Canadian Hog JOURNAL
Canada's national hog magazine

Canada's top producer-focused swine industry publication since 1972. Covering news, commentary, events and research in four editions annually.

Volume 45 | Number 2

Fall 2023

Date of Issue: October 2023

Published by Alberta Pork with cooperation from producers and partners across Canada.

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Publications Mail Agreement
No. 40062769

Return undeliverable addresses to:
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4828 - 89 Street NW
Edmonton, AB, Canada T6E 5K1

Cover Photo
Canadian pork charcuterie

Probiotics could help piglets defeat diarrhea, Page 36

Message from the editor

The Fall 2023 edition of the Canadian Hog Journal is here!

From talking to people at industry events, I've heard a lot of rumblings about the need for better pork promotion in Canada. It's a tricky subject. Consumer marketing, done right, is usually expensive. But without the right underlying strategies, it could be wasteful. Still, when it works, its pros vastly outweigh the cons. I delve into what's behind Canadian pork promotion today, where it could be headed and why it matters.

Emergency preparedness is frustrating yet fundamental. There are plenty of reasons why, but looking across the world, war and disease issues in Ukraine have amounted to an extreme crisis for many Ukrainian hog farmers. What can Canadian producers learn from the situation?

With Seneca Valley Virus (SVV) popping up at Canadian assembly yards last year, there has been growing concern around what further discoveries could mean for the movement of pigs to the U.S. The Canada West Swine Health Intelligence Network (CWSHIN) stepped up surveillance this year in the hopes of catching any new cases before shipments head south.

Encountering an on-farm disease challenge would catch any producer off-guard and could create a significant operational disruption. Veterinarian Cordell Young and producer Steven Waldner from Alberta share their experience battling H1N2 and how good relationships make all the difference.

With 'net zero' climate targets all the rage around the world, agriculture, too, is impacted. But for all of the noble intentions to address greenhouse gas emissions, the tip of the iceberg conceals much larger obstacles for farmers. The Canadian Pork Council's (CPC) Katerina Kolemishevska offers perspective on why Canada's climate goals are missing the mark for the pork industry.

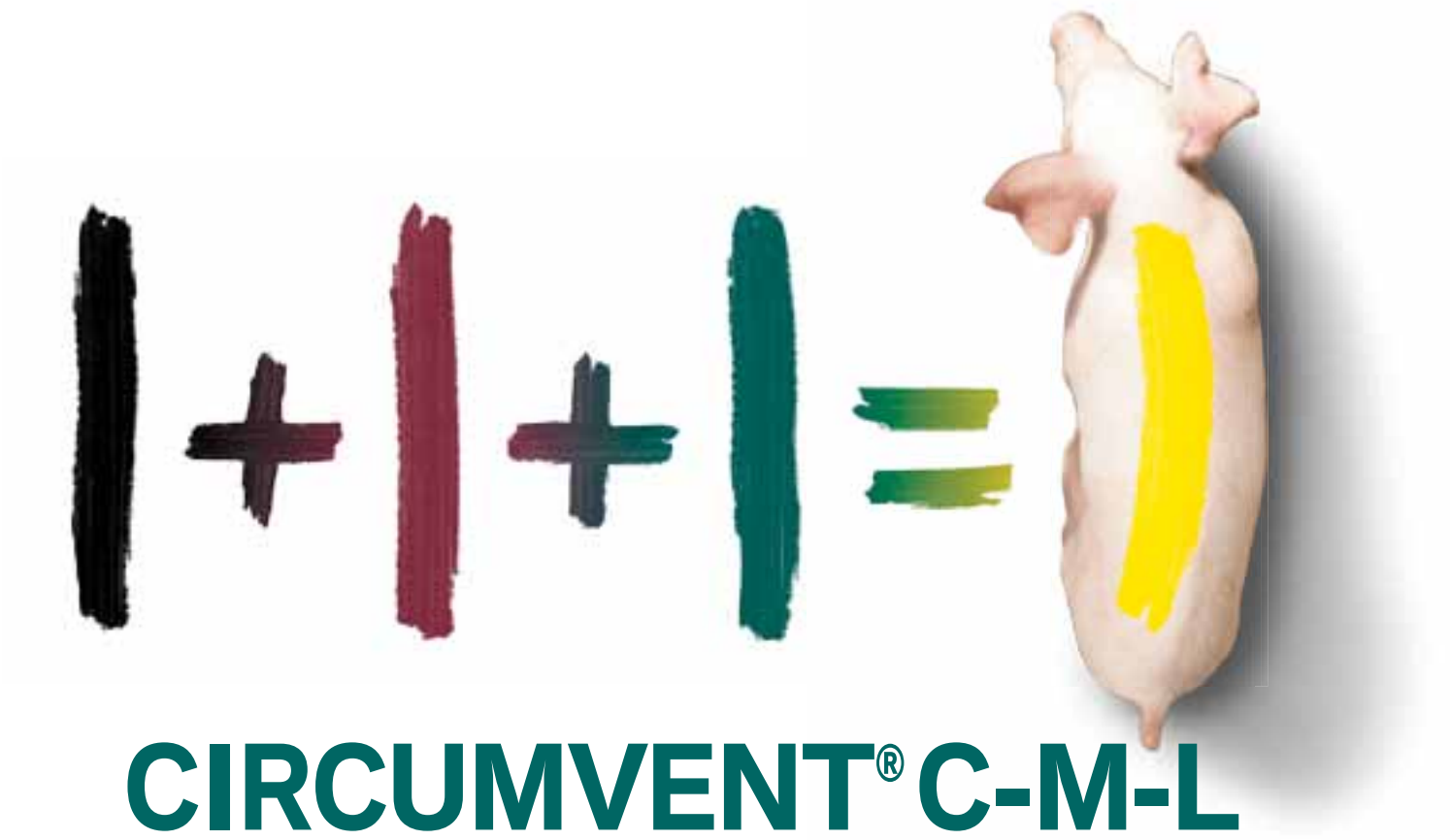
A new, ongoing series of videos showcases the many people across the agriculture value chain that make it all possible, with their stories presented in an enjoyable broadcast news format. Ontario Pork's Tyler Calver provides details.

Swine Innovation Porc research featured in this edition includes project overviews related to using probiotics to combat diarrhea and an ongoing truck washing project that is improving transport biosecurity across the board.

And, finally, from Cargill, learn about the connection between larger piglet litters and lower birth weights, and how to avoid losing money in pursuit of greater efficiency.

The Canadian pork industry features a wide range of expertise, experience and perspectives on matters that affect the entire sector. Your voice counts, and I want to hear it! Share your thoughts by reaching out to *andrew.heck@albertapork.com* or tagging the Canadian Hog Journal (*@HogJournal*) in your conversations on Twitter/X and Facebook. ■

Andrew Heck



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Pork promotion must look to the future

Andrew Heck

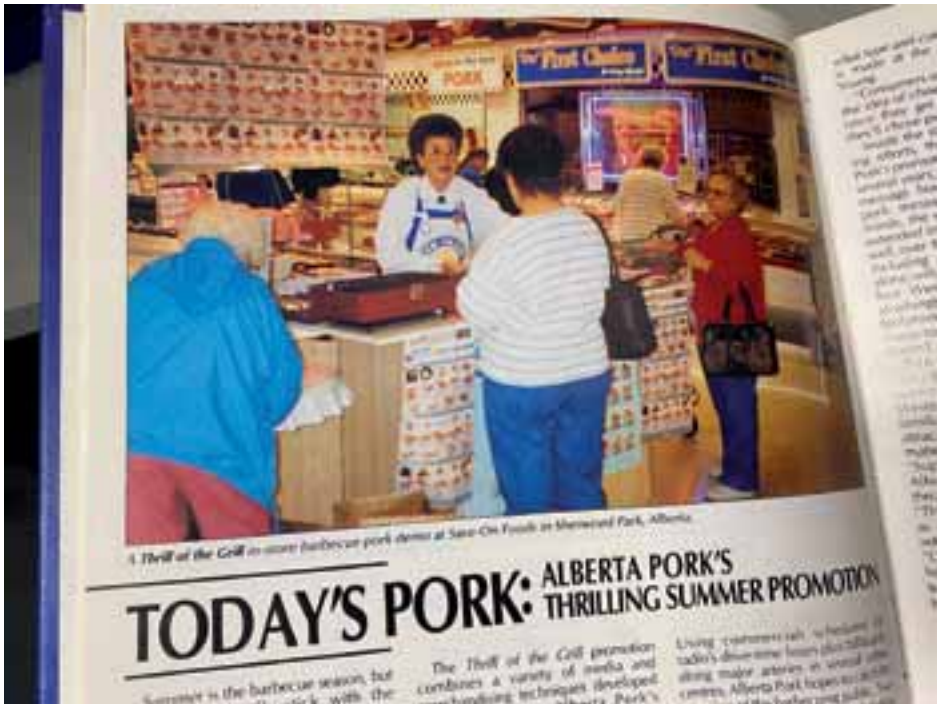
Despite its inherent virtues – from affordability, ease-of-use, nutritional density and taste – Canadian pork has fallen behind the pack when it comes to consumer marketing, compared to its protein competitors. While supply-managed commodities undoubtedly have a financial advantage, it is incumbent upon the Canadian pork industry to keep pace.

Pork demand is largely tied to trends outside of the industry's control, but that doesn't mean the industry can't help influence the trajectory. Consumer marketing has ranked lower on the industry's priorities in recent years than more pressing concerns, like pricing, which has created an opportunity for increased attention and improvement to current pork promotion efforts.

Once upon a time, Canadians could be counted on to fill their fridges and freezers with fresh and cured pork products, ready-at-hand in a moment's notice for tonight's family supper, tomorrow's bagged lunch or a backyard cookout.

Today, the situation is very different. Consumers are much less inclined to stock up on food at all, as grocery prices have soared and as foodservice options have made meals more convenient than ever. About half of Canada's nearly 40 million people are under 40-years-old, and nearly 95 per cent of the entire population lives in cities, including many new Canadians. While pork appeals to Canadians of all ages and backgrounds, there's no doubt that younger, urban, culturally diverse consumers and their children will continue to wield increasing influence over trends.

This societal change represents both a blessing and a curse. On one hand, consumers are much better informed than ever before, and they have a lot more choices when it comes to food. On the other hand, the playing field for marketers has become much more complex to navigate. Pork promotion, however, has been sluggish to adapt.


TODAY'S PORK: ALBERTA PORK'S THRILLING SUMMER PROMOTION

Appealing to modern pork consumers is harder than ever. The Summer 1993 edition of the Western Hog Journal featured a spotlight on Alberta Pork's 'thrilling summer promotion.' But do the same strategies work today?

Pork: the other (non-)white meat

With consumers becoming increasingly health-conscious, and as professional nutrition advice began to steer people away from diets high in saturated fat, pork in the 1980s needed a makeover. The solution? Turning pork into chicken – proverbially speaking – as lighter, bird-based options were rapidly taking flight in terms of purchasing habits.

