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LETTERS FROM A FAMILY FARM

STAFFING FARMS FOR SUCCESS

One of our seemingly constant battles in the ag industry is finding – and retaining – good workers.

The **Canadian Agricultural Human Resource Council** tracks these often-daunting statistics and helps to advocate for programs to address this hurdle in our industry. By 2025, the council projects, "the sector will have nearly 114,000 more jobs than can be filled by the domestic labour force."

This staffing difficulty is perhaps particularly acute when it comes to management in livestock operations. After all, someone with good animal husbandry instincts and skills can be a difficult find – let alone someone with this knowledge who is also good at leading a team.

This month, writer **Kate Ayers** explores the attributes of successful hog barn managers, as well as the challenges and opportunities in recruiting qualified candidates. Hopefully this article provides some useful insights for the next time you must hire someone for this integral role.

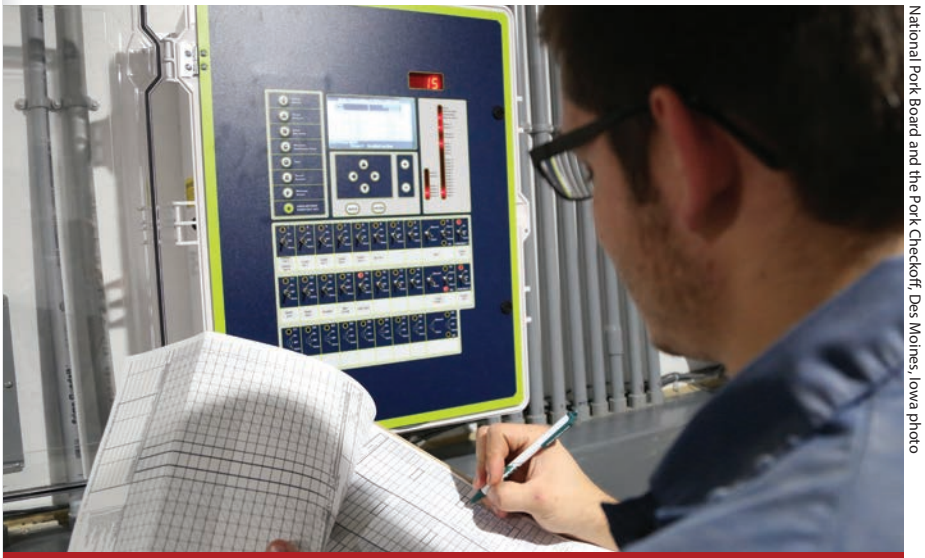
Alternatively, you may consider a form of succession planning within your farm team, in terms of promoting from within and helping someone on staff develop the additional skills necessary to take on the role of barn manager.

Our writers also tackle several production issues this month. **Nicholas Van Allen**, for example, delves into the topic of resiliency and the research efforts underway to help strengthen the health of our herds.

Swine veterinarian **Hollyn Maloney** discusses the problem of pre-weaning mortality and the steps we can take to cut down on these piglet losses.

As always, I hope this month's content helps you continue to make incremental improvements in your swine operation.

Andrea



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

Barn managers work "towards a plan that will ensure the sustainable growth of the farm and the well-being of its people," says Heather Watson, the executive director of Farm Management Canada in Ottawa. See "Hog barn managers: 'The glue that holds the vision to reality'" on page 6.


stuartmiles99/iStock/Getty Images Plus photo

USMCA: MUCH ADO ABOUT SOMETHING FOR PRODUCERS

Now that North American officials have signed the United States-Mexico-Canada Agreement (USMCA), Canadian hog producers have shifted their focus from whether a deal can be reached to what it means for them.

Although the ag industry is relieved that the clouds may have lifted around commerce with the United States, our biggest trade partner, the deal isn't all blue skies for hog producers.

"Our biggest concern is the increased competition that pork producers face because of subsidies for some sectors of agriculture," said **Gary Stordy**, the **Canadian Pork Council's** (CPC's) director of government and corporate affairs.

"These are apparently pure cash payments associated with the deal that are being offered to certain commodities, yet there's no evidence that the recipients are facing a loss related to USMCA," he added.

As Canadian pork farmers compete with other commodities for scarce resources like land, some stakeholders worry that compensating some agricultural commodities, while neglecting others, puts the hog industry at a disadvantage.

The USMCA must still be ratified by the governments of all three countries. In the meantime, the CPC encourages pork producers to talk with politicians about the importance of a level playing field and the implications of the agreement on farmers' bottom lines. **BP**

ONTARIO UPDATES ANIMAL WELFARE BILL

Ontario's new animal welfare legislation came into effect Jan. 1.

When drafting the new bill, called the Provincial Animal Welfare Services (PAWS) Act, 2019, the Ontario government consulted with livestock sector representatives to ensure the bill was well-suited to govern the treatment of farm animals.

"The government was good at meeting with all stakeholders to try and come up with the best solutions," **Eric Schwindt**, the chair of **Ontario Pork**, said in an interview.


Tsekhmister/iStock/Getty Images Plus photo

Industry groups assisted in writing the bill and will also advise on enforcement, he said.

A top priority for the pork sector throughout the process was ensuring "that biosecurity measures are respected," he said.

But Schwindt doesn't anticipate the new legislation will have much of an effect on pig farmers because the vast majority "of pork producers never have any animal welfare issues on the farm level," he said.

Overall, the PAWS Act focuses on transparency and accountability to ensure the public understands that all animals in the province are treated humanely. **BP**

STAKEHOLDERS BRACE FOR RISK OF ASF

Swine industry researchers are working around the clock to prevent African swine fever (ASF) from entering North America and to ensure the continent's producers are ready to act in the event of an outbreak.

As part of an ASF collaboration project, the **Swine Health Information Center** (SHIC) team toured affected farms in Vietnam, a November *Farmscape* article said.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"The project will benefit from collaboration and will help identify answers to specific questions that we have in order to do a better job of being prepared for an ASF infection in North America," **Dr. Paul Sundberg**, the SHIC's executive director, said to *Better Pork*.

The team is investigating such factors as entry pathways, virus isolation, surveillance tools and farm repopulation, Sundberg said in the article.

"We learned from the porcine epidemic diarrhea (PED) outbreak in the United States in 2013 that we weren't prepared for an emerging disease," he said to *Better Pork*.

"We had to scramble to do research to understand the PED infection, the biosecurity aspects … and virus control."

So, participants in the ASF collaboration project aim to get "those answers ahead of a potential infection, rather than having to waste time after the infection gets here," Sundberg added. **BP**

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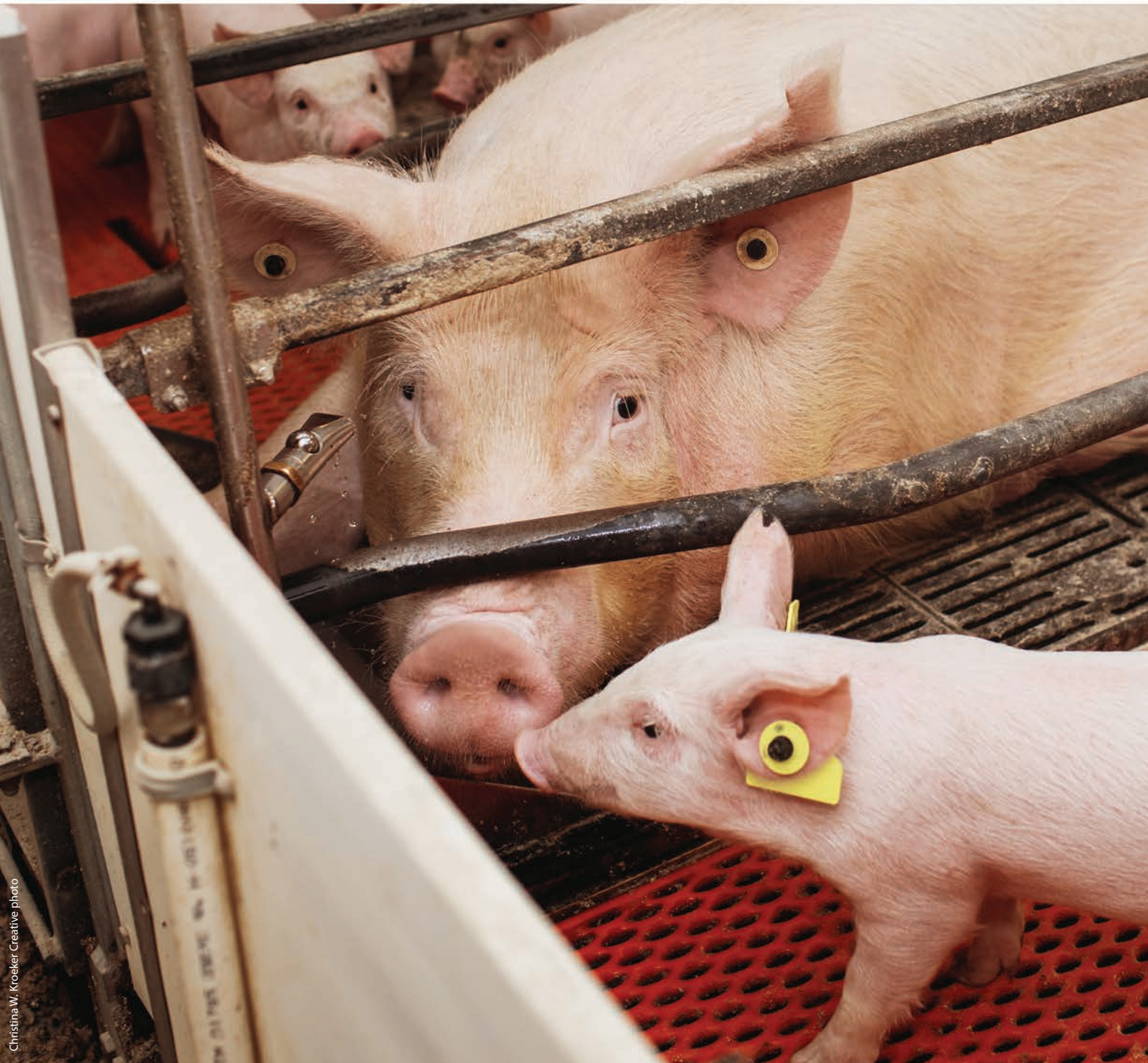
They're in high demand but must possess the r
work ethic and personality to succee

by KATE AYERS



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The Canadian swine sector's production level is projected to increase by 2.3 per cent per year in the next decade, a Canadian Agricultural Human Resource Council (CAHRC) fact sheet says.

To ensure this growth, the industry needs the right people to get the work done. And barn managers with proficient skills and qualifications can lead the industry to new heights.

"Managers ensure that the strategic direction and the overarching vision and goals of the farm are aligned with daily operations, that the farm is forever forward looking when making everyday management decisions," says Heather Watson, the executive director of Farm Management Canada (FMC) in Ottawa.

Barn managers work "towards a plan that will ensure the sustainable growth of the farm and the well-being of its people," Watson says. "Managers are essential to every farm as the glue that holds the vision to reality."

FMC is a national organization that provides the resources necessary to enable Canadian farmers to make sound management decisions, its website says.

In addition to needing the expertise to care for pigs, operate heavy machinery and maintain facilities and equipment, managers must understand finances, communicate effectively and manage staff.

Indeed, hog barn managers have many responsibilities, and applicants should be well qualified for the job. So, this month, *Better Pork* speaks with family farm owner-operators, management company representatives and a business development specialist to learn about the skills and qualities necessary for successful barn managers. These industry professionals also highlight the benefits and challenges of this position and job opportunities in the sector.

Becoming a barn manager

Hog barn managers learn through formal training, on-the-job training and experience, says "Farm manager – swine production," a CAHRC web page. So, some farm owners require their managers to have a bachelor's degree in agriculture or a related field, while other owners may welcome applicants with a high school diploma and credible experience, a PayScale article says.


Jennifer Wright

Farm owners often seek applicants who have extensive industry experience and strong management skills, says Jennifer Wright, CAHRC's senior human resources adviser and stakeholder engagement specialist. Recruiters also prefer applicants who have WHMIS (Workplace Hazardous Materials Information System) and first aid certificates, she adds.

Fortunately, many opportunities are available for individuals to learn and grow within the swine industry. For example, through a partnership between Manitoba Pork and Assiniboine Community College, instructors developed the pork production technician program, Manitoba Pork's website says. This two-year e-learning program covers communication strategies, production record keeping, stockmanship skills and biosecurity practices.

If filling a barn manager role is not urgent, farm owners may hire entry-level staff and help them develop the skills needed to take on management roles in the future, says Sydney Palmer, a

farm operator and president of CLS Consulting Ltd. in Lloydminster, Alta. CLS Consulting provides recruitment and immigration advice to resident applicants and other Canadian visa applicants, the company's website says.

Farm owners can use this hiring and training strategy if they'd like their hog barn managers to fit into their farms' established operating systems.

"Some owners don't want managers to be previously trained in a different perspective," says Richard Smelski, a pork industry professional who has more than 35 years of experience in farming, business development and project coordination. He resides in Shakespeare, Ont.

So, before applicants submit their resumés to apply for a barn manager position, they should ensure that they meet the qualifications of the job posting and that the employer runs an operation that suits their management styles.


Richard Smelski

Skill sets and qualities

To run a successful hog operation, barn managers must effectively rank tasks, Smelski says.

Barn managers need a solid understanding of swine nutrition, reproduction, animal behaviour and biosecurity protocols, says "What makes a good pig caretaker," an Iowa Select Farms article.

However, the specific skill sets that a farm owner requires of his or her barn manager "depend on the system that (he or she) will be working in: farrow to finish, feeder barns or nursery barns," says Terry Betker, president and CEO of Backswath Management Inc. "And whether the barn is independent or integrated."

