Management of the pregnant doe: general caprine health

D.G. Pugh
College of Veterinary Medicine, Auburn University, Auburn, Al

Management practices

Bio-security should be the first and most important part of a herd health program for goat health care maintenance. No new animals should be brought to the farm and introduced into the general population of the farm unless they first have undergone a complete examination and have been quarantined for a minimum of 30 days with no contact with the remainder of the flock. Strict measures to minimize the introduction of diseases foreign to a farm must be observed.

The dietary/nutrition program is critical for maintaining optimal health, productivity, and fecundity in a herd of goats. The body condition should be assessed on all farm animals on a bi-yearly to monthly basis. Scores of 2.5 to 3.5 (on a 5-point system) are desirable. Body condition scoring is the best tool for assessing long term energy adequacy. Animals with optimal body condition score will more likely become pregnant, and be less likely to succumb to pregnancy toxemia. Prevent over-conditioning and provide plenty of exercise for parturient does. Obesity should be avoided as it is associated with both a greater incidence of dystocia, some forms of pregnancy toxemia, and increased production costs.

The clinician should be aware that extra-label use of pharmaceuticals and vaccines in food animals is ‘frowned upon’ by the Food and Drug Administration and United States Department of Agriculture, respectively. Goats, whether used for meat, milk, pets, or fiber are considered food animals. All animals on the farm should be given yearly vaccinations and boosters for toxoids for *Clostridium perfringens* type C and D and *C. tetani*. Pregnant animals should be vaccinated 30 days before kidding. This will help protect the doe and ensures high levels of antibodies to protect the newborn kid. If the herd has a history of abortion and the causative agent has been confirmed, and if vaccines for those diseases exist, then pregnant animals should be vaccinated for those particular forms of abortion causing diseases one month before the start of breeding. Bucks, yearlings, and other adults should receive annual boosters at the same time to streamline animal handling. Kids from non-immunized dams should be vaccinated at one to three weeks and given a booster three to four weeks later. Kids from immunized dams should be vaccinated at one to two months and given a booster three to four weeks later.

Multivalent clostridial vaccines, including those against blackleg, malignant edema, and bacillary hemoglobinuria, rabies and leptospirosis are occasionally used, but these are uncommon diseases in goats. Vaccination to prevent such diseases may not economically justifiable When these diseases are endemic on certain farms the extra-label use of cow vaccines is commonly employed. Vaccination sites should be chosen in order to minimize blemishes, lameness, and site reactions that require trimming at slaughter or poor performance in the show ring. Subcutaneous injection behind the elbow or in the caudolateral neck region are preferred, with a third choice for injection being over the ribs.

Usually, one to two months prior to the breeding season, bucks used for breeding should be identified, examined to ensure good overall health, and a breeding soundness examination performed. All suspect bucks should be culled or removed from the farm, and only those found to be healthy and free of congenital defects, and those which pass the breeding soundness examination used. Perform pregnancy diagnosis on all bred does 45 to 60 days after breeding to also enhance overall productivity. Animals not found to be pregnant should be culled or removed from the herd/flock. Animals confirmed pregnant should not be co-mingled with new or non-pregnant animals.

Keywords: Goat herd health, parasite control, vaccination recommendations

Parasite control

Internal parasitism of meat goats is the most significant health risk affecting production and can result in serious economic losses for producers. Financial losses are a result of decreases in growth, milk and fiber production, as well as increased treatment and prophylaxis costs. Parasitic infections can also result in death and/or loss of function. Although a major concern in production animals, this can be quiet devastating for pet animal owners.

Feeding practices which increase stocking rates but also increase pasture contamination with nematode parasite eggs magnify internal parasite infection in grazing goats. Care should be taken to minimize intake of infective nematode parasite larvae when feeding goats. Animals with limited nutrient intake or those offered diets deficient in one or more nutrients are more likely to suffer losses from internal parasitism than those fed a balanced diet.

