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Guatemala, Malnutrition

Guatemala: The Mission to End Malnutrition

In Guatemala, known as the Land of Eternal Spring, a major food crisis has plagued nearly half of the country's children ("A National Shame"). Cases of severe malnutrition, primarily within Amerindian villages, have occurred due to the lack of nutritious foods in their diet. Currently, the government has very few helpful programs instituted for the poor because of the lack of equality within Guatemala's social hierarchy as well as environmental factors that have limited farming. Outside organizations continue to assist Guatemala's problems with malnutrition, but the country is in need of greater support if they wish to eradicate the problem.

Guatemala is home to about 16.58 million people, nearly half of which is rural population at 47.97% ("Guatemala- Rural Population"). As a representative democracy, the current president Jimmy Morales leads the country as both head of state and head of government. Although agriculture is a prominent part of Guatemala's economy, only about 35% of their land is currently cultivated. Coffee, sugar, bananas, and cotton are some of the main products produced and exported. There are many large plantations in Guatemala but the average farm is about .2-1.5 hectares. For scale, the grass area in the center of a 400-meter track is 1.12 hectares. Families in rural areas usually grow enough crops to sustain their own meals. Most farming takes place during the wet season, and during the dry season, it is very limited ("Guatemala- Agriculture"). Due to its position on the boundary between the Caribbean and North American tectonic plates, Guatemala is susceptible to severe natural disasters such as earthquakes, volcanic activity, hurricanes, and landslides. Most recently, the eruption of the Volcán de Fuego in June has severely impacted the land and lives of the people living in the region, as well as the nation as a whole, regarding population and food security. In addition, climate change in recent years has extended the duration of the dry season, which leaves many farmers with drought and a lower crop yield than in the past.

The typical Guatemalan family is nuclear, with about six members on average. In rural areas, adobe houses usually have two rooms, dirt floors, and roofs made of palm leaves or straw. Their diet is mostly corn tortillas with supplemental rice, beans, tomatoes, and plantains when available ("Guatemalans"). In poor rural areas, where malnutrition is most prevalent, people may live off tortillas only because they cannot afford anything else. Due to the current economic recession, the price of tortillas has risen. In the past, one quetzal, which is the equivalent of about twelve cents, could buy eight large tortillas. Now, one quetzal can only buy about four small tortillas (Abbott). Most rely on subsistence farming, but natural disasters and climate change have hindered food production. Now, families must find outside work in order to pay for their food and supplement their income. People work mostly in agricultural or construction jobs, with an average annual income of \$1,619 USD. The government does not enforce labor laws very strictly in Guatemala, meaning that many work in unsafe and unhealthy working conditions ("Guatemala- Working Conditions"). Additionally, 40% of the population does not have access to clean water. Although education is available to youth, many children cannot afford to attend because they must work in order to support their families. Only one third of the population has regular access to health care services ("Guatemalans").

Disregard for regulation and laws, economic recession, and environmental factors make access to

nutritious food unreachable for many families. This is why half of Guatemala's children are chronically malnourished. In some rural areas, where indigenous Mayan descendants live, it is nearly 80%. This ranks Guatemala as the sixth most malnourished country in the world ("A National Shame"). Malnutrition has severe impacts on a person's health. It hinders physical growth, brain development, and can cause stunting. The occurrence of stunting in children under five years of age in Guatemala is one of the highest in the world. Nationally, the rate lays at 46.5%, but in the areas with the most poverty, the rate can reach up to 90% ("Guatemala"). Once an incident of stunting has occurred, a vicious cycle begins to take place. Stunted and malnourished mothers will give birth to malnourished children, which will repeat when the children age and have families of their own. Another prevalent form of malnutrition in Guatemala is vitamin A deficiency, or VAD, which can cause blindness, immune system problems, and stunting.

Malnutrition has a direct correlation with the environment. Guatemala's mountainous terrain makes the use of heavy farming machinery more difficult to use, which slows the farming process. Predisposition to natural disasters decreases the amount of arable land available to cultivate when volcanic eruptions, droughts, floods, and earthquakes occur. Without sufficient crops, malnourishment takes place. Since the end of Guatemala's civil war in 1996, the trend of malnutrition has only gotten worse. Mayans have been discriminated against in Guatemala since the arrival of the Spanish in the sixteenth century, when they were forced into slavery. In the 1960's, the poor, including Mayans, demanded fair wages and rights to their land, which began the thirty-six-year-long civil war. Since the ending of the war, laws have been put into place to deter discrimination but it is still prevalent due to lack of enforcement ("Guatemala- Maya"). Mayan children and women are the most effected by discrimination and represent a large portion of the malnourished in Guatemala.

