

Healthy Living with **Goats**

An overview of
health issues for the
backyard farmer

By Ragan Adams, MA, DVM
and David Van Metre, DVM, DACVIM



VETERINARY MEDICINE
COLORADO STATE UNIVERSITY
EXTENSION



The city of Fort Collins allows city dwellers to acquire a license to keep two pygmy or dwarf goats in their backyards under Ordinance No. 097, 2013. The regulation may be found online at fcgov.com. There are important stipulations about goat management in the ruling. Read the ordinance carefully before purchasing goats to assure that you can comply. To be licensed to keep goats, Fort Collins residents must take a quiz on goat husbandry and health issues, have facility inspections, and provide proof of rabies vaccination by a licensed veterinarian.

The quiz for licensure is based on information contained in this pamphlet, and in the “Goat Resource Handbook,” published by The Ohio State University Extension.

This pamphlet provides an overview of important goat health issues. Like all animal owners, goat owners have an obligation to manage their goats for optimal health. Owners should also understand that close contact between people and goats increases the risk of diseases that spread from animals to people and from people to animals; these are called zoonotic diseases. Most of the urban community has not been exposed to

these health challenges. Understanding healthy goat management and steps that decrease disease exposure will minimize the potential for negative impacts. Education about proper husbandry and biosecurity practices will help ensure the health and welfare of the animals, their owners, and neighbors.

Although this pamphlet focuses on health issues, it is not a substitute for the services of a veterinarian. Learn to know and care for your goat, recognize when your goat is sick, and obtain professional veterinary help when needed. If anyone who has handled your goats becomes ill, it is important to mention goat exposure to the attending physician. Because goats have not traditionally been kept in cities, the physician will not usually consider goat-borne organisms in the list of causes of a human health problem.

Purchasing your goats: It is very important to buy your goats from a reputable farmer. You may wish to buy them as kids or as pregnant does. Whichever you prefer, be a well-informed consumer. Advice on buying a pygmy goat is available on page 141, “Goat Resource Handbook” (GRH).¹

In Fort Collins you must keep goats

in pairs. Goats are herd animals and are more content if maintained with their own kind. The city regulation allows wethers, which are castrated male goats; female goats, called does; and kids, or baby goats. Intact male goats, called bucks, are not allowed in the city because they can be aggressive and dangerous. According to city regulation, kids born to a backyard doe may be kept until they are 12 weeks of age, then you must reduce your herd back to two goats. This will require finding a home for the kids or your adult goats, a stipulation to consider fully before buying backyard goats.

The city goat license allows goats to be kept for milk and fiber production, or as companions. According to city ordinance, goats may not be raised for meat.

It is important that you learn to recognize your goats’ individual behaviors and physical characteristics. This will enable you to recognize when they do not feel well.

Normal measurements for healthy goats:

Average lifespan 8-15 years

Normal body temperature
101.5°-104°F (39.1°-40°C)

Normal pulse rate 60-90 beats per minute (faster for kids)

Normal respiration rate 15-30 per minute

Health issues vary with the age, gender, and use of your goats. Below is information for three categories of goats: adult goats, including wethers and spayed or non-pregnant does; dairy does; and kids.

ADULT GOATS

The following list highlights important aspects of the adult goats’ care and associated health problems. Producing does have some additional health needs that are considered below.

Diet: Goats are ruminants. Their digestive system is very different from that of people, cats, and dogs. Goats stay healthiest when the main part of their



diet is forage, such as grass and hay. They should not have access to trash; refuse, especially containing plastic, may harm goats if consumed. Proper nutrition is important for health. Some feeding errors make goats ill, and can even lead to death.

A thorough description of goat feeding is provided in Chapter 5 of the “Goat Resource Handbook” mentioned earlier. The most common goat problems associated with improper diet are:

Body condition - Don’t let them get too fat or too lean.²

Enterotoxemia (overeating disease, pulpy kidney, struck) - Make all feed changes gradually and vaccinate for C perfringens type C and D. See page 89 GRH.

¹ www.nppa-pygmy.com/resources/husbandry/buying_goat.asp.

² kinne.net/bcs.htm

Grain overload (ruminal acidosis, toxic indigestion) - If your goat gets into the grain barrel and consumes more grain than usual, call a veterinarian.

Grain overload is very serious and can lead to death. For most dwarf animals there is not a need for grain unless they are almost ready to kid, or are in early lactation, meaning the first four weeks after birth of kids.³

Water: Provide plenty of fresh, clean water that is warm in the winter and cool in the summer. See page 51 GRH. Problems associated with water deprivation include urinary calculi and heat stress/dehydration. Both conditions require veterinary attention. See CSU Extension Fact Sheet No. 1.629⁴ and page 90 GRH.