Marketers readily latched onto this revolutionary idea to modernize pork's image, beginning with a U.S. National Pork Producers Council (NPPC) campaign in 1987: The Other White Meat®. Thanks to concentrated, well-funded initiatives, the catchy slogan spilled over into Canada, becoming a sentiment that would be adapted and recycled for years. While the tagline was officially retired in 2011, its legacy endures, representing former glory that has yet to be recaptured.

Even though the campaign resonated with a relatively homogenous consumer base back then – using traditional media like print, radio and television advertising, along with point-of-sale activities – it was based on a falsehood, as pork isn't white meat. In fact, many people eating pork today were not even born when the campaign was conceived.

When the motto first came into use, the positive perception of poultry was hard to ignore. One of the main selling features of fresh pork then, as now, is its similarity to chicken in terms of nutritional value and possible methods of preparation. But does that matter? Fast-forward to the age of the internet, and not all consumers are seeking a chicken copycat anymore, but perhaps one that goes toe-to-toe with a comparable yet pricier protein, like beef.

CONTINUED ON PAGE 8

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Starting in 1987, the U.S. National Pork Producers Council (NPPC) trademarked and aggressively promoted pork as 'The Other White Meat®.' The slogan resonated with consumers into the 2000s, but today, it's antiquated.

As chicken consumption has continued to rise in Canada, beef consumption has declined, with pork remaining stable. Logically, filling the void left by beef may hold greater potential than trying to cut into chicken's popularity, which continues to dominate, almost untouched. Plant- and lab-based meat alternative manufacturers recognized this right away, heading straight for the creation of fake beef burgers. And while these companies have struggled to turn a profit and continue to try their hand at simulated pork, poultry, dairy and seafood products, the soy- or pea-based patty has seen moderate success and commercial application relative to other imitation goods.

When diners are looking for a night out and a satisfying meal, heading to the local steakhouse has remained a popular choice for decades. Even when pork manages to make a prominent appearance on restaurant menus, few establishments treat it with the same level of reverence and respect as beef, and the results speak for themselves, when guests are served an underwhelming, regrettable pork plate.

Just 10 degrees-Fahrenheit separates juicy, medium rare pork from dry, well done pork, but health officials around the world have differing opinions on what's safe.

While foodservice does not directly drive pig or pork prices, restaurants play an important role in how consumers engage with pork, especially as mobile application-based delivery options become increasingly popular.

As these unfortunate eating experiences serve to reinforce consumers' preferences, beef comes out on top almost every time, which cements in their minds a distinct difference in quality, even if that belief is rooted in a simple matter of technique and presentation.

For a long time, pork was under-classed as subsistence – eaten at home when many people kept backyard pigs for personal consumption or simply didn't appreciate it fully. Pork's second-rate historical reputation precedes it, even today, with food safety remaining a common yet dated concern.

Food safety has come a long way over the years, with foodborne illnesses in pork not usually the direct responsibility of production or processing, but cooking. Age-old fears related to *Trinchinella* bacteria are no longer seen with commercially raised pigs, with other pathogens like *E. coli*, *Salmonella* and *Listeria* now the focus.

As a result, there has been renewed interest and push for health officials to adopt lower temperature standards, given the circumstances around modern pork production and processing. Already back in 2011, the U.S. Department of Agriculture lowered its temperature recommendations for pork to 145 degrees-Fahrenheit, with some rest time, which is consistent with their guidelines for beef and veal. Australian Pork even goes so far as to publish on its website: "Pork doesn't need to be overcooked to be safe. In fact, pork can be eaten with a hint of pink in the middle." Health Canada, meanwhile, still places the pork minimum at a stodgy 160 degrees-Fahrenheit, just shy of chicken's 165-degree threshold.

While it may seem like a reversal of once-trusted marketing strategies, if Canadians – especially the current generation of young and soon-to-be adults – can be convinced to treat pork more like the red meat it actually is, it could showcase the beauty of the product in new ways. Even if a consumer's preference is to eat out or order

in, picking pork could be seen as enjoyable and economical just the same.

Disease provides tangible reason to care

One area in which the Canadian pork industry has a pressing need to brush up is the situation of a potential foreign animal disease outbreak, like African Swine Fever (ASF).

In the event trade comes to a halt due to ASF, pork supplies already in cold storage will become backlogged, awaiting export, which will cause serious supply chain complications. The only immediate reprieve could be renewed consumer interest in buying up the stalled pork until market activities resume as normal. This sounds doable in principle, but in practice, Canadians are nowhere near equipped to eat up much of the surplus.

Flash back to 2003: a case of bovine spongiform encephalopathy (BSE) was first discovered in Canadian cattle, resulting in the closure of global markets to Canadian beef. In response, the industry rallied Canadian consumers to buy beef... and it worked.

Year-over-year, between 2002 and 2003, per capita domestic beef consumption increased from 13.5 kilograms to 14.2 kilograms. While beef prices plunged as a result of the markets lost from BSE, hurting the industry in the direct aftermath, consumers were thrilled to find deep discounts at retail. Curiously, during that same time, per capita pork consumption declined, with chicken consumption remaining stable.

While Canadian consumers' response to BSE could serve as an analogy for a hypothetical ASF experience, there are some differences: only about half of all Canadian beef is typically exported, with the other half consumed domestically, whereas pork is undoubtedly more export-reliant. Additionally, romantic stereotypes about beef – think of

CONTINUED ON PAGE 10

Canadian beef's triumph over BSE was a massive accomplishment, at least partly due to consumer loyalty, which was built over time by the industry's own promotional efforts. But would Canadian pork under ASF receive the same treatment?

the picturesque ranching lands featuring cattle and cowboys in the Rocky Mountain foothills – are largely absent with pig production, which positions beef much better than pork among everyday consumers who may view pork neutrally or even negatively. 'Factory farm' prejudices are one example.

If ASF were to hit Canada, it is doubtful that Canadians would respond as enthusiastically to pork as they did to beef during the BSE crisis, which means it's in the pork industry's best interest to work even harder now to build its brand, before the need becomes critical.

While a supply crisis may be inevitable under ASF, anything helps, when it comes to growing consumption levels. Proactive thinking suggests pork promotion is one way to do it, to develop favourable consumer habits and build pride along the way, which has a ripple effect even when crises are not imminent.

While provinces are fond of their own brands and promotional activities, the strength of Canadian pork lies its ability for partners to pool their resources.

Partners must come together rather than splinter

Today, more than 1.4 million metric tonnes of Canadian pork end up overseas, with around 670,000 metric tonnes being consumed domestically; however, not all pork consumed by Canadians is Canadian. An additional 270,000 metric tonnes of imports – mostly from the U.S. – end up here, highlighting the reality of an integrated, international market, as retailers often choose to sell foreign pork. In foodservice, that can improve profit margins, and in grocery, it may be easier to sell at a lower price, encouraging shoppers' purchases.

If the proportion of Canadian pork consumed domestically versus exported became even a bit more balanced, it could make all the difference to enhancing Canadian food security and public trust, with a financial benefit to follow for the industry. While private businesses like grocers and restaurants are free to acquire pork from any approved source, it stands to reason that retailers could make the conscientious choice to consider standing behind Canadian versus foreign products. While pork may lack beef's bold appeal, Canadi-

an consumers are generally on board with the 'buy local' mantra, which is a naturally favourable position for the Canadian pork industry.

Working with Canada Pork, provincial pork producer organizations across Canada and the Canadian Pork Council (CPC) frequently engage with one another on various promotions, in addition to efforts that take place exclusively at the provincial level. For example, Alberta Pork, Sask Pork and Manitoba Pork join forces regularly to drive initiatives designed for western Canada as a whole, while Ontario Pork and *Éleveurs de porcs du Québec* (Quebec Pork) have sophisticated programs of their own, tailored to their respective jurisdictions. From having a presence at community events to working with grocers and restaurants to showcase Canadian pork, there is still a place for traditional forms of consumer marketing, although the benefits are typically less impactful compared to decades past. As such, pooling resources for maximum effect, today, possesses the greatest potential.

Through Canada Pork, provincial borders dissolve, and the true face of a united pork front is revealed. To the consumer, it sends a stronger message about the product, through brands like Verified Canadian Pork (VCP), with a value proposition based on quality assurances at the farm and plant level.

From one province to the next, it may be true that subtle differences like feed ingredients, environmental conditions and operational styles contribute to distinctions in the end product, but overall, the average consumer likely can't tell the difference, may not care and probably doesn't even know. Suffice to say, marketing at the provincial level, over the national level, divides resources and brings smaller returns than the industry is likely capable of achieving through collective action.

Pork can prevail, but only with fresh thinking

For the Canadian pork industry to address its current marketing stalemate, it has become clear that collaboration and investment are the best way forward. Paired with modern thinking and novel approaches for an ever-changing demographic, pork has more to offer consumers than most other proteins, but those virtues are not as widely appreciated as they could be.

Successful marketing requires data to strengthen its case. If the direct benefits are unable to be measured, stakeholder confidence is lost, and momentum dies. The Canadian pork industry must take action to understand its audience even better.

The changed landscape requires updated tools and tactics to tap into what today's consumer wants and will ultimately find, with or without industry input. Finding a way to capitalize on the situation remains pork promoters' Achilles Heel.

If Canadian consumption of pork can tick upward, even a little, it may generate greater domestic interest in this world-leading product, which is the goal that has eluded the industry as society forges ahead faster than pork marketing has been able to match. ■

Understanding contemporary demographics is a must. The choices of today's pork consumer look very different from what they once were.

Green goals, grey realities: the net-zero quest

Katerina Kolemishevska

Editor's note: Katerina Kolemishevska is Director of Policy Development, Canadian Pork Council (CPC). She can be contacted at kolemishevska@cpc-ccp.com.

Prime Minister Justin Trudeau stood alongside other world leaders in at the COP21 conference in 2015, signing Canada onto the Paris Agreement, which commits us to international net-zero goals.

The call for a net-zero planet has been echoing across countries, industries and communities with more urgency than ever before. As floods, heat waves and wildfires ravage our world, finding an effective but achievable solution to climate change is paramount.

The Intergovernmental Panel on Climate Change (IPCC) reported in 2018 that the Earth has warmed 1.5 degrees-Celsius compared to pre-industrial levels, due to greenhouse gas emissions (GHGs). The report emphasizes the need for a "rapid and far-reaching" transition to keep temperatures at current levels. This is how the net-zero concept came to exist and was adopted with the Paris Agreement at the United Nations Climate Change Conference (COP21), during which signatory countries, including Canada, pledged to act.

Canada has committed to reaching economy-wide net-zero GHGs by 2050, along with 120 countries, aiming to slash global emissions in half by 2030. The Canadian government has set various legislative measures to meet the goals, with the most important being the *Canadian Net-Zero Emissions Accountability Act*, enacted in 2021. Currently, the government is developing its Sustainable Agricultural Strategy (SAS), outlining the indicators, tools and actions that could help the agri-food sector meet the target.

