Heat Stress in the Cria

By Karen H. Baum

There are more premature births, weak crias and poorer growth in crias born during hot, humid weather. The mothers do not milk as well as they use the water they drink to stay cool, rather than produce milk. The dams also tend to eat less concentrate (grain) and graze less.

Since it is the premature cria that needs the most help, a wise breeder will plan ahead as being prepared can ward off disaster. Have everything on hand months before you think you will need it. The normal pregnancy can vary two to four weeks either side of the due date, with spring births tending to have a two week longer gestation than those in the fall. Whenever possible avoid birthing during the hot, humid months of summer or the cold, windy, icy winter seasons. Take your breeding date in the fall and go back three months to make sure your dam is not in the last two months of pregnancy during hot weather.

Preparation should start when the mother is bred. To have a successful pregnancy keep the mother in good condition. Shearing is especially important during hot, humid weather with pregnant mothers or densely fibered animals needing to be reshorn. The young alpaca crias should be shorn once the weather warms up. Supplement the mother's diet during the last third of her pregnancy to allow for rapid fetal growth and colostrum/milk production. Heat stress is often a geographic problem that is influenced by the adaptability of the individual, the climate and interactive forces.

The combination of elevated heat and/or humidity, especially incessant conditions, favors development of heat stress. Prerequisites for the development of heat stress in alpacas and llamas include a sum of approximately 150 or greater when totaling the ambient temperature (F) and the humidity. For example, if the ambient temperature is 80 F or higher and the humidity is at least 70%, conditions are opportune for heat stress to develop in susceptible individuals. (The sum using degrees Celsius would have to be converted to Fahrenheit.) As one factor rises the other factor can be lower than the values mentioned while still enhancing the chances of heat stress. A sum of 180 or above means red alert for potential severe heat stress risk.

Newborn crias have a hard time thermo-regulating and can easily overheat. They also have to learn to stay out of the sun when it is hot and find a cool place in the shade. Since they are lower on the pecking order they do not usually get the choicest spot. Sunburn can occasionally be a problem particularly where the skin is white. Sun screens can be applied to avoid damage in animals prone to sunburn but this can attract dust. Chlorhexidine (Nolvasan) ointment can be applied to areas oozing from sunburn. Corona ointment, which has a lanolin base, can be applied if it is dry. Either of these should be applied sparingly and rubbed in well. The fitness of the animal, density of the coat and the activity level all influence the likelihood of heat stress.

This male cria is shown here only 7 weeks old and just shorn. He had over 0.8 pounds of fleece taken off, half of which was hand sheared previously when he was only 8 days old and suffering from heat stress.

Cria at six weeks of age, one week before complete shearing and five weeks after hand shearing.

Stressors such as transportation, weaning, increased activity (playing with other crias and getting overheated), illness (especially respiratory disease) and advanced pregnancy increase the risk of heat stress. Other predisposing factors include a nervous personality, poor ventilation, being moved to a new farm, or being regrouped. When the animals are moved or regrouped, a new hierarchy has to be established. This can mean disputes, including fighting, or an unshaded place for a particular animal to rest. Adding new animals to a group can have the same effect. One new animal can disrupt the balance of the herd. It is also advisable that you not wean during or just before hot humid weather.

Signs of heat stress tend to be nonspecific. There are varying severities of heat stress, from mild lethargy (depression) to recumbency (downer) to death. Animals having a fever of 103.0 or higher need immediate attention. A fever is especially dangerous when it is higher than 105 F (40.5 C). Any fever should be a warning sign, especially in the face of climatic conditions favoring heat stress. Have an extra thermometer on hand in case one breaks when you so need it. Be aware and be prepared.

Decreased weight gain, poor appetite, stiffness, reluctance to rise or lay down and dullness can be the first signs noticed. It is important to check the animal's temperature as soon as the initial signs are recognized. Depression, increased respiratory rate or effort and drooling can occur as the condition progresses. Trembling, weakness, always laying down, especially on their side in an attempt to expose their belly, may also be observed. Recumbency (downer), disorientation or severe depression can result from a serious case of eat stress. Due to the high body temperature and/ or impaired circulation there can be muscle damage. The heart, as well as skeletal muscles, can be affected. The muscle damage can contribute to the animal's inability to rise.

Priority should be directed toward keeping the animal's body temperature within the normal range (99.0 – 101.5F).

This may mean hosing with cold water for an hour or longer if the body temperature is elevated, especially above 103 F. Be sure to keep the patient in the shade with plenty of air movement. The animal needs to lay in a "giving " surface. Pea gravel (#8) works well as it contours the body while allowing the water to drain away. The animal should not lie continuously in water as this will make the skin too soft and the water will heat up. Hosing and ice are the two most effective and practical means to reduce body temperature.

Cooling can be accomplished and maintained using cold water, ice, fans and shearing. The most critical sites to hose, or immerse in cold water, are under the belly, in the armpit and the groin. These are also the key sites to pack with ice for rapid cooling. The front of the neck, front of the chest as well as between the front legs are also good areas to hose with cold water. Hosing should be done as often as necessary to stop progression of heat stress and to minimize the deleterious effects.

