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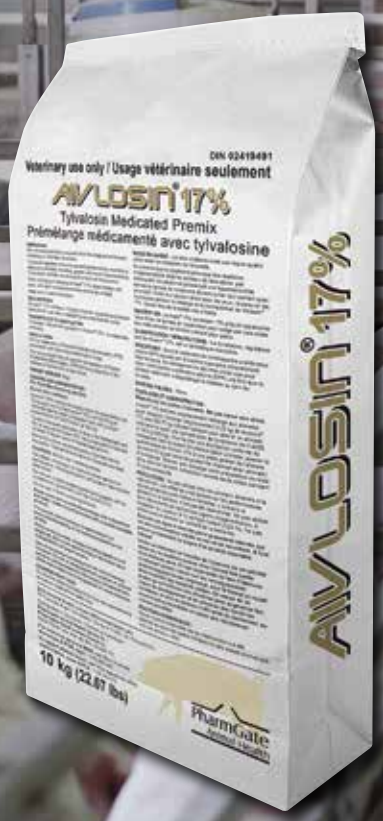

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The Business of Canadian Pork Production

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DEAR READER: LETTERS FROM A FAMILY FARM

TRACING GLOBAL AG MARKET TIES

Our agricultural industry is inextricably connected with international markets.

When I was researching and writing my PhD dissertation, it was fascinating to uncover the connections Ontario producers had with the broader marketplace. My work focused on the basic items, like food and clothing, farm families made and purchased for their households between 1900 and 1945.

Ontario farm families did, of course, produce many items for themselves. They raised and processed their own pork and poultry. Women baked breads and desserts for their families, and sewed and mended clothing.

But this household production was complemented and supported by purchases – whether from neighbours, local shops, mail orders or larger department stores.

And these purchases had a range of origins. Some farm families, for example, bought locally produced bread and butter to supplement their homemade items.

Other items came from further afield. Farmers periodically bought, for example, canned salmon, bananas and figs. Farm women followed sewing patterns inspired by Paris or New York fashions.

Even in the early 20th century, we were clearly enmeshed in global markets.

This interconnectivity continues – and arguably expands – into the present day throughout the ag industry.

Now, we're closely watching international trade negotiations and discussing how they may impact our industry. We're tracking the implementation of the **Canada-European Union Comprehensive Economic and Trade Agreement** (CETA) and wondering about the implications for agricultural goods.

And, of course, we're following the **North American Free Trade Agreement** (NAFTA) negotiations underway between Canada, the United States and Mexico.

In this edition of *Better Pork*, **Geoff Geddes** delves into the NAFTA negotiations, highlighting the benefits and drawbacks of the current agreement. He explores what pork producers and industry leaders, both in Canada and the United States, are emphasizing in these discussions.

As we discuss and debate global market access, please feel free to get in touch to share your thoughts. I always enjoy hearing from our readers. **BP**

ANDREA M. GAL

Bill Canavan (shown here) and Leola Canavan staff the Alderney Landing Meadowbrook Meat Market location in Dartmouth, N.S. **Read the related story on Meadowbrook on page 20.**

PORK BARNS SEE REVISED REGULATIONS

Ontario pork producers who have not had their barns and ventilation systems verified by a professional engineer need to do so under revised provincial regulations.

"Since the fall of 2014, when the changes regarding unvented heaters were introduced, I have experienced a significant increase in my workload regarding inspections (for new barns) and the preparation of the required ventilation calculations certificates," says **Harry Huffman**, an agricultural engineer with **Huffman Consulting** in London, Ont.

However, the lack of a revised enforcement date for all existing barns resulted in a significant drop in the number of requests Huffman received over the last year.

With the recent announcement of another two- to four-year window to come into compliance in Ontario with the revised **Natural Gas and Propane Installation Code**, CSA-B149.1, Huffman expects that some farmers will put off inspection requests until the deadline gets closer.

This attitude may backfire and cause a backlog as the enforcement date approaches, as there are a small number of professional engineers in Ontario undertaking this work, Huffman warns.

Producers with barns 25,000 sq. ft. (2,323 sq. m) or under have until July 1, 2021 to comply.

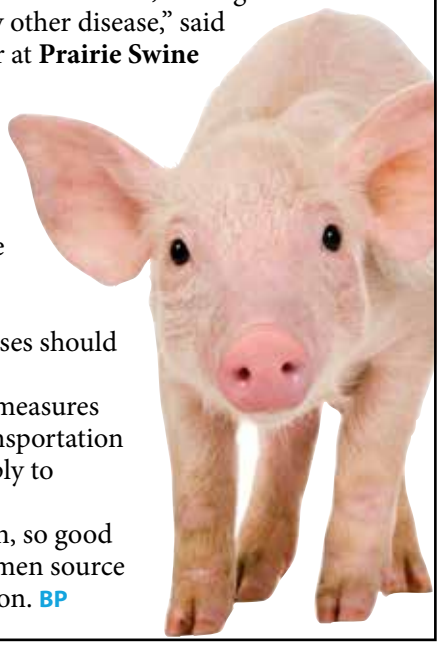
Farmers with barns that are greater than 25,000 sq. ft. have until July 1, 2019 to comply. **BP**

PRRS 2.0: A STRAIN ON PRODUCERS

The latest version of something is often called "new and improved," but the new strain of PRRS (Porcine Reproductive and Respiratory Syndrome) sparks other adjectives that aren't fit for print.

That said, the industry's focus is on how to deal with this more virulent strain recently identified in Manitoba.

"PRRS is the most deadly pig disease in the world, costing the global pork industry more than any other disease," said **Dr. Egan Brockhoff**, managing partner at **Prairie Swine Health Services** in Red Deer, Alta.



"PRRS virus mutates so we have hundreds of strains across North America, but this (strain) happens to be a particularly virulent one."

As a leading expert on PED (Porcine Epidemic Diarrhea), Dr. Brockhoff observed that, while PRRS is a bigger problem, the approach to the two diseases should be similar.

"It's all about biosecurity. The same measures producers put in place in areas like transportation and barn entry to prevent PED will apply to PRRS."

But PRRS also moves through semen, so good biosecurity with your boar stud and semen source is critical for minimizing risk of infection. **BP**

GlobalP/iStock/Getty Images Plus photo

RESEARCH TO CREATE A VALUABLE TOOL

Convincing producers of the importance of record-keeping is the goal of **Emily Hanna**, a master of science candidate at the **University of Guelph**.

Specifically, she's "developing benchmarks of nursery performance that are specific to Ontario nurseries," explained Hanna, who is conducting her research through the **Ontario Veterinary College's Department of Population Medicine**.

Hanna will collect data from 50 swine nurseries in the province. She'll establish a range of benchmark values, including gain, feed efficiency and mortality.

"So far, I have found that production types and husbandry practices are quite diverse," said Hanna. "Additionally, I have found that individually weighing an entire group is not necessary to determine the performance of batches in a nursery and that small subsets can provide reliable values."

Hanna's most notable finding to date is that growth rates vary both between and within farms much more than expected.

The **OMAFRA University of Guelph Research Partnership** and **Ontario Pork** provided funding for the project. Other researchers involved in the study include: **Dr. Zvonimir Poljak**, **Dr. Terri L. O'Sullivan** and **Dr. Robert M. Friendship**. **BP**

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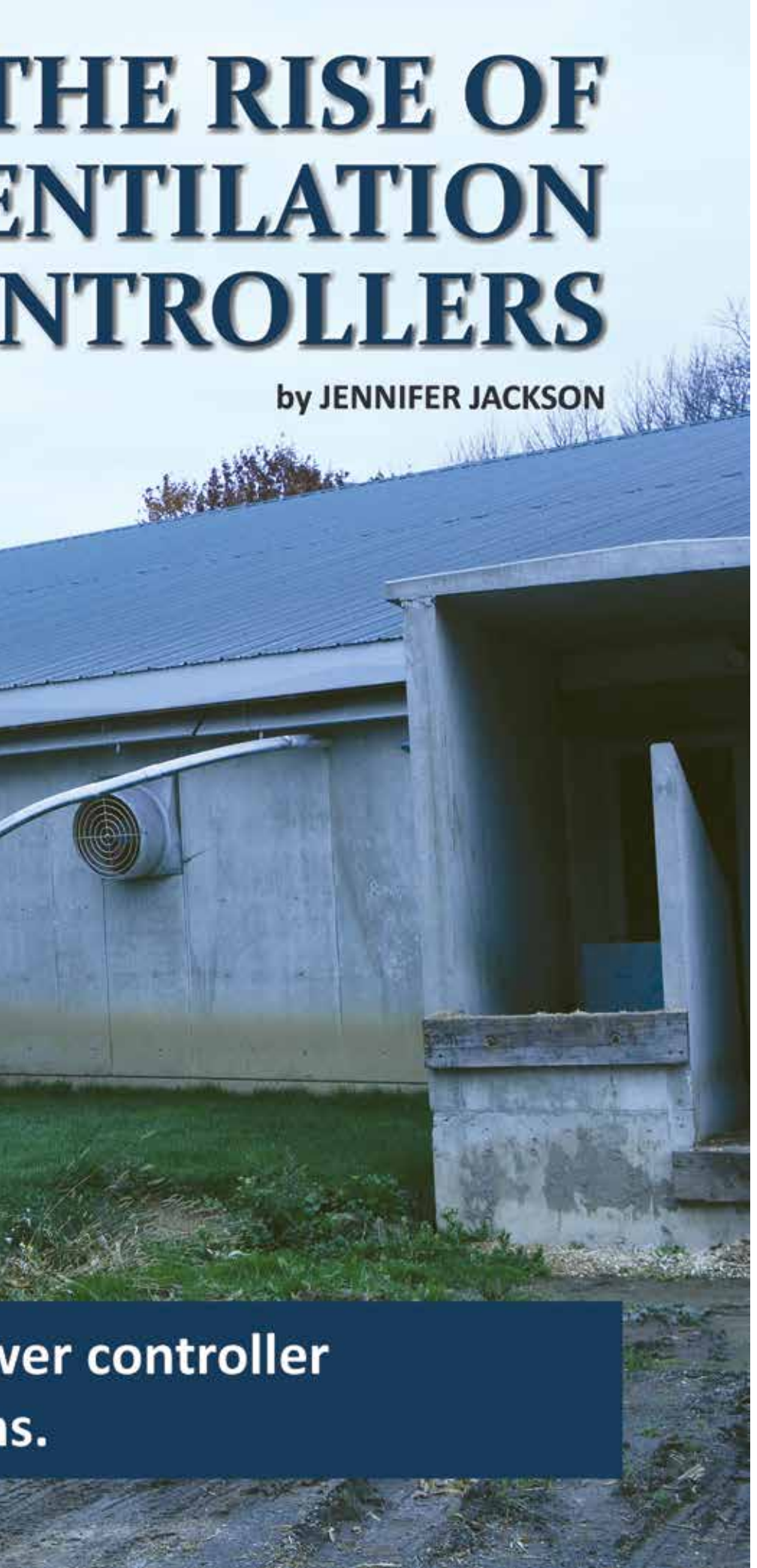
THE RISE OF ENTILATION NTROLLERS

by JENNIFER JACKSON

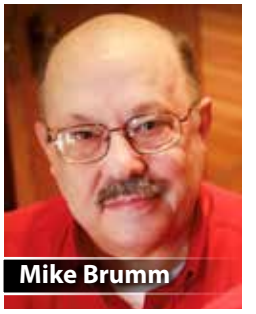


The swine industry is moving to adopt big data, particularly in ventilation.

Mike Brumm, swine consultant, first realized this possibility when he participated in a ventilation workshop in the upper American Midwest about a decade ago.

"We recognized that people did not fully understand ventilation systems," he says. "Meanwhile, we also learned that we didn't know what we were doing at that time and we were supposed to be the experts."

After that realization, Brumm and his colleagues spent more time on producers' farms learning as much as they could.


Mike Brumm

"The more we visited, the better we got at being able to help producers. As teachers, (we could) simplify the expectations so that we could say 'regardless of what controller you have running your ventilation system, this is what should be happening.'

"Controllers don't have to be fancy but, with the fancier ones, you can often do more things beyond ventilation."

Benefits

A major advantage of the newer controllers is their ability to collect large amounts of data from sensors and electronics around the barn.

First and foremost, "these controller systems increase the data points for all data accumulated on-site and then put (the information) on the Internet," says Brumm.

"The controller is not only (managing) the ventilation, but (the controller) can also be the access point for anything that generates an electronic signal. This could be water flow (and) ammonia sensors. The controllers are now the new, (main) data point."

The ventilation controllers can send data to the producer's computer or phone, says Robert Daniel, the business development manager for

the MAXIMUS control system.

"The MAXIMUS ties in and operates all the different equipment (such as) fans, inlets, sensors, bin scales or ESF (electronic sow feeder) systems," he says. "It will also notify personnel of all issues that may occur while the animals are in the building. All the data that's collected can be viewed locally or remotely to help management make better decisions during production."


Robert Daniel

The ability to control all these points in the barn delivers benefits, including energy efficiency, says Steve Beadle, engineer of livestock structures and equipment at the Ontario Ministry of Agriculture, Food and Rural Affairs.

"First, the systems can control fans, heaters and inlets (for example), so some energy savings can be achieved," he says. "Elements are turned on or off as appropriate; (they) require only the 'least' amount of energy to maintain the desired environment."

Second, the controller systems can fine-tune the pigs' environment.

"The systems can provide a more consistent environment, decreasing the magnitude of fluctuations in temperature, humidity and air quality that occur when systems are operated manually once or twice per day," says Beadle.

In Rick McBay's opinion, the biggest advantage of the newest controllers is healthier and happier animals. McBay is the sales manager for Faromor Ltd., a company that manufactures and markets agricultural ventilation systems.

"Animal comfort is increasingly a topic of research now, such as the way farmers house the hogs or (establish) organic setups," he says. "Controller technology goes hand in hand with this trend."

A more comfortable pig results in fewer vet and medication bills, better feed conversions and increased sow litter systems, says Daniel.

"In today's facilities, with genetics and animal welfare playing a bigger role, growers definitely need to consider systems that can notify them when animals aren't following growth curves such as feed, water or weight," says Daniel.

"If (producers) are aware of the animals' situation in real time, they can make the necessary adjustments to prevent delayed growth or sickness," he explains.

Energy savings

A major benefit of the latest innovations in ventilation technology is the significant energy savings for the farmer, says Beadle.

"Energy savings typically come in the form of decreased electricity use and decreased heating fuel use," he says.

In terms of heating, controllers allow producers to be precise in setting temperature demands.

"Many of the automated control-

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The energy savings that farmers can achieve with the latest ventilation systems is a reason for the government to consider implementing producer incentives, says Gary Stordy.

lers will allow programming of a temperature 'curve' that changes the desired temperature set point over some period of time," he says.

"This (programming ability) can be useful in, say, the nursery when we want the temperature to be warmer at the start of this phase and to decrease (the temperature) over eight weeks, (for example), as the piglets grow."

This feature optimizes fuel use. Only the fuel that is needed is used; the producer needn't manually change the temperature daily or every couple of days, he says.

Gary Stordy

When it comes to reducing electricity, controlled systems can turn on and off according to the environment. This action reduces the use of a fan for longer than needed, for example, in a manual system, says Beadle.

However, "in a staged system, (where additional fans turn on in sequence as the temperature rises and turn off as the temperature drops), there can be a significant increase in electricity use if the temperature is near the stage set point (as the fans will cycle on and off fairly quickly)," he says.

"Adding variable frequency drives to the fans can help decrease these spikes in electricity use, as fans can be sped up or slowed down instead of cycling on and off."

The energy savings that farmers can achieve with the latest ventilation systems is a reason for the government to consider implementing producer incentives, says Gary Stordy, public relations manager for the Canadian Pork Council (CPC).

"The CPC is advocating for the government to provide incentives that will allow producers to modify their ventilation systems," he says. "When you look at the cost of production and set aside the price of feed, electricity used for ventilation is a big cost. Depending on the type of system, it may be using more energy than the new systems.

"There is certainly a federal and provincial push to lower carbon footprints. Ventilation systems are turned on and used constantly. Therefore, we should be encouraging producers to upgrade and use more efficient systems."

When to upgrade

Although there are many benefits to using the newest in controllers, every farm manager should determine whether the investment makes financial sense for his/her operation.

"In cases where significant maintenance is required on an existing system – if the indoor air quality, pig performance and maintenance requirements of the existing system are all acceptable – then a new installation of a similar system may be prudent," says Beadle.

"There are, however, opportunities to increase energy efficiency with new components.

"If the existing system is lacking in some way, a different system may be warranted. Measuring and document-

ing the indoor air quality, pig performance and maintenance costs (including labour) can provide some data to help farmers make rational decisions."

Alastair Bratton, production manager for Verus Animal Health Alliance, echoes the thought that producers, assisted by industry experts, should determine case by case whether they should upgrade to the latest systems.

Bratton oversees some 15,000 sows in barns ventilated with an automatic forced-air system.

The system was designed by the engineer who built the barns about 18 years ago. The system still works and there is no need to upgrade it, he says. If you want to upgrade to the newest systems, you must consider how much money you want to spend and what benefits this investment will provide.

To explain this decision-making process, Bratton uses a car analogy.

"Do you want the Bentley or do you want the basics that will just get you through?" he says.

"With ventilation, the basics will get you through, keep your pigs happy and healthy and the air quality will be good. (But consider, for example, if) you want to be notified if a fan is not working or is using more voltage (than usual) at 2 a.m., or if your staff can notice these things every day.


Rick McBay

"Each barn and each system is so different. You really have to understand what you need and where your operation is situated."

Different climates require different management.

Because each operation is unique, McBay sits down and works with clients to help determine their needs.

"The first thing I do is get insight into (the farmer's) priorities. What's important for his/her farm and what's not? What's the age of the operation? What's the lifespan of the operation? What if the customer does not intend to keep the operation? Is it a brand new building?" he says.

"If (the farmer) has an existing operation (instead of a new build), we first discuss the weaknesses in the current system."

What to keep in mind

A factor that producers should keep in mind when deciding whether to upgrade their systems is the need to provide adequate employee training.

Many software packages and controllers are available, so producers should acquaint themselves with the options, says Beadle.

There are different ventilation controllers – each with their own features and capabilities – on the market. Producers should understand how their system works, how to program them or whom to call to have someone program them, he says.

Ventilation systems only work when they are maintained and calibrated, Beadle adds. A regular maintenance and calibration program should be established in every operation.

And just because the system is new and potentially more advanced does not necessarily mean it will be easier to manage, says Brumm.

"The newer systems can be very complicated, especially for staff who don't want to work with computers," he says. "You have to ask yourself: how are we going to have training sessions? What are we going to do for support if (the system) does not work today? What are the fail-safes?

"A disadvantage is that you can change things in the barn with remote access, but you are not there to see the consequences of what you just did," he says. You could accidentally adjust the ceiling inlets, and suddenly the whole system is off.

Although the new systems may work well in your operation, you should also think of the individuals who use the system. Even if you're using the white box with two black knobs (which are often the controllers installed in conventional systems), training is important.

Brumm Swine Consultancy photo

Proper understanding of how the ventilation system works is crucial to swine operations, regardless of the age of the ventilation system, says Alastair Bratton.

Bratton agrees that proper understanding of how the ventilation system works is crucial to swine operations, regardless of the age of the ventilation system.

"People often struggle to fully understand how ventilation systems work," he says. "I was recently in a barn where all the fans were running and the soffits were closed. You could hardly open the door and staff were confused as to why it was still warm in the room."

Train staff to use the ventilation system and help them understand it fully. For example, have them understand that, if they struggle to open the barn door, they have an inlet problem, he explains.

If staff are at the barn alone on a weekend, they need to know how the ventilation works to be able to adjust it accordingly, Bratton says.

Looking ahead

Regardless of the age and type of their ventilation systems, Beadle believes producers should primarily focus on the equipment's performance.

"Producers should focus on providing the best possible indoor air quality to maximize the potential of their pigs," he says. "Regular maintenance of both ventilation systems and other equipment/building components will ensure (equipment) longevity, proper operation and return on capital investment."

Faulty ventilation systems not only affect the pigs' performance but also jeopardize the farmer's bottom line. Beadle reminds producers to calibrate and inspect their ventilation systems regularly to ensure they maintain the desired environment.

"Poor ventilation or failing/failed systems can negatively affect anything from pig performance to disease pressure to heat/cold stress to mortality," says Beadle. "All of these issues negatively affect the bottom line. In addition, poorly operating or failed systems can affect equipment and building components and, in extreme cases, can lead to fire."

The latest in swine ventilation software and controllers indicates where the industry is headed, says Brumm.

"Big data is the future for pig barns. Think back 10 years ago when precision farming was just starting on corn and soybeans. Now everyone is used to it," he says. **BP**

TALKING TRADE WITH INDUSTRY LEADERS

Pork industry leaders highlight the benefits NAFTA has brought to the Canadian, American and Mexican markets.

by GEOFF GEDDES

The advice "if it ain't broke, don't fix it" can save a lot of headaches. For the Canadian pork industry, this advice could ward off the financial headaches that an overhauled North American Free Trade Agreement (NAFTA) may entail.

The main goal of NAFTA – signed in 1994 by Canada, the United States and Mexico – was to promote economic growth by easing the movement of goods and services through the three countries. Seen from a Canadian perspective, the agreement has done exactly that and the pork industry hopes that crunching the numbers will give negotiators something to chew on.

Gary Stordy

"Canadian hog producers have benefited greatly from NAFTA," said Gary Stordy, public relations manager for the Canadian Pork Council.

Turning up the volume

"Since 2000, Canadian pork and pork product exports have increased by 387 per cent in volume, while the value has grown from $700 million to over $4 billion. The U.S. is Canada's largest export market, importing

Alberta Pork Producers Development Corporation photo

408,000 tonnes (449,743 tons) of pork valued at $1.4 billion in 2016," Stordy explained.

"Mexico is Canada's fourth-largest market. Last year, Canadian pork exports to Mexico totalled 314,000 tonnes (346,126 tons) of pork valued at over $587 million."

Like any good trade deal, this agreement is not a one-way street. It also benefits the other trade partners.

"NAFTA has been a tremendous boon for the U.S. pork industry," said Dave Warner, director of communications at the National Pork Producers Council in Washington, D.C.

"Our exports have gone up significantly since NAFTA was implemented to the point that Canada is now our number four pork market and Mexico is number two. Last year, we sent about US$799 million (worth) of pork to Canada and US$1.36 billion to Mexico."

Dave Warner

Spare them the change

As positive as many in the pork industry are about the agreement, they are equally negative about "fixing" what they see as a

well-oiled machine.

Darcy Fitzgerald, executive director of Alberta Pork, for example, thinks any changes that hinder trade would be detrimental to the swine industries across North America.


Darcy Fitzgerald

"We have already seen how restrictions can impede trade when we dealt with the COOL (country of origin labelling) issue," said Fitzgerald.

A cool reception for restrictions

"Under COOL, producers in Canada and the U.S., as well as in the food industry, were restricted in their activity, so those sorts of impediments are not something we should revisit," Fitzgerald explained.

Unsurprisingly, many producers share that sentiment.

"We have good friends in the U.S. that see the value of NAFTA," said Rick Bergmann, a pork producer in Steinbach, Man.

"Given that so many jobs on both sides of the border depend on NAFTA, it's important to keep (the trade agreement) alive. If there are adjustments, the deal must remain workable for farms here and south of the border. We have a win-win right now, so let's not mess it up."

Do you want the bad news?

And what would a "messed up" NAFTA look like? There are differing viewpoints but they share a common theme: the revised agreement wouldn't be pretty.

"The worst-case scenario would be the imposition of tariffs on the pork industry," said Stordy. "Since agricultural products generally have a shelf life and must be moved within a certain period, they are usually one of the first tariff targets."

South of the border, the National Pork Producers Council has looked at some numbers about their own worst-case outcome and don't like what they see.

"We heard rhetoric during the presidential campaign about withdrawing from NAFTA altogether," said Warner.

"According to Dermot Hayes, an economist at Iowa State University, pulling out of the deal would eventually cost us the Mexican market. That means a 5 per cent loss in U.S. pork production and a 10 per cent reduction in the U.S. live hog market. Based on US$14 per hog and slaughter numbers from last year, we're looking at a US$1.7 billion cumulative impact on the U.S. pork industry."

Or do you want the good news?

If the optimal approach to uncertainty is prepare for the worst, hope for the best, then what are the hopes of Canadian pork industry leaders?

MayaCom/iStock/Getty Images Plus photo

Overall, Darcy Fitzgerald believes that we have a very efficient system for moving live pigs and boxed pork over both borders.

"A modernized NAFTA must continue to strengthen opportunities for communication and co-operation among North American regulatory authorities," said Stordy.

"In any altered agreement, we need to preserve NAFTA benefits, maintain the dispute settlement mechanism and retain COOL retaliation rights.

"The renegotiation is also a chance to strengthen food (and feed) safety, and smooth the flow of pork between Canada and the U.S. by reducing regulatory barriers."

Eliminating non-tariff barriers, like sanitary and phytosanitary regulations, is another oft-cited goal for the Canadian pork industry.

The art of the deal

Of course, getting what you want is the point of negotiation and experts agree that Canada's approach to the talks will be critical.

"All three countries should look at the little things costing us time and trouble at the border," said Fitzgerald.

"Do we have to reinspect everything? How can we speed up the paperwork? How can the USDA (United States Department of Agriculture) and the CFIA (Canadian Food Inspection Agency) have a better connection?"

Ontario Pork photo

"The North American livestock and meat industry should be considered as an integrated entity," said Ron Davidson.

Overall, Fitzgerald believes that we have a very efficient system for moving live pigs and boxed pork over both borders and that negotiations should focus more on tinkering than transforming.

Help us help you

Ron Davidson, senior vice-president, international trade and public affairs for the Canadian Meat Council, feels participants in the trade negotiations would be wise to keep the big picture in mind.

Ron Davidson

"The North American livestock and meat industry should be considered as an integrated entity," said Davidson.

"Within that entity, live animals and meat products flow freely between countries according to evolving regional supply and demand circumstances."

The primary competitors for livestock producers and meat packers are not their counterparts within the NAFTA region, Davidson stressed. Instead, this competition comes from other production and exporting regions of the world, including Europe, South America, Australia and New Zealand.

"In this context, the NAFTA negotiations should be premised upon the implementation of measures that would improve the long-term competitiveness of the export-dependent North American livestock and meat sectors, including pork, vis-a-vis counterparts elsewhere in the world."

AlexLMX/iStock/Getty Images Plus photo

Learning a trade

Part of that big-picture thinking is putting trade agreements in context.

"It's concerning that the U.S. administration withdrew from the TPP (Trans-Pacific Partnership), as that (trade agreement) was going to be a tremendous deal for our pork industry," said Warner.

"You heard rhetoric during the (presidential) campaign about trade deficits and jobs moving overseas, but it's important to distinguish between trade and free trade."

As Warner sees it, the pork industry is the poster child for that distinction.

"The U.S. pork industry exports more pork to the 20 countries with which we have free trade agreements than we do to all the other countries combined," he explained.

Often, getting what you want also means doing something that goes against the Canadian stereotypes: asserting yourself.

"We have to go in (to the trade negotiations) and tell it like it is, reminding people that if it's not broken, don't try to fix it," said Bergmann.

"We need to be vocal on successful elements of trade like NAFTA and shout out its virtues loud and clear to our counterparts. Last year, Canada was the number one export market for American agricultural products, so the U.S. needs to tread lightly here."

Like many things in the United States these days, the outcome of the NAFTA renegotiation is anyone's guess.

"The U.S. government is unpredictable," said Stordy. "In all three countries, there is no shortage of stakeholder comments and playing to the local crowd of supporters.

"We just need to get to the table, have thorough and thoughtful discussions, and be willing to take a pause before things boil over."

Fitzgerald is optimistic.

"Almost 25 years have passed quickly since the original deal was signed. Everyone was nervous when (NAFTA) first came into force as it changed the way we did things; yet it has been positive for all three countries."

If negotiation is done in good faith and with strong business sense, Fitzgerald believes NAFTA will benefit even more people in the future.

And given the choice between tinkering and tariffs, Canadian negotiators would say the choice is clear – or so they hope. **BP**

by
NICHOLAS
VAN ALLEN

GROWING A BRAND IN NOVA SCOTIA

Meadowbrook Meat Market has made a name for itself locally and sees a bright future for the pork industry.

Have you ever tried a Jimmie Dog? What about a Jimmie Lamb Ham? At Meadowbrook Farms, located in Berwick, Kings County, N.S., you can find both – and much more.

Not too long ago, Nova Scotia abounded with pork producers. But they were hit hard during the Great Recession, even the larger ones. Now, there are just a handful left who farm commercially.

Today, the local industry is rebounding and demand for locally produced pork exceeds processing capabilities. Meadowbrook Farms is one of the producers on the forefront of this growth and it is helping to move the industry forward.

Meadowbrook is not only a farrow-to-finish operation, it is also a pork processing site, it features a meat market and it even offers a catering service.

Meadowbrook is owned and operated by Margie Lamb, whose husband Jim Lamb (for whom the Jimmie Dog, a type of hot dog, and Jimmie Lamb Ham, the farm's signature ham, were named) was the founder and operator of the business until his passing in 2016.

Margie was a teacher before she retired from that profession and went to work full time for Meadowbrook – three days before her last day of teaching.

Having grown up cultivating strawberries and potatoes, as well as raising a couple pigs, on a small farm with a father who worked off-farm as a cooper, Margie was no stranger to the jack- (or jill-) of-all-trades needs of farm life.

Now, Margie is the chairperson of Pork Nova Scotia, in addition to her role overseeing the farm, retail operation and catering business. And her farm's products can be found all over the province. People seek the brand out as a source of locally produced, Nova Scotia pork.

Meadowbrook, though, is more than just a farm. It's a community.

Working with Margie Lamb are people like Emily Auclair – a computer science student from Dalhousie University who was at Meadowbrook for the summer, Mike Trombley, Stu MacMillan,

Margie Lamb shows off the famous "Jimmie Dog."

Linda Gillespie, Jennifer Killam and others. Bill and Leola Canavan are at the front at the Alderney Landing market location, where they share space with the staff at Casaroma Wellness Centre.

When *Better Farming* arrived at Meadowbrook, we were immediately greeted with a fresh cup of tea (notably with hogs on the mug) and homemade rhubarb muffins – in classic, maritime fashion.

Margie Lamb and assistant Mike Trombley stand together inside the Meadowbrook Meat Market, ready to welcome customers.

How did Meadowbrook get started?

"Jim started this farm in the 1970s … raising some cattle," Margie says. At the time, he grew purchased, weaned piglets to market size which went to Larsen's, Armstrong's, Bowlby's and other meat packers.

Jim "always worked off-farm," selling seed for Pioneer for 40 years. He "planted it and lived it," she says. The farrow-to-finish operation expanded later and, by the late-1980s, Jim "decided he'd like to try selling a side of pork on a Saturday. That's how we got into marketing."

How has your farm achieved success?

"Jim set a goal that he wanted to be able to sell 50 animals a week through his own market … (and), from '88 on, the business just kind of incrementally grew. We grew as a group. More people came, just by word of mouth. It was all word of mouth."

Soon, "we were outgrowing the market … we decided to build."

What is the size of Meadowbrook Farms today?

Meadowbrook has 59 acres itself, rents 200 acres for crops, and has 150 animals farrow-to-finish.

What is Meadowbrook's Internet access like?

"It's not dial-up … I have Netflix!"

How much time do you spend on a cellphone?

"It's hard to say. I've lost two phones in the past twelve months but … about an hour a day."

How many people are on staff at Meadowbrook?

Ten years ago, "we had five staff. Today we have nearly 30 (people)."

They work in the office, packing, processing, sanitation, in the barns, and running the catering business. Some are part time. All in, "we write 28 to 30 pay cheques."

How is Meadowbrook involved in the community?

Jim was a Rotarian and involved in other community projects, such as building a new arena in Berwick.

Today, Meadowbrook offers donations of its products to community groups whenever it can and the staff take part in other special events.

Meadowbrook Farms was at the Rotary duck race this spring, for example, and Margie was a team captain for the Canadian Cancer Society's Relay for Life and has worked with 4-H.

And "Nova Scotians work together," as Margie says. When Maple Leaf closed the Larsen location in Berwick in April 2011, causing a loss of nearly 300 jobs, Meadowbrook hired on several of the highly skilled workers. Today, they are each a part of the Meadowbrook family.

Where does Meadowbrook sell its products?

Meadowbrook does a lot of wholesale with customers in Antigonish, along the South Shore, Halifax, Dartmouth and in other markets. In Dartmouth, the staff sell out of the Alderney Landing market and, in Halifax, the company's products are in retailers like Pete's Fine Foods.

The catering business and the staff's community work help to spread the word about the brand to new consumers who buy from these locations or come to the Meadowbrook Meat Market in Berwick.

Meadowbrook products are used in a number of restaurants, such as White Point Beach Resort, Wooden Monkey in Halifax, and Pasta Jax in Middleton.

Margie also values the opportunities the team has as members of Taste of Nova Scotia.

Margie Lamb, owner of Meadowbrook Farms and Meadowbrook Meat Market, and Emily Auclair, a Dalhousie University computer science student, stand together inside the facility at Meadowbrook Farms.

What sorts of products does Meadowbrook sell?

Meadowbrook sells traditional cuts of pork produced on its own farms. It also offers cured bacon, meatballs, hot dogs, sausages and other pork items.

You can even buy specialty

At the Meadowbrook Meat Market you can buy anything from pork, to juice, to salad and potatoes – all "as local" as you can get.

flavoured items, such as coffee-flavoured bacon (near Father's Day) and, from time-to-time, tandoori- or coconut Thai-flavoured bacon.

At the market in Berwick, customers can also fill their carts with anything from locally roasted coffees, to honey, rhubarb, juice and maple syrup. "We get as much local as we can find," Margie says. Meadowbrook is a retailer of not only pork products but other Atlantic Canada-produced food items as well.

How does Meadowbrook cultivate a brand?

Meadowbrook is now a brand name, having recently been trademarked, and Margie has done some radio advertising to "educate people about what we do." These efforts, in addition to word-of-mouth advertising, community work and tours, have added to the recognition of Meadowbrook locally.

Who buys your products?

"You know what … people are the most amazing. We have people from the South Shore, from Yarmouth, and we have a huge number of people who come from Halifax. They drive."

Those coming from Halifax, for example, travel over 100 km to get to Meadowbrook.

What do consumers want to know about your products?

They often ask, Margie says, "are your pigs happy?"

To that, she replies, "Yes. They are well fed, herdsmen are trained to handle the animals with care, (we have) open housing for gestating and growing animals … you can tell by the meat if a pig is stressed. Nice pink meat … (means) happy pig."

What is your plan for succession?

One day, Margie plans to sell the farm and the market. But, she clarified, it has to be "to the right person." Someone who will "understand the values (of Meadowbrook), stay true to the product (and) our customers, and be good to our staff."

When Margie Lamb is asked, "are your pigs happy?," she replies, "Yes. They are well fed, herdsmen are trained to handle the animals with care, (and we have) open housing for gestating and growing animals."

What is the future of Meadowbrook? Of Nova Scotia pork?

Meadowbrook is trying to expand into agritourism if possible, as well as increasing its production as part of a desire to re-grow Nova Scotia pork production.

Margie wants pork production in the province to find itself once again, through smart selling and marketing, and wants consumers to have the opportunity to recognize the "people behind their purchase."

There is demand for Nova Scotia pork, she says. If the province can get access to a federal abattoir, for example, they could ship to Newfoundland or internationally.

"We can start again," Margie says, we just need to "get some enthusiasm back into the industry." BP

by
S. ERNEST SANFORD

TAPEWORM: A ZOONOTIC PARASITIC INFECTION

Tracking the lifecycle of the tapeworm, as the infection passes from pigs to people.

songqiuju/iStock/Getty Images Plus photo

The pig tapeworm, Taenia solium, can be found worldwide and is the cause of cysticercosis in humans. The Taenia solium tapeworm is present primarily in countries where people consume raw or undercooked pork.

Cysticercosis is extremely rare in people in Canada and the United States. The few infections that do occur are usually in people who have travelled outside of Canada and the U.S.

Life cycle of Taenia solium

Pigs eat food contaminated with the tapeworm eggs from human feces. The eggs contain the tapeworm larva. The larva hatches in the pig's small intestine, then bores into the gut wall and migrates to different areas inside the pig, especially intramuscular locations.

The larva changes into a fluid-filled sac called a cysticercus. The cysticerci reach full size in 60 to 70 days and remain infective in the pig for up to two years. Humans get infected by cysticerci when they eat raw or undercooked pork, or when they consume incompletely cured pork or ham contaminated with cysticerci.

Once present in the human intestinal tract, cysticerci mature to adult tapeworms. The tapeworm attaches to the intestine by burying its head, which contains several hooks, to anchor itself in the intestinal wall. The tapeworm grows up to 6.5 to 23 ft. (2 to 7 m) in five to 12 weeks.

The tapeworm is made up of a chain of 700 to 1,000 segments, called proglottids. Each proglottid has both male and female reproductive organs, making the tapeworm a hermaphrodite. Each proglottid towards the end of the chain contains up to 40,000 eggs.

The egg-filled proglottids break off from the chain and are passed in the feces. The eggs are freed when the proglottid breaks down in the soil, allowing the cycle to restart.

A pork tapeworm can live for over 20 years, producing several thousand eggs daily. The pig is the intermediate host of the adult tapeworm in humans, who are the definitive and final host of the tapeworm. Cysticerci can also infect other animals, such as black bears and dogs.

Signs and symptoms

While adult tapeworms in humans rarely cause clinical signs, symptoms may include abdominal pain, diarrhea or constipation. Cysticerci may be found in all areas of the body.

The most serious consequences result when larvae develop in the brain, causing a clinical condition called neurocysticercosis, which is a major cause of epilepsy.

Pigs usually show no clinical signs of infection. Typically, meat inspectors find cysticerci in pork after the pig is slaughtered. Cysticerci are generally found in the muscles of swine heart, tongue, legs, thigh and neck, but can also be found in other parts of the body.

Prevention

Food, water and soil can become contaminated with tapeworm eggs from human feces. People can prevent exposure to Taenia solium by:

- Cooking pork thoroughly.
- Washing hands frequently during food preparation.
- Preventing cross-contamination during food processing.
- Properly disposing of human waste, thus preventing contamination of food and drinking water.

Summary

The pig tapeworm, Taenia solium, causes cysticercosis in humans.

Pigs become infected by consuming food or water contaminated with tapeworm eggs in human feces.

The eggs contain the tapeworm larva, which hatches in the pig's small intestine. The larva bores into the gut wall and migrates to different areas in the pig, especially into muscles. The larva then becomes a fluid-filled sac called a cysticercus.

Humans become infected with cysticerci when they eat raw or undercooked pork, or consume incompletely cured pork or ham contaminated with the larvae.

Cysticerci mature to adult tapeworms in the human intestinal tract. The tapeworm embeds itself into the intestinal wall anchored by hooks in its head.

Cysticercosis does not occur naturally in people in Canada and the United States.

The few cases in these countries usually occur in people who have travelled outside of Canada and the U.S.

Cysticerci in pigs are made up of a chain of 700 to 1,000 segments called proglottids. Each proglottid has both male and female reproductive organs, and can produce up to 40,000 eggs. Proglottids towards the end of the chain break off and disintegrate in the soil, releasing the eggs which can be consumed by pigs to restart the cycle.

Infection in humans seldom causes clinical signs. Possible symptoms include abdominal pain, diarrhea or constipation. Cysticerci that migrate into the brain produce a serious clinical condition called neurocysticercosis, which is a major cause of epilepsy worldwide.

People can prevent cysticercosis by cooking food thoroughly, washing their hands during food preparation, preventing cross-contamination during food processing, properly disposing of human waste and observing good hygiene practices. **BP**

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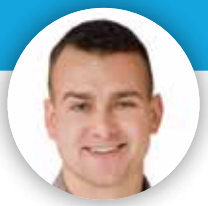

by
DR. HYATT FROBOSE

NUTRITION TIPS FOR GROUP-HOUSED SOWS

How to maximize value and avoid pitfalls when transitioning your operation to group housing.

JYGA Technologies photo

Regardless of the feed system chosen, managing gestating sows in pens poses new challenges for, and requires a rethink from, producers, nutritionists, veterinarians and farm employees at the slat level.

The transformation from individual gestation stalls to group housing is now underway throughout the Canadian swine industry.

Many producers may worry that it will be difficult to maintain the consistency and level of productivity currently expected of modern commercial sow farms. Regardless of the feed system chosen, managing gestating sows in pens poses new challenges for, and requires a rethink from, producers, nutritionists, veterinarians and farm employees at the slat level.

However, an optimist may argue that group housing may also force us to instill more stockmanship into our farm caretakers. At least we can take solace in the many international examples of producers who have shown that group-housed sows can perform at levels equivalent to sows managed exclusively in stalls.

As a nutritionist helping producers through this transition, I am fortunate to be able to offer not only a fresh perspective on feeding gestating sows effectively but also to provide a trained eye to help avoid the nutrition management pitfalls most likely to occur in group-housed sows.

First, let's consider the primary challenges that producers face when managing sows in pens. The major ones that come to mind are aggression between sows at initial mixing, food-directed aggression around the feeding and drinking areas, and challenges with lameness.

These challenge areas can be minimized by providing sufficient space, designing the pen layout and slat configuration appropriately, and properly managing the timing of

mixing events.

Proper sow nutrition also plays an important role. Historically, gestating sows have been limit-fed a single diet to prevent them from becoming over-conditioned and to minimize annual feed costs.

Nonetheless, a gestating sow's appetite often results in sows fighting over feed in competitive feeding systems, such as floor feeding and shoulder stanchions. Her appetite can also result in aggression around entryways into non-competitive feeding areas, such as ESF (electronic sow feeders) and free-access stalls.

Luckily, gestating sows are the stage of pig production where fibrous feedstuffs can be most efficiently utilized. Sows have a fully developed large intestine which can digest and absorb energy from soluble fiber sources.

So, producers have the opportunity to lower feed costs by incorporating grain by-products, such as soybean hulls, wheat middlings and DDGS (distiller's dried grains with solubles). These alternative ingredients have a lower bulk density, which means sows must consume a greater volume of feed to match the calorie content of a traditional corn-soy diet.

From a group-housing standpoint, this increased bulk provides the added benefit of increasing the satiety of sows, resulting in sows spending a greater amount of time lying down and digesting, rather than competing with other sows for additional feed. Finally, a higher fiber gestation diet has also been shown to help increase feed intake as sows transition into farrowing.

While these ingredients can be useful tools, it's also important to remember that they are variable in quality and nutrient content, and producers and nutritionists must actively monitor these grain by-products to avoid unintended negative effects.

Depending on the pen design, producers and nutritionists must also consider the environmental effects of housing on a gestating sow's nutrient requirements. For example, sows housed in large pens with ESF stations must travel farther to and from the feeding area, thereby having higher activity levels and expending additional calories compared to sows immobilized in gestation stalls.

But group-housed sows also tend to lay together and thereby reduce their maintenance requirements for generating body heat compared to stalled sows. Consequently, researchers are trying to determine if producers can reduce dietary energy levels or barn heating costs by lowering the ambient temperature of group-housed sow areas.

Sows' feet and leg health also have to be considered in order to achieve optimal herd performance in group-housed sows. I often find these health considerations to be the biggest challenges during the initial transition. While adequate skeletal conformation is an initial prerequisite for entry into the breeding herd, lameness and mortality caused by aggression, flooring type, and/or inadequate nutrition (diet formulation or off-feed events) are often the biggest detractors in a group-housing system.

Gestation diets may need to be reformulated to increase

JYGA Technologies photo

Develop a feed drop calibration routine in pens (and in breeding stalls) at least once per month and stick to it!

micromineral concentrations, such as zinc and selenium, as well as vitamins, like biotin and choline, to provide a protective buffer for hoof and joint health. I recommend you consult your herd nutritionist to ask what supplements are available and the associated economics of their inclusion in your feed program.

Fortunately, one of the most common mistakes made in pen gestation barns is also the easiest task to remedy. I mentioned bulk density earlier and this element plays a significant role in maintaining proper sow body condition.

In most gestation feed systems, the box drops (free-access stalls, floor feeding and stanchions) or ESFs and free-access ESFs are calibrated on a volumetric basis. Too often, producers and nutritionists make diet changes without informing barn staff of the change, or particle size varies markedly from load to load and feed drops are not re-calibrated frequently enough to ensure sows continue to receive the allocated amount of feed.

On a recent farm visit, a change in feed ingredients led to a 35 per cent reduction in bulk density, which meant that sows intended to receive 2 kg (4.4 lbs) of feed per day had only been receiving 1.3 kg (2.9 lbs) per day, which explained the poor body condition seen in a high percentage of the pigs. Develop a feed drop calibration routine in pens (and in breeding stalls) at least once per month and stick to it!

On the brighter side, feeding sows in pens also creates some new opportunities to deliver precise nutrient levels to individual sows that were not available in previous gestation stall configurations. In most stall barns, a single feed line is used to deliver feed to all females, regardless of parity, and only the amount of feed provided can be altered.

However, it is well documented that gilts and young sows have the highest nutrient requirements, as they are still growing themselves. Older sows, in contrast, only need the minimum requirements for maintenance and pregnancy development.

Since sows in pens typically have lower aggression and lameness issues when segregated by parity, the transition to group-housing offers an opportunity to feed a dedicated diet to gilts and young sows, and a separate, lower-cost diet to older sows. This targeted feeding can be done with dedicated feed lines to specific pens, or by utilizing two feed lines and blending different ratios of diets using electronic feed systems according to sow parity and body condition.

This recently developed feed blending technology also affords nutritionists opportunities to phase feed sows in gestation by altering dietary amino acid and energy content per stage of gestation. Researchers are endeavouring to determine the optimal and most cost-effective way to present feed to the gestating sow.

Furthermore, blending two diets also allows nutritionists to take a fresh look at opportunities for targeted inclusion of feed additives or medication during specific stages of pregnancy. This presentation may be more cost-effective than previous feeding methods, where the additive needed to be included throughout gestation or producers had to manually top-dress the ingredient during feeding times.

This article is by no means an exhaustive list of the nutritional challenges and opportunities that producers face when converting to group-housing. Based on my own experience, these elements seem to be the most likely things to be overlooked or mismanaged, which can result in serious economic and animal welfare consequences.

During this period of transition to group-housing, keep an open mind to new ideas and approaches to feeding your animals. Don't hesitate to reach out to nutritionists, and producers who have made the transition, with questions about the ideal way to manage your group-housed sows. **BP**

Dr. Hyatt Frobose is the swine nutrition specialist with JYGA Technologies. He completed his Ph.D. in swine management and nutrition at Kansas State University.

Ontario

Pork News & Views

ONTARIO PORK

Prepared and Edited by the OMAFRA Swine Advisory Team

October 2017

New Swine Education Centre in Ridgetown

The University of Guelph Ridgetown Campus opened a new Swine Education Centre on July 18. The facility is approximately 6,600 sq. ft. (613 sq. m) and includes state-of-the-art technology for teaching, demonstration and training. The facility was funded mostly by the Ontario Ministry of Agriculture, Food and Rural Affairs (Agricultural Research Institute of Ontario) and Ontario Pork.

Operational costs of the facility, with respect to education, will be covered by the Agriculture Diploma program. Costs associated with any extra demonstration projects will be covered on a cost-recovery basis with the involved industry partners.

This facility is important to Ridgetown Campus as it provides a facility for students to gain experience in management and hands-on techniques relevant to modern hog production. Besides that, the centre is also important to the swine industry, as it provides a location for the demonstration of new technology and techniques to producers and other industry partners.

As costs at a university institution are generally higher than on a commercial farm, hogs will be kept only during the times they are required for teaching or projects. To this end, 10 bred sows will be brought in during the late summer to farrow during the fall semester. Students will get the opportunity to learn management and hands-on skills with the sows and their litters through farrowing, processing, weaning, re-breeding and confirmation of pregnancy. After that, sows will be shipped and the hogs will be finished to market. Students will be involved in applied projects to test/demonstrate the impact of various treatments on sows, piglets or market hogs.

If other hogs are needed for specific demonstration projects during times when hogs are not required for student education, hogs can be brought in. An additional benefit to bringing new sows in at the beginning of the fall semester is that it will be easier to get the timing of events synchronized with the respective classes.

Agriculture students will gain learning opportunities in a number of courses, including Livestock Systems, Pork Production and Animal Health, and Veterinary Technology students in Medical Exercises. Students will have the opportunity to learn management and husbandry skills in pork production using state-of-the-art equipment and techniques. It is estimated that the facility will serve over 600 student-hours each year. Besides students entering the barn, there are two biosecure areas with window viewing into each room housing pigs so that students, producers or industry partners can view equipment or techniques. The plan is to maximize the use of the barn for education and demonstration projects for students and industry stakeholders. Any individual or group wishing to visit the facility, or any industry partner wishing to participate in projects in the facility, should contact Dr. Paul Luimes at Ridgetown Campus.

Paul Luimes, U of G Ridgetown Campus
(519) 674-1500 x63550
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Gestation room

Farrowing room

Finishing room with FIRE feeders

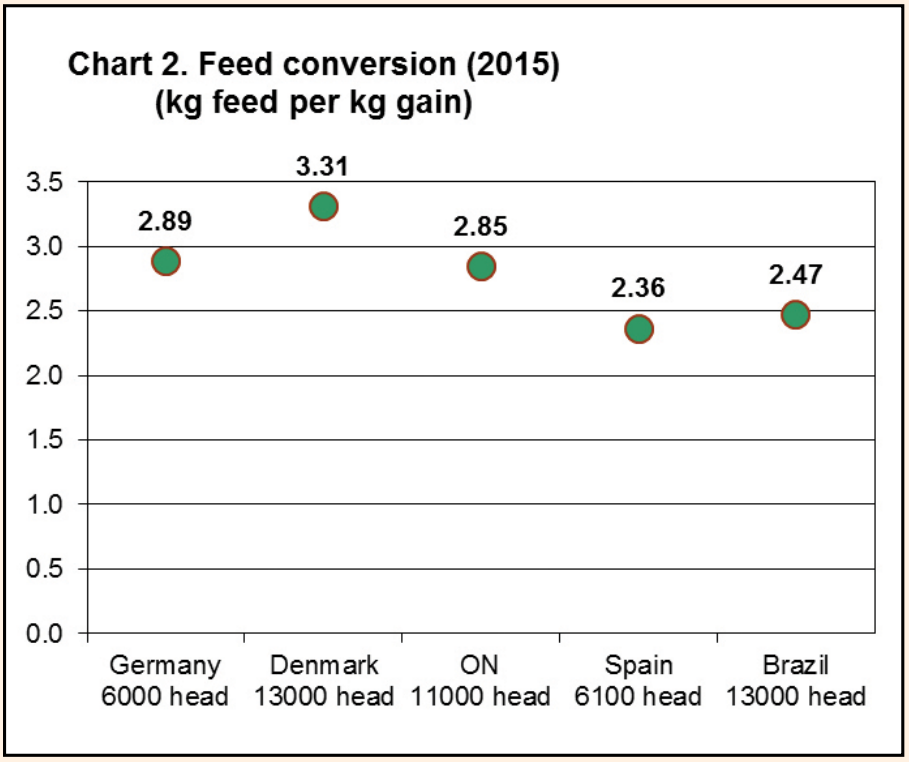
International Comparisons for Swine Production

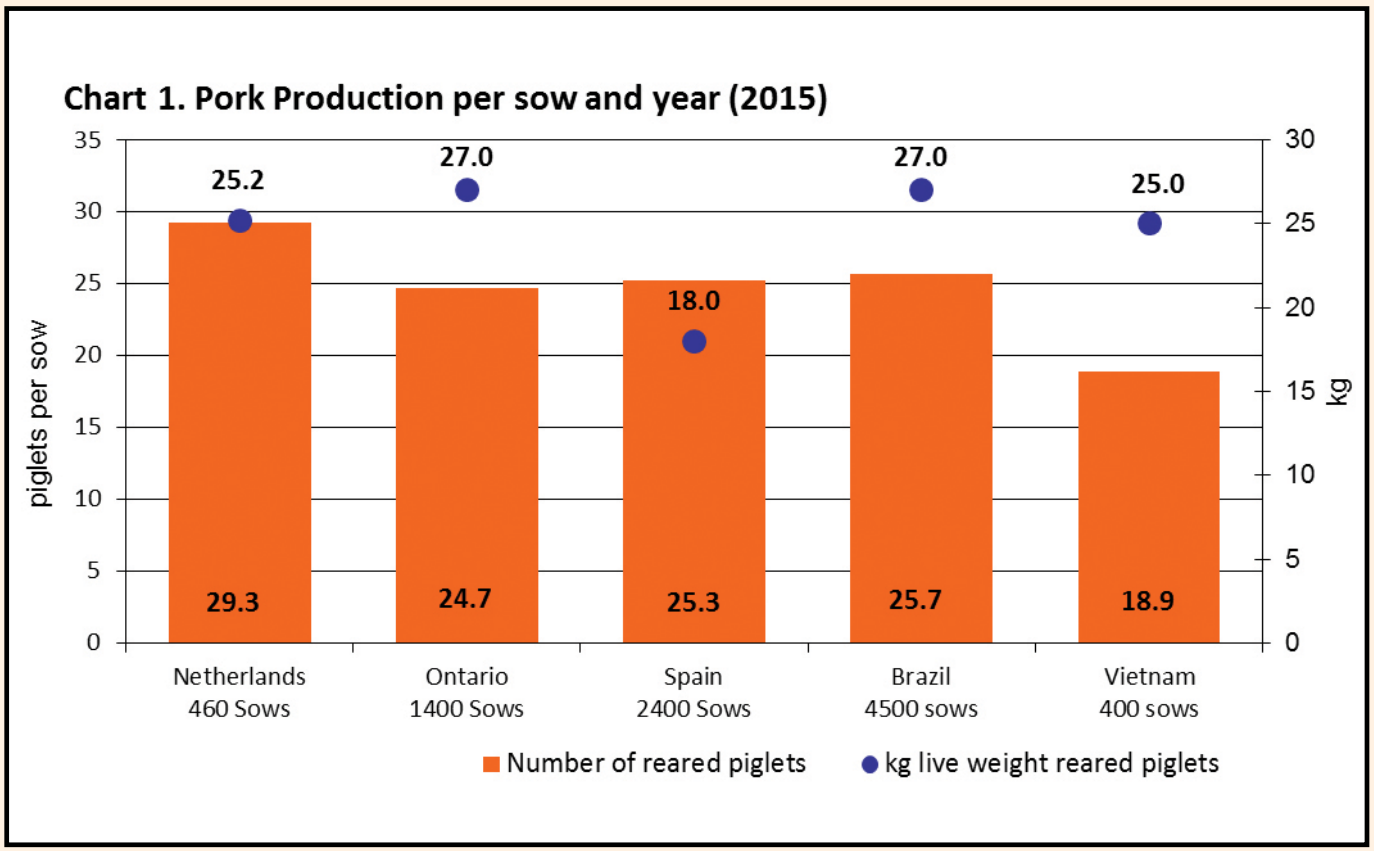
The success of Ontario's swine sector is dependent on global trade. Exports of pork represent a significant portion of total production in this sector. Given the economic significance of exports, it is important to understand the sector's competitiveness relative to different regions of the world.

agri benchmark[1] is a global, non-profit network of agricultural economists, advisers, producers and specialists in agricultural value chains. The network uses a consistent methodology to compare production systems and their economics worldwide. Ontario joined the swine network in 2015 with two farms: farrow to feeder and finishing operations.

Participating countries gain access to all countries' data in the network. Having access to this global data on productivity and financial performance allows for many comparisons of Ontario's swine sector with our international counterparts.

There are 14 countries represented in the network. Participant countries follow a standard data collection procedure to create typical farms that reflect representative farms by production system. The Ontario





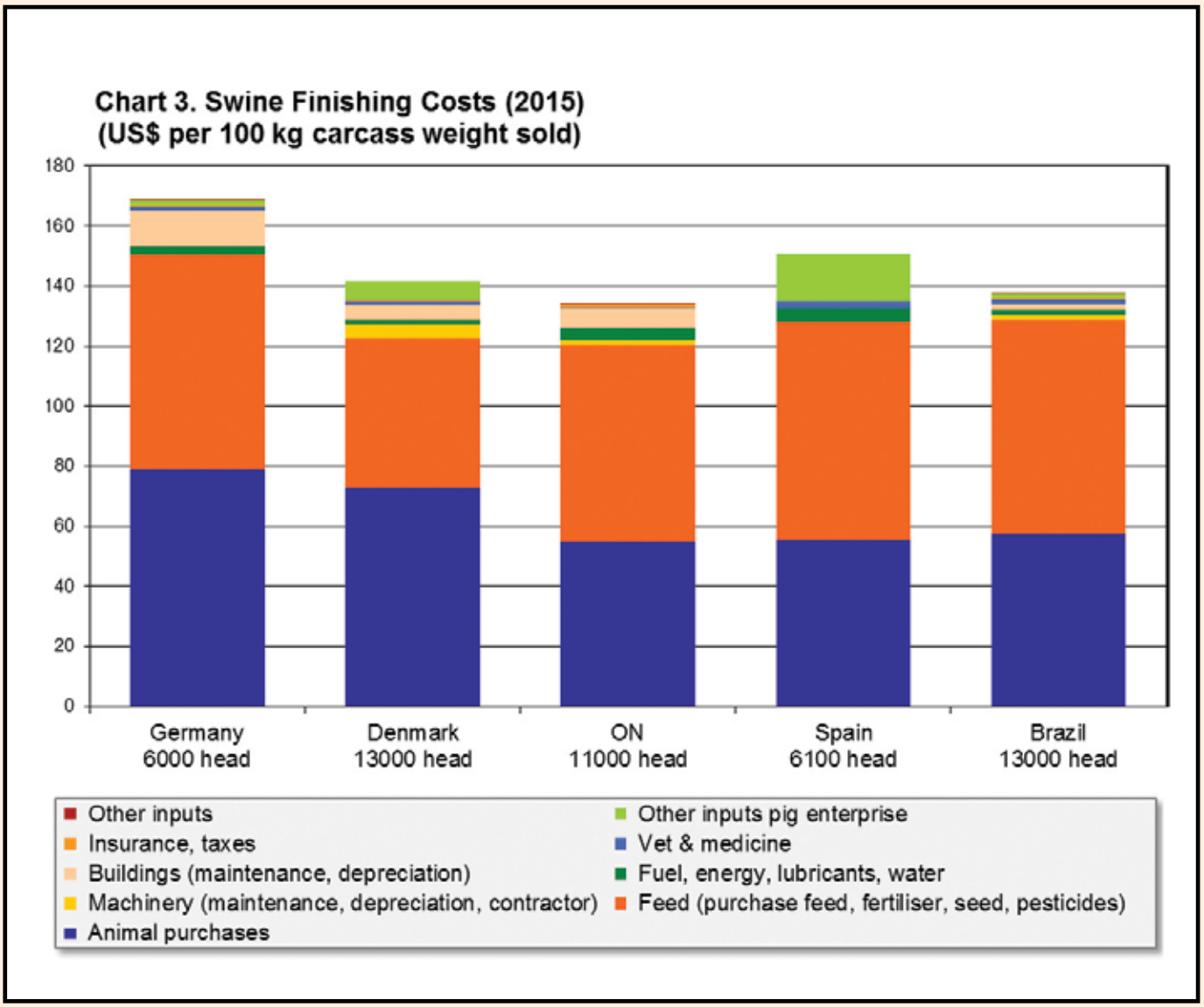
swine farm data is based on the OMAFRA Swine Enterprise Budgets (www.omafra.gov.on.ca/english/livestock/swine/finmark.html).

Chart 1 on page 30 shows comparisons of Ontario's sow productivity alongside four other pork-producing nations. The size of the sow herd is listed below the country name. The blue dot represents the feeder finishing weight and the orange bar represent the number of reared piglets/sow/year. Compared to the four other countries, Ontario had one of the highest live weight/reared piglets at 27 kg. The Ontario, Spain and Brazil farms had similar numbers of reared piglets/sow/year, behind the Netherlands at 29.3. Vietnam had very low productivity at 18.9 reared piglets, which resulted in very high per piglet costs of production.

The agri benchmark data also allows you to consider these types of large differences from the perspective of "If these low productivity or high cost countries were able to improve with better management and genetics, what will their competitiveness look like compared to others?" These countries may not be competitive now but, with improvements, they could be more of a factor in global trade.

The selected swine finishing farms were comprised of five typical farms from Germany, Denmark, Canada, Spain and Brazil. The size of the operations represented by the number of head finished/year for each farm is listed below the country name. Since feed costs are a significant factor in the swine finishing cost of production, feed efficiency is a key factor in profitability.

Chart 2 on page 30 shows the feed conversion results for the five selected finishing farms. The range was 2.5 to 3.3 kg feed/kg of gain. The Ontario farm landed in the middle of the results at 2.85. Spain had lighter starting and ending weights, which contributed to the better conversion



rates. Although Demark had lighter finishing weights, its farm had the highest conversion rates.

Cost competitiveness is an important factor for exporting commodities. Chart 3 compares the 2015 costs/100 kg carcass weight sold of the finishing enterprise for the five selected countries. Animal purchases and feed costs are the largest costs for all countries, representing between 85 and 93 per cent of total costs. The Ontario farm's animal purchases were the lowest of the group and their feed costs are in line with the others, with Denmark having the feed cost advantage over the others. The Danish feed cost advantage was despite its relatively high feed conversion rates seen in Chart 2. The Danish farm did have heavier starting weights in the finishing enterprise and a lighter finishing weight, which contributed to some of the difference. Overall, the Ontario farm had a competitive cost structure compared to these other nations.

2015 was the first year Ontario participated in the swine agri benchmark network. The results presented here are a few examples of the type of analysis and comparison that can be done with the data. The strength of the comparisons will continue to grow, as more years are added to allow for more year-over-year trend analysis. Understanding the productivity and cost differences can help us gain valuable insights into Ontario's competitiveness and identify opportunities for improvement.

[1]More information on agri benchmark and summary reports are available at www.agribenchmark.org.

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Health & Safety Board Requirements

In an effort to protect workers' rights and their health and safety in the workplace, the Ontario Government requires workplaces to post certain documents. The following article outlines these requirements. For detailed links to each requirement, please visit http://bit.ly/2wuRyks.

1. Health and Safety Policy:
   The Occupational Health and Safety Act (OHSA) requires employers to prepare and review, at least once a year, a written Occupational Health and Safety Policy, and to develop and maintain a program to implement that policy. The policy must be posted in the workplace.

2. Workplace Violence & Harassment Policy:
   The OHSA requires employers to prepare and review, at least once a year, a written Workplace Violence & Harassment policy, and to develop and maintain a program to implement that policy. The policy must be posted in the workplace, except for workplaces with five or fewer regularly employed workers, unless ordered by an inspector.

3. A Copy of the Occupational Health & Safety Act and Farming Regulations:
   The main purpose of the Act is to protect workers from health and safety hazards on the job. It sets out duties for all workplace parties, rights for workers, procedures for dealing with workplace hazards and provides for the enforcement of the law when compliance is not achieved. There are particular regulations that apply to farms.

4. Employment Standards in Ontario:
   Under the Employment Standards Act, 2000 (ESA), employers are required to display the most recent version of the Ministry of Labour's Poster, "Employment Standards in Ontario," in at least one highly visible location in the workplace. Employers are required to provide each employee with a copy of the poster. There are some special rules and exemptions for farm employees.

5. Health & Safety at Work – Prevention Starts Here Poster:
   Under the Occupational Health and Safety Act (OHSA), all provincially regulated workplaces must display this poster. It outlines the rights and responsibilities of workers, supervisors and employers on the job and provides a Ministry of Labour telephone number (1-877-202-0008) to report critical injuries, fatalities and work refusals, and to obtain information about workplace health and safety information.

6. WSIB- First Aid Regulations:
   All employers covered by the Workplace Safety & Insurance Act are required to have first aid equipment, facilities and trained workers in all workplaces. The First Aid Requirements (Regulation 1101) states what each employer is required to provide. In summary, the expense of first aid equipment and services is the responsibility of the employer. First aid equipment must be inspected at least quarterly. First aid stations must be easily accessible. Employers must post the first aid poster, first aid certificates, and kit inspection card. Employers must keep detailed records of all incidents and first aid treatment given. The "In Case of Injury" Poster is

provided free of charge to employers directly by the WSIB. Employers can get the poster online or by calling the WSIB at 416-344-1000 or 1-800-387-0750.

7. Other Human Resources Posting Requirements:

a. A copy of the First Aid Certificate of those trained or a list of the names of the valid First Aiders.
b. Name of the Health & Safety Representative or names of the individuals on the Joint Health & Safety Committee.
c. Location of the Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) binder.
d. Emergency numbers. (They should be posted near the phone as opposed to the Health & Safety Board.)

From information compiled by staff at Ontario Pork and OPIC.

2016 Census of Agriculture Highlights for Ontario and Canada – Pigs

Ontario

- Ontario had the second-largest number of pigs in the country, increasing from 3.1 million in 2011 to 3.5 million in 2016, while the number of farms reporting hogs rose from 2,556 to 2,760.
- The growth was due to better market conditions, which boosted the price of pigs relative to the period preceding the 2011 Census.
- Prior to the 2011 Census of Agriculture, the pig sector was beset by high feed costs, disease and low pig prices, resulting in significantly fewer farms and a smaller pig herd.

Canada

- Pig numbers grew from 12.7 million in 2011 to 14.1 million in 2016, while the number of farms reporting pigs increased from 7,371 to 8,402.
- The growth is due to improvements in market conditions, which boosted the price of pigs relative to the period before the last census. Prior to the 2011 Census of Agriculture, the pig sector had been beset by high feed costs, disease and low pig prices, resulting in a large number of producer exits and a fall in pig numbers.

Did you know? Unvented Heater Compliance Deadline has been Extended

The deadline for compliance has been extended for existing propane or natural gas fired unvented heaters installed in livestock and poultry housing prior to Oct. 1, 2014.

Technical Standards & Safety Authority (TSSA) issued a Code Adoption Document Amendment to the Gaseous Fuels Regulation on April 10, 2017.

In general, the requirements mandate that unvented heaters are interlocked with the ventilation system. Alternatively, if not interlocked, appropriate ventilation must be confirmed by calculations and prominently displayed in the entrance area to each building housing livestock or poultry. The Code Adoption Document Amendment included an extended, phased compliance deadline based on the total building area housing livestock on an individual premise:

- Larger facilities, over 25,000 sq. ft. (2,323 sq. m), must be in compliance by July 1, 2019.
- Smaller facilities, up to and including 25,000 square feet, must be in compliance by July 1, 2021.

For unvented heaters that are not interlocked with the ventilation system, producers must retain a Professional Engineers Ontario (PEO) license holder to verify the following by calculation:

- Minimum ventilation rate (mechanical or natural ventilation systems) when the heaters are operating is not less than 300 cfm per 100,000 BTUh of heater input; and
- Maximum heater input does not exceed 20 BTUh per cubic foot of space in which the heater is located.

Additional information and resources, including a list of PEO

Ontario Farm Data, Census of Agriculture

	1996	2001	2006	2011	2016
Number of sows and boars	312,083	369,360	427,234	285,801	318,810
Number of all other pigs	2,518,999	3,087,986	3,523,358	2,802,845	3,215,294
Total number of pigs	**2,831,082**	**3,457,346**	**3,950,592**	**3,088,646**	**3,534,104**

Source: Statistics Canada – 2016 Census of Agriculture and the OMAFRA Statistics Unit

license holders, can be found on the Ontario Pork website at www.ontariopork.on.ca/Resources/Producers.

Contact a PEO license holder promptly, as many on this list are already booking into 2018. Failure to comply by the deadline may result in suspension of fuel delivery, fines and/or imprisonment.

The Gaseous Fuels Code Adoption Document Amendment, FS-225-17, is available on the TSSA website at www.tssa.org.

The following is a review of one of our longest running events, the Southwestern Ontario Pork Conference, from the March-April 1976 edition of PNV:

Another Successful Pork Producers' Conference at Ridgetown

Approximately 300 attended the 14th Southwestern Ontario Pork Producers' Conference at Ridgetown College.

Keynote speaker for the Conference was Rex Whitmore, a pork producer from Wisconsin. His presentation was entitled "Present and Future Problems and Opportunities in the Swine Business." He indicated, for the pork producer who has the know-how, the help, the financing, some imagination and most of all management ability, the outlook is unlimited. Often, when we make changes, we go too far. In our race for meatiness in hogs, we lost track of mothering ability, ease of farrowing, disposition and soundness in our sow herds. He indicated the American Pork Congress had brought together all parts of their pork industry for a better understanding of each other's problems. He suggested that producers must set aside a portion of the total price of each market hog to promote their products and help find answers to their problems.

In conclusion, Rex indicated the future was extremely bright; our producers must adjust to "playing in a larger ball park."

The five workshops were well attended. Researchers, agribusiness representatives and pork producers exchanged ideas for improving the pork industry.

The Ham, Loin, and Bacon Auction proved to be a financial success. The Grand Champion carcass was consigned by William Kaczun, herdsman for Gerald Miller, Kerwood. The Grand Champion Ham was purchased by Oxford Farmers Co-op, Muirkirk, for $5/lb, the Loin by Shur Gain Feeds for $5/lb and the Bacon by Master Feeds for $7/lb.

The ladies program was again a great success. Dennis Keifer, Chatham, put on a pork cutting demonstration. Kay Spicer, O.P.P.M.B., demonstrated how versatile pork was as she prepared a number of pork dishes. Miss Nancy Thompson, Blenheim, was crowned S. W. Ontario Pork Queen at the final banquet.

Banquet speaker Rodney Fox, a young dairy farmer from Cayuga, encouraged farmers to be proud of their occupation. A clean shirt and trousers when you go to town will give you a lift and improve your image. It takes a great deal of skill to operate a farm successfully today. Be proud of the fact that you are a farmer.

Andy J. Bunn, Swine Specialist, London

OSHAB Big Bug Day October 24, 2017

Come hear about:
Manitoba PED update, provided by Dr. Karine Talbot, Hylife

New results regarding transboundary survival of foreign animal disease pathogens in contaminated feed ingredients, provided by Dr. Scott Dee

Antimicrobial Usage – from five years ago to today ... future changes coming

OPIC Benchmarking Results Overview

Update on diseases of interest and transmission risks

Registration Details
Oct. 24, 2017
The Arden Park Hotel, Stratford

Registration: 9:30 a.m.;
Program 10 a.m. to 4 p.m.
Hot lunch included,
no fee for registration.
Please pre-register with Donna at 519-272-1532 or e-mail dkaczmarczyk@southwestvets.ca.

Coming Events:

Big Bug Day Oct. 24, 2017

Royal Agricultural Winter Fair
Nov. 3 to 12, 2017

Saskatchewan Pork Seminar
Nov. 14 to15, 2017

Banff Pork Seminar
Jan. 9 to 11, 2018

Southwestern Ontario Pork Conference Feb. 21, 2018

London Swine Conference
March 27 and 28, 2018

Ministry of Agriculture,
Food and Rural Affairs

Ontario

2017 Ontario Monthly Hog Market Facts

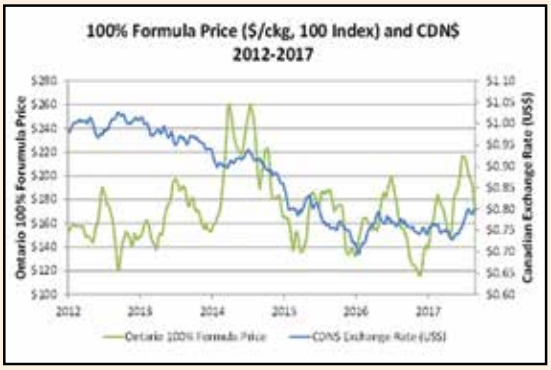
Compiled by Jaydee Smith, OMAFRA *jaydee.smith@ontario.ca*

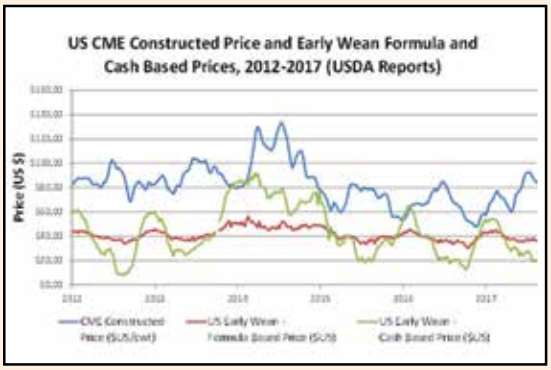
Month	1st 6 mo.	Jul '17	Aug '17
100% Formula Price ($/ckg, 100 index)	$170.99	$210.92	$191.96
*** Same Month - Previous year**	**$164.41**	**$189.66**	**$160.74**
Average price ($/ckg, DW total value)	$200.71	$244.64	$225.42
Low price ($/ckg, DW total value)	$178.95	$221.99	$206.90
High price ($/ckg, DW total value)	$231.21	$265.57	$247.09
Ontario Market Hog Sales	2,518,350	376,117	377,907
***% Change Same Weeks - Previous Year**	**1.33%**	**7.4%**	**3.6%**
Average Carcass Weight (kg)	102.31	101.00	101.17
Weaned Pigs ($/pig, 5 kg)**Formula	$44.46	$54.84	$49.91
Feeder Pigs ($/pig, 25 kg)**Formula	$70.61	$87.00	$79.19
Value of Canadian Dollar (US$)	$0.7496	$0.7866	$0.7928
*** Same Month - Previous year**	**$0.7516**	**$0.7665**	**$0.7701**
Prime Interest Rate at End of Month	2.70%	2.95%	2.95%
Corn (farm price) - $/tonne	$185.93	$184.65	$176.67
*** Same Month - Previous year**	**$187.94**	**$179.69**	**$177.90**
Soybean Meal (Hamilton + $20)-$/tonne	$497.45	$486.76	$463.38
*** Same Month - Previous year**	**$514.08**	**$586.37**	**$538.70**
Corn - Western Ontario Feed - $/tonne	$200.77	$200.47	$193.73
*** Same Month - Previous year**	$201.70	$193.90	$195.18
DDGS FOB Chatham/Sarnia/Alymer ($/tonne)	$163.53	$165.25	$150.50
*** Same Month - Previous year**	**$213.12**	**$228.30**	**$183.63**

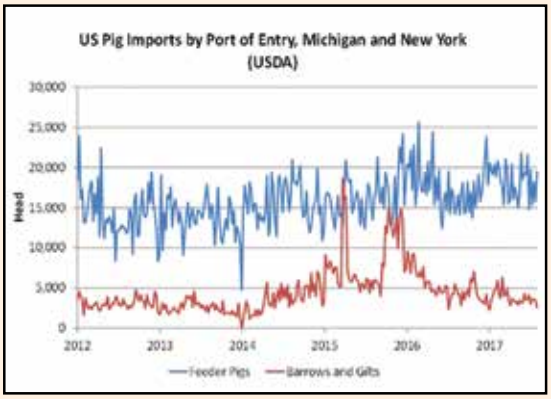
Summary of OMAFRA Swine Budget ($/pig, Farrow to Finish)

Value of Market Hog	$196.27	$238.68	$217.76
Feed Cost	$114.18	$112.34	$112.05
Other Variable Costs	$42.58	$44.56	$44.77
Fixed Costs	$23.76	$23.76	$23.76
Total Costs	$180.53	$180.66	$180.58
Net Return	$15.74	$58.02	$37.18

Charts created with assistance by Megan Kitts, Livestock Summer Assistant.







The OMAFRA Swine Team produces four hog market reports that can help keep your knowledge of Ontario hog market facts and trends up to date. For more information or to subscribe to receive the monthly OMAFRA Swine Budget, Weekly Hog Market Facts, Hog Market Price Trend, or Hog Margin Tracker$, send a request by email to OMAFRA.Livestock@ontario.ca.

Ontario

Swine Budget – August 2017

Compiled by Jaydee Smith, OMAFRA *jaydee.smith@ontario.ca*

Income ($/pig)	**Farrow to Wean**	**Nursery**	**Grow-Finish**	**Farrow to Finish**
Market Pig @ 101% of Base Price $191.96/ckg, 110 index, 101.17 kg plus $2 premium				$217.76
Variable Costs ($/pig)				
Breeding Herd Feed @ 1,100 kg/sow	$13.37			$14.67
Nursery Feed @ 33.5 kg/pig		$16.29		$17.17
Grower-Finisher Feed @ 277 kg/pig			$80.21	$80.21
Net Replacement Cost for Gilts	$3.13			$3.44
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	$1.18	$0.60	$2.13	$4.05
Labour	$6.27	$1.85	$4.00	$12.83
Operating Loan Interest	$0.24	$0.30	$0.97	$1.55
Total Variable Costs	**$32.41**	**$24.12**	**$95.85**	**$156.82**
Fixed Costs ($/pig)				
Depreciation	$3.92	$2.00	$7.09	$13.50
Interest	$2.20	$1.12	$3.97	$7.56
Taxes & Insurance	$0.78	$0.40	$1.42	$2.70
Total Fixed Costs	**$6.90**	**$3.52**	**$12.48**	**$23.76**
Summary of Costs ($/pig)				
Feed	$13.37	$16.29	$80.21	$112.05
Other Variable	$19.04	$7.83	$15.64	$44.77
Fixed	$6.90	$3.52	$12.48	$23.76
Total Variable & Fixed Costs	**$39.32**	**$27.64**	**$108.34**	**$180.58**

Summary	**Farrow to Wean**	**Feeder Pig**	**Wean to Finish**	**Farrow to Finish**
Total Cost ($/pig)	**$39.32**	**$68.56**	**$137.46**	**$180.58**
Net Return Farrow to Finish ($/pig)				**$37.18**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium				**$158.88**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium				**$162.27**

This is the estimated accumulated cost for a market hog sold during the month of August 2017. The farrow to wean phase estimates the weaned pig cost for March 2017 and the nursery phase estimates the feeder pig cost for May 2017. For further details, refer to the "2017 Budget Notes" posted at http://www.omafra.gov.on.ca/english/livestock/swine/finmark.html.

THE ROLE OF TRANSPORT IN BIOSECURITY

by LILIAN SCHAER

Tiered wash levels can help reduce disease risks across the swine industry.

Disease is a constant challenge for Ontario's pork industry. From Porcine Epidemic Diarrhea (PED) and Porcine Reproductive and Respiratory Syndrome (PRRS) to Senecavirus A and others, each disease results in costs and losses to the industry – and takes an emotional toll on the producers dealing with an outbreak.

Pig transport is one area of risk for disease transmission, from limited truck washing capacity to potential biosecurity gaps.

During the first PED outbreak in 2014, many Ontario producers decided to take action and make transport a biosecurity priority. Two main risks associated with livestock transport are pigs loaded onto a dirty or improperly washed truck that then become infected with the diseases on the truck, and diseases left on a dirty truck that end up contaminating the barn when loading the next batch of pigs.

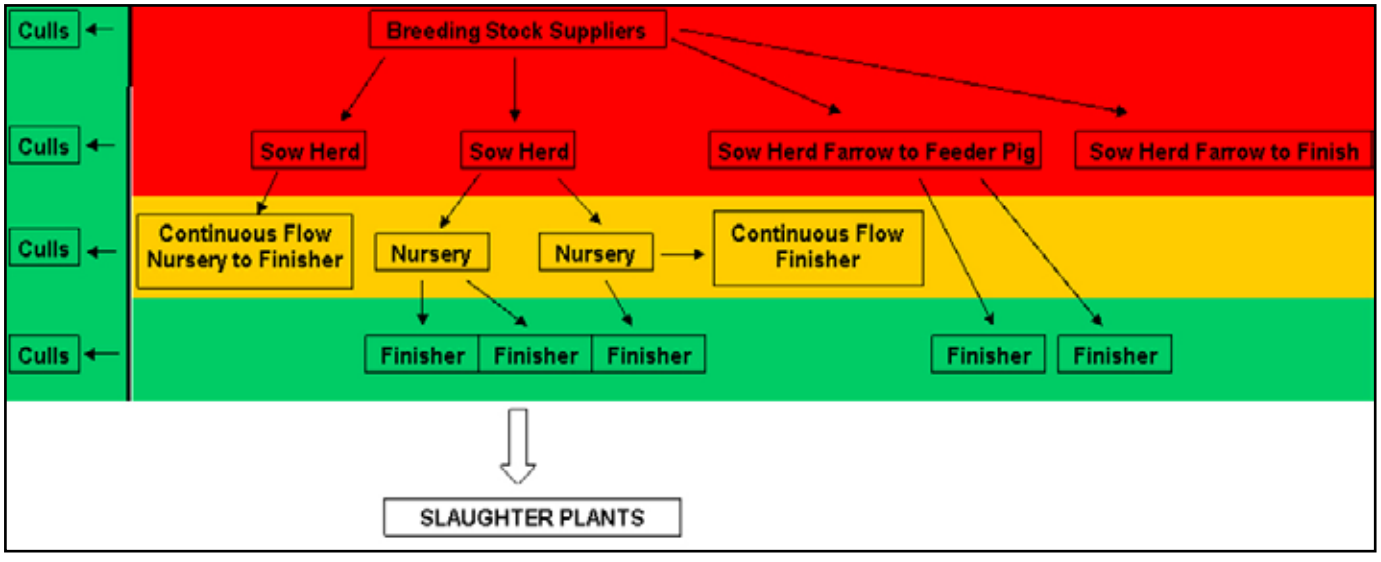
Assembly locations are a high-risk contact point, with animals coming and going from many different locations. The animals that stay in these locations become carriers and shedders of pathogens present there.

A thorough wash, disinfect and dry of every trailer after every load of pigs is delivered is one way to greatly reduce disease transmission risks associated with transport.

Often, these locations are older facilities that are almost impossible to completely empty and wash. Some assembly points are not well laid out to prevent contamination between inbound and outbound vehicles, making contact with these facilities a risk for disease transmission.

Processing plant unloading docks are also high-risk contact points

Figure 1: The pork production pyramid



because a high number of trucks and pigs from various locations have contact with the docks.

"Your livestock truck just backed up and touched the same bumper that the last x number of trucks touched. Who knows where all of those trucks have been?" says Drew De Bruyn, transportation specialist with an Ontario swine production system.

"It is best to treat everything outside of the trailer as if it is wet red paint or contaminated. You do not want any of the red paint contamination coming home with your trailer."

When thinking about pig production, the sow base is critical and, if infected with a disease, sow sites have the potential to move the disease to a number of downstream

"Washing livestock trailers is a crucial aspect to transport biosecurity and there are different degrees of 'washed' trailers," says Drew De Bruyn.

Figure 2: Example of possible transport biosecurity criteria

Criteria	Genetic – moving breeding stock	Sow herds and continuous flow facilities (including farrow-to-finish)	Feeder pig transport (nursery to finisher) barns that operate all-in-all-out	Markets (finisher to slaughter) barns that operate all-in-all-out
Dedicated equipment: tractors and trailers used for this production stage are not used for other production stages.	yes	optional	optional	no
Dedicated site management	yes	yes	optional	optional
Special driver training	yes	yes	no	no
High pressure wash with hot water	yes	yes	yes	optional
Inspect, +/- test	yes	optional	no	no
Disinfect	yes	yes	yes	yes
Dry	yes	yes	yes	no
Heat or bake	optional	optional	no	no
High volume wash and disinfect	no	no	no	yes
Back end wash only	no	no	no	no

sites. As shown in figure 1 on page 37, the pork production pyramid places breeding stock suppliers and sow herds in a "red zone" at the top, followed by nurseries and continuous flow finishers in a "yellow zone" in the middle, and a "green zone" at the bottom for all-in-all-out finishers.

The higher a barn is positioned on the pork production pyramid, the greater the number of pigs that are affected by a change in health status at that barn.

As well, if a continuous flow operation becomes infected, it is more difficult to control or eliminate the disease in that type of system compared to barns following all-in-all-out pig flow.

Preventing infection with disease at these sites reduces impacts on production, as well as the need to implement costly elimination plans.

A thorough wash, disinfect and dry of every trailer after every load of pigs is delivered is one way to greatly reduce disease transmission risks associated with transport. However, this system is not always feasible due to financial and logistical constraints.

Some producers and transporters have established an alternative approach on how to manage transport for the higher end of the production pyramid. Specifically, segregated livestock trailers that exclusively move animals between breeding stock barns, sow barns and nurseries eliminate a huge risk.

To take the biosecurity measures a step further, washing this exclusive fleet of equipment at a segregated wash bay helps avoid any possible accidental cross-contamination during or after washing. As well, these dedicated trailers will never deliver or pick up at assembly points or processing plants.

The red zone at the top of the pyramid requires far fewer trucks and trailers than the other zones. One load of weaned piglets will become two to three loads of feeder pigs and ultimately approximately five loads of market hogs.

"Washing livestock trailers is a crucial aspect to transport biosecurity and there are different degrees of 'washed' trailers. A washed trailer that moves market hogs from an all-in-all-out finishing barn will be a different style of wash compared to washing a trailer that is going to move boars from an isolation barn to a boar stud," explains De Bruyn.

"It would be really handy if the industry could benchmark these different wash degrees. That way, different producers and transporters across our industry could easily understand exactly what type of wash was required for what situation. We need definitions of the different tiers of washing."

An example of criteria which could be applied for the levels of the pork production pyramid is provided on page 38.

What you can do

The following recommendations can help reduce the risk of bringing disease into a barn. All of these techniques require good biosecurity practices.

On the truck

Any transport activities for operations or facilities in the red and yellow zones of the pork production pyramid must focus on preventing pigs on the truck from contracting

TIPS TO MINIMIZE DISEASE RISK

Sow barns/isolation units: Never allow a dirty truck to back up to the facility; wash, disinfect and dry trailers or use a transfer truck; consider a transfer platform or station.

Nursery: Never move pigs from nursery to finishing barns with a dirty truck; wash, disinfect and dry trailers or use a transfer truck; consider a transfer platform.

Finisher: Wash, disinfect and dry trailers for continuous flow systems; scrape, high volume wash/disinfectant for all-in-all-out; consider a chute extension. BP

Oleksandr Lipko/ iStock/Getty Images Plus photo

One load of weaned piglets will become two to three loads of feeder pigs and ultimately approximately five loads of market hogs.

diseases and protecting the pigs in the barn as well.

Steps to achieve this goal are:

- Use a truck and trailer that are properly washed, disinfected and dried. This process is essential to help protect pigs from contracting PED, PRRS, Senecavirus A and other diseases.
- Use segregated, low-risk equipment for this work (red and yellow zones) whenever possible.
- A positive pressure load-out can further reduce risk by blowing air out of the barn during loading.

In the barn

If your goal is to prevent contamination of the barn, such as when shipping out of an all-in-all-out finisher barn, then pig and people flow and separation are key. If a trailer backing up to a barn is dirty with manure and bedding, it could be positive for PED, PRRS or other diseases.

This situation means the virus could get into the barn by being kicked off the trailer by pigs during loading; tracked into the barn on pig and/or human feet and/or other fomites; or blown or sucked into the barn during loading.

Steps to reduce this risk include:

- Keep shipping areas to strict one-way pig flow and clearly separate "clean" and "dirty" areas.
- Before loading, generously apply a dry disinfectant like lime to the loading chute and the back 10 ft. (3 m) of the trailer.
- Wash and disinfect the loading area after each use.
- Create a buffer zone between the contaminated trailer and the load-out facility. This buffer could be accomplished in a variety of ways, including:
  - Use a transfer platform between the trailer and barn. Clean and disinfect this platform between loads to ensure an added layer of protection, provided that there is no transfer of material back towards the barn.
  - Chute extensions at finishing sites provide a buffer between trailer and barn, and allow the transporter to enter the truck in a biosecure way using the Danish entry.
  - A positive pressure load-out can further reduce risk by blowing air out of the barn during loading. 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.

OPTIMUM SPACE FOR NURSERY PIGS

by
DR. CYRIL ROY

Researchers analyzed optimum space for maximizing feed intake and average daily gain.

Space allowances given to pigs can affect the economic viability of farms and also the health and welfare of animals. While there has been a significant body of research studying the effects of space allowances on grow-finish pigs, little information is available regarding the effects on nursery pigs.

Studies have shown that providing an optimal space allowance increases productivity by maximizing feed intake and animals' average daily gain (ADG). However, optimum economic performance is influenced by high growth rates, as well as by increasing the number of pigs per pen and overall barn throughput.

The optimum space allowance for maximum economic returns is lower than that for achieving maximum growth rate.

As well as affecting ADG, space allowances which are below optimal recommendations can negatively affect the welfare of the pig through the risk of immune suppression, increased disease susceptibility, restriction of normal behaviours and an increase in damaging behaviours.

As a result, establishing optimal space allowance requirements requires consideration of economic, health and welfare factors.

When recommending space allowances for farm animals, researchers use an "allometric" formula which uses the average body weight and a constant (k) to calculate the space allowance needed per animal.

When this formula was used to estimate space allowances for grow-finish pigs, researchers concluded that a k value of 0.0335 (equivalent to 0.7 sq. m of space for a 100 kg finisher pig) provided optimal space and maximum ADG. When pigs were given more space, no increase in ADG was found. When space allowance was reduced below this value, however, ADG dropped in proportion to the crowding.

Establishing optimal space allowance requirements requires consideration of economic, health and welfare factors.

The same space allowance (k value) has been proposed for nursery pigs, but young pigs behave very differently from older animals and may have different space requirements. For example, nursery pigs perform more overlying behaviour and thus may have a lower optimum space requirement than finisher pigs.

As ongoing reductions in antibiotic use are increasing concerns for animal welfare and getting the weaned pig off to a good start, finding appropriate space allowances based on animal behaviour, health and performance considerations will be the way forward.

This article presents some initial results from research done at the Prairie Swine Centre on space allowances for nursery pigs. Staff conducted the studies on a research farm and on two commercial farms.

Measures included productivity (ADG), feed efficiency, behaviour, and stress physiology. The researchers' goal was to identify the critical cut-off at which crowding occurs and to address areas where uncertainty remains.

Methods

To compare effects on a research farm to those on a commercial site, staff completed the study in two phases: with controlled trials at the Prairie

Researchers observed more nursery pigs sitting at lower space allowances.

Swine Centre in Saskatoon (Phase 1), and commercial trials at two farm sites (one in Saskatchewan and one in Manitoba: Phase 2).

In Phase 1, researchers studied a total of 1,200 weaned pigs in the nursery rooms at the Prairie Swine Centre for approximately five weeks. Staff gave piglets six different space allowances (k= 0.023, 0.0265, 0.0300, 0.0335, 0.0370 and 0.0390). Researchers weighed pigs weekly and adjusted pen size to maintain the targeted space allowance.

Group size is another important factor affecting social interaction among pigs. Some researchers have argued that larger groups require less space, due to the increased sharing of free space, while others have disputed this finding. In Phase 1, staff housed pigs in groups of 10 and 40 to study interactions between group size and space allowance.

Researchers conducted commercial trials (Phase 2) on two farms using the same six space allowance treatments used in Phase 1 but pens remained static in size. Staff adjusted the number of pigs per pen to target space allowance based on the nursery exit weight (25 kg), ranging from 19 to 32 pigs per pen.

Staff recorded feed use and weighed pigs at nursery entry, three weeks and five weeks. Researchers placed cameras above each pen in weeks one, three and five to record standing, sitting, lying, feeding and drinking behaviour. Staff recorded lesions on pigs to evaluate aggression and collected saliva samples on the research farm at three time points to measure pigs' stress response.

Results and discussion

On the research farm, space allowance had no effect on the average daily weight gain, feed intake or feed efficiency. However, at commercial sites, lower space allowances showed reduced average daily gain, particularly from midpoint (day 21) to end of the trial (day 45).

The lack of space allowance effects on growth on the research farm, compared to commercial sites, was likely due to the high health status and added care provided on the research farm. On the research farm, staff adjusted space allowances weekly to increase the impact of space allowance but, despite these adjustments, researchers saw no impact on growth.

In contrast, the commercial sites had a constant space allowance. This arrangement gave pigs relatively more space during their first weeks in the nursery, with crowding increasing gradually over time. Space allowance, however, had a significant impact.

Antibiotic reduction studies have also found fewer effects in the research herd, due to the reduced challenge in a controlled, high-health environment.

Behaviour measures can be helpful in interpreting these production results, as pigs will adjust their behaviour to compensate for crowding

Feeding and drinking behaviour were both affected by space allowance and group size.

before changes in growth are seen. For example, studies show that finisher pigs housed in large groups will adjust their feeding behaviour to eat fewer meals per day, with longer feeding bouts, because it requires more effort to access the feeder.

In this study, researchers observed more nursery pigs sitting at lower space allowances. On commercial farms, there was a large increase in sitting in week five, compared to weeks one and three. Some scientists suggest sitting is a "cut off" strategy in pigs and an early indicator of stress. Pigs also did less lateral lying (lying on their side) at low space allowances, presumably due to crowding.

Feeding and drinking behaviour were both affected by space allowance and group size. As researchers reduced pigs' space allowance, the total time spent feeding dropped from 49 to 44 minutes per day, and the average length of feeding bouts decreased from 2 to 1.9 minutes. However, the number of feeding bouts per 8 hour day increased from 23 to 25.

Similarly for drinking behaviour, reducing pigs' space allowance resulted in less total time spent drinking, a reduction in the average drinking bout length and an increase in the number of bouts per day.

However, when researchers increased group size, the total time pigs spent drinking increased. One theory is that pigs in the larger group were more active and therefore drank more. However, this theory cannot be confirmed as water consumption was not recorded.

The behaviour of nursery pigs changed greatly during their time in the nursery. Sternal lying and overlying reduced as pigs grew, and sitting increased. Overlying behaviour showed the greatest change and decreased by 50 per cent after the first week. This observation refutes previous suggestions that nursery pigs require less space due to their propensity to overlie.

However, this study shows that pigs' willingness to overlie is drastically reduced after their first week in nursery, and is lowest at the end of the nursery period when space allowance is also lowest.

Conclusions

In this preliminary analysis, lower space allowances (below k 0.0335) had a negative impact on average daily weight gain, especially between weeks three and five on commercial farm sites. Space allowance also affected pigs' feeding and drinking behaviour, as well as their postures. Changes in behaviour can be used as an early indicator of potential impacts on productivity. Overlying behaviour reduced significantly shortly after weaning, indicating that pigs are less willing to overlie at the end of nursery phase, when pigs are most crowded. Consequently, this behaviour cannot be used to justify reduced space allowances.

While further analysis is needed to draw firm conclusions from this study, the results indicate that pigs reared under commercial conditions were more susceptible to crowding stress than those managed under research farm conditions. Weaning and nursery are critical stages in pig production and are highly stressful. With increasing pressure to reduce antibiotic use, it will be even more important to consider space allowances in the nursery and to ensure that pigs get a good start on life. **BP**

Dr. Cyril Roy is a post-doc in ethology at the Prairie Swine Centre. The Centre conducts near-market research that can be applied by the pork industry within a one- to seven-year time frame.

MOE'S MARKET MINUTE

by
MOE AGOSTINO
& ABHINESH GOPAL

PORK BELLY PRICES HOLD THE KEY

The fall market looks set to be shaped by NAFTA talks and expanded packing capacity.

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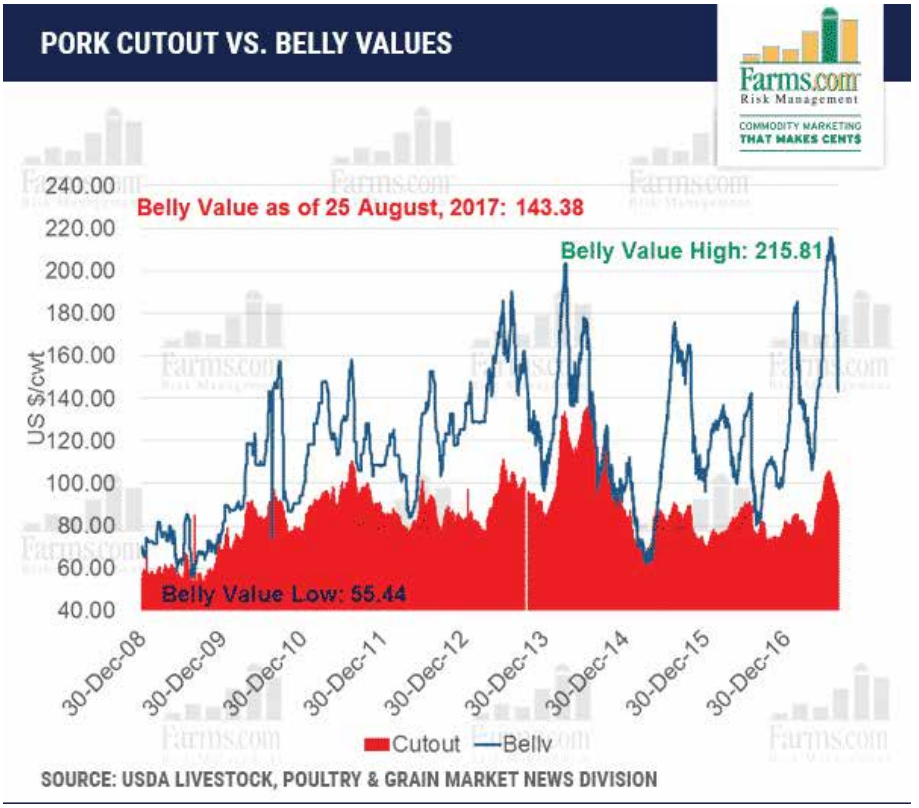
This year's spike in belly prices to record highs supported the hog market, helping limit losses despite burgeoning North American pork supplies.

Considering the soaring belly prices we witnessed this summer, the indications were clear that these prices would be key to the fortunes of lean hog futures.

As of the end of August, pork belly prices had decreased by about 30 per cent since their record highs in late-July, which represents quite a steep nosedive. (Belly prices reached a record high of US$215.81 per hundredweight on July 20.) Consequently, lean hog futures did feel some downward pressure, as the October contract values dropped to their lowest close in over three months by the end of August.



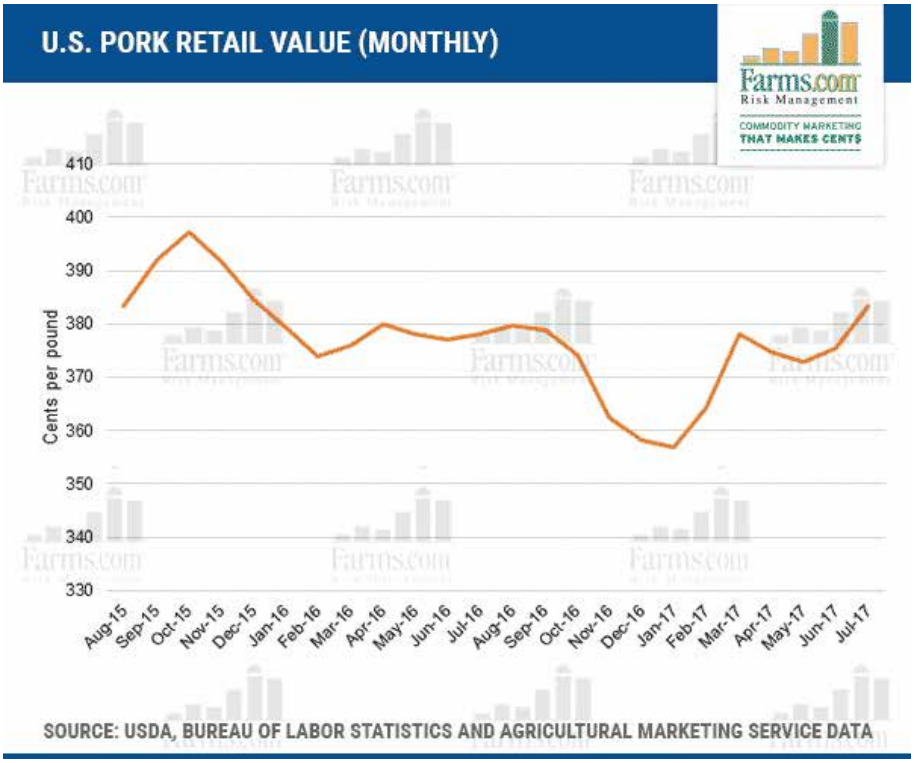
SOURCE: USDA LIVESTOCK, POULTRY & GRAIN MARKET NEWS DIVISION

This year's spike in belly prices to record highs supported the hog market, helping limit losses despite burgeoning North American pork supplies. By the end of summer, hog slaughter numbers and pork production rose to multi-month highs.

Towards the latter part of August, pork belly values started sharply breaking lower, which had a direct impact on lean hog futures and caused them to fall off.

When their costs catch up with wholesale prices, retailers normally stop promoting the sale of bacon. We got an indication of this trend when the United States Department of Agriculture (USDA) reported the jump in retail bacon feature prices in August.

For the week of Aug. 14 to 18, the American national average price of bacon was US$5.36/lb, according to the USDA. This figure was slightly lower (2 per cent) than the previous week but an increase of 22 per cent



over the prices in early June.

The average price of bacon this summer was among the highest retail prices for this item since the summer of 2014.

In late August, the retail pork activity index fell steeply. This drop is likely associated with the fact that retailers stopped promoting the sale of bacon. The value of other pork products also declined sharply in August as pork processing plants increased slaughter. Retailers have priced meat to lure consumers to their stores.

Historically, the market witnesses weakening belly prices after August as retailers reset their feature prices, limiting volume sales. And this year was no exception.

But, this year, the wild card for the hog market is the expected expansion in American pork packing capacity coming online soon. American summer hog slaughter has been lower than predicted by the USDA's Quarterly Hogs and Pigs report, released in June, despite strong third-quarter slaughter.

Livestock producers who were behind on their feed purchases for this year had multiple opportunities to catch up, thanks to the USDA's crop reports that were bearish for grain prices.

This year's NAFTA (North American Free Trade Agreement) renegotiations have made livestock traders nervous but some trade participants remain optimistic about agricultural outcomes during NAFTA talks.

Lower pork belly demand, higher hog weights and slaughter pressured the hog market, but strong pork processing margins will limit excessive weights.

In good news, too, Argentina has formally agreed to import American pork for the first time since 1992. For the hog market, pork exports will always be key to supporting prices. **BP**

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The average price of bacon this summer was among the highest retail prices for this item since the summer of 2014.

by
RICHARD SMELSKI

WHY DOESN'T THE STOMACH DIGEST ITSELF?

Understanding the physiology of the pig can enable producers to enhance their management techniques.

Let me continue our discussion from the August edition of *Better Pork* on the importance of understanding the physiology of the pig. Specifically, I want to consider why the stomach doesn't digest itself.

And, in fact, it does in some ways – the health issue that arises from this phenomenon is known as ulcers. Up to 60 per cent of pigs at slaughter have shown some signs of ulcers, researchers say. (A 2002 study in the *Canadian Veterinary Journal*, for example, said that over 50 per cent of pigs at slaughter had signs of erosions or ulcers.)

But why doesn't the stomach fully digest itself, like it does with the diets it's fed? We can turn to physiology to understand how a stomach works and, as a result, possibly enhance our management of pigs. (Interestingly, the pig's anatomy and physiology is similar to that of humans.)

The stomach is composed of strong muscle tissue, and is situated between the esophagus (throat) and the duodenum (intestines). This organ stores the food the pigs eat for anywhere from one to four hours. The stomach also helps to break down this food before it moves into the intestines.

On the inside of the stomach there are folds of skin called gastric rugae, which make the stomach very extendable – especially after a big meal. Without the stomach, pigs would need to eat every 20 minutes or so, as opposed to eating regular meals. Interruptions to these meals, such as by feeders running empty or pigs being unable to access feed due to stress or crowding, can cause ulcers.

The stomach secretes a potent mix of gastric juices to begin the breakdown of food, including an enzyme called pepsin, which is inactive until it mixes with the hydrochloric acid in the stomach. Pepsin is essential in the digestion of proteins. The hydrochloric acid also causes the stomach to maintain a pH of about two (more acidic than a Coke), which helps to kill off bacteria that come into the digestive system via food.

Even this small amount of information about pigs' stomachs might influence your management decisions.

The most common of the epithelial cells which form the stomach wall are mucous cells. These cells secrete a protective mucus to protect the stomach from its toxic acids; every day, these cells release about two to three litres (0.5 to 0.8 gallons) of gastric fluids into the stomach. To provide further protection, the stomach sheds hundreds of thousands of epithelial cells from its surface lining every minute.

Water, alcohol, salt and simple sugars can be absorbed directly through the stomach wall. However, most substances in food need a little more digestion and must travel into the intestines before they can be absorbed. A valve, called the pyloric sphincter, controls the amount of chyme (partially digested food and digestive secretions) entering the small intestine.

So why is it helpful to understand the physiology of the stomach?

Even this small amount of information might influence your management decisions – for example, ensure regular access to feed for pigs to maintain ample chyme in the stomach (in order to optimize digestion and reduce ulcers), check water pH to enhance health (which helps maintain stomach pH), and optimize the number of pigs per pen (to ensure continuous feed access per pig).

A little physiological information may help answer questions on why a management technique might or might not work for you. **BP**

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

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