What does 'net zero' really mean?

Interpretations of 'net zero' usually refer to reducing GHG emissions to the greatest possible extent and balancing what's left. Why 'net' zero? Even with total de-carbonization of systems that create emissions, there will always be GHGs in the environment. To reach total neutrality – or 'zero' – emissions must be completely balanced, which is impossible. As most emissions come from energy-intensive industries, including agriculture, a delicate yet imperfect solution is being sought.

'Offsetting' and 'insetting' GHG emissions are two basic strategies for agriculture. Offsetting provides an instant way to balance emissions, whereas insetting directly enhances the sustainability and resiliency of agricultural operations.

To be more precise, offsetting allows producers to compensate for emissions already produced by investing in environmental projects outside of their operations, to reduce their carbon footprint. Most offsetting strategies focus

Manure management strategies align with net-zero 'insetting' practices and have widespread application on Canadian farms today.

on industrial carbon capture and storage. This is contrasted with reducing emissions directly related to agricultural activity and the agri-food supply chain, which is considered insetting.

Insetting incorporates carbon reduction directly into the production business model, such as conservation tillage, crop rotation and manure management. Depending on the operational structure, producers can combine offsetting and insetting practices and tailor them to specific on-farm contexts to drive significant progress towards the broader net-zero goal.

Are some net-zero goals out-of-reach?

The net-zero approach represents a good attempt to tackle climate change in theory, but in practice, the path is burdened with complications.

As it stands today, it seems nearly impossible to maintain global temperatures at just 1.5 degrees-Celsius above pre-industrial levels. This will require significant adjustments for the agri-food sector, including how we produce crops and livestock, eliminate food waste and manage biodiversity.

Transitioning to net zero often requires substantial investments in new technology, equipment and procedures. In its report on "Canada's road to net-zero," RBC estimates $2 trillion of investments will be needed to finance the transition over the next three decades. That's at least $60 billion annually from government and industry to cut Canada's emissions by 75 per cent.

For agriculture alone, RBC suggests costs will be $2.5 billion annually to cut emissions from 73 megatonnes in 2019 to 43 megatonnes going forward. While current government programs can cover some of the cost, it is unclear how public incentives can guarantee long-term commitment. But what happens with the huge remaining cash gap needed to enable this transition? Where is that money coming from? Current economic conditions, such as inflation rates, don't make it any better. On the contrary, it makes the money tighter.

Technological limitations also challenge innovation. Despite scientific progress, we are still in the early stages of creating scalable, efficient and cost-effective climate-smart technologies. While other sectors have identified many technologies that could substantially reduce emissions, these are not readily available in agriculture. As energy sources vary from one region of the country to the next, one-size-fits-all solutions may be out-of-reach for farmers.

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Realistically reaching net zero remains a foggy proposition for most Canadian hog farmers, as investment and technology are still insufficient.

Across agriculture, carbon capture and storage systems could be a game changer, but land availability is a major concern. The U.K.-based climate policy thinktank, Grantham Institute, believes up to 1.2 billion hectares of land worldwide would be required to grow crops for bioenergy to replace conventional, carbon-intensive forms. That equates to nearly 80 per cent of all the land that is now farmed. Implementation at that scale would permanently damage biodiversity and harm global food security.

And there's another problem: nitrogen. We still have much to discover scientifically when it comes to understanding biological processes that contribute to GHG emissions, especially the nitrogen cycle. Nitrogen encourages carbon sequestration by promoting plant growth, so it must be managed carefully. A recent report by the intergovernmental Organisation for Economic Co-operation and Development (OECD) highlights the lack of clarity on how nitrogen affects soil microorganisms, which impacts soil biodiversity and fertility, crop output and nitrogen emissions. As the nitrogen enigma becomes better-understood, we may find out that the net-zero calculations are even more complicated than previously thought.

The existing knowledge gaps in agriculture make net zero unfeasible with today's tools. To overcome this barrier, the industry needs multi-faceted strategies to support economic, social and technological advancements.

Find a more balanced way forward

Even if all of the recommended best management practices are implemented, the agri-food sector has little chance of attaining net zero. Despite the associated risks, many agricultural sectors have already committed to pursuing these environmental, social and governance (ESG) goals.

While the Canadian pork industry's carbon footprint is comparatively low, we have significant potential to reduce our overall environmental impact. Hog farmers are constantly striving to improve on-farm practices to lower their input costs and generate positive ecological outcomes.

Yet, some experts consider the net zero commitment necessary to fast-track progress, while others argue that additional regulations and taxes should accompany the pledge; however, relying on legislation rather than cooperation undermines the incentive for producer engagement.

Initiatives that measure and enhance producer sustainability support the broader industry's transformation efforts. Sustainability as a principle – rather than net-zero commitments – balances all associated factors to ensure the industry's long-term viability, rather than only targeting GHG emissions in the pursuit of a one-dimensional objective.

Given that the obstacles to net zero are significant, acknowledging them does not justify inaction. Instead, it demands a more realistic approach. Prioritizing best management practices is important, but producers are not the sole drivers of change. We should shift our attention and invest profoundly in research and development to address technological gaps and develop strategies that work for everyone.

The reality of arriving at net zero is grey because, regardless of which direction we take, no solution is completely green. Instead of unreachable targets, we should understand that the path toward sustainability is a series of steps, and every step in the right direction is critical. ■

ESG goals have consumed the corporate world. Even within the Canadian pork industry, companies are looking to keep up.

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DECEMBER 12

3:00 pm	COFFEE AND VISIT OF THE BOOTHS	
4:00 pm	PANEL | **AN INDUSTRY MEETING THE INCREASING CONSUMER DEMANDS** (F)	
5:30 pm	EXHIBITORS' OPENING COCKTAIL	

DECEMBER 13

8:00 am	COFFEE AND VISIT OF THE BOOTHS		
9:15 am	**WHAT A WORLD!** (F) **Guillaume Lavoie, MBA**, Public policy entrepreneur, lecturer and international affairs analyst		
10:05 am	**DEMYSTIFYING CLIMATE CHANGE TO TAKE ACTION** (F) **Marco Dufresne, Eng.**, Vice President Engineering and Environment, Olymel S.EC./L.P.		
10:55 am	**THE MEXICAN PORK INDUSTRY: GROWTH, CHALLENGES, AND OPPORTUNITIES** **Victor Ochoa, DVM, MBA**, General Manager, Carolls – Smithfield Mexico		
11:45 am	LUNCH AND VISIT OF THE BOOTHS		
WRKSHOP	ANIMAL HEALTH	2:05 pm	**VACCINATION: IT NEEDS TO WORK, DON'T MISS YOUR SHOT!** (F) **Elisabeth Carrière, DVM**, Services vétérinaires ambulatoires Triple-V Inc.
		2:50 pm	**NEXT LEVEL OF GENETIC IMPROVEMENT - THE PRRS RESISTANT PIG** **Lucina Galina, DVM, Ph. D.**, Director Technical Projects, PIC/Genus
	FARM MANAGEMENT	2:05 pm	**75% RETENTION IN PARITY 3: HOW DO YOU DO IT?** (F) **Francis Simard, Agr., M. Sc.**, Director, Monogastric Nutrition and Development, Trouw Nutrition Canada Inc.
		2:50 pm	**IMPACTS OF THE FARROWING CRATE SIZE AND LIFT FLOORS ON PIGLET PERFORMANCE AND MORTALITY** (F) **Sébastien Turcotte, Agr.**, Manager - Buildings and Livestock Management, Centre de développement du porc du Québec Inc.
	MARKETING	2:05 pm	**PORK UNDER THE SPOTLIGHTS : NUTRITIONAL VALUES, COOKING METHODS AND CULINARY JOURNEYS** (F) **Catherine Lefebvre, Dt. P. Nutritioniste**, President, La Petite histoire – Production de contenu audio et vidéo
		2:50 pm	**IMPACT OF ACTIONS TAKEN TO REDUCE AND ADAPT TO CLIMATE CHANGE ON THE MARKETING OF PORK PRODUCTS** (F) **Marco Dufresne, Eng.**, Vice President Engineering and Environment, Olymel S.EC./L.P.
1:55 pm	**BRUNO'S 10 COMMANDMENTS** (F) **Bruno Landry**, Comedian and Speaker		
5:00 pm	EXHIBITORS' COCKTAIL		

Starting at 6:00 pm CELEBRATIONS | **COME CELEBRATE THE EXCELLENCE OF OUR SECTOR**

Producers should take blister cases seriously

Jette Christensen

Editor's note: Jette Christensen is Manager, Canada West Swine Health Intelligence Network (CWSHIN). She can be contacted at manager@cwshin.ca.

Blisters are a concerning sight for any hog producer. Some are caused by diseases considered 'federally reportable' by the Canadian Food Inspection Agency (CFIA), while some are not. Knowing which is which, and how to protect your herd, is key to managing your barn and protecting the Canadian pork industry at large from potential trade disruptions that could be caused by a federally reportable disease outbreak.

The Canada West Swine Health Intelligence Network (CWSHIN) includes representation from provincial pork producer organizations, swine veterinarians and government officials, aimed at monitoring diseases both absent and present. For CWSHIN, keeping producers informed about the latest disease-related issues across B.C., Alberta, Saskatchewan and Manitoba helps ensure the sector is approaching challenges with as much information as possible, to assist decision-making.

Based on CWSHIN's disease surveillance efforts, we are looking to grow producers' understanding of blister-related diseases and prepare them to identify and mitigate risks.

Blisters can look similar yet be very different

Five diseases affecting pigs cause blisters that look very much alike: Foot and Mouth Disease (FMD), Vesicular Stomatitis Virus (VSV), Swine Vesicular Disease (SVD), Seneca Valley Virus (SVV) and Vesicular exanthema of Swine (VES). At first glance, clinical signs of these diseases are indistinguishable. Collectively, they are known as viral vesicular diseases. Other diseases like Porcine Parvovirus and Swine pox can also cause blisters, but these are usually identifiable through other signs. Conversely, some blisters are caused by non-infectious exposure.

Out of the bunch, FMD is considered the most concerning for surveillance.

The presence of blisters alone is not enough to confidently determine the presence of disease, but their appearance should be met with caution and proactive response.

FMD not only affects pigs but other livestock, such as cattle. The virus can also be carried by animal-based food products, including pork, beef and dairy. Inspection officials in foreign countries receiving shipments of Canadian pigs and pork rightly want to protect their countries from FMD – just like us – which makes this particular disease critical for the industry to prevent.

However, because FMD, VSV and SVD are all federally reportable, when animals in a herd have blisters, the discovery must be reported to CFIA. SVV and VES, on the other hand, are less likely to cause a large-scale disruption to international pig and pork movements.

If a producer notices blisters in the barn, how likely is the cause a reportable disease?

