

# Canadian Hog JOURNAL

Canada's national  
hog magazine



## **Banff Pork Seminar 2020**

**Inside:**

**Right to farm  
is under fire**

**Cross-cultural  
communication**

**Disease preparedness  
comes into focus**

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Pork loin lunch prep at the Banff Springs Hotel Conference Centre



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The Banff 2020 edition of the Canadian Hog Journal is here!

They say this magazine is the next-best thing to being at the Banff Pork Seminar in-person, but the truth is that is a difficult claim to make. The seminar is one-of-a-kind, and you should by no means expect that a magazine can replace that experience. Nevertheless, I hope you will be satisfied with the coverage here and will consider attending in the future.



The seminar returned to the Fairmont Banff Springs—a crowd favourite.

This edition diverges a bit from previous Banff editions. Rather than providing a strict summary of the seminar’s proceedings, as was done before, I have tried to pick and choose some of the highlights and present them to you in a few different ways, with added commentary, to provide an enhanced perspective.

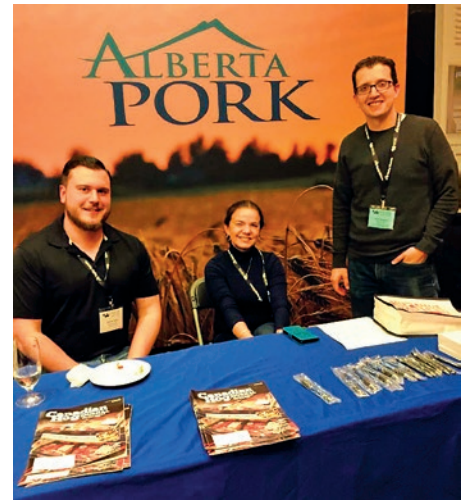
This year’s seminar was my second time attending, since I have been in the industry for just shy of two years now. It can be daunting to be surrounded by so

many presenters and guests with impressive résumés (more so than mine, at least)—whether they come from academia, industry or possess the kind of expertise that can only come from being a producer for many years. You can find all kinds in Banff, and they each add a special quality to the event.

It is rather amazing to me that the seminar, now in its 49th year, still attracts a decent number of people who have been attending since the early years – even before the seminar was actually in Banff. (The concept debuted in Olds, Alberta.) There is no shortage of knowledge to be gained in speaking with these veterans, to be sure! It is a testament to the quality of the seminar and the character of the people who compose this great industry.

The venue for this stellar event, the Fairmont Banff Springs, is an attraction in its own right, and we are blessed in Alberta to have this kind of setting at our doorstep. I have to admit, as a lifelong Albertan, that I struggle to fully appreciate the setting without taking it for granted. Certainly, in speaking with most out-of-province and out-of-country guests, they are quick to remind you how lucky we are.

I am already counting down the days until next year’s golden (50th) anniversary of the seminar. I eagerly await the discussions and excitement that are in store, whether those things are found at the conference centre or in many of the restaurants and pubs around town! Those who have been there will understand.



Alberta Pork team members (from left to right) Andrew Heck, Communication Programs Coordinator & Editor, Canadian Hog Journal; Cristina Neva, Quality Assurance and Production Specialist; and Javier Bahamon, Quality Assurance and Production Manager.

Does this edition meet your expectations? What is your experience with the Banff Pork Seminar? Email me at [andrew.heck@albertapork.com](mailto:andrew.heck@albertapork.com) to share your thoughts. Send in your feedback for me alone, or write a “letter to the editor,” and I will consider publishing it! ■

Andrew Heck  
Editor

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# The right to farm is under fire

Andrew Heck

What would you do without your farm? It is most likely your primary source of income and your home. Your family might have lived on that land for generations. It might even be inconceivable to you that life would ever look different.

When we think of the reasons why producers may become dispossessed, what typically comes to mind is financial ruin. In late 2018, when Canadian pork prices were at decade lows, some producers, unfortunately, made the difficult decision to shut down their operations. In other, rarer cases, the banks came knocking. Either situation is far from ideal, but these are not the only situations in which a producer could have his livelihood taken away.

In a modern world where the *wants* of a growing, predominately urban public trump the *needs* of producers, sadly, farmers often lose. Old MacDonald *had* a farm, until social pressures drove him under, it would seem.

## North Carolina producers feel the heat

During a breakout session at the 2020 Banff Pork Seminar, Andy Curliss, CEO, North Carolina Pork Council, brought forth a handful of public issues facing producers in his state.

One such issue was highlighted in a 2018 article published in the *North Carolina Medical Journal*, which suggested an increased risk of mortality in communities associated with confined animal feeding operations. The study was widely distributed and manipulated by agenda-driven agriculture adversaries, but it was also challenged by a researcher at the University of Minnesota, who effectively demonstrated the limitations of the study.

The data, too, supports a different conclusion. As an example, in North Carolina's two counties that account for nearly half of its pork production, neither of those counties is among the top 25 per cent of counties with the highest mortality rate across the state.



Andy Curliss, CEO, North Carolina Pork Council takes environmental stewardship seriously. He is shown here in January 2020 standing on a covered digester used to produce renewable energy at a hog farm in his state.

Another studied cited hog barn odour as a potential cause of asthma for school-aged children. Even the data used in the study appears to contradict this claim, as children attending school within a two-mile range of any farm had no greater instance of respiratory problems compared to children attending

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schools more than two miles away. As with the study on mortality, researchers in Iowa and North Carolina raised objections.

Such instances of baseless complaints lodged against farmers are not without consequence. There are many examples of how such studies are taken out of context by activists and mainstream news media to support a narrative that confirms the biases of those who oppose modern farming.

Even before the North Carolina studies on mortality and odour, other nefarious influences had contributed to a poor public image for the industry. Predictably, much of this campaign was driven by disruptive people, but it required the public support, media platform and legal recourse to become truly devastating.

### Duplin County becomes a tinderbox in need of a spark

Central to the odour controversy is the practice of spraying treated lagoon manure on fields. In North Carolina, the method was banned at new livestock operations in 1997. For grandfathered operations, the practice continues to this day.

The timing of the ban was conspicuous, given that many newly built operations were appearing near a golf course where the U.S. Open was hosted in 1999. A long-standing, effective practice of manure disposal was eliminated to satisfy the desires of the professional sports and entertainment industry.



*The state of North Carolina banned manure spraying shortly before the 1999 U.S. Open (golf) was held at Pinehurst. Winner Payne Stewart's iconic pose, shown here, was memorialized with a statue at the course, which hosted the tournament again in 2005 and 2014. © J.D. Cuban, USGA Museum.*

Households in Duplin County have a median annual income of \$36,679, which is \$25,258 less than the median annual income of \$61,937 across the entire country, and \$13,641 less than the median of \$50,320 across the state. Compared to other counties, Duplin has an unusually high number of residents working in agriculture. The median property value in Duplin County was \$88,800 in 2017, which is two-and-a-half times

smaller than the national average of \$229,700. Interestingly, the home ownership rate is 69.7 per cent, which is higher than the national average of 63.9 per cent.

Historical systemic racial division and poverty play an important role in understanding Duplin County's social and political affairs, and these things should not be overlooked. But for the full picture to come into focus, it is necessary to examine the issues more closely to determine which factors and influential players are responsible for generating the friction. Often, the malicious intentions of bad actors can be found at the root.

The increased presence of agriculture and higher rate of home ownership suggest that this area is ripe for a potential conflict regarding land use. That conflict has been found in the less-than-glamorous side of animal agriculture. From the perspective of producers, learning to accept the unflattering reality of hog production is simply necessary in this line of work. It is how producers make their living and provide food for those who would likely be incapable of doing so themselves. For a misinformed or ill-motivated segment of the population, that often-unspoken reality becomes an easy target.

### Joey Carter fights the blaze valiantly

Following an exploration of issues broadly facing North Carolina producers, Curliss told the harrowing tale of Joey Carter: a producer who, for more than three decades, met and exceeded North Carolina state regulations for hog farmers and was known to constantly upgrade his operation, based on considerations of animal welfare and the environment. In addition to hogs, he raises cattle and is active in his local cattlemen's association. Even before and during his time as a producer, Carter served as a police officer (now retired) and volunteer fire chief for the town of Beulaville. He is, by many people's objective standards, a model producer and citizen.

In July 2018, a North Carolina jury awarded more than \$25 million in a lawsuit against Smithfield Foods – the world's largest pig and pork producer, which owns 500 farms in the U.S. and contracts with another 2,000 independent operators in the country. In total, there are 26 federal lawsuits affecting 86 farms, filed by more than 500 plaintiffs living near those farms in eastern North Carolina.

“The lawsuits are a serious threat to a major industry, to North Carolina's entire economy and to the jobs and livelihoods of tens of thousands of North Carolinians,” said Keira Lombardo, Smithfield senior vice president, in a statement.

