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**SOW FEEDING STRATEGIES**

6

## **RISK MANAGEMENT**

Industry Options

14

## **MARKET OUTLOOK**

Pricing Shift?

44

## **AG POLITICS**

Balancing Roles

20

## **SOW HOUSING**

Accessing Space

28

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**DEAR READER: LETTERS FROM A FAMILY FARM**

**REWARDS & RISKS IN FARMING**

We are fortunate in so many ways in our industry.

In my mind, the strength of the tight-knit ag community is extraordinary. We depend on our friends for an extra set of hands when we are caught in a bind. Or, perhaps we'll swing by a neighbour's shop to borrow a wrench when we're in the field and our shop is a bit further away.

We can visit over coffee (or perhaps something a bit stronger, depending on your day) to discuss the start of the growing season or a recent problem in the barn.

The winter conference and trade show season, which is just wrapping up, allows us to grow our network. We can meet new contacts and renew our connections with people we often only see on this winter circuit.

In the age of social media, the reach of the community is almost limitless – we can chat with farmers or industry reps in a different area of the country or even another part of the world. We can learn from one another through Twitter and Facebook, and share our successes and our challenges.

But, of course, we face levels of risk and challenges that we cannot simply turn to neighbours to help us overcome.

We all know the standard culprits. Mother Nature can throw many curveballs at us, whether it be insufficient rain or an early frost. Global trade relations, like the ongoing saga between China and the United States, can wreak havoc on the markets. Disease outbreaks, like porcine epidemic diarrhea virus, can have significant financial and emotional effects on producers.

As many of these threats are beyond our control, we must think carefully about opportunities to mitigate risks.

This month, writer **Geoff Geddes** delves into the topic of risk management. He highlights both government and alternative options available to pork producers across Canada. Industry experts share practical tips on how to help protect your farm operation.

I hope this edition of *Better Pork*, as always, is informative. Please don't hesitate to reach out if you'd like to discuss the contents of the magazine or another matter of importance on your family farm. **BP**

*Andrea*



James Hofer photo

**James Hofer (right) chats with his son Trevor in the hog barn at Starlite Colony in Starbuck, Man. See "Fuelling up: Optimizing body condition during lactation" on page 6.**

vitphoto/Stock/Getty Images Plus photo



## SWINE-POWERED SEMIS ON THE HORIZON

Swine manure could soon serve as a renewable fuel source for diesel-powered engines, researchers say.

A team of **University of Illinois** (U of I) scientists converted wet biosolids into fuel that can be blended with diesel, a December university release said.

The United States produces 79 million tons (71.7 billion kilograms) in dry matter of wet biowaste each year, the release said. One of the biggest challenges with using this medium to produce energy is its water content. Drying wet biowaste requires a large amount of energy, making this source of power inefficient, the release said.

A process called hydrothermal liquification addresses this inefficiency. It uses water in the reaction to convert nonfatty biowaste components into biocrude oil. Scientists can then process this oil further to create engine fuels.

“We have already converted swine manure into crude oil and now we are working on upgrading the crude oil to diesel,” **Yuanhui Zhang**, the project research lead, said to *Better Pork*. The scientists created upgraded distillates, which can be blended with diesel.

The blended fuel “meets the current standards in terms of engine power output and emissions of pollutants,” Zhang said.

Consumers could see this diesel at the pumps in as early as five years, he added. **BP**

## TAINTED MEAT MAKES BAD SOUVENIR

While some people may consider mugs and snow globes to be tacky souvenirs, they sure beat pork tainted with African swine fever (ASF). That’s the takeaway from a recent Australian study showing that ASF-contaminated pork is reaching border points.

Although ASF doesn’t infect people, the disease can survive in meat and be passed along to pigs.

“While transmission of ASF may occur through fomites, people or products that have contact with pigs, the experience in Russia, eastern Europe and China shows that contaminated meat products are the primary mode of transporting ASF from area to area,” said **Dr. Paul Sundberg**, executive director of the **Swine Health Information Center** in Ames, Iowa.

Australian testing found both ASF and foot-and-mouth disease in seized contraband. These findings are interesting but not surprising, Sundberg said to *Better Pork*.

“The **United States Department of Agriculture** takes the position that anything it seizes is presumed positive, whether tested or not,” he said.

“In my opinion, that is a reasonable way to approach it.” **BP**



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## NEW TRIAL CANCER TREATMENT TOOL

Doctors are using pigs to test a “drug sponge” that could alleviate side effects from cancer treatments in humans.

By inserting a sponge into the bloodstream to absorb excess medications, researchers hope to lessen and prevent the side effects of chemotherapy treatments for the patient.

A “drug sponge is an absorbent polymer coating a cylinder that is 3D printed to fit precisely in a vein that carries the blood flowing out of the target (cancerous) organ,” a January **University of California, Berkeley** (UC Berkeley) release said.

The sponge would soak up any cancer-treating medications that are not absorbed by the tumour in

hopes of stopping the drugs before they reach other organs in the patient’s body.

“Surgeons snake a wire into the bloodstream and place the sponge

like a stent, and just leave it in for the amount of time you give chemotherapy,” **Nitash Balsara**, a professor of chemical and biomolecular engineering at UC Berkeley and a senior faculty scientist at **Lawrence Berkeley National Laboratory**, said in



the release.

In early tests in pigs, the sponge absorbed roughly 64 per cent of doxorubicin, a liver cancer drug.

Scientists at UC Berkeley, UC **San Francisco** and the **University of North Carolina at Chapel Hill** participated in this research. **BP**

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# FUELLING UP:

## OPTIMIZING BODY CONDITION DURING LACTATION

by KATE AYERS

Farmers must ensure that their breeding animals meet daily nutrient and energy requirements to maintain healthy herds and litters.

Breeding sows can be likened to Formula One race cars, says Mark Bodenham, the swine business manager at Masterfeeds at the London, Ont. office.

This company provides farmers with animal nutrition solutions.

Recently, scientists and industry experts have made tremendous advancements in swine genetics; the results are prolific litters and increased demands on gilts and sows. So, herd health personnel – including farmers and nutritionists – need to optimize how they manage these animals.

Raising a productive sow starts with good animal husbandry at birth and extends into the animal's gilt growth stage.

“When you are looking at life-time performance of a sow, the value of proper gilt development cannot be understated,” says Donald Skinner, manager of nutrition and technical services at Molesworth Farm Supply in Listowel, Ont. This business helps farmers develop feed plans for their swine, poultry and ruminant animals.

“Regardless of how you get replacement females into your sow herd, the end game is making sure that, early in their life cycles, they've been fed and raised to be breeding animals.”

Swine nutrition specialists, extension specialists and a Manitoba hog producer share tips to help farmers manage the challenges associated with breeding-sow feed regimens. After all, productive and healthy sows produce strong piglets.

### Factors affecting feed intake

Each gilt and sow has unique needs. So, responses to environmental conditions may vary across the herd.

However, all lactating sows need adequate nutrient and energy intake to support their health and produce viable litters.

Factors that may affect a lactating sow's feed intake include

- body condition before farrowing
- genetics
- age and parity
- feed quality, frequency and composition
- barn temperature
- feeder type
- water availability
- barn personnel

“Sow feed intake during gestation and body condition prior to farrowing” are crucial, Dr. Denise Beaulieu, an assistant professor in the department of animal and poultry science at the University of Saskatchewan, says to *Better Pork*.

“That is primarily why we limit feed intake during gestation. If the feed intake is too high during gestation, that will negatively affect feed intake during lactation, especially right after farrowing.”

Skinner agrees.

“If a sow is overweight, she produces a hormone that reduces her appetite,” he says.

“Reproductive issues can arise as well because the animal will start to put fat

tissue into her mammary glands.” And she might not milk as well. “These issues can affect a sow’s rebreeding and future litters.”

Producers can visually assess animals’ conditions, looking particularly at back fat and using a scoring system. While this approach is quick, it is also subjective.

“The trouble with visual scoring is that some sows are tall and lean looking but still have back fat. Other

sows may be stout and not have very much” back fat, Skinner says.

“Not all sows are created equally in physical appearance.”

Farmers can use ultrasound probes or calipers to directly measure back-fat thickness. These tools are more precise than visual scores, but they are also more expensive and time consuming.

In addition to monitoring sows’ body conditions, producers must

monitor lactating sows’ feed quality and eating frequency.

As first-parity sows are smaller in size and do not produce as much milk as multiparous sows, these animals have a feed intake that is about 10 per cent lower than multiparous sows, says Laura Eastwood, the swine specialist at the Ontario Ministry of Agriculture, Food and Rural Affairs.

So, farmers should ensure these younger sows get enough feed to maintain proper conditioning.

“By increasing feeding frequency from two to three times a day, intake will increase about 15 per cent,” Eastwood says.

### Lactation diets

Feed for lactating sows must contain three essential components: adequate energy and protein to sustain high productivity and quality ingredients to encourage the animals’ higher feed consumption.

“Energy demands for milk production are very high, especially with larger litters, so a high-energy intake is important,” Skinner says.

“But protein and amino acid content cannot be forgotten. Really, it’s about having an appropriate balance between the two.”

Commonly, nutritionists use corn and soybean meals in lactating sows’ diets. Farmers can also include wheat shorts in the ration as a source of fibre as well as by-products, such as bakery meal and liquid fat sources.

Lower cost is a reason farmers may use those products, Skinner says. These feed ingredients also provide fibre for nursing sows, which has shown to provide gut health benefits and prevent constipation, Skinner says. Constipation leads to reduced feed intake, which hurts milk production and piglet growth.

“You can also use corn distillers and canola meal. But some people are conservative with their use” of these ingredients.

They are concerned about feed palatability and want to limit “potential exposure to toxins that might be in corn,” Skinner adds.

In addition, nutritionists include “vitamins and minerals at higher

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levels in lactation diets than in other rations because such diets need to support a breeding animal, not just a growing animal.”

The staff at Starlite Colony in Starbuck, Man., feed their farrowing pigs wheat, corn, barley and full-fat soybean meal, says James Hofer, the colony’s hog barn manager. The team includes hemp seed screenings in the ration when the product is available. This ingredient is high in fibre, energy and protein, Hofer says.

The colony’s feeding system allows Hofer to feed two rations to accommodate animals in different developmental stages.

“The first ration is a gilt ration, designed for first-parity animals. It has been scientifically proven that a gilt that is farrowing for the first time is not yet finished developing, and she is still growing,” Hofer says.

“If you try to make a ration that is good for the gilts and good for the sows, you’d really overfeed your sows. Sometimes, I think people make a ration kind of in the middle, but then



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“Energy demands for milk production are very high, especially with larger litters, so a high-energy intake is important,” Donald Skinner says.



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no animal gets the right feed.”

In addition to fibre and energy requirements, producers must also find the correct amino acid ratios for their sows. Farmers can add lysine, methionine and threonine – important amino acids – to the feed, Beau-lieu says.

The swine sector should focus more on nutrients and less on ingredients, Bodenham adds.

“Ingredients are a delivery mecha-

nism for nutrients. If you assume there are no quality issues with the ingredients, you need to develop a balanced nutrient program that will deliver” what the sows need, he says.

Given sows’ complex dietary needs, “producers need to work closely with their nutritionists, vets and genetics companies to come up with a feeding program appropriate for their herds,” Eastwood says.

“Recommendations can vary great-

ly based on health status, genetics, ingredient availability, time of year” and other factors, she adds.

### Negative nutrient balances

Lactating sows are in a constant state of energy deficiency as they must provide a continuous supply of nutrient-dense milk for their piglets.

So, the key is to limit nutrient imbalances as much as possible throughout the lactation period, Skinner says.

When sows use more energy and nutrients than they can uptake through feed, they begin to use their fat tissue to generate milk and carry out bodily functions. If that happens to an excessive degree, sows can become more prone to illness and injury, he adds.

If severe, insufficient nutrient and energy intake can have significant effects.

Low nutrient and energy intake can cost you up to 1.2 piglets per litter, according to a 2006 study by Goodband and others, Bodenham says.

“Consequences of insufficient nutrient and energy intake are very dramatic and are probably one of the greater challenges we face” in the industry, he adds.

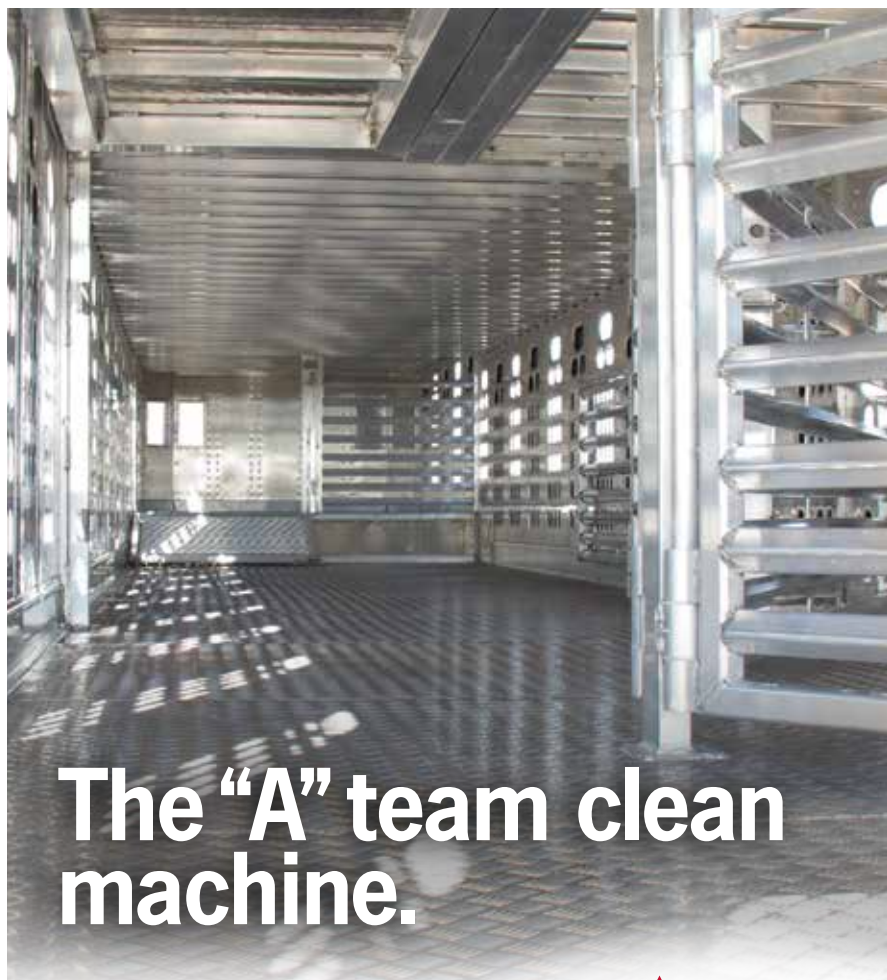
This nutrition issue can even threaten sows’ future production.

