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## **VACCINATION IN GOATS AND SHEEP MANUAL**



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## **Vaccinations for sheep and goats**

Vaccinations are an integral part of a flock health management program. They provide cheap insurance against diseases that commonly affect sheep and goats.

Probably, the only universally recommended vaccine for sheep and goats is CD-T. CD-T toxoid provides three-way protection against enterotoxemia (overeating disease) caused by *Clostridium perfringens* types C and D and tetanus (lockjaw) caused by *Clostridium tetani*. Seven and 8-way combination vaccines for additional clostridial diseases such as blackleg and malignant edema are available, but generally not necessary for small ruminants.

Enterotoxemia type C, also called hemorrhagic enteritis or "bloody scours," mostly affects lambs and kids during their first few weeks of life, causing a bloody infection of the small intestine. It is often related to indigestion and is predisposed by a change in feed, such as beginning creep feeding or a sudden increase in milk supply.

Enterotoxemia type D, also called "pulpy kidney disease," usually affects lambs and kids over one month of age, generally the largest, fastest growing lambs/kids in the flock. It is precipitated by a sudden change in feed that causes the organism, which is already present in the young animal's gut to proliferate, resulting in a toxic reaction. Type D is most commonly observed in animals that are consuming high concentrate diets, but can also occur in lambs/kids nursing heavy milking dams.

To confer passive immunity to lambs and kids through the colostrum, ewes and does should be vaccinated 2 to 4 weeks prior to parturition. Females giving birth for the first time should be vaccinated twice in late pregnancy, about four weeks apart.

Maternal antibodies will protect lambs and kids for about two months, if offspring have ingested adequate colostrum. Lambs/kids should receive their first CD-T vaccination when they are 6 to 8 weeks old, followed by a booster 2 to 4 weeks later. If pastured animals are later placed in a feed lot for concentrate feeding, producers should consider re-vaccinating them for enterotoxemia type D.

Lambs and kids whose dams were not vaccinated for C and D can be vaccinated with some success at two to three days of age and again in two weeks. However, later vaccinations will be more successful since colostral antibodies interfere with vaccinations at very young ages.

A better alternative may be to vaccinate offspring from non-vaccinated dams at 1 to 3 weeks, with a booster 3 to 4 weeks later. Anti-toxins can provide immediate short-term immunity if dams were not vaccinated or in the event of disease outbreak or vaccine failure. Lambs and kids whose dams were not vaccinated for tetanus should be given the tetanus anti-toxin at the time of docking, castrating, and disbudding, especially if elastrator bands are used. Rams and bucks should be boosted annually with CD-T.

In addition to CD-T, there are other vaccines that sheep and goat producers may include in the flock vaccination program, depending upon the health status of their flock and the diseases prevalent in their area.

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### **Soremouth**

There is a vaccine for sore mouth (contagious ecthyma, orf), a viral skin disease commonly affecting sheep and goats. It is a live vaccine that causes sore mouth lesions at a location (on the animal) and time of the producer's choosing. Ewes should be vaccinated well in advance of lambing. To use the vaccine, a woolless area on the animal is scarified, and the re-hydrated vaccine is applied to the spot with a brush or similar applicator. Ewes can be vaccinated inside the ear or under the tail. Lambs can be vaccinated inside the thigh.

Because the sore mouth vaccine is a "live" vaccine and sore mouth is highly contagious to humans, care must be taken when applying the vaccine. Gloves should be used. Flocks which are free from sore mouth should probably not vaccinate because the vaccine will introduce the virus to the flock/premises. Once soremouth vaccination is begun, it should be continued yearly.

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### **Footrot**

Foot rot (and foot scald) is one of the most ubiquitous diseases in the sheep and goat industry. It causes considerable economic loss due to the costs associated with treating it and the premature culling of affected animals. There are two vaccines for foot rot and foot scald in sheep. Neither product prevents the diseases from occurring, but when used in conjunction with other management practices such as selection/culling, regular foot trimming, foot soaking/bathing, etc., can help reduce infection levels. Foot rot vaccines should be administered every 3 to 6 months and especially prior to anticipated outbreaks of hoof problems (i.e. prior to the wet/rainy season).

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### **Caseous lymphadenitis**

There is a vaccine for caseous lymphadenitis (CLA, cheesy gland, abscesses) in sheep. CLA affects primarily the lymphatic system and results in the formation of abscesses in the lymph nodes. It is highly contagious. When it affects the internal organs, it becomes in a chronic wasting disease. The cost of CLA to the sheep and goat industry is probably grossly underestimated. The CLA vaccine is convenient to use because it is combined with CD-T. The CLA vaccine should only be used in flocks which do not already show signs of CLA infection.

