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Managing Perinatal Mortality in Goats

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What Is Perinatal Mortality?

The time period from a few weeks before kidding until about four weeks after kidding is referred to as the perinatal period. Perinatal mortality includes late-term abortions, losses at birth and losses during the first month after birth. Most of the data about perinatal mortality in goats has been collected overseas, where mortality ranges from as little as 13 percent to nearly 40 percent. On average, nearly 14 percent of kids in the U.S. die before weaning.

The most dangerous time in a kid's life is its first month. Predators were ranked as the single most important factor in kid losses in one South African study. Small, weak kids, congenital defects and abandonment also play major roles in kid perinatal mortality.

Perinatal deaths are likely to be one of the greatest sources of economic loss on your goat farm. The cost of perinatal mortality includes the cost of feeding and maintaining your doe throughout her pregnancy, veterinary expenses and lost revenue due to the loss of your kids. In one research study, poor management on participating farms was involved in more than two-thirds of the known deaths. By making a few simple changes to your management system, you may be able to reduce early kid losses on your farm.

Abortion/Stillborn Kids

Abortions and stillborn kids are usually caused by an infection like toxoplasmosis, brucellosis, chlamydiosis or leptospirosis. Kids may also be born weak and die shortly after birth as a result of these infections. Infections are often a result of poor farm hygiene or poor biosecurity. Does younger than 3 years of age and older than 9 years of age abort more often. In one study, about 10 percent of does were open when they were checked using an ultrasound. Another 10 percent lost their kids before birth.

- Barn cats are carriers of toxoplasmosis and can pass it along to does when they defecate in feed or hay.
- Chlamydiosis is the most common form of infectious abortion in goats in the U.S. It is passed to other animals in the fluids and membranes from aborted fetuses or the vaginal discharge from an

infected doe. Older does that have been exposed to chlamydia are immune, but doelings and yearling does can become infected and abort. In a flock that has not been exposed to chlamydia before, older does can also have high abortion rates.

- Leptospirosis is normally found in several species of wildlife including raccoons and skunks as well as dogs, cattle and pigs. The bacteria are transmitted in contaminated water. Flooding, heavy rains and warm, humid weather increase the likelihood of transmission.

- Brucellosis is passed to other animals in the fluids and membranes from aborted fetuses or the vaginal discharge from an infected doe. Contaminated feed can be a source as well. Several species of *Brucella* are responsible for abortion in goats, and most of them can be transmitted to humans.

- Q-fever is found nearly everywhere livestock are raised. Ticks serve as a reservoir for the bacterium that causes Q-fever and are thought to transmit the disease. Q-fever is transmitted by contact with fetal fluids and membranes, milk, urine and feces.

Clean up aborted fetuses and their membranes to prevent other animals from becoming infected. Because many of the abortion-causing diseases of goats are transmissible to humans, be sure to wear gloves and wash thoroughly after handling any aborted fetuses or materials. ***If you are pregnant or think you might be, DO NOT handle aborted fetuses or fetal membranes.*** You should take samples of fetal membranes and the fetus itself to a diagnostic laboratory as soon as possible. You can often treat abortion-causing diseases with tetracycline antibiotics, but proper diagnosis is needed to make sure the antibiotic will be effective.

Keep your pets, birds, rodents and other wildlife out of your feed and feed storage areas. Keep your water tanks and troughs clean. Unfortunately, there are no approved vaccines for chlamydiosis, leptospirosis, toxoplasmosis or Q-fever for goats. There are vaccines for some of these diseases that are approved for use in sheep that can be used off-label in goats under the supervision of your veterinarian.

Another reason for a high number of stillborns might be pregnancy toxemia, also called ketosis. Ketosis is caused by inadequate energy intake during the last trimester of pregnancy. It is especially a problem in over-conditioned does, but is also seen in thin does. Does stop eating and become lethargic. Eventually they go down and will not rise. Treatment involves providing readily digestible sugars in a drench. Propylene glycol, molasses or a syrup made up of table sugar (1 cup sugar:1 cup water) can provide enough energy to correct the problem if it is caught early. Give 2 to 3 ounces of propylene glycol or up to 8 ounces of molasses or sugar syrup every 4 to 6 hours until she begins eating again. Once your doe goes down, recovery is doubtful.

Birth Weight

Birth weight is a critical factor in perinatal mortality. Kids that weigh over 6½ pounds have higher survival rates than lighter kids. Heavier kids have enough energy to maintain their body heat and get up to suckle quickly. Kids that weigh less than 2 pounds have high death rates. Light-weight kids usually die of starvation or hypothermia. Goats are different from sheep in that both light-weight and heavy-weight lambs had higher mortality than intermediate-weight lambs. There seems to be no such relationship in goats. Heavier kids have better overall survival rates.

