock will go towards.

Although Haitians use farming as the main way to feed their families, they do not eat the crops that they produce. Families typically sell much of the food harvested in regional open-air markets and then take the income and use it to buy household foods. Some of these foods include sweet potatoes, yams, corn, rice, coffee, and bread. Haitian farmers grow a decent amount of food locally, however the country is heavily dependent on imported food. The United States is the largest contributor to the country sending mostly rice, flour, and beans. The United States also sends more luxurious items like bicycles, vehicles, and clothes. Land owned by farmers is normally around three acres, and it is uncommon for a household to not own land because of the dependency on it. Land is normally traded and inherited without the use of official documentation. Because of this, members of the same families have recently gotten into fights with one another leading to bloodshed.

The majority of Haitians will have their first meal in the morning, which consists of an egg, coffee, and bread. Then they will have a larger meal in the afternoon, which is their main carbohydrate source. This is normally made up of rice, manioc, or sweet potatoes. Because of their location, there is also a lot of fish included in their diets, along with the occasional amount of beef or mutton. More common meats are poultry, goat, and fish. Families that are not wealthy eat wherever they feel comfortable, while more

wealthy families generally eat together. Haitians eat fruit between meals as a prized snack. People that suffer from malnutrition typically know about their dietary needs, but because of the availability of food due to poverty. One of the reasons that people sell the crop that they raised is so that they can use the money to buy more nutritious food. Sugar cane is the primary crop grown in Haiti, with sustenance crops of beans and rice being secondary to this cash crop. The elite 3% of the land owners in Haiti produce crops for export, while the nation as a whole is a net agricultural importer. Laborers receive less than one dollar per day for harvesting these crops.

The infrastructure of Haiti is in extremely bad shape at the moment. Efforts to improve this problem have been underway since 1915, but it is in no better shape now than what it was 100 years ago. The infrastructure supports on-farm production, such as irrigation, energy, transportation, and storage before and after the harvest. This enables producers to move quickly from the farm to processing facilities or the market. Infrastructure is not limited to just these items. Telecommunications to cover markets, and agro-processing and packaging facilities enable products to move rapidly and efficiently from production sites to markets and ports. These are lacking in the Haitian infrastructure. Due to a lack of private and governmental support in these areas, for the near future, Haitian producers will be confined to current marketing strategies for their commodities that reach beyond the excess of personal consumption.

In Haiti, a major concern is the sanitation infrastructure. Recent epidemic outbreaks of cholera have been responsible for more than 8,000 deaths and nearly 648,000 people infected, according to the ministry of health. A ten-year plan was established by the United Nations, but was unable to implement plans to date. The goal was to increase toilets to 90% of the population from a mere 27% of the population. Potable water was accessible to only 69% of Haiti's population. The goal was to increase this to 85% in the ten year range. In the central region of the rural Central Plateau, the worst level of cholera illness, the cases are double that of the national average. Haiti's first wastewater treatment plant, located in the hills of Morne a' Cabrit, now processes 30 to 40 drums of sewage per day rather than dumping raw sewage in the Port-au-Prince's junkyard.

There is a specific link between several key components in Haiti regarding the previous mentioned concerns. First and foremost, without a profitable method to generate income, Haiti will doubtfully be able to create a funding source for improved water and sewage treatment facilities. In order for Haiti to prosper, it needs a population that can maintain health, receive income from commodities, or development of skilled labor. With restricted natural resources, the odds of Haiti becoming a manufacturing center are slim. Therefore, Haiti will need to devise a plan to control the first order of business to provide for security for her people: safe, accessible, and plentiful water to all regions of the country. This includes a disposal method of waste and refuse, as well. Just like a fine tuned engine, not only do inputs need to be managed, but also outputs need to be controlled. Due to uncertain weather patterns, fresh water supplies are crucial for providing rural areas with necessary water for irrigation of farm crops.

