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PRECISION FEEDING

HOG BARN TECH

ESFs and RFID

6

PASSIONATE PRODUCER

Third Generation

20

LIFETIME PRODUCTION

Improving Sow Longevity

15

BUSINESS MANAGEMENT

Successful Farmers

36

ADAM SCHLEGEL

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(519) 763-9660
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BEHIND THE LINES

Past accomplishments and new opportunities

For many of us, December is the time to reflect on past accomplishments and look toward new plans and opportunities.

It seems fitting, then, that writer **Jim Algie** explores the incorporation of technology into hog barns and considers future possibilities. Eastern Canadian producers share their transitions to electronic sow feeders and Wi-Fi in their barns.

Such feeders, of course, open up opportunities for precision feeding in commercial swine operations. P.E.I.-based writer **Janice Murphy** highlights Quebec research into this type of program and explains the potential benefits.

Other writers delve into similarly timely issues, such as **Ernest Sanford**'s discussion of the causes of gastric ulcers in pigs, and **Lilian Schaer**'s overview of the habits of Canada's most financially successful farmers.

I am also pleased to formally announce that we are taking *Better Pork* national in 2017. This has been a longer-term project for our team that fits well with the expanded focus and reach of other Farms.com endeavours.

After all, **Farms.com** has a national reach through its swine webpages, Canadian swine enewsletter, Pork News social media, and annual *Benchmark Magazine*. **PigCHAMP**, another Farms.com company, is also known and recognized nationally – and internationally – as the most trusted and widely used swine production software program. Thus, it makes sense that *Better Pork* looks to pork production across the country while maintaining its emphasis on high quality and relevant content.

Please do not hesitate to be in touch with any questions or suggestions – I always enjoy connecting with Canadian farmers! BP

ANDREA M. GAL

Features

Jim Algie photo; Yobro10/iStock/Getty Images Plus/Getty Images photo

Departments

Banff Pork Seminar moves mountains to drive attendance

Björn Alberts/Creative RF/Getty Images photo

If your travel plans include standing around in sub-zero temperatures talking pork, your spouse may decide to sit this one out – but you'll still have plenty of company. While drawing 600 people to the Canadian Rockies in January is no small feat, organizers of the 46th **Banff Pork Seminar** (BPS) know what it takes.

Considered a key industry event in North America, BPS runs Jan. 10-12, 2017 at the Banff Springs Hotel.

The theme "innovative and sustainable solutions for an evolving industry" is evident in several presentations, including "Countering public misperceptions of agriculture" by Dr. **Joe Schwarcz** of **McGill University**.

"One of the greatest misconceptions today surrounds the herbicide glyphosate," said Schwarcz.

"Of course glyphosate is toxic, it's supposed to be; after all, it's designed to kill weeds. The problem is that people panic when they hear it can cause cancer. They don't understand that a dose which is toxic in some laboratory study of animals can be inconsequential for humans."

That panic hurts crop industries. But it also impacts pork producers as consumers worry that, by eating pork, they will consume the toxins pigs ingest with their feed.

Education is key to addressing misinformation, says Schwarcz.

"Just as we teach kids to read and write, we must make them scientifically literate. To feed 10 billion people by 2050, we need decisions based on sound science rather than hearsay and emotions." BP

Understanding PEDV detection methods

Aumsama/Creative RF/Getty Images photo

Iowa State University researchers conducted a study to examine shedding patterns in growing gilts exposed to Porcine Epidemic Diarrhea Virus (PEDV). The main goal was to evaluate multiple sample types to find the best option for the detection of PEDV.

Researchers collected data from a gilt production site that was exposed to PEDV when the pigs were 13 weeks of age. The scientists used three methods of collection: rectal swabs, oral fluid samples and pen fecal samples. Of the three methods, oral fluids had the highest proportion of positive samples for the longest amount of time (69 days), followed by pen fecal samples (55 days) and rectal swabs (41 days).

"Overall, we found that detection varies among sample types, and producers and veterinarians can choose which sample type works best for their system," said **Jordan Bjustrom-Kraft,** a research assistant involved with the study.

PEDV causes the highest mortality rates in suckling pigs, so understanding shedding patterns within the breeding herd is important in order to keep a healthy and stable supply of pork.

The research was published in June in *BMC Veterinary Research*. BP

Holiday gifts to make you squeal with joy

AlexPro9500/Creative RF/Getty Images photo

Nowadays, there is a bacon-themed version of just about anything. If you're looking to complete your holiday shopping, check out this selection of bacon-inspired gifts. This list does not indicate endorsement.

For the chef: *BACON 24/SEVEN: recipes for curing, smoking and eating* by **Theresa Gilliam**.

This cookbook covers all things bacon. From breakfast to dessert, this book is sure to bring out the pork connoisseur.

For the bartender: Bakon Vodka from **Black Rock Spirits**.

If you've ever wondered what a bacon-flavoured drink would taste like, wonder no more. Bakon, a bacon-flavoured vodka, is available by special order from the LCBO. Bakon is a good choice when making a Caesar, according to the company website.

For the board game fanatic: Bacon-opoly from **Late for the Sky**.

This spinoff from the classic Monopoly board game is sure to bring the family together for a bacon-filled game night. Collect money when you pass "Sizzle" and be careful not to land on "Burnt."

The year-round bacon lover: Bacon Freak's bacon of the month club.

Nothing quite says happy holidays like bacon mail. Sign up for the bacon of the month club, where every month the recipient is mailed a package of bacon hand-rubbed with unique flavours.

Any of these gifts are sure to make the bacon lover in your life squeal with delight. BP

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The COMPUTERIZED

Pork producers are slowly but surely embracing electronic sow feeders and other computerized technologies to improve the management and enhance the profitability of their farms.

by JIM ALGIE

When Adam Schlegel left home to study computer science at the University of Waterloo he didn't know exactly when he'd come back to work at Schlegelhome Farms.

He eventually returned after school and five more years at an Ottawa software start-up company. Now 36, Adam farms with his parents, Clare and Catherine, in a multi-site operation that includes corn and soybeans. His return coincided with crucial capital decisions about the future of Schlegelhome Farms.

The process led ultimately to new farrowing facilities, partial adoption of open housing in a renovated sow barn, and installation of the first commercial-scale version of Canadian-made SowChoice feeders. These electronic sow feeders (ESFs) are designed and built by Canarm AgSystems of Brockville and Arthur, Ont., and are one of two Canadian systems available.

"I've always been interested in technology in agriculture," Adam said during a recent morning tour of the family's renovated 2,600-sow and farrowing facilities just north of Shakespeare, Ont.

"Growing up, I saw the gap between what was available in the market and the state of the art, and back then – even today – I would say it was 10 years," he said. "That's a big gap; there's an opportunity there." He also stressed the strong benefits

Dianne, Calvin, Travis, and Francis Brekelmans have a farrow-to-wean operation near Thamesford, Ont. They have group housing arrangements and an ESF system. See related story on page 12.

HOG BARN

that his operation gained from new technology employed by his genetics and feed suppliers. Regarding the use of technology on the farm, Adam noted a clear generational difference between himself and his parents. But he also described Clare – a high-profile former Ontario Pork chair and former Canadian Pork Council president – as an early adopter of computer technology.

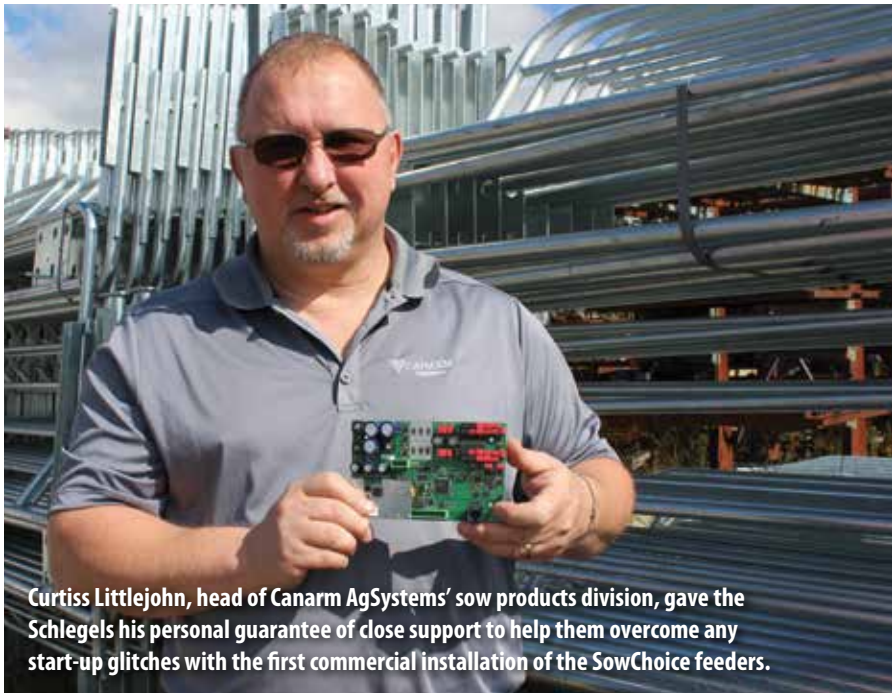
The increasing availability of computer technology for livestock management and recent changes to Canada's Code of Practice for the Care and Handling of Pigs mandating greater movement for gestating sows in pens appear to have prompted a round of new investment in buildings and renovations. Numbers and costs are hard to come by, and the size of such investments varies widely.

In the emerging age of robotic tractors and global positioning systems (GPS) to guide precision field work, smart barns seem almost inevitable. Robots are already in use in dairy barns to milk cows and sweep floors.

In a smart hog barn, robots can powerwash stalls and lead cantankerous boars. There are digital machines to detect the heats of sows and to feed, water and weigh pigs. Other machines manage feed inventory, ventilation and manure storage; still other machines assess the health status of and financial returns on a batch of pigs.

University of Saskatchewan ethologist Jennifer Brown, who heads Canada's National Sow Housing Conversion Project (NSHCP) to educate producers about group-housing techniques, described a Spanish feeding system that incorporates weigh scales capable of matching feed records with the body weight of individual animals. New data is one side-effect of the current shift to group housing for sows and the adoption of ESF technology.

