

Livestock Health Series

Herd Health Program for Dairy Goats

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Importance

An effective animal health program is an essential part of a successful dairy goat management program. Good feeding and breeding will not result in maximum production if goats are not kept in good health.

Since each herd is different, you should work with a veterinarian to create a herd health plan. Keep good records for each animal regarding medications, vaccinations, wormers, injuries, production, breeding and culling. Use this information to plan your herd health program. Preventive medicine is usually less expensive than treating disease.

The best economic returns are realized when disease problems are at a minimum. Because the symptoms of some diseases are so similar (e.g., white muscle disease, polyarthritis, CAE, tetanus), you need to work closely with a veterinarian, specifically one familiar with dairy goats, if possible. In some cases, you may have to select a veterinarian that you like and allow him/her to gain experience with dairy goats in your herd. The veterinarian has the training to provide a diagnosis or the means of obtaining a diagnosis when a disease occurs. The veterinarian should also be familiar with products for treating goats plus current regulations and health requirements for shipping animals.

Observation and Records

Spending a few minutes every day watching your animals is time well spent. You can learn the normal behavior and attitude of your goats and then can recognize anything that may be wrong. This knowledge is one of the most important characteristics of a good herder.

If abnormal behavior is observed, use common sense, experience, and knowledge and your physical senses to determine the problem. Don't overlook the obvious.

A physical exam may show an abscess, cut or bruise. Ask questions. How is the behavior abnormal? Is the head down, or are the ears drooping? Is the animal off-feed? Is it sweating or shivering? Is the respiratory rate normal at 12-20 breaths/minute? Is there a fever? Temperatures range from 101.7-103.5°F with an average of 102.3°F. Is the heart rate normal at 70-100 beats/minute? Has this disease occurred previously?

Record all observations on a permanent record. Do you have a record of these same symptoms at another time? Has your veterinarian seen these diseases in other herds?

Nutrition and Feeding Practices

Goats too skinny or too fat and goats off-feed are the most common nutritional problems. Each can be

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prevented by properly balancing the ration and controlling other diseases. Frequent observations can allow early detection of these disorders and minimize their effects. The quality and quantity of feed during the dry period affects the doe and kids throughout at least the next year. Much emphasis should be given to the importance of nutrition in any stage of development of your goats.

Dairy goats should be fed similarly to dairy cattle. A good-quality hay should be the basis of the ration, and a 14-18 percent protein concentrate should be fed as a supplement during lactation. Higher-producing does may require higher protein in the ration. Silage is not a common feed since most goats are kept in small herds, which does not justify costs of the equipment. Periodically, feel your does to determine their body condition, and avoid overfeeding grain to does in late lactation. Fat goats are more prone to go off-feed, have problems at kidding and tend to have pregnancy toxemia. Additionally, overfeeding grain may lead to foundering the animal.

Loose or block trace mineral salt (TMS) should be available at all times. Goats are susceptible to copper deficiency and, unlike sheep, are fairly resistant to copper toxicity. Therefore, cattle TMS, rather than sheep salt with very low copper, should be offered. The salt and other feeds should be kept dry and off the ground.

To avoid a decrease in water consumption, especially for high-yielding does, water should be fresh and plentiful. If possible, water should be warm in winter and cool in summer, although water from a ground source is acceptable if it is clean and free of manure and other disease sources.

Bucks and wethers fed on substantial amounts of grain are prone to develop urinary calculi. Genetics may also be a factor in the disease. Reducing grain consumption, adding ammonium chloride to the diet, keeping the calcium:phosphorus ratio at about 2:1 and keeping the magnesium level low help prevent the buildup of calcium in the urinary tract.

If you are not familiar with the dairy goat ration, work closely with your county Extension agent or another person who is knowledgeable in formulating diets for goats.

Common Diseases

Coccidiosis is a common disease of young kids. Rotating all the kids through one or two pens is not recommended. Older goats shed coccidia in the manure and infect the pens. As coccidia build up in the pens, infection in kids is increased. Signs are diarrhea or pasty feces (sometimes on rump or legs), loss of condition, general unthriftiness and poor growth. Acute cases sometimes result in death with no noticeable symptoms beforehand. For some producers, the first indication of coccidiosis will be death of kids. To help prevent coccidiosis in dairy goats, the kids should be grouped by size in clean, well-ventilated inside pens or outside portable pens that are moved to clean ground periodically. Eradication is difficult once the facilities are infected. Coccidiostats added to the water or feed are necessary. A management control program also includes strict sanitation to minimize the contamination of kids with coccidia from the manure of adults or infected kids. Chronic coccidiosis is one of the main causes of poor growth in kids.

