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# From Pasture to Plate: A Study of the Rituals, Ecology and Economics of Sheep in the Context of Aid Al Adha in Morocco

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*SIT Study Abroad*

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SIT: Multiculturalism and Human Rights Fall 2011

# From Pasture to Plate: A Study of the Rituals, Ecology and Economics of Sheep in the Context of Aid Al Adha in Morocco

Location: Rabat Medina, Morocco

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12/12/2011  
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## **Abstract**

This project addresses the ecological and economic roles that sheep play in Morocco in the context of Aid Al Adha celebration. It specifically examines the methods of sacrificing, butchering and preparing the different parts of the ram as part of the holiday as experienced by the researcher in a case-study located in the Rabat Medina. However, it goes further, as to explore the impact that sheep agriculture has on the nation's economy and on the lives of Moroccans in both urban and rural areas. It discusses strategies that the Ministry of Agriculture and other agencies use to help facilitate local sheep breeding programs and to create new ones that will meet the needs of the Moroccan people in years to come.

## Introduction

*Over the past few days, Moroccans have been preparing for the annual sacrificial holiday; loading sheep onto their terraces, into their closets and in the backs of their cars. I have seen sheep tied by the feet and shoved into crates, some carried by motorcycles and others thrust into burlap sacks and toted home like infants in the arms of eager men. Their bleating now fills the streets and the night along with the rhythmic click-clacking of their hooves on the tiled debbs and zankats of the Rabat medina. Advertisement billboards on grocery store entrances and along highways use cartoon images of sheep and clever catch-phrases as propaganda, encouraging shoppers to stock-up on complementary food stuff or to take out loans to buy a ram. Many of the rams seem to sense their condemned fate while others eat hay and gander around contently, without exhibiting signs of panic in response to their recent change in lodging or scenery. Excited and nervous tension fills the air as Muslims await the final indication that Aid Al Kebir can finally commence.*



**Figure 1. Rue Laalou, ram in the bed of a truck**



**Figure 2. Derb Jirari, men struggling to get a ram home**



**Figure 3. Ram in a cart on Avenue Mohammed V**

## Personal Background

Three sheep were brought up to my Moroccan family's terrace two days before the commencement of Aid, one belonging to each family inhabiting our apartment complex. After the rams were settled in a corner by the laundry lines and provided with a tarp cover and food, my family and I went up to see the one my brother had selected. My sister and cousin flashed their cell phone lights in his face and giggled about his superior size and quality as compared with the neighbor's sheep. However, instead of laughing along with them, I felt a pang of remorse.



Figure 4. Three Rams on the terrace (The one on the far left belonged to my family).



Ever since I was a child, sheep have held a special place in my heart. I used to raise them as part of a youth organization in the United States called 4-H. For this club, each child was given a loan to purchase a lamb, and then was entirely responsible for the care and maintenance of that lamb until it was old enough to be sold at a livestock auction to the highest bidder. I also spent a lot of time with close family friends who were Basque -American shepherders when I was even younger. During this time, our garage was often packed with dangling lamb carcasses and we frequently enjoyed meals made from their meat. I have had the opportunity to witness the entire life cycle of a sheep, get a sense of the energy and time it takes to raise one, and feel rewarded by the fact that the fruits of my labor helped provide somebody's family with food. Over all, I feel like I have a special connection with sheep that is derived from a deep-rooted appreciation and respect for them based on my past experiences, which have led me to develop the following research project.

## Methods

I did not know anything about the Aid Al Adha celebration before coming to Morocco. Once I learned the basic ideas surrounding this grand holiday, such as its relationship to the story of Ibrahim and Ismail in the Qur'an and some of the traditions, I was compelled to research further. I wanted to investigate the methods of sacrifice, the traditions of preparing and consuming the meat and the ecological and economic implications of supplying the amount of sheep needed for Aid Al Adha every year. The result is that this project takes a two-part approach. Part 1 consists of the events of Aid Al Adha and the background economic and ecological research constitutes Part 2.

