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Haiti, Factor 11: Malnutrition

A Promising Solution for Solving Malnutrition: The Miracle Tree That Can Save Millions of Haitian Lives

Nobel laureate, agronomist and humanitarian Norman Ernest Borlaug stated, "Food is the moral right of all who are born into this world." The burning question is; if this is true then why do 100,000 children suffer from malnutrition in Haiti despite its rich resources and cultural heritage (World Food Programme)? Once referred as the "Pearl of the Antilles" for its natural beauty and inhabitants, the island is now known for devastations such as earthquakes, disease outbreak, crime and poverty (Delices).

Haiti's has a population of 10 million people out of which 2.5 million live under extreme poverty conditions (World Food Programme). Haiti ranks extremely low in the United Nation's Human Development Index as it stands 146th out 177 countries for the 2007/2008 study (International Fund for Agricultural Development). Haiti's overall poverty rate is 77 percent. In rural areas, which accounts for 52 percent of the country's population, 88 percent of the population is poor and 67 percent live in extreme poverty ("Rural Poverty in Haiti"). Food insecurity, the malnutrition crisis, and devastating natural disasters are some important key factors that contribute to the hardships that Haiti faces on its way to recovery and development.

Food insecurity in Haiti is a systemic issue that contributes to the already chronic socioeconomic disparities that are prevalent in the nation. Access to sufficient quantities of nutritious food remains an issue for millions of Haitians. An estimated 3.8 million Haitians are food insecure (World Food Programme). A Haitian family size consists of two parents who conceive on average 6-8 children, and possibly an extended family. Their two meals a day usually consists of rice and bean accompanying traditional, rural foods of sweet potatoes, manioc, yams and corn. A typical farm sizes range from 2-2.5 acres and consists of crops such as corn, tomatoes, sweet potatoes, cassava, beans, vegetables, plantains, bananas and livestock (USAID). Despite the agricultural diversity of rural food production, majority of Haitians suffer from malnutrition.

Therefore the burden of food insecurity is a vicious cycle as pregnant women are at greater risk of contracting disease and obtaining micronutrient deficiencies. Iron and vitamin A deficiencies have been identified as a contributing factor for global disease. Affecting approximately 2 billion people worldwide, iron deficiency in pregnancy corresponds to intra-uterine brain damage and possible fetal wastage. Globally, vitamin A deficiency (VAD) is responsible for 800,000 deaths in children and women annually (Bulletin). This is global issue extends to the current Haitian public health crisis.

For centuries, Haiti has struggled to combat infectious diseases that claim thousands of lives yearly. Rural regions are greatly populated as majority of Haiti is not yet urbanized. These densely populated areas are primarily poverty stricken and are vectors of diseases. Water and food borne diseases such as bacterial and protozoal diarrhea, hepatitis A and E, and typhoid fever are still prevalent throughout the nation. Some vector bone diseases include dengue fever and malaria ("The World Factbook"). Lack of persistent access to nutritious food and clean drinking water has jeopardized the health and wellbeing of the millions of lives that populate Haiti up to this date. The agriculture sector plays an important role in Haitian livelihood, however years of environmental degradation and weak economy has resulted in lack of improvement in agricultural practices.

Agriculture is one of the largest sectors of the Haitian economy as it constitutes 24.7 percent of the gross domestic product ("The World Factbook"). Haiti is comprised of mountainous terrain that previously

were lush rainforests. Haiti is on the track of urbanization; however rural regions are densely populated and are the areas where cyclic poverty is most prominent (“Rural Poverty in Haiti”). Haiti has a limited amount of cultivated land due to environmental degradation, years of soil erosion and the severe weather such as flooding, hurricanes and earthquakes have prevented improvements in agricultural techniques (“Government and Environmental Degradation in Haiti”). Haiti does not produce enough food to feed its people; in fact 60 percent of the crops are imported. In most cases, farmers practice the method of subsistence farming, which entails growing and utilizing enough crops to feed a large family and leaving little to sell in markets (International Fund for Agricultural Development). There is potential for advances in the Haitian rural and urban lifestyle. However, due to lack of access to micro lending and credit and improvements in innovative agricultural techniques, Haiti’s conditions will only worsen if action is not taken.

The big questions still pending: does Haiti have any long term sustainable solutions to this continuous crisis of malnutrition? Can pregnant mothers, infants and young children have a promising healthy life? Does access to adequate food become a human right concern for Haitian people? Is there a source of food that allows Haitians to meet their daily nutritional value? The answer to all these problems lies in a miracle plant called the *Moringa oleifera* tree. Though native to the Indian subcontinent and Africa, the tree has been introduced to other tropical areas of the world (Price).