Minerals: A trace mineral block specifically formulated for sheep or goats should be available at all times. Most trace nutrients and vitamins are provided by a good-quality grass hay and the appropriate trace mineral-supplemented salt block that is formulated specifically for sheep and goats. Copper toxicity may result from feeding minerals that are formulated for horses and cattle.⁵

In wethers, salt imbalance and water deprivation contribute to the formation of urinary calculi, or stones, and blockage of the urethra. If wethers are straining to urinate, veterinary care is needed immediately.

Parasites: Parasites may be on the outside of the goat involving the skin

and hair coat, called external parasites, or the inside of the goat inhabiting the digestive tract, called internal parasites or “worms.”

Possible skin parasites include lice, mites, ticks, and fleas.⁶

Depending on the parasite, signs of internal parasitism can range from weight loss, diarrhea, anemia with pale mucous membranes of the eyes and mouth, swelling under the jaw, generalized weakness, and eventually death. See CSU Extension Fact Sheet No. 8.019⁷ and page 88 GRH.

Coccidia, cryptosporidia, and other internal parasites may be carried and shed by adult goats that are not showing signs of disease. Young goat kids are very susceptible to getting these parasites from the older animals and then can be severely affected by disease.

Toxoplasmosis from cats, especially kittens, defecating in goat feed presents a health risk to pregnant women. Goat feed should be stored so that other animals do not have access.⁸

Dental evaluations: Goat teeth wear out as the goat ages. The teeth should be examined yearly for signs of excessive wear. Goats that are losing weight or are disinterested in food should have dental exams.

Skin and coat diseases: Abnormalities of a goat’s coat, hair loss, and sores on their mouths or between their toes may be symptoms of significant diseases. Here are some of note:

Contagious ecthyma (orf, sore mouth, scabby mouth) – See page 90 GRH.⁹

Ringworm¹⁰

Caseous Lymphadenitis (CLA, boils) – See page 91 GRH.

Footrot (foot scald) – See page 89 GRH.

Pizzle rot¹¹

It is important to realize that some of these diseases, including sore mouth and ringworm, can easily transfer to humans. The sores should not be handled or examined without protective gloves.

Skeletal diseases:

Lameness, stiffness, or reluctance to move are primary symptoms of diseases affecting the muscles, joints, or bones.

Hoof health -

Hooves need to be trimmed. See page 85 GRH.

Tetanus - Vaccina-

tions are available to protect against this painful and deadly disease. See page 90 GRH.

Caprine Arthritis-Encephalitis Virus infection (CAE) - See page 91 GRH.

Diseases of the nervous system:

Primary symptoms are abnormal behavior, sleepiness, and aggression. Rabies is a concern in northern Colorado, where incidence of the disease has been rising. This disease is spread to pets and livestock through the bites and scratches

of infected animals, often small wild animals, including skunks, raccoons, foxes, and bats. Vaccination is required for a city goat license.¹²

Facilities management: Dry, draft-free housing is essential for goat health. See page 147 GRH. Excessive humidity and warmth, or wetness and chilling in cold weather, may lead to pneumonia. This is recognized by fevers, cough, runny eyes and nose, rapid breathing, and loss of appetite. See page 88 GRH. The facility must be cleaned of manure frequently for



the health of the goats, to decrease odors, and to minimize flies and other annoying insects. Adult goats may be carriers of potentially harmful fecal bacteria that cause disease in goats and people. Manure should be properly composted prior to applying to gardens to decrease the chance that harmful fecal bacteria might contaminate edible plants. Although many lay publications encourage the application of goat manure directly on the garden, this practice is not supported as part of best agricultural practices.¹³

³ www.merckmanuals.com/vet/digestive_system/diseases_of_the_ruminant_forestomach/grain_overload_in_ruminants.html

⁴ <http://www.ext.colostate.edu/pubs/livestk/01629.html>

⁵ veterinaryextension.colostate.edu/menu2/sm%20rum/Copper%20Poisoning%20vm-knight-ingle.pdf

⁶ pods.dasn.okstate.edu/docshare/dsweb/Get/Document-5175/EPP-7019web.pdf

⁷ www.ext.colostate.edu/pubs/livestk/08019.html

⁸ www.cdc.gov/parasites/toxoplasmosis

⁹ www.cdc.gov/ncidod/dvrd/orf_virus/

¹⁰ www.cdc.gov/healthypets/diseases/ringworm.htm and www.tennesseemeatgoats.com/articles2/skindiseases.html