"We do expect to see more regular monitoring and individual monitoring that allows you to manage individual pig data," Brown said in an interview from her Prairie Swine Centre office in Saskatoon. She cited recent research at both the Univer-



Curtiss Littlejohn, head of Canarm AgSystems' sow products division, gave the Schlegels his personal guarantee of close support to help them overcome any start-up glitches with the first commercial installation of the SowChoice feeders.

Clare, Catherine and Adam Schlegel have a 2,600-sow and farrowing operation near Shakespeare, Ont.

Curtiss Littlejohn photo

sity of Guelph and Agriculture and Agri-Food Canada's Sherbrooke Research and Development Centre in Que. and predicts a shift toward precision management made possible by electronic feeding.

"So each sow will have a different feeding program, and you can actually take advantage of a better formulated feed in late gestation that's going to meet the needs of late pregnancy," she said.

Brown identified growing interest in these subjects through growing attendance year over year at group-housing educational events. She noted rising levels of construction that "we haven't seen in a long time" in Canada for new swine facilities.

Neil Booth, Maple Leaf Foods' production manager, has presided over wholesale revisions to his company's Manitoba-based hog-rearing operations since company CEO Michael McCain made high-profile commitments to new standards for animal welfare and environmental sustainability. A hog farmer since his youth in the United Kingdom, Booth oversees Maple Leaf's annual production of 3.9 million hogs; just over 41 per cent (1.6 million) are raised in company-owned barns.

The decision to move to loose housing began at Maple Leaf in 2007, just ahead of a difficult period for Canadian hog farmers who saw the federal government design programs to reduce their numbers. In some ways, current barn construction and renovations are catching up with aging facilities, Booth said.

Nine years later, Maple Leaf completed about a quarter of planned conversion work for the 3,000-sow barns that are now standard for the company. Maple Leaf has used Dutch-designed ESF gear from Nederlandsche Apparatenfabriek, better known as Nedap. Booth praises the management potential of ESF data for lower cost, precision feeding.

New feed lines are capable of phase feeding sows at different stages of gestation. Radio-frequency identification tags will allow the recording of all significant events in the life of an individual pig.

Maple Leaf has already seen a small reduction in feed use following ESF installations and expects to see further efficiencies. In what Booth figures has become "a continual process" of adaptation, they've begun introducing computer tablets for barn workers to electronically capture accurate real-time data.

"Technology is moving so fast," Booth said. "It's a matter of trying to grab the bits that are meaningful to you."

Sarnia, Ont.-area farmer John Van Engelen, 55, admits to a touch of technological obsessiveness and acknowledges that extra costs occasionally come with early adoption. His 250-sow farrow-to-finish operation – which features open sow housing, Nedap ESF and auto sorting – appears on the NSHCP's website. In 2010, he and his wife, Joan, won the Premier's Award for Agri-Food Innovation Excellence. This spring, John installed Wi-Fi to permit the use of a sow program that he can run on his cellphone and stream music into the barn.

The technology allows for greater efficiency, saves on labour and improves the working environment. John, Joan, daughter Cassie and son Mitchell all work in the operation.

Mitchell, 24, has returned to farm after studying agriculture at the University of Guelph's Ridgetown College and working periodically elsewhere. His interest in new technology encouraged some of John's recent moves.

"I'm looking at my boy here who's planning to take over the operation," John said. "So (Mitchell) has adapted very well. He knows exactly what's going on now and so, for me, that's a benefit.

"If you want to be more efficient,


Bob Brcka

if you want to keep your operation going, you can't stay in the background. You've got to keep going ahead," Van Engelen said.

Bob Brcka, an Iowa software developer, figures livestock agriculture is as many as 30 years behind the "just-in-time" thinking that is common in automobile manufacturing. A frequent speaker at industry gatherings, he's general manager of PigCHAMP which sells one of many widely adopted hog-farm management programs. (Brcka's software company, developed in the early 1980s by a group of University of Minnesota veterinarians, is now part of the Farms.com group of companies, as is *Better Pork*.)

"The technology is available; it's just that agriculture and livestock production hasn't adapted to it as quickly," Brcka said in an interview from his office in Ames, Iowa. Recent hog-barn innovations such as environment and feed-inventory monitoring, weighing and sorting devices as well as electronic feeding all generate data that can be put to better use, he said.

"I think that's going to be the challenge for the pork industry in the next 10 years," Brcka said. "How do I take all these different sources of data that are available? . . . How do I bring that (information) together in a place where I can make better decisions?" BP

The promise of precision feeding


Candido Pomar

Hog-feeding science has caught up with the capabilities of computer-managed feeding gear, a leading researcher says; it's just a matter of taking the research to commercial scale.

A pioneer of precision feeding for finishing hogs over the past 10 years, Dr. Candido Pomar has identified protein intake savings of as much as 20 per cent in his lab at Agriculture and Agri-Food Canada's (AAFC's) research centre in Sherbrooke, Que. Precision feeding should mean significant savings and management advantages for hog farmers.

Pomar expects commercial transfer of his finisher research within two years. Precision feeding for gestating sows will follow quickly, he predicted in a recent telephone interview from Sherbrooke.

The lab uses custom-designed feed-delivery systems at higher than commercially viable costs. But talks have begun with interested manufacturers about barn-worthy gear which, Pomar says, is "the next step."

Commercial-scale electronic sow feeders (ESFs) have been available for years for gestating sows, mainly to help solve competitive conflicts over feed between animals in groups. ESF equipment also holds the promise of precision feeding for sows, Pomar confirmed.

The key in both cases is to identify individual pigs and meet their individual requirements. It's a shift in thinking about livestock management that makes use of computer-controlled systems capable of measuring, recording and deploying data.

Pomar and his colleagues have conducted dozens of trials with groups of finisher pigs to test the theory's various aspects. Pomar's AAFC profile cites 26 published journal articles since 2009.

"The important thing is we have to be able to feed each pig differently," he said. "So we have to decide what this pig needs, this day, and we have to have a feeder that is able to do that."

After developing mathematical models and software to work the Sherbrooke system, Pomar and his colleagues have confirmed savings in protein and phosphorus at the rate of about 20 per cent.

"We are reducing the expensive nutrients to the pig, so we can expect a reduction of between eight and 10 per cent in feeding cost," Pomar said.

Spanish by origin, Pomar received undergraduate training in agricultural engineering at the Technical University of Madrid. He received an animal science doctorate in 1989 from Laval University in Quebec for his early precision-feeding work. He is currently a Laval associate professor.

The untimely death of researcher Cornelis (Kees) de Lange in August interrupted research at the University of Guelph on the precision feeding of gestating sows. The research used modified versions of commercially available ESF gear from Canarm AgSystems, an Ontario-based manufacturer. Under de Lange's supervision, graduate student Robert "Quincy" Buis completed a master's thesis this spring after conducting experiments at the university's Arkell lab.

Buis's work demonstrated the preliminary viability of precision feeding among a small group of first-pregnancy sows. A report of his findings appears online under the university's research record.

Since Prof. de Lange's death, Buis has moved to private-sector work in animal nutrition. The fate of planned trials at Guelph for second- and third-pregnancy sows was unclear to Curtiss Littlejohn, Canarm's swine products manager, during a recent interview. In early October, university officials were testing his company's installed ESF equipment to see whether they would use it on the university's commercial herd, said Littlejohn, who expects further research at Guelph. He also said Canarm had begun talks with Pomar about developing new precision-feeding equipment for finishing pigs.

Pomar is aware of at least one other precision-feeding trial in Quebec and of similar projects in Europe and Brazil.

"In the past, we have been developing our knowledge to feed animals in groups," he said. "When we move from groups to individuals, we have to change the way we


"The important thing is we have to be able to feed each pig differently," says Candido Pomar.

are thinking."

Targeting average performance by group feeding tends to overfeed the most efficient animals and underfeed others. The work has required improved understanding about the metabolism of growing pigs and particularly of their use of calcium and phosphorus.

That knowledge, added to mathematical models which interact with feeding equipment, allows for automated feeding of finisher pigs. Similar calculations have yet to be done for sows, Pomar said.

"For sows . . . we are going to have to do some research on the differences because when you are interested in just the group response . . . we are not encouraged to know why there are pigs that are performing better," Pomar said.

"When you are moving to individuals, you have to know why one pig is performing better than the others," he said.

Software used in Pomar's finishing experiments identifies each animal, measures feed intake and body weight and then automatically calculates and adjusts the "concentration of nutrients."

"All this is done automatically so the farmer has not to decide every day how and what he will feed," Pomar said. "The impact is going to be important," he said, predicting a broad shift within 10 years toward precision feeding.

"Soon corn and soybeans will be in competition between animals and humans, so that means we should be expecting feed costs will increase. We cannot continue using five kg of feed protein to produce one kg of animal protein," he said.

Pomar's techniques not only cut feed costs, but also permit close monitoring of disease and more accurate timing for calculating finished weight.

"The interest for me is not just because we're improving nutrient efficiency but because (we) have a lot of information," Pomar said. "You know in real time what is happening on your farm, so when a disease is getting in you are going to identify very quickly that something is happening . . . You are going to be able to make interventions really quickly." **BP**

ESF equipment strengthens this farrow-to-wean operation

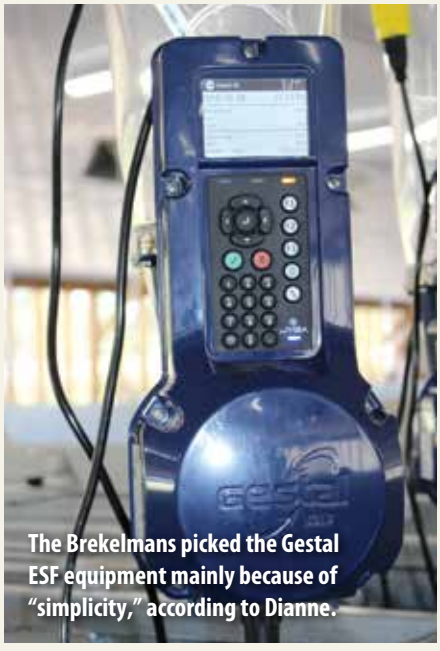
Dianne and Francis Brekelmans settled on a farm called Netherend Acres near Thamesford in the mid-1980s to raise grower-finisher pigs as part of a family business. The couple purchased the farm from Francis's father in 1993.

