Alternatives to Pellets:
Part 2

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Last issue, some prerequisites to feeding an alternative to pellets was discussed. When a producer switches to a pellet alternative, they are taking on the responsibility for providing their animals' nutrient requirements. Although this may sound intimidating, it is actually simpler than many imagine.

The major feed items necessary for alpacas are:

- Hay and/or pasture
- A good mineral mix
- A protein and energy supplement for lactating females and any animals that are underweight

The last item is the concern of this article. There are two ways to make a protein/energy supplement that does not contain vitamins and minerals. One is to find a local feed mill that has the ingredients you want to use and can formulate a 15% energy and protein supplement. Many feed mills possess computer programs that allow them to do this.

Or you can try your hand at some simple formulation yourself. A spreadsheet program such as Excel would be very useful. The table below lists ingredients typically used, depending on location, and the crude protein (CP), stated both as a % and a decimal value that is to be used in the calculations below.

These CP values are given in what is called an "as fed" basis. This method is used by nonruminant nutritionists because most of the ingredients they use are very dry (around 90% dry matter). Ruminant nutritionists use a system that adjusts for dry matter because many ingredients used in their diets are higher in moisture. This also requires another step. I have chosen the former system because it is simpler and all the ingredients listed below have dry matters around 90%. Note, we are not calculating total diet, just a protein and energy supplement.

Energy sources (approx. 65%)

Ingredient	DM(%)	CP(%)
Corn	89	8.3 (0.083)
Oats	88	11.5 (0.115)
Milo (sorghum)	89	9.2 (0.092)

Protein sources (approx. 25%)

Ingredient	DM(%)	CP(%)
Soybean meal	89	43.8 (0.438)
Alfalfa meal	92	18 (0.18)

Other (add at 10%)

Ingredient	DM(%)	CP(%)
Beet pulp	91	8.6 (0.086)
Flax seed	90	33.6 (0.336)

How to formulate a simple two or three ingredient protein/ energy supplement.

Let's say you want to use cracked corn (8.3% CP or 0.083), soybean meal (43.8% CP or 0.43.8), and beet pulp (8.6 CP or 0.086). Your goal is 15% CP. Beet pulp is added at 10% (10 lb. in a 100 lb. batch, easier to calculate that way):

10 lb. * 0.086 CP = 0.86

Then we subtract this from the goal CP of 15%: 15 - 0.86 = 14.14

This is the CP to be provided by a combination of corn and SBM (for a total of 90 lb.). Assume that roughly one-half of the 15% CP will be provided by SBM, which has the highest CP of the three ingredients. Here is where trial and error comes into play. Let's start with 25 lb. of SBM, how much CP will that provide? 25 * 0.338 = 8.45 CP

8.45 (CP from SBM) + 0.86 (CP from beet pulp) = 9.31 CP (total CP so far).

90 lb. (lb. of corn + lb. SBM) - 25 (lb. of SBM) = 65 lb. of corn

How much CP does 65 lb. of corn yield?

65 lb. * 0.083 CP = 5.395

Now add all the CP values together and see how close we are to the goal of 15%: 5.395 + 8.45 + 0.86 = 14.7

This rounds up to 15%. You can get closer, of course, but that would mean fractions of a pound or percent.

If this is calculated using a spreadsheet program like Microsoft Excel, you can make a horizontal line for each ingredient (column A would be for weight, column B for the CP value in decimals, and column C would be the formula (=1A * 1B). The number before the letter in the formula will change depending on the row. In the space C4 (for three ingredient formulas) put the formula =sum (C1+C2+C3).

As you manipulate the weights for corn and SBM, you can see how the total CP will also vary. You may be able to mix a 100 lb. batch at home in a large garbage can. If you want to use ingredients not listed above, or are confused about the above description, please contact the author at lark@naturs-way.com.