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Sierra Leone, Factor 11: Malnutrition

Blindsided by Ebola: Food Crisis Follows

Background

After being established by the British as a simple trading post in the 17th century, the land near modern day Freetown soon became known as Sierra Leone and changed from being used for the trade of timber, ivory, and slaves, to becoming a destination sought after by freed American slaves (Central Intelligence Agency, 2016). The colony of Sierra Leone continued to grow for many years until it eventually gained its independence from Great Britain in 1961 (British Broadcasting Corporation, 1961). Violence has always been a major part of Sierra Leone's history, and between the years of 1991-2002, a civil war broke out. Due to the forced recruitment of child soldiers during the war, nearly 6,000 children were forced into combat (Sierra Leone Truth and Reconciliation Commission, 2016). Not only children were affected by the atrocity, as an estimated 50,000 Sierra Leone adult citizens were killed and livestock in the region were almost completely wiped out (Gberie, 2005). After being assisted during the war by the United Nations, the new Sierra Leone government worked on various issues and began to make headway in areas such as food production. However, this progress came to a standstill in February 2014, when Sierra Leone fell victim to the worst Ebola outbreak the world had ever seen (Centers for Disease Control and Prevention, 2016).

Geography

Sierra Leone is located in western Africa and borders the countries of Guinea and Liberia. Just on its southern border lays the North Atlantic Ocean, which gives the country immediate access to trade. Sierra Leone borders the ocean for 402 kilometers and covers approximately 72,325 square kilometers of land (nearly half the size of Iowa), with 75% of that land being suitable for growing crops (Food and Agricultural Organization, 2012). This country includes many different ecological and agricultural zones, which has caused the lifestyles of many Sierra Leone citizens to be vastly different from one another. The four major physical regions of this country consist of the coastal plains, the interior plains, the interior plateau, and the Freetown Peninsula Mountains.

Sierra Leone has a tropical climate with only two main seasons. The first is a wet season lasting from May to October when the country gets 3,000-5,000 millimeters of rain every year. The second is a dry season lasting from November to April, which consists of very dry weather and humidity that averages above 80% for most of the year (Food and Agricultural Organization, 2012).

At one point, nearly 60% of Sierra Leone's land was covered in forests. However, 70% of these trees have been lost due to human activities (Food and Agricultural Organization, 2012). One of the methods used for the removal of these trees is a 'slash and burn' technique in an attempt to gain more farmland, but this method can be extremely harmful as it is unsustainable.

Society and Culture

Sierra Leone has a population of 6.6 million people with 41.8% being under the age of 15 (Country Meters, 2017). An estimated 36% of this population is rural (World Culture Encyclopedia, 2017). This means that one third of its population does not have easy access to many of the services provided in the urban areas of Sierra Leone, such as schools. This is shown in the country's low literacy rate, as only 47.71% of the adult population (16 years+) is able to read and write, meaning that 2 million Sierra Leone citizens are illiterate. However, the future is beginning to look brighter in Sierra Leone because the youth literacy rate is 67.57%, which is over 20% higher than that of the older generation (Country Meters, 2017).

There are between 15 and 20 different ethnic groups in Sierra Leone with the two largest, the Temne and the Mende, comprising around 30% of the population (World Culture Encyclopedia, 2017). These two groups have a large influence over their less populous counterparts and frequently impose their culture on other ethnic groups. Even though this cultural pressure exists, Sierra Leone is fortunate because the different ethnic groups are relatively friendly to one another. Typically, the only time disputes occur are during national elections, when it is common to have politicians accused of favoring one ethnic group over another. However, this is vastly different when compared to surrounding African nations that have frequent ethnic disputes, which often escalate into civil war.

The majority of homes in Sierra Leone are earth and clay structures with a thatch roof. The clay and earth blocks are constructed in such a way that they are able to keep the inside of the house cool during the hot and dry times of the year. Many kinds of modern building materials have been introduced to make homes more durable, but these modern materials often cause the houses to lose their ability to stay cool during the hot and dry seasons.

The average family size in Sierra Leone is 6 people (United Nations International Children's Emergency Fund, 2017). Rice is considered to be a staple in the average diet of Sierra Leone and is eaten at almost every meal. Other foods that are consumed include various fruits, seafood, potatoes, and cassava.

The primary economic activity in Sierra Leone is subsistence agriculture. Subsistence agriculture is a form of farming in which nearly all of the crops and produce grown by the farmer are used to maintain the farmer's family. This leaves little to no produce available for the farmer to sell (Britannica, 2009). Sierra Leone is also rich in valuable resources such as diamonds and gold, but due to the country's corruption and smuggling, the government fails to profit from this export. The main source of industry in Sierra Leone is food processing. Other industries, such as tourism, thrived at one point in time, but due to the outbreak of the civil war in Sierra Leone starting in 1991, the tourism industry has since become almost nonexistent.

Ebola Outbreak and the Aftermath

From 2014-2016, Sierra Leone experienced the worst outbreak of Ebola the world had ever seen (World Health Organization, 2015). The reported cases of Ebola started out slowly, but eventually the number of

these cases grew exponentially until Sierra Leone was in the midst of a health crisis. There ended up being over 14,000 cases of Ebola with 4,000 of these cases resulting in death (World Health Organization, 2015).

The long-term effects this outbreak had on the population are still poorly understood. It is thought that the health effects of having this disease will continue long after the infection has happened and can even still have an effect on the body nearly two years after a person was infected. There are also other difficulties associated with having survived such an epidemic. For instance, there is a harsh social stigma towards individuals who have had Ebola, which makes it difficult for them to find employment.

