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Uganda, Factor 7: Animal Agriculture

1. Uganda (specifically northern Uganda) - Quail, a sustainable source of food and income for subsistence farmers?

Uganda, home of the greatly endangered mountain gorilla, Lake Victoria, and the wonderful Rwenzori Mountains. Despite these amazing national wonders, Uganda is also home to rural undeveloped communities, struggling to survive on a daily basis (Kelly 2009). Uganda is a developing country that is approximately 93,065 sq. miles in size. With the population rising in the poorest part of Uganda, the Northern Ugandan Region, food shortage has been on the rise. The Northern Ugandan Region census of 2016 estimated that the population had reached 7,594,700. The official national language of Uganda is English, however, other languages such as Arabic and Swahili are commonly spoken. Uganda's climate is sunny most of the year, rarely rising above 85 degrees. It has two seasons, rainy and dry. The rainy season is March-May and October-November and the dry season is December-February and June-August. Uganda is extremely diverse between its southern, central and northern regions. Because of the great diversity in landscape and population, this research will focus on the northern region. This northern region of Uganda has reduced access to resources, the infrastructure is poorly developed, and the people have limited access to government and civic funding.

2.(a.) Growing up in northern Uganda, many children live with both parents with average number of siblings ranging dramatically between the districts. Many women become pregnant at a young age and average giving birth to 6.1 children (World Family Map, 2014). Because poverty and malnutrition are high, the rate of children dying at a young age is high. Many Ugandans who live in the larger city of Kampala, in southern Uganda, enjoy eating meat or chicken stews served with rice, chapatti, and ugali (Food & Daily, 2017). For dessert they enjoy mandazi, a type of doughnut. Fish is also a popular entree there, the main varieties being ngege tilapia, Nile perch and the tiger fish (Food & Daily, 2017). While these southern Ugandans have access to these more desirable dishes, citizens of the Northern Region have limited access to these types of foods. Many families who live in the Northern region of Uganda tend to eat the same type of meal every day, mainly starches and varieties of nuts. These northern region families rarely eat meat or protein because of the high price that comes along with it. According to an interview with a local family man from Moyo, most residents eat a very low animal protein diet, only having meat on special occasions. When they do consume meat it is usually pork, fish, goat's meat and edible rat (Emmanuel, 2016). Because of the poverty level among this region, citizens are faced with the issue of not providing enough food for their families. Almost 85% of the estimated 22 million Ugandans live in rural areas, primarily as smallholder agriculturist. More than a third of the country lives on less than a US dollar a day. (Perkins, 2008). Some areas have begun poultry farming as a major investment for ensuring survival and the payment of children's school requirements and medical expenses, but there are few individuals who can afford such a large investment. For those who have access to education, in Uganda it may start at three years of age at nursery school and then starts primary school at age six. Primary school is taught thru age 24, for both males and females. Sadly most students are forced to drop out of school early due to school and transportation fees. Students are taught the different sciences, mathematics, history, English, social studies etc. Larger cities have expensive boarding schools that wealthier parents can choose to send their children. Uganda has one of the worst healthcare records in the world (Kelly, 2009). Almost 51% of the people don't have any contact with public healthcare facilities. Many of healthcare facilities that are

available are extremely unsanitary. There is usually one clinic or hospital per district or region. (Kelly, 2009). Malaria, responsible for over 26% of deaths, is the main cause of death in northern Uganda.

(b.)In Uganda, agriculture is a major component of rural livelihoods, especially in subsistence farming. A large number of men and women do not have the opportunity to work outside the home since there is little opportunity for employment. Those who do work tend to earn a very low wage. The majority of families in northern Uganda live solely off what they produce for food with very little coming from an outside source (FAO, 2016). Most large farms are on average five to six acres in size with subsistence farming ranging from small yard size plots to one acre. Most of the crops grown on large farms include: cassava, millet, cotton, sweet potatoes and groundnuts. Some families have a type of domesticated bird, primarily chicken. Almost all poultry farmers in Uganda are women and children, since the poultry farming is thought to be minor and not benefitting men's efforts. Many women will raise poultry mainly for food security, as part of their survival strategy, because of this it is rare to find a homestead that does not own a type of poultry.

