



# Rock River Laboratory News

Autumn 2012



Photo: "Ellie", one of Rock River Laboratory's conulated Holstein cows

## TBAR-in: DI-estion through **Your Cows**

One of dairy nutrition's biggest challenges is measuring nutrient digestibility. Energy for gains or milk production (and farm profitability) hinges on forage, grain, and TiviR nutrient digestion. Nutritionists calculate nutrient contents and then multiply by digestibility to determine how much digestible energy is available for gains or milk production. For several nutrients, such as fat and sugars, digestible energy is fairly simple\_ However for the whole ration, starch, and fiber, we're constantly looking for better digestion measures to use in our nutrition models. Historically we've used ADF-based equations, lab-bench (in vitro), and even rumen incubation (in situ) estimates to troubleshoot digestion challenges. However these are only predictions for what happens through the cow and each approach has room for improvement.

*continued next page*

Universities have measured digestion through cows using TAR and fecal samples with marker techniques. These digestion measures are very accurate and valuable, however the approach has not been routinely viable because scientists use expensive markers that laboratories cannot measure quickly or cost effectively- until now!

In September 2012, Rock River Lab's team co-authored a paper in the *Journal of Dairy Science* describing a novel way to routinely measure digestion through commercial dairy cows\_ We described how using an alternative marker, indigestible NDF using the Combs-Goeser approach, can be used to calculate digestion, and then showed how digestion is actually related to milk! To our knowledge, this is the first commercial-digestion approach that has shown to be related to milk production (meanine it is ACCU .ixTEj. Other commercial iii vitro and in situ techniques have not actually been related to milk production\_

## in Memory of Our Friend,

Tifuliah

Last spring we lost our clear friend and colleague, Twilah Kulow. As Forage Lab Supervisor for over 30 years, Twilah played an integral role in the success of Rock River Lab. Her attitude was positive and cheerful, and she was always happy to assist our customers. She is greatly missed by the staff, as well as the many friends and patrons of Rock River Lab.

To honor Twilah and keep her memory alive, Rock River Lab has founded the "Rock River Laboratory Scholarship in Memory of Twilah Kulow". This scholarship will be awarded to undergraduate students enrolled in the College of Agricultural and Life Sciences Department of Dairy Science. Dairy science and nutrition were of great interest to Twilah, and we hope that she would be pleased with this sentiment.

if you would like to make a contribution, you may contact Jodi Wickham at the University of Wisconsin Foundation at [jodi.wickham@suoporaiw.org](mailto:jodi.wickham@suoporaiw.org).

Rock River Lab is now offering this technique, exactly as described in the *Journal of Dairy Science*, for your herds. Using TiVIR and fecal samples you collect, we'll calculate digestion through your cows and have the results back to you in a short period of time. You can use the results to benchmark your diet during great performance, troubleshoot for profit opportunities, or even evaluate diet changes with new forages or ingredients.

After we measure your digestion, we use a three-step approach to assess TMR quality and performance: 1) Does your TMR analysis check out? 2) How does your diet digestion compare to average? 3) Which ingredients should you focus on? (See next page for example report-)

We'll be here to help interpret results so you understand exactly what they mean and what opportunities there might be for your farm. Feel free to contact us with any questions.--john Goeser



Photo: vmtrLuciluissom



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Watertown, WI 53094-0169  
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### Feed Analysis Report

MAPLETON VETPLEX SUPPLEMENTS  
732 STATE ROUTE 89  
POLK, 01-1 44866  
330.635.0659

Representative:  
DR. JOHN BRYK  
TOM PACK

2910  
**Certified**  
bY(NFTA)

<b>Sample # 1</b>	<b>TMR</b>	
<b>Lab # 58683</b>	<b>Sampled on 11/16/2012</b>	<b>Received on 11/16/2012</b>
<b>Feeder HOSTETTER, AMOS</b>		<b>Charge S126.00</b>

