

Disease Prevention Through Education



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ILRI
— 40 —
YEARS
better lives through livestock



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Thank you also to anyone not named above. There are far too many people to thank them all, but know that I truly appreciate everything you have done for me.

About Me

I was born and raised in Readlyn, a small town in Iowa with a population of under 900 people. While at first glance this may not seem like an agricultural upbringing, agriculture has indeed been a part of my entire life. As I entered high school, I began agricultural education classes at Wapsie Valley High School under Mrs. Ellen Doese. Upon enrollment, I was inducted into the National FFA Organization. During my years in high school, I had the opportunity to compete in various Career Development Events, beginning first with Conduct of Meetings and Parliamentary Procedure and ending with Extemporaneous Speaking. Also through FFA, I had the opportunity to show dairy cattle at the Bremer County Fair, participate in dairy judging, and work at a Veterinary clinic through our Supervised Agricultural Experience program. This, in turn, led into me working on a dairy farm under the guidance of Mikel Richards.

Eventually, these experiences led me into the World Food Prize. One of my friends, Alana Platte, attended the World Food Prize conference the year before, and her stories motivated me to begin work on a paper over Malnutrition in Bolivia that would allow me to attend the Iowa World Food Prize conference in Ames. With tremendous help from my agricultural teacher and mentor, Mrs. Ellen Doese, I was able to submit my paper and attend the Iowa World Food Prize conference in Ames. From there, I was one of seventy six out of almost 400 students from around the state selected to attend the World Food Prize Global Youth Institute in Des Moines. Again, my mentor, Mrs. Ellen Doese, brought me to the conference. I was given the opportunity to listen to top researchers and farmers from around the world, share their ideas on the future of agriculture, and speak of the importance of the best minds in the world collaborating to create a more sustainable and productive future to feed the world.

I then brought these ideas home to Wapsie Valley, where I worked on holding a meal packaging event for the entire school. After receiving a grant from the NobleCause organization for \$6,500, I contacted Outreach Meal Packaging. With the help of NobleCause, Outreach, and the students and staff of Wapsie Valley, we were able to package 20,250 meals. These meals were then transported to the Northeast Iowa Food Bank, where they would serve over 100 people for an entire year.

After this project, I thought my involvement with the World Food Prize had come to a close. Never in my wildest dreams would I have imagined spending my entire summer 8,000 miles away from home in Ethiopia. Yet, after being selected as one of 24 Borlaug-Ruan interns, that is exactly what happened. As I left home, I knew that the person getting on that plane would not return the same as when I left. Looking back, I could never have imagined how truly life-changing this whole experience turned out to be in the end. I returned home to Iowa, filled with a better understanding of the world around us and a huge sense of humility, realizing how truly blessed we are to be living in the United States of America.

Addis Ababa, Ethiopia

Addis Ababa, the capital of Ethiopia, lies in the highlands of Ethiopia in the center of the Great Rift Valley. With a population of eight million people, the city of Addis Ababa reaches a size greater than New York City (Planet). However, walking through the city, one would never guess this size. From the small-town feeling to goats, sheep, and cattle roaming the streets to people always stopping to say hello, I felt right at home in this city 8,000 miles away from the place where I was born and raised. Thanks to the kindness and generosity of almost every single person I was fortunate enough to meet, I felt one with the citizens.

The International Livestock Research Institute (ILRI)

“The International Livestock Research Institute (ILRI) works to improve food security and reduce poverty in developing countries through research and better livestock,” as stated on the company website. In short, ILRI’s mission is “better lives through livestock,” a slogan one can find posted all around campus. Since their creation, ILRI has expanded to twelve different offices in twelve different countries. ILRI, as an international organization, has hundreds of different donors. Oftentimes, individual projects have their own set of donors, ranging from USAID to the Bill & Melinda Gates Foundation to the CGIAR fund (ILRI).