(c.)The main barrier stopping Ugandans from improving their agriculture productivity is that they don't have the funds to purchase or make modern farming equipment. Most farmers own only a small hand plough, a panga (a type of machete) and an African hoe. Without fertilizers, pesticides and access to high quality seed and vegetable planting material, the crops don't produce the large and healthy crop that is greatly desired. Access to food markets is difficult because of transportation issues. Most families that live in the northern regions of Uganda will never even see a vehicle. Many travel by walking and riding bicycles. Families rarely leave their villages because they don't have the money to travel and also because the roads are extremely rough and difficult to travel on. Education for new technologies is limited and therefore many farmers do not attempt to engage in new practices.

3. Factor 7: Animal Agriculture

4. (a.-i.)Animal agriculture is small in northern Uganda, with very few families having the finances to raise a significant species in order to produce enough food for their family. Because livestock production is kept so small, many of the residents eat animal protein on a rare basis. Those families raising animals tend to have a higher income from the sales of any surplus. Also, those who raise animals as a food source tend to have lower malnutrition rates.

(a.-ii.)The rural areas of northern Uganda are the heaviest effected by the lack of animal agriculture. The lack of protein may lead to more disease because of the body's lack of nutrition to fight off basic illness. This lack of animal agriculture is not felt as heavily by those in the southern portion of Uganda, where there are larger cities and better infrastructure.

(a.-iii.) The trends for the lack of animal agriculture in the northern region are not really tracked, and there was little to no literature research available. Contact was made and interviews conducted electronically through Facebook and Email with a northern Uganda local NGO communicating with Mrs. Lee, as well as an agriculture extension representative from the northern area of Uganda near Moyo, and a quail farmer near Kampala. Each interviewee indicated that rural families have a difficult time surviving from the subsistence farm life they lead and that some of the younger generations are leaving the area and heading towards larger cities. All indications point towards little change from the past and no change for the future, unless a new approach is able to help these families advance in animal agriculture.

(b.)Increasing animal agriculture in northern Uganda would dramatically increase the quality of life for families by increasing nutrition through increased protein availability. Any surplus of eggs, meat, hide or other animal products could be used to earn an income to support the family's needs. An increase in income may allow for families to provide their children an education or better education, potentially leading to an increase in status, skill or wage earning capacity. All the above changes could lead to a longer living individual with fewer stresses from trying to stay alive off meals which are primarily starched based. An increase in animal agriculture could also provide another avenue for families to replenish the soil with nutrients from the manure produced by the animals. This increase in natural fertilizer could reduce the use of chemical fertilizer and therefore reduce the costs associated with producing some of the other starch crops.

(c.)As the population of Uganda grows there will be more and more demand for food and less availability of animal based protein. If the current status does not change, the already malnourished families will continue to struggle with poverty, health issues, low income and high crime rates. The wellbeing of rural northern Ugandan families lies in education regarding potential ways to participate in animal agriculture in order to provide change for future generations.

