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Egypt, Population

Egypt: A Sustainable Solution to Egypt's Population Growth

Home to two of the seven wonders of the ancient world, Egypt is a country that is rich in history as well as culture. Unfortunately, this fascinating country is facing a food and water crisis, and many people do not have enough money or resources to have access to the most essential things to life. Poverty strikes, families are left hungry, and malnourished children have stunted growth due to inadequate nutrition. The fertile crescent surrounding Egypt's cherished Nile River can no longer compete with Egypt's growing population. The changing climate is hitting Egypt hard and climate change is limiting crop production. It is clear that changes need to be made to improve the quality, quantity, and availability of food in Egypt. The government needs to step up, agricultural practices need to be changed, and an awareness needs to be spread, because no one should have to wonder where their next meal is coming from.

The desert country, Egypt is located in Northern Africa, and has a dry, arid climate, with a population of nearly 100 million people. Egypt's climate consists of hot, humid summers, and mild winters. Egypt has a republican government, which is semi-presidential, and has a unicameral legislature. The presidential election takes place every 6 years. The prime minister shares the responsibility of ruling Egypt with the president. Egypt is divided into 26 governorates or counties (CultureGrams, 2018). Egypt's land is only about 3% cultivated, which grows crops such as rice, cotton, sugarcane, soybean, oranges, and grapes. The average farm size is 2.5 feddans, or 2.595 acres, meaning that Egypt mainly consists of small subsistence farms (Egypt, 2018).

Urban families typically have 2 to 3 children, and live in apartments, while rural families have up to 5 children, and live in homes that are built close together. Egypt imports 40% of its food and 60% of its wheat. A typical meal may consist of rice, bread, stuffed vegetables, and falafel. Meat such as fish, lamb, chicken, and turkey are expensive and only consumed on occasions, while bread is consumed with almost every meal. Food is typically sold in supermarkets or vendors, restaurants are also common in Egypt. Egypt still follows traditional family roles, women are expected to be housewives, while the men are normally the breadwinners. Agriculture is the most common profession in Egypt. Other careers include engineering, sales, and marketing. The average salary in Egypt is 190,256 EGP or \$19,380 US dollars. Primary school is required in Egypt, though loosely enforced. Children of poorer families who can not afford things like school supplies and bus passes often end up not receiving a proper education. Egypt has some excellent doctors, and healthcare in private offices is quite good. Public doctors, however, have old equipment and low-quality treatment. People who can't afford private doctors, may not receive proper health care. Many Egyptians face problems such as poverty, food and fuel shortage, and unemployment. Poverty is the reality for twenty-six percent of Egyptians, especially those who live in upper Egypt, where forty-nine percent of the population cannot provide food for their families. The unemployment rate is a high thirteen percent, doubling for women. Families that struggle financially do not get adequate nutrition because they settle for cheap and nutrient lacking food (CultureGrams, 2018).

With a yearly population growth rate of about 2%, Egypt has a population that is continuously growing (Egypt Population, 2018). This means that there are more people to feed, but less land to grow crops. On top of this environmental problems are making it increasingly difficult to grow sustainable agriculture that can feed Egypt's growing population, which is expected to reach 140 million people by 2050, if this happens Egypt will have to increase its food productivity by 70% (El-Ramady H.R., El-Marsafawy S.M., Lewis L.N, 2013). The increase in population also results in more waste and an increase in pollution. The Nile River faces daily pollution problems. Most cities in Egypt rely on the Nile for drinking water, which

is becoming unsafe to drink. A report for the Egyptian Organization for Human Rights stated that 38 million people in Egypt are drinking polluted water. Agriculture is responsible for a good portion of the polluted Nile, residue from chemical fertilizers, and agriculture water drainage are sources of pollution in the Nile. Other sources include oil pollution, industrial wastewater, and radioactive discharge (Fady, M., 2017). The population growth places more pressure on farmers to produce more, resulting in overused land that is becoming useless, and inarable. Due to the population growth, there is a competition between groups for resources, urban slums are increasing, and it is harder for refugees to find housing. Climate change is taking a toll on agriculture, as unpredictable weather and an increase in temperature become more common, it is becoming increasingly difficult for farmers to meet their demand for food. Climate change can increase the risk of pests taking over crops while damaging the habitat of beneficial insects. Drought causes crop failure and shrinks the amount of arable land. An increase in temperature dries up water sources and exhausts the aquifers. The heat also disturbs the flowering and pollination of plants (Infographic:How does..., 2014). Egyptian agriculture is especially vulnerable to the damages of climate change because of its already hot climate. Further warming will decrease crop productivity nationally by 11% to 28%, depending on the crop. More and more people will fall short on food and water, because of climate change. The only arable part of Egypt is near the Nile River, Ancient Egypt was able to thrive off of this land, and have substantial agriculture that grew on abundant soil because of the annual flooding of the Nile River and a stable climate. The Aswan High Dam made the annual flood absent in some areas. Minerals found in the water acted as a fertilizer for Egypt's agriculture, the absence of the flooding depletes the soil of these minerals and made it harder for agriculture to thrive. (El-Ramady H.R., El-Marsafawy S.M., Lewis L.N., 2013).

