

Canadian Hog JOURNAL

Canada's national
hog magazine

Banff Pork Seminar tests assumptions, offers insights

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profitability perspectives**

**Rethinking pork for a
changing world**

**Carbon reduction helps
pigs and planet**



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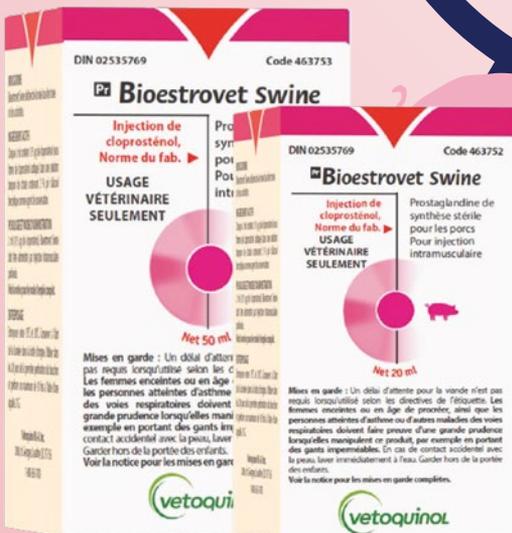
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Message from the editor

The Winter 2024 edition of the Canadian Hog Journal is here!

You may have noticed this edition has been published one month later than normal, as the Canadian Hog Journal moves to a four-edition annual cycle from five editions, previously. Our Spring 2024 edition will be published in May, as usual.

Our wide-reaching coverage of the Banff Pork Seminar, along with highlights from the latest Porc Show and Saskatchewan Pork Industry Symposium, are all found in this edition, and much more.

A project covering enrichment options for weaners, from the University of Manitoba, won first place among student scientists at Banff, which is found here, along with coverage of Prairie Swine Centre's swine welfare research forum, which was held just before the seminar.

Sylvain Charlebois, 'The Food Professor,' is widely sought after by national news media to share his perspective on agri-food policy and its many sensitive issues. With his finger on the pulse of Canadian consumers, Charlebois offered his perspective on what he believes lies ahead for pork. His plenary session speech was one of the most highly anticipated this year in Banff.

Representatives from across the Alberta pork value chain descended on Jasper this past fall to mentor and judge international business students. Twelve international student teams had just 30 hours to develop strategies to address pork industry profitability, which were then presented to an expert panel. Despite the short timeframe and lack of specific knowledge about the industry, the students pinpointed some new ways of thinking about old problems.

Research in this edition features a project directed by Swine Innovation



Porc (SIP), related to sow group mixing, along with two topic areas from industry partners: PrevTech addresses stray voltage in barns, and Trouw Nutrition reviews the advantages of measuring your farm's carbon footprint.

The Canadian Hog Journal works collaboratively with producers and their partners to be more than just a source of information, but an advocate for collective success and a showcase for our incredible industry and its people. And we need your help: send news releases, ideas, feedback and suggestions to 'andrew.heck@albertapork.com' or tag the Canadian Hog Journal (@HogJournal) in your conversations on Facebook and X.

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sign and print costs associated with the magazine, directly supporting our readers – especially producers – who routinely turn to the Canadian Hog Journal for the exploration of important issues, production insights and personal enjoyment. Your product and service sales, or event attendance, can benefit from this exposure among our more than 3,500 print subscribers, who receive the magazine free-of-charge, along with many other readers who visit our website, 'canadianhogjournal.com,' and social media. Email 'andrew.heck@albertapork.com' for details. ■

Andrew Heck

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Banff Pork Seminar tests assumptions, offers insights

Andrew Heck



Conversations were plenty among this year's Banff Pork Seminar guests, as the event hosted its most guests since 2018.

The 52nd annual Banff Pork Seminar took place at the Banff Springs Hotel from Jan. 9 to 11, featuring a wide range of plenary session speakers, breakout session presenters, award winners, research presentations, networking and much more.

“The advisory committee has worked hard to bring in speakers to cover things like the economic picture, sustainability, new technology and more,” said Steve Davies, Senior Manager, Hog Production, Maple Leaf Agri-Farms & Chair, Banff Pork Seminar Committee. “We have speakers from all over the world to cover day-to-day farm operations, to help those who want to improve.”

More than 700 guests were flooded with informative and entertaining talks on topics that spanned the pork value chain, allowing them to consider their own operations and where improvements can be found.

Markets are bleak, but future looks better

Joe Kerns, CEO, Partners of Production Agriculture opened the seminar with an exploration of commodity market outlooks for the coming year. Based on margins for U.S. farrow-to-finish operations, late 2023 and early 2024 could be considered the least-profitable for producers in the industry's history.

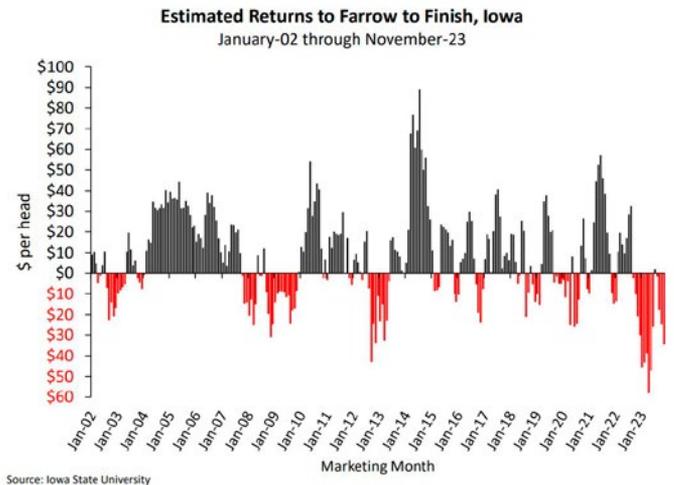
While COVID-19 ultimately caused a spike in U.S. domestic pork demand, due to restaurant closures and improved grocery sales, that impact has fallen off, levelling out demand last year and likely going forward. This, along with the high cost of production but increased productivity, has hurt profitability. With inflation not easing back to pre-COVID levels very quickly, this has had a significant impact across the board.

Lack of available labour remains a challenge, but the cost of labour in all industries might be an even larger problem.

However, in the coming year, Kerns believes a lot of opportunity exists, and he cautions producers against forward contracting too early.

“I could see the second half of 2024 having sharply higher prices. I'm incredibly optimistic,” said Kerns.

In virtually every pork-exporting country in the European Union (E.U.), year-over-year production continues its downward trend, making room for other market players, including Canada and the U.S. On the farm side, Porcine Reproductive and Respiratory Syndrome (PRRS) cases in the U.S. in 2023 were at their lowest numbers in more than a decade, along with the average pigs saved per litter.



While the past year was financially difficult for many producers, especially in the U.S., Joe Kerns thinks there's reason to be optimistic in the coming months.

These positives, however, are tempered by a less lucrative Chinese market, where pork prices have fallen rapidly in the past year on account of a large domestic supply. Whereas foreign interest in China peaked during the initial stages of the country's African Swine Fever (ASF) outbreak, through 2018 and 2019, the Chinese government appears to be working to strengthen economic ties with South American partners.

In Brazil and Argentina, corn and soybean production are expected to be at a record high in the coming year, due to El Niño's positive impact on growing conditions and better global market potential. Brazil has effectively doubled corn production over the past 12 years, and its soybean production continues to climb. An increasing proportion of food-

and feed-grade Brazilian corn and soy is being bought by China.

“Last year will go down as a watershed moment where we [U.S.] forfeited our soybean export dominance to Brazil,” said Kerns. “They are the force to be reckoned with.”

Meanwhile, in the U.S., corn and soybeans for sustainable fuels are being pursued aggressively, cutting into supply that might otherwise enter the livestock feed market, pushing prices upward. The U.S. government is incentivizing these crops by providing a credit for farmers to sell to sustainable fuel processors.

“I think there are some unintended consequences that will be coming into play,” said Kerns.

Conestoga does things differently



Arnold Drung's decades-long view of the pork industry brought a sense of calm to the audience, considering industry setbacks, which are nothing new.

Arnold Drung, President, Conestoga Meats presented his perspective on the industry as an integrated production-processing business.

As a processor, Conestoga traces its roots to the opening of its hog slaughter facility in Breslau, Ontario in 1982, along with the founding of Progressive Pork Producers in 1994: a collective formed between 120 farms in Ontario, during a time when U.S. tariffs on Canadian pork were a considerable threat to financial viability. In 2001, Progressive Pork Producers purchased Conestoga, and the two entities effectively became one.

Prior to joining Conestoga, Drung's experiences working with Maple Leaf Foods in the 1990s share some parallels with the situation in the industry today, where the list of problems perpetually seems longer than the list of solutions.

CONTINUED ON PAGE 8

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Project Type:	Volume Sold (MtCO ₂ e):	Average Price:	Price Range:
Wind	12.8	\$1.9	\$0.3 - \$18
REDD+	11	\$3.3	\$0.8 - \$20+
Landfill methane	7.9	\$2	\$0.2 - \$19
Tree planting	3	\$7.5	\$2.2 - \$20+
Clean cookstoves	3	\$4.9	\$2 - \$20+
Run-of-river hydro	1.5	\$1.4	\$0.2 - \$8
Water/purification	1.2	\$3.8	\$1.7 - \$9
Improved forest management	0.8	\$9.6	\$2 - \$17.5
Biomass/biochar	0.7	\$3	\$0.9 - \$20+
Energy efficiency - industrial-focused	0.7	\$4.1	\$0.1 - \$20
Biogas	0.6	\$5.9	\$1 - \$20+
Energy efficiency - community-focused	0.6	\$9.4	\$3.3 - \$20+
Transportation	0.5	\$2.9	\$2.2 - \$6.8
Fuel switching	0.5	\$11.4	\$3.5 - \$20+
Solar	0.3	\$4.1	\$1 - \$9.8
Livestock methane	0.2	\$7	\$4 - \$20+
Geothermal	0.1	\$4	\$2.5 - \$8
Agro-forestry	0.1	\$9.9	\$9 - \$11



Carbon credit values vary by type, as shown on this pricing chart from July 2023. For agriculture, opportunities like capturing methane from manure are promising for pork production.

“We ran into a train wreck in the hog industry [in 1998],” said Drung. “It was a very difficult time, with hog prices hitting record lows. That led to interesting changes, like increased consolidation.”

Worker strikes at Maple Leaf’s slaughter facility in Burlington, Ontario, along with the opening of the slaughter facility in Brandon, Manitoba, were challenges navigated by Drung that have contributed to his resiliency and poise in the face of struggle.

“It’s a great business, but it’s not for the faint of heart,” said Drung. “A key differentiator for our business has been our unique pricing model. What drives the pricing in our system is what consumers are willing to pay for pork.”

Massive currency swings, disease outbreaks and geopolitical impacts were cited by Drung as major factors that have affected Conestoga over the past 25 years.

“If you can’t compete at par, you can’t compete at all,” said Drung.

Conestoga approaches its pricing in a way that keeps the company competitive. Like all major Canadian processors, export development remains a focus for the company, though inroads have been made more recently with domestic retailers.

“Different people want different things,” said Drung. “That’s good because certain jurisdictions like different parts of the

animal. That’s why we still consider the Chinese market important.”

In places like China, and in other parts of the pork-loving world, Drung suggests that economic prosperity provides hope for the future of exports.

“When people’s incomes grow, one of the things they do is spend more money on better food, including protein, like meat,” said Drung. “If you look at global incomes, they’re rising.”

Touching on the environmental sustainability of the industry, Drung sees potential for greater public awareness of the gains made so far.