Based on what CWSHIN knows, blisters are least likely to be caused by FMD, as Canada and the U.S. are currently free of this disease. SVV is known to be present in some Canadian and U.S. assembly yards, which makes it a possible diagnosis. However, data from CWSHIN's surveys show that all cases from 2019 to date have had non-infectious causes, making this the likeliest cause for producers to consider, in most cases.

When diagnosing blisters, there are some challenges. While the specific disease can be ruled out, it is more difficult to find a non-infectious cause and make a definite diagnosis – locating the 'smoking gun' as evidence. If CFIA suspects that a blister case is being caused by a reportable disease, restrictions could be placed on the herd until these causes are ruled out.

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Potential causes of blisters in pigs	
Federally reportable diseases: • Foot and Mouth Disease (FMD) • Vesicular Stomatitis Virus (VSV) • Swine Vesicular Disease (SVD)	*Other viral diseases:* • Seneca Valley Virus (SVV) • Vesicular exanthema of Swine (VES)
Other diseases: • Porcine Parvovirus • Swine pox virus	*Non-infectious causes:* • Trauma • Chemicals • Sunburn or frostbite • Feed • Toxins • Plant awns

Not all blisters are viral, but they can be hard to tell apart. Only through testing are diseases able to be ruled out.

No matter what, it goes without saying, producers would be wise to take blister cases seriously, working with their herd veterinarians to make informed choices.

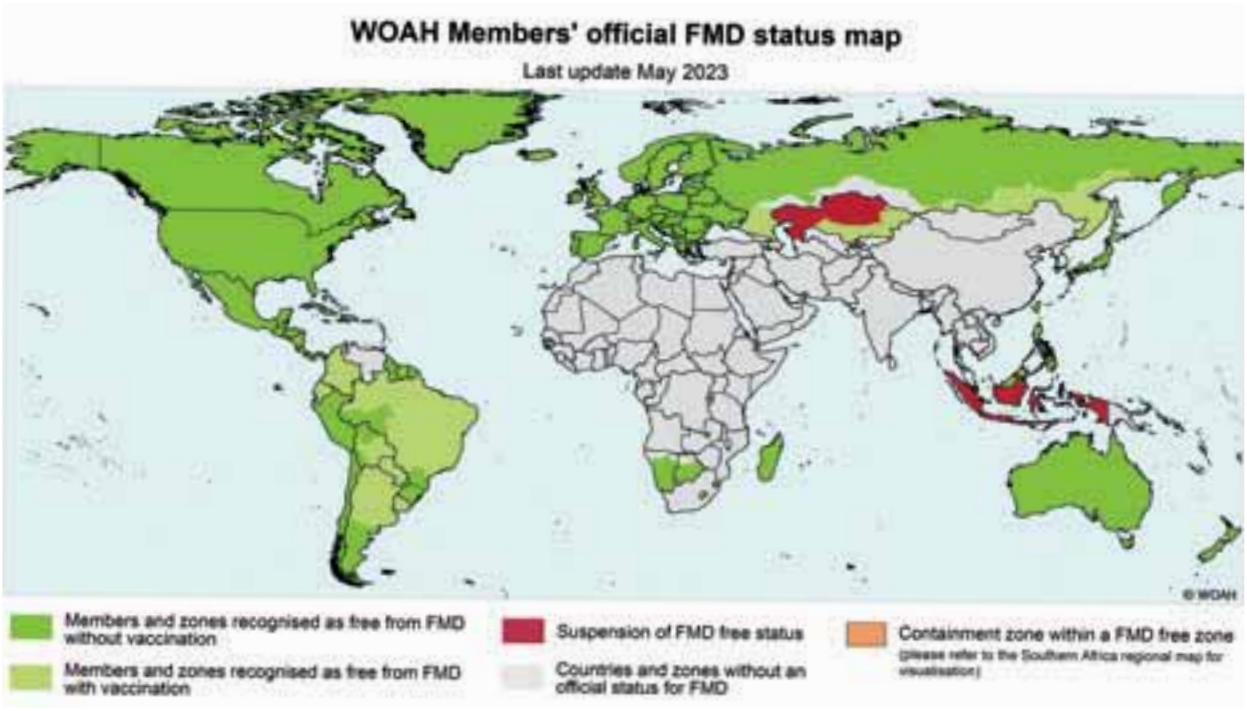
SVV-positive shipment causes concern

Last year, a load of cull sows being shipped across the Canada-U.S. border were stopped by U.S. Department of Agriculture (USDA) officials under the suspicion of being infected with FMD. Rather fortunately, testing confirmed that the animals were not FMD-positive but were SVV-positive. While SVV is concerning enough on its own, the discovery of FMD could have been significantly worse. Following this incident, assembly yards in Manitoba were required to step up their disease testing. From these yards, many western Canadian shipments of cull sows head south.

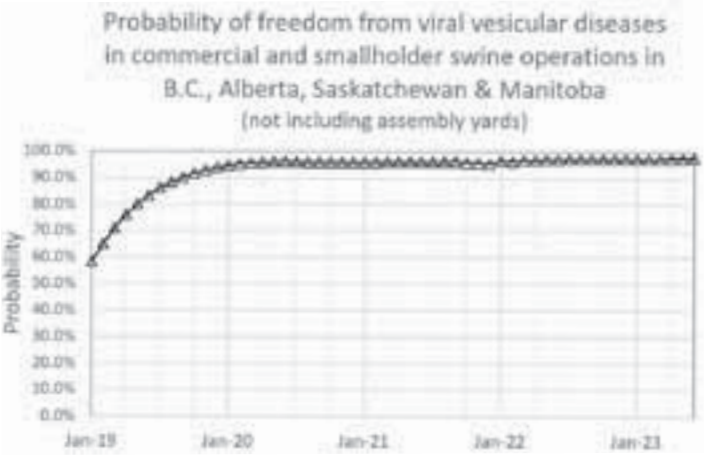
This year, after increased testing, sows with healing blisters were once again seen at assembly yards in Manitoba, traced back to two farms. Testing was able to rule out all viral vesicular diseases for both herds, including SVV and FMD. Due to the presence of blisters, these farms required a thorough investigation.

In these cases, a definitive diagnosis would have been very nice to have, to prevent future cases and repeat investigations at the assembly yards and the farms from where the sows originated; however, with the wide range of potential causes other than viruses, it was not possible to reconcile lab tests with the presence of a cause in the barn. For example, one case had lab findings consistent with chemical or thermal burns, but no chemicals were found in the barn. In the other case, hydrated lime was suspected, but there was no lab test to confirm chemical burn lesions. While we were able to confidently rule out viral vesicular diseases, we weren't able to find the cause – frustrating, but a good example of why this issue is so complex.

Blister cases such as these are likely to be encountered at assembly yards in the



Detection of a federally reportable disease in Canadian pigs could have harsh consequences for the industry. CWSHIN's surveillance efforts help instill confidence that Canada remains free of diseases like FMD.



While the detection of a federally reportable disease is always possible, according to CWSHIN clinical surveys, the chances remain low. Despite the odds, continued vigilance is a must.

future. If or when that happens, a similar process of investigation will take place. From a producer perspective, you risk blisters being traced back to your herd from assembly yards, and this may cause disruption to your cull sow flow.

As a proactive measure, producers should keep an eye out for blisters in their herds, especially when it comes to cull sows. If you suspect blisters, contact your herd vet, and if the advice is to proceed with ruling out viral vesicular diseases, contact CFIA. Your herd vet can help you work with labs to determine the cause of the blisters. The benefit to the entire industry is that, every time viral vesicular diseases are ruled out, we have more evidence of freedom from reportable diseases like FMD.

Reportable diseases unlikely to be present

CWSHIN's collaborative approach to disease issues provides benefits to the entire Canadian pork industry. When it comes to disease surveillance, we are working hard to continue to help provide evidence that Canadian pigs are free of diseases that could halt international trade. As producers know, disruptions to the pig and pork value chain have a ripple effect that can hit home fast.

Since 2019, CWSHIN stakeholders have participated in quarterly surveys that rely on clinical impressions to gauge the risk of finding viral vesicular diseases in western Canadian herds. Based on the information from the surveys, CWSHIN maintains a model that calculates the probability of freedom from exactly these diseases. Currently, the probability of freedom is about 96 per cent, which is as high as it can get, considering that no disease is ever completely risk-free from being introduced.

Enhanced biosecurity measures and diligence with assessing animal health are critical steps for disease prevention. CWSHIN is here to be a resource for producers, should there be any question about the health of Canadian pigs. ■

Ukrainian farmers defy odds during war

Andrew Heck

At more than 100 metres tall, Mother Ukraine has kept watch over Kyiv since 1981, when Ukraine was a Soviet republic. Originally, her shield bore the communist hammer-and-sickle, but this year, the insignia was replaced with the Ukrainian trident, a national symbol.

War brings with it no shortage of tragic consequences. Frequently, outsiders observing the Russian invasion of Ukraine are exposed to news reports showing all manner of devastation, including strikes against military and industrial targets, but also civilian areas.

For some hog farmers in Ukraine, life has become nothing short of a nightmare, as their farms have become unwittingly caught in the crossfire. Yet, their resiliency has been remarkable. Facing a true emergency of the highest order, they continue to produce pigs, process pork and supply their mostly domestic market.

From the direct impacts to Ukrainian civilians, to ripple effects across the Ukrainian pork value chain, hog farmers around the world should have their eyes on Ukraine, if they want a crash course in the value and need for emergency planning and what's at stake when things go terribly wrong.

Massive change comes quick

From one day to the next, Ukrainians' lives and livelihoods currently hang in the balance.

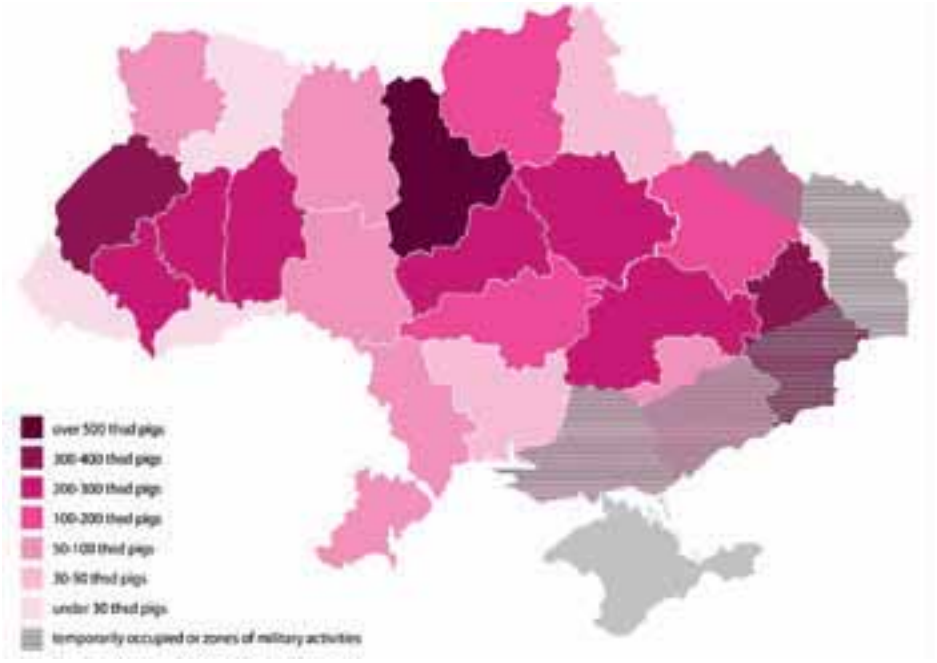
"All possible risks are there in Ukraine," said Oksana Yurchenko, President, Association of Ukrainian Pig Breeders. "Despite this, we continue to work with our partners to support producers, whose needs are different in each region of the country."