At the time, Carter was a contract finisher for Smithfield. Carter's farm was one of those targeted by the lawsuits. Rather ironically, one of the suit's plaintiffs even lives on property that was voluntarily subdivided from the family's plot by Joey Carter's father, purchased and developed five years after Joey

CONTINUED ON PAGE 10

had already built two of seven total barns that made up his total operation. To date, the same land Carter's father started farming several decades ago has been home to four generations of the Carter family.



A five-year-old boy leaves a rally and press conference in support of families affected by the lawsuits, in July 2018, held at Joey Carter's farm. Hundreds gathered to show support for the affected farmers.

© The News & Observer, Raleigh, U.S.

Complicating the matter further was the imposition of a gag order against the farmers who were being targeted by the lawsuits. Incredibly, only representatives of Smithfield were allowed to testify in court, and public comment on the lawsuits by defendants was effectively banned.

"It's been kind of tough knowing the relationship and how the community was before this all started, and how it is today," said Carter, in a September 2018 interview with the North Carolina Farm Bureau. "It's really driving a wedge between the farmers and a lot of people in the community, which it shouldn't."

Partly owing to the demographics of Duplin County, the debate over the smell of hog manure and detection of fecal bacteria (generated by a white farmer) on nearby homes (of black residents) has, in some ways, amplified existing tensions and provided a platform for a wider discussion on social issues.

The phenomenon is made clear by the fact that the lawsuits against Smithfield were created by out-of-state lawyers who

chose to seek mostly African-American plaintiffs living near Smithfield farms, which represents a statistical anomaly, considering the two-to-one, white-to-black ratio of residents in these areas, according to U.S. census data from 2017. Rather than seeking to better their communities by urging improvements be made to area farms, plaintiffs sought financial compensation alone.

Suffice to say, the heart of this dispute goes well beyond what any producer is prepared to tackle on his own, and while social license should be the concern of every producer, it is disheartening to think the problem is being addressed, however adequately or inadequately, through lawsuits and legislation, rather than stepping back and working for a community-based solution that benefits all.

"You've got to stay positive to survive and get through it," said Carter. "It's going to be alright; it's just a bump in the road. In the end, I really think somebody else is in charge—somebody higher up—and we're going to be fine."

"The time we're in, I think nobody's safe—whether you're in the hog business, chicken business, turkey business, cow business. I just don't know what it's coming to."



Joey Carter (left) shakes hands with an official from the U.S. Department of Agriculture, following Hurricane Florence in 2018. Manure lagoons in this part of the U.S. can become environmentally hazardous in severe weather, if not managed appropriately.

## Lawsuits have farmers and allies seeing red

In January 2020, the U.S. Court of Appeals heard arguments from Smithfield's law firm against the controversial nuisance lawsuits, citing seven serious errors that resulted in an unfair and improper trial. The U.S. Court of Appeals previously heard arguments against these lawsuits in September 2018, during which time the farmer gag order was harshly criticized as being unfair.

Leading up to the January 2020 appeal, the North Carolina Pork Council joined forces with the U.S. National Pork Producers Council and other partners to file an amicus brief in support of Smithfield.

The appeals process was undertaken with the goal of reversing the punitive damages or ordering a new trial. Rulings are typically issued three to six months after oral arguments are heard. At the time of this article's publication, no ruling had yet been made.

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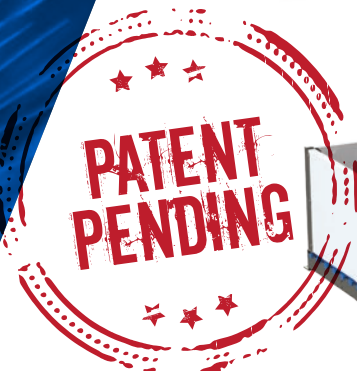
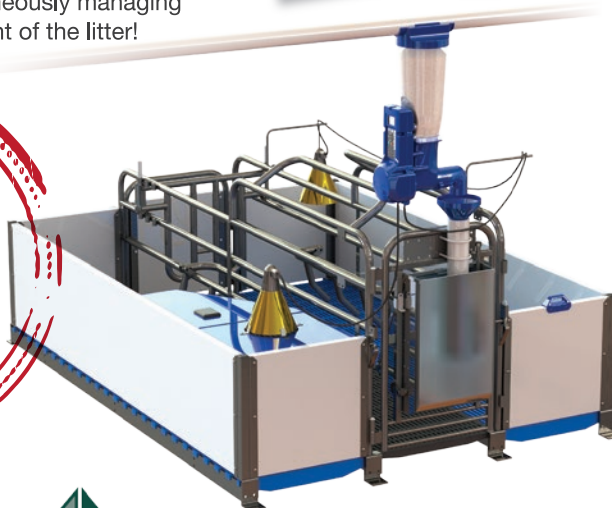
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## What is burning in Canada?

In 2018, Ponoka County, Alberta, released its Municipal Development Plan (MDP), which included restrictions on the development of new confined feeding operations in a 20,000-acre area where more than a dozen already exist. In addition to being home to many existing confined feeding operations, the region boasts some of the highest-quality soil found anywhere on the prairies for cropland.

The restrictions were detailed in the County's North West Area Structure Plan, affecting an area immediately adjacent to the Queen Elizabeth II Highway—the major roadway between Edmonton and Calgary. This population corridor includes some of Alberta's fastest-growing cities and towns, driving demand for non-agricultural use.

Rather than a concern for odour or contamination, as in North Carolina, Ponoka County's rationale within the plan states, "There is a strong demand for rural residential parcels, and the County is willing to meet this demand provided that it does not damage agriculture or the environment, or impede the logical and economic growth of urban areas."

Essentially, the County would like to see the land within the defined area zoned for residential properties which are not primarily agricultural. Subdividing this land for acreages would indeed contribute more greatly to the County's tax base, but at what cost to the community and livestock producers?



*Development plans in Ponoka County, Alberta have re-zoned a sizeable portion of land where many intensive livestock operations are found.*

In response to the plan's adoption, the Ponoka Right to Farm Society was formed to challenge the plan in court. The Society now numbers more than 250 area residents who oppose the County's direction.

"Ponoka County is a farming community, and the municipal government should not be setting up exclusion zones and banning new farms," said John Hulsman, one of the Society's board members.

The issue for many producers in the area is that the new restrictions will limit the growth of operations onto new land, which is a concern for multi-generational farm families looking to expand.

In Alberta, confined feeding operations come under the authority of the Natural Resources Conservation Board (NRCB), which has operated since 2002 under the Agricultural Operation Practices Act (AOPA). The legislation is the responsibility of the province's Ministry of Agriculture and Forestry. Before 2002, licensing and compliance monitoring for confined feeding operations were the responsibility of Alberta's municipalities, which is one reason why Ponoka County's imposition of the North West Area Structure Plan is raising eyebrows.

In December 2019, the Ponoka Right to Farm Society launched an appeal with the Alberta Court of Queen's Bench. At the time of this article's publication, a court date was set for February 2020.

## Hot issues are often complex and diverse

Right to farm is a layered, multi-dimensional topic. Consideration must be given to the region in which challenges are faced and the context surrounding the issue.

In Canada, the matter has not reached the same public proportion as in North Carolina, and the consequences have not been as dire. But it is not so far-fetched to imagine that the winds of change could blow the inferno in our direction. Is it only a matter of time? ■