“We have to keep reminding people how much we’ve already done in the past 50 years,” said Drung. “We’ve produced a lot more with a lot less, and we’re continuing to do that. People tend to forget.”

Carbon markets make sense but need work

While the agriculture industry has been reluctant to fully buy in to the principle of carbon reduction, Marty Seymour, CEO, Carbon RX suggested the sentiment is misdirected.

“Carbon, to me, is a little bit of a lightning rod,” said Seymour. “It’s an anti-Trudeau play. We didn’t like the messenger, so we didn’t listen to the message.”

Seymour's experience working in the livestock feed industry in the 2000s saw the rise of concerns over antimicrobial use (AMU). At the time, reducing AMU seemed lofty and impractical, but with enough time and pressure, the industry is adapting.

"We could not imagine raising pigs without antibiotics in feed. Fast-forward 20 years, and we're doing it," said Seymour.

While the topic of carbon reduction is certainly not new, in terms of widespread adoption and implementation, Seymour thinks the best time to take the plunge is now. For agriculture businesses, it requires only an open mind and an understanding that society is unlikely to back off the idea.

"If you're not yet at the table in this conversation, you're not late," said Seymour. "There's still time on carbon, but it's happening fast."

Assessing greenhouse gas intensity, methane is considered 28 times more potent than carbon dioxide, while nitrous oxide is more than 250 times more potent. For pork, that represents opportunity when it comes to manure management. Manure injection sequesters methane and reduces reliance on fertilizers containing nitrous oxide. While carbon dioxide is often the focus in carbon markets, methane and nitrous oxide are avenues that are underexplored.

Carbon markets have two types: compliance markets, like taxation, and voluntary markets, which global businesses are approaching as part of their sustainability strategies.

"This is like the Kijiji of carbon," said Seymour.

But there's a problem: while compliance markets are essentially unavoidable – a form of negative reinforcement to discourage emissions – they're not integrated with voluntary markets. In many ways, this serves to lessen the attractiveness of voluntary markets. While many companies are looking to cash in on climate incentives, Seymour warns against this narrow thinking. The co-benefits of carbon reduction and meeting sustainability goals hold value in today's commercial landscape.

"Agriculture needs to learn what ESG means [environmental, social and corporate governance]," said Seymour. "What's changing are the financial terms related to ESG. The financial nature of carbon markets makes them a sticky business."

When it comes to net-zero commitments, as they relate to improving public trust for the pork sector, Seymour expressed skepticism.

"I don't think this will actually drive consumer behaviour. It's more complicated than that," said Seymour. "But the risk of not being in this space still isn't worth it. If you don't know what's for dinner, you're what's for dinner."

Heat stress concerns on the rise



Bruno Silva believes significant challenges lie ahead for the pork industry, in light of global warming.

Bruno Silva, Professor, Swine Nutrition and Production and Environmental Adaptation, Federal University of Minas Gerais (Brazil), thinks that global warming naysayers in the pork industry need to think harder about how to brace for a hotter planet.

"In the coming 50 to 60 years, there will be a huge impact in the northern hemisphere. Winters will get shorter, and summers will get longer," said Silva. "It's clear that these changes will impact our society, including economically."

Currently, summers in Europe and Asia average about 25 degrees-Celsius for more than half of the time. This is the threshold for heat stress on sows and finishing pigs. In the U.S. livestock industry, losses to heat stress total between \$1.9 billion and \$2.7 billion annually.

"When we look at heat stress, it's a cascade of effects," said Silva.

Silva reminded producers that pigs cannot sufficiently regulate their own body heat. When pigs are too hot for too long, they experience hormonal changes. As pigs begin rapidly panting to cool themselves off, intestinal hypoxia can occur, leading to reduced amino acid digestion and inefficient growth.

Heat stress also increases sow infertility and abortions, along with worsening maternal microbial transmission to fetuses, which compromises born piglets' immune responses. Under heat stress, microbiota modulation is key to managing sows' glycemic response. Sows fed high-starch diets experience the effects of hypoglycemia – or low blood sugar – more intensely than those fed lower-starch diets when it's hot.

CONTINUED ON PAGE 10

“This is the McDonald’s effect. You order the Big Mac, the milkshake, the fries – it’s all starch, and then you’re hungry again four hours later,” said Silva.

Regardless of season, Silva suggested 80 per cent of total feed intake of lactating sows happens between midnight and 7 a.m.; however, many farms do not program their feeders for the sows’ benefit, according to this range of time, but for their own ease of management, which is less effective.

Choosing palatable feed flavours can also increase feed intake, which prevents body weight loss and stimulates milk production, partly countering the effects of heat stress. Likewise, feed formulation can play a role. Feeding less crude protein and more supplemented amino acids keeps sows cooler as they digest feed.

Prop 12 dos and don’ts



While opinions vary on Prop 12, for those trying to operate within its parameters, it helps to have some advice.

PJ Corns, Director, Sow Production, JBS Live Pork provided lessons learned in the wake of California Proposition 12: the new sow-spacing regulations that have caused some discomfort in the U.S. pork industry, as producers are left to trial-and-error experimentation, in many cases, to figure out what works and what doesn’t.

“One thing we learned in Prop 12, if you put a thin animal in the barn, she’s going to have a tough time,” said Corns.

Unfortunately for JBS, as Prop 12 compliance reared its head, the company and other producers facing the same struggles have not been assisted very proactively by the California Department of Food and Agriculture, including vague direction on exactly how pens would be measured.

When auditors visited JBS’ barns, the new set-up was already mired with difficulty, as auditors took measurements smaller than what JBS had planned for. The result was a half-square-inch less per sow, which caused headaches and necessitated further barn renovations. This prompted JBS and some of its major competitors to form a working group,

to share information and resolve any common problems experienced by all.

“We had to act fast,” said Corns. “Every farm and every system we’ve done for Prop 12, we’ve gotten better.”

Corns suggested proper gilt selection, an expectation of increased labour and a change of mindset are the path to success. Sorting sows according to body condition, and then assigning pens on those factors, has helped manage the process. Not only space, but length of time in the pen, is covered under Prop 12. JBS diligently records the time sows are in pens, as an easy way to communicate compliance to auditors.

“I thought about all kinds of digital options, but nothing beats good, old pen and paper,” said Corns.

Corns also reflected on the impact of social hierarchy within the sow groups, which is even more critical to understand with loose housing. Identifying the ‘bullies’ and the ‘bullied,’ and separating them, works better for all.

On the whole, compared to pre-Prop 12 practices, Corns indicated JBS has experienced an increase in sow death losses due to injury but decreases across most other categories, especially prolapses and sudden deaths.

When to wean when zinc oxide is out

Mike Tokach, Professor, Kansas State University looked at nutrition and management of weaned pigs fed low-zinc diets. Zinc oxide supplements are commonly used to prevent diarrhea, but their usage globally is under growing scrutiny for their negative impacts on antimicrobial resistance and the environment.

“We know it’s being restricted in places like the E.U., and we want to prepare for a time when that could happen here [in North America],” said Tokach.

Producers around the world are now being tasked with using zinc oxide at lower levels – or not at all – while being mindful of how to overcome the loss of its benefits, using strategies related to genetics, management and diets.

Tokach suggested that lower-zinc-oxide diets need palatable ingredients that stimulate feed intake, have reduced but highly digestible crude protein and coarser-ground grains. Acid-binding capacity also matters. In the gut, products containing lactose increase calcium, which has a high acid-binding capacity. Lower-calcium diets for first two diets after weaning are recommended to help balance it out.

“In places like Denmark and the Netherlands, where zinc oxide is removed, producers are weaning at 28 days,” said Tokach.

From one genetic background to another, recommended weaning age can differ; however, early-weaned pigs have more permeability in the gut, which reduces immune re-



As public opposition to the use of zinc oxide continues to threaten its status, Mike Tokach offered some suggestions for how to maintain performance while using less of it.

response to *E. coli*. In general, non-Duroc genetics and later weaning ages provide the best scenario for preventing *E. coli*, as Duroc sires tend to have less resistance to the bacteria.

Water hardness also impacts *E. coli* prevalence. Water found in most parts of the Canadian prairies and U.S. Midwest is considered ‘extremely hard.’ These are areas of significant pig production where zinc oxide supplements might otherwise come in handy.

Tokach also pointed out that Rotavirus precedes *E. coli* in many cases, as an early warning sign. Decreasing the environmental load in the barn is important for controlling the build-up of pathogens, including Rotavirus. Effective sanitation is one solution, including a process of degreasing, pressure-washing, disinfecting and drying thoroughly at a warm temperature.

Luc Dufresne, Veterinarian, Demeter Veterinary Services took a deeper dive into weaning age, evaluating older weaning strategies to support piglet and sow performance. Deciding on the ideal weaning age, for any operation, largely depends on a cost-benefit analysis. Using an accurate production model, with good data, is essential.

“If you put garbage information in, you’re going to have garbage information coming out,” said Dufresne.

Dufresne reflected back on the popularity of segregated early weaning, which resulted unintended consequences for weaners’ gastrointestinal (GI) tracts. The GI tract is the single largest immune organ in the body. As in humans, the presence of healthy gut bacteria supports pig immunity, but earlier weaning creates stress, which disrupts the normal development of the GI tract and increases disease susceptibility, as a result.

“We used to think of the GI tract like a big stew, on an element, and whatever you put into it just mixes,” said Dufresne. “We now know that’s not how it works.”

In attempting to wean later, farrowing crate efficiency is also important. While costs will increase across many variables with later weaning, this increase is offset by reduced mortality. In Demeter’s trials, a 21-day weaning age seemed to be the sweet spot, though a multitude of production factors can come into play for individual operations.

MealMeter 2.0 wins Aherne Prize

The F.X. Aherne Prize for Innovative Pork Production recognizes individuals who have developed either original solutions to pork production challenges or creative uses of known technology. The prize is named for the late Frank Aherne, a professor at the University of Alberta, who was a major force for science-based progress in the Canadian pork industry.

This year’s Aherne Prize was awarded to Iowa-based equipment manufacturer PigEasy, for its MealMeter 2.0 technology.

MealMeter 2.0 is a smart feeder designed to monitor and improve the health and productivity of sow herds. PigEasy’s system uses sensors to track feed and water intake and alerts workers in real-time via a virtual dashboard if there are dips or irregularities. This allows workers to quickly identify and treat individual sow issues. MealMeter 2.0’s dashboard tools can also help barn managers make informed decisions about ration changes, treatments and culling.

“For technology to truly improve productivity and efficiency on the farm, it must be easy to implement and user-friendly,” said Katie Holtz, Vice President, PigEasy. “MealMeter 2.0’s tracking and alerting technology achieves this by integrating into an already high-performing feeder. The PigEasy team is honoured and grateful for this recognition.”

Sows use intuitive feeding behaviors to dispense feed and water from MealMeter 2.0. With its innovative design, Meal-



Dave Kloeke, President, PigEasy & inventor of MealMeter 2.0 was awarded a U.S. patent for the product this past year. Kloeke’s farrow-to-wean operation near Templeton, Iowa serves as his testing ground for new ideas.

Meter 2.0 simulates the natural rooting and drinking behaviors of sows, encouraging them to consume the feed and water they dispense. There are no complicated feed curves to set, adjustments required or motors to maintain.

MealMeter 2.0 is available in Canada through Manitoba-based Buckingham Ag.

“The common-sense approach to this feeder enables the producer to have minimal electrical requirements, which dramatically reduces the cost to install,” said Rick Bergmann, President, Buckingham Ag. “The fact it doesn’t have a motor eliminates costly maintenance issues. It’s a very well thought out product that brings savings back to the farm.”

