

## Nutrition Overview

### Microbe population

Alpacas are very good at converting dry and poor quality feed for use. Alpacas are ruminants: they have a three compartment stomach where plant material is digested with the help of a normal “flora” or population of organisms, including fungi, bacteria and protozoa. Other mammals cannot digest plant material for use as energy.

To assist the microbes in their digestive role, the alpaca grinds food mechanically with its molar teeth, continually provides substrate (grass and water) for the microbes to work with, and mixes food continually (new food, cudging). The alpaca also removes the products of fermentation regularly.

The microbes in turn provide alpaca with energy in the form of volatile fatty acids; protein; vitamins (produces as microbes multiply), and gas.

The compartments in the stomach are named C1 C2 and C3 (compartment 1.. so on). Course particles from C1-2 are moved back up into the mouth for further chewing (rumination), adding saliva and further reducing the particle size of food to ensure easier digestion by microbes.

Why do you need to know all about the relationship between the alpaca and its microbe population? Because this is the basis for healthy nutrition. Look after the microbe population and it will look after the alpaca.

### Essentials of feeding

Water, energy, protein, fibre, vitamins and minerals

The first 4 need to be provided before assessing vitamin and mineral status.

- **Water:** 50-80ml/kg body weight. (=3.5-5.6L for a 70kg animal)  
Requirements increase in growth, stress and hot weather.
- **Protein:** Maintenance: 8-10% crude protein  
Gestation: 12% crude protein  
Lactation: 13-15% crude protein  
Growth <9 months: 12-14% crude protein  
Growth 9-18 months: 10-12% crude protein  
Protein “feeds” the microbes and allows muscle and weight gain, growth and fertility.  
The greener the pasture, the more protein it contains.
- **Energy:** Requirement is 1.5% of body weight in dry matter for maintenance i.e. a 70kg alpaca requires  $70 \times 1.5\% = 1.05\text{kg}$  of dry matter (all water removed). This equates to about 5.3kg of lush pasture (20% dry matter) or 1.2kg of hay (90% dry matter) for maintenance. Requirements increase during periods of growth, stress, and hot weather
- **Fibre:** at least 25% of the diet should be provided as long-stemmed (4cm + length) fibre. Mature pasture or cut hay are good sources. Fibre allows

digestion and stimulates microbial activity, as well as providing a slow release of energy for the animal, even when it is not eating.

Adequate nutrition should be assessed with regular body scoring.

Enough fibre? 50% of animals lying down should be chewing their cud: faecal consistency should be dry and pelletised: check body score

Feeding alpaca should be a combination approach.

Available at all times:

-Fresh abundant cool water

-Good quality pasture hay  
and if possible pasture.

For alpaca that are growing, lactation, in last gestation, etc, supplementary feeding is necessary. Protein, energy and vitamin requirements are increased.

Examples of supplementary feeding regimes

- 70kg, maintenance    -1.2kg oaten hay (~8% crude protein) will JUST maintain.  
                              -1.2kg mixture of 3 parts oaten and 1 part lucerne hay will have increased energy and protein.
- Growing crias        -2 parts oaten hay, 2 parts lucerne hay, 3 parts oats, 3 parts lupins. This provides energy and protein plus calcium and phosphorus required for bone growth.  
                              -Ad lib oaten hay plus premixed alpaca supplement (e.g. muesli or pellets)
- Lactating females:    -3 parts lucerne, 3 parts oaten hay, 2 parts oats, 2 parts lupins will cover energy protein and calcium and phosphorus needs.

**\*NB Be cautious with grain feeding. Overloading grain upsets the balance of microbes in the gut, changes the pH of the stomach and can cause severe abdominal pain, digestive upset and poisoning. When feeding grains, introduce gradually to allow animals to become used to the feed: feed out in a spread out fashion to prevent one animal hogging feed, and ensure adequate fibre in the diet. Concentrate=grain and this includes grain and muesli mixes and pelleted feed.**

### **Vitamins & Minerals:**

Animals on good pasture should not lack in vitamins or minerals

Be aware that pre prepared foods contain extra minerals and vitamins: care not to over supplement.

-Vitamin D: required from an exogenous source as alpacas can become deficient in winter. Supplement with 1500iu/kg in early and late winter.

-Vitamin A & E: can become deficient when no access to green feed in >8 weeks.

-Selenium: some areas are deficient in soils and therefore pastures.

Do not supplement unless a diagnosis has been made via blood tests.

Determine mineral requirements with animal, pasture, hay, grain and soil testing.

Your local veterinarian and Department of Agriculture should be able to assist with local knowledge regarding minerals in your area.