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Brazil, Factor 4

Brazil: Implementing Practices to Maximize Growth and Potential of Livestock

A report released on Brazilian poverty by Human Resources Operations Division detailed about how farming and agriculture has such a big effect on their economy. In their report, they detailed that over 50% of Brazil's poverty came from the northeast region. Thirty five percent of that 55% poverty from the northeast region came from the rural part of the northeast. The northeast region of Brazil accounted for 40% of the total agricultural employment. The majority of farms in the northeast region of Brazil are large farms tended to by working tenants. The upbringing of large farms was brought about by the government's economic strategy which was to focus on import substitution and cheap food prices. This strategy paired with the focus of modernizing of agriculture in the 1970s made it easy for large plantations to start up. The government also provided fiscal subsidies to encourage farmers to open up new land, which only helped large farms out (Brazil: A Poverty Assessment).

The average salary per month according to Brazil's last census was \$678.90. Their average monthly salary means that they earn a little more than \$8,000 per year. There is still a huge income gap in which the 10% wealthiest made more in one month than the 10% poorest do in 3 years. The poorest Brazilians earned roughly \$77.40 a month. The poorest 10% earned 1.1% of the countries total income; while the richest 10% earned 44.5% of the total countries income. This income gap paired with the dominance of large farms makes earning a living on a small farm difficult. The most affected by the conditions of the poor are children. "About a quarter of the children under 5 suffer from chronic malnutrition" (Brazil: A Poverty Assessment). Children are also more than twice as likely to participate in the labor force. Of all the poor Brazilians that live in the northeast, nearly half of them are smallholders or sharecroppers. The rest are temporary workers or employees. The head of their household is normally illiterate, and they have a scarce access to proper utilities such as running water and a sanitary waste system. These obstacles need to be assessed in order to help Brazil's poverty. The best way to start is by aiding Brazil's small farms (Brazil: A Poverty Assessment).

Unlike Minnesota; Brazil only has two seasons consisting of a drier season (winter), and a wetter period (summer). There are four different zones to Brazil each with a distinct climate that affects what can grow there. The northwestern zone is the Amazon Rain Forest which receives an abundance of rain which life flourishes in. The northern part of Brazil is drought-ridden with an abundance of wild brush that mainly grows during the winter. The central part of Brazil is more or less a big plain which receives an adequate amount of rainfall throughout all seasons. Finally the most agricultural of the zones is the southern zone. This zone has the most experienced farmers, better technology, and overall has a better climate for growing crops and earning money. The southern zone also tends to have well-distributed rainfall which helps greatly increase the yield on crops. Not only is this zone the most economical, it is the most densely populated and has sustainable housing for humans and fencing for animals. The Northeastern zone on the other hand is populated with shrubs and its lack of adequate rainfall makes living difficult; especially when there is subpar housing and fencing available. There are many kinds of animals raised in the Northeastern zone, but the animals that seem to thrive there are goats. Goats are excellent browsers that seem to thrive on shrubs and the drier weather of the northeastern part of Brazil. Because of this, most of the goat population of Brazil is from the northeastern zone. It seems that the quantity of animals is well on its way, but some of the ways that they raise the animals could use some help. Raising animals is not easy, and problems are always going to arise. In order to better raise animals and give them the best chances of survival, some basic guidelines need to be followed. The basic guidelines are controlling the load of parasites to maximize

thriftiness, supplying an adequate amount of nutrition, and creating a comfortable environment for the animals to live in (Brazil: A Poverty Assessment).