Backswath Management Inc. provides management consulting services, tools and resources for farms and agribusinesses across Canada, the company's website says.

Hog barn managers must also be skilled at strategic planning, human resources, finances and administration, and occupational health and safety, the CAHRC article says.

Barn managers should demonstrate strong leadership by coordinating or directing activities, paying attention to details and accounting for herd performance, the article adds.

"A hog barn is like a factory, so the whole operational effectiveness depends on how (managers organize) workflows in those barns," Betker says.

Barn managers should motivate their staff and create pleasant workplaces for the team.

"It's all about the people," Betker says. "You have to create the right culture in the barn."

Watson agrees.

Managers should schedule regular meetings and performance reviews, which help to keep everyone on track, she says. Managers should also encourage employees to report

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"Managers ensure that the strategic direction and the overarching vision and goals of the farm are aligned with daily operations, that the farm is forever forward looking when making everyday management decisions," says Heather Watson.

"issues and opportunities as they arise, (so) that employees are heard and feel like a part of the team," Watson adds.

Hog farmers may hire workers who come from many different cultural backgrounds and who speak different languages, Betker says. For example, workers may be Filipino, Mexican or Canadian, and each person will bring unique training and experience to the operation.

"It is important that barn managers recognize that the people working (for them) have their own cultures that may impact how they work," Betker says to *Better Pork*.

Because barn managers need a range of skill sets, people in this role must be willing to learn continually. They must stay up to date on industry developments, practices and technological advancements, and they must be quick thinkers and problem solvers, Smelski says.

Barn managers should be prepared to deal with unforeseen circumstances and be efficient, he adds.

Wright agrees.

"Barn managers provide focused attention to all aspects of production and business management for that location," she says. "They identify and address issues that may arise and provide support to workers."

And barn managers must communicate effectively, says Palmer.

"Communication is the most important" aspect of the job, whether the manager speaks "with the owners of the farm or the staff who work under them," he says.

"Most issues can be fixed with communication," he says. "Good communication also leads to good managing abilities."

Dianne Brekelmans of Netherend Acres Inc. near Thamesford, Ont.,

agrees that barn managers must be able to effectively communicate with workers and share knowledge. Brekelmans, along with her husband Francis and son Calvin, owns and runs a 5,000-sow farrowing operation.

The Brekelmans have 16 employees, including a breeding manager who oversees the gestation and breeding section of the farm, and a farrowing supervisor who manages the daily activities of the farrowing room. The family hosts seminars on and off the farm to promote skills development.

The family wants their barn team to contribute to production, to identify gaps in understanding throughout the process and to provide solutions.

"You have to work with your employees, not above them," says Calvin Brekelmans.

While effective communication is key between managers and workers, hog barn managers and farm owners must also have solid working relationships and aligned production targets, Watson says.

"Employers must set clear expecta-

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

"A hog barn is like a factory, so the whole operational effectiveness depends on how (managers organize) workflows in those barns," Terry Betker says.

tions when it comes to performance goals and formalities around process, authorities and work habits in general, so that both employers and employees know what is expected and have a base against which to measure goal achievement," she says.

Indeed, hiring the right people is essential to ensure farm productivity, to optimize herd productivity, and to minimize turnover, labour costs and employee dissatisfaction, says "Swine human resources: managing employees," a Pork Information Gateway article.

"Farms that have good performance achieve it because of their people," the article says. "Pigs do not achieve excellence; people achieve excellence through their pigs."

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

Managers should encourage employees to report "issues and opportunities as they arise, (so) that employees are heard and feel like a part of the team," Heather Watson says.

Worker retention

One of the biggest human resource challenges is retention, Palmer says. And retaining the barn manager is particularly important because the role is central to the success of the farm operation.

Betker agrees.

"If someone is managing a barn and isn't happy, she could get a job at another barn the next day, especially if she is good at what she does," he says.

So, to prevent the loss of the barn manager, farm owners who seek to hire one "should take their time with recruitment and hiring to look at what skills, experiences and personal characteristics will best complement the team and fulfill the current and future needs of the farm," Watson says.

"Employers should look beyond what the candidate can do (including experience, training, credentials) to what the candidate will do (including attitude, values and beliefs, self-motivation, judgement, willingness to learn and temperament)," she says to *Better Pork*. "The latter qualities can really impact interpersonal relations and performance."

Farm owners and barn managers who have strong working relationships are more likely to have greater job satisfaction, Betker adds.

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"Employers must offer competitive wages and benefits," Watson says. For example, "some (farm owners) have created very clever incentives to attract and retain workers, such as (offering) a brand-new truck after three years of loyal service."

Other in-kind payments could include company pork products at no charge, cheaper housing or time off for family events, Palmer says.

Challenges and opportunities

Although hog operations employ 4 per cent of the agricultural workforce, the Canadian swine sector could have 15,400 unfilled positions by 2025.

While farmers have little control over this impending labour shortage, industry leaders can effect change in the public's perceptions of the work that barn managers do and their working conditions.

"The industry has to present a positive image in the job marketplace," Smelski says. "The people who are in the business are professional and they love hog production. So, the passion is there but the image is not right now.

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

"Communication is the most important" aspect of the job, whether the manager speaks "with the owners of the farm or the staff who work under them," says Sydney Palmer.

"When you walk through a manufacturing firm or a service industry establishment, you can see that a lot of people would be happier working in a pig barn," he adds.

"Farm owners offer recreational activities for their employees in the barn, and they are beautiful facilities."

Betker agrees about the need to address the public perceptions of the sector.

"For students who are graduating from high school or post-secondary programs, I'm not sure 'hog barn manager' would be on the top of their potential jobs list," he says.

"We need to promote the fact that we're not talking about managing barns that existed in the '70s and '80s," he says. "We're talking about managing barns with good lighting and ventilation … and that have a high degree of focus on the environment.

"We need to present the industry as a good opportunity for work," he says.

The industry also needs to promote its adoption of new and advanced tools, Dianne Brekelmans says.

"It's exciting implementing the new technologies that are changing the roles and skill sets of employees we seek," she says. "We need to continue to share what we are doing on our farms."

While hog barn managers have many tasks to juggle and skills to master, the opportunities are endless for applicants who have open minds and a willingness to learn. **BP**

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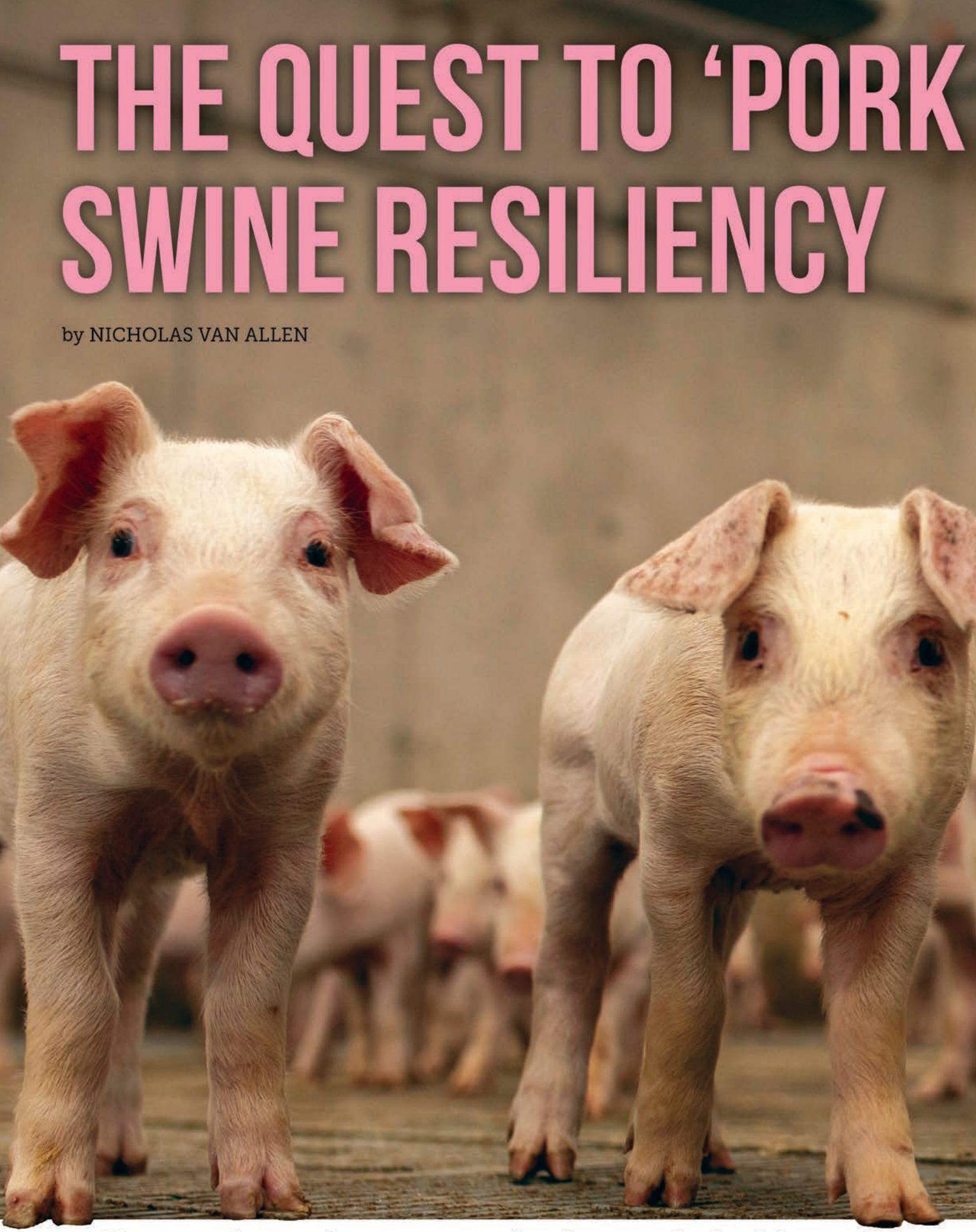
THE QUEST TO 'PORK SWINE RESILIENCY

by NICHOLAS VAN ALLEN



Researchers, farmers and other stakeholders all have

UP'

Swine industry stakeholders around the world are working to tackle a big issue: finding a way to consistently improve pigs' disease resiliency.

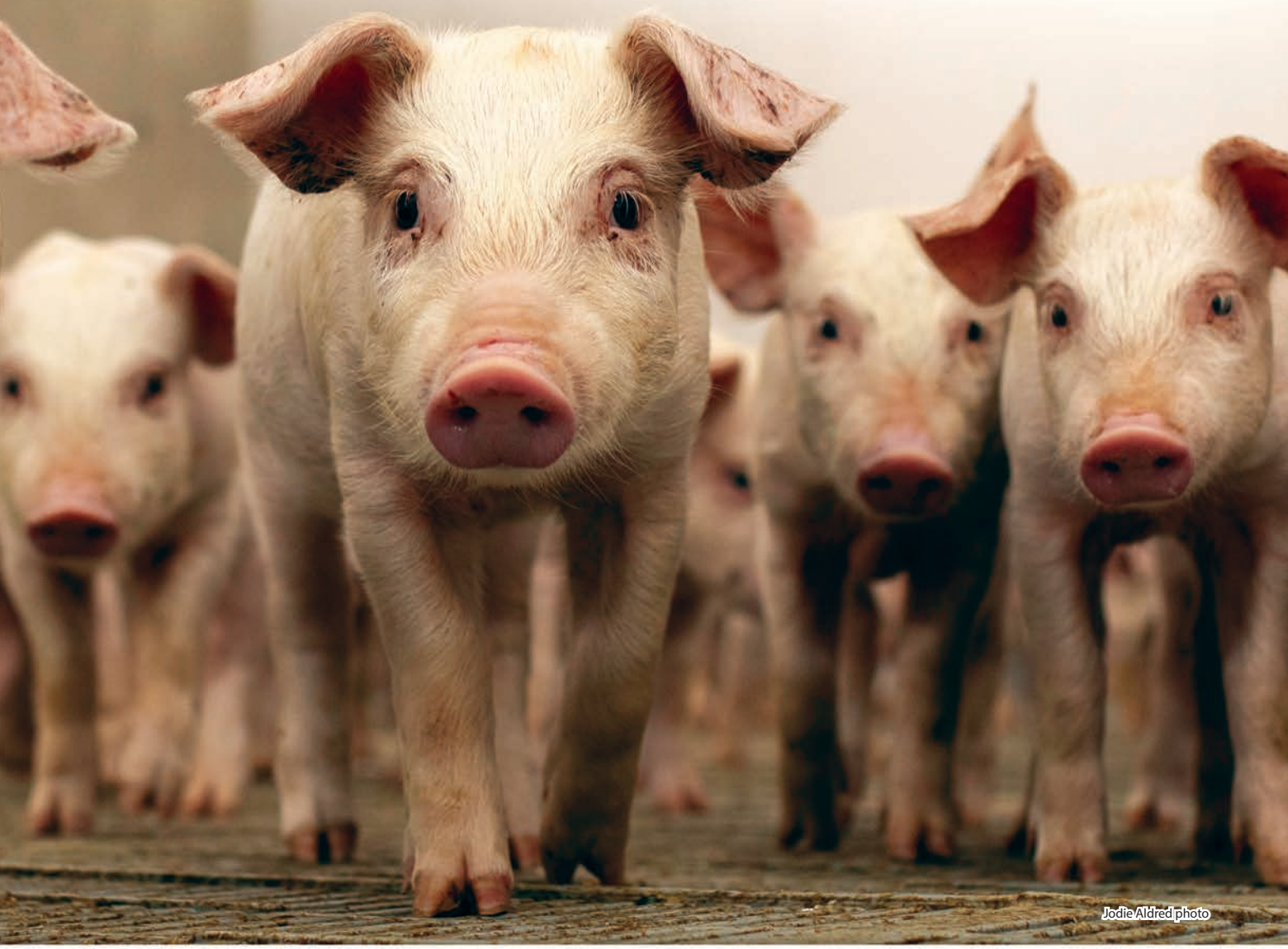
"Resilience, also sometimes referred to as robustness, is the ability of an animal to maintain productivity or performance when exposed to disease or other stressors (e.g., heat or cold stress)," says Dr. Jack Dekkers in an email to *Better Pork*. He's a professor and the leader of the animal breeding and genetics group at Iowa State University.

