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DEAR READER: LETTERS FROM A FAMILY FARM

APPLYING AG RESEARCH

Increasingly, scholars and scientists are looking to bridge the gap between research and practical applications.

Universities, for example, often encourage their master's and doctoral students to participate in the Three Minute Thesis competition. As the title suggests, participants boil their years of research down into a three-minute presentation. Participants are allowed to use only one slide for illustration. The purpose of the competition is for students to make their often very specialized work accessible and relatable for the general public.

In my case, I spent a few years as a grad student travelling to museums and archives across Ontario, as well as meeting with farm families. I studied diaries and account books kept by past generations of farmers, gaining insights into their production and purchase of food and clothing.

As I worked closely with a range of rural residents and farm families, I was comfortable chatting about my research. After all, I thought it was pretty cool to discover Ontario producers periodically bought oranges and bananas by the early 20th century, as well as dress patterns inspired by New York and Paris fashions.

My work allowed me to document farmers' long-standing connections to local, national and international markets.

Keeping my enthusiasm contained to a clearly developed message, presented in under three minutes, was more of a challenge. The competition was certainly a great learning opportunity!

This month, writer **Geoff Geddes** delves into the world of swine research. He connects with scientists at such institutions as **Swine Innovation Porc**, **Genome Alberta** and the **Prairie Swine Centre**. He gains insights into their work, as well as the tangible implications for pork producers.

In our other feature article this month, staff writer **Kate Ayers** explores the upcoming federal changes regarding the on-farm use of antibiotics. She outlines the timeline for the implementation of these regulations and details what they will mean for producers. **BP**

ANDREA M. GAL

University of Saskatchewan photo

University of Saskatchewan researchers worked on developing tools the industry could use to address *Brachyspira*-associated diseases. Here, Michelle Sniatynski, a lab technician, performed susceptibility testing. See "How does pork research spell success" on page 14.

from2015/E+ photo

BREEDING AWAY CASTRATION

Researchers are developing a swine genetic trait to eliminate the need for castration. Not only will this trait enhance animal well-being, it will also help to prevent boar taint in pork.

DNA Genetics, a supplier of swine genetics, and **Recombinetics**, a Minnesota-based expert in gene editing, are partnering to develop and evaluate this technology, according to a January release.

Recombinetics scientists have created a breeding method which ensures male piglets remain in the pre-pubertal state, eliminating the need for castration.

"We are at the pre-commercialization stage (now) because we are still going through the testing of the traits," said **Tad Sonstegard**, principal investigator of the agricultural division at Recombinetics.

The researchers are studying the feasibility of this management technique by evaluating feed efficiency, meat quality and best practices for recovery of puberty and fertility, according to the release.

"We have to validate that the traits work … without affecting the animals. And there is also regulatory approval that has to be completed and then we have to integrate the traits into the genetic pyramid," he said.

"This specific project is an innovative use of precision breeding techniques that have the potential of improving both animal health and efficiency," **Tom Rathje**, chief technical officer for DNA Genetics, said in the release. **BP**

ANTIBIOTIC ALTERNATIVES TO THE RESCUE

Scientists at the **U.S. Department of Agriculture's** (USDA) **Agricultural Research Service** (ARS) have found an amino acid that could act as a substitute for antibiotics and growth promoters for piglets.

The amino acid, L-glutamine, is naturally produced in humans and other animals, including swine, according to a USDA release in January.

Piglets showed more positive growth and health effects when given a dry-feed diet formulated with L-glutamine, as opposed to diets containing either dietary antibiotics or no supplements at all, the scientists found.

In fact, piglets on the amino acid diet ate 60 per cent more food than the animals on either of the other diets, the release stated.

The supplement could improve the digestive health, nutrient absorption and intestinal microflora of piglets, **Jay Johnson**, an animal scientist with ARS, said in the release.

"Our research indicates that L-glutamine can improve the intestinal health of piglets," Johnson said to *Better Pork*.

The ARS has filed an application to patent this technology. **BP**

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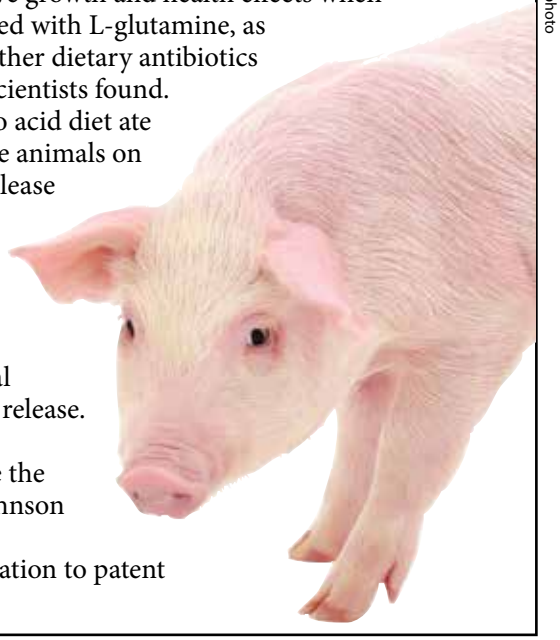

REVISED TPP OPENS DOORS FOR PORK

If at first you don't succeed, revise the deal and try again. That was Canada's approach recently with the resurrected version of the **Trans-Pacific Partnership** (TPP).

Canada agreed to the **Comprehensive and Progressive Agreement for Trans-Pacific Partnership** with 10 other countries in mid-January.

"This deal brings some stability for the Canadian pork industry in an important market," said **Gary Stordy**, director of government and corporate affairs at the **Canadian Pork Council**.

"It gives us a strong competitive advantage in Japan, which is a billion dollar market for pork, and allows us to cement our presence there going forward."

That partnership is important, as Canada faces competition from the United States which is negotiating its own free trade agreements with Japan and the European Union.

"The icing on the cake is that the revised TPP generates additional opportunities for us with other partners, most notably Vietnam," Stordy said.

Alongside his international counterparts, Canada's Trade Minister **François-Philippe Champagne** signed the new trade agreement on March 8.

The next step is ratification. "We encourage the government to move forward with a speedy process in the spring session," Stordy said. **BP**

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Beginning Dec. 1, 2018, Canadian livestock producers will need prescriptions from a veterinarian to purchase prescription drugs and prescription medicated feed.

PRESCRIBING CHANGE IN THE LIVESTOCK INDUSTRY

How the government's new rules regarding antibiotics will affect your farm operation.

by KATE AYERS

Antimicrobial resistance (AMR) is a growing global concern. Virtually all influenza A viruses circulating in people, for example, resist one category of antiviral drugs, says the World Health Organization's (WHO) website.

About 82 per cent of all antimicrobial use in Canada is related to agriculture, says the Public Health Agency of Canada, so the agricultural industry needs to help address the problem.

The government has enacted new regulations that pertain specifically to the industry: beginning Dec. 1, 2018, Canadian livestock producers will need prescriptions from a veterinarian to purchase prescription drugs and prescription medicated feed.

"The idea is not to deny the use of antimicrobials in the livestock industry for the promotion of health, but it is to use them in a prudent manner that ensures (these medications) will be able to be used into the future" so the bacteria won't develop resistance to them, says Dr. Tim McAllister, Agriculture and Agri-Food Canada's principal research scientist for ruminant nutrition and microbiology.

What changes are being made?

The government's changing regulations are a part of the Public Health Agency of Canada's *Tackling Antimicrobial Resistance and Antimicrobial Use: A Pan-Canadian Framework for Action*. The government wants to slow the upward trend of AMR and preserve the efficacy of current and future antimicrobials, its website says. These regulatory changes support the WHO's *Global Action Plan on Antimicrobial Resistance*.

In May 2017, the Canadian government made the following changes to the Food and Drug Regulations, say the Ontario Ministry of Agriculture, Food and Rural Affairs and Gary Stordy, director of government and corporate affairs at the Canadian Pork Council. The first two regulations came into effect on Nov. 13, while the rest will be phased in this year.

- A risk-based regulatory pathway

allows companies to import low-risk veterinary health products (VHPs), such as "nutraceuticals," vitamins and minerals, for use as health management tools in food animals.

- Producers have not been able to import antibiotics important to human medicine for use on livestock since November. Instead, farmers will have to work closely with their veterinarians.
- As of Dec. 1, 2018, producers will need veterinary prescriptions to attain antibiotics that are important to human medicine. For example, penicillin G, streptomycin and neomycin, which are used to treat common infections, will not be available for purchase at local farm supply outlets. Feed mills can still supply antibiotics in mixed feed, but producers will need prescriptions prior to ordering these products.
- By December, growth promotion (GP) claims will be removed from labels of veterinary products that contain antibiotics. As of April, 64 products will have GP claims removed.

To help ease the transition associated with these regulatory changes, producers should ensure that they have veterinary-client-patient-relationships (VCPRs) in place.

Striving for positive outcomes

The complexity of the AMR problem means that governments, industry, stakeholders and the public all need to work together to address the issue, Health Canada says.

The department's "goal is to promote the responsible use of antimicrobials to reduce the development and spread of resistant bacteria, as well as to help preserve the availability of effective antimicrobials for future generations," says Rebecca Purdy, Health Canada's senior media relations adviser.

And Canadian officials classify antibiotics according to "their relative importance to human health," says McAllister.

"Category four is of limited importance in terms of its use in human health. … But a category one antimicrobial has direct relevance to use in human health."

Antibiotics in categories one, two and three are considered medically important. The federal government will move all antibiotics in these categories, which are used in animal production, to prescription status by Dec. 1, 2018.


Tim McAllister

The increased veterinary oversight could help enhance animal health and welfare. In the process, industry officials hope that public health will benefit as well.

"I think the main benefit is public good. One hopes that with improved veterinary oversight, whenever antibiotics are used in animals, producers will take the opportunity to reflect on whether or not they are actually needed and ensure they are used appropriately," says Dr. Scott McEwen, a professor at the Ontario Veterinary College located in Guelph, Ont.

"That's not to say that most antimicrobials aren't used appropriately now, but there is more opportunity for abuse of antibiotics without a vet involved."

In addition, improved veterinary oversight for medical decisions could instil more trust in consumers, says Dr. Clayton Johnson, a veterinarian and director of health at Carthage Veterinary Service Ltd. in Illinois.

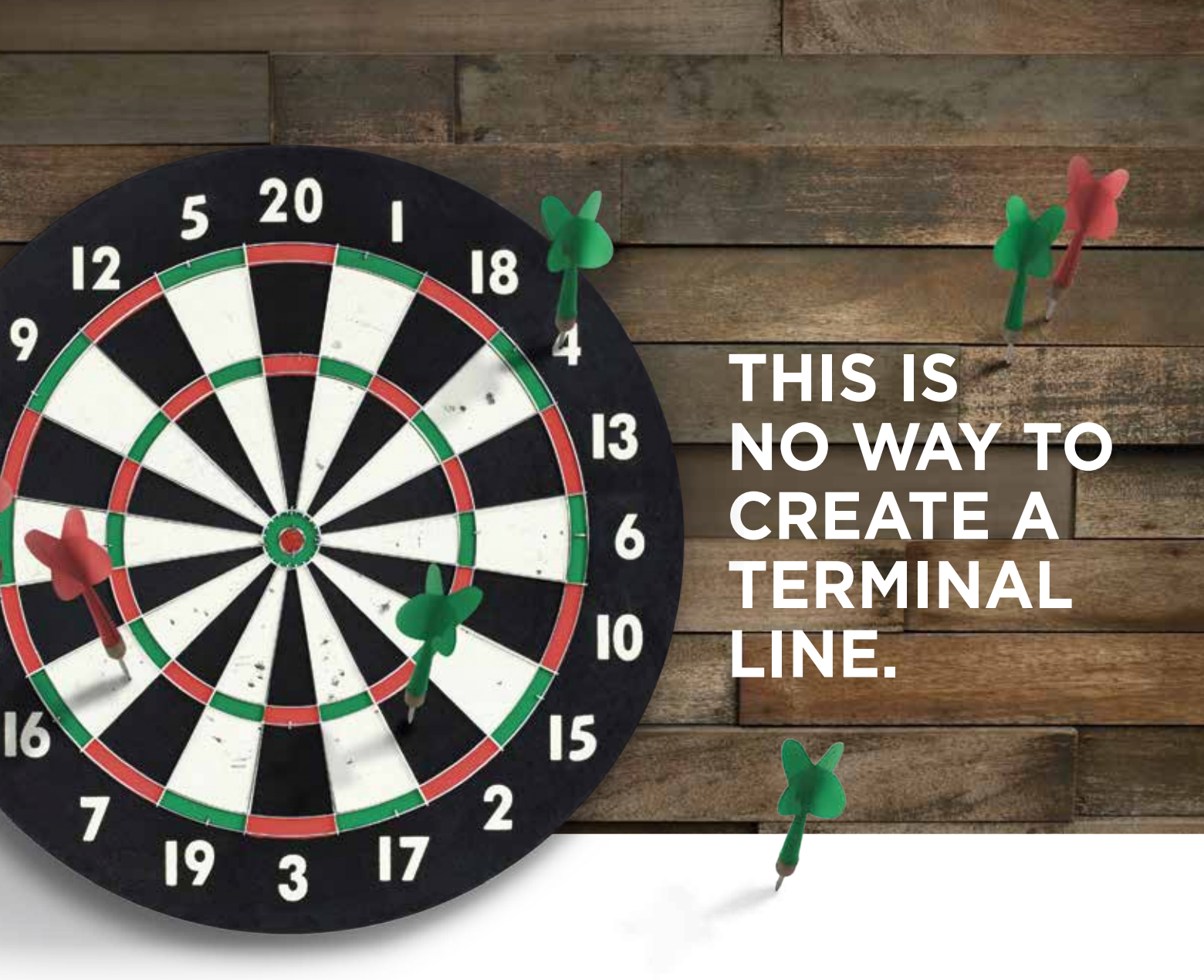
The public can be "happy with the steps we are taking to document and be transparent with our antibiotic usage," he says.

Making the transition

When adjusting to the new regulations, the pork industry could face some challenges.

Producers, for example, will no longer be able to use subtherapeutic antibiotics for growth promotion.

"That practice is going to be off the



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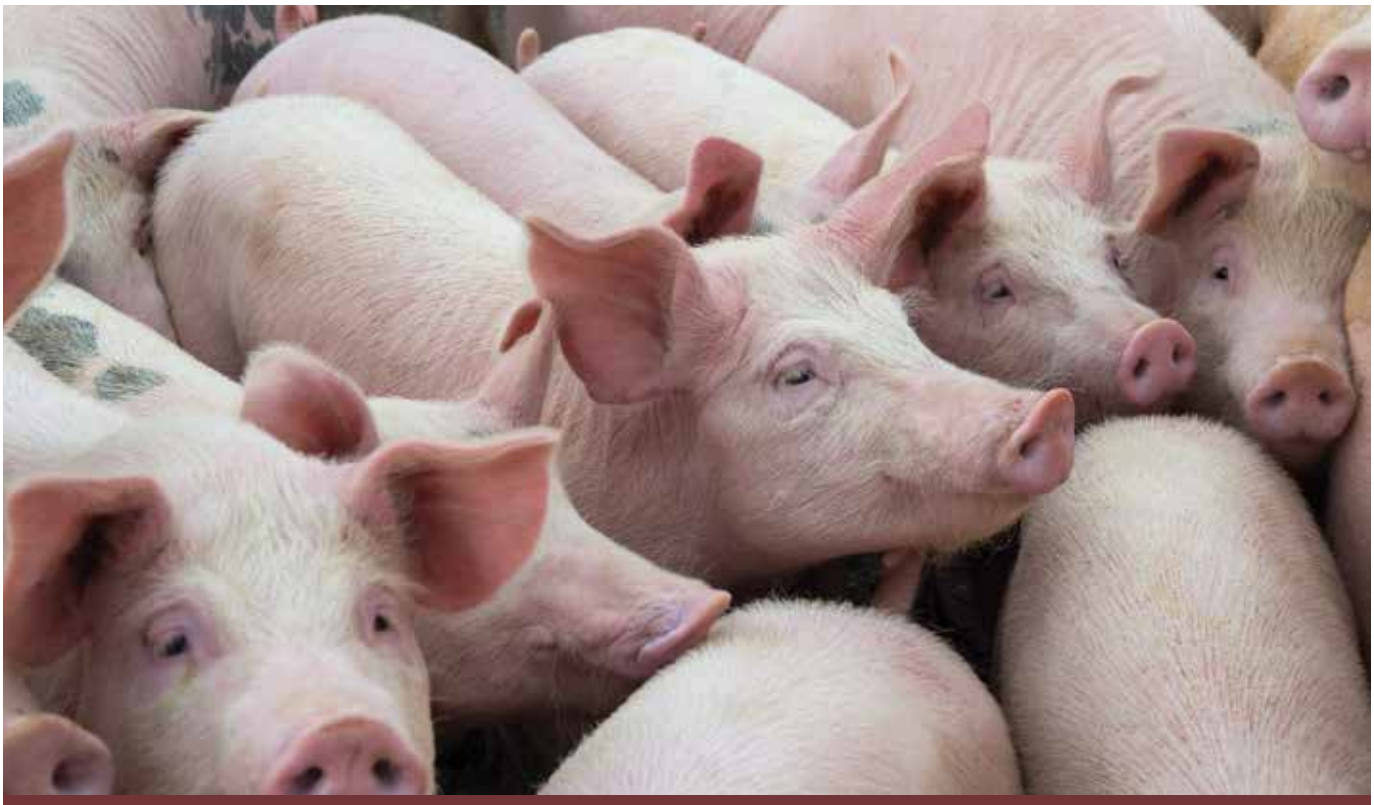

"The idea is not to deny the use of antimicrobials in the livestock industry for the promotion of health, but it is to use them in a prudent manner that ensures (these medications) will be able to be used into the future," says Dr. Tim McAllister.

table. But antibiotics are not eliminated for disease prevention. So, if the antimicrobial has a claim for disease prevention, then producers will probably be able to use it under the direction of a veterinarian," says McAllister.

Some industry representatives also wonder if the country has enough swine veterinarians to help producers with the new regulations.

Jorge Correa

"Canada is a big place and many pig producers are in remote areas. So, just the volume of work that comes with servicing all of the remote clients could be a bit of a challenge," says Johnson.

Stordy agrees. "The majority of the changes will affect veterinarians and feed mills," he says. "They will need to complete the appropriate documentation and will see increased oversight from the government."

But industry professionals are working to ensure a seamless transition for producers.

"People in the feed industry, pharmaceutical industry and veterinary groups are working to facilitate that process so, when regulations do come into place, dispensers will operate without too much interruption," McEwen says.

"Web-based prescriptions should ease the stress on veterinarians," Stordy adds.

Overall, the Canadian pork industry is ready for the regulatory and policy adjustments, says Dr. Jorge Correa, the Canadian Meat Council's vice-president of market access and technical affairs.

"Processors and producers have been working with the government since the beginning of this initiative," he says. There were "no surprises when the regulations were released, and there was enough time for preparation and divulgation."

Producer adjustments and antibiotic alternatives

The degree of change producers may have to make depends on their current production and management practices.

Livestock producers who already have a VCPR should not experience too much of a change to their normal practices, the Beef Cattle Research Council says.

Gary Stordy

Individuals with established relationships can consult with their veterinarians who, in turn, can write prescriptions to cover the estimated volume of necessary medications as needed. These prescriptions will have an expiry date, however.

"Those (producers) who haven't been working closely with veterinarians may need to review their health

protocols. That review could lead to changes in their practices, including biosecurity," says Colleen McElwain, programs director at the Canadian Animal Health Institute.

Producers "may want to consider working with their veterinarian, their feed mill and others to see if, perhaps, there is something else they could use to help promote overall health."

The key to reducing reliance on antibiotics lies in disease prevention. Different management practices, including vaccination and changes to cleaning and disinfecting protocols, can help lower the incidence of infection, McElwain says.

Managing pigs' stress levels may also fend off disease and enhance their ability to fight infections.

"Any type of stressful situation, whether it be ventilation conditions in the barn or handling methods, will increase the susceptibility to infection. … Animal husbandry is the first line of defence against any disease," says McAllister.

Indeed, producers should pay close attention to overall herd health management to reduce the need for antibiotic treatment, says McEwen.

He encourages producers to have "consultations with their veterinarians to determine what steps need to be put in place to reduce the overall need for antibiotic treatment by using strategies for vaccination, using all-in-all-out management, as well as reducing stresses and mixing of animals.

"While farmers already do all of these things," they can try to improve on these management practices, he suggests.

Johnson agrees.

"Have the veterinarian write out treatment protocols and train the caretakers on your farm … to treat pigs appropriately," he says. "That's really something we can't do enough education on: making sure everyone understands what the treatment regimen is."

Finally, producers should take a critical look at current antibiotic use

AlexRaths/iStock/Getty Images Plus photo

Producers can consult with their veterinarians who, in turn, can write prescriptions to cover the estimated volume of antibiotics needed over a given period.

Carthage Veterinary Service photo

Clayton Johnson, a swine veterinarian, says the public can be happy with the steps being taken to improve transparency in antibiotic use.

in their operations.

"Does it still work? Is it still necessary? Those are questions producers can ask themselves and can work with their veterinarian to get some answers to," explains Dr. Mike DeGroot, Ontario Pork's technical programs veterinarian.

More information

As the industry shifts to comply with the new regulations, it can consult resources from the Government of Canada, producer associations, veterinary groups and animal health associations. Producers should also discuss any questions or concerns with their swine veterinarians.

The changes that producers make should enable the country to better manage antibiotic use.

And Health Canada's regulatory and policy changes help align the country's efforts with initiatives underway globally.

"Really, what these changes do is put us more in line with our trading partners," says McElwain. **BP**

AMERICA'S VETERINARY FEED DIRECTIVE

Rachel Lincoln photo

American farmers can only use feed containing a VFD drug when a licensed veterinarian issues an order.

The U.S. Food and Drug Administration's (FDA) revised veterinary feed directive (VFD) drugs section of the Animal Drug Availability Act took effect on Jan. 1, 2017, says the FDA's website. The regulations improve the efficiency of the VFD program as well as protect human and animal health, the FDA says.

Heather Fowler

"Overall, this feed directive was an effort by the FDA in eliminating the use of medically important antibiotics for growth promotion purposes in food animal production and bringing therapeutic use in feed and water under additional veterinary oversight," says Heather Fowler, DVM, the U.S. National Pork Board's director of producer and public health.

The American program differs slightly from the framework that will be enacted in Canada later this year.

American "swine producers are required to have a VFD on file for medically important feed-grade antibiotics, whereas the use of water-based antibiotics requires a prescription. Both require a vet-client-patient-relationship (VCPR) be in place," Fowler says.

Therefore, farmers can only use feed containing a VFD drug when a licensed veterinarian issues an order.

In the year since the final rule's inception, Fowler has not noticed any disruptions in the sector.

"The pork industry is unique: prior to this rule, it had a number of drugs which were already under the veterinary feed directive. So, the use of the VFD isn't necessarily new to the industry. I think that assisted with the transition," she says.

"To ensure, however, that this transition was seamless, the National Pork Board launched an 18-month campaign to educate producers on the upcoming rule change, providing them with the tools to make certain that they were effectively prepared for its implementation," Fowler added.

Industry professionals stress the importance of VCPRs and joint collaboration.

"I can't emphasize enough that working with your veterinarian to devise a strategy is critical," says Dr. Clayton Johnson, a veterinarian and director of health at Carthage Veterinary Service Ltd. in Illinois.

"It's imperative that we work together, not only on this, but with other regulatory changes that may come about. I don't think, in Canada or the United States, these regulatory changes are going to be the last time we're asked to adjust antibiotic usage on our farms." **BP**

iStock/Tsekhmister/Getty Images Plus photo

HOW DOES PORK RESEARCH SPELL SUCCESS?

For the swine industry to chart its best path forward, research must be relevant for producers.

by GEOFF GEDDES

nicolas_/E+ photo

"We regularly invite industry (representatives) to workshops where they articulate their needs and ask the academic community to respond," said Gijs van Rooijen, chief scientific officer at Genome Alberta.

At one time, research and the pork industry were like the proverbial two ships that pass in the night: sailing the same ocean but never meeting.

But today research and the pork industry are coming together to satisfy their mutual need for knowledge in such areas as nutrition, animal health and housing.

The subjects are diverse but the common thread for researchers is a focus on what matters most to industry. If they ignore that thread, their prospects for future funding can unravel before their eyes.

"We regularly confer with industry (representatives) to identify their research priorities, understand current issues and determine what questions need answers," said Abida Ouyed, acting general manager of Swine Innovation Porc (SIP) in Quebec.

A reverence for relevance

"From there, we invite the research community to submit projects for funding that meet those needs. Every proposal is evaluated on relevance to the industry and scientific merit. In that way, we ensure we are always funding the most pertinent projects," she said.

Working with different levels of government and segments of the industry, SIP builds research programs to enhance the Canadian pork sector's competitiveness and sustainability.

One of SIP's main funding sources is a producer check off of 2.5 cents per slaughtered pig, so responding to producer priorities is critical.

"In addition to research and development, we use those funds to support knowledge/technology transfer and get research results into practice as soon as possible," she said to *Better Pork*.

Who's in charge here?

While it might seem only natural that industry would set the agenda for researchers, this approach was not always the case.

"In the past, the research process was led by academics showing their advances to industry and saying,

'Here is a tool you can use, so please do so,'" said Gijs van Rooijen, chief scientific officer at Genome Alberta.

"Today, that process has been turned on its head. We regularly invite industry (representatives) to workshops where they articulate their needs and ask the academic community to respond."

Over the last 10 years, Genome Canada has administered $240 million in research projects, matching sector priorities with research capacity in Alberta, across Canada and even abroad. As both researchers and industry members can attest, those priorities are numerous and often daunting.

"Research must address an increasing global population while reducing our environmental footprint and responding to consumer demands around animal welfare," van Rooijen said to *Better Pork*.

"Genomic innovation is a big part of the puzzle as it lets producers access new breeding lines that are more disease-resistant, thereby improving productivity while enhancing animal health and comfort."

Sherbrooke Research and Development Centre, AAFC photo

Researchers evaluated the impact of ventilation in warm conditions on the behaviour, physiology, and carcass and meat quality of pigs waiting to be unloaded at the slaughterhouse. Pictured here is a combined water sprinkling and ventilation system.

Feed frenzy

Given that feed accounts for about 70 per cent of a producer's expenses, much of the current research involves reducing feed costs by employing distillers dried grains with solubles (DDGS), alternative feedstuffs and synthetic amino acids. That said, projects in other areas are growing in importance.

"My research includes transportation, group housing, euthanasia and castration, to name a few (areas)," said Dr. Jennifer Brown, research scientist in ethology at the Prairie Swine Centre in Saskatoon, Sask. "Anything with an animal behaviour or welfare tag comes my way."

Although she often has a harder time getting funding than people working on nutrition, her work is equally critical for the industry, especially when we consider the recent updates to the *Code of Practice for the Care and Handling of Pigs*.

An enriching experience

"Subjects like housing and enrichment can be a hard sell as there is less interest from commercial groups," said Brown. "But these projects are demonstrating the industry's focus on animal welfare and continuous improvement. They are showing the public that we are aware of welfare issues and are addressing them as best we can."

At the same time, Brown and her colleagues must ensure that their findings are practical and producers can use them.

Geert Geene, who runs a 1,250-sow operation in Amberley, Ont., echoes this sentiment. Geene participated in two of Dr. Brown's projects which looked at enrichment and group sow housing.

"Just because something sounds good on paper doesn't mean it will always work in the barn," said Geene. "Before researchers tell producers to do something, they must ensure it's feasible, so everyone isn't wasting time and money on a dead end."

That said, research done right is invaluable.

"Everything we do, from what we feed our pigs to what temperature we keep our barns at, is the product of research," explained Geene.

While the same can be said for other livestock sectors, the dynamic pork sector could be the poster child for research

Doug Richards, Prairie Swine Centre photo

In this on-farm demonstration project, pigs used enrichment objects.

advocates in agriculture.

"Our industry is always changing," Ouyed said to *Better Pork*. "It's vital that we keep up by funding different types of projects.

"That includes basic, fundamental research to better our understanding of how things work, (such as) the microbiome and its role in improving pig health and performance. Then there's practical research that helps producers stay competitive."

Healthy competition

For many pork-industry researchers, the emphasis on staying competitive cannot be overstated.

"Two-thirds of the pork we produce in Canada is exported," said Stewart Cressman, chairman of the Advisory Board at the Agricultural Research Institute of Ontario (ARIO). "The quality attributes must be there (if we want) to compete against other countries, especially in demanding markets like Japan's."

Created in 1962, ARIO is a corporate body which reports directly to the Ontario minister of agriculture, food and rural affairs. ARIO advocates research for the betterment of agriculture, veterinary medicine and consumer studies.

"We are agriculture's window on the wider world," said Cressman. "Our job is to read the tea leaves properly and identify gaps that need to be addressed.

"Historically, Canada has funded a lot of research and generated many peer-reviewed papers," he said. "However, sometimes innovation doesn't get put into practice because it's easier to keep doing things the way you always did them.

"Knowledge transfer is one thing but it must be implemented to have an impact."

Depending on the area of research, implementation may be easier said than done.

In research we trust?

"For example, the research community is very excited about the potential of gene editing for PRRS-resistant pigs," said van Rooijen.

"The challenge is the consumer trust issue: how comfortable are consumers with using genetic technology to improve pig health and productivity? We must have a solid grasp of what the public is thinking so we know how best to move research objectives forward."

That "how" issue is crucial.

"We (at SIP) must always consider current industry needs when funding projects," said Ouyed. "Sometimes, though, we should think outside the box."

Eyes on the prize

In Ouyed's view, the research community should use one pair of glasses when looking at where we are at and another pair when looking at where we are headed.

"One pair examines present issues and how to address them, while the other looks 10 years down the road and tries to anticipate what may happen. What could our needs be a

agnormark/iStock/Getty Images Plus photo

"Can we build a research program that is flexible and adapts depending on the results we obtain each year and where the industry is going?" asked Abida Ouyed.

decade from now?" she asked.

"Our longest research planning period today is five years within a clear yet limited program, but let's dream and say we have x amount of funding and we can think more broadly, more long term. Can we build a research program that is flexible and adapts depending on the results we obtain each year and where the industry is going?"

The research possibilities are intriguing.

"I can see a time when producers work with hand-held devices that allow them to analyze a saliva sample from a pig and get a quick readout of what is wrong with their herd," said van Rooijen. "It could involve DNA analysis or look at specific metabolites that are fingerprints of disease status for a particular pig."

At the top of Dr. Brown's wish list is more automation.

"Right now, we have trouble getting engineers excited about innovation for pig barns.

"I'd love to work with them on improved measurement tools like water-flow monitors, automation to measure and enhance enrichment, better feeder systems and water drinkers that flush themselves," she said.

"There are also issues to be addressed in the farrowing environment, such as sow comfort and enhanced piglet care (as well as) getting pigs better prepared for weaning while in the farrowing room."

Dr. Brown would also like to implement better flooring and upgraded ventilation systems to improve welfare for both humans and animals.

"Then there's the whole aspect of more precision feeding and phase feeding in the gestation period. We've started on many of these topics but still have a long way to go."

Unlike those two ships passing in the night, research and industry seem to have forged a strong connection. By building on the bond and maintaining their focus on relevance, they hope to find smooth sailing for years to come. **BP**

by
KATE
AYERS

FAMILY TIES UNITE BUSINESS PARTNERS

This Oxford County, Ont. family is self-sufficient in nearly all areas of its farm operation.

Fons Vandenbroek photo

The four business partners of Broekfarms gathered for a photo with their McCormick-Deering WD6 tractor and farm dog Parry. From left to right: Leo (younger brother), Fons, Harrie (older brother) and Alfons (father).

"Get 'er done!" is a common refrain at Broekfarms Inc., a 1,250-sow operation in Oxford County, Ont. Fons Vandenbroek, along with his father Alfons, and his brothers, Harrie and Leo, is always up for trying new ways to tackle challenges around the farm. And the family has found this approach to be successful in most situations.

The Vandenbroek family moved to Ontario from the Netherlands in 1992. Fons had just graduated from a post-secondary agricultural economics program.

A year later, the family started its Canadian operation with a rental 175-sow barn. Five years after that, they built a new 550-sow barn, using the rental building as a quarantine barn. Recently, the family upgraded one of its finisher barns, which was originally built in the 1980s.

The family has a multi-site farrow to partially finished operation, as the partners partly finish pigs and

sell some feeder animals as well.

The brothers, with help from Alfons, grow crops to produce all the required feed but will swap out ingredients with a local feed mill when necessary. Between the four business partners, they complete all tasks, such as trucking livestock and feed.

The family is looking to convert one of its aging gestation barns to loose sow housing soon with the intent to see which system works best. Ultimately, they will fully convert to loose housing, a national requirement under the *Code of Practice for the Care and Handling of Pigs* by 2024.

Fons hopes the family's operation will expand during the transition to loose housing. His sights are set on moving to a complete farrow-to-finish model.

Amidst the various farm responsibilities, Fons can most often be found in the barn, tending to the pigs.

Fons met his wife Heather in Canada and the couple has three children: Ryan, Emma and Jeff. Each family member contributes to the farm business, whether by completing paperwork or barn chores.

Although Broekfarms is a successful and self-sufficient operation, Fons wants to ensure that the family farm continues running smoothly long into the future. His main goal is to "continue to grow our farming operation and hopefully pass it on to the next generation."

What contributed to your decision to become a pork producer?

We had a mixed farm of both dairy and pigs (in the Netherlands). … We wanted to expand the farm. In Europe, there wasn't a lot of room for all of us to farm so we thought we'd move to Canada.

Describe your role on your farm operation.

I run the farrowing barns along with my two brothers. One runs the nursery and the other one runs the finishing barn. My brothers do most of the land work and cash cropping side of things for the operation.

So, I am involved in the day-to-day work in the sow barns.

Hours you spend in the barn per week?

(Laughs.) Probably too many. We always say that a full-time job is 40 hours and, if you're self-employed, you work 80 hours.

I basically work every day, on weekends and on holidays.

Hours you spend in the office per week?

Umm, probably not enough.

Sometimes, I am a little unorganized. I spend maybe five to 10 hours a week in the office.

How many emails do you receive per day?

Way too many. (Laughs.)

Worthwhile emails? Probably between 25 and 30.

Fons Vandenbroek photo

Fons and his family pile into the back of the farm truck for a photo. From left to right: Emma (daughter), Fons, Jeff (youngest son), Heather (wife) and Ryan (oldest son).

And then probably another 50 to 100 spam emails or ones that are no good.

How many text messages do you receive per day?

I would say 30 to 40 texts per day.

Hours a day on a cellphone?

I am somewhere in the range of 1,500 minutes per month, so around an hour per day.

Email or text?

Text. It's quicker.

Any favourite apps?

I use the Chicago Mercantile Exchange app for the Chicago Board of Trade quite a bit. The weather app, definitely. And probably the messaging app. There are so many messaging apps now but I still use old school text messaging.

Hours a day on the Internet?

Same amount as office hours, more or less. When I am in the office, I am usually doing online banking and stuff like that.

How often do you travel?

I have monthly meetings that I have to drive to.

I travel outside of the province no more than twice a year.

Where did you last travel to?

I just came back from Manitoba. I went to look at a sow feeding system.

I also went to a trade show in the United States last year.

What do you like best about farming?

The freedom.

What do you like least?

There's nothing really. There are less than ideal days, but I think you're going to get that situation everywhere.

What is the most important lesson you've learned?

Make mistakes and learn from them. That's the best one, I think.

What's your top tip about farm transition planning?

We want to keep the next generation involved. I farm with my two siblings which, at times, can be a bit of a challenge. So, the members of the next generation are going to be cousins.

Succession is high on our priority list … we are in that process now.

Are you involved in any committees, boards, associations or volunteer efforts?

I was president of the Elgin Federation of Agriculture for five years. I am still on the board there.

I am the director and now vice-president of the local federation. … I'm trying to get young farmers involved. … I am no longer in my twenties, although sometimes I still think I am.

We also have a grassroots representation on the provincial board. So, I am one of the Elgin reps there.

What are your hobbies or recreational activities?

I like to ride my motorcycle but I don't do it very often.

My wife loves camping and I'll tag along. I don't mind it. The part I don't like so much is that we have to pay to have neighbours. We have freedom on our own farm and then we tend to go to busy campsites.

What was the last book you read?

Growing Up Amish. I am still not finished but I'm about two-thirds of the way through it.

I live in an Amish neighbourhood and, reading this book, I learned a bit about this group.

This is the first book I've read in a long time.

What does your family think of farming?

My wife is from the city, so she was used to a steady nine-to-five kind of job. We don't always have weekends off, even when we plan it.

Other than that, she's still stuck with me, so she must like something about it! (Laughs.)

Our kids like it and don't like it. I think it's great for them to grow up on a farm and they won't realize that until they are older. They don't like the chores part but they like other aspects.

We have a field in the back where they can go, invite their friends over and ride their quads. They like that part of the farm.

How do you define success?

You work at your hobby – you can do your daily activities without having a long face. I think that's success.

Is your farm vehicle messy or neat?

Very messy.

What are three items that are always in your pickup?

Cellphone charger, empty coffee cups and a calculator.

What's the best time of day?

Later in the evening.

Everything is sort of done – I can sit for a minute and wind down. The kids have gone to bed.

What was your most memorable production year?

Probably the year we moved to Canada in 1992. It was the worst year ever for corn harvest. We had just moved here, so we thought those conditions were normal for farmers in Ontario.

Now, we think every year is a breeze compared to how we started out, as far as cropping goes.

What do you see as current or future challenges for the industry?

Social licence, I think.

Sometimes you read comments on social media and you'd almost think farmers were criminals. I don't think we are but some people don't agree with animal agriculture as a whole.

People are removed from agriculture which I think is definitely a challenge for the future. **BP**

by
S. ERNEST SANFORD

SALMONELLA IN PIGS AND PORK

People can also suffer from *Salmonella* food poisoning as a result of this zoonotic disease.

Rachel Lincoln photo

Salmonella spp. disease in pigs and people is called salmonellosis. In people, this disease usually comes from infected animals.

A zoonotic disease or "zoonosis" is defined as an infectious disease transmitted from animals, including pigs, or animal products, like pork. The zoonotic disease can be transmitted by direct contact with an animal or indirectly via food products from the animal, called foodborne transmission.

For decades, poultry, including meat and eggs, was the major source for salmonellosis in humans. Pigs and pork were secondary sources. Over time, however, the poultry industry worked hard and successfully cleaned up the cause of the problem.

Currently, pigs and pork are the number one source of salmonellosis in people. Scientists claim that, if you look long and hard enough, you will find one or more *Salmonella*-infected pigs in every herd.

There are over 2,000 serotypes of *Salmonella* spp., most of which can infect pigs. But *Salmonella Choleraesuis* and *Salmonella Typhimurium* are, by far, the two most common *Salmonella* spp. that cause clinical disease in pigs.

Salmonella Choleraesuis causes septicemic disease in pigs. The *S. Choleraesuis* bacterium invades most internal organs and systems in the pig, resulting in fever, pneumonia, meningitis, arthritis and death, depending on which organs or systems the bacterium invaded. Diarrhea may also occur but less frequently than in pigs infected with *Salmonella Typhimurium*.

Extremities (ears and feet) become blue. The *Salmonella* bacterium can also establish long-term infections in the intestines. Lymph nodes in the intestines can harbour the *Salmonella* bacteria and the pig becomes a long-term subclinical carrier of *S. Cholerasesuis*. During periods of stress, the *Salmonella* bacteria emerge from the lymph nodes and are shed in the feces.

Infection with *Salmonella Typh-*

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imurium produces diarrhea. These bacteria are also shed in the feces.

Summary

Salmonellosis is the disease caused by *Salmonella* spp. infection in both humans and animals. Salmonellosis in humans is a zoonotic disease, meaning that it is transmitted from animals to humans. The pig, or pork, is the principal source for salmonellosis in people.

Food-borne salmonellosis (*Salmonella* food poisoning)

Food-borne salmonellosis (*Salmonella* food poisoning) occurs when *Salmonella* bacteria are ingested in uncooked or undercooked food – poultry, meats, milk, eggs, etc.

Although meat and meat products are the usual source of *Salmonella* food poisoning, fruits and vegetables (e.g. melons, spinach and lettuce), can also be sources.

Contamination of pork by *Salmonella* occurs when feces from pigs shedding Salmonella comes into contact with pork. This contact most often occurs when intestinal contents are accidentally spilled onto the carcass at a slaughter plant. Slaughterhouse workers are acutely aware of this danger and are trained to not spill or splash intestinal contents during slaughter.

Contamination can also occur in the home via cross-contamination from handling other products after handling raw pork or other meats that are contaminated with *Salmonella*. To avoid this problem, use separate utensils for raw pork, and handle raw pork and other food ingredients separately.

Salmonella infection in humans can be completely symptomless. Most commonly, people experience diarrhea (including bloody diarrhea), abdominal cramps, vomiting, body aches and fever (ague) of 37.8 C to 38.9 C (100 F to 102 F). Symptoms start about six to 72 hours after eating contaminated food and can last for three to seven days if untreated.

Conclusion

Salmonella infections are common in pigs but clinical disease is uncommon. Clinical disease in pigs is caused primarily by two of the several thousand serotypes of *Salmonella: S. Choleraesuis* and *S. Typhimurium*.

The latter serotype is a major cause of *Salmonella* food poisoning in humans and comes from people eating foods that have been contaminated with *S. Typhimurium* bacteria. Pork is a contributor to food contamination with *S. Typhimurium*, as are uncooked or undercooked poultry, other meat products, fruits and vegetables. **BP**

Editor's note: This article first ran in the April 2017 edition of *Better Pork*.

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EXAMINING FIBRE NUTRITION IN FINISHERS

by
MOHSEN POURABEDIN, PHD

As pigs' utilization of fibre varies by their growth stage, producers need to formulate diets accordingly.

Cargill Animal Nutrition, Canada photo

Most nutrition systems apply the same fibre utilization to all production phases (12 kg to slaughter).

Livestock production is the world's largest user of land, either directly through grazing or indirectly through the consumption of feed grains (Alexandratos and Bruinsma, 2012).

Increasing the efficiency of resource utilization and using more co-products not only supports increased levels of production but also ensures sustainable development. Most cereal grain co-products, such as wheat shorts, hulls, rice bran and distillers dried grains with solubles (DDGS), are typically less expensive than common feed grains such as corn and soybean meal, and have high amounts of dietary fibre.

As this fibre is not metabolized by digestive enzymes, it reaches the hindgut of the hog undigested, which allows for fermentation by gut microbiota. Microbial fermentation of dietary fibres in the gut produces different short chain fatty acids that provides energy for the pigs.

These acids also indirectly benefit the pigs by lowering intestinal pH which prevents the growth of pathogens. We need to better evaluate fibre efficiency in order to maximize sustainability, thus increasing profits for producers.

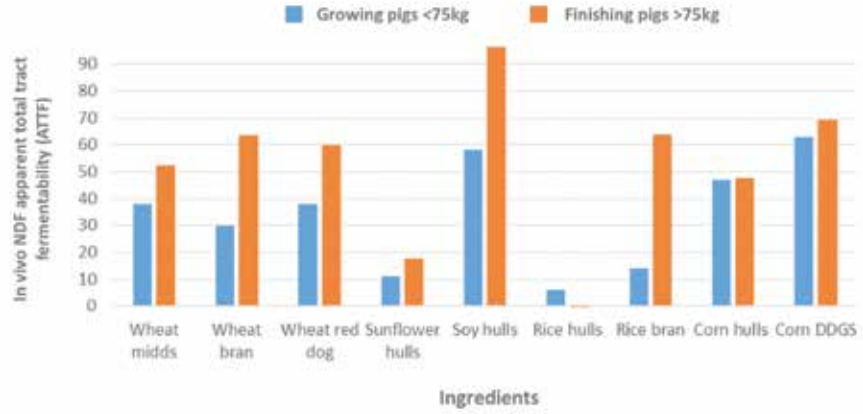
Fibre nutrition has received little attention in finishing pig nutrition. Yet finishing diets, especially in the later phases, contain a high level of fibrous ingredients. Most nutrition systems apply the same fibre utilization to all production phases (12 kg to slaughter).

Research has proven, however, that older pigs (75 kg to slaughter) have a better fibre utilization. This improvement is due to a longer and better developed intestinal tract as well as slower passage rate, allowing for a greater fermentation of the fibre by intestinal microbes (Jaworski, 2016).

In order to better evaluate the energy contribution from fibrous ingredients in growing and finishing pigs, the Cargill Innovation Center in Elk River, Minn. conducted a series of trials. Cargill Animal Nutrition researchers obtained data on performance, fermentability of dietary fibre in the pig intestinal tract (apparent total tract fermentability, ATTF), and in vitro gas production from the most common, relevant ingredients.

Finishers are better able to utilize, and thus extract more energy from, neutral detergent fibre (NDF) than

Figure 1: In vivo apparent total tract fermentability of NDF in most common fibrous ingredients (Cargill internal trial).



Fermentation of dietary fibre in the pig gastrointestinal tract was higher in finishing pigs (>75kg) than growers (30 to 75 kg) for most fibrous ingredients.

currently assumed in single grow-finish net energy systems, researchers found. Intestinal fibre fermentability increased with age (Figure 1), they found.

For most ingredients, this finding means an increased energy contribution due to increased fermentability. The industry needs to evaluate the energy release from fibrous co-products in both growers and finishers, the research shows.

In Figure 2, we can see the difference between growers and finishers in extracting energy for the most common fibrous ingredients. These findings are in line with the literature.

Shi and Noblet (1994) reported improved fermentability of crude fibre and NDF when body weight was increased from 45 kg to 150 kg. In addition, Le Goff et al. (2002) concluded that fermentability of NDF in diets containing corn bran, wheat bran and sugar beet pulp increased from grower (35 kg) to finisher (75 kg) pigs and was even higher in adult sows.

These results support the need to differentiate between growing and finishing pigs for more accurate energy contributions from fibrous ingredients. Therefore, producers should narrow the body weight range into different phases and calculate the value of fibrous ingredients more accurately as the hogs grow.

On the other hand, the pig's intestinal capacity increases in relation to the fibre level, causing greater amounts of digesta to remain in the large intestine. This finding means the carcass weight is reduced in relation to the slaughter weight. Thus, producers can expect a reduction in carcass dressing percentage when dietary fibre content increases (Heinritz et al., 2016).

champpkk/iStock/Getty Images Plus photo

Finishing pigs are more capable of extracting energy from fibrous ingredients than growers.

Researchers have evaluated nutritional and processing strategies, such as fat addition, ractopamine, withdrawal of high-fibre ingredients at the end of the finisher period, and pelleting to mitigate the yield reduction. Among these approaches, the withdrawal of high-fibre ingredients at the end of the finisher period gave the most consistent and promising response.

The withdrawal of high-fibre ingredients 15 to 20 days before slaughter decreases, on average, 59 per cent of the negative effects on yield, recent data from an internal review shows. Since most pork producers are paid on a carcass yield basis, we must evaluate the true value of using high-fibre ingredients, taking their effects on carcass yield into consideration.

In conclusion, finishing pigs are more capable of extracting energy from fibrous ingredients than growers.

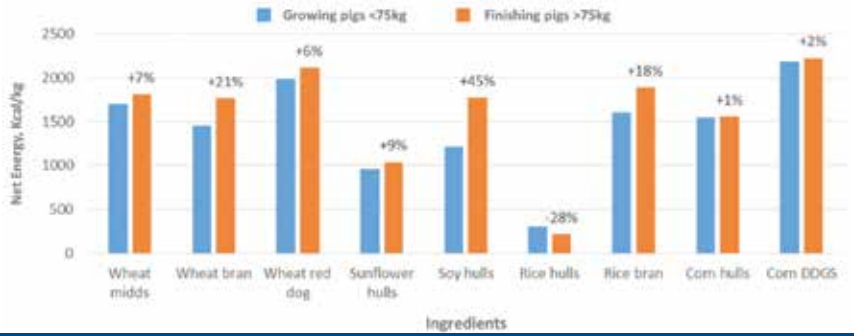
Cargill's new in vitro and in vivo data will help to better evaluate co-product utilization in hog diets, leading the transition to more sustainable swine production. Producers must also assess the nutritional and financial impact of fibrous ingredient inclusion from both a formulation perspective and a revenue (carcass yield) perspective.

By using both models together, hog producers can be more precise and dynamic in finisher pig nutrition and better able to control profits at the finish line! **BP**

Mohsen Pourabedin is the monogastric nutritionist for Cargill Animal Nutrition, Canada. He received his B.Sc. and M.Sc. degrees in Animal Nutrition from the University of Tehran, followed by a PhD in gut microbiology at McGill University. In his current role, Mohsen is responsible for the design and development of new products for pigs and poultry.

Cargill's animal nutrition business offers a range of compound feed, premixes, feed additives, supply chain and risk management solutions, software tools and animal nutrition expertise that is unmatched in the industry. For more information about Cargill Animal Nutrition, visit: cargill.com/animal-nutrition.

Figure 2: Estimated Net Energy (kcal/kg) of the most common fibrous ingredients in growers (<75kg) and finishers (>75kg)



Net Energy contribution of most fibrous ingredients was higher in finishing pigs (>75kg) than the growing pigs (30 to 75 kg) due to higher fibre utilization efficacy in finishing pigs.

Ontario

Pork News & Views

Prepared and Edited by the OMAFRA Swine Advisory Team

ONTARIO PORK

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Cull Sows: Traceability for a Complex System

At its core, the goal of traceability is to be able to follow a group or individual item's movement within the supply chain. PigTrace serves as the Canadian pork sector's traceability program. If a food safety issue or foreign animal disease outbreak were to occur, traceability provides health officials with tools to contain the situation quickly and efficiently. While the identification and recording of movements of market hogs from farm to processor is well understood, the culled sow market is more complex. The requirements for proper identification and tracking of culled sows movements for PigTrace are reviewed below.

Cull sows are an integral part of herd management practice and play an important role in the economics of pork production. The culling process enables farms to maintain breeding performance by replacing less productive stock and ensuring that on-farm flow remains steady. Often, cull sows are sold through a marketer. They are moved from the farm to an assembly point where they are collected and sorted amongst cull sows from other farms to make a complete load before being brought to the processor.

Identification Requirements

Prior to a cull sow being shipped, it must be properly identified at the farm. Any cull sow not brought directly to a slaughter facility must have either an approved 15-digit individual ID tag or an approved tag bearing the farm's five-digit herd mark number. (See Figure 1.) A shoulder slap tattoo is not an acceptable method of traceability for cull sows unless they are going directly from the farm to a slaughter facility. Once a cull sow has been properly identified and shipped, both the operator of the cull sow's departure site and the destination site are required to report the movement to PigTrace. This movement must be reported within seven days of when the movement occurred.

	INDIVIDUAL ID	HERD MARK
LARGE – TRAPEZOID	 H 1-½" x W 2-¼"	 H 1-½" x W 2-¼"
LARGE - RECTANGULAR	 H 1-½" x W 2-¼"	 H 1-½" x W 2-¼"

Both the 15-digit individual ID tag and the herd mark tag can be purchased directly from PigTrace. Please allow 4 weeks for delivery.
T: 1-866-300-1825

Ontario Pork is able to sell 15-digit individual ID tags only. Please allow 10 business days for delivery.
T: 1-877-668-7675

Figure 1: PigTrace Key Components Tags and Tattoos

Movement Reporting

Properly identifying each animal is only one part of the traceability process. A record of the movement occurring ensures that the animal can be properly traced throughout the supply chain. The following movement information must be reported by both the operator of the destination and departure site:

1. Departure and destination sites
2. Date and time of departure/arrival
3. Number of pigs sent/received
4. License plate number or conveyance identification
5. Approved pig identifiers

Operators of the departure and destination sites can report the movement of cull sows using one of the following methods:

1. Using their PigTrace credentials an individual can log into the PigTrace Canada website and report an event within the system.
    a. https://pigtrace.traceability.ca / login
2. Fill out a swine movement

document which is available on the Ontario Pork website under Resources for Traceability. The swine movement document is also available on the PigTrace website.

   a. Once filled out an individual should then e-mail, fax, or mail the swine movement document directly to PigTrace or to Ontario Pork.

3. Call PigTrace's toll-free number, **1-866-300-1825**. By calling the toll-free number you can report your movement over the phone. You will need to provide all necessary movement information.

Proper identification and reporting for all swine movements is key to the viability of the Canadian pork industry. Active participation by members will ensure that the industry is prepared in the event of a disease outbreak, which ensures that swine operations will be able to avoid costly market disruptions and production losses. For any further questions on PigTrace and how to enhance your operation's traceability practices please call Ontario Pork's Member Services team at 1-877-668-7675.

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How Do You Get Gilts to Fit into Your Batch Farrowing Program?

The entry of gilts into the breeding herd is a key factor in maintaining a consistent number of farrowings, and this is particularly challenging in a monthly batch farrowing system. Failure to manipulate the cycling of gilts results in empty farrowing crates or some gilts farrowing later than the rest of the batch. The latter situation might result in weaning pigs that are too young and underweight to thrive in the nursery. As a University of Guelph graduate student in the Department of Population Medicine, I recently completed a research trial where I examined three different ways to control the timing of gilt breeding.

The trials were conducted at Arkell Swine Research Station. Gilts were selected at approximately 6 months of age and puberty was induced by injecting them with a single intramuscular (IM) injection of 400 IU of equine chorionic gonadotrophin (eCG) and 200 IU of human chorionic gonadotrophin (hCG) (PG600®, Merck Animal Health), and they were provided with 20 minutes of boar exposure per day. Once gilts were cycling, they were placed on a daily oral dose of 6.8 mL of altrenogest (Regu-Mate®, Merck Animal Health) for at least 14 days to suspend the cycling. This created a group of gilts that would come into heat somewhere between 4 and 9 days after the treatment of Regu-Mate® was stopped, similar to the effect of weaning for lactating sows.

At this stage, gilts were randomly assigned to one of three treatment groups. Gilts in Group 1 were injected IM with 600 IU of eCG (Pregnecol®, Vetoquinol) 1 day after Regu-Mate® was withdrawn to induce estrus, and injected IM with 5 mg of porcine luteinizing hormone (pLH) (Lutropin®, Vetoquinol) 80 hours later to synchronize ovulation. A single standard insemination was performed at a fixed-time of 36 hours after the pLH injection, regardless of estrus behaviour. Gilts in Group 2 received a 2 mL intravaginal dose of triptorelin acetate (OvuGel®, Elanco) 6 days after Regu-Mate® withdrawal. A single standard insemination was performed at a fixed-time of 24 hours after the triptorelin acetate treatment, independent of estrus

Table 1: Detailed ultrasound results of the time of ovulation as experienced by approximately 9 gilts per treatment group*

	Number of gilts that ovulated		
Number of hours after breeding	**Group 1**	**Group 2**	**Group 3**
4	--	--	--
10	3	2	1
26	7	6	2
33	--	--	5
Total number of gilts	10	8	8

**Group 1: eCG-pLH, Group 2: Triptorelin acetate, Group 3: Controls.*

Table 2: Production performance data, represented by mean values ± standard deviation, of gilts receiving a single fixed-time insemination (Group 1 and 2*) versus conventional double mating during a natural estrus (Group 3)

Outcome	Group 1 (n=62)	Group 2 (n=61)	Group 3 (n=57)
Farrowing rate (%)	75.8	80.3	89.5
Litter size (#)†	11.8 ± 4.2	12.1 ± 2.7	12.6 ± 3.1
Age at weaning (days)	17.6 ± 1.5	17.7 ± 1.4	16.7 ± 1.6

**Group 1: eCG-pLH, Group 2: Triptorelin acetate, Group 3: Controls.*
†Litter size refers to total piglets born.

behaviour. Gilts in Group 3 served as the control group. After Regu-Mate® was withdrawn, estrus detection was performed twice a day using boar exposure. A standard insemination was performed when a gilt was first discovered in standing heat and a second insemination was performed 24 hours later if the gilt was still in standing heat. Of the 60 gilts that were recruited into this group, 3 were not bred due to lack of standing heat. Breedings in all three groups were done in the presence of a boar; therefore, all gilts were exposed to boars in the same way. Time of ovulation was monitored by transabdominal ultrasonography to confirm time of ovulation in approximately 9 gilts from each treatment group.

The ultrasound results (Table 1) showed that the hormone treatments in Groups 1 and 2 resulted in a predictable time of ovulation and that the single insemination at a fixed-time was appropriate. On the other hand, most gilts in Group 3 had not ovulated 24 hours after the first breeding and therefore, a second insemination was justified. Group 3 gilts showed better reproductive performance including higher farrowing rate and total litter size. It was speculated that this may be due to the possibility of Group 1 and 2 gilts having immature eggs present in some cases. On the positive side, the gilts in Groups 1 and 2 farrowed close together and, therefore, tended to have older and heavier pigs at weaning. This performance data is summarized in Table 2.

Overall, both treatments used in this research successfully synchronized ovulation but the benefits of a more uniform farrowing group did not outweigh the slightly lower reproductive performance. Further work is required to enable producers to use these two techniques without experiencing any losses in performance.

This research was funded in part by Ontario Pork and the Ontario Ministry of Agriculture, Food and Rural Affairs-University of Guelph Research Partnership. OvuGel® was donated by Elanco Animal Health..

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Impact of Creep Feed Pellet Size on Piglet Performance Pre- and Post-Weaning

Creep feeding piglets in the farrowing room is one strategy to help piglets get off to a better start at the time of weaning, and to help reduce the post-weaning growth lag and its subsequent impacts on animal health and performance. In the summer of 2017 the OMAFRA Swine Team conducted a demonstration trial using a commercial herd to explore in more detail the impact of altering creep pellet size on piglet performance pre- and post-weaning. This was a follow up trial to one conducted in 2016, details of which can be found in the December 2016 issue of Pork News & Views.

The trial started in June 2017 in a farrow to wean barn located in Perth County, Ontario. Piglets were weaned at 19 days of age into a nursery holding room at the sow barn. Four days post-weaning, piglets were moved to an offsite nursery barn where we tracked their body weights until 28 days post-weaning. We used two consecutive farrowing groups, with 24 sows and their litters in each group. This gave us a total of 540 piglets that were put onto the trial.

Ten days prior to weaning each litter was randomly assigned to one of three treatment groups. The control pigs received no creep feed and the two treatment groups received either small (~3 mm diameter) or large (~12 mm diameter) pelleted creep feed. Both creep feed treatments were the same formulation (Masterfeeds Vigor Starter 1+ product). At weaning all piglets were fed the small pellet creep feed for 4 days in the holding room, and were then transferred onto their standard mash diets at the offsite nursery barn.

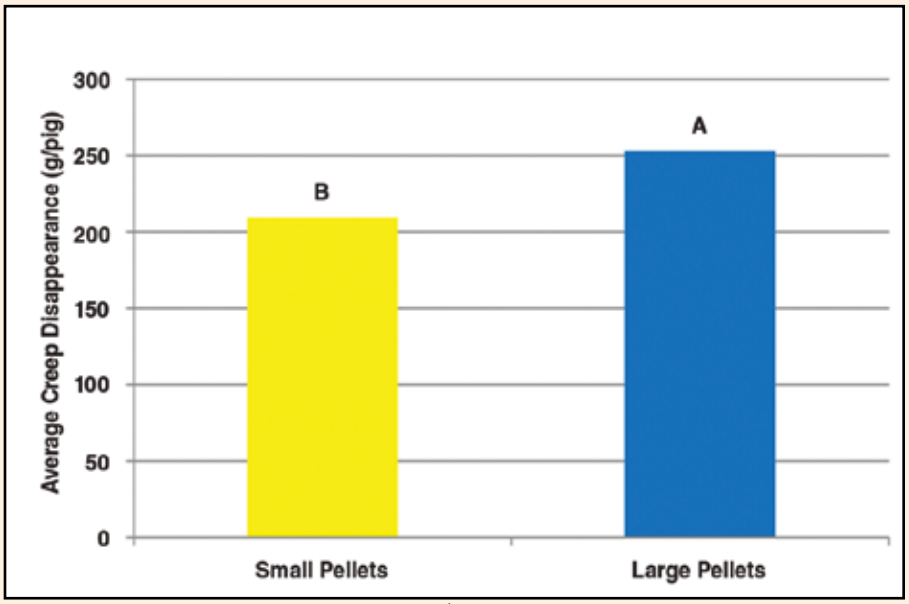


Figure 1: Average creep feed disappearance (g/piglet) for litters offered small or large pellet creep feed in the farrowing room (10 days pre-weaning until weaning).

Individual piglet weights were collected at the start of the trial (10 days pre-weaning), at weaning, 1 day post-weaning, 4 days post-weaning (immediately prior to piglets moving to offsite nursery), 7 days post-weaning, 14 days post weaning and 28 days post-weaning. Creep feed disappearance was measured for each farrowing crate offered creep feed. At weaning piglets were sorted based on their creep feed treatment into 2 pens per treatment with a shared feeder in the holding room, and feed disappearance was measured for each of the 3 treatment groups. Four days post-weaning the piglets were loaded onto a commercial transport trailer and shipped to an off-site nursery where piglets were mixed according to the barns standard operating procedures. Each pen contained piglets from all treatment groups.

The creep feed contained 2300 ppm zinc. The high zinc level was included to allow us to determine which individual piglets consumed or did not consume creep feed when it was offered (piglets consuming

high zinc in feed have high zinc in feces). One week after the onset of creep feeding, a fecal sample was collected from each individual piglet and analyzed for its zinc content, allowing us to class each piglet as a creep 'eater' or a creep 'non-eater' in the farrowing room.

Results

Similar to the findings of our 2016 creep feeding trial, creep disappearance was significantly higher when piglets were offered large pellets versus small pellets in the farrowing room (Figure 1). However, there was no impact of creep treatment (no creep, small or large pellets) in the farrowing room on feed intakes post-weaning.

Creep treatment also had no impact on the body weight of piglets at any time point throughout the trial; however, the average daily gain of the pigs was affected at various points. Most notably was the impact on ADG around the time of weaning, where piglets not offered creep had negative gains in the first 24 hours post weaning, small pellet pigs had positive gains but much lower than their pre-weaning ADG rate, and large pellet pigs maintained an ADG similar to that of their pre-weaning gain (Figure 2). This indicates that the large pellet pigs got onto feed much faster post-weaning, and were able to cope with weaning stress better than the pigs in the no creep and small pellet groups. Large pellet piglets did not experience the post-weaning growth lag commonly seen in commercial pig production. Additionally, the ADG for large pellet pigs (113.2 g/d) was higher than that of small pellet pigs (104.2 g/d) or no creep pigs (106.2 g/d) between day 4-7 post weaning ($P < 0.05$), immediately after being moved on a commercial truck to an offsite nursery and mixed with new pen mates. Again, this indicates the piglets given the large pellets pre-weaning were able to cope with post-weaning stressors better than those offered small pellets or no creep.

When ADG was calculated for the entire wean to 28 day post-wean period, piglets fed creep feed (small or large pellets) in the farrowing room

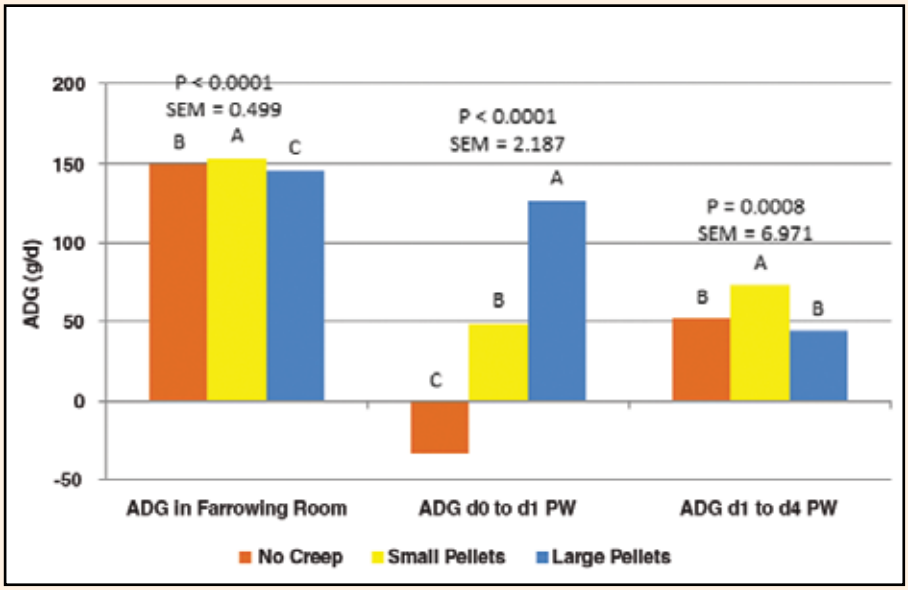
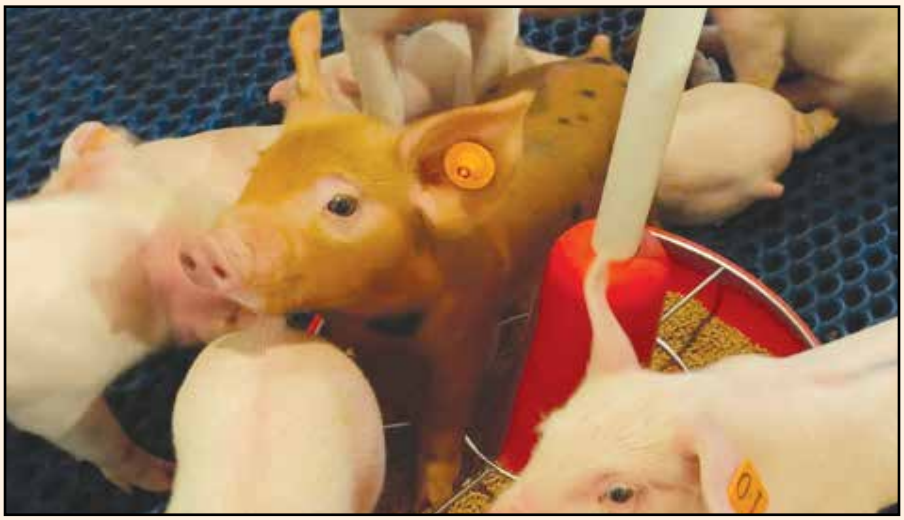


Figure 2: Average Daily Gain (g/day) of piglets in the farrowing room, for the first day post-weaning and from day 1-4 post-weaning. Differing letters within a set of bars indicates statistical difference ($P < 0.05$).

out-performed piglets not offered creep feed (no creep = 190 g/d, small pellets = 210 g/d, large pellets = 208 g/d; $P < 0.05$). This is a clear indication that offering creep feed in the farrowing room will impact nursery pig performance, which subsequently may be transferred into improved finisher barn performance and shorter days to market.



Piglet weight variability was lowest for piglets offered large pellets, and highest for piglets offered no creep throughout most of the experimental period. We also observed differences in mortality rates between the treatment groups, and the number of piglets that got held back for being 'too small' as decided by the nursery barn manager (who was unaware of which pigs were coming from which treatment group). This data is presented in Table 1. The percentage of piglets that reached day 28 of our trial was 90.5% for the no creep group, 92.1% for the small pellet group and 97.3% for the large pellet group.

In this trial we did not observe differences in the number of piglets within a litter consuming creep feed based on the pellet size; however, we did observe that piglets classed as 'eaters' were on average smaller than those classed as 'non-eaters'. This finding supports many other research trials, and we can be confident that creep feed is consumed more by smaller piglets than larger piglets.

Summary and Conclusions

This study provided very clear data that getting piglets to eat creep feed, regardless of the form of feed, has significant benefits to piglet performance. In addition, we confirmed that creep is consumed more by smaller piglets. Although we did not observe differences in the piglet body weights, ADG was higher in creep fed piglets vs. non-creep piglets. Piglets offered large pellets got onto feed faster post-weaning, did not experience the post-weaning growth lag, and were able to cope with the stress of transportation and mixing better than piglets offered small pellets or no creep, as evidenced by their higher ADG immediately post weaning and immediately following their move to the offsite nursery barn. Additionally, significantly more piglets in the large pellet treatment group made it through to the 28 day post-weaning trial end date than those on the other treatment groups.

Based on these findings, in conjunction with the findings from our 2016 demonstration trial, creep feeding does have significant impacts on piglet performance, most of which is observed post-weaning as opposed to in the farrowing room itself. Even if creep feed does not impact piglet body weight, it can impact the piglets ability to get onto feed faster post-weaning, to cope with highly stressful situations such as transportation and mixing, which in turn can reduce weight variability and reduce the number of piglets that need to be held back due to their small size.

For more information on creep feeding and maximizing creep feed intake on your farm, please contact me at:

Laura Eastwood, Swine Specialist
519-271-6280
laura.eastwood@ontario.ca

Table 1: Percentage piglet losses throughout each stage of the trial, including mortality and piglets held back for being too small.

	No Creep	Small Pellets	Large Pellets
Farrowing Room	2.2	0.0	1.1
Holding Room	0.6	0.0	0.6
Nursery Barn	2.3	3.5	1.1
Total Mortality	5.0	3.4	2.7
% Hold Backs	4.7	4.7	0.0
Total Mortality + Hold Backs*	**9.5**	**7.9**	**2.7**
% of Pigs Reaching day 28*	**90.5**	**92.1**	**97.3**

**Chi Square statistical analysis, $P < 0.05$*

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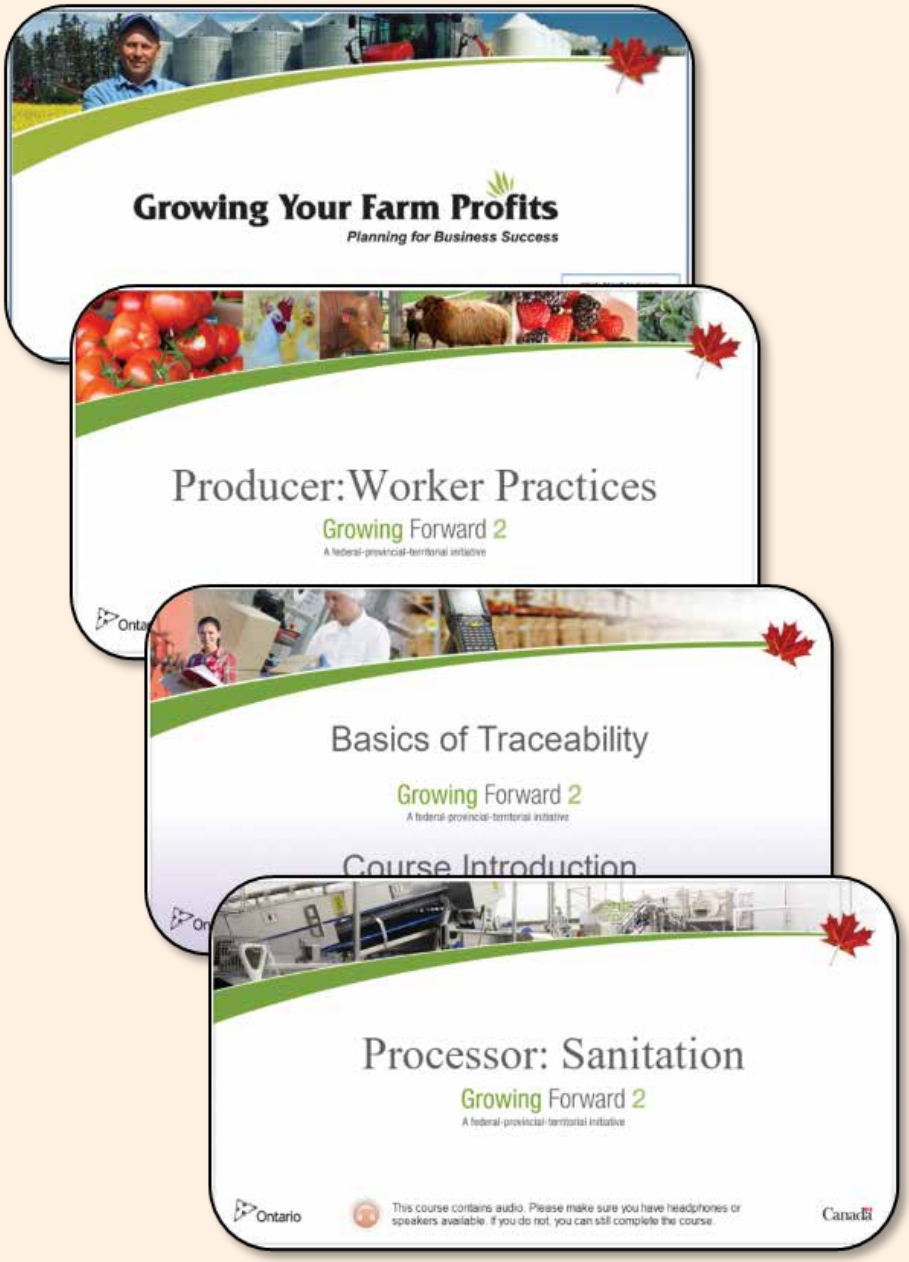
For more information, contact the University of Guelph, Ridgetown Campus at rcagfood@uoguelph.ca or 519-674-1500 ext. 63295

This project was funded in part through Growing Forward 2 (GF2), a federal-provincial-territorial initiative.



We need your help!

In order to complete the on-farm surveillance project for Senecavirus A (SVA) we need samples.

Please speak to your veterinarian when submitting routine blood samples for other reasons and remind them to fill out the special SVA surveillance project- AHL submission form and to include it with the submission. The only requirements are that you must be submitting 20 or more blood samples for testing to the AHL and you must include your farm Premise Identification Number (PID).

OMAFRA Farrow to Finish Swine Enterprise Budget - 5 Year Summary

Compiled by the OMAFRA Swine Team *OMAFRA.Livestock@ontario.ca*

	2013	2014	2015	2016	2017
Market Hog Value	$183.85	$237.53	$185.77	$177.69	$192.40
Feed Costs	$128.21	$117.75	$115.72	$113.95	$113.10
Other Variable Costs	$39.49	$37.80	$38.44	$40.43	$43.51
Fixed Costs	$20.74	$21.92	$21.92	$23.76	$23.76
Total Cost per Pig	$188.45	$177.46	$176.07	$178.14	$180.38
Net Return	-$4.60	$60.07	$9.70	-$0.45	$12.02

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

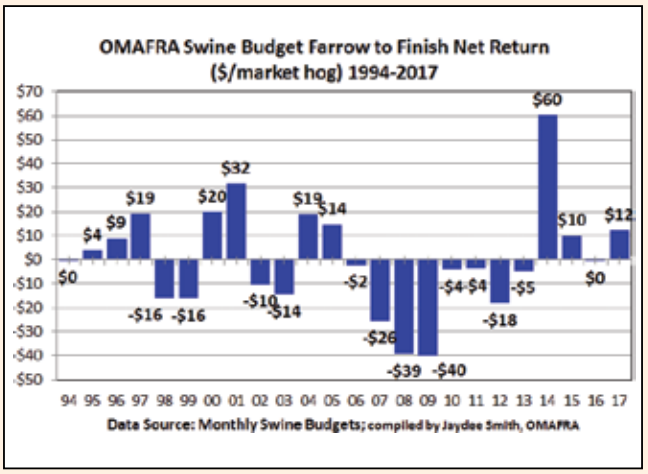
$ per pig	$55.64	$119.79	$70.05	$63.74	$79.30

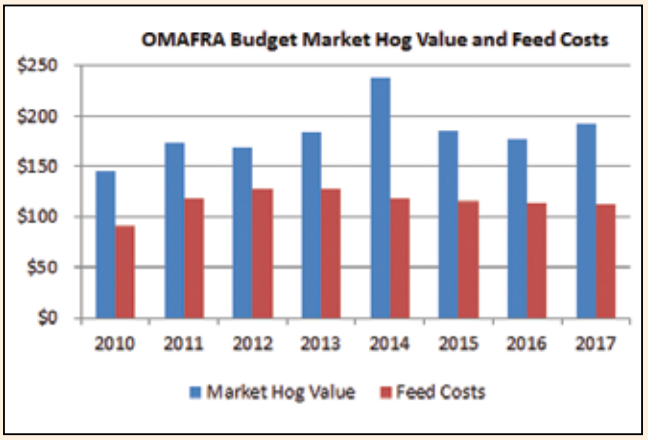
Calculated Breakeven Prices

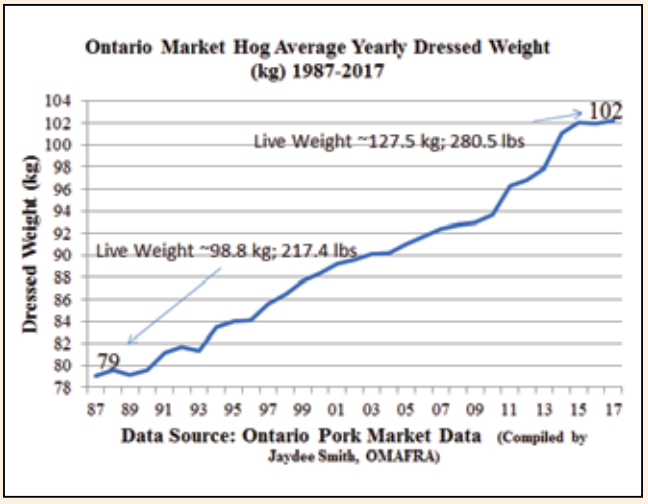
Variable Costs	$152.31	$136.82	$134.21	$134.50	$136.10
Total Costs	$171.38	$156.35	$153.54	$155.47	$157.02

Market Information

Dressed Weight	97.92	101.01	102.04	101.98	102.26
Market Index	110.00	110.00	110.00	110.00	110.00
Market Price (100% FP)	$167.16	$209.88	$163.00	$163.00	$167.73
Corn (FOB Huron, $/tonne)	$222.10	$173.80	$183.66	$181.87	$179.99
Corn (W. Ont. Feed, $/tonne)	$237.94	$192.90	$198.19	$197.47	$196.42
Soybean Meal	$564.72	$641.85	$528.25	$520.26	$488.81
U.S. Reference Price	$89.65	$105.28	$70.36	$64.97	$71.48
Canadian Dollar Value	$0.9711	$0.9061	$0.7837	$0.7548	$0.7708
Prime Interest Rate	3.00%	3.00%	2.71%	2.70%	2.90%







Ontario

Swine Budget – February 2018

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 $165.96/ckg, 110 index, 104.44 kg plus $2 premium				$194.57
Variable Costs ($/pig)				
Breeding Herd Feed @ 1,100 kg/sow	$13.14			$14.41
Nursery Feed @ 33.5 kg/pig		$15.98		$16.84
Grower-Finisher Feed @ 277 kg/pig			$81.87	$81.87
Net Replacement Cost for Gilts	$1.69			$1.85
Health (Vet & Supplies)	$2.16	$2.10	$0.45	$5.03
Breeding (A.I. & Supplies)	$1.80			$1.98
Marketing, Grading, Trucking	$0.90	$1.50	$5.76	$8.33
Utilities (Hydro, Gas)	$2.35	$1.38	$2.13	$6.17
Miscellaneous	$1.00	$0.10	$0.20	$1.40
Repairs & Maintenance	$1.26	$0.61	$2.15	$4.19
Labour	$6.27	$1.85	$4.00	$12.83
Operating Loan Interest	$0.24	$0.33	$1.10	$1.72
Total Variable Costs	**$30.82**	**$23.85**	**$97.67**	**$156.61**
Fixed Costs ($/pig)				
Depreciation	$4.22	$2.04	$7.18	$13.95
Interest	$2.36	$1.14	$4.02	$7.81
Taxes & Insurance	$0.84	$0.41	$1.44	$2.79
Total Fixed Costs	**$7.42**	**$3.59**	**$12.64**	**$24.55**
Summary of Costs ($/pig)				
Feed	$13.14	$15.98	$81.87	$113.12
Other Variable	$17.68	$7.87	$15.80	$43.48
Fixed	$7.42	$3.59	$12.64	$24.55
Total Variable & Fixed Costs	**$38.24**	**$27.44**	**$110.30**	**$181.16**

Summary	**Farrow to Wean**	**Feeder Pig**	**Wean to Finish**	**Farrow to Finish**
Total Cost ($/pig)	**$38.24**	**$67.24**	**$139.22**	**$181.16**
Net Return Farrow to Finish ($/pig)				**$13.41**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium				**$154.41**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium				**$157.69**

This is the estimated accumulated cost for a market hog sold during the month of February 2018. The farrow to wean phase estimates the weaned pig cost for September 2017 and the nursery phase estimates the feeder pig cost for November 2017. For further details, refer to the "2018 Budget Notes" posted at http://www.omafra.gov.on.ca/english/livestock/swine/finmark.html.

UPDATE ON SWINE DISEASE RISK IN ONTARIO

by LILIAN SCHAER

Swine experts shed light on current disease statuses and offer advice to help protect your operation.

Sylvia Galbraith photo

It's always a good idea to regularly review biosecurity protocols, especially those protocols that reduce cross-contamination risk when managing or moving pigs, servicing barn equipment, managing feed or dealing with deadstock.

A number of swine diseases with significant impact potential continue to circulate in Ontario. Below, Swine Health Ontario (SHO) provides the status updates and reminders for reducing transmission risk.

Porcine Epidemic Diarrhea (PED)

Six PED cases were still considered positive in Ontario as of mid-February. Two of the three most recent breaks happened in finishing barns and only one occurred in a sow herd. The industry has conducted PED monitoring at multiple assembly sites and these sites have tested positive at times.

One large Ontario processing plant also periodically sees positive test results from samples taken at the loading docks. These positive samples found at processing sites are expected to primarily be the result of contact with assembly points.

"The low number of positives is attributable to better biosecurity by everyone but especially by transporters and producers," says Dr. Cathy Templeton, a veterinarian with South West Ontario Veterinary Services and SHO Leadership Team member.

"We recognize how difficult it is to maintain biosecurity protocols in cold weather, so it is truly a good news story that we've only had three PED breaks so far this winter."

Recommendation: Remember that PED and delta coronavirus travel in manure. Although trailer washing is a risk reduction tool, it is not a guarantee that a trailer backing up to a barn is safe.

The barn door is the place to prevent PED and delta coronavirus transmission as these viruses can be carried into the barn on people, pigs or equipment. If shipping areas are designed with strict one-way pig flow and a clean/dirty area is clearly separated, ideally with the addition of positive pressure, the risk of a dirty truck can be greatly reduced.

Senecavirus A (SVA)

SVA is active in Ontario sow assembly sites but, to date, it has not been detected on-farm. The industry continues its SVA monitoring at assembly sites – the three main

cull sow sites test positive at times, as do approximately 10 per cent of secondary assembly sites. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) is supporting an on-farm SVA testing program and SHO is actively seeking producers willing to have their herds tested for antibodies to the virus.

"Twenty blood samples will be taken from your herd with testing paid for by OMAFRA. The test, which looks for SVA antibodies, is anonymous and for scientific reasons only," says Templeton, adding interested producers should contact their herd veterinarians.

Recommendation: It's always a good idea to regularly review biosecurity protocols, especially those protocols that reduce cross-contamination risk when managing or moving pigs, servicing barn equipment, managing feed or dealing with deadstock.

Porcine Reproductive Respiratory Syndrome (PRRS)

A combined SHO/Ontario Swine Health Advisory Board (OSHAB) PRRS monitoring project that is an extension of the current Ontario Area Regional Control and Elimination program is entering its second year.

The goal is to more accurately classify site-specific PRRS status, measure the clinical impact of herd breaks, and quickly identify and report on particularly virulent strains of the virus.

After four sow herd breaks in January 2017, the industry reported one to two new cases monthly – but that situation changed with 10 sow herd breaks in December alone.

"We are collecting data on the immediate impact of a PRRS outbreak, as well as on the production impact eight weeks after diagnosis, so we can rank outbreaks as mild, moderate or severe and report to industry in a timely manner. This approach has not been taken before in Canada and the U.S.," says Dr. Ryan Tenbergen of Demeter Veterinary Services, who is also a member of OSHAB's science and technology committee.

Although trailer washing is a risk reduction tool, it is not a guarantee that a trailer backing up to a barn is safe.

More data on the severity of the PRRS strains seen in recent months will be available as on-farm production impact is assessed.

Recommendation: With as many PRRS breaks in December as in the previous 11 months of 2017, it's important to be vigilant about biosecurity and to revisit your procedures for people traffic, deadstock and live animal introductions.

Reviewing actual procedures on your farm and not just the written protocols can enable you to identify changes that you could make to improve biosecurity and stop disease at the barn door.

Swine influenza

Influenza is no stranger to the Ontario hog industry, but the way the disease is acting and moving has changed, says Dr. Kevin Vilaca, veterinarian with South West Ontario Veterinary Services and a member of OSHAB's science and technology committee.

Newer strains are lasting longer, causing more damage and leaving animals sicker than before. Many commercial vaccines are outdated, so influenza can become endemic within a herd, repeatedly re-infecting pigs. While H1N1 and H3N2 have long been circulating in Ontario, they were joined by H1N2, a new virus, in 2016. OMAFRA has started building an influenza database and sequencing all flu virus cases that go through the Animal Health Laboratory.

"It's still in early stages but, in consultation with different universities in Canada and the U.S., we're starting to see trends and reference viruses from other areas," says Vilaca.

Recommendation: Influenza can be transmitted by aerosol but often enters barns through the movement of people, so producers and barn workers are encouraged to get vaccinated. Biosecurity at transport and on entrance to farms can help keep influenza out. **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.

NEW TECHNOLOGY CAN HELP YOUR OPERATION

by TREENA HEIN

PRAIRIE SWINE CENTRE 25 YEARS

These systems can be game changers but necessitate a shift in mindset.

Using multiple online systems to monitor and manage herd performance of sows and finishers is now second nature for John Van Engelen and his family at Hog-Tied Farms in Lambton County, Ont.

The advantages provided by these systems are very powerful, Van Engelen says, but if you are not the type of farmer who is interested in trying new things and using the knowledge that comes with new tools, the technology may not be for you.

Let's start with benefits to the bottom line. Every system at Hog-Tied has paid for itself at least once over. Indeed, a particular system can pay for itself simply by resolving one problem, Van Engelen says.

"As an example, a while back, my feed monitoring system informed me the pigs had an ADG (average daily gain) of 880 g, when that figure is usually about 1,000 g," he explains.

"I suspected toxins in the corn and I had it tested. The feed company assured me all was well, but I had it tested two more times because I could clearly see the loss in performance with the system data. I put a binder in the feed and the pigs went to gaining over 1,000 g per day again.

"Without the system picking that (issue) up right away, it would have taken me much longer to see the problem and deal with it. And I wouldn't have had any hard data about the extent of the problem."

Van Engelen also points to the big financial picture in terms of small, ongoing savings.

"If an average herd goes through a million dollars of feed in a year, and the technology allows you to save 0.5 or 1 per cent every year, it's more than worthwhile," he says.

The system data can be viewed on a smartphone or any other device. Van Engelen spends the first minutes every morning looking at how each sow is eating and his son looks at the market pigs.

KellyJo/Getty Images Plus photo

"If an average herd goes through a million dollars of feed in a year, and the technology allows you to save 0.5 or 1 per cent every year, it's more than worthwhile," John Van Engelen says.

Van Engelen installed a two-way sorter for phase feeding in 2003. When he built a new barn in 2013, he added five three-way sorters with RFID (ear tag) technology used in conjunction with the feed monitoring system. It means physical sorting is not needed, which provides cost savings in labour.

The system's market predictor, which forecasts when to ship pigs, provides more savings. Pig weights are uniform and the animals get the exact protein they need at the time they need it. The system simplifies a lot of things, Van Engelen says, and it creates savings all the time.

Right now, he only uses the RFID system for on-farm trials run in collaboration with his packing plant or veterinary pharmaceutical companies. Van Engelen, however, is looking at using the system for all pigs in his operation.

"What I've learned so far with the trial pigs is that there is an average difference of $20 in feed between the pig that does best and worst," he says.

"If you can use the technology in the entire herd to identify and segregate the poor doers and sell them for BBQ and stop the spread of flus, for example, the performance of the herd and the health of the herd will be better. The cost will easily be worthwhile.

"It's so easy to track individual animals with their growth rate and so on. With this system, you can also age boars and ship them before there is boar taint and the need to castrate. Mandatory shipping before taint to completely avoid castration may become a requirement for pigs shipped to Europe or for all pigs raised in North America. ... With this system, I am ready for whatever comes."

Van Engelen also uses four

An advantage to all these technologies for Hog-Tied Farms is that the operation will not require any additional labour after the 2018 expansion is complete.

electronic sow feeder (ESF) stations, three for sows and one for gilts. The data allows him to provide exactly the feed required for sow at various stages of pregnancy and by weight. He can also try different feeding regimens. He is experimenting, for example, with protein levels for third parity-plus sows, feeding them lower-scale protein to day 85.

A few more technologies are in place at Hog-Tied Farms. Van Engelen has added the ESF software program to an automatic feed dispenser for the farrowing sows, which provides labour savings. This tool is especially handy when Van Engelen and his son are combining in the fall.

RFID technology is also tied into the ESF pens, where it automatically tracks how many times the sows approach the window of the adjacent boar pen and the length of time they stay. When a threshold is reached, the system automatically spray-marks the sows identified to be in heat.

Lastly, the ventilation systems are automated.

In Van Engelen's view, the benefits of these tools go beyond a dramatic improvement in the productivity of his operation – he thinks that technology will also help keep younger people in agriculture.

"Once you have various tools in place, I would think you won't believe the difference and would never go back," he says.

"I've grown into it, but my kids have never been without these systems. I don't think they would be here without them because (the work) would be dull, cumbersome and unsafe.

"We have Wi-Fi in the barn and we wear wireless headphones that provide hearing protection. You can also hear the news, take a phone call or the kids listen to music. They both love being here. With all these tools, pig farming is interesting, efficient and enjoyable."

Another advantage to all these technologies for Hog-Tied Farms is that the operation will not require any additional labour after the 2018 expansion is complete. (The family is building a new barn, with the total farm sow number increasing from 250 to 350.)

"With these systems, I am ready for the future," Van Engelen says. "I highly recommend them."

In September, Van Engelen was one of several experts who spoke at a series of Group Sow Housing Seminars hosted in Winnipeg, Man. and Strathmore, Alta. The meetings brought together experts in the areas of construction/renovation, technology/innovation, nutrition, science and behaviour to discuss the conversion to group sow housing.

If you are looking for more information on the transition to group sow housing, you can find videos and presentations from the seminar at prairieswine.com/successfully-converting-to-group-sow-housing/.

This project, "From Innovation to Adoption: On-Farm Demonstration of Swine Research," is funded by Swine Innovation Porc within the Swine Cluster 2: Driving Results Through Innovation research program. Funding is provided by Agriculture and Agri-Food Canada through the AgriInnovation Program, provincial producer organizations and industry partners. **BP**

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

KEEPING IT SIMPLE IN LOOSE HOUSING

by CARRIE ANDERSON

While the conversion certainly brings changes to your barn, the transformation can be straightforward.

New Standard Group photo

One of the best parts of the forward-exiting ESF system is that sows are not as prone to crowding the entrances to the feeders.

As the Canadian hog industry continues its transition from gestation crates to group housing, many individuals and companies are presenting different opinions on how producers should approach this undertaking. As with most things in life, the more you research this topic, the more confusing it can be.

Using the KISS (Keep It Simple, Stupid) rule, I reviewed what the conversion to loose housing is really like for some producers – and some of what I found was quite surprising.

You can convert without affecting production

The possibility of reduced production after the transition to loose housing is at the forefront of many producers' minds. Depending on who they have talked to, producers may have heard that their sow inventories would drop up to 20 per cent after conversion.

Interestingly, in my analysis of real-world results, I saw that when operations have proper plans in place, production does not have to decrease at all.

"A typical converted barn can still hold just as many animals as before," said Kevin Kurbis of New Standard Ag, a company that works closely with producers during their transitions to loose housing.

"We've converted well over 70,000 sow spaces and we only had to cut back on the sows in a couple of situations." He has achieved these results by utilizing existing alleys, and other empty or dead spaces, in new ways.

While commonly referenced by the industry, the number of sows prior to and post conversion is not the most reliable indicator of production, Kurbis explained.

"We typically also see an increase in production levels after conversion. So at the end of the day, even with fewer sows in some barns, there was the same number of pigs being produced," he said.

You can convert without concrete work

Concrete work can be expensive, messy and time-consuming. Quite understandably, some producers dread this work when converting their barns to loose housing. When asked about the amount of work it takes to convert a barn to loose sow housing, I was surprised to find it does not require a complete destruction of the concrete.

"The slat-to-solid ratio in most stall barns works pretty well within our desired floor plan. If it is total slat, then it gets real easy," Kurbis said. "On a partial slatted barn, we just excavate a few key areas but the majority stays in place."

The time frame to convert a barn

Jim Algie photo

With exits far enough from feeder entrances, sows are much more likely to lay down and relax rather than head right back to the feeders.

does not change based on its size, he added. "Pretty much any conversion can be done in six weeks – the size doesn't affect that (timeline) because we go through the same steps regardless of size."

The design doesn't have to be complicated to work

When it comes to the design of the barn, Kurbis is all for keeping the design simple and guided by natural sow behaviour.

"Our approach is to first look at what the sows want to do naturally and then find equipment and designs or layouts that encourage that behaviour," Kurbis said.

The best example of this practical design work is evident in pen layout, he said.

"We always keep the sows moving forward," Kurbis said, "so there is no need to train them to back out of stalls. This (layout) is key during feeding time when extra activity can increase the aggression amongst the sows.

"The sows exit on the front alley. They never have to have their back ends exposed to other animals trying to enter the feed station."

You need a supportive partner in the transition

Ian Hill from Bailey Creek Pork is the managing director of a 1,700-sow farrow-to-finish operation in Queensland, Australia. After a worldwide search for a suitable stall-free system, Hill met Kurbis and his team in Canada.

For Hill, the decision to work with Kurbis came because he saw value in the way the system focuses on the needs of sows. While the system itself won him over, Hill found the custom barn design and guidance from his design and support partner to be most valuable.

Of course, happy sows didn't hurt either. "The sows on this system are the most relaxed I have ever seen," Hill said.

If the system isn't putting the sow first, a problem exists

Since the main reason behind the push to convert to loose housing is based on animal welfare, it only makes sense that a system that puts the animal first would be successful.

When I asked Kurbis if he was concerned about the potential challenges producers might face while converting their barns, he just smiled. "No…it's simple," he said. **BP**

Carrie Anderson is a writer from Sioux Falls, South Dakota who has a passion for pigs. While she currently spends her time working for 5j Design + Marketing and writing for several blogs, she used to work as an assistant to a swine vet.

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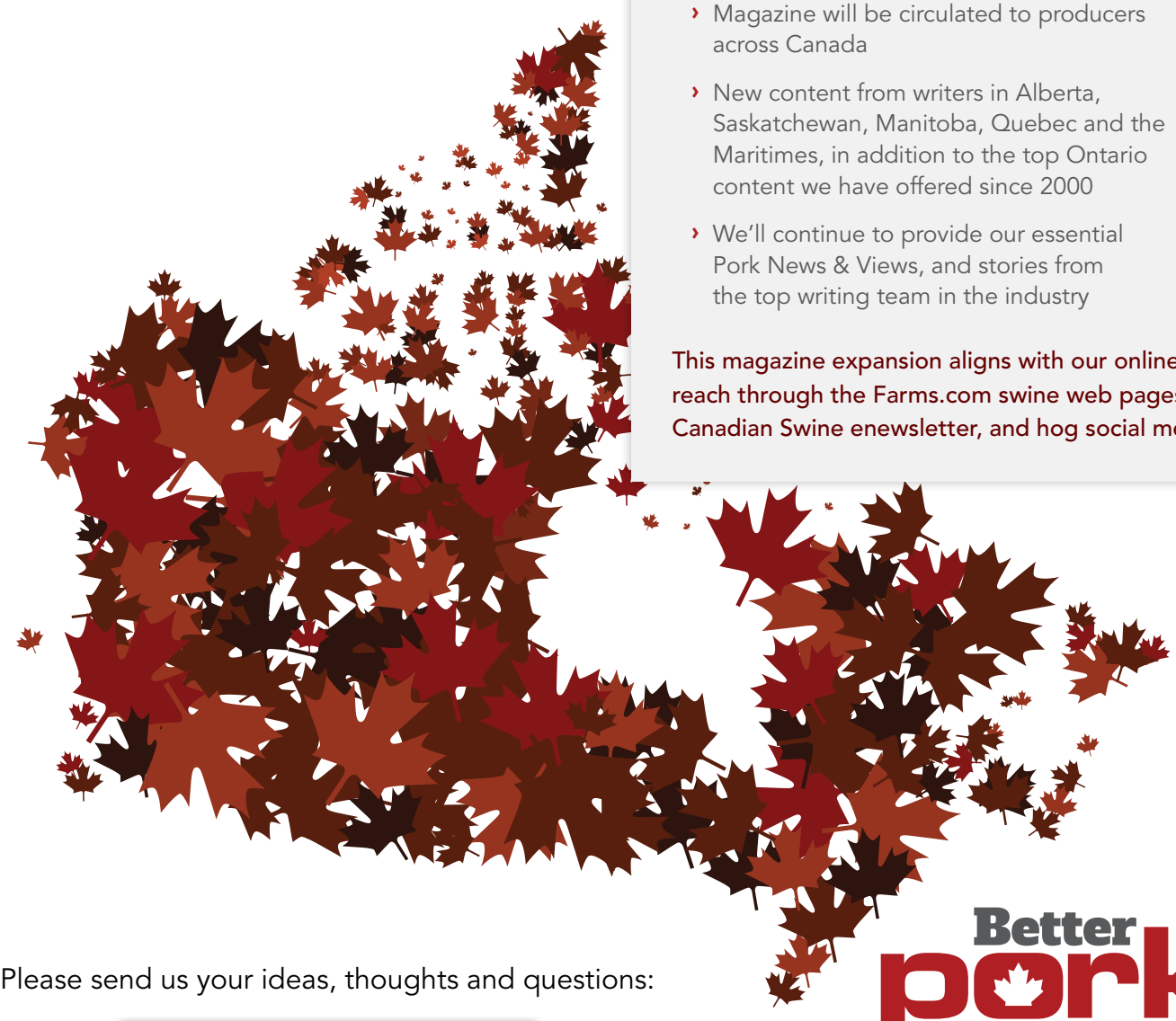

Please send us your ideas, thoughts and questions:

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MOE'S MARKET MINUTE

by
MOE AGOSTINO
& ABHINESH GOPAL

WILL BOOMING PORK DEMAND CONTINUE?

Forecasts continue to look promising for pork exports and domestic consumption.

margouillatphotos/iStock/Getty Images Plus photo

Though 2017 U.S. pork production was record large, export demand was also very strong.

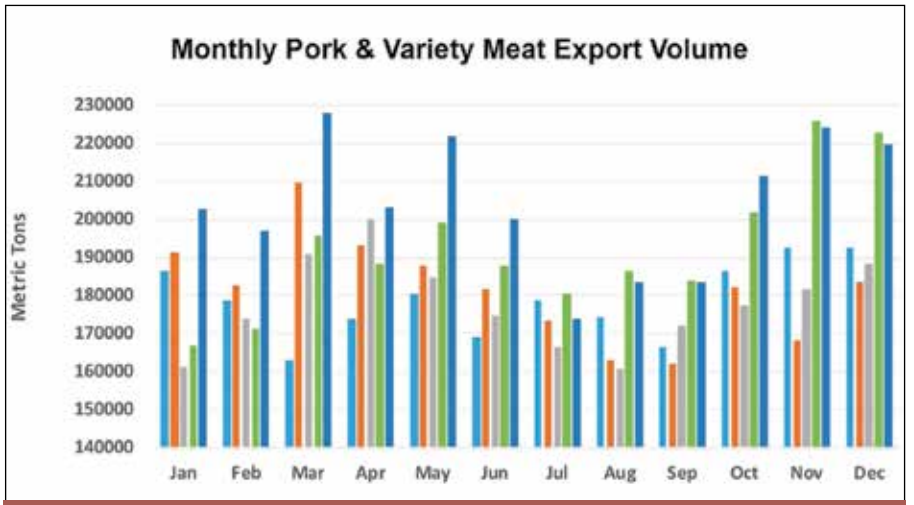
Last year was a record-breaking one for the volume of American pork exports, according to U.S. Department of Agriculture (USDA) data compiled by the U.S. Meat Export Federation (USMEF). Last year's exports easily surpassed the 2016 volume record by 6 per cent and, at US$6.49 billion in value, the total 2017 exports value was just shy of the 2014 record of US$6.67 billion.

China/Hong Kong was the largest destination for American pork variety meat exports, according to USMEF, and 2017 exports to this region increased by 2 per cent in volume (up to 321,116 tonnes). The value of these exports climbed 16 per cent (to US$741.8 million), as variety meat exports to China and Hong Kong accounted for an average of US$6.12 per U.S. hog slaughtered.

Globally, American pork variety meat exports increased by 4 per cent (to 543,973 tonnes), while export value increased by 17 per cent. On average, these exports equated to an average of US$9.67 for every hog processed, which was a record for the industry.

Due to the discontinuation of American involvement in the Trans-Pacific Partnership trade agreement, the country's pork industry is experiencing a growing concern about market access in Japan. Competitors like Canada, Mexico, Chile and the European Union face lower trade barriers and/or favourable trade arrangements compared to the United States. And, of course, North American Free Trade Agreement renegotiations continue.

Though 2017 U.S. pork production was record large, export demand was also very strong. While the new volume record for pork is impressive, the export value increased at an even more rapid pace, the USMEF said. This information confirms that



Source: U.S. Meat Export Federation based on USDA data

America exported significant quantities of pork in 2017, particularly during spring, early summer and towards the end of the year.

international demand is robust and the trend is expected to continue in 2018.

USDA forecasts a yearly increase in American pork exports of 4.7 per cent in 2018, taking them to a new record of 5.9 billion pounds. American pork production will also be higher this year, with the USDA projecting a year-on-year increase of 5.1 per cent. The department also forecasts American pork consumption will rise to 51.8 pounds (23.5 kg) per capita.

The 2018 expansion of the American pork processing capacity and increased shackle space give the industry an advantage over other meats, and will be key supportive factors for prices.

A seasonal drop in winter pork demand and burgeoning supplies did weigh on hog prices early in the year, as did lower U.S. pork packer margins. Markets, however, await the spring/summer grilling season. Last year, strong bacon demand and the resultant shortage of pork bellies in cold storage were instrumental in propping up pork values and hog prices during the summer.

In January, pork sold for an average of US$3.75 per pound at American grocery stores. While this price is only an increase of 1 cent since December, it is an increase of 18 cents from a year ago.

Hog prices will drop by 8.1 per cent in 2018 and by another 5.9 per cent in 2019, according to USDA's projections. After 2019, however, prices should slowly increase over the next decade.

4kodiak/iStock/Getty Images Plus photo

American pork consumption in 2018 could turn out to be much higher than current market expectations!

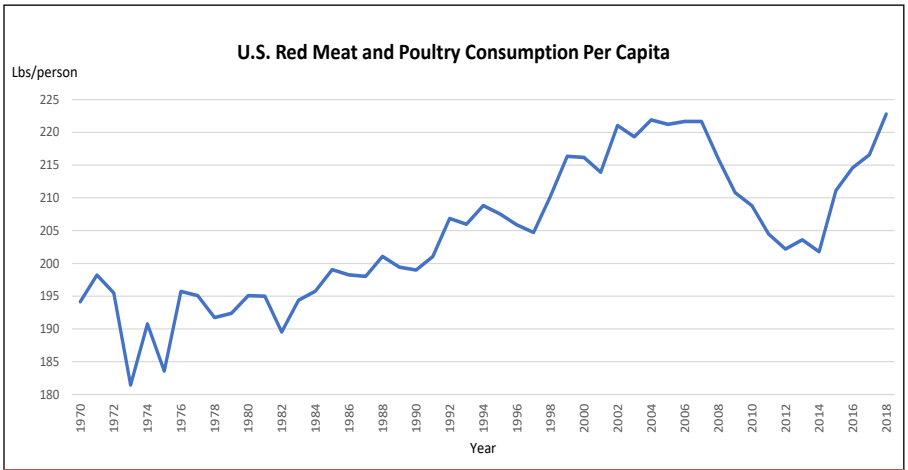
Interestingly, the February fall in hog prices coincided with the drop in the American stock market, which highlights the perceived relationship between economic health and consumer demand.

A tax break for U.S. consumers, through Trump's tax cut measures, means more money in consumers' pockets. Likely, they will eat out at restaurants more often and increase their protein (meat) consumption.

American availability of the top four proteins – beef, pork, chicken and turkey – will average 222.8 pounds (101.1 kg) per capita this year, which is an increase of 2.6 per cent year-on-year and the largest total ever.

American pork consumption in 2018 could turn out to be much higher than current market expectations! **BP**

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



Source: United States Department of Agriculture, Economic Research Service

The USDA projects that per-capita meat availability will continue to rise this year.

by
RICHARD SMELSKI

WHAT MIGHT THE FUTURE LOOK LIKE?

Technological progress is happening at a dizzying speed – especially as multiple elements come together.

Which would you rather choose: $1 million or a penny that doubles every day for 31 days?

If you picked the first option, you would have missed out on over $10 million.

This example demonstrates the compounding effect of technology. Just as the most significant gains in compounding from the penny occurs towards the end of the 31 days, the same can be said for technology – the overwhelming majority of the world's data has been created in the last few years, according to a 2016 statistic from IBM.

How will our world change in the near future? Let's take inventory of some of the current technologies, including artificial intelligence, CRISPR, 3D printers, e-commerce and body monitors. When we combine the effects of such technologies, we create a larger synergy.

In the future, 3D printers could replace – or at least work alongside – contractors, mechanics and carpenters. A group in China, for example, has already 3D printed and built a six-story apartment building.

Body monitors are another growing area of interest. How many people do you know who wear Fitbits, health monitors or GPS devices? Another device, known as the Tricorder, can work with your phone, and take your retina scan, blood sample and breath sample. This device then analyzes biomarkers that can identify 13 diseases. Technology can also detect birthing, estrus or feeding in livestock.

How about advances in voice and facial recognition? Scientists created the first digital camera in 1975. Today, facial recognition technology can identify individuals from a database of 10,000 people within 100 milliseconds. Border service officers use this technology for passport verification and it is more accurate than human verification.

Clearphoto/Getty Images Plus photo

Want to predict the changes in society and the agri-food industry over the next several years? Compare it to compounding the penny.

In the agricultural industry, robotic technology is an obvious development. We use it to wash barns and complete routine chores, for example. But when researchers combine robotic technology with artificial intelligence, we get driverless cars and tractors.

How about meat substitutes? Some of the biggest players in the agri-food industry, including Tyson Foods and Cargill, are investing in meat substitutes. Even Bill Gates is involved. Ynsect, a French company, produces replacement protein from insect meal for fish and animal feed. In British Columbia, Enterra Feed Corporation manufactures insect-based feed ingredients.

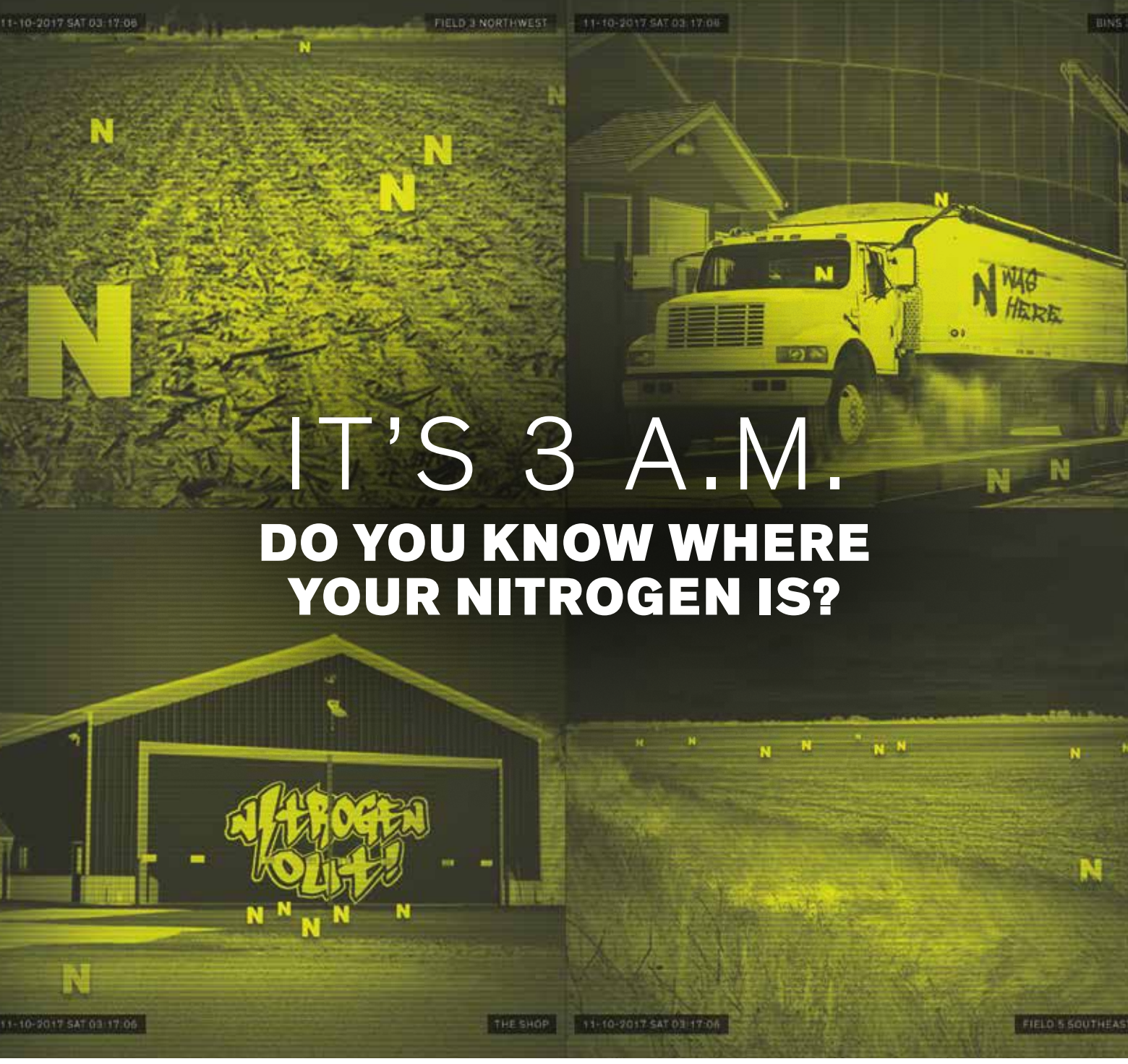
The most dramatic advance, in my mind, is the development of CRISPR. This technology is a simple yet powerful tool for editing genomes. Researchers use it to easily alter DNA sequences and modify gene function.

CRISPR's potential applications include correcting genetic defects, treating and preventing the spread of diseases, and improving crops.

Scientists have applied CRISPR technology in the agri-food industry to improve the drought tolerance of crops, as well as their yields and nutritional properties. Researchers can also use CRISPR for germline editing, which involves making genetic modifications to reproductive cells and embryos. Scientific and public debates continue about the use of CRISPR technology, centering on ethical concerns.

Want to predict the changes in society and the agri-food industry over the next several years? Compare it to compounding the penny. **BP**

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



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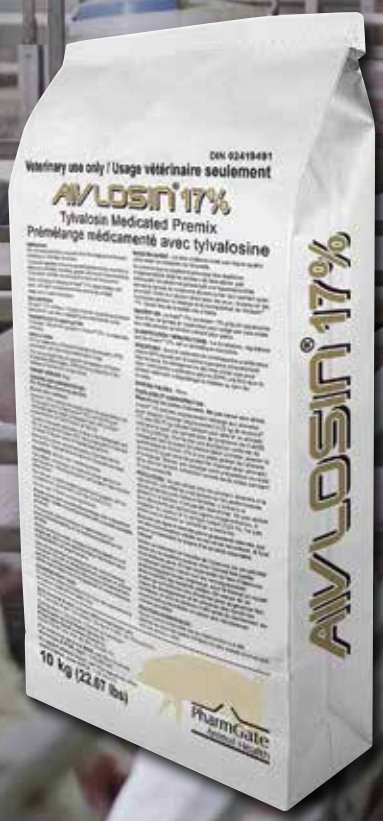

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[a]Canadian Veterinary Medical Association guidance on the prudent use of anti-microbial drugs, 2014.
[b]Data on file.

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