

## Neutral Detergent Insoluble Protein



Neutral detergent insoluble crude protein, or NDICP, is the insoluble protein fraction remaining after extraction with neutral detergent solution.

The use of sodium sulfite in NDF and NDICP measurements (denoted as aNDF and NDICP<sub>SS</sub>) reduces protein contamination and results in more accurate calculations of NFC and Energy.

$$\text{Ex. NFC} = 100 - [\text{CP} + (\text{NDF} - \text{NDICP}) + \text{Fat} + \text{Ash}]$$

Sodium sulfite removes some, but not all, of fiber bound protein (see Table 1), which is why it is still important to measure NDICP<sub>SS</sub>. Most ration balancing and modeling software now utilize NDICP with sodium sulfite (NDICP<sub>SS</sub>), but some (ex. CPM Dairy) do not advise using sodium sulfite in the NDICP procedure.

Dairyland's base procedures for NDF and NDICP include the use of sodium sulfite and are labeled on reports as aNDF and NDICP<sub>SS</sub>. Other methods can be made available upon request

Table 1. Comparison of alfalfa hay samples analyzed with and without sodium sulfite.

Nutrient	NDICP	NDICP <sub>SS</sub>
CP	19.6	19.6
ADF	37.9	37.9
NDF	51.5	51.5
ADICP	2.55	2.55
<b>NDICP</b>	<b>3.32</b>	<b>2.44</b>
Lignin	7.56	7.56
Total fatty acids	2.05	2.05
Ash	8.43	8.43
<b>NFC</b>	<b>20.7</b>	<b>19.9</b>
<b>OARDC TDN</b>	<b>56.2</b>	<b>55.9</b>

Resource

Mertens, D.R. 2002. Gravimetric determination of amylase-treated neutral detergent fiber in feeds with refluxing in beakers or crucibles: Collaborative study. AOAC 85: 1217 – 1240.