"When exposed (to disease), some pigs that get sick recover quickly and keep on going. They're resilient animals," Dekkers says.

"Two main biological factors contribute to resilience: resistance and tolerance," he says.

"Resistance is the ability of an animal to prevent (resist) infection or to reduce the ability of a pathogen (virus, bacteria) to establish itself and replicate within the animal. Disease resistance is often thought to be an all-or-none situation: when exposed to disease, an animal either gets infected or does not.

"In nature, however, there are different degrees of resistance," he explains. "When pigs are injected with the same amount of the porcine reproductive and respiratory syndrome virus (PRRSV), it does well in some pigs. (But it) has difficulty replicating in other pigs because of their immune defenses, which can be measured by the amount of virus found in their blood after infection.



Jodie Aldred photo

roles to play in addressing this production challenge.

"Tolerance, on the other hand, is the ability of an animal to minimize or overcome the damage created by a certain amount of pathogen present in an animal," he says.

"It is very difficult to measure resistance or tolerance directly," but resilience can be studied "by measuring the performance of animals in a barn in which pathogens are present," he says. These performance metrics can include factors such as growth and mortality rates.

Research efforts

One of the key sources of research is the natural disease challenge model in Deschambault, Que.

Beginning in 2015, this challenge occurred at a wean-to-finish research station, where technicians seeded the animals with diseases common to the Canadian commercial industry. The diseases included PRRSV, influenzas H1N1 and H3N2, post-weaning E. coli, and *Lawsonia intracellularis* (ileitis).

Dr. John Harding, a professor at the University of Saskatchewan's Western College of Veterinary Medicine, studied the project alongside Dekkers and others. Harding discussed the model in his paper, titled "The natural disease challenge model for evaluating resilience," for the 2020 Banff Pork Seminar.

Swine researchers made several important findings during the challenge, Harding's article indicates.

First, the "removal of direct contact between shedding and naïve pigs" is an "effective strategy to reduce challenges," he says.

Further, "good operational biosecurity, including filtration and positive pressure ventilation, has been sufficient to maintain PRRSV freedom in an isolated room built within a PRRSV-positive farm," he says.

So, resiliency on the farm involves limiting disease spread and understanding how environmental factors contribute as well.

Producers can use other herd management techniques to improve resiliency, says Gary Stordy, the director of government and corporate affairs at the Canadian Pork Council. These practices include "controlled access to certain parts of the property, the changing of clothes, etc.," he says.

These types of "subtle changes add up to improve biosecurity," he adds.

Harding agrees.

Staff "compliance to well-established biosecurity routines … is essential," he says.

Seasonal variation in disease is clear, "predictable and fairly dramatic," the challenge model shows. In other words, the level of challenge is higher in the winter when barns are closed up and conditions get better in the summer, Harding adds in a *Better Pork* interview.

Genetic factors may also be at play, he suggests. "Improvement of disease resilience using genetic selection is possible, if appropriate measures of disease resilience can be obtained on animals within the high-health nucleus breeding farms," he says in his article.

Farmers and scientists can use both novel measures, such as daily variation of feed intake and time at the feeder, and

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

"When exposed (to disease), some pigs that get sick recover quickly and keep on going. They're resilient animals," Dr. Jack Dekkers says.

more traditional measures, such as growth rate and morbidity, to measure disease resilience, the natural disease challenge model team found.

The limitation appears to be that the "indicator traits must be heritable, have substantial genetic correlations with disease resilience, and should not interfere with other important traits," Harding says in his paper.

"These indicator traits are something we can measure in the pig (to) predict resilience," he tells *Better Pork*. "To make any genetic progress, it has to be done in a very high-health environment, and these are predictive of performance when the pig goes into a very dirty environment."

"Indicator traits" can mean studying correlations between white blood cells and disease, the presence of specific antibodies (called natural antibodies) and other, more specialized

Continued on page 21

THE UNTOLD STORY IN THE PURSUIT OF HERD HEALTH

Despite all the work underway on swine resiliency within the sector, threats to the overall biosecurity of producers' operations remain key concerns for the industry.

Gary Stordy, the director of government and corporate affairs at the Canadian Pork Council, worries about the cases of trespassing on farms. These transgressions happen across the country, he says.

"The untold story on the trespass issue is the mental stress that farmers go through, raising animals only to be subject to a form of harassment for doing what they do every day, working to ensure animals remain healthy," Stordy says.

The regions that deal with trespassers face "a difficult situation," he says.

Producers want officials to act. For example, it's not fair that producers must negotiate with trespassers to have them removed, Stordy says to *Better Pork*.

Lorne McClinton photo

The regions that deal with trespassers face "a difficult situation," Gary Stordy says.

"Producers are interested in seeing Crown attorneys charging, prosecuting and convicting. … More has to be done across Canada," he says. Right now, the situation "does not sit well."

So, while researchers work to improve pigs' genetic resiliency, and producers try to strengthen on-farm biosecurity, swine industry stakeholders call on the governments to do their part to protect herd health. **BP**

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

Producers can improve biosecurity and herd resiliency through "controlled access to certain parts of the property, the changing of clothes, etc.," Gary Stordy says.

Continued from page 19

indicators such as the disease-resistant assay of animals.

Some traits offer such promise to the industry, and genomics might be an answer, the challenge model shows. Researchers are trying to learn which genes help make some hogs more resilient than others.

"In general, estimates of heritability of disease resilience traits are low (less than 15 per cent), which means that 85 per cent of the factors that result in one pig being more resilient than another pig, even when they are in the same barn or even in the same pen, are not the result of differences in genetics," Dekkers says.

However, the 15 per cent is important. "We found that the genetically top 20 per cent of pigs based on estimated breeding values for resilience had 11 per cent lower mortality (and) 0.75 fewer health treatments per pig. Those that survived reached market weight nine days earlier," Dekkers says.

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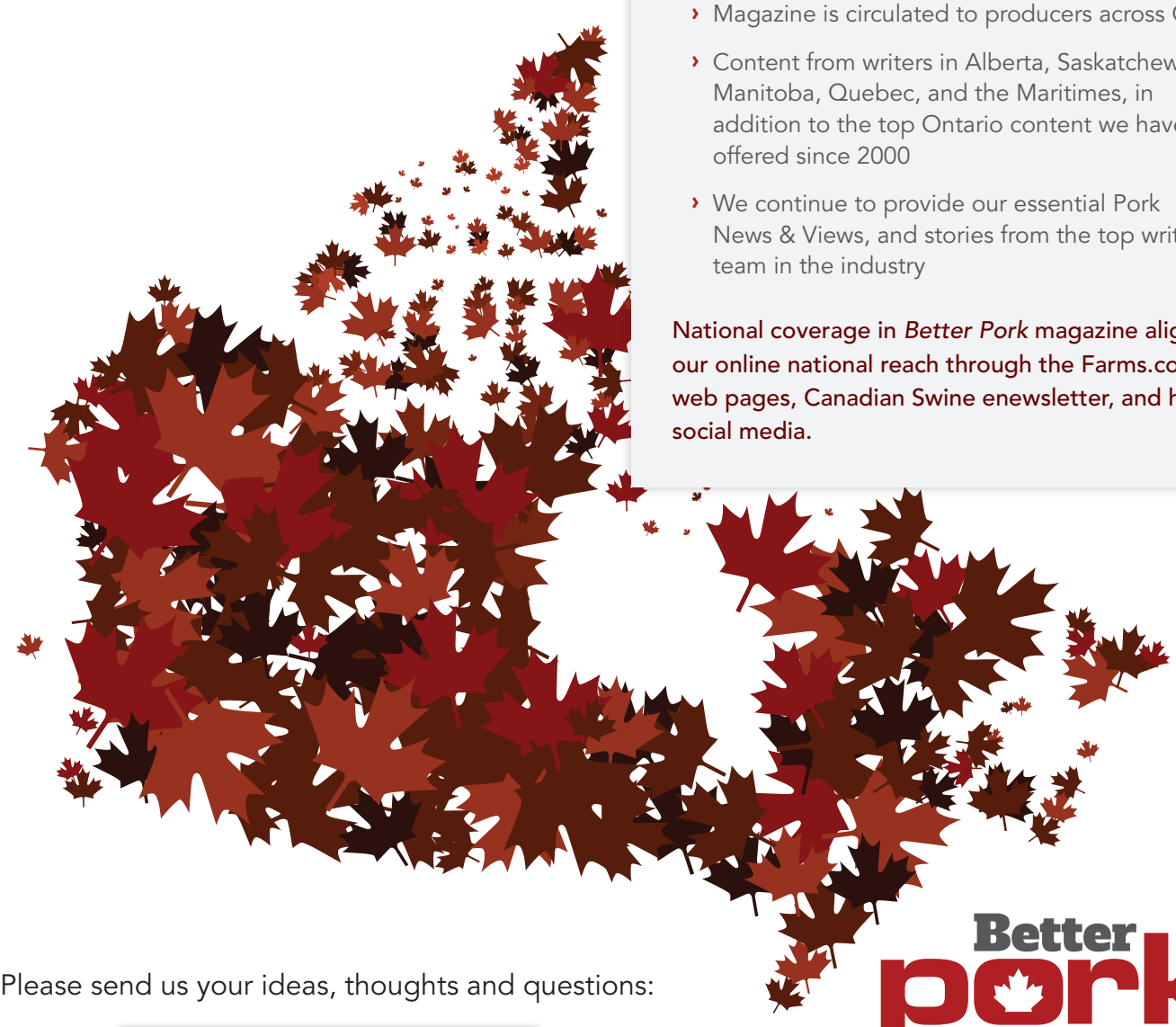

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per pig. So, selecting the top 20 per cent of pigs based on their genetics" could save that lost profit.

"To capitalize on the natural genetic variation that exists for resilience," researchers have identified "some DNA markers … that allow breeders to select pigs that have better resistance or resilience to specific diseases … and more research is ongoing," Dekkers explains.

"We are in the process of identifying early indicators of disease resilience that can be measured in healthy piglets," he adds. "Having such a 'diagnostic' would allow breeders to identify pigs that have the genetic for disease resilience."

So, while the science on genetic resiliency is just beginning, it appears extremely promising for the industry.

"The best thing producers can do to improve the resilience of their herds is to make sure that the pigs are not exposed to disease in the first place," Dekkers says. But "it is obviously not feasible to keep all diseases out of a herd, and we also don't have effective vaccines for all diseases.

"That's where genetic improvement of disease resilience comes in."

If researchers can better determine the genetic predictors for disease resilience, then producers would face lower costs and fewer production hurdles.

While the research may still be a way off from on-farm application, producers are interested, Stordy says. They might consider disease resiliency in future genetic choices.

This decision must be made at the farm level, so stay tuned for more. **BP**

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

"We found that the genetically top 20 per cent of pigs based on estimated breeding values for resilience had 11 per cent lower mortality (and) 0.75 fewer health treatments per pig," Dr. Jack Dekkers says.

UP CLOSE

by KATE AYERS

PASSION FOR PIGS DRIVES FARM SUCCESS

Members of a Saskatchewan Hutterite Colony work together closely to ensure farm operations run smoothly.

Herbie Stahl, the hog barn manager for the Downie Lake Hutterite Colony in Maple Creek, Sask. cannot see himself doing any other job. His love for pigs and farming shines through in his daily work and production records.

The colony was established in 1958 and is home to 97 residents. In addition to the pork operation, the Downie Lake Hutterite Colony cultivates 17,000 acres of crops including durum, wheat, peas, lentils, canola and barley. The farm team also raise beef and dairy cows. This diversification helps spread the colony's risk, Stahl says.

While the colony uses some of its crops for livestock feed, it also sells some of the crops on the commodity market.

Stahl, along with his five-person team, manages the colony's 650-sow farrow-to-finish operation.

Stahl's career in the swine industry began when he was 17, when he pressure-washed the hog barns. He worked his way up the ladder, getting promoted to barn manager 22 years ago.

During harvest, he also drives a combine or truck.

In the hog barns, Stahl uses electronic sow feeders (ESFs). His staff experienced no issues upon system installation and the sows easily transitioned to using the ESFs.

"The sows go to eat when they feel like eating. We don't have to rush to the barn to feed the sows; they simply just get feed," he says.

The pork operation is RWA certified, which means the animals are raised without the use of antibiotics. To make the transition to this certification, "everything needs to be in order – good ventilation, good, healthy stock, good water quality and the feed program needs to be right up to spec," Stahl says.

Barn managers and operators also need to keep an eye out for mouldy grain as it can compromise the animals' immunity, he adds.

Stahl is transitioning to organic pork production and looks forward to continuous improvements in the colony's hog operation.

Herbie Stahl photo

The Downie Lake Hutterite Colony in Maple Creek, Sask. has a 650-sow farrow-to-finish operation.

How many people does your farm employ?
The hog farm employs six people.

What are your roles on your farm?
I am the hog barn manager.

Hours you work per week?
Around 48 hours.

Hours in the office per day?
Maybe one hour per day, on average.

What items are on top of your desk?
My computer, a mouse, a keyboard and a lot of paperwork.

Email or text?
Email is good.

