Quality Assurance for Goat Nutrition

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Quality assurance is a proven set of voluntary, sensible management practices that will ensure that goat meat is safe and wholesome, enhance environmental quality, and increase efficiency of production. It is a way for goat producers to make their own rules to ensure that production practices result in safe goat products (meat, milk, cheese, etc.) rather than having defective goat products cause consumer problems that could lead to government-imposed regulations on the goat industry. Most quality assurance practices are common sense; problems arise due to not thinking things through, which may happen under management pressures. Quality assurance is a tool that assists in organizing common sense-thinking into a systematic method for evaluating practices. Quality assurance provides guidelines on production practices that can simplify management decisions.

There are five Preferred Production Practices in Nutrition/Feedstuffs in the quality assurance program for meat goat production:

1. Provide proper nutrition to all goats according to stage of production
2. Ensure that feed and water are free of contaminants
3. Comply with the FDA ban on feeding of ruminant-derived protein supplements
4. Take care in the use of feed medications and other feed additives
5. Record use of chemicals on pastures to prevent harvest and feeding of feed containing chemical residues

Provide Proper Nutrition to All Goats According to Stage of Production

The first and most important of these areas is providing proper nutrition to all goats according to stage of production. Good nutrition goes a long way towards good animal health. It seems like common sense to feed animals properly, and yet if you attend an auction, you will see some animals come into the ring that are very skinny and malnourished. Goats have a habit of multiplying and owners find it easy to become attached to them. The end result is an overcrowding problem and, with resources usually limited, this may result in animals being underfed. Match the number of animals to available facilities, feed, and financial resources. Limit the number of animals that you become attached to. You are abusing your animals if you have more goats than space to care for or resources to feed properly. However, another nutritional problem sometimes seen in goats is that they are too fat, making them susceptible to pregnancy toxemia at kidding, overheating during the summer, and less resistant to diseases. More goats suffer from obesity than undernutrition. Overfattening animals is harmful to their health. It may please you to feed your animals more feed, but by doing so you are increasing their health problems.

An indicator of the nutrition level of animals is their body condition. Body condition scoring is a method of describing the fleshiness of goats with a numerical score, 1 being extremely thin and 5 being overly fat. There is a body condition scoring program on the American Institute for Goat Research
website at http://www2.luresext.edu/goats/research/bcs.html. The web page has a series of pictures of animals from the side, top, short ribs, and breast bone along with descriptions that enable you to match your goats body shape to the correct body condition. The American Institute for Goat Research has also published a brochure with color pictures and written descriptions.

Ideally, a goat should be in body condition score of 3 with some exceptions. Animals need to have a body condition score of 3.5 in the fall to ensure body reserves and flesh covering to help keep them warm in the winter. Animals should have a body condition score of 3 before kidding, since they may lose weight while kids are nursing, but they should not go below a body condition score of 2. If does are in body condition score greater than 4.5, they are in danger of pregnancy toxemia as kidding time approaches. Also, animals that are less than body condition score of 2 are susceptible to pregnancy toxemia. If goats have an adequate amount of green grass or browse that is of reasonable quality, they will keep themselves in adequate condition. Goats get too fat from too much feed. They are too thin when there is not an adequate amount to eat. This is especially a problem when goats kid during the late fall or winter when often no green material is available.

There are a number of resources to assist you in feeding your animals properly. There is a ration balancer on the Institute website at http://www2.luresext.edu/goats/research/nutritionmodule1.htm. By inputting information on your animal such as breed type, weight, stage of pregnancy, etc., the program will calculate nutrient requirements for energy, protein, calcium, and phosphorus and predict dry matter intake. If you do not know the weight, there is a calculator to estimate body weight from measuring the heartgirth (distance around the chest) and breed type. This may be useful if you need to know the weight of a goat for administering the proper dose of medicine. The ration balancer will also calculate the nutrients required for gaining weight or obtaining a desired body condition score in a period of time. The ration balancer will assist you in determining if your pasture/hay is nutritionally adequate and allow you to select a supplement to adjust the level of supplementary nutrition to meet the goat’s nutrient requirements.