In order to undertake this research project in the most effective manner, I employed a variety of qualitative methods and techniques. I spent the days leading up to Aid meticulously observing and recording the bustling activity in the medina. I strove to fully-immense myself in this celebration in order to learn as much as I could through participant observation. I witnessed three sacrifices on the morning of Aid and one complete dissection of the lamb carcass. I recorded all the meals that were prepared by a Moroccan family during the Aid day and the two days following, I spent time in three different households, and I talked with many people I encountered on the streets about what this holiday means to them. I took photographs, videos and careful notes about everything I observed and experienced.

After gathering as much information as I could about my topic through celebrating the holiday, I had to establish contacts that would give me access to information concerning my other areas in inquiry. I contacted specialists at the Hassan II Institute of Agronomics and Veterinary Science, the Ministry of Agriculture and the Association Nationales des Ovins et

Caprins (ANOC) and listened to one-on-one lectures, gathered primary source information and obtained statistics concerning the distribution, abundance and economics of sheep in Morocco. Both qualitative and quantitative information is included in this project. All the qualitative information was gathered by the researcher but the quantitative figures were obtained from exterior institutions.

Although I managed to gather a sufficient amount of qualitative data, I did face some obstacles in my research that should be noted. It was difficult for me to document the main events of Aid and the corresponding street activities using picture and video because many people are opposed to having their photographs taken. Therefore, in order to refrain from interfering with the activities I was studying and maintain my status as a participant observer, I was cautious as to the timing of my pictures and therefore, do not have a large quantity. Also, the time constraint granted for independent research projects with my program was not fitting to my topic because it began after the Aid. If I had been allowed to receive funding, research time, and guidance before the Aid holiday, I could have completed more thorough research.

## **Part 1**

### **Al Aid Mubarak Said!**

Aid Al Adha is on the 10th day of the 12th month Dhul-Hijjah on the Muslim calendar, which is based on lunar cycles (Ellis, 1999). Because of this particular calendar's structure, the specific dates of the holidays are not consistent, in other words they change from year to year. The exact day of Aid is not determined until a crescent moon shows, making the timing of the sacrifice unclear until the last moment. In Morocco, the king is responsible for determining when the crescent moon has appeared. Upon his consent, Moroccan Muslims may begin their festivities. They begin by saying the appropriate prayer and afterwards, must complete their sacrifices before the morning is over. If the prayer is not said before the ram is killed, it qualifies only as slaughter and not sacrifice. This ritual has remained relatively intact over the centuries and it still parallels the requirements that are outlined in the Hadiths:

Volume 2, Book 15, Number 75:

Narrated Al-Bara' bin 'Azib:

The Prophet delivered the Khutba after offering the prayer on the Day of Nahr and said, "Whoever offers the prayer like us and slaughters like us then his Nusuk (sacrifice) will be accepted by Allah. And whoever slaughters his sacrifice before the 'Id prayer then he has not done the sacrifice." Abi Burda bin Niyar, the uncle of Al-Bara' said, "O Allah's Apostle! I have slaughtered my sheep before the 'Id prayer and I thought today as a day of eating and drinking, and I liked that my sheep should be the first to be slaughtered in my house. So I slaughtered my sheep and took my food before coming for the prayer." The Prophet said, "The sheep which you have slaughtered is just mutton (not a Nusuk)." He (Abu Burda) said, "O Allah's Apostle! I have a young she-goat which is dearer to me than two sheep. Will that be sufficient as a Nusuk on my behalf?" The Prophet (p.b.u.h) said, "Yes, it will be sufficient for you but it will not be sufficient (as a Nusuk) for anyone else after you." (quraninenglish.com, accessed 28 Nov. 2011)

The “Feast of the Sacrifice”, as noted earlier, commemorates the story of Ibrahim and Ismail in the Qu’ran. According to the story, God sent a message to Ibrahim in a dream that he must sacrifice his oldest son as a symbol of his devotion. The following is an excerpt from the Qur’an, of the dialogue that was exchanged between Ismail and Ibrahim after the God’s message was relayed from father to son:

"O My son! I have seen in a dream that I offer thee in sacrifice: Now see what is thy view!" "O My father! Do as thou art commanded: Thou will find me, if Allah so wills one of the steadfast."