Banff’s legacy lives on

From far and wide, to the heights of the Rockies, the Banff Pork Seminar continues to represent Canada’s longest-running and one of the best pork conferences in the world, when it comes to blending informative content with networking opportunities and a stunning location.

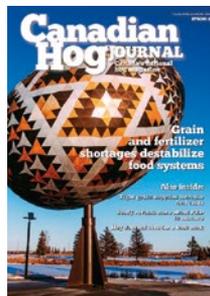
Guests from Canada and across the globe are excited to spread the knowledge – and get the word out – about this must-attend annual event. ■



The iconic Banff Springs Hotel, town of Banff, Banff National Park and nearby attractions continue to be seen as an incentive for distant visitors to the seminar.

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Porc Show reaches decade milestone

Andrew Heck



The Porc Show's highly engaging presentations and workshops are coupled with warm hospitality, providing guests with an all-around enjoyable experience.

The 10th annual Porc Show took place at the Quebec City Convention Centre on Dec. 12 & 13, featuring keynote speeches on global affairs, climate change and more, along with workshop presentations in the areas of animal health, farm management and consumer marketing. Customarily, most speeches are delivered in French, with live English translation, while others are delivered in English with French translation.

The cross-section of subjects spanned various parts of the Canadian and international pork industries, welcoming more than 700 guests to the conference for the second year in a row back in-person, following COVID-19.

Celebrating a decade of success, while navigating COVID-19 for two of those 10 years as a virtual conference, this year was a special moment for organizers and sponsors, who marked the occasion with a video shown to the audience.

“The sector is adjusting despite inflation, geopolitical factors and pricing. ‘Ever-evolving?’ I think that describes it,” said Sébastien Lacroix, President & CEO, Quebec Association of Animal and Cereal Nutrition Industries (AQINAC). “Over the past 10 years, we’ve shown the industry is strong and able to work through challenges.”

Pork industry faces climate change dilemma

Marco Dufresne, Senior Vice President, Technical Services, Special Projects and Sustainability Development, Olymel recognizes that our industry can no longer ignore the wide-reaching impacts of climate change, which intersect environmental, political and reputational factors.

However, Dufresne believes agriculture and all industries need to consider the full spectrum of greenhouse gas (GHG) emissions sources across the value chain to address the problem effectively. Not just at the farm level, but also in processing and transportation. Recognizing that agriculture does not currently have many great options to satisfy society’s eco-conscious demands, it is incumbent upon the sector to show leadership in spite of the odds.

“If you don’t act pre-emptively, you face risks,” he said. “It’s a funny idea – sort of a mirage, really. Our objective is to be carbon-neutral, but we don’t know how.”

Dufresne cited Science Based Target’s (SBTi) Forest, Land and Agriculture Guidance (FLAG), which includes emissions reduction targets for businesses operating in swine, among many other areas. The internationally recognized organization has set a target of 33 per cent reduction by 2030 and 72 per cent by 2050. Accomplishing this ambitious feat is both unlikely and unreasonable, unless the world recognizes existing, natural ‘carbon sinks’ in agriculture, namely grazing lands, crop production and practices like using manure to offset reliance on nitrogen-based fertilizers.



Marco Dufresne casts doubt on emissions reduction targets for agriculture but also recognizes that the industry can't wait for solutions to fall into its lap, either.

“This is a part of the solution. We need to have more plants on the planet, and we need to increase the area where we grow all kinds of plants,” said Dufresne. “Even if we stopped all human activities and went back to how we did things in the 1850s, it would take 700 years for GHGs to deplete to the same level as then.”

Dufresne suggested that feasible energy transition to meet such bold targets is not yet possible, as infrastructure in ag-

riculture is simply not ready. Getting closer to a solution will require mutual understanding among businesses, which Dufresne called, “a prisoner’s dilemma.”

“How can I make decisions that help my competitor and I stay in business?” he asked.

Balancing individual business interests with collective objectives is key. If businesses refuse to set climate priorities in sync, momentum is lost. This is the case in energy production, where global energy demand is huge but green solutions are insufficient to fill the potential void of phasing out fossil fuels. This also impacts pork and, by extension, many export-based agriculture sectors. Heavy, diesel-fuelled trucks used to move pigs have no useful alternative right now, as one example. Fuel-oil-burning cargo ships crossing the Pacific Ocean while carrying upwards of 70 per cent of all Canadian pork is another daunting fact, in context.

Dufresne offered a sobering yet realistic synopsis: “Together, we must lower our emissions while preparing to adapt to the coming changes.”

PRRS-resistant pig continues to progress

Lucina Galina, Director, Technical Projects, PIC is one of the masterminds behind her company’s PRRS-resistant pig, which continues to make progress toward commercial adoption, albeit not without some significant barriers remaining. Porcine Reproductive and Respiratory Syndrome (PRRS) is one of the more destructive yet relatively common afflictions of hog operations in many countries, including Canada.

“Avoiding a PRRS outbreak has some obvious benefits when it comes to reducing antimicrobial use and costs for producers,” she said. “We believe gene editing offers huge potential for stopping the spread of PRRS.”

PIC is working with researchers to build upon existing knowledge to quantify the benefits of PRRS resistance, such as reduced antimicrobial use (AMU). The company previously



Lucina Galina is confident in the future of gene editing in livestock but understands public sentiment on the topic, and policy, remains mixed.

commissioned Iowa State University to study AMU in U.S. PRRS outbreaks, which revealed many producers are relying on antimicrobials – increasingly criticized for their environmental and health impacts – as a management tool where a gene-edited pig may avoid the problem altogether. Some of these antimicrobials are considered medically important for human health, which adds to the controversy.

Along with continuing to characterize the potential benefits of a PRRS-resistant pig in commercial production, PIC is steadfast in testing and evaluating its breeding program that creates PRRS resistance in successive generations of pigs – the offspring of gene-edited individuals who pass along the trait.

Inheritance of the trait requires both a male and female PRRS-resistant pig to be bred, but consistently generating resistance in offspring requires more work, as the expression of this particular gene does not appear with all offspring. Galina suggested a hypothetical 1,000-sow operation could take anywhere from five years to a decade for resistance to take hold within the entire herd, using sperm from a PRRS-resistant boar.

“One point I want to make very clear is that this process is not ‘genetic modification’ [GMO],” she said. “Genetic modification is when you introduce foreign genetic material to an organism, whereas gene editing works with existing genetics in an organism.”

‘CRISPR/Cas’ gene editing is a precision genetic toolbox that singles out individual nucleic acids – the building blocks of DNA. This allows for the creation of new gene sequences at the same level as nature, in principle. This cut-and-paste approach to pig genetics is the heart of PIC’s work on PRRS resistance, which is an important distinction for pig and pork production scientifically, politically and economically.

GMO versus gene editing matters a great deal for regulatory approval globally. Many jurisdictions do not approve genetic modification of animals but tend to have fewer reservations with gene editing. However, even where gene-edited pigs could be approved, the pork from those animals, while perfectly safe to eat, may not be approved to export to some countries, including Japan – a large market for North American product.

While the journey toward successful application and acceptance has been time-consuming, in October 2023, Colombia became the first country in the world to issue a positive regulatory determination for PIC’s PRRS-resistant pig, implying the project is headed in the right direction overall.

Media, myths unfairly drive opposition to meat

Catherine Lefebvre co-hosts ‘*Ons’appelleetondéjeune*,’ a podcast produced by CBC Radio Canada. She’s also a certified nutritionist, travel lover and a defender of common-sense dietary advice.

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A lack of widespread scientific literacy, and bad actors, have demonized livestock and meat, to the detriment of society, according to Catherine Lefebvre.

“As humans, we don’t eat ‘nutrients’ – we eat food,” she said. “We can’t limit ourselves to the nutritional value of our plates. We eat for a lot of reasons, especially pleasure. Taste is high on the list, and price may be even higher.”

While issues such as animal welfare and environmental concerns have undoubtedly swayed some consumers’ opinions on livestock production and meat consumption, Lefebvre believes cultural factors and food insecurity are an elephant in the room, related to the broader discussion.

“A certain segment of consumers believes we’re talking too much about climate change. While climate change is important, it’s not the main consideration. Food security and affordability matter,” she said. “As dietitians, we say, ‘You should eat this and not eat that,’ but that doesn’t take into account what some consumers are able or willing to do.”

As an affordable and nutritious protein, pork is an attractive option for people with lesser means. As well, Canadians of cultural backgrounds where pork is preferred should not be overlooked, such as those of East Asian, Latin American and European extraction, whose cuisines all offer a host of exceptional and delicious dishes that can be prepared using Canadian pork. Lefebvre’s travels around the world have afforded her a nuanced understanding of what drives choice.

“I don’t even want to say how many times I fly on planes in a year. I’m a polluter,” she said. “Will I stop? No. From that perspective, you can consider how consumers think about meat. Consumers won’t stop, but production methods can get better to lower their ecological footprint. We have to live in a dietary system that’s sustainable; we have to adapt.”

When it comes to criticism of pork from a health angle, Lefebvre believes her ilk – those who leverage popular media to

spread messages – are some of the worst culprits driving collective misunderstanding and disinformation.

“There are a lot of myths out there, like those related to cancer,” she said. “What is reported is heavily summarized, and the big problem with dietary studies is that we just do observation studies. We can’t ethically give bacon to a control group every day for 100 days straight and see if they get cancer; all we can do is survey people about their bacon-eating habits and consider their self-reported health status.”

Lefebvre also points out that lifestyle choices are underestimated. The person who enjoys eating meat while also staying active and sleeping well stands a better chance at maintaining their health than the person who doesn’t eat meat but has other unhealthy habits – poorly balanced diets and physical inactivity, for example.

Despite society’s deck being stacked against meat, Lefebvre holds hope that most consumers will continue to give meat a fair shake, while developing a greater sense of appreciation for food overall.

Ten years down, many more to go

Be it the networking opportunities, subject matter or hospitality offered by the Porc Show, one would be hard-pressed not to appreciate this gathering of minds. The event thoroughly captures the breadth and depth of the Canadian pork industry, while also providing an experience that is uniquely French-Canadian, in a lot of ways.

For English speakers and producers living in western or central Canada, the Porc Show may appear intimidating or far-flung from the outside; however, a trip to this exciting event is well worth the commitment. ■



The Château Frontenac – arguably the most iconic fixture of Quebec City’s skyline – carries a prestige that is embedded within Quebec’s culture, which contributes significantly to the consideration of finer details for guests at the Porc Show.

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Saskatchewan Pork Symposium spreads optimism

Bruce Cochrane

Editor's note: Bruce Cochrane is Reporter and Editor, Farmscape. He can be contacted at 'farmscape@wonderworks.ca.'



Donald Leung, namesake and founder of Donald's Fine Foods, received a Lifetime Achievement Award during this year's symposium.

The 46th annual Saskatchewan Pork Industry Symposium took place at the Saskatoon Inn and Conference Centre on Nov. 7 & 8, welcoming more than 250 guests to learn about the latest developments in the sector.

“The purpose of symposium is to bring producers together to allow them to network and be exposed to new ideas and different production methods that they can take back to their farms,” said Mark Ferguson, General Manager, Sask Pork. “The goal is to not only strengthen their own operations but to help develop the industry, making it as economically stable and profitable as possible.”

The mood on the first day was upbeat and had been set just a week-and-a-half earlier with the official opening of the North 49 Foods sow processing plant in Moose Jaw – an exciting development for which Donald's Fine Foods has received praise from producers, industry partners and government officials.

