An Evaluation of Livestock Production and Veterinary Medicine in Dominica

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Abstract:

On the island of Dominica the presence of agriculture is more than apparent and within that there is a definite interest in livestock production. With this interest in livestock naturally comes the practice of Veterinary Medicine.

After a three week period on the island and having been immersed into the world of Dominican Agriculture and Veterinary medicine this evaluation has been created with a basic description of what livestock production is like on the island accompanied by Veterinary Medicine. It also includes several photographs depicting Dominican livestock practices. Throughout the report I have included suggestions that may potentially further the success of Agriculture and Veterinary care on the island of Dominica. One thing that should be noted as well is that this report has an emphasis placed on cattle and goats.

Introduction:

There are a myriad of livestock production facilities, breeding operations, veterinary clinics, and resources that span the United States; in turn this has led to a massive industry in which knowledge and services are easy to obtain for the most part. This allows farmers and producers to be well informed about livestock production if they so desire to be.

Beyond the mass amount of available knowledge there are the broad ranges of livestock production that vary greatly. There are “small town family farmers”, “middle class farmers”, and then there are the massive producers who rule the industry not only in the United States but in other parts of the world as well. The big-time US producers have even helped raise the U.S to the rank of one of the top producing countries in the world which

also includes countries such as India, China, Brazil, and the European Union (EU-27). This broad U.S spectrum of production provides for an easy basis for which to compare Dominican agriculture to since there are so many scales of production.

Examining Dominican production on a scale comparable to the U.S places it towards the lower end of the spectrum since island-wide the focus is on local family owned farms emphasizing sustenance lifestyles in which production goals are to produce enough to support one's own family. These are comparable to the "small town family farms" of the United States. The goal is personal production. All in all this lends that Dominica is not an exporter of meat exports as is the United States. In fact they can't export meat at all because they aren't EU certified. They are aiming at obtaining it though.

As far as education of farmers goes, in terms of livestock knowledge, there is a slight lacking. Farmers are indeed knowledgeable as many have been involved with livestock their whole lives, but there is definitely an information gap. Somewhere farmers are not being kept up to date with modern breeding, feeding, housing, and restraint techniques/ practices. There is, however, an Agriculture and Veterinary Extension that is provided by the Ministry of Agriculture. I have looked online at their website, however I receive an error code that says "Domain not found". The fact that I receive this error code may explain some portion of the gap I previously mentioned. In addition, one thing that may be deepening the gap is the fact that veterinarians are far and few on the island of Dominica. In the United States a veterinarian is a Google search or a phonebook away whereas here contacting a local veterinarian comes only if you know them personally and live nearby or when one happens to stop by to check up on something.

As my evaluation will provide, the small scale production of livestock in Dominica is lacking the boost it needs to begin exporting the livestock it produces, but the potential is grand as farmers have their heart and passion in everything they do concerning their herds and flocks.

Material and Methods:

In order to obtain information about livestock production on Dominica I visited various local farmers and producers on the island and was able to get an inside look at the animals they were raising, the feeds they were utilizing, the barns where their animals were sheltered, their means of animal restraint, and much more. On these visits I simply conversed with the farmers to try to get a foothold on what livestock rearing on the island is all about; I was accompanied by Dr. Lennox St. Aimee, a Veterinary Officer of the Ministry of Agriculture, and on occasion by our driver that day. I asked them questions about their personal experiences with livestock on the island as well. Visitation was made to several small towns on the island and included the following: the farmers of Delices, Alexander near Victoria Falls, Andrew of LaPlaine, Brentanol from the SouthEast, those working at the Livestock Facility, Jullian John of Grand Bay, Alexander of Grand Bay, Arthur Leuleerent of Grand Couliblle, Anthony Creek of Grand Couliblle, and Mann Mitchell of Sultan.

While visiting I took photographs with a Samsung Digital Camera and recorded any information in a small 6”x8” notebook with a 0.5mm Pigma Pen. All photographs present in this report were taken myself.

In addition, while working in the Ministry of Agriculture’s Molecular Diagnosis Lab on another research project (Tick Transmitted *Babesia* in Cattle on the Island of Dominica) I

had the opportunity to converse with Dr. Lennox St. Aimee on various topics of Veterinary Medicine and how it comes into play with the world of livestock production on the island. On top of this there is the matter of basic observation during my three week period on the island. Piecing all of these bits of information provided for the groundwork of this evaluation.

Discussion:

Upon simply observing livestock while on the island of Dominica it is apparent that livestock production on the island as a whole is very informal. Even when one is not searching for livestock you are sure to see cattle, goats, and chickens roaming around. Of the most numerous are probably goats and chickens. Chickens roam freely without any enclosure of any sort whereas goats and cattle are typically tied to fences, trees, and picks in the ground. Figures of such "tie-ups" can be seen in Figures 1, 2, and 3.

This varies greatly from livestock production back in the United States; typically chickens are contained by, at the very least, a pen of chicken wire or fencing of some sort if not a chicken coop. As for goats they are allowed to roam free or are hitched to picks in the ground but all behind the safety of a closed fence or pen. The one thing that I particularly found alarming about free-roaming goats in Dominica was the fact that not putting livestock safely behind enclosures can lead to large economic losses in that it provides room for injury by cars in particular and hence causes carcass damage and overall loss if the animal does not survive the injury.

As I began to visit farms of local producers, I began to realize that most livestock producers do in fact try enclose their animals in the best "barns" and pens they are capable of

affording and making with their own hands. In the U.S it is simple to make a quick trip to Home Depot and whip up or pay someone to build a facility for your animals. Here in Dominica it is not so simple. Materials are costly even for simple things such as chicken wire due to high import taxes on the island. Fifty feet of chicken wire sells for a whopping $50 US. Hence, building resources are limited and it is common to reuse materials over and over until they literally fall apart. This creates difficulty in making appropriate and modern pens for holding livestock. Farmers do the best with what they have been given though and have been generally successful. Considering the cost and labor it takes to build anything on Dominica it is apparent that farmers are doing the best they can with what they have access to.

Although with more funding I feel as though they would be able to create outstanding barns. *Figure 4* depicts a goat barn that I visited in Delices. It is easily seen that this barn is constructed with the best interest of the goats it holds but it is also readily apparent that the enclosure is exposed to the elements, be it rain, wind, or storms. Another notable feature of this barn is that it is not very large and that there are three or four goats per pen depending on size and hence the animals are slightly cramped together. I was told that they are given pasture time but in limited quantities since there is not much pasture and because they have to be watched.

This leads to my next matter: feeding. Goats and cattle can live on simple pasture feeding because they are ruminants and are therefore very efficient at converting feed, especially considering their tendency to choose plants that are at their peak in nutrition. (When it comes to plants: as quantity increases quality decreases. Basically as plants mature they

lose nutritional value at a certain point.) Although this may be true it is typically best if they receive some sort of concentrate, also known as supplements/additives, to accompany their roughage (pasture/browse) because this conversion takes quite a bit of energy and concentrate can help offset any imbalances and ensure proper nutrition to the animal. For goats in particular a grain supplement that has a total crude protein (CP) content of 14-16 % is desirable and should be provided with quality legume hay such as alfalfa. With this it is also recommended that a salt or calcium block be provided to ensure that the goats are getting the appropriate amounts of minerals, After visiting several farms it became apparent that recommended feed rations were not followed; common feedstuff for goats on the island swayed towards creeper vine (*Parthenocissus quinquefolia*), elephant grass (*Pennistum purpureum*) and pasture browse. Upon looking at the benefits of these plants I have come to the understanding that creeper vine is acceptable for goats to eat but has minimal nutritional value and "elephant grass [is] marginally below the critical level (150 mg L^{-1}) of rumen ammonia required for proper rumen function (Preston and Leng, 1987)." This being said I would suggest that there is room for improvement in feeding of livestock, especially in the case of goats. Although it is possible to raise a goat on pure pasture or basic plant feed it will not produce a superior outcome when it comes to meat quality. There should be added supplements, vitamins, hay and minerals.

As for feeding methods it was intriguing to see the feeders devised by Dominican hand. They mostly consisted of slatted wood and bamboo angled against the pen so as to allow the goats to pick through the slats and grab the food. The goal is to keep the feedstuffs (plants) off of the floor to prevent feed contamination by feces or hooves. These feeders which are pictured in

Figures5 and 6 do a fine job for the most part. However, smaller leaves and such may fall through the slats due to their large size. This is not a huge problem though.

On a slight side note there is the matter of feed storage which is depicted in *Figure 7.* Most farmers keep their plant-based feed off the ground on slats of sheet metal. This is not completely ideal in that the feed is still exposed to moisture, the elements, and insects. Moisture can cause the rotting and degeneration of the food as can poor weather conditions. Insects on the other hand can lead to disease and feed loss. Hence, it is suggested that farmers on the island consider sealed and closed storage bins for feed storage. Even something as simple as a plastic garbage could suffice.

As it pertains to cattle there is not much to say when it pertains to feeders because all of the cattle I encountered were being purely pasture fed. Hence, they too could benefit from concentrate.

One thing that goes hand in hand with feeding that is often overlooked is water. It is such a simple concept that livestock of all varieties both here and in the U.S need. Here in Dominica, like in the U.S, farmers don't always understand the vital importance of this resource in rearing livestock. Nearly every farm I visited provided plenty of water for their animals by means of small hanging buckets with the exception of those farms that relied only on pasture feeding. In those cases the animals were left to their own devices when looking for water. I noted that in cases of pasture raising there is typically a small stream or pond nearby that is easy for the animals to find on their own. The vital key that is missing though is the cleanliness of the water provided to those livestock enclosed in pens. Dominica is known for their fresh, clean, and pure drinking supply and thus it shouldn't be problem to provide clean and untainted water. Most

often the water I saw was filled with dirt, leaves, and on occasion dead bugs. This will not kill the livestock but fresh water is healthier and produces healthier meat carcasses in the long run.

Beyond feeding/watering, there is also the matter of restraint for purposes such as fecal testing and blood withdrawal. When it comes to goats it is as simple as holding the horns at their base and extending the goat's body out lengthwise. See Figure 5 Usually if you are experienced there is little to no difficulty with this and there is no need for a harness of any sort although it is common practice to use a simple sisal rope head harness in the United States. This was very similar to restraint practices in the United States.

However, when it came to cattle there was extreme variation. Most commonly cattle are left roaming free with nothing more than a knot tied piece of sisal rope left hung around their neck. This rope isn't tied to a tree or fence of any sort but rather left dangling. This is a common practice for when a cow/bull is needed the farmer simply follows and/or chases the cattle until they can catch grasp of the rope. Upon achieving this they corral the cow/bull into an area where there is a sturdy tree or rock of which they will attach the rope to and slowly begin to increase the tension in the rope so that the head of the cow/bull is brought close to the tree/rock. Once the animal is secured someone will grab the cow/bull by the horns so as to gain control of the head. Head control is vital to being able to restrain the animal and so bull tongs were used to insert into the nose and obtain this control. The head was then extended and the animal was worked with. A visual is provided in *Figure 10.*

One thing that Dominica has an abundance of in goat barns is "slotted floor systems". These can be seen in *Figures 11 and 12.* Basically the entire floor is built so that there are gaps in between the pieces of wood. These floor systems are wonderful for they allow fecal matter

produced by the goats to fall down below underneath the barn that is raised up several feet. This system does wonders for sanitation and thus decreases chances of disease within the barn. Other farmers such as Alexander near Delices , have taken this system to a whole new level by utilizing the goat droppings for manure. This was an inspiration. He has built his goat barn (*Figure 13*) so that it doubles as a manure compost station. The feces fall below the slats in the floor and then he shovels the feces out from through the metal door pictured in *Figure 14.* Once out, he piles the feces up into piles and adds organic matter/scraps and creates his own manure.

Finally a visit to the livestock facility proved useful in showing that Dominica is in fact trying to get on the rails with modern agriculture. This is apparent in that it was extremely similar to facilities back home. There are enclosed pens with barb wire, restraining pens, wash stations and even a goat barn with a slotted floor system. This facility was proof of Dominica's attempt to pull its livestock production to a level where the exportation of meat is possible. In addition, I was told by Dr. Lennox St. Aimee that this facility is typically where people come for animals that have been bred for desirable characteristics. Examples include cattle with *Bos Indicus* influence and goats with Boer goat qualities that lend high meat yield.

As for veterinary care on the island there are only about 10 veterinarians on the entire island and of that only 3 are female, thus showing that this is still a male dominated field. As for schooling most veterinarians I spoke with went to veterinary school in Cuba. I was told it took 5 years. One year to learn Spanish (if you didn't know it already) and 4 years of

actual schooling. This was different than the four year undergraduate schooling plus four years of veterinary schooling minimum we have back in the United States.

I also inquired about veterinary practices and what diseases impact farmers the most and was informed that coccidia is a big problem in goats ,but as far as other diseases are concerned there isn't much being done to prevent them. I was told that typically the veterinarians aren't called until a problem arises. Upon asking what a veterinarian on the island might see most often I was told that it's not really disease but instead incidents where animals are hit by a car or injured physically in some way or form.

When I asked about vaccines I was told that they aren't commonly used on the island with the exception of those such as rabies.

To top that off I realized that spays and neuters are not all that common on the island when it comes to livestock or cats and dogs. Back in the U.S we have feral cat programs and low cost spay/neuter-clinics and such to prevent animal overpopulation but here there is no sign or initiative to begin any sort of spay/neuter-return program at all. This only confirms how different these two worlds of veterinary medicine are from each other.

On a final point of veterinary medicine there is the matter of communication. In the United States veterinarians are easy to find as in most places they are numerous. This makes it relatively simple to keep in contact with a local veterinarian when one has questions. Typically the clinic will from time to time call up owners to remind them to come for booster vaccines and for heartworm tests and in the event a procedure has been done it is typical of a veterinarian to call to check up on their patient. Here it is more difficult to keep in close contact with a veterinarian for they are spread so far and few. This makes it

difficult to ensure owners are following through with medication protocols and such. As Dr. Lennox St. Aimee told me, most often the problem is not that the owner did not seek treatment for something but rather they did not follow through with the treatment plan as they were supposed to. An example is in the case of Bayticol for tick treatment; a farmer may treat with the proper medication but it will only be successful if they administer the correct dosage for the correct time span. Thus, again there is a gap in information flow.

Figure 1: Traditional Tie-Up Method

Figure 2: Traditional Tie-Up Method

Figure 3: Traditional Tie-Up Method

Figure 4: Typical Goat Barn

Figure 5: Bamboo Feeder

Figure 6: Wooden Feeder

Figure 7: Feed Storage

Figure 8: Water Bucket

Figure 9: Goat Restraint

Figure 10: Cattle Restraint

Figure 11: Slotted Floor System

Figure 12: Slotted Floor Manure System

Figure 13: Goat Barn

Figure 14: Goat Barn Manure Product

Figure 15: Restraining Pen at Livestock Facility

Figure 16: Goat Barn at Livestock Facility

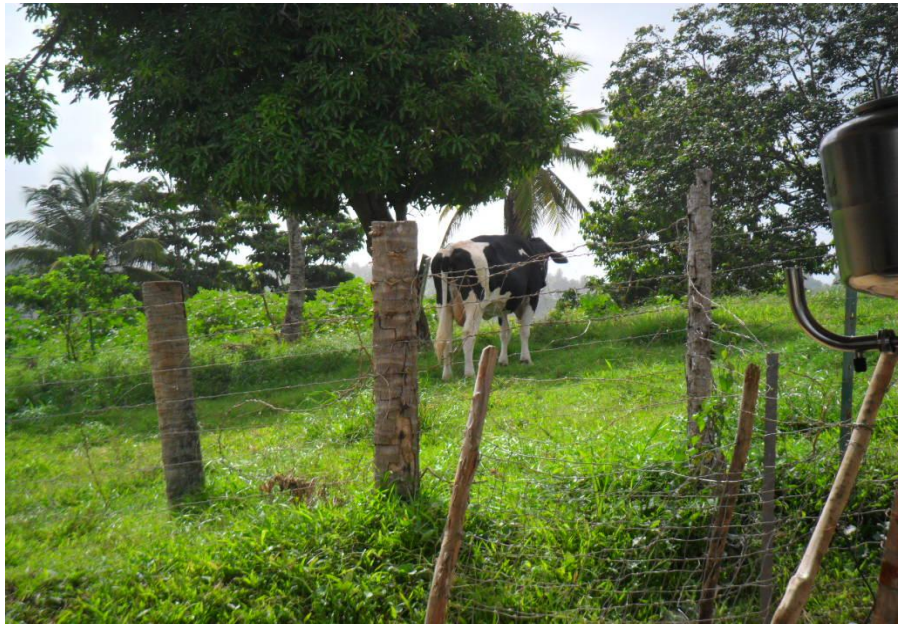

Figure 15: Cattle Enclosure Pen at Livestock Facility

Conclusion:

All in all my visits with the farmers of Dominica proved inspiring. There are people on this island with such a passion for what they do and if they can work on fixing simple things such as providing clean water supply, building barns that limit disease and are not exposed to the elements, storing food strategically, and most importantly taking an interest in following treatment protocols and when possible inquiring about prevention then the future will be bright for livestock production in Dominica. The hardest part will be the farmers coming together as a strong united front in attempts to become EU certified. It will take a united front to improve meat quality as a whole and then Dominica can reap the economic benefits of their hard work.

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