Any favourite apps?
WhatsApp.

What do you like best about farming?
I like everything.

I like my pigs.

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What do you like least?
Picking rocks.

What does your family think of farming?
My family are diehard farmers.

What's your top tip about farm transition planning?
Patience.

Make sure the upcoming generation seeks advice from and asks questions of the generation who was in charge of the farm operation before them.

What's the most important lesson you've learned?
Feed good grain to your animals.

What's your guiding management principle?
Communication is important.

What's your top goal?
My top goal for the colony's hog farm is to transition to organic pork production.

What are the biggest challenges you face in the industry and how have you addressed them?
The biggest one is the hog market – it really has its ups and downs.

We try to do more forward pricing.

Diversifying our operation has helped a lot, too.

If you could send a message to non-farmers, what would you say about the industry?
I would recommend that non-farmers go out and work on farms with animals to see what it is like.

That way, non-farmers wouldn't have to go out and protest.

If you weren't a farmer, what do you think you'd be doing for a living?
I like electrical work.

How do you support your mental health during the busy times of the year?
Make sure I get enough sleep and eat right.

What are your hobbies or recreational activities?
I like to fish.

What was the last book you read?
I am not a big reader.

How often do you travel?
Maybe monthly.

Where did you last travel to?
I was all the way up in the Grande Prairie area of Alberta.

Is your farm vehicle messy or neat?
Neat.

What's the best time of day?
Morning.

What was your most memorable production year? Why?
The year 2014 was the most memorable to date.

We had record crop yields on our farm operation. **BP**

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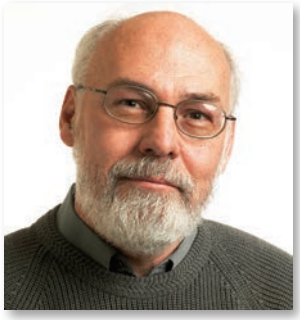

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by
DR. HOLLYN MALONEY

WAYS TO REDUCE PRE-WEANING MORTALITY

To decrease these losses, staff should use good sow management and provide effective early piglet care.

Pre-weaning mortality (PWM) is a significant cause of economic loss in the swine sector. While we often see an increase in PWM with larger litter sizes, we can reduce or prevent these losses with proper management.

Many factors contribute to PWM. This article will focus on the most commonly reported causes, which include crushing, low viability and starvation. Control of PWM begins with good herd management prior to, during and after farrowing.

Pre-farrowing

As litter size increases, the amount of room in the uterus per piglet decreases, which can increase the number of small low-viability piglets born. Piglets with a birth weight (BW) of 1 kilogram (2.2 pounds) or less are significantly less likely to survive than piglets that are bigger.

Sow management prior to farrowing is important to reduce the number of small piglets per litter.

PWM is highest in gilt litters. This situation is partially related to the fact that many gilt litters have more small piglets compared with litters from older sows. It is important not to breed gilts less than 135 kg (297 lbs.) because their small size will increase the number of growth-restricted small piglets per litter. Proper nutrition during gestation for all gilts and sows is essential to reduce the number of low-BW piglets.

BW is also affected by the length of gestation. So, when inducing, aim for farrowing at no less than 115 days of gestation. Early farrowing will increase the number of low-BW piglets and decrease the quality of colostrum.

Colostrum is the first milk produced by the sow and is very high in components important for piglets' early immune systems. Piglets that receive poor-quality colostrum will be susceptible to infections.

Dr. Jessica Law photo

These piglets huddled together for warmth because the creep area is not warm enough. Chilled piglets become weak and more susceptible to disease.

PWM increases again after parity seven, so it is important to maintain a proper parity distribution and cull sows after their seventh parity.

Farrowing

Staff must regularly monitor sows during farrowing to reduce stillborns and increase piglet viability.

Check sows at least every 30 minutes. If staff see no new piglets during this time, then staff should do a physical check of the sow and assist if needed. Use clean sleeves and lubricant to maintain good hygiene.

Piglet mortality is higher in litters born on weekends due to decreased availability of staff. It is important to manage weaning times and appropriately induce sows to reduce the number of farrowings on weekends.

Post-farrowing

Piglet mortality is highest in the first three days of life, so early piglet care is essential.

Staff must immediately dry piglets after farrowing to prevent chilling. Staff can sprinkle a drying powder over the creep area that they can move piglets into after birth.

Alternatively, workers can use towels. Separate towels should be used for each litter and they should be washed well between uses to prevent disease transmission.

The temperature of the creep area is also important to prevent chilling. In the first few days of life, this area should be around 32 to 35 C (90 to 95 F) and should be pre-warmed prior to farrowing so it is ready for the first piglet.

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

Piglets that are small or starving can benefit from sugar supplements since the extra energy will help them get milk themselves.

This zone also must be free of drafts.

If a piglet becomes chilled, it will be more prone to illness and become weak. This compromised condition will make the piglet less able to compete for milk or move away from the sow, increasing the piglet's risk of starvation and crushing.

If piglets are huddling together, the creep area may not be warm enough.

The warm micro-environment is also important to reduce the number of crushed piglets.

Sows are comfortable at a much lower temperature – around 17 to 19 C (63 to 66 F) – than piglets. By creating a small warm zone, the piglets can get the heat they need while the sow remains comfortable.

If the sow is too hot, then she may become agitated and move around more, increasing the risk of crushing.

As well, the heat of the creep zone will draw piglets away from the sow when they are resting, so they are less likely to be crushed.

Chilled piglets may attempt to sleep on or next to the sow to use her heat, which increases their chances of being crushed.

Another critical early-care task is to ensure that all piglets get colostrum. Without it, they are more likely to die of illness.

Ideally, all piglets should receive colostrum within six hours of birth. After this period, the ability of their gut to absorb the colostrum begins to decrease and is gone by 24 hours.

Staff can move piglets to teats and mark those animals that are known to have nursed. By using this strategy, workers can help piglets get colostrum earlier and ensure they all get it.

If a sow has more piglets than functional teats, workers should use split suckling to improve colostrum uptake.

Once workers know a portion of the piglets have nursed, then staff can separate this part of the litter to allow time for the other animals to nurse with less competition.

Do not leave the separated group away from the additional heat source for more than an hour or these animals will become chilled.

Small piglets require extra attention. These animals often experienced growth restriction while in the uterus, which can inhibit their development. Growth-restricted piglets may have a dome-shaped head, bulging eyes, or wrinkles perpendicular to the mouth.

These piglets have been shown to have low energy stores, meaning they have less energy to move away from the sow, compete for milk and stay warm.

Providing these piglets with a sugar supplement increases survivability. Staff can use supplements like Baby Pig Restart or dextrose mixed with warm water and place the mixture at the back of the piglets' tongues. Workers should ensure the supplement is warm when giving it to the piglets to prevent chilling.

PWM is a complex issue. However, due to its significant economic effects, it is worthwhile to allocate the resources for extra planning prior to farrowing and care in the first few days afterwards to decrease the chances of this occurrence. **BP**

Dr. Hollyn Maloney is a veterinarian with Prairie Swine Health Services in Red Deer, Alta.

by LILIAN SCHAER

SWINE SYSTEM UPS INDUSTRY RESPONSIVENESS

Tracking advances will enable Ontario's swine sector to leap into action if a disease emergency strikes.

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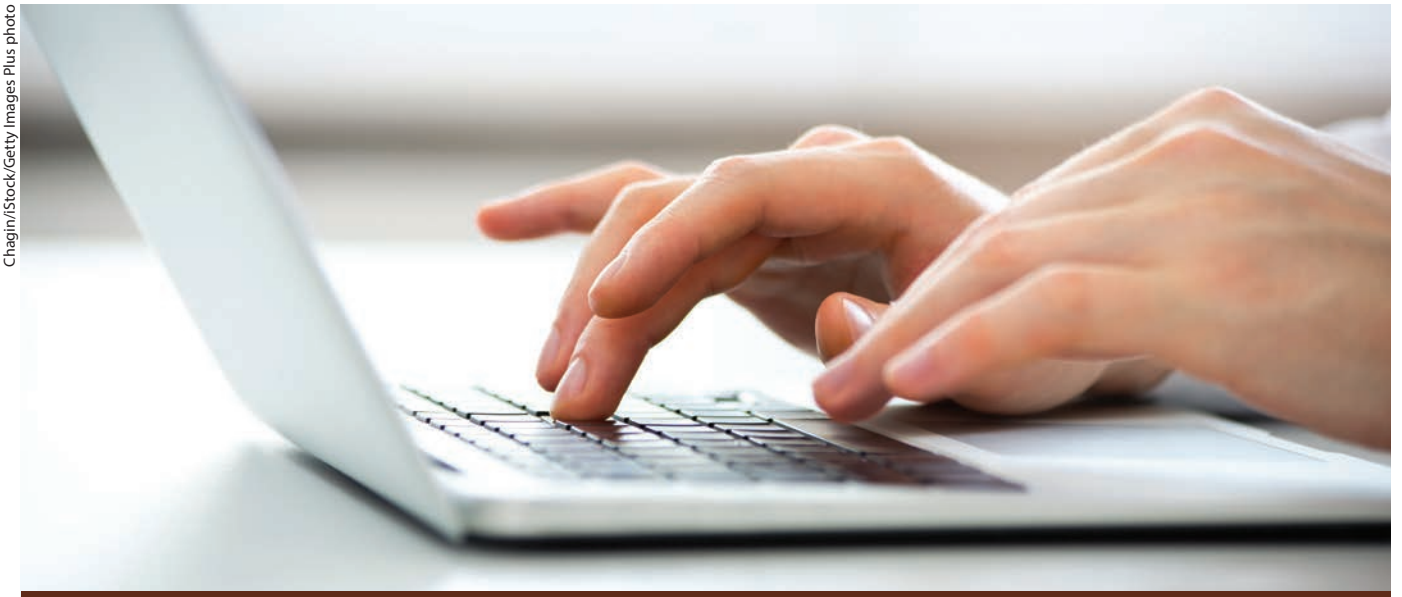

"We can provide accurate movement reporting within 24 hours, especially once we have the majority of our industry enrolled in the program," says Frank Wood. "The potential of this system is incredible."

Ontario Pork is rolling out improvements to its electronic manifesting system, developed to automate the tracking of pig movement in the province.

The changes will ultimately make it easier for producers to be compliant with animal movement reporting requirements, and help the industry with tracking and response in case of an animal disease emergency.

Reporting pig movements in Canada, whether from farm to farm, for export or to market, became mandatory on July 1, 2014 through PigTrace Canada, the national swine traceability database. Farmers must report their animal movements to PigTrace within seven days.

This work can be done automatically through Ontario Pork's AgManifest system, which integrates with and reports daily to the national movement database.

"We can provide accurate movement reporting within 24 hours, especially once we have the majority of our industry enrolled in the program," says Frank Wood, Ontario Pork's manager of industry and member services. "The potential of this system is incredible."

Ontario Pork, in conjunction with federally inspected processing plants in Ontario, led the development of AgManifest to replace the previous system of paper-based receipts used when shipping livestock.

Over the last two years, Ontario Pork focused on enhancing the system's features, as well as making it easier for people to use. These enhancements include enabling auto-filling of some information, and automating the paperwork required from producers, transporters, assembly points and plants for special certifications, like those for ractopamine-free animals.

"Instead of having staff manually enter information, once a farm is set up on the system, it pre-populates information like the premise ID, farm address, trailer plates and more, which saves staff time looking up the information and reduces data-entry errors," Wood explains.

The system is fully functional at Conestoga Meats in Breslau, Ont. and work is underway to get the necessary infrastructure in place for other pork processing plants in the province.

Conestoga Meats is also involved in a Canadian Food Inspection Agency-approved pilot program that would enable electronic document sign-off with the use of a four-digit PIN code.

The final link is making the connection between this system, which tracks animal movement, and the Ontario Area Regional Control and Elimination (ARC&E) disease mapping system. The ARC&E program falls under the purview of Swine Health Ontario.

The system is used to track herd health status for diseases like porcine reproductive respiratory syndrome (PRRS), porcine epidemic diarrhea (PED) and Senecavirus A, but could easily be expanded to include other diseases if needed.

"This will open us up to do more mapping and zoning in Ontario – the quicker we have information in our system and the quicker we under-

stand animal movement and disease status, the quicker we can react," says Wood. This tracking strategy applies to both internationally reportable diseases like African swine fever or foot-and-mouth disease and non-reportable but economically significant diseases such as PRRS and PED.

"The sooner we can get those zoning pieces in place, the sooner we can re-open trade markets and that's absolutely paramount to the industry," he says. "For a country that exports more than 70 per cent of its pork production, an outbreak of a reportable disease would be devastating – and this gives us reassurance that a quicker resolution is possible."

Although AgManifest is currently an Ontario-level initiative, some of the other pork-producing provinces have shown an interest in it. The system could ultimately serve as a model for a national approach. In the meantime, Ontario Pork will continue to work on system enhancements, such as being able to include cull animals and those animals destined for the barbecue market.

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

The final link is making the connection between AgManifest, which tracks animal movement, and the Ontario Area Regional Control and Elimination (ARC&E) disease mapping system.

"Getting the whole chain involved is critical to containing disease," Wood says. "We still have work to do, but we are so much further ahead than we used to be. I've never seen so many levels of government and industry sit down and work on this together."

For more information on AgManifest, please contact Frank Wood at 519-767-4600. **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.

PRAIRIE SWINE CENTRE

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HIGH-FIBRE DIETS OFFER HERD BENEFITS

These diets improve satiety in gestating sows and the growth performance of their offspring.

High-fibre diets for sows during gestation and lactation reportedly play a positive role in the swine industry.