When an opportunity arose in 2001 to concentrate on sows, the Brekelmans began with an open-housing system. Ever since, they have worked to perfect techniques that minimize competition between sows living in groups.

Both adult sons, Calvin and Travis, have decided on careers at Netherend Acres, which was named for the Dutch heritage of both sides of the family and for the Zorra Township side road that ends in a bush near the family farm.

As a result, the family has undertaken renovations and built new facilities to increase the size of the breeding herd from 3,700 to about 5,000 sows.

When construction neared completion in early October, the Brekelmans were poised to begin moving pigs into the new barns.



The Brekelmans picked the Gestal ESF equipment mainly because of "simplicity," according to Dianne.

Their operation includes Gestal ESF equipment, which they mainly use to eliminate the competition inherent in their original systems. With Waterloo-based consultant Blair Gordon, Gestal's Ontario representative, the Brekelmans designed a system with three feeders per 35-sow pen.

The system allows each animal to eat in protected stalls operated by radio frequency identification (RFID) tags to track individual rations.

The Brekelmans have adjusted their group housing arrangements in gradual steps: they have moved from using open floor drops to shoulder stalls capable of individual feeding. Each step brought productivity improvements.

"We're really hoping now with the technology (that) we can cater to (the pigs) and feed them individually," Dianne said in a recent interview as workers from Sebringville-based general contractor FGC Ltd. completed the final details. "It's non-competitive, so we can address the individual needs of every animal in that pen."

Dianne expects improved feed efficiency and productivity "because we can have these animals in a more uniform condition."

Netherend Acres, which employs 14 people, manages its sow herd and farrowing operations in seven buildings. The operation sells three-week-old piglets mainly to Quebec buyers. The Brekelmans expect the new barns to reach capacity by early spring of 2017.

They picked JYGA Technology's Quebec-made Gestal equipment (one of two Canadian ESF systems available) mainly because of "simplicity," Dianne said. A conventional power chain delivers dry feed to each station which drops individual rations through hard-wired, computer-controlled dispensers to protected individual feeding stations.

"We do a lot of backfat testing, and the range is too wide in a competitive system," Dianne said. Better management of individual feeding should produce "a more consistent-sized animal." Better control should also increase production efficiency, she said.

Francis and Dianne moved to automatic feeders now because they have identified desirable improvements in available ESF equipment. The Brekelmans moved only three years ago to head-station feeders. At that time, they had avoided ESFs because they "didn't think it was there yet," Francis said.

"I think we went for simplicity as the number one reason," Francis said. The family chose Gestal from a wide range of available options from North American and European manufacturers. "The other ones, they're great I'm sure, but there just seems to be a lot more moving parts, more air valves . . . plus training" for the animals, he said of the earlier designs that he had seen in operation.

Gestal, designed and built by a group of St–Lambert-de-Lauzon, Que. hog farmers, dispenses daily feed allowances in increments without water, which is available elsewhere in the group pens. Gestal equipment operates with in-house software, but the company has begun talks about possible coordination with two well-known software developers of more common hog-management programs, Gestal's Gordon said. BP

Adam Schlegel highlights his experiences with electronic sow feeders


Adam Schlegel

The Schlegels recently renovated their 2,600-sow and farrowing facilities, and these renovations included the first commercial installation of the SowChoice electronic sow feeder (ESF), a product of Ontario's Canarm AgSystems.

The SowChoice ESF now serves part of the Schlegels' sow population. The equipment was attractively priced, and it came with Curtiss Littlejohn's personal guarantee of close support to help the Schlegels overcome start-up glitches. There were a few. (Littlejohn, a former chair of Ontario Pork, heads Canarm AgSystems' sow products division.)

"You cannot do a system like this without local support," Adam Schlegel said. "The scariest part about moving to an ESF system from a farmer's point of view is that there are pieces of the system that I cannot fix with a hammer."

After 18 months, Schlegel has a stable system that provides daily rations for 500 sows. The pigs are divided in two dynamic groups, meaning sows can move in and out of the group, with banks of four feeders in each open-housing room. Open gates allow a hungry animal to enter a one-way walk-through stall that senses her presence by radio frequency identification.

The machine links to computer records that identify the animal and her daily feed allotment. If she has not eaten that day, the machine extends the feed bowl and starts dispensing food and water. Mixing water with feed speeds consumption, Littlejohn said.

The system is sealed and hard-wired for durability. Wireless devices are used mainly to locate individuals for special attention. Littlejohn emphasizes the farmers' ability to access and work the system with wireless tablets and cellphone devices.

Canarm has taken pains to use standard electronic components for ease of maintenance and repair. The system also has an extension module which allows it to work seamlessly with PigCHAMP software. (PigCHAMP is a Farms.com company.)

Some of the potential for digital technology remains commercially unrealized, Schlegel said. Promising precision-feeding techniques requires further academic work, and "traceability is a big deal," he said.

But it all depends on accurate records for individual animals. It may also lead to closer links between farmers and consumers who may prefer to purchase meat from pigs produced by sows raised in groups.

"There's always a decision about whether to reinvest and to what degree," Schlegel said. "Our operation has expanded in the last five years, and it's all about finding what the right next piece is to keep the operation efficient." BP

Computer feeders pays off for Sherbrooke farmers

When Francis St. Laurent and his father, Jocelyn, decided to double their 2,400-sow herd near Sherbrooke, Que. and build a new $5-million barn in 2014, they knew it would use group housing and electronic feeders.

But which system to choose among many available?

The family chose Big Dutchman's Call-Inn pro basically because of its track record, said Francis, 24, in a recent phone interview.

Michigan-based Big Dutchman has manufactured computer feeders for more than 20 years. Francis describes the system as "powerful" in use. Individual dietary adjustments, simplified by computerized feeding, bestow obvious bottom-line benefits.

Hans-Gerd Ulrich, Big Dutchman's sales director, Canada and US key accounts, says Francis reported not only reduced feed costs but also improved piglet production in the newer St. Laurent barn. Central Canada represents an active market now partly because of Canada's Code of Practice for the Care and Handling of Pigs, Ulrich said.

The relatively high proportion of family-farm businesses is also a marketing factor because of proprietors' personal interest in improved production, he said. Interest is less great among "integrators and hired workers generally," he said.

St. Laurent's biggest headaches involved educating employees.

Although Big Dutchman offers its own software, Francis has stuck with PigKnows for most applications because it's what the family used in the older barn. The family – Francis is the oldest of four siblings – also knows they'll have to make further adjustments before the Code of Practice becomes mandatory in six years.

However, the shift to using more technology and data seems inevitable, he said.

"It's more than a trend," St. Laurent said. "It changes completely the way to do things." BP

Big Dutchman, Inc. photo

Francis St. Laurent

Optimizing sow output with longer productive lives

In Europe, the average sow doesn't survive to produce a fourth litter. Yet in the best herds, some sows manage 10 farrowings and more. It's time to take a closer look at improving sow longevity.

by NORMAN DUNN

Nowadays, German hybrid sows have a lifetime production of at least five litters. These sows still have a way to go before they match the Austrian average of just below seven litters per sow.

Sobering statistics: The Finnish Litter Recording Scheme which reported the performance of some 30,000 purebred Landrace sows in 2013 put average lifetime production at 3.29 litters.

Britain's Agriculture and Horticulture Development Board notes this year that the annual sow replacement rate for indoor herds averages 52 per cent. And 32 per cent of gilts coming into the herd don't even make it to their third farrowing!

The replacement rate seems to be much better in Denmark and the Netherlands, however. These countries are currently top of the European swine-production efficiency league, and both record farrowings per sow lifetime between 4.8 and 5; sows produce around 60 weaned hogs apiece.

And in Germany, the Bavarian Association for Livestock Producer Groups reports average lifetime production from its members' 70,000 sows as 5.1 litters and 52.5 weaned hogs.

So what's the secret for longer-living, more productive sows? Is it mainly due to mother sow genetics?

Günther Dahinten from Bavaria's Institute for Animal Breeding indicates that hybrid mothers from local breeding programs do indeed perform much better than those from international breeding companies in this respect. For instance, the main Bavarian hybrid consistently records a 40 per cent culling rate up to litter five. The comparative figure for the worst performing international breeding company hybrid line is 67 per cent.

Austria's Swine Breeding Association easily matches neighbouring Bavaria's performance in this respect. Not surprisingly, because in Austria

Sows with 10 litters – still productive and profitable (Starting year 2008; the records are ongoing)

Litter	Total litters	Proportion of sow herd (per cent)	Averaged weaned/litter
1	416	100	12.9
2	381	92	13.1
3	328	79	13.4
4	279	67	13.6
5	236	57	13.6
6	187	45	13.1
7	153	37	13.2
8	107	26	12.9
9	62	15	12.1
>10	52	13	12.3

An example from one of the German state's top 25 swine-production units.
Source: Schleswig-Holstein swine group.

"productive lifetime" has become an important breeding value.

University of Vienna scientists have helped point genetic development in this direction. They've discovered that heritability for longer production life is about the same as that for the factor "born alive piglets per farrowing." It can therefore be easily applied in breeding programs. Naturally, the genes sought are primarily those for robust health, above average fertility and sound legs and feet.

Before going any further, though, we cannot forget that a reasonable flow of replacement gilts must be maintained so that genetic improvements can be steadily introduced into commercial herds. German advisers reckon that genetic improvement within a standard hybrid breeding program for slaughter hogs brings an average increase of 0.3 weaned per litter in each new generation. When everything is taken into account including gilt-rearing costs, slaughter price for the sow and returns for total produced hogs, then sows can earn their keep right through to at least litter 10.

Where improvement potential is even higher, such as with the herd spotlighted in our table, an argument exists for replacing sows a little earlier. But even in elite breeding programs where performance improvement is as high as 0.6 extra weaners per litter in each new generation, sows can still be profitable right up to litter eight.