The inequality and discrimination that exists between Mayans and non-Mayans in Guatemala has strong ties to their food security issues, and therefor is in need of a solution. The indigenous Mayans make up about 40% of the population, and yet they have very little representation in government affairs. According to the Constitution, all Guatemalans can vote, but Mayan voting rights are often restrained by tedious voter registration requirements and lack of adequate transportation. Also, elections are often scheduled to occur during harvest seasons, when many are too busy working to go to the poll ("Guatemala- Maya"). Seeking election as a Mayan is difficult as well. Indigenous peoples are extremely underrepresented and excluded from political life and decision making across the country. Winaq, the only indigenous political party left, usually only gets about 3.5% of the vote and has limited financial resources, meaning the demands and rights of the Mayans are often not upheld ("Guatemala- Maya"). The national government, under the Guatemalan Constitution, needs to be held responsible for the upkeep of all citizens' rights. This could be achieved if more citizens of indigenous ancestry had position of power in the government, or if the voting process was made more available to them. President Jimmy Morales and the Congress should focus more on making sure that the indigenous, which make up a large portion of their country's population, are heard and have equal opportunities to participate in politics. This will be the first step in ending discrimination against Mayans and decreasing their predisposition to malnourishment because of their ethnicity.

Due to the severity of malnutrition in Guatemala, there are already organizations and programs actively trying to prevent malnutrition. In August of 2017, Guatemala's President of the National Congress and the Executive Director of the World Food Programme signed a commitment to reduce current malnutrition rates by at least half by 2030. Currently, WFP is providing food and assistance to people affected by natural disasters, providing specialized nutritious foods to children, and many other projects. Mario Touchette, WFP Representative says, "It is urgent to establish specific and sustainable actions that will continue over time... involving government institutions, civil society and the private sector"

("Guatemala Congress..."). If they want to achieve their goal, Guatemala cannot rely solely on WFP. Guatemala's government is one of the poorest in Central America and most of their money is concentrated in rural areas such as Guatemala City, where malnutrition does not exist in mass numbers ("A National Shame"). The World Bank rated Guatemala last in the world in public spending and government revenues in 2014. Less than ten percent of their GDP is spent on health, housing, education, and social security combined ("Guatemala's Public Spending..."). In addition, the Guatemalan government has been known for its corruption. The current president Jimmy Morales was almost impeached due to the unexplained source of money that was discovered to be funding his presidential campaign. He was also under fire for using government funds for personal purchases. Morales' brother and son were both arrested on charges of corruption and money laundering. Many members of the Congress that came to office January 2018 are also under investigation for corruption charges (Allison). More of Guatemala's budget needs to be geared towards eradicating malnutrition and stunting. A possible solution would be increasing tax collection from wealthy Guatemalans. Extra tax dollars will fund programs dedicated to supplying the malnourished with nutrient-rich food and providing education to inform people of malnourishment and preventative measures. Although this would be an ideal solution, there are flaws within the plan. Increased tax revenue could create more opportunities for corruption and tax evasion. Tax evasion is a difficult problem that many countries face and can only truly be solved if the government has an inclusive strategy in which equity exists among all sectors of society, regions, and economy. If citizens believe in their government's laws and policies, they will be less likely to commit tax evasion or fraud. Also, making the procedure of tax payment simpler will make taxpayers more compliant.

The United Nations International Children's Emergency Fund also works directly with Guatemala. Health workers from UNICEF visit Guatemalan families and give them supplements such as nutritional pastes and vitamin A drops. According to Elena López, a native to Aldea Chicorral, one of the main causes of chronic malnourishment is that people marry young and have many children. In large families, there often is not enough food for everyone. Regardless, UNICEF's programs have made at least a small positive change. "We are having success," says Faustina Vásquez, a UNICEF health worker, "Not in every family, but in many families" (Nybo). In summary, Guatemala is in need of a highly proficient system of administering nutritional elements to rural areas, which involves both the national government and foreign aid.

This goal could be achieved with the use of biofortification programs. Biofortification is a strategy that increases the nutritional value of crops through two different methods; selective breeding and genetic modification. In developed nations, such as the United States, staple food fortification takes place, to ensure that healthy micronutrients are consumed. Foods such as cereals and milk are fortified with extra minerals and vitamins during the production process (Gearing). In developing nations, however, the majority of the population does not have access to these fortified foods. They must rely on cheap staples like rice or corn. Currently, most Guatemalan farms do not use genetically modified organisms (GMOs). This leads back to corruption within seed companies. In 2014, the "Monsanto Law" was passed in Guatemala. The law allowed powerful companies, like Monsanto, to patent and privatize GM seed production and bar federal courts from being able to interfere with the sale or planting of seeds (Abbott). Under this legislation, farmers had to buy new seeds each season because patented seeds cannot be legally re-planted. Although the seeds were high quality because of their genetic modification, they were expensive. Also, imported GM corn from countries like El Salvador was much cheaper, meaning the farmers could not compete with their prices (Abbott). Luckily, Mayan farmers banded together to get the "Monsanto Law" repealed, but legal loopholes still exist in the original bill meaning that similar legislation could resurface under a different name. The seeds market continues to be a place for corruption in Guatemala. The US State Department has declined to comment on how they may be able to

help Guatemala realign their legislature regarding GM crops (Abbott).