Such diets are said to offer benefits for animal welfare, in terms of improved satiety in feed-restricted pregnant sows, and production, in terms of increased litter size and weaning weight.

Feed restriction for gestating sows prevents excessive body weight gain and the associated negative consequences on locomotion, farrowing and feed intake during lactation. Aggression and other stereotypes associated with restricted feed intake are welfare and production concerns, especially when sows are housed in groups.

So, researchers designed this study to determine the effect of hydrothermal processing of straw on the metabolic indicators of satiety, behavioural measures in group-housed gestating sows, and growth indicators of litter performance.

lucentius/iStock/Getty Images Plus photo

Wheat and oat straw can be a cheap source of fibre; however, the fibre in this straw is primarily insoluble.

Wheat and oat straw can be a cheap source of fibre; however, the fibre in this straw is primarily insoluble. Feed processing techniques can change the physical property of fibrous ingredients, potentially improving solubility and nutritive value for pigs.

Adding 10 per cent oat or wheat straw to the diet of sows in late gestation had no effect on feeding

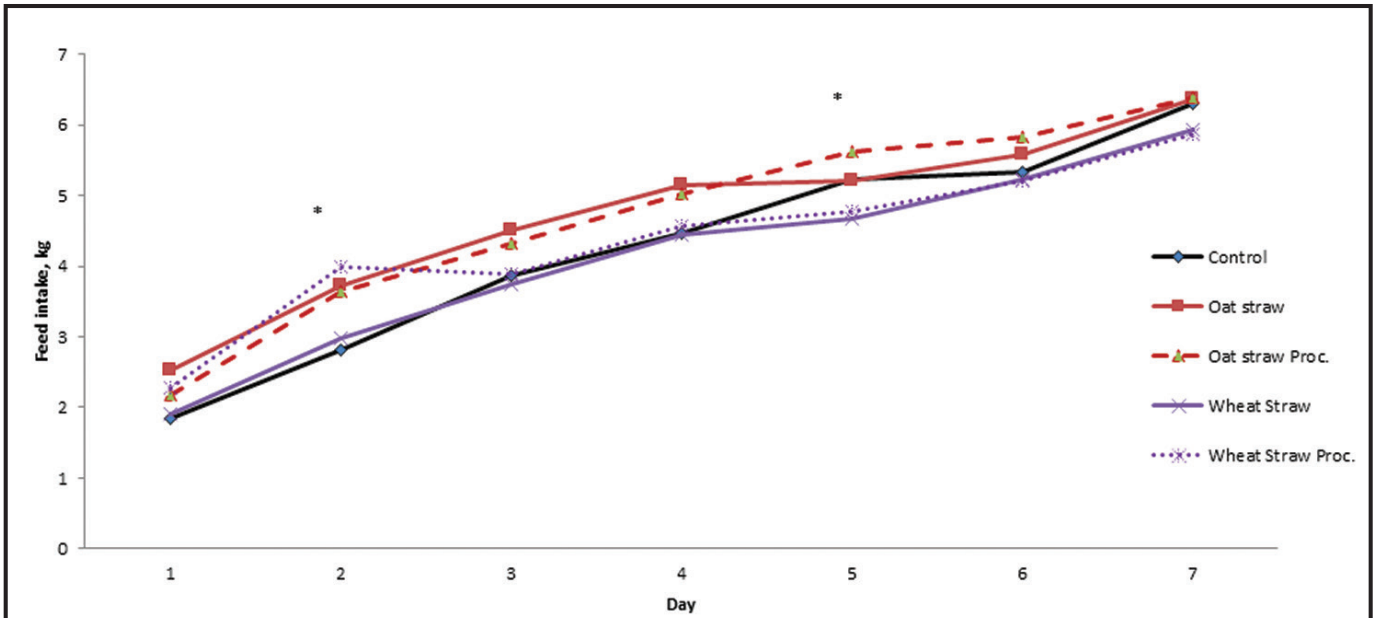

Figure 1: Daily feed intake in lactating sows supplemented with processed or unprocessed oat and wheat straw during late gestation. Values are means. Overall treatment effect: * $P < 0.05$.

Lactating sows' feed intake improved with oat straw supplementation compared to the wheat straw.

motivation, piglet characteristics at birth, estimated milk production, market weight or carcass quality of the offspring, regardless of processing, the results indicated. In addition, oat straw supplementation influenced endocrine and metabolic status in late gestating sows and improved lactation feed intake and litter body weight up to nursery exit.

Overall, oat straw had the greatest effect on sow physiology, lactation feed intake, and litter weight gain.

What did we do?

Researchers randomly assigned 150 gestating sows to one of five dietary treatments (30 sows per diet) until farrowing. Technicians fed sows a standard gestation diet or this diet supplemented with processed or unprocessed oat or wheat straw at 10 per cent of the daily feed allowance. Processed straw was produced by hydraulically compressing straw at a temperature of about 80 C (176 F).

Researchers determined nutrient digestibility, plasma insulin, IGF-1, prolactin, glucose, urea and feeding motivation (measured by the time required to consume 200 g feed) in late gestation. After farrowing, technicians fed sows a standard lactation diet. The scientists recorded litter characteristics and sow feed intake seven days post-parturition.

Rat0007/iStock/Getty Images Plus photo

Overall, oat straw had the greatest effect on sow physiology, lactation feed intake, and litter weight gain.

Upon weaning, scientists selected three piglets per litter with body weight close to the average litter weight. The researchers placed these animals on standard nursery, grower and finisher diets, and followed the pigs from weaning to market. The technicians recorded body weight

of the selected pigs at nursery exit, which was four weeks post weaning.

Pigs were identified at market, allowing estimation of treatment effect on offspring market weight, back fat thickness, loin thickness, per cent lean yield, carcass weight, and dressing percentage.

Treatment had no effect on sows' feeding motivation, piglet characteristics at birth, estimated milk production, and offspring body weight at market or carcass quality. Processed straw improved dry matter digestibility and energy content.

The effect was greater with oat straw. Pre- and postprandial (pre- and post-feeding) glucose concentrations tended to decrease with the processing of wheat, but not oat, straw. This effect was more apparent in the preprandial samples.

Lactating sows' feed intake improved with oat straw supplementation compared to the wheat straw. (See Figure 1 on page 34.)

Piglet weaning weight increased with oat straw supplementation and processing improved nursery-exit body weight. Straw supplementation, however, had no effect on offspring body weight at market or carcass quality, regardless of processing.

Overall, oat straw supplementation had a greater effect on sow physiology and provided benefits for sows in late gestation, compared to wheat straw. Some indications suggested further benefits are obtained through mild processing.

Conclusions

Processing improved dry matter digestibility and energy content, and these effects were greater with oat than wheat straw. Furthermore, processing the oat straw increased plasma glucose in sows, whereas the scientists observed the opposite effect with the wheat straw, indicating a potential for improved satiety with the oat straw. Moreover, pregnant sows fed oat straw from day 86 of gestation to farrowing had increased feed intake in early lactation and greater average piglet weaning weights.

Overall, results suggest that oat, but not wheat, straw affected sow physiology and provided benefits for gestating sows.

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by
RICK
McBAY

VENTILATION OPTIONS FOR YOUR PIG BARNS

Producers should weigh the benefits of ventilation systems to determine the best option for their barns.

Rick McBay photo

This barn has natural ventilation with a solid insulated panel system.

Over the last 25 years, natural ventilation systems have become commonplace in large group finishing hog facilities.

Insulated sidewall curtains or solid insulated sliding panels, combined with insulated ridge-mounted chimneys, were the hallmarks of a quality low-cost natural ventilation system. In an all-in-all-out system during cold weather conditions, an additional heat source is commonly required in barns full of 55-pound (25-kilogram) pigs.

In a flow-through system, the heat generated by the mixture of heavier weight hogs renders this additional source unnecessary. The extra advantage of this type of system is that it does not require mechanical ventilation for the under-floor manure pit in total slat barn designs. The natural ventilation typically maintains a neutral static pressure within the room. As a result, the manure gas remains below floor level since it is heavier than air.

In the late 1990s and early 2000s, companies introduced the concept of a dual or hybrid ventilation system to the industry.

This system combines mechanical fans, either sidewall mounted or in chimneys through the ridge, along with fresh air intakes mounted on the ceiling. These intakes draw fresh air from the attic through soffit openings. This system also uses sidewall curtains or panels typical with natural ventilation.

What are the benefits to this system? The power ventilation part of the system used in cold weather conditions provides tighter temperature control than can be achieved with an all-natural system. For example, in a natural ventilation system, if the barn is full of market-weight pigs in the winter, the controller may have to slightly open one or both of the sidewalls to dissipate the heat generated by the animals. If this situation occurs in below-freezing outside temperatures, it can cause the interior temperature to become erratic.

When this temperature fluctuation happens, producers using natural ventilation will occasionally experience a temporary increase in feed consumption as the animals eat more to replace lost body heat. Typically, farmers think this additional feed cost is not prohibitive.

As the economics of hog production became more complex, however, many producers not willing to absorb these extra costs discovered that a dual ventilation system was the most effective way to minimize this increase in feed consumption.

Companies can design dual ventilation systems using two principles.

The first design uses a natural ventilation system with power ventilation for cold weather.

The second design entails a power ventilation system with sidewall openings for hot weather.

In the first case, you would typically size the power ventilation portion of the system for approximately 25 per cent of the total ventilation requirement. In the second scenario, the power ventilation would have a much larger capacity, usually at least 50 per cent.

Producers can operate both designs effectively, but initial equipment and operating costs can be a deciding factor as to which option you select. Proponents of the first design appreciate the benefits of natural ventilation and want to use that portion

Rick McBay photo

This barn has natural ventilation with an insulated curtain system.

of the system as much as possible throughout the year. Either way, both systems will provide tighter ventilation control than natural ventilation in cold weather.

The other factor to consider when choosing between natural and dual ventilation is the automation control required. In a natural ventilation system, producers generally use a controller that opens and closes each sidewall opening based on an internal temperature sensor.

The producer typically manually controls the dampers in the ridge chimneys, since they tend to be positioned seasonally and require only a temporary adjustment to deal with extreme cold. In some situations, the dampers can remain fully open throughout the year, depending on the rotation of the hogs and the weather. The controller for this type of system will have a contact and setting that will automatically turn the heater(s) on and off as required.

In a dual ventilation system, producers will require a more sophisticated control system. The controller will automatically speed up and slow down the exhaust fans on a variable speed basis and, depending on the size of the building, will also operate the fans in more than one stage to provide a smooth increase in the exhaust capacity.

At the same time, the fresh air intakes are automatically opened and closed to provide an equal amount of fresh air to match what the fans are exhausting. Once a set temperature is reached within the room, the system will switch over to natural ventilation and begin to open the sidewalls as required.

Rick McBay photo

This barn has a dual ventilation system.

Rick McBay photo

This barn has dual ventilation with a solid insulated panel system.

At certain times of the year (typically in the spring and fall), the system will run on a natural basis during the day but switch to the power portion overnight when the outside temperature drops.

Once the system is running as a natural system 24 hours a day, the producer typically moves the ceiling inlets to the closed position to keep hot air from entering from the attic. The decision as to whether to continue running the fans is based on operator preference.

Regardless of your preference, a properly designed natural or dual ventilation system will provide you with the optimal environment required for both healthy pigs and profitable production. **BP**

Rick McBay is the natural ventilation specialist for Faromor – a Canarm company.

For 40 years, he has worked with livestock producers to provide them with equipment and ventilation solutions. During the last 25 years, Rick has been directly involved with the design and development of natural ventilation systems being used worldwide.

Ontario
Pork News & Views
Prepared and Edited by the OMAFRA Swine Advisory Team
ONTARIO PORK
February 2020

Fencing for Outdoor Pig Production – Protecting your Livestock and the Environment

Information in this article is geared to people who raise pigs outdoors, or provide outdoor access. If you sell pigs to a farm where they will be provided outdoor access, contact the OMAFRA swine team for printed copies of this article and the referenced Factsheets, which you can provide as an information package prior to the pigs moving.

The purpose of this article is to provide guidance on building fencing suitable for pig containment. This includes fencing to keep pigs with outdoor access on your property, and/or fencing to keep feral pigs away from your livestock and crops.

Preventing pigs from escaping outdoor housing enclosures can be a difficult task. Pigs are strong, agile and can jump over barriers. Keeping them contained however, is extremely important. Escaped pigs are hard to catch, and can quickly turn into lost revenue for your farm if they are not recovered. It only takes a short period of time for an escaped pig to become feral, and if other feral pigs are nearby, they can quickly breed, producing multiple litters each year. The term 'wild pig' refers to any swine (Sus scrofa) outside of a fenced area, which includes Eurasian wild boar, domestic pigs and hybrids.

Figure 1: A small group of wild or escaped pigs can destroy 10-12 acres overnight. Pigs will consume crops, but will also root the ground, causing significant damage to the field itself.

Pigs can survive well in Ontario climates, and have extremely flexible diets allowing them to adapt easily. Wild pigs are one of the most invasive mammals on the planet, and cause extensive damage to agricultural land, crops, native ecosystems and other livestock. The US estimates an annual cost for damage from wild pigs at $1.5 billion, although under-reporting is likely. Wild pigs are often termed 'ecological train wrecks' from the amount of damage they can do to land and wildlife. It is imperative that pigs housed (or with access to) outdoors must not be given the opportunity to escape in order to prevent lost revenue for your farm and to prevent increasing the wild pig population in Ontario.