Moisture 49.51%      Dry Matter 50.49%

Analyte Description	TMR
Crude Protein %DM	17.72%
aNDF (W/INB503) %DM	33.40%
Fat (EE) %DM	4.05%
Starch %DM	21.41%
Organic Matter %DM	89.16%

**Calculations**

**N.F.O** 35.74%

**TMR-D in vivo apparent digestion results**

		AVG	MIN	MAX
Organic Matter	57.94%	66.16%	44.37%	80.80%
NDF	26.61%	42.06%	13.72%	63.45%
Starch	84.65%	97.10%	93.13%	98.65%
Crude Protein %CP	62.02%	63.70%	32.75%	82.28%
Fat %Fat	81.64%	74.32%	53.78%	95.99%

**Comments**

Analyzed by wet chemical methods.



All interpretations of these results should begin with making sure that dry matter intakes are as expected.

A 1% increase in Organic Matter Digestibility has been related to approximately 0.51bs increased Energy Corrected Milk (Schell@ et al., 2012).

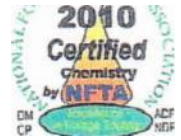
Schalla, A., L. Meyer, Z. Meyer, S. Onetti, A. Schultz and J. Goeser, 2012. Hot topic: Apparent total-tract nutrient digestibilities measured commercially using 120-hour in vitro indigestible neutral detergent fiber as a marker are related to commercial dairy cattle performance. J Dairy Science 95:5109-5114.

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### TMR-D Enhanced Report

Reference: Schalla, Meyer, Meyer, Oneni, Schultz and Goeser. 2012. .1 Dairy Sci.  
mAPLZTON VETPLEX SUPPLEMENTS  
732 STATE ROUTE 89  
POLK, OH 44866  
330.635.0659

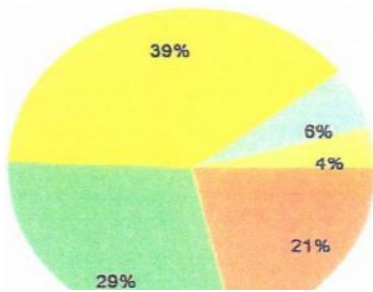
Representative:  
DR. JOHN BRYK  
GEORGE PICK



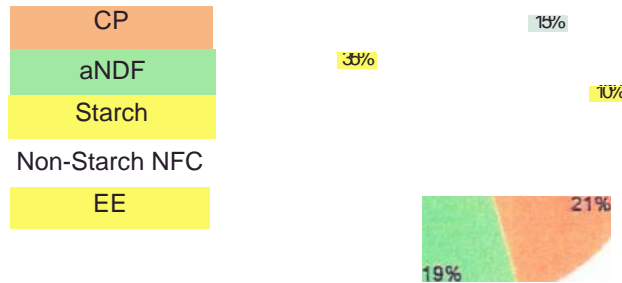
Sample #	1	TMR
iLab #	59493	Sampled on 12/5/2012 Received on 12/13/2012
(Feeder	HOSTETTER, AMOS	Charge \$126.00
Dry Matter	47.8%	Avg. DMI 56.4
TMR Nutrient Analysis	Your TMR, % of DM	Avg TMR, % of DM (Prior 2 Yr Data)
Crude Protein (CP)	16.3%	17.2%
aNDF	39.5%	33.7%
Fat (EE)	2.3%	4.0%
Starch	25.7%	25.5%
Organic Matter (OM)	89.1%	92.0%
Non-Starch NFC	5.3%	11.7%

TMR-D in vivo results	Your TMR, % Digested	Benchmarks (Prior 2 Year Data)		
		Avg	Min	Max
OM-D	63.8%	64.6%	47.9%	81.2%
NDF-D	45.6%	38.1%	14.5%	61.7%
Starch-D	92.3%	91.0%	80.6%	99.0%
CP-D	62.3%	61.8%	41.8%	81.9%
Fat (EE)-D	50.9%	74.3%	51.5%	97.1%
lb Dig OM	32.11b	33.51b	13.0lb	37.21b