Swine production advisers know there's an awful lot of management involved, too, in improving sow longevity and productive lifetime. The North Rhine-Westphalia (NRW) Chamber of Agriculture, which supports hog farmers in one of Europe's most densely stocked production areas (with 60 per cent of the republic's 26,000 hog farms), recently named failures by stockpersons in spotting sows in heat and getting them successfully served as a major management reason for the early departure of sows from the herd. Other factors are farrowing and nursing problems, which cause around 20 per cent of culling in NRW breeding herds. A proportion of lameness can also be attributed to management, and this means an early departure for another 20 per cent of sows on average, according to the NRW Chamber of Agriculture.

Stefan Proebsting is a swine husbandry adviser with this chamber. In a recent advisory article, he gave this tip: the manager should carefully note all reasons that sows go to

University of Vienna scientists have discovered that heritability for longer production life is about the same as that for the factor "born alive piglets per farrowing."

slaughter in a special journal. Such reasons include specific injuries, disease, body condition, breeding record and other factors such as poor mothering ability. He feels that these reasons often highlight weak points in husbandry.

For instance, has enough attention been paid to selection in young breeding stock for sound feet, legs and framework? Where dry sows are loose-housed in groups, is not enough being done to prevent bullying and biting injuries by separating the most aggressive females?

Feeding replacements are also considered to be an important aspect in NRW where advisers say that the females kept from breeding herd production as future replacements for the herd should be fed differently from male litter members. For this reason, the advice is to pen these females separately. Daily liveweight gain should not be too high. Around 600 grams is the limit advised for conventional Landrace/Yorkshire hybrids. And getting them used to human interaction during rearing is a priority, too. This, says Proebsting, avoids a lot of stress for the animals later in the breeding herd.

The Danish swine sector also recommends that farmers note all details of why a sow must leave the herd prematurely and use the journal as a blueprint for preventative management in this respect.

The country's Pig Research Centre publishes a 10-point plan to help farmers select sows for longer productive life. Recommendations start with strong legs and sound feet. The Danes emphasize that this aspect must be appraised every time the animal is ready for service, through-

When top-class management and years of genetic striving toward sow longevity come together, the results paint an optimistic picture for future swine herd performance.

out its lifetime. Individual feeding for sows according to body condition and litter size is another must for the Danes. Housing aspects include having non-slip flooring in all areas to prevent injuries that can dramatically shorten a productive lifetime and having enough hospital pens for immediate isolation and treatment of injured sows.

For daily supervision, Danish advisers put a lot of emphasis on the herd managers getting the sows up and moving around during every inspection. The advisers suggest immediate removal of the sows to hospital pens if excessive stiffness or tender feet are obvious and if bite injuries occur.

The long-living herd featured in the table – an example taken from the top 25-per-cent sector of breeding herds in northern Germany (Schleswig-Holstein) – shows what can be achieved when good management is added to powerful genetic progress. This farrow-to-finish herd with 150 DanAvl sows produces 35.2 weaners per sow from an average 2.48 litters per year. Here, 13 per cent of sows are still producing well (12.3 weaned per litter) with their 10th litter. Top production per sow occurs during litters four and five, each with an average 13.6 piglets weaned. And 57 per cent of sows here produce a fifth litter. After the sixth litter, the most common reason for slaughter in this herd is leg and foot problems.

When top-class management and years of genetic striving toward sow longevity come together, the results paint an optimistic picture for future swine herd performance. Austria is perhaps the best example of European progress. The national hybrid program produces (F1) slaughter hog mothers (typically, the first hybrid production cross mothers) that currently average just below seven litters each on commercial farms. Just under one quarter of the 50,000 recorded females are still profitably producing with their 10th litter. The Austrian "record sow" in the national recording program so far was born in 2000 and has produced 26 litters with a total of 288 piglets born alive. **BP**

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Hog farming as a passion, rather than simply a job

Melissa Da Costa is right where she wants to be – on the family farm surrounded by pigs.

by JENNIFER JACKSON

Melissa Da Costa

Melissa Da Costa has a special place in her heart for pigs. "Who doesn't love pigs?" says Da Costa.

Establishing a career on the family farm – Baseline Pork, located on the border of Norfolk and Oxford Counties in Ontario – felt natural to Da Costa. She always wanted to work in the pork industry.

"When my parents couldn't find me, it wasn't uncommon (for me to be) playing inside the dog house or the chicken coop," she said.

Getting a diploma in business from Humber College was a priority for Da Costa before pursuing her career. "I figured it didn't matter what else I wanted to do in life, business is a good foundation; I can always expand on it."

She worked at Ontario Pork during college, dealing mainly with transporters and producers.

Today, Da Costa works full-time on the family farm, and although she acknowledges the significant transition from agribusiness to farming, she couldn't be happier.

"Since I was about nine years old I've worked on the farm in the sow barns. I've always loved animals and have (always) wanted to work with them," says Da Costa. For her, working full-time on the family farm "was the next step."

Although, to Da Costa, it's not work. "It's not really a job if you genuinely like what you do."

As her role on the farm progresses, she ultimately wants to share her passion for pigs with consumers. "They do not realize how much time, effort, and care go into raising the animals. We want the pigs to live the best life that they can," says Da Costa.

Baseline Pork is a family farrow-to-finish hog operation with 3,000 pigs and plans for expansion. Second and third generations work on the farm; Da Costa is a part of the third generation. She feels lucky to work alongside all her siblings, her parents and her uncle.

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What contributed to your decision to become a pork producer?
Mainly the fact that my parents are pork producers.

I've worked with pigs since I was young, and I've always loved working with animals.

Describe your role on your farm operation.
Right now, my role is mostly in the office.

But I just passed my AZ drive test, so hopefully I'll be in the office less. (I'll hopefully be) driving pigs and hauling feed as well as (helping) raise the hogs.

Hours you spend in the barn per week?
About two or three right now. I'm hoping as of this weekend and (forward) it will be about 20.

Hours you spend in the office per week?
About 30 – too many.

How many emails do you receive per day?
Give or take, 10. It's mostly business (documents) and invoices – that sort of stuff.

How many text messages do you receive per day?
Farm-related texts? About five – I mostly get phone calls.

Not farm-related? It's hard to say, maybe about 50 or 60.

Do you currently use any swine management software? If so, how do you think this technology has helped your operation?
We do – it sends the herd's information right to our vet, and they keep an eye on the herd health.

Hours a day on a cell phone?
About two to three.

What type of smartphone do you have?
Samsung Galaxy.

Email or text?
I prefer both. For the farm, I like the paper trail of email. (Although) text is definitely faster and easier.

Any favourite apps?
The only farm(-related) one I have would be the weather app.

I also use Spotify – music is always on in the background.

Hours a day on the Internet?
About three or four.

How often do you travel?
Not too often – unless day trips count!

(Day trips include going) to the beach or on adventures with friends.

Where did you last travel to?
The last place I went with the farm was Iowa for the World Pork Expo last June.

What do you like best about farming?
Every day is different – you never know what your day will include. And the animals!

Pigs each have their own personality and they're intelligent.

What do you like least?
The harsh winter days – I'm not a fan of the cold.

What is the single most important advice you've received or lesson you've learned?
Always run the numbers forwards and backwards. It's better to eat soup and sandwiches than to owe your steak to the bank.

(This is) just something my parents have always drilled into me, especially when going over finances.

What's your management philosophy or guiding management principle?
You can't expect anyone to do a job if you're not willing to do it yourself.

What's your advice for working so closely with multiple generations?
Patience. It's not always easy to see eye-to-eye, especially with different generations.

Do your siblings share your passion for the business and pigs?
We sometimes disagree on the day-to-day management, but we're definitely on the same page for our

love of animals!

With your love of pigs, have you ever had a tough time with the business?
Yes! I remember we had a pet pig named Helga. (She) followed me around everywhere; she even cried when I put her away for the night.

When she "went away," it really taught me how to separate your pets from your food. It's a different kind of attachment now.

Are you involved in any committees, boards, associations, or volunteer efforts?
I'm an active member of my local Optimist International club.

Everything we do (through the Optimists) is for the kids in our community. We've (funded) splash pads and skating days. We absorb all the costs, and they get to have fun!

What are your hobbies or recreational activities?
I would have to say baking, and shooting. I have a few layer hens that keep me busy.

What was the last book you read?
Terri: The Truth by Michael Schiavo.

What does your family think of farming?
It's more of a way of life than a job (for my family).

I also have a boyfriend who farms. You have to find somebody who understands that (farming is a way of life) or it won't work.

What's your most important goal?
I definitely want to expand the farm!

How do you define success?
Loving what you do, and a roof over your head.

Is your farm vehicle messy or neat?
Messy and covered in dog hair. The dogs go everywhere with me – and the hair too, I guess.

What are three items that are always to be found in your pick-up?
Coffee change, a mug, and extra sweaters.

What are three items that are on top of your desk?
Pens, bills, and drawings from my nieces and nephews. I have three nieces and three nephews.

What was the last piece of equipment you bought for your shop?
The last thing we bought was a pressure washer hose.

What's the best time of day?
Evening, usually the time to wind down.

What was your most memorable production year?

In 2008, we didn't have enough farm space. We had fenced off a section of the field for about 1,500 pigs. They ended up destroying about five acres of corn. Trying to load them up was a nightmare.

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

Our labour sources. It's so hard to find employees – let alone good employees.

Also the lack of consumer knowledge that drives our industry, and it might not be for the best.

I'd love to be able to educate (consumers) on what we as farmers, actually do.

(Show them) how the hogs are raised humanely, even though the meat may not be specifically marketed that way. (That) one specific aspect I think is huge. I think an informed consumer is a smart consumer – we need more of those! BP

This interview has been edited and condensed.

Melissa Da Costa

Ontario
Pork News & Views
Prepared and Edited by the OMAFRA Swine Advisory Team
ONTARIO PORK
Decemeber 2016

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

In the February 2016 issue of Pork News & Views I wrote an article titled "Getting Your Piglets Off to a Better Start – Improve Creep Feed Intake!" In that article I detailed the importance of creep feeding for piglets, and strategies to improve intakes. I discussed a series of experiments conducted in the Netherlands (van den Brand, 2014), where piglets were offered creep feed with larger pellet size (10 or 12 mm) compared to a small (2 mm) pellet. The rationale behind these experiments was that in the wild, piglets are exposed to large objects such as acorns prior to weaning. These pigs not only learn to eat large items, but there is also a social (exploratory) benefit. The researchers found that when litters were given the choice of the small or large pellet, the piglets preferred the larger diameter pellet (350 g/litter/d higher intake of large pellets compared to small). When litters were offered one treatment (either small or large pellet size), creep feed intake was 650 g/d higher in litters offered large pellets. Additionally, the researchers also showed that piglets given large pellets before weaning had higher body weight gain and feed intake post-weaning.

