

Drought Management Strategies for Sheep and Goats

► Understanding drought strategies for greater herd health: culling, pre-weaning, feed management, supplementing, and stress monitoring.

Introduction

Drought conditions occur when there is no rain or other precipitation over a prolonged period of time. During a drought, there is a shortage of water and reduced soil moisture that greatly reduces the growth and quality of forage. Although drought is usually associated with hot summer conditions, it can occur and persist during any season and severely impact sheep and goat production.

Under such conditions producers are advised to:

- Follow long-range weather forecasts, especially seasonal drought predictions of the National Weather Service
- Establish a plan to minimize the negative effects of drought on animal well-being and production, including on-farm finances.

Following Long-Range Forecasts

Drought in the United States is monitored through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Data is then uploaded to the United States Drought Monitor website at <http://droughtmonitor.unl.edu/>.

Also, each state provides additional drought information. In the state of Alabama, for example, you can find helpful information on the following websites:

- Alabama Cooperative Extension System's Drought website at <http://www.aces.edu/eden/hazards-threats/drought/>.
- Alabama Department of Economic and Community Affairs (ADECA): Drought Planning and Management in Alabama at <http://www.adeca.alabama.gov/Divisions/owr/Pages/Drought.aspx>
- Alabama Water Watch: State Drought Monitor at <http://www.alabamawaterwatch.org/resources/state-drought-monitor/>



Figure 1. Photo of author with mixed goat herd during drought period in southern Tennessee.

Contact your local county Extension office for additional drought information.

Best Practices for Drought Management Plan

Culling

The first management practice to consider is whether or not to reduce herd size. By reducing herd size, you can lower the burden of supplemental feeding, reduce grazing pressure on stressed pastures, and lessen the demand on limited water supplies. Consider selling older females and those with poor reproductive or health histories, but keep the best breeding stock. Also, sell dams with persistent/chronic lameness and mastitis and those that frequently present episodes of worm burden that require treatment.

Lower Stocking Rates

Unchecked grazing or browsing pressure during a drought can cause long-term damage to pastures if not adequately managed. Manage grazing and frequently check pasture condition to prevent overgrazing and overstocking. The number of sheep and goat equivalents

per acre should be reduced to minimize higher grazing pressure. Options to lower grazing pressures on drought-stressed pastures include reducing stock density by culling or increasing grazing area, creating drylot feeding paddocks to manage stock off of drought-stressed pastures, and relocating animals. Relocation may involve temporarily moving animals to new grazing lands (possibly a new farm) with available forage in an area not dramatically affected by drought. Note: Be aware that during a drought, animals may ingest toxic plants while grazing.

Pre-weaning Lamb and Kid Management

Creep feeding may be a prudent approach along with weaning offspring a couple of weeks earlier than planned. Provide medicated creep feed to avoid increased mortalities due to coccidiosis. Higher incidence of worm burden can occur in kids and lambs. Apply FAMACHA checks and fecal egg counting to identify and to treat highly infected animals. Weaning weight can be affected by a decrease in milk production during drought, so supplementing the dam while nursing offspring may be advisable.

Group Animals and Supplement by Physiological Status

Proper grouping of animals allows for efficient use of nutritional supplements. Manage ewes and does based on pregnancy status and body condition score. Likewise manage mature stock from young stock. On a scale from 1-5, provide supplemental feeding if does and ewes are at 2.5 or lower. Dry females and females at early to mid-gestation have lower nutritional demands than young stock and lactating females. Dry and early to mid-gestational females can be maintained on lower quality forages with little or no supplemental feeding.



Figure 2. Close-up of a FAMACHA check being performed

Provide minerals free choice to all animal groups. The first option for nutritional supplementation during drought is good quality hay. Availability of good quality hay locally may depend on the length and timing of drought conditions. Drought conditions may also have adverse effects on hay production in the affected area, reducing availability and quality while increasing demand and costs. Securing hay from out-of-region sources may be required. The websites listed in the Introduction section of this publication provide hay listings across the state, region, and nationally that producers can use to locate sources if local hay supplies are compromised by drought.

Hay quality as determined by forage test results may dictate that concentrate supplementation may also be needed. Commercial rations can be expensive. Seek out grains or by-products that are cheaper in your region. Products selected should provide adequate amounts of crude protein, energy, and roughage. By-product feedstuffs may be fed solely or along with commercial feed preparations. Provide free choice loose mix minerals, hay, and quality water. Avoid over-feeding of concentrates to prevent rumen acidosis and sudden mortality.

Water Sources and Supplies

Water is the most important nutrient that may be limited during drought. Various water sources such as using municipal water, well water, ponds, or creeks may be compromised. Each water source poses unique drought-related issues.

On average, the daily consumption of water is 4 liters/head/day in normal weather situation. However, during hot days, water intake can be greatly increased up to 9 liters/head/day. Allow enough trough space so that all animals can drink. Ensure that water is cool and clean during hot, drought conditions. Check water temperature during summer drought periods and test for quality.

During dry conditions, tanks, ponds, creeks, and wells are drying out. As a consequence, there may be a higher concentration of salts, minerals, and algae in water supplies that could become toxic to animals. Therefore, it's important to monitor water sources. Hauling water from an outside source may be expensive but necessary. Also, be aware of situations in which municipal water sources may be limited or restricted from use for livestock during drought conditions. Such scenarios may require a plan for prompt acquisition of water from an alternative source or temporarily moving animals to a new location where water is available.