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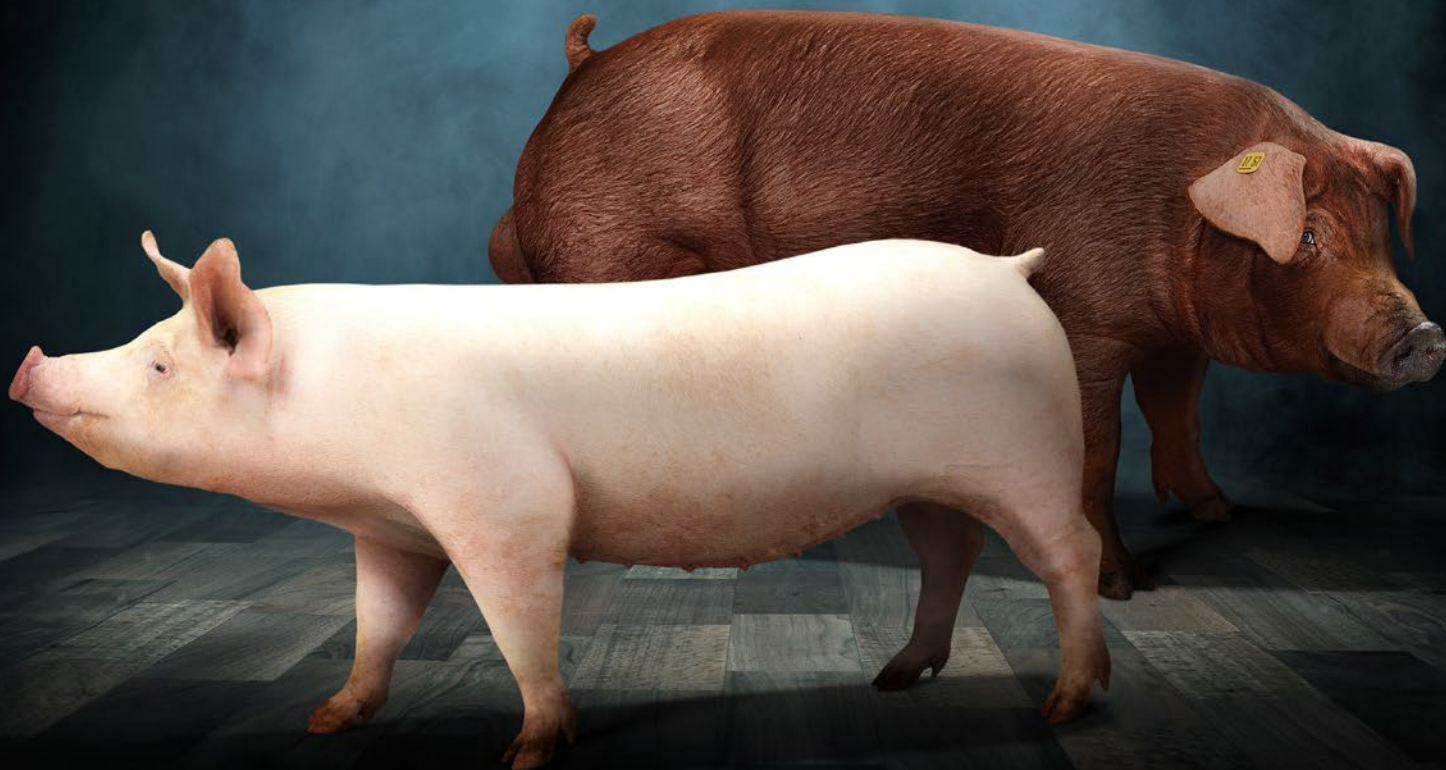
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# Communicating with the cross-cultural advantage

Marvin Salomons



Tina Varughese uses her own background and a humorous approach to tackling issues related to cross-cultural communication. She is a long-time colleague of Marvin Salomons.

Changes continue to take place in the Canadian pork industry. Each year brings new threats in disease and market challenges. Even so, the industry continues to be spurred on towards opportunities fueled by primary and processing innovations that enable pork to be sought as a food of choice.

Another face of industry continues to change as well. As we delve into the barn, we see a changing culture in the people managing and caring for pigs. Not only a changing mindset but also a change in the very culture of the people themselves. Today's Canadian pork operation is a vibrant mix of new cultures from all corners of the world. This same trend can be seen in the industries that support these farms. People with different experiences, languages and beliefs working side-by-side to produce Canadian pork for the world. The people and languages inside a barn bring a whole new dimension to working effectively in a team environment.

Visit a Canadian pork farm today and you will not be surprised to be greeted by a worker from a country other than Canada. All came by choice and desire to work in our industry. These new people bring new characteristics and are being readily embraced by the industry as a major part of a new workforce strategy and need that keeps Canada's pork industry in the game.

Having an effective team means understanding those team members, including their cultural backgrounds. That is the message Tina Varughese brought to the 2020 Banff Pork Seminar, delivering keynotes in a breakout session called, "50 shades of beige: communicating with the cross-cultural advantage." Rated as one of Canada's top speakers, Varughese knows the

drill. Being an Indo-Canadian daughter of first-generation East Indian parents, she draws on personal experiences in delivering her humorous, high-energy talk on diversity and inclusion in the intercultural workplace. Fifteen years of working in Alberta's Immigration Office, in addition to operating her own settlement and relocation business in Calgary, give her a true understanding of many different cultures.

## Why talk about cross-cultural communication?

Tina Varughese says top successful organizations understand that being able to communicate cross-culturally in the workplace results in better productivity, performance and employee engagement. This is no different on the farms and businesses in Canada's pork sector. She says managing diversity drives profitability, leads to innovation and promotes an inspiring workplace culture. Within Canada's population, Varughese points out 20 per cent are foreign-born, with the top source immigrant countries to Canada being India, China, Pakistan and the Philippines. For the Canadian pork industry, currently, the top source countries of foreign workers are Mexico, the Philippines, the Netherlands, U.K., Ireland and Ukraine. From the industry's perspective, there is a desire to turn these "temporary, foreign" workers into permanent Canadian residents or citizens.

## Where workers originate

A view of work permits issued over the past few years by Canadian authorities show many countries provide the wide array of new cultures coming to Canada. Unfortunately, Immigration, Refugees & Citizenship Canada (IRCC) does not break down the

CONTINUED ON PAGE 16

## Total Foreign Worker Permits Issued

Common Pork Sector Target Countries

Country of Citizenship	Total Permits in all sectors	
	2018	2019 *end Nov 30
France	915	1,100
Ireland Republic	180	155
Mexico	28,865	30,715
Netherlands	125	165
Philippines	8,755	9,510
Ukraine	560	545
United Kingdom & Overseas Territories	940	895
United States of America	1,850	1,565
Other common sources: Guatemala, Honduras, India, Jamaica, Mauritius, Nicaragua, Poland, Romania South Africa, Thailand, Trinidad & Tobago, Vietnam	31,115	36,595
<b>Total</b>	<b>73,305</b>	<b>81,245</b>

Source: IRCC, November 30, 2019

No specific data breaks down country of origin for workers in the Canadian pork sector, but anecdotal sources indicate the top targeted source countries are those shown here.

permit numbers by sector, but historically, the most significant portion of foreign worker permits are issued to the agriculture and food processing sectors. Of those, the majority are coming under the Seasonal Agricultural Worker Program (SAWP) from targeted Caribbean countries and Mexico for seasonal businesses like beekeeping, fruits, vegetables, tree nurseries and other harvesting operations. While IRCC data covers all Canadian business sectors, the countries of origin represented in the pork sector do represent a significant portion of the foreign worker permits issued in agriculture each year.

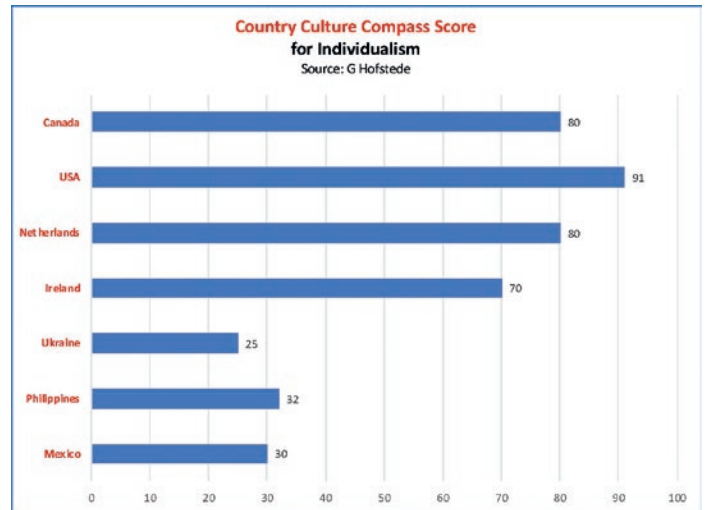
**Individualists versus collectivists**

From one country to another, our appearances may differ, but so do our values and approaches to interpersonal interactions. Varughese’s message builds on this using the work of renowned Dutch social psychologist Geert Hofstede, well-known for his pioneering research on cross-cultural groups and organizations. The concept centres around findings that show, depending on the society in which a person is raised, he or she will either lean towards individualism or collectivism.

Varughese says individualist values reflect individual tastes, goals, achievements and accomplishments, whereas collectivist values reflect shared ideas among families, work divisions and communities. Every decision, conversation and contribution we see in the workplace is reflected by these constructs. According to Hofstede, it has to do with whether a person’s self-image is defined in terms of “I” or “we.” In individualist societies, people tend to look after themselves and their direct family only. In collectivist societies, people belong to “in-groups” that take care of them in exchange for loyalty.

**Considering the cultural compass of pork farm workers**

If managed well, diverse teams work. Knowing the team’s individual make-up and values is key. Hofstede developed his



Dutch social psychologist Geert Hofstede developed a compass that identifies levels of individualism or collectivism for every country in the world.

“culture compass” around six values – one of which is the degree of individualism inherent to a society and how this is reflected by those who belong to that culture.

Hofstede’s compass scores each country on various traits. The top collectivist countries in the world are Guatemala, Ecuador, Panama, Venezuela, Columbia and Indonesia, while the top individualist countries are the U.S., Australia, U.K., the Netherlands, Hungary and Canada.

In looking at several of the main countries used to source foreign workers for the pork industry, we can see huge differences in country scores based on Hofstede’s compass. Comparing several selected countries like Mexico, Ukraine and Ireland with Canada demonstrates why it is important for employers to consider this information when dealing with foreign employees.

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Mexico, with a score of 30, is considered a collectivist society. For Mexican workers, loyalty is paramount and overrides most other societal expectations. Mexican society favours strong relationships where everyone takes responsibility for fellow members of their group. In collectivist societies, an offence made to someone often leads to shame and loss of face. In addition, employer-employee relationships are perceived in moral terms, much like a family link. While Canadians may not instinctively think along these lines, employers hiring and promoting workers from collectivist cultures should take into account how these decisions could affect an employee's in-group.