- The Koran, Sura 37, Ayat 102 (quraninenglish.com, accessed 28 Nov. 2011)

When Ibrahim was about to carry-out the action of sacrificing his favorite son as outlined in his dream, he was stopped by God. God was impressed by Ibrahim’s devotion and as a reward, allowed him to spare his son and instead sacrifice a ram in his place. According to one inhabitant of the Rabat medina I encountered on the Aid day, this act symbolized a move away from the religions where human sacrifice was considered the preferred homage to God, and toward creating a defined separation between humans and animals. This perspective represents only one interpretation of the significance of this story, but it may help to explain why it is celebrated so widely.

Even though this story is not central to Islam, Aid Al Adha has none-the-less become the largest and most celebrated holiday in the Muslim world. This explains why the holiday is often referred to as Aid Al Kebir. Determining the evolution of the traditions surrounding this holiday is another research project in itself, and therefore will not be under scrutiny here.

## **Sacrifice and Butchering**

Throughout Morocco, approximately 5 million sheep were slaughtered within a two hour time-frame this year on Aid according to the Ministry of Agriculture. Their innards were methodically prepared and eaten while their heads were burned collectively on massive pyres in the streets. There are many activities surrounding sheep on Aid Al Adha including: Arranging the purchase of the ram, the storage and maintenance of the ram leading up to the holiday, the pre-sacrifice prayer, the actual sacrifice, the butchering of the meat, the preparation of the food (including cleaning and cooking), the order of consumption of the various parts (and the foods they were served with), the roles of members within the household, etc. As many details as possible were observed before, during and after the feast of the sacrifice this year on Nov. 7, 2011, but this section of the project focuses on actual sacrifice and the meat-preparation that follows

The following account is a record of one of the three sacrifices that I witnessed on Aid al Kebir in the Rabat Medina, Morocco. The entire process of sacrifice and butchering went as follows:

- 1) The ram was tied at the feet with plastic twine, hind legs and front legs together. The body was held still by two men while another was positioned at its head.
- 2) The ram's neck was stretched back until it was taut.
- 3) The appointed butcher, either a professional or the male head of the household, sliced a long, thin carving knife quickly through the animal's jugular. (A prayer was whispered to the animal before it was sacrificed).

Immediately afterwards, the men quickly laid the body down on the ground. Blood spurted out of the ram's neck arteries in pulses and formed large crimson pools on the terrace. There was a seemingly long period of stillness that followed the sacrifice before the ram's body began to writhe violently. The puddle of blood that had gathered under it was then splashed, with dramatic effect onto the staircase, its adjoining walls, and the spectators. The ram's leg muscles were twitching and protesting the inevitable. This scene went on for two or three minutes before the animal's death was finalized. It was difficult to watch the life literally drain out of a living thing. But, this method was described by several members of the Moroccan families involved in all three sacrifices as the most ethical way to end the life of an animal.



Figure 5. Taken immediately after the cut was made through the neck

Once the ram lay motionless, the men went to work. They broke the neck and used a knife to completely decapitate it, placing the head in a bucket to be taken down to cook in one of the neighborhood bonfires. A bicycle tire pump was placed in the anus of the sheep to inflate the body. According to my host sister, this method is used to separate the fat and skin from the meat for ease of butchering without damaging the interior. The bottom half of the front legs were broken off and removed, a hook was strung through the two upper leg bones, and the carcass was hung in the doorway between the terrace and the staircase. The ram was then painstakingly dissected in the following order:



- 1) The wool hide was completely carved away from the body and placed in a pile on the terrace, including the bottom halves off all four legs. (The hide is treated by a different process that allows the wool to be easily extracted from the skin to be used or sold)
- 2) The layer of fat between the skin and bones was carefully sliced off in one whole sheet and hung on the clothes line to dry and harden in the sun.
- 3) A careful incision was made in the belly, the entrails were meticulously extracted and sorted into designated bowls. The intestines and stomach in one, the heart, liver, kidneys and lungs in another and everything else in a third.
- 4) The rib cage was emptied and cleaned of all contents with a hose and the carcass was left to hang on the terrace for the remainder of the day.