Primary risks (and sources of lost revenue) from escaped pigs can include:

- significant damage to crops and fields (they destroy the crop and the ground by rooting, Figure 1)
- predation and/or harassment of other livestock (they can kill calves, goat kids, lambs, deer, etc. and will also block or deter livestock's access to feeders)
- aggression towards humans (razor sharp tusks can cause significant damage to people, including death)
- disease transmission (wild pigs can carry many diseases concerning to the swine industry, as well as zoonotic diseases which can be transferred to people)
- natural ecosystem damage (trampling, wallowing, rooting, resource competition, plant damage, animal damage (including destruction of ground nests and consumption of small reptiles and amphibians)

Proper fencing reduces the risk of your pigs escaping, but also protects your herd from any wild pigs in the area. It is your responsibility as an animal owner to ensure they are kept on your property. Escaped pigs will likely roam onto neighboring properties, especially if crops or feed sources are present. If your pigs escape, you can be held responsible for damage to crops, other livestock and property. Escaped pigs can also become a road hazard, increasing the risk of road accidents. If you are housing pigs outdoors for any stage of their production cycle, ensure your fencing is strong, sturdy and tall in order to protect your pigs, the land, other animals and your farm profits!

Fencing Options

There are many different fencing options for housing livestock outdoors, and the type of fencing you select can depend on several factors, including cost, sturdiness, longevity and ease of setup/repair. The size and type of animal housed plays a major role in determining what fencing type to use on farm, and not all fencing types are suitable for pigs. For example, piglets will require fencing with smaller gaps compared to fully grown pigs, but fully grown pigs will require much stronger fencing than piglets. It is important to consider the size of your pigs when developing a fencing plan for your farm. Remember, pigs can go over (Figure 2), through or under a fence if the fence is not designed properly, and their strong snouts

can lift fencing, including posts, if it is not secure. When researching fencing options, it is important to critically assess any fencing under consideration for its suitability for pigs. The size of the pig(s) is important, and pig's ability to dig, lift, jump, and push through small spaces with considerable force should not be underestimated.

Depending on the size of the pigs and the duration of access to the fence, it may be necessary to bury fencing below ground level to prevent escape by pigs rooting the earth below the fence. Electrification of the bottom and top of the fence can also help prevent pigs from going under or over. The bottom wire should be well strained and close to the ground.

Fencing Types

Options that may be suitable for pigs include page wire, electric fencing, solid wooden or metal fencing, high tensile wire, pipe panel and electric fence. For a barnyard enclosure, a concrete floor and walls, or concrete floor with prefabricated welded metal fencing panels or strongly constructed wooden fencing are best suited.

Details on several different types of farm fencing can be found in the "Farm Fencing Systems" OMAFRA factsheet (Order # 08-035, http://www.omafra.gov.on.ca/english/engineer/facts/08-035.htm) and "Sheep – Fencing Options for Predator Control" OMAFRA factsheet (Order # 02-053, http://www.omafra.gov.on.ca/english/livestock/sheep/facts/02-053.htm).

Figure 2: Pig jumping over a tall, wire mesh panel fence (source: https://www.deeranddeerhunting.com/featured/cuddeback-variety-slam?pid=12562)

For pigs, it is recommended to combine multiple types of fencing in order to better contain (or exclude) them. An example of this is page wire fencing with electric wires located low (at pig height), and high (to prevent jumping). Research into fencing to control (exclude) wild boar found that only a combination of an extremely strong page wire fence combined with electric fencing was adequate to completely stop wild boar from crossing.

Because pigs can jump, if adult pigs are being kept outdoors, fences should be at least 1.5 meters high. Pig fencing should also go below ground level if possible. This can be accomplished by burying some of the fence below ground, or by attaching a mesh skirt which is buried underground to a depth of 60 cm (2 feet). A 90O angle underground will significantly reduce the risk of successful rooting under the fence. Double row fencing with an underground mesh skirt at a 90O angle on one fence, with an electric wire between the two rows, is considered the 'gold standard' for pig fencing. Double row fencing is standard practice in many regions where pigs are routinely kept outdoors.

When using electric fencing, it needs to be tested daily to ensure it is working properly. For piglets, the bottom wire will need to be low to the ground so routine control of plant growth is essential. When pigs first encounter electric fencing it is highly likely they will jump forward, through the fence, as opposed to jumping backwards from the shock. For this reason, pigs need to be trained if you plan to use electric fencing. The easiest way to train them is to set up the electric fencing in an area where there is a solid wall behind (like a barn wall or solid fence). This ensures that when pigs first encounter the electric fence, they are forced to jump backwards away from the fence, not through it.

Barbed wire is not recommended for pigs. The barbs can damage the pigs and can be particularly harmful to sows' udders.

Conclusions

Best Fencing Practices for Pigs:

- double row fence
- high enough to prevent jumping (minimum 1.5 meters for adult pigs)
- mesh skirt buried 60 cm (2 feet) underground to prevent rooting (at a 90O angle if possible)
- addition of electric to another fencing type (inside enclosure or between double row fencing)

While the initial cost of constructing 'pig proof' fencing is high, this is offset by reduced cost of recapture, reduced risk of exposure to wild animals, and peace of mind. Keeping your pigs in, or wild pigs out, not only reduces the risk of lost revenues, it also helps protect Ontario, native habitats, wildlife, farm land and other livestock from the damage escaped pigs will cause

Resources

Fencing for Pastured Free Range Pigs https://www.proof.net.au/fencing
O'Brien A. 2002. Sheep – Fencing Options for Predator Control. OMAFRA Factsheet # 02-053
Stone R.P. and Leahy M. 2008. Farm Fencing Systems. OMAFRA Factsheet # 08-035
Hone J. and Atkinson B. 1983. Evaluation of Fencing to Control Feral Pig Movement. Aust. Wildl. Res. 10: 499-505.

Ontario Ministry of Agriculture,
Food and Rural Affairs

Ontario

2019 Ontario Monthly Hog Market Facts

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

Month	Jan '19	Feb'19	Mar '19	Apr '19	May '19	Jun '19	1st 6 mo.
100% Formula Price ($/ckg, 100 index)	$135.65	$133.45	$139.01	$193.73	$202.91	$190.33	$165.85
*** Same Month - Previous year**	**$156.28**	**$165.96**	**$151.39**	**$128.94**	**$152.13**	**$185.96**	**$156.78**
Average price ($/ckg, DW total value)	$171.01	$165.88	$173.80	$229.80	$240.74	$224.59	$200.97
Low price ($/ckg, DW total value)	$146.50	$146.74	$145.55	$207.09	$220.15	$207.80	$178.97
High price ($/ckg, DW total value)	$223.57	$210.31	$224.55	$260.99	$266.68	$249.27	$239.23
Ontario Market Hog Sales	424,466	410,839	521,399	392,174	510,557	402,446	2,661,881
***% Change Same Weeks - Previous Year**	**3.8%**	**3.4%**	**11.3%**	**1.0%**	**9.9%**	**4.2%**	**5.2%**
Average Carcass Weight (kg)	105.19	104.06	103.87	103.38	103.57	102.74	103.80
Weaned Pigs ($/pig, 5 kg)**Formula	$35.27	$34.70	$36.14	$50.37	$52.76	$49.49	$43.12
Feeder Pigs ($/pig, 25 kg)**Formula	$55.96	$55.05	$57.35	$79.92	$83.70	$78.51	$68.42
Value of Canadian Dollar (US$)	$0.7490	$0.7566	$0.7499	$0.7478	$0.7431	$0.7526	$0.7498
*** Same Month - Previous year**	**$0.8032**	**$0.7987**	**$0.7747**	**$0.7857**	**$0.7780**	**$0.7632**	**$0.7839**
Prime Interest Rate at End of Month	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%
Corn (farm price) - $/tonne	$198.68	$198.93	$194.31	$192.73	$207.23	$236.38	$204.71
*** Same Month - Previous year**	**$170.06**	**$176.12**	**$187.77**	**$191.07**	**$199.32**	**$187.76**	**$185.35**
Soybean Meal (Hamilton + $20)-$/tonne	$513.56	$494.96	$488.39	$487.55	$486.30	$534.99	$500.96
*** Same Month - Previous year**	**$476.49**	**$510.27**	**$559.57**	**$572.80**	**$593.04**	**$560.25**	**$545.40**
Corn - Western Ontario Feed - $/tonne	$215.54	$212.83	$208.82	$204.94	$219.12	$248.51	$218.29
*** Same Month - Previous year**	**$183.80**	**$189.97**	**$201.92**	**$203.28**	**$214.17**	**$204.19**	**$199.56**
DDGS ($/tonne)	$177.13	$174.00	$187.80	$205.38	$204.80	$199.38	$191.42
*** Same Month - Previous year**	**$219.21**	**$244.00**	**$227.90**	**$244.75**	**$259.50**	**$258.30**	**$242.28**

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

Value of Market Hog	$160.53	$156.28	$162.42	$224.51	$235.48	$219.25	$193.08
Feed Cost	$120.66	$119.85	$119.70	$118.41	$118.72	$120.07	$119.57
Other Variable Costs	$45.11	$45.31	$45.33	$45.05	$44.88	$44.67	$45.06
Fixed Costs	$24.55	$24.55	$24.55	$24.55	$24.55	$24.55	$24.55
Total Costs	$190.33	$189.71	$189.58	$188.02	$188.15	$189.30	$189.18
Net Return	-$29.80	-$33.43	-$27.16	$36.49	$47.33	$29.95	$3.90

Ontario

2019 Ontario Monthly Hog Market Facts

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

Month	Jul '19	Aug'19	Sept'19	Oct'19	Nov '19	Dec '19	Year++
100% Formula Price ($/ckg, 100 index)	$172.86	$189.53	$142.82	$147.96	$143.21	$140.58	$161.00
*** Same Month - Previous year**	**$188.54**	**$132.86**	**$127.20**	**$159.01**	**$143.92**	**$132.98**	**$152.21**
Average price ($/ckg, DW total value)	$196.06	$217.58	$175.16	$179.10	$187.57	$187.07	$195.70
Low price ($/ckg, DW total value)	$179.19	$199.71	$159.04	$160.02	$159.18	$155.29	$173.86
High price ($/ckg, DW total value)	$226.96	$248.14	$213.76	$216.76	$241.95	$238.40	$235.11
Ontario Market Hog Sales	380,306	478,093	422,713	431,513	563,305	378,058	5,315,869
***% Change Same Weeks - Previous Year**	**-0.8%**	**-7.4%**	**6.2%**	**7.7%**	**0.4%**	**-2.0%**	**2.7%**
Average Carcass Weight (kg)	102.26	101.44	102.96	103.90	105.16	105.07	103.63

Weaned Pigs ($/pig, 5 kg)**Formula	$44.95	$49.28	$37.13	$38.47	$37.24	$36.55	$42.01
Feeder Pigs ($/pig, 25 kg)**Formula	$71.31	$78.18	$58.92	$61.03	$59.08	$57.99	$66.66
Value of Canadian Dollar (US$)	$0.7638	$0.7541	$0.7551	$0.7571	$0.7565	$0.7584	$0.7534
*** Same Month - Previous year**	**$0.7609**	**$0.7670**	**$0.7670**	**$0.7699**	**$0.7580**	**$0.7442**	**$0.7717**
Prime Interest Rate at End of Month	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%

Corn (farm price) - $/tonne	$245.62	$231.18	$224.96	$208.29	$200.97	$206.68	$211.93
*** Same Month - Previous year**	**$186.27**	**$196.93**	**$190.94**	**$179.67**	**$181.05**	**$198.58**	**$187.29**
Soybean Meal (Hamilton + $20)-$/tonne	$511.23	$481.25	$507.22	$537.97	$492.35	$499.09	$501.69
*** Same Month - Previous year**	**$544.81**	**$529.22**	**$511.05**	**$522.55**	**$515.85**	**$517.01**	**$535.17**
Corn - Western Ontario Feed - $/tonne	$257.90	$248.85	$245.40	$250.76	$218.18	$222.17	$229.02
*** Same Month - Previous year**	**$200.02**	**$209.03**	**$208.35**	**$203.68**	**$204.37**	**$215.60**	**$203.40**
DDGS FOB Chatham/Sarnia/Alymer ($/tonne)	$191.75	$191.50	$205.25	$222.63	$204.40	$208.50	$197.66
*** Same Month - Previous year**	**$214.00**	**$194.20**	**$220.25**	**$199.63**	**$152.10**	**$155.63**	**$215.18**

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

Value of Market Hog	$198.39	$215.60	$165.37	$172.79	$169.32	$166.10	$187.37
Feed Cost	$122.65	$123.95	$128.08	$128.93	$127.71	$126.67	$122.99
Other Variable Costs	$44.91	$44.76	$45.00	$44.85	$44.90	$44.96	$45.29
Fixed Costs	$24.55	$24.55	$24.55	$24.55	$24.55	$24.55	$24.55
Total Costs	$192.12	$193.24	$197.63	$198.33	$197.16	$196.19	$192.83
Net Return	$6.27	$22.33	-$32.26	-$25.54	-$27.84	-$30.09	-$5.46