Ukrainians are also found to be very collectivist. If Ukrainians plan to go out with their friends, they might say, "We with friends," instead of, "My friends and I." Family, friends and even entire neighborhoods are foundational to Ukrainians' approach to everyday life. Relationships are crucial for obtaining information, social networking or for successful negotiations. They need to be personal, authentic and trustful before one can focus on tasks and build on a communication style.

Canada and the U.S. score 80 and 91, respectively, on the dimension of individualism. These figures are the highest for this given dimension, characterizing us as having as very individualist cultures. In the business and working world, this translates into an employee expectation of self-reliance and initiative. Within the exchange-based world of work, hiring and promotion decisions are based on merit or evidence of what one has done or can do. As a result, a Canadian individualist working alongside a strong collectivist will approach communication and the job quite differently.

### Communicating using different styles

In her presentation, Varughese pointed out there are several communication styles that are factors in how people talk and deal with each other. She elaborated on the following categories:

- **Reflexive:** Reflexive communicators will often repeat parts of the conversation using the same tone and



*Effectively communication with employees means understanding what works for them.*

intonation in the conversation. Reflexive speakers feel repeating the conversation shows respect and understanding.

- **Interruptive:** Interruptive communicators often interrupt the conversation without knowing it. Given their family and community-oriented culture, collectivists are often by nature interruptive.
- **Direct:** Direct communicators use fewer words and less non-verbal communication. This practice may be perceived as rude, abrasive or arrogant, but in reality, it may be indicative of culture. Like many North Americans, Ukrainians are very direct communicators and may not need as much positive reinforcement as others.
- **Indirect:** Indirect communicators are often collectivists who view group or team harmony as being more important than disagreeing with someone. Mexicans who fall within this group are less direct in communication. Filipinos are strong collectivists, very hierarchal and indirect communicators. For them, saving face is important, so careful, non-embarrassing feedback is key.

The methods by which employers communicate with employees can have a significant impact on job performance. Varughese says there is a close link between performance feedback and indirect versus direct communicators. In North American cultures, she says the "sandwich approach" is used to offer performance feedback. The process involves delivering positive news first, followed by constructive criticism and ending with positive feedback. However, not all cultures resonate with this technique, but employees from all cultures still need meaningful feedback. Offering specific positive feedback will reinforce desirable behaviour. An employer could try saying something like, "You did a great job processing that last batch of pigs. It was done right, fast and met our SOPs."

Varughese says direct communicators do not always give positive feedback, as it is not part of their culture, and doing

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good work is viewed as an expectation. She says this can be deflating for some and lead to employee disengagement on the job. She notes indirect communicators still need positive feedback, but if they are collectivists, the praise would be better offered in-person rather than in a group setting like the staff room at coffee break. In this case, indirect communicators will not respond well if the entire team is present. The feedback is better delivered behind closed doors so that the indirect communicator, who may also be a collectivist, recognizes that their job is not threatened. Hierarchy is important in some cultures and can play a role in the process.

**Communicating using different platforms**

In today’s workplace, communication is typically done in one of three ways: face-to-face, by phone or by email. In the pig barn, communication within and between teams or management can be difficult especially where technology is not readily accessible or where differences in culture, language or understanding of expectations are unclear. In collectivist cultures, like Mexico and the Philippines, chit-chat is about relationship-building and may include discussion about family, community, school, politics and sports. On the other end of the spectrum, in Canada, chit-chat can be superficial and addresses the current weather or asking how someone is feeling, often without much emphasis on finding out the true answer.

Language skills are important in relaying your message, especially when it comes to doing important tasks on the farm, such as breeding sows, recording data and identifying health concerns. Varughese says, if English is a second language, a phone call should be followed up with an email, to ensure the message is understood and that nothing has been lost in translation. Another technique is the use of photos as a communication aid, if the matter is visual in nature, such as animal health symptoms. Using this technique can also spare workers from embarrassment or misunderstanding if accented speech is an issue.

Varughese also notes where mixed cultures and languages exist in a working team, speaking only English or French on the job should be encouraged. This allevi-

ates issues where people feel they are being excluded from the conversation or being talked about. In some cultures, this can be viewed as rude. Leave the talking in mother tongues for coffee and lunch breaks.

**Exercise caution with non-verbal communication**

According to Varughese, non-verbal communication such as gestures, posture, eye contact, smell, silence and personal space can be interpreted differently in each culture. Gestures

CONTINUED ON PAGE 20

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such as physical greetings – like handshakes, hugs and kisses – vary from culture to culture, and simple signs such as giving the “thumbs-up” or the “all-OK” sign can mean different things and might be considered offensive in some cases.

In North American culture, direct eye contact is expected and respected, while in some cultures, it can be viewed as disrespectful. Vocal tone and volume can also be perceived differently. Some cultures expect leaders to have loud voices; on the other hand, in Japanese culture, a loud voice signals someone is out of control. In North America, silence is often viewed as a lack of interest, whereas in some cultures, it is seen as someone who is reflecting on what is being said.

### Opening your mind will help your operation

Navigating the ins and outs of cross-cultural communication may be daunting, but it could also be an important consideration for your business. Rather than arriving at wrong conclusions about your workers, try to understand their backgrounds and how this affects communication.

To wrap up her presentation, Varughese asked attendees to rise from their seats and participate in a fun dance routine



An impromptu Bollywood-style dance routine caught attendees off-guard but served to illustrate a point.

based on the Bollywood-style of Indian movies. The exercise was done to demonstrate a principle: when in doubt, mirror the image, the gesture or even the tone when dealing and communicating with employees whose cultural backgrounds are different from yours. Failing to do so could result in lost production or profit. ■



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# Disease preparedness comes into focus

Andrew Heck

Disease-related emergencies are familiar to many in attendance at the Banff Pork Seminar. At least three separate presentations were focused on the threat posed by foreign animal diseases, and just last year, on the first day of the seminar, Alberta announced it had recorded its first-ever case of porcine epidemic diarrhea (PED).

Seminar presentation topics under the banner of disease preparedness were delivered by Amy Cronin of Swine Health Ontario, Egan Brockhoff of Prairie Swine Health Services and Alex DeJong of BMO.

In addition to presentations during the seminar, producers from across the country, and some guests from abroad, were invited to take part in a pre-seminar Serious Animal Disease Emergencies workshop through the Animal Health Emergency Management (AHEM) Project. The session was hosted by Alberta Pork and the Canadian Pork Council (CPC).



Todd Bergen-Henengouwen is the resource development lead for the AHEM project. He also operates a mixed crop farm in southern Alberta.

## AHEM project workshop prepares producers

“We were pleased with the turnout, given that not all guests had arrived in Banff that early, and given that not everyone in attendance at the seminar is a producer,” said Matt Taylor, Project Manager, AHEM. “We felt the seminar was a good opportunity to efficiently attract participants at a time

CONTINUED ON PAGE 22



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when they were already travelling and prepared to expand their knowledge.”

The goal of the session was to introduce producers to disease prevention strategies that they could take back to their own operations. Producers were also versed in disease response management, to prepare for the unfortunate case that disease should enter their own herds. The event featured an introduction to a new producer handbook, an emergency scenario simulation and networking opportunities.

“For us, the development of this handbook was an important step for our producers,” said Javier Bahamon, Quality Assurance and Production Manager, Alberta Pork. “Resources are great, but they require instruction. Through the AHEM project, producers are able to receive a helpful resource for reference, along with the appropriate training to integrate these strategies into their existing emergency plans.”

The handbook is divided into five sections, which include information on understanding risks to the industry, preparing for disease, responding in the event of an outbreak, and sections for definitions and additional exercises for producers to complete.

So far, handbooks have been customized for pork producers in Alberta, Manitoba and Nova Scotia. Similarly, handbooks have been customized for beef, dairy, goat and sheep producers across the country.

In 2018, the initial AHEM project team released 13 plans and associated handbooks. In 2019, during the project’s second phase, the development of another 15 plans and handbooks began. The plans provide step-by-step guidance on roles and responsibilities for staff at provincial and national associations, and the handbooks offer clear and concise information for producers.

To promote these resources, the AHEM project kicked off a series of scheduled pork-specific workshops, including a November 2019 session in Red Deer, Alberta and the January 2020 session in Banff, followed by a March 2020 session in Red Deer. Further workshops for pork and other sectors are being planned across Canada.



## African Swine Fever is top priority for Canadian Pork Council

Egan Brockhoff is a veterinarian and partner in Prairie Swine Health Services of Red Deer, Alberta, in addition to serving as a veterinary counselor to the Canadian Pork Council (CPC). Brockhoff’s work takes him to farms across western Canada and even to Asia, where he has witnessed first-hand the devastation caused by African Swine Fever (ASF). He delivered a presentation as part of a breakout session at the 2020 Banff Pork Seminar.