Enterotoxemia, also called overeating disease, is common in both kids and adults. *Clostridium perfringens* type C or D, primarily type D, can be fatal. It is usually but not always associated with a change in quality and quantity of feed. In problem herds, vaccination every three to six months may be necessary compared to once yearly in other herds. Vaccination helps prevent acute death syndrome, but a few vaccinated animals may develop symptoms of the disease. In young kids, signs are watery diarrhea, depression, wobbly gait and sometimes convulsions. In acute cases, kid temperature may reach 105°F, and death usually occurs in four to 48 hours. Milk yield drops abruptly if the animal is lactating, and death may occur in 24 hours. Contact your veterinarian immediately if you have a problem, but death may be the first observed symptom. Treatment involves administration of antitoxin and antibiotics plus treatment of acidosis.

Pneumonia and related respiratory problems are more common in kids but affect all ages of goats. To prevent the disease, decrease stress on the goats by providing dry, well-ventilated housing with adequate space. Good nutrition, deworming and avoiding changes in the environment decrease the problem. Vaccination for specific organisms causing the respiratory problems will help. To treat respiratory diseases, correct the predisposing factors contributing to the disease and treat with antibiotics.

Pinkeye, or infectious keratoconjunctivitis, occurs more often in warm or hot weather because it is spread by flies and close contact. To control the disease, good sanitation and management, including fly control, are essential. To treat the infected goats, use broad-spectrum antibiotics and commercially-available sprays or powders. If severe, the goats should be removed from sunlight or have the eye covered with a pack. Treatment of pinkeye should be prompt since it can be highly contagious.

Vaccination for contagious ecthyma (soremouth) is not recommended unless the disease already exists in the herd. The main problems with infected kids are difficulty in eating and spreading lesions to the does' udders or the herder. Also, these kids are not allowed to attend goat shows. A live virus vaccine is used by scarifying the skin (e.g., inside the thighs or under the tail) and painting on the vaccine. It is easier to put a drop of vaccine on a hypodermic needle and pierce the ears. However, the probability of immunization is decreased, and the ear is more likely to be touched by the herder than areas under the thigh or tail. Lesions may last as long as four weeks. After the scabs have healed, the animals can go to shows. If the herd is shown extensively, it should be

vaccinated. Always be aware that humans, especially youth, may be infected with soremouth, usually on their arms, hands or face.

Diarrheal diseases, or scours, are more common in young kids. In addition to coccidia, other causes include colibacillus such as *Escherichia coli* (*E. coli*), worms, salmonella and viruses. Symptoms vary with the cause but, in general, are anorexia (won't eat), high temperature, weakness and watery or pasty feces. Good sanitation, housing and management are the primary methods to prevent diarrhea. Treatment includes antibiotics, intestinal astringents (bolus or fluid to decrease contractions) and fluid and electrolyte therapy.

Each dairy goat herder should have an annual calendar listing approximate times and ages when certain activities should be performed to maximize profits. This annual calendar should begin with the pregnant doe at 40 to 90 days prior to kidding. The dry period should be considered the beginning of the next lactation. The following calendar is an example of one arrangement of dairy goat health practices on a farm.

Annual Calendar

HEALTH PRACTICE	ACTIVITY
<p style="text-align: center;">Dry doe</p>	<ol style="list-style-type: none"> 1. At drying off, treat both halves of the clean udder with a dry cow treatment preparation. Continue teat dipping two times daily for three days. 2. Inject does with 50 mg vitamin E and 1 mg selenium per 40 lbs of body weight three weeks before due date. 3. Provide clean yards and housing. Sanitation is essential since poor sanitation or muddy lots will make the doe more susceptible to mastitis and later reproductive problems.
<p style="text-align: center;">Kidding</p>	<ol style="list-style-type: none"> 1. Provide a clean, dry, well-ventilated area. Be prepared to assist at kidding if necessary. 2. Examine doe's udder for mastitis. Dip teats following milking. 3. Kids should receive colostrum within one hour following birth from a CAE-negative doe. 4. Dip or inject navels of kids with 7 percent iodine. 5. Give weak or sick kids 25 mg vitamin E and 0.5 mg selenium.
<p style="text-align: center;">Kids – One Day to Three Weeks of Age</p>	<ol style="list-style-type: none"> 1. Disbud with an electric dehorner. Be sure to use the disbudder for goats and not calves. 2. Castrate male kids. 3. Give tetanus toxoid and clostridial disease vaccination (<i>Clostridium perfringens</i> type C + D) or another similar multivalent vaccine at four weeks before weaning and at weaning. 4. Kids should be checked closely and culled for genetic disorders, especially hermaphrodisism and abnormal teat structure. Teats should be checked periodically for more than one opening. 5. Provide creep feed with coccidiostat.