Figure 3. Photo of supplemental feeding for sheep. Photo credit: Mike Pennington, Wiki

Feeding Management during Drought

Separate animals according to age and physiological status based on the body condition scoring system (BCS) 1-5. For more information, visit the eXtension's Web page titled Goat Body Condition

Score Introduction at <http://articles.extension.org/pages/21636/goat-body-condition-score-introduction>.

Supplement animals with a BCS of 2.5 or lower, increasing supplement levels if condition is still lower. Manage "shy feeders" by feeding them separately. When animals are fed in groups, dominance is likely to occur leaving shy feeders out of the feed trough.

Introduce high-energy grains slowly. Ammonium chloride (0.5%) should be added to cereal grain to prevent formation of urinary calculi in bucks and rams. Roughage should be provided at 3-5% of live body weight. Avoid sudden changing of feeds. When changing feeds, mix the old with the new feed and gradually increase the overall concentration.

Abrupt feed exchange can decrease appetite and increase the incidence of grain poisoning.

Select feed type based on availability and cost. Determining total energy and protein requirements for each group (dry, pregnant, lactating, yearling, growing kids/lambs, bucks, and rams) during physiological phase of development. Calculate the amount needed to feed the herd/flock with selected feed. Be sure to monitor feed in order to adjust rations up or down.

During drought, energy is the first limited nutrient on grasses and a major nutrient required for maintenance and growth. Check feed with higher levels of metabolic energy (ME). Most hays, grains and commercial pellets have adequate crude protein for adult non-lactating

sheep and goats. However, during drought, dry grazed pasture, some browse plants, poorer grass hays and other forages can be lower in crude protein (CP). Consequently, animals fed with lower CP levels will lose weight and may drop below their critical live weight.

Use of nitrogen non-protein products (NNP) such as urea can be used to supplement poor-quality or dryer pasture, grains, and other bio-products lower in CP content. Urea can be sprayed on to roughage, grain or fed in licks or with molasses. However, urea poisoning can occur. Reduce the energy used to produce milk production from ewes and does by early weaning. So feed kids and lamb ad libitum feeds containing ME and 16% crude protein.

And if necessary, supplement vitamins A and E because these vitamins are likely to be deficient as a direct result of drought feeding.

Monitor Animals for Signs of Stress and Illness

During drought conditions sheep and goats are under stress, which increases their susceptibility to outbreaks of coccidiosis and other diseases. Frequent inspection of the flock and herds are needed to certify animal well-being and care. Outbreaks of pinkeye (keratoconjunctivitis), sore-mouth (contagious ecthyma), caseous lymphadenitis (CL) can occur during drought.

Pneumonia caused by bacteria types such as *Pasteurella multocida*, *Mannheimia haemolytica*, or *Arcanobacteriu pyogene* are also a concern. A higher incidence of pneumonia can be found in animals from non-vaccinated flocks and herds and when kept in shelters that are poorly ventilated.

Enterotoxaemia or overeating disease that is caused by bacteria *Clostridium perfringens* types C and D, is a condition occurring when sheep and goats experience a sudden exchange of diet, and sometimes in response to stress condition such during drought. A gradual introduction of grains to the diet over a week or two helps prevent this disease. Pregnancy toxemia or ketosis is a metabolic disorder that can be resulted from improper feeding. During drought to prevent pregnancy toxemia, make sure females are in moderate body condition going into the last six weeks of gestation and provide grain in moderation as needed, based on forage nutrient content.

Abortion can be a concern during drought periods. Infectious agents such as *Chlamydia abortus*, *Listeria monocytogenes*, and *Toxoplasma gondii* are also

concerns. Non-infectious abortions can occur due to water tanks and ponds being heavily concentrated with nitrites and nitrates from algae and other toxic salts and chemicals. Non-infectious abortions can also occur by trauma or head-butting when pregnant animals are competing for space during feeding or social ranking. Provide adequate shelter and trough spaces for all animals in the herd or flock.

Monitor Toxic Plants

During drought, pastures are short in forage quality but can be full of plants that are toxic and deadly to animals. In good pasture condition, animals would normally avoid eating such plants unless accidental. However, in drought conditions high mortality rates may occur among animals as a result of poisonous plant consumption. The most common toxic chemical is prussic acid (hydrocyanic acid) found in the leaves of peaches, plums, wild cherry, and other stone fruits. Other plants with concentrated levels of nitrate or nitrites are Johnson grass, annual sorghum, Sudan grass, millet, Bermuda grass, pigweed, and ragweed.

Plants such as perilla mint contain toxins that can cause respiratory failure and the death of sheep and goats. Consult your county Extension office for a list of plants in your pastures that can be potential problems during drought periods.

In closing, remember to follow national, regional, and local drought advisories. The best small ruminant management practices presented in this publication will help you to develop a drought management plan that is suitable to your production system. For additional drought information, please contact your county Extension office.

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Maria L. Leite-Browning, DVM, *Extension Animal Scientist, Alabama Cooperative Extension System*

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