Egypt's food security issues need to be addressed by the government in order for real and lasting changes to be made. The solution needs to be a holistic one, and it needs to increase food security at both the national level and the household level. The solution should include upgrading public health services, using water efficiently, and educating the people about nutrition. Contrary to the current trend in Egypt rural development is essential in increasing food security. Urbanization is increasing due to lack of job availability and economic opportunities in rural areas. In order to encourage more people to move to rural areas, health services and job availability needs to improve in those areas. Egypt's farmland along the Nile is restricted because of urbanization beyond capable limits, and an increase in soil and water salinity. The government has plans to obtain 1 million acres of land to increase agricultural volume, but sustainability needs to be a factor in this decision. Increasing Egypt's cultivated land is a good idea but it would require non-renewable groundwater for 90% of the irrigation. Sustainable measures can be taken to increase water availability in Egypt. Harvesting rain and flood water, desalination, and treating wastewater for agricultural use can limit the demand for non-renewable groundwater (Al-Riffai, P.,2015). To make the most valuable use of Egypt's limited water sources, the majority of the crops grown should require little water such as olives, grapes, and citrus fruits, rather than water-intensive crops like sugarcane, soybeans, and wheat (Scott, J., 2011). Livestock should be limited as they require large amounts of food and water and only produce 83 calories of edible meat per 1187 calories of feed consumed (Shepon, A., Eshel, G., Noor, E., & Milo, R, 2016). Individual families should educate themselves on nutrition to prevent malnutrition and nutrient deficiencies, they should practice being frugal with water and limiting food waste. Households should be environmentally aware and eliminate or limit their consumption of animal products and water-intensive crops. Transportation systems and roads that connect rural areas to the nearest cities and markets are important factors in the success of the new land development. Funding for such infrastructure could be achieved through taxes and donations.

As a developed and first world country, America has the power to increase food security in Egypt, and other countries that are struggling with food and water scarcity. As an everyday American you can implement habits and lifestyle changes that can make a big difference in solving global hunger. Simple habits such as turning off the faucet when you are brushing your teeth or taking shorter showers can add up to a huge amount of water saved. Making the choice to switch to a plant based lifestyle or even decreasing the amount of animal products in your diet will limit the demand for livestock, and make more

room for plant based crops which are significantly more calorie efficient. With all these extra calories and food America will be capable of exporting more food to developing countries, including Egypt. To encourage more Americans to make these lifestyle changes schools should start teaching their students about how their diets, and habits affect the world. Plant based nutrition is the solution to feeding the world's growing population.

America should also send people to Egypt to educate them on the causes of their food crisis, as well as possible solutions. This would result in an awareness of the problems as well as a drive to find a solution. If the government was taught these solutions they might propose laws and the educated Egyptian citizens would then become more politically active and vote for the laws that would help solve their problems. America could also send people to provide Egypt with the essential agricultural tools they are lacking such as effective transportation to get food to market before it spoils, methods of conserving water, and fertilizer. Teachers, volunteers, and mission groups are examples of some of the people the USA could send to Egypt. .