New cull sow plant strengthens Canadian industry

This year, in recognition of his significant and lasting impact on Saskatchewan's pork industry, Donald Leung was presented with a Lifetime Achievement Award. Leung immigrated with his family to Canada in 1975 and held several jobs before finding himself in meat processing. He worked his way up in the business, and in 1993, with the help of three employees, he founded Donald's Meat Distribution, renamed Donald's Fine Foods in 2005.

The company, based in B.C., operates pork processing, distri-

bution and further processing facilities, including its Britco plant in Langley. In 2010, Donald's acquired Moose Jaw Pork Packers, which was renovated and renamed Thunder Creek Pork. The renovated facility has been operating for more than a decade and is now Saskatchewan's largest federally inspected hog slaughter facility. In 2019, Donald's purchased the former XL Foods beef processing plant in Moose Jaw with the intention of converting it into a cull sow processing facility. That renovated facility was officially opened in October, under the name North 49 Foods.

There are an estimated 240,000 cull sows available in Alberta, Saskatchewan and Manitoba, the majority of which are shipped to the U.S. for processing. The expectation is that many of those cull sows could end up being diverted to North 49.

Conveniently, during his presentation, Brett Stuart, a market analyst with Global AgriTrends, predicted increased sow liquidations over the winter as the pork sector works to restore profitability.

“We're still living in the post-COVID hangover of free and easy money, when global stimulus packages topped 18 trillion dollars,” he said. “And now governments are in a pinch to rein in inflation – a fact that hog farmers see every time they buy fuel, fertilizer or feed.”

In addition to reducing shipping costs, processing sows in Canada avoids potential hang-ups caused by moving so many animals across the Canada-U.S. border. This issue was placed front-and-centre just last summer, when the U.S. Department of Agriculture (USDA) detected Seneca Valley Virus (SVV) in Canadian sows heading south. Since then, the Canada West Swine Health Intelligence Network (CWSHIN) has been steadfast in monitoring for SVV at Canadian assembly yards.

Industry experts champion biosecurity, handling

Preventing disease starts with proper biosecurity. Julia Keenlside, Veterinary Consultant, CWSHIN discussed CWSHIN's biosecurity load-out project and provided practical tips for producers to make improvements.

“One of the biggest components when designing a load-out is it has to be easy to load pigs through,” she said. “It has to be easy for staff to work in and pigs have to move through it quite well.”

CWSHIN recently worked with Alberta Pork, Sask Pork and Manitoba Pork to develop a load-out fact sheet, which is available to producers through their respective provincial



As always, the symposium brought together producers and partners from all walks to life to share information and learn from each other.

pork producer organizations.

In addition to ramping up biosecurity, effective animal handling can reduce stress of pigs and people alike, with performance benefits to follow. Jennifer Woods with J Woods Livestock Services explained why pigs do what they do, not what we want them to do.

“Usually, the animals are doing exactly what we are telling them to do according to where we are standing and our body language,” she said. “Once you understand their behaviors and their motivations, handling them will become much easier.”

Kendall Weger, Technical Services Specialist, PIC offered advice on piglet care and how to get the biggest bang for your buck.

“What happens on day one sets the stage for the piglets that we’re going to be weaning, and it affects the sow’s performance in subsequent litters,” she said. “It’s important to make sure the piglets are warm and dry, that they get their colostrum, and that the sows are also well cared for.”

Beyond production insights, the symposium also delivered a healthy dose of motivation, courtesy of its keynote speaker.

Long-rider’s journey inspires resilience

Best-selling author and filmmaker, Filipe Masetti Leite, brought a unique perspective to the symposium by delivering a keynote address covering his experiences as the youngest person ever to traverse the Americas by horseback – a journey that took eight years, over three separate stints, during which he visited 12 countries. Masetti’s adventure provided a compelling source of inspiration for producers who may see themselves as fighting an uphill battle, at times.

He suggested that strategic planning is the biggest step to prepare for success, getting your mind and body ready for any endeavour you choose in life. Before he embarked on his journey, Masetti spoke to other long-riders to learn of their experiences and to get advice.

“We tend to complicate things, but you don’t have to reinvent the wheel,” he said. “You have to learn who the successful people are in your field and what they did to get there, then find mentors to help you follow in their steps.”

Masetti told of the challenges he faced and of the support and generosity he received from those he encountered.

“Don’t listen to the nay-sayers,” he advised. “Understand your own mind and believe in yourself. Believe in your goals and your dreams, because if you don’t believe, no-one else will.”

Meeting Masetti was one of the highlights of the symposium for 10-year-old Reise Podhordeski, Sask Pork’s Whole Hog Youth Ambassador, who spoke with Lucas Cochrane, a youth reporter for Farmscape.

“People don’t know a lot about how we get our food,” said Podhordeski. “As the ambassador, I help represent Sask Pork and all the hog producers in the province. I’ve been able to go on tours, interview people in the industry and learn all about pigs. Then I get to share that information with other kids in their classrooms and on field trips.”



Reise Podhordeski, Sask Pork’s Whole Hog Youth Ambassador, was thrilled to meet best-selling author and filmmaker, Filipe Masetti, who delivered a keynote address.

Clinton Monchuk, Executive Director, Farm and Food Care Saskatchewan echoed Podhordeski’s comments about connecting people back to what they eat.

“When there’s engagement between farmers and consumers, there’s a higher level of trust,” he said. “Confidence among consumers means that, when questions come up in the future, the consumer has a degree of familiarity that generates enhanced understanding about how food is being grown and raised.”

Following the success of this year’s Saskatchewan Pork Industry Symposium, organizers are already eagerly looking forward to the 2024 event. ■

Pork industry seeks fresh profitability perspectives

Andrew Heck



Andrew Dickson, former General Manager, Manitoba Pork and Darcy Fitzgerald, Executive Director, Alberta Pork field questions from one of the teams competing at the Alberta International Business Competition (AIBC), as they worked to refine their proposals focused on pork industry profitability.

Whether a producer, processor or retailer, Canadian pork value chain stakeholders constantly have their minds, and businesses, geared toward profitability. This intense focus on financial viability is the increasingly elusive objective that must be met by all to ensure the industry's domestic and global customers are able to stay fed and satisfied, literally and figuratively. At times, the struggle can lead to near-sightedness and a return to 'old ways' that prevents positive change from being realized.

However, as value chain partners find themselves at an impasse when it comes to addressing barriers to profitability, cynicism can quickly set in. This challenge makes it important as ever to consider new approaches to bridging gaps, if stakeholders truly want to find success in the coming years.

Recently, Alberta Pork took the initiative to seek support in the form of business student proposals solicited as part of the Alberta International Business Competition (AIBC), an event hosted by the University of Alberta Faculty of Business on Nov. 16 & 17, featuring 12

academic teams from around the world.

"The goal of AIBC is developing relationships with companies and organizations who share our vision, profiling Alberta as a diversified business community, while also showcasing the amazing beauty Alberta has to offer," said Maya Bezubiak, VP Competition, AIBC. Bezubiak, a second-year University of Alberta student, joined the organizers' side after attending as a Team Ambassador, in 2022. "Jasper is the perfect setting to bring international minds together to recommend innovative solutions for Alberta. AIBC would not be possible without the support we receive from all our partners."

Teams hailing from Alberta, Ontario, Quebec, North Carolina, Florida, Mexico, the Netherlands, Thailand and Hong Kong all made their way to Jasper – the world-renowned mountain town and tourist destination – to hear two business cases, then respond. Alberta Pork's case, centred around pork industry profitability, was presented by Darcy Fitzgerald, Executive Director, Alberta Pork.

"Alberta Pork was thrilled to be included as part of this prestigious competition," said Fitzgerald. "These young, bright minds came up with some impressive and unexpected ideas, which is no easy feat."

Teams then had just 30 hours to research, brainstorm, fine-tune and deliver a presentation before a team of expert judges, including Fitzgerald; Andrew Dickson, former General Manager, Manitoba Pork; Stan Vanessen, Chair, Alberta Pork; Ian Moon, Manager, Hog Procurement, Olymel; Brian Markert, Chair, Western Hog Exchange; Trevor MacLean, Partner, MNP; along with other representatives from the Alberta business community.

Getting down to business

With the business case established, each team quickly got to work generating ideas, exploring everything from profit-sharing strategies and single-desk marketing, to advertising campaigns and public events. Some of the communication-focused ideas mentioned using the Canadian Hog Journal as a channel for effectively spreading messages.

Recognizing the different approaches, a common thread could be found among all: the need to find innovative ways to increase producer margins; the need to develop better business relationships among value chain partners; and the need to improve pork promotion and awareness.

The winning team, from the University of Florida, cited information provided by Alberta Pork related to pig carcass value as one of its primary motivators to suggest that revenue across the value chain is unevenly distributed and a threat to industry sustainability.

"There is currently a disconnect between key players in the pork production chain, starting with customers," said team member Joshua Levin, refer-



University of Florida team members Madison Malone, Savannah James, Joshua Levin and Beata Chen presented data-based solutions to empower producers and connect them to consumers directly, using product packaging.

ring to domestic sales of pork. “Customers are unaware of the premium product differentiation, so they are unwilling to pay a premium price. Ultimately, if retailers and processors are unable to receive a premium price, they are unwilling to pass that back to producers.”

On top of improved efforts to communicate pork’s consumer value, the team suggested that producers could also use technology to empower their own decision-making, by sharing information related to production costs and pig pricing.

“Integrated negotiation information could help producers better understand their value-add,” said team member Savannah James, referring to contracts with processors. “Processor ROIs [return on investments] would allow producers and processors to work toward a more palpable solution for both stakeholders.”

Following its characterization of the profitability problem, the team then unveiled its revenue strategy. The strategy emphasized greater industry transparency to aid consumer confidence and encourage pork purchases. The team

suggested Alberta Pork could investigate blockchain technology to aggregate information for end-users, accessible at the retail level using a QR code.

“This could include better tracking, enhance traceability and shared data,” said team member Madison Malone. “Consumers can see that the product is sustainably sourced, building trust and helping them justify that premium price.”

While blockchain technology may seem foreign to the Canadian pork industry, the team referenced the success of BeefChain: a U.S.-based blockchain system adopted in 2019 and approved by the U.S. Department of Agriculture (USDA). BeefChain assists quality assurance certification by tracking cattle at the ranch level, to the feedlot, to the processing plant, to the grocery store.

Increased revenue at the retail level, understandably, may not automatically trickle down to processors and producers; however, the major advantage of blockchain is its user-entered, encrypted data. This places the power of the tool with producers and processors supplying this information. For the system to work in retailers’ favour, it must also benefit their suppliers, creating a mutual desire for cooperation and collaboration.



The University of Florida team celebrated its victory, at the AIBC’s closing awards gala, during which competition results were announced in real time. It was the team’s second championship in as many weeks.

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The AIBC event not only provided benefit to the Canadian pork industry but also welcomed international guests to our beautiful country in a profound way, promoting continued cooperation.

“Producers have a unique position, as they’re the only ones with the pigs’ data,” said team member Beata Chen. “They’re the only ones who can provide this blockchain and transparency, giving them leverage. That way, if the retailer doesn’t want to share profits, producers wouldn’t need to participate, which would affect the retailers’ sales, so there’s no way to take advantage of producers.”

Though the University of Florida’s team’s performance was remarkable, it wasn’t without precedent: the team was only two weeks removed from its previous competition victory, at an event held in Guadalajara, Mexico. In February, the University of Florida will host its own event, the Heavener International Case Competition (HICC).