After the sacrifice and butchering was complete, the women began to play a more active role in the festivities. They took the categorized bowls of internal organs and began to thoroughly clean them with cold water from outdoor hoses. Both the intestines and the stomach must be cleaned extremely well before they are consumed in order to prevent illness that could be incurred from remnants of food particles and fecal matter. After the cleaning process was finished, the bowls were brought inside the house, the dried sheet of fat was gathered from the clothesline and folded into another bucket, and the head was brought by the man of the household to one of the street fires. The uncovered bowls of what appeared to be grab-bag lamb parts were placed all around the house including in the hallways, on the washing machine and in the bathroom. There was a constant danger of landing a foot into one of them if you did not pay enough attention.



**Figure 6. Gutted ram carcass hanging on terrace**



**Figure 7. Bowls of sorted ram organs and innards**

The remaining carcass was left to hang until that evening, when my host mother's sister arrived. With assistance from the whole family, the animal was brought into the house to spend the night in the hallway on what used to be a desk chair. The next morning, my aunt began to sever the animal into pieces that included chunks of meat from its back, sides, neck, legs, ribs, shoulders, rump, stomach and chest. A portion of meat was then reserved to be given to charity while the rest was properly packed and placed into the freezer. This entire process took several hours to complete due to the difficulty of slicing through the sinew and bones. By the end, the smell of raw meat clung to the walls and corners of the house with a fury that did not let up until about a week later, when the smell of ram became less frequent in the kitchen as well.

## **Food Service Ritual**

By around noon on the Aid day, the organs were clean and the sheet of fat was dry, allowing for the cooking and meal preparation to finally commence. The order in which the various organs of the ram are prepared and consumed in Morocco varies by city and region. There are often set traditions that are practiced within each city's medina in terms of what are the appropriate foods and spices that should be served with each meal. The following 'meal record' represents a case-study of a Moroccan family from the Rabat Medina. By recording the specific meals that the family prepared, I hope to begin to understand some of the traditions unique and/or common to the Rabat medina and the context behind the traditions related to serving the meat.

At the beginning of the Aid day and before the sacrifice, a special arrangement of breakfast food items was prepared and shared between families. It consisted of a large array of sweetened treats that likened more to dessert than to breakfast. I ate three breakfasts with three different families, but the contents were pretty much the same. The breakfasts included sweetened mint tea, riaf with honey, Moroccan pancakes, and several types of fruit and nut flavored cookies (Table 1). Although this meal did not contain meat, I thought that its contents were important to note because it remained consistent across the three families with which I spent time.

**Table 1. Record of all the meals eaten during Aid El Kebir and the two days following**

	Breakfast	Lunch	Dinner
Monday Aid al Kebir	-Sweetened mint tea -Riaf w/ Honey - Assorted cookies -Moroccan Pancakes	-Kabobs w/ liver, lungs wrapped in fat -Heart w/ spices -Cooked over charcoal fire, outside -Spices: salt, cumin	-Intestines with spices and olives -Pancreas with salt and cumin
Tuesday	-Sweetened mint tea -Riaf w/ honey -Porous Pancakes	-Intestines (uneaten from previous night) -Tripe w/ olives	-Scrambled eggs and brains -Testicles and kidneys with salt and cumin
Wednesday	-Sweetened black tea -Riaf -Bread -Cream Cheese -Olive Oil -Fruit Preserves	-Neck meat tagine with dates -Cucumber and tomato salads	-Harira - Tahlia (shoulder meat sweetened with prunes and sugar)

