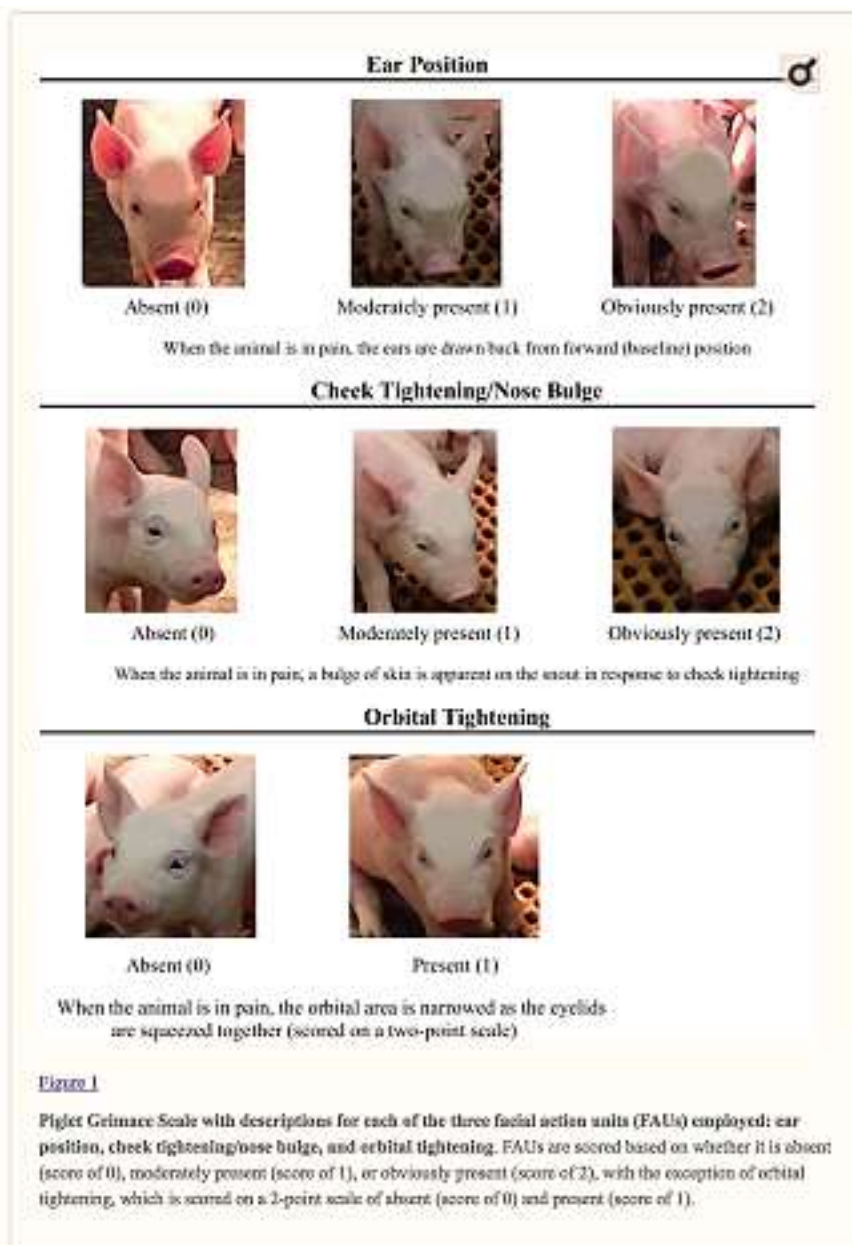


New grimace scale simplifies pain detection in piglets

Livestock Research Innovation Corporation

By LILIAN SCHAEER



A NEWLY DEVELOPED scale to measure facial expressions – specifically grimaces – by piglets can help producers assess whether the animals are feeling pain.

“Pain is an abstract concept especially in animals because you can’t ask them if they’re feeling pain,” explains Abbie Viscardi, now a Research Assistant Professor at Kansas State University but who worked on the project under Prof. Patricia Turner as part of her graduate studies at the University of Guelph.

“Many tools we have now to measure pain take a long time or they’re very invasive and aren’t practical, so we felt we could develop this grimace scale that could be easily used in the barn to quickly recognize pain in pigs,” she added.

The Code of Practice for the Care and Handling of Pigs now mandates the use of pain medication when performing procedures like tail docking and castration on piglets. That makes it important to know the level of pain the animals experience in order to use the appropriate and most effective treatment.

According to Viscardi, behaviour analysis is the gold standard for pain assessment but it is time-consuming and hard to do in commercial



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production settings. Pain signs in pigs include ears pulled back, eyes squeezed together and a bump or bulge on the snout caused by cheek tightening.

Facial expression analysis is widely used to assess pain in animals through the development of species-specific grimace scales. The first scale was developed for mice in 2010; since then, additional scales have been introduced for rats, rabbits, horses, sheep and lambs.

To develop the piglet grimace scale, researchers began by surgically tail docking and castrating piglets and then video recorded their behaviour for eight hours after the procedures so they could ensure the animals’ facial expressions correlated with pain-related behaviour.

Images of piglets facing the camera

were then manually taken from the video footage and evaluated so the scale could be developed to rank expressions from no pain to severe pain.


Over 600 piglet face images and the newly developed scale were then given to observers, who were asked to score the piglets using that scale. Results showed their scores correlated with the piglets’ pain behaviour – for example, pain faces scored higher matched up with higher pain behaviour.

“We have used the scale in four other studies since, including some large scale trials and it’s looking really good in its ability recognize pain,” she said.

Grimaces were found to be more prominent in low body weight piglets, so it could also be a good resource to alert farmers and barn staff to piglets

that aren’t doing well, she added.

“When it comes to pain detection, as long as prompt intervention occurs, it is useful,” she said, adding her ultimate goal would be to automate the scale into an app or video system that can automatically scan pens of animals for facial expressions demonstrating pain. For more information, visit <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5394162/>.

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