

Determining the optimum space allowance for nursery pigs

► Jennifer Brown, Prairie Swine Centre

Project Status: Completed in 2018

This study showed that the minimum space allowed for nursery pigs, as recommended in the *Code of Practice for the Care and Handling of Pigs* (2014), provides a reasonable balance between production costs and pig welfare.

Researchers showed that decreasing the space allowance for nursery pigs from the current Code requirement of $k = 0.0335$ by 20% ($k = 0.0265$), which is the maximum short-term decrease allowed, resulted in reductions in average daily gains on commercial farms. In addition, it was found that lower space allowances impacted animal behaviour in studies carried out on both commercial and research farms.

Why was this study done?

Space allowance has a significant economic impact on productivity and the total pig throughput possible on a farm, as well as on the behaviour and welfare of pigs. Therefore, researchers wanted to examine various space allowances in order to find an optimal balance between production costs and pig welfare.

What was done and what was the outcome?

This study examined six different space allowances for nursery pigs ranging from k values of 0.0230 to 0.0390 (equivalent to approximately 2.5 to 3.7 ft²/pig at 26 kg body weight) and was carried out in two phases.

In Phase I, which was carried out at a research barn, there was no measurable impact of space allowance on average daily gain (ADG). However, in Phase II, which was performed on two commercial barn sites, there was a clear effect of space allowance on ADG, where space allowances below $k = 0.0335$ resulted in reduced growth.

Both phases of the study showed similar changes in pig behaviours. At lower space allowances, sitting behaviour (associated with poor welfare) was increased, while lateral lying (associated with comfort) was decreased. In addition, as piglets aged there was a significant



Piglet pen during the nursery density trial.
Source: Prairie Swine Centre

reduction in overlying behaviour, and an increase in lateral lying. In nursery weeks 3 and 5, the fact that there was more overlying behaviour at lower space allowances compared to higher space allowances suggests that this was a space-saving behaviour used to cope with limited space. Ear and tail lesions also increased in week 5, indicating that the impact of space restriction is greater in the late nursery period than at weaning.

Collaborators

Denise Beaulieu	University of Saskatchewan
Yolande Seddon	
Dan Bussi�eres	Groupe C�eres Inc.
Sandra Edwards	Newcastle University, UK

Additional project information

Click on the links below for further information on this project

Links were last updated in 2022

R&D Featured Articles—by Geoff Geddes for Swine Innovation Porc

Articles may be found at: <http://www.swineinnovationporc.ca/resources-e-newsletters.php>

- [Pigs in Space](#)
- July 2018 (Vol. 3, No. 8.)

Farmscape Interviews:

- [Sow Foot Health Improves with Use of Rubberized Concrete Floor Coatings](#)
- November 23, 2018
- [Rubberised Concrete Floor Coverings Offer Potential to Improve Sow Foot Health](#)
- October 30, 2018
- [Space Allowance Influences Nursery Pig Productivity and Behaviour](#)
- September 26, 2018
- [Research Suggests Space Allowance Requirements Could be Reduced for Nursery Pigs](#)
- September 30, 2016
- [Research Provides Insight into Effects of Stocking Density on Nursery Pig Performance](#)
- September 22, 2016
- [Researchers Look to Identify Optimal Space Allowance to Maximize Productivity of Nursery Pigs](#)
- November 21, 2014

Peer-reviewed articles and abstracts:

- Roy, C., Kaur, R., Seddon, Y., Brussieres, D., Edwards, S., Brown, J. (2017) [Determining the optimal space allowance for nursery pigs](#). Presented poster (print version). *2017 Pig Welfare Symposium, Des Moines, Iowa, November 7-9, 2017.*

Additional Resources:

2018

- Roy, C., Schultz, K. (2018) [Determining the Optimum Stocking Density in Nursery Pigs](#). Article. *National Hog Farmer Magazine*
Retrieved from: <https://www.nationalhogfarmer.com/search/node>



2017

- Brown, J. et al. (2017) [Determining the Optimum Stocking Density in Nursery Pigs](#). Article. *Prairie Swine Centre Annual Report 2016-2017*: p. 28. Electronic version. Retrieved from: <https://www.prairieswine.com/portfolio-item/annual-report/>
- Roy, C. (2017) [Optimum space allowances for nursery pigs](#). Article (paper version). *Canadian Hog journal October 2017*.
- Kaur, R., Seddon, Y., Bussieres, D., Edwards, S., Brown, J. (2017) [Effects of nursery space allowance on the behavior and salivary cortisol levels of weaned pigs](#). Oral session from Proceedings. *Proceedings of the 13th ISAE North-American Regional Meeting May 12-13, 2017*: p. 19
Retrieved from: https://www.applied-ethology.org/USA_resources.html
- Kaur, R., Seddon, Y., Edwards, S., Brown, J. (2017) [Evaluation of the optimal space allowance for nursery pigs](#). Proceedings (print version). *Proceedings of the 13th ISAE North-American Regional Meeting May 12-13, 2017*
- Kaur, R. et al. (2017) [Effects of nursery space allowance on the behaviour of weaned pigs](#). Abstract from proceedings. *Advances in Pork Production (Banff Pork Seminar), Vol 28, Abstract 2*.
Retrieved from: <https://www.banffpork.ca/proceedings/search>

Financial support for this project

This project is part of the Swine Cluster 2 (2013-2018) research program, made possible through financial support from Agriculture and Agri-Food Canada, eight provincial pork producer organizations and over 30 industry partners. [Click here to learn more about the financial partners for Swine Cluster 2](#)