*African Swine Fever (ASF) preparedness is a primary concern for the Canadian Pork Council (CPC). Céline Bourbonnais, Communications Manager, CPC provided an update on the organization’s national communications plan in the event of an outbreak, during a CPC board meeting in Banff.*

For its part, the CPC is preparing to combat ASF by hosting bi-monthly meetings with Canadian Food Inspection Agency (CFIA) officials to raise awareness and understand what the agency is doing. CPC is also meeting with the Animal Nutrition Association of Canada (ANAC) to explore ways to address the potential risk of imported feed and feed ingredients being contaminated with ASF.

Collaboration is key. CPC regularly communicates with the U.S. National Pork Producers Council and partners in Mexico to share information and work on a unified North American response plan. Through the Canada West Swine Health Intelligence Network (CWSHIN) and other regional partners, information is being shared with veterinarians and producers across the country.

## Inching closer to an ASF vaccine

At the same time the Banff Pork Seminar was taking place, the Canadian Food Inspection Agency (CFIA) announced that the University of Saskatchewan’s Vaccine and Infectious Disease Organization-International Vaccine Centre (VIDO-InterVac) will embark on new ASF research to further support Canada’s preparedness strategy. This complements ongoing collaborations between the CFIA and VIDO-InterVac aimed at developing and testing vaccines and antivirals for ASF.

“CFIA’s support increases Canada’s international contribution to combat the spread of ASF,” said Volker Gerdt, Director, VIDO-InterVac. “This is a prime example of how this CL3-Ag infrastructure supports national priorities against emerging infectious disease and the development of solutions that mitigate their impact.”

*CONTINUED ON PAGE 24*

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Gerds was a presenter during one of the seminar's breakout sessions, during which he provided an overview of VIDO-InterVac's work and explored the different kinds of viruses and corresponding vaccines from an epidemiological point-of-view.

Several experimental vaccines for ASF have been based on gene-deletion mutants. However, the concern with these vaccines is that, at high doses, they can cause disease by themselves. Because these vaccines use live viruses, vaccinated animals will shed the virus into the environment, which could infect other animals in a pig herd or potentially spread outside a farm and infect wild pigs, which carries a much greater risk for transmission.

In contrast, inactivated vaccines are very safe, as all pathogens have been completely inactivated. However, an inactivated vaccine virus is no longer

able to enter the cell, thus appearing to the immune system as an extracellular pathogen, which leads to a suboptimal immune response. In the case of either gene-deletion vaccines or inactivated vaccines, there is no clear answer to the ASF problem.

When vaccines are not available for disease response, the economic impact of that disease is compounded, as we have seen with ASF and PED. Vaccines play a critical role in protecting our industry, but at the same time, practical considerations need to be made for the changing expectations of producers and herd veterinarians. It is essential that novel platform technologies are created to allow for rapid, cost-effective vaccine development, while preserving global trade partnerships and keeping our industry competitive.

### Ontario Swine Incident Command Centre stands ready

Amy Cronin is a Guelph-area hog farmer, mother of six, school board trustee and former board director with Ontario Pork who is part of Swine Health Ontario's (SHO) Ontario Swine Incident Command Centre. For the past four years, she has also served on the Banff Pork Seminar Advisory Committee.



*Amy Cronin explains the biosecurity protocols on her own farm.*

SHO is a leadership team comprised of representatives from Ontario Pork, the Ontario Pork Industry Council (OPIC), along with ex-officio representation from the Ontario Ministry

of Agriculture, Food and Rural Affairs (OMAFRA).

SHO was formed to facilitate a collaborative approach to improving and better coordinating the pork industry's efforts to prevent, prepare for and respond to serious swine health threats in Ontario. SHO subsequently identified the development of an Ontario Swine Incident Command Centre (OSICC) structure for industry disease response, following the principles of Incident Management Systems (IMS), as a key strategic goal.

### Protecting your bottom line in a disease outbreak

Alex DeJong is a Senior Director of Agriculture and Agri-Business at BMO, based in Ontario. He presented on financial planning in the face of foreign animal disease.

Alex handles large and strategic agricultural client relationships across the province, including large cash crop, protein and horticulture producers, as well as grain elevators and input suppliers. He and his team work closely with clients to provide advice, direction and flexible credit structures to meet their specific needs and business goals.

Financial considerations in a disease outbreak are specific to individuals, but in general, the main issue is are likely to be related to cash flow and marketability of hogs. One-month, three-month and six-month plans are recommended to help producers manage in the event that borders close to exports or there are other disruptions to pig movements.

Partnering with your lender is crucial to arriving at a plan that works. It is important to know how you and your lender can work together to support your business during a potential disease outbreak. Financing solutions and other strategies differ between institutions, which is why producers should not hesitate to make appropriate arrangements to protect themselves. ■

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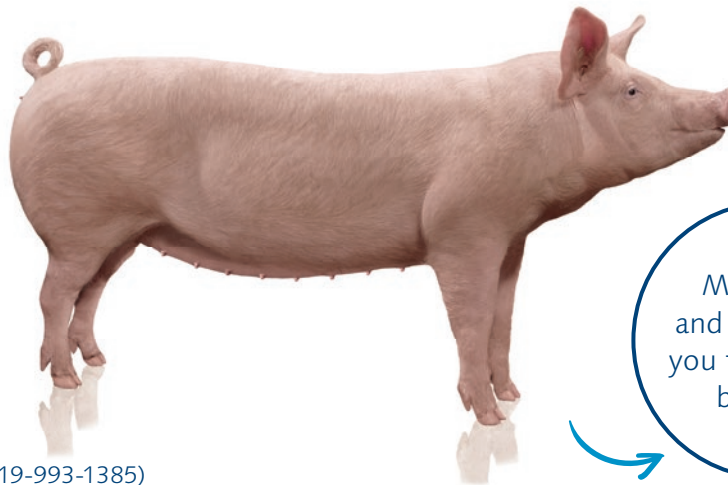


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# More tenacious than contagious: ASF's true threat

*Meristem*

Twelve years ago, African Swine Fever (ASF) outside of Africa was a so-called exotic disease with minor impact. That has changed drastically. ASF is one of the most important threats to the global pig farming sector, with no drugs or vaccines available to cure or prevent the disease.

To prevent, control and eradicate ASF is a big job, said Klaus Depner of Germany's Friedrich-Loeffler-Institute, during the 2020 Banff Pork Seminar. If we are going to beat this disease,



*The Oder River forms the border between Poland on the east bank and Germany on the west bank. African Swine Fever (ASF) has been discovered in wild pig carcasses only tens of kilometres from the Polish side of the river.*

the world needs to look beyond just biological and include social science, he added.

"Knowledge about disease biology, epidemiology and the human-host interactions are needed. But humans are recognized as the main cause of both long-distance transmission and virus introduction into domestic pig farms," said Depner.

"By considering only the biological particularities of the disease – contagiousity, tenacity and case fatality rate – but ignoring the human aspects, the epidemic will not be controlled. It is crucial to include social science when planning prevention, control or eradication measures."

## Tracking the origins of ASF

The ASF epidemic started in Georgia in 2007 and subsequently spread throughout the Caucasus region and Russia. In 2014, ASF reached the European Union (EU), and four years later, the first outbreaks were reported in Asia. In several European countries, the disease has become endemic in the wild boar population, while it can still be managed in domestic pig herds.

When ASF reached the EU, it was expected to either spread rapidly within the wild boar population or fade out due to high case fatality rate and the absence of long-term carriers. The cur-

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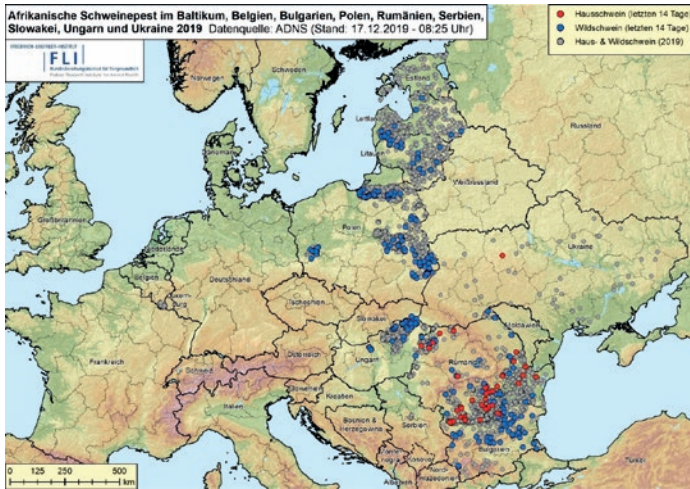
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The presence of ASF in Europe, by region, differs in concentration, number of total discovered cases and composition of domestic versus wild cases.

rent situation, where the disease has become endemic in several countries, shows that none of these predictions held true. The infection survived locally in the wild boar population independently from outbreaks in domestic pigs.

In addition to local transmission in wild boars, long distance jumps into disease-free areas occurred. Human activities have been identified as main drivers of disease transmission in the domestic pig epidemiological cycle.