Ukrainian producers raise hogs across a large swath of territory spanning from the eastern and central provinces bordering Russia and its ally, Belarus, all the way to the far western provinces, sharing borders with friendlier neighbours like Poland, Slovakia and Romania. While Ukraine is certainly smaller than Canada, it is the second-biggest country in Europe to Russia, stretching more than 1,500 kilometres at its widest. As in Canada, far-spread clusters of production lead to regional differences.

When full-on war struck the eastern part of the country, chaos ensued, as many producers were left to fend for themselves.

"Nobody knew what to do," said Yurchenko. "Producers stopped breeding gilts to halt the production cycle, and they cut sow herds."

In addition to immediate production impacts, other factors were at play:



Ukraine's pig herd across the country shrunk by 600,000 head between 2022 and 2023. During that same time, the country's entire agricultural sector lost about half of its pre-war annual revenue.

unreliable electricity and gas, unsafe transportation routes and even the threat of being drafted into the military.

"Our ministry of agriculture has an agreement with the ministries of defense and finance to make exemptions for up to half of all producers seen as critical to maintaining the food supply," said Yurchenko. "However, it is an application process, which can be difficult. Older producers are not seen as fit for combat, but younger producers and their workers are vulnerable."

Because the collective labour pool has shrunk with resources tied up in the war, all facets of the industry have experienced setbacks.

"[Military] mobilization is a challenge. You lose veterinarians and other people when they don't manage to receive immunity," said Yurchenko. "Some farms lost most of their employees to the military, which creates difficulty continuing the operation."

One of Ukraine's largest hog farms, Agrocomplex Slobozhansky, was nearly lost as a direct result of Russian occupation but is in the painful process of rebuilding.

Sporadic explosions and firefights constantly threaten farms in conflict hot spots. Machinery is often stolen by occupiers, whose presence lingers even after they're gone, with landmines that have been buried. It is estimated that more than one million acres of Ukrainian farmland are actively mined.

"Unfortunately, we have lost about 15 per cent of all farms and about 11 per cent of the entire pig herd, either because of the war or because producers shut down their operations," said Yurchenko. "Fortunately, no major processing facilities have been affected, as these are found mostly in non-combat zones."

Agrocomplex Slobozhansky was one of Ukraine's largest hog producers pre-war. Spread between two sites in Kharkiv province, the company's 3,400 sows and integrated operations were delivered a major blow between March and September 2022, as Russian troops were stationed just a few kilometres away, regularly hammering the region to wrest control of it.

Throughout the occupation, *Agrocomplex Slobozhansky*'s owners kept a diary of events as they took place.

"The farm faced constant shelling, and the surrounding roads were blocked,

CONTINUED ON PAGE 22

making supply of critical inputs and shipments of pigs out impossible," the diary reads. "Farms began to use diesel generators, and the drinking and feeding systems were only run a few hours a day to save diesel. Pigs on both farms began to die, due to lack of water and feed."

Starting in April, the nearby village and surrounding areas completely lost power. Then, in May, additional shelling destroyed the farms' feed mill. In a futile attempt to keep up with operational needs, workers began to grind grain for feed by hand. Eventually, the area was liberated, but not without bitter consequences for the producer.

"Now that the region has been freed from Russian troops, the farm currently has 1,300 breeding pigs. Many of the barns have no windows, and there are holes left by shells in a number of the roofs."

On the bright side, *Agrocomplex Slobozhansky* was lucky enough not to have lost everything, unlike some others. The company vows to rebuild and repopulate to pre-war levels, at a price tag equivalent to around CAD $25 million. Though, little to none of the necessary funding will likely come from external partners.

"Before the war, we had some government programs to finance new construction and renovations to barns, but that has since ended," said Yurchenko. "Farms today in the highest-risk areas are rejected for support and denied bank loans."

From the depths of carnage and destruction to the relative yet tenuous stability of the present day, Ukrainian hog farmers continue to fight for their farms and lives.

Ukrainian industry still sees hope

Starting in 2012, African Swine Fever (ASF) quickly became a major concern for Ukrainian producers, when the disease first broke on a small farm in the east. Then, multiple cases in wild boar were discovered in 2014, followed by an outbreak on a 60,000-head commercial operation in 2015.

"Since then, we've been working with the USDA [U.S. Department of Agriculture] and UNFAO [Food and Agriculture Organization of the United Nations] on improving Ukrainian swine biosecurity," said Yurchenko. "Even right now, we're still creating educational materials, like instructional videos, to help other farmers model their operations off of those that have made positive changes."

From recently adopted protocols like showering in and out of barns, and diligent efforts to fence all outdoor operations, ASF is being faced head-on, for the sake of business continuity under intense pressure.

Throughout 2022, the number of pigs on-farm in Ukraine declined by 11 per cent, to just over five million total. Approximately 35 per cent of Ukrainian pigs are raised on small farms, with producers selling to local abattoirs, and the remaining 65 per cent belonging to the commercial system.

Compared to Canada, the impact of Ukrainian pig production on local food security is proportionally larger, as Ukraine currently exports only about 5,000 metric tonnes of pork annually, compared to Canada's 1.4 million metric tonnes. Prior to 2015, Ukraine's exports were six times larger than today, with its biggest customer, Russia, no longer seen as a favourable client.

Beginning in 2014, long-standing political tensions between Russia and Ukraine finally flared up, resulting in the ongoing occupation of Crimea – the disputed peninsula jutting into the Black Sea. The Black Sea connects to the Mediterranean via the Bosphorus and Dardanelles Straits through Turkey, the route by which Ukraine and Russia move much of their agricultural commodities, like grain and oilseed, to foreign markets. In response to widespread economic sanctions issued against Russia for its aggression, the country banned imports of agricultural commodities from several sources, including Canada, which is estimated to have cost the Canadian pork industry $500 million.

The bulk of Ukrainian pork is consumed domestically, and consumer prices are high across the board for all types of food. Despite the cost, demand remains high, with Ukrainians continuing to desire pork. Pre-war, Ukraine consumed 800,000 metric tonnes of pork annually, with 100,000

Eurasian wild boar are native to Ukraine, unlike Canada, but the species presents the same fear of disease transmission, including African Swine Fever (ASF). Ukraine has grappled with ASF for more than a decade. Image © Jerzy Strzelecki

Pork is a staple for many Ukrainians, when it's available. Much of Ukraine's pork is sold at small markets where, today, it's on the higher-priced end, which has presented an opportunity for producers and processors still in business.

metric tonnes now off the market, creating a void.

In a rare victory, this high demand, coupled with reduced supply, has created new opportunities for producers and processors outside of the main conflict zones. And while the export-based Ukrainian crop sector has been hurt by an inability to move grain out of its ports, it's led to lower domestic feed costs for hog farmers. In Ukraine, as in Canada, those costs represent upwards of 70 per cent of all inputs for any given producer, typically.

"It's true that many producers in the east have either lost or chosen to shut down their farms, but some of them have moved west, which has been seen as an opportunity," said Yurchenko.

Even before the war, Ukraine was a net-importer of pork, mostly from countries like Poland, Germany and Denmark. Still, foreign market diversification remains an attractive strategy for processors, who are working with E.U. officials to implement zoning and prove that Ukrainian pork from commercial farms is free of ASF. While entrance into the E.U. marketplace remains a lofty goal, emerging partners in Asia, like Vietnam and Hong Kong, are already buying Ukrainian pork.

While high prices for pigs and pork are a silver lining for the Ukrainian industry, farms hit with ASF are afforded no financial assistance to recover losses incurred from depopulating and sanitizing barns.

"It doesn't leave them with many options," said Yurchenko. "That's why we're focused on trying to keep the number of new cases low."

While the overall situation for Ukrainian hog farmers remains harrowing, with no clear resolution in sight, the industry and the Ukrainian people have looked to triumph, however possible.

Canadian farmers should be ready

For Canadian hog farmers, the prospect of war may seem far-flung, but other emergencies – such as animal backlogs experienced during COVID-19 processing closures, the possibility of foreign animal disease outbreaks and environmental disasters – provide plenty of rationale for our industry to take notice and learn from Ukraine's struggles.

Stemming from multi-stakeholder discussions in 2018, the African Swine Fever Executive Management Board (ASF EMB) was assembled to act as a framework for collaborative work to prevent and control ASF, if it were detected in Canada. The ASF EMB is coordinated by Animal Health Canada (AHC), a not-for-profit association jointly funded by federal and provincial governments, industry organizations and other partners.

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Animal Health Canada's Emergency Management Division helps livestock producers prepare for significant risks, like foreign animal disease outbreaks.

Similarly, the Animal Health Emergency Management (AHEM) Project was designed to engage and educate livestock producers across Canada in their efforts to minimize the impacts of disease on-farm. AHEM was taken on by AHC in 2020. Both the ASF EMB and AHEM Project were incorporated into AHC's new Emergency Management Division earlier this year.

The AHC Emergency Management Division's main task is to support emergency preparedness planning to ensure rapid and coordinated response across industry and governments, with a particular focus on foreign animal diseases like ASF and Foot and Mouth Disease (FMD). This, in turn, supports a quicker recovery, which is good for producers, supply chain partners and the Canadian economy.

For producers, the group continues to work with provincial and national pork producer organizations to help with farm-level management, including printed and digital materials, in-person seminars and webinars. Many of the tools being developed can be applied to various types of emergencies, as it's easier to modify an existing plan than to start from scratch, should the need arise.

For Mikki Shatosky, who works in AHC's Emergency Management Division, it's about more than just planning – it's about understanding how to respond to an emergency. This understanding should begin long before an emergency occurs.

"You have to plan thoroughly; it's not only about your well-being but also the well-being of your workers, family and all those involved in the response," said Shatosky. "It could potentially affect your neighbors, first responders and your entire community. Have first responders ever dealt with an emergency on a pig farm? What specific information could be provided in advance to assist them?"

Building strong relationships within your community and with partners, including your provincial pork producer organization, ensures everyone is aligned in their understanding of what could happen in case of an emergency.