“To win one international competition is hard enough, and that’s always excit-

ing and thrilling and gets me all fired up – but winning back-to-back, that’s tough,” said Sean Limon, the team’s coach. “Their performance at the end of the year really elevated our program. They demonstrated the high standard the HICC team has and brought our program back to the top level that it is.”

Coming in second place at AIBC was the team from Panamerican University (Mexico), and coming in third place was the team from Concordia University (Quebec).

Big-picture thinking encourages optimism

Be it blockchain or billboards, no shortage of creativity, ingenuity and resiliency were on display at AIBC. Teams took time out of their own busy school schedules – and money out of their own pockets – to participate in this incredible demonstration of talent and enthusiasm for business practice.

Looking to the future, the Canadian pork industry’s efforts toward greater profitability, equitability and sustainability have a real wealth of opportunity to look beyond traditional thinking and embrace change. During a time when industries and businesses are fighting to stay relevant among audiences, it makes sense for decision-makers to step out of their comfort zones and open their minds to fresh perspectives. ■

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Rethinking pork for a changing world

Sylvain Charlebois

Editor's note: Sylvain Charlebois is Professor & Director, Agri-Food Analytics Lab, Dalhousie University. He can be contacted at 'sylvain.charlebois@dal.ca.'



Sylvain Charlebois is often called upon to speak on topics related to contemporary agri-food issues. He presented at Alberta Pork's AGM in November and at the Banff Pork Seminar in January.

In a world where the culinary landscape is as diverse as its people, the enduring appeal of pork in Canadian diets speaks volumes about its cultural and nutritional significance. As the mosaic of Canadian society evolves, so does its dietary preferences, yet pork continues to hold a prime position on dinner tables across the nation. It's not just about tradition; it's about taste, versatility and a deep-rooted connection to our agricultural heritage. However, pork remains one of the most underappreciated sources of animal protein. It needs a renaissance.

Today, the Canadian pork industry stands at a crossroads, influenced by various global and local trends. An overwhelming 94 per cent of Canadians continue to include meat in their diets, underscoring the enduring demand for animal protein. However, this demand doesn't exist in isolation;

it's shaped by economic, environmental and social currents that swirl around the choices consumers make every day.

The spectre of inflation looms large over every sector, and the food industry is no exception. Forecasts

suggest a staggering 45 per cent increase in meat prices by 2025, compared to 2022, which understandably alters consumer behaviour. Canadians are not just passive observers in this scenario; they're active participants, adapting their grocery shopping habits and spending less on food overall. This isn't merely a statistic; it's a shift that reflects the resilience and adaptability of Canadian consumers in the face of economic pressures.

With inflation comes affordability challenges. Several studies conducted in recent years suggest that plant-based proteins or vegetable proteins are generally less expensive than meat, at least over the past 12 months. The idea is to encourage consumers to opt for a more affordable protein source. However, when examining prices in Canada, the situation is not as clear-cut.

Let's start with pork itself. Since March 2020, pork prices at retail have increased anywhere from four per cent to seven per cent, but they have experienced significant fluctuations. Even from one month to the next,



While pork retail prices have been stable relative to other proteins, especially plant-based ones, fluctuations tend to be more volatile, which stands out for consumers.

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variations can be quite pronounced. According to Statistics Canada, these percentages remain below the overall average for food expenditures during the same period.

Now, for vegetable proteins, let's examine four relatively popular products: lentils, dry beans, tofu and hummus. Their prices have increased by 25 per cent, 23 per cent, 16 per cent and 10 per cent, respectively. While

resulting in fewer losses, and their production is generally less intensive. However, once prices have risen, consumer perception is durably affected, leading them to believe the product is still too expensive. This is what's known as 'meat counter psychology,' which influences our perceptions.

People feel like meat counter prices have increased more in recent years, but that's not entirely the case, at

long-term success. Promoting the nutritional benefits of pork and developing healthier pork products can attract health-conscious consumers.

In this dynamic landscape, the Canadian pork industry has unique opportunities and challenges. Marketing Canadian pork isn't just about selling a product; it's about telling a story that resonates with consumers' evolving values and tastes. It's about leveraging



Dietary trends, cultural diversity and preference for specific cuts of pork are opportunities for the industry to market itself better.

these increases are more substantial, they have been more gradual, without the violent fluctuations seen with meat. Since these plant-based product prices are less volatile, the hikes often go unnoticed.

Meat counter prices tend to fluctuate more due to the greater influence of variables such as energy and transportation costs. Plant-based proteins are less exposed to food safety risks,

least according to Statistics Canada data. And that is not helping pork sales. Pork needs to find its TikTok moment, allowing consumers to understand that pork is unique, healthy, versatile and affordable. The industry should stay attuned to changing consumer preferences, including dietary trends, cultural diversity and preferences for specific cuts of pork. Flexibility and adaptability to evolving consumer demands are crucial for

new technologies to ensure that Canadian pork isn't just available but also sustainable and of the highest quality.

However, the story doesn't end with domestic challenges. The global landscape is rapidly changing, and Canada isn't isolated from these shifts. Food geopolitics are becoming increasingly relevant, with more people living inside a handful of Asian countries than outside of those countries, indi-

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cating that dense population centres are emerging as significant players in the global food market. For the pork market, it matters a great deal. In response, strategies like friend-shoring, nearshoring and onshoring – which serve to shorten yet complicate supply chains – are not just buzzwords but essential tactics for business resiliency in an interconnected world. This will impact how the pork industry is structured and how competitive it can be.

The federal carbon tax has also been an issue for the industry and its competitiveness. Carbon pricing undeniably holds significant weight in Canada. Nevertheless, it is imperative that we rigorously evaluate its effects on the affordability of food for Canadians and the long-term competitiveness of our industries. Unfortunately, comprehensive analyses in this regard have been lacking, and much of what we've encountered appears to be influenced by biased narratives. The efforts of our team at Dalhousie University, consisting of 10 researchers, have shed light on the scarcity of research in this area. It is challenging to quantify how carbon pricing affects food retail prices due to the multitude of factors influencing prices, starting with consumer behaviour. Our primary focus has been on industrial and wholesale prices, where we have

identified noteworthy disparities between Canada and the U.S. This needs to be recognized. Our collective focus on carbon taxes should be on how the policy is impacting Canadian agriculture's competitiveness versus the U.S., including the pork industry.

Moreover, for consumers, environmental stewardship is no longer a choice but a necessity. The focus is shifting from merely assessing retail impact to understanding and enhancing competitiveness while being environmentally conscious. The good news is there's progress. From 2008 to 2023, there's been a significant reduction in negative environmental perceptions, indicating a more sustainable path forward. Consumers care about the environment, and the pork industry is

poised to do well with eco-conscious consumers.

As we delve into the future, the Canadian pork industry isn't just facing a series of challenges; it's embracing a spectrum of opportunities. It's about understanding and adapting to the economic pressures, global shifts and environmental concerns that shape our world. It's about recognizing the enduring appeal of pork in Canadian diets and ensuring that this tradition continues in a way that's sustainable, ethical and aligned with the ever-evolving consumer preferences. The path ahead is complex, but with resilience, innovation and a deep understanding of both local and global dynamics, the Canadian pork industry can continue to thrive. ■

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Addressing stray voltage supports pig comfort and safety

Pierre-André Meunier

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Quebec-based Agrivolt is available to help producers across Canada and the U.S. address stray voltage issues."



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In the realm of hog farming, a crucial yet often overlooked issue is the impact of stray voltage on the health and productivity of pigs. Understanding and effectively managing this source of stress is essential for ensuring an optimal environment for livestock.

Earlier this year, PrevTech Innovations acquired Agrivolt – experts in stray voltage and animal welfare – to strengthen our leadership in electrical safety for agriculture.

"It is important to understand the origin of the various sources of stray voltage in order to apply proper corrective measures," said Marc Thibodeau, Manager, Agrivolt.

Stray voltage results from the presence of electricity in the structures within the animal's environment. This can lead to discomfort or stress factors for pigs, particularly in confined areas where they cannot escape its effects. Over time, this stress can lead to behavioral and health problems that affect animal productivity and can diminish overall farm performance.

Identifying the sources and effects

Sources of stray voltage are diverse but can be separated into two main categories: on-farm sources and off-farm sources. On-farm sources can stem from worn-out equipment, damaged wiring, improper grounding methods or use of certain electrical equipment like variable speed drives and electric fences. Off-farm sources relate to the type of electric utility network feeding the farm, commonly being a grounded system.

Barns, with their metal structures and grids embedded in concrete, are unfortunately effective grounding areas that can attract and transmit stray currents toward animals. The levels will vary throughout the day depending on the electrical consumption of the farm and demand from neighbouring power users.

When addressing discomfort related to animal stress, it's essential to consider a wide range of potential causes, like water quality, nutrition and employee training. Before considering stray voltage as a possible cause, producers are strongly recommended to work with their veterinarians, nutritionists, equipment vendors and electricians to rule out any other stress sources.

Education is key for producers

Education plays a critical role in understanding and managing stray voltage. Producers should have general knowledge of how stray voltage works, along with available solutions. Sharing knowledge on best practices for electrical system design and maintenance can significantly reduce stray voltage incidents on pig farms.

Dealing with stray voltage is not just about productivity; it's about animal welfare. Understanding the causes and implementing effective mitigation strategies can create a safer and more comfortable environment for pigs. Taking proactive steps to address stray voltage is an integral part of modern, responsible pig farming. Monitoring systems are essential to ensuring electricity is not the weak link in your operation. ■

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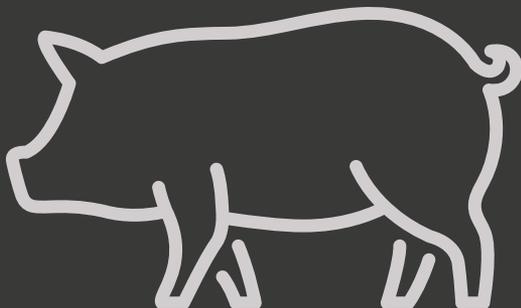
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Alberta Pork representatives met with several politicians, including Rachael Thomas, Member of Parliament (MP), Lethbridge (Alberta).

Industry delegates head to Ottawa

Representatives from nearly all provincial pork producer organizations joined with representatives from the Canadian Pork Council (CPC) in mid-October on a mission to Parliament Hill in Ottawa, where they met with various Members of Parliament, Senators and other bureaucrats.

The three-day gathering was held to build relationships with key decision-makers and people of influence, while advocating for producers on issues like disease preparedness, trade and business risk management (BRM) programs.

Key concerns for the group included earning stronger support for African Swine Fever (ASF) preparedness, reservations over the U.K.'s accession to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and a desire to modernize AgriStability by making it more applicable for mixed-farming operations, which would include a larger number of hog producers.

This is the first time in recent years that a cross-country delegation has visited

Ottawa together, but CPC and the provincial organizations expect it to become a more frequent and increasingly coordinated effort, providing a united front for producers from coast to coast. The next visit of delegates is tentatively scheduled for April.

CPC joins 'Say No to a Bad Deal'

The Canadian Pork Council (CPC) joined the 'Say No to a Bad Deal' coalition in early February. This coalition, representing Canada's pork and beef sectors, is pushing for renegotiations of the U.K.'s accession to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). "The CPC is proud to join the Say No to a Bad Deal coalition, and we're calling for renegotiations of the CPTPP before Canada approves the United Kingdom's accession," said Rene Roy, Chair, CPC. "We have been patient and have proposed solutions that we did not achieve, and now we are concerned there will be a precedent of non-tariff trade barriers inside the CPTPP we must avoid."

