

The Question of Grain

— By Lark L. Burnham, Ph.D., Ruminant Nutrition —

There is some controversy among alpaca producers about the feeding of grain. Some questions whether it can be digested by alpacas, and others wonder if it is harmful. Either way, I will try to explain the place of grain in the alpaca diet.

First, it is important to clarify how grain is digested. Normally, ruminants and pseudo-ruminants such as alpacas and llamas consume mostly-roughage (hay or pasture) diet. Ninety-five percent of all soluble carbohydrates, which include grain, are fermented by microorganisms in the rumen. Only a very small percentage makes it to the small intestine to be digested by the alpaca's own enzymes. Rumen microorganisms ferment grain preferentially to roughage because it takes less time and effort and yields bigger rewards (energy).

Both the fermentation of grain

and roughage generates volatile fatty acids (VFA), which are the predominant sources of energy used by alpacas. Like candy, grain is almost pure energy. The principal microorganisms in the rumen will change depending on whether roughage or grain predominates in the diet.

Do/did wild alpacas eat grain? Probably not, or not very often. Would they have eaten it if they had come across it? Definitely. Do/did wild alpacas lose weight during lactation? Yes.

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The primary feedstuff in the alpaca diet should be roughage, mainly hays like Orchard grass and Coastal Bermuda grass, or pasture. Alfalfa should be reserved for lactating females and those which need to gain weight

after lactation.

Bagged supplements often contain grain along with vitamins and minerals. To maintain alpacas at a healthy weight and not over-mineralize, it is better to feed grain, as needed, and provide a separate mineral free-choice. The habitual feeding of supplement that contains both grain and minerals has contributed to the current alpaca obesity problem.

A good grain/protein combination such as corn/soybean meal/flax seed, or corn/soybean meal/alfalfa meal, can be fed to lactating mothers. Grain/protein mixtures can be custom-made at feed mills.

The protein in soybean meal and other protein sources is used by rumen microflora to replicate. Bacterial protein is the chief source of protein for alpacas. Protein sources such as soybean meal can be fermented by the rumen bacteria to generate energy. However, these are very expensive sources of energy. Ground corn

or wheat may be fed alone as an energy supplement to gestating females which need to gain weight.

Some producers will undoubtedly complain that alpacas will not voluntarily consume mineral if fed separately. In this case, a SMALL amount of grain may be

either sprinkled on top of the mineral, or mixed in (up to 20%). Like body scoring, the mineral feeder should be monitored regularly to prevent both over and under consumption. Alpacas that are on pasture do not consume as much mineral as those that are either on dry lot or kept penned up during the winter. In the former case, more grain must be added to entice the animals to eat mineral.

When mineral disappears too quickly, a producer can either reduce the amount of grain or increase the salt content. The important thing is that mineral consumption is monitored to insure that the animals get what they need.

Alpacas that are overfed have poorer quality fiber, in addition to a greater potential for complications during reproduction and lactation.

If possible:

- **Feed a grain or grain/protein mixture that does not also contain vitamins and minerals except as described above**
- **Separate animals by condition and stage of reproduction, and feed a grain or grain/protein mixture to those under a body score of 5 (on a 1 to 10 scale) and to lactating females**
- **Regularly evaluate each group and move animals in or out as necessary**
- **Make sure a mineral mix is always available to all group**

About the author:

Lark Burnham received a B.S. in Animal Science (1979), from Kansas State University and a M.S. in non-ruminant nutrition (1995) from Kansas State University, Manhattan, and a Ph.D. Doctorate in ruminant nutrition (2004) from Texas Tech University, Lubbock. Her special interests are comparative nutrition, the role of the micro flora in all mammals, fiber digestion, and probiotics. Lark currently works for Natur's Way, Inc., Horton, KS, which produces MSE probiotics.

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