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Livestock production systems for Food Security in Ethiopia

When you hear the phrase “food security” what do you think of? Food security is defined as when people do not have to live in fear of hunger or starvation. An example of food insecurity would be when people are undernourished as a result of the physical unavailability of food. So why is this a problem? As of right now 925 million people are defined as malnourished because of food insecurity (“Ethiopia-Livestock”). Ethiopia is located in Eastern Africa. To date, Ethiopia is the number one exporter of meat in Africa. Ethiopia seems to be on the right track to eliminate food insecurity. However, Ethiopia’s population is around 80 million, and it is predicted that by the year 2050 the population will double (Hagen). Ethiopia is going to have to make some extreme changes to be able to keep up with the demand of livestock.

It is important to understand the lives of Ethiopians in order to decide what changes are possible. A typical family in Ethiopia still abides by the basic gender roles. Men are responsible for plowing, harvesting, the trading of goods, the slaughtering of animals, herding, the building of houses, and the cutting of wood. Women are in charge of cooking, brewing beer, cutting hops, buying and selling spices, making butter, collecting and carrying wood, and water (“Ethiopia”). If a man participates in domestic activities such as cooking and child rearing, he may become a social outcast. It is stressed that education is more for boys than girls (“Ethiopian Culture- Traditional Costume, Food and Drink”). Therefore, girls are restricted from leaving the house and socializing more than boys.

A typical family living in Ethiopia consists of a husband and a wife who were arranged to be married. Also, people still believe in giving dowries. The dowry may include livestock, money, or other socially valued items. The proposal usually involves elders, who travel from the groom's house to the parents of the bride to ask for the marriage. The elders are traditionally the individuals who decide when and where the ceremony takes place. Both the bride's and groom's families prepare food and drink for the ceremony by brewing wine and beer and cooking food. A great deal of food is prepared for the occasion, especially meat dishes (“Ethiopian Culture”). The basic family structure is much larger than the typical family life Americans are used to. There are often three to four generations in a household. The oldest male is usually the head of the household and is in charge of decision making. Men, usually having the primary income, control the family economically. Women are in charge of domestic life and have significantly more contact with the children. The father is often seen as an authority figure (“Ethiopian Culture”).

During early childhood, children have the most exposure to their mothers. At around the age of five, children start attending school if their families can afford the fees. In rural areas, schools are few, and children do farm work. This means a very low percentage of rural youth attend school. Women face discrimination as well as physical abuse in school. This includes name calling, bullying, etc (“Ethiopian Culture”). After the children grow up, most of them stay with the family and continue to work at the family farm or do the daily chores in the house.

An average family farm in Ethiopia would consist of land ownership of two or less hectares. A hectare is 10,000 square meters. The average farm size can generate only about 50% of the minimum income required for the average farm household to lead a life out of poverty. The average farm has around four cattle, three small ruminants, and four horses/camels/donkeys (“Ethiopia-Livestock”). Out of all these animals, the camel is worth the most money and the most efficient. Families also raise a small flock of chickens, because they produce meat, eggs, and feathers which can be used for stuffing (“Ethiopia-Livestock”).

In Ethiopia there are several barriers that get in the way of easily improving agricultural productivity and access to food markets and adequate nutrition. The number one challenge is simply the dry season. This creates several problems: first, and most manifest, would be animals and even people have to travel farther to find clean water. Secondly, the forage becomes depleted during the dry season. This situation gets much worse when there is an exceptionally long dry season. Last of all, long dry seasons leave the grass that did survive extremely low in the nutrient value that the livestock need.

Recently more and more precious forage pasture land has been lost by either drought or cultivation. In Iowa everyone sees growing crops and raising livestock go hand in hand. But, what if that wasn't the case? In Ethiopia people haven't figured out a way for raising livestock and growing crops to coincide. This is a very challenging and interesting problem. Obviously, farmers need pasture land and/or grain to properly raise livestock. Most Iowans do this by raising animals and crops. People are still competing against each other to either raise livestock or plant crops ("Ethiopia Livestock"). This would be a sticky situation for the people of Ethiopia because they will need to find a balance of farm land and pasture land, especially with the population on the rise.

In the last few paragraphs, I have stated several problems with Ethiopia. However, I'm not writing this essay just to state the problems and be done. No, here are some of the solutions I have brainstormed: set up more indoor animal facilities, allow more water availability, make a production plan for the forage grasses, and simply educate people about how to make animal and plant production more efficient and productive.

My first solution is to incorporate partial or closed indoor housing facilities for livestock. There are a few problems with raising and producing livestock out in an open pasture: first and the most common, is death by wild animal; second, is the spread of disease contracted from wild animals and other sources; and lastly, there is little access to clean water. With an indoor housing facility, Ethiopians would eliminate most all of these problems. Wild animals would not be able to get in, nearly eliminating two problems: death and disease. In addition, water would be readily available in one spot.

