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# Fraser Analytical Services

Laboratory Services for Agriculture

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## Services and Pricing Guide

August 2016



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# History

Fraser Analytical Services (FAS) delivers a full complement of forage/feed testing and evaluation services not previously available in Western Canada. As a producer, feed manufacturer, nutritionist or researcher, Fraser Analytical is here to meet your analytical needs.

FAS is a satellite facility of Cumberland Valley Analytical Services (CVAS) located in British Columbia's Fraser Valley. Our primary focus is providing rapid turn-around of forage and feed analysis by Near Infrared Spectroscopy (NIR).

Through our partnership with CVAS and use of expanded equations we are able to provide nutrient evaluations not traditionally available by NIR to the Canadian feed industry.

Innovation and rapid adoption of new technologies have allowed CVAS to become the United State's largest provider of chemistry based evaluations for forage. CVAS is now regarded as the industry leader in in vitro digestibility services while also providing one of the most complete offerings for NIR forage evaluation.

Thanks to our partnership with CVAS and our proximity to the US border, FAS provides rapid turnaround on samples while eliminating the cost and paperwork usually associated with sending materials to the US.

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Forage and feed characterization ...  
... from the field to the feed bunk.



# NIR Packages

These options are available on hays, haylages, corn, corn silages, grain silages, small grains, and TMR.

<b>NIR1</b>	17.25
The NIR 1 Analysis includes tests for Dry Matter, Moisture, Crude Protein, ADF Protein, NDF Protein, Soluble Protein, ADF, NDF, Lignin, Starch, Sugar, Fat, Ash, Calcium (Ca), Phosphorus (P), Magnesium (Mg), and Potassium (K) and pH on ensiled forage. Calculated values are provided for Available Protein, Adjusted Protein, Degradable Protein, NEI, NEm, NEg (OARDC Summative Energy Equation), and NFC.	
<b>NIR2</b>	25.50
The NIR 2 is the NIR 1 Analysis with wet-chemistry Minerals - Calcium (Ca), Phosphorus (P), Magnesium (Mg), Potassium (K), Sodium (Na), Iron (Fe), Manganese (Mn), Zinc (Zn), and Copper (Cu).	
<b>NIR3</b>	33.00
The NIR 3 is the NIR 2 Analysis plus wet-chemistry on Chloride (Cl) and Sulfur (S).	
<b>NIR4</b>	39.00
The NIR 4 is the NIR 2 Analysis plus wet-chemistry on Crude Protein, ADF and NDF.	
<b>NIR5</b>	28.00
The NIR 5 is the NIR 1 Analysis plus wet-chemistry on Crude Protein, ADF, and NDF.	
<b>NIR Plus Option</b>	9.25
Provides 30 hr NDF Digestibility with Kd rate, an NIR evaluation of fermentation acids (for ensiled forages), as well as a uNDF at 30 hrs, a uNDF at 120 hour and 240 hrs, total fatty acids, and soluble fiber. This option also includes a soil contamination probability index of low, medium, or high for forages. A nitrate probability is reported as low, medium, or high. For corn silage, the NIR Plus Option provides 12 hr NDF digestibility and 7 hr (4mm) starch digestibility.	
<b>CPM Option</b>	No Charge
Provides Neutral Detergent Residue (NDR) in place of aNDF analysis.	
<b>Apparent Nutrient Digestibility by TMR and Fecal Evaluation</b>	57.50
Includes a NIR Plus evaluation of a high group TMR and associated fecal matter to generate an evaluation of apparent NDF and starch digestibility.	
<b>TMR Mixer Evaluation</b>	125.00
(Set of 5 samples analyzed to assess mixer efficiency) NIR analysis with chemistry minerals. This package includes DM, CP, Soluble Protein, ADF, NDF, Lignin, Fat, Starch, Sugar, Ash, Ca, P, Mg, K, Na, Cl, S, Fe, Mn, Zn, Cu.	
<b>TMR Control - NIR</b>	64.00
NIR analysis with chemistry minerals. This package includes DM, CP, Soluble Protein, ADF, NDF, 24 hour NDF Digestibility, Lignin, Fat, Starch, Sugar, Ash, Ca, P, Mg, K, Na, Cl, S, Fe, Mn, Zn, Cu. Also included is an evaluation for peNDF, SPS (starch processing score), and the Penn State Particle Size Evaluation.	