The Moringa tree grows best in dry conditions requiring very low care and water. Nutritional analyses show that the leaves from this tree are high in protein, vitamin A and C, potassium, and calcium. The plant also contains 18 essential amino acids; Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Threonine, Tryptophan, Valine, Alanine, Arginine, Aspartic Acid, Cysteine, Glutamic Acid, Glycine, Histidine, Serine, Proline, Tyrosine that are especially important for children’s diets (Fisher). Moringa's nutritional properties are incredible, besides having potent medicinal properties; almost every part of the tree is edible. Fresh leaves from the Moringa tree have been shown to contain more than 4 times the amount of vitamin A of carrots, 7 times the vitamin C of oranges, 4 times the calcium of milk, 7 times the potassium of bananas, and twice the amount of protein of yogurt. They also contain large amounts of minerals and antioxidants. There is no plant based source of food out there that matches that the nutritional density of Moringa tree.

A case study was conducted by doctors in Bangalore, India in June and July of 2013 to give nutritional intervention in the form of *Moringa oleifera* powder to children for two months who suffered from protein energy malnutrition (PEM). Sixty children between the ages of 8-11 who presented with severe malnutrition, congestive heart disease, asthma, and renal problems were used in this study. There were 30 children in the nutritional intervention group (variable) who were given 15g of powdered Moringa leaf in their food twice a day for two months. The other 30 children were in the control group who were given normal food without the Moringa powder. The case study observed that 70 percent of children in the nutritional intervention group with grade II PEM improved to grade I. Additionally, 60 percent of children with grade I PEM showed significant improvement in their nutritional status. It was concluded that *Moringa oleifera* offers the nutritional necessities, and it is a sufficient malnutrition combatant (VS Srikanth, S Mangala, and G Subrahmanyam). This case study proves the scientific evidence of Moringa’s role in alleviating nutritional public health crisis.

Introduction of Moringa as a cash crop to Haiti on a national level is not a daunting challenge, as Moringa has already been introduced in the Haitian economy at a small scale level for a period of time. The challenge is in educating its citizens to adopt it into their daily food intake. Malnutrition is closely tied to access of adequate food, nutrition, income and education. The poverty level here can be measured in adult illiteracy. Since 2000-2011, the adult literacy rate increased from 39.5 percent to 49 percent (“Adult Literacy Rate”). However basic skills and low performance in education is still prevalent. Sound nutritional habits can become permanent if children and women were educated. Early nutritional

counselling and education can be the one of the most critical and successful strategy the government can undertake.

Though Haiti has made notable progress in reducing infant mortality by meeting the Millennium Development Goal presented by UNDP, malnutrition still impacts the health of pregnant women and infants (“UNDP Releases Haiti MDG Report”). This disparity has to be and can be further reduced through the intervention of nutritional education and incorporating Moringa intake as a supplement into daily diets.

Reforestation and strengthening sustained agricultural practices has not only become national priority for the government of Haiti but also for local and international nongovernmental organizations and development agencies. Institutional strengthening in the agricultural, health and education sector by forming partnerships to combat malnutrition as a Haitian epidemic has to be a national and international priority. All of the key stakeholders have to collaborate: from the Haitian government, to the framers, to local and international nongovernmental agencies, to micro lending agencies, to private sectors and corporations, and to its local citizens. The international community must give foreign aid and assistance in addressing food security.

Another successful strategy is to facilitate the disbursement of Moringa tree practices, by focusing on empowering locals and community healthcare workers to take lead in the distributing of seeds and the knowledge of its health. The most successful promotion of Moringa tree occurs when community members witness the various benefits of Moringa first hand. Access to markets is the critical factor in income generation from the Moringa products.

One such key stakeholder is Smallholder Farmers Alliance (SFA) that has started implementing innovative, market-based agricultural programs. The goals of planting tree crops by small scale farmers in Haiti is to reforest, create sustained income generation and increase production of food. In this scenario the Moringa tree fits the need of Haitian people, as its by-products which are derived from the tree can be a substantial means of additional source of nutrition as well as cash income. Once planted, the Moringa tree sends its roots down to the water table, making it drought tolerant. It is also a nitrogen fixer and its leaves can be used as a fertilizer. The seed oil is a good clean source of biofuel as well. The seed of the Moringa is very effective in clarifying and cleaning contaminated water (“MORINGA”). In addition to combating malnutrition, Moringa can become an easily implemented cost effective, readily available solution for the clean water crisis in Haiti.

Several international development organizations now play key roles in revamping the agricultural sector in Haiti, especially after decades of focusing on other sectors and delivering food aid which has been detrimental for food pricing for the Haitian local markets. Inter-American Development Bank has recently approved both a \$27 million land tenure security project and a \$15 million agricultural reform project. (O’Connor).

USAID also made food and economic security its primary objective of development in Haiti during the aftermath of the country’s 2010 earthquake. USAID should continue to extend its successful Feed the Future North project that looks to expand farmers' yields of primarily five key crops: corn, beans, rice, plantains and cocoa (O’Connor). USAID can diversify its investment to the undertaking of lending aid and technical assistance to local farmers in planting of the Moringa tree. This can be a national level campaign partnering with Farmer-to-Farmer in Haiti (FAMU). FAMU volunteers can work with the non-governmental organizations to build a strong small enterprise development program that focuses on developing small agro-enterprise of the Moringa tree and its by-products. The FAMU volunteers can

become the grassroots workers in educating the communities and masses of the great health benefits derived from the Moringa tree.

