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Kenya, Animal Agriculture

Beef Production in Kenya

By the year 2020, Africa's population will increase to one and one-third billion people. Fifty-two million people will reside in Kenya alone (Population). This enormous swell in population will severely strain the continent as food production falls farther and farther behind demand. To add to the challenge of food security in Africa, income is also expected to rise in the next 20 years. Because livestock products are normal goods - meaning that, as income increases, demand for products such as beef will also increase - each individual will consume more livestock products than they do now (Mankiw). This, along with a rapidly growing population, indicates that the African demand for livestock products will increase exponentially in the next few years. Kenya is an important beef producer that also exports on a small scale to its neighboring countries (ILRI). Therefore, it is critical to both look at the challenges and consider any potential improvements to Kenyan beef farming now to ensure that its supply will also increase in the coming years.

The Republic of Kenya is located in East Africa and borders five other countries as well as the Indian Ocean. The country straddles the equator and is roughly twice the size of Nevada. Kenya has sandy beaches along the ocean and slowly rises from east to west through inland plains, highlands, and mountains. The plains cover three-quarters of the country and are mostly covered in underbrush. The highlands are bisected by a wide, steep canyon called the Great Rift Valley (Stanford). Lake Victoria, the largest lake in Africa, lies along the southwestern border of Kenya. The Nalubaale dam within the lake provides hydroelectric power for the surrounding countries. Overall, Kenya's climate changes from tropical along the coast to arid towards the interior (Britannica).

Kenya gained independence from Britain in 1963 and became a republic twelve months later. Kenya's current government is a constitutional republic, and the most recent constitution written in 2010 instituted two levels of government - national and county. The national government consists of executive, legislative, and judiciary branches led by a president, senate and national assembly, and chief justice. There are also forty-seven county governments headed by governors. The president and cabinet determine the country's policies and implement government projects, while each governor oversees his or her county's portfolio of economic, health, infrastructure, and development policies (Misachi). Within this framework, the local governments have a lot of influence over farming practices because they are responsible for managing their particular county's resources and development projects.

Currently, Kenya has an estimated population of forty-eight million people of different ethnicities and cultures (World Atlas). It is a very young country - forty percent of the population is under the age of fifteen because of both high fertility rates and a culture that favors early marriage and childbearing (Scroope). Because of a nationwide HIV epidemic, the national government spends its resources on disease treatment and prevention rather than on a robust family planning program. Kenya is also a host country for hundreds of thousands of refugees escaping violent conflicts in several of the neighboring areas. Most of Kenya's population is concentrated in the southern parts of the country and around shorelines such as Lake Victoria and the Indian Ocean. Almost seventy-five percent of the population lives in rural towns and villages, but this number has been slowly decreasing as more and more Kenyans move to cities such as Nairobi for better jobs and educational opportunities. Even though Kenya's population growth has begun to plateau in recent years, it still causes a strain on the country's job market, government social services, farmland, and natural resources (World Factbook).

Healthcare in Kenya is poorly supplied and understaffed, with only one doctor per eight thousand people. Nearly five percent of the population has AIDS/HIV, and there is a high risk of contracting infectious diseases such as malaria, typhoid, dengue fever, rift valley fever, or diarrhea. The government funds clinics that concentrate on preventative medicine for these ailments, but has been only minimally successful because diarrhea, dysentery, and sexually transmitted diseases are still very prevalent. Modern healthcare is rare in rural areas, and many farmers still utilize traditional medicine such as herbal tonics and healing rituals (Scroope). In addition to poor healthcare, Kenyan families face other challenges in their infrastructure. Sixty percent of households in the country have electrical service in their homes, but only seven percent of people living in rural areas have access to electricity. Seventy percent of people own cell phones. Only about eighty percent of urban areas and sixty percent of rural areas have access to improved drinking water. Improved sanitation rates are much lower at about thirty percent for both urban and rural households (Stanford). Because of the myriad of infrastructure challenges that the rural population faces on a daily basis, it has been very difficult for Kenyan farmers to find both the time and the funding to make the move from subsistence to for-profit agriculture.

In Kenya, family is important and is a great source of pride. Most Kenyans expect to marry and raise a family (Scroope). A typical woman in Kenya has an average of three kids. In rural areas, families have more kids who are usually raised by extended families, while urban kids tend to be raised by their nuclear family (World Atlas). Kenya is very patriarchal in the rural areas of the country - women are expected to be obedient to their husbands and gender responsibilities are well-defined. The man is responsible for financially supporting his family and rarely helps with household chores. Women care for the home and children, which is a big task in houses without running water or electricity. In agricultural communities, women do up to eighty percent of the work because they share the work in the fields in addition to their household responsibilities (Stanford). In urban areas, however, women have more gender equality, and women are beginning to share both household responsibilities and decision-making power with their husbands (Scroope).