On the ILRI campus, multiple organizations are hosted. It helps every institute involved to save money on cleaning help, security, food centers, land cost, management, and a variety of other services. As a result, the campus is well maintained, and almost everything scientists and researchers need can be found on-campus. Some other organizations hosted by ILRI include the International Potato Center (CIP), Bioversity International, International Food Policy Research Institute, International Water Management Institute, Center for International Forestry Research, International Fund for Agriculture Development, and a huge variety of other research organizations. With all of these organizations on-campus, almost every single research project imaginable has been done or will be done soon on the ILRI campus. Put together, all of this work and research are truly amazing and have the power to change lives all around the country. As listed on ILRI’s website (www.ilri.org), their mission, vision, and strategies are as follows:

“Vision:

- A world where all people have access to enough food and livelihood options to fulfill their potential.

Mission:

- To improve food and nutritional security and to reduce poverty in developing countries through research for efficient, safe and sustainable use of livestock—ensuring better lives through livestock.

Strategies:

- With partners, to develop, test, adapt and promote science-based practices that—being sustainable and scalable—achieve better lives through livestock.
- With partners, to provide compelling scientific evidence in ways that persuade decision-makers—from farms to boardrooms and parliaments—that smarter policies and bigger livestock investments can deliver significant socio-economic, health and environmental dividends to both poor nations and households.
- With partners, to increase capacity among ILRI’s key stakeholders to make better use of livestock science and investments for better lives through livestock.”

Why Education?

As the old proverb goes, “If you give a man a fish, he will eat for a day. But if you teach a man how to fish, you feed him for a lifetime” (Lifetime). As I travelled through the Ethiopian countryside and visited numerous farming communities, I realized that this proverb could not be truer. For years, Non-Governmental Organizations (NGO’s) have been handing out food, money, vaccinations, medication, and countless other resources. While this may have been good for a week or two, this does not last. By giving free handouts, the people grow dependent on these handouts, instead of learning how to more effectively produce their own food. Over the last few decades, this dependence has become a major issue for most Ethiopian farming communities.

In order to help fix this problem, ILRI has been focusing many of their projects on education as opposed to simply handing out solutions. Examples include workshops that show farmers the benefits of buying vaccines as opposed to farmers waiting for free handouts, showing more efficient farming methods as opposed to delivering free relief food, and a huge variety of other educational ways to improve agriculture. Farmers have shown time and again that they are more than willing to work for their food. They possess the workforce between their village and their family, and they definitely possess the willpower to grow their own food. Right now, all they lack is some of the basic knowledge to help control disease and more efficiently manage their farmland. So, in order to help combat this, education has become one of the leading methods of hunger prevention in the entire world.

The first step in education, however, is the most difficult step. We first must break the cycle of dependency on NGO’s, which will involve breaking almost every farming community of a habit that has been around for over fifty years. This will be no easy task, but the end result will be well-worth it. World hunger is not solved overnight. It is solved through the hard work and determination of hundreds of thousands of good people all around the country. After my experiences in Ethiopia, I have become a firm believer that education can and will be the tool that ultimately defeats world hunger, once and for all.

Abstract

Farmers in Ethiopia are among the hardest-working people in the world. Every day, they work the land, laboring to produce enough crops to provide for their family and keep food on the table.

As Amhara's average elevation reaches upwards of 13,000 feet (The Amhara National Regional State), good grazing grass can be hard to find. Because of this, farmers often are forced to drive their herds for over fifteen kilometers every single day in order to find good grass for the livestock to feed on, as reported by local farmers.

Herd sizes in Amhara are relatively small with many farmers having twenty animals or less, which means that when one animal goes down due to disease, reproductive issues, neurological disorders, or any variety of other issues, this loss can be detrimental to farmers. As a result, farmers do everything within their power to ensure their animals remain healthy. Oftentimes, this can prove to be quite the challenge.

As is common in many third-world countries, Ethiopia has had its fair share of diseases. Many of these diseases have been fairly common, and as a result, vaccinations and medication have been developed to combat these diseases. However, as the country continues to develop, new diseases continually arise.