The World Food Programme has started its food aid procurement from local Haitian food markets and sources. However the key partner in strengthening the agricultural sector is the Haitian government, which unfortunately has a record of corruption and neglecting its farmers while relying on foreign aid for its bankrupted government budget (O'Connor). A Moringa seed disbursement program can be adopted by World Food Programme as a national policy implementation to promote nutritional self-sufficiency as it goes hand in hand with their existing program that supports local food producers in Haiti for the food aid program.

In order for the Haitian agricultural sector to evolve and strengthen, the microfinance and credit sector has to develop strong partnerships with all key stakeholders. Known as an alternative bank for the organized poor, Fonkoze, the local nongovernmental organization has become the leading micro credit lending agency. It maintains strong partnerships with the Agency for International Development, the United Nations, the Inter-American Development Bank and many more bilateral agencies for creating economic stability in the agricultural sector ("Fonkoze: Haiti's Largest Microfinance Institute").

Fonkoze has its presence in Haiti for 15 years where 99 percent of its members are women. Its outreach to its rural poor is well established. It is trying to meet the needs of the migration population moving from the rural country to the urban setting of Port-au-Prince. Its biggest success lies in working with microfinance programs, bettering the quality of lives of women and their families. The program, Chemen Lavi Miyò, which means "Pathway to a Better Life" in Haitian Creole, is testing a new approach to helping those living in extreme poverty to transition into a sustainable way of life. This intensive program addresses the need for generating new working opportunities with support, training and financial management. At the end of the training program, participants will be equipped with the skills and a business plan to move themselves out of poverty ("Fonkoze: Haiti's Largest Microfinance Institute"). Such an important key player can partner with the government and local agricultural communities, farmers and individuals to start a national level campaign for community and individual gardens both rural as well as for urban setting for planting of the Moringa tree.

Partners in Health, a U.S.-based nongovernmental agency has a long term positive presence in Haiti, impacting, improving and saving millions of lives. Under the dynamic leadership of Dr. Paul Farmer, the Abbott Fund has collaborated with Partners in Health to conquer the problem at its source by encouraging local communities to create innovative solutions to improve nutrition. The production of Nourimanba, which is a nutrient dense, peanut butter-based food to treat severe childhood malnutrition, has been successful in Haiti ("Abbott Fund- Projects - Haiti Malnutrition Project"). Partners in Health has a long standing relationship not only with the Haitian government but also with its United States counterpart, such as Clinton Foundation and Bill and Melinda Gates foundation in stabilizing the global public health sector crisis in Haiti. They can be instrumental in launching such powerful initiatives by duplicating similar actions of Nourimanba, by making Moringa available to local Haitian as an additional source of nutrition.

To successfully implement the Moringa Project, there must be nutritional and health care education to teach citizens about alternative food sources that have high nutritional value. Community gardens and potted plants for growing Moringa is an extremely viable option in promoting self-sustaining methods for food security. Education is important vital in preparing and empowering farmers and their offspring to make productive contributions to their society and economy. Local health care community workers can be agents of change by disseminating nutritional education.

Chronic malnutrition coincides with disease, as it causes high levels of susceptibility of contracting diseases as one's immune system is so weak it is unable to protect itself. Eliminating vitamin A

deficiency is a potential solution in obliterating malnutrition and micronutrient deficiencies in Haiti. As a result of improving nutrition, disease susceptibility will decrease as immune systems will be healthier. Moringa is the solution in reducing, if not eliminating disease related to malnutrition in Haiti.

It is apparent that a great simple solution in combating malnutrition lies in the implementation of planting Moringa trees as a national agricultural policy. The financial investment is at the core of this solution. The challenge now will be in structuring an efficient value chain; something which will only be possible through joint efforts by the private sector, including smallholders, associations and larger companies, and public institutions. This indeed can be done and is demonstrated by success stories from other countries, such as demonstrated in the case study conducted in Bangalore, India (VS Srikanth, S Mangala, and G Subrahmanyam).

Opening access to local and international markets for Moringa and its by-products can change the economic landscape of the Haitian economy. With such close proximity to United States, Moringa produced in Haiti can have a point of advantage in opening to international markets. Small agricultural enterprises can be highly instrumental in successfully cultivating the Moringa tree, not only to meet the nutritional needs of its local people but also cater to the other countries who suffer from the malnutrition crisis. Haiti's large youth are willing to improve the nation's standing and to end the political, social and economic turmoil that has plagued the nation for decades. As the eminent noble laureate Norman Ernest Borlaug stated, "We cannot build a peaceful world on empty stomachs and human misery." The developed countries of the world can join hands to end the malnutrition crisis and to give the Haitian people the well over due opportunity to regain their health and economy.

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