This summer, OMAFRA conducted a demonstration trial using two commercial barns in Ontario, with the aim of determining the effects of using large creep pellets on piglet performance pre- and post-weaning. Working with Daco Animal Nutrition, Masterfeeds Vigor Starter 1+ product was used for the trial, and was offered to piglets as either their mini size pellet (~3 mm diameter) or as a specially made large pellet (~12 mm diameter). The diet included highly digestible ingredients and milk products to aid piglets in the transition from a milk diet to a vegetable based diet.

Thirty-four sows and their litters were used in each barn. Half of the litters were given mini creep pellets, and the other half were given large pellets (Figure 1). They were fed starting 6 days post-farrowing until weaning (d21) and for 1 week post-weaning. Piglet weights were recorded within 24 hours of birth, at weaning, 2 days post-weaning, 7 days post-weaning and 28 days post-weaning. Feed disappearance was recorded one week after feed was added in the farrowing crates, at weaning (~2 weeks after feed was added in the crates), 2 days post-weaning and 7 days post-weaning. At this point, producers switched piglets over to their standard commercial diets.

Results:

We did observe different results in each of the two barns. It is important to keep in mind that each barn was a different environment with different

Figure 1: Litters received either mini pellets (~3mm diameter; left) or large pellets (~12 mm diameter; right).

genetics and health statuses, which may help explain why the results were not identical on both farms. Table 1 and Table 2 show the results for Barns 1 and 2 respectively. For both barns we saw significantly higher feed disappearance (intake) when piglets were fed large pellets compared to the mini pellet, in both the farrowing room and the nursery post-weaning.

In Barn 1, although we saw increased feed disappearance, piglet weights and gains were lower at the time of weaning for the litters fed the large pellets. However, by one week post-weaning, and carried through to 28 days post-weaning, piglets fed the large pellets had caught up to their counterparts, and variability was reduced. In this barn, we observed less of a post-weaning growth lag in piglets fed the large pellets (Figure 2), which helps explain how they were able to catch up in body weight. Although their body weight was lower at weaning, they did not lose weight immediately after weaning, which did occur with piglets fed the small pellets.

In Barn 2, we observed no difference in the weaning weights of pigs, but weight gain was higher in the first week post-weaning for piglets fed the large pellets compared to the small pellets, and we tended to see higher body weights of the piglets at d28 post-weaning. Piglets fed the large pellets also had lower variability in weights within a pen over time. In Barn 2, we did not observe evidence of a post-weaning growth lag with piglets fed the small or large pellets; however, we did see that piglets fed the large pellets had larger gains in the first week post-weaning (Figure 3).

Summary

In both barns we saw increased feed disappearance (intake) in the farrowing rooms and in the nursery when piglets were offered large pellets. Despite lower weaning weights in Barn 1 (possibly related to health challenges), this translated into a reduced post-weaning growth lag compared to piglets offered small

Table 1: Barn 1 results.

	Small Pellets	Large Pellets	Significant (Y/N)	Difference[1]
Farrowing Room				
Creep Intake (g/litter/d)				
Week 1	20	150	Y	130
Week 2	80	400	Y	320
Average	50	270	Y	220
Average Piglet Weight (kg)				
Birth[2]	1.62	1.63	N	
Weaning (~21 d)	6.98	6.49	N	
Gain (birth to wean)	5.36	4.86	Y	-0.50
Nursery				
Feed Intake (g/pig)				
Wean to 2d post-wean	140	250	Y	110
d2 to d6 post-wean	690	1190	Y	500
Wean to d6 post-wean	830	1440	Y	610
Average Piglet Weight (kg)				
Weaning	6.98	6.49	N	
2d post-wean	6.76	6.49	N	
6d post-wean	7.47	6.99	N	
28d post-wean	15.91	15.43	N	
Average Piglet Gain (kg)				
d2 to d6 post-wean	0.71	0.50	Y	-0.21
d2 to d28 post-wean	8.45	8.44	N	
d6 to d28 post-wean	9.16	8.94	N	

[1]Difference calculated as large pellet value minus small pellet value when significance was determined.

[2]Creep feed treatments were not offered until 1 week after birth.

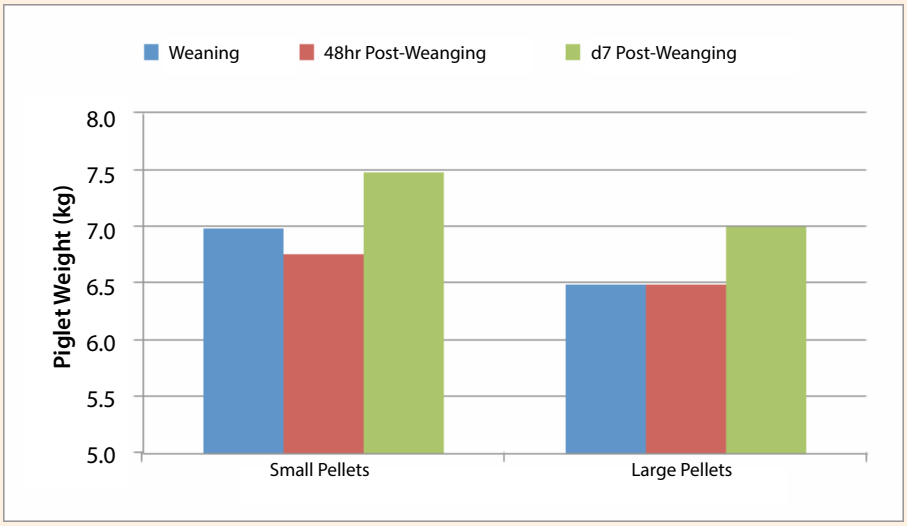

Figure 2: Piglet weights at weaning, 2d and 7d post-weaning showing the post-weaning growth lag in Barn 1, which was more pronounced in piglets fed small pellets.

Table 2: Barn 2 results.

	Small Pellets	Large Pellets	Significant (Y/N)	Difference[1]
Farrowing Room				
Creep Intake (g/litter/d)				
Week 1	30	80	Y	50
Week 2	130	230	Y	100
Average	100	210	Y	110
Average Piglet Weight (kg)				
Birth[2]	1.41	1.38	N	
Weaning (~21 d)	6.18	6.39	N	
Gain (birth to wean)	4.75	5.02	N	
Nursery				
Feed Intake (g/pig)				
Wean to 2d post-wean	220	280	Y	60
d2 to d7 post-wean	650	1060	Y	410
Wean to d7 post-wean	870	1340	Y	470
Average Piglet Weight (kg)				
Weaning	6.18	6.39	N	
2d post-wean	6.33	6.97	N	
7d post-wean	6.57	7.30	N	
28d post-wean	14.05	15.43	N	
Average Piglet Gain (kg)				
d2 to d7 post-wean	0.24	0.33	Y	0.09
d2 to d28 post-wean	7.49	8.13	N	
d7 to d28 post-wean	7.73	8.46	N	

[1]Difference calculated as large pellet value minus small pellet value when significance was determined.

[2]Creep feed treatments were not offered until 1 week after birth.

Figure 3: Piglet weights at weaning, 2d and 7d post-weaning showing no post-weaning growth lag in Barn 2 regardless of diet; however, large pellet pigs had greater increases in gain over this time period.

pellets, and comparable body weights throughout the nursery phase. In Barn 2, piglets offered the large pellets tended to have higher gains and were moving towards higher body weights at d28 post-weaning. We observed no post-weaning growth lag in Barn 2, but large pellet pigs increased their weight more rapidly immediately post-weaning than those offered small pellets.

Additionally, piglets spent time exploring and playing with the large pellets in the farrowing crates. The large pellets acted as a form of enrichment for the piglets, and allowed them to learn to consume feed in a social setting. Because the piglets like to pick up the pellets and play with them prior to consuming them, it will be important to make sure that your slat size will not let the pellets fall through in order to obtain maximum benefits from feeding large pellets.

In this field trial we chose to feed the pellets in both the farrowing room and for 7 days post-weaning in the nursery. As discussed in my previous article on creep feeding, maintaining the same feed immediately post-weaning is important to help piglets cope at the time of weaning. Depending on the flooring in your nursery, it may be a better option for you to switch to the mini sized pellet (of the same feed) at weaning, which will help prevent feed loss through the slats.
For detailed information on the large pellet creep feed please contact Daco Animal Nutrition or Masterfeeds.

