

Winterizing Your Camelid Feeding Program

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The winter season is fast approaching, though Mother Nature is not very consistent in delivering snow and cold temperatures in expected areas at expected times. The Northeast received a Halloween snow cover, but recently has basked in 60 degree November temperatures. The only constant is change. How does one then modify, if necessary, their feeding program to accommodate winter weather? There are essentially two key issues that need to be addressed. One specifically confronts the nutritional needs as modified by cold weather, while the second recognizes unique nutritional support that might need to be implemented during winter. The first issue applies to all animals, while the second is more specific to pregnant and younger animals.

Key Issue 1: Increase dietary energy intake to provide sufficient energy to maintain body temperature.

- Llama and alpacas need to maintain normal body temperature to survive. Camelids raised in northern regions of North America are exposed to environmental temperatures much lower than their native habitat. In these cold conditions, camelids will expend additional energy to maintain body temperature.
- Body temperature is maintained by increasing basal metabolic rate (internal furnace) to generate heat. The increased metabolic rate requires energy as the fuel to stoke the body furnace. Data suggests maintenance energy is increased 1% for every 2°F below an animal's lower critical temperature.
- Based on an average maintenance energy requirement, the following table shows the amounts of different feeds that would need to be consumed to meet the additional energy needs under increasing cold stress conditions. Feed intake capacity will increase with colder weather, though some animals may not be able to consume all the needed energy as forage, thus some grain feeding may be necessary.

Feed	ME (Mcal/lb)	Mild (20%)	Moderate (40%)	Severe (60%)	Extreme (80%)
		0.5 Mcal	1 Mcal	1.5 Mcal	2.0 Mcal
		lbs/day required to meet additional energy needs			
Grass hay, early	1.0	0.5	1.0	1.5	2.0
Grass hay, head	0.86	0.58	1.16	1.74	2.33
Grass hay, mature	0.73	0.68	1.37	2.05	2.74
Alfalfa hay, early	1.05	0.48	0.95	1.43	1.90
Alfalfa hay, full	0.82	0.61	1.22	1.83	2.44
Straw	0.66	0.76	1.52	2.27	3.03
Corn	1.45	0.34	0.69	1.03	1.38
Commercial Pellet	1.25	0.40	0.80	1.20	1.60
Beet pulp	1.22	0.41	0.82	1.23	1.64

- Beyond nutrition improving the animal's ability to withstand the cold can help. Providing wind breaks, reducing drafts, and increasing bedding amounts all can improve the animal's insulation and protect against the cold. Blankets or jackets for more susceptible animals may be used. Older animals and younger animals are at greater risk for succumbing to cold temperatures and not be able to adequately maintain body temperature.
- Body condition scoring can be used to assess whether or not the added feed is meeting the animals' energy needs. Body condition loss will occur if energy intake is insufficient to meet the demands.
- Ensure water is always available for consumption during the winter months. Water intake is the driving force behind hay consumption. Ensure the water does not freeze for prolonged periods and limit consumption.

Key Issue 2: Ensure adequate vitamins and minerals for pregnant and young growing animals.

- Winter time in North America is often the period where spring crias are continuing their critical growth period and females are in mid-to-late pregnancy preparing for a spring birth. Without access to pasture, intake of essential vitamins A, D, and E will be reduced without appropriate supplementation.
- Vitamin D status of all animals is reduced during the winter months due to the lack of available sunshine that promotes natural synthesis of the vitamin. Low vitamin D status will slow growth and potentially lead to rickets if severe. Vitamin D can easily be supplemented with a vitamin D injection or a vitamin D fortified dietary supplement. A single vitamin D injection (1,500 IU/kg body weight) lasts 90 days. Recommended dietary supplementation rate is 30 IU/kg body weight daily. Be careful not to overdo it as vitamin D can be toxic!
- Though vitamins A, D, and E do not cross the placenta, continued supplementation of the pregnant female is important as these nutrients will concentrate in colostrum. The cria's vitamin status is critically dependent upon colostrum consumption.
- Pregnant females transfer significant amounts of mineral to the developing fetus, which accumulates in the fetal liver. This mineral storage will be used by the newborn cria to support immune and metabolic functions in early life. This is a critical issue as milk is typically low in nearly all trace minerals. The female's mineral status controls how sufficient this mineral transfer is to the fetus.
- Review your feeding program to ensure your vitamin and mineral supplement is sufficiently providing these key nutrients to all animals, but most importantly growing crias and pregnant females. Blood sampling can be used to readily assess vitamin status of your animals; speak with your veterinarian for sample collection and submission.