# Chemistry Packages

<b>Standard</b>	<b>33.75</b>
Includes Dry Matter, Moisture, Crude Protein, Unavailable Protein (Haylages only), Adjusted Protein, Soluble Protein, calculated Degradable Protein (Forages only), Acid Detergent Fiber (ADF), Neutral Detergent Fiber (NDF), Ash, NFC, (Energy values on forages only) TDN, NEI, NEm, NEg, RFV (for hays and haylages), and Ca, P, Mg, K, Na, Fe, Mn, Zn and Cu with pH on an ensiled forage.	
<b>Standard Plus Energy</b>	<b>53.50</b>
Standard Package plus Fat, Lignin, ADFCP, NDFCP to get Energy Values on Non-Forages.	
<b>CPM Plus</b>	<b>77.25</b>
Includes the Standard Analysis and Lignin, Fat, ADFCP, NDFCP, Chloride, Sulfur, Starch and Sugar. When combined with our Fermentation Analysis a Soluble Fiber is calculated.	
<b>RFV</b>	<b>21.75</b>
Includes Dry Matter, Moisture, Crude Protein, ADF, NDF, calculated RFV (on hays and haylages), Adjusted Protein, NEI, NEm, NEg and TDN.	
<b>Basic NDF</b>	<b>30.00</b>
Dry Matter, Moisture, Crude Protein, ADF, NDF, Minerals (Ca, P, Mg, K, Na, Fe, Mn, Zn, and Cu), pH on ensiled forages, with calculated values for Adjusted Protein, TDN, NEI, NEg and NEm.	
<b>Minerals Only</b>	<b>27.25</b>
Includes Dry Matter, Ca, P, Mg, K, Na, Fe, Mn, Zn and Cu.	
<b>TMR Diagnostic</b>	<b>164.00</b>
By chemistry; includes DM, CP, Soluble Protein, Ammonia, ADF, NDF, peNDF (physically effective NDF - Mertens) 24-hour NDF Digestibility, Lignin, Fat, Starch, SPS (starch processing score), 7-hour Starch Degradability, Sugar, Ash, Ca, P, Mg, K, Na, Cl, S, Fe, Mn, Zn, Cu, Lactic Acid, Acetic Acid, Butyric Acid and the Penn State Particle Size Evaluation.	
<b>TMR Control – Chemistry</b>	<b>74.50</b>
By chemistry; includes DM, CP, Soluble Protein, ADF, NDF, Starch, Ash, Ca, P, Mg, K, Na, Cl, S, Fe, Mn, Zu, Cu. Also included is an evaluation for peNDF, SPS (starch processing score), and the Penn State Particle Size Evaluation.	
<b>Animal Protein</b>	<b>54.50</b>
Provides Dry Matter, Moisture, Crude Protein, Soluble Protein, Ash, Fat, Ca, P, Cl and S.	
<b>Liquid Sample</b>	
• Provides Dry Matter, Moisture, Crude Protein, Ammonia, Fat, Sugar, Ash, Ca, P, Mg (K), Na, Fe, Mn, Zn, and Cu as well as TDN, NEI, NEm, and NEg. <b>55.00</b>	
• Above analysis with Karl Fischer moisture—appropriate when volatiles other than moisture are present in the sample <b>102.50</b>	
<b>Feed Mill Mixer Evaluation</b>	<b>189.50</b>
Evaluation of CP, Ash, Ca, P, Mg (K), Na, Fe, Mn, Zn, Cu on 10 samples. Includes report of analyses including average, SD, and COV for nutrients.	
<b>Multistep in vitro Protein Evaluation (MSPE)</b>	<b>110.00</b>
<b>Freeze Dry RUP</b>	<b>135.00</b>
Based on work by Dr. Debbie Ross and Dr. Mike Van Amburgh. An In Vitro evaluation of feed material is followed by treatment sequentially with acid and enzymes. Rumen availability as well as intestinal digestibility is provided.	

