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Zimbabwe's Unsustainable Agriculture and its Effects Food insecurity in Zimbabwe continues to be in a fragile state and has been for many years. Due to ongoing climate challenges causing unstable weather patterns, crops do not produce enough resources to sustain its people. This crisis that has been occurring has affected Zimbabwe in many ways including economically and is continuing to decline the health of many people in rural Zimbabwe who are currently facing a crisis of food insecurity. Zimbabwe is a landlocked country located in southern Africa bordered by South Africa, Botswana, Zambia, and Mozambique. The country's government serves as a presidential republic with a president elected by the people. Within its population of about 15 million people, rural families make up between 32 and 38 percent and consist of about five people. Because of this, these families, and the country's economy, depend greatly on Zimbabwe's agriculture. This dependence is threatened as farmers across the region struggle with consistently growing and maintaining livestock because of climate changes. Normally Zimbabwe's weather patterns are standard with rainy seasons beginning in November, but within the past five years, those scheduled seasons occur as late as January. When flash flooding does not occur in the country, droughts are often experienced. Zimbabwe usually has five natural regions that operate the agricultural system with three parts of it being used for crops. This system is one that its economy relies on and from 1961 to about 2001 the system did quite well agriculture such as tobacco, maize, paprika, fruits, and cattle. But to grow, one important thing crops need is irrigated soil and before recently Zimbabwe's farmers depended on weather patterns to irrigate their soil. On the other hand, without well-irrigated land and nothing to feed on it is difficult for any type of livestock to develop. Furthermore, it is not healthy for any living organism to have too much or too little of what it needs to survive, so this unstable cycle that is occurring promotes poor agricultural development. According to Jemittias Denhreh, a Zimbabwean farmer and plant specialist "we're experiencing the worst style of drought. If we receive rains, it will be like a cyclone: very violent, too windy. Very erratic. So you cannot bank on it. Things are changing every day." (Denhreh). Farmers that operate on a smaller scale such as Denhreh typically have farms 37 to 27 hectares or less in size. These farmers work tirelessly through the days to provide for their families but because of the failing crops they work so hard to produce, most only have one or two meals of sadza, a type of porridge, a day. To try and adapt to the dramatic changes of not being able to rely on the weather, some farmers have begun to switch to grain crops like velvet beans, sorghum, and finger millet. These types of crops are more notorious for being drought resistant and having shorter seasons. Factors such as these pose less of a risk of losing a whole harvest. Other things that contribute to unsustainable food in Zimbabwe include little access to markets in communities. Even so, if markets were accessible, most families do not make a steady income to meet the high prices of market food. In meeting these changes families who depend on farms and markets for food have less diversity and

nutrition options and pose many health threats to the community.

In order to properly grow and flourish humans, especially children, need a steady and nutritious diet. Because of Zimbabwe's underdeveloped, struggling agricultural system and food shortages, "in 2020, more than 7.7 million people - half the population - will face food insecurity at the peak of the lean season" (World Food Programme). Lean season is a term used to describe agriculture in developing countries and can be defined as "that dangerous period between planting and harvesting when job opportunities are scarce and incomes plummet" (Evidence Action). During this time is when the Zimbabwean people struggle the most and experience their greatest shortages in food and have a higher risk of malnutrition. Malnutrition is a lack of nutrition which can be caused by not having enough to eat, not having enough of the right thing to eat, or being unable to utilize the food available. When looking at the type of unsustainable food source in the country, many cases of malnutrition can be found. One case of this occurrence was documented in January of 2020 where it is described that a two month old child named Max "would normally be reliant on breast milk only. Yet it has been weeks since he last breastfed and is compelled to eat unsweetened maize-meal porridge as is his daily diet" (Unicef). In the early stages of development, it is very detrimental for a child not to receive sufficient amounts of breast milk to support its development. But if a mother is not receiving an adequate amount of food it is harder for them to produce the appropriate amount of milk for the child. The effects of this can include many things such as muscle and bone depletion, weak immune system, and poor organ health. Naturally, as humans grow older bones muscles begin to grow weaker, but malnutrition accelerates this process. Because of this, in some instances where malnutrition occurs loss of strength, mobility, and poor posture can be seen. Losses such as these can have detrimental effects on activeness and, in some cases, make everyday activities difficult. Lack of nutrients can also prompt poor immune health. If the human body lacks nutrients found in most fruits and vegetables and a stable diet, white blood cell counts can decrease. When this happens normal functions like healing can take longer and the body can be more susceptible to illnesses and infections. Organs may also have a difficult time functioning when the body is malnourished. The brain and the eyes may not operate as normal and can diminish at a quicker rate. The body is not the only thing that can be tainted by malnutrition, the mind can also be negatively affected. When treating someone who has nutritional and mineral deficiencies "it is far more complex than simply curing disease and providing children with therapeutic foods," in more extreme cases, post-traumatic stress disorder is often seen (Action Against Hunger). During post-traumatic stress disorder behavioral changes can be provoked and in some circumstances can threaten a mother's ability to care for and nurse their child. Malnourishment which is caused by unsustainable agriculture and low food resources has many negative effects on Zimbabwe and its people and poses a threat to their future.

