R25 Funding Final Report

Farm to Table Program: Uruguay

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With the current globalization of trade in food and an incredible number of known cases of foodborne illness in the world each year, the need for a better understanding of food systems abroad is extremely important for the safety of imported and exported foods. The Farm to Table Program, established by professors at both the University of Minnesota and the Ohio State University, provides ample opportunities to learn about and participate in different aspects of the food industry in a foreign country. Issues involved include food animal health and welfare, foreign food safety issues, and their overall relation to public health. To examine these issues, there are visits to facilities throughout the food supply chain, discussions with related government and private sector leaders, and interactive cross-cultural activities. As a participant in the second year of the Farm to Table Program, I traveled with a group of students and professionals to the country of Uruguay for one week to investigate the Uruguayan food system. The trip had a distinct focus on the production and exportation of Uruguay's meat and dairy products.

Uruguay is the second smallest country in South America, bordering the South Atlantic Ocean between Argentina and Brazil. Their economy is based mainly upon their agricultural trade, which has been largely dependent on beef and wool production since the mid-19th century. The invention of refrigerated processing and shipping facilities during the 20th century was a turning point for the industry, allowing for the exportation of Uruguayan beef products to other national markets (Palmerlee, Adams, Bao, Beech, Konn, & Nystrom, 2010). Each year, Uruguay maintains approximately 11 million heads of cattle and slaughters between 2 to 2.5 million, equating to almost 4 cows per Uruguayan individual. Around 80% of the meat produced in Uruguay is exported, with an ability to export to over 200 countries worldwide (Mathews &

Vandeveer, 2007). The main countries of beef exportation from Uruguay include Russia, the European Union, NAFTA (Mexico, Canada, United States), Mercosur (Argentina, Brazil, Chile, Paraguay), and China (MercoPress, 2010).

Agricultural trade within developing countries is expected to grow at a faster rate than in developed countries due to the higher speed of increased population and food demand. As consumer income rises in these regions, proportions of money spent on food will shift from purchasing staple items to more meat and dairy products, fruits, and vegetables (Delgado, 2003; Steinfeld, Wassenaar, & Jutzi, 2006). The highly efficient food processing and importation systems witnessed first hand in Uruguay stand as an incredible example for potential establishments in developing regions of the world as the need for more meat production exists. The activities that I participated in during the Farm to Table Program were highly relevant to the idea of potential food systems in developing areas of the world.

An important aspect of food importation and exportation is food safety and the availability of laboratory resources to investigate potential health issues of a food substance either before its distribution within or outside of a country, as well as when it is imported. We visited three such laboratories, including the Technology Laboratory of Uruguay (LATU), the Cooperative Veterinary Laboratory of Colonia (COLAVECO), and the Veterinary Laboratories Division (DILAVE) of the Ministry of Livestock, Agriculture, and Fisheries. Each facility provided us with a tour to display their different methods of investigating potential food safety issues.

The program also involved visiting facilities that were involved somewhere along the pathway of the production of food products of animal origin. “Procesadora de Pescado Industrial Serrana” works with seafood production and processing, including specimens that have been

imported and those that will eventually be exported. We also visited a grocery store chain called "Tienda Inglesa" to see and compare the common method of selling animal food products versus the way in which it is done in the United States.

The remaining facilities we visited were associated with meat and dairy production. "Estancia Sierra de los Caracoles" is a calf production farm that maintains cattle on 3000 acres of land. Farms such as this produce calves to be sold to dairy and meat producers after they grow to an eligible age and size. We were able to visit both a small dairy and cheese production farm ("La Cumbre") and a large military-run dairy farm. Dairy from such farms can be sent to larger processing facilities, such as the National Cooperative of Milk Producers (CONAPROLE), which is a large producer of industrial and consumer products for use within and outside of Uruguay. Cattle raised for beef production would be sent to large facilities, such as the one we visited called "Frigorifico Matadero Carrasco S.A.," that slaughter and process beef for consumption in Uruguay and abroad.

The intensity and efficiency of beef production in Uruguay is an incredible market that could stand as an example to meat production and processing methods in developing regions. As was discussed during the program, the beef production process begins on a calf production farm where heifers are bred to have their first calf at two years of age. They are continually bred each year for around five years to attempt an overall 85% rate of calves produced each season. Calves are eventually bought to either become dairy producers or to be raised as beef cattle, of which 80-90% are raised solely on pasture of free-range farms. This is very different from beef production in other areas of the world like the United States where the majority of cattle are grain-fed on concentrated animal feeding operations (CAFOs).

There are multiple differences between grain-fed and pasture-fed beef products, including nutritional and environmental benefits. Because pasture-raised cattle have a lower calorie intake, the meat they produce is much leaner and has less saturated fat (Clancy, 2006). Their meat has also been found to have higher amounts of beneficial fatty acids and vitamins such as A and E (Daley, Abbott, Doyle, Nader, & Larson, 2010). Pasture feeding of cattle is also much less detrimental to the environment. Whereas CAFOs are known for consuming large amounts of energy in addition to creating water and air pollution, the raising of cattle on large grasslands as is done in Uruguay has a much smaller environmental impact (Clancy, 2006). In fact, a study done by the Center for Environmental Law and Policy at Yale University ranked Uruguay among 146 countries with the 3rd lowest environmental impact and greater sustainability of natural resources (Esty, Levy, Srebotnjak, & de Sherbinin, 2005).