The last trimester is when most fetal growth occurs in goats. Your does' nutritional needs are nearly double during this period. Some producers attempt to keep birth weight down by reducing the amount of feed they provide their does during the last trimester of pregnancy. However, this strategy is more likely to cause doe and fetal losses from ketosis than to prevent problems at birth. If your does do not receive enough nutrition during the third trimester of pregnancy, they are likely to have more trouble giving birth and produce less and lower quality colostrum.

Instead of withholding feed, you should consider selecting does that easily give birth to heavier kids.

Choose bucks that sire kids with higher birth weights as well as high growth rates to weaning. You can help small kids by keeping them warm and dry. Make sure that they get up and suckle soon after birth. Exposure leading to hypothermia can be a major source of loss during extremely cold or wet weather.

Sex

Research results on the influence of sex of kid on survival are mixed. Some studies show males are more likely to die than female kids. Other studies show males survive better because of their higher birth weights. Still other studies could not find any effect of sex on survival. There is not much you can do about which sex of kid you get. Based upon your own experience with kids' sex and whether it makes a difference in survival rates on your farm, you can keep a more watchful eye on your bucklings or doelings during the first few weeks of their lives to improve their survival rate.

Litter Size

We all want does to give birth to more than one kid each year. Multiple births result in more kids to sell at weaning, or so we hope. But kids from larger litters have lower survival rates, especially during the first month of life. Kids from large litters tend to be smaller and lighter, but high birth weight is one of the keys to kid survival. Kids from twin and larger litters do not suckle as long as singleton kids. This means they probably get less colostrum than kids from single births because of competition for a limited supply.

You should keep kids from large litters warm until they can control their own body temperature. You should also make sure they get enough colostrum. You may have to collect colostrum from other does with single kids, does that have lost their kids, or purchase packaged colostrum to provide enough to your triplet and higher litter size kids.

If you have access to an ultrasound machine and know which does are carrying large litters, you can separate them from the rest of the flock so you can provide them additional feed. This will ensure additional fetal growth before birth which will increase the kids' chances of survival.

Dystocia/Labor

Your does will normally deliver their kids in about 30 minutes. Kids that undergo a prolonged birth do not stand or nurse as quickly as kids that are born easily. However, they suckle longer than kids from short-duration births. Providing adequate nutrition to does during pregnancy can reduce the incidence of dystocia in goats.

You need to be prepared to assist does that have dystocia. Does that are not accustomed to being handled can suffer from additional stress when you attempt to assist them with kidding. After the kids are born, you should leave them undisturbed for at least six hours so they can recover and bond. On the other hand, does that are used to being handled may be better off when you assist. They appear to relax once help arrives.

Despite the need to assist your doe when she is having dystocia, if you do not do it correctly you can injure the kid so badly it will not survive or you may kill it outright. You will need to have plenty of lubricant on hand, latex gloves and a kid snare. Lubricate the doe's birth canal as thoroughly as you can. Gently feel the fetus to see if it is correctly positioned to be born. If its head or a leg is bent back, you will have to gently but firmly push the kid backwards until you can carefully reposition the kid correctly. Place the snare carefully over the head and forefeet of the kid and gently pull as the doe pushes. Hold the kid in place as the doe relaxes between contractions. This will allow the birth canal to slide back along the kid's body. A kid's bones are still largely made of cartilage rather than bone, and they are very easy to break. You must be very careful to avoid breaking the kid's legs. If you must assist a kid being born rear hooves first, you must be careful to avoid pulling too hard. You can fracture most of the ribs, making it difficult or impossible for the kid to breathe. You can also rupture the liver, causing the kid to bleed out very rapidly internally.

Factors Associated With Dystocia

While there is little you can do about some factors that cause dystocia, there are a number of factors you can manage to prevent dystocia.

- **Birth weight** – Kids with higher birth weights tend to suffer from dystocia more frequently. High birth weight kids are more likely to be incorrectly positioned for birth as well.

- **Mating small-framed does to large-framed bucks** – Large, blocky kids have more trouble being born.

- **Mating doelings too early** – Does bred before they reach 65 percent of mature size often fail to grow large enough to deliver kids easily.

- **Poor nutrition** – Does that do not get enough energy in their diet may become exhausted before kids are born. Low calcium in the diet can reduce the strength and duration of contractions during labor.