On the first day, the kabobs were prepared in a very specific way that was uniform between my family and my neighbors. The liver and lungs were diced into chunks and then wrapped in dried pieces of fat that were cut off from the large sheet with scissors. They were strung onto long metal skewers and placed into small metal grills to be positioned over a home-made charcoal fire set-up in the outside hallway. My sister and I sat, fanning the fire and watching the kabobs cook. After they were finished, the heart was placed in the grill until it was barbequed to satisfaction. The kabobs were served on a large, communal plate and the heart was placed on a smaller plate from which my brother had to take the first bite. Everything was eaten with copious amounts of grainy salt and cumin sprinkled on them. These were the contents of the first Aid meal and after everyone said their ‘hmdulahs’, they slept.

The same kind of communal participation did not occur with any of the following meals. My cousin prepared the intestines by herself, which were intermixed with olives and eaten with bread. The tripe was prepared and consumed the same way and the testicles and kidneys were eaten in identical fashion to the heart, but instead prepared over a modern stove. Riaf and sweetened mint tea were constant features of breakfast for the entire week following Aid Al Adha. By the third day, all the organs had been eaten with meals with the body meat became the main ingredient. For both lunch and dinner, sweet meat dishes were prepared using sugar, prunes, and dates, first the neck and then the shoulder. The service of meat dishes with sweet flavors seems to be reserved for special occasions, even outside of Aid Al Adha.

Over all, the order in which the organs were consumed went as follows: liver, lungs, heart, intestines, stomach, brains, kidneys, and testicles. Cumin and salt were the dominant spices or seasonings for the organs and the meat dishes were prepared using sweets. Consuming the organs seemed to be the most important and prioritized meals.

## **Part 2:**

### **Economics and Statistics**

There are around 16 million sheep in Morocco occupying approximately 30 million hectares of pastureland and about 52% of the inhabitants of rural areas or 1.1 million families make their living in livestock agriculture (Boujenane 2011). For many regions, including the Oriental, Middle and High Atlas, and Central Plateau, sheep breeding represents the principle source of agricultural-based revenue annually (Belkal 2010, pg 7). There are 781,563 sheepherders in Morocco with an average flock size of about twenty-one heads (Boujenane 2011). Ovines represent 30% of the total quantity of red meat consumed in Morocco yearly, which equates to about 120,000 tons of mutton (L'Elevages 2005). Despite its popularity, the price of mutton is fairly expensive, selling for an average of 50.50 dirham per kilogram in 2005 (L'Elevages 2005). Sheep are an integral part of the agriculture and economics of Morocco and the role they play must not be underestimated. There are a larger number of sheep than any other livestock animal in Morocco and more than half of the total amount of all sheep consumed each year is on the Aid Al Adha holiday.

Due to the size and magnitude of this celebration in Morocco, a substantial amount of logistical planning goes into its preparation, much of which is nationally orchestrated and mediated. There is a massive and unwavering demand for sheep on Aid Al Adha, and the fact that this demand is religiously and traditionally justified creates potential for an ecological crisis without careful planning. The National Association of Ovines and Caprines (ANOC) works in collaboration with the Ministry of Agriculture to facilitate and develop new strategies for sheep breeders across Morocco. The population of Morocco continues to grow each year, especially in

the urban areas, while the sheep population has remained relatively stagnant over the last 15 years (L'Elevages 2005). If this trend continues, there is a possibility that the demand for sheep could out-weigh the number that can be supplied. This is because the current sheep population seems to have reached its carrying-capacity according to statistics collected by the Ministry of Agriculture. If there was a drought, famine, plague or other form of natural disaster, this threat would be further perpetuated.

In fact, in 1987 King Hassan II had to ask the Moroccan people not to sacrifice a ram for Aid Al Adha holiday because the country had experienced a drought that year and the sheep population would have been completely diminished had the Aid Al Kebir been celebrated at its usual magnitude (Ellis 1999). Instead, the King sacrificed a ram on behalf of all the Moroccan people so that the sheep population could be protected until the next year.