++ Year figures are based on January to December

Ontario Ministry of Agriculture,
Food and Rural Affairs

Ontario

2019 U.S. Monthly Hog Market Facts

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

Month	Jan '19	Feb'19	Mar '19	Apr '19	May '19	Jun '19	1st 6 mo.
CME Constructed Price (US$/cwt)	$56.35	$55.83	$57.76	$80.89	$83.33	$79.19	$68.89
*** Same Month - Previous year**	**$69.49**	**$73.34**	**$64.95**	**$56.16**	**$65.54**	**$78.41**	**$67.98**
Pork Carcass Cutout Value (US$/cwt)	$69.85	$64.57	$69.65	$84.81	$84.77	$80.27	$75.65
*** Same Month - Previous year**	**$80.34**	**$78.98**	**$73.88**	**$68.08**	**$72.81**	**$81.84**	**$75.99**
HRetail Price (US$/lb)	$3.71	$3.73	$3.80	$3.79	$3.88	$3.92	$3.81
*** Same Month - Previous year**	**$3.75**	**$3.74**	**$3.75**	**$3.75**	**$3.74**	**$3.70**	**$3.74**
Early Weaned Pigs Cash Based Value	$62.65	$55.48	$50.12	$64.51	$54.58	$35.80	$53.86
*** Same Month - Previous year**	**$72.24**	**$69.55**	**$48.76**	**$33.36**	**$29.67**	**$20.15**	**$45.62**
40 Pound Feeder Pigs Cash Based Value	$71.36	$69.01	$74.92	$97.32	$81.38	$58.49	$75.41
*** Same Month - Previous year**	**$82.76**	**$85.27**	**$81.71**	**$66.99**	**$57.52**	**$42.85**	**$69.52**
Commercial Hog Slaughter '000 Hd	11,042.4	10,104.2	10,724.4	10,582.6	10,354.3	9,988.7	62,796.6
*** % of Same Month - Previous Year**	**3.1%**	**4.9%**	**0.0%**	**5.9%**	**1.3%**	**4.0%**	**3.1%**
Number of Sows Slaughtered '000 Hd	266.7	235.2	250.4	257.1	253.9	243.1	1506.4
*** % of Same Month - Previous Year**	**0.9%**	**-1.2%**	**-3.3%**	**4.6%**	**-3.0%**	**-1.6%**	**-0.6%**
Average Barrow & Gilt Dressed Wt. (lbs.)	214	213	212	213	212	211	212
*** Change from Previous Year (lbs.)**	**+2**	**+1**	**0**	**0**	**-1**	**+5**	**+1**
Pork Production**	3.2%	4.8%	-0.5%	5.4%	1.6%	5.5%	3.3%
Pork In Cold Storage (end of month)**	-3.1%	1.0%	-0.4%	-2.1%	0.8%	10.2%	
Pork Exports**	-1.8%	-7.9%	-4.2%	-4.3%	-0.8%	9.8%	-1.8%
Feeder Pig Imports**	4.0%	-0.6%	-13.6%	3.7%	-7.8%	-15.7%	-5.0
Market Pig Imports**	-7.7%	41.1%	5.6%	-8.7%	-14.0%	-6.0%	-0.6%

** % change from same month in the previous year

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

Value of Market Hog[1]	$118.20	$113.28	$134.03	$165.69	$168.45	$160.64	$143.38
Feed Cost	$74.90	$75.05	$74.97	$74.47	$74.11	$75.44	$74.82
Other Variable Costs	$37.44	$37.61	$38.72	$40.54	$40.77	$40.87	$39.33
Fixed Costs	$15.90	$15.90	$15.93	$15.93	$15.93	$16.38	$16.00
Total Costs	$128.24	$128.56	$129.62	$130.93	$130.82	$132.69	$130.14
Net Return	-$10.04	-$15.27	$4.41	$34.76	$37.63	$27.95	$13.24

Ontario

2019 U.S. Monthly Hog Market Facts

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

Month	Jul '19	Aug'19	Sept'19	Oct'19	Nov '19	Dec '19	Year++
CME Constructed Price (US$/cwt)	$73.04	$79.03	$59.77	$62.07	$60.05	$59.09	$67.20
*** Same Month - Previous year**	**$79.31**	**$56.50**	**$54.16**	**$67.78**	**$60.46**	**$54.90**	**$65.08**
Pork Carcass Cutout Value (US$/cwt)	$75.47	$83.96	$70.94	$79.11	$82.18	$79.48	$77.09
*** Same Month - Previous year**	**$82.70**	**$69.05**	**$74.34**	**$79.11**	**$70.80**	**$71.53**	**$75.29**
HRetail Price (US$/lb)	$3.93	$3.90	$3.88	$3.91	$3.86		
*** Same Month - Previous year**	**$3.73**	**$3.82**	**$3.79**	**$3.73**	**$3.70**	**$3.74**	**$3.74**
Early Weaned Pigs Cash Based Value	$33.41	$23.78	$28.32	$28.51	$32.19	$44.13	$42.79
*** Same Month - Previous year**	**$16.30**	**$17.32**	**$30.89**	**$36.30**	**$45.71**	**$63.00**	**$40.27**
40 Pound Feeder Pigs Cash Based Value	$50.11	$38.30	$39.63	$43.46	$46.78	$56.41	$60.60
*** Same Month - Previous year**	**$30.41**	**$20.55**	**$31.36**	**$41.27**	**$49.73**	**$68.51**	**$54.91**
Commercial Hog Slaughter '000 Hd	10,578.2	10,867.0	10,644.8	12,301.1	11,330.8		
*** % of Same Month - Previous Year**	**10.2%**	**-2.6%**	**10.3%**	**5.6%**	**2.6%**		
Number of Sows Slaughtered '000 Hd	255.0	246.3	239.7	278.5	245.4		
*** % of Same Month - Previous Year**	**5.5%**	**-8.8%**	**5.0%**	**-0.9%**	**-3.8%**		
Average Barrow & Gilt Dressed Wt. (lbs.)	207	206	209	210	212		
*** Change from Previous Year (lbs.)**	**+2**	**0**	**+2**	**+2**	**+1**		
Pork Production**	10.7%	-3.1%	10.6%	6.4%	3.5%		
Pork In Cold Storage (end of month)**	11.3%	4.2%	1.7%	7.2%	13.2%		
Pork Exports**	27.5%	16.2%	7.6%	3.6%	21.5%		
Feeder Pig Imports**	-9.6%	-11.2%	7.6%	4.7%	-10.5%		
Market Pig Imports**	-2.0%	-9.5%	3.4%	2.4%	18.5%		

** % change from same month in the previous year

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

Value of Market Hog[1]	$155.05	$156.99	$128.79	$131.13	$126.41		
Feed Cost	$77.83	$78.25	$77.82	$77.75	$77.04		
Other Variable Costs	$40.90	$41.66	$39.57	$39.00	$38.60		
Fixed Costs	$16.38	$16.38	$15.86	$15.86	$15.86		
Total Costs	$135.10	$136.29	$133.25	$132.61	$131.49		
Net Return	$19.95	$20.70	-$4.45	$1.48	$5.08		

++ Year figures are based on January to December

[1]The selling price used in the Iowa Budget has changed and is not comparable to previous US Hog Market Facts reports.

Ontario

Swine Budget – Average 2019

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

Income ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Market Pig @ 101% of Base Price $161.00/ckg, 110 index, 103.63 kg plus $2 premium				$187.37
Variable Costs ($/pig)				
Breeding Herd Feed @ 1,100 kg/sow	$13.98			$15.33
Nursery Feed @ 33.5 kg/pig		$16.81		$17.72
Grower-Finisher Feed @ 282 kg/pig			$89.94	$89.94
Net Replacement Cost for Gilts	$2.44			$2.68
Health (Vet & Supplies)	$2.16	$2.10	$0.45	$5.03
Breeding (A.I. & Supplies)	$1.80			$1.98
Marketing, Grading, Trucking	$0.95	$1.60	$6.01	$8.74
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	$4.15	$12.98
Operating Loan Interest	$0.32	$0.40	$1.36	$2.13
Total Variable Costs	**$32.54**	**$24.86**	**$106.40**	**$168.28**
Fixed Costs ($/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	$13.98	$16.81	$89.94	$122.99
Other Variable	$18.56	$8.04	$16.45	$45.29
Fixed	$7.42	$3.59	$12.64	$24.55
Total Variable & Fixed Costs	**$39.96**	**$28.44**	**$119.03**	**$192.83**

Summary	Farrow to Wean	Feeder Pig	Wean to Finish	Farrow to Finish
Total Cost ($/pig)	**$39.96**	**$70.04**	**$149.01**	**$192.83**
Net Return Farrow to Finish ($/pig)				**-$5.46**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium				**$165.75**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium				**$169.16**

This is the estimated accumulated cost for a market hog sold during 2019. For further details, refer to the "2019 Budget Notes" posted at: http://www.omafra.gov.on.ca/english/livestock/swine/finmark.html.

Ontario

Swine Budget – December 2019

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

Income ($/pig)	**Farrow to Wean**	**Nursery**	**Grow-Finish**	**Farrow to Finish**
Market Pig @ 101% of Base Price $140.58/ckg, 110 index, 105.07 kg plus $2 premium				$166.10
Variable Costs ($/pig)				
Breeding Herd Feed @ 1,100 kg/sow	$14.46			$15.86
Nursery Feed @ 33.5 kg/pig		$17.22		$18.14
Grower-Finisher Feed @ 287 kg/pig			$92.68	$92.68
Net Replacement Cost for Gilts	$2.10			$2.31
Health (Vet & Supplies)	$2.16	$2.10	$0.45	$5.03
Breeding (A.I. & Supplies)	$1.80			$1.98
Marketing, Grading, Trucking	$0.95	$1.60	$6.01	$8.74
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	$4.15	$12.98
Operating Loan Interest	$0.33	$0.41	$1.39	$2.18
Total Variable Costs	**$32.69**	**$25.26**	**$109.16**	**$171.64**
Fixed Costs ($/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**	**$29.28**	**$12.64**	**$24.55**
Summary of Costs ($/pig)				
Feed	$14.46	$17.22	$92.68	$126.67
Other Variable	$18.23	$8.05	$16.49	$44.96
Fixed	$7.42	$3.59	$12.64	$24.55
Total Variable & Fixed Costs	**$40.11**	**$28.85**	**$121.80**	**$196.19**

Summary	**Farrow to Wean**	**Feeder Pig**	**Wean to Finish**	**Farrow to Finish**
Total Cost ($/pig)	**$40.11**	**$70.60**	**$152.20**	**$196.193**
Net Return Farrow to Finish ($/pig)				**-$30.09**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium				**$166.36**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium				**$169.75**

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

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by
VICTORIA STEWART &
DR. LEE-ANNE HUBER

RESEARCH ADVANCES PRECISION FEEDING

Individualized feeding programs may offer benefits for gestating sows in loose housing systems.

Typically, producers feed sows a single diet throughout the entire gestation period.

In some cases, farmers increase the feed allowance for thin sows and/or for all sows in the final weeks before farrowing to supply additional energy and nutrients. However, these feed allowance adjustments at the end of gestation do not account for sows' unique nutrient and energy requirements throughout gestation and across parities.

For example, first-parity sows are immature and still require nutrients for maternal growth, in addition to supporting fetal, placenta, mammary gland and uterine growth. If fed a single diet, these sows could be at risk for being undersupplied in both energy and nutrients (especially lysine) at the end of gestation, when fetal and mammary growth occur very rapidly.

In contrast, older sows (parity 4+) are mature and do not require extra energy and nutrients for maternal growth. During early gestation (trimester one), when the requirements are low for pregnancy-associated growth, sows are often over-supplied with energy and nutrients on a single-diet feeding program.

In this scenario, sows can become over conditioned, leading to future reproductive issues such as farrowing complications, reduced milk production, and fewer piglets born in the subsequent reproductive cycle. In addition, over-supplying energy and nutrients will increase feed costs and nutrient losses into the environment.

Scientists can use nutritional models to precisely estimate the energy and nutrient requirements of individual sows for each day of gestation based on body weight at the time of breeding, parity, and anticipated litter birth weights. These (daily) energy and nutrient requirement estimates, coupled with equipment capable of blending individualized feeding programs for sows in loose housing systems, open a new realm of precision feeding.

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What are the effects of precisely meeting estimated energy and nutrient requirements for individual sows on each day of gestation?

But the question remains: what are the effects of precisely meeting estimated energy and nutrient requirements for individual sows on each day of gestation? Do improvements in sow reproductive performance and longevity result? Will these improvements offset the relatively higher cost of installing computer-controlled precision feeding equipment for gestating sows?

At the University of Guelph, we are working to answer these questions.

In our study, we randomly assigned 107 sows (average initial parity 1.4±0.5) to a precision (PF) or control (CON) feeding program between days two and nine of gestation. We followed the sows for three consecutive pregnancies and returned the animals to the same feeding program in each of the three gestation periods.

We housed sows in group pens equipped with electronic sow feeders (ESFs) capable of blending two diets. They contained the same energy content (2,518 kilocalorie/kilogram net energy) but differed in protein (lysine) concentrations (high versus low protein; 0.80 versus 0.20 per cent standardized ileal digestible lysine).

The CON sows received 2.2 kilograms (4.8 pounds) of the same blend of these diets on each day of gestation to mimic conventional feeding practices (i.e. to achieve 0.56 per cent lysine). For the precision feeding program, we developed a specialized feed curve for each sow using a nutritional model to estimate energy and nutrient (lysine) requirements for each day of gestation.

The ESFs then blended the two diets in different proportions for each sow on each day of gestation to meet the estimated energy and nutrient requirements.

Sows entered the farrowing room on gestation day 108 and received 2 kg (4.4 pounds) per day of a standard lactation diet until farrowing. After farrowing, sows received step-up access to the lactation diet; they achieved ad libitum access by day four of lactation.

Within 24 hours of birth, we standardized litters to 11 piglets via cross-fostering. After weaning, sows were re-bred and entered the same feeding program as in the previous pregnancy (average parity 2.4±0.5).

During the first pregnancy, PF sows had lower body weight gains in the first trimester than CON sows. However, the total amount of weight gained throughout gestation, sow body weight at the end of gestation, and the number of piglets born alive between PF and CON sows did not differ. (See Table 1 on page 51.)

In the second pregnancy, PF sows had greater body weight gains than CON sows in both the second and

Table 1: Sow body weight change and litter characteristics at birth for sows receiving precision (PF) or control (CON) feeding programs between days six and 108 of gestation during two subsequent pregnancies.