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### **Abortion**

Abortion is when a female loses her offspring during pregnancy or gives birth to weak or deformed babies. There are vaccines (individual and combination) for several of the agents that cause abortion in sheep: enzootic (EAE, *Chlamydia sp.*) and vibriosis (*Campylobacter fetus*). Abortion vaccines should be administered prior to breeding.

Risk factors for abortion include an open flock and a history of abortions in the flock. Unfortunately, there is no vaccine (available in the U.S.) for toxoplasmosis, another common cause of abortion in sheep. Since the disease-causing organism is carried by domestic cats, the best protection is to control the farm's cat population by spaying/neutering and keeping cats from contaminating feed sources.

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### **Rabies**

Though the risk to sheep and goats is usually minimal, rabies vaccination may be considered if the flock is located in a rabies-infected area and livestock have access to wooded areas or areas frequented by raccoons, skunks, foxes, or other known carriers of rabies. Frequent interaction with livestock may be another reason to consider vaccinating.

The cost of the rabies vaccine relative to the value of the animals should be considered as well. The large animal rabies vaccine is approved for use in sheep. No rabies vaccine is currently licensed for goats. All dogs and cats on the farm should be routinely vaccinated for rabies. Producers should consult their veterinarian regarding rabies vaccination.

In order for vaccination programs to be successful, label directions must be carefully followed and vaccines need to be stored, handled, and administered properly. Only healthy livestock should be vaccinated. It is also important to note that vaccines have limitations and that the immunity imparted by vaccines can sometimes be inadequate or overwhelmed by disease challenge.

With the increasing role of small ruminants in small farms and sustainable farming systems and the rapid growth of the meat goat industry, hopefully animal health companies will develop and license more vaccines for sheep and especially goats. Scientists are currently working on vaccines to protect small ruminants against worms.

### **Common Vaccinations for Goats**

By **Cheryl K. Smith**

If raising goats is part of your green lifestyle, you can make yourself more sustainable by giving your goats vaccines yourself. Just what vaccines do your goats need to be healthy? Well, most veterinarians recommend that, at a minimum, you vaccinate goats for *clostridium perfringens* types C and D and tetanus (CDT). This vaccine prevents tetanus and enterotoxemia that's caused by two different bacteria. Yet many breeders don't vaccinate their goats with this or any other vaccine, for different reasons.

Vaccinating for enterotoxemia or another disease doesn't always prevent the disease. But in some cases, if a vaccinated goat does get the disease, it will be shorter and less severe, and the goat is less likely to die. And the cost of vaccinating is minor compared with treating the disease or paying to replace a dead goat.

A number of vaccines are used to prevent disease in goats. Most of them are approved for use in sheep but not goats. That doesn't mean that they aren't effective or can't be used in goats but that they haven't been formally tested on goats.

Most goat owners with small herds usually don't need any vaccines other than CDT. In areas where rabies is rampant, some veterinarians recommend that you vaccinate your goats for rabies, even though it isn't approved for goats. It is a good idea to work with a veterinarian to determine what is right for your circumstances.

### **Creating a First Aid Kit for Goats**

If you have only a couple of goats, you probably can afford the occasional veterinary visit. But as your herd grows, you're likely to find that you want to save money and hassle by treating some of their minor ailments or handling some of the health care yourself. But even if you don't want to take over some of this care, you still need to be prepared for those times when a vet isn't available or the problem is minor.

The following lists show you what to have on hand in a goat first aid kit. You can get all of them from a feed store, a drug store, or a livestock supply catalog. None require a prescription.

Include the following equipment and supplies:

- Surgical gloves
- Drenching syringe for administering medications
- Cotton balls
- Gauze bandage
- Alcohol prep wipes
- Elastic bandage
- Digital thermometer
- Syringes and needles
  - Tuberculin needles and syringes for kid injections
  - 20-gauge needles and syringes of various sizes — 3 cc, 6 cc, 15 cc
- Tube-feeding kit (tube and syringe) for feeding weak or sick kids
- Small clippers for shaving around wounds
- Sharp scalpel
- Sharp surgical scissors

Include these medications:

- 7 percent iodine
- Terramycin eye ointment for pinkeye or eye injuries
- Antiseptic spray such as Blu-Kote for minor wounds