Kenya's top grossing agricultural products are tea, coffee, corn, wheat, sugarcane, fruit, vegetables, dairy products, beef, fish, pork, poultry, and eggs. Its main cash crops are tea and coffee, which are grown on large plantations. The rest of Kenya's farms are called "shambas" and have historically tended to be fairly small. The size of these farms has steadily decreased over time since it is a custom for each generation to divide the family farm between sons. However, some families have begun to purchase farmland to add to their inheritance. These subsistence farmers grow mainly vegetables and fruits, and any extra food that the farmers have after feeding their families is either sold at local markets or bargained for other goods. Farmers or corporations that raise solely animals such as cattle, goats, and sheep are much less common and have traditionally been considered wealthy (Stanford).

Corn, or maize, is the staple food of Kenyans. It is ground into flour and cooked as a porridge, which is sometimes mixed with vegetables, potatoes, or mashed beans. Boiled greens and other vegetables as well as banana porridge round out a normal daily diet. Herders use milk as their primary food ingredient, and fish is popular on the coast and around Lake Victoria. Special occasions are celebrated with a dish called "burnt meat" made from roasted goat, sheep, or cow. Beef stew is another favorite, but it consists mostly of vegetables and beans because meat is expensive and rarely eaten by the rural population (Stanford).

Many urban Kenyans work in what is called the *jua kali* sector, working day labor as mechanics and in construction. Others are employed in industry, services, and government, but the country has an extremely high unemployment rate, estimated at about fifty percent. Almost forty percent of the population lives below the poverty line. This is not helped by the country's infrastructure, which is inadequate for commuting, housing, and food security (Stanford). In spite of widespread poverty, however, there is an emerging affluent social class in the urban areas of Kenya that has exponentially

increased its demand for animal agricultural products, especially beef. Also, as the country's infrastructure slowly improves, even middle class families are beginning to incorporate more dairy and meat into their diets (Logan-Henfrey). Because of this increased demand, eighty percent of subsistence farmers now depend at least partially on livestock for their livelihood, and thirty-five percent of the cultivated land in Kenya is now dedicated to permanent pastureland (World Factbook).

The challenges to animal agriculture in sub-Saharan Africa are daunting. Food production has not been able to keep up with the increasing population. In order for the food supply to meet the future demand in Kenya, food production must increase. Additionally, animal agriculture requires a lot more land than plant agriculture to generate the same amount of food (Logan-Henfrey). Because of population growth and shrinking family farms, land is already becoming scarce. To complicate matters further, livestock production efficiency in Kenya is only one-fourth that of developed regions (ILRI). The climate does not favor animal agriculture and is especially harsh for beef cattle. Almost constant periods of drought cause water shortages that are difficult for both the animals and the plants on which they feed. The dry climate also contributes to excess soil erosion, which removes nutrients from the grasslands. The overstocking of animals in an attempt to feed the growing population has disastrous consequences for the land because overgrazing causes even more erosion. Farmers with smaller and smaller farms are challenged financially and then begin to graze cattle on land that is not suitable for pastureland. Because they are barely existing at a subsistence level, they cannot afford inorganic fertilizers and thus try to get as much out of their land as they can without putting anything back. As soil fertility declines, crop yields also decline, and Africa falls more and more behind in its attempt to feed its bulging population. The stresses on the land due to irresponsible farming practices can even lead to severe and sometimes irreversible environmental degradation (Miyaki).

The result of stressed pastureland is malnourished cows. Poor beef production has a direct effect on rural families because, even though there are some large scale operations, most beef cattle are raised on small farms as a supplement to plant crops. An average farmer only owns a few beef or dairy cows. Because of this, there is a high cost associated with transporting one or two cows at a time for long distances over poor roads to be slaughtered, canned, and frozen in plants located near urban areas. Another problem facing these small farms is that the exotic purebred beef cattle sought after by the upper class are very expensive to purchase, so most Kenyan farmers cannot afford to raise them (ILRI).

Overcoming the challenges that Kenyan beef farmers face will not be an easy task. Because beef farming is expensive and is usually undertaken as a supplement to the production and income generated by plant farming, a poor year for plant crops can easily cause a small farm to have to sell all of its cattle and cease its beef operation (Miyaki). Therefore, a good place to start would be for government officials to champion programs that increase productivity and profitability across all agricultural sectors in Kenya. Local governors could work in tandem with the national government to tailor programs for their respective counties. Private companies and donors could try to align with the government to help create a sustainable, coordinated approach to job creation, infrastructure improvement, low-interest farm loans, and agricultural education and research. Improving farming productivity will eventually improve the economy of Kenya, bringing both food security and job opportunities to the country. By stabilizing the livelihoods of all small farmers, the more expensive and much more profitable beef cattle industry would have a better chance of flourishing.