What exactly is a partial or indoor facility? If thinking of an indoor facility in Iowa, most people would think of a confinement building, which is a huge closed in building where thousands of animals live in cramped quarters. The building I propose as a possible way to raise livestock is called a hoop building. Hoop buildings are defined as barns that are built with strong, durable steel framework providing protection against rust and corrosion. They also feature a tightly woven fabric cover that stands strong against the elements and resists tearing and leaking. These buildings do not need lighting, for the light fabric on the top leaves the building with a naturally lit environment (*Agriculture Supplies, Fabric structures, Equine Buildings, Grain Storage,*

Livestock Buildings From FarmTek). Hoop buildings are easy to set up, less costly than traditional steel or wooden buildings and last just as long, if not longer. The Ethiopian people can set up pastures outside of these buildings so the livestock can get out and graze, or they can keep them confined and use the land to plant and harvest different forages to feed as hay.

My second idea is to make water more available. Water is the most important need animals and humans have. Most species would be dead within 2-3 days of no water. Water is scarce in Ethiopia, especially in the dry season. Some piping has been set up to the larger cities. However, most people live outside of town, and must travel far to find clean water. Another problem within Ethiopia is not enough piping for water to travel to people in need. Hopefully more pipe can be laid, for that would relive a lot of pressure of water worries. Animals would be much more healthy and productive with easy access to clean water.

There is one animal that can live up 7 days without drinking a drop of water: the amazing camel. Camels are able to store excess fat and fluids in their hump(s). Camels also provide milk, meat and travel. A

camel produces anywhere from 4-5 liters of milk a day for up to nine months. Camel milk is also higher in iron, vitamin C, and protein than cow milk is. Camel meat is also sold and eaten by Ethiopians (“Livestock production in Pastoral and Agro-pastoral Production Systems of Southern Ethiopia”). Americans are used to hopping in a car and going to the store or to visit friends. Ethiopians cannot afford vehicles; they rely largely on donkeys and camels. Camels can carry up to 350lbs (“Camel”). Camels may be the future of animal production, simply for the fact that they drink less water but are just as useful and productive as other livestock. In conclusion, Ethiopians can raise more camels for several reasons: they drink less water, produce milk and meat, and they provide travel.

Available forage land is also a rising problem. More and more land is being used for cultivation. Land cultivation and farming go hand in hand in most areas. Ethiopia needs to gain a better understanding of how and when to plant, grow, and harvest. One large barrier to all of this is the dry season. In the dry season there is nowhere near enough water to irrigate the plants. One suggestion may be to set up more piping again, to transport more water, faster. Next to needing water, Ethiopians need to know the difference between plants. For example, *Digitaria naghellenis* is a grass known for easy digestion and good milk and butter production when eaten by lactating animals (“Dairy Production System in Ethiopia”). There are several forage crops that are very productive and easily grown. Acacia pods and leaves are fed, especially in the dry season, for they tolerate the dryness very well and have a high nutrient value. Andaade is chopped and fed to animals during the dry season also. This helps alleviate feed shortage during this hard time. Plain grasses that grow naturally in pastures grow great during the rainy season, but in the dry season the grasses die and lose their nutrient value (“Ethiopia Fodder Adoption”). My suggestion is let the natural grasses grow in the rainy season, but also plant some Andaade and or Acacia plants so farmers can harvest these plants and dry them to feed as “hay” during the dry season.

My last suggestion is to educate people about what they are doing and why. If Ethiopians had a better understanding of animal, plant, and environmental science, farmers would be able to run their farms much more efficiently and productively. Volunteers could come to Ethiopia and give presentations about animal production, raising crops, etc. For example, the International Livestock Research Institute, also known as the ILRI, already has several programs started. Some programs include the following: meeting the rise and demand in animal source food, low livestock funding, ways to better livestock, chicken production and market systems of Ethiopia, and the list goes on and on (“Livestock-Ethiopia”) if the ILRI continues with its educational presentations and research, this program would continue to benefit thousands of Ethiopians.

In conclusion, my personal suggestion to the Ethiopians is to set up more indoor animal facilities, make water more available, make a plan for forage grasses, and simply educate people. One goal of mine is to introduce more camels into their agricultural program for the simple fact that camels produce the most income. The second idea of mine is to incorporate more indoor facilities. Indoor facilities can help reduce disease and death rate. My third suggestion is to set up some kind of crop rotation. This would create feed pasture land in the rainy season and hay in the dry season. My last solution is to educate people. Ethiopians would be able to have a better understanding of what they are doing and why. Ethiopia is a country with much potential. When I started my research, I thought the country was a place where everything would have to be started from scratch, but as I researched, I discovered some programs were already started and could be expanded on. For example, food security programs. Overall, Ethiopia just needs a push, and the people can easily accomplish all of my suggestions. I would love to aid the people making these changes in any way possible.

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