

# **2023 Banff Pork Seminar**

Advances in Pork Production Volume 34

Banff, Canada  
10 – 12 January 2023

## **Editors:**

**Ashley Steeple**  
**Ben Willing**

ISBN: 978-1-7138-8885-7

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2023) by University of Alberta  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact University of Alberta  
at the address below.

University of Alberta  
Department of Agricultural, Food and Nutritional Science  
4-10 Agriculture/Forestry Centre, University of Alberta  
Edmonton, AB, Canada T6G 2P5

Phone: (780) 492-3651  
Email: [pork@ualberta.ca](mailto:pork@ualberta.ca)

[www.banffpork.ca](http://www.banffpork.ca)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of Contents

4	❖	Preface
5	❖	2023 BPS Advisory Committee
6	❖	List of Sponsors
9	❖	Index of Advertisers
11	❖	Program of the 2023 Banff Pork Seminar
15	❖	Table of Contents

## Plenary Sessions

23	❖	<b>Global Pork Markets: Update &amp; Outlook</b> <i>Brett Stuart</i>
33	❖	<b>Maple Leaf Foods Sustainability Program</b> <i>Mauricio Alanis</i>

## Breakout Sessions

### 1. Swine Health

37	❖	<b>Circovirus: A Practitioner's Perspective of Present and Future</b> <i>Ryan Tenbergen</i>
44	❖	<b>Streptococcus suis and Escherichia coli in the Nursery: A Health by Nutrition Approach</b> <i>Brooke Smith</i>

### 2. Sow Management & Reproduction

56	❖	<b>Feeding the Sow &amp; Managing the Farrowing Environment to Improve Nursery Pig Performance</b> <i>Casey Neill</i>
----	---	--

- 61 ❖ **What to Expect from an AI Dose & Best Practices On-Farm**  
*Kyla Ripley*

### 3. Technology

- 73 ❖ **Digital Farm & Technology Insight**  
*David Speller*
- 82 ❖ **Evaluation and Application of Technology in Swine Production Systems**  
*David Rosero*

### 4. Innovators

- 198 ❖ ***Kazachstania slooffiae* alters immune system function and promotes an anerobic environment**  
*Tausha L Prisnee, Rajibur Rahman, Dakota Cipriano, Julia Neyedly, Janelle M Fouhse and Benjamin P Willing*
- 200 ❖ **Examining the impact of dietary nitrogen content and source on growth performance in growing pigs**  
*Miranda J. Buchinski, Carley M. Camire, Olufemi O. Babatunde, Anna K. Shoveller and Daniel A. Columbus*
- 206 ❖ **Effects of feeding barley-based diets differing in starch & fibre and energy value on growth performance & organ weight in weaned pigs**  
*J. Sanchez-Zannatta, L.F. Wang, E. Beltranena, A.D. Beattie, R.N. Newkirk and R.T. Zijlstra*
- 218 ❖ **Effects of sow grouping practices on mixing aggression and production**  
*Jessica C. Vehof, Karen Mancera, Yolande M. Seddon and Jennifer A. Brown*

## 5. Piglet Management

- 89 ❖ **Colostrum Management & Piglet Survival**  
*Kara Stewart*
- 97 ❖ **Assessing Economic Opportunity of Improving Mortality Rate in Breed-to-Wean Swine Production**  
*Lee Schulz*
- 114 ❖ **Farrowing House Management Effect on Total System Productivity**  
*John Sonderman*

## 6. Grow-Finish Management

- 126 ❖ **Strategies to Maximize Profit in Late Finishing**  
*Matt Ritter*
- 137 ❖ **Wean-Finish Efficiencies: The Often-Overlooked Areas**  
*Nat Stas*

## 7. Feed & Nutrition

- 147 ❖ **Opportunities for Improving Feed Quality and Consistency While Reducing Feed Costs for On-Farm Feed Mills**  
*Malachy Young*
- 158 ❖ **Sow Nutrition and Management with its Impact on Sow Mortality**  
*Laura Greiner*

## 8. Building Engineering

- 165 ❖ **Swine Heaven in 2050: Building the Future of Pig Housing**  
*Sebastien Fournel*

176 ❖ **Manure Management & Treatment: State of Knowledge**  
*Stephane Godbout*

186 **Abstracts: Best of Current Research**

## ABSTRACTS: Best of Current Research

### Microbiology & Immunology

- 190 ❖ Exposure to Salmonella Typhimurium induces expression of B-cell proliferation and activation markers  
*Jéssica A. Barbosa, Arthur N. da Silva and Matheus de O. Costa*
- 191 ❖ Live tracking bacteria as they infect pigs: a method for understanding Streptococcus equi sbsp. zooepidemicus infection  
*Barbara Cortez, Lucie Amblard and Matheus Costa.*
- 192 ❖ Performance of Mhyosphere® PCV ID vaccination on Canadian farm  
*Bussieres, D; Degroot, M; Jordà, R; Nodar, L; Bernal, N; Ballarà, I; Panaccio, Y; Mcknight, J and Ibanez, G*
- 193 ❖ The sow milk microbiome  
*Devin B. Holman, Katherine E. Gzyl, Arun Kommadath*
- 194 ❖ PRRS and Swine Influenza viruses detection in aerosol (dust) in commercial farms  
*Christian Klopfenstein, Claudia Coulombe, Marie-Claude Poulin Chantale Provost and Carl A. Gagnon*
- 195 ❖ Improving diagnostic methods for Streptococcus equi subsp. zooepidemicus in swine  
*Sulove Koirala and Matheus Oliveira Costa*
- 196 ❖ Piglet microbiomes show high barn to barn variation in Western Canada  
*B. McCuaig, E. L. McCarthy, S. L. Saundh, R. de Almeida Mesquita, T. Prisnee, J. Harding, B. Willing, M. Links and A. Van Kessel*
- 197 ❖ Evaluation of oral inoculation methods for swine dysentery  
*Parra-Aguirre, J.C., Nosach, R., Fernando, C., Hill, J.E. and Harding, J.C.S.*
- 198 ❖ Kazachstania slooffiae alters immune system function and promotes an anerobic environment  
*Tausha L Prisnee, Rajibur Rahman, Dakota Cipriano, Julia Neyedly, Janelle M Fouhse and Benjamin P Willing*
- 199 ❖ Viability of Streptococcus equi subsp. zooepidemicus on environmental surfaces  
*Ramos, C.P.; Koraila, S. and Costa, M.O.*