Grazing management plays a role in providing for the nutrient requirements of the animal, as well as contributing to the control of toxic plants and parasite problems. Grazing animals on pastures with inadequate forage results in loss of body condition. In addition, when the amount of forage available to animals is limited, they are forced to eat more of the less desirable plants, which may contain toxins that can poison the animal. Some plant toxins may enter into the meat and affect humans. Grazing too close to the ground also results in increased levels of internal parasites. Preventing overgrazing will assist in having adequate forage to meet nutrient requirements and keep animals from grazing too close to the ground, thereby ingesting fewer parasitic larvae (worms) and lessening the need for deworming. Using less dewormer reduces the risk for dewormer residues in the meat, slows down the increase in anthelmintic resistance, and saves money. Good nutrition promotes good health, reducing the need for antibiotics and potential for antibiotic residues in the carcass. Grazing in areas that flood or have standing water can result in infection by liver flukes and result in liver condemnation as well as reduced animal performance.

**Ensure Feed and Water are Free of Contaminants**

Most contaminants enter the goat through the mouth. We must be careful about what is available for the goat to eat and drink. The source of drinking water must be safe and the water offered in a manner that prevents contamination by feces, urine, feed, and filth. Water should be tested by the
health department with the same tests that apply for human consumption. The presence of coliforms would indicate a water supply contaminated by feces. Nitrates in water can be toxic depending on the level. There is a case of giardia mastitis in goats being caused by a contaminated water source. Animals watering from natural sources such as streams can pick up infections from other animals miles upstream. Livestock waterers should be difficult for animals to defecate or urinate in. They should also be difficult for wildlife to use to reduce the spread of germs and prevent contamination of the water by wildlife carcasses. Waterers should be cleaned out regularly.

You can be assured that when you purchase a sack of feed from a reputable company that it is free of contaminants and toxic substances. Companies realize that they can be held liable for those problems and have established manufacturing practices to prevent the production of contaminated feed. You only need to store the feed and get it fed without contamination. However, if you have a large herd of goats and purchase individual commodities or byproduct feeds there are many more management considerations. You must ensure that the purchased feed or feed ingredients are free from mycotoxins, such as aflatoxins. Mycotoxins can end up in goat products, especially milk, with serious consequences. Corn can be contaminated with aflatoxins depending on the weather conditions at harvest and storage conditions. Most feed ingredient dealers will guarantee their feed to be free of aflatoxins or other toxins. However, if you buy a truckload of whole shelled corn from a neighbor, you have no such guarantee. Commodities and byproduct feeds purchased through a feed ingredient dealer will usually come with some implied warranty on quality. However, if you buy a commodity directly from a company or a salvage company, the quality may not be known. Protect feed from contamination from baling twine or plastic that can cause serious digestive problems in animals.

Feed must be stored where it will be dry and not overly hot. If feeds get wet, it will mold or ferment. Mold may result in mycotoxins being formed in the feed. Excessive heat can decrease vitamin potency and protein quality. Storage of feed in bins requires more management for keeping moisture out. If a bin is not completely fed out in several months, condensation can be a problem if the feed is not aerated. Keep records on feed such as where it was purchased and dates fed. If there is a problem with your animals, these records may provide useful information on tracing the source of contamination. The feed storage area should not contain herbicides, pesticides, rat poisons, or bird poisons. There should be no foreign objects that can contaminate your feed, such as a can of nails or bolts. Murphy’s law says that anything stored in the same room will somehow, despite your best efforts, ooze over to anything else in the same room. Rats and mice should be controlled to prevent spread of diseases through the feed. Transmission fluid and electrical transformer fluid are potential problems in that they contain polychlorinated hydrocarbons which, if consumed, result in contamination of the meat with a carcinogen. Another potential source of contamination in feed is transmission/hydraulic or radiator fluid leaking from farm equipment and contaminating feed. Lead and other heavy metals may be picked up through spills and leaks. Batteries and paint may contaminate feed. Animals may lick toxic levels of lead off of a car battery. Animals may sample paint from paint cans. Good housekeeping will go a long way toward preventing problems.

It does little good to buy quality feed and store it properly, only to feed it in a manner that allows for contamination. Every effort should be made to offer animals feed in a trough constructed to prevent goats from entering and standing or defecating on feed. Also, the trough should be easy to clean. Feed should not dribble out of the trough on the ground for animals to eat. Some feeders can be readily tipped over while others have the ends left off so they can be easily swept out. Both types can result in goats consuming contaminated feed. Goats can be kept out of troughs by using keyhole feeders or
a bar running down the center. Protect the feed trough from contamination by chemicals, foreign materials, and feces. Protection against contamination with fecal material from wild animals or birds may be difficult. Minerals, likewise, should be fed in mineral feeders that prevent contamination by feces and urine. There are a number of suitable mineral feeders for goats, from those made from PVC sewer pipe to some made from used car tires to cattle feeders covered by a flap of material. Only a 1-week’s supply of mineral should be put in the feeder at a time so that fresh mineral is available to reduce the nutrients in the mineral being degraded by heat or moisture.