Dam Age/Parity

First-parity does, also called primiparous does, are does kidding for the first time. Kids from first-parity does are less likely to survive than kids from older does. Does that are younger are also more likely to abort. Does over 7 years of age also have higher kid losses.

There is little you can do to change the age of your does. Some producers delay breeding does until they are 18 months old or older. This option may not be economical for most breeders. Instead, you can separate your first-parity does before kidding so you can keep a closer eye on them as they give birth and begin caring for their kids. You may also want to provide supplemental feed to help your first-parity does continue to grow while they are pregnant, especially during the last trimester. On the other hand, you may want to cull older does to reduce perinatal losses.

Nutrition

A good nutrition program is one of the best ways to avoid perinatal mortality problems on your farm. A poor nutrition program will cause problems of its own as well as make other problems worse. Does that receive inadequate nutrition:

- Produce light-weight kids that are more likely to die.

- Give birth to weak kids.

- Have kids that get up and nurse late.

- Produce less colostrum and less milk.

- Produce low-quality colostrum.

- Have fewer multiple births.

- Have fewer weaned kids per doe mated.

- Are more likely to abort.

- Die themselves before they give birth due to ketosis.

Does should be in body condition score 2.5 to 3 on a 5-point scale (5 or 6 on the 9-point scale) when they kid. For more information, see *Body Condition Scoring of Sheep* (http://www.uaex.uada.edu /publications /PDF/FSA-9610.pdf) and *Feeding Ewes to Maximize Reproductive Success* (http://www. uaex.uada.edu/publications/PDF/FSA-9611.pdf). The principles are essentially the same for goats as they are for sheep.

Dam Behavior

Anyone who has been around goats for any length of time can tell you that some does are better mothers than others. Maternal behavior can have a significant impact on kid survival. Mothering is a learned behavior to a certain extent, and your first-parity does will get better at caring for their kids as they mature. But mothering behavior is also inherited. You can improve mothering ability in your herd through selecting the best mothers for breeding.

Mothering behavior is most evident during the first few hours after kidding. This is also the period of time when she will learn to recognize her kid, so it is best if the doe and her kids are not disturbed while they bond. More than half the time does lose kids to the same cause, so watch your does carefully. If they do lose a kid, make sure they do not lose another for

the same reason. Poor milk production and abandonment are two of the top causes of kid loss related to dam behavior.

Kid Behavior

Not only does the behavior of your doe make a difference in kid survival, but the behavior of your kids is important as well. Normally, kids get up and begin nursing very quickly. Some will be up and eating in just a few minutes, but most will need about a half an hour to get up and another 30 to 90 minutes to start nursing. Kids complete bonding to their mothers over the course of their first day of life. The closer they can be to their mothers and the more often they can nurse, the better their survival rates become.

Kids from primiparous does or that suffered from dystocia will take a little longer to stand and nurse. Once they stand, they tend to nurse for longer periods of time. Weak kids, especially kids from does that did not receive good nutrition during pregnancy, have higher mortality rates, up to 19 percent. They also fail to show survival behaviors like teat seeking and suckling as strongly as more robust kids from well-fed does.

There are many other factors that contribute to kid behavior shortly after birth. Some of the factors are genetic. Breed, sex of the kid and the kid's sire all affect kid behavior. For example, kids from "native" breeds that have undergone less intense selection for production traits and have been more subject to Nature's whims get up and nurse sooner. Males require more time to progress through kid survival behaviors than female kids. Light-weight kids and kids from larger litters also require more time to stand and nurse. Underfed does, especially during the last trimester of pregnancy, give birth to kids that take longer to rise and nurse.

Congenital defects

Congenital means something that is present before birth. Congenital defects are defects that happen while the kid is developing in the uterus of the doe. When the kid is born, the defect may be lethal or cause such difficulty with birth or normal function after birth that the kid dies. Congenital defects can be genetic, but they can also be caused by toxins in certain plants or improper tissue development during fetal life.

Summary

Perinatal mortality can be one of the greatest sources of financial loss on your farm. There are many causes of perinatal mortality, but small changes in your farm's management can greatly reduce your losses. You should keep pets and wildlife out of your feed and water. Keep a close watch on kids that have higher risk of perinatal deaths like bucklings, underweight kids, kids from first-parity does and kids from difficult or prolonged births. Manage your does' nutrition so that their needs are met and they kid in good body condition. Select bucks whose kids are robust and lively. Finally, select calm does that are good mothers who easily give birth to heavier, twin kids. Your kid losses will decline and your profits will rise with less worry and labor on your part.

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