When Quality Counts, Count on Technology

By Geoff Geddes, for Swine Innovation Porc

As a marketing slogan, "quality is overrated" never caught on, and for good reason. To pork consumers and producers, quality is king. As science applies the latest technology to predict, measure and enhance pork quality, using everything from bruises to pig ears, industry is eying the results with interest.

Pig Ears and Pork Quality

Predicting pork quality via pig ears might sound like fantasy, but the potential is real thanks to the project "Rapid in vivo prediction of composition and quality traits using near-infrared spectroscopy (NIRS)".

Among other applications, NIRS helps predict body fat content in humans based on measurements in the ear. This prompted scientists to test NIRS on a variety of ears from slaughtered pigs. Scanning the ears in different areas, they examined the link between NIRS spectra results and meat quality traits such as lean and fat content, fat depth and fatty acid profile.

Encouragingly, researchers found they could categorize carcasses as "high" or "low" level for each of these traits. Of course, success with any new technology hinges on adapting to challenges, and this project was no exception. A pig's willingness to remain stationery for an ear scan is comparable to a toddler with ADD, so the search is on for a scanning device that could be clamped to the ear and allow for data collection "on the go".

Ear hair and pigmentation can also impede scanning, but these issues are minor hurdles in light of the potential benefits for industry.

New technologies have shown promise in assessing meat quality. Left: Using a spectrophotometer to assess bruising colour. Right: Using NIRS on pig ears. Photos: AAFC

By predicting carcass and quality traits, NIRS can provide valuable data to aid in genetic selection. There are also implications for sorting, in that NIRS allows you to separate animals based on aspects like body composition and fatty acid profile. This should aid in matching specific pigs to specific markets, allowing producers to customize their feeding plans and meet the demands of those markets.

Like any new technology, NIRS is not cheap; then again, neither were big screen televisions when they first emerged, and we all know how that turned out. Like the TVs, NIRS will inevitably drop in price and rise in quality, and that's good news for producers and packers.

Sure, you can't watch the big game with NIRS, but if the options are cheering for your team in HD and boosting your bottom line, the choice is clear.

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Carcass Bruising and Meat Quality

If you thought linking pig ears to pork quality was improbable, how about using pig bruises? It sounds crazy until you break it down, and then it makes perfect sense: Since bruising leads to lower carcass quality and value, uncovering the cause of bruises could protect the pig and producer profits at the same time.

Assessing pork belly quality Source: AAFC

Of course, before they could isolate cause, researchers needed an objective method for assessing the number, type and age of bruises on pork carcasses in the plant. They found it in color measurement via a spectrophotometer, an apparatus for measuring the intensity of light in a part of the spectrum. By identifying bruise age as fresh (less than seven hours) or old (more than 25 hours), scientists could determine if that bruising occurred during transportation to the plant or while still on the farm.

That was significant, as the first step to bruise prevention is figuring out when and how it happened. From there, changes can be made at the point of injury, thereby preserving carcass value and enhancing animal welfare at the same time.

Finding a win-win solution in the pork industry can be a challenge. If this system of

bruise assessment can generate more profit for producers and greater comfort for pigs, by anyone's criteria, that's a winning

Measuring Pork Belly Quality

While a dieter's goal is to "lose that belly", pork bellies are a hot commodity these days, with rising demand fueling higher prices. Unfortunately, the method for measuring pork belly quality is painfully low-tech, involving manual assessment of firmness or softness by plant workers. It's a subjective, time consuming approach that seems out of place in the 21st century, so scientists sought to modernize it.

Using cameras and a short, adjustable conveyor, they ran a number of tests to find the ideal angle for plant conveyor belts. Ironically, they found the solution to this weighty problem in gravity. After modifying current plant equipment to lie flat, they sought the optimal setting for classifying pork rib-in bellies based on objective softness traits.

The result was a system where firm bellies pass over the gap between two conveyors and are sent for further sorting, while soft bellies fall to a third conveyor underneath. This would allow plants to easily separate bellies according to their suitability for bacon production, and to further sort the ones destined for bacon based on the fit with particular markets.

If all goes as planned, the project will eventually spawn an automated commercial system that can evaluate bellies faster, more accurately and with less labor costs than the existing method. Rather than "losing that belly", scientists hope to win over industry to a new approach whose time has come.

Regardless of the approach, the focus on quality in these three projects is a prime example of research aligning with, and responding to, industry priorities. In the ultra competitive pork business, high quality may not be everything, but it sure beats the alternative.

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