¹¹ www.infovets.com/books/smrm/F/F880.htm

¹² www.cdc.gov/rabies, and www.larimer.org/health/ehs/rabies.htm

¹³ www.cdc.gov/features/ecoliinfection, www.ncbi.nlm.nih.gov/pmc/articles/PMC2094871, www.ncbi.nlm.nih.gov/pmc/articles/PMC3123879, and <http://www.ext.colostate.edu/safefood/news/v14n1s04.html>

DAIRY DOES

In addition to the health concerns listed for non-producing adults, dairy does have additional health challenges relating to pregnancy, delivery, and milk production. In order to produce milk does must be bred to bucks, become pregnant, and deliver kids.

Pre-breeding: Unlike full-sized goats, pygmy goats have an extended breeding season, which means kids may be produced in winter or summer. The doe should be at least 1 year of age and in



appropriate body condition when she is bred for the first time. Does that are too lean or too heavy may not be able to carry a normal pregnancy, or the doe may have problems during delivery or producing milk. Annual vaccinations should be given 30 days before breeding.

Breeding: Because bucks cannot be kept in the city, the does will have to be

transported to the buck to be bred.

Pregnancy: Gestation, or the duration of pregnancy, is about five months. Once the doe is confirmed as pregnant, she should be protected from exposure to infectious agents.

Non-pregnant goats may be asymptomatic carriers of organisms such as bacteria, viruses, and parasites/protozoa that cause pregnant does to abort. These include Chlamydiosis, Listeria, Leptospira, Toxoplasmosis, Q fever, and Brucella.¹⁴ All of these organisms may make people sick as well. Q fever in goats

is considered a notable human health hazard because the organism survives in soil, can become airborne, and can be blown distances in the wind. This can unintentionally expose neighbors. See CSU Extension Fact Sheet No. 8.022.¹⁵ The most practical way to protect your pregnant goat from diseases is to wear clean clothes, wash footwear, use gloves, and wash hands if you handle other goats before you handle your own. Does

may be vaccinated against some of these diseases, but vaccination is not protective against all causes of pregnancy loss in goats.

Nutrition during pregnancy will have to be adjusted appropriately. See page 67 GRH. Does may develop ketosis, called pregnancy disease or pregnancy toxemia, and/or milk fever, known as parturient paresis or parturient hypocalcemia, if

their diet is not properly adjusted during pregnancy and early lactation. See page 91 GRH and CSU Extension Fact Sheet No. 1.630.¹⁶

About six weeks prior to delivery, your veterinarian should check your doe and your facility in preparation for birth. Addressed then will be appropriate vaccinations, which optimize immune protection for the kids through colostrum; and deworming medications, which minimize exposure of kids to intestinal parasites. The birthing area should have clean bedding and water in containers that are elevated off the ground.

A note about spontaneous abortion: Most of the diseases that cause abortions in goats also make people sick. Aborted tissues should be handled carefully with plastic gloves and the tissue double wrapped in plastic bags so as not to expose young children, pregnant women, elderly people, and people with compromised immunity; these people are more susceptible to the organisms that cause abortions in goats. If a goat aborts, it is important to call the veterinarian to examine the doe and to pursue diagnosis of the cause of the abortion by submitting samples to a diagnostic laboratory.¹⁷

Birth: About 140 days after breeding the doe must be watched carefully for signs of delivery. See page 37 GRH. The kid(s) most likely will emerge front feet first, with nose resting on the front legs. If the doe is in distress and you are not experienced assisting the birth, your veterinarian should be called. The birth process is

a wonderful act of nature to witness, but infectious agents can be shed in the placenta and birth fluids. Young children, elderly, and the immune-compromised should not be exposed to these tissues. It is normal for a doe to expel dark fluid for two to three weeks after giving birth. The goat kids will need special attention for the first few weeks of life; this is discussed in the next section.

Lactation: You must decide whether the kids will nurse the doe, or if they will receive milk replacer so that your family may drink the goat's milk. Either way, the doe should be observed during lactation for signs of mastitis, an infection of the udder that may be localized or may become a systemic disease. Signs include swelling, redness, pain, or abnormal discharge from the udder. See page 100 GRH.