Meat goats infected with internal nematode parasites quickly contaminate pastures through their manure. Others then become infected as they graze on the same pasture. Small ruminant or camelid production systems that use grazing without pasture rotation, particularly in areas of high rainfall and ground moisture, are more likely to have infected animals. Droughts, inclement weather or lack of adequate forage (or pasture) may result in increased animal concentration which can also equate to an increase in parasitism.

Because of the increase in parasite egg production and fecal contamination around late pregnancy/early postpostpartum, breeding herds usually experience more gastrointestinal parasite problems than mature non-breeding animals. This periparturient rise in nematode egg output in goat feces can readily lead to pasture contamination and an increased risk of infection in kids living on a heavily contaminated pasture. Routine deworming 30 days prior to kidding and continued deworming through the birthing season for meat goats will help reduce the pasture contamination associated with this periparturient rise in egg shedding. Fecal egg count should be monitored during this period.

Gastrointestinal parasites appear to have a negative effect on protein metabolism and, to a lesser extent, on energy metabolism and increase requirements of these nutrients in goats. Increasing dietary protein (particularly proteins rich in sulfur-containing amino acids) intake will aid in overcoming some of the clinical signs seen with parasitism. Protein quality appears to have a more significant affect than the quantity. Supplemental soybean meal and energy can improve resilience. Dietary supplementation appears is more effective when targeted (i.e., when specific nutrients are deficient and the goat's requirements for those nutrients are greatest).

Given the complicated nature of parasite control and recent documentation of widespread resistance to deworming compounds in North America, meat goat producers must take a multi-pronged approach to parasite control: (1) Employ husbandry and feeding practices that minimize parasite infection; (2) Use novel deworming practices that maximize endectocide efficacy and minimize parasite resistance; (3) Consult with the local veterinarian and/or a state agricultural extension specialist.

Strategic deworming

Strategic deworming is an effective control regimen if reinfection from pasture grazing is minimal. Using a strategic program, producers should deworm animals: (1) just before they are placed on dry lot feeding prior to winter management; (2) during winter when freezing conditions kill infective parasite larvae, lowering the incidence of reinfection from pasture grazing; and/or (3) prior to the peripaturient rise in parasite eggs (one month pre-birthing).

After deworming, meat goats should be moved, if possible, to a pasture with a low level of infective parasite larvae to help minimize the potential of reinfection. Those pastures are typically used for small grain or hay production and are grazed by horses or cattle, llamas and alpacas. Treating young animals at weaning and moving them to a "safe pasture" is also a form of strategic deworming.

Tactical deworming

Using a tactical program, a de-wormer is administered during the period of greatest pasture contamination. For example, animals are treated 10 to 14 days following a rain, especially if it follows a drought. Tactical deworming can also be used in response to an increase in fecal egg counts. Systems such as the McMaster's fecal flotation quantify the number of nematode parasite eggs per gram of feces, allowing producers to identify and address parasitic infections before they become serious. Strategic and tactical regimens may also be combined, but doing so will result in a greater chance of recruiting anthelmintic resistance.

Suppressive deworming

While suppressive deworming programs may be appropriate in certain situations and on some farms, many meat goat operations face other challenges as a result of using this regimen. Suppressive programs call for deworming at regular intervals, usually two weeks to three months apart, which is expensive, labor intensive, and fails to use or take into account animals' natural resistance to parasites. Using these programs reduces the farm/flock's natural refugia and enhances onset of anthelmintic resistance. If all animals are dewormed routinely without regard to weather or production status meat goats with some natural resistance to internal parasites cannot be identified, and parasite resistance to deworming compounds is magnified. With the exception of strategic and tactical deworming, routine deworming should be used cautiously, as it may result in animals building resistance to anthelmintics more rapidly.

Additional reading

Pugh DG, Baird AN: Sheep and goat medicine, 2nd ed. Philadelphia: Elsevier; 2011.
Smith MC, Sherman DM: Goat medicine, 2nd ed. Ames (IA): Wiley-Blackwell; 2009