Similar to crop production, meat and animal production need to be made straightforward in hopes of raising more of a quantity of animals without sacrificing quality. One of the best ways to go about this is by parasite control and management. The definition of a parasite according to dictionary.com is “an organism that lives on or in an organism of another species, known as the host, from the body of which it obtains nutriment.” Dealing with parasites can be a challenge for producers because firsthand knowledge and a good basis of research to combat them are needed for good management. Parasites have a larger effect on animals than most producers realize. Internal parasites especially have an adverse effect on the well-being of the animal. Internal parasites can cause the most damage to an animal because the parasites often take vital nutrients from the stomach before it can get into the body. Other internal parasites make incisions into the last part of the stomach on ruminants, causing them to lose blood. Some of the parasites that animals can get show almost no sign of being infected until it’s too late to help the animal. If the animals have too large of a load of parasites, reproduction can become an issue. The animal’s thriftiness also declines; leaving it open for an infection or a disease that it would otherwise fight off. The best way to combat internal parasites is a careful combination of cross-species grazing, pasture rotation, culling of non thrifty stock, and the occasional worming before reproduction begins. However some of these methods are inconceivable for smaller producers with limited pasture. So instead of using the best possible way to control internal parasites in animals by using pasture limits, producers tend to use shortcuts which work wonders in the short term. However, looking a little later down the road, it is only setting producers up for even greater problems in the future. Raising animals is important and what producers decide to do can easily make it difficult to control the load of parasites on an animal. Reducing the load on an animal means less stress and an overall better weight gain, improved thriftiness, and better reproduction; which translate to more muscle for consumption of humans. One of the easiest methods to help an animal with worm problems is to use dewormer medication. However, when medications are used on a set schedule, internal parasites have the chance to become resistant to the medications used if certain steps are not taken (Understanding the Ruminant Animal's Digestive System).

With producers using dewormers on a set schedule and not doing anything for preventing resistance of the worms, the probable truth is that there will come a time in the near future when our current stock of dewormer medication will be of no use to us anymore because of a very resistant worm load. There is already proof of this theory. In Texas, the overuse of Ivomec has lead to an almost complete resistance to that Ivomec in parasites found in meat goats. This is just one isolated case of resistant worms. The reason behind dewormer resistant parasites is that when you deworm an animal, you are not killing one hundred percent of the worms. Those few worms that are left behind have the possibility to be resistant to that dewormer. As those worms multiply, they create more worms which may also carry the resistance to the dewormer. The next time you use that same dewormer, there will be more of those resistant worms. Over the time of years, you will come across a worm load that is completely resistant to the dewormer that you have been using. I have made it my specialty in FFA and 4-H to find the best possible way to deworm an animal without creating a resistant worm. One of the ways I have found works the best is to do fecal samples to determine the exact worm load on an animal. By doing the fecal tests periodically on our animals, I am able to determine which goats have resistance problems, and which goats have trouble fighting off the worm load. I am also able to tell which worm egg count is too high, and from there, I can decide which worms need to be targeted, and what the best possible dewormer to use. By doing this method, I have found that our herd is having very little problem dealing with a large worm load, and therefore have a great weight gain because of it. Eliminating resistant worms and preventing their resistance takes some careful forethought and determination. Luckily, there is one method that seems to be slowing down the parasite’s resistance to some dewormers.

Another way of destabilizing resistance to worming is to cycle between the three families of anthelmintics (dewormers). The three families of dewormers are benzimidazoles, levamisoles, and avermectin. Each family of anthelmintics kills only a certain few types of worms that affect the goat. The different worms can be eliminated by a careful cycling of the families of anthelmintics. Wormers in the benzimidazole family are Valbazen, Safeguard, Panacur, and Synantic. In the past, they did an excellent job of eliminating roundworms(nematodes) and flukes(trematodes). However, with the widespread development of resistance and the availability of more efficient and easier to administer dewormers, their use has decreased over the past few years. Levamisoles(Imidazothiazoles) include the compounds Tramisol, Levasol, and Rumatel. Levamisole is highly effective on nematodes; however it has no effect against flukes and tapeworms. The final class of dewormer used for goats is Avermectin. The common drugs include Ivomec, Dectomax, Cydectin, and Epronex. The most commonly used drug, Ivomec, is used very effectively to treat a large array of parasites that can cause internal and external problems (Merck Veterinary Manual).

Another obstacle to be considered is that some parasites are species specific and require a different diagnosis. There are many natural ways to prevent high loads of internal parasites such as; supplying an adequate nutrition, multispecies grazing, pasture rotation, and finally quarantining a new animal to the herd. These methods when used correctly and in the correct portions will help control the internal parasite load on the animal.