It can prevent sows from going into heat for the next breeding cycle and disrupt hormone levels, Skinner explains.

While lactating pigs will often lose some weight, farmers must monitor these animals to ensure their body conditions do not drop too low.

“The goal is to prevent large swings in body condition throughout her reproductive life, keeping body condition as steady as possible,” Eastwood says.

“Large swings in body condition can have negative impacts on conception rates, embryo survival, farrowing



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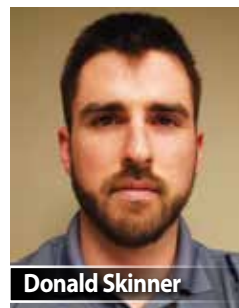
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Donald Skinner



rates, piglet birth weight, litter variability, re-breeding rates, milk production (and thus piglet weaning weights), sow longevity, sow lifetime productivity and producer profitability,” she explains.

Farmers can limit nutrient imbalances by monitoring sow feed intake throughout lactation.

“Knowing sow feed intake can help you make more informed management and nutritional decisions. It can also play a role in troubleshooting other issues that might exist within your operation,” says Skinner.

For producers who manually feed their sows, “one of the simplest ways to track feed consumption is to use a sow feed card,” says Skinner.

“You have a card hanging above each sow’s farrowing crate and you mark down how much feed is going to that sow for every feeding.”

Some automatic feeders can collect this data for farmers.

After the farrowing period, farmers can review this data for individual sows and compare it with the average feed intake across herds.

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Lactating sows are in a constant state of energy deficiency as they must provide a continuous supply of nutrient-dense milk for their piglets.

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James Hofer puts plastic wrap above the creep feeder and heating pad areas to keep the piglets warm.

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### Optimizing feed intake

Meeting the nutritional requirements of lactating sows can be challenging for hog producers. So, farmers should review their barn and animal management strategies to optimize the animals' feed intake.

"Key factors under the farmer's control are management of sows in gestation, temperature, water availability and 'feeding style,'" Skinner says.

Maintaining the correct farrowing barn temperature is critical for maximizing lactating sows' feed intake. But nurse sows' needs differ greatly from piglets' needs.

"A sow is most comfortable between 15 and 22 C (59 and 71.6 F), whereas newborn piglets need to be between 30 and 35 C (86 and 95 F)," he says.

"Keeping the ambient temperature cooler and creating two separate microenvironments for the piglets and the sows are of paramount importance," Bodenham says.

Hofer puts plastic wrap above the creep feeder and heating pad areas to keep the piglets warm.

Producers must also ensure the correct feed-to-water ratio to optimize sow feed intake.

"Pigs don't like to eat dry feed. They prefer to eat it with a bit of moisture, like a porridge," Skinner says.

"But, if feed gets wet, it's easier to spoil. And if it spoils, they are not going to eat it."

Barn staff must keep the feeders clean, so the rations remain appetizing for the sows.

"If the pigs can have waterers in the feeder and the feeder stays relatively clean, that's the best way to maxi-





National Pork Board, Des Moines, Iowa photo

“Sows need good access to quality water at all times,”  
Laura Eastwood says.

mize feed intake,” Skinner adds.

Eastwood agrees. “Pelleted feed or wet feed will increase intake by approximately 10 per cent compared to dry mash,” she says.

“Sows need good access to quality water at all times. Including water nipples that they can access while laying down, in addition to ones for when they are standing, is a great idea.”

Barn feeding systems also play a role in ensuring sows have access to the necessary nutrients throughout the farrowing period.

In Skinner’s experience, ad libitum (ad lib) feeding may be the most effective method to ensure lactating sows are comfortable and satisfied, he says.

They “should be able to eat as much as they feel like eating,” he adds.

Hofer agrees.

“Our sows are on ad lib feed the

minute they are loaded into the farrowing crates,” he says.

“That is one way that we ensure the sows are getting enough feed. They are not limited in any way as to how much they can eat.”

Other producers, however, prefer to hand feed during lactation, Eastwood says.

So, “producers must find a feeding system option that is right for them, their staff and their facilities,” she adds.

Skilled and knowledgeable barn personnel can oversee these management details and greatly promote animal productivity.

Staff in the barn “definitely need to understand what is going on and what they see in the farrowing rooms for intake,” says Bodenham.

If we optimize feed and barn conditions, we can wave the checkered flag for achieving top productivity in our sow herds. **BP**

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# MANAGE RISK OR IT

by GEOFF

## The Canadian pork industry can draw finding the right mix fo

As bomb defusers can attest, some jobs are riskier than others. While pork producers may not risk life and limb, their livelihoods are on the line when times get tough.

In an ideal world, we could eliminate risk and farming would be stress-free. But, for those forced to live in the real world, the next best thing is risk management.

“Historically, pork is a sector with a lot of volatility,” says Dr. Jean-Philippe Gervais, vice-president and chief agricultural economist at Farm Credit Canada in Regina, Sask. “Because you’re dealing with two commodities – pork on the revenue side and feed on the input side – over which you have no control, there is a level of complexity

that grain and oilseed producers don’t experience.

“Feed and pork prices fluctuate, and the multiple production cycles call for numerous marketing decisions. The pork industry ... can benefit greatly from sound risk-management practices.”

Apart from the usual risks posed by price volatility, weather and disease, producers today face greater exposure to risk than ever before.

“First of all, pork operations are getting bigger, (so) more total dollars are at stake,” says Eric Schwindt, chair of Ontario Pork. “We also have no idea what White House (officials) will do or say on a given day to impact our





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industry. Then there's the growing threat from African swine fever (ASF), a huge unknown that could have an enormous impact on the bottom line."

The final wild card is trade, Schwindt says. For example, China may need to import pork because of its ASF outbreak but could choose not to buy the meat from Canada and the United States for political reasons.

In a way, the evolution of risk management has mirrored the evolution of pork production in general.

"Just as the industry has become more sophisticated in areas like biosecurity, we are taking greater advantage of tools and techniques to mitigate risk," says Schwindt.

## Get with the programs

The tools available include the suite of business risk-management (BRM) programs funded jointly by federal, provincial and territorial governments.

They offer protection from income and production losses to help farmers manage risks that threaten their businesses.

One such program is AgriStability, which provides support when a large margin decline occurs. AgriStability protects farmers from not only price declines, but also increased input costs and production losses.

"Coverage under this program is unique to your farm

history,” says Bill Hoar, manager of Western Livestock Price Insurance Program (WLPPI) at Agriculture Financial Services Corporation (AFSC) in Lacombe, Alta. In Alberta, AFSC administers BRM programs as agreed by Agriculture and Agri-Food Canada (AAFC), and Alberta Agriculture and Forestry.

“Producers will receive Agri-Stability payments when their income in the program year drops more than 30 per cent below their historical reference margins,” the AAFC website says.

“While participation has been simplified over the years, this tax-based program requires some verification, which can delay the payment process,” Hoar adds.

Another federal offering is Agri-Invest, a matching deposit-based program for participants who face small margin declines. Producers can also use the program “to make investments to reduce on-farm risks,” the AAFC website says.

“AgriInvest funds, including the



AlexLNX/istock/Getty Images Plus photo

**“Just as the industry has become more sophisticated in areas like biosecurity, we are taking greater advantage of tools and techniques to mitigate risk,” says Eric Schwindt.**

government contribution portion, can be withdrawn at any time,” says Hoar.

“The program is simple, responsive, predictable and bankable. Producers often refer to it as a rainy-day fund. The con is that it takes time to build up a balance from which to draw.”

### Predicting the futures

For those who prefer to go the private route, some intriguing choices exist as well.

“Hedging, futures and options are the main tools available,” says Gervais to *Better Pork*.

“You can use them on your own or through a service provider that pools your resources with other producers and does the work for you. (These tools) can help you lock in a reference price and minimize fluctuations, and you can do it on either the revenue or cost side if, say, you want to secure a certain price for corn or other feed grains.”

While producers across the country can use the federal programs and hedging tools, variations exist between provinces in farmers’ risk-management approaches.

“In Ontario, most producers have enough land to grow a lot of the feed that they require,” says Schwindt. “Feed is your biggest input cost, so growing your own helps hedge the risk.”

As well, he says, roughly 30 per cent of Ontario’s pigs are processed at producer-owned Conestoga Meats.

“That ownership is a risk-management strategy in itself, as producers are selling pork as well as pigs,” says Schwindt. “Typically, those two markets are counter-cyclical, offering natural offsets that aid in minimizing risk.”

Ontario’s Agricorp-administered



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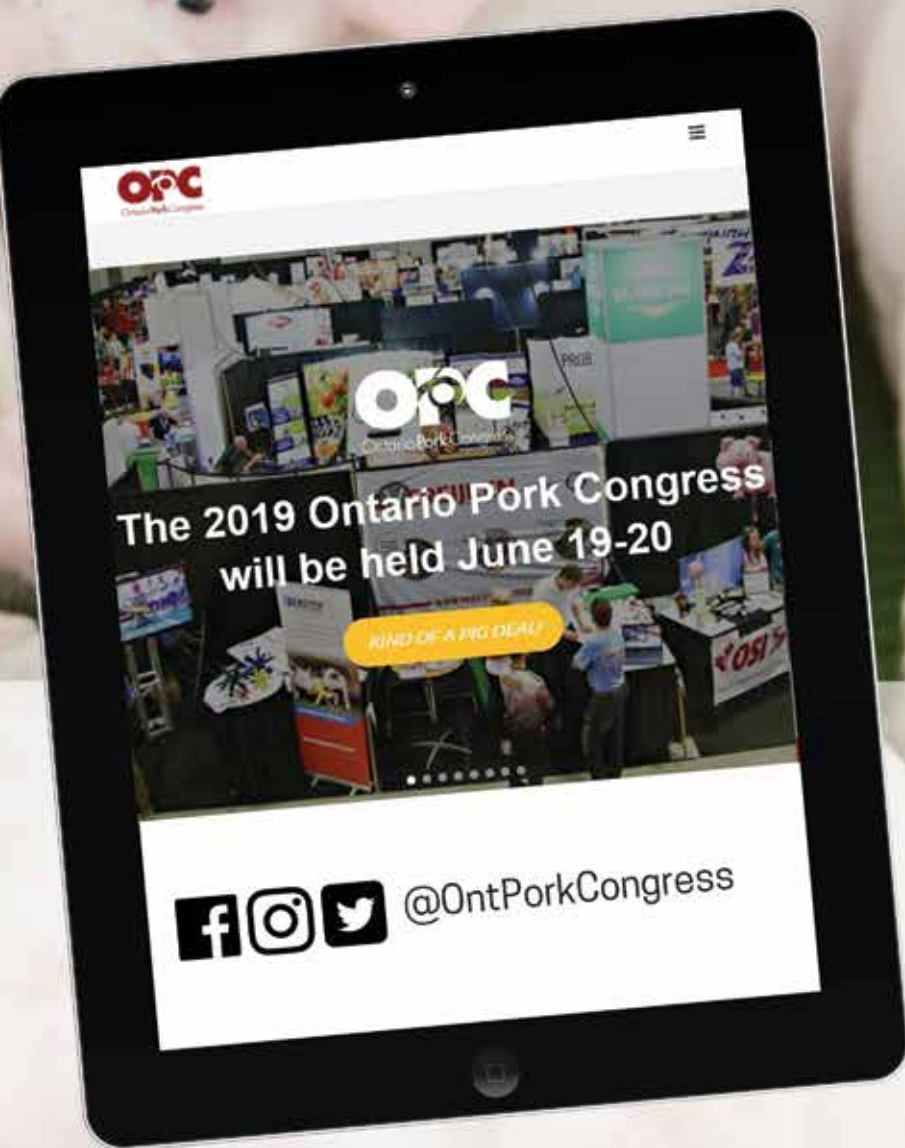
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## RISKMANAGEMENT

Risk Management Program (RMP) also helps livestock producers manage risks – such as fluctuating costs and market prices – that are beyond their control.

“RMP for livestock works like insurance to help Ontario producers offset losses caused by fluctuating commodity prices and production costs. Participants pay premiums based on their insured production and their chosen coverage level,” Agricorp’s website says.

Out west, AFSC administers WLPPI with joint funding from the federal government and the four western provinces. The program is available in British Columbia, Alberta, Saskatchewan and Manitoba.

“WLPPI offers price protection for calf, feeder and hog producers,” says Hoar.

“A producer selects from the available coverage table options for the day and pays the insurance premium. If the settlement price is less than the coverage purchased, an indemnity is paid to the producer to make up the difference.”

If the settlement price is above the coverage purchased at the time of expiry, no payment is issued. Hog coverage options for forward prices range from two to 10 months.

This risk management strategy, like others, features pros and cons.

“The program covers risk from a drastic change in price, basis and



Martin Schwalbe photo

**“Determine your specific risks that require mitigation,” says Bill Hoar. “Financial, credit, price and operational risks are some of the ones you should identify as worthy of analysis.”**

currency for the product being covered,” says Hoar. “WLPPI is voluntary and there is no minimum purchase amount. Another advantage is the timeliness of payments, as this is an index-based program and

receipts are not required.

“Keep in mind, however, that there is a premium involved. This has been a challenge for pork producers out west dealing with negative margins and tight cash flows.”

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## Strength in diversity

Though everyone's risk management plan will be different, the best approach is often like a sound investment strategy: don't put all your eggs in one basket.