"In the event of a disease outbreak, there will be a lot to manage. You'll

need to have an inventory of your animals, equipment and a site map, among other crucial information," said Shatosky. "The more you can do in advance, the better prepared you will be. When you're actively facing the emergency, it's too late. Having the necessary tools ready can be a significant help."

Emergency preparedness goes beyond the logistical considerations related to your farm. Confronting a crisis often carries heavy mental, emotional and psychological baggage.

"When you add animals to the equation, it heightens the stress level," said Shatosky. "As a farmer, you raise animals that you sincerely care for. When something goes wrong, you feel personally responsible, but it's important to realize you're not alone, and you must take care of yourself. Knowing where to find assistance is vital."

Shatosky also emphasized the merit of international cooperation for mutual learning.

"Collaboration across borders and international knowledge-sharing are important components of our work," said Shatosky. "We bring together private practitioners, government officials and industry representatives from around the world to exchange ideas through our programs."

Whether you are in Canada, Ukraine or anywhere else, no-one is immune to unforeseen circumstances. For hog farmers, effective planning, preparedness and response are your best forms of self-protection.

Resiliency is essential to emergency response. Planning and preparedness are its precursors. Image © Maksym Kozlenko

Pray for peace but prepare for war

There is understandably a big difference between envisioning an emergency and experiencing one. Whether on-farm or in society, as Ukraine is facing, broken spirits must quickly mend and trudge onward.

"During the first months of the war, you would hear the air raid siren and panic," said Yurchenko. "It's quite difficult to imagine, but people living here are making the best of the situation. Who knows what will happen tomorrow? Nobody knows. Why not have a BBQ? Life goes on."

During this time of war for Ukrainians, the fight is actively on. And while violent conflict may not be on the horizon for Canada, peace time in the pork industry should mean taking all measures in advance of a crisis, especially one that interrupts foreign trade. That includes evaluating and upholding the highest standards of biosecurity and animal health, in anticipation of the recovery process. Business resumption will depend on it. ■

PRRS scare leads to H1N2 discovery

Cordell Young

Editor's note: Cordell Young is a veterinarian with Precision Veterinary Services, based in Alberta. He can be contacted at cordell@precisionvet.ca.

When Fairlane Colony in Alberta – a 370-sow farrow-to-finish operation – noticed an unusually high number of sick pigs in its herd in 2020, alarm bells quickly sounded.

"We knew there was a problem right away, so we called our vet," said Steven Waldner, Fairlane's barn manager. "She came out to our farm to see what was happening and suggested we start dealing with it right away."

Initially, Porcine Reproductive and Respiratory Syndrome (PRRS) appeared to be the culprit, which is bad news for any producer, given the amount of time and resources required to recover from such an outbreak. The farm immediately began to use medication to stem the spread of what was believed to be PRRS.

However, other options still remained on the table. After the outbreak was already underway, Waldner reached out to Precision Veterinary Services for additional support. Our initial thinking was, *what if some kind of influenza, not PRRS, was responsible?*

Steven Waldner is the hog boss for Fairlane Colony and an Alberta Pork board director. Starting three years ago, Fairlane has progressively and successfully navigated an H1N2 outbreak, providing lessons for all producers who may face similar situations.

Unfortunately, at that time, the perspective on flu vaccines wasn't particularly promising, but Waldner's determination and Precision's persistence remained steadfast. We knew a solution was needed – something that could reverse the farm's fortunes and save its animals from further suffering.

Attacking the issue head-on

Early samples for flu strains came back negative, but further diagnostic analysis ended up determining the problem: H1N2, a subtype of Influenza A, which is sometimes called 'bird flu' but is endemic in pigs and can also infect humans. Its symptoms can be similar to PRRS, and co-infections of PRRS and H1N2 are not unheard of.

While the discovery was jolting, knowing what was behind the problem ignited a spark of hope. Armed with newfound knowledge, the team launched into action. The farm underwent internal biosecurity changes and an intensive process to initiate flu vaccinations – a critical step towards turning the tide against the illness that had plagued them for so long. The decision to implement vaccinations proved to be a game-changer.

"Vaccination really helped get our production back on track," said Waldner. "All of the performance metrics got better, and we didn't need to use as much medication anymore. After that, we were able to continue mostly as normal, with upgraded biosecurity."

Fast-forward to 2023, and Fairlane's numbers paint a compelling picture of resurgence, thanks to the effectiveness of the vaccine and the producer's ability to do what needed to be done.

One of the most significant changes was the number of sows that farrowed early. Using 115 days of gestation as the cut-off, only half as many sows farrowed early post-vaccine compared to before. This matters because piglets born at that point in gestation are often considered premature, have higher rates of mortality and are poorer quality. This had a substantially positive impact on overall piglet viability by reducing the amount of labour and stress that might have been required during the first two days after farrowing and also reduced scouring outbreaks.

Adjusted farrowing rates increased to nearly 92 per cent, which was a dramatic improvement. The average gestation length of just over 116 days highlighted the farm's change in sow stability, as piglets born alive per litter surged to 15.27, with the mummified fetus rate dropping to a mere 1.8 per cent, which suggests improved sow health and prenatal care. The average litter birth weight also increased modestly from 20.2 kilograms to nearly 20.7 kilograms, underscoring better nutrition and piglet development.

The average number of piglets weaned per litter increased from 12.17 to 12.92, with pre-weaning mortality decreasing to 14.5 per cent from 15.5 per cent, pointing to improved piglet health and care post-birth. Piglets weaned per sow per year also increased substantially from 29.62 to 31, which could be a combination of management efficiency and possible genetic improvements.

The breeding female cull rate also decreased to 41.9 per cent from 50 per cent, indicative of improved herd health and culling decisions. The average number of parities of those sows increased to 5.29 from 3.13, which tells us more of the young sows were able

As Fairlane's production has stabilized in the years following the outbreak, the farm is now prepared to manage any potential concerns into the future.

to withstand the demands of production without the additional challenge of H1N2.

Recovery continues, with the power of knowledge

Beyond the numbers, the recovery process taught us some valuable lessons, which helped Fairlane right its course in the aftermath, even leading to production benefits.

"We saw a very big improvement in weaning since getting the problem under control," said Waldner. "The average birthweight per piglet is a bit lower than before, and we don't quite know why, but it could be the higher number of births. In any case, this hasn't hurt the piglets' health or average daily gain on the sow. That part has actually been even better."

While some residual coughing remains, even today, it's a far cry from the previous state of the herd. While no flu vaccine is capable of completely removing all the long-term respiratory challenges that emerge, vaccines are a powerful tool for veterinarians to offer producers, and the results speak for themselves. Today, Fairlane's herd looks much better than three years ago.

In addition to addressing the disease itself, Fairlane's biosecurity has improved. Hallways used to move piglets from the nursery to the scale are now washed weekly, and new clothing protocols involve a change of coveralls, gloves and boots before moving between the grow-finish, nursery and farrowing rooms of the barn.

Fairlane Colony's unwavering commitment to finding a solution in collaboration with veterinary support helped the farm battle through sickness and uncertainty to emerge victorious. The journey from a state of crisis to a better, healthier life for the farm's pigs is a testament to the power of science, understanding disease, resilience and the importance of working as a team.

Fairlane's experience showcases what can be achieved with the right tools, expertise and dedication to problem-solving. Even in the face of the most daunting challenges, there is always a way forward – a path towards triumph, growth and transformation. ■

Despite the outbreak, Fairlane's weaners are looking better than before, thanks to the adoption of the vaccine and improved biosecurity.

Ontario news platform showcases pork's people

Ontario Pork

Editor's note: For more information, contact Tyler Calver, Senior Communications Specialist, Ontario Pork at tyler.calver@ontariopork.on.ca.

Among the many things that COVID-19 taught us, we learned just how essential our food supply chain is. More importantly, we learned just how vital the people are who work to keep that supply chain moving.

It's for this reason that Ontario Pork has launched its very own online news platform, to tell the stories of these unsung heroes. From farmers to butchers, chefs to restaurant owners, truckers to veterinarians, nutritionists to processors, *Ontario Pork News* is creating a channel of human-interest news stories that focus on the people who are feeding not only Ontario, but the world.

Each story will be posted on Ontario Pork's YouTube channel (*@OntarioPorkNews*). A new video will be posted every two weeks, and the stories will also be shared across all Ontario Pork's social media accounts to engage a wide range of viewers.

"We want to share these stories and celebrate these people," said John de Bruyn, Chair, Ontario Pork. "*Ontario Pork News* will be that conduit for us to tell the positive stories happening across the industry."

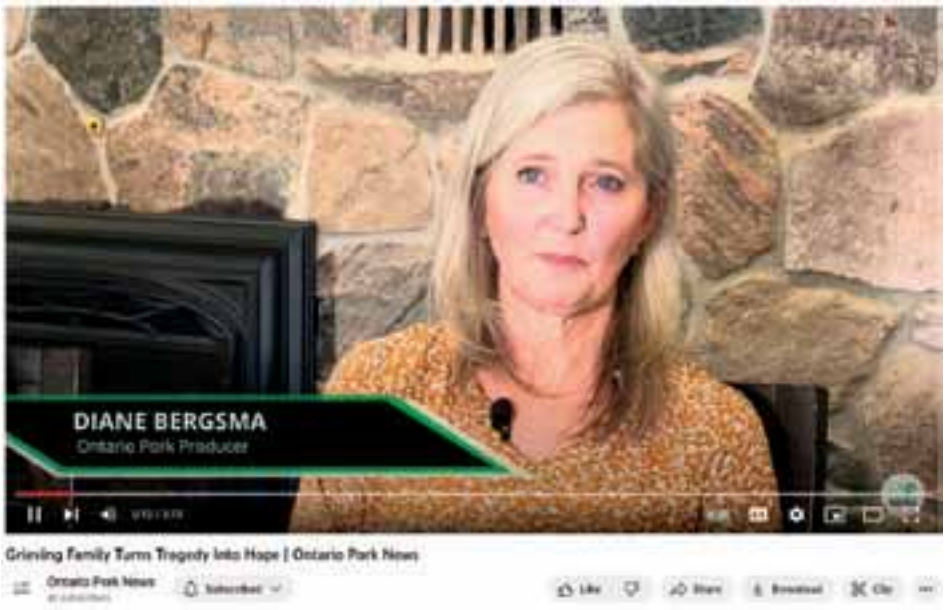
OP News will be travelling across the province telling news stories similar to the half-hour, farm-dedicated program format on local TV stations some viewers may remember from decades past. The channel won't just focus on the pork industry but on different people across the supply chain.

"It's not just pork-centered; we're going to be talking to other people who represent different commodities," said Tyler Calver, Senior Communications Specialist, Ontario Pork. "There are so many amazing stories out there, and we want to highlight the dedicated people who work so hard 365 days a year to put delicious, nutritious food on our plates."