Egypt's government is similar to the United States in some ways but they differ slightly. In Egypt the president, any member of the people's assembly, or any minister has the right to propose a bill. The ad-hoc committee then examines the bill and sends it to the people's assembly for a vote. Laws in Egypt are enacted by the People's Assembly which is a group of 454 members. Ten of these members are appointed by the president, while the remaining are directly elected. Similar to America the constitution in Egypt is the supreme law of the land. Laws are passed when both the People's Assembly passes the law and the president approves the law. If the president does not approve the law it is sent back to the People's Assembly where it needs a two-thirds majority vote in order to become a law. (Library of Congress, 2012)

In order to make more room for crops to grow the government should propose stricter laws that limit the number of people who can live in urban areas. Laws that restrict the use of gmOs as well as animal agriculture should also be put in place. Support by Egyptian citizens should be gained if they are educated about the root problems of their food crisis. This would result in more people who believe in agriculture reform getting elected for the People's Assembly. It is crucial that these laws are put into action because otherwise no sustainable changes would be made and Egypt would continue to be a developing country that can't survive on its own.

To get the future generations out of poverty Egypt needs to enforce stricter education laws so that future generations can succeed and get promising careers. Charities could be set up to give school supplies to children whose family cannot afford them. Schools should also teach gardening skills to their students so that they grow up knowing how to grow their own food, which is a cheaper option than buying food at the store. Without education families will get themselves into an endless cycle of poverty and it will be nearly impossible to get Egypt out of its food crisis.

In order for Egypt to overcome its food security problems and nourish a growing country, agricultural changes need to be made. GMOs claim to be the solution to global hunger, but GMOs have not shown substantial improvement in global food security. On the contrary traditional crossbreeding, which relies on sexual reproduction has been the dominant source of yield improvements in recent decades. To keep up with the population growth crop production needs to double by 2050, if we were to rely on genetically engineered crops to double food production in 33 years, there would need to be a biotechnology revolution, which is highly unlikely. In the long run, GMOs intoxicate the soil, making it infertile. The real solution to increasing food security in Egypt and other developing countries is one that is substantial and will benefit future generations, not harm them, as GMOs do. Small farms like those in Egypt are struggling not because of the need for GMOs, but because they do not have proper resources such as water, fertilizer, and infrastructure to transport produce to market, all of which are needed to be successful. By shifting our focus and money from GMOs to solving the problems that directly limit crop

productions, we would have more success in improving food security. It costs \$100 million to research and develop one genetically modified variety, but only \$1 million to develop a new variety through traditional breeding. In Africa traditional breeding has shown superiority to GMOs in improving drought tolerance and efficiency. Farmers should use natural and sustainable fertilizers rather than chemically packed and nutrient draining ones. Egypt should ban GMO practices and traditional breeding should be used to achieve high producing crops (Cassidy, E., 2015)

Eliminating food waste is a key step in solving Egypt's food crisis. Egypt is one of the top culprits in terms of how much food they waste, each person averaging about 73 kg of food waste per year. Advancing roads, transportation, storage facilities, and other infrastructure is crucial to reducing food waste in Egypt and other developing countries, this would help prevent food from spoiling by giving it proper storage and the resources needed to get it to market (Adham, E., 2017). To get full use out of foods composting food remains would increase soil productivity and aid in the solution to increasing food security. Before Egypt relied on chemical fertilizers and before the Aswan High Dam was built there were a lot of earthworms benefiting the soil. The soil died when the Aswan High Dam was built and so did the earthworms. Bringing earthworms back into Egypt is a solution to organic waste disposal, and would further increase soil fertility. An Australian by the name of Gina Wupperman tested this out and brought two kilos of red wiggler earthworms to Egypt. The worms were quarantined in case they were a threat to soil or the crops and were fed cow and horse manure, agricultural waste, and food scraps. The vermicompost the worms created after decomposing their food was used to feed the research centers crops. The study was a success and researchers want to introduce vermicompost to a few Egyptian families as well as gardening tables, so Egyptian families can grow crops in their home with good fertile soil. Introducing earthworms back into Egypt can help make the soil as fertile and prosperous as it once was, as well as help families grow small farms to make food more available to them (Sarant, L., 2013).

Food security in Egypt can be improved if the government takes action, water is used mindfully and efficiently, and sustainable agriculture that is as natural as possible is practiced. As with all food security issues, feeding Egypt will not be easy and it will take years of time, dedication, and awareness from both the people of Egypt, as well as ourselves who may live in the US but can contribute to Egypt's development. The solution to feeding Egypt is not simple nor does it rely on one single change, rather it is a complex solution that has many factors to it. In order for this solution to be sustainable and beneficial to future generations, it needs to be environmentally friendly and void of chemicals or unnatural practices that will only contribute to climate change, and conflict for our descendants.

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