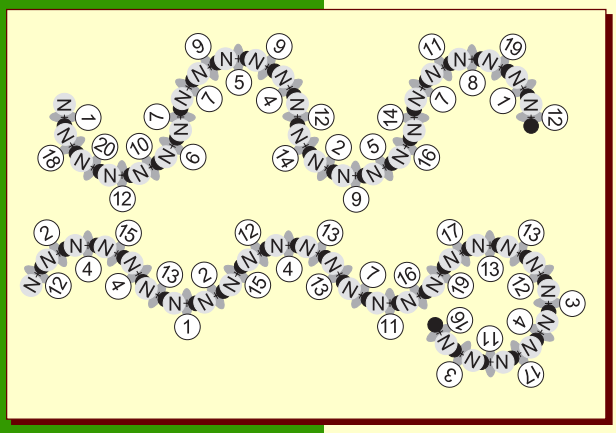
Protein



There are three major classes of organic components in feeds:

- carbohydrates (e.g. fibre and starch);
- lipids (fats and oils), and;
- proteins.

True proteins are composed of long chains of amino acids, each protein distinguishable by its unique sequence of the 20 different amino acids as illustrated on the left.

In the feed lab, protein is distinguishable from carbohydrate and lipid due to its content of nitrogen (N) - feed proteins typically contain about 16% N. This property makes it possible to estimate the protein content of a feedstuff by measuring its N content and multiplying by 6.25 (the inverse of 16%). However, not all N in feed is associated with true protein. *Non-protein nitrogen* (NPN) is found in feed components such as urea, ammonium salts and single amino acids. The value calculated by multiplying total N by 6.25 is therefore labelled crude protein.

for more information:

Bypass Protein 1. Background, *University of Alberta Dairy Research Highlights*

Alfalfa Protein, *Alberta Dairy Management*

Rumen-Protected Amino Acids 1. Background, *Dairy Research Results from the Lethbridge Research Centre*