Say No to a Bad Deal represents agriculture leaders who advocate for fair and equitable trade agreements that benefit all parties involved. With the U.K. not moving on its approach to trade negotiations, CPC wants to remind the Government of Canada its job is to ensure the best interests of Canadian farmers are represented. Canadian pork producers rely heavily on international markets for their livelihoods, with 70 per cent of production destined for export markets. Fair trade agreements provide producers with the opportunity to access new markets, diversify their customer base, and increase profitability. "By joining forces with the Say No to a Bad Deal coalition, we are sending a clear message: Canadian farmers will not accept anything less than fair and equitable trade agreements that support our industry's growth and prosperity," said Roy.

Senate kills carbon tax exemption

Bill C-234, an *Act to amend the Greenhouse Gas Pollution Pricing Act*, was introduced in the House of Commons in February 2022 by Benn Lobb (Conservative), Member of Parliament (MP), Huron-Bruce (Ontario). The bill was intended to give an exemption to the federal carbon tax on fuels like natural gas and propane, use in barn heating and grain drying. The bill was eventually passed in the House in March 2023, with support from Conservative, Bloc Quebecois, New Democrat and Green MPs, and opposition from Liberal MPs.

Following its passage in the House, the bill was read in the Senate, with sponsorship from Senator David Wells (Newfoundland and Labrador). After two successful readings, during third reading, Senator Lucie Moncion (Ontario) introduced an amendment to remove barn heating from the bill, which was

defeated. Following this amendment, another amendment was introduced by Senator Pierre Dalfond (Quebec), which sought to significantly distort the intention of the bill, and that amendment was passed by a one-vote margin.

The Senate proceedings coincided with much attention around the issue of carbon tax 'carve-outs,' which Steven Guilbeault, Minister, Environment and Climate Change Canada, stated will not be forthcoming beyond an exemption to the carbon tax on heating oil used for homes, primarily in Atlantic Canada. The heating oil exemption was granted less than a month prior to the Senate's decisive vote on Bill C-234.

Passage of the amendment now requires the bill to return to the House of Commons. Following the Parliamentary break over Christmas, Bill C-234 was reintroduced by Lobb in late January, in its original form.

Saskatchewan sow plant opens

Donald's Fine Foods officially opened its North 49 Foods sow processing plant in Moose Jaw, Saskatchewan in late October. The facility is expected to bring much needed sow slaughter capacity to western Canada, as most cull sows are



Saskatchewan Premier Scott Moe attended the grand opening of the North 49 facility in Moose Jaw.

assembled and shipped to the U.S. for processing, at present.

"This facility will provide an excellent local market opportunity for these animals in western Canada," said Toby Tschetter, Chair, Sask Pork. "It will result in a significant improvement in animal welfare conditions and reduced cross-border movements. It will also significantly improve biosecurity for our industry and reduce our greenhouse gas footprint."

North 49 occupies a former cattle slaughter facility that sat vacant for several years before being sold to Donald's. The company also operates Thunder Creek Pork in Moose Jaw, a hog slaughter facility.

Nebula group of companies grows

South Country Livestock Equipment successfully merged with the Nebula Group of Companies in mid-2023. The South Country team joined the growing ag

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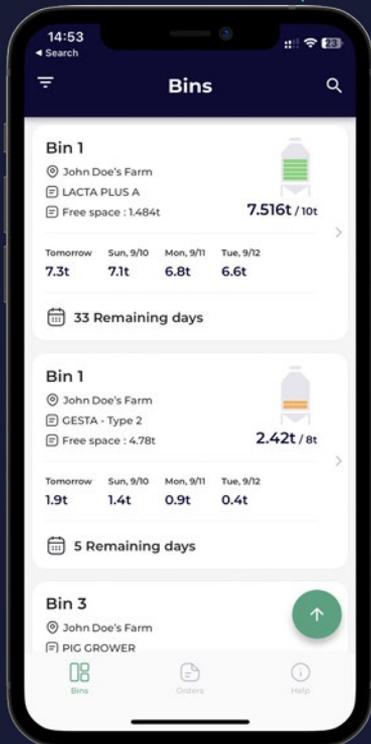
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equipment and service division of the Nebula Group, which includes Envirotech Ag Systems, purchased in April 2022.

Both companies specialize in the design and automation of confined livestock production systems focusing on technologies and services that are superior in farm efficiencies and animal welfare as they pertain to rearing, feeding, watering and ventilation.

Founded in 2015 in Waterloo, Ontario, Nebula is focused on constant innovation and advancement of its technologies. The group's mission is to profitably expand its leadership in food production and safety in a localized manner through the decentralization of the food supply chain via sustainable resources, modernized technology and self-sufficient processes.

South Country was founded more than four decades ago in Lethbridge, Alberta and is the largest and oldest equipment dealer in southern Alberta. Envirotech is headquartered in Winnipeg and Sioux Falls, South Dakota, and has served livestock producers across western Canada and the U.S. since 1995.

Farm Health Guardian adds new capabilities

Farm Health Guardian has added to its growing list of fleet management system integrations. Motive is the latest leading GPS system that Farm Health Guardian's biosecurity software now links with, to give customers easy access to data that will help strengthen biosecurity.



Motive's GPS system tracks biosecurity breaches in real time and notifies users immediately.

"This latest addition of Motive to our GPS integrations provides more customers with access to valuable biosecurity data that will help protect their farms and their entire systems," said Anthony Novero, Chief Technology Officer, Farm Health Guardian. "This provides an added layer of useful biosecurity data using the GPS system that many farms already have."

Research shows that trucks and other vehicles are a major contributor to the spread of many animal diseases. When Farm Health Guardian integrates with a client's existing GPS system, it helps to reduce the risk of spread by strengthening transport biosecurity.

Customers can get real-time alerts if biosecurity protocols are breached, validate adherence to downtime requirements and confirm truck wash visits. The integration also allows managers to check adherence to health pyramid flows or groups and receive notifications if a truck visits a farm outside of their assigned properties.

Launched in 2020, Farm Health Guardian technology is reducing the risk of disease spread and improving biosecurity compliance. Farm Health Guardian operates out of Guelph, Ontario and Omaha, Nebraska.

Andrew Beusekom joins Design Concrete

Design Concrete Inc. has announced that Andrew Beusekom of Magnum Swine Genetics will join Jim Haggins as a sales representative for western Canada.

Beusekom has worked in the hog industry for 35 years, and in 1996, started Magnum Swine Genetics in Fort Macleod, Alberta. Magnum markets to producers in Alberta, Saskatchewan and B.C., with 200 boars in its system currently, which is expected to expand to 300 boars in early 2024.

With Design Concrete, Beusekom is looking forward to working with producers in concrete slat supply for the replacement of old slats, along with larger renovations or building new production facilities.

Design Concrete specializes in custom manufacturing of hog slats to replace aging infrastructure, as well as new sow and grow-to-finish housing. They deliver both large and small orders to production sites. Since 1979, the company's CSA-certified precast facility has produced both wet cast and dry cast products.

Design Concrete is headquartered in Seaforth, Ontario and appreciates the widespread support of producers in western Canada, in addition to its Ontario base. ■

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Swine welfare research a hot topic in cold Banff

Miranda Smit

Editor's note: Miranda Smit is Assistant Manager, Knowledge Transfer, Prairie Swine Centre. She can be contacted at 'miranda.smit@usask.ca.' For more information on the NSERC IRC in Swine Welfare research program, visit 'swinewelfare.com' or contact Yolande Seddon at 'yolande.seddon@usask.ca' or Martyna Lagoda at 'martyna.lagoda@usask.ca.'



The NSERC IRC in Swine Welfare program was on full display during a Prairie Swine Centre forum in advance of the Banff Pork Seminar.

Just prior to the start of the Banff Pork Seminar, on Jan. 9, while it was quickly becoming frigidly cold outside, discussions were taking place around animal welfare in modern pork production systems.

More than 40 pork producers, industry representatives and researchers came together to hear the results generated from the Natural Sciences and Engineering Research Council (NSERC) Industrial Research Chair (IRC) in Swine Welfare research program. The program is located at the University of Saskatchewan, led by Yolande Seddon. The forum was hosted by Prairie Swine Centre, which played a key role in the establishment of the research Chair.

Seddon kicked off the meeting with an overview of the factors at play driving the conversation forward on animal welfare, including emerging regulatory changes. This includes the switch to group sow housing by 2029, as mandated by the National Farm Animal Care Council's (NFACC) *Code of Practice for the Care and Handling of Pigs*, along with changes to the *Health of Animals Regulations* under the *Health of Animals Act*.

Transport regulation changes have come under fire from the industry, as changes are considered to be not fully informed by science, due to a lack of research in the area of swine transport.

Program created to address industry challenges

With the onset of regulatory changes for animal welfare, in 2015, the industry recognized the need to proactively respond, which prompted 14 partners in the Canadian pork value chain to come together with a vision to enhance collective understanding of welfare considerations.

The solution was the creation of a research Chair in swine welfare, providing resources to address current and future challenges. The University of Saskatchewan agreed to create a position at the Western College of Veterinary Medicine (WCVM) in Saskatoon, and following a competitive application process, including an international scientific review, NSERC matched industry funding to create the five-year program, which started in 2018 and is now wrapping up.

From the beginning, the objective was to conduct research to support sustainable intensification of pork production systems, with a focus on improving welfare in fully slatted reared pigs, including tools to measure and monitor welfare. Along with improving welfare of pigs on-farm, the program provides an opportunity to communicate progress on animal welfare inside and outside of the industry.

CONTINUED ON PAGE 34



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When pigs play, they're happier and healthier, which supports their wellbeing and the barn workers who know them best.

This objective was split into four goals: the impact of early life influences on sociability and resilience to stress of growing pigs; the ability for play to induce positive emotions and immune response; the identification of biological markers to indicate welfare; and the examination of carcasses at processing to measure welfare.

During the forum in Banff, three PhD students and one post-doctoral fellow presented their research results tied to the respective program goals.

Early life management leads to long-term success

Siba Khalife looked at how early life management of pigs influences their long-term welfare in fully slatted systems. Pigs were provided enhanced management consisting of chewable materials to support normal foraging behaviour, intermittent positive human contact to reduce their fear of humans and additional space to support social skill development either in the farrowing room, nursery or both stages until 12-weeks-old, before returning to 'standard' production conditions and followed to slaughter.

Pigs provided with enhanced management in both the farrowing and nursery stage had higher lifetime weight gain thanks to improved growth in the nursery period, and better handleability scores at the end of the nursery period,

suggesting that modifications in early life management can have long-term positive effects.

Play provides benefits beyond enjoyment

Understanding the role of play as it relates to disease resiliency and quality of life provides production benefits for producers and increases public trust for the entire industry.

Karolína Steinerová explored whether play behaviour can be used as a tool to enhance positive welfare and quality of life for farmed pigs, while also supporting benefits for production.

The research showed it's possible to stimulate play in pigs in a commercial environment beyond the age it naturally occurs – between two- to six-weeks-old – demonstrating the potential for the industry to promote this behaviour, characterized by spontaneous excitement with arousal. The research also collected data supporting the assumption that play is a positive experience for pigs, therefore increasing the evidence that play can be used as an approach to support positive welfare in commercial settings.

Since positive emotional wellbeing is associated with improved health and resilience in humans, an important aim of the research was to evaluate whether the same benefits can be realized by pigs, through play. Exciting findings reveal that when challenged with a Porcine Reproductive and Re

CONTINUED ON PAGE 36

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During the forum in Banff, three PhD students and one postdoctoral fellow presented their research results tied to the respective program goals.