It is imperative, first from an ecological standpoint, that the vast majority of the sheep slaughtered on Aid Al Adha be rams. This is because the survivability of any animal population depends on the number of females it contains. A larger number of females are required than males because males can impregnate several females in a short period of time and by extension father several offspring, but each female can only have 1 or 2 lambs per breeding season. Fortunately, the story of Ismail and Ibrahim necessitated a ram be sacrificed, so this aspect of Aid does not put the female population of sheep under serious threat, but it is something that should be kept under careful scrutiny.

When dealing with issues and tensions related to providing sheep for the Aid Al Adha celebration, and supporting pastoral subsistence in rural areas versus supporting growing populations in the cities, priorities must be established in terms of where resources and funding



should be allocated. But, there are conflicting interests at stake for each group. In order to resolve these conflicts, priorities need to be set in the directions of both conserving local breeds and developing new ones.

## Agriculture and Ecology

There are a variety of both local and imported, domesticated breeds of sheep in Morocco and the abundance of each varies by region. Local breeds represent approximately 40% of the total sheep population and others (either cross-breeds or imported breeds) make up the other 60%, numbering around 9.19 million of the 16 million head total (Belkal 2010, pg 8). Although there is significant sheep breed diversity present in Morocco and they all contribute to its agricultural landscape in some way, there are five main breeds that are recognized by the national government as local varieties. These include the Boujaad, D'Man, Beni-Guil, Timahdite and Sardi breeds (Belkal 2010). A detailed description of the main characteristics of each is listed below in order of least to greatest population size:

- Boujaad: the largest, most rustic breed, they are most commonly found in the regions of Khouribga and Beni-Mellal.
- D'Man: known for its phenotypic diversity, small size, high fertility rate and ability to reproduce more than once a year. They are localized in the provinces of d'Errachidia and Ouarzazate.
- Beni-Guil: considered to be the best breed for meat in Morocco, very resilient and well-adapted to their environment on the Oriental Plateau.
- Timahdite: primarily found in the Middle Atlas Mountains, they are valued for their ability to adapt easily to the altitude
- Sardi: known for its large size, the rams are the most popular choice for Moroccans on Aid Al Adha. It is the most populous local breed in Morocco with about 2.1 million head.

The Ministry of Agriculture was concerned about maintaining the diversity of Morocco's local sheep populations, so they developed a system of 'national recognition' as a means to extend this agenda. As a part of this system, any shepherd who tends sheep belonging to any of the nationally recognized, local breeds can qualify to receive a stipend of approximately 800 dirham/sheep/year to put towards their maintenance (this includes food, veterinary check-ups, etc) (Boujenane 2011). Political action towards protecting livestock biodiversity has become a priority in many developing countries because it can serve as a sort of long-term insurance policy against economic fluctuation (Blench 2005). Additionally, preserving genetic variation within a species acts as a sort of 'buffer' in cases of natural disasters such as famine, drought or plague and provides opportunities for pastoral subsistence in different geographic areas and across a wide variety of ecological conditions. It is also important to note that different populations of the same breed of sheep may have unique genetic traits that contribute to combating disease or to specific adaptations. This means that sheep of the same breeds should also be protected based on regional variation as another important aspect of agro-biodiversity (Blench 2005). However, high levels of biodiversity are often not in the best interests of the demands by a growing human population, especially in urban centers. Here is where tension is created between clashing interests of politics and science.

In order to meet the demand for meat and feed the people of the world, it has become increasingly more common to develop new breeds of livestock that are high-input and high-output (HIHO) to make up for gaps in supply. 'High-input' means that it takes a lot of energy, cost or resources for the animals to successfully live and reproduce, for example providing them with very specific living conditions or a particular type of food. 'High-output' refers to the increased product that is obtained in the end, such as larger relative size, increased reproductive

efficiency, or shortened time to reach maturity. Once a breed such as this is developed and integrated into the national system of agriculture, they are often preferred over local varieties because of their efficiency, thus causing other breeds to diminish due to lack of interest or income potential. However, these HIHO breeds become genetically homogenized quickly and are often not well-adapted to local environments. Thus, if an agricultural and economic system that relies heavily on HIHO breeds fails, the results can be devastating for the human population. It would no longer be possible to provide enough food because the HIHO breeds cannot survive in natural environments and the local breeds would have been reduced to near extinction. So, what is the best method to use for countries such as Morocco, with both heavy urban and rural dependence on sheep agriculture, in order to ensure long-term economic and ecological sustainability?