The main problem associated with the aftermath of the Ebola outbreak is food insecurity and the malnutrition that follows, which is the factor I have chosen to address. The Ebola outbreak has caused an extreme decrease in access people have to markets due to fears concerning the Ebola virus, and the possibility of another outbreak. This decrease in market availability has in turn caused a significant decrease in the average Sierra Leone household income, as individuals are unable to sell their goods at market.

Those who are most affected by this catastrophe include people who have had members of their family infected by the Ebola virus, citizens who have jobs in agricultural fields, and casual workers. The biggest problems facing households with individuals whom Ebola has directly affected is that they need medical aid. This is a problem because there are few roads in rural Sierra Leone, so help isn't always an option. Besides this fact, even if someone is not directly affected by Ebola, but a member of their household is, all members of the household are quarantined in order to prevent the Ebola virus from spreading. This means that those who are quarantined are unable to make any income or have much access to food. Food trade was severely lessened during the Ebola outbreak, which caused reduced food availability and increased prices on foods in the market.

Even though the threat of the Ebola virus is not nearly as great as it was during 2014-2015, the effects of this outbreak can still be felt today, with many of its problems continuing to wreak havoc on Sierra Leone. Rice production in Sierra Leone is lower than it had been even during the Ebola outbreak (Famine Early Warning Systems Network, 2016). This is a major problem because rice is the main staple in every Sierra Leone meal and, without rice, the population of Sierra Leone has the potential to drop into a food security emergency. This is also coupled with the fact that prices are above average, causing many households to be unable to meet their survival needs according to Nyabergi Tipo of the United Nations Food and Agricultural Organization, and it is expected that at least 20% of these rural communities will be facing food insecurity. "The results confirm that drivers of food insecurity are low agricultural productivity, poverty and a lack of resilience, poor road and market accessibility, gender inequality and a lack of income generation diversification. The negative socioeconomic impacts of Ebola further exacerbated food insecurity. While the majority of the population relies on agriculture for their livelihoods, the report shows that only 4 percent are growing enough rice to meet their needs for the whole year, and rice production has decreased nationwide by 15 percent over the last five years" (Nyabenyi Tipo, United Nations Food and Agricultural Organization, 2016).

Possible Solution

Although these problems continue to loom over Sierra Leone, there are significant measures being taken and more that are needed in order to prevent Sierra Leone from increasing the number of people facing food insecurity. Organizations such as the World Food Programme (WFP) and the United Nations Food and Agricultural Organization (FAO) are working very hard in order to help Sierra Leone overcome its food insecurity issues. However, the situation is problematic since only 4% of farmers in Sierra Leone use chemical fertilizers, 10% have access to improved seed varieties, and 99% of farmers still use manual tools (Central Intelligence Agency, 2016).

During Sierra Leone's civil war in 1991-2002, the amount of livestock rearing in the country decreased exponentially until it was almost non-existent. Although these numbers have risen in recent years, only a few breeds of each animal are used throughout Sierra Leone. This leaves their animal stock vulnerable to being wiped out by diseases such as bovine pleuropneumonia, which devastates the cattle population of Sierra Leone annually (International Livestock Centre for Africa, n.d.).

The solution I am proposing to solve the problem of food insecurity in Sierra Leone is to introduce an integrated rice-fish farming system. In a rice-fish farming system, fish are introduced into rice fields in order to create a symbiotic relationship between both the fish and the rice. The dense patches of rice provide the fish with safety from birds and other natural predators, while the fish eat insect pests and produce waste that provides the rice with added nutritional benefits. In many rice farms throughout the world, the rice fields lose yield over time because of a decrease in nutrients; however, a study conducted by researchers from the Food and Agriculture Organization in 2011, found that adding fish to rice fields boosts the amount of nutrients in the rice and provides nutritional and economical benefits for its farmers.

Rice is the main crop grown in Sierra Leone and is a major staple in the population's diet, but rice monoculture is unable to uphold a sustainable supply of food because of its long-term effect on the environment (Food and Agriculture Organization, 2012). Introducing the integrated system will not only increase the amount of fertilization provided for the rice from the fish, but it will also provide the citizens of Sierra Leone with a stable source of protein.

For multiple reasons, I propose using African Sharptooth Catfish (*Clarias gariepinus*) in the rice-fish farms. These fish have an omnivorous diet, which consists of many pests, such as insects and small invertebrates, that are common in rice fields (University of Michigan, 2004). The African Sharptooth also grows fast, can live in a wide variety of water qualities and conditions, and can reproduce easily in captivity (Encyclopedia of Life, 2016). In order to keep the African Sharptooth Catfish in stock, I propose that organizations, such as the World Food Programme (WFP) and the United Nations Food and Agricultural Organization (FAO), fund fisheries to be built in Sierra Leone that will raise the fish until they are big enough to be stocked into the rice fields. This will also make the rice-fish farming in Sierra Leone sustainable.

Some problems may begin to arise during times of drought, but I propose that safe ponds are created in which the fish can be channeled during these time periods. Even if the fish do not make it to the safe ponds in time, there is a chance the fish will survive, as the African Sharptooth Catfish can live in shallow mud for a long time (University of Michigan, 2004). In order to start the rice-fish farming systems, the

farmers of Sierra Leone will need to be educated by world food organizations about topics including how to manage their rice-fish system, how to create safe ponds, when to channel fish into the safe ponds, and what to do during periods of drought.

Once the citizens of Sierra Leone are educated on how to properly create and manage a rice-fish farming system, they will be able to provide themselves with food. The introduction of a rice-fish farming system in Sierra Leone will increase protein consumption and decrease malnutrition. The solution for malnutrition in Sierra Leone is in the palms of our hands, and we need to make sure this problem gets addressed very soon in order to make sure Sierra Leone has a chance at a brighter future.

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