One of the cheapest solutions to the challenge of beef farming in Kenya is education on how to raise beef cattle. Beef farming requires knowledge and experience. The farmers have to learn the rules and regulations involved in selling cattle for food while also learning how to raise them (Miyaki). A grassroots way to ensure compliance would be to require the local veterinary extension officer to inspect the beef and decide if it is fit for consumption. A safety inspection would guarantee that farmers are following standardized sanitation procedures, including vaccinations that could be made mandatory. It may be difficult for farmers who already own dairy cattle to learn the proper ways to care for and treat

beef cattle, but governmental and private foundation programs could be made available to poll farmers on their current knowledge and then offer pamphlets and training tailored to each farmer's needs.

Using local beef cattle breeds that are more affordable, easily available, and better adapted to Kenya's environment is a good way to introduce farmers to beef farming. However, beef from exotic breeds tends to bring in more money and is a better quality of meat (Kebebe). These breeds require more expertise to raise, so programs could be put into place to subsidize the purchase of stock and then train experienced farmers to raise purebred beef cattle for both breeding and meat consumption. If local farmers become successful in breeding programs, the cost of these purebred cattle would slowly decrease because they would be more readily available for purchase.

Programs could also be developed to help the rural farmers adapt to the harsh East African climate. Kenya is currently going through a long period of drought, which is making it hard to farm anything, much less raise livestock. The soil is dry and lacking in nutrients (Logan-Henfrey). Farmers could be educated on which crops to plant to help boost soil quality as well as which crops to plant to decrease soil erosion. More education on pasture management as well as feed processing would also improve current farming practices. One solution to poor pasture quality would be to feed the cows hay. This would allow the farmers to rotate their pastures so that the fallow fields could regenerate. However, this solution to poor soil quality would have to be carefully balanced with the additional cost of hay because most farmers could not afford the extra expense. A local, independently-funded program that supplies hay at little to no cost to farmers who contract to rotate their fields could possibly kick-start a soil quality improvement across an entire county.

Another way to help boost beef production would be to rehabilitate marginal areas to increase the acreage for the cattle to graze. As more and more of the rural population moves to cities for better job opportunities, the land available to people still living in the rural areas will increase. More land would improve the quality of beef from the cows, and farmers willing to learn how to care for beef cattle could finally start raising beef for profit. Management and support services could be utilized by the department of agriculture, livestock, and wildlife to ensure that newly available land is repurposed into pastureland. Additionally, beef cattle could be used to graze on crop byproducts after the harvest. Animals such as cattle are essential to small farms in Kenya because they can convert inedible products like crop residues into human food. Most importantly, they speed the process of composting these byproducts because their stomach bacteria easily break down crop residues and release their nutrients into the soil in the form of manure, a natural fertilizer (Kebebe).

Because forty percent of Kenya's population is under the age of fifteen, one of the best ways to ensure proper farming practices in the future would be to present educational programs for young people on beef farming. Classes could be offered as school electives or as short, weekly classes at community centers such as churches. Distributing stories and comic books about Africans who are beef farmers would familiarize children with this occupation and also make it a relatable topic. By overcoming the idea that only the rich can raise beef cattle and introducing animal husbandry practices to young farmers who might otherwise have never tried beef farming, these programs would begin to increase beef production in Kenya just as this large population group matures into adulthood.

The goals of food security and the standard-of-living increases cannot be met by policies and education alone, however. Research must be done to find new ways of increasing production and efficiency in developing countries. Research at nonprofit laboratories includes the scientific exploration of livestock health and nutrition, farmland management, and the development of genetically modified organisms as well as the psychology and public health issues of the people who farm the land (ILRI). This research can be used to help improve the production efficiency of the cattle, introduce disease-resistant stock, and conserve the natural resources needed for livestock farming in Kenya.

The solutions proposed above may not completely satisfy the demand for beef in Kenya as the urban population grows and demands more and more meat. However, increasing the overall amount of beef produced may eventually lower the price of the beef in the local markets, making it more affordable for lower class citizens. No other component of a small farm in a developing country like Kenya has as much potential as the beef cow to reverse the widespread hunger, poverty, and environmental decline that collectively prevent rural Kenyans from improving their lives. Successful beef agriculture generates more income than any other farm activity, and the money can be used to buy grains, vegetables, and fruits that further improve nutrition.

Kenya has all of the necessary components - land, water, and people - to become a successful beef producer and to feed its growing population. This potential is far from being fully developed, but a lot of progress has been made in the past few decades. The government, private companies, and nonprofit organizations have shown that they can work together. By investing and teaching technology and skills to local farmers, best practices in beef agriculture can easily be adopted by future generations. Kenyans must now work together to improve these partnerships in order to help beef farming realize its potential at a critical time in the country's history. This is how beef agriculture will achieve the level of quality and productivity needed to feed Kenya's population and even help Kenya become a substantial beef exporter in the near future.

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