One of the biggest problems faced by the country as a whole is the gap between the farmers and the researchers intent on helping the farmers. The diseases that the researchers perceive to be prevalent may not match up with what the farmers believe to be most important. As a result, farmers ignore most of the work researchers do because these are not the diseases with which farmers are concerned, as many ILRI researchers have found through many years of trial and error. For example, several ILRI researchers found that the milk chain was being exposed to bacteria at many stages. After discovering the exact locations, researchers then proposed solutions to farmers to help eradicate the bacteria in these trouble areas. The farmers accepted these solutions very willingly when the researchers were paying for and putting in the work to eradicate the bacteria. However, when researchers checked back in a year later, they found that the bacteria levels were the same as before they intervened. When they questioned the farmers, the answer they most commonly received was that they had more prevalent problems.

In order to help fight this issue, a research team at ILRI developed a questionnaire for farmers across the country. The goal of this survey was to ask farmers' opinions on which diseases they would like researchers to develop cures. With the help of local veterinarians, over the course of an entire year, farmers were interviewed individually and in focus groups all over the country, and blood samples were collected from diseased animals. As a result, a more accurate data set emerged, showing which diseases were the most prevalent in Ethiopia, and which diseases farmers would like researchers to work on.

As a result of this work, a new disease has been discovered in the Amhara district. This disease is causing mass abortions in small ruminants, which is resulting in a cash deficit for local farmers. Through developing questionnaires for local farmers, holding focus-group discussions, and taking blood samples, the hope is to discover the disease behind these abortions. Once the disease is labeled, a cure can begin to be developed, which can then be sold to farmers. The end goal of this project is to reduce the amount of abortions occurring in small ruminants in the Amhara district, and prevent the disease from spreading to the rest of the country.

Additionally, a severe case of coenurus has been discovered in Yabello. While this disease already has a cure, many farmers are not aware of this cure, or they simply do not have faith in the cure and have not put it into use. This is where education comes into play. By helping farmers to better understand the disease and begin the proper treatments in a cost-effective manner, hundreds of animals will be saved in Yabello, and will lead to thousands of dollars saved annually. These two projects have the potential to have a major impact on food security in Ethiopia. Both of these projects seek to improve the life of livestock in Ethiopia, which helps to increase nutrition and food levels across the entire country.

Research Basis

The basis of our work stemmed from a nation-wide survey conducted over the course of the last year. When I arrived on the ILRI campus, the results were just being published, and I had the opportunity to witness the three-day conference where these results were shared. The survey itself was done with farmers across the nation in Ethiopia's four main districts of Amhara, Oromia, Tigray, and SNNR. One of the main goals of the survey was to analyze gender differences throughout Ethiopia, to understand the knowledge gap between men and women, and to reveal what their individual jobs were on the farm. Another one of the main goals was for the researchers at ILRI to discover which diseases were causing farmers major problems, to give research teams diseases to cure.

The survey was completed first through holding household surveys. These surveys were performed by a team of veterinarians and researchers throughout Ethiopia. In order to accomplish the task of accurately surveying the entire family, interviews were done separately with the males and females. The surveys included questions over the separate and shared responsibilities of males, females, and children; questions over knowledge levels on various diseases; how the knowledge and work of caring for animals was split; where animals were housed; and knowledge of various prevalent diseases within their villages and districts.

After the survey was completed, focus group discussions were held with men and women each holding their own meetings, as shown in Fig.1. These focus group discussions aimed to assess many of the same questions as the household surveys in a group environment. This assessment was done through asking the respondents to weigh their answers on a scale out of twenty. The questions in the focus group discussions were all framed in a way that when asked, the respondents could take twenty beans provided by the researchers and place them in squares according to their prevalence. For example, one of the questions was, "During which season do you see most diseases?" The respondents were then provided with twenty beans, which they would place in boxes labeled with the four seasons. Seasons with a higher amount of diseases would have more beans, and seasons with fewer diseases seen would have fewer beans. In



Fig-1. One of the many focus group discussions held in the Amhara District outside of Sekota.

this way, researchers were able to identify environmental causes associated with different diseases.

Finally, blood samples were taken from six animals from every herd. These blood samples were taken back to a lab to be analyzed for different blood-borne pathogens. However, due to a variety of issues such as a lack of proper transportation and improper storage, most of the blood samples were rendered unusable. As a result of this, the entire blood sampling part of the project was, unfortunately, eliminated.

