Enrichment for sows

By Victoria Kyeiwaa, Prairie Swine Centre, SK

University of Saskatchewan masters student, Victoria Kyeiwaa, travelled halfway around the globe from her home in Ghana to look for ways to improve the management of sows in Canada. Working at the Prairie Swine Centre, her research focuses on enrichment measures for pigs, specifically in the area of sow enrichment.

While many different forms of enrichment materials have been studied, most of the research has been done on piglets and growing pigs. Examples are straw, chains, wood, rope, mushroom compost, wood shavings, garden hose, peat moss and rubber balls. These studies have shown that, when growing pigs are given appropriate enrichments, they can benefit from reduced aggression, fewer behavioural vices (such as tail-biting), reduced fear, and improved growth. While similar benefits can be expected for sows, older animals are different and generally prefer consumable enrichments over simple objects.

The farm-level interest in sow enrichment has been driven by the revised Code of Practice for the Care and Handling of Pigs, which includes a requirement that all pigs should be provided with "multiple forms of enrichment that aim to improve the welfare of the animals". This code requirement and the increasing trend towards group gestation housing have created a need for research in this area.

Kyeiwaa's research is part of a larger Swine Innovation Porc project, led by Dr. Laurie Connor at the University of Manitoba. The research is being carried out at Prairie Swine Center and the University of Manitoba, and looks at different ways of developing effective environmental enrichment for group-housed sows which would be economically viable to the pig industry and could serve to guide producers in decision making.

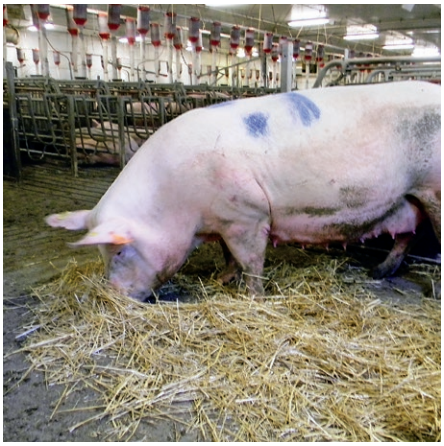
European research has identified straw and other malleable and consumable materials as being optimal for pigs. However, in North America there is a greater reluctance to provide such materials. "Straw has been effective in grower-finisher pigs but there is an increased risk to biosecurity" says Dr. Jennifer Brown, Ethology Research Scientist at Prairie Swine Centre, and Kyeiwaa's supervisor. "In this study, we included straw as a comparison treatment to the other enrichments," explains Brown. Small amounts of high fibre materials (e.g., chopped or pelletized straw) can be provided, in a rack or hopper, for example, and will increase satiety (feeding satisfaction) in sows as well as providing enrichment.

Because pigs are social animals and their social status can influence enrichment use, the effects of social status will also be examined.

"Enrichment can help to reduce aggression and stress and improve physiological function for all ages of animals, so clearly there is a benefit to the industry, and providing enrichment will also help to address consumer concerns about barren conditions in pig housing." adds Brown.

Sows in stalls show stereotypies or abnormal behaviours such

CONTINUED ON PAGE 26



as bar biting, continuous drinking and vacuum/sham chewing. Stereotypies are defined as behaviours with no clear function, and are seen as indicators of frustration, boredom, fear and stress.

Sows in group housing also show some of these abnormal behaviours, especially ear/tail-biting, bar biting, as well as overt aggression, which can increase the chance of abortions. "Provision of environmental enrichment could potentially reduce or even eliminate these behaviours, but our question is, what types of enrichments do sows prefer?" asks Brown.

Four treatments are being provided to sows including; rope, small amounts of straw, wood on chains and a control treatment where there is no provision of enrichment materials. Because pigs are social animals and their social status can influence enrichment use, the effects of social status will also be examined. Social status is determined in a feed competition trial whereby six focal sows – three dominants and three subordinates – are selected for additional data collection. Mostly, in a social environment, subordinate animals are being bullied and driven away from available resources by dominant ones. Dominant and subordinate sows are selected in this study to determine if all sows, irrespective of social status, will benefit from enrichment use.

A common problem with enrichments is that animals lose interest over time. Thus Kyeiwaa will also examine if regular rotation of enrichments can increase their interest and value to sows, compared to constant provision.

Cameras are mounted over the pens and time lapse photos taken on selected days to determine the level of enrichment use, and the activities and postures of sows. Stereotypic behaviours are recorded by live observation of sows, and levels of aggression are determined using skin lesion scores, ranging from 0 (no injury) to 3 (severe injury) on both sides of the body.

Accelerometers are used as automated measuring tools to record the mobility of animals, similar to pedometers used to record fitness activities in people. Accelerometers are being used in this research to compare the activity levels of dominant and subordinate sows. Saliva samples are also taken in early, mid- and end of each trial to determine cortisol levels as a measure of stress.

While the benefits of enrichment are well known, determining exactly what enrichments are suitable at each stage of production, as well as the best methods for presenting them, are still unclear. Kyeiwaa's research will help to fill these gaps related to sows, and will form the basis for practical recommendations to benefit sows and help producers meet the code of practice requirement.

Enrichment is a new area for Canadian pig producers, and time is needed to clarify what is meant by enrichment and to implement these measures. "Once producers get comfortable with the concept of enrichment, I'm sure we will see them taking the lead on this and coming up with some great ideas," Brown says.

This research project will be completed in December 2017, with results available in 2018. This project is funded by Swine Innovation Porc within the Swine Cluster 2: Driving Results Through Innovation research program. Funding is provided by Agriculture and Agri-Food Canada through the AgriInnovation Program, provincial producer organizations and industry partners. ■