Physical indicators speak volumes

Whether looking at live pigs or carcasses, biological markers and other physical indicators can paint a picture of welfare that is now better understood. By tying this understanding to farm- and processing-level assessments, decisions around pig care can be evidence-based.

Darian Pollock presented her work on using hormone levels in swine hair to measure welfare and discussed the applicability of this technique for genetic selection for stress resilience. Hair collection is a non-invasive, low-cost method of sample collection, and a section of hair can provide information on the hormone activity over time, corresponding to the hair growth, helping to reduce the frequency of sample collection and providing a chronic measure.

One of the significant advantages of the NSERC IRC in Swine Welfare program is the opportunity for additional collaborations with industry researchers across North America. Pollock presented work on a collaboration between the WCVM Swine Welfare team, Iowa State University and PigGen Canada to analyze hair from pigs with a variety of genetic backgrounds, taking a closer look at using hormone levels for genetic selection of stress resilience.

This work showed a correlation between cortisol levels in hair and the number of struggles and vocalization intensity of piglets during a standardized handling test – the backtest – that evaluates behavioural stress response. Hair cortisol levels are also considered ‘moderately heritable,’ meaning they are somewhat able to be passed from sows or boars to piglets, suggesting the potential application of hair hormones for genetic selection for stress resilience.

When evaluating whether hair hormones were influenced by rearing system modifications that could support im-



Physical indicators provide a wealth of information on pig welfare but monitoring at the processing plant level demands automation to support integration.

proved welfare, Pollock found that hair hormone levels were not influenced by providing straw to pigs, nor by the enhanced early life management practices described by Khalife. However, there was a lot of individual variation in hormone levels, and piglets with lameness pre-weaning did have a higher ratio of cortisol-to-DHEA – a steroid hormone precursor – suggesting hair hormone ratios can potentially be used as a biomarker of individual pig welfare.

Martyna Lagoda looked at whether physical indicators on pig carcasses could be used to automatically monitor welfare in processing plants. The research team assessed on-farm welfare indicators all the way from breeding to slaughter. Indicators on carcasses were evaluated using a camera installed opposite the production line after scalding and dehairing had taken place.

Analysis is evaluating if the appearance of skin lesions, tail length and hernias can shed light on the conditions under which pigs were raised. Initial results show a relationship between the proportion and severity of tail-biting and observable lesions on carcasses, demonstrating how monitoring carcass lesions could be used as a herd diagnostic tool for welfare on-farm and during pre-slaughter handling.

For processors, using these indicators to determine welfare requires seamless integration with existing plant procedures. The research team collaborated with Seok-Bum Ko from the College of Electrical and Computer Engineering at the University of Saskatchewan to develop a software model using artificial intelligence to recognize and track individual pig carcasses and identify different body parts for assessment. The next steps are to train the model to measure skin lesions, tail length and hernias while organizing the data collected for analysis.

Research supports pigs and people

Given the success of the projects under the NSERC IRC Swine Welfare research program, the group is looking to continue its efforts on behalf of the Canadian pork industry. The commitment of NSERC and producer organizations to date has made it possible to build a strong research team that is also able to look at other welfare priorities outside of the research Chair focus, providing opportunities to up-and-coming professionals aiming to make their careers here in Canada.

Carmen Cole, who first joined the swine welfare research group to do her undergraduate research thesis, then continued as a research technician, is now a Master's student with the group. She had the opportunity during the forum to present on her work developing and validating a one-step

electrocution technique for on-farm euthanasia. As her research continues, the program holds value not only for the students engaged in the work and the pigs whose quality of life is improved, but also for those who reap its benefits in pork production and processing.

Seddon ended the research forum with a call to action: as the program will end in June 2024, she encouraged stakeholders to consider renewing their commitments to the program, both financially and in principle. Sustaining a research Chair in swine welfare maintains key research infrastructure for the industry and demonstrates a strong working partnership. She also encouraged producers to think about how they can incorporate results of this work into their own operations.

This certainly gives everyone enough to think about while we're waiting for warmer temperatures outside! ■



The NSERC IRC in Swine Welfare program wraps up this year, but researchers are looking for continued support.

An advertisement for MSP[RS] Resistant Starch. At the top, the text "Weather THE STORM" is written in a white script font. Below it, a smaller text reads: "Scours is a challenge, but it doesn't have to be. Feed your piglets MSP[RS]® Resistant Starch daily to ensure they weather the storm." The central image shows a close-up of a pig's face. In the bottom left corner, there is a white bag of MSP[RS] Resistant Starch. In the bottom right corner, the text "MSP[RS] RESISTANT STARCH" and the website "www.mspResistantStarch.com" are displayed.

A social media promotion for Canadian Hog JOURNAL. The text "Canadian Hog JOURNAL" is at the top in a large, bold, white font. Below it, the text "Follow '@HogJournal'" is written in white. There are two social media icons: a blue Twitter bird icon and a blue Facebook 'f' icon. To the right of each icon is a QR code. At the bottom, the text "'Like' & 'share' our posts" is written in white.

Enrichment at weaning can reduce piglet stress

Ashlyn Scott & Meagan King

Editor's note: Ashlyn Scott is a graduate student with the Department of Animal Science at the University of Manitoba. She can be contacted at 'scotta12@myumanitoba.ca.' Meagan King is an assistant professor with Department of Animal Science at the University of Manitoba. She can be contacted at 'meagan.king@umanitoba.ca.'



Ashlyn Scott was the first-place winner of the R.O. Ball Young Scientist Award at this year's Banff Pork Seminar. The award recognizes graduate students who provide a best overall combination of good and relevant science, a well written abstract and an excellent presentation.

Weaning is a stressful time for piglets. When weaned, they can be stressed because of sow separation, transportation and re-mixing. Our recently completed research project looked at ways to mitigate piglets' stress around weaning to improve their behaviour, welfare and performance.

When looking for ways to mitigate piglet stress around weaning, finding solutions beneficial to piglets and feasible for large-scale producers can be challenging. This project took place in the summer of 2022 at a 6,000-sow operation.

The research team supervised by Meagan King compared the outcomes of two enrichment types and their combined effect: object enrichment and social enrichment. Object enrichment included hanging burlap in farrowing and nursery pens using C-clamps to secure the sheet over the plastic pen panels, while social enrichment included allowing groups of two or four neighbouring litters to mix before weaning by removing the plastic pen dividers when piglets were approximately three-days-old.

The team recorded piglet behaviour, piglet body weights, and sow and pig-

let lesion scores. The results indicate that each type of enrichment was able to be implemented in a commercial setting and benefitted the piglets.

Evaluating enrichment options

By mixing piglets with other litters before weaning, the animals get the chance to interact with other piglets in a familiar environment, with their sow present, while developing social skills that they can use once weaned and mixed with unfamiliar pigs again in a new environment. Using this method, piglets are also provided with

	Laid-ons
Single litters (not mixed)	~10%
Two litters mixed	~6%
Four litters mixed	~4%

Figure 1: Laid-on piglet deaths as a proportion of total piglets

more space per pig when the dividers are removed, and more safe space is available away from the sow. In our trial, this significantly reduced the number of laid-on deaths – percentage of piglet deaths that were a result of being crushed by the sow (Figure 1).

Mixing piglets in groups of four litters before weaning decreased the amount of biting by weaned piglets, and as a result, improved their lesion scores one-week post-weaning. Before weaning, sow udder and teat condition also deteriorated less when piglets were mixed with four neighbouring litters. Mixing did not affect piglet weaning weights or total mortality.

By providing burlap in the pens, piglets are encouraged to engage in natural behaviours, such as chewing, rooting and exploring, and there is an element of familiarity between their environments before and after weaning. Having access to burlap reduced biting behaviours between piglets before and after weaning, because they had a more positive outlet for their chewing behaviours and performed less fighting and biting. As a result, fewer lesions were observed after weaning.

Access to burlap also reduced the amount of manipulation of pen objects, potentially improving the longevity of the pens, flooring and feeders. Results indicate providing burlap did not affect piglet weights or mortality one week after weaning. Average daily gain was not measured; however, other studies have found that access to burlap improves weaners' feed intake. Feed intake is improved because the piglets' jaw and facial muscles are more developed after chewing on burlap. This practice

also improves their transition to solid feed following weaning.

Both types of enrichment benefited the piglets; however, their effects were not additive, meaning that either object or social enrichment can be implemented by producers, depending on preference and suitability to their operations. When deciding which enrichment type might have a greater impact on-farm, some key factors to consider are cost, biosecurity and welfare (Figure 2).

Overall, both types of enrichment allow piglets to socialize with others at

a younger age and redirect their attention and aggression away from each other, which does not negatively impact performance and can improve behaviour around weaning.

Getting a better feel for burlap

Currently, our team has a follow-up project to evaluate if the timing of burlap presentation is important. For this project, there are four treatments: piglets have access to burlap only in the nursery; piglets have access to burlap only in the farrowing room and nursery; sow and piglets have access to burlap in the farrowing room, and piglets have access to burlap in the nursery; sows and piglets have no access to burlap.

The results of this project should indicate whether piglets need previous exposure to burlap in the farrowing room in order to benefit from it at weaning, and whether they learn from their sow to engage with burlap. ■

	Object Enrichment - Burlap	Social Enrichment – Mixing
Benefits	<p>Piglet behaviour – Reduces tail and ear biting.</p> <p>Piglet welfare – Reduces piglet lesions the week after weaning.</p> <p>Piglet performance – No change in the number of piglets weaned per sow, weaning weights, or weights 1-week after weaning.</p>	<p>Piglet behaviour – Reduces tail and ear biting.</p> <p>Piglet welfare – Reduces crushing of piglets by the sow. Reduces piglet lesions the week after weaning.</p> <p>Piglet performance – No change in the number of piglets weaned per sow, weaning weights, or weights 1-week after weaning.</p>
Cost	<p>Materials – Buying burlap and clamps in bulk from wholesalers can keep costs low.</p> <p>Labour – Placing new burlap for each batch and removing the soiled burlap when washing the room.</p>	<p>Materials – No additional materials are required. Could modify pen dividers to make mixing easier (with a pin/pivot mechanism).</p> <p>Labour – Removing the dividers after farrowing and replacing them when washing the room.</p>
Risk	<p>Biosecurity – Replacing the burlap sheets before each new batch reduces biosecurity risk.</p> <p>Safety – Burlap is a natural fibre and is not a risk to sow or piglet health.</p> <p>Manure pump – Minimal risk to slurry manure systems as only single strands can pass through slats.</p>	<p>Biosecurity – May improve piglet resilience by being exposed to different litters.</p> <p>Safety – Sows are still in crates. No increased risk to employees.</p>

Figure 2: Factors related to each type of enrichment

Mixing matters when grouping sows

Swine Innovation Porc

Editor's note: This article is a project summary prepared for Swine Innovation Porc, as part of a series of articles covering SIP's work. For more information, contact 'info@swineinnovationporc.ca.'



As group sow housing becomes more common, understanding how to best manage the situation is vital knowledge for producers.

As group sow housing becomes more prevalent in Canadian pig production, understanding its unique dynamics is important. In such systems, proper management is key to minimizing stress for sows, thereby boosting sow reproductive performance and piglet development. Given the stakes for producers, scientists are working hard to find the best approach.