Preliminary Findings

After these results were collected and analyzed, the research team at ILRI hosted an Epidemiology and Gender Dissemination workshop for area veterinarians and other leading researchers around the country. In this workshop, researchers and veterinarians had the opportunity to not only be lectured on the results, but also had a chance to discuss what these results actually meant, and what would be done going forward with these results.

One of the biggest focus areas involved the gap between genders. Results found that while the knowledge level between men and women were almost always identical, the men were almost always the decision makers when it came to deciding what to do with any of the animals on the farm. However, on a more positive note, it was discerned that in male-headed households, men consistently consulted their wives before making any major decisions that would affect the entire family.

Research also revealed that ownership does not play a major role in the amount of work performed by the men vs. the women. Men were most often the ones responsible for the upbringing of the animal, while women were the ones bringing the animals to market to sell. In this way, ownership did not guarantee reaping any of the physical benefits from the livestock. Even if women were to own the animals, men would almost always perform most of the physical labor associated with the care and wellbeing of the animals. Because of this, women seldom received any of the benefits from the production and sale of animals.

One other major focus of this survey was to identify different problematic diseases by districts, with the ultimate goal to return to perform interventions. Focus groups detected that several of the diseases that researchers were currently working on were not identified as major issues with farmers; therefore, when researchers presented these interventions to farmers, they were most often ignored. If the farmers did not perceive the disease as a threat to their livestock, they would not bother wasting time and money on medication and vaccinations. However, the opposite was also true. Farmers were able to identify and agree upon several different diseases that were causing major devastation among their livestock, including an abortion outbreak in the Amhara district outside of Sekota and a disease, called coenurosis, in Yabello, which lies in the Oromia district.

After going through all of the different results, the veterinarians and researchers split apart into four separate groups by regions to hold focus group discussions of their own. Each project site had been given \$1,500 USD through various organizations with the intent of funding

interventions in the different regions. The focus groups first identified the problems associated specifically with their regions and then recorded what had already been done in each district so as to not waste any time or money repeating a project. Next, researchers identified all possible courses of action possible before deciding on one or two interventions that would be most practical for each area. After these areas were identified, researchers returned to their hometowns to put these interventions into practice in local farming communities.

Abortion Outbreak Investigation in Amhara

It was decided by our management that the best course of action for the abortions in Amhara would be an outbreak investigation, in which I would assist in any way possible. We began by developing a fifteen page questionnaire which asked farmers to describe the abortions, identify when they occurred, report clinical and postmortem signs, and provide a variety of other questions. The goal was to be able to narrow the possible causes to a few diseases. We would then collect blood samples, which would also serve to help identify which disease was causing these abortions. Finally, we would hold focus group discussions, of which the goal was to help farmers work together to discuss the causes of these abortions and, perhaps, help jog their memories with input from other farmers.

After finalizing the questionnaire and preparing our blood sampling kits, we headed 725 kilometers north of Addis Ababa to Sekota. In Sekota, we assembled our team. Team members included Hiwot and Biruk from ILRI and local veterinarians and researchers Abede, Adene, and Ayaleu. With our team in place, we began our interviews and blood sample collections, as show in Figure 2.

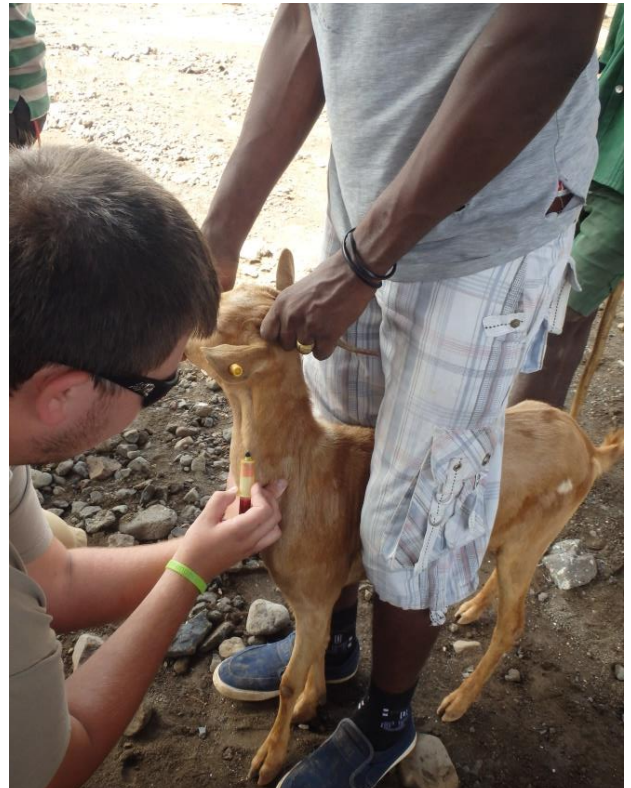


Fig-2: We collected blood samples in the Amhara region, outside of Sekota.

