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Forage Laboratory

EXPANDED DIGESTIBILITY MEASURES

In vitro digestibility measures (IVTD) are used to better define the feeding value of forages. Over the last five years, IVTD has been extensively used to evaluate new corn silage hybrids and trouble-shoot rations when cows were under-performing. Increasing interest in this area has led us to develop a new array of digestibility services.

Digestibility is determined in the lab by incubating samples in rumen fluid for a specified time period. Based on industry usage, four time periods will be offered: 6, 24, 30 and 48 hours. Thirty and 48 hour incubations are used most often. Six and 24 hour incubations are used in specialized circumstances. When in doubt, select either 30 or 48 hour times based on the advice of your nutritionist.

Technology at work

To keep pace with the industry's increasing demand for NIR services, extensive work was done over the last 6 months to develop IVTD NIR calibrations. Calibrations for 24, 30 and 48 hours are available for forages (not grains or TMR). Additionally, a combination service or 24 and 48 hours is also available. Based on recent work done at Cornell, the pair can be used for rate estimations in the CNCPS. More information on how to use these two values in the model will be forthcoming in the very near future.

Fiber Digestibility

As its name implies, neutral detergent fiber digestibility (NDFD) is a measure of digestible fiber. NDFD can be determined when a NDF analysis is performed in conjunction with an IVTD. Stated another way, IVTD and NDF are both required to produce NDFD. If your interest is in NDFD, be sure both are selected.

Options

Various combinations of services are available. Table 1. Ilustrates the options as they appear on the new sample information sheets.

Table 1

In Vitro Digestibilities (IVTD) - select one

IVTD and NDF are required for NDFD determinations.
IVTD48, CP, ADF, NDF are required for RFQ & milk/ton calcs.

IVTD	6hr	24hr	30hr	48hr	
NIR		☐	☐	☐	$4.00
Wet	☐	☐	☐	☐	$19.00
☐ Submitted in quantities of 20 or more					$13.00
☐ NIR 24 & 48hr combination for modeling					$7.00

Call for other options or combinations.

If you are using older forms, simply write NIR or Wet plus the time period: IVTD48, IVTD30, IVTD24, OR IVTD6.

The cost for an individual NIR digestibility is $4.00 per time period. The cost for an individual wet digestibility is $19.00 per time period. Thus, if you select a wet 24/48 combination, the cost is $38.00.

Do not check off both NIR and wet boxes for the same time period. Our system is designed to accept only one IVTD value per time period. If both boxes are checked, NIR will be given where applicable, else the sample will receive wet chemistry.

Unless modeling is involved, the vast majority of analyses should be performed at 30 or 48 hours. Refer to the **Digestiblity Tip Sheet** for more information. Contact the lab if you are interested in any other time periods or combinations.

RELATIVE FORAGE QUALITY (RFQ) IS HERE!

RFQ is a new value used to score haycrop forages. Similar to Relative Feed Value (RFV), RFQ utilizes nutritional components and predicted performance values to serve as an indicator of overall forage quality. RFV is based on analyzed ADF and NDF values. RFQ is based on CP, ADF, NDF, fat, ash and NDF digestibility (NDFD48). Fiber digestibility is a critical component of how well a forage will be utilized by the animal. Incorporating this component into the RFQ scoring system should enhance our ability to evaluate forages.

How is RFQ used?

RFQ was developed to use the same scale as RFV. Incorporating digestibility into the equation will have the following effect on scores:

1. Forages with higher digestibility will have higher scores. Compare the two similar alfalfas in the Table 2.

2. Different formulas are used for calculating RFQ for grasses and legumes. Grasses will typically score higher under the RFQ system than under the RFV system. Good quality grasses will justifiably receive higher scores than seen in the past. Compare the RFV and RFQ in Table 2.

Table 2

	CP%	ADF%	NDF%	NDFD48	RFV	RFQ
Alfalfa A.	20	30	40	45	152	151
Alfalfa B.	20	30	40	55	152	174
Grass	15	35	53	55	108	129

* NDFD48 expressed as a percentage of the NDF.

Getting RFQ

A new NIR package was created to satisfy the needs of the majority of our hay customers. The **(309) NIR Hay Market Profile** provides the following: DM, CP, ADF, NDF, NDFD48, IVTD48, lignin, sugar, NFC, RFV, RFQ, Milk/ton, TDN, NEI, NEm, NEg, Ca, P. It is only available for hays and haylages. Cost: $16.00

In order to receive a RFQ with any other standard package, your analyses must include CP, ADF, NDF, and NDFD48. Adding IVTD48 to any existing package will yield the following: IVTD48, NDFD48, RFQ and Milk lb/ton (see digestibility section for more information).

Milk lb/ton is a projection of potential milk yield per ton of forage. This is based on the MILK2000 program developed by the University of Wisconsin. For more information on this, visit their web site at www.uwex.edu/ces/forage.

NEW CORN SILAGE ENERGIES

Two new corn silage energies will begin appearing on reports. These NEL values are Schwab/Shaver (SS) adjusted for starch digestibility and whole plant processing. Starch digestibility decreases as silage

dry matter increases. Whole plant processing helps improve digestibility on drier corn silage. The first new energy value (SS NEL) is adjusted for starch digestibility. The second value (SS Proc. NEL) is adjusted for starch digestibility and processing. Typically, the dry matter will need to be greater than 35% for processing to have a significant effect (see Table 3.).

As with hays and haylages, Milk lb/ton values will be generated following the MILK2000 program from Wisconsin. Milk lb/ton will appear when a sample receives an IVTD48 analysis along with CP and NDF. As above, values will be generated for both regular and processed corn silage.

To provide this information on a routine basis, a new NIR package is being offered - **(310) Corn Silage Market Profile**. This package is similar to the Hay Market Profile, except that **starch** is substituted for sugar. The cost: $16.00.

As described above, adding a wet chemistry or NIR IVTD48 to any standard package will yield the milk/ton information.

Table 3

Component	Typical	Dry Mature	Drought Stressed
DM%	30	42	38
CP%	8	9	6
ADF%	28	21	35
NDF%	45	40	60
NDFD48*	58	50	50
Starch%	30	42	10
NEL, Mcal/lb	.70	.75	.57
SS NEL, Mcal/lb	.70	.68	.54
SS Proc. NEL, Mcal/lb	.70	.73	.55
Milk lbs/ton	3449	2797	2404
Milk lbs/proc. ton	3449	3142	2460

*NDFD48 expressed as a percentage of the NDF.

SUMMARY

Take advantage of these new services. Having digestibility information routinely available will allow you to take the next step forward in evaluating and utilizing forages to their maximum potential. The new NIR IVTD services makes frequent evaluation a reality. Use this information for obtaining RFQ and Milk/ton values to evaluate your forage quality. Please contact the lab at 800.496.3344, if you have questions regarding these new services. Thanks again for using Dairy One.

NEW PACKAGES

(309) NIR Hay Market Profile: Hay & Haylage only - DM, CP, ADF, NDF, **NDFD48, IVTD48,** lignin, **sugar,** NFC, RFV, **RFQ, Milk/ton,** TDN, NEI, NEm, NEg, Ca, P. Cost: $16.00

(310) NIR Corn Silage Market Profile: Corn silage only - DM, CP, ADF, NDF, **NDFD48, IVTD48,** lignin, **starch,** NFC, **Milk/ton,** TDN, NEI, NEm, NEg, Ca, P. Cost: $16.00