Past conflicts and controversy over GMOs has hindered the production and use of GM seeds in Guatemala. There is still debate over the health effects and environmental impacts of GMOS, but the National Academy of Sciences of the US has conducted a study that debunks myths about the dangers of GMOs. They have concluded that genetically modified crops are “no different from others and that there is not one test that has shown a negative impact on the health of people.” They also discovered that there is no evidence to prove that GMOs cause major environmental problems (“A Win for GM Crops”). Genetically modified crops often have higher crop yield and nutritional value, which are two essential parts of the fight against chronic malnutrition. Genetic modification is done by taking desirable genes from other organisms, such as bacteria, and inserting them into the genes of a particular crop. Golden rice is a perfect example of the amazing results that can occur with GM crops. The new rice’s genes have been modified to carry high amounts of beta-carotene, which is the precursor for vitamin A. According to scientists, just one third cup of golden rice per day would be enough to prevent vitamin A deficiency in a child (Gearing). In contrast to traditional vitamin A drops and supplements, which require constant funding, golden rice seeds can be replanted once introduced, making them extremely cost effective. The company Syngenta has also agreed to provide free golden rice seeds to farmers that make less than \$10,000 per year (Gearing). Since rice is already a staple in Guatemala, golden rice would not be hard to accept in traditional cultures. Corn is also a staple crop of Guatemala, and happens to be one of the most common genetically modified crops. Scientists have already modified corn seeds to supply extra micronutrients of vitamin E, iron, and the essential amino acid lysine (Gearing). All of these nutrients supplement diets and can possibly end malnutrition if introduced in Guatemala. In the past, GMOs have helped other developing countries. The organization Helen Keller International has launched a program to provide vitamin-A fortified cooking oil to counties in West Africa. Fortifying cooking oil with vitamin A is effective and low cost, at only one cent per liter. In addition, 70% of the target population consume industrially processed oil. This initiative has decreased the number of vitamin-A deficiency cases in West Africa. The program has resulted in high success, as twelve of the fifteen countries in the Economic Community of West African States (ECOWAS) now have mandatory legislation for fortifying cooking oil (“Fortifying Cooking Oil...”). The only cons to using GMOs is the controversy that is associated and its minor ability to decrease biodiversity. Genetically modified organisms could be the answer to ending the high malnutrition rates of Guatemala if a similar program is initiated with both government funding and foreign aid.

Although genetically modified crops are the quicker, more effective solution, they are also not commonly accepted in Guatemala yet. The second approach to biofortification is selective breeding. This is when a plant already contains small amounts of the vitamin or mineral needed. These plants are then bred to make more plants that have higher levels of the vitamin or mineral of interest. The process is repeated over time until there are high levels of the desired compound (Gearing). For crops like rice, selective breeding is not an option because there is no vitamin A present. However, corn does contain small amounts of vitamin A. Although it would take years to selectively breed high levels of vitamin A into corn, it is a viable solution. It is a more natural technique that is more likely to be accepted in Guatemala since corn has already been selectively bred for size, color, and taste for centuries. However, education programs would be needed to educate farmers on how to properly selectively breed crops for certain micronutrients. One project that is active in Guatemala now is “Yo Me Adapto”, which is a program led by the Pan American Development Foundation and funded by the foreign disaster assistance office of the United States. The project’s goal is to train 1,500 farming families how to use climate-smart agricultural practices such as greenhouses, weather stations, rain catchment, and irrigation systems to combat drought. The farmers also learn about soil preservation and varietal crops, but there is no information on biofortification given (“Climate-Smart Agriculture...”). This program could be improved, or a new

program could be made to adapt to the needs of the rural Guatemalans. With biofortification programs, farmers will be more likely to accept genetic modification and selective breeding practices.

Guatemala is a developing country with a growing need for support. Chronic malnutrition and stunting infect the county's rural areas in mass numbers, while the urban areas enjoy comfortable life styles. Corruptions within the government, economic recession, discrimination, and environmental factors have contributed to this severe hunger. With aid from foreign countries, Guatemala is receiving some of the help they need, but more work must be done. Creating higher tax rates for the wealthy and introducing biofortification programs will increase food supply and nutritional value in Guatemalans' diet. Legislature to protect indigenous peoples' rights is necessary and will better unify the country after the long and bitter civil war. With these solutions, great change is on the horizon for Guatemala.

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