(d.)While doing research on sustainable sources of animal agriculture, the production of quail kept popping up as a unique and different approach to providing for a family in the United States as well as other places. It is believed quail production can be a viable animal agriculture source for families to begin with or add to their current operation. From the interviews conducted with the residents of Uganda, it was found that quail are commonly raised in the south and central areas by farms producing plenty to sell to restaurants and markets. There was very little indication that many, if any, rural families in the north were currently raising quail as a method of subsistence farming or for profit. As part of the interviews, it was brought up that quail are not raised, because of the lack of education regarding the care and management. There are, however, some families raising their own chickens. I decided to conduct my own hands-on research to see which species, quail or chickens, would be the most economical to produce. I procured eggs for hatching for both species and the quail hatched between day 16 and 18 while the chickens hatched at day 21. The quail reached sexual maturity and began producing eggs at six to eight weeks of age while the chickens took nearly 30 weeks to lay the first eggs. In the time it took chickens to reach maturity, theoretically I could have raised three generations of quail, and considering quail lay nearly an egg a day with a 75% hatch rate, that's a lot of quail. While the quail are smaller and their eggs are smaller, they could potentially produce a constant source of eggs and meat. Quail are less susceptible to disease and they have been noted as being more nutritious than chickens. Implementing this new idea would require education, some new equipment, and legal regulations to be followed. Education could be handled through local agriculture extension representatives in the area. Frequently, these specialists are employed by NGO's in order to serve as the agriculture specialist in the area, helping others learn and implement new ideas and practices. Because the extension representatives are local, families may be more likely to trust that the information and ideas are legitimate and applicable to bettering their position with animal agriculture production. Trust is important, and I believe the extension representatives would be key to introducing quail production in the area of northern Uganda. The main equipment which would be necessary would be a solar incubator. While an electric incubator would work in some areas, power is not consistent, and may reduce incubation rates if the power goes out. A solar powered incubator with a battery could be used in order to incubate eggs to raise future generations of quail. There are several on the market, and I believe the best idea is for farmers to create a type of cooperative with the extension representative so that many of the families could share in the cost and therefore share in the use of a solar incubator. Wire cages would also need to be purchased or created in order to contain the birds. While education and new equipment would be necessary for introducing quail to the area the first step is to

follow all guidelines set forth by the local and national government. According to the interview conducted, there are some minimal steps to complete in order to begin raising quail if you are planning to sell them. I could not find any regulations for home quail production other than using birds from outside the country. The good news is, since quail are being produced in Kampala and other large cities, eggs and birds are available for purchase already in Uganda.

(e.) The implementation of quail production in rural northern Uganda is highly reliant on the local families buying into the idea of something new. According to Susan Davis, Engineering for Change, there are steps and concerns which should be considered in order to help developing countries accept and adopt new sustainable agriculture practices. Funding and the availability of proper equipment will be the largest obstacles to overcome, however, there are many options for solving these key issues. While NGO's and local governments may be options for sources of funding and equipment, stewardship of the resources by the local residents is the number one key to successful implementation and longevity of new sustainable agriculture practices. (Blumenthal, 2017). NGO's could be a key funding source, however, finding the right NGO for this project will be key. So many NGO's are financially strapped or dedicated to specific areas, it will be important to identify an organization with a passion for animal production, increasing food sources, and potentially ones focused on helping families start their own animal enterprises in order to provide funds for their families. Heifer International is an NGO who operates in northern Uganda with a focus on working with smallholder farmers with continued training. Heifer International works primarily from donations, with individuals and groups typically funding the purchase of animals in needy areas. Many donations originate from individuals and groups who are passionate about animals and helping others. Spreading the word through the National FFA and National 4H organizations would be a first step in promoting the funding of the quail project. Currently quail are not an option to be purchased through Heifer International, but because of the low cost, I could see many opportunities for small and large donations to come in for the support of quail production in these needy areas. I believe Heifer International is the right type of NGO who could help implement quail production in northern Uganda. I would like to propose my thoughts to Heifer International as a new option for their organization. The value in developing a quail program through a government agency or NGO reaches farther than the initial investment and purchase of the animals and equipment. Considering that quail have a rapid rate of maturity, reaching breeding age as well as processing age at six to eight weeks makes them a prime candidate for a sustainable option for a protein source. The eggs can be eaten and they can also be incubated to further the growth of the flock. Investors in quail programs can rest assured their investment will grow far beyond the initial quantity of the animals and equipment purchased because families receiving the initial animals will be positioned to share the meat and eggs, but also to help others start their flocks by providing small chicks as starters. The chain reaction of others helping each other with fast producing quail is a duplicable process in close knit communities common in northern Uganda. There are positive indications that the introduction of quail in northern rural areas could be implemented fairly easily, with the right people and resources in place. (Lee, 2017) (Emmanuel, 2016). In addition to funding, education will be increasingly important. In addition to working with local extension representatives, I believe many NGO's would be willing to help with the education and equipment procurement in order to help with the improvement of animal agriculture. I would hope that the local governments would be supportive of families raising quail for food and possible sales, however, some local governments may show resistance due to a "new" production method coming into the area. I believe working with the extension representatives could ease any reluctance from local leaders.

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