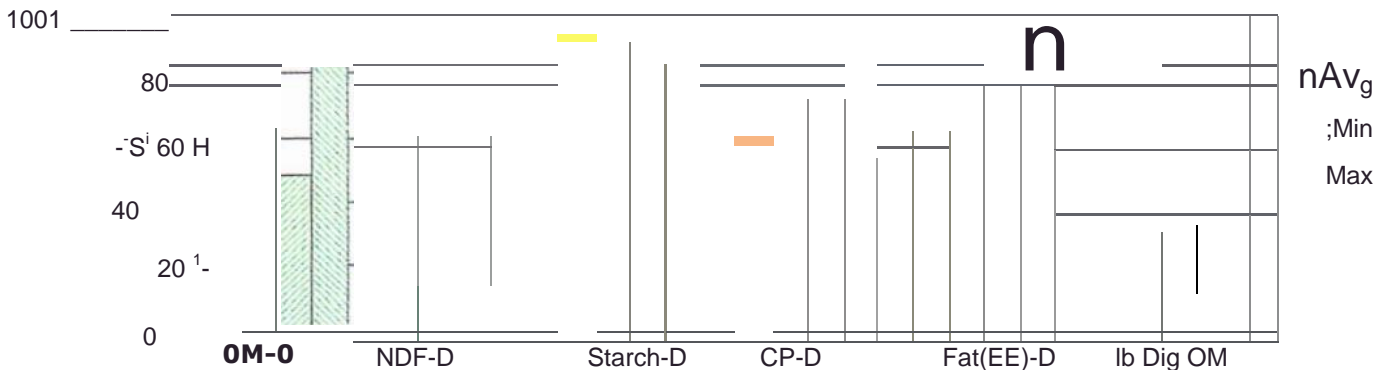
Digestible Energy Contributions Your TMR



Digestible Energy Contributions 2 Year Averages



in vivo Nutrient Digestibilities





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### Feed Analysis Report

MAPLETON VETPLEX SUPPLEMENTS  
 732 STATE ROUTE 89  
 POLK, OH 44866  
 330.635.0659

Representative:  
 DR. JOHN BRYK

2910  
 Certified  
 by OASIS

<b>Sample # 1</b>	<b>TMR</b>
Lab # 58951	Received on 11/28/2012
Feeder SENSENIG, JOHN D.	Charge \$126.00

Moisture 46.36%      Dry Matter 53.64%

Analyte Description	TMR
Crude Protein %DM	15.99%
aNDF (wfNaSO3) %DM	35.74%
Fat (EE) %DM	2.98%
Starch %DM	20.85%
Organic Matter %DM	92.22%