"We are aggressive traders of futures and options, and are always looking for opportunities to hedge our risk," says Steve Illick, a former director of Ontario Pork and owner of a 1,200-sow farrow-to-finish operation in Orangeville, Ont.

"We also participate in the Ontario RMP and AgriStability. The goal is to look at all the angles, be efficient and put some money away in good years as a cushion for the bad times." Notably, Illick helped create RMP.

Crafting a plan to manage risk can be complicated, so it's wise to keep some basic points in mind.

"Determine your specific risks that require mitigation," says Hoar. "Financial, credit, price and operational risks are some of the ones you should identify as worthy of analysis."



Jean-Philippe Gervais

A firm understanding of your balance sheet and cash-flow statements is critical if you want to understand the risks to your operation.

If you don't feel comfortable working with financial statements, working capital or debt-to-equity ratios, Hoar advises that you seek out someone who is. This individual will be able to stress test your operation and provide markers critical to managing success.

While you must know what risk management is, you should also know what it's not.

"The signal from a risk-management program shouldn't be that we've had a lousy year, but we have this safety valve so let's build more barns," says Illick.

"The purpose is not to put people in a hugely profitable position but to keep the doors from closing," he says. "We don't want to place producers in a spot where the downturn finally ends and they are saddled with a mountain of debt."

Without risk management, you might not have enough good months in the next cycle to overcome previous losses, so you're just drowning in deeper water, he says.

When assessing the value of risk management, you must also consider the bigger picture.

"Agriculture is a huge price-taking industry where you must accept the prevailing prices in the market and are unable to affect them," says Illick. "At the same time, a lot of pinball-machine tilting is going on worldwide; every country has its own rules for playing the game, and it's not always a level playing field."

"When we get into prolonged downtimes in the pork sector, we run the risk of destroying an industry that simply can't wait for the next upswing to come along."

Wading through the options and developing a sound risk-management plan isn't easy, but failing to do so could be hazardous to the health of your business and the industry.

Like defusing a bomb, it's a dirty job, but someone must do this work. **BP**

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by  
**LAUREN  
ARVA**

# PRODUCING PIGS IN THE PRAIRIES

**This Alberta hog farmer is committed to innovation in his family operation and in the pork industry.**



Jurgen Preugschas photo

**Niko Preugschas, Jorgen's son, works 75 hours per week at his family's contract finishing operation.**

Jurgen Preugschas, president of Pigs R Us in Mayerthorpe, Alta., has balanced his farm work with his involvement in ag politics for 25 years.

This second-generation farmer developed an interest in the field as a high school student. Together with his wife Anne, Jurgen took over the family hog operation in 1972.

Eventually, he became involved in ag politics because he wanted to stay up to date on issues and innovation in the industry and improve his political knowledge.

Preugschas first served as chair of Alberta Pork in 1994-95 and returned to the position from 2005 to 2007. He moved into the federal ag politics circle the following year, serving as chair of the Canadian Pork Council until 2012.

As Preugschas has supported and led the industry through change, his family farm operation has also shifted.

Formerly a purebred hog breeding operation, Pigs R Us is now a contract finishing operation. Jurgen's son, Niko, owns and operates the farm with Jurgen's assistance. Although reliable staff on the farm is important,

"things always run smoother when the boss is at home and leading the charge," Preugschas says.

The family opened a \$1.8-million state-of-the-art barn, consisting of an over-4,000-head contract finishing operation, in October. The barn features four 1,000-hog rooms, LED lighting, shallow-grade floors to help with clean-up and loading times, and a 120-foot (36-metre) wash bay for feed trucks near the loading zone.

Pigs R Us ships three cycles to the Olymel processing plant in Red Deer, Alta. annually.

## **Describe your role on your farm operation.**

I suppose I'm an adviser.

I help when needed and I do the books.

In the last 10 to 12 years, I have been on the road a tremendous amount, which has given my son, Niko, the opportunity to learn to better manage on his own.

## **How many people does your farm employ?**

We have Niko, his wife Amy, and two temporary foreign workers.

## **Hours you work per week?**

Niko works about 75 hours per week.

## **Hours in the office per day?**

I probably average two hours a day, five days a week.

## **What are three items that are on top of your desk?**

My office is always messy.

Most of what I do is the financial books, so there's always financial stuff on my desk.

## **Email or text?**

I use both.

## **Any favourite apps?**

My weather app.

## **What role does social media play in your daily life?**

A limited role.

I use Facebook, but very little. I also use Twitter a little bit.

## **How often do you travel?**

My wife and I like to go somewhere in the sun every year, and we visit our son in Minneapolis two or three times a year.





Jürgen Preugschas photo

### Jürgen and his son, Niko, operate Pigs R Us.

We have relatives in Germany, so we try to get there every couple of years.

#### Where did you last travel to?

Dallas, Texas for the World Meat Conference, and Minnesota to visit my grandchildren.

#### What do you like best about farming?

There are so many things, but I'm thinking the decision-making freedoms.

#### What do you like least?

The uncertainties and the things you don't have control over.

The frustrations, be it weather or the uncertainties of the market.

As farmers, we have very little control over what price we receive for our product. Everyone expects us to pay full price for everything and we sell everything at wholesale.

#### What's the most important lesson you've learned?

I think it is critical that we, as farmers, stay on top of our financial picture.

It's out of your control sometimes, so it's critical that you stay on top of your finances and discuss that information with your lender so he or she is always aware of where you're at.

#### What's your guiding management principle?

Trust who you work with.

You need to put your faith in the people you're working with. You need to give them the proper training and allow them to make mistakes.

#### What's your top tip about farm succession?

I think you need to talk about it and you need to plan.

Be open about it and, as a parent, don't expect to walk out with a ton of money and make your child a first-generation farmer.

#### What are your hobbies or recreational activities?

Sports have always been a big part of my life. I love just about all sports.

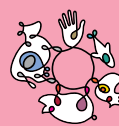
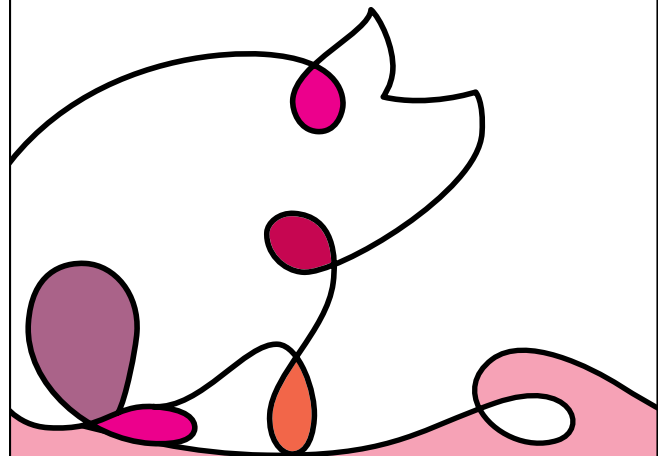
We go horseback riding a lot. Every Wednesday night from May until the end of September, we ride together with the neighbours.

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We also ride through the mountains.

We've been riding for about 30 years.

**What was the last book you read?**

Ken Follett's *The Pillars of the Earth*.

**What does your family think of farming?**

They love it. It's not without frustrations, but they like farming and they

like the lifestyle.

My wife has been a big supporter for the nearly 50 years we've been married.

**What's your top goal?**

To pass on a successful operation. I want it to continue to get better.

**How do you define success?**

Success is when you are happy with what you have achieved.

**Is your farm vehicle messy or neat?**

Always messy.

**What was the last piece of shop equipment you bought?**

A shop toolbox.

**What's the best time of day?**

Morning.

**What was your most memorable production year?**

Even though we had already switched to custom finishing, 2014 without a question. It was amazing.

After 12 or 13 years of disaster in the industry, that sort of a comeback was really something.

**What are the biggest challenges you face in the industry and how have you addressed them?**

The difficulties for independent pork producers.

Price discovery has not worked for a long time, and it has been putting the independent producer in Canada out of business.

**If you could send a message to non-farmers, what would you say?**

Somehow, the message that non-farmers have to understand is that we, as farmers, try to produce efficient, safe food for the world to eat.

People have to understand that farmers really care about what they produce. Sometimes, not enough money goes to the farmers for everything they put into their work.

**If you weren't a farmer, what do you think you'd be doing for a living?**

I like a lot of things. Certainly, politics have always interested me.

Initially, when I went to university, I was going to become a veterinarian. But, I'd probably be doing something in the ag field.

**Do you do anything to support your mental health during busy times of the year?**

I have a glass of wine every night with my wife. **BP**

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# THE HISTORY OF PORCINE CIRCOVIRUS TYPE 3

An emerging pathogen or old news? What we know so far and what questions we have yet to answer.



Multiple pinpoint hemorrhages on this kidney are indicative of porcine dermatitis and nephropathy syndrome.

In the 1990s, the swine sector first associated porcine circovirus with significant disease in pigs.

This specific virus was named porcine circovirus type 2 (PCV2) to distinguish it from porcine circovirus type 1, which the industry had not previously considered a disease-causing agent. But within 15 years of the discovery of PCV2, the virus caused an epidemic resulting in significant swine mortality throughout North America and Europe, devastating the industry.

After this outbreak, researchers quickly developed and introduced commercial PCV2 vaccines. Now some of the most successful animal

health vaccines, these products have become the most-used prophylactic agents in swine production.

Despite extensive use of these effective vaccines, however, PCV2 continues to be one of the most economically significant viruses in swine production.

Although vaccines can almost eliminate clinical disease and decrease viral shedding, they do not completely prevent infection. The clinical signs and disease caused by PCV2 are known as the porcine circovirus diseases (PCVD), which include:

- post-weaning multisystemic wasting syndrome (PMWS)
- reproductive disease

- porcine dermatitis and nephropathy syndrome (PDNS)
- subclinical infections

## Discovery of PCV3

In 2015, a farm in North Carolina experienced significant reproductive losses and increased sow mortality.

A thorough investigation revealed disease pathology consistent with PDNS lesions associated with PCV2. This syndrome of PCV2 consists of multiple circular lesions of varying sizes on the animal's skin.

Generally, the lesions are located on the udder and hind legs, and they vary in colour from red to dark purple or black. On the kidney surface,

numerous pinpoint red dots will be present.

Further tissue diagnostics tested negative for PCV2, porcine reproductive and respiratory syndrome virus (PRRSV) and influenza A virus. The fetal tissues were negative for PCV2, PRRSV and porcine parvovirus.

Since the diagnostic results did not support the initial diagnosis of PCV2, investigators made the decision to perform viral metagenomic sequencing. This technology allows for a direct genetic analysis of genomes within a sample.

In this case, researchers used the fetal tissue as the sample and sequenced the genetic information of a circovirus.

It was significantly different from PCV2. So, in 2016, researchers named it as a new circovirus, porcine circovirus type 3 (PCV3).

### International PCV3 investigation

Once the industry discovered PCV3, some researchers wondered whether it was a new virus.

After scientists shared the genome of PCV3, laboratories in such countries as Thailand, Japan and the United Kingdom detected the virus. Researchers suspect that PCV3 is an endemic (prevalent) virus, which has been around for decades, in swine.

About 15 to 35 per cent of swine submissions to the University of Minnesota in the last two years were positive for PCV3. The prevalence varies by sample type and production stage.

Scientists suspect PCV3 is like PCV2, in that the mere presence of the virus does not seem to cause disease. PCV2 compromises the immunity of pigs. Often, the animal must be infected by a secondary pathogen, such as PRRSV or *Streptococcus suis*, for significant illness to occur.

So far, the North Carolina case is one of only a handful of situations where researchers have established a direct link between PCV3 and the disease. Other cases demonstrated vasculitis (inflammation of blood vessels) and myocarditis (inflammation of heart muscle) to be associated with the presence of PCV3.



This grow-finish pig is affected with porcine dermatitis and nephropathy syndrome. The animal exhibits red and purple hemorrhage on the skin over the stomach and hind legs.

With the development of diagnostic tests for PCV3, like those tests used for many common swine viruses such as polymerase chain reaction (PCR), the sector can now afford to look for this virus in current diagnostic cases and stored tissues from previous cases.

### The future of PCV3

PCV3 is a “new” virus to the swine industry only because we have access to genetic analysis that was previously unfeasible.

Now, it is cheaper and easier to identify and characterize bacteria, parasites and other micro-organisms that may be significant to swine health. The more we use this technology, the more situations we will have like this PCV3 discovery, where the significance of the micro-organism may or may not be known.

Like PCV2, PCV3 is probably

an endemic virus that is commonly found in swine. Scientists, however, are struggling to define the characteristics of disease linked to PCV3.

In December, the Swine Health Information Center in Ames, Iowa announced that it is sponsoring research at the University of Minnesota veterinary diagnostic lab to investigate PCV3 cases from the last two years. Researchers want to determine if lesions like vasculitis and myocarditis, or cases of undiagnosed PDNS, diarrhea and respiratory disease, were associated with PCV3.

Further research will help the industry determine the significance of this novel virus and if we need to create an effective vaccine for PCV3, like we have for PCV2. **BP**

*Dr. Jessica Law is a veterinarian with Prairie Swine Health Services in Red Deer, Alta.*



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by  
**LILIAN  
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# ONTARIO PREPARES TO ADDRESS ASF THREATS

**Producers, industry leaders and government officials all have roles to play in keeping the disease out.**

Despite efforts to contain its spread, African swine fever (ASF) continues to advance across Asia and Europe. While neither Canada nor the United States has ever had a case of ASF, the North American pork industry is on alert. It's increasing industry preparedness, public education and border security to reduce the risk – or possible effects – of an outbreak here.

## Why ASF matters

African swine fever is an internationally reportable foreign animal disease. Even a single case could spark an immediate shutdown of export markets. The potential cost for the industry of an outbreak in Canada is about \$40 billion, current estimates say.

While the disease poses no risk to humans, food safety or other livestock, ASF is highly contagious among pigs. It can spread rapidly through direct contact with the blood, tissue, fluids and manure of infected animals. Because ASF can survive in the environment for a long time, it can also spread through equipment, tools, vehicles, clothing, footwear and livestock feed.