Annual Calendar (cont.)

HEALTH PRACTICE	ACTIVITY
<p data-bbox="147 342 391 432">Deworming Program</p> <hr data-bbox="142 932 391 936"/> <p data-bbox="147 947 386 1052">Lack of control of worms can destroy a herd.</p>	<ol data-bbox="427 296 1487 1818" style="list-style-type: none"><li data-bbox="427 296 1487 520">1. Worms are one of the biggest problems of dairy goats in Arkansas. You must set up a deworming program and adhere to it. Worms not only kill both young and old goats, they contribute to poor growth rates, an unthrifty appearance, coughing, diarrhea and other digestive problems. To minimize contamination of uninfected goats, maintain a dry, clean environment with a sound manure management plan. Depending on location and density, deworming may have to be repeated at different times during the year.<li data-bbox="427 554 1370 583">2. As needed, have your veterinarian conduct fecal examinations for worm eggs.<li data-bbox="427 617 1442 709">3. Kids should be dewormed at weaning and treated for coccidia. Repeat as necessary. Preferably kids should be fed a feed with coccidiostat to minimize effects of coccidiosis.<li data-bbox="427 743 1398 810">4. Adult goats should be dewormed as often as needed to control the various types of worms.<li data-bbox="427 844 1487 1423">5. Strategies for deworming the dairy goat herd may vary from farm to farm and the observation skills of the caretaker. Some experienced caretakers may be able to deworm only 20 to 30 percent of the herd by routinely watching goats for signs of abnormal appearance and/or behavior plus monitoring levels of anemia in the mucous membrane of the eyelids, gums or vulva. This approach, called the FAMACHA system for monitoring of the eyelids, works well with a knowledgeable caretaker and when <i>Haemonchus contortus</i>, or the barber pole worm, is the primary internal parasite. <i>H. contortus</i> is a blood sucker, and heavy infestation results in anemia. However, if tape worms, <i>Trichostrongylus</i>, or other worms are the primary worm infecting the herd, monitoring anemia levels may not adequately diagnose the problem, since these worms are not primarily blood suckers. Egg counts should be used to monitor the level of infection and the effectiveness of the dewormers used to treat the goats. Many producers now use a dewormer until it no longer displays apparent effectiveness before switching to another dewormer. This technique is believed by some to allow resistance to build against the current product in use, while saving effective products of unrelated compounds for future use in the parasite control program. For beginning goat owners, it is best to work with your veterinarian or an experienced goat owner on internal parasite control in the herd. Lack of control of worms can destroy a herd.<li data-bbox="427 1457 1487 1818">6. General control recommendations for internal parasites in goats include sound manure management by frequent removal of manure and cleanliness to minimize potential contamination. Rotate pastures to break the life cycle of the worms if possible. Decrease stocking rates if the stock density is great. Taller pastures for goats will minimize exposure to larva of internal parasites. Feed goats in troughs or racks that are sufficiently high above the ground to prevent manure contamination. Watering troughs should be constructed to prevent manure contamination, perhaps with a concrete pad around the base of the trough so that goats cannot defecate in the water. Utilize high, well-drained pastures, especially when the ground is wet, and avoid low, wet pastures when rains are frequent. Depending on the type of forage, goats should graze four to six inches above the ground to minimize exposure to larva of internal parasites.

