Listen Up: Pig Ears Help Predict Quality

By Geoff Geddes, for Swine Innovation Porc

"In a pig's eye" is a way to express disbelief, and at first glance, using pig ears to predict pork carcass and meat quality may seem like a stretch. But believe it or not, researchers on the project "Rapid in vivo prediction of composition and quality traits using near-infrared spectroscopy (NIRS)" paired pig ears with the latest technology in gathering vital information for producers and packers.

"We've been using NIRS for many years in different ways," said Dr. Manuel Juarez, Livestock Phenomics Scientist with Agriculture and Agri-Food Canada. "A few years ago, we found an article where NIRS was used to predict body fat content of the human body by measuring in the ear, so we thought it might be useful for pigs."

As a first step, Dr. Juarez, aided by NIRS expert Dr. Nuria Prieto, took ears from various weights and genders of slaughtered pigs and scanned them with NIRS on different parts of the ear. They then used the NIR spectra results to predict a number of meat quality traits such as lean and fat content, fat depth and fatty acid profile.

"When we looked at how those spectra of the ear predicted carcass traits, the results were quite promising. Nothing is perfect, but we were able to classify carcasses as having a high or low level of each trait."

In applying this approach to live animals, some challenges emerged. Like most creatures, pigs are reluctant to stand still for an ear scan, and telling them "this will only take a second" doesn't help. To address that, researchers are looking at options for an instrument that would clamp to the ear and let the animal relax while the spectra collection occurs.

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Ear hair is never an asset

On another front, hair and pigmentation in a live pig's ear makes it harder to find a clear area for scanning, so protocols will be needed that cover this reality.

Despite having a few wrinkles to iron out, this research group is the first to achieve proof of concept for the technique, and industry is taking note.

"We've had meetings with packers, producers and genetic companies, and they all felt this was very promising if we can make it work. Anytime you can predict carcass and quality traits it provides two clear benefits."

Using near infrared spectroscopy on live and carcass ears. Photos: AAFC

One such benefit is genetic selection, where NIRS can produce high quality data from the breeder to optimize selection decisions. There is also much to be gained from this technology when it comes to animal sorting.

Sorting it out

"Part of the power of NIRS is that it allows you to sort pigs within a batch of animals based on factors like body composition and fatty acid profile. By selecting certain pigs for certain markets before you even finish them, you can gear your feeding plan to match the needs of the animal and the target market. Then when it comes time to send them to slaughter, those that don't meet the minimum standard for a certain customer can be given more attention or sent to another market."

One of the best things about dealing with new devices is that over time, the cost goes down while the quality improves.

"NIRS is becoming cheaper and cheaper, and when you combine affordability with the means to generate solid, real-time data, the implications could be huge. With the changing approaches in the United States and Canada to classifying meat, the ability to assess quality early and accurately will be critical."

So maybe using pig ears to measure quality isn't glamorous, but look on the bright side: At least you're not the pig.

For more information….

For more information about the work described in this article, please contact Dr. Manuel Juarez at manuel.juarez@agr.gc.ca.

This research was part a larger national project titled *Use of novel technologies to optimize pig performance, welfare and carcass value*.

You may find additional resources related to the project by consulting our website:

www.swineinnovationporc.ca/technology

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