For further information on the field trial, creep feeding and other strategies to help get your piglets off to a better start, contact:

Laura Eastwood
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	1st 6 mo.	Jul '16	Aug '16	Sept '16	Oct '16
100% Formula Price ($/ckg, 100 index)	$164.41	$189.66	$160.74	$147.55	$126.19
*** Same Month - Previous year**	**$157.87**	**$182.42**	**$187.21**	**$175.38**	**$174.49**
Average price ($/ckg, DW total value)	$192.67	$221.37	$191.22	$178.66	$158.13
Low price ($/ckg, DW total value)	$171.69	$201.16	$172.03	$156.89	$132.66
High price ($/ckg, DW total value)	$220.58	$244.20	$219.99	$219.84	$208.82
Ontario Market Hog Sales	2,485,555	446,643	364,853	489,644	401,107
*** % Change Same Month - Previous Year**	**0.00%**	**-4.50%**	**0.32%**	**4.48%**	**8.00%**
Average Carcass Weight (kg)	102.75	100.56	100.44	100.81	102.35
Weaned Pigs ($/pig, 5 kg.)**Formula	$42.75	$49.31	$41.77	$38.36	$32.81
Feeder Pigs ($/pig, 25 kg)**Formula	$67.82	$78.24	$66.27	$60.87	$52.05
Value of Canadian Dollar (US$)	$0.7516	$0.7665	$0.7701	$0.7634	$0.7549
*** Same Month - Previous year**	**$0.8102**	**$0.7804**	**$0.7610**	**$0.7549**	**$0.7630**
Prime Interest Rate at End of Month	2.70%	2.70%	2.70%	2.70%	2.70%
Corn (farm price) - $/tonne	$187.94	$179.69	$177.90	$173.93	$176.97
*** Same Month - Previous year**	**$179.50**	**$191.53**	**$178.14**	**$199.72**	**$188.44**
Soybean Meal (Hamilton + $20/tonne)	$514.08	$586.37	$538.70	$501.58	$493.77
*** Same Month - Previous year**	**$533.85**	**$576.13**	**$552.10**	**$515.06**	**$510.53**
Corn - Western Ontario Feed - $/tonne	$201.70	$193.90	$195.18	$189.21	$191.80
*** Same Month - Previous year**	**$191.23**	**$204.87**	**$200.91**	**$224.58**	**$203.15**
DDGS FOB Chatham/Sarnia/Alymer ($/tonne)	$213.12	$228.30	$183.63	$180.50	$195.50
*** Same Month - Previous year**	**$244.94**	**$205.60**	**$212.50**	**$213.80**	**$205.96**
Summary of OMAFRA Swine Budget ($/pig, Farrow to Finish)					
Value of Market Hog	$189.48	$213.89	$181.37	$167.26	$145.49
Feed Cost	$113.78	$114.94	$116.00	$115.37	$114.51
Other Variable Costs	$40.31	$40.32	$40.55	$40.79	$40.65
Fixed Costs	$23.76	$23.76	$23.76	$23.76	$23.76
Total Costs	$177.85	$179.02	$180.31	180.12	$178.93
Net Return	$11.63	$34.87	$1.06	-$12.86	-$33.44

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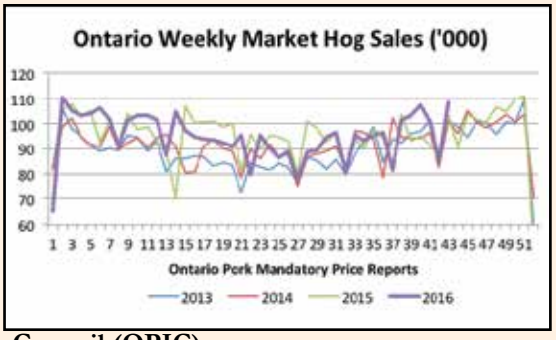

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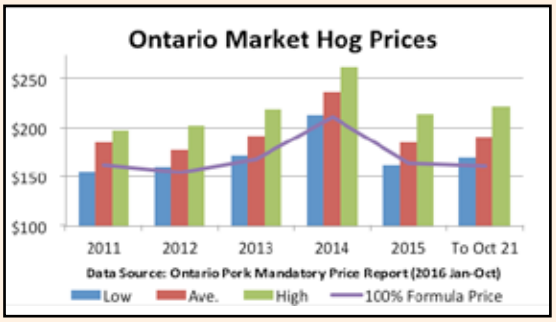

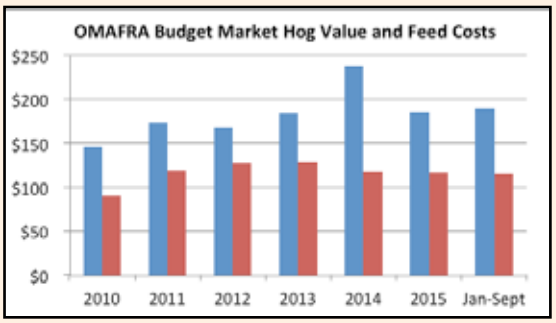

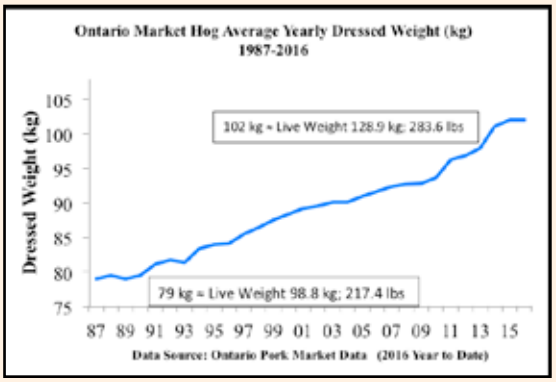

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Ontario

Swine Budget – December 2016

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

Income ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Market Pig @ 101% of Base Price $126.19/ckg, 110 index, 102.35 kg plus $2 premium				$145.49
Variable Costs ($/pig)				
Breeding Herd Feed @ 1,100 kg/sow	$13.31			$14.59
Nursery Feed @ 33.5 kg/pig		$16.64		$17.54
Grower-Finisher Feed @ 278 kg/pig			$82.38	$82.38
Net Replacement Cost for Gilts	$2.36			$2.59
Health (Vet & Supplies)	$2.16	$2.10	$0.45	$5.03
Breeding (A.I. & Supplies)	$1.48			$1.63
Marketing, Grading, Trucking	$0.70	$1.00	$4.66	$6.48
Utilities (Hydro, Gas)	$1.96	$1.15	$1.77	$5.14
Miscellaneous	$1.00	$0.10	$0.20	$1.40
Repairs & Maintenance	$1.18	$0.60	$2.13	$4.05
Labour	$6.27	$1.85	$4.00	$12.83
Operating Loan Interest	$0.23	$0.29	$0.95	$1.51
Total Variable Costs	**$30.65**	**$23.73**	**$96.54**	**$155.16**
Fixed Costs ($/pig)				
Depreciation	$3.92	$2.00	$7.09	$13.50
Interest	$2.20	$1.12	$3.97	$7.56
Taxes & Insurance	$0.78	$0.40	$1.42	$2.70
Total Fixed Costs	**$6.90**	**$3.52**	**$12.48**	**$23.76**
Summary of Costs ($/pig)				
Feed	$13.31	$16.64	$82.38	$114.51
Other Variable	$17.35	$7.09	$14.16	$40.65
Fixed	$6.90	$3.52	$12.48	$23.76
Total Variable & Fixed Costs	**$37.55**	**$27.25**	**$109.03**	**$178.93**

Summary	Farrow to Wean	Feeder Pig	Wean to Finish	Farrow to Finish
Total Cost ($/pig)	**$37.55**	**$66.33**	**$137.74**	**$178.93**
Net Return Farrow to Finish ($/pig)				**-$33.44**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium				**$155.59**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium				**$158.93**

This is the estimated accumulated cost for a market hog sold during the month of October 2016. The farrow to wean phase estimates the weaned pig cost for May 2016 and the nursery phase estimates the feeder pig cost for July 2016. For further details, refer to the "2016 Budget Notes" posted at http://www.omafra.gov.on.ca/english/livestock/swine/finmark.html.

Fusobacterium gastrosuis: A new bacterium possibly related to gastric ulcers in swine

A trail-blazing finding in human medical research has prompted new questions in swine veterinary medicine.

by S. ERNEST SANFORD

Gastric (stomach) ulcers occur in grower-finisher pigs, typically between three and six months of age.

RGtimeline/Creative RF/Getty Images photo

Scientists at Ghent University in Belgium have discovered a new bacterium in the stomach of pigs that may be causing gastric ulcers. The findings were presented by Professor Freddy Haesebrouck, leader of the research team, at the International Pig Veterinary Society (IPVS) Congress held in Dublin, Ireland, June 7 to 10, 2016. A proposal has been put forward to name the bacterium *Fusobacterium gastrosuis*.

Gastric ulcers in pigs

Gastric (stomach) ulcers occur in grower-finisher pigs, typically between three and six months of age. The ulcers occur in the cranial portion of the stomach, at the non-glandular region where the esophagus opens into and enters the stomach. This location is the exact opposite to where gastric ulcers in humans are located, which is at the other end of the stomach, the pylorus, the exit point of the stomach as it enters into the duodenum, the start of the small intestines.

Unlike the rest of the pig's stomach, which is glandular, the cranial portion does not have protection from stomach acids by presence of a mucus coating.

Gastric ulcers can result in sudden death when the ulcer breaks through a blood vessel in the stomach and the pig has a massive bleed out into the lumen of the stomach. Alternatively, the ulcer might bleed small amounts over an extended period causing the pig to be anemic, unthrifty and have a reduced growth rate.

Risk factors for gastric ulcers in pigs

Although the cause of gastric ulcers in pigs is not fully known, a number of important risk factors have been determined. "Anything that causes an empty stomach is a risk factor," according to the American Association of Swine Veterinarian's diagnostic notes on the subject.

Feeding finely-ground pelleted feed, when the average particle size is less than 700 microns, can cause stomach ulcers to increase in the herd. Disruptions in feed delivery may also trigger an increase in ulcers as a result of delayed or interrupted feed consumption. Hot weather or disease outbreaks, especially of respiratory diseases, can cause the development of gastric ulcers.

Cause of gastric ulcers in humans

For decades, the dogma had been that gastric ulcers in people were caused by stress. In 1981, Dr. Barry Marshall, an internal medicine specialist in Perth, Western Australia, teamed up with Dr. Robin Warren, pathologist at the Royal Perth Hospital in Perth. Since 1979, Dr. Warren had been identifying curved, spiral bacteria in the stomach wall of stomach biopsy samples from patients with gastric ulcers. Dr. Marshall cultured these bacteria in the labora-

tory and traced, not just ulcers, but also stomach cancers associated with the gut bacteria. The bacterium was subsequently named *Helicobacter pylori*.

Drs. Marshall and Warren presented their findings at medical conferences in Australia and around the world. The researchers were met with universal skepticism and dismissiveness from gastroenterologists who tenaciously held on to the dogma that gastric ulcers in humans were caused by stress.

Unable to convince the medical establishment, Dr. Marshall grew desperate. He cultured *H. pylori* from the gut of a patient with a stomach ulcer, made a broth and drank it. Over the next few days he developed gastritis, the precursor to a gastric ulcer. He started vomiting and became very sick.

Dr. Marshall biopsied his own stomach, and cultured *H. pylori* from the stomach wall, thus proving that those bacteria were the cause of stomach ulcers. With the identification of a bacterium as the cause of stomach ulcers, a cure was immediately available – antibiotics! This allowed microbiologists to take the lead on the management of gastric ulcers in humans.