HEALTH PRACTICE	ACTIVITY
<p>Vaccination Program</p>	<ol style="list-style-type: none"> 1. Vaccinate for tetanus toxoid and <i>Clostridium perfringens</i> type C + D or another similar multivalent vaccine once yearly during the dry period in pregnant does, for kids at four weeks before and at weaning plus twice yearly, and yearly for bucks. 2. For pneumonia in problem herds, vaccinate kids twice, 14 to 21 days apart prior to weaning. Vaccinate pregnant does once during the last month of gestation. Use a vaccine that is appropriate for the type of pneumonia that your goats have, e.g., Pasteurella. Your veterinarian can suggest specific vaccines for your area.
<p>Mastitis Program</p>	<ol style="list-style-type: none"> 1. Examine udder two times daily at milking for abnormal secretions of milk, e.g., lumps or stringy milk, and hot, swollen udders. Treat early if mastitis is detected. 2. Wash and dry udders before milking. Remove milking machine promptly when milk flow has ceased. 3. Use a recommended teat dip following each milking to decrease entry into the udder of mastitis-causing organisms. 4. Dry teat at drying off to kill bacteria in the udder. 5. If milking by machine, have equipment checked periodically to be sure that it is functioning properly. 6. Employ strict sanitation practices so that mastitis is not spread from one goat to another, including individual paper towels for cleaning the teats and disinfecting the milking machine after milking a goat with mastitis. 7. Treat all cases of mastitis promptly and properly with antibiotics. Record all treatments and note the withdrawal times for milk and slaughter. If retreatment is necessary, use a different antibiotic as bacteria vary in their resistance to different antibiotics. In problem cases, have your veterinarian culture a milk sample to determine the most effective antibiotic to use.
<p>Foot Care Program</p>	<ol style="list-style-type: none"> 1. Trim hooves at least four times annually, or as needed. 2. Fence goats out of wet, marshy areas where the organisms causing foot rot are more likely to grow. 3. Use a foot bath of dilute copper sulfate or formaldehyde if foot rot becomes a herd problem. 4. Treat foot rot with appropriate antibiotics. Follow recommended withholding guidelines for milk.
<p>External Parasite Control Program</p>	<ol style="list-style-type: none"> 1. Control flies with appropriate insecticides and strict manure management. 2. For biting and sucking lice, use coumaphos (25% wettable powder) or other recommended pesticides. Spray or dip all goats in the herd when necessary. See MP144, <i>Insecticide Recommendations for Arkansas</i>. Body dipping will reduce infestation of lice. 3. For ringworm, use daily topical treatment of equal parts iodine and glycerin or a commercially available product recommended for ringworm or fungal diseases.
<p>Breeding Program</p>	<ol style="list-style-type: none"> 1. Test all breeding-age animals periodically for caprine arthritis encephalitis or CAE and, if suspected, tuberculosis and brucellosis. Consult your veterinarian for assistance. 2. Observe buck for libido and conduct a breeding soundness exam if there are any suggestions of him not being a fertile breeder. 3. Do not mate a buck to a close relative so that inbreeding is minimized, unless that is part of your planned breeding program. Maintain good records so that you know the parentage of each goat. The American Dairy Goat Association has a web site that allows you to determine the percentage of inbreeding from a mating.



Proper care of the dairy goat will lead to a more productive animal with less health problems.

Culling

Culling is essential to the overall productivity of the herd. Goats will be injured, some will not become pregnant during the breeding season and some will produce less milk than you are willing to accept. Some animals become unthrifty and “waste away.” Animals with these symptoms may not have a single disease but a syndrome. Generally, if a goat is well fed and has good teeth and a low parasite load, it should thrive in a sound environment. If it begins “wasting away” and does not respond to antibiotics, it should be culled.

The major causes of this syndrome, in addition to poor nutrition, parasitism and dental problems, are paratuberculosis or Johnes disease caused by

Mycobacterium avium subsp. *paratuberculosis* (contrary to cattle, goats show little or no diarrhea and thickening of the intestinal walls); internal abscesses associated with caseous lymphadenitis due to *Corynebacterium pseudotuberculosis* (*ovis*) or *Corynebacterium pyogenes*; locomotor problems (particularly arthritis due to retrovirus infection [CAE virus or caprine arthritis encephalitis]); and any chronic hidden infections (e.g., metritis, peritonitis or respiratory problems). These diseases are usually not treatable, and many are contagious. Also, the chronic nature of their symptoms make the diseases difficult to diagnose. Culling is the best option for the infected goat in most cases.

Sanitation

Strict sanitation is necessary to prevent diseases. Although sanitation requires time and money, it is time and money well spent since prevention of the diseases is more economical than treatment. The housing for goats plus their food and water must be kept clean and dry.

References

- Extension Goat Handbook*, edited by G. F. W. Haenlein and D. L. Ace. Available from Caprine Supply, P. O. Box Y, DeSoto, Kansas 66018.
- Merck Veterinary Manual*, Merck & Co., Inc., Rahway, New Jersey 07065.
- National Dairy Database* for both cows and goats, Center of Dairy Profitability, 1675 Observatory Drive, Madison, Wisconsin 53706.