Ontario Pork's new YouTube channel, Ontario Pork News, is sharing stories from across the Ontario agriculture value chain.

Whether it's a focus on successful farming operations, ensuring healthy animals and safe food, fostering a sustainable environment, or building strong communities and people, *Ontario Pork News* is dedicated to sharing informative stories from the many people and their families who are feeding our communities.

"There are so many misconceptions about agriculture floating around and there really isn't a countering voice," said Steff Lebrocq, Meat Manager, Market Fresh. "With so many jobs in agriculture available, I believe *Ontario*



The Bergsmas lost their son, Dalles, and created a charitable initiative in his memory. Their story was the first to be highlighted by Ontario Pork News.

Pork News will be a great way to showcase the variety of great professions in agriculture while highlighting all of the meaningful contributions of the agriculture industry."

In the last few years, especially since the pandemic, there have been employment challenges for a lot of agricultural sectors.

"We're hoping by shining a positive light on our industry, we might be able to attract more people to these awesome jobs," said Calver. "Ontario's pork sector employs close to 20,000 people in directly related jobs that support communities. For example, when a truck driver stops at the local café or gas station, or a veterinarian buys a new truck. Agriculture isn't just feeding people; it's driving our economy."

The first *Ontario Pork News* story featured the Bergsmas, a hog farming family from Lambton County. Through the loss of their son, the Bergsmas have created a mental health charity. This story already has more than 200,000 views across all of Ontario Pork's social media platforms.

"We are incredibly grateful to Ontario Pork for taking so much interest and providing support for our Three Oaks Cabin project," said Diane Bergsma. "Being able to share our story, although difficult, does provide some relief. We hope this exposure will help cultivate recognition of the necessity to care for our mental wellbeing and promote awareness for our respite cabin and mental health resources."

If you or anyone you know has an interesting agriculture-related story you'd like to share, please email *news@ontariopork.on.ca*. Also, don't forget to subscribe to *@OntarioPorkNews* on YouTube for all the latest videos. ■

Ontario Swine Research Centre opens

Ontario Pork's board of directors attended the grand opening of the new facility in Guelph.

The Ontario Swine Research Centre at the University of Guelph officially opened in late August, after six years of planning and construction. A grand opening event was held, which saw attendance from more than 800 guests, including farmers, researchers and government officials.

"I think it's super important," said Dan Roelands, a producer from Middlesex County. "With costs higher these days, you are always looking to be more efficient, and if we can find new ways of being more efficient, that's great."

The 68,000-square-foot facility is equipped with the latest barn technology, including advanced loose sow housing and automatic feeding systems. The feeding system is connected to radio frequency identification (RFID) ear tags, so researchers will be able to monitor and control the precise amount and type of blended feed mixture that each pig is eating.

Prop 12 ripple effects continue to be felt

When California Proposition 12 was definitively upheld by the U.S. Supreme Court in late May, after first having been passed by California voters in 2018, consequences for U.S. producers and processors were felt immediately.

Many reports of empty meat coolers in California supermarkets have given consumers their first taste of Prop 12's cause-and-effect, but in other states, like Massachusetts and New Jersey, the cascading results are gaining political momentum.

In late July, New Jersey signed into law a gestation crate ban for sows, which had previously been struck down in the state's senate twice. And in late August, Massachusetts Question 3 – similar in premise to Prop 12 – was officially implemented after first being voted on in 2016.

Recognizing the likelihood that Prop 12 could set a precedent for other legislation at the state level across the U.S., a group of Senators from Iowa and Kansas, supported by the U.S. National Pork Producers Council (NPPC), joined forced to introduce the *Exposing Agricultural Trade Suppression (EATS) Act* in U.S. Congress.

"Proposition 12 puts the regulatory burdens on the backs of farmers and racks up the price for consumers at the grocery store, and the *EATS Act* will prevent such actions from crushing our Iowa producers," said Senator Joni Ernst. "I will continue to fight against reckless policies from activists who attempt to ban Iowa's agricultural products."

Attorneys General for 16 different pork-producing U.S. states offered their formal support for the *EATS Act* in early August, by sending a joint letter to the Congressional Speaker and Leaders.

While support for and opposition to sow spacing legislation has embroiled all pork-producing U.S. states, in Canada, any direct impacts for most producers remain to be seen but could be coming shortly.

Pork products were few and far between at this grocery store in California, in mid-July. Non-compliant Prop 12 pork acquired after the start of July is not allowed to be sold, causing supply shortages.

In early September, the Canadian Pork Council (CPC) hosted a webinar featuring Michael Formica, Chief Legal Strategist, NPPC. He provided an overview of the situation and how NPPC is standing up for producers.

"We are now looking at three or four states that could soon be able to dictate moral choices for the marketplace," said Formica. "The *EATS Act* allows any state to launch a lawsuit against any other state that passes a law like Prop 12. Producers want some certainty that, if someone wants to make an investment into their facility, someone else isn't going to come along and move the goalposts."

Quebec integrator sees opportunity in Prop 12

Quebec-based duBreton is an integrated production-processing operation with farms and plants across multiple provinces and U.S. states, focusing on 'organic' and 'certified humane' pork. In late August, the company formally requested an exclusion from the provincial marketing agreement that regulates various aspects of the industry, citing its own unique business model, which is thriving.

"We need to make room for initiative, trust producers, not stifle them or force them into a rigid, outdated system," said Vincent Breton, President, duBreton. "When Starbucks closes a branch, it's not the local café that has to pay for it."

In light of incoming animal welfare legislation in the U.S., like Prop 12 and Question 3, duBreton has experienced new business opportunities emerge as a result of other producers' and processors' non-compliance; however, the company insists that the industry support programs benefitting some of its larger, indirect competitors selling commercial pork are unfair.

In early September, duBreton's operations were visited by auditors from the California Department of Food and Agriculture.

duBreton claims it has become the first Prop 12–certified company in Canada.

"We will become the first Canadian company and one of the first in North America to be fully compliant, confirming our animal welfare leadership," said Breton.

duBreton's products are currently being carried by the Whole Foods grocery chain in the U.S. and various foodservice partners, like Chipotle.

Manitoba processor expands capacity

The Government of Manitoba and Government of Canada announced in late July $2.4 million of funding to Winkler Meats over two years through the Sustainable Canadian Agricultural Partnership (SCAP) to support infrastructure upgrades of the facility.

"Manitoba's hog sector is thrilled by this new investment in value-added processing right here at home, a shining example of Manitoba's protein advantage in action," said Rick Rick Préjet, Chair, Manitoba Pork. "Fifty-five per cent of the jobs in agriculture and agri-food processing rely on the hog sector and its producers. We are excited to build on the over 20,000 Manitobans that rely on our sector for a well-paying job across our province."

Winkler Meats is expanding its capacity with help from a federal grant.

Upgrades will include new harvesting and processing equipment, along with a high-capacity packaging line. The expansion is a joint venture between Winkler Meats and Wisconsin-based Johnsonville, which sources some of its sows from western Canada for its product lineup of sausages, sold in Canada and the U.S.

Manitoba processor opens new headquarters

HyLife's global headquarters were officially relocated to Steinbach from La Broquerie, Manitoba in late August, with the opening of a new office.

"This is more than a building; it is a new home and anchor for HyLife that we hope will become a community landmark," said Grant Lazaruk, President & CEO, HyLife. "After several years envisioning, planning and building, we look forward to settling in and collaborating in this world-class space."

Earl Funk, Mayor of Steinbach, praised the company's commitment to the city.

"We anticipate that the opening of this state-of-the-art facility will influence other large businesses to move here, further solidifying Steinbach as a centre for high-tech agribusiness opportunities," said Funk. "With HyLife's operations having the international scope, we look forward to this opening bringing Steinbach recognition, not only at the local table, but at the global table as well."

HyLife's integrated operations include hog farms and feed mills across Manitoba, in addition to its slaughter facility in Neepawa. HyLife pork is sold in nearly 20 countries worldwide. ■

HyLife's headquarters have moved to Steinbach.

Lower birth weights hurt producer profits

Zhenbin Zhang

Editor's note: Zhenbin Zhang is a swine nutritionist for Cargill Animal Health. He can be contacted at zhenbin_zhang@cargill.com.

Strategies targeting management, genetics and nutrition can counter issues related to lower birth weights, enhancing profitability.

The swine industry has achieved significant advancements across various aspects, such as enhancing litter sizes, accelerating growth and improving feed efficiency in commercial grower-finisher pigs. These achievements can be attributed to extensive research and development efforts from both academia and industry. However, there remains ample room for enhancing pig livability.

When considering the cumulative losses from stillborn and mummified fetuses (eight to 10 per cent of piglets), pre-weaning mortality (14 per cent of losses), nursery mortality (four per cent) and grower-finisher mortality (four per cent), it becomes apparent that nearly one-third of pigs perish following pregnancy assessment. Many of these mortality factors can be correlated with birth weight.

Birth weights decline with larger litters

While producers are enjoying litter size increases, at a rate of about 0.3 piglets more per year, there is a downward trend in birth weights. When litter size is increased by one piglet, birth weight is reduced by 20 grams, and birth weight within-litter variation is increased by 0.38 per cent. The literature from five years ago consistently reports average birth weight above 1.4 kilograms, whereas birth weight today is closer to 1.2 to 1.3 kilograms.

Researcher George Foxcroft associated low birth weights with uterine capacity and maternal uterine nutrition. Moreover, gilts tend to give birth to lighter piglets than sows. The augmented rate of sow herd replacement over time could be partially responsible for this downward trend in birth weight. The health status of the pigs also plays a role in determining birth weight. Nutrient appro-

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Correlation of piglet birth weight and subsequent performance

	Weight Range			P
	Light	Medium	Heavy	
Average birth weight, kg	1.129	1.511	1.785	
Weaning weight (21-d-old), kg	5.647^{c}	6.634^{b}	7.308^{a}	<0.001
End nursery weight (70-d-old), kg	25.695^{b}	28.240^{ab}	29.828^{a}	0.001
Slaughter weight (150-d-old), kg	97.055^{b}	102.272^{a}	103.668^{a}	<0.001
Feed efficiency				
Nursery	0.599	0.607	0.605	0.818
Grower-Finisher	0.348^{b}	0.362^{a}	0.369^{a}	0.001
Wean-Finisher	0.389	0.398	0.406	0.162

(Adapted from Lanferdini et al., 2018; Livestock Science 214:175-179)

Table 1

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priation by parasites and the constraints posed by reproductive pathogens like Parvovirus and Porcine Reproductive and Respiratory Syndrome (PRRS) can also hinder fetal development.

The reduction in birth weight bears economic repercussions for pig producers. Firstly, a correlation exists between birth weight and pre-weaning mortality. The critical birth weight threshold for heightened pre-weaning mortality risk has been identified as 1.1 kilograms. Research conducted by Kansas State University several years ago revealed that 15 per cent of piglets exhibited birth weights of 1.11 kilograms or less. This subgroup demonstrated a 34 per cent pre-weaning mortality rate, contributing to 43 per cent of overall pre-weaning mortalities. Piglets with birth weights below 500 grams seldom survive.