# Wet Chemistry Options

<b>Fermentation</b>	25.00
Includes Dry Matter, Titratable Acidity, Lactic Acid, Acetic Acid, Propionic Acid, Butyric Acid, Iso-butyric Acid, 1,2 - Propanediol, Total VFA, pH, Lactic Acid/VFA ratio, Crude Protein equivalent from Ammonia and Ammonia N as a percentage of total N.	
<b>Fermentation Analysis Plus</b>	39.50
Includes Fermentation Analysis as well as a breakdown of Alcohols, Acetates and Lactates.	
<b>Fatty Acid Profile Basic</b>	94.00
Cost and profile vary depending on sample type.	
<b>Fatty Acid Profile Full</b>	156.00
<b>Fatty Acid Profile by Acid Fat Extraction</b>	180.00
<b>Heavy Metals</b>	72.00
Includes Aluminum, Antimony, Arsenic, Barium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Phosphorus, Potassium, Selenium, Sodium, Sulfur, Thallium, Zinc.	
<b>Mold Count</b>	25.00
Mold/Yeast Count	
<b>Mold Identification</b>	46.00
Mold/Yeast Count with Mold Identification	
<b>PDI/Urease</b>	44.25
Protein Dispersibility Index (includes PDI, and Urease Activity)	
<b>Selenium</b> (expected levels needed)	48.50
<b>Urease Activity</b>	23.25
<b>Fat (acid-hydrolysis)</b>	35.75
<b>CNCPS</b>	19.75
Adds to the standard package fat, lignin, ADFCP and NDFCP. Allows energy values to be calculated on non-forage samples.	
<b>Micron Particle Size</b>	19.50
<b>Byproduct</b>	27.50
Adds to the standard package fat, lignin, ADFCP, NDFCP, sulfur and chloride.	
<b>DCAD (Cl, S)</b>	11.50
<b>Corn Silage Processing Score (CSPS)</b>	19.50
<b>Physically Effective NDF (PENDF)</b>	19.50
<b>Particle Size</b>	8.00
Particle Size Evaluation (Penn State Separator)	
<b>Molybdenum</b>	11.25
<b>Non-Protein Nitrogen (NPN)</b>	28.50

## In vitro Analysis

CVAS has the capacity to run most any sized in vitro project with all samples inoculated from a single run of comingled rumen fluid. Our in vitro facility has over 2000 incubator flask positions.

NDF Digestibility 25.75

Time points may include 6, 12, 24, 30, 48 or 240 hrs (iNDF). Other time points available upon request.

NDF Digestibility Time Point Series (6 points)  
with Rates 120.75

Starch Digestibility 31.50

Time points may include 2, 4, 7, 8, 12, 18, 24, 72 hrs. Other time points available upon request.

Starch Digestibility Time Point Series (6 points)  
with Rates 159.00

Dry Matter Digestibility (In vitro) 20.00

Time points as determined by client.

Dry Matter Digestibility Time Point Series (6 points) 99.75

Basic RPE (Rate Pool Evaluation) 58.50

Forage 30, 120, 240 hr

Concentrate 12, 72, 120 hr

Standard RPE 98.50

Forage 4, 8, 12, 24, 48, 72, 120, 240 hr

Concentrate 4, 8, 12, 24, 48, 72, 120, 240 hr

## In situ Analysis

CVAS maintains 10 to 12 cannulated lactating cows. This provides flexibility to hang large numbers of bags for in situ evaluations, at the same time having access to large amounts of rumen fluid for in vitro incubations.

Protein Digestibility 93.00

Rumen Undegradable Protein (RUP) at 16 hrs

Dry Matter Digestibility 68.25

24, 30, 48 hours. Other time points available upon request.

Starch Digestibility 95.00

Time points may include 7, 16, 24 or 72 hrs. Other time points available upon request.

NDF Digestibility 93.00

Time points may include 6, 24, 30, 48, 96, 120 or 240 hrs (iNDF). Other time points available upon request.