### Characteristics of ASF in Europe

The ASF strain in the current epidemic is highly virulent. While the disease is asymptomatic in warthogs, domestic pigs and wild boar mostly develop a severe hemorrhagic disease and die within a couple of days. If naïve pigs come into contact with the diseased animal or its secretions, some will become infected and meet the same destiny.

However, the case fatality rate – proportion of infected individuals that succumb to the disease within a certain time period – is high, often reaching 90 to 100 per cent. So far, there is no evidence that the few survivors may become carriers playing a significant role in the ASF epidemiology.

ASF virus has been shown to be relatively stable in the environment, having high tenacity. It survives the process of putrefaction, and carcasses of infected animals may remain infectious for weeks.

In frozen meat, the virus may survive for several years; in dry meat and fat, almost one year; in blood, salted meat and offal, more than three months; in feces, more than one week.

Given this tenacity data, it is easy to understand why and how contaminated meat and meat products have played a crucial role in ASF transmission and epidemiology.

### How contagious is ASF?

One important aspect for understanding ASF is contagiousity. That is the percentage of animals that get infected after contact with the ASF virus or the probability that an animal picks up an infection after contact with the virus.

The ancient sylvatic cycle in Africa, involving warthogs and Ornithodoros ticks, is the non-contagious form of the infection. The asymptomatic wild suids and ticks allow a transmission cycle, which can be maintained indefinitely in Africa. Tick bites are transmitting the disease within the warthog population without clinical manifestation.

The balance between natural hosts and ASF was altered by the introduction of domestic pigs by colonists from Europe into Africa. In contrast to infected warthogs, domestic pigs and European wild boar develop severe clinical disease. In the absence of ticks or iatrogenic transmission by parenteral injection, the virus is transmitted orally by direct contact with infected pigs or contaminated fomites.

### Spotting the high-risk period

The “high-risk period” is defined as the time that elapses from virus introduction until disease confirmation. Due to the low contagiousity, the speed of virus spread within an epidemiological unit is slow. Therefore, at the beginning of an outbreak, usually only a few pigs are affected and die.

In a small farm, the death of a few pigs would be noticed immediately – for example, if three out of 10 pigs died, representing 30 per cent mortality. However, if only three pigs die in a herd of 1,000 pigs, that is only 0.3 per cent mortality, and ASF is likely to remain unsuspected from the start.

In large farms with thousands of animals, the initial low mortality might lead to a prolonged high-risk period, which may last several weeks until the mortality increases and exceeds a given threshold before ASF is suspected.

CONTINUED ON PAGE 28

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For keeping the high-risk period as short as possible, passive surveillance – which means targeted testing of sick and dead animals – has to be enhanced in ASF-restricted and risk areas, said Depner. For example, in breeding farms, all dead gilts, sows and boars should be tested for ASF even if farm mortality is below the usual threshold.

## The persistency triangle tells all

In wild boar populations, the ability of the virus to remain infective after putrefaction is of particular importance for wild boar carcasses that remain in the environment until total decomposition. In this regard, the low contagiousity of ASF is contrasted by the high tenacity.

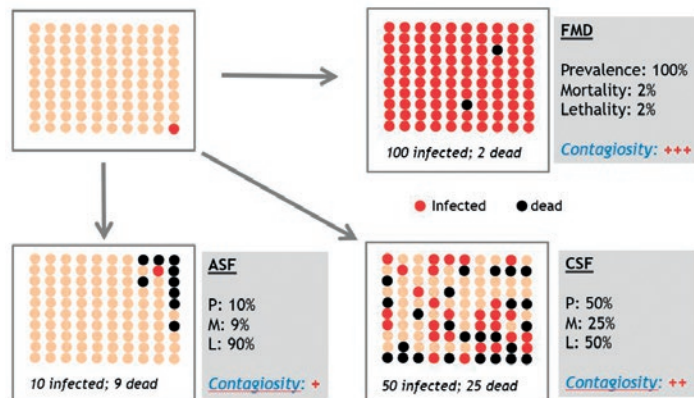
Contaminated wild boar carcasses might facilitate virus persistence for months within a region, significantly influencing the

course of an ASF epidemic. Even if the probability of infection for each contact is low, the long-lasting persistence will allow maintenance of virus circulation.

The qualities of the three epidemiological traits contagiousity, tenacity and case fatality rate make ASF virion efficient in both persistence and transmission. The interaction of these three parameters maximizes both local persistence and geographical spread of the virus, making its eradication a challenge. Depner calls this “the persistency triangle.” The interaction of these three parameters maximizes local persistence and limits fast geographical spread. ■



*“The mortality rate for the virus is often incorrectly considered to be 100 per cent. This is not true. The case fatality rate is close to 100 per cent, but the virus itself is not particularly contagious. This is an important distinction, since the impact of a disease can’t be measured on these qualities alone,”* said Dr. Depner.



A chart compares characteristics of Foot and Mouth Disease (FMD), Classical Swine Fever (CSF) and ASF.



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# Wild pigs, nutrition, resilience and more

Andrew Heck

## Western Canada's wild pigs run amok

Potential for disease transmission, environmental destruction, physical threats to livestock and other headaches that come with invasive species are what landowners can expect as Canada's wild pig presence continues to grow relatively unchecked. Because they are intelligent, hardy creatures, eradication has proven elusive.

Ryan Brook delivered the final plenary session presentation at the 2020 Banff Pork Seminar. His team at the University of Sas-



Many conference attendees were unfamiliar with the wild pig problem. As a result, Ryan Brook received a lot of extra attention following his presentation.

Wild boars were originally brought to Canada in the 1980s. The current wild pig population is composed of individuals that have escaped captivity, either escaping through poor fencing or being deliberately released.

Efforts to control the wild pig problem in Canada, at present, are sparse, due to a perceived sense of security. We do not have African Swine Fever (ASF), as in Europe, but we do have other swine diseases that could just as easily move from farm-to-farm due to contact with these animals.

In terms of what could stem the tide, Brook suggests more leadership is needed, along with aggressive but calculated culls. There are

katchewan has been studying wild pigs for nearly a decade, and population trends suggest that there will be no shortage of further work to do in this area.

"More than 700 delegates who came here to talk about managing pigs inside the fence," said Brook. "I'm the only one who came here to talk pigs outside the fence."

"Wild boars" were originally brought to Canada in the 1980s. The current wild pig population is composed of individuals that have escaped captivity, either escaping through poor fencing or being deliberately released.

a couple of reliable techniques available to do this, including use of what he calls a "Judas pig" to lure hunters to an entire group of pigs, also known as a "sounder." Hunting the animals one by one has proven counter-productive, but trapping and eliminating an entire sounder seems to work. The issue is keeping pace with the growth of the problem, which is not yet happening.

"No one of these points alone will solve the wild pig problem," says Brook. "It will take a comprehensive plan."

As for the cost?

"Not sure," he answered. "Bloody expensive. Hundreds of thousands, maybe millions of dollars. One thing is sure: every year you wait, it gets more expensive."

## Nutrition research focuses on grow-finish and post-wean pigs

Breakout sessions on nutrition were hosted by Mike Tokach and Annie Lerner from Kansas State University, along with Francesca Molist from Schothorst Feed Research of the Netherlands.

Tokach and Lerner delivered the presentation, "Feeding the Grow-Finish Pig and Managing Their Increasing Carcass Weights."

Their research suggests a historical trend toward market hog weight continuing to increase by more than half a kilogram every year. Genetic improvement allows these heavier weights to be achieved economically; however, long-term increases in market weight require adjustments to production facilities, nutrition programs, transportation and processing facilities.

The maintenance requirements of pigs are proportional to their body weight. Thus, heavy-weight pigs have higher maintenance requirements and must continue to eat increasing amounts of feed to dilute their maintenance needs and provide adequate intake to maintain growth rates.

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<sup>1</sup> Messenger, KM, Papich, MG, Blikslager, AG. Distribution of enrofloxacin and its active metabolite, using an in vivo ultrafiltration sampling technique after the injection of enrofloxacin to pigs. *Journal of Veterinary Pharmacology and Therapeutics*. Published online. doi: 10.1111/j.1365-2885.2011.01338.x, Copyright Blackwell Publishing, September 2011. <sup>2</sup> FOI Summary Supplemental New Animal Drug Application (NADA) 141-068. Baytril® 100 enrofloxacin injectable solution in swine. For treatment of SRD, March 14, 2008. USA. <sup>3</sup> O'Connor et al. A mixed treatment meta-analysis of antibiotic options for bovine respiratory disease – An update. *Prev Vet Med* 132 (2016) 130-139.



and use energy from fibrous feedstuffs more efficiently through hindgut fermentation. Thus, producers may have the opportunity to lower feed cost by using fibrous feed ingredients. The potential negative effects of these ingredients on carcass dressing percentage must be considered in their economic evaluation.

Molist delivered the presentation, “Feeding Programs and Nutritional Strategies for Post-Weaning Piglets in the Absence of In-Feed Antibiotics.”