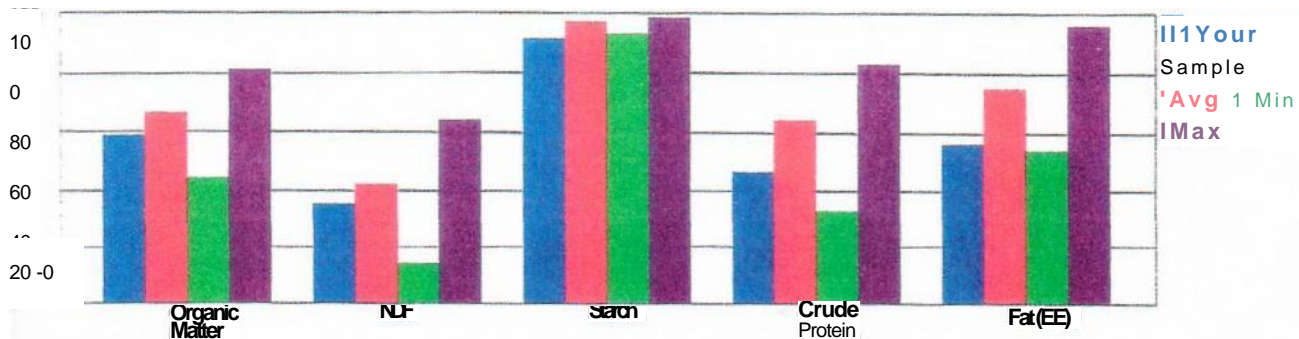
**Calculations**

N.F.0      39.22%

TMR-D in vivo apparent digestion results	AVG	MIN	MAX	
Organic Matter	58.39%	66.16%	44.37%	80.80%
NDF	35.14%	42.06%	13.72%	63.45%
Starch	91.55%	97.10%	93.13%	98.65%
Crude Protein %CP	46.26%	63.70%	32.75%	82.28%
Fat %Fat	56.08%	74.32%	53.78%	95.99%

**Comments**

Analyzed by wet chemical methods.



All interpretations of these results should begin with making sure that dry matter intakes are as expected.

A 1% increase in Organic Matter Digestibility has been related to approximately 0.5lbs increased Energy Corrected Milk (Schalla et al., 2012).

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### TMR-D Enhanced Report

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Representative:  
 DR. JOHN BRYK

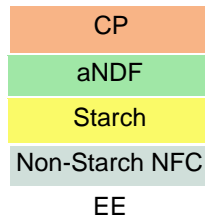
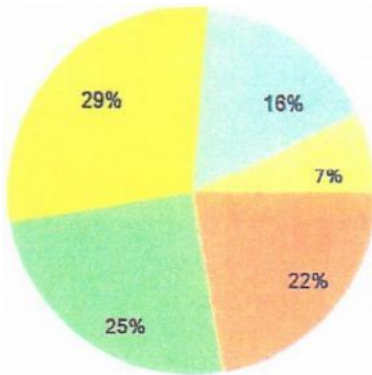


Sample # 1	TMR	
Lab # 59775	Sampled on 12/26/2012	Received on 12/28/2012
Feeder SENSENIG, JOHN D.	Charge 5126.00	
Dry Matter 53.7%	Avg. DMI 56.4	

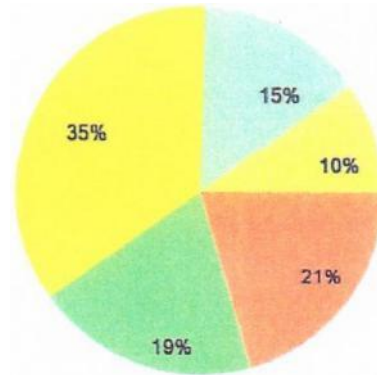
TMR Nutrient Analysis	Your TMR, % of DM	Avg TMR, % of DM (Prior 2 Yr Data)
Crude Protein (CP)	16.6%	17.2%
aNDF	34.4%	33.8%
Fat (EE)	3.2%	4.0%
Starch	21.9%	25.5%
Organic Matter (OM)	91.7%	92.0%
Non-Starch NFC	15.6%	11.5%

TMR-D in vivo results	Your TMR, % Digested	Benchmarks (Prior 2 Year Data)		
		Avg	Min	Max
OM-D	70.4%	64.4%	47.7%	81.1%
NDF-D	51.5%	37.9%	14.7%	61.2%
Starch-0	94.0%	91.3%	80.9%	99.0%
CP-D	74.1%	61.5%	41.2%	81.7%
Fat (EE)-D	72.3%	73.7%	50.3%	97.0%
.b Dig OM	36.41b	33.41b	12.81b	37.11b