## Amino Acids

Cysteine, Methionine 85.25

Cysteine, Methionine

Cysteine, Methionine, Lysine plus 9 more 112.75

Cysteine, Methionine, Lysine, Aspartic Acid, Threonine, Glutamic Acid, Proline, Glycine, Alanine, Valine, Isoleucine and Leucine.

Full Profile without Tryptophan	152.00
Cysteine, Methionine, Lysine, Aspartic Acid, Threonine, Glutamic Acid, Proline, Glycine, Alanine, Valine, Isoleucine, Leucine, Taurine, Hydroxyproline, Serine, Lanthionine, Tyrosine, Phenylalanine, Hydroxylysine, Ornithine, Histidine and Arginine.	

Full Profile with Tryptophan	176.00
Cysteine, Methionine, Lysine, Aspartic Acid, Threonine, Glutamic Acid, Proline,	

## Proximates

TAG 1	25.75
Includes Dry Matter, Moisture, Crude Protein, Crude Fat and Crude Fiber	

TAG 2	35.75
Includes Tag 1 plus Ash, Ca and P	

TAG 3	44.25
Includes Tag 1 plus Ash and Ca, P, Mg, K, Na, Fe, Mn, Zn, Cu	

TAG 4	22.25
Includes Dry Matter, Moisture, Ash, Ca and P	

Protein Only	6.25
Protein (combustion)	

Moisture Only	3.00
Moisture (Moisture loss drying at 135°C for 2 hrs)	

Fat (ether extraction)	10.00
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Fat (acid hydrolysis)	35.75
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Crude Fiber	9.00
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Ash	6.25
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Karl Fischer Moisture	45.00
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Proximates/Mycotoxins

## Mycotoxins

**Mycotoxin Screen**  
Screen includes Aflatoxin, B1, B2, G1, G2, Deoxynivalenol, Zearalenone, and T-2 Toxin

With DON by GC	71.25
With DON by HPLC	88.75

<b>Mycotoxins Screen Plus</b> Ochratoxin and Fumonisin	<b>102.00</b>
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DON by GC	40.50
DON by HPLC	57.75
Aflatoxin by HPLC	40.50
Zearalenone by HPLC	72.25
Fumonisin by HPLC	72.25
Ochratoxin by HPLC	72.25

# Water Analysis

Fraser Analytical now offers bacteria analysis in house. We bill in CAD.

Total Coliform and E.coli 46.35 CAD

For all other water tests, USD apply.

Nitrate Nitrogen and pH 13.75

Livestock Suitability Package 37.25

Includes pH, hardness, total dissolved solids, Ca,P,Mg,K,Na,Fe,Mn,Zn,Cu, chlorides, sulfate and nitrate

pH 6.00

Alkalinity 11.75

# Manure Analysis

CVAS is certified by the Minnesota Department of Agriculture for manure testing. With increasing emphasis on stewardship of resources, including implementation of nutrient management planning, manure testing is becoming a routine evaluation for animal production facilities. Our web-based data management system offers tools for efficient administration of manure testing data.

## Packages

Base Test Package 1 36.50

Total Nitrogen, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, NH<sub>3</sub>, DM, Density

Base Test Package 2 31.50

Total Nitrogen, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, NH<sub>3</sub>, DM

Base Test Package 3 28.50

Total Nitrogen, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, NH<sub>3</sub>

## Additional Options

Water Soluble Phos 11.00

Minerals (Ca,Mg,Na,Fe,Mn,Zn, & Cu) 8.00

Volatile Solids 5.75

pH 5.75

Total Carbon (C/N Ratio) 25.00

Lagoon Analysis 48.50

pH, Nitrogen, Total Solids, Minerals

# Plant Tissue Analysis

Standard 41.50

N, P, K, Ca, Mg, Na, S, Fe, Mn, Zn, Cu, B

Trace Minerals each 38.00

Cd, Co, Pb, Mo, Ni

Nitrate Nitrogen 11.25

Total Nitrogen 6.25

Total Carbon 25.00

Total Sulfur 6.25

Samples run for Nitrate Nitrogen, Nitrogen, Carbon, or Sulfur without a mineral package will include a \$7.00 processing charge



# Equine Services

Understanding equine nutrition is of critical importance to a horse's health and well-being and has radically changed in recent years. As we learn more about how horses digest and utilize nutrients from feeds, feed choices have broadened and changed. The importance of sugars, fructans, and fiber digestibility is better recognized.

