Acid Detergent Insoluble Nitrogen

When silage is put up too dry (greater than 50% dry matter) or hay too wet (less than 85% dry matter), excessive heating may cause some of the protein in the crop to become irreversibly bound to lignin. Heating during the processing of feeds (e.g. pelleting) can have the same effect.

The severity of damage is estimated in the feed lab by measuring the amount of nitrogen (N) associated with the acid detergent fibre (ADF) residue. Depending on the feed lab, this fraction may be reported as acid detergent insoluble nitrogen (ADIN), acid detergent fibre nitrogen (ADF-N), acid detergent fibre protein (ADF-P) or *heat-damaged protein*, expressed as a percentage of either total N, total crude protein or feed dry matter. Values reported as N can be converted to CP by multiplying by 6.25.

In most feeds, 3-8% of total CP will be associated with the ADF residue, even in the complete absence of heating. Therefore, most feed labs do not discount the total CP value unless ADF-P values are excessive. Others assume that a fixed proportion (e.g. 70%) of ADF-P is unavailable. Discounted CP values are often reported as Adjusted Crude Protein (ACP).

for more information:

Understand Your Feed Analysis Report, *Alberta Dairy Management*

Alfalfa Protein, *Alberta Dairy Management*