Metabolic testing units used for studying pigs at Schothorst Feed Research, located in Lelystad, the Netherlands.

In order to remove in-feed antibiotics in post-weaning diets, it is essential to have a holistic approach and understand the roles of nutrients like fibre, crude protein and fat in promoting intestinal health. The nutritional strategy should be based on formulating low-nutrient post-weaning diets to promote feed intake of the piglets while simultaneously avoiding having an excess of non-digested substrate that can be used for the bacteria to proliferate.

Use of fibre should be concentrated on accelerating the development of the gastrointestinal tract. It is also important to formulate low crude protein diets and use ingredients with high amino acid digestibility. When formulating post-weaning diets, reduce the buffer capacity of the diet to optimize stomach function.

Although, there is still a need for further research on the effect and function of fat and fatty acids in promoting intestinal health, it is advisable to use medium chain fatty acids and opti-

mize the diet, taking into account the proportion of unsaturated to saturated fatty acids.

**Sow management starts with gilts**

Breakout sessions on sow management were hosted by Dan Busieres from Groupe Ceres of Quebec, along with Bob Thompson from PIC U.S.A. of Kentucky.

Thompson delivered the presentation, “Factors Involved in Sow Mortality.”

Sow mortality is a multi-factorial problem that increased as our pork industry grew and expanded in the 20th century. A review of 3.6 million parity records between 1996 and 1998 has shown monthly mortality rates were approximately 7.6 per cent in January 1996, reaching a high of 14.5 per cent during the summer of 1998. With focus from researchers, veterinarians, producers and breeding stock companies, it improved to where systems were below 10 per cent annualized with many in the four to six per cent range in the early 21st century. Then, as the industry started to expand again, mortality increased until most systems were back to the low- to mid-teens.

Proper gilt development and acclimatization are essential to build a sound herd. How you receive replacements will drive what efforts are needed to be successful at retaining younger parities and reducing overall sow mortality. Many producers in

CONTINUED ON PAGE 32



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the U.S. have internal multiplication where herd replacements are raised on-site. With increasing sow productivity and higher replacement rates, it has stressed their systems to have enough good quality select weight gilts. If there are any disease outbreaks, this creates an even larger deficiency.

Reducing sow mortality is up to everyone involved in the pork industry. In Denmark, the industry has set goals to bring about country-wide efforts in this area, for the sake of accountability. If the same does not happen in North America, customer perceptions will eventually force us to act. Why not be proactive?

Bussieres delivered the presentation, “Key Aspects for Capturing Reproductive and Sow Lifetime Performance.”

We often view the success of a sow farm by looking at the number of pigs weaned per sow per year performance, which indeed is important when we look at production efficiency. On the other hand, economically, this number may not be the most important.

Gilts are the foundation of the herd, and a good start with your gilts in their first cycle is key in order to optimize herd lifetime performance. Gilts with higher litter size in their first parity will have a higher retention rate. We should expect our gilts to have the best farrowing rate of the herd and have 14 to 15 total born in their first litter. Also, we should aim for a retention rate of 75 per cent or more up to third parity and achieve between 55 to 60 pigs weaned per lifetime.

Optimizing sow and lifetime productivity starts with a good gilt program. Management and nutrition are key factors when looking at producing high quality replacement stock and making sure they have a good start in their first production cycle.

### Pig resilience digs into DNA

Breakout sessions on pig resilience were hosted by John Harding from the University of Saskatchewan, Jack Dekkers from Iowa State University and Ben Willing from the University of Alberta.

Harding delivered the presentation, “The Natural Disease Challenge Model for Evaluating Resilience.”

A natural disease challenge model was established at a wean-to-finish research unit in Deschambault, Quebec in November 2015 to study disease. The model has provided a unique opportunity to intensively monitor disease transmission and expression.



From left to right, presenters John Harding, Jack Dekkers, Ben Willing and Bob Kemp.

The model has established that disease resilience traits like mortality, morbidity and performance have a sizeable heritable component, although the disease challenge is dynamic over time and not experimentally controlled. This demonstrates that improvement of disease resilience using genetic selection is possible, if appropriate measures of disease resilience can be obtained on animals within the high-health nucleus breeding farms.

The model has provided a unique opportunity to intensively monitor disease transmission and expression, and the effect of strategic interventions in a commercial research facility that has been managed consistently and systematically with well-trained staff over a four-year period.

Moving forward, large-scale public-private collaborative research partnerships will provide vital alternatives to improve pig health and welfare on commercial farms. This natural disease challenge model will play a role in that discovery.

Dekkers delivered the presentation, “Genetics and Early Predictors of Resilience.”

Infectious disease represents one of the largest cost components to the swine industry, incurring veterinary costs, loss of pigs due to mortality, reduced performance and reduced animal welfare.

Unique and extensive data has been collected on a large number of wean-finish pigs that can be used to understand the genetic basis of disease resilience and to develop genetic tests or indicator traits to identify pigs with high genetic merit for disease resilience, without having to expose them to disease. The latter is essential for the implementation of selection for disease resilience in nucleus breeding herds.

Genetic markers and genomic prediction provide a valuable tool to predict breeding values on animals for traits for which they are not being recorded. Disease resilience is a good candidate for this. Genomic prediction, however, requires ongoing recording of the phenotype in a so-called training population.

Willing delivered the presentation, “Host Microbial Interactions and Disease Resilience in Pigs.”

Gut microbiota has been identified as one of the important factors influencing disease resistance. Through a Genome Canada and Genome Alberta funded project, Willing has endeavoured to identify microbial populations associated with disease resistance and to characterize how disruptions associate with altered immune development in pigs.

The gastrointestinal tract of newborn mammals is rapidly colonized by environmental and maternal microbes with tremendous biomass and diversity. The relationship, balance and mechanistic interactions between these microbes in the gut is extremely complex and not well understood in states of health or disease.

CONTINUED ON PAGE 34





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Antibiotics may cause transient or persistent alterations in gut-associated microbiota and are suggested to be a major contributor to increased prevalence of immune mediated disorders. Since the gut microbiota – which consists of a dynamic community of bacteria, viruses, fungi and archaea – is known to impact the development, maturation and function of the immune system, it is a natural extension that the microbiota will impact vaccine efficacy.

In humans, increased sanitation, reduced exposure to microbes in early life and frequent use of antimicrobials have been associated with an increased susceptibility to certain disease conditions. This can also be the case with swine production where different production methodologies and technologies are employed.

### Smart technology's integration challenges

Breakout sessions on smart technology were hosted by Dale Polson from Boehringer-Ingelheim Animal Health of Georgia, Chris Bomgaars from EveryPig Inc. of Florida and Benny Mote from the University of Nebraska.

Polson delivered the presentation, “Precision Livestock Ecosystems: Integrating Technology, Process and Culture.”

Each precision livestock farming technology generally has value potential for any given farm site and thus can be evaluated to a degree in a similar manner as other products and services have always been and continue to be today. However, the greatest value of individual precision livestock technologies is not realized in isolation.

There are three primary elements to a strategic framework for all ecosystems that integrate and connect cyber-physical systems within any business environment: technology, process and culture. For all businesses and commercial operations that operate within each business environment, people are the drivers, technologies are the vehicles and processes are the roadways.

The potential of precision livestock farming technologies is clear. To continue to chase that potential and beyond, many existing as well as new start-up companies will enter the marketplace to supply these technologies to livestock producers. The challenge for these companies will be offering a clear value proposition for producers, related to effective integration and cost-consciousness.

Bomgaars delivered the presentation, “Reducing the Threat of African Swine Fever (and Other Severe Diseases) Through Telemedicine.”

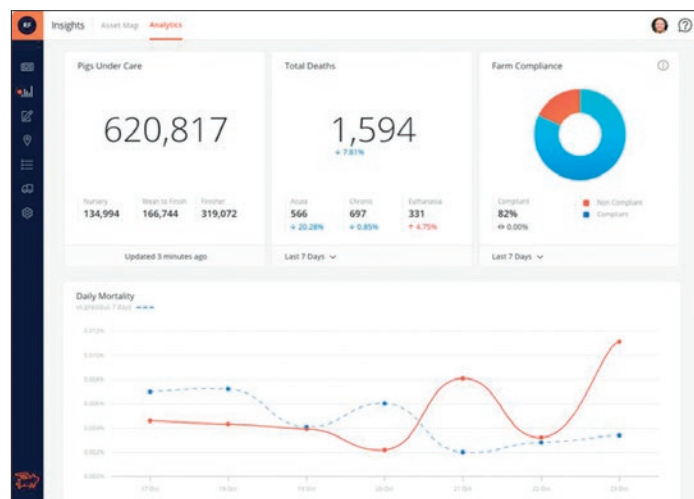
Infectious disease outbreaks originating overseas have often been treated as someone else’s problem, unlikely to affect pork production in North America. As we have seen in recent years, the wait-and-see approach to the spread of disease among livestock may be an increasingly risky one.

