

PREVENTION OF HEAT STRESS

By Jimmy Hudson
Piney Hills alpacas

By far the best approach to heat stress management in alpacas is prevention. It is much easier to prevent heat stress in alpacas, than it is to treat heat stress. Prevention is the first and most important line of defense against heat stress syndrome.

- **Shearing and Fiber Care** This is one of the first measures you should take to prepare your alpacas for the upcoming summer. We have our entire herd sheared by the end of April. Timing will vary depending on your location and when the temperatures begin to reach the 90s in your area. All alpacas should be shorn, including crias of all ages, and pregnant females, regardless of due date. The alpaca's fiber should be sheared to the skin over the entire alpaca prior to periods of significant heat exposure to help prevent heat stress. It is not advisable, nor safe, to avoid or delay shearing in order to show or present the alpaca in a sale. Alpacas for sale can be shown to potential buyers in the shorn state, with the bagged fleece on display. Show alpacas can be shown in shorn or composite classes, or at shows during cooler months or the year. It is cruel and dangerous to keep alpacas in full fleece in hot climate for any reason.
- **Water.** Always provide plenty of fresh, cool, clean water as water requirements may double during periods of increased heat exposure. Water should be available in all areas of the pasture, and strategically placed in shaded areas when possible. If water becomes heated during the day, it should be changed at intervals to ensure the alpacas have cool water at all times. If during periods of increased risk, alpacas are given palatable electrolyte mixtures in their water, a second source of fresh, untreated water should be made available to ensure water intake for those alpacas that dislike the taste of electrolytes. Because glucose and other solutes in most electrolyte mixtures favor bacterial growth, electrolyte-containing solutions should be replaced and containers cleaned daily. An alternative to providing electrolyte solutions is to add a blended mineral mix that contains electrolytes to the alpaca's daily feed or provide as a free choice supplement.
- **Shade and Shelter.** Adequate shade and housing should be provided to alpacas as an important measure in the prevention of heat stress. All of the alpacas should have access to shade and shelter. If shade trees are not available, non-permanent structures built of metal pipe and covered with woven polypropylene fabric will provide 80% of the shade of solid roofed buildings. These structures are inexpensive and may be moved from pasture to pasture, reducing construction costs. These are excellent alternatives for shadeless pastures.
- **Fans.** Water-cooled evaporative fans, i.e. swamp coolers, are of great value because they cool the air as it is circulated. These work very well, even in our high humidity, and work great in an arid environment. This past summer, on our hottest days (over 100 degrees), it remained 85 degrees in our barn with two water-cooled fans running. High efficiency fans that promote high airflow are also useful. We utilize Dayton wall-mount fans for increased airflow.
- **Nutrition.** Proper nutrition is important in the prevention of heat stress. Ensure a well balanced diet. Avoid feeding high protein feed or low quality hay. Remember that a product of digestion is heat, so providing easily digestible feed such as grain or pelleted feed reduces heat production during digestion. They should, of course, have continued access to grass and/or good quality hay.
- **Herd Management.** Husbandry practices should be modified during periods conducive to heat stress. Breeding, birthing, and weaning should be done during the cooler times of the year. This modification of the breeding season will prevent birthing during hotter periods of the year, as crias and late-pregnant alpacas are susceptible to heat stress. Avoid training, or any physical activity that exerts or stresses the alpacas during periods of increase heat.

- **Herd Movement.** Avoid moving alpacas to a hot climate, i.e. north to south, during the summer months. It may take 6-8 months to acclimate alpacas to a new geographical area, feeding practices and herd mates. Avoid regrouping alpacas if possible, or weaning alpacas during the summer.
- **Vigilance.** The herd manager/owner should frequently observe the behavior of the alpacas in order to quickly detect early signs of heat stress. The manager should be very familiar with the usual or normal behavior of individual alpacas. One way to assess the effectiveness of your preventive heat stress measures is count the respiratory rate of undisturbed alpacas. If the average respiratory rate of the majority of the alpacas is > 35 breaths per minute, more preventive measures should be instituted.

DETECTION OF HEAT STRESS

The initial signs of heat stress may be quite subtle and apparent to only the most astute observer. Initial signs of heat stress may include panting, depression or dullness, staggering, drooping of the lower lip, excessive salivation, or other abnormal behavior. Scrotal swelling or edema in the intact male may be the result of heat stress. More advanced signs of heat stress may include facial or partial facial paralysis, difficulty breathing, inability to stand, convulsions or coma. An alpaca with any combination of these symptoms, coupled with a rectal temperature of >104 F, a respiratory rate >40 per minute, and a heart rate >90 per minute, could be suffering some degree of heat stress. Without intervention, severe alterations of the alpaca's ability to maintain a safe body temperature may well result in death.

It is of paramount importance that the alpaca caretaker be vigilant and know the normal behavior of an individual alpaca. Heat stress syndrome may begin with an alpaca simply not eating and depressed, and then rapidly progress to a complete collapse of all body systems with resultant death. The onset of this syndrome may be so insidious that careful observation of any alterations in the eating, drinking, and other behaviors of the alpaca is critical in the detection and early treatment of heat stress. One of the most common mistakes is to assume the depressed alpaca will be fine, and to delay close examination. Alpacas that are not acting normally should be examined more closely immediately. This examination should include a rectal temperature (normal 101° - 102°).

TREATMENT OF HEAT STRESS

The intensity of treatment should be determined by the severity of the signs the alpaca is exhibiting. The most effective treatment in the early stages is simply cooling the alpaca down. This can be accomplished by hosing the alpaca down on a relatively fibreless area such as the lower chest with a water hose, placing the alpaca in front of a fan or in an air conditioned room. Expeditious shearing of the chest and blanket area in an air conditioned room, without placing undue stress on the alpaca, may also be considered. Avoid wetting the blanket of an unshorn alpaca since water seals the surface fibers creating a "mat" that actually may cause heat retention. If water is used, make certain that it is contacting skin. Heat stressed alpacas should be allowed free access to fresh, clean, cool water. As they cool down and rest, many will begin to drink.

Alpacas who are lying down, depressed, unable to rise and in severe distress, may not only require cooling (e.g. water hosing, air conditioning) but may also require more stringent measures such as alcohol rubs, ice water enemas or water immersion. If cold or ice water enemas are used for cooling, it is important to note that the rectal core temperature may be inaccurate for up to six hours. These alpacas need prompt medical attention by a veterinarian knowledgeable in heat stress for supportive treatment.

Alpacas can be successfully raised in hot and humid climates. Prevention of heat stress syndrome should be the mainstay of any alpaca breeder's health program, particularly where heat stress poses a significant health risk to alpacas. Special attention should be paid to quickly identifying affected alpacas, followed by prompt and effective treatment protocols.