## Symptoms

Infected animals exhibit such symptoms as fever of 40.5 to 42 C (104.9 to 107.6 F), loss of appetite, lethargy, skin hemorrhages, vomiting and diarrhea. Some strains of the disease cause only depression, slight fever and reduced appetite, while more severe strains result in almost 100 per cent mortality.

Producers noticing any of these symptoms should contact their veterinarians immediately.

Everyone – including government officials, industry members and producers – has a role to play in reducing the risks associated with ASF.



DarcyMausby/iStock/Getty Images Plus photo

**African swine fever can spread rapidly through direct contact with the blood, tissue, fluids and manure of infected animals.**

## What can producers do

- Obtain a premises identification number (PID) from Ontario Pork for each production site.
- Record all pig movements through AgManifest/PigTrace to support traceability efforts.
- Create and follow biosecurity protocols, including for barn entry, required down time, cleaning and disinfection, and transportation. Review these protocols regularly with your team.
- Limit barn entry. Before you allow farm staff or visitors into your facility, ensure they haven't had contact with pigs in ASF-infected countries.
- Keep daily logs of all human and vehicle traffic entering production sites.
- Consult with your feed supplier about ingredient sourcing.
- Observe pigs daily. Contact your veterinarian immediately if you see any symptoms that could be linked to ASF.
- Do not bring meat products from other countries into Canada.
- Wash all clothing and footwear after returning from an international trip.
- Enrol in the Ontario Area Regional Control and Elimination program (ARC&E). You can register online at [onarce.ca](http://onarce.ca). Although the program focuses on providing farm-specific data for porcine reproductive and respiratory syndrome (PRRS) and porcine epidemic diarrhea (PED), enrolling is a first step in better protecting the swine industry from any disease threat – including ASF.



**What the industry is doing**

The Ontario industry is active on many fronts when it comes to foreign animal disease preparedness.

Swine Health Ontario is heavily involved in planning and establishing an Incident Command Centre (ICC) for animal disease response. This centre provides the infrastructure for a coordinated industry response that works hand-in-glove with the Canadian Food Inspection Agency (CFIA) and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

Although still in its early days, the ICC is partially activated, holding bi-weekly conference calls. It is also establishing expert teams in the areas of zoning, destruction and disposal, communications, support systems and scenario development, ready to respond to a potential ASF outbreak.

A long-term goal of the pork industry was getting this type of infrastructure in place. ICC members include producers, veterinarians, government liaisons, industry liaisons and financial/legal experts, as well as Ontario Pork and Ontario Pork Industry Council (OPIC) representatives. In order to support a comprehensive swine industry response, all ICC members are trained on their roles and responsibilities in the event of any health-related industry crisis.

As well, the new Swine Health Information System (an integration of ARC&E and AgManifest) in Ontario will bring together livestock movement, health status and other information into a single platform.

In an emergency, officials can use this system to quickly track where animals came from and what barns, facilities or trucks they might have touched in the process.

With every new participant, the effectiveness of the platform increases and the ability of the industry to protect itself grows exponentially.

This level of traceability should also help with zoning. In the event of a disease outbreak, the industry can provide proof to Canadian trading partners that, while one area of the country may be affected, others are not.

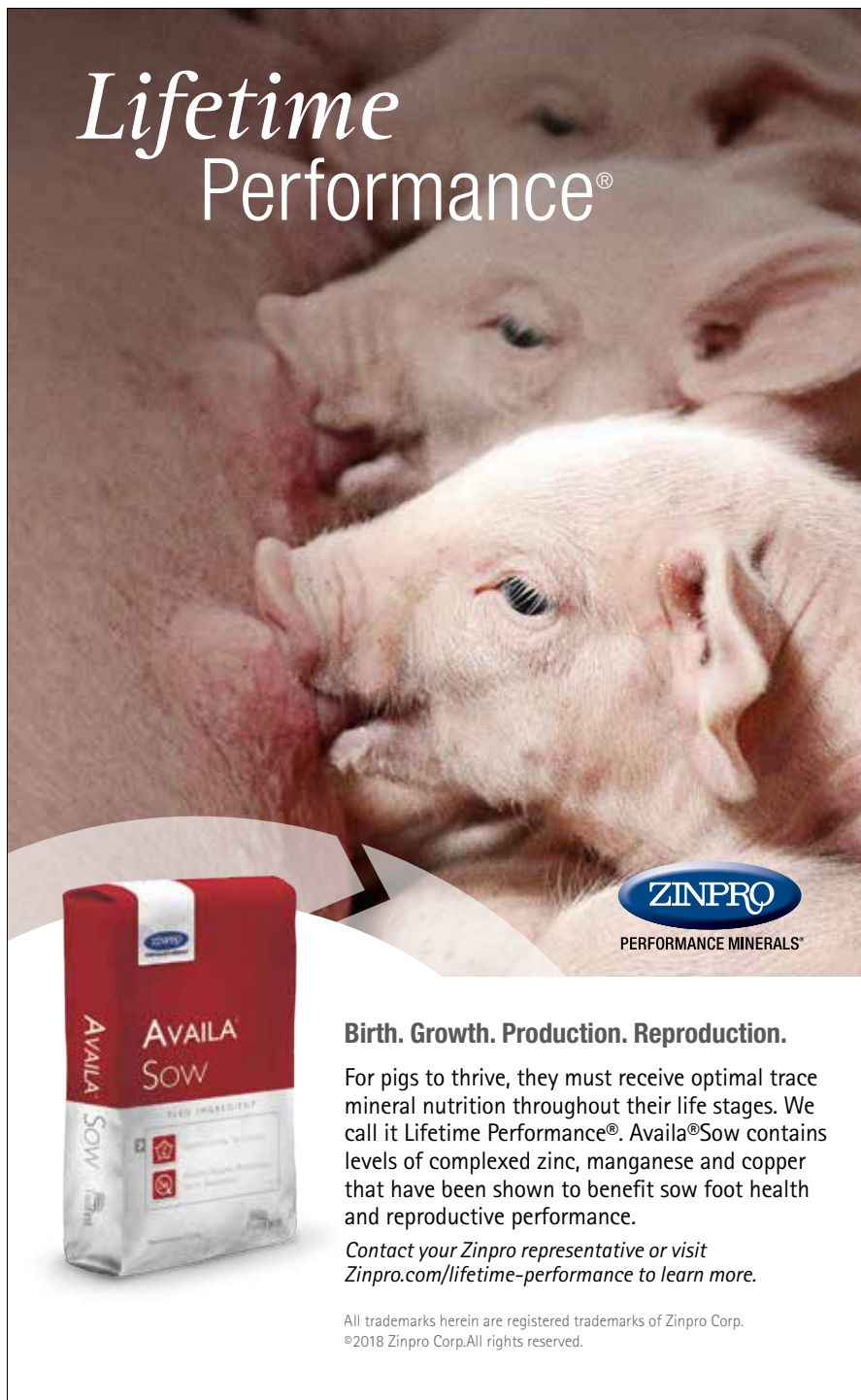
The goal is to help keep some export markets open, or let them reopen more quickly following closure, for areas of the country that aren't part of an outbreak.

**What governments are doing**

The CFIA and OMAFRA are heavily engaged in emergency preparedness for a possible ASF outbreak and have also initiated a partial activation of their respective incident command

centres. Working closely with industry stakeholders, all involved are closely monitoring ASF, regularly updating each other and sharing critical information to mitigate possible outbreak scenarios. **BP**

*Swine Health Ontario is a leadership team focused on improving and coordinating the industry's ability to prevent, prepare for and respond to serious swine health threats in Ontario.*



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# ARE SOWS MOTIVATED FOR MOVEMENT?

Researchers studied how hard pigs are willing to work to access more space versus more feed.

National Pork Board and the Pork Checkoff, Des Moines, Iowa photo



**The National Farm Animal Care Council must clarify, by July 1, 2019, what constitutes “greater freedom of movement” and the suitable options to meet this requirement.**

All mated gilts and sows must be housed in groups or individual pens as of July 1, 2024, the Canadian Code of Practice for the Care and Handling of Pigs says.

Mated gilts and sows may also be housed in existing stall barns if they are provided with the opportunity to turn around or exercise periodically, or other means that allow a greater freedom of movement. The National Farm Animal Care Council must clarify, by July 1, 2019, what constitutes “greater freedom of movement” and the suitable options to meet this requirement.

The definition will be informed by scientific evidence. At present, however, such evidence is minimal.

So, the objective of this Prairie Swine Centre study was to provide scientific information to be used as a basis for this recommendation.

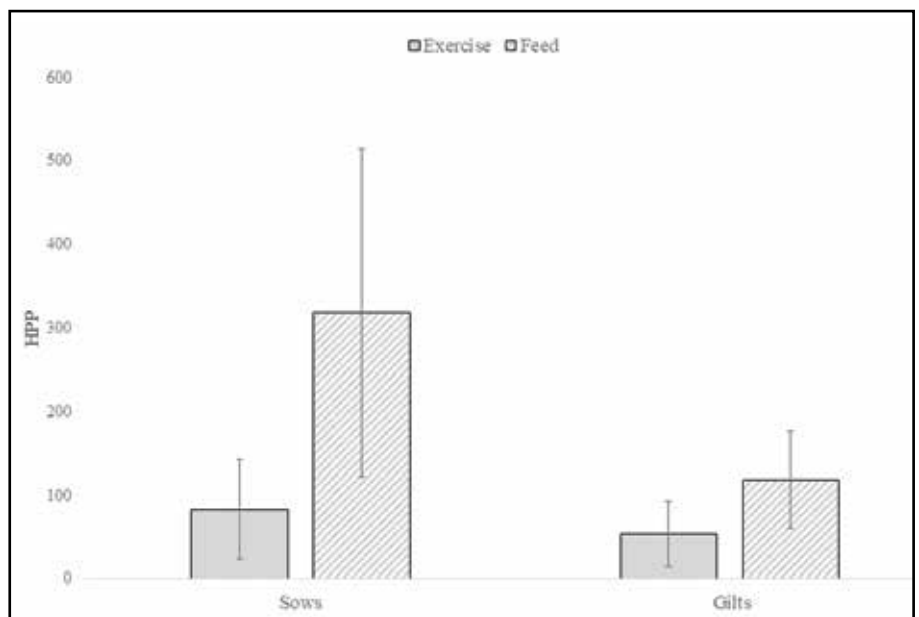
Researchers studied a total of 24 animals (12 gilts and 12 sows) for their motivation to exit the gestation stall and access the alleyway between

stalls for a three-minute period.

Technicians constructed an operant panel that contained two identical buttons. The team programmed these buttons to count the number of times

a sow pressed each button.

One button is designated as the active button (AB), as pushes can result in a reward for the sow. The other is designated as the dummy button



**Figure 1:** The highest price paid (HPP) for sows (n = 4) or gilts (n = 4) to access time out of the stall (exercise) or a feed reward (mean ± S.D.).



(DB), acting as a control measure. Presses made to this button have no effect and do not contribute to the sow obtaining a reward.

**Training and testing procedure**

Scientists trained and tested sows in two phases.

In one phase, the reward was the gate opening and the sow being allowed to roam the alley. In another phase, the reward was 0.44 pounds (0.2 kilograms) of feed.

Researchers balanced the order of training and testing for stall exit or extra feed. They trained half of the sows to exit first and the other half to receive extra feed first.

When training and testing animals to exit the stall, scientists rewarded sows for pressing the active button with three minutes of time to freely move around in the alleyway between stalls.

When training sows to press the operant panel for access to more feed, researchers fed them only 50 per cent of their standard gestation ration in the morning to facilitate training. Thereafter, scientists used a handful of gestation feed as the reward.

The technicians switched the position of the AB and DB between training and testing for feed and access to time out of the stall.

Once sows were trained, researchers tested the animals on an ascending fixed ratio (FR) schedule. The number of AB button presses the sows had to make increased by 50 per cent each day.

The FR started at 9 and increased daily to a maximum of 365. This approach produced a testing schedule of FR 9, 14, 21, 32, 48, 72, 108, 162, 243 and 365.

In each 30-minute testing session, scientists gave the animal a maximum of three consecutive opportunities to reach the required FR and obtain its reward.

If an animal failed to reach the required FR within the 30-minute period, the researchers did not give the sow a reward.

Scientists gave the animal a second opportunity to reach the required FR the following day.



National Pork Board and the Pork Checkoff, Des Moines, Iowa photo

**Sows and gilts have a moderate level of motivation to obtain time out of the stall.**

If the animal reached the required FR, testing continued along the schedule. If the animal failed to reach the required FR for a second day, testing ended.

Researchers fitted all sows with accelerometers to record step counts as a measure of activity when out of the stall. A camera positioned at one end of the alleyway recorded the sows' behaviour once out of the stall.

During testing for motivation to exit the stall, scientists recorded the frequency and duration of sows seeking social contact or food.

**Results**

The motivation (as measured by the highest price paid, known as HPP) to exit the stall was numerically similar in sows and gilts. (See Figure 1.)