The last 30 years have seen a shift to larger but fewer production operations. With this shift, efficiencies as well as the quality of the product have improved. Data collection and storage, however, still lag other industries.

The early detection of ASF is uncommon using the current methods available on-farm. As such, differential diagnoses are troublingly common. Barring the widespread adoption of portable laboratories, we can assume that early detection will continue

to fall on the shoulders of on-site caregivers should the disease arrive in North America.

With the threat of ASF looming over the pork industry, it is more important than ever that producers adopt a structured data approach. The ability to spot the symptoms of ASF and other infectious diseases quickly may be the difference between containment and bankruptcy. Services like EveryPig provide structured barn-level data collection made exclusively for the pork production industry.



An example of the EveryPig interface, as shown on a tablet screen.

Mote delivered the presentation, “Individual Pig Activity Tracking in Group Housed Swine Offers a Deeper Understanding of Swine Production.”

Advanced detection and intervention of compromised pigs significantly increases the probability for recovery in addition to the potential for reducing disease transmission spread or subsequent injuries. To date, identifying sick or injured pigs is achieved through visual evaluation by caretakers and has practical limits as to the amount of time they can allot to monitoring each individual pig.

Application of precision technology has been slower to develop in the livestock sector than the crop sector due to the complexity of tracking individual animals. However, advances in technology has progressed to the point that the industry is on the cusp of a technology revolution.

As a means to address this need, Mote’s team developed and evaluated a deep feature-based detection and tracking platform, known as NUtrack Livestock Monitoring System, with the capabilities to automatically identify, maintain individual identification and continuously track the activities and location of group housed pigs. The system is built around consumer-level security camera hardware and desktop computers with graphics processing units.

During a 42-day trial, the overall accuracy of the system was shown to be greater than 99 per cent when pigs were not lying down. The unrivaled ability and accuracy of the NUtrack system contributes enormous promise in the advancement of precision livestock farming for swine. ■

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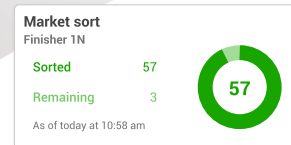
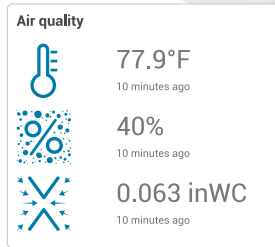
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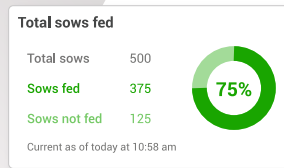
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# Meet the 2020 Banff Pork Seminar award winners

## Meristem

This year, two well-designed innovations – one from Canada, one from the U.S. – shared the honours as winners of the F.X. Aherne Prize for Innovative Pork Production at the 2020 Banff Pork Seminar. The late Frank Aherne, a professor at the University of Alberta, was a major force for science-based progress in the Canadian pork industry.



Ben Willing, Advisory Committee Member, Banff Pork Seminar stands with Tess Faulkner and Gillian Greaves of South West Ontario Veterinary Services, developers of an innovation awarded the 2020 Aherne Innovation Prize.

“The Aherne Prize recognizes individuals who have developed either original solutions to pork production challenges or creative uses of known technology,” explains the University of Alberta’s Ben Willing. “There is no better place to celebrate industry innovation than the Banff Pork Seminar, and we are pleased to acknowledge grassroots inventiveness in the pork industry.”

Winners for their Hammock swine restraint device were Tess Faulkner and Gillian Greaves of South West Ontario Veterinary Services in Stratford, Ontario. Winners for their FarrPro Haven micro-climate for pigs were Amos Petersen and Chris Hansen of FarrPro Inc. in Iowa City, Iowa.

## The FarrPro Haven: a perfect micro-climate for newborn pigs

The pre-wean mortality rate in the swine industry is at unprecedented levels and continues to cause major economic and productivity losses. Iowa-based ag tech start-up FarrPro has developed novel approach to address this ongoing and costly problem.

FarrPro’s patent-pending Haven unit is a heat and light supplementation platform for use in farrowing crates. Using the divider wall between neighboring creeps as

a base, the Haven creates a draft free micro-climate, allowing it to deliver highly efficient heat energy to two separate litters. Its elongated, semi-enclosed design provides over four cubic feet per creep of controllable and consistent heat energy which promotes healthy creep behavior while significantly reducing pre-wean mortality and energy use.

Iowa State University’s Agricultural and Biosystems Engineering department recently completed a pilot study of Haven units on a commercial farrowing farm in Ogden, Iowa. The result of that study showed a significant reduction in PWM from 12.04 per cent in heat lamp litters compared to 9.67 per cent in Haven litters – a 20 per cent reduction. With the U.S. average born-alive litter size being approximately 13.5, this translates into 0.32 more pigs weaned per litter. The study also showed that Haven units used an average of 3.25 kWh per day compared to the heat lamp average of 6 kWh per day, a 46 per cent reduction in energy use.

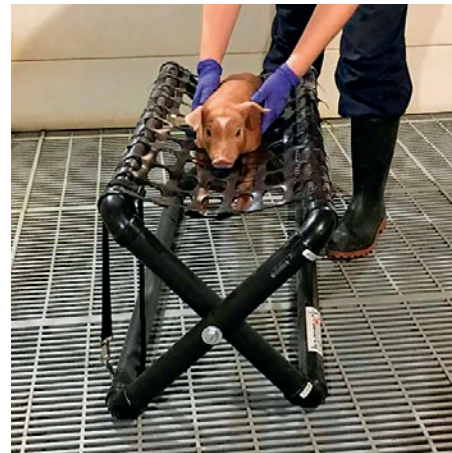


The FarrPro Haven is a heat and light supplementation platform for use in farrowing crates.

## The Hammock restraint device improves animal care and handling

As young professionals starting out in the swine industry, Tess Faulkner and Gillian Greaves were quickly immersed in on-farm production, as well in on-farm trials in conventional swine facilities.

One of their task during research trials and when helping production clients was euthanizing piglets in nursery settings. Although some producers may find this task simple enough, challenges with physical ability and less experience can necessitate a new way to complete the same task. The Hammock was invented for this purpose.



A piglet is placed in the Hammock.

Depending on the size or fitness of the animal, as well as the size or fitness of the person completing the euthanasia, the process can become quite difficult, causing unnecessary stress to both the animal and the human handler. The Hammock acts to restrain the pig in a manner that allows both the operator and the animal to relax. Instead of using a sorting board or their body to restrain the animal, animal care staff is able to place the piglet into the restraint, keeping both hands free to safely operate euthanasia devices such as a captive bolt gun, ensuring accurate placement of devices.

The Hammock was designed to be practical – easily compactable, folding down to be stored and used in a barn setting. A number of variations were constructed and tested in a barn setting with both research staff and producers. The latest design has improvements in strength, collapsibility, ease of cleaning, as well as the ability to use with pigs of various sizes.

## 2020 Foxcroft Honorary Lectureship

There are many aspects of resilience research, and a breakout session at the Banff Pork Seminar brought together four leading speakers on this topic. One of those was the George Foxcroft Lectureship for 2020, Jack Dekkers of Iowa State University.

“This award allows the Banff Pork Seminar, working in conjunction with the University of Alberta, to host speakers who are conducting leading research that is

applicable to the pork production industry and will potentially improve production efficiency.

“The quality of the research and contribution to the pork industry are the determining factors in selecting a recipient for this award,” said Ben Willing. “Jack Dekkers is a clear example of that success.”

Dekkers grew up in the Netherlands and received his Bachelor and Master of Science degrees from Wageningen Agricultural University and his Ph.D. in animal breeding from the University of Wisconsin. From 1989 to 1997, he was on faculty at the University of Guelph, working closely with the Canadian industry on genetic improvement of dairy cattle.



Banff Pork Advisory Committee members Ben Willing (left), Michael Dyck (right) and Foxcroft Lectureship recipient Jack Dekkers (middle).

He currently is a C.F. Curtiss Distinguished Professor and Leader of the Animal Breeding and Genetics group at Iowa State. Current research focuses on the genetic basis of feed efficiency and health in pigs and on the integration of quantitative and molecular genetics, including whole genome selection, with applications to swine and poultry.

**Student science winners announced**

Two young scientists at the 2020 Banff Pork Seminar were presented with the R.O. Ball Young Scientist Award. The award recognizes graduate students who provide a best overall combination of good and relevant science, a well-written abstract and an excellent presentation. It is named after Ron Ball, a former Banff Pork Seminar program director and long-time researcher.

This year’s first prize was awarded to Julia Linck Moroni of the University of Alberta for her research, “Influence of litter weight birth phenotype on embryonic and placental development.” Second prize went to Theresa Lantz of the University of Alberta for her research, “Use of near-infrared spectroscopy as an inexpensive, fast and non-destructive method for intramuscular fat analysis in pork chops.”

The first-place winner receives a \$500 cheque and a plaque, while the second-place winner receives a \$250 cheque. ■



First prize winner Julia Linck Moroni (left) and second prize winner Theresa Lantz (right).

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