



How can we find out the nutrient content of different poultry feedstuffs?

Mojtaba Yegani and Doug Korver



Current status

- Feed is the most expensive item in commercial poultry production.
- The feed market has experienced considerable volatility over the years.
- It is important to get the most nutrients out of feedstuffs.
- Nutrient content of feedstuffs can vary significantly.
- We need to know the actual nutrient content of feedstuffs in order to formulate diets to meet poultry's requirements more closely.

What can be done?

- We can test feedstuffs by feeding them to chickens and measuring some parameters (i.e. *in vivo*).
 - I. Requires frequent use of animals.
 - II. Expensive and time-consuming.
- We can test feedstuffs in laboratory environment by providing some conditions similar to the digestive tract of chickens (i.e. *in vitro*).
 - I. Substantial reduction in the use of animals.
 - II. Faster and less expensive.



Shaking water bath mimicking body temperature & gut motility.



Flasks providing an environment for digestive processes to occur.

- *In vitro* results should be validated with results of animal studies.



Filter papers containing non-digested residues.

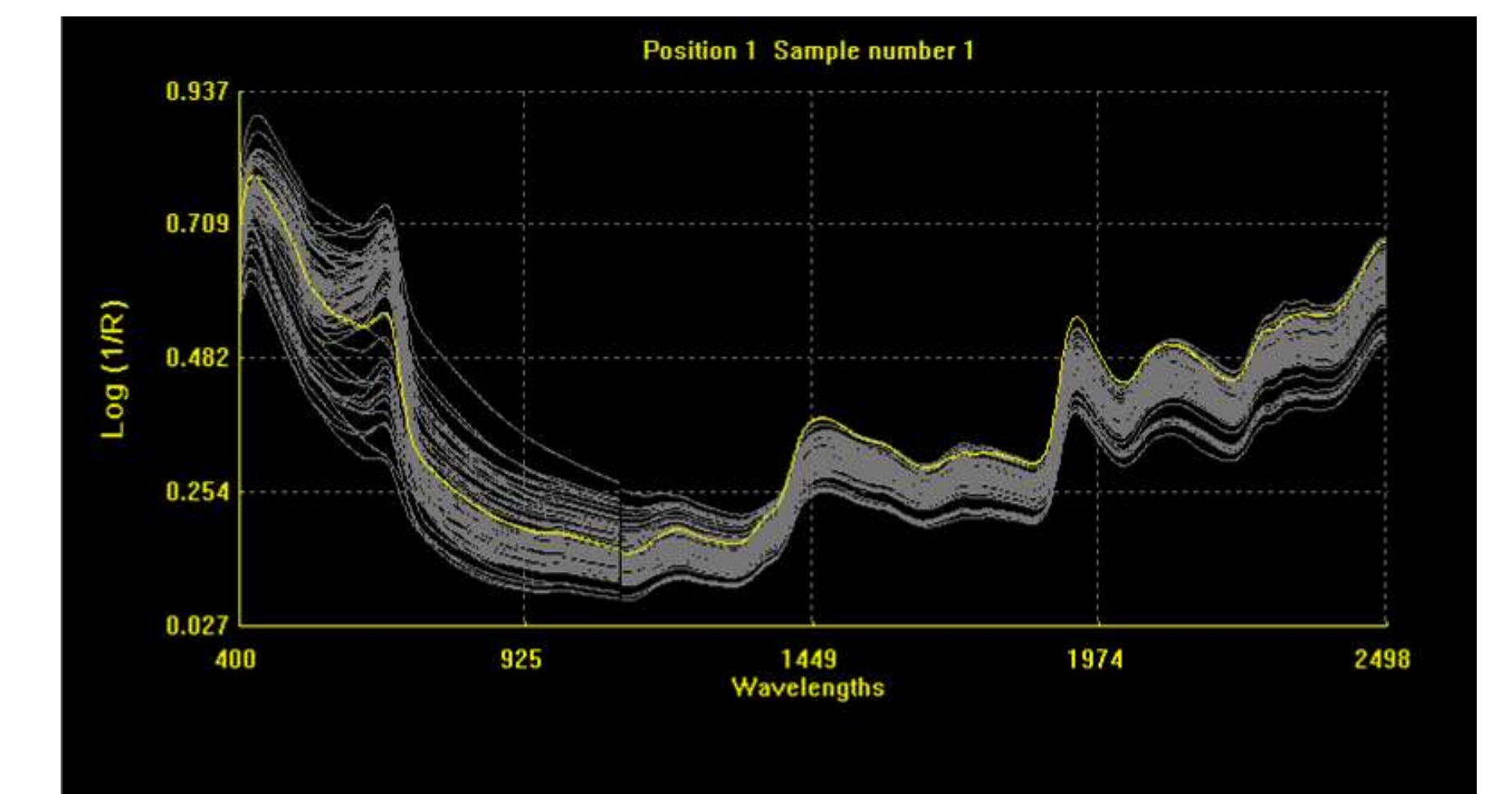


The calorimeter measuring energy values of feedstuffs & *in vitro* digestion residues.

- *In vitro* results can be used to establish, maintain, and up-date Near Infra-red Reflectance Spectroscopy (NIRS) calibrations.



Feedstuffs are scanned by calibrated NIRS machine.



Spectra showing nutrient content of feedstuffs.

Where are we headed?

- Predicting nutrient content of feedstuffs using NIRS (i.e., accurate and time efficient).
- Providing a more reliable basis for payment according to feedstuff quality and more accurate diet formulation for optimal animal performance.

Reference

ACIDF Project - Feed Quality Evaluation/NIRS.

Acknowledgments

ACIDF; Danisco Animal Nutrition; University of Alberta; Dr. Marylou Swift and Kerry Nadeau for providing pictures.