One of the main problems when discussing sustainable agriculture in Zimbabwe is its declining amount of rainfall. As mentioned previously, farmers have already started to adapt to climate shifts by growing crops that are more resilient to drought and have short maturation

times. But in order to fully adapt to their situations, farmers need to neglect their reliance on weather and outdated techniques and adopt more appropriate systems that will help production move quickly and smoothly. Most farmers have turned to hand watering to irrigate crops because erratic rainfall but doing this does not provide as much accuracy and requires more work than nutrient deficient humans can do. To combat this, there have already been initiatives and programs started by organizations like Act of Peace and Mercy Corps that have made it a mission to educate and inform Zimbabwean farmers who may not have proper training and knowledge to sustain a farm in their current situations. Conservation farming programs such as these provide farmers with the confidence and opportunity to increase their crop yields and ability to provide nutritious options for their families. In the conservation programs, “the farmers learn how to cover the ground with mulch from old stalks of corn to keep the water from evaporating and to hoe the soil in preparation for seed planting. These simple but innovative techniques are ensuring farmers living in drought-stricken areas in Zimbabwe are able to feed their families, even when the rains fail” (Reliefweb). Along with these teachings, I feel that it is important for farmers to have access to technologies like irrigation systems and other farming equipment to help them along the way. On the continent of Africa as a whole “slightly more than 13 million hectares, making up just 6 percent of the total cultivated area” are equipped for irrigation (International Food Policy Research Institute). There have already been some solutions put in place for people to have more accessible water sources, such as rain water capture tanks in Uganda. These water collection tanks were placed in villages and can collect up to 6,000 litres of water during rainy weather. I think another sufficient solution to accessible water on a larger scale may be the Zambezi River. The Zambezi is the fourth-longest river in Africa and runs through six countries Zambia, Mozambique, Namibia, Angola, Botswana, and Zimbabwe, and flows into the Indian Ocean. One of the river's dams, the Kariba Dam or Lake Kariba, which is located in northwestern Zimbabwe between Zambia and Zimbabwe already provides some of the country with hydroelectric power. To provide and support irrigation for the entire population of the country I believe that a system of canals should be put in place connecting from the Zambezi River and Lake Kariba. Through these systems, water can then be pumped through a filtration process where it then can be distributed to communities by way of underground piping systems. If government funding for this project is not possible, foundations that specialize in fields of improving agriculture and food security in many countries, and some that have already helped Africa immensely, would be reliable sources for funding. A program such as this, combined with already implemented efforts to educate Zimbabwe’s farmers, will hopefully make water for irrigating more accessible for farms in the region and make it easier for them to compete with weather challenges. These changes I believe will ultimately increase Zimbabwe’s food sustainability and overall security.

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