In Sekota, the farmers were organized by a field coordinator based at the local research center. In this way, the field coordinator could contact the farmers and arrange for them to gather in a pre-set location. This arrangement was very beneficial to us; we could travel to one location and interview fifteen farmers, as opposed to taking the time to travel to fifteen different households in one day.

Through the household surveys, many farmers reported that the abortions were actually waning at the time when we arrived. In fact, when asked to estimate proportionately how many abortions had occurred in the previous five months, almost all farmers reported all of the abortions occurring in the first two months, with almost zero reported in the most recent three months. Goats were reported as the unanimous number one animal affected by the abortions, which were

followed by sheep. Cattle and donkeys remained, for the most part, unaffected. The clinical signs that were most frequently seen were vaginal discharge, Placentitis, Septicemia, Emaciation, and the presence of a rough hair coat immediately preceding the abortion. However, almost all of the farmers blamed the abortions on the drought and unusually long and hot summer.

The focus group discussions stood to strengthen what the farmers had been saying during the household surveys. During the focus group discussions, we used proportional piling to help farmers agree on several different parts of the abortions, ranging from the time they occurred to the disease prevalence. From this, we did find that the abortions were much more widespread than we first believed; 50-75% of females in an infected herd suffering from abortions, a fact that alarmed us.

We collected blood samples from three goats from each of the participating farmer's herds. These were at first taken solely by the veterinarians, but they soon decided to train me to take blood samples, which resulted in my taking of many blood samples. The whole blood samples were first taken to the lab in Sekota, where the blood serum was separated from the red blood cells for delivery first to ILRI, and then to a lab in Addis Ababa, where they would be analyzed for diseases. When I left Ethiopia, the blood samples had not yet made it into the processing queue and therefore, results from these blood samples were still pending.

Coenurosis Education in Yabello

After arriving back in Addis Ababa at the ILRI campus, we had two days to recuperate before heading back out to the field, this time 600 kilometers south to Yabello to tackle the coenurosis issue. The survey had shown that most farmers had no idea the causes of coenurosis, and, therefore, had no idea how to prevent or cure it. They were aware that it was a brain disorder stemming from worms in the brain, so most cure attempts consisted of trying to deworm the goats. However, since the worms reside in the brain and spinal cord (Scott), these results proved futile.

To help combat this issue in an internship of her own, Aurelia, a French veterinary student, came down to help with this problem. On her first trip to Yabello while I was in Sekota, she learned as much about coenurosis as possible so that she could have a better understanding on how to communicate with farmers in order to come to an agreeable solution.

Her results were as follows: coenurosis is a disease that actually stems from dogs. When dogs get parasitic worms in their stomachs such as tapeworms, these worms hatch eggs, which are then released through their feces. These eggs are then absorbed into the soil, which transfers these eggs into the grass. The sheep and goats eat this grass. The eggs begin to mature inside the sheep and goat, making their way through the blood stream into the spinal cord and brain. Over the course of the next 7-8 months, cysts begin to form in the brain, reaching sizes of up to 5-6 centimeters in size. This causes the goat to first act abnormally. The most common behavior is walking in endless circles, which gives the disease the nickname Circling Disease. As the cysts continue to grow, they can cause blindness and paralysis in the goat and then, ultimately, death. When the sheep and goats are butchered, their heads are cut off and fed to the dogs, which means that the worms are again ingested by the dogs, and create a very deadly process.

During the butchering process, the sheep and goats lose over 50% of their market value because of this disorder, causing farmers to lose, on average, 8,330 birr every year, which roughly translates into 400 United States Dollars. Almost five percent of all animals in Yabello are affected with coenurosis, a number which is bound to continue to rise if no solution is brought around.