The motivation to obtain access

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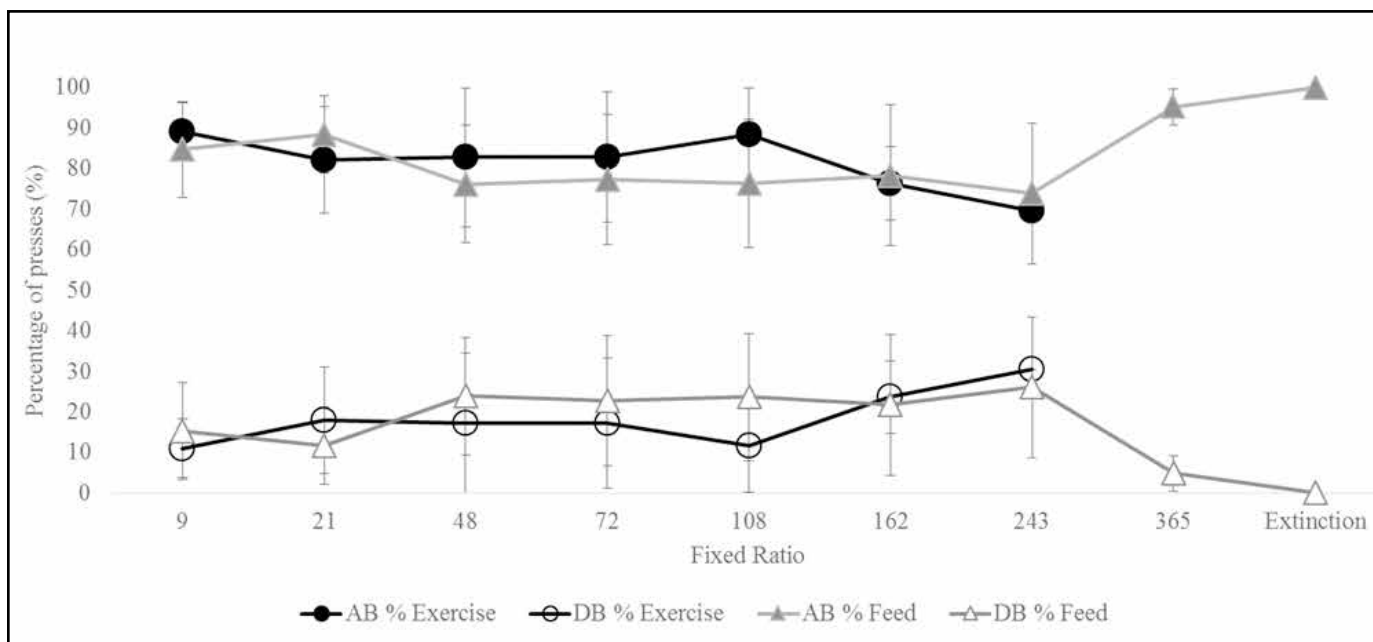
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**Figure 2:** The mean percentage of total button presses in which the active buttons (AB) and dummy buttons (DB) were pressed when tested for access to time out of the stall (exercise) and access to additional feed. Data from sows and gilts combined (n = 8).

to additional feed was numerically greater in both sows and gilts. Sows showed a greater motivation for food than gilts.

However, the mean latency to press the active button over the whole testing period was numerically shorter for both sows and gilts when tested for access to exit the stall compared to access to feed. Gilts had a longer latency than sows to access more feed.

Researchers presented additional control sows with the operant panel for 30 minutes for seven consecutive days, with no rewards. Initially, they interacted with the panel. They generated total push counts on Day 1 within the range of the HPP by sows and gilts for access to exercise.

However, over the course of the seven days, interaction with the panel reduced to near zero push-button counts.

In contrast, sows trained to associate interaction with the panel with generating a reward maintained levels of interaction with the panel over consecutive days and as the FR increased. (See Figure 2.)

**Conclusions**

Sows and gilts have a moderate level of motivation to obtain time out of the stall, as measured by the highest

price paid and in comparison to the higher level of motivation to receive a feed reward. Sows displayed a higher motivation than gilts to access additional food.

To provide more substantial evidence on which to base Code recommendations, further studies will be conducted to examine sows’ motivation to exit the stall at different feeding levels. Researchers will also compare the effect of weekly exercise in group housing versus stall housing on sow behaviour and production.

**Acknowledgements**

We would like to acknowledge the financial support for this research project from the Saskatchewan Agriculture Development Fund, Sask Pork and Alberta Pork. We would also like to acknowledge the strategic program funding provided by Sask Pork, Alberta Pork, Ontario Pork, the Manitoba Pork Council and the Saskatchewan Agriculture Development Fund.

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*The Prairie Swine Centre conducts near-market research that can be applied by the pork industry within a one- to seven-year time frame.*



## OPIC Special Interest Meeting: African Swine Fever Business Risks - Summary

On February 26th, approximately 80 swine industry representatives gathered at the Stratford Golf and Country Club to learn about the business risks associated with African Swine Fever (ASF), and to learn about how the Canadian Food Inspection Agency (CFIA), OMAFRA and Swine Health Ontario (SHO) would function if ASF were detected in Canada. The following is a brief summary of the day.

The first presentation of the day was "Ontario Pork in the Global Protein Market" by Ted Bilyea. Ted covered a lot of material showing Canada's and Ontario's position in the global meat industry, focusing on Pork. Ted explained that meat and food demand will continue to increase over next ten years, but not as rapidly as it has over past ten years. Currently, Canada accounts for approximately 1.5% of the global pork supply. China is the largest producer of pork in the world. Current projections by the US Meat Export Federation (USMEF) are that China/Vietnam will decrease production by approximately 15% due to their outbreaks of ASF, which equals a 7% drop in world pork supply. With the 15% drop in China production, the global market will likely only make up a small portion of the missing pork due to pricing and inflation issues. The US is best positioned to backfill this, but not with 62% tariffs. Ted also briefly discussed Brexit, and how that may impact Canada's position in the global market. Currently, the United Kingdom (UK) is the largest importer of ham and bacon, which they bring in from the European Union (EU). If there is a hard Brexit, the UK will be looking for other sources of ham and bacon. Canada has previously supplied that demand, so there is a pos-

sibility of this market opening up again. One final comment Ted made was that plant-based proteins will not displace meat protein. The world demand for protein is going to increase significantly over the coming years, and plant-based protein will compliment meat protein in filling that need.

Next, Patrick O'Neil from the Ontario Pork Marketing Division spoke about "ASF Local Market Impacts and Scenarios". Currently, of all our top trading partners, only China has ASF. It is unlikely that our other major trading partners will want to accept Canadian pork if ASF were found here. Patrick went through 3 different scenarios and provided some analogies of what things may look like. Scenario 1 - ASF stays out of North America: The best analogy for this would be our situation with Foot and Mouth Disease, which has not been an issue since the 1950's. There is potential for increased pork export opportunities, but it is very difficult to estimate the actual impact. Currently, the hog futures markets are betting on this scenario. Scenario 2 - ASF arrives in Canada: This would be similar to when BSE arrived in Canada impacting the beef sector. It will create staggering economic losses due to a crash in prices as trade markets close. Because we produce a lot more pork for export than we do beef, Canada is not likely to be able to eat our way through the full supply of pork. Depending on how long markets remain closed, we will likely also see animals being euthanized, possibly beyond the ones that have been infected. Scenario 3 - ASF arrives in the USA but not Canada: The best analogy for this would be the current situation with tariffs on US pork. It will be extremely disruptive as base prices fall, since our markets are very interconnected. There may be opportunity for new export markets, supplying some of the US customers, but exports to the

US from Canada would decline.

The afternoon portion of the program focused on what happens if ASF is found in Canada. Dr. Ed Creighton from the CFIA explained the process of what happens during a foreign animal disease break. He explained how the CFIA responds, including quarantine, lab testing, analysis of the potential spread from infected the infected premise and what happens if the CFIA orders euthanasia of infected herds. The CFIA has pre-activated its Incident Management System (IMS) and is working hard to keep ASF out of Canada, and to plan for if it does arrive. After Dr. Creighton spoke, OMAFRA presented information on its IMS structure, and how it works with the CFIA and SHO structures. OMAFRA has also pre-activated it's IMS structure and is working closely with CFIA and SHO to prevent and plan. A second presentation by OMAFRA highlighted some business risk management tools that producers can access, such as AgriStability, AgriRecovery and AgriRisk national programs, as well as the Ontario specific Risk Management Program. The final presentation of the day was given by Amy Cronin from Swine Health Ontario (SHO). Amy highlighted how SHO was formed, and how it has developed an IMS similar to that of the CFIA and OMAFRA in response to gaps realized during the 2014 PEDv outbreak. SHO has also pre-activated their IMS system and are working closely with OMAFRA and the CFIA on planning and preparedness. With all three IMS systems in place, duplication of efforts will be reduced and people will have clear, designated roles if ASF is found in Canada, allowing for a highly coordinated response effort

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## Group Sow Housing - Producer Profile

At our Group Sow Housing and Management Seminar in Stratford last December, one of our speakers was a farm manager from a large operation in Alberta. He talked about their experience in choosing, installing and working with two different types of group sow housing.

For the planning stage, he emphasized the importance of doing your homework. Ask other producers what have they done? What worked? What didn't? What would they do differently in hindsight? Then assess your options. Should you renovate an existing space or build new? Will you take the opportunity to modify your production? Which of the various systems available does your barn layout allow? What is the square footage available? Who is going to do the renovation – in house or contractors? How much do you want to budget?

He then described their experience in converting two facilities, one to group housing with electronic sow feeders, and one to a shoulder stall system. He goes into more detail than I can cover here. To watch his full presentation, go to the London

Swine Conference YouTube site. For now we'll go straight to his comments on the new systems. Overall, he said, the benefits of group housing were numerous, for example:

- increased sow mobility and fitness, which impacted piglet robustness;
- increased sow comfort and welfare; a reduction in herd size with similar or improved production performance such as increased lactation length,
- an increase in wean weight, decreased nursery feed costs,
- and in the end a higher value feeder pig.

In comparing the two systems, he noted that the shoulder stall system had the cost advantage, and there was no training needed for the animals. It was low tech with no dependency on tech support. There was no need to relocate feed and water systems.

The shoulder stalls did have some disadvantages compared to the automatic feeding system:

- you lose the ability to individualize sow feeding;
- there is more competition for feed;
- it's more labour intensive and

requires a higher level of stockmanship;  
■ and at the time of mixing, aggressive sows can cause more problems with the fallouts of that impacting production.

In the end he noted that which system to use depends on what suits you best. Start with a solid plan workable with your current facilities. Have a firm budget in mind but allow for surprises. Understand the limitations of your existing barn. Finally, use comparative production data before and after your renovation to understand what's working and what needs fixing.

To help navigate through some of the choices and options available when planning for this sort of project, a Group Sow Housing Decision Tree and 'Pros and Cons' factsheet have been created. They were printed full size in the February issue of Pork News and Views, or you can find them online at [www.londonswineconference.ca](http://www.londonswineconference.ca). You can find more information on these options including several producer profiles at [www.group-sowhousing.com](http://www.group-sowhousing.com)

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A capacity crowd turned out for the Group Sow Housing and Management Seminar in Stratford.



## Water Line Maintenance

Providing a clean water source every day is essential to ensuring your herd's health and best economic performance. The water lines that carry the water to your pigs are not transparent; it is not possible to see what is happening inside them. It is easy to forget about this part of the building when cleaning and disinfecting. Successful water sanitation begins with a thorough water line cleaning program. The variability and dynamics of water systems create cleaning challenges, but these can be overcome with water quality information, a little effort, the right tools, and some plumbing (Watkins, 2007).

### Water sampling

To test for total coliform and E. coli in your water, you will need to get at least two sample bottles from your local health unit (Figure 1). To test if there is contamination of the well, take a sample near the well head before any treatment system. Use the second bottle to test at the end of the furthest line in the barn

to determine if there is any biological activity within your water line.

To take a water sample, remove all attachments from the faucet. Begin by disinfecting the faucet with a lighter. Keep the flame on the spout for 3-5 seconds to kill any bacteria on the outside of the faucet. For plastic faucets or an alternative to flame, swab the faucet with isopropyl alcohol at 70%. Turn on the faucet and allow the water to flow for ten seconds before filling the bottle. While the water is running, remove the sample bottle lid. To avoid cross contamination:

- Do not touch the inside of the lid or the mouth of the bottle
- Do not put the lid down
- Do not rinse out the bottle
- Do not touch the mouth of the bottle to the faucet while filling

Fill the bottle to the prescribed mark and close the lid firmly. Pack the bottles in an insulated cooler until they can be shipped to the local health unit. It is preferable to bring in samples immediately to

the lab or within 24 hours after collection for accurate results. Similar protocols would be used for more comprehensive water tests.

When analyzing the results the total coliform and E. coli levels should be ideally zero. However, total coliform levels can be up to 10 units for safe drinking consumption. There is no acceptable level other than zero for E. coli.

### Water Treatment System

Depending on your water quality, there are a variety of water treatment systems available. Some of these treatments include but are not limited to:

- Filtration for particulates or even finer particles including bacteria
- Water softening
- Iron/sulphur removal treatments
- UV treatment
- Chemical injection (chlorine, acid, ozone, hydrogen peroxide etc.)
- Reverse Osmosis

Your choice of treatment depends on initial water quality, capital cost, maintenance costs, and on-going product costs. If an injector is used it is necessary to have separate units for medication and chemical injections.

### Plumbing

If you are noticing decreased pressure on certain lines or drinkers you may have issues with particulates, scale, biofilm, or all of the above. Particulates can be addressed with high flow filtration, preferably down to 5 microns. This may require staged filtration. Due to Ontario's hard water it is recommended to use acid or "descaler" products as part of your waterline maintenance program. In extreme cases a water softener may be required. Biofilm is a result of iron reducing bacteria. This can



Figure 1: Bottle used for water samples plus instructions for taking a sample and how to send it for testing

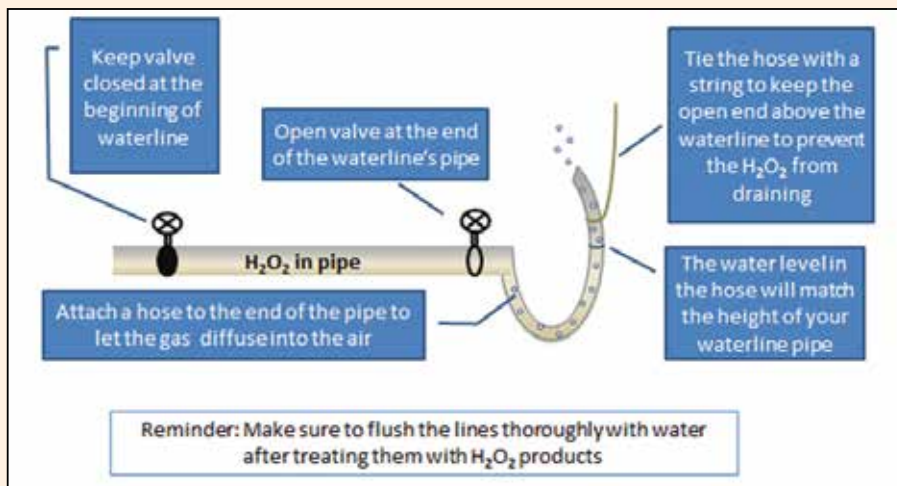


Figure 2: Schematic of waterline with hydrogen peroxide products and hose at end to release gases produced from product.

be addressed with iron filters or products that can break up and prevent biofilm from forming such as acidifiers, chlorine or peroxide. Left unchecked, water lines can become restricted and biofilm can harbour pathogens resulting in lower animal performance.