If you choose to milk the goat, proper technique, milking frequency, and milk-handling procedures must be followed to ensure the health of the goat and the milk drinkers. This takes a lot of time and daily, consistent effort. See page 102 GRH. Pasteurization for home milk consumption is strongly encouraged to ensure the milk does not carry organisms that can make milk drinkers very sick. Colorado law governs the sale of raw milk, meaning milk that has not been pasteurized.¹⁸

The nutritional needs of the doe will increase while she is lactating. See page 67 GRH. The duration of lactation and the amount of milk that she produces will vary with breed, nutrition, and management practices.

¹⁴ www.aces.edu/pubs/docs/U/UNP-0079/UNP-0079.pdf

¹⁵ www.ext.colostate.edu/pubs/livestk/08022.html

¹⁶ www.ext.colostate.edu/pubs/livestk/01630.html

¹⁷ www.cdc.gov/listeria, www.cdc.gov/leptospirosis/index.html, www.cdc.gov/parasites/toxoplasmosis, www.cdc.gov/qfever, and www.cdc.gov/brucellosis

¹⁸ www.ext.colostate.edu/safefood/newsltr/v11n2s03.html, http://www.state.co.us/gov_dir/leg_dir/olls/sl2005a/sl_105.htm and <http://cofarmtomarket.com/value-added-products/dairy/fluid-milk/>.

Rebreeding: The doe should be dried off, or allowed to stop producing milk, prior to rebreeding. This is a time period when the doe regains her body condition and general health prior to the next reproductive cycle.

KIDS FROM BIRTH TO 12 WEEKS OF AGE

It is important to provide care to kids at birth. As soon as possible after delivery, the nose should be cleared of mucous and the umbilical cord should be dipped in an iodine-containing antiseptic solution. The doe's udder should be cleaned and several squirts of milk should be expelled from each teat to encourage flow of colostrum. Colostrum contains antibodies that will protect the kid from disease until its own immune system is functioning. Kids should nurse

within one hour of birth. See page 61 GRH.

The neonatal period (Birth to 14 days): Young kids should be carefully watched. Keep them warm, dry, and well fed. Illness can overcome them quickly. Examine them for congenital defects, passage of meconium, and general demeanor. Your veterinarian should be called if the kids are nonresponsive, sleepy, floppy, restless, not hungry, not producing feces and urine, or if they develop diarrhea. Vague signs of disease will worsen in a matter of hours in newborns.

Newborn kids have immature immune systems. Infection is their greatest disease challenge. Clean surroundings, straw or sawdust bedding, and ingestion of colostrum are the primary means by which kids fend off infectious diseases.

Common diseases of the young kid include:¹⁹

Floppy kid syndrome
Enterotoxigenic E. coli, Rotavirus, Cryptosporidiosis, Salmonellosis, and Enterotoxemia (C. perfringens C or D) Pneumonia

Mycoplasma polyarthritits in kids
Healthy kids should be vaccinated against Clostridium perfringens C&D, and tetanus at 2, 4 and 8 weeks, and their horn buds should be removed. If this procedure is done at about 1-2 weeks of age it will be less stressful than later. See page 79 GRH.

Males can become sexually mature as early as 9–12 weeks. It is important that the male kids are separated from their mothers by this time. Male kids may be castrated at 1-2 weeks using an elastrator ring while using the same anesthesia for their horn bud removal. Castration may be surgically performed by a veterinarian at any age.²⁰ See page 81 GRH.

Kids between 14 days and 12 weeks:
The kids should be gradually weaned and placed on a solid diet.

Intestinal parasites can quickly overwhelm the kids, causing severe disease

and death. The kids become exposed when they start nibbling at everything in their environment. At the first sign of consistent diarrhea, failure to gain weight, poor hair coat quality, or anemia, identified by intolerance of exercise, lethargy, and pale gums, affected goats should be diagnosed and treated appropriately. See CSU Extension Fact Sheet No. 8.019.²¹

Female goats can be spayed, which involves surgical removal of ovaries or ovaries and uterus. Spaying may be performed when the goats are juveniles if they will not be bred. Spaying can avoid the potential health risks or behavioral problems associated with sexual maturity. Female goats of any age with incurable mastitis may also benefit from spaying, but then will no longer be able to become pregnant or produce milk. The least invasive and well tolerated method of spaying is via laparoscopy.

Licensed veterinarians may be found at the Colorado State University James L. Voss Veterinary Teaching Hospital, (970) 297-5000; or through the Colorado Veterinary Medical Association, (303) 318-0447.

¹⁹ www.tennesseemeatgoats.com/articles2/healthproblemsKids06.html

²⁰ www.luresext.edu/goats/library/fact_sheets/g04.htm

²¹ www.ext.colostate.edu/pubs/livestk/08019.html