Aurelia found that in order to end this process, eliminating the worms from the dogs was a necessity, as opposed to previous attempts to cure the goats themselves. We would do this through deworming the dogs and preventing the dogs from being able to eat the infected sheep and goat heads. This meant that farmers had to be educated on coenurosis to understand how treating the dogs would save their sheep and goats. We brought the poster pictured to the right (Fig-3) to multiple villages over the course of four days and educated local farming communities on the coenurosis cycle and how to prevent this from occurring. We then collected fecal samples, which we brought back to the lab to analyze for coenurosis. Finally, we began the process of deworming dogs, giving every dog that we collected a fecal sample from a dose of a deworming drug known as Praziquantel. As long as farmers continue to deworm their dogs with this drug every three months, they should begin to see a decline in the occurrence of coenurosis within the next eight months.



Fig-3: The poster that we brought to villages in Yabello, illustrating the coenurosis cycle.

Finally, we held a training day for influential community leaders in and around the farming community. During this day of training, we went into detail over all of the facts of coenurosis, attempting to thoroughly convince these members that our solution would work, and encouraging them to continue to deworm their dogs for years to come. Our hope was that these influential community members would take this knowledge back to their communities and encourage all of the farmers in all of the villages to deworm their dogs and prevent the dogs from eating the sheep heads.

Challenges

During our time in Sekota, we encountered several unique challenges. First, there was a language barrier. In Ethiopia, there are over 80 languages spoken, with over 200 dialects to add to the general confusion. This meant that several farmers did not speak Amharic, and, therefore, the team from ILRI could not communicate with them. To solve this issue, we took advantage of local veterinarians and researchers that spoke English, Amharic, and the local language. The veterinarians took over the household surveys and focus group discussions, and those of us that

did not speak the local language collected blood samples in this time. In this way, we were able to collect information from these farmers as well, without having any time delays that come with using a translator.

Second, the time that we arrived was directly in the middle of planting season, which meant many farmers were in the fields and much too busy to take half a day to meet with us. Because of this, our first two days spent in Sekota were spent in our hotel rooms, as the farmers were unable to gather due to the large work load they faced. After resolving this issue, we faced a third problem a few days down the road – a death in the village had stopped all work, which we did not discover until after making the two hour drive to the villages. Because of this, another day of work was wasted.

We ultimately ended up deciding to extend our stay, but we also faced another unique challenge in getting this approved. Directly north of Sekota, protestors were engaging in an uprising: A bus and a car were burned in protest against the government. Because of this, the government shut down the cellular network and internet for the entire area for two days; as a result, we had no way to let Barbara at ILRI know that we would be extending our stay by another day, and therefore we would not know if this extended stay would be approved. However, in the end, we decided to stay another day, even without knowing if the village would be out of mourning yet and willing to gather. Luckily, we were able to pull off the interviews, blood sample collections, and focus group discussions without a hitch.

During our stay in Yabello, we also encountered some unique challenges. First, unlike Sekota, the farmers did not have a local field coordinator. This meant that when we travelled to villages, the farmers had no idea we were coming and often were not present. This meant that the most educated people in the villages were the women and children. Our hope is that the farmers that missed out on the training would gather knowledge from those that did attend the training, so that preventive measures would be taken in all villages. Secondly, the trainings did not take place as we had previously imagined. Our hope was to have two simultaneous training sessions in every village: one for the men and one for the women. However, because of the lack of coordination, we ended with only one training per village with the men and women joined together.

One other problem we faced was collecting the fecal samples. Our original thought was that we would capture the dogs, and one of the researchers would collect a fecal sample straight from the dog. However, this proved ineffective. The dogs had no feces inside of them at the time of capture. Also, the high level of difficulty capturing the dogs and holding them still also proved to be problematic. We eventually decided to just give the farmers sample vials with gloves, educate them on how to collect fecal samples, and have them collect the samples after the dogs defecated. We would then come back the next day to collect the samples and hand out the deworming drug. However, this procedure turned out to be very unreliable, and few samples were actually collected. Additionally, just like in Sekota, there was also a language barrier. The people of Yabello spoke their own language; therefore, we needed more translators. We managed this barrier through the local research center and with the help of several researchers there.