## Equine Basic 21.25

This NIR package includes Dry Matter, Moisture, Digestible Energy, NSC, NFC, RFV, Starch, Sugar (WSC and ESC), Protein, ADF, NDF, NDFom, Fat, Ash, Calcium (Ca), Phosphorus (P), Magnesium (Mg), and Potassium (K).

## Equine Lancer 29.50

This package includes Dry Matter, Moisture, Digestible Energy, NSC, NFC, RFV, Starch, Sugar, Protein, ADF, NDF, NDFom, Fat, Fatty Acids (total), and Ash by NIR. Chemistry minerals are provided, superior analytically to NIR predictions, including Calcium (Ca), Phosphorus (P), Magnesium (Mg), Potassium (K), Sodium (Na), Iron (Fe), Manganese (Mn), Zinc (Zn), and Copper (Cu).

## Equine Chemistry Basic 57.00

This package is similar to the Equine Lancer package but uses reference chemistry methods in place of more economical NIR. It provides Dry Matter, Moisture, Digestible Energy, NSC, NFC, RFV, Starch, Sugar, Protein, ADF, NDF, Ash, Calcium (Ca), Phosphorus (P), Magnesium (Mg), Potassium (K), Sodium (Na), Iron (Fe), Manganese (Mn), Zinc (Zn), and Copper (Cu).

## Equine Chemistry Complete 80.00

This package includes Dry Matter, Moisture, Digestible Energy, NSC, NFC, RFV, Starch, Sugar, Protein, ADF, NDF, Lignin, Fat, Ash, Calcium (Ca), Phosphorus (P), Magnesium (Mg), Potassium (K), Sodium (Na), Sulfur (S), Chloride (Cl), Iron (Fe), Manganese (Mn), Zinc (Zn), and Copper (Cu).

Analyses important to trouble shooting equine nutritional problems are listed on other pages. Various nutritional components are listed on pages 10–11, mycotoxins on page 9, mold and yeast evaluations on page 5, and water on page 14.

# Components

Please add \$7.00 processing charge  
to each sample not run with a package.

Acid Insoluble Ash.....	24.50
ADF.....	6.25
ADFom (ash free).....	9.25
ADFCP.....	6.25
Ammonia Nitrogen .....	11.25
Ash.....	6.25
Barium.....	36.00
Boron .....	11.25
Chloride.....	6.50
Cobalt.....	38.00
Crude Fiber.....	9.00
Crude Protein .....	6.25
Deg. Protein (strep. Griseus) .....	12.75
DCAD Option.....	11.50
Chloride, Sulfur	
Dry Matter.....	6.50
Elemental Iodine .....	78.00
Ergonovine .....	110.25
Fat (Acid-Hydrolysis).....	35.75
Fat (Ether Extraction).....	10.00
Fecal Starch.....	12.25
Free Fatty Acids .....	26.50
Gossypol.....	509.25
Initial Peroxide (on liquid materials).....	31.00
Initial Peroxide (on dry materials).....	94.50
Iodine Value .....	52.50
Karl Fischer Moisture .....	45.25
KOH .....	38.00
Lactose.....	72.00
Lead.....	38.00
Lignin.....	10.00
Micron Particle Size .....	19.50