Utilizing a pasture to its full potential is somewhat straight forward. There are 3 kinds of ruminants that each thrive on a different type of forage. The first type likes to eat leaves and things that are easily digestible. They typically use their body's natural height to eat the leaves that other animals cannot digest. These animals include giraffes and deer, and they are known as concentrate selectors. The second kind of ruminants is called Grass/roughage eaters. They tend to like eating grasses and other fibrous materials. They have longer intestinal tracts compared to concentrate selectors, and prefer young grasses to legumes. This type of ruminant would include cattle, and sheep. The final type of ruminants is known as intermediates. This type of ruminant is ruled solely by goats as they are different than both concentrate and grass eaters. Goats like a diet of forbs and browse such as woody, shrubby type plants. This group of ruminants has adaptations of both concentrate selectors and grass/roughage eaters. Using at least 2 different types of ruminants is a good way to utilize pastures. One example including cattle and goats would greatly improve utilization of the pasture as well as improving the well being of the animals. Cattle and goats may differ in diets, but they both reap many benefits from being in the same pasture. The benefits that they receive are a lower parasite count, protection from predators, and better nutrition overall (Understanding the Ruminant Animal's Digestive System).

Goats and cattle when used in the same pasture tend to create a bond between the species. Goats can see danger easier than cattle, and the cattle are a great protector when they know of incoming dangers. With both species working together, they create a great team against predators that might have gotten otherwise lucky with the takedown of an animal. Defense against predators is a great reason to graze the animals together, but they also help each other by eliminating parasite eggs on the pasture. One specific example of a parasite that targets goats, but not cows, is the barber pole worm (also known as *haemonchus contortus*). Barber pole worms are the number one internal parasite for goats. Being untreated, they can suck up to one cup of blood from a goat. Eggs are passed through fecal matter, and the goat picks up the eggs when it eats grass infected with the eggs. When cows ingest the egg, their abomasum is tough enough that they cannot suck any blood, and they eventually die without any harm to the cow what so ever. This is done visa-versa and the eggs are eliminated without harm to them either. The final main benefit that the species gain while grazing together is a better overall nutrition. With similar diet habits, two species may be eating the same grass and the pasture would be gone twice as fast. However with two species with differing diets, they each eat what they want and they

both are happy. As an added bonus, the goats will eat the weeds that may be overgrown and the cows don't like to eat. Grazing two different species on the same land is called cross-species grazing, and it is a somewhat popular practice in small farms. If this could be implemented in Brazil, poor farmers could gain the benefits listed above as well as having two types of meat for eating.

The only drawback that comes from cross-species grazing is that the plants are being depleted faster than if only one species was grazing there. They deplete it faster, and the land may end up looking more barren than with only one species. There is a simple solution to this drawback, however it requires sectioning off a pasture. If the animals could eat one section of the pasture, then move on before it becomes too depleted, it would give the weeds and plants time to grow back before the animals got back around to eating there again. Another bonus is that most parasite eggs will die before the animals have a chance to ingest them.

Brazilian livestock in general need pasture rotation and access to shelter from both the sun and wind. As the animal gets more comfortable it better utilizes the pasture given to them. The more comfortable the animal is, the more meat it will produce, and the more tender the meat will become. Part of this comes from having an abundance of fresh drinking water, and also enough tender plants to live on. One popular method of improving pasture quality was to burn the pasture. Recent research done on this method however has found that burning the pasture once a year for eight years resulted in a twenty-five percent reduction in total plant production. Ranchers had the adverse reaction to burn the pasture five times in one year. The frequent burning of the pastures killed most of the tender plants as well as some of the shady trees, and killed off almost all of the annual bloomers. The burning of pasture combined with the inadequate rains made it almost unattainable for all of the plants to properly bloom and reproduce with flowers before the ranchers burned the pasture. Goats would do well in an environment of tough weeds, but that would take a lot of time and patience. The better management choice would be to avoid burning the pastures and plant more trees to liven the soil (Understanding the Ruminant Animal's Digestive System).

In a perfect world, animals could be left to graze in fields without having to worry too much about having problems with internal parasites. Internal parasites however do cause problems for farmers around the world. Brazil in particular should start to worry about their livestock management because grazing cattle on burnt pastures is not sustainable at all. With the introduction of goats into herds of cattle, farmers wouldn't have to worry about being overridden with weeds or stubborn shrubs. Instead they would be reaping the benefits of having twice the animals living off the same amount of land. Of all the problems that a producer comes across, internal parasites could possibly be the worst. An animal that is heavily infected with parasites will almost certainly die. With lighter infestations, an animal could have decreased productivity, signs of anemia, problems with reproduction, and makes the animal less thrifty and therefore more prone to disease and infection. Eliminating the threat of internal parasites would be easy enough to do if we didn't have to worry about producing resistant worms.

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