Finally, one of the largest problems we faced was the need to pay farmers for coming to a day of training. In Yabello, the farmers had become accustomed to being overcompensated for training days. They now had come to expect compensation for four to five days of work for one day of training as they are missing several days of work to travel; in addition, the regulated money for food and lodging. However, between the local research center and ILRI, we could only pay them for one day of work. We spent many hours debating about this problem before eventually deciding to pay the farmers the minimum that they would accept. This turned out to work just fine in the end, and everyone was content with the pay that they received.

End Results

After our time in Sekota, we had some time to analyze the data we had collected. After many hours examining the results, we came to the same preliminary conclusion as most of the farmers – these abortions were caused by an unusually long and hot summer combined with a severe drought in the area. The reason this affected small ruminants much more than large ruminants was the fact that small ruminants are not as durable as large ruminants, and smaller changes in their environment and daily living patterns can throw off their entire system.

However, as we have yet to receive any results back from the bloodwork, we cannot say for sure that this is the cause. The bloodwork has been sent to a lab in Addis Ababa to be analyzed; however, at this time, we have only the observations of farmers recorded in the surveys.

If it is truly the drought and hot summer causing these abortions, the solution would lay somewhere in improving feed quality and water access for farmers and livestock in dry areas. This project will subsequently be handed over to a different organization, one that deals primarily with research in dry areas.

After our time in Yabello, now the hope is that we have begun a lifelong process for many farmers. We educated around twenty different farming communities and showed hundreds of people how to prevent the death of thousands of sheep and goats in their communities. If farmers continue to de-worm dogs as we have shown them and proceed to purchase deworming medication, Yabello will begin to see a positive shift in the battle against coenurosis in Yabello.

As a result, farmers will be saving the lives of a substantial percentage of their herd, and they will have plenty to both provide for their families and extra to sell on the marketplace. Farmers will, therefore, save thousands of much-needed birr every single year, and turn farming into a more profitable business. Even more positively, this will not only affect the farmers, but it will also affect the communities surrounding the farmers. With extra animals to sell on the markets, towns will no longer suffer from meat shortages. Meat prices should drop with the rise in quantity; thus, the poorer members of the community will also have access to meat and protein. Because of this, nutrition levels in poor Ethiopian communities such as Yabello should rise.

Looking back, my time here in Ethiopia was very well-spent. I was able to make an impact on hundreds of farming communities on separate ends of the country, and save countless lives in the process. While I cannot claim either of these projects as my own, I am proud to be able to say I

was able to create a positive difference in the lives of farmers and farming communities all across the country of Ethiopia.

Reflections

As my time here in Ethiopia came to a close, I took some time during a car ride to think about this entire experience as a whole. Before we leave, the World Food Prize holds a day-long conference, where various professionals come in to explain some of the sensations you will experience while travelling the world. They tell you when you leave that you will return home a changed person. They tell you that the things you see will be so absolutely different from life as we know it, and that you will truly come to appreciate all of the things we have back home. They tell you about how you will become homesick, encounter cultural shock on some level, and cast completely out of your comfort zone, and that by the end, we will be much better people for it. We heard all of this and more while sitting in the comfort of the World Food Prize Hall of Laureates just a few short months ago. After hearing this, I thought I was mentally prepared to immerse myself in another culture, and thought I knew what was coming. However, reflecting over my experiences, I could never have imagined experiencing a quarter of the things I have experienced here.

When I first arrived and looked outside the airport doors, I realized how completely foolish I was to think that I was mentally prepared for this challenge. Within the first 20 seconds, I was already beginning to panic, realizing that for the first time in my life, I was no longer protected by the security of the United States' borders. Men carrying AK-47's were scattered throughout the airport, which made me realize that, here, war is not just something one hears about on the TV late at night. As I walked out of the doors of the airport, the initial sight of the parking lot was overwhelming. Thousands upon thousands of cars were packed into an area meant for only a few hundred, and it seemed no traffic laws were being followed. I was supposed to find our driver, whom we had never met before, in this? Yet, we managed.