# Components

Moisture Only.....	3.00
Moisture (Moisture loss drying at 135°C for 2 hrs)	
Molybdenum.....	11.25
aNDF.....	6.25
aNDFom (ash-free).....	9.25
NDF-CP.....	6.25
NDR.....	6.25
Nitrate.....	11.25
Non-Protein Nitrogen (NPN).....	28.50
Particle Size Evaluation (Penn State Separator).....	8.00
Pepsin Digestibility.....	48.50
(0.2% pepsin as per AOAC-includes crude protein determination)	
pH.....	5.75
Protein Only.....	6.25
Protein (combustion)	
Protein Dispersibility Index.....	44.25
(includes PDI and Urease Activity)	
Prolamin.....	42.00
Prussic Acid (Cyanide).....	57.75
Salt (as chloride).....	6.50
Selenium.....	48.50
(expected levels needed)	
Soluble Protein.....	6.25
Starch.....	12.25
Starch (Gelatinized).....	61.00
Sugar.....	10.00
Sulfur.....	6.25
Trypsin Inhibitor.....	102.50
Urea.....	28.50
Urease Activity.....	23.25
Vitamin A.....	82.00
Vitamin D.....	126.00
Vitamin E.....	126.00

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## Turn-around Time

Wet-chemistry results are returned three to six days following receipt with exceptions for special analyses. Results on NIR samples received by 11:00 a.m. for NIR-2 & 3 are posted the same day. NIR samples submitted to a satellite facility requiring additional chemistry analysis will increase turn-around time by one day.

## Accuracy and Precision

CVAS is certified by the National Forage Testing Association in both chemistry and NIR analyses. CVAS also participates in AAFCO, MAP, and BIPEA check sample programs. In addition, CVAS is an approved AOCS oilseed meal, unground soybean meal, and NOPA laboratory. All samples released by CVAS are reviewed by in-house personal with years of industry experience.

## Pricing

The intent of this Services and Pricing Guide is to illustrate to our current and prospective clients the services that CVAS provides. To meet your needs, we are continually expanding our services through new forage characterization services, adoption of cutting-edge information technology, and unsurpassed data management services. Please use this as a reference and check [www.foragelab.com](http://www.foragelab.com) for the most up-to-date services and pricing. Prices are as of August 1, 2016, and are subject to change without notice.

## Billing

CVAS bills twice monthly, net 30. We provide an itemized invoice detailing charges by sample. We will bill third parties.

For more information pertaining to each individual assay, please visit our website [www.foragelab.com](http://www.foragelab.com) or email us at [mail@foragelab.com](mailto:mail@foragelab.com).

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# CVAS Web-based Data Review and Management System

CVAS continues to provide the most extensive internet-based data management programs available to the industry. Our on-line data management system not only gives you historical access and unique reporting capabilities, but allows you to “mine” valuable statistical information from your samples.

The website provides co-branded reporting, custom report formats, client logging of samples with user-defined data fields, and support for multiple languages. Samples can now be logged by the user, minimizing the potential for transcription errors and providing additional fields for descriptive data to be associated with the sample.

Results are available by website, fax, e-mail (numerous formats available for importing into most nutritional models) as well as by mail.

## Other Charges

Special handling or sample prep	up to \$10.00
Sample forwarding fee	\$6.00
Archival Report Charge (per sample up to 5)	\$2.50

After 5 samples, \$40.00/hour in 15-minute (\$10.00) increments.

## CVAS Mobile App

Our FORAGELAB app is a convenient way to submit and view sample information via your mobile device. The app is available on the iPhone, iPad and Android platforms. Clients are able to retrieve results almost immediately after the analysis is complete. In addition, you can ensure prompt handling of your samples by submitting them through the FORAGELAB app. You can include detailed descriptions of your sample, select the analysis you require and even take a source picture of the sample.

## Data Services

CVAS supports research institutions and industry by providing nutrient data on forages and feeds with data available back as far as 15 years and spanning U.S. and international geographies. We work with clients on custom analytical needs and have the ability to utilize our database to quickly generate summaries and comparisons of analyses.

Data is only provided in an anonymous fashion that does not compromise any individual business or clients’ privileged information.

Below is an example of relationships that can be developed from evaluation of data:



## Our Mission:

Cumberland Valley Analytical Services is committed to providing innovative and cost-effective forage and feed laboratory testing for the agriculture industry. Combining the most comprehensive array of forage characterization services, cutting-edge information technology and outstanding customer focus, we will be the global leader in feedstuff analysis and analytics as we support world food production needs.