## **Solutions**

It would not possible to discontinue use of the HIHO breeds because they are now integral to feeding the world and therefore need to have a defined place in the economics and agriculture of every country, including Morocco. The principle economic characteristics of HIHO breeds are that they function most effectively when input supply chains are short and where long-term social and political stability is assured. This is because they depend heavily on reliable infrastructure and relative predictability of the price of inputs. For this reason, they have typically been more successful in Europe and Asia than in Africa, and around cities rather than in rural areas (Blench 2005). However, if political stability continues in Morocco despite pressures from the Arab Spring, HIHO breeds may become relatively successful, useful and common. Cutting-edge geneticists at the Hassan II Institute for Agronomics and Veterinary science have been working on developing a HIHO breed in Morocco that combines the best genetic traits of two different nationally recognized, local breeds in Morocco.

As mentioned earlier, the Sardi is the most popular breed of sheep for the Aid Al Adha holiday because of its size. However, the Sardi breed does not reproduce very efficiently as compared to other breeds of sheep in Morocco. The average fertility rate hovers between 90 and 98%, the mating season is very narrow compared to other breeds (between May and October) and the ewes only mother an average of 1 to 1.3 lambs per year (Belkel 2010). The D'Man breed on the other hand is significantly smaller than the Sardi, but it has the ability to reproduce at any time during the year, with each ewe mothering an average of 1.6 and 2.3 lambs each per annum (Belkel 2010). However, the fertility rate is more variable than the Sardi, between 80 and 100% depending on their geographic location (Belkel 2010). Several cross-breeding experiments have been conducted between the Sardi and the D'Man breeds in hopes of producing a HIHO breed

that will combine the most desirable traits of each. Ideally, this new cross breed would have the size and physical features of the Sardi but the more efficient reproductive capabilities of the D'Man. The sheep produced from cross-breeding these two breeds are called the DS breed (Boujenane 2011). Experiments continue so that the exact desired traits can be isolated and the population of the new breed can grow. Currently, scientists behind developing the DS are trying to obtain national recognition for it on the basis of its economic potential (Boujenane 2011). In coming years, the DS breed could become the major preference for Aid Al Adha and consequently, a major player in the agricultural economy of Morocco.

Nonetheless, the current diversity of sheep breeds should continue to be conserved and protected by national agencies. HIHO breeds should simply be integrated into the current agricultural system, not replace it altogether. Maintaining the integrity of local breeds is still the most effective strategy for sustaining the rural populations of Morocco and supporting pastoral subsistence. The responsibility for maintaining diverse livestock breeds may fall increasingly to international bodies and national governments in coming decades so as to ensure their success (Blench 2005). HIHO breeds will serve to fill the gaps between supply and demand in growing urban populations and to ensure that Aid Al Adha can continue to be celebrated in its current form in the face of changing ecological conditions.

## Conclusion

In general, Aid Al Adha is a holiday that requires a lot of planning, whether that is done by individual families or by national agencies. There are many traditions surrounding this celebration and its execution has become so important, that an entire country's ovine agricultural infrastructure has been designed around it and regulated by it. The Aid Al Adha celebration may have originally had an exclusively religious basis, but it now breeches the arenas of economics, politics, genetics and ecology. Sheep play a significant role in Aid Al Adha, and in the culture of Morocco as a whole. Moroccans are heavily dependent on sheep for both symbolic and practical reasons, and this dependence will only continue to increase in years to come.

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