It is important to be able to isolate, treat, and flush your water system especially if you are in continuous production. An investment in manifolds, ball valves, and faucets can help accomplish this. You will need a bypass for chemical injectors and medicators, valves to isolate lines for treatment, and faucets at the end of lines to flush “descalers”, acidifiers, etc. If you are using a hydrogen peroxide treatment as a “descaler” (such as Proxi-Clean) you will need to add a length of hose at the end of a flush line to prevent the lines from bursting (Figure 2).

Water is considered the last nutritional frontier. Ontario has a lot of water but not all of it is suitable for livestock. If you would not drink the water why would you let your pigs drink it? Poor quality water has impacts on herd health, productivity, gestation, weaned pig average, weight gain, etc. You have high quality genetics, with high quality feed and high quality man-

agement; do not sabotage your herd with low quality water or lack of water line maintenance.

With special thanks to Dr. Susan Watkins for the introduction and information used in this article based on her article, ‘Water Line Sanitation’.

## References

Watkins, S. (2007, August). Water Line Sanitation. Retrieved June 30, 2016, from Avigen: [www.aviagen.com](http://www.aviagen.com)

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## Common Issues with Large Group Housing

The following is a summary of Sylvén Blouin’s presentation at the Group Sow Housing & Management Seminar held on Dec. 4, 2018. Sylvén is the Animal Welfare Director at Jyga Technologies in Quebec.

When housing sows in groups there are many common challenges independent of the feeding system you are using. Group housing is generally more work than housing sows

in stalls and requires a high level of stockmanship to make it work well. Having dedicated personnel that are properly trained is key. It is important to find a feeding system that works for you and your staff, as not every system is suited to all people. For example, high tech equipment is not friendly to everyone, so chat with your employees and find a system that you can all work with. If your staff are stressed your sows will also be stressed.

It is important to keep in mind that mistakes can lead to stress for both the animals and the workers. One big mistake or a series of small mistakes can create major problems in group housing. For example, if you have an out of feed event at the start of a feeding period with an electronic sow feeding system, the effects can last for up to 5 days. More dominant sows that feed earlier in the feeding period will hover around until feed is available, displacing the normal time slot for more subordinate sows, which pushes the ‘day’ back for everyone. This then carries over to the next day, slowly reverting back to normal. Another example is that if you have an over-crowded ESF station (more sows than recommended by the manufacturer), it may only have a minor impact on the sows; however, if you also have an over-crowded pen (not enough square footage per sow) and poor water access (not enough drinkers or poor layout of water around pen), the effects multiply and can have drastic impacts on the sows, leading to major stress and reduced performance.

When retrofitting or building new, there are many things you need to consider. With retrofits you will have to make some compromises based on your existing facility, so keep in mind that these may add to the sows’ stress. Regardless of if



**Table 1:** National Farm Animal Care Council Code of Practice for the Care and Handling of Pigs recommended space allowances for sows and gilts in group housing.

| Group Description  | Partially Slatted Floors |                 | Solid Bedded Floors |                 |
|--------------------|--------------------------|-----------------|---------------------|-----------------|
|                    | m <sup>2</sup>           | ft <sup>2</sup> | m <sup>2</sup>      | ft <sup>2</sup> |
| Gilts              | 1.4 – 1.7                | 15 – 18         | 1.5 – 1.9           | 16 – 20         |
| Sows               | 1.8 – 2.2                | 19 – 24         | 2.0 – 2.4           | 21 – 26         |
| Mixed Gilts & Sows | 1.7 – 2.1                | 18 – 23         | 1.9 – 2.3           | 20 – 25         |

you are retrofitting or building new, pens should be free of building structures (don't put a support post in the middle of a pen) and sows should have enough space (Sylvén recommends at least 20 sq. ft. per sow, see Table 1 for NFAACC Code of Practice recommendations). When retrofitting, you also need to consider the flooring in your current facility and determine if it is suitable for group housed sows. You may need to reduce the slat gap width or lay out the pen based on solid and slatted areas already in place.

Layout and design of your group pens is extremely important to ensure success with group housing. There are several decisions you need to make before you can properly design your system:

1. Which type of feeding system do you plan to use?
2. Will you house gilts with the sows or keep them separate?
3. Do you want static or dynamic groups?
4. How big will your groups be?

Once you have answered these questions you can start to work on pen details such as space allowances (see Table 1), feeder placement, bedroom placement, water placement, etc. Other questions to ask yourself include solid or slatted flooring in bedroom areas (Sylvén prefers solid in these areas), do gilts need a separate training pen (a good idea if using an ESF system) and where will my hospital pens be located? It is essential to ensure

there is enough free space around feeders, behind rows (if using shoulder stalls or free-access stalls) and around partitions. Sylvén's rule of thumb is 10 feet around everything. This helps reduce crowding and improves movement around the pen (see Figure 1).

Depending on which style of system you pick (see February 2019 issue of Pork News and Views for a summary of the pros and cons of each), you may or may not require gilt training to be incorporated into your system. If you are floor feeding or using shoulder stalls there is no need to train the gilts. If you are using free access stalls, you will need to spend some time showing the sows how the gates work. With an ESF style system, you will want a training pen to teach the gilts in stages on how to use the system. Sylvén estimates that about 80% of gilts will figure things out if proper training protocols are in place.

Placement of water around the pen is another important consideration when designing your loose housing barn. Drinkers should be spread out around the pen and not all in one place, as often sows will lay down against the wall the drinkers are on, blocking access. If using a bowl style drinker, you should be able to put about 10 sows per bowl. For a nipple style, 5 to 10 sows per drinker. Although Sylvén likes hanging nipple drinkers best, he said any style is fine if they are spread out around the pen and

there are enough for the number of sows.

The final thing mentioned during this presentation was enrichment. By providing enrichment such as straw, wood, rope or commercial toys, you give the sows something to occupy time with, helping to divert aggression and reducing stress. If you would like to watch Sylvén's presentation from the Group Sow Housing & Management seminar visit the London Swine Conference YouTube channel at [https://www.youtube.com/channel/UCOzb-J6HKSswaoG6H\\_\\_HukAA/videos](https://www.youtube.com/channel/UCOzb-J6HKSswaoG6H__HukAA/videos)

*From the Ontario Animal Health Network Producer Report.  
To view the producer reports visit [www.oahn.ca](http://www.oahn.ca)*

## News from the Ontario Animal Health Network Swine Team

*The following information is an excerpt from the Oct.-Dec. 2018 Ontario Animal Health Network Swine Producer and Industry Report. To see the full report visit [www.oahn.ca/networks/swine](http://www.oahn.ca/networks/swine).*



**OAHN Erysipelas Project**  
*Announcing the OAHN Swine Network's Erysipelas Project*

The OAHN Swine Network discussed the fact that Erysipelas continues to be reported at a higher observation frequency on the veterinary survey. This trend has been observed for the past 12 quarters. A project to support the isolation of Erysipelas from suspect cases will help us investigate and gather more information on why swine producers are seeing more cases of Erysipelas. This project has funding to conduct further genetic testing (genotyping of isolates). This way we will be able to compare past and current isolates to see if they are the same or different.

The OAHN Swine Network is encouraging veterinarians and producers to submit fresh or frozen tissue samples of the spleen and liver from suspect Erysipelas cases (swine exhibiting diamond shaped skin lesions) to the Animal Health Laboratory (AHL). Testing and courier fees will be covered by this project. Samples will also be solicited through swine processing plants. For more detailed information on this project please contact Dr. Tim Pasma [tim.pasma@ontario.ca](mailto:tim.pasma@ontario.ca).

## Influenza A Virus (IAV)

### *Some interesting facts for producers*

The OAHN Swine Network discussed the fact that Influenza A virus in swine continues to be reported at a higher observation frequency on the veterinary survey. This trend has been observed for the past 7 consecutive quarters. In the forth quarter there were 37 submissions for Influenza A in swine to the Animal Health Laboratory (AHL) in Guelph. Swine producers must understand that humans, pigs and birds can share Influenza A viruses back and forth and that all could act as a vessel for the virus to change its genetic composition through reassortment, ultimately creating new Influenza A viruses.

Dr. Sue Burlatschenko commented on a research study that she recently came across. The study focused on the reassortment of influenza A viruses (IAV) of avian and swine origin. This study took a pig that was infected with an avian Influenza A strain H1N1 and a pig that was infected with a swine Influenza A strain H3N2. Both infected pigs were then introduced into a group of pigs known to be negative and not previously exposed to IAV. All pigs were euthanized 7 days after being mixed with the known 2 pigs infected with Influenza A. The majority of virus recovered (86%) was swine H3N2. Only about 1.8% was avian H1N1. The remainder were reassortment viruses, and one pig did have 48 different genotypes isolated. Viruses recovered from the lower respiratory tract had greater diversity.

This study is a great reminder on the importance of making sure that all people exposed to swine are vaccinated yearly with the Influenza A vaccine. Also, this study serves as a good reminder that if anyone working with swine is experiencing a cough, congestion, runny nose, fever or chills that they should stay at home until recovered to prevent the possibility of exposing swine to Influenza A virus.

*Source: Zhang, X., Sun, H., et al. Tissue tropisms opt for transmissible reassortments during avian and swine influenza A virus co-infection in swine. PLoS Pathog 14 (12) e1007417.*

## How can producers engage in OAHN?

Read our quarterly producer reports and let us know what you think!

Discuss the material included in these reports with you herd veterinarian and other swine producers. Help us spread the word!

## Contact Us!

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## Resources Available from the London Swine Conference



The London Swine Conference has covered a lot of ground over the last 19 years. Did you know that all of the conference proceedings, beginning in 2001, are available at [www.londonswineconference.ca](http://www.londonswineconference.ca)? Besides a record of the 'hot topics' over the years, the proceedings are a great industry resource covering an impressive range of practical and technical topics.

There are also links to videos of selected presentations beginning with the 2018 conference, and we plan to continue that for 2019.

London Swine Conference hosted an auxiliary event in December last year, the Group Sow Housing and Management Seminar. Videos of presentations from that meeting are being made available, and links can be found at the LSC website in the GSHMS section. The videos include a number of producer profiles. There are also a number of other resources in that section that were prepared especially for the seminar (and are described in the previous articles in this newsletter).





## OMAFRA Farrow to Finish Swine Enterprise Budget - 7 Year Summary

Compiled by the OMAFRA Swine Team

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|                             | 2012            | 2013           | 2014           | 2015          | 2016           | 2017           | 2018            |
|-----------------------------|-----------------|----------------|----------------|---------------|----------------|----------------|-----------------|
| <b>Market Hog Value</b>     | \$168.39        | \$183.85       | \$237.53       | \$185.77      | \$177.69       | \$192.40       | \$175.92        |
| <b>Feed Costs</b>           | \$127.77        | \$128.21       | \$117.75       | \$115.72      | \$113.95       | \$113.10       | \$117.60        |
| <b>Other Variable Costs</b> | \$37.71         | \$39.49        | \$37.80        | \$38.44       | \$40.43        | \$43.51        | \$43.90         |
| <b>Fixed Costs</b>          | \$20.85         | \$20.74        | \$21.92        | \$21.92       | \$23.76        | \$23.76        | \$24.55         |
| <b>Total Cost per Pig</b>   | \$186.33        | \$188.45       | \$177.46       | \$176.07      | \$178.14       | \$180.38       | \$186.06        |
| <b>Net Return</b>           | <b>-\$17.94</b> | <b>-\$4.60</b> | <b>\$60.07</b> | <b>\$9.70</b> | <b>-\$0.45</b> | <b>\$12.02</b> | <b>-\$10.14</b> |

### Calculated Return Over Feed Costs (Market Hog Value less Feed Costs)

|                   |         |         |          |         |         |         |         |
|-------------------|---------|---------|----------|---------|---------|---------|---------|
| <b>\$ per pig</b> | \$40.62 | \$55.64 | \$119.79 | \$70.05 | \$63.74 | \$79.30 | \$58.32 |
|-------------------|---------|---------|----------|---------|---------|---------|---------|

### Calculated Breakeven Prices

|                       |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|
| <b>Variable Costs</b> | \$151.93 | \$152.31 | \$136.82 | \$134.21 | \$134.50 | \$136.10 | \$139.49 |
| <b>Total Costs</b>    | \$171.31 | \$171.38 | \$156.35 | \$153.54 | \$155.47 | \$157.02 | \$160.97 |

### Market Information

|                                      |          |          |          |          |          |          |          |
|--------------------------------------|----------|----------|----------|----------|----------|----------|----------|
| <b>Dressed Weight</b>                | 96.85    | 97.92    | 101.01   | 102.04   | 101.98   | 102.26   | \$102.92 |
| <b>Market Index</b>                  | 110.00   | 110.00   | 110.00   | 110.00   | 110.00   | 110.00   | \$110.00 |
| <b>Market Price (100% FP)</b>        | \$154.64 | \$167.16 | \$209.88 | \$163.00 | \$163.00 | \$167.73 | \$152.21 |
| <b>Corn (FOB Huron, \$/tonne)</b>    | \$259.01 | \$222.10 | \$173.80 | \$183.66 | \$181.87 | \$179.99 | \$187.29 |
| <b>Corn (W. Ont. Feed, \$/tonne)</b> | \$276.25 | \$237.94 | \$192.90 | \$198.19 | \$197.47 | \$196.42 | \$203.40 |
| <b>Soybean Meal</b>                  | \$523.97 | \$564.72 | \$641.85 | \$528.25 | \$520.26 | \$488.81 | \$535.17 |
| <b>U.S. Reference Price</b>          | \$85.43  | \$89.65  | \$105.28 | \$70.36  | \$64.97  | \$71.48  | \$65.05  |
| <b>Canadian Dollar Value</b>         | \$1.0004 | \$0.9711 | \$0.9061 | \$0.7837 | \$0.7548 | \$0.7708 | \$0.7717 |
| <b>Prime Interest Rate</b>           | 3.00%    | 3.00%    | 3.00%    | 2.71%    | 2.70%    | 2.90%    | 3.60%    |

