

Technical leadership drives NIRS growth in Alberta

by Kieran Brett

With funding from ACIDF and ALMA, Mary Lou Swift gave early adopters of NIRS technology the training and support they needed to keep going.

Have you ever bought a tool that you believed would make you more productive? Once you got it home and out of the box, well, there was more to it than you expected. You didn't quite have the knowledge to use it or the time to figure it out. Your promising tool went on the shelf and stayed there.

When the tool is Near Infrared Spectroscopy (NIRS) technology, and the new users are Alberta feed mills, consultants and livestock producers, the stakes are far too high for this to happen.



In 2011, when the Alberta Crop Industry Development Fund (ACIDF) and Alberta Livestock and Meat Agency (ALMA) helped 15 organizations acquire NIRS units, they asked scientist Mary Lou Swift to run the show.

“There’s a lot to figure out with NIRS,” says Swift. “It’s the kind of technology where you can easily get discouraged early on if you don’t get the right support.”

Swift, currently the Director of Nutrition with Hi-Pro Feeds, served as Technical Director and Administrator for the Alberta NIRS Network from 2011 to 2015. ACIDF provided funding for this work through the \$8 million Feeding Initiative funded by ALMA.

High potential for NIRS

NIRS is a technology that measures the amount of light energy absorbed by chemical bonds containing hydrogen within a sample. Constituents

within a feed -- such as protein, starch, fiber and lipids -- contain molecules with hydrogen bonds. This measurement produces a one-of-a-kind spectral 'fingerprint' for each sample. This fingerprint is statistically associated to the chemical composition of a sample and a calibration model is produced once this data is known for at least 50 samples. An NIRS unit can cost upwards of \$70,000.

The 15 members of the Alberta NIRS Network are a diverse group. They include livestock producers (both feedlots and Colonies), feed manufacturers, feed consultants, animal health consultants and the University of Alberta. Some have a Foss type of NIRS unit, while others use a Unity Scientific machine. Some had experience and expertise in NIRS; others were new to the technology. Some were able to purchase calibrations or develop their own; others needed basic training in day-to-day operation.

Swift's role was to deliver a consistent training program, to quarterback calibration development and to ensure that data were correctly compiled and regularly shared.

Not hard...if you know how

Over the past decade and more, Swift has been one of the scientific pioneers who've helped bring NIRS from high-potential concept to everyday management tool. As Network leader, she visited members' facilities to teach sampling techniques, unit operations and the basics of calibration. Having an NIRS unit at the University of Alberta also helps a new generation gain academic expertise in the field and supports other research projects.

"Training in NIRS scanning doesn't take that long," says Swift. "Teaching people to calibrate is a bit of an art, and there are definitely some tricks of the trade. Normally, I'd go in and sit down with people for a couple of hours, and that was enough to get them going."

As more Network members used their NIRS units more regularly, the volume of data grew and grew. Swift gathered data from users and developed quarterly reports so that Network members could more easily use their data for decision-making.

Four years ago, the members of the Alberta NIRS Network believed this technology could improve their operations. Today, with the right technical leadership and support, it's happening.

Says Mary Lou Swift: "The success rate of using ALMA dollars to advance NIRS has been very, very good. I think we can be proud of ourselves for building this capacity here in Alberta. This technology is here to stay."