Item	Pregnancy 1		Pregnancy 2		*P*-value [1]			
	PF	CON	PF	CON	SEM[2]	TRMT	PREG	TRMT x PREG
No. [3]	53	55	37	37				
Body weight, kg								
Initial (day six)	154	157	184	188	9	0.550	<0.001	0.801
Final (day 108)	213	211	247	231	7	0.364	<0.001	0.036
Gain: Trimester 1	10[a]	15[b]	6	6	2	0.152	<0.001	0.027
Gain: Trimester 2	26	23	21[a]	14[b]	2	0.036	<0.001	0.079
Gain: Trimester 3	14	14	33[a]	25[b]	3	0.058	<0.001	0.089
Gain: Overall	52	51	64[a]	44[b]	4	0.028	0.419	0.003
Loss: Lactation	-9	-8	-13	-18	3	0.430	0.005	0.185
Backfat depth, mm (gestation day 108)	16	17	19	19	1	0.811	0.003	0.655
Piglets								
Born alive	11.0	12.0	11.0	10.5	0.6	0.594	0.132	0.134
Stillborn	0.8	0.8	1.1	0.7	0.3	0.178	0.528	0.309
Mummified	0.2	0.2	0.2	0.1	0.9	0.970	0.404	0.877
Litter birth weight, kg	14.8[x]	16.5[y]	17.0	16.4	0.9	0.576	0.102	0.079
Lactation length, days	21.5	22.0	19.4	19.3	0.6	0.795	<0.001	0.340
Average daily feed intake (Lactation; kg)	5.1	5.4	5.9[x]	6.7[y]	0.2	<0.001	<0.001	0.092

[a, b] Means without a common superscript letter within a row and pregnancy differ (P<0.05).
[x, y] Means without a common superscript letter within a row and pregnancy tend to differ (0.05<P<0.10).
[1] P-values for the main effects treatment (TRMT), pregnancy (PREG), and the interactive effect of treatment and pregnancy (TRMT x PREG).
[2] Maximum value of the standard error of the means.
[3] 108 sows reached the end of gestation in the first pregnancy of the study and 74 sows reached the end of gestation in the second pregnancy of the study. (Sows were mainly removed due to failure to cycle within seven days of weaning or were open at pregnancy check.)

In the second pregnancy, precision-fed sows gained more weight than control sows in trimesters two and three, without becoming over-conditioned. Precision feeding did not influence litter characteristics at birth.

third trimesters of gestation, as well as greater overall body weight gain in gestation, without becoming over conditioned. Litter characteristics at birth did not differ.

Therefore, precision feeding gestating sows appears to increase maternal body weight gain in late gestation, when energy and nutrient requirements are the greatest, at least in the first two pregnancies.

We weaned the remaining sows enrolled in the study early in the year, which concludes data collection for the third pregnancy. With this data, we will determine if PF offers any benefit in terms of sow longevity (drop-outs), 'lifetime' (i.e., over three pregnancies) sow productivity, and 'lifetime' feed budgets (including feed intake during lactation periods).

We are conducting a follow-up study to examine the growth performance, and carcass and meat quality of offspring from the PF and CON sows from each of the three pregnancies. Ultimately, this work will determine the long-term effects of precision feeding sows during gestation on the efficiency of the entire production chain. **BP**

Dr. Lee-Anne Huber is an assistant professor in the department of animal biosciences at the University of Guelph in Ontario. Her research focuses on swine nutrition.

Victoria Stewart is a master's student working with Huber.

MOE'S MARKET MINUTE

by
MOE AGOSTINO
& ABHINESH GOPAL

SHIFT IN U.S. PORK PRODUCTION EXPECTED

While market analysts expect export demand for pork will increase, they predict production levels will fall.

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Strong American pork packer margins kept the packers interested in slaughtering as many hogs as possible and the sector had a record availability of market-ready hogs during the final quarter of 2019.

In the last quarter of 2019, the pork sector broke the weekly U.S. hog slaughter record multiple times and the quarterly slaughter figures were record high.

In its December update, the U.S. Department of Agriculture (USDA) estimated fourth-quarter 2019 American production at 7.535 billion pounds due to high hog slaughter numbers and carcass weights.

Strong American pork packer margins kept the packers interested in slaughtering as many hogs as possible and the sector had a record availability of market-ready hogs during this period. Hog producers expanded production in anticipation of the increased Chinese demand.

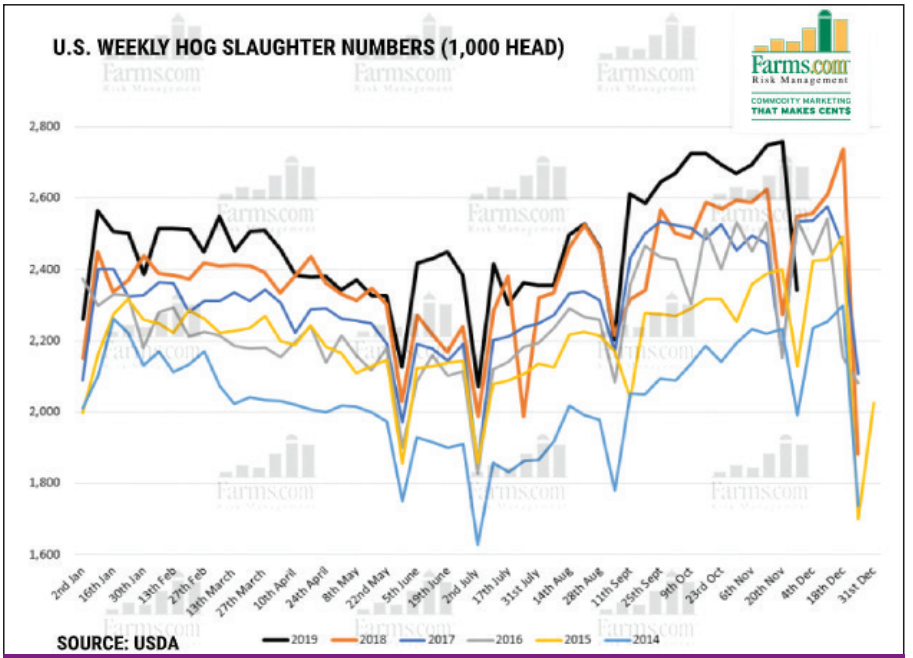
The abundant availability of pigs prevented packers from bidding up the prices which kept a lid on hog futures despite the strong demand.

Nonetheless, the USDA expects American hog production in the first and second quarter of 2020 to drop by 355 million pounds and 710 million pounds, respectively, versus the final-quarter 2019 figures.

However, the year-on-year pork production during the first quarter of 2020 will be higher by 342 million pounds (a 5 per cent increase) and the second quarter will be higher by 210 million pounds (a 3.2 per cent increase).

But, unlike the fourth quarter of 2019, the USDA expects the supply of market-ready hogs to drop in the first half of 2020, which will force packers to chase hogs if export demand remains buoyant.

Since August 2018, African swine fever (ASF) has ravaged China's hog herd, which has led to mass culling of pigs and decimated the country's hog population by as much as 40 per cent.



U.S. weekly hog slaughter hit record numbers in November 2019.

For example, in September 2018, the Chinese hog herd dropped by 41 per cent year-on-year.

Rabobank, a multinational banking and financial services company, predicts China's initial restocking of hogs will occur slowly in 2020 and 2021. This restocking will accelerate in 2022 and likely last until 2025 before the country's herd returns to its pre-ASF size.

As pork is a staple of the Chinese diet, this meat shortage has caused massive food inflation in the country. As a result, China has imported large quantities of pork, and also tried to substitute it with other meats in the local diet.

So far, the European Union is the biggest beneficiary of this demand. The long-drawn U.S.-China trade war deterred American pork exports to China.

As this trade sentiment turned more positive during the second half of 2019, however, China made large purchases of U.S. pork. While a U.S.-China "Phase 1" trade deal agreement in December left some uncertainty in the markets, confidence grew that China would have no choice but to turn to the United States for pork.

The United States was the only country left with enough pork to fill the gap in the Chinese market.

As the spike in American hog production finds a top and eases off during the first half of 2020, down 250,00 to 300,000 head per week compared to the last quarter of 2019, the expected increase in Chinese import demand for U.S. pork will likely occur. The markets have waited for this situation since the second half of 2018.

As a result, market analysts expect the total U.S. pork export outlook to improve during the first six months of 2020. Pork export sales for 2020 had already picked up during the fourth quarter of 2019 and, barring a relapse in U.S.-China trade relations, trade analysts expected these exports to hit a new record.

As of Nov. 14, U.S pork export sales bookings stood at 253,628 metric tons and China had made 92 per cent of those bookings.

In the first quarter of 2020, if demand for U.S. pork stays strong as supply drops, hog futures could see a bigger rise than what the seasonal pattern implies. But U.S. pork cutout values will need to also rise above US$100/hundredweight. The cutout values were firm during the final quarter of 2019 despite burgeoning supplies, suggesting that demand was very strong. **BP**

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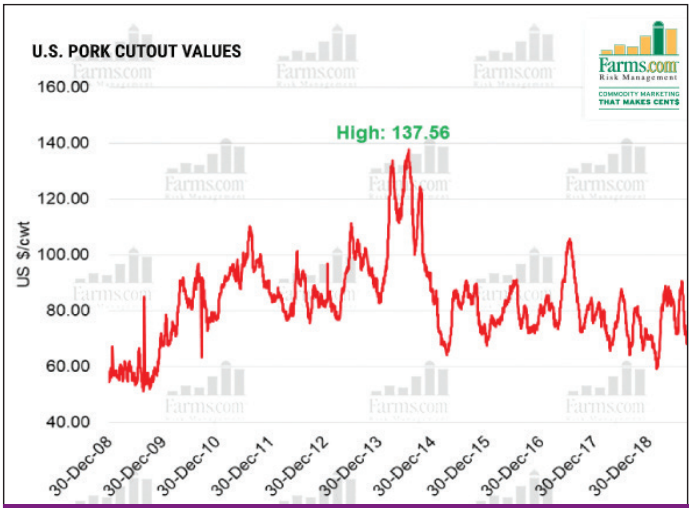
While a U.S.-China "Phase 1" trade deal agreement in December left some uncertainty in the markets, confidence grew that China would have no choice but to turn to the United States for pork.

Maurizio "Moe" Agostino is chief commodity strategist with Farms.com Risk Management and Abhinesh Gopal is head of commodity research. Risk Management is a Farms.com company, as is Better Pork. Visit RiskManagement.Farms.com for more information.

Source: USDA



American pork cutout values firmed during the fourth quarter of 2019.

SECOND LOOK

by
RICHARD SMELSKI

PERSEVERANCE OFTEN PAYS OFF IN BUSINESS

Consider this tale from the gold rush when you face your next big hurdle in your swine operation.

In his 1937 book *Think and Grow Rich*, American self-help author Napoleon Hill tells a story that is so fitting for the pig industry. Let me summarize it for you.

The tale centres on the experiences of R.U. Darby and his uncle during the gold rush. The uncle decided to try his luck in Colorado. After staking his claim, he started the arduous job of mining with the basic tools of a shovel and a pick. He worked for weeks before discovering some ore but he needed specialized equipment to mine it. So, he reburied his findings and returned to Maryland to recruit some assistance.

Together with Darby, the uncle scraped together the money necessary to purchase mining equipment. The pair returned to Colorado.

The duo's hopes rose when they shipped their first car of gold ore to a smelter, as they received very strong returns. The pair knew they'd only need a few more car loads like the first one in order to pay off their equipment. Then, they'd start making handsome profits.

But the situation didn't pan out as Darby and his uncle expected. Their luck seemingly came to an end, as the vein of ore stopped. They kept drilling, hoping to find more, but to no avail. The pair decided to cut their losses.

Darby and his uncle sold the machinery as scrap, only receiving a few hundred dollars in payment, and returned to Maryland.

The story doesn't end there, though. The person who bought the equipment decided to consult a mining engineer about the claim Darby and his uncle had given up on.

The duo didn't understand enough about mining and the vein of ore wasn't exhausted, the engineer said. Rather, the vein should pick up again about three feet from where the pair had stopped mining.

blackred/iStock/Getty Images Plus photo

As a result of perceived disasters, many people quit three feet from the gold.

So, the new miner got to work. The engineer was right – the new miner made millions from the claim "because he knew enough to seek expert counsel to resolve the problem," Hill said.

Ultimately, Darby paid back every dollar he borrowed, albeit not from money he made in the gold business. He learned from the experience and became a huge success in the life insurance industry.

How does this story relate to the pig sector?

Being a "senior" in the pork industry, I can recall many people forecasting doom in our sector. We heard such predictions as "the big guys are going to own our businesses" and "the U.S. will stop imports."

And, over the years, think of how many diseases were allegedly going to end the sector. We heard such predictions with foreign animal diseases, transmissible gastroenteritis, porcine circovirus, porcine reproductive and respiratory syndrome, swine dysentery, and even atrophic rhinitis.

While these diseases caused significant challenges for many farmers, other pork producers survived and prospered.

My first encounter with porcine pleuropneumonia was horrible. I remember a producer in Seaforth, Ont. saying "It has taken me years to build this operation and now I'm going to lose my farm in months due to this dreadful disease."

Yet, like many other terrible events, our industry overcame porcine pleuropneumonia. Many doomsday forecasts faded into unheard-of problems.

As a result of perceived disasters, many producers quit three feet from the gold and some farmers made their fortunes in other fields. Some producers studied the situation, strategized and continue to mine the gold. Still others continue to mine, always three feet from the gold! **BP**

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

You might say we were born this way. Fixated on continuous improvement, allergic to shortcuts and in it for the long haul. Funny thing is, the more we stick to our principles, the more folks stick with us. Because chances are, those are the traits you admire in our people and our pig. Join us at dnaswinegenetics.com

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