The medical establishment now paid attention. For their work on *H. pylori*, Drs. Marshall and Warren were jointly awarded the Nobel Prize in Physiology or Medicine in 2005. Since their discovery of *H. pylori*, the standard care for gastric ulcers is treatment with an antibiotic. Stomach cancer, once one of the most common forms of cancer, is almost gone from the western world.

Since this trail-blazing discovery of *H. pylori* in humans, the hunt has been on to find if similar bacteria are present in gastric ulcers in pigs. Yes, similar bacteria have been found in the stomach wall of pigs with gastric ulcer. The bacteria, however, are usually located at the distal end of the stomach (the pyloric region), far from the esophageal area where stomach ulcers are located in pigs. Consequently, these bacteria are less likely to be the cause of gastric ulcers in pigs. (In contrast, similar bacteria are located adjacent to the site of the stomach ulcers in humans.)

rakijung/Creative RF/Getty Images photo

Causes of gastric ulcers can include: finely-ground pelleted feed, delayed or interrupted feed consumption, hot weather and disease outbreaks.

Is Fusobacterium gastrosuis the cause of gastric ulcers in pigs?

Two features about Fusobacterium gastrosuis which put it in somewhat favourable light as the possible cause of gastric ulcers in pigs are:

- The bacteria of the genus Fusobacterium are usually pathogenic, meaning they are disease-causing bacteria, and
- The bacteria is located in the area of the stomach that is close to the site of gastric ulcers in pigs.

Although these are encouraging features, they do not prove conclusively that this *Fusobacterium gastrosuis* is indeed the cause of gastric ulcers in swine. That proof will have to be determined over time. BP

S. Ernest Sanford, DVM, Dip Path, Diplomate ACVP, is a Swine Veterinary Consultant based in London, Ont.

The impact of precision feeding on feeding behaviour of grower-finisher pigs

Precision feeding can be beneficial for commercial swine production, without impacting feeding behaviour, according to researchers.

by JANICE MURPHY

Phase feeding is considered standard operating procedure in most grower-finisher operations. Traditional phase feeding programs use least-cost formulations designed to meet the nutritional requirements of either the average or best-performing pig in a given population. These programs result, however, in over- and under-feeding of pigs within the same group.

In an ideal world, all pigs within a growing phase would have the same nutrient requirements. The reality is that pigs' requirements change over time, follow individual patterns, and can even vary greatly between individuals in a group.

When this variability is ignored, conventional phase feeding programs lead to inaccurate nutrient levels, usually oversupplying the majority of the pigs with more nutrients than required. Ultimately, this approach results in high feeding costs and excessive nutrient excretion to the environment.

Precision feeding provides a modern alternative to phase feeding by taking into account the between-pig variation. Precision feeding allows pigs to be individually fed with diets that are adjusted in real-time, according to the pigs' own patterns of feed intake and growth, tailoring diets to their specific nutrient requirements.

When considering the implementation of a precision feeding program, producers and nutritionists must work together to gather key information. It is important to establish the nutrient profile of each feed ingredient, as well as the pigs' specific nutrient requirements. Premixes need to be formulated precisely in order to avoid wasting excess nutrients. Once these parameters are in place, the dietary nutrient concentration can be simultaneously adjusted to match the requirements of each pig in the herd.

Stramyk/Creative RF/Getty Images photo

The reality is that pigs' nutrient requirements change over time, follow individual patterns, and can even vary greatly between individuals in a group.

Previous research from Agriculture and Agri-Food Canada (AAFC) clearly indicates that precision feeding is an effective strategy to improve nutrient utilization, while reducing feed cost and nutrient excretion, without jeopardizing performance. In grower-finisher pigs fed rations where daily adjustments were made, lysine and nitrogen intake decreased by 25 per cent, while excretion was reduced by 40 per cent, without compromising growth or body composition.

Despite its benefits, precision feeding is still a relatively new concept. Research into feeding behavior provides a link in the gap between the nutritional and behavioral sciences. A better understanding of pig feeding behavior could provide valuable insights which could contribute to improved feeding strategies, productivity, and well-being.

Researchers at AAFC's Dairy and Swine Research and Development Centre in Sherbrooke, Que. set out to explore the feeding behavior of grower-finisher pigs raised with precision feeding strategies. The study was performed over 84 days with 35 barrows and 35 gilts, starting at 30 kg body weight. Researchers evaluated five different treatments.

The control treatment was a three-phase feeding program that provided all pigs in the group with a fixed blend of a high nutrient density diet and a low nutrient density diet within each feeding phase. The treatment diets were four daily phase-feeding programs in which pigs were fed with a diet blended to meet 110, 100, 90, or 80 per cent of their estimated lysine requirements.

The use of electronic feeders is a key element in precision feeding strategies. These feeders record detailed and quantitative information on feeding behavior, such as time, size, and duration of each meal. In this study, feed was provided individually via five feeding stations installed side-by-side in the front of the pen. The feeding station identified each pig as its head entered the feeder and delivered a blend of feeds in response to each animal's estimated allowance. The feeders precisely monitored the timing of each visit and the amount of feed consumed.

Throughout the trial, the pigs met the expected performance for their genotype, in terms of feed consumption and weight gain. The feeding pattern that emerged was diurnal (or occurred during the day); 73 per cent of the feeder visits followed this timeline. The diurnal nature of feed intake increased with age, with daytime

meals accounting for 64 per cent of total meals in the first feeding phase, 74 per cent in the second phase, and 82 per cent in the last phase.

Treatment did not affect number of meals, duration of meals, time between meals, feed consumed per meal, and feed consumption rate (Table 1). Gilts consumed 19 per cent less feed per meal and had a significantly lower feed consumption rate compared with barrows.

Pig feeding behavior was not affected by diet composition. However, there was a significant negative correlation between feed efficiency, the amount of feed consumed per meal, and feed consumption rate. The researchers found that the variables which related most closely to pig performance results were feed consumption rate and number of meals per day. Given the limitations of the current experimental design, the scientists determined that more research is needed to pinpoint and interpret the importance of these traits with larger groups of pigs.

Precision feeding (at 100 per cent of estimated lysine requirement)

Table 1. Feeding behavior of pigs fed in a group according to a three-phase feeding program or individually with daily tailored diets providing a percentage of the estimated lysine requirements

Response	Treatments					Sex		Feeding phases		
	3-phase	110	100	90	80	Barrows	Gilts	1	2	3
Interval between meals, min	280	275	234	241	241	263	267	227c	301a	268b
Feeding time per meal, min	6.39	5.85	5.77	5.70	5.44	6.46	5.82	6.21a	6.44a	5.76b
Feed intake per meal, g	258	250	243	239	217	286	231	194c	279b	301a
Feed consumption rate, g/min	39.8	41.5	41.7	41.0	39.7	42.7	39.9	31.4c	42.4b	50.2a
Number of meals per day	9.81	10.1	10.8	11.1	11.1	10.5	10.7	11.0a	9.42b	11.3a

a–c Values within a row and within the comparison (among treatments or feeding phases) with different superscripts differ significantly at $P < 0.05$

Source: Andretta, I., Pomar, C., Kipper, M., Hauschild, L., and Rivest, J. 2016. Feeding behavior of growing–finishing pigs reared under precision feeding strategies. J. Anim. Sci. 94: 7: 3042-3050.

resulted in a reduction in the dietary lysine level by 26 per cent, compared to the three-phase diets. Feed intake and feed efficiency were similar across treatments. Feeding pigs using precision feeding at 110, 100, or 90 per cent of the estimated individual lysine requirement also did not influence weight gain. This information suggests the mathematical model used to establish the feeding pattern for individual pigs was properly calibrated to estimate their lysine requirements.

Researchers observed interactions between treatment and feeding phase for feed intake per meal and feed consumption rate. However, feeding behavior did not differ among the treatments overall. Individually feeding growing pigs with daily tailored diets is an effective approach to reduce lysine levels without impacting performance. Based on current and previous research results, the researchers determined that precision feeding programs could be applied in commercial pig operations without implications for feeding behavior or performance.

Feeding rates and other behaviour-related information could prove to be valuable tools in pig production. Several factors appear to influence feeder-use patterns in group-housed pigs: light/dark cycles, group size, social pressures, management level, feed allowance, equipment design, and housing environment. Since no single mechanism regulates feed intake on a wholesale basis, there is still a need to better characterize the effect of feeding programs and other environmental factors on feeding behavior.

Precision feeding offers significant potential for the pork industry. However, implementing these systems represents a challenge. A comprehensive approach is needed to ensure the supportive information is available to farmers in order to confidently estimate individual nutrient requirements, reliable electronic devices are available for use on-farm, and the program remains cost effective. These challenges will need to be addressed to solidify precision feeding as a practical and viable option for producers.

Based on this research, feeding grower-finisher pigs individually with daily tailored diets has been established as an effective approach for reducing lysine levels without impacting performance or feeding behavior. These results suggest several factors may play an important role in the regulation of feeding behavior in group-housed pigs. These factors warrant consideration when designing feeding programs for commercial pig production, although further research is necessary to better define the specific mechanisms involved. BP

Janice Murphy lives in P.E.I. She is a graduate of the University of Guelph with a MSc in swine nutrition and has worked in both the private and public sectors.

What is Swine Health Ontario and how does it impact the province's other swine organizations?

The leadership team has identified four target areas and goals to achieve by 2019.

by LILIAN SCHAER for SWINE HEALTH ONTARIO

There's been a shift in the landscape of swine health in Ontario over the last 12 months. The overall goal is a more collaborative and proactive response to swine health in the province, say industry leaders.

That goal led to last year's creation of Swine Health Ontario (SHO), a leadership team of seven individuals representing the province's swine health stakeholders. The team's focus is to take an industry-wide view of swine health and to develop a long-term strategy for the industry.

SHO's member organizations include Ontario Pork, Ontario Pork Industry Council (OPIC) and the Ontario Swine Health Advisory Board (OSHAB), as well as the Ontario Ministry of Agriculture, Food and Rural Affairs as an ex-officio member. The seven-member SHO team includes Clare Schlegel, Amy Cronin, Dr. Doug MacDougald, Jay Squire, Mark Yungblut, Dr. David Alves, Dr. Cathy Furness and manager Lori Moser.

