Swine Innovation Porc

PORK CLASSIFICATION

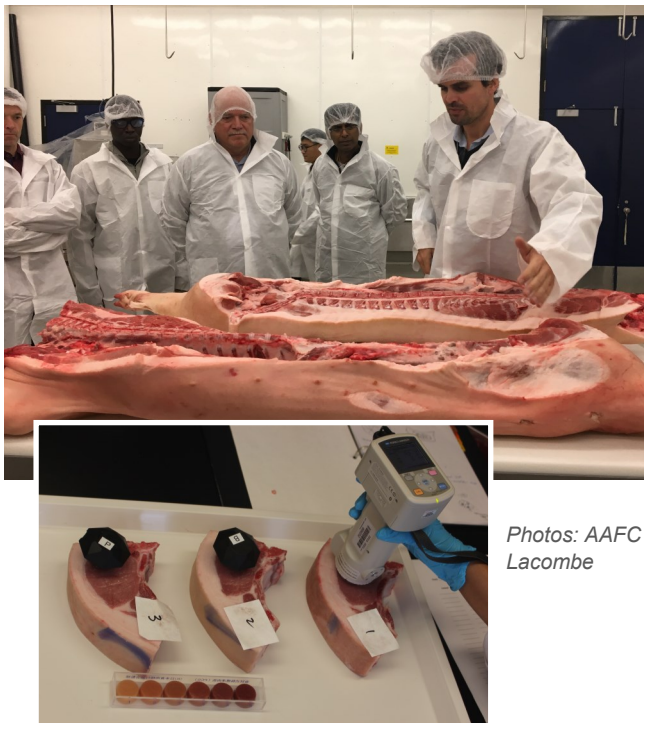
Classifying Canadian pork based on quality attributes

Manuel Juarez, Lacombe Research & Development Centre (AAFC)

Why is this project important?

The pork export landscape continues evolving, with major players trying to access the same import markets. Diversification in export alternatives is important to provide stability to pork packers in a less stable international climate.

At the same time, the domestic market is receiving more attention, with a renewed interest in increasing pork consumption within our borders. Determining pork quality is fundamental for the modern food industry aiming to standardize their products according to specific niche markets, which demands specifications according to measurable parameters. The quality attributes that are important to domestic and international clients differ for each individual primal. Loin colour is expected to fall within a range that guarantees, at the very least, that major defects will not be tolerated.



Photos: AAFC Lacombe

These include PSE pork (pale, soft, exudative pork, characterized by an abnormal colour, consistency, and water holding capacity) and DFD pork (dark, firm, and dry).

Similarly, extremely soft pork needs to be identified at the cutting floor, and separated from the premium lines, to avoid client complaints. Regarding the belly, which is currently the most valuable primal cut in the pork carcass, dimensional factors and, especially, firmness play a major role in client satisfaction. Although less emphasis is usually placed on the quality characteristics of shoulders and hams, colour and firmness issues can also lead to discontent among buyers. Additionally, lean–to-fat ratio can be important when sorting out these primals.

While different technologies are commonly used for grading pork carcasses, classification of individual primals based on quality attributes tends to be

performed manually by plant operators, often using subjective standards and in-house protocols. Some of the technologies available for objective classification are high cost and most packers are unable to justify the return on investment for such devices.

This project was aimed at developing and testing new approaches and low-cost technologies to provide commercial packers with customizable options to enhance individual primal classification based on specific quality attributes.

What did researchers do?

Researchers developed and tested multiple pork classification approaches and low-cost technologies. These included: the use of handheld devices for the evaluation of pork colour; new subjective colour standards (adapted to specific lighting conditions, and offered in multiple formats); commercial and handheld NIR devices for the prediction of iodine value (a measurement used by the meat industry to define the amount of unsaturated fatty acids in fat tissue) in pork fat in relation to belly firmness; mechanical systems for the classification of pork bellies based on firmness; and the use of image analysis for pork sorting under commercial conditions.

These systems have sparked interest from commercial pork packers, who intend to adapt the approaches and technologies for either quality control and R&D activities, or as standard practices for everyday primal sorting in the processing line. Genetic companies with a direct focus on pork quality characteristics are also looking forward to implementing some of these systems for high-throughput data collection. Finally, research providers, such as Canadian universities, are starting to integrate the technologies and protocols for pork primal quality evaluation, especially those addressing quality traits not traditionally included in standard research.

What will be the benefit of this research?

This study built on the concept developed by Canada Pork International (CPI) for a pork primal classification system. Such a system could easily build on the “Verified Canadian Pork™” value proposition, leading to a stronger system aimed at increasing consumer confidence and awareness (domestically and abroad), differentiating our products from competitors, and providing a credible national platform for brand building.

Collaborators

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Project status

Completed in 2023.

Additional resources & information about this project

R&D Featured Articles by Swine Innovation Porc

- Classified Information: The Great Canadian Pork Sort
  February 11, 2021

Farmscape interviews

- New Tools Under Development to Improve Quality Classification of Pork
  June 25, 2019

Additional resources

- Ayers, K. (2019, October). Modernizing Pork's Grading System. *Better Pork.* pp. 6-13. https://www.betterfarming.com/flippingbook/better-pork/2019/october/#6
- Siemens, H. (2019). New Tools Under Development to Improve Quality Classification of Pork. *Prairie Hog Country*. http://www.prairiehogcountry.com/2019/09/06/new-tools-under-development-to-improve-quality-classification-of-pork/

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