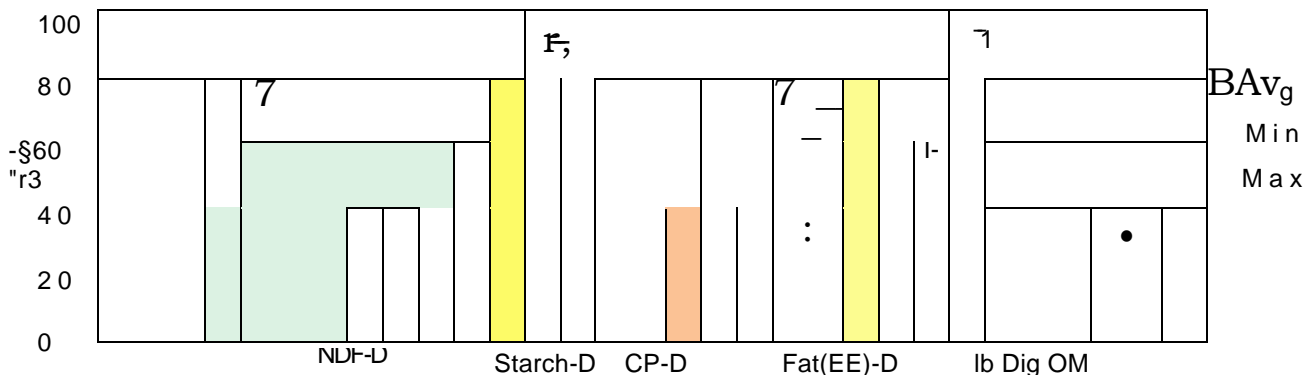
Digestible Energy Contributions Your TMR



Digestible Energy Contributions 2 Year Averages



in vivo Nutrient Digestibilities





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### TMR-D Enhanced Report

Reference: Schen, Meyer, Meyer, Ortetti, Schutt/ and Goeser. 2012, J Dairy Sci.

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Representative:  
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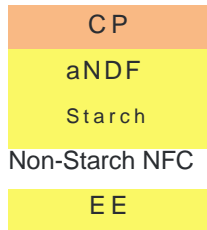
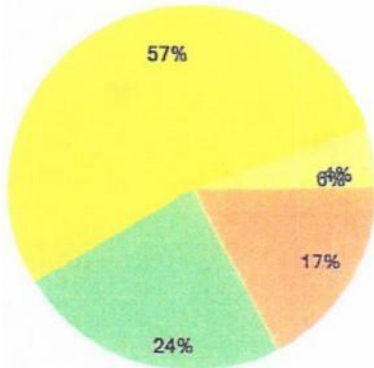


Sample # 1 TMR  
 Lab # 58904 Sampled on 11/20/2012 Received on 11/26/2012  
 Feeder ZACHARIAS, MARK Charge \$126.00

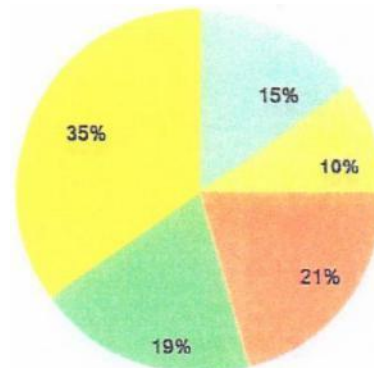
Dry Matter 641% TMR	Avg. DM1 56.4	
Nutrient Analysis	Your TMR, % of DM	Avg TMR, % of DM (Prior 2 Yr Data)
Crude Protein (CP)	13.1%	17.2%
aNDF	37.5%	33.6%
Fat (EE)	2.8%	4.0%
Starch	39.9%	25.5%
Organic Matter (OM)	94.7%	92.0%
Non-Starch NFC	1.4%	11.7%

TMR-D in vivo results	Your TMR, % Digested	Benchmarks (Prior 2 Year Data)		
		Avg	Min	Max
OM-D	55.2%	64.8%	48.4%	81.3%
NDF-D	35.8%	38.3%	14.5%	62.1%
Starch-D	81.1%	91.1%	80.8%	99.0%
CP-D	58.1%	62.1%	42.6%	81.7%
Fat (EE)-D	49.5%	75.0%	53.2%	96.8%
d Dig OM	29.5lb	33.7lb	13.2lb	37.3lb

Digestible Energy Contributions Your TMR



Digestible Energy Contributions 2 Year Averages



in vivo Nutrient Digestibilities