The health of animals that are pasture-fed versus those raised on CAFOs is another important aspect that is present the Uruguayan beef production chain. When cattle are raised in cramped, high stress-level CAFO conditions, they are more prone to the occurrence and spread of respiratory and other bacterial infections (Clancy, 2006). This increase in disease has led to an increase in the use of antibiotics, of which overuse can result in increased antibiotic resistance. Such resistance may not only be harmful to the animal, but also to humans during production, processing, or consumption of the animal product (Gilchrest, Greko, Wallinga, Beran, Riley, & Thorne, 2007; Walker, Rhubart-Berg, McKenzie, Kelling, & Lawrence, 2005). While diseases can still occur in pasture-fed cattle, the grazing of cattle on vast areas of pasture results in lower incidence of infections and resulting treatment with antibiotics, as was discussed while in Uruguay.

For those diseases that may still occur, a cattle traceability system such as that being implemented in Uruguay is incredibly beneficial. By having a method to identify cattle throughout pre- and post-harvest practices, there is a major potential for improving the control of disease outbreaks. The system in Uruguay is expected to be fully implemented throughout the country as early as July of 2011. Since September of 2006, national identification has been mandatory by the Uruguayan government to be established in newborn cattle between the first movement and six months of their birth. The two tags located on their ear include a highly visible tag and an implanted microchip for computer identification (Meat Trade News Daily, 2010; Swedberg, 2008). A second phase of this traceability implementation would continue to track carcasses more specifically after slaughter (Mathews & Vandeveer, 2007).

The aspects of the beef production system in Uruguay could be useful as examples for potential meat production systems in developing countries. For instance, their methods of cattle beef production are well-suited for smaller production practices where fewer animals are available and sustainability is crucial. Pasture-fed livestock is a healthier method of production, both for the animals themselves and for the eventual individuals who may consume them, and it causes fewer detrimental effects to the environment. The use of similar welfare and animal identification standards could be very beneficial for meat production in a developing region, especially if products were going to be exported. The exemplification of healthier meat from pasture-fed animals that were treated humanely throughout the production process could be used as a marketing tool for advertising to higher-paying consumers. Although similar animal identification may be harder to implement due to the high expenses required, simpler systems could be used to control lost and stolen livestock at the production level. Even if meat products

were mainly to be sold and consumed within a developing country, the benefits of following production system methods such as those in Uruguay are numerous.

An example of a developing country that has used meat production and exportation to their benefit is Namibia in Southern Africa. Although the gross domestic product (GDP) of Namibia is higher on a scale of developing countries, they also have one of the most unequal income distributions of the entire African continent (US Department of State Bureau of African Affairs, 2010). Approximately 80% of the beef produced each year in Namibia is exported to the European Union, South Africa, and Japan. Their Farm Assured Namibian Meat Scheme has been established to meet European Union requirements for traceability and welfare. It includes standards for production systems and general animal welfare, veterinary issues, animal handling, transportation, and cattle housing and environment (Bowles, Paskin, Gutiérrez, & Kasterine, 2005). While the beef production of Namibia may not be as extensive as that in Uruguay, there are many relevant similarities of both programs from which other developing countries could potentially benefit.

Personal Thoughts

Throughout the Farm to Table Program in Uruguay, I felt completely safe. I found the hotel accommodations to be sufficient and the food selection to be adequate and delicious. The personalities of the participants in the program exceeded my expectations. Although we were from all over the Americas, including the United States, Costa Rica, Brazil, Paraguay, Venezuela, and Uruguay, I felt friendly and comfortable with each and every individual. Because we all had similar areas of interest, it was easy to bounce thoughts and ideas off of each other, even though someone may have been needed to translate. Everyone I met from Uruguay was very welcoming and with a semi-conversational level of Spanish, I was pleased with how the relaxed atmosphere made me eager to practice speaking in conversation. I am grateful for the friendships I made during this trip to Uruguay, both with other students from the United States and with students from Uruguay and Paraguay whom I have been able to continue conversing with through the internet on a regular basis.

For individuals traveling with other students from the same university, I would suggest selecting the same flight schedule if possible. There was one student from our group whose flight was delayed and she was not able to start into the program with us until late Monday afternoon. She did have an extensive traveling background and was comfortable speaking in Spanish; however, for a student who may not have much experience traveling to an area where you do not speak much of the language, flying with other students may be helpful if there are delays in the flight schedule.

Visual Story

"Procesadora de Pescado Industrial Serrana" (Solis Mataojo, Uruguay)

Employees are processing the blue shark. After processing and packaging, this and other species eaten as seafood are exported all over the world, including to Europe, North America, Africa, and Asia.

"Estancia Sierra de los Caracoles" (Maldonado, Uruguay)

Calf production and breeding farm owned by a foreign investor and operated by a retired veterinarian from Uruguay. Cattle and calves are maintained on over 3000 acres of land.

"La Cumbre" (Nueva Helvecia, Uruguay)

Parmesan cheese production at a smaller dairy farm owned and operated by a second generation Swiss family.

"Tienda Inglesa" (Montevideo, Uruguay)

Tienda Inglesa is the largest retailer chain of grocery markets in Uruguay. This picture was taken in a back room of the deli portion of the store. The amount of meat shown here is actually during the slow season.

"Mercado del Puerto" (Montevideo, Uruguay)

The availability of meat products is dominant in many settings, including in this market in Montevideo. This photo displays the traditional "asado" method of cooking meats by grilling it over coals.

El Parque Anchorena (Colonia, Uruguay)

Dr. Hoet is shown interpreting the history of a tower used by Spanish soldiers. The land was donated by Aarón de Anchoren to the Uruguayan government with the agreement that it would be dedicated to park and conservation purposes.

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