Fans aid evaporative cooling and are useful on both a long and short-term basis. It is important to keep the air moving at lower levels where the patient will kush. Make sure the fan are powerful enough to create a strong draft and have several fans so all animals will enjoy the benefit of the increased air flow. Many animals pick a spot just in front of or just behind the fan to lie down. These animals get excellent airflow but restrict the benefit to the others. A combination of high and low fans will help ensure good coverage. Be sure the blades are adequately shielded to prevent injury to your animals. It is amazing to see how most species really enjoy the fans during hot, humid weather.

Access to clean cold water, which is changed often, is critical. A salt/mineral block should be kept close by to encourage intake with resultant increased water consumption. Loose salt/mineral is good too. Electrolytes in the water are okay as long as fresh water with no electrolytes is also available at all times. Some animals do not like the smell/taste of electrolyte water. It would be counter productive to diminish water consumption.

Maintaining normal body temperature is critical. Once an animal overheats it is prone to overheating during the remainder of the hot summer and fall. Their thermostats get reset and often do not regulate well. In subsequent years these animals can be more prone to heat stress so vigilant monitoring is crucial. Early shearing is helpful but they may need to be reshorn during the heat of the summer.

Prevention of heat stress starts with planning and the planning should have started yesterday, last month or, best of all, last year. Shearing, and reshearing, whole body or regional, of any animal previously affected, or those having dense coats, is very important. Shearing needs to be done prior to the onset of hot, humid weather. This necessitates planning.

Avoid late pregnancy (last trimester) during the hot, humid months, i.e. summer and early fall. Late pregnancy predisposes an animal to heat stress and other complications. There appears to be increased chance of prematurity and poorer milk production by the mother. This results in an escalated chance of death and slowed growth of the surviving crias. Premature birthing can also result in lack of adequate colostrum production, which in turn leaves the cria open to fatal infections. There is also a higher risk of the cria succumbing to parasites as well as infections.

Cool water to drink, lay or stand in or to be sprayed with should always be available. Running creeks or ponds are ideal but wet sand, water holes or children's wading pools work well. The water should be fresh and in a cool shaded area. This usually means changing the water several times a day in hot weather, or adding

Photo courtesy of Alpaca Atlantic of Tennessee

Photo courtesy of Finger Lake Alpacas

frozen two-liter plastic soda bottles to the pools and water tubs. Automatic waterers are ideal as they can be cleaned daily, or several times a day, to keep cold water in them. You do not want to have a big tub which is awkward to empty and wastes a lot of water when changing it. Insulated buckets for a few animals are good too. These need to be changed at least twice a day during hot humid weather. Make sure the cria can reach the water.

Good health is very important. Animals should be grouped appropriately so they can be fed to ensure proper weight and to reduce stress. Thiamine and niacin in the feed are protective in some species and are indicated for llamas and alpacas. Adequate selenium and Vitamin E are important. Feed a well-balanced easily digestible diet. If the mother is not eating well she will not milk well and the cria will not gain well. If the cria is hot he/she will not nurse enough; the mother's udder may get overly full when the cria is not nursing normally. Monitor the mother and cria closely with regards to appetite, activity, attitude, posture, breathing and cud chewing.

New arrivals should be isolated while adjusting to the new environment, and should be gradually introduced to native animals after the suitable time. Care should be given to ensure the lack of respiratory disease. Breathing is a method of heat exchange. Any disorder of the respiratory system can make an animal more susceptible to heat stress.

Shade is of ultimate importance. There must be more than enough shade at all times of the day, with adequate room to prevent crowding or fighting. The shady areas should also have adequate ventilation. Feed and water should be in the shaded areas. The areas should be kept clean and tidy to encourage the animals to stay in the shade, and to reduce the risk of disease.

Transportation during hot weather should be done after sundown and before sunup if possible. Vehicles which are air-conditioned are great. When traveling during the day put bags of ice in the trailer, van or truck to cool the floor and keep the ambient temperature lower. There needs to be drainage to prevent slippery footing as the ice melts. Fans or vents to encourage airflow while moving are also helpful. Be prepared for a back-up plan if stopped in traffic for an extended period of time. Bags of ice continue to cool whether or not you are moving. Have a halter and lead for each animal being transported. Be prepared to unload and reload if you have a breakdown and are stranded for a while.

CQ

About the Author

Dr. Baum is Past-President and past Vice-President of the Lama Association of Mid-Atlantic States (L.A.M.A.S.). Karen is on the Alpaca Research Foundation board of directors, having filled the roles of President and Vice-President as well as Secretary. She is the past President, and currently Vice-President, of the International Lama Registry.

You may reach Dr. Karen Baum at
Little Doc's Veterinary Care
1484 Wandering Acres Rd.,
Huddleston, VA 24104