Throughout the next several weeks, we toured the city with Deborah Wyburn. For the first time, we saw true mass poverty, hunger, malnutrition, and suffering. Children were forced to beg on the street to survive, and those lucky enough to get a job often suffered from poor work conditions, the like of which one will never find within the borders of the United States. Yet through all of this, the people were cheerful, kind, polite, and giving. They may not have had much, but what they had, they are always willing to share, a fact that I found positively amazing. For example, no matter where we were or what our mission was, people would invite us into their homes and provide us coffee, for no other reason than out of the goodness of their hearts.

Then came our trip to Sekota. I found life in the country to be far different than life in the city and not always for the better. Farmers used farming methods not seen in the United States for over 150 years. The soil they were tilling was more rock than dirt, and the soil they could find was closer to sand than soil. Yet these farmers were still able to produce enough crops to sustain their family, their village, and, by extension, their country. When we interviewed farmers, not once could we ever hear a word of complaint coming from their mouths. Abortions could kill 19 out of 20 of their future herd, and cause countless thousands of birr worth of losses from causes

outside of their control, but when we asked why they didn't complain, they answered, "But one survived. Is that not blessing enough?"

We then travelled to the other end of the country to Yabello. Here, coenuruses was killing thousands of sheep, goats, horses, donkeys, and even people every year. This disease caused thousands of birr of losses, money which the farmers did not have. They must be struggling to survive, yet they did not let it show. As we travelled from village-to-village, educating farmers on how to prevent coenuruses, we were consistently greeted with open arms. Each village immediately went into their homes and brought us chairs, drinks, and, occasionally, even food. What little they had, they were more than happy to share with complete strangers. For me, this was completely mind-blowing. If I would have been in their shoes, I know for a fact that this would not have been my attitude. And again, we would never hear a word of complaint from these people. Again when we questioned their attitudes, their response was always the same, "We have enough to feed our family. What else could we possibly want?"

One day, taking a mile-long walk back to my hotel room during our midday break, I ran into some men sitting a little way off of the road. They immediately called for me to join them. (Understand that in Yabello, white people are few and far between, and many people only see one every 3-4 years here; everyone is always calling to us.) Something made me agree, and I sat with them for about twenty minutes, just talking about life in this country. I learned that when one graduates high school here, if you are lucky enough to make it that far, the government issues a test, which decides your future. The government will choose what your major in college will be, and there is absolutely nothing one can do to influence or change this choice. These men had all gone to college and earned various degrees, all of which were completely useless to them. No one was hiring in these fields. Therefore, these men used skills they had learned during high school and became welders, and they scraped by day-to-day. They had not had an easy life, but from the way they acted and talked, one could have never guessed this. They were content with what they had, and they did not ask for more. As they put it, they were lucky to live in one of the only African countries not stricken with war. They compared Ethiopia to countries such as Libya, where militants and rebels kill people without cause, and there is no safety no matter where they go. They agreed that they were truly blessed indeed to be living in a country where they were safe, even if they had to sacrifice freedom to remain so. This attitude was truly admirable.

I think that back home in the United States, we could all take a lesson from these people. We have so much of everything – more food than we could ever hope to eat, tap water that is always safe to drink, plenty of extra money for recreation, freedom to make our own choices, avenues our own successes, lessons from our own failures, and the freedom to choose with whom we will spend the rest of our lives. So often we take these blessings for granted. So often we still find grounds to complain about these very blessings that we have received when billions of people find reason to be happy in the poorest and most unfree countries in the world.

So knowing this, what can we do? Most of us are never going to leave the United States and head to a developing country, and that is completely fine. There is absolutely nothing wrong with this. But we can all help from where are, given the gifts that we already possess. Perhaps it is donating time or money to our favorite charities. Perhaps it is choosing to donate blood at the

Red Cross when the time comes. Perhaps it is sending supplies overseas with relief aid organizations. If you cannot do these or any of the other countless things one can do to help a starving world, perhaps one should just be grateful for the blessings that we have already received. It is such a simple task, really. By each one of us adopting a more positive attitude, by each doing our part, no matter how small, we can truly change the world.

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