Health care in Haiti is extremely poor right now. The average life expectancy is 71 at the moment. In 1999, the life expectancy was less than 51 years. There are also an estimated 11 percent of people from age twenty-two to forty-four that have HIV. Even though it has improved dramatically in recent years, hospitals still need lots of improvement. The hospitals that they do have are extremely understaffed and they don't have very good funding. For every 8,000 citizens, there is only one doctor. Because of this shortage of doctors and general health care, it is important that Haiti find improvements for sanitation and potable water. This would relieve some pressure off of health care.

The government of Haiti is aware of the needs for improved water and sanitation. The series of hurricanes that hit the country in 2008 caused a major loss in investments, worsening the budget of the already low funding going towards water and sanitation. A good part of the Haitian government's

funding goes towards electric power generating plants. In the past ten years, three new thermal power plants were built and put into use. The main reason that this is not a good place for Haiti to invest in is because the company is not only not making any money, but that they are selling their generated electricity for half of what it costs to generate it. This causes them to lose an extreme amount of money, taking a large amount of Haiti's national budget to cover the losses. The power company has such high expense in generating electricity because they use diesel fuel to power their systems. Another reason for the substantial losses are that the company only receives compensation for around 50 percent of the electricity that it generates due to theft and people not paying their bills. Because of this large loss of money, two of the plants shut down in 2009. In order to fix sanitation and potable water, energy is needed. While money is being spent on electricity, it is not being spent on water treatment facilities. Questions have arose from money use that has been donated by foreign governments and charitable organizations. Governmental corruption has been the focus on these blames. Resolving poor control of sewer, or actually not having sewer containment at all, as in the rural areas, will greatly affect the condition of fouled drinking water. Treatment facilities for Haiti's sanitation and drinking water need to be created in a fashion that allow for three factors: inexpensive operation, efficient use of natural facilities, and ease of creation.

The chemistry of human waste is simple, however the chemistry in treating it is complicated. Human waste consists of primarily proteins, carbohydrates, and fats. These, in themselves, provide a perfect diet for microbial digestion. Sullage, or waste that comes from other materials such as soaps, grease, and various chemicals, also make up wastewater. Combining these semi-solid materials with potentially pathogenic infectious diseases, creates the problem. Infectious disease thrives in these environments. If left to infiltrate drinking water or to cross contaminate food through inappropriate disposal or fertilization methods, epidemics are sure to occur. A basic method of handling sewer waste is to catch it, contain it, oxygenate it, and then control the solid disposal. Concentration of wastewater is much higher in Haiti, as with most tropical communities, as the average water consumption is only 40-100 l/person per day. As compared with the US consumption of 350-400 l/day, our effluent is considered weak, and easier to decompose.

Construction of holding ponds is a possibility with the soil profile of Haiti. Lining basins with clay would allow for controlling wastewater percolation. Collection basins that could be managed through filtering of overflow through saline ponds would help to reduce bacteria output of many pathogenic diseases. Bacteria that infect the Haitian population from poor sanitation cannot live in saline water. These systems are relatively inexpensive to create and to manage. Continual government regulation would be required, however, and this has proven to be difficult to date.

Haiti has had many natural and man-made disasters. Through years of slave driven control to sequential natural disasters, one of the poorest regions on earth has been oppressed by the inability of inhabitants to be healthy, receive basic essentials necessary for life, and receive just assistance from their government. Much of the land has been robbed of natural forested areas to provide for fuel. Wood and charcoal are the primary fuel source for over 3 million people. Erosion has become a problem when torrential rains occur seasonally on open land. Producing crops that can weigh the test of these problems is of concern. A land that has rich soils, a work force, temperatures that are adequate for a variety of agronomy, and proven, yet fundamental production practices are not the problems that Haiti faces. Haiti faces a fundamental problem with infrastructure to provide for sanitation of fresh water and sewer. Rainfall is adequate, but comes in either a feast or famine volume. The ability to provide for irrigation would multiply agronomic output. Recommendations include assistance with monitoring private and governmental donations, education in water and sanitation engineering, and improved sustenance farming that provides for long term food security, rather than the current sugar cane export.

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