"Swine Health Ontario is not a separate legal entity, but rather a management group that provides direction and ensures swine health efforts are coordinated amongst the partners at the table," explains Jay Squire, leadership team member and chair of OPIC. "The roles and responsibilities of the individual organizations have largely remained the same, but by working together under the SHO umbrella, we can do things we wouldn't be able to individually," adds Squire.

Swine Health Ontario providing leadership and strategy

Swine Health Ontario is directing its energies toward developing a swine health strategy for Ontario. This will include the entire cycle of health management: planning and prevention, early detection, response plans, recovery and support systems, and continual improvement.

"We will make a difference by creating a health strategy that is proactive, practical and responsive," says Squire. "For the long term, the hope is that Swine Health Ontario will take an increasingly important role in being a champion for swine health across the entire Ontario industry."

SHO has identified the following target areas as being critical to move the provincial industry towards a culture of continuous improvement in swine health management through a proactive, practical and responsive plan that engages the entire industry.

Delivering on Strategic Goals

To help advance these goals, OSHAB has taken the lead on eliminating Porcine Epidemic Diarrhea (PED) from Ontario, targeting swine farms as the first step. This effort is supported by industry sponsorship and is funded in part through Growing Forward 2 (GF2), a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of GF2 in Ontario.

"OSHAB is continuing its role in health project implementation for OPIC and now also for Swine Health Ontario," says Dr. Marty Misener, OSHAB chair. "We run projects that fit within our mandate and the SHO leadership group sets the strategy and long-term plans for swine health in Ontario." 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.

Swine Health Ontario Target Areas	Goal Statement *(3-year time frame, 2016 to 2019)*
Targeted Disease Management – starting with PED Elimination	Eliminate Porcine Epidemic Diarrhea (PED) from the Ontario swine industry with an effective response in place for any new outbreaks. Use these processes as a model to manage any future disease challenges.
Swine Health Information System	Develop a swine health information system including an accurate, real-time surveillance system, database and mapping tool to detect, track, monitor and report on disease.
Swine Health Ontario Command Centre	Establish a command centre for the Ontario swine industry using a step-by-step approach to develop, test and implement systems and protocols.
Disease Prevention	Improve disease prevention through biosecurity and risk management measures.

There's money in business management activities for hog farmers

First-of-its-kind research has identified the top seven habits of Canada's most financially successful farmers and connected those business management activities to higher farm income and profitability.

by LILIAN SCHAER for the AGRI-FOOD MANAGEMENT INSTITUTE

The *Dollar$ and Sense study*, commissioned by Agri-food Management Institute (AMI) and Farm Management Canada, included 604 farms nationwide of all types and sizes in grains and oilseeds, beef, hogs, poultry and eggs, dairy, and horticulture, and farmers of all ages. Ipsos Ag and Animal Health completed the study and the research was released earlier this year.

The study results show that Canadian farm businesses in the top 25 per cent financially out-perform those in the bottom 25 per cent by a wide margin: 525 per cent increase in Return on Assets (ROA), 155 per cent increase in Gross Margin Ratio, and 100 per cent increases in Return on Equity (ROE) and Asset Turnover.

In the top quartile of farm businesses surveyed, 13 per cent were hog operations. By comparison, hog farms represented 11 per cent of farm businesses in the bottom quartile.

"This study clearly identifies the connection between farm business management practices and better financial outcomes on-farm," says Ashley Honsberger, AMI executive director.

"For the first time, there is proof that the top management habits directly impact a farm's profitability and income."

Continuous learning is by far the leading driver of farm financial success, according to the study results. Farms in the bottom 25 per cent are three times less likely to look for training, new information or learning opportunities.

"It's no surprise that training and a lifelong commitment to personal development was at the top of the list," says Colin Siren, vice president of Ipsos Ag and Animal Health.

Farm Type Median Ratio		Total (n=512)	Grain & Oilseed (n=162)	Beef Cattle (n=126)	Hogs (n=48*)	Poultry & Eggs (n=40*)	Dairy Cattle (n=87)	Horticulture (n=49*)
Asset Turnover	Top 25%	20.0%	28.6%	17.7%	69.6%	13.6%	16.7%	27.8%
	Bottom 25%	9.7%	7.2%	5.6%	18.9%	10.1%	13.2%	9.7%
Gross Margin Ratio	Top 25%	50.0%	47.6%	50.0%	31.6%	37.7%	59.7%	55.6%
	Bottom 25%	19.6%	21.6%	19.6%	13.5%	0%	16.0%	24.7%
Return on Assets	Top 25%	10.0%	10.8%	8.1%	21.5%	5.0%	9.9%	14.6%
	Bottom 25%	1.6%	1.4%	1.2%	2.7%	0%	2.3%	1.3%

"People who are willing to make change are more likely to be financially successful."

Second is having current finances so that key farm decisions are made based on an accurate financial picture of the business. Farms in the bottom quartile are three times more likely to have out-of-date financial records.

The third driver is seeking out professional business advisers or consultants. Farms in the top quartile are 30 per cent more likely to work regularly with a farm business adviser or a team of advisers.

Four other drivers also ranked highly: having a formal business plan, knowing and monitoring cost of production, assessing and managing risk, and using budgets and financial plans.

Three-quarters of the 56 hog farmers surveyed felt the financial health of their farm was a little or much better now than five years ago.

Nationwide, the top 25 per cent of hog farms showed a 21.5 per cent ROA compared to 2.7 per cent in the bottom 25 per cent; 31.6 per cent Gross Margin Ratio compared to 13.5 percent; 123.1 per cent ROE compared to 21.4 per cent; and 69.6 per cent Asset Turnover compared to 18.9 per cent.

According to the study results, fifty-nine per cent of hog farmers use cost of production for benchmarking and decision-making, higher than the average of 50 per cent for all farmers.

The study also showed 63 per cent of hog farmers use structured production planning processes, compared to 57 per cent of all farmers, and 38 per cent use farm business advisers, again higher than farmers as a whole at 31 per cent.

"A list of seven habits can seem overwhelming, so consider tackling just one item per season to get started," advises Honsberger.

A helpful tool is Pledge to Plan, a website with business management activities for each season, resources, and stories of producers who've gone through the process.

To access this information, visit www.pledgetoplan.ca.

The *Dollar$ and Sense study* was funded through Growing Forward 2, a federal-provincial-territorial initiative. BP

The Agri-food Management Institute (AMI) aims to increase awareness, understanding and adoption of beneficial business management practices by Ontario agri-food and agri-based producers and processors.

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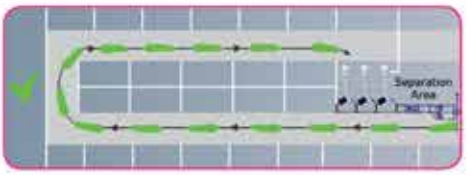
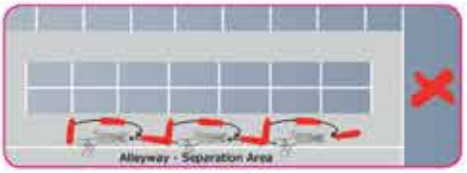


Non aggressive sow behaviour



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The emperor has no clothes on

Weighing in on the "fart tax" and the climate change debate.

by RICHARD SMELSKI

Believe it or not, a "fart tax" (essentially a tax on greenhouse emissions from animals – especially ruminants and including pigs) has been seriously discussed in several countries. Indeed, in September, the California legislature approved legislation which will regulate emissions on dairy farms, according to the Associated Press.

At times, don't you just want to shout "the emperor has no clothes on?"

Let me remind you of the eminent Hans Christian Andersen story. A vain emperor ordered his weavers to make him the most unique garment ever. Two weavers spent a lot of time doing nothing. They claimed that only the wise and loyal would be able to see the unique garment. In reality, no garment existed at all. No one would admit that the emperor was naked for fear of being seen as unwise or disloyal. Until one day, when the emperor was on parade, did a little boy from the audience shout "the emperor has no clothes on."

Let me shout – I don't believe in the severity of climate change.

Before we get into the arguments of the hundreds of pros and cons on this controversial topic, let's set the guidelines on analysis and admissible evidence, without the fear of the "lack of wisdom or loyalty."

For example, it's not that I fully refute climate change; it's not that I am being a contrarian; and it's not that I haven't spent a lot of time studying the subject that I doubt the severity of climate change. After all, the Ice Age ended about 11,500 years ago, so we know that climate changes. It's not that there aren't good arguments on both sides. But let's remove the emotion and "business dealing" and rely on the facts. Like Sargeant Friday from Dragnet would say, "just the facts ma'am, just the facts."

kadmy/Creative RF/Getty Images photo

Possibly a regulation such as the "fart tax" should also be imposed on vain policy makers.

The first parameter in deciphering factual information is to apply a statistical analysis on the scientific data surrounding the topic. Just because two things happened together, doesn't mean one caused the other. Just because events are clustered doesn't mean they're not still random.

I believe that while carbon dioxide levels are increasing, this does not mean that temperatures are rising.

The provincial Climate Change Mitigation and Low-carbon Economy Act, 2016 (Bill 172) wants us to reduce greenhouse gas emissions by 15 per cent by the end of 2020.

Carbon dioxide levels rise and fall over time (but statistically insignificantly). A temperature's rise isn't necessarily related to increased carbon dioxide levels. However, rising carbon dioxide levels do mean an increase in plant growth. In fact, OMAFRA's "Carbon Dioxide in Greenhouses" factsheet recommends supplementing up to 1,000 ppm of carbon dioxide into greenhouses to support plant growth.

What troubles me is that carbon dioxide is so necessary for plant growth (photosynthesis) yet we want to limit it so intensively in our atmosphere. Yes, there are other gases – so why not focus on those?

So, I don't believe that carbon dioxide, an invisible gas that we all exhale or expel and that makes up less than a tenth of one percent of the atmosphere, could be affecting earth's climate to the severity that is proclaimed.

I am a doubter of the severity of climate change. Possibly a regulation such as the "fart tax" should also be imposed on vain policy makers like the emperor and his senate. BP

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

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