



Grain and Alpacas

By Lark L Burnham, PhD
Ruminant Nutrition

Alpaca producers are becoming anxious about or turning away from pelleted feed and other supplements that contain grain. Much of this anxiety seems to stem from the belief that grain is not “native” to alpacas. It seems that a little basic rumen microbiology is in order.

In this article, as well as all others by this author, the term “grain” refers to the seeds of the corn, wheat, oat, barley, etc., plant, not to pellets or bagged supplement. Because of the high energy content of this ingredient, grain should only be fed to lactating females, growing cria, and animals that are seriously underweight. A mineral supplement should always be available and replaced frequently to encourage consumption.

Although a ruminant or pseudo-ruminant ingests the feed, they only digest a very small amount. The lion's share is fermented by microorganisms. In most cases, what alpacas actually digest is those hard-working microbes.

The rumen is a bag of billions of microorganisms, with approximately 400 different species (bacteria, yeast, fungi, and amoeba). However, only a handful of species dominate the milieu at any one time. These “big dogs” are determined by diet.

A microbe's “lifetime” (the time before one cell becomes two) lasts from 40 minutes to several hours. That means that thousands of generations of that particular strain come and go in the average alpaca lifetime.

Let's say that the first generation of that particular strain is when it makes a home in a particular alpaca's rumen. This is most likely when it is a young cria. Crias adopt most of their initial populations from either the mother or from the environment. The feed that that cria got at the time of initial inoculation is that organism's “native” feed. Sometimes this is mother's milk, and sometimes it is starter supplement, which often contains grain.

Because of their very short “lifetimes”, microorganisms can adapt to changes in diet and environment in weeks rather than centuries for mammals. They have more than enough time to evolve doing the normal alpaca lifetime. It is highly unlikely that a particular specimen of a strain will remain exactly the same as its progenitor. Bacteria swap DNA, as well as discard genes that no longer have any purpose in that environment.

The “Big Dog” strains change as diet changes, and diet changes as alpacas mature. This often means that they are still present in the gut, but in much smaller numbers. Although new strains enter the rumen from the environment and exposure to other animals, they may not proliferate if the current diet is not conducive.

Alpacas and other ruminants, thanks to their highly adaptable rumen population, can safely ingest both soluble and insoluble carbohydrates, as described in the last two issues. That said, the vast bulk of the alpaca diet should remain roughage.

Soluble carbs are like ice cream to a 5 year old human. If offered that or broccoli, they will choose the former almost every time. This is not because grain and other soluble carbohydrates taste good, it is because they are easily fermented and deliver more bang for the buck, so to speak (generate more energy output with the same energy input).

Grain also scares producers because of associated problems in cattle. Please be aware that normally only feedlot cattle are fed much grain, most beef cows and calves graze pasture or are given hay. Feedlot cattle consume a diet that is 95% grain or higher. There is no reason an alpaca should ever be given this amount of grain. If they accidentally consume this much, they need to see a veterinarian immediately. Cattle must be gradually adapted to high grain diets, a process that takes weeks, or suffer serious health problems or even death.

Some producers associate ulcers with grain. This is a misconception. Ulcers are caused by stress, such as showing, transportation, birth, weaning, and shearing. Stress causes shifts in rumen populations that favor opportunistic pathogens. These microorganisms can irritate and erode rumen lining (ulcerate).

Preventive use of a concentrated probiotic prior to, during and after any of the above stresses will avoid ulcers.

Although alpacas consume feed, microorganisms do the actual digesting. Very little, if any, soluble carbohydrate survives the rumen to be digested by alpacas' own enzymes. Microorganisms "eat" grain, and alpacas "eat" microbes. It doesn't matter what their ancestors in South America consumed as long as the diet is mostly roughage, and the animals are given enough time to adapt.

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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