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| Income (\$/pig)   | Farrow to Wean | Nursery | Grow-Finish | Farrow to Finish |
|---|----------------|---------|-------------|------------------|
| Market Pig @ 101% of Base Price \$133.45/ckg, 110 index, 104.06 kg plus \$2 premium |                |         |             | \$156.28         |

| Variable Costs (\$/pig)           |                |                |                 |                  |
|-----------------------------------|----------------|----------------|-----------------|------------------|
|                                   | Farrow to Wean | Nursery        | Grow-Finish     | Farrow to Finish |
| Breeding Herd Feed @ 1,100 kg/sow | \$14.15        |                |                 | \$15.52          |
| Nursery Feed @ 33.5 kg/pig        |                | \$16.40        |                 | \$17.28          |
| Grower-Finisher Feed @ 283 kg/pig |                |                | \$87.05         | \$87.05          |
| Net Replacement Cost for Gilts    | \$3.02         |                |                 | \$3.31           |
| Health (Vet & Supplies)           | \$2.16         | \$2.10         | \$0.45          | \$5.03           |
| Breeding (A.I. & Supplies)        | \$1.80         |                |                 | \$1.98           |
| Marketing, Grading, Trucking      | \$0.90         | \$1.50         | \$5.76          | \$8.33           |
| Utilities (Hydro, Gas)            | \$2.35         | \$1.38         | \$2.13          | \$6.17           |
| Miscellaneous                     | \$1.00         | \$0.10         | \$0.20          | \$1.40           |
| Repairs & Maintenance             | \$1.26         | \$0.61         | \$2.15          | \$4.19           |
| Labour                            | \$6.27         | \$1.85         | \$4.00          | \$12.83          |
| Operating Loan Interest           | \$0.31         | \$0.40         | \$1.33          | \$2.09           |
| <b>Total Variable Costs</b>       | <b>\$33.23</b> | <b>\$24.34</b> | <b>\$103.07</b> | <b>\$165.16</b>  |

| Fixed Costs (\$/pig)     |                |               |                |                  |
|--------------------------|----------------|---------------|----------------|------------------|
|                          | Farrow to Wean | Nursery       | Grow-Finish    | Farrow to Finish |
| Depreciation             | \$4.22         | \$2.04        | \$7.18         | \$13.95          |
| Interest                 | \$2.36         | \$1.14        | \$4.02         | \$7.81           |
| Taxes & Insurance        | \$0.84         | \$0.41        | \$1.44         | \$2.79           |
| <b>Total Fixed Costs</b> | <b>\$7.42</b>  | <b>\$3.59</b> | <b>\$12.64</b> | <b>\$24.55</b>   |

| Summary of Costs (\$/pig)               |                |                |                 |                  |
|---|----------------|----------------|-----------------|------------------|
|   | Farrow to Wean | Nursery        | Grow-Finish     | Farrow to Finish |
| Feed                                    | \$14.15        | \$16.40        | \$87.05         | \$119.85         |
| Other Variable                          | \$19.08        | \$7.94         | \$16.02         | \$45.31          |
| Fixed                                   | \$7.42         | \$3.59         | \$12.64         | \$24.55          |
| <b>Total Variable &amp; Fixed Costs</b> | <b>\$40.65</b> | <b>\$27.93</b> | <b>\$115.71</b> | <b>\$189.71</b>  |

| Summary  | Farrow to Wean | Feeder Pig | Wean to Finish | Farrow to Finish |
|--|----------------|------------|----------------|------------------|
| Total Cost (\$/pig)  | \$40.65        | \$70.23    | \$145.13       | \$189.71         |
| Net Return Farrow to Finish (\$/pig)   |                |            |                | -\$33.43         |
| Farrow to Finish Breakeven Base Price (\$/ckg, 100 index) includes 101% Base Price & \$2 Premium |                |            |                | \$162.37         |
| Farrow to Finish Breakeven Base Price (\$/ckg, 100 index) excludes 101% Base Price & \$2 Premium |                |            |                | \$165.74         |

This is the estimated accumulated cost for a market hog sold during the month of February 2019. The farrow to wean phase estimates the weaned pig cost for September 2018 and the nursery phase estimates the feeder pig cost for November 2018. For further details, refer to the "2019 Budget Notes" posted at <http://www.omafra.gov.on.ca/english/livestock/swine/finmark.html>.





# ADDRESSING PIG BARN DETERIORATION

## Swine industry stakeholders share the best strategies to help extend building lifespans.

Due to the age of most Canadian swine barns, a large percentage will need to be replaced or renovated over the next few years.

Most buildings average between 20 and 30 years old. Most hog barns are completely enclosed using a negative pressure ventilation system to main-

tain pig comfort.

To reduce heating costs during winter, producers generally turn ventilation down to a minimum

**Table 1:** Summary of responses from producers, builders and equipment suppliers on current status of pig barn degradation and respondents' recommendations to mitigate the problems.

| Structural components           | Issues encountered (% of respondents reporting the issue)   | Mitigation strategies  |
|---------------------------------|---|--|
| 1. Roofing                      | <ul style="list-style-type: none"> <li>corrosion/rusting (100%)</li> </ul>                              | <ul style="list-style-type: none"> <li>use of a thicker gauge of tin</li> <li>better screws</li> <li>application of paint on both sides of tin</li> <li>modification of ventilation system so that barn air does not come into contact with the roof</li> </ul>  |
| 2. Penning/stalls               | <ul style="list-style-type: none"> <li>corrosion/rusting (86%)</li> <li>cracks (29%)</li> </ul>         | <ul style="list-style-type: none"> <li>stronger support, use of heavier anchors (1/2 inch rather than 3/8 inch)</li> <li>use of solid rod; avoid welds in wet areas</li> <li>use of stainless steel for first 6 inches of post or anything that has contact with manure or the floor</li> <li>use of plastic (if not costly) instead of concrete or steel</li> </ul> |
| 3. Exterior walls               | <ul style="list-style-type: none"> <li>corrosion/rusting (100%)</li> </ul>                              | <ul style="list-style-type: none"> <li>plastic walls filled with concrete</li> <li>thicker tin</li> <li>concrete construction</li> <li>better exhaust fans; proper ventilation</li> </ul>  |
| 4. Ceilings                     | <ul style="list-style-type: none"> <li>corrosion/rusting (60%)</li> </ul>                               | <ul style="list-style-type: none"> <li>use of screws, not nails</li> <li>application of paint</li> <li>use of plastic or fibreglass products</li> </ul>  |
| 5. Trusses                      | <ul style="list-style-type: none"> <li>corrosion/rusting (80%)</li> <li>moisture decay (60%)</li> </ul> | <ul style="list-style-type: none"> <li>installation of ridge ventilation</li> <li>use of galvanized or stainless steel, protective coatings and insulation</li> <li>better ventilation to avoid backdrafting</li> </ul>  |
| 6. Feeding and drinking systems | <ul style="list-style-type: none"> <li>corrosion/rusting (40%)</li> <li>cracks (40%)</li> </ul>         | <ul style="list-style-type: none"> <li>thicker PVC for drinking systems</li> <li>use of steel feeders</li> <li>use of plastics above pig level and steel at pig level</li> <li>all intake hoppers and drive units should be stainless steel</li> </ul>   |

rate. The combination of minimum ventilation and, in some areas, high winds, causes exhaust air to recirculate within the facility. This situation leads to poor air quality which, in turn, increases deterioration due to increased exposure to moisture and corrosive gases.

So, this project set out to determine Canadian-specific strategies for decreasing the pace of pig barn deterioration.

Researchers undertook a critical literature review to identify solutions that were applicable to Canadian pig barns. Next, the team presented a survey to various stakeholder groups – including producers, builders, and material and equipment suppliers – across Canada.

About 60 per cent of farmers struggle with rapid deterioration, the questionnaire results revealed. Specifically, the structural components respondents had issues with were:

- roofing (50 per cent of respondents)
- penning/stalls (50 per cent)
- exterior walls (40 per cent)
- ceilings, trusses and/or attics, and feeding and drinking systems (30 per cent)

Respondents did not report any



National Pork Board and the Pork Checkoff, Des Moines, Iowa photo

**About 60 per cent of farmers struggle with rapid deterioration, the questionnaire results revealed.**

significant issues with accelerated deterioration of partition walls between two rooms, manure and drainage systems, or barn foundations.

**Results**

Table 1 on page 39 summarizes the barn deterioration issues producers and builders encountered and their

recommendations for mitigation.

The most common issue was corrosion or rusting of barn roofs, penning/stalls, exterior walls, ceilings, trusses, and feeding and drinking systems. Some respondents identified issues related to moisture decay in trusses, and cracks in penning/stalls, and feeding and drinking systems.

**Table 2:** Summary of potential solutions to rapid barn deterioration and their applicability to Canadian swine barns based on literature review and survey.

| Category/potential solution | Description   | Applicability   |
|-----------------------------|---|---|
| <b>A. Building design</b>   |   |   |
| 1. Wood (durable design)    | <ul style="list-style-type: none"> <li>■ use of timber with bigger dimensions, well-seasoned and with good detailing</li> </ul>   | Applicable  |
| 2. Metal (durable design)   | <ul style="list-style-type: none"> <li>■ rigid or batt insulation (e.g. 4 to 6 mm polyethylene) plus vapour barrier, especially on truss assembly</li> <li>■ appropriate design gap between insulation and wall or ceiling for moisture drying in the event of penetration</li> <li>■ good vapour barrier on areas near fasteners</li> </ul>  | Applicable  |
| 3. Ventilation (in general) | <ul style="list-style-type: none"> <li>■ use of stacks or discharge tubes to release exhaust air from the animal building</li> <li>■ extension of insulation and vapour barrier from inside the building to underside of vented overhangs</li> <li>■ chimneys installed intermittently between trusses for ridge ventilation</li> <li>■ separate ventilation for barn interior and the attic</li> </ul> | Applicable; extent of current application in Canadian swine/livestock buildings not confirmed |





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| B. Building material selection and treatments                  |   |  |
|--|---|--|
| 1. Wood  | <ul style="list-style-type: none"> <li>■ use of naturally durable wood</li> </ul>   |  |
| Chemical preservation  | <ul style="list-style-type: none"> <li>■ oil-based preservatives (creosote oil)</li> <li>■ fixed water-soluble preservatives</li> <li>■ organic solvent preservatives</li> </ul>  | Applicable   |
| Impregnation of wood with polymers                             | <ul style="list-style-type: none"> <li>■ improve the physical and mechanical properties of low-grade wood species</li> <li>■ use of copolymer derived from allyl alcohol and methyl methacrylate (optimum compatibility and compressive strength perpendicular to fibre increased by about 100 times while water absorption was reduced by 50 per cent; biodegradation did not occur)</li> </ul>  | Applicable; further investigation of effectiveness against deterioration needed          |
| Bio-control  | <ul style="list-style-type: none"> <li>■ wood treated with urea and ureolytic bacteria (<i>Proteus sp.</i> and <i>Bacillus sp.</i>)</li> <li>■ combination of <i>Proteus sp.</i> and <i>Trichoderma viride</i> to inhibit growth and kill fungi</li> </ul>  | Further investigation of effectiveness needed  |
| Titanium dioxide nanoparticles                                 | <ul style="list-style-type: none"> <li>■ used to prevent fungal <i>Hypocrea lixii</i> (white-rot) and <i>Mucor circinelloides</i> (brown-rot) growth in wood</li> <li>■ applied by spraying or simple brushing on surfaces</li> </ul>   | Further investigation of applicability/feasibility for use in livestock buildings needed |
| 2. Metal   |   |  |
| Stainless steel  | <ul style="list-style-type: none"> <li>■ known resistance to dry corrosion (oxidation) and attack of acidic condensates</li> </ul>  | Applicable   |
| G90 hot-dip galvanized (G90 HDG)                               | <ul style="list-style-type: none"> <li>■ treated with zinc phosphate</li> <li>■ recommended by U.S. Steel for metal connectors in animal housing, G90 zinc coating is typically used in Canada (G60 for U.S.)</li> </ul>  | Applicable   |
| Duplex System  | <ul style="list-style-type: none"> <li>■ e.g. G90 Duplex = G90 connector + paint and G185 Duplex = G185 connector + paint</li> <li>■ G90 duplex or G185 connectors with vapour barrier and separate ventilation for attic space is recommended in animal buildings</li> </ul>   | Applicable   |
| Avoidance of galvanic corrosion                                | <ul style="list-style-type: none"> <li>■ e.g. using stainless steel nails for stainless steel hangers and galvanized nails for galvanized hangers</li> </ul>  | Applicable   |
| Use of other materials, such as ceramic materials and polymers |   | Applicable   |
| Galvanizing  | <ul style="list-style-type: none"> <li>■ zinc layer application on steel and iron structures</li> </ul>   | Applicable   |
| Coatings   | <ul style="list-style-type: none"> <li>■ epoxy coating that is lead- and chromate-free recommended for metal truss plates</li> </ul>  | Applicable   |
| Repair of corrosion-attacked metals                            | <ul style="list-style-type: none"> <li>■ cleaning as a de-rusting method remains the advised method over use of rust converters</li> </ul>  | Applicable   |
| 3. Concrete  |   |  |
| Concrete mix composition                                       | <ul style="list-style-type: none"> <li>■ use of sulphate-resistant binder-like-type 50 Portland cement (equivalent to CEM III/B concrete based on CSA A3000, 1998) as most effective among eight concrete treatments</li> <li>■ use of other supplementary cementing materials such as slag, fly ash and silica fume to minimize tricalcium aluminate (C3A) content of concrete mix</li> <li>■ use of additives for concrete top layers (e.g. product "S" based on ground tuff) to increase life of concrete compared to regular sand-cement mix for top layer of animal housing flooring</li> <li>■ also applies for protection of steel reinforcements</li> </ul> | Applicable; feasibility and cost analysis needed for application in livestock buildings  |



C. Building management/production practices

|                                      |   |            |
|--------------------------------------|---|------------|
| Interior cleanliness and maintenance | <ul style="list-style-type: none"> <li>■ proper cleaning and disinfection; high-pressure washing and use of cleaners to effectively remove aggressive residues and manure on surfaces</li> <li>■ periodic inspection for leaks through vapour barriers and corrosion on connectors and fasteners</li> <li>■ removal of corrosive agents from the attic and additional protective coatings must be provided to connectors</li> </ul> | Applicable |
| Feeding method                       | <ul style="list-style-type: none"> <li>■ wet feeding method can make the degradation problem on barn floors worse</li> <li>■ greater feeder-drinker distance to minimize lactic and acetic acid attack on concrete by the feed-water mix</li> </ul>   | Applicable |
| Others                               | <ul style="list-style-type: none"> <li>■ putting concrete or brick bin underneath nipple drinkers</li> <li>■ protection of concrete floor itself by fibre cement-board, metal plate, rubber sheet or a top layer “product S”</li> </ul>   | Applicable |

**Mitigation strategies**

Among the solutions – such as surface treatments, new materials, ventilation systems, and control and maintenance – to improve the building lifespan, participants identified the last option as the least expensive and the easiest to adopt.

