

Imaging is Everything in Pork Assessment

By Geoff Geddes, for Swine Innovation Porc

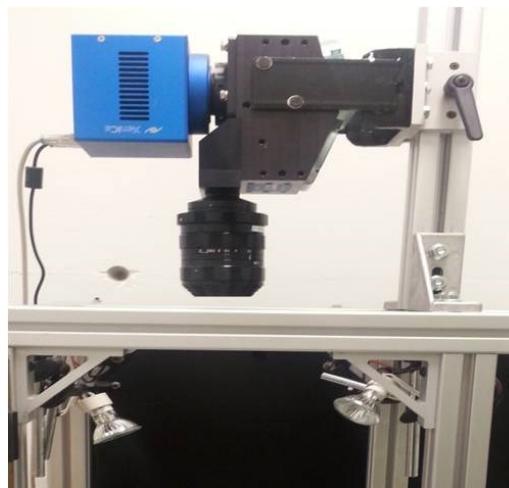
If you've heard a parent rave about their tone-deaf child's "beautiful voice," you know objectivity can be a challenge. But given the importance of objective pork quality assessment for producers and plants, it's a challenge that researchers gladly accepted. And as part of the study on application of rapid methods for non-invasive assessment of pork quality, they not only rose to the occasion, they went above and beyond it.

"There is a need for non-invasive, reliable, objective methods that are able to determine the entire array of quality parameters while preserving the integrity of meat cuts," said Dr. Michael Ngadi, Professor of Food Engineering at McGill University.

Living on the cutting edge

The current industry approach to evaluating sample quality in the plant uses a standard based on color and water holding capacity. Since it's a subjective method, it's also inconsistent, so Dr. Ngadi and his colleagues sought a better way and found it in cutting edge technology called hyperspectral imaging. As the leading research group in Canada and perhaps the world on this system, they saw its potential for the pork industry.

"Hyperspectral imaging is proving very effective for objectively grading pork on different quality attributes based on standards of the National Pork Producers Council (NPPC-USA)."



*Line-scan hyperspectral imaging system.
Photo: Canadian Centre for Swine Improvement*

In stage two of the project, researchers zeroed in on fat measurement.

"Marbling is a big issue when it comes to pork quality. It's part of the NPPC standards, but right now you have to use a chart that you physically compare with the pork to determine the level of marbling. Using hyperspectral imaging, we've been able to predict the marbling score objectively. This could have a big impact on the industry as it allows them to segregate products for different markets and maximize profits; for example, assigning leaner cuts to Canada and more marbled cuts to Japan."

An added benefit of the new technique relates to the fact that the whole idea of marbling has

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changed over the years. When marbling scores were first envisaged, they were meant to track intramuscular fat content, but breeding changes in recent years have altered the correlation between that content and visible marbling.

"Our approach gives industry the option to measure intramuscular fat content or use marbling scores depending on which method they prefer."

The meter is running

Though pleased with the progress to date, Dr. Ngadi is most excited about another tool they're working on called a marbling meter.

"This is a tool that industry can use to assess pork quality noninvasively and with great accuracy. It can be calibrated to track various quality standards."

They currently have a rough prototype developed and intend to do further testing.

"I don't know of any similar technology anywhere in the world, so Canada has a chance to be the first. We envision plants being able to scan a loin on the conveyor and get all the details and quality attributes in real time. That's the direction we're going and I think we're within striking distance."

They also want to apply that scanning element to assess the marbling of loins without cutting them. The current method requires cutting to determine marbling score, thereby degrading the loin and decreasing its value.

"If you could determine marbling not just on the loin but on the carcass itself, and not have to cut the loin, you could still get full value for it, so this could have huge significance for the industry."

Even if you're tone deaf, the potential benefits of this research should be music to your ears. ☺

For more information....

To learn more about the work described in this article, please contact Dr. Michael Ngadi at michael.ngadi@mcgill.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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