Infrared Camera Could Keep Producers in the Black

By Geoff Geddes, for Swine Innovation Porc

In leafing through your high school yearbook, it's clear that the camera loves some of us more than others. While a thermographic camera - a device that forms an image using infrared radiation – may be even less flattering, its potential for collecting valuable data on pigs is drawing praise and interest from the pork industry.

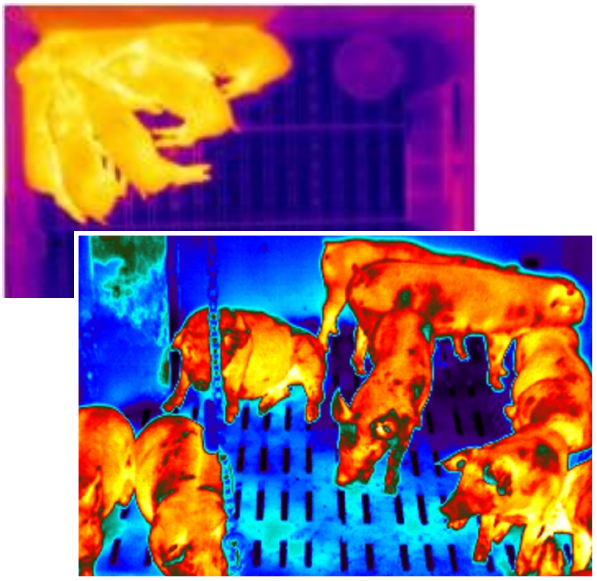
"Our research group led by Dr. Alan Schaefer first used thermography on beef cattle, but I recently started trying it with pigs as it's easier to deal with the technical aspects in a pen than a feedlot," said Dr. Nigel Cook, Livestock Welfare Research Scientist with Alberta Agriculture and Forestry.

The heat is on

It had previously been shown that this technology could help detect disease by looking at how an animal loses heat. Taking the "what if" approach, Dr. Cook went one step further.

"I wondered if, with intensively housed livestock, you would still have to take images of individual animals or if you could capture a group of pigs with a single shot."

If the latter were true, a single camera set up in a barn and trained on a pen wouldn't have to identify each animal to be effective, saving much time and effort on the part of producers. Testing with vaccines showed this was the case, as the maximum temperature recorded by the camera increased during testing, even if only one or two animals in a pen were sick.



Infrared imagery. Photos: Canadian Centre for Swine Improvement.

Not content to focus solely on disease detection with this technology, researchers also introduced the cameras to feeding stations.

Information to chew on

"When animals enter the automatic feeder, it records their weight and the amount of feed consumed. By attaching infrared cameras to that system, we capture each pig's internal temperature and match that reading to their growth and feed consumption."

Matching those numbers is significant in light of the finding that pigs taken off feed for even a short period experience a drop in metabolism and a corresponding dip in radiated temperature. Not surprisingly, those animals with lower

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metabolic rates proved to be the most feed efficient as measured by feed consumption and feed-to-gain ratio. In essence, the thermographic camera helps identify pigs with higher feed efficiency, and the implications for industry can't be overstated.

A growth industry

"From a growth perspective, there are a couple of applications for this technology that can be realized immediately. Genetic companies select animals for feed efficiency through a lengthy process of growing the animals and measuring their growth and feed consumption to determine efficiency. If instead, companies could test for feed efficiency early in life using infrared thermography, they could make the process faster and less expensive."

For producers, the research findings could enable them to custom feed their animals based on levels of feed efficiency. With feed costs consuming a big chunk of producer revenue, saving money by picking the best animals to grow could plump up the bottom line.

Then there are the health benefits, which is what prompted this research in the first place.

"If we can place automated systems in barns that flag when something may be wrong, pen stock persons could immediately examine the affected animal and call in a veterinarian if needed. Through early diagnosis of a disease problem, a farm can improve their ability to treat their pigs effectively and lessen the chances of transmitting that disease to other animals or barns."

Expectations are high for this new technology to identify sick pigs and classify animals based on feed efficiency, and for good reason. Based on results to date, thermographic cameras could make pigs and the pork industry the picture of health.

For more information….

For more information about the work described in this article, please contact Dr. Nigel Cook at nigel.cook@gov.ab.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:

http://www.swineinnovationporc.ca/research-technology.php

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