Purchase hay that is free of mold. Also, know the quality of your hay. Silage should be free of mold and have a good silage smell. Avoid silage that smells of butyric acid since it may be infected with listeria. Goats are quite susceptible to listeriosis and treatment of the disease is difficult with only moderate success. Stocking rate is important in that too high of a stocking rate will reduce the nutrition available for your animals and limit their performance. Good pasture management should consider nutrition of the animals as well as prevention of internal parasites.

Comply with the FDA Ban on Feeding of Ruminant-Derived Protein Supplements

There is a Food and Drug Administration ban on feeding ruminant-derived proteins to other ruminant animals feed. This is to provide an extra layer of protection from Bovine Spongiform Encephalopathy or mad cow disease. There is a disease similar to BSE called Creutzfeldt-Jacob Disease (CJD) that is found in people. A variant form of CJD (vCJD) is believed to be caused by eating contaminated beef products from BSE-affected cattle. This FDA ban is to prevent having any animals eating feeds that could result in this disease. There are certain exceptions to this rule. Feed companies know this and comply with the ban. However, this may be a problem at the farm level. For instance, if goats are fed poultry litter from poultry farm, the poultry feed may have been formulated with mammalian protein. Other prohibited feedstuffs include meat meal, meat and bone meal, and other byproduct meals made from ruminant species. Pet food should also not be available for goats as it may contain prohibited feedstuffs.

Take Care in the Use of Feed Medications and Other Feed Additives

The term “medicated feed” includes all medicated feed products intended to be a substantial source of nutrients in the diet of an animal. There are only four drugs licensed by the FDA for use in goat feed. No other feed additives are allowed to be used in feed for goats. Deccox and Rumensin are approved for prevention of coccidiosis. Fenbendazole and Morantel tartrate are approved for use as dewormers in goats. Feed additives must be used according to the label. No one, including a veterinarian, can legally prescribe the use of any additives in feed other than as directed on the product label. If you have a tetracycline responsive disease in your goats, you cannot legally feed tetracycline medicated feed even though it is labeled for that use in sheep or cattle. However, the FDA has realized this practical problem and will, in general, not take regulatory action if medicated feeds are used in this manner. A veterinarian can prescribe water medications in an extra label drug use manner. Observe the withdrawal period on the label. Keep records of animals treated, drug, batch, date, dose administered, and how administered. There are problems sometimes in medicated feeds with the addition of drugs at the wrong level, resulting in toxicity. However, feed manufacturers have programs in place to prevent this problem due to the liability considerations. If you mix feeds containing these additives, ensure compliance with the authorized practices of the FDA.
Record Use of Chemicals on Pastures to Prevent Harvest and Feeding of Feed Containing Chemical Residues

Records need to be kept of all herbicides, insecticides, and fungicides that are applied to forages. For the most part, few chemicals are used on forages consumed by goats. Herbicides are sometimes used to clean under electric fences, to treat plants that goats don’t eat, or may have been accidentally applied. How about your neighbor spraying and your goats getting out on his property? The labels of these chemicals usually state the number of days before it is safe to graze treated areas. Also, alfalfa hay often has herbicides and pesticides applied during production. Hopefully, most hay producers adhere to stated withdrawal periods when using these chemicals.

High levels of nitrogen fertilizer coupled with the right environmental conditions can cause nitrate levels in forages to increase to toxic levels. Test soil to determine fertilizer requirements. If high levels of nitrogen are required, use a split application of fertilizer. Also, remember that heavy applications of manure or fertilizer can result in water contamination. Record all applications of fertilizer or manure to the land. Soil pH affects trace mineral availability. Geology determines the levels of trace minerals in the soil. Plants differ in their ability to extract nutrients from the soil. These three factors, soil pH, geology, and plant species, determine which trace minerals need to be supplied. Phosphorus is often the most deficient mineral in animal production systems. Monitoring the phosphorus level in forages and using a mineral supplement with the appropriate levels of calcium and phosphorus is important.
The proper citation for this article is: