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Kenya, Factor 4: Animal Health

Kenya: Preventing the transmission of disease in poultry

Our world today is changing constantly. With improvements in technology in spite of the fluctuating economy, modernization is happening. This is especially true regarding the food industry, especially meat. Poultry is arguably the world's most accepted source of animal protein (Poultry. Web). Being distributed culturally throughout food around the world, poultry has impacted our world in many ways. It provides an essential component of rural households through food, income and even social roles (Rural. Web). In Kenya, poultry has revolutionized their economy and culture and provided them with family roles (Rural). The men, typically, would watch over the chickens and feed them while the women would nourish and care for the chicken (Poultry. Web). However, the chickens of today are farmed in intensive settings with birds over-crowded that require constant monitoring and a significant amount of care. These birds are very susceptible outside of the artificial "factory farm" settings and can succumb to disease and result in devastating losses without proper bio-security and disease prevention measures (Poultry. Web). These birds are not ideal for the small family backyards that are needed in rural areas of Kenya and other developing countries.

Widely accepted in all cultures and regions, the chicken today *Gallus domesticus* is very different than its ancestor the red jungle fowl *Gallus gallus*. The chickens of today, through extensive breeding, have diverged into two distinct lineages (Poultry. Web). The intensive farming of chickens and the integrated operations have forced the efficiencies needed for today. The broiler bird, which has been bred over generations, has evolved to be an efficient food converter into meat. This bird can grow rapidly to market size in less than six weeks. The changes in genetics that has allowed rapid growth also make them susceptible to diseases and dependence on specially formulated feeds (Poultry. Web). Indeed, today, the large companies have their own feed mills that prepare them with specific proportions of vitamins, amino acids and other essential nutrients that are needed for the high feed conversion seen in broilers. However, the broiler bird still needs to grow from an egg that needs to be laid by the mother broiler hen. If the broiler can reach market weight in six weeks and the hen does not begin to lay until twenty-six weeks of age, you can imagine the size of the bird at the same rate of growth. The large size causes additional problems in the mother hen like arthritis, leg fractures and other weight related issues that were not seen in the past (Poultry. Web).

The second poultry lineage was developed to be efficient egg layers, these birds referred to simply as layers, convert most of their feed into eggs. On average each laying hen would lay an egg a day. The feed for these birds are obviously formulated differently, for example its high calcium content is needed for egg shell integrity. The amount of meat in layers would be less than a third of a similarly aged broiler chicken. Due to these breeding practices, over time, they have become highly susceptible to diseases (Poultry. Web). Most chickens are vaccinated at least six to seven times as a broiler and many more as a layer. In addition, they may also be treated with antibiotics and other medicines to treat specific issues or diseases. Some of these vaccinations include the protection against Marek's disease, Newcastle disease, infectious bronchitis, fowl pox and avian flu (Poultry. Web). In contrast, the red jungle fowl and its early descendants were essentially scavengers eating insects and scraps and were highly resistant to diseases. To this day, native or local chickens roam the countryside in developing countries and scavenge. While these birds are hardier and more resistant to infections, they are not as tender in meat or as productive as the breeds in farms today. Chickens were used in the past to help poor families with their income while providing needed protein and in some cases were used to prevent childhood diarrhea through the passive

transfer of antibodies through eggs consumed from chickens vaccinated against diarrheal pathogens (Kenya: Urban. Web).

A typical subsistence Kenyan farm family consists of five members. Due to Kenya's economy diminishing, many people can't afford to vaccinate all their children let alone their animals. An average Kenyan farming family earns less than \$271 a year which is not enough money to provide sustainable care towards their main source of income, poultry and livestock. Access to healthcare is quite difficult due to the lack of income so most poor families often go without medical care. This is a very serious issue in Kenya not only for the spread of diseases amongst humans, but the spread of disease towards livestock and poultry as well. Gaining adequate nutrition is harder because many Kenyan people are poor. On average the recommended intake of calories is 2000, while the average Kenyan gets only 1400 calories and the amount is even less in poor families. In fact, 13% of high-density urban households have unacceptably low levels of food consumption resulting in malnutrition in Kenya (Rural Poverty. Web).

The lack of income really comes into play with nature. Because so many poor Kenyan farming families lack the necessary assets to maintain their chickens, they became very prone to diseases. If prevention is better than cure, and they do not have the means to vaccinate in order to prevent the diseases, clearly treatment, which is even more costly, is completely out of reach. This issue greatly affects Kenya's economy due to the fact that poultry has a great impact on the market (Kenya: Urban. Web). Chickens are often sold at markets, but considering most chickens have diseases that owners cannot afford to cure, they are often not sold and even become so ill that they pass away. This steepens the production line for Kenya by making it harder to have a balanced economy when most of their diseased chickens are dying (Kenya: Urban. Web). This reduces the amount of meat amongst families and negatively affects egg production. Considering Kenya is viewed as a poor country, this makes it harder to deal with disease spread. Several initiatives have been introduced in Kenya for the improvement of livestock, for example, the Kenyan Government was involved in aiding animal health in Kenya through the Animal Health Service Rehabilitation Program which is designed to improve how the small livestock owners can gain animal health services. There were four international agencies funding this program: IFAD, IDA, OPEC and UNDP. Overall, the project was not successful because this initiative only managed to vaccinate only 35-40% of Kenya's cattle. Due to the significant amount of cattle drippings, a dramatic rise in ticks began to form and disrupted the project. The overall project impact for delivering sufficient healthcare to small livestock owners was below expectations (Kenya: Animal. Web).

One of many Kenyan staple foods includes Ugali (a stiff porridge) served normally with chicken. Meat, especially chicken, has impacted Kenya's nutrition strongly. In fact, a typical feast in Kenya would include a vast amount of barbequed meat known as nyama choma (Kenya Demographics. Web). This just goes to show how important chicken is in an average Kenyan diet and how it affects their culture through food. Today, the distribution of chickens to alleviate poverty and much needed protein to families is curtailed due to the vaccinations and medications necessary for their upkeep. Another factor is the availability of vaccines for small farms. Products are typically made for large farms where it's convenient to have large doses in a single vial. The most common dose presentation is 1000 doses and can be as large as 10,000 doses in a single vial for chickens. A typical family farm, even if they could afford the vaccine, would throw away most of the product as it will not be needed. Or they would keep the vial for the next time, by when the product is no longer effective. Many of these products also require refrigeration and with the lack of a "cold-chain", they can become useless. With little money, it makes it tremendously hard for the poor farming families in Kenya to treat their chickens when not having enough money to even treat themselves (Biodesign).

Enter the Kuroiler, a hybrid of the hardier native chicken and the broiler developed by Keggfarms in India. The Kuroiler was first introduced by Keggfarms a decade ago and has proven to be successful. This self-sustaining breed is highly resistant to diseases and is expected to flourish being disease free while

retaining the positive attributes of the layer and broiler breeds. The Kuroiler is a productive egg layer and also a meat bird that serves a dual purpose. Though the Kuroiler is its own separate breed, it is quite similar phenotypically or physically to the indigenous chicken. The only noticeable difference is the Kuroiler's extraordinary size. These chickens can lay up to two hundred eggs verses forty eggs and weighs 3+ kg verses 1.5 – 2.0 kg (Semambo).

Critics may argue that mass developing Kuroilers would be breaking ethics and animal rights, but I strongly disagree. By having such a bird, it can enable us to survive and research and aid birds to also survive in harsh environments thus allowing them to be successful in their habitat. These birds are helping poor families in South-east Asia and in Africa. In fact, a pilot trial testing the suitability of the Kuroiler in Uganda proved a plus on weight gain, egg production, sale price and quality of meat. As a result of this trial, Ugandan farmers claimed the taste of the Kuroiler meat was better by 78.9% as compared to the indigenous chicken. The texture of the meat was comparatively softer by 75% and the sizes of the Kuroiler eggs were larger by 92% (Semambo). Considering food scarcity has greatly impacted Kenya specifically, the majority of the Kenyan population has resulted in restricting consumption (eating fewer or smaller meals and cheaper products). By enabling the Kuroiler, one can receive almost twice the meat and almost five times the amount of eggs eliminating restricting consumption. An egg alone contributes 6 grams of protein and 70 calories, while 100 grams of chicken meat can contribute 21 grams of protein and 170 calories (Farmers. Web). The Kuroiler also has the ability to survive with minimal needs in harsh environments similar to Kenya's.

The Kuroiler has been proven to outperform local chickens and is the next step in alleviating Kenya's nutrition and economy (Semambo). The sale price of a male Kuroiler at 5 months of age is \$24.50 as compared to indigenous male chickens at 5 months of age sold at only \$8.40 (Semambo). The Kuroiler, while a bit more expensive, will end up saving money and be used more efficiently in the long run. Not only does the Kuroiler breed surpass the indigenous chicken, however, studies show that they can actually co-exist peacefully with the indigenous chicken eliminating the worry of predation or quarantining the chicken (Semambo).

Programs to help the Kenyan farmers through international and US aid agencies are present today such as the U.S Government's Food Security Initiative, Feed the Future. While one may question why the US is spending resources outside the country when people in the USA are going without, the numbers of malnourished children and people are much greater in places like Kenya (U.S. Government. Web). Also, helping promote self-sustainable agricultural practices are far more lasting with greater returns to the world. In addition, NGO's and charities such as the Bill and Melinda Gates foundation help educate and assist with the introduction of the Kuroiler (U.S. Government. Web). Jagdev Sharma, a researcher at Arizona State University's Biodesign Institute, along with members from Keggfarms are developing a new approach to raising the poultry production in Uganda (Biodesign). According to Sharma, "transformation is the introduction of a hybrid chicken known as the Kuroiler into rural communities." Sharma has received a \$1.4 million grant from the Bill Gates foundation to pursue this project in Uganda. He wishes it will reduce poverty and improve the quality of life. Similarly, if such an initiative were taken in Kenya, their economy, based on trends and facts, would increase and be more productive (Biodesign). Bred to thrive on household and agricultural waste, the Kuroiler provides eggs and meat, a major source of protein, necessary for the family. This breed is a solution to improving the quality of life for the rural poor of Kenya and will allow the families to thrive and the micro-economy to prosper. The sale of the surplus meat and eggs, provides much needed additional income to the family.