- Blood stop powder, for hoof trimming injuries
- Di-Methox powder or liquid for coccidiosis or scours
- Epinephrine, for reactions to injections
- Kaolin pectin, for scours
- Antibiotic ointment, for minor wounds
- Aspirin, for pain
- Activated charcoal product, such as Toxiban, for poisoning
- Children's Benadryl syrup, for congestion or breathing problems
- Procaine penicillin, for pneumonia and other infections
- LA-200 or Biomycin, for pneumonia, pinkeye, or infections
- Tetanus antitoxin, to prevent tetanus when castrating or for deep wounds
- CDT antitoxin, for treatment of enterotoxemia
- Milk of magnesia for constipation or bloat

You also want to include these items:

- Betadine surgical scrub, for cleansing wounds
- Probiotics, such as Probios or yogurt with active cultures
- Powdered electrolytes, for dehydration
- Fortified vitamin B, for goat polio or when goat is off feed
- Hydrogen peroxide, for cleaning wounds
- Rubbing alcohol, for sterilizing equipment

### **Using Guardian Animals to Protect Your Goats**

Many goat owners keep livestock guardian dogs, donkeys, llamas, or alpacas with goats as full-time guard animals. Guardian animals can add a substantial cost in terms of training and upkeep, but they may be well worth the effort and time if they work out.

Try to get a guardian animal from a breeder who has used the animals for this purpose and can vouch for (but not guarantee) their pedigree, training, and temperament.

- **Livestock guardian dogs** (LGDs) were bred and have been used for thousands of years to protect goats and sheep in Europe and Asia. They live and bond with the goats, are aggressive toward predators, and are focused on the job. These dogs are traditionally white, which enables them to blend in with the sheep flock and be distinguished from predators. Of the many breeds of livestock guardian dogs, the Great Pyrenees is probably the best known. Other common livestock guardian breeds include

- Akbash
- Anatolian
- Komodor
- Kuvasz
- Maremma
- Ovcharka
- Shar Planinetz
- Slovak Cuvac
- Tatra Sheepdog

Don't buy a herding breed such as Australian shepherd or border collie to guard your goats; they aren't qualified. Their job is to herd, and you may have a problem with them chasing goats. That isn't to say that some haven't been successful, just that they are unlikely to do a good job protecting goats.

- **Donkeys** have been used for hundreds of years to guard sheep and other herd animals. They're very intelligent and have good hearing and eyesight. They work better alone and don't like dogs, so they can't work as a team with an LGD. Donkeys' dislike of dogs also makes them effective against coyotes.



Because donkeys are naturally herd animals, if they're bonded to the goats, they can be counted on to stay with them most of the time. Ideally, you get a guardian donkey at birth or as soon as it's weaned to make sure it bonds with the goats. Because they eat the same food as the goats, donkeys also will want to stay with the herd after they realize that's where the food is.

When a guardian donkey becomes aware of a predator, she situates herself between the intruder and the herd and brays loudly. If the animal doesn't leave, she chases it, and if that doesn't work, she attacks by rearing up on her hind legs and coming down on the predator with her front feet.

- **Llamas and alpacas** are good guardian animals because they bond quickly to goats and also eat the same feed. Castrated males make the best goat guardians. Males can injure goats by trying to mount them and can be too aggressive toward humans as well.

Unlike dogs, llamas work better as guardians when they're alone instead of in a pack. A llama and guard dog combination can be trained to work cooperatively, though.

Llamas need strong fences to help them do the job. If a guardian llama can't scare off a dog or coyote with his aggressive attitude, the predator may kill him.

Here are the common vaccines for goats:

### Goat Vaccinations

Vaccine	Disease Protected Against	When to Give
CDT	Enterotoxemia and Tetanus	<b>Does:</b> Fourth month of pregnancy <b>Kids:</b> 1 month old and one month later <b>All:</b> Booster annually
Pneumonia	Pasteurella multocida or Mannheimia Haemolytica pneumonia	Two doses 2–4 weeks apart
CLA	Cornybacterium pseudotuberculosis	<b>Kids:</b> 6 months old, 3 weeks later and annual booster
Rabies	Rabies	Annually
Chlamydia	Chlamydia abortion	First 28–45 days of pregnancy
Soremouth	Orf	Annually

All goat vaccines are formulated to be and so must be given as injections. Follow these guidelines when giving a vaccination:

- To minimize the chance of an adverse reaction, vaccinate goats only when they are in good health.
- Do not use expired or cloudy vaccines.
- Use a 20-gauge, 1-inch or 3/4-inch needle on an adult, or a 1/2-inch needle on a kid.
- Follow the manufacturer's instructions for dosage.
- Use a new, sterile needle and syringe on each goat.

- Do not mix vaccines.
- For the best effect, do not delay booster shots.
- Keep a record of vaccinations given.