

FREE SOLUBLE PROTEIN RESULTS MADE POSSIBLE BY NYS DEPARTMENT OF AGRICULTURE AND MARKETS FUNDS

— last year, the DHIA Forage Lab successfully competed for a grant funded through the “Agricultural Research and Development Grant Program”. The intent of this program is to stimulate applied research designed to address New York’s agricultural needs and opportunities. Under the terms of the program, the applicant has to meet or exceed the requested funds. DHIA’s match was greater than 3 to 1.

Great strides have been made in NIR software making calibration less time consuming and more precise. As a result of this, the NIR Spectroscopic method for crude protein and acid detergent fiber have received “interim first action approval” by the Association of Official Analytical Chemists (AOAC). This means that NIR has passed the first step towards becoming an officially accepted method.

The increased interest in protein fractions and demand for soluble protein analysis made it the next logical choice for calibration. Some background research had been conducted in this area with promising results. NIR is at its best when analyzing the organic components (protein, fat, fiber, starch, etc.) of feeds. The insoluble protein is primarily “true protein”. This makes it an excellent candidate for NIR analysis. By determining the insoluble protein, the soluble protein can be determined by difference. The first soluble protein calibration to be completed was for haylage with tremendous results. Coefficients of determination (r^2) for calibration and validation were 0.957 and 0.963, respectively, or greater than 95% of the variation in soluble protein was accounted for by the calibration.

The grant, as proposed, was for the development of the soluble calibration for haylages. However, since the haylage calibration was completed ahead of schedule, the grant has been extended to cover hay and corn silage. We are currently working on these calibrations and hope to have them completed by early fall.

To the best of our knowledge, these will be the first NIR soluble protein results commercially available. Since the NYS Department of Ag & Markets partially funded the development of this calibration, the NIR soluble protein result for haylage will automatically be provided at NO ADDITIONAL COST with the (01) NIR COMPLETE PACKAGE. The same will hold true for hay and corn silage as the calibrations are completed. Until that time, soluble protein will remain an extra cost option for hay, corn silage and high moisture corn. This will make the Northeast DHIA NIR analysis the most complete package available.

Much thanks to the Department of Ag and Markets for their support.

NONSTRUCTURAL CARBOHYDRATES (NSC) — plant carbohydrates have been divided into two classes. The first is cell

wall or structural carbohydrates. These are hemicellulose, cellulose and lignin. The structural carbohydrates (as their name implies) provide structural rigidity for the plant. In other words, they provide the backbone necessary to support the growing plant. As the plant matures, the structural carbohydrates increase as a percentage of the dry matter. The % structural carbohydrates can be determined by NDF analysis.

The second class is the non-cell wall carbohydrates also known as cell solubles or nonstructural carbohydrates. These are primarily the starches and sugars that the plants use as energy. They provide the micro-organisms in the rumen with a readily fermentable source of energy. Current articles indicate that the optimum level of NSC is between 30 and 40% of the ration dry matter. It has been suggested that 38% is a good number to begin balancing for.

The NSC is determined by the following calculation:

$$\% \text{ NSC} = 100\% - (\text{CP}\% + \text{NDF}\% + \text{Fat}\% + \text{Ash}\%)$$

This assumes that accounting for all the above leaves the NSC as the only constituent remaining. Thus, the NSC is a calculated estimate, not a measured value.

For most feeds, the NSC will be calculated using analysis values for CP and NDF and average values for fat and ash. This is because the fat and ash values do not vary much in forages and are not routinely analyzed for. When the fat and ash have been analyzed, the measured values will be used.

To receive NSC values on the reports, be sure that at least CP and NDF analyses have been requested. If a more precise estimate of NSC is desired, please be sure to also request fat and ash analyses. Certain miscellaneous feed types (for example, grain mixes and TMR’s) will not receive NSC unless all four components have been analyzed for.

There are no hard and fast rules for balancing NSC. The above guidelines should be used as a starting point. We are providing NSC so that you may begin experimenting with it in the field to determine if it is a valid concept. Let us hear your experiences.

MOATLAGE — in our last issue, we offered a free NIR analysis to anyone who could guess what moatlage is. The clues were as follows:

1. Color - black
2. Texture - coarse, variable, basically nondescript
3. Odor - citrus-like
4. Fermented
5. May be a mixture of two or more things
6. Origin - California

Moatlage smells great but, looks awful. It's wet, black and extremely stemmy along with a mass of nondescript material. Moatlage, in this instance, is a mixture of cotton gin trash and citrus pulp waste. The term "moats" is used to describe the cotton gin trash. According to the person who submitted the sample, the cows really like it. The analysis is presented below:

Thanks to all the folks who submitted guesses.

DM BASIS			
	%		ppm
DM	47	Fe	9900
CP	9.6	Zn	58
ADF	58.6	Cu	40
Ca	2.90	Mn	184
P	.28	Mo	14
Mg	.82		
K	2.13		
Na	.18		