Secondly, low birth weight compromises growth performance. As demonstrated in *Table 1*, lighter piglets at birth exhibit a reduction in body weight of one kilogram at weaning, 2.5 kilograms at the conclusion of the nursery phase, and five kilograms at the end of the finishing phase. Additionally, these lighter piglets demonstrate a two per cent lower feed efficiency from weaning to finishing. It is worth noting that birth weight has no discernible influence on carcass quality or meat characteristics. Given the significance of mortality and growth performance as key economic indicators, the decline in piglet birth weight undermines the profitability of producers.

Finding solutions to common problems

Industry experts have been working tirelessly to improve birth weight and mitigate their negative impacts. Swine geneticists are exploring ways to enhance uterine capacity, while nutritionists are focusing on improving uterine nutrition for placenta development and fetal growth. Much research into late-gestation nutrition has encouraged the industry to use a late-gestation diet or 'bump feeding' to increase nutritional intake. However, there is a need to raise awareness of the importance of nutrition in early gestation. There's also nutritional technology like Profert, developed by Cargill Animal Nutrition, which can improve follicle maturation and development in weaned sows. This technology results in better-quality fertilized eggs, which translates into higher and more uniform birth weights and more piglets born alive.

From a production management point-of-view, the practice of split-feeding helps low-birth-weight piglets obtain the colostrum they need for life-readiness. At the same time, some producers have used a milk replacer for herds with large litters. For example, if a sow farm has an average of 17 to 19 live-born piglets, but the sows have only 14 to 16 teats, the extra piglets can be fed a milk replacer. In this case, the primary objective is to save the piglets' lives. In the light of this practice, it also makes sense to give milk replacer to low-birth-weight piglets or with large litters. Milk replacers like Cargill's Rescue Milk are designed to provide nutrition comparable to that of sow's milk.

The nutritional concept covers milk proteins, essential fatty acids comparable to milk fat composition, immune-enhancing compounds and gut health technology. The use of milk replacer results in low pre-weaning mortality and higher weaning weights. In addition, milk replacer can improve the body condition of sows at weaning, thus ensuring reproductive performance of the next litter. Therefore, the use of a milk replacer can be considered a standard management practice to improve productivity in herds with litter sizes greater than 14 live-born piglets.

Strategies targeting management, genetics and nutrition can help counter issues associated with lower birth weights. Integrating milk replacers can reduce pre-weaning mortality, improve weaning weight and sow condition, with the effect of enhancing profitability for producers. ■

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Probiotics could help piglets defeat diarrhea

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.

If you want to kill the buzz at a party, bring up diarrhea. Though it's rarely discussed off the farm, the condition is a major concern for producers, sparking science to look for solutions.

Given the stakes, developing an alternative and environmentally friendly strategy to combat post-weaning diarrhea and improve the overall health of pigs is imperative. Post-weaning diarrhea is caused by a group of *E. coli* that produces special toxins and is widespread in swine production today. In addition to causing stress for the animals, it does the same for their owners by harming growth performance and increasing mortality in the barn.

The inclusion of Bacillus-based probiotics in nursery pig diets may reduce the presence of feed-induced diarrhea and help maintain or improve growth performance.

In many cases, farms rely on antibiotics to treat post-weaning diarrhea. Given the rise in antibiotic-resistant bacteria associated with livestock farming, pressure is growing to phase out the drugs completely, with some countries already banning their use in feed to promote growth.

Heavy metals like zinc oxide have proven effective in controlling diarrhea yet have come under considerable scrutiny for their negative effects on animal health and the environment. These metals can accumulate in vital organs like the pancreas and liver and can contaminate soil and water.

Probiotics: all pros, no cons

Now that we know what doesn't work, only one question remains: what does? Based on recent studies, the addition of probiotic bacteria – live micro-organisms that are intended to have health benefits when consumed – to the diet has several advantages for piglets during weaning: improved nutrient digestibility, reduced pathogen levels and greater gut immunity.

As a further benefit, adding specific probiotics to pig feed could help reduce

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the number of antibiotic-resistant bacteria in the intestine. One such probiotic – *Lactobacillus* – has been studied extensively for this purpose and is now being used in commercial applications.

Another promising option in the battle against post-weaking diarrhea is a particular strain of *Bacillus* species, known as *Bacillus subtilis*. *Bacilli* are rod-shaped bacteria that can form spores and survive in harsh conditions. These bacteria are plentiful, residing in soil, water, dust and air, and will thrive in various temperatures. Furthermore, their ability to create spores at high temperatures and endure high-acidity environments make *Bacillus subtilis* a robust strain that could be developed as an in-feed probiotic supplement. In recent studies, augmenting pig diets with probiotic *Bacillus subtilis* reduced the incidence and severity of diarrhea and boosted the immunity of piglets during testing.

Apart from addressing diarrhea caused by *E. coli*, the inclusion of *Bacillus*-based probiotics in nursery pig diets may reduce the presence of feed-induced diarrhea and help maintain or improve growth performance. This is significant, since weaning-associated diarrhea can also be triggered by economical diets that are mostly plant-based.

Because feed cost is a huge burden on the industry, less costly regimens are often necessary, but they have also been associated with a higher incidence of diarrhea and lower intestinal integrity, which refers to the ability of the intestine to maintain its structure and function.

Scale-up testing needed

Good research is an investment in the future, so the scientists in this study were grateful for financial support from Swine Innovation Porc (SIP), the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and CBS Bio Platforms Canada.

From the University of Guelph's Department of Animal Biosciences, several researchers and students joined forces for the project: Julang Li, Sudhanshu Sudan, Lee-Anne Huber, Robert Friendship, Elijah Kiarie, Xiaoshu Zhan, Lauren Fletcher and Serena Dingle.

Also integral to the project were Rob Patterson, Vice President, Innovation & Commercialization, CBS Bio Platforms, and the animal care and sampling assistance provided by the barn staff and research associates at the Arkell Swine Research Facility, along with sample processing and data extraction by BioZone at the University of Toronto.

Based on the current results, low-dose supplementation can achieve significant improvements in growth performance in a research environment. From here, larger studies in commercial production settings must be conducted to confirm these findings.

While there is still work ahead, this study adds to a limited body of research on the use of probiotics as an alternative to zinc oxide and antibiotics in guarding against post-weaning diarrhea. The results also suggest that supplementing piglets with a novel *Bacillus*-based probiotic may improve feed efficiency and growth performance, offering an economical feeding strategy to benefit producers around the world.

As a dinner topic, that sure beats diarrhea. ■

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Getting the dirt on cleaner trailers

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.

In the process of combatting swine disease transmission, researchers have been looking for new ways to improve livestock trailers for biosecurity reasons.

Porcine epidemic diarrhea (PED) – which causes vomiting, diarrhea and often mortality – has wreaked havoc on pigs around the world, and science is helping to combat it on several fronts. Most recently, researchers targeted a common mode of disease transmission – livestock trailers – as they strove to improve cleaning methods and boost biosecurity in Canadian swine transport.

What started as an effort to save time and money when cleaning trailers took on added meaning in early 2014, when PED arrived in Canada. The disease that first hit North America in the U.S., costing their pork sector billions of dollars, was here, and producers were in panic mode.

PED prevention partners

For guidance on how to proceed, the federal government and pork producers asked the University of Saskatchewan to lead efforts to stop the transmission of PED and other diseases that can result from transporting animals.

Researchers consulted with a PED advisory committee comprised of members from across the country, including transport companies, provincial pork producer organizations, processors and veterinarians. Together, the parties identified priorities around PED prevention, starting with how to clean trailers thoroughly enough that no trace of the virus remained on board.

Working with the Prairie Agricultural Machinery Institute (PAMI) in Humboldt, Saskatchewan, scientists devised a high-pressure washer and vacuum system that would reach every corner of a trailer and blast out clumps of ma-

nure or any other material that might harbour PED.

The washer was a good start, so the next step was developing a remotely controlled system that would allow complete cleaning of trucks without the need for human workers entering the trailer. This involved trying different technologies, including a small robot vehicle used by the military to pick up explosive packages and safely detonate them. Eventually, the project partnered with Truck Wash Technologies Inc. in Sault Ste. Marie, Ontario to advance its gantry-style wash system for their purposes. This system moves across the length of the trailer in multiple passes, simultaneously cleaning the exterior and interior.

Feeling the heat

Researchers were also tasked with finding the optimal level at which to heat trailers, so that if any trace of the pathogen remained after washing, it would be deactivated. Collaborating with the Vaccine and Infectious Disease Organization (VIDO) at the University of Saskatchewan, the research team concluded that heating the trucks at 75 degrees-Celsius for 20 minutes would be sufficient to eliminate the threat.

The challenge with heating was that some areas of a trailer – such as behind gates and walls – can be harder to warm sufficiently. In response, the team looked for sensors that could be installed in trailer trouble spots and monitor temperatures. Though they found a company that specialized in sensors to assist in this effort, it overlooked one small detail: pigs eat sensors.

Undeterred, the University of Saskatchewan engineers collaborated with the sensor company – Transport Genie in Burlington, Ontario – to develop sensors and insulate them properly to protect against curious snouts. The new sensors deliver GPS traceability of swine transport trailers, continuously measure environmental conditions during transport of animals and verify that trailer trouble spots reach the required time and temperature during heat treatment.

Idle threats? Not a chance

Thanks to this project, the risk of transmitting PED and other pathogens during transport has been drastically reduced, saving producers millions of dollars per year from illness and death loss. Findings from the study have raised the biosecurity bar, and heating trailers at 75 degrees-Celsius for 20 minutes is now the industry standard.

Based on this project, Prairie Swine Centre has developed guidelines to assist designers in considering animal welfare and biosecurity with new trailers.

As a further benefit, scientists are working with trucking companies to install their sensors, not only for biosecurity, but to warn drivers when the temperature and humidity levels are endangering pigs. Apart from enhancing animal welfare, this move will aid both trucking companies and processors, as each is responsible for the pigs once in their possession.

Led by Terry Fonstad at the University of Saskatchewan, this study drew on funding from Swine Innovation Porc (SIP) and expertise from several corners: Prairie Swine Centre, PAMI, Truck Wash Technologies Inc., Transport Genie Ltd., the PED advisory committee and VIDO.

Arms race

As the world learned the hard way from COVID-19, we must always stay a step ahead of the enemy. In that spirit, researchers are addressing what happens if a trace amount of virus survives washing and heating of the trailer and embeds itself in a biofilm for self-protection. A biofilm is a thick layer of organisms that gather to form a colony.

With the attention garnered by their findings, researchers are now fielding calls from the Canadian Food Inspection Agency (CFIA) about other diseases of concern, such as African Swine Fever (ASF), and how to defend against them. ■

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