As part of Swine Innovation Porc's (SIP) Cluster 3 research activities, Jennifer Brown at the University of Saskatchewan explored the pros and cons of different group management systems, focused on dynamic versus static grouping and compared early and late mixing of sows. The University of Saskatchewan's Yolande Seddon, Agriculture and Agri-Food Canada's Nicolas Devillers and the Canadian Centre for Swine Improvement's (CCSI) Brian Sullivan also contributed to this work.

With the dynamic mixing approach, multiple breeding groups are housed together in each pen. As small groups of sows are moved out to be farrowed, new groups of recently mated sows join the pen. In static groups, each pen houses only one breeding group of sows. The animals are only mixed at the start of gestation, and no sows can be brought in for replacement if a sow is removed. The choice to imple-

ment dynamic or static housing can have big impacts for barn design.

Mixing and mingling

To assess options for group management of sows, the researchers used a variety of mixing times and grouping strategies in the barn. They also followed two of the groups to farrowing and examined the piglets to gauge the impact of pre-natal stress. To assess the piglets, the researchers looked at vitality scores, stress levels, behaviour at tail docking, growth rate and length of time for piglets to approach the udder.

Dynamic mixing is a popular choice for producers, allowing use of new technology and providing individual feeding for sows. But researchers are concerned that there is potential for more conflict, aggression and stress

as groups of sows move in and out of the pen. When it comes to sows, there is 'mixing aggression' and 'ongoing aggression.' Researchers were concerned that ongoing aggression in dynamic groups would be a problem. What they found was that mixing aggression, which happens only once at the beginning of gestation, was reduced in dynamic groups because there were fewer new group members. At the same time, they found that ongoing aggression resulted in more lesions in dynamic groups throughout gestation, but it was not enough to impact their production. This suggests that mixing aggression is more important than ongoing aggression in terms of the impact on reproduction.

Late mixing, after 28 days of gestation, is also largely favoured over early mixing, but this may not be sustainable in the long term for the industry, given incoming regulatory changes to sow spacing during gestation in Canada and the U.S. As a result, researchers are examining early mixing more closely as a viable option.

Interestingly, this study found less aggression in dynamic systems over static ones, in which both were mixed early. In dynamic systems, aggression levels were low when each small group was added, compared to one large mixing



Sow aggression in group settings has implications for performance and animal welfare, and can generate financial losses if left unchecked.

event for the static housed sows, which occurred in early pregnancy. The production results were also surprising: dynamic sows had higher farrowing rates than static sows, and even over a control group of late mixed sows.

The research suggests there is not a clear winner between static and dynamic mixing; both systems are popular and will continue to be so. They require very different approaches, so producers must be more aware of those differences to fine-tune management strategies.

Climbing the social ladder

Another important factor influencing a sow's reproductive performance during this study was social status within the pen. Researchers determined each sow's rank within the group as dominant, intermediate or subordinate based on a feed competition test. A sow's rank played a large role in setting their stress level, which, in turn, affected piglet behavior and physiology. The exact connection is not yet clear, but scientists hope to learn more as they review the data.

As part of the project, the researchers also examined sow mortality. Using a survey and follow-up visits that covered 104 herds, they found higher mortality in herds with 3,000 or more sows, compared to smaller herds, and higher mortality in group gestation versus stalls. Scientists were especially concerned that the majority of deaths in group gestation involved younger sows. Apart from the animal welfare implications, early culling represents financial loss. Most producers can attest that sows with fewer than three parities don't even cover their replacement cost.

These mortality findings are critical for the industry going forward. The increase in lameness should spawn a greater focus on all aspects of gilt development, and genetics com-

panies could prioritize conformation (functional legs and feet) and a calmer temperament that is less prone to aggression. Greater robustness traits would be beneficial as well, making sows more durable in group systems as they navigate concrete floors and interact with their pen mates.

Addressing the mortality issue will take a combined effort from researchers and producers. Appropriate next steps for producers would include increased worker training and ensuring consistency in the use of mortality-related terminology – what constitutes 'culled,' 'euthanized' and 'died on farm.'

As group sow housing continues to be more widely implemented across the industry, the more producers can learn about managing group gestation and limiting sow mortality, the better equipped they'll be to face the future. ■

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Carbon reduction helps pigs and planet

Laurence Nantel

Editor's note: Laurence Nantel is Swine Nutrition Advisor, Trouw Nutrition. She can be contacted at 'laurence.nantel@trouwnutrition.com.'

Excretion	kg/kg Market Weight	kg/Market Pig	Emissions	kg/kg Market Weight	kg/Market
Nitrogen	0.043	5.792	Ammonia (NH3)	0.013	1.718
Total P	0.010	1.287	NOx	0.001	0.142
Phosphates (PO4)	0.029	3.861	Methane (CH4)	0.035	4.715
Potassium	0.017	2.242			
Zinc	0.00041	0.056			
Copper	0.00006	0.008			

Environmental Impact values expressed as per kg farm gate weight

Impact Category	Climate Change (+LUC) kg CO2 eq	Eutrophication Freshwater kg P eq	Eutrophication Marine kg N eq	Eutrophication Terrestrial Mol N eq	Acidification Mol H+ eq	Land Use m² yr crop eq
Sows	0.332	0.00003	0.002	0.018	0.004	0.327
Nursery	0.408	0.00004	0.002	0.028	0.007	0.396
Grow-Finish	0.136	0.00000	0.000	0.000	0.000	0.000
Enteric Fermentation	0.146	0.00003	0.000	0.002	0.001	0.016
Farm Operations	1.440	0.00024	0.015	0.064	0.016	2.881
Feed	0.705	0.00000	0.001	0.116	0.026	0.000
Manure Mgmt.	2.427	0.00027	0.016	0.182	0.043	2.897
Total Grow-Finish	3.167	0.00034	0.020	0.228	0.054	3.620
Total						

From field to farm to fork, quantifying carbon emissions across the pork value chain can be tricky. Technology makes it easier to track and target for reduction.

The Canadian pork industry cares about the environmental impact that comes with feeding its many global consumers. As consumers continue to demand healthier and more responsible agricultural practices, environmental concerns will inevitably define the future of food production.

This societal pressure has forced us to define a more durable agricultural strategy oriented toward carbon reduction. To achieve this objective, we first need to analyze the carbon life cycle of agricultural businesses. In doing so, it is possible to establish a benchmark to evaluate carbon intensity. Although it may seem dif-

icult to quantify emissions, tools are available on the market to make it accurate and easy.

Measuring carbon footprint

Trouw Nutrition has long used Watson® software to help producers make day-to-day decisions about ration formulations, transport management, the use of feed additives or antibiotics, and more recently, sustainable development. This new sustainability component allows for the calculation of the 'carbon budget' of a farm and express it as kilograms of carbon dioxide equivalent: a unit of comparison between emission sourc-

es, including methane and nitrous oxide.

With this technology, it is now possible to predict the quantity of environmental pollutants associated with the pork value chain, from crop production and feed milling, to feed intake and manure management, to transportation. Watson generates various reports showing the carbon dioxide equivalent of a farm, with a breakdown representing different parts of an operation. This allows producers to identify areas of focus to potentially reduce carbon intensity. Producers also have access to several scenarios in which

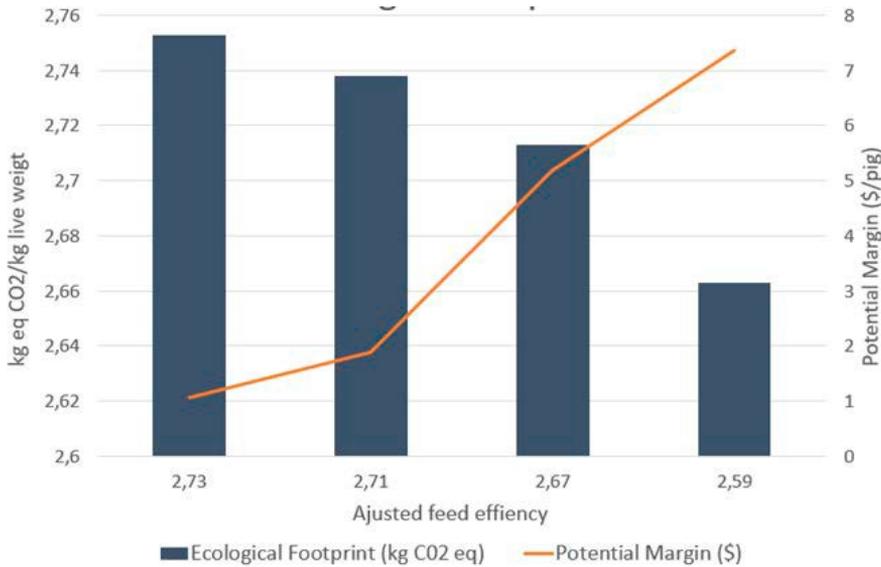


Figure 1: Improving pig performance comes with environmental benefits.

they can identify the impacts of genetics, health status, management practices and energy inputs. To assess carbon intensity, we must examine the business in detail, taking into account management practices, the feeding program and animal performance. For example, since feed contributes most to the carbon intensity of a farm, it is important to calculate the transport distance for each feed ingredient, from the field to the feed mill, and from the feed mill to the farm. A farm that produces its own crops for feed reduces

its emissions associated with feed transportation. Manure management has the second-largest influence on emissions. Enteric fermentation – the process through which livestock digest feed – results in the formation of methane, released with manure.

Though agriculture in general has a smaller impact on emissions compared to some industries, carbon reduction still matters. When the goal is to reduce emissions, several interesting strategies can be implemented. For example, manure pits can be

covered or more responsible energy use can be targeted.

With a Watson analysis, it is also possible to identify how improvements to swine performance can support the environment. In other words, improved feed efficiency can not only potentially increase margins but also decrease a farm's ecological impact. More specifically, a five per cent improvement in feed conversion reduces the carbon intensity of a farm by three per cent (Figure 1).

By using carbon intensity as a practical measure to improve the overall performance of a farm, it is possible to achieve both economic and ecological sustainability. Watson's assessment tool also enables the ranking of pork producers against other types of livestock producers from around the world.

Altogether, a product with a smaller carbon footprint is more appealing for the consumer and the market. As such, the future of pork production involves measuring ecological impacts to improve performance and public trust. ■

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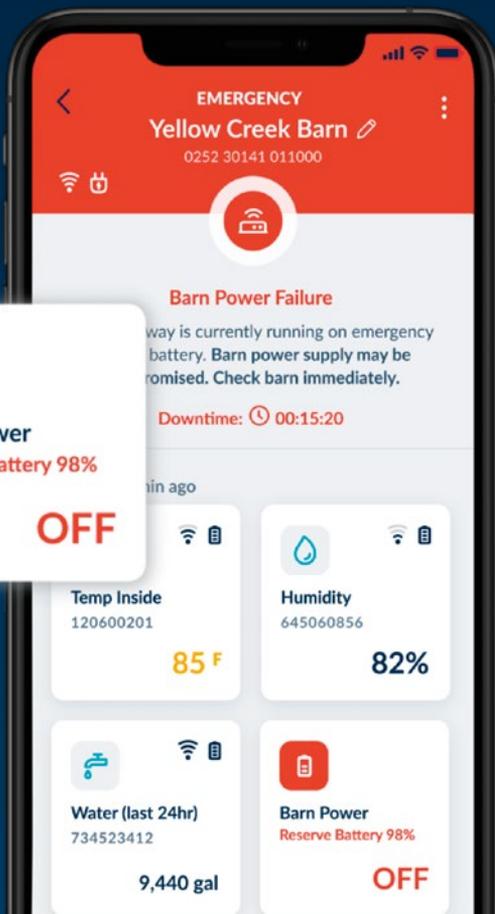
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