The next question would be how do we introduce the Kuroiler to Kenya? Besides the philanthropic foundations, targeting non-government organizations to help educate and facilitate the acceptance of the bird is very important. I feel the Kenyan people can be educated about the Kuroiler chicken through a program involving veterinarians, universities and local cooperatives. Basic husbandry techniques and

practical upkeep can be obtained from Keggfarms. Demonstrating the ease of maintaining the Kuroiler and explaining the value it can bring to an average rural family will ignite interest and increase participation. In addition, finding a local company that can serve as a supplier of eggs and chicks to potential farm families is critical to establish a sustainable local source of the Kuroiler. A partnership with a major meat producing company such as Tyson Foods, JBS USA, Cargill or Smithfield Foods would help increase the penetration into large areas of Kenya. By targeting these large meat companies, it will allow them to diverge the Kuroiler around the world. Finally, Keggfarms, the company that introduced the bird will be central in providing the information, the initial breeding stock that will be essential for the success of this venture (Watrous. Web).

The Kuroiler is a practical and realistic solution to improving animal health in poultry and meeting a growing need for food and protein for the impoverished parts of Kenya. This bird has been proven to adapt to the harshest environments and improve the lifestyle quality of life in many rural parts of the world. It has proven to be almost twice the size of a broiler laying almost four times the amount of a layer. With proper funding and initiative, the Kuroiler can be introduced and adapted simply throughout Kenya and allow for the expansion of their economy as well. By implementing this idea throughout Kenya, it can alleviate the stress on poverty and allow basic life necessities such as protein and food. The world is reaching a new level beyond in which the food needs are going to double, creative and alternate sources of agriculture and farming will be necessary to sustain our planet. The Kuroiler is the product of great science and cross breeding and is an inspiration for further, similar study. Our generation will soon realize that progress can help satisfy the impoverished and make their lives better and healthier. We all deserve to have food on our plate. Let's make a change.

Works Cited

- Biodesign Institute. ASU, 2014. Web. 31 July 2014. Path:
<<http://www.biodesign.asu.edu/research/projects/kuroiler-chickens>>
- Farmers Uncertain About Future of Kuroilers*. URN, n.d. Web. 1 Aug. 2014.
<<http://ugandaradionetwork.com/a/story.php?s=52567>>.
- Isenberg, Daniel. Keggfarms (India)—Which Came First, the Kuroiler™ or the KEGG™? 2007. Harvard Business School. 9-807-089.
- "Kenya: Animal Health Services Rehabilitation Programme." IFAD Investing in Rural People. CSS, n.d. Web. 21 Aug. 2014.
<http://www.ifad.org/evaluation/public_html/eksyst/doc/prj/r188kece.html>.
- "Kenya Demographics Profile 2013." *Index Mundi*. CIA Worldfact Book, 21 Feb. 2013. Web 1 Aug. 2014. Path:
<http://www.indexmundi.com/kenya/demographics_profile.html>
- "Kenya: Urban poor face rising food insecurity." *Irin News*. UN Office for the Coordination of Humanitarian Affairs, n.d. Web. 11 June 2014.
<<http://www.irinnews.org/report/96035/kenya-urban-poor-face-rising-food-insecurity>>.
- The Poultry Site*. 5m Publishing, n.d. Web. 1 Aug. 2014.
<<http://www.thepoultrysite.com>>.
- "Rural Poverty in Kenya." *Rural Poverty Portal*. IFAD, n.d. Web. 1 Aug. 2014.
<<http://www.ruralpovertyportal.org/country/home/tags/kenya> >.

Semambo, D.K.N., Mary C. Mbabazi, Jagdev Sharma, and Mbabazi M. C. "The Kuroiler chicken as a means of reducing poverty and providing nutritional security in Uganda." (2013): 1-26. Print.

"The U.S. Government's Global Hunger and Food Security Initiative." Feed the Future. MSG, n.d. Web. 21 Aug. 2014.
<<http://www.feedthefuture.gov/country/kenya>>.

Watrous, Monica. Food Business News. Sosland, n.d. Web. 19 Mar. 2013.
<http://www.foodbusinessnews.net/articles/news_home/Business_News/2013/03/Ranking_the_meat_and_poultry_i.aspx?ID=%7BE1E627B9-E4CE-40A0-A3E0-ED9B597FCBFE%7D&cck=1>.