## Nutrition & Management

- 200 ❖ Examining the impact of dietary nitrogen content and source on growth performance in growing pigs  
*Miranda J. Buchinski, Carley M. Camire, Olufemi O. Babatunde, Anna K. Shoveller and Daniel A. Columbus*
- 201 ❖ The impact of dietary nitrogen content and source on essential amino acid utilization in growing pigs  
*Miranda J. Buchinski, Carley M. Camire, Josiane C. Panisson, Anna K. Shoveller and Daniel A. Columbus*
- 202 ❖ Effect of diets with supplemental lysine and essential amino acid-nitrogen to total nitrogen ratios on growth performance in pigs  
*Carley M. Camire, Lucas A. Rodrigues, Josiane C. Panisson, Anna K. Shoveller and Daniel A. Columbus*
- 203 ❖ Simulating Ontario swine production with discrete event dynamic modelling  
*Maggie Henry; Wade McDonald, Amy L Greer, Robert M Friendship and Zvonimir Poljak*
- 204 ❖ Increased serum levels of IL-8 and IL-12 following an out-of-feed event in finishing pigs fed air-classified pea starch diets  
*Agbee L. Kpogo, Josiane C. Panisson, Megan Dubois, Matthew Loewen, Denise Beaulieu and Rex Newkirk*
- 205 ❖ Selection for protein efficiency in pigs  
*Rob Bergsma, Laura Beens, Gustavo Mejicanos, Ethendhar Rajendiran, Huaigang Lei, Egbert Knol, Chengbo Yang, Martin Nyachoti and Argenis Rodas-Gonzalez*
- 206 ❖ Effects of feeding barley-based diets differing in fermentable starch and fibre and energy value on growth performance & organ weight in weaned pigs  
*J. Sanchez-Zannatta, L.F. Wang, E. Beltranena, A.D. Beattie R.N. Newkirk and R.T. Zijlstra*
- 207 ❖ The impact of a calcium deficiency and phytase addition on bone mineralisation and calcium and phosphorus metabolism in piglets  
*Béatrice Sauvé, Frédéric Guay and Marie-Pierre Létourneau-Montminy*



- 208 ❖ Feeding a multi-enzyme blend to increase the nutrient digestibility of wheat-canola expeller diets fed to ileal-cannulated weaned pigs  
*A. J. Soderstrom, L. F. Wang, R. Patterson, E. Beltranena and R. T. Zijlstra*
- 209 ❖ Extrusion and enzyme supplementation enhance ileal and total tract digestibility  
*W.P.G. Van Straten, L.F. Wang, A.K. Shoveller, E. Beltranena, T. Vasanthan and R.T. Zijlstra*
- 210 ❖ Feeding barley grain to weaned pigs: effect of hull processing and endosperm fermentability on growth performance  
*Lingjun Zhu, Lifang Wang, Rex N. Newkirk, Aaron D. Beattie, Eduardo Beltranena and Ruurd T. Zijlstra*
- 211 ❖ Feeding naked oats to replace wheat grain on weaned pig growth performance  
*Lingjun Zhu, Sonja Bialobzyski, Lifang Wang, Ruurd T. Zijlstra and Eduardo Beltranena*

### **Behaviour & Welfare**

- 212 ❖ Effects of sow grouping practices on reproductive performance and piglet development in relation to prenatal stress  
*Karen F. Mancera, Jessica Vehof, Yolande M. Seddon and Jennifer A. Brown*
- 213 ❖ Eyes on the pig: Assessing welfare from a different angle - A Swine Welfare Chair research update  
*Giuliana G. Miguel-Pacheco, Yuanyue Wang and Yolande M. Seddon*
- 214 ❖ Hair and salivary cortisol and dehydroepiandrosterone (DHEA) levels as biomarkers of welfare in swine  
*Pollock, D.S., Janz, D.M. and Seddon, Y.M.*
- 215 ❖ An 8-year trend in claw lesions in commercial herds associated with sow herd size and parity order  
*Ton Kramer, Alan Klein, Alyssa Cornelison, Wesley Schweer, Mike Socha, Geraldo C. Alberton and Lucas Rodrigues*
- 216 ❖ Does pre-weaning socialization and/or object enrichment improve piglet performance, behaviour, and welfare?  
*A. Scott, A. Le Heiget, R. Stefanson, J. Ahloy-Dallaire, C. Yang and M. King*

- 217 ❖ Promotion of positive animal welfare through play and its physiological and psychological effects on pigs  
*Karolína Steinerová, Jennifer A. Brown, Sarah E. Parker and Yolande M. Seddon*
- 218 ❖ Effects of sow grouping practices on mixing aggression and production  
*Jessica C. Vehof, Karen Mancera, Yolande M. Seddon and Jennifer A. Brown*

### **Breeding & Reproduction**

- 219 ❖ Uterine horn resection to facilitate non-surgical embryo collection in pigs  
*Karen L Visscher, Louisa Zak, Richard R.E. Uwiera and Michael K Dyck*