However, few respondents consider maintenance improvement as the best option to improve building lifespan.

If cost is not considered as a decision parameter, new building materials and ventilation system improvements should be the priori-

ties. For producers, when the cost of the technology is not considered, an adequate ventilation system, sufficient insulation and high-durability wall materials are the most attractive solutions to improving building lifespan.

**Conclusion**

When reviewing all potential strategies to mitigate building deterioration, it was apparent that considering appropriate ventilation, environmental control and air treatments, improvement of corrosion protection, efficiency of building materials, and adequate building maintenance would have the greatest effects within Canadian pig barns.

These strategies still need to be evaluated in a barn to determine their full potential in increasing facility lifespans. **BP**

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*The centre conducts near-market research that can be applied by the pork industry within a one- to seven-year time frame.*



National Pork Board and the Pork Checkoff, Des Moines, Iowa photo

**If cost is not considered as a decision parameter, new building materials and ventilation system improvements should be the priorities.**



by  
**MOE AGOSTINO  
& ABHINESH GOPAL**

# HOG MARKET SHIFT ON THE HORIZON

**While the short-term outlook is bearish, the long-term outlook is bullish thanks to developments in China.**

The American hog markets started pricing in a risk premium in the fall. This shift can be attributed to the outbreak of African swine fever (ASF) in China, which could lead to better U.S. exports in the future. Lean hog futures built in a risk premium of as much as US\$15/cwt.

But, traders grew tired of waiting for the export optimism to become a reality as part of a U.S.-China trade deal. Short-term bearish fundamentals set in. The bearish influence sent futures plummeting, nearing the lows of July 2018, as traders took profits and decided to “live and wait to play another day.”

The ASF outbreak is a serious hog disease concern for Eurasia, as officials have reported cases across the vast region.

The epidemic should have led to increased demand for North American pork, market analysts thought. But various factors – including the long-drawn trade wrangle between the U.S. and China – have poured cold water over that notion.

In the short term, the hog market is weighed down by the prospect of burdensome 2019 supply. The U.S.



David Kadlec/Stock/Getty Images Plus photo

**Chinese consumers may prefer American or Canadian pork, rather than domestic pork, because of the ASF outbreak.**

hog industry expansion is still very strong, the February 2019 USDA World Agricultural Supply and Demand Estimates (WASDE) report said. This year’s American pork production will be almost 4 per cent (or over 1 billion pounds) higher year over year, the USDA predicted.

The heavy supply weighed on markets, as the 2019 January American hog slaughter was 7 per cent higher than the same period last year. The 2019 figure was much higher than analysts expected.

Harsh winter weather added insult to injury, creating logistic issues and backing up hogs in the country.

In much of the upper U.S. Midwest, January temperatures were so

cold that it was dangerous to transport hogs. Some plants were shuttered and, despite shifts that ran on Saturdays, the extra supply of hogs has weighed on cut out (ham and belly) values, cash prices and spilled over into futures.

In February, U.S. pork reached its lowest wholesale price of US\$0.6561/pound in a decade, Bloomberg reported. Hams reached their lowest price in almost four years, coming in at US\$0.4429/lb. Seasonally, this downward fall is not a surprise. We should be nearing the lows for this time of the year.

The market did not have enough demand to absorb the record supply. Despite the report of newer cases of ASF in Asia and Europe, the lingering Chinese tariffs and trade talks weighed on the markets.

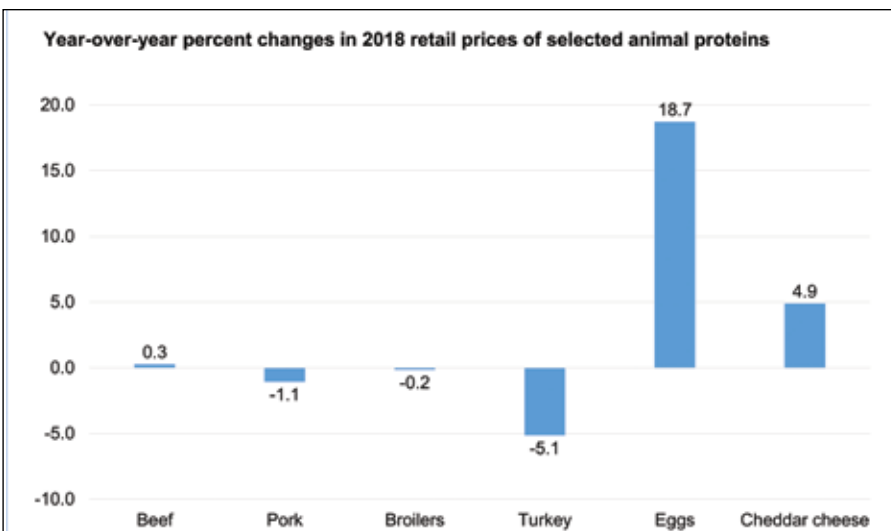
Winter pork consumption was down by about 18 to 20 per cent in the affected countries of Eurasia, according to market estimates.

But, that situation need not be the case in the long-term.

By late February, China and the U.S. were preparing a memorandum of understanding, which highlighted their points of agreement. The document covered such topics as agriculture, currency and non-tariff barriers, Reuters reported.

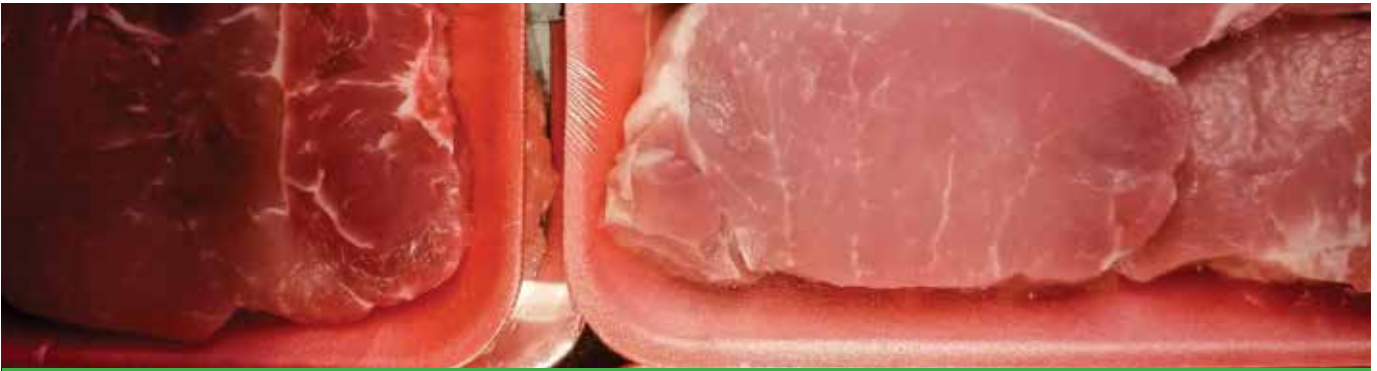
China also proposed to import an additional about US\$30-billion worth of American ag products annually. As part of the deal to help address the

Source: USDA, Economic Research Service; U.S. Department of Labor, Bureau of Labor Statistics



**In 2018, the year-over-year per cent changes in retail prices for beef, pork and broilers were small.**





In the short term, the hog market is weighed down by the prospect of burdensome 2019 supply.

U.S.-China trade balance, the list included more American corn, soybeans and wheat, Bloomberg reported. Although the proposal did not specifically note pork, market watchers agree this meat should feature prominently on the list, especially since China is the world's largest consumer of pork.

Since its first report of ASF in August 2018, China has liquidated its hog herd aggressively. As a result, 2019 Chinese pork production could drop by one-fifth (or more). If this shift happens, prices should increase, as should demand for cheaper imports.

Over the winter, Chinese pork values dropped as small farmers left the business and the industry consolidated. Chinese markets were flooded with pork supplies. The more the country reduces its breeding herd, the greater the push will be, over the next eight to ten months, to import more pork.

While nearby hog futures were falling limit down by the third week of February, the October and December deferred future contracts traded near contract highs.

China will buy a record amount of meat from abroad this year, Fitch Solutions says. (This company is a subsidiary of Fitch Ratings, which is one of the "big three" credit-rating agencies.)

This Chinese increase in pork imports could be attributed to rising domestic pork production deficits and a change in consumer purchasing patterns. Chinese consumers may prefer American or Canadian pork, rather than domestic pork, because of

the ASF outbreak.

Chinese pork imports could reach 2 million metric tons, which would be close to an all-time high, in 2019. The Chinese government will soon buy pork for its reserve, it said in February.

Strong export opportunities should arise later this year, market analysts expect, as China reduces its breeding herd and U.S.-China trade relations get back on track. This year, U.S. pork exports should hover around a record of 6.3 billion pounds, the USDA projected.

Domestically, USDA estimated the per capita disappearance of 2019 U.S. pork will be 51.7 pounds (23.3 kilograms). This figure is about 1.8 per cent higher year-on-year and a 40-year high.

The pork industry still faces long-term risk with ASF. We must keep this disease out of North America if we want to tap into any of that bullish global demand which could arise later in the year.

ASF can spread through livestock feed, direct contact with affected pigs or through contaminated vehicles and equipment. The disease can also spread through the movement of contaminated pork products.

Although ASF poses no threat to human health, it could be devastating to the North American hog herd.

Despite the potential for increased U.S. pork exports, the industry remains anxious and vigilant. An ASF outbreak in the U.S. or Canada would lead to mass culling, export bans and consumer panic.

The USDA is working with Mexican and Canadian officials to

prevent the arrival of ASF in North America, U.S. Secretary of Agriculture Sonny Perdue said at the 2019 USDA Agricultural Outlook Forum in Arlington, Virginia in February. **BP**

*Maurizio "Moe" Agostino is chief commodity strategist with Farms.com Risk Management and Abhinesh Gopal is head of commodity research. Risk Management is a member of the Farms.com group of companies. Visit RiskManagement.Farms.com for more information.*

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by  
**RICHARD  
SMELSKI**

# STEPS TO SETTING PIGLETS UP FOR SUCCESS

**Barn staff should closely monitor piglets, ensuring they get colostrum and warmth in a timely manner.**



**The sow only produces colostrum in high quantity for about 12 hours after farrowing.**

The first few hours of a piglet's life are crucial to its survival and future performance.

In the womb, the piglet is in an environment of 39 C (102.2 F). At birth, however, the piglet enters a hostile environment of about 18 C (64.4 F). The newborn animal is wet and weak.

Since a sow cannot transfer antibodies to her unborn piglets, these animals are born immunologically naive, Jena G. Alexopoulos and others say in a March 2018 paper.

The sow can only transfer antibodies to its piglets through its colostrum, which is crucial in ensuring piglets' adequate immune function. Immunoglobulin is the main "antibody in colostrum and acts to protect piglet(s) against infections," these researchers say.

So, piglets' consumption of colostrum is essential as soon as possible after birth. Colostrum contains energy-rich protein, fat and carbohydrates, Alexopoulos and others say. In contrast to the milk that follows, colostrum has higher concentrations of dry matter and crude proteins, but lower concentrations of lactose and fat.

The sow only produces colostrum in high quantity for about 12 hours after farrowing. Then, her production of this special type of milk steadily declines. About 20 hours after farrowing, the sow produces "regular" milk.

The first-born piglet has more opportunity to obtain colostrum and select better teat placement than its later-born counterparts. Piglets that drink more than 200 grams (7 ounces) of colostrum have a 7.1 per cent mortality rate, Hélèn Quesnel and others found in 2012.

In contrast, piglets that consume less than 200 g (7 oz.) of colostrum are six times (43 per cent) more likely to die during the nursing stage.

As piglets begin to drink colostrum, they get energy and warmth. In the process, piglets' body temperatures and viability increase. Both traits are strongly linked to survival and performance. Increased colostrum consumption is also related to better intestinal development and better performance through to the weaning stage and beyond.

Producers can follow several management techniques to enhance neonatal piglet survival. A key

element is having someone in the barn monitoring the farrowing sows and newborn piglets. These staff can oversee such activities as cross fostering, split suckling and the provision of supplemental colostrum.

If we must foster piglets with another sow, consider moving the females, as they are typically best able to cope with management changes.

Since piglets are born wet and have poor thermoregulatory systems, they are very vulnerable to hypothermia.

So, heat sources for piglets are important.

The placement of a heat lamp behind a sow during farrowing reduces piglet mortality, research shows. The extra heat source provides piglets with immediate warmth following birth.

Finally, we can creep feed piglets to increase survivability. Improved crate designs can help with this process.

We can achieve the best incremental value in pig production in the first 24 hours following birth. A better way always exists. **BP**

*Richard Smelski has over 35 years of agribusiness experience and farms in the Shakespeare, Ont. area.*



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