

Our new name is the “Dairy One Forage Lab” – Part of Dairy One Cooperative, Inc. At the Northeast DHIA annual meeting last fall, the delegates approved changing the name for the entire organization to Dairy One. We are still a farmer owned organization providing a wide range of services to dairy producers and ag. related businesses in the Northeast. The Forage Lab continues to expand and currently serves customers from all 50 states and 35 countries on six continents. We continue our commitment to providing fast, accurate and innovative feedstuffs analysis. Keep those samples rolling in!

NEW NET ENERGY EQUATIONS

(Greater Accountability for Nutrient Variability)

In 1996, we adopted the Ohio State Summative energy equation for predicting TDN. The multiple component approach offered several advantages over using solely ADF:

1. Accounted for the negative impact of lignin on forages.
2. Accounted for the positive impact of fat on grains and by-products.
3. Applicable to any feed type of plant origin thereby providing the ability to predict the energy content of grains and by-products.
4. Presented a uniform approach to predicting energy across all feed types.

At the same time, the NRC equations were adopted for predicting net energies. For calculating NEI at 3X maintenance, the NRC assumes a constant 4% discount per unit of maintenance (above maintenance intake) across all feed types. Experience has shown that the OSU/NRC approach worked well for most feedstuffs.

However, as feed intake increases, digestibility decreases at a variable rate. As intake increases, so does rate of passage resulting in a loss of potentially digestible dry matter. This loss is largely accounted for by the loss of potentially digestible NDF. Neutral detergent fiber is more slowly digested and therefore more likely to escape the rumen undigested.

Van Soest has proposed a variable discount system to account for changes in digestibility with changing levels of NDF and intake. Increasing levels of forage NDF will generate proportionately greater discounts resulting in lower NE values.

How will this affect energy values? The new equations will have the greatest impact on grass and high NDF forages. The variable discount system accounts for the higher NDF of grasses resulting in lower net energy values than those predicted by the NRC system.

Listed below (Table 1.) is a comparison of net energy values using the NRC vs. the variable discount method.

TABLE 1. Comparison of NRC vs. Van Soest variable discount method for net energies.

Forage	NRC	VS	CP%	ADF%	NDF%	Fat%	Ash%	Lignin%
Legume	0.61	0.60	20.0	32.1	40.7	2.4	10.1	7.5
MM Legume	0.59	0.56	15.9	35.4	51.1	2.7	8.7	7.4
MM Grass	0.59	0.50	11.4	38.7	62.0	2.8	7.3	6.6
Grass	0.59	0.48	10.1	39.7	64.8	2.8	6.9	6.6
Corn silage	0.72	0.69	8.3	27.2	46.2	3.0	4.0	3.6

MM = Mixed Mostly

NEI expressed as Mcal/lb.

Under the new system, TDN values will continue to be predicted at maintenance levels (1X) using the OSU equation. Net energies for forages will use the variable discount approach. NEI values will be predicted at 3X maintenance and NEm and NEg at 2X maintenance from the TDN value.

Looking Forward

As new research becomes available, we will continue to look for ways to fine tune our approach to energy prediction. The multiple component approach was a quantum leap forward from using solely ADF. The variable discount method incorporates additional component information to further refine net energies. This is probably not the last time that our energy prediction scheme will change. We are always on the lookout for ways to better define energetic efficiency and getting the most value out of your feedstuffs.

NEW DEGRADABLE PROTEIN ASSAY

For several years we have been using the Strep. Griseus enzymatic technique for measuring degradable protein. This procedure involves incubating forage samples in an enzymatic solution for 48 hours to simulate rumen retention time. Similarly, concentrates are incubated for 18 hours. During this time, the enzyme degrades the protein in a manner similar to that which occurs in the rumen. After incubation, the residue is analyzed for the remaining protein and this value is subtracted from the total protein to determine the degradable protein.

New research has demonstrated that the incubation period can be substantially reduced by altering the enzyme concentration. This modification has enabled us to reduce the incubation time of forages to two hours and concentrates to 45 minutes.

The cost of this procedure is \$7.00/sample. The determination of degradable protein also requires a crude